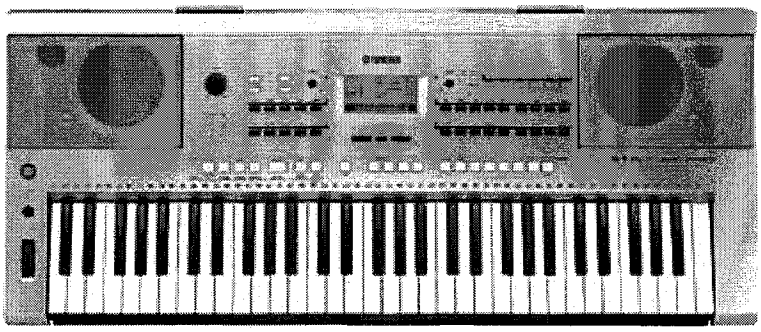
# Digital Keyboard

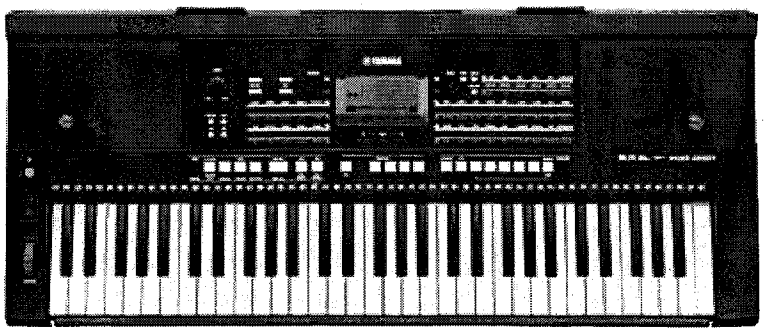
# KB-290
# KB-291

# SERVICE MANUAL

● KB-290



● KB-291



## ■ CONTENTS




PK 001873

YAMAHA
HAMAMATSU, JAPAN

## 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:** This product contains chemicals known to the State of California to cause cancer, 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

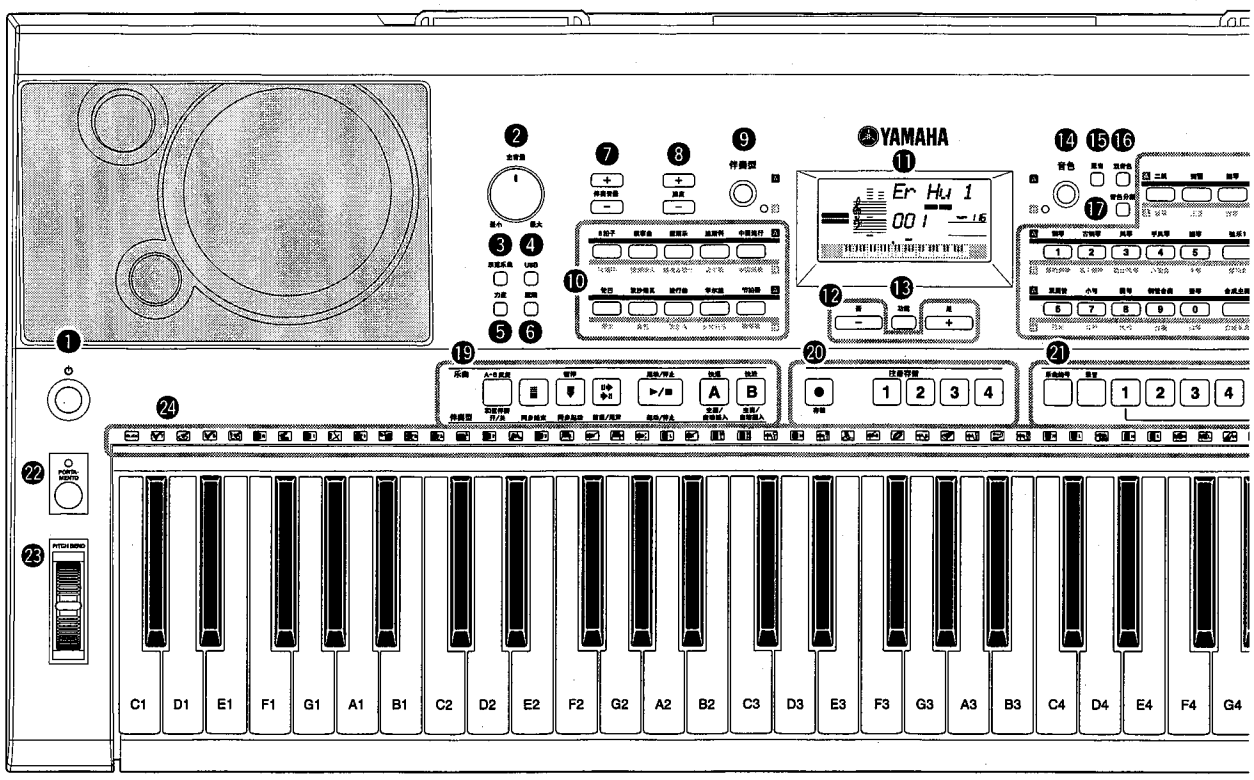
Some data items are automatically saved as backup data in the internal memory even if you turn the power off. Saved data may be lost due to malfunction or incorrect operation. Save important data to a USB storage device or a computer. To protect against data loss through media damage, we recommend that you save your important data onto two USB storage devices/external media.

# SPECIFICATIONS

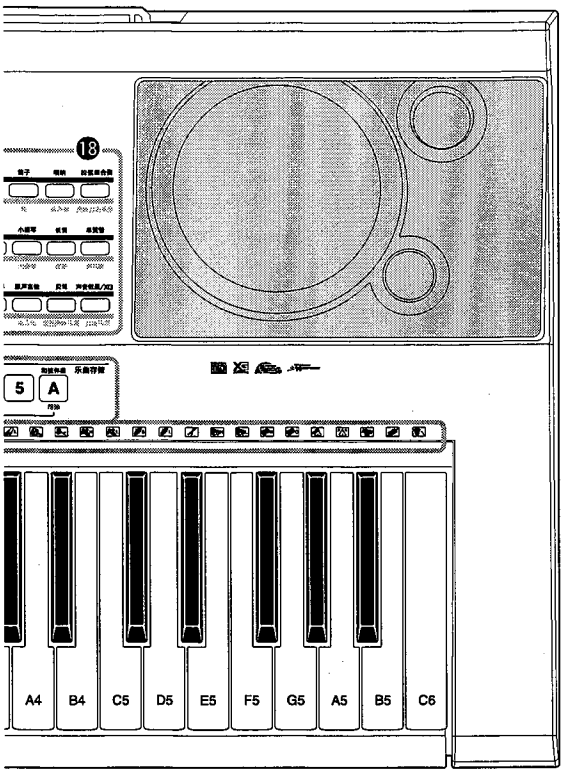
| | | | |
|---|---|---|---|
| **尺寸/重量** | 尺寸 （宽 × 深 × 高） | | 947 x 401 x 160 mm |
| | 重量 | | 7.0 kg （不包括电池） |
| **控制接口** | 键盘 | 琴键数 | 61 |
| | | 力度感响应 | 是 |
| | 其它控制器 | 滑音轮 | 是 |
| | | 滑音 | 是 |
| | 显示屏 | 类型 | LCD显示画面 |
| | | 背光 | 是 |
| | | 语言 | 英文 |
| | 面板 | 语言 | 中文 |
| **音色** | 音源 | 音源技术 | AWM立体声采样 |
| | 复音 | 复音数 （最大） | 32 |
| | 预置 | 音色数 | 697 音色 （包括 22 个鼓/中国打击乐器组/声音效果+10个琶音音色 + 474个 XGlite音色） |
| | 兼容性 | GM/XGlite | 是 |
| **效果器** | 类型 | 混响 | 10 个类型 （包括超宽立体声） |
| | | 合唱 | 4种类型 |
| | | 和声 | 26种类型 |
| | | 琶音 | 150种类型 |
| | 功能 | 双音色 | 是 |
| | | 分割音色 | 是 |
| | | 面板延音 | 是 |
| **伴奏型** | 预置 | 预置伴奏风格数 | 173 |
| | | 指弹和弦模式 | 多重指法 |
| | | 伴奏控制 | 和弦伴奏开/关、同步起动、起动/停止、前奏/尾声、主奏/自动插入 |
| | 自定义 | 用户伴奏 | 是 |
| | 其它功能 | 单触设置 （OTS） | 是 |
| **乐曲** | 示范乐曲 | 示范曲数量 | 20 |
| | 录音 | 乐曲数量 | 5 |
| | | 音轨数量 | 6 |
| | | 数据容量 | 每5首乐曲约10,000音符 （当仅录制旋律轨时）<br>每5首乐曲约5,500个和弦 （当仅录制旋律轨时） |
| | 兼容的数据格式 | 回放 | SMF （格式0和1） |
| | | 录音 | SMF （格式0） |
| **功能** | 注册记忆 | 预设注册数量 | 16 |
| | | 自定义注册数量 | 32 |
| | 整体控制 | 移调 | -12-0-+12 |
| | | 调音 | 427.0-440.0-453.0 Hz |
| **存储** | 内置存储器 | | 约1.79 MB |
| | 外接驱动器 | | 可选购的USB存储设备 （通过USB[TO DEVICE]端口） |
| **连接** | DC IN （直流输入） | | 直流输入 12 V 插口 |
| | 耳机/输出 | | [耳机/输出] x 1 |
| | 延音踏板 | | [延音踏板] x 1 |
| | 表现踏板 | | [表现踏板] x 1 |
| **功放** | | | 6W x 2 |
| **音箱** | | | 12cm x 2 + 3cm x 2 |
| **电源** | 电源 | 适配器 | PA-150A或Yamaha推荐的相应产品 |
| | | 电池 | 六节电池 （1.5V AA 碱性电池/锰电池或1.2V 充电 Ni-MH电池） |
| | 耗电量 | | • 10W （KB-290/291）<br>• 13W （KB-290/291和 AC电源适配器） |
| **附件** | 包含附件 | | • AC电源适配器 （PA-150A或Yamaha推荐的相应产品）<br>• 谱架<br>• 表现踏板 EP-1<br>• 使用说明书<br>• Online Member Product Registration （在线会员产品注册）<br>• 保证书 |
| | 可选附件 | | • 踏板：FC4，FC5 |

# ■ PANEL LAYOUT

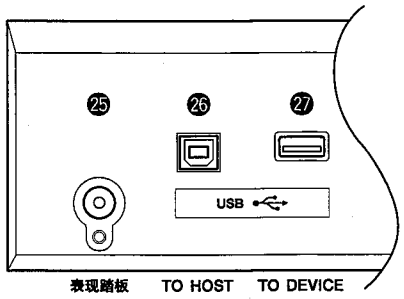
## 顶部面板

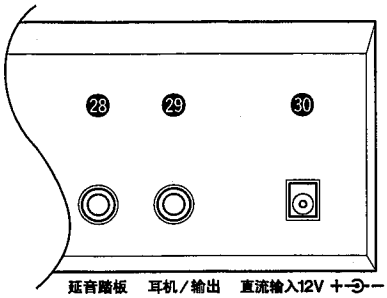



❶ [⏻] (待机 / 开) 开关
❷ [主音量] 旋钮
❸ [示范乐曲] 按钮
❹ [USB] 按钮
❺ [力度] 按钮
❻ [混响] 按钮
❼ 伴奏音量 [+], [-] 按钮
❽ 速度 [+], [-] 按钮
❾ [伴奏型] 按钮
❿ 伴奏目录按钮
⓫ 显示屏
⓬ [-/ 否], [+/ 是] 按钮
⓭ [功能] 按钮
⓮ [音色] 按钮
⓯ [延音] 按钮
⓰ [双音色] 按钮
⓱ [音色分割] 按钮
⓲ 音色目录按钮
⓳ 乐曲 / 伴奏型控制按钮
⓴ 注册存储按钮
㉑ 乐曲存储按钮
㉒ [PORTAMENTO] (滑音) 按钮
㉓ [PITCH BEND] (弯音) 轮
㉔ 打击乐器组图标




## 后面板

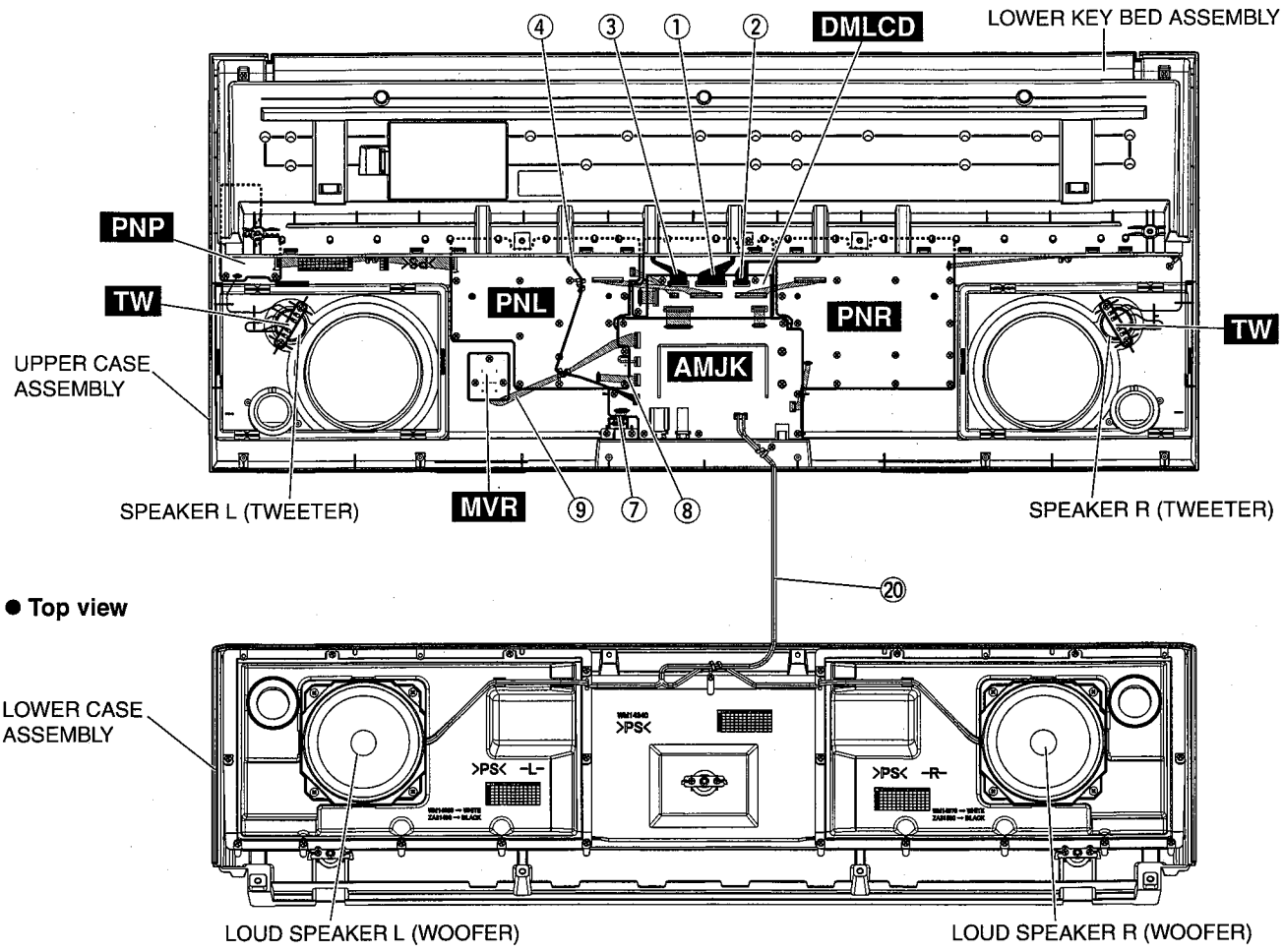



㉕ [表现踏板] 插孔
㉖ USB [TO HOST] 端口
㉗ USB [TO DEVICE] 端口
㉘ [延音踏板] 插孔
㉙ [耳机 / 输出] 插孔
㉚ 直流输入插口

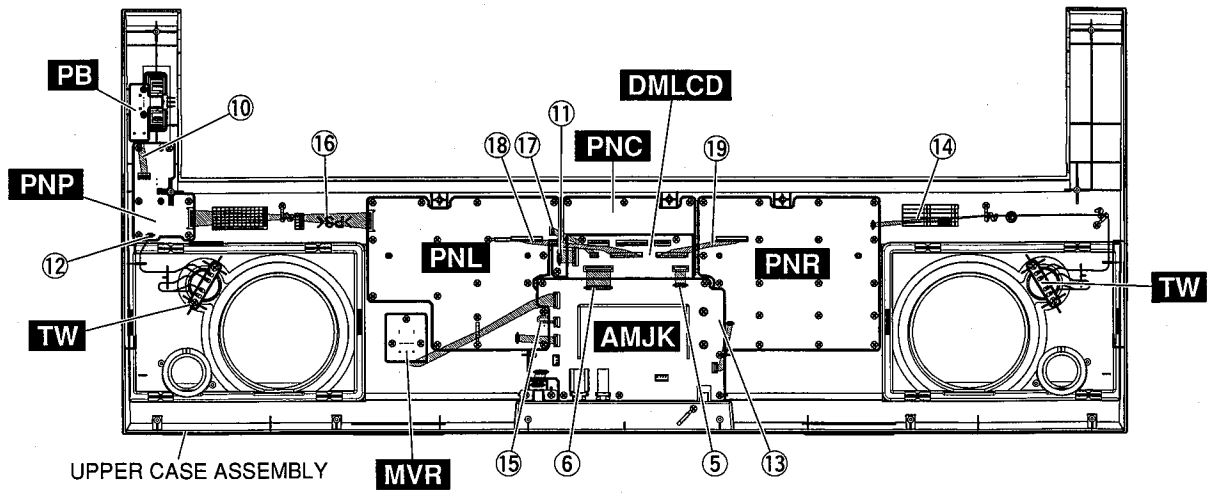
# ■ CIRCUIT BOARD LAYOUT & WIRING

● **Bottom view**



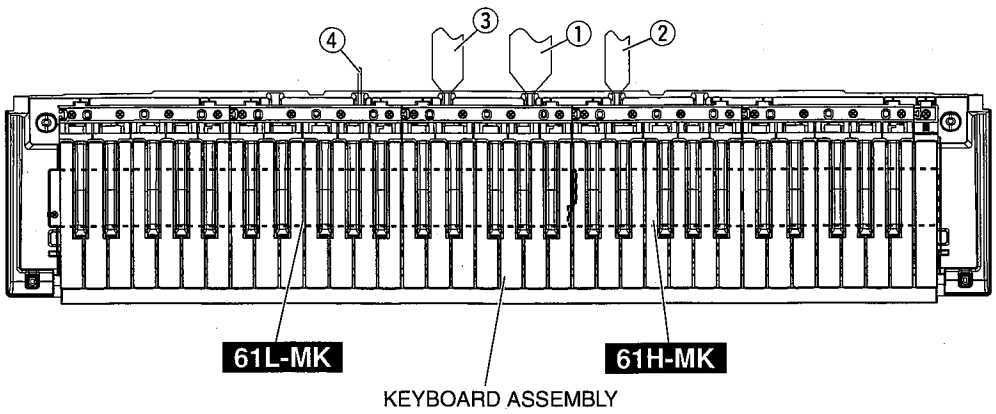

## <UPPER CASE ASSEMBLY>

● **Bottom view**



## <LOWER KEY BED ASSEMBLY>

● **Top view**




| No. | Unit Name | Location | Parts No. | Connector Assembly | Destination | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ① | LOWER KEY BED ASSEMBLY | 30 | (ZA27390) | | 61H-MK-CN1 | *1 | *4 | DMLCD-CN501 | *1 | *4 | 12P L=250 |
| ② | | 40 | (ZA26060) | | 61H-MK-CN2 | *1 | *4 | DMLCD-CN503 | *1 | *4 | 5P L=250 |
| ③ | | 50 | (ZA26420) | | 61L-MK-CN5 | *1 | *4 | DMLCD-CN502 | *1 | *4 | 7P L=200 |
| ④ | | 120 | (ZA53710) | BATT | SPRING TERMINAL (B/A) | *2 | *6 | AMJK-CN101 | *1 | *9 | 3P |
| ⑤ | AMJK CIRCUIT BOARD | WH001 | (ZA17530) | | AMJK-CN211 | *3 | *11 | DMLCD-CN505 | *1 | *4 | 5P L=50 |
| ⑥ | | WH002 | (ZA18490) | | AMJK-CN212 | *3 | *11 | DMLCD-CN504 | *1 | *4 | 11P L=50 |
| ⑦ | | WH003 | (ZA17530) | | AMJK-CN204 | *3 | *11 | AMJK-CN103 | *3 | *11 | 5P L=50 |
| ⑧ | PNL CIRCUIT BOARD | WH001 | (ZA17230) | | PNL-CN802 | *3 | *11 | AMJK-CN205 | *1 | *4 | 3P L=100 |
| ⑨ | MV CIRCUIT BOARD | WH002 | (ZA17590) | | MV-CN200 | *3 | *11 | AMJK-CN203 | *1 | *4 | 5P L=200 |
| ⑩ | PB CIRCUIT BOARD | WH003 | (ZA25600) | | PB-CN902 | *3 | *11 | PNP-CN901 | *1 | *4 | 3P L=50 |
| ⑪ | PNC CIRCUIT BOARD | WH004 | (ZA17690) | | PNC-CN806 | *3 | *11 | DMLCD-CN300 | *1 | *4 | 6P L=50 |
| ⑫ | PNP CIRCUIT BOARD | WH005 | (ZA37800) | TWL | PNP-CN905 | *3 | *11 | TW (+/-) | *2 | *5 | 2P L=100 |
| ⑬ | PNR CIRCUIT BOARD | WH701 | (ZA25430) | | PNR-CN701 | *3 | *11 | AMJK-CN210 | *1 | *4 | 2P L=100 |
| ⑭ | | WH702 | (ZA37790) | TWR | PNR-CN702 | *3 | *11 | TW (+/-) | *2 | *5 | 2P L=320 |
| ⑮ | UPPER CASE ASSEMBLY | 350 | (WC60540) | BL | Back light assembly | *3 | *5 | AMJK-CN100 | *1 | *4 | 2P L=70 |
| ⑯ | | 510 | (ZA53660) | PNP | PNL-CN800 | *1 | *9 | PNP-CN900 | *1 | *9 | 9P |
| ⑰ | | 520 | (ZC35770) | PN | PNL-CN803 | *1 | *9 | DMLCD-CN303 | *1 | *9 | 3P |
| ⑱ | | 530 | (ZA57650) | PNL | PNL-CN804 | *1 | *9 | DMLCD-CN302 | *1 | *9 | 14P |
| ⑲ | | 540 | (ZA57650) | PNL | PNR-CN700 | *1 | *9 | DMLCD-CN301 | *1 | *9 | 14P |
| ⑳ | LOWER CASE ASSEMBLY | 30 | (ZA35470) | SP | Speaker L (Woofer) | *2 | *7 | AMJK-CN209 | *1 | *10 | 4P |
| | | | | | Speaker R (Woofer) | *2 | *8 | | | | |

* 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: Edge mark is adjusted to + mark.
*6: Red wire is connected to (+) terminal. Black wire is connected to (–) terminal.
*7: White wire is connected to (+) terminal. Black wire is connected to (–) terminal.
*8: Red wire is connected to (+) terminal. Black wire is connected to (–) terminal.
*9: Red wire is adjusted to Pin 1 mark ( △ mark).
*10: White wire is adjusted to Pin 1 mark ( △ mark).
*11: Connected

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

# ■ 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 six (6) screws marked [80A], two (2) screws marked [90] and two (2) screws marked [100A]. The lower case assembly can then be removed. (Fig. 1)

* ***When installing the lower case assembly, first tighten the screw marked [90] and then the remaining screws. (Fig. 1)***

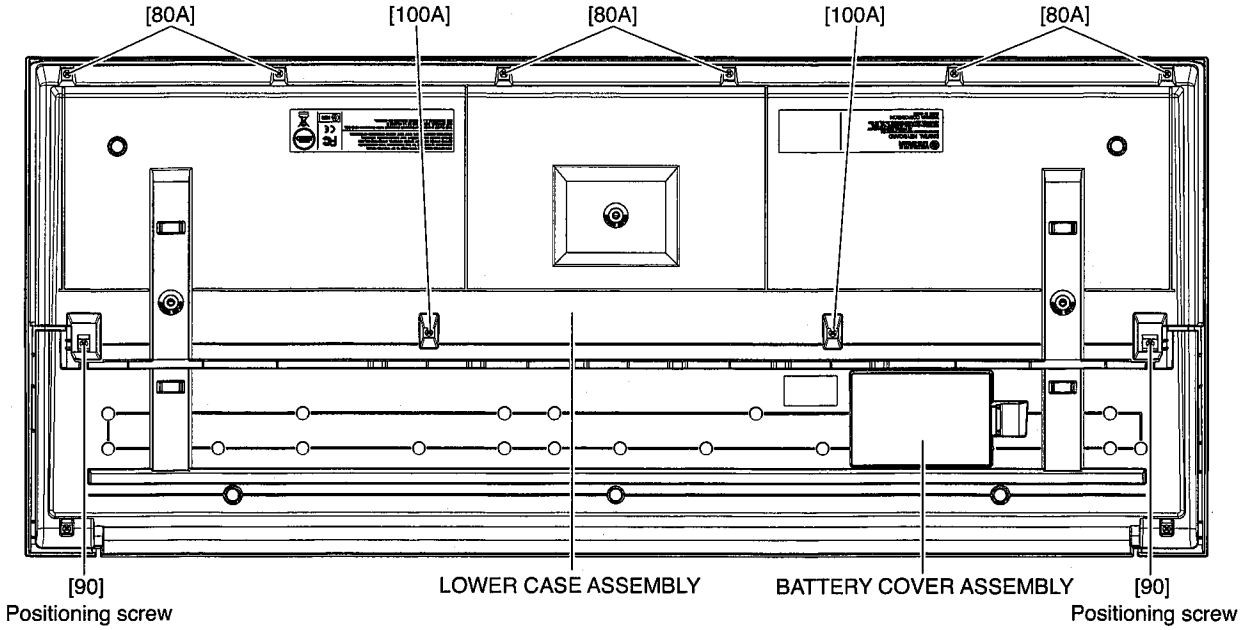
## 2. Lower Key Bed Assembly

**(Time required: About 3 minutes)**

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

2-2. Remove the two (2) screws marked [80B] and screw marked [100B]. The lower key bed assembly can then be removed. (Fig. 2)

● **Bottom view**




● **Top view**

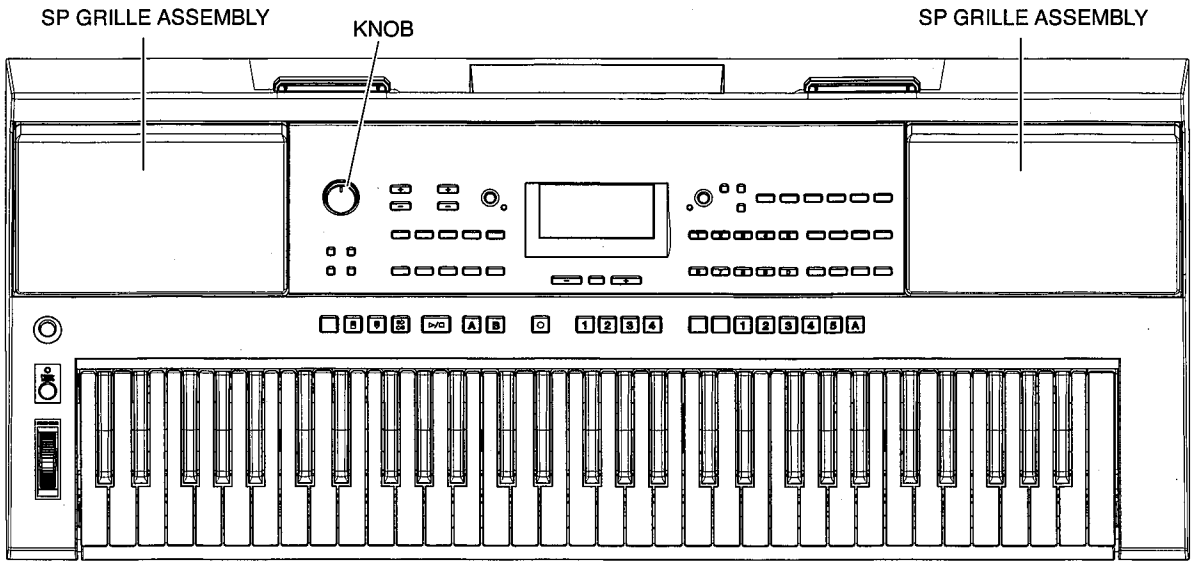



Fig. 1

## 3. AMJK Circuit Board

**(Time required: About 4 minutes)**

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

3-2. Remove the screw marked [400A] on the rear. (Fig. 2)

3-3. Remove the nine (9) screws marked [400B]. The AMJK circuit board can then be removed. (Fig. 2)

## 4. DMLCD Circuit Board, Back Light Assembly and LCD Display

**(Time required: About 6 minutes)**

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

4-2. Remove the AMJK circuit board. (See procedure 3)

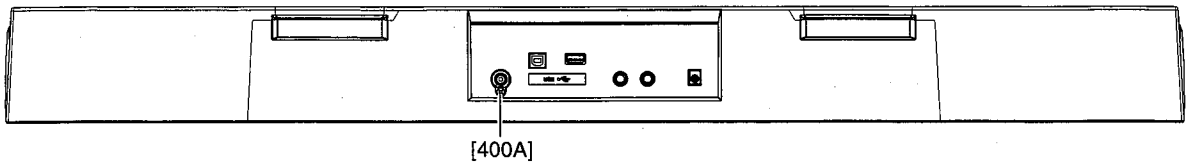
4-3. Remove the thirteen (13) screws marked [400C]. The DMLCD circuit board can then be removed. (Fig. 3)

* ***When installing the DMLCD circuit board, first tighten the screws in the order of 1 through 4 and then the remaining screws. (Fig. 3)***

4-4. Remove the back light assembly, LCD display and rubber connectors from the LCD panel molding. (Fig.4)

* ***Avoid touching the conductive part of the rubber connector as much as possible. Should foreign matter or dirt adhere, remove such contamination using adhesive tape or the like. Do not wipe off using solvents such as benzene or alcohol.***

● **Rear view**




● **Bottom view**

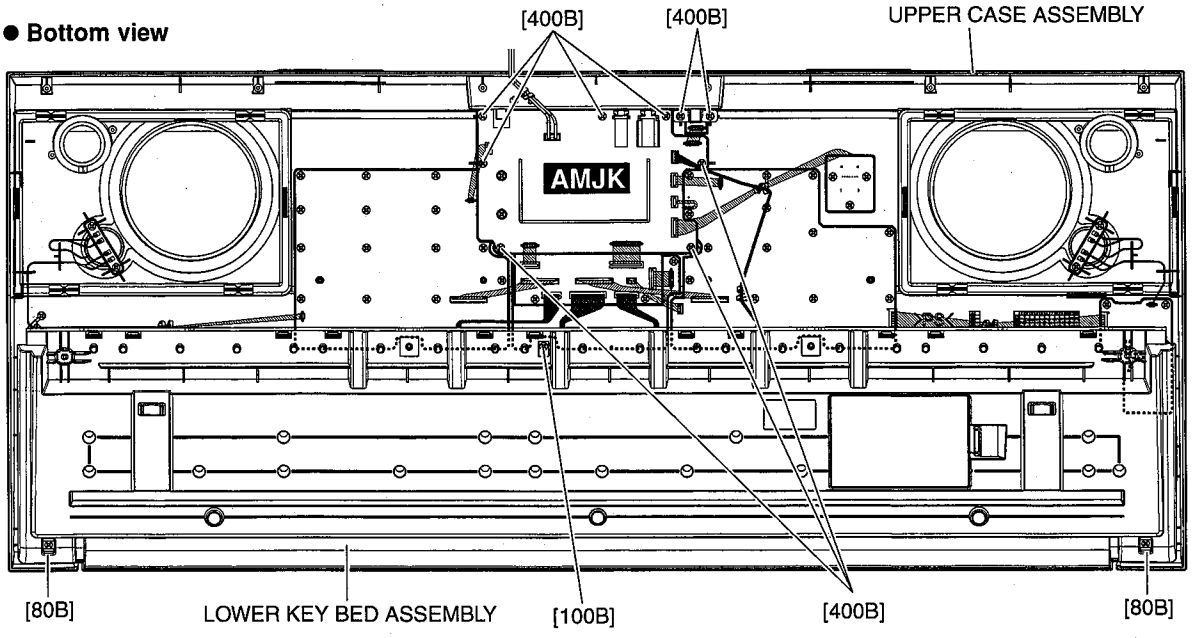



Fig. 2

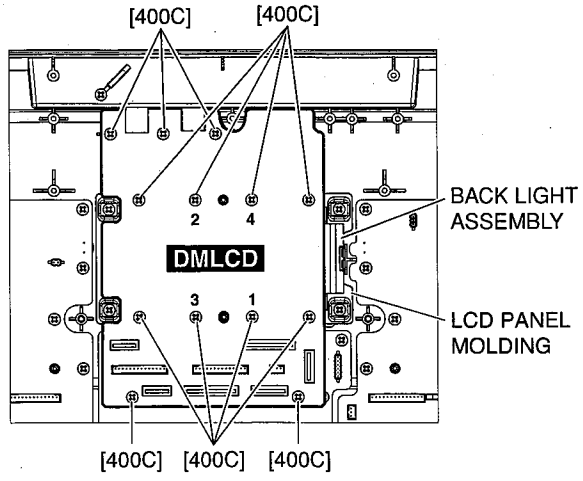



Fig. 3

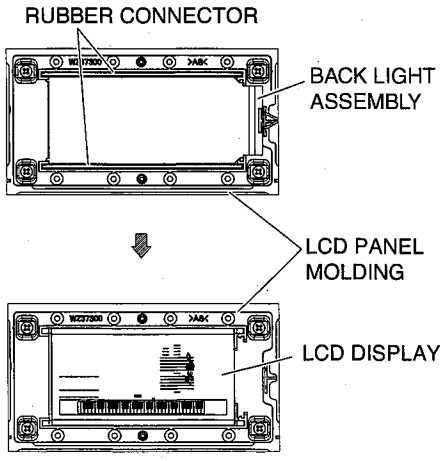



Fig. 4

## 5. MVR Circuit Board

**(Time required: About 2 minutes)**

5-1. Pull out the volume knob from the control panel as shown in Fig. 5.

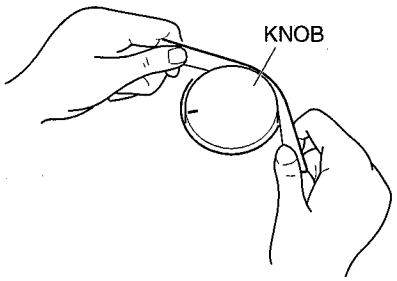



Fig. 5

5-2. Remove the lower case assembly. (See procedure 1)
5-3. Remove the three (3) screws marked [400D]. The MVR circuit board can then be removed. (Fig. 6)

## 6. TW Circuit Boards and Speakers (Tweeters)

**(Time required: About 3 minutes each)**

6-1. Remove the lower case assembly. (See procedure 1)
6-2. **TW Circuit Board (L) and Speaker L (Tweeter)**
Remove the connector assembly TW and speaker cable soldered to the TW circuit board (L) and remove the two (2) screws marked [400E]. The TW circuit board (L) and speaker L (tweeter) can then be removed. (Fig. 6)
6-3. **TW Circuit Board (R) and Speaker R (Tweeter)**
Remove the connector assembly TW and speaker cable soldered to the TW circuit board (R) and remove the two (2) screws marked [400F]. The TW circuit board (R) and speaker R (tweeter) can then be removed. (Fig. 6)

## 7. SP Grille Assembly

**(Time required: About 3 minutes each)**

7-1. Remove the lower case assembly. (See procedure 1.)
7-2. Set the four (4) projections [A] parallel to the groove in the upper case assembly and remove the SP grille assembly L. (Fig. 1, Fig. 7)

* ***The SP grille assembly R can be removed in the same manner.***

## 8. PNR Circuit Board

**(Time required: About 5 minutes)**

8-1. Remove the lower case assembly. (See procedure 1)
8-2. Remove the lower key bed assembly. (See procedure 2)
8-3. Remove the AMJK circuit board. (See procedure 3)
8-4. Remove the twenty (20) screws marked [400G]. The PNR circuit board can then be removed. (Fig. 7)

## 9. PNL Circuit Board

**(Time required: About 5 minutes)**

9-1. Remove the lower case assembly. (See procedure 1)
9-2. Remove the lower key bed assembly. (See procedure 2)
9-3. Remove the seventeen (17) screws marked [400H]. The PNL circuit board can then be removed. (Fig. 7)

## 10. PNC Circuit Board

**(Time required: About 8 minutes)**

10-1. Remove the lower case assembly. (See procedure 1)
10-2. Remove the lower key bed assembly. (See procedure 2)
10-3. Remove the AMJK circuit board. (See procedure 3)
10-4. Remove the DMLCD circuit board. (See procedure 4)
10-5. Remove the nine (9) screws marked [400I]. The PNC circuit board can then be removed. (Fig. 7)

## 11. PNP Circuit Board

**(Time required: About 3 minutes)**

11-1. Remove the lower case assembly. (See procedure 1)
11-2. Remove the lower key bed assembly. (See procedure 2)
11-3. Remove the six (6) screws marked [400J]. The PNP circuit board can then be removed. (Fig. 7)

## 12. PB Circuit Board and Wheel Assembly

**(Time required: About 3 minutes each)**

12-1. Remove the lower case assembly. (See procedure 1)
12-2. Remove the lower key bed assembly. (See procedure 2)
12-3. Remove the two (2) screws marked [400K]. The PB circuit board can then be removed with the wheel assembly attached. (Fig. 7)
12-4. Pull out the wheel assembly from the PB circuit board. (Fig. 8)

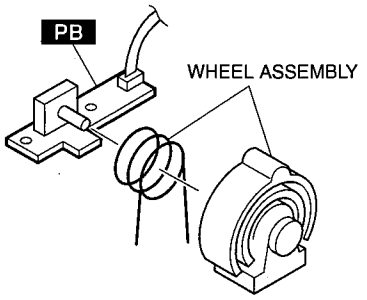



Fig. 8

## 13. Speakers (Woofers)

**(Time required: About 3 minutes)**

13-1. Remove the lower case assembly. (See procedure 1)
13-2. Remove the four (4) each screws marked [40] to the right and left. The speakers (woofers) to the right and left can then be removed. (Fig. 9)

## <UPPER CASE ASSEMBLY>

● **Bottom view**

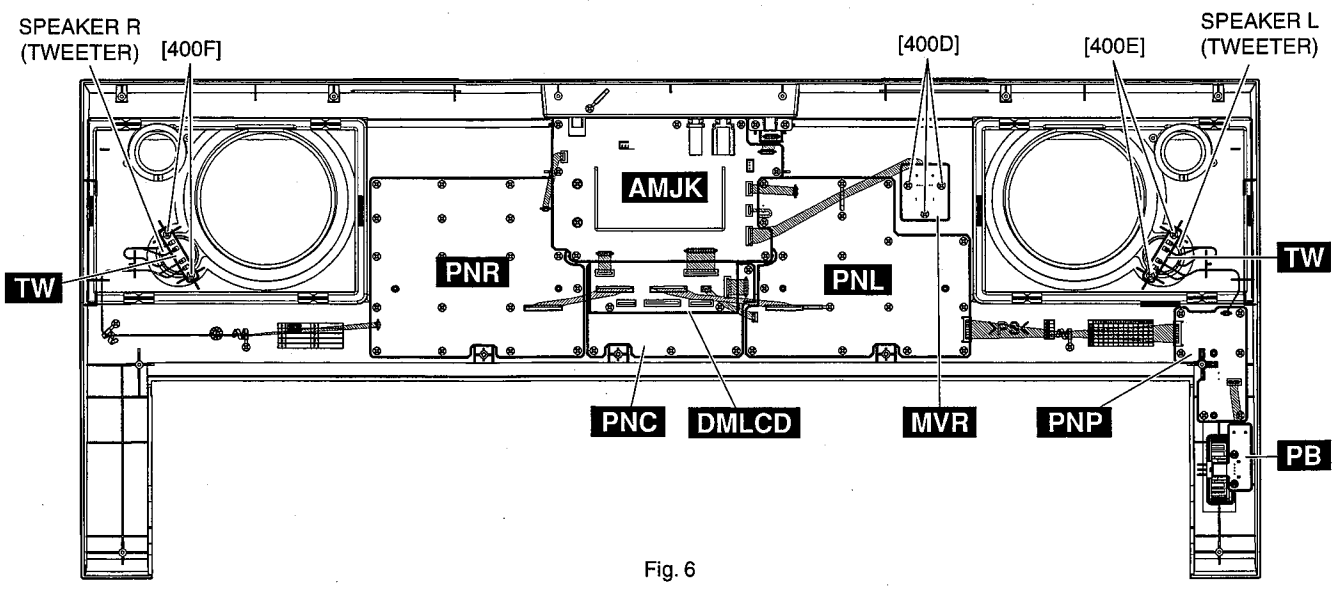



Fig. 6

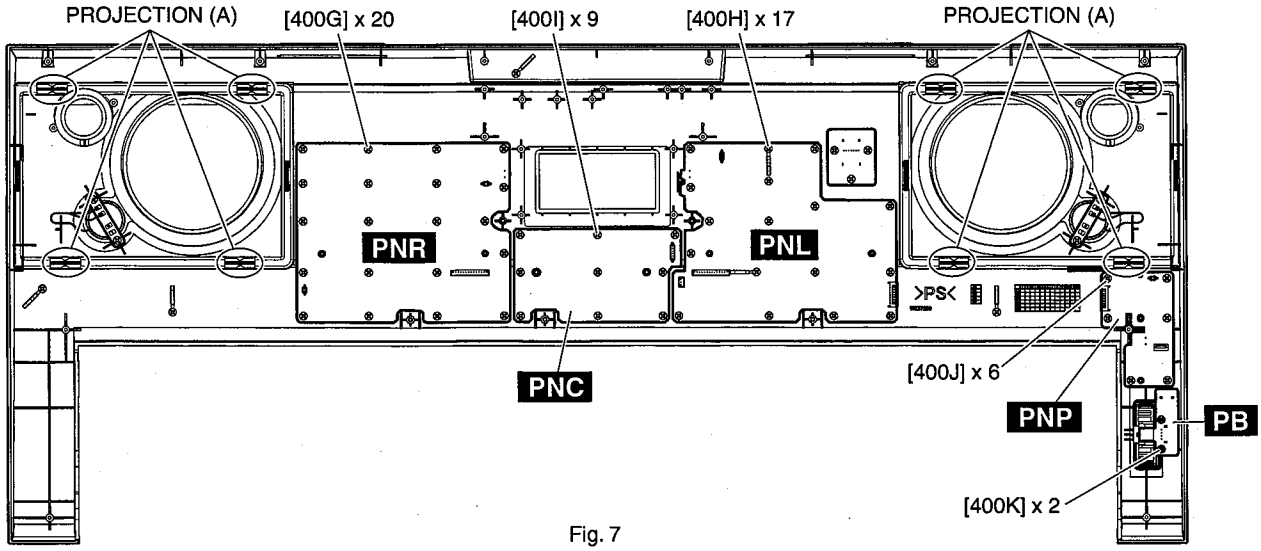



Fig. 7

## <LOWER CASE ASSEMBLY>

● **Top view**

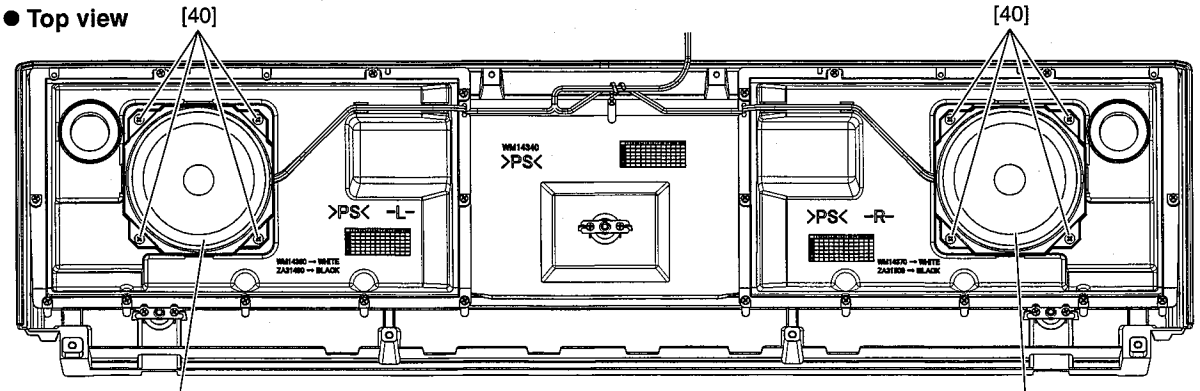



Fig. 9

## 14. Disassembling Keyboard Assembly

**(Time required: About 13 minutes)**

14-1. Remove the lower case assembly. (See procedure 1)

14-2. Remove the lower key bed assembly. (See procedure 2)

14-3. **White Keys and Black Keys**

14-3-1. 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. 10)

14-3-2. To remove a set, remove the four (4) each screws marked [120A]. The white and black keys in the set can then be removed. (Fig. 10)
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)

14-3-3. To remove the white key C6, remove the screw marked [120B], unhook as described in Procedure 14-3-2, and pull out toward you. (Fig. 10)

* ***When all white and black keys were removed, first attach the white and black keys C3 ~ B3 aligning them with the boss, and then attach the remaining white and black keys. (Fig. 10)***

14-4. **Rubber Contact**

14-4-1. Remove the white and black keys corresponding to the rubber contacts to be removed. (See Fig. 10 and Procedure 14-3.)

14-4-2. Remove the rubber contacts. (Photo 2, Fig. 11)

14-5. **Circuit Board 61L-MK**

14-5-1. Remove the white and black keys from C1 to B3. (See Fig. 10 and Procedure 14-3.)

14-5-2. Remove the four (4) screws marked [100C] and eight (8) screws marked [110A]. The circuit board 61L-MK can then be removed. (Fig. 11)

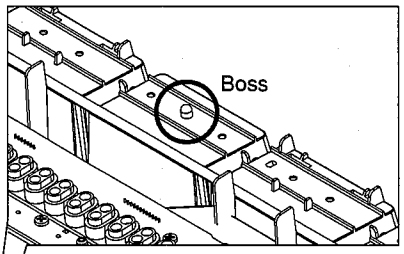
* ***When installing the circuit board 61L-MK, tighten the screws 1 through 12 in numerical order as shown in the figure "61L-MK" in Fig. 12.***

14-6. **Circuit Board 61H-MK**

14-6-1. Remove the white and black keys from C4 to C6. (See Fig. 10 and Procedure 14-3.)

14-6-2. Remove the three (3) screws marked [100D] and five (5) screws marked [110B]. The circuit board 61H-MK can then be removed. (Fig. 11)

* ***When installing the circuit board 61H-MK, tighten the screws 1 through 8 in numerical order as shown in the figure "61H-MK" in Fig. 12.***




**<LOWER KEY BED ASSEMBLY>**

● **Top view**

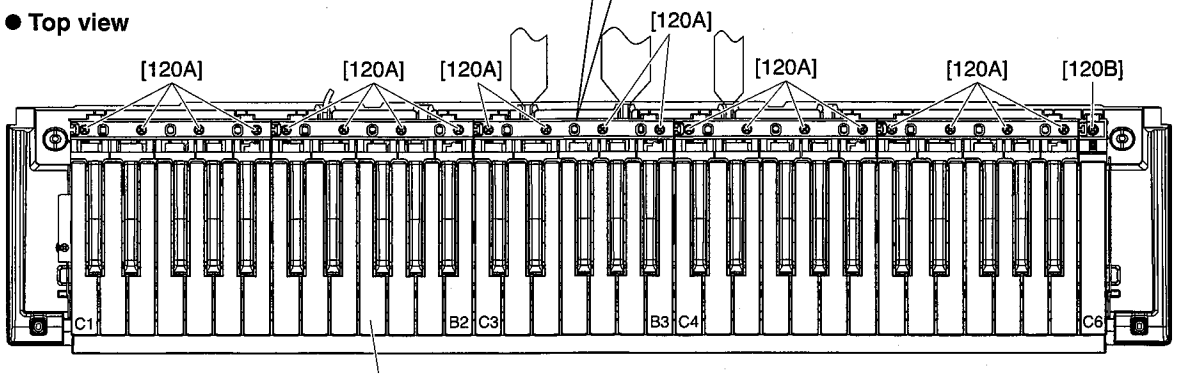



Fig. 10

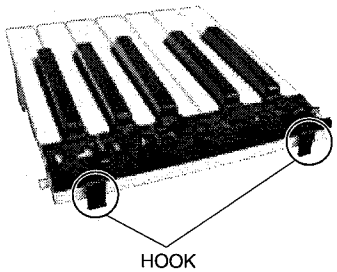



Photo 1

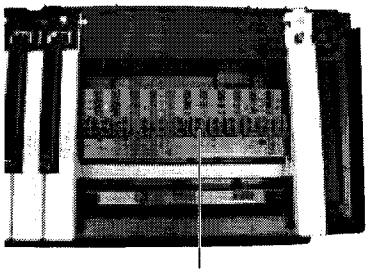



Photo 2

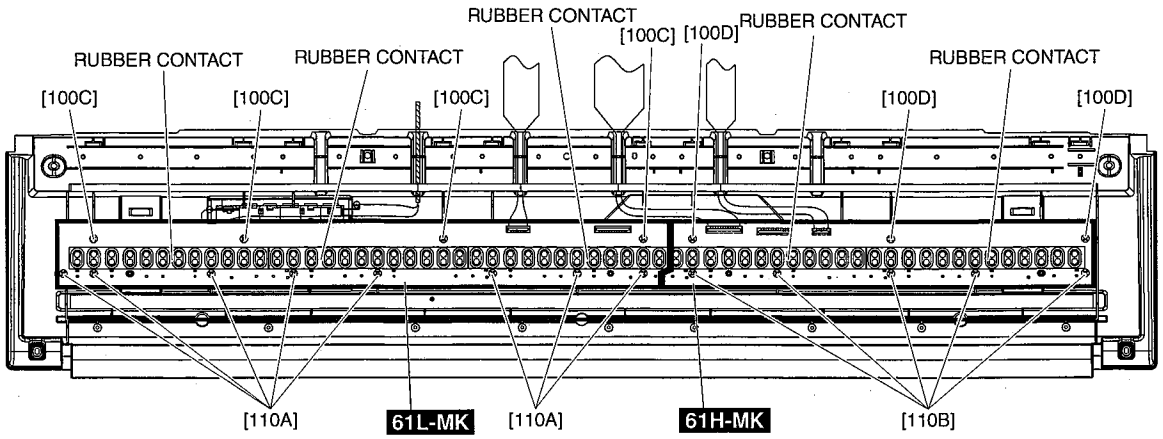


Fig. 11

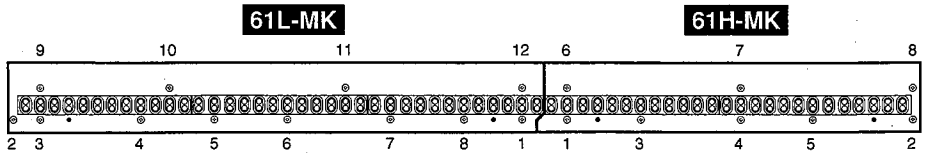


Fig. 12

## 15. How to Remove Spring Terminals

### 15-1. Spring Terminal A and Spring Terminal B (Time required: About 4 minutes each)

15-1-1. Remove the lower case assembly. (See procedure 1)

15-1-2. Remove the lower key bed assembly. (See procedure 2)

15-1-3. Remove the white and black keys from C1 to B2. (See Fig. 10 and Procedure 14-3.)

15-1-4. Remove the connector assembly BATT soldered to the spring terminal A and spring terminal B. (Photo 3)

15-1-5. Reverse the lower key bed assembly and remove the battery cover assembly. (Fig. 1)

15-1-6. Lift the spring terminal A a little and slide it in the upper right direction to remove it. (Fig. 13)

15-1-7. Remove the hook for the spring terminal B to pull it out from inside. (Fig. 13)

### 15-2. Spring Terminal C and Spring Terminal D (Time required: About 1 minute each)

15-2-1. Remove the battery cover assembly. (See procedure 15-1-5)

15-2-2. Remove the hooks to pull out the spring terminal C and spring terminal D. (Fig. 13, Fig. 14)

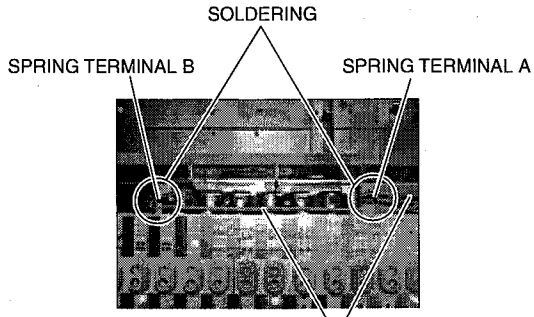


Photo 3

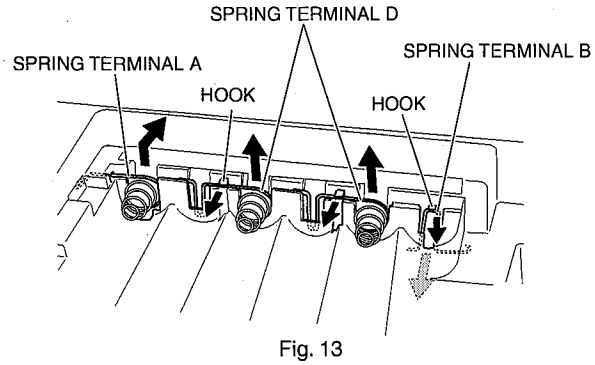


Fig. 13

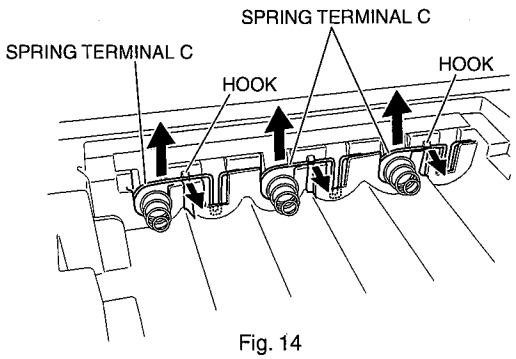


Fig. 14

# ■ LSI PIN DESCRIPTION



## • R8A66597FP (YD645A00) USB HOST CONTROLLER

DMLCD: IC402

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | VIF | - | IO power supply +3.3V | 41 | VBUS | I | VBUS input |
| 2 | INT_N | O | Interrupt | 42 | GND | - | Ground |
| 3 | SOF_N | O | SOF pluse output | 43 | VCC | - | Power supply +3.3V |
| 4 | DREQ0_N | O | DMA request | 44 | RST_N | I | Reset signal |
| 5 | DACK0_N | I | DMA acknowledgement | 45 | GND | - | Ground |
| 6 | DEND0_N | I/O | DMA transfer end | 46 | MPBUS | I | Bus mode selection |
| 7 | DREQ1_N | O | DMA request | 47 | A1 | I | Address bus |
| 8 | DACK1_N | I | DMA acknowledgement | 48 | A2 | I | |
| 9 | DEND1_N | I/O | DMA transfer end | 49 | A3 | I | |
| 10 | VDD | O | Output 1.5V with internal regulator –generated | 50 | GND | - | Ground |
| 11 | GND | - | Ground | 51 | VDD | O | Output 1.5V with internal regulator –generated |
| 12 | SD0 | I/O | Split data bus | 52 | A4 | I | Address bus |
| 13 | SD1 | I/O | | 53 | A5 | I | |
| 14 | SD2 | I/O | | 54 | A6 | I | |
| 15 | SD3 | I/O | | 55 | A7/ALE | I | Address bus/Address latch enabled |
| 16 | SD4 | I/O | | 56 | RD_N | I | Read strobe |
| 17 | SD5 | I/O | | 57 | WR0_N | I | D7-0 Byte write strobe |
| 18 | SD6 | I/O | | 58 | WR1_N | I | D15-8 Byte write strobe |
| 19 | SD7 | I/O | | 59 | CS_N | I | Chip select |
| 20 | VIF | - | IO power supply +3.3V | 60 | VIF | - | IO power supply +3.3V |
| 21 | GND | - | Ground | 61 | GND | - | Ground |
| 22 | VCC | - | Power supply +3.3V | 62 | D0 | I/O | Data bus |
| 23 | XIN | I | Input for oscillation | 63 | D1/AD1 | I/O | Data bus/Multiplex address bus |
| 24 | XOUT | O | Output for oscillation | 64 | D2/AD2 | I/O | |
| 25 | AVCC | - | Analog power supply +3.3V | 65 | D3/AD3 | I/O | |
| 26 | AGND | - | Ground | 66 | D4/AD4 | I/O | |
| 27 | REFRIN | I | Reference input | 67 | D5/AD5 | I/O | |
| 28 | VBOUT1 | O | External power on | 68 | D6/AD6 | I/O | |
| 29 | OVCUR1 | I | Overcurrent input for Port1 | 69 | D7/AD7 | I/O | |
| 30 | VBOUT0 | O | External power on | 70 | VIF | - | IO power supply +3.3V |
| 31 | EXTLP0 | O | Control of external power for low power consumption | 71 | GND | - | Ground |
| 32 | ID0 | I | ID input | 72 | D8 | I/O | Data bus |
| 33 | OVCUR0A | I | Overcurrent input for Port0 | 73 | D9 | I/O | |
| 34 | OVCUR0B | I | | 74 | D10 | I/O | |
| 35 | VCC | - | Power supply +3.3V | 75 | D11 | I/O | |
| 36 | DM1 | I/O | USB D- data | 76 | D12 | I/O | |
| 37 | DP1 | I/O | USB D+ data | 77 | D13 | I/O | |
| 38 | GND | - | Ground | 78 | D14 | I/O | |
| 39 | DM0 | I/O | USB D- data | 79 | D15 | I/O | |
| 40 | DP0 | I/O | USB D+ data | 80 | GND | - | Ground |

## • SWL01U (YA876A01) CPU

DMLCD: IC001

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | NC | - | Connection to the GND | 89 | NC | - | Connection to the GND |
| 2 | NC | - | | 90 | NC | - | |
| 3 | EA3/PD3/KYN24 | I | ON/OFF signal from the keyboard | 91 | MD03 | I/O | External memory data bus |
| 4 | EA2/PD2/KYN23 | I | | 92 | MD11 | I/O | |
| 5 | EA1/PD1/KYN22 | I | | 93 | MD04 | I/O | |
| 6 | EA0/PD0/KYN21 | I | | 94 | MD12 | I/O | |
| 7 | ED0/PC0/KYN11 | I/O | Key selection signal to the keyboard | 95 | MD05 | I/O | |
| 8 | ED1/PC1/KYN12 | I/O | | 96 | MD13 | I/O | |
| 9 | ED2/PC2/KYN13 | I/O | | 97 | MD06 | I/O | |
| 10 | ED3/PC3/KYN14 | I/O | | 98 | MD14 | I/O | |
| 11 | ED4/PC4/KYN15 | I/O | | 99 | MD07 | I/O | |
| 12 | ED5/PC5/KYN16 | I/O | | 100 | MD15 | I/O | |
| 13 | ED6/PC6/KYB05 | I/O | | 101 | Vss | - | Digital Core ground |
| 14 | ED7/PC7/KYB06 | I/O | | 102 | CS50RDN/PE4/RCLK | O | Priority of setup) PE4 > RCLK(SDRAM) > CS50RDN |
| 15 | PROTN | I | Determines if the product is a prototype | 103 | MA17 | O | External memory address |
| 16 | BISTMD | I | Memory BIST mode (1: BIST mode) | 104 | MA23 | O | |
| 17 | BISTCLK | I | Memory BIST clock | 105 | MA16 | O | |
| 18 | PLLBPN | I | PLL bypass mode (0: PLL bypass) | 106 | MA15 | O | |
| 19 | TESTN | - | Test mode | 107 | MA14 | O | |
| 20 | Vss | - | Digital Core ground | 108 | MA13 | O | |
| 21 | XI | I | Crystal oscillator input (33.8688 MHz) | 109 | MA12 | O | |
| 22 | XO | O | Crystal oscillator output | 110 | MA11 | O | |
| 23 | VDD | - | Digital Core power supply | 111 | VDD | - | Digital Core power supply |
| 24 | Vss | - | Digital Core ground | 112 | IOVDD | I/O | I/O power supply |
| 25 | IOVDD | I/O | I/O power supply | 113 | MA10 | O | External memory address |
| 26 | TRSTN | I | JTAG I/F reset | 114 | MA09 | O | |
| 27 | TMS | I | JTAG I/F mode | 115 | MA20 | O | |
| 28 | TCK | I | JTAG I/F clock | 116 | MA21/PF1 | O | |
| 29 | TDI | I | JTAG I/F input | 117 | MA22/PF2 | O | |
| 30 | TDO | I | JTAG I/F output | 118 | MA19 | O | |
| 31 | VDD | - | Digital Core power supply | 119 | MA18 | O | |
| 32 | PLLVDD | - | Digital PLL power supply (common with Core power supply inside) | 120 | MA08 | O | |
| 33 | Vss | - | Digital Core ground | 121 | MA07 | O | |
| 34 | PLLVss | - | Digital PLL ground (common with Core ground inside) | 122 | MA06 | O | |
| 35 | WCLK/SYO | O | Word clock (1 Fs = 44.1 kHz) | 123 | MA05 | O | |
| 36 | PFO | O | Output-only port | 124 | MA04 | O | |
| 37 | SDO1 | O | Audio output data (with EQ & compressor) | 125 | MA03 | O | |
| 38 | SDO0 | O | (SWL01 equivalent output data)/Selection signal to the keyboard | 126 | MA02 | O | |
| 39 | BCLK | O | Bit clock (64Fs) | 127 | MA00 | O | |
| 40 | SYSCLK/PG3 | O | System clock (256Fs/384Fs/768Fs) | 128 | CS1N/PG1 | O | Chip select for area 3 |
| 41 | SDI/PH3 | I | Serial audio input data | 129 | Vss | - | Digital Core ground |
| 42 | Vss | - | Digital Core ground | 130 | ICN | I | Reset |
| 43 | IRQON/PH0 | I | Interrupt input | 131 | Vss | - | Digital Core ground |
| 44 | NC | - | Connection to the GND | 132 | NC | - | Connection to the GND |
| 45 | NC | - | | 133 | NC | - | |
| 46 | NC | - | | 134 | NC | - | |
| 47 | NC | - | | 135 | PA0 | I/O | Universal I/O port |
| 48 | TXD0/PG4 | O | Serial port I/F | 136 | PA1 | I/O | |
| 49 | RXD0/PH4 | I | Serial port I/F | 137 | PA2 | I/O | |
| 50 | TXD1/PG2 | O | Serial port I/F | 138 | PA3 | I/O | |
| 51 | RXD1/PH1 | I | Serial port I/F | 139 | PA4 | I/O | |
| 52 | SCLK1/PH2 | I | Serial port I/F | 140 | PA5 | I/O | |
| 53 | UCTL | I | Fixed L when USB is in use/Fixed H when not in use | 141 | PA6 | I/O | |
| 54 | VDD | - | Digital Core power supply | 142 | PA7 | I/O | |
| 55 | Vss | - | Digital Core ground | 143 | PB0 | I/O | |
| 56 | AVDD | - | Analog power supply | 144 | PB1 | I/O | |
| 57 | AVREF | I | ADC reference | 145 | PB2 | I/O | |
| 58 | AN0 | I | ADC input | 146 | PB3 | I/O | |
| 59 | AN1 | I | | 147 | PB4 | I/O | |
| 60 | AN2 | I | | 148 | PB5 | I/O | |
| 61 | AN3 | I | | 149 | PB6 | I/O | |
| 62 | AGNDREF | I | ADC ground reference | 150 | PB7 | I/O | |
| 63 | AVss | - | Analog ground | 151 | IOVDD | I/O | I/O power supply |
| 64 | USBVDD | - | USB I/O power supply 1.8v (Pullup when not in use) | 152 | Vss | - | Digital Core ground |
| 65 | FUNC_DM | I/O | USB data - | 153 | VDD | - | Digital Core power supply |
| 66 | FUNC_DP | I/O | USB data + | 154 | WRN/PF5/WEN | O | Priority of setup) PF5 > WEN(SDRAM) > WRN |
| 67 | USBVss | - | USB I/O ground | 155 | UBN/PF7/UDQM | O | Priority of setup) PF7 > UDQM(SDRAM) > UBN |
| 68 | USBIOVDD | - | USB I/O power supply 3.3v (Pullup when not in use) | 156 | LBN/PF6/LDQM | O | Priority of setup) PF6 > LDQM(SDRAM) > LBN |
| 69 | Vss | - | Digital Core ground | 157 | CS2N/PE0/KYB07 | O | Chip select for area 4 |
| 70 | VDD | - | Digital Core power supply | 158 | CS3N/PE1/KYB08 | O | Chip select for area 5 |
| 71 | XI_UCLK | I | Crystal oscillator input (48 MHz) | 159 | CS4N/PE2 | O | Chip select for area 6 |
| 72 | XO_UCLK | O | Crystal oscillator output | 160 | CS5N/PE3/KYB09 | O | Chip select for area 7 |
| 73 | Vss | - | Digital Core ground | 161 | CS51WRN/PE5/KYB12 | O | For luminescent keyboard |
| 74 | IOVDD | I/O | I/O power supply | 162 | CS52WRN/PE6/KYB13 | O | |
| 75 | VBUS | I | USB Vbus | 163 | CS53WRN/PE7 | O | |
| 76 | PULLUPE | O | USB Pullup enable | 164 | PF3 | O | Output-only port |
| 77 | CS0N/PG0 | O | Chip select for area 2 | 165 | PJ5 | O | Used as key selection signal to the keyboard |
| 78 | RDN/PF4 | O | External memory read signal | 166 | PJ4/KYB11 | O | |
| 79 | MA01 | O | External memory address | 167 | PJ3/KYB01 | O | |
| 80 | MD00 | I/O | External memory data bus | 168 | PJ2/KYB04 | O | |
| 81 | MD08 | I/O | | 169 | PJ1/KYB03 | O | |
| 82 | MD01 | I/O | | 170 | PJ0/KYB02 | O | |
| 83 | MD09 | I/O | | 171 | Vss | - | Digital Core ground |
| 84 | MD02 | I/O | | 172 | ECSN | I | Chip select input from external CPU |
| 85 | MD10 | I/O | | 173 | EWRN/PD5/KYN26 | I | Write enable input from external CPU |
| 86 | NC | - | Connection to the GND | 174 | ERDN/PD4/KYN25 | I | Read enable input from external CPU |
| 87 | NC | - | | 175 | NC | - | Connection to the GND |
| 88 | NC | - | | 176 | NC | - | |

- **NT3881DFG-01** (X3148A0R) **LCD DRIVER**
- **ML9040A-B01GAZ03A** (XZ987A0R) **LCD DRIVER**
- **SPLC780D1-001A-HQ1** (YC471A00) **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 outout | 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 | |

- **AK4385ET** (X6040A01) **DAC** (Digital to Analog Converter)

DMLCD: IC201

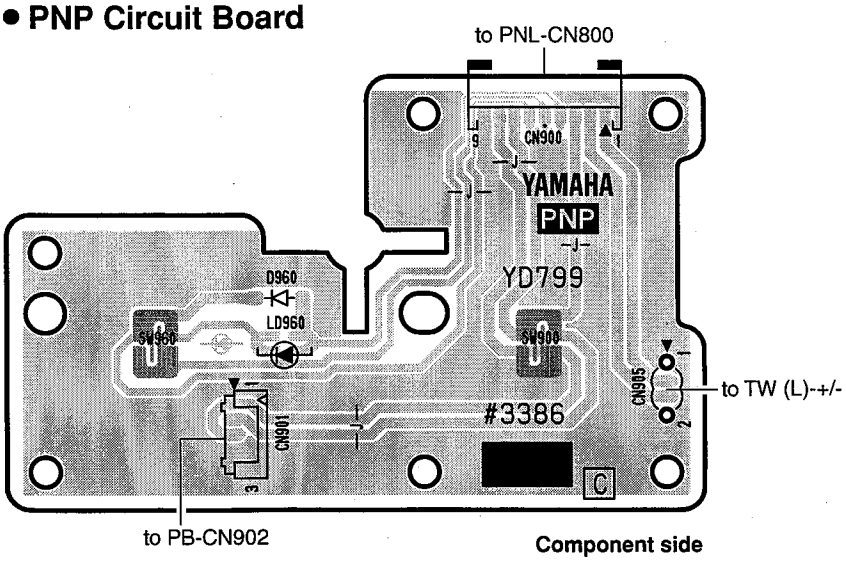
| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | MCLK | I | Master Clock | 9 | AOUTR- | O | Rch Analog out(-) |
| 2 | BICK | I | Audio Serial Data Clock | 10 | AOUTR+ | O | Rch Analog out(+) |
| 3 | SDTI | I | Audio Serial Date Input | 11 | 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 |

# ■ CIRCUIT BOARDS

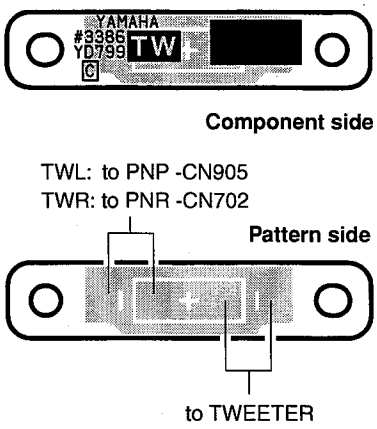


**Note: See parts list for details of circuit board component parts.**
**The DMLCD circuit boards "YD796C0" and "YE803A0" are shared parts.**

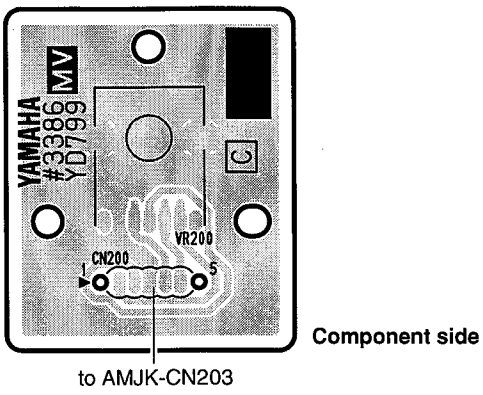
## ● PNP Circuit Board



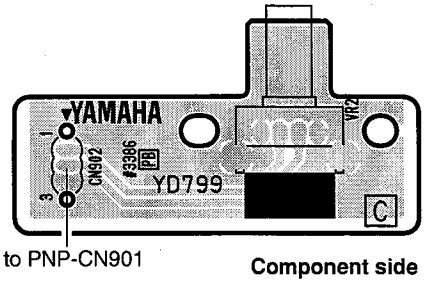

## ● TW Circuit Board



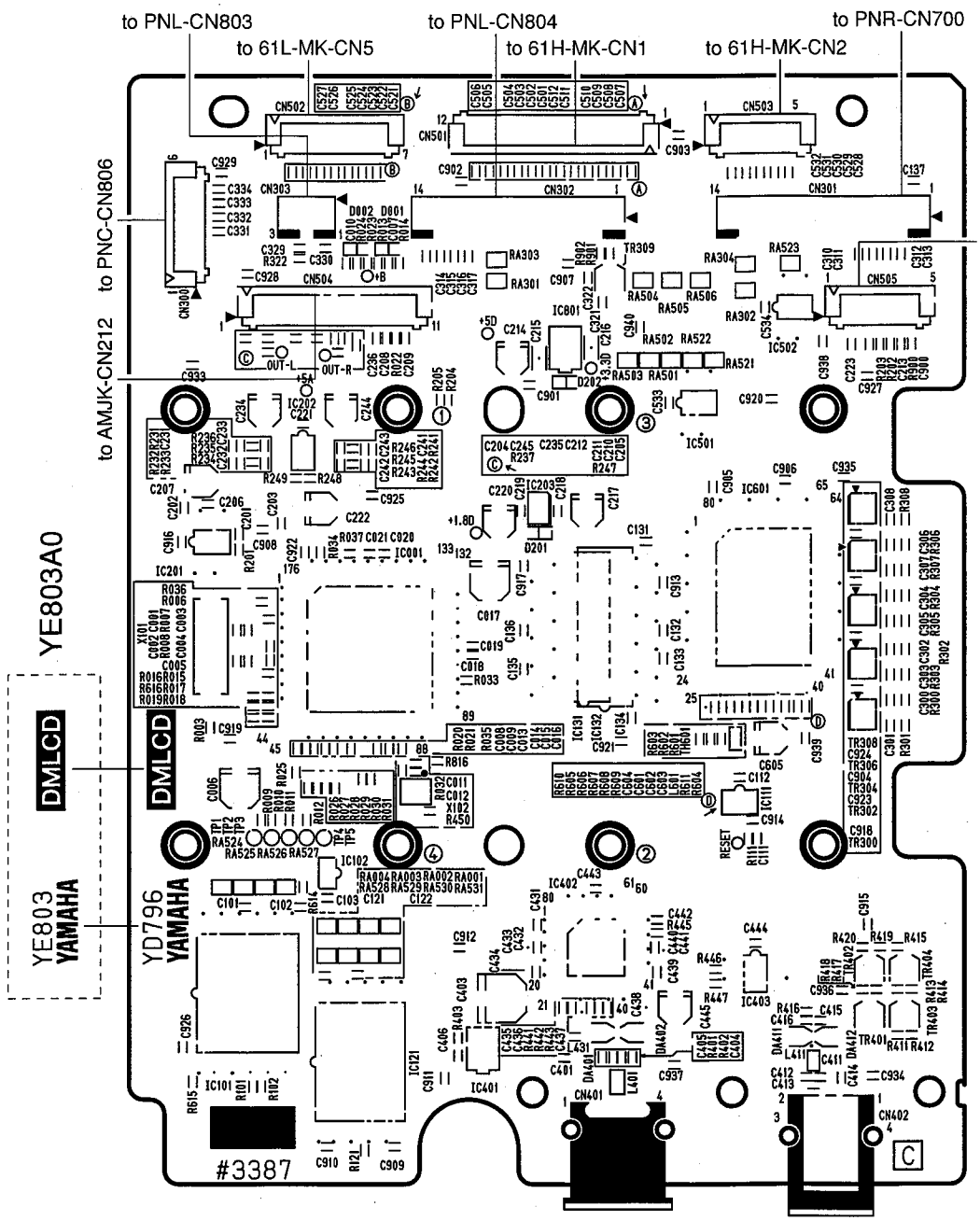

## ● MV Circuit Board




## ● PB Circuit Board



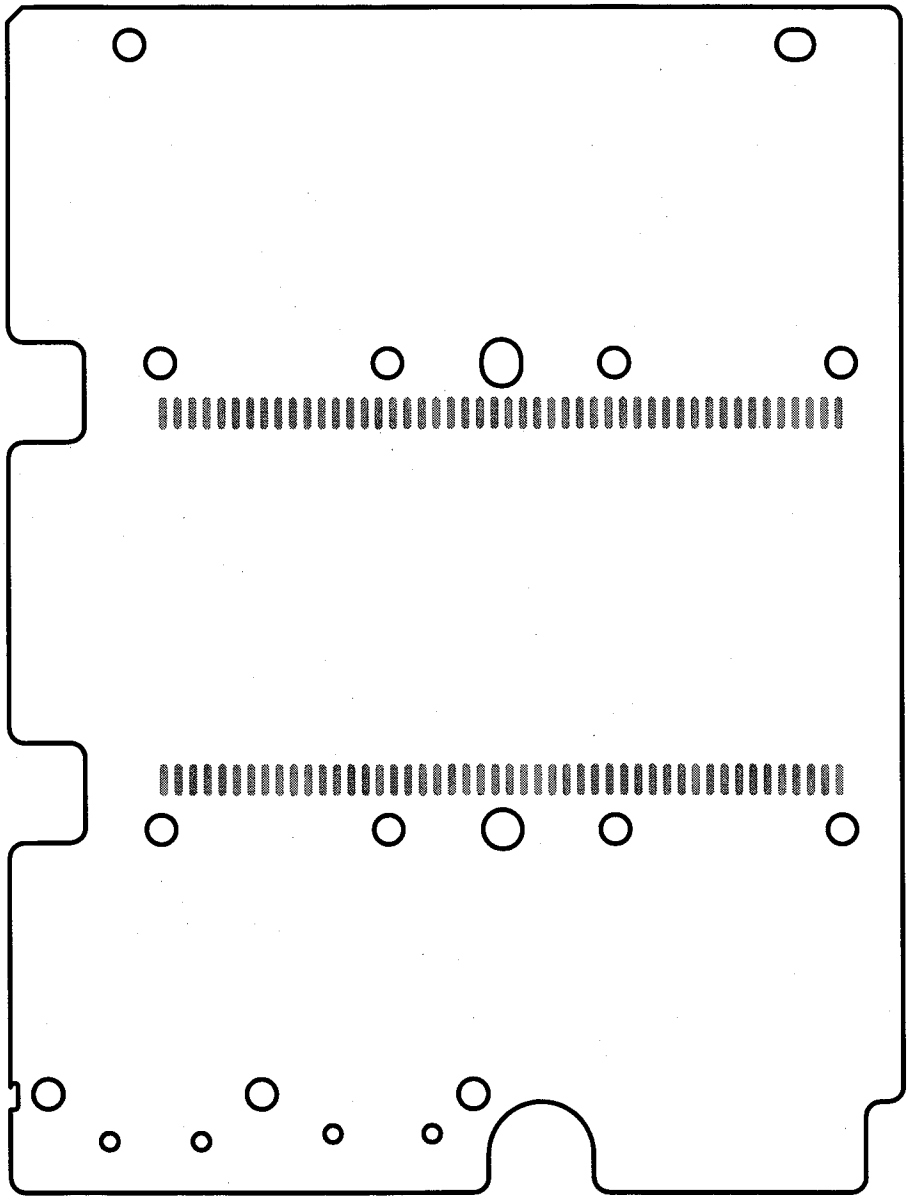
## • DMLCD Circuit Board




YD796C0

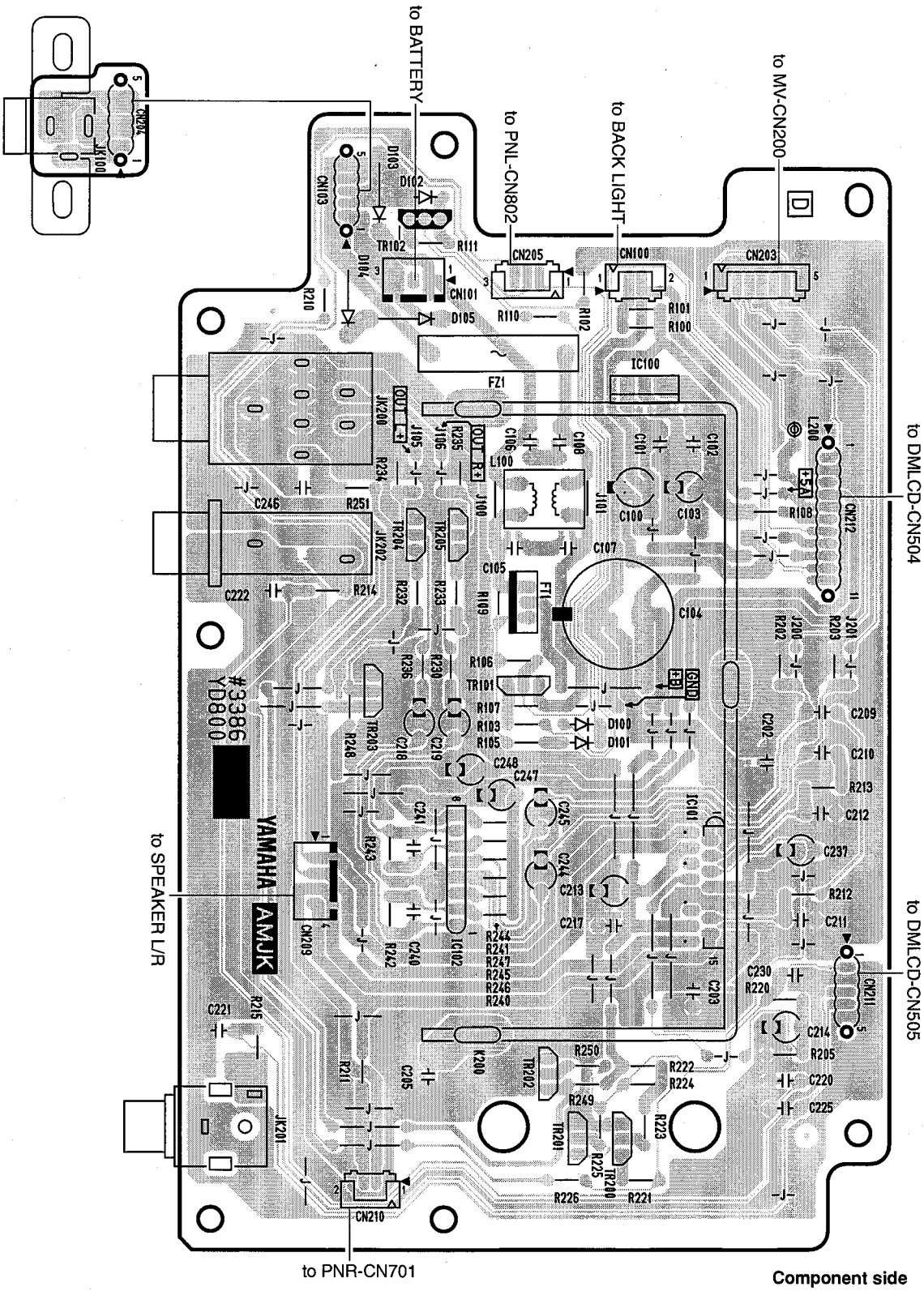
**Component side**

## • DMLCD Circuit Board



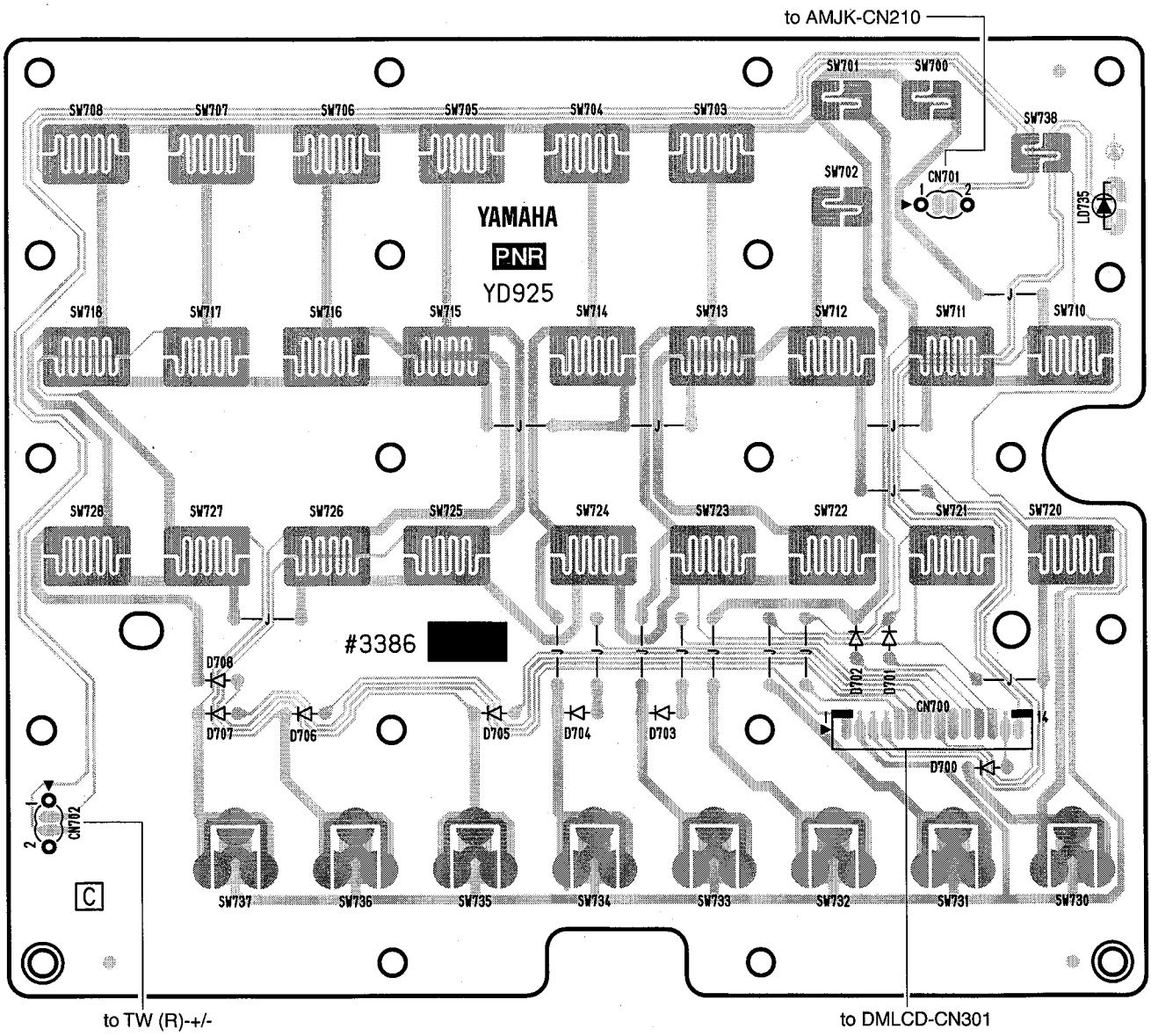
Pattern side

## • AMJK Circuit Board




Component side

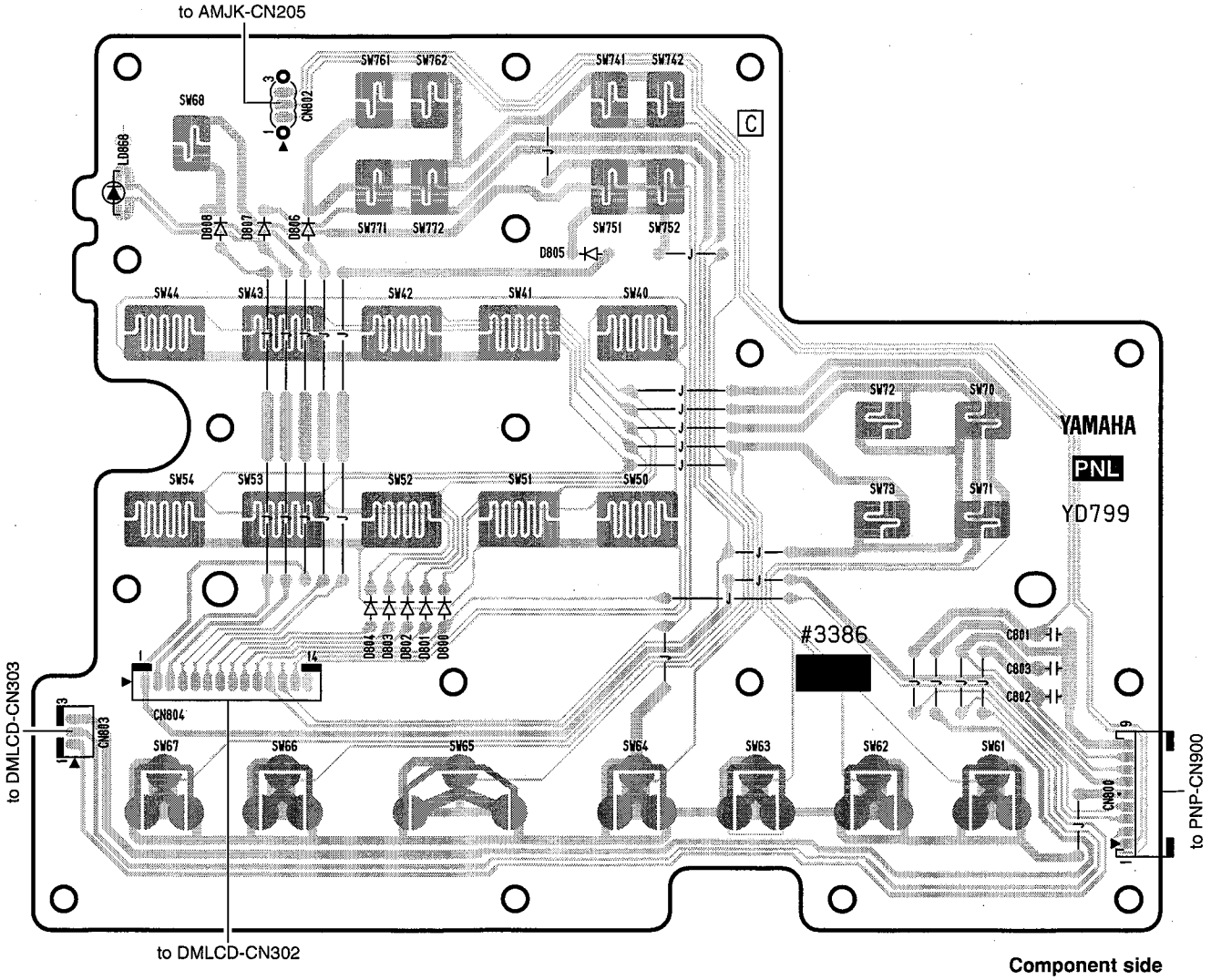
## • PNR Circuit Board



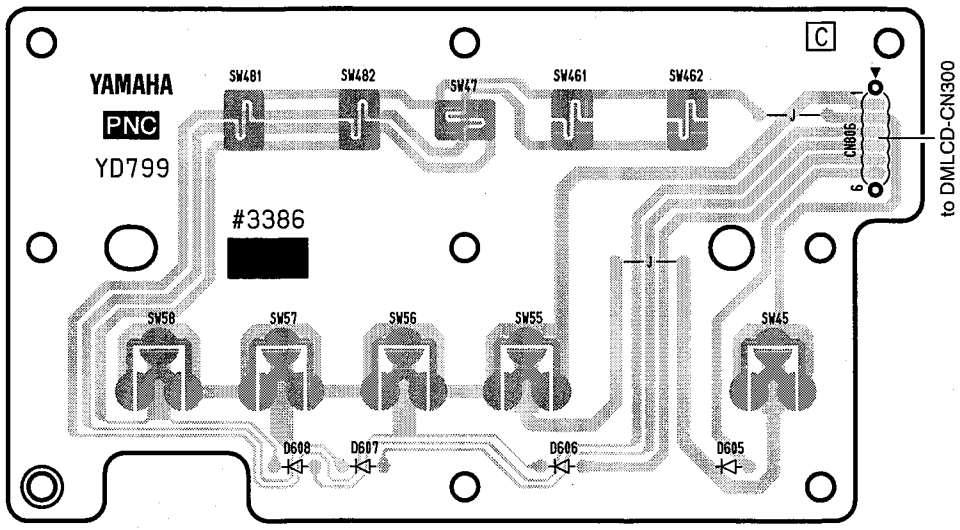

**Component side**

Scale: 90/100

## • PNL Circuit Board



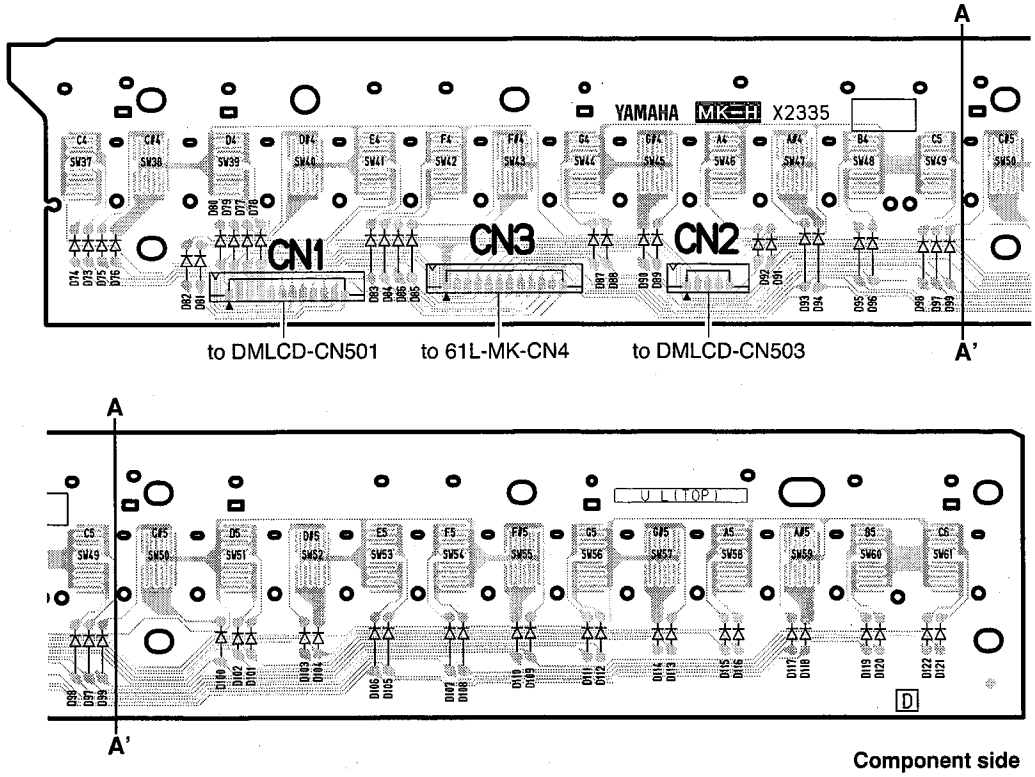

## • PNC Circuit Board




2NA-WZ26940-1

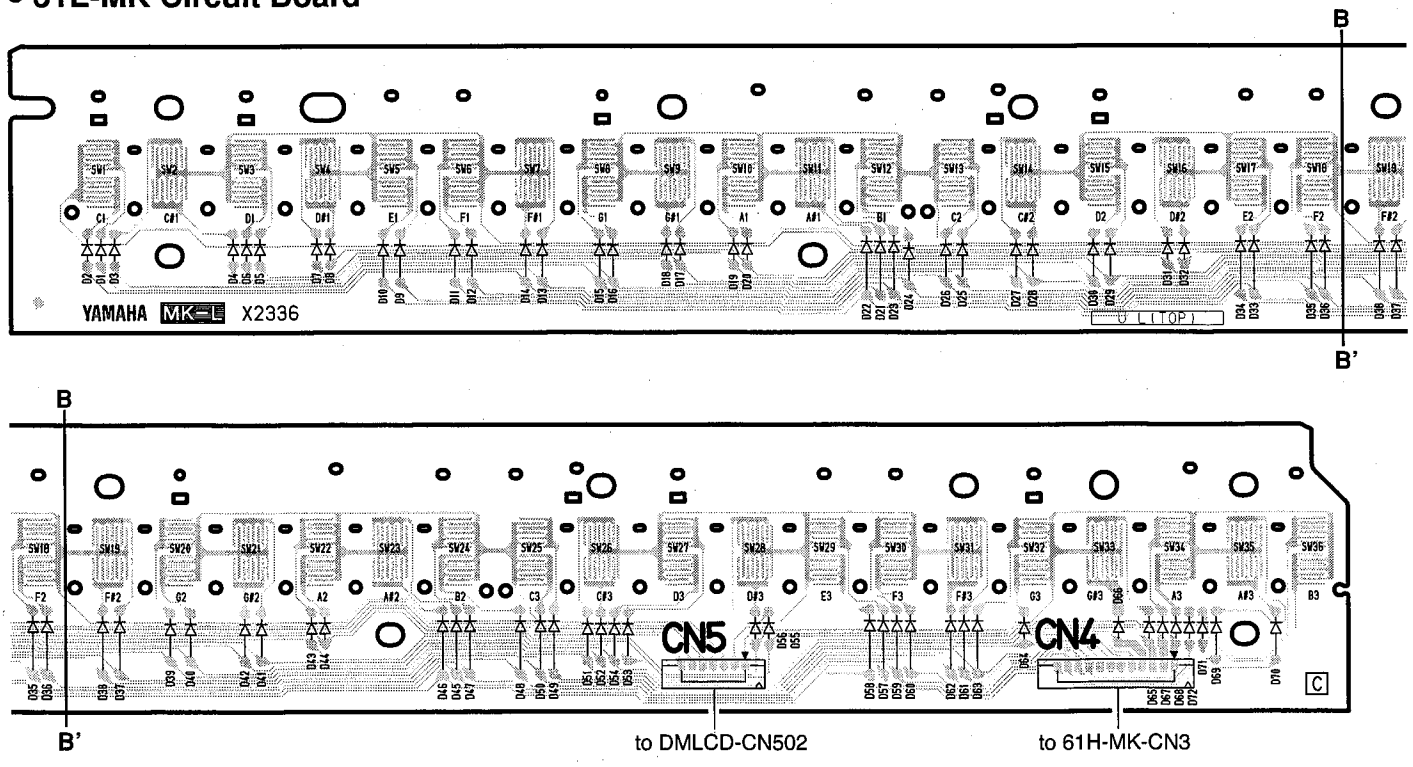
Scale: 70/100

## • 61H-MK Circuit Board




Component side

## • 61L-MK Circuit Board




Component side

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

# ■ TEST PROGRAM

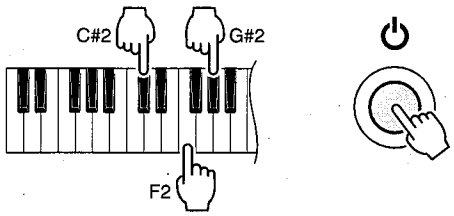
*** If the test number 59 "Factory Set" is executed, the data already set will be lost.**

## 1 Preparations

1) Use an AC adaptor PA-150A.
2) Measuring device: Frequency counter, which can detect thousandth value or more, Level meter (with JIS-C filter), Oscilloscope
   Note: Use a stereo plug and connect a load resistor of 33 ohms to the [PHONES/OUTPUT] jack for measurement unless otherwise specified. Input impedance of the measuring device should be 1 M ohms or more.
3) Jig: Foot switch (FC-4 or FC-5), USB cable, EXP Pedal (Accessories), Batteries
4) Controller settings
   MASTER VOLUME : MAX
   PEDAL : OFF
   Others : Initial setting when the power is turned on

## 2 Starting up the Test Program

While holding down the keys [C#2], [F2] and [G#2] 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 [+/YES] or [–/NO] button to select a test program item.
3) Press the [START/STOP] button to execute the test.
4) See the "Switch test item list" on page 27 for the correlation between button names in the manual and the button names on the panel.

**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 [+/YES] or [–/NO] button 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 result is 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**<br>**001** | Displays version of the ROM.<br>Using the voice switches, each data version can be displayed as follows.<br>[ 二胡 ] Main Program Version — Main: ***<br>[ 琵琶 ] Boot Program Version — Boot: ***<br>[ 扬琴 ] Style Data Version — Style: ***<br>[ 笛子 ] Song Data Version — Song: ***<br>[ 唢呐 ] Voice Paramater Version — Param: ***<br>[ 拉弦组合奏 ] Wave Data Version — Wave: ***<br>  <br>*** : Version<br>The "Main" version is used as the version of ROM for management.<br>You have only to check the "Main" version as the "Main" version will change if the version of Boot/Style/Song/Param/Wave is changed. |
| 2 | **Mem 1 All**<br>**002** | Checks the ROM, RAM and FROM connected to the CPU bus.<br>Make sure that "**Mem 1 OK**" is displayed on the LCD.<br>When the result is OK, test No. 003, 004 and 005 can be omitted. |
| 3 | **Rom Chk1**<br>**003** | Checks the ROM connected to the CPU bus.<br>Make sure that "**Rom OK**" is displayed on the LCD. |

| TEST No | LCD display | Test descriptions, judging conditions, etc. |
|---|---|---|
| 4 | **Ram Chk1**<br>**004** | Checks the RAM connected to the CPU bus.<br>Make sure that "**Ram OK**" is displayed on the LCD. |
| 5 | **FRomChk1**<br>**005** | Checks the FROM connected to the CPU bus.<br>Make sure that "**FRom OK**" is displayed on the LCD. |
| 8 | **TG1 Chk**<br>**008** | Plays each key automatically in the order of scale (auto-scaling). (32 notes from C2 to G4 will be played.)<br>Make sure that there is no abnormal sounds 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) |
| 9 | **Pit Chk**<br>**009** | Checks pitch accuracy.<br>Connect the frequency counter to the [PHONES/OUTPUT] jack. (Either L or R)<br>Make sure that the correct signal is output. (441.0 Hz ± 0.2 Hz)<br><br>**Amount of volume decay**<br>Connect the level meter (with JIS-C filter) to the L/R of the [PHONES/OUTPUT] jack. (33 ohms load)<br>Turn the [MASTER VOLUME] to the minimum and measre the amount of volume decay.<br>· PHONES L, R: -70 dBu or less |
| 11 | **Output R**<br>**011** | Connect the level meter (with JIS-C filter) to the L/R of the [PHONES/OUTPUT] jack.<br>(33 ohms load)<br>Set the [MASTER VOLUME] to the maximum level and check the output level.<br>· PHONES L: -55.0 dBu or less · PHONES R: -8.4 dBu ± 2 dB |
| 12 | **Output L**<br>**012** | Connect the level meter (with JIS-C filter) to the L/R of the [PHONES/OUTPUT] jack.<br>(33 ohms load)<br>Set the [MASTER VOLUME] to the maximum level and check the output level.<br>· PHONES L: -8.4 dBu ± 2 dB · PHONES R: -55.0 dBu or less |
| 22 | **SW Chk**<br>**022** | Checks the 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 page 27.)<br>When a switch with LED is turned on, the LED will light up.<br>Make sure that "**SW OK**" is displayed on the LCD when all the switches are pressed as indicated.<br>To cancel the operation halfway, press the lowest key (white key C1) to return to the item selection display. |
| 23 | **A. LED On**<br>**023** | Make sure that all the LEDs on the panel are turned on. |
| 29 | **LCD On**<br>**029** | Make sure that all the dots on the LCD are turned on. |
| 30 | **LCD Off**<br>**030** | Make sure that all the dots on the LCD are turned off. |
| 34 | **PD1 Chk**<br>**034** | Connect a footswitch (FC-4 or FC-5) to the [SUSTAIN] jack.<br>Check that C3 sound is played when the [START/STOP] button is pressed with the pedal depressed (On) to start the test and that C4 sound is played when the pedal is released (Off). The sound will stop when the pedal is depressed again.<br>Make sure that "**PD1 OK**" is displayed on the LCD. |
| 36 | **PD3 Chk**<br>**036** | Connect an expression pedal (EP-1) to the [EXP. PEDAL] jack.<br>Check that C3 sound is played when the [START/STOP] button is pressed with the pedal depressed (On) to start the test and that C4 sound is played when the pedal is released (Off). The sound will stop when the pedal is depressed again.<br>Make sure that "**PD3 OK**" is displayed on the LCD. |
| 38 | **PB Chk**<br>**038** | 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).<br>Make sure that "**PB OK**" is displayed on the LCD.<br>PB C: "064"<br>PB DW: "000"<br>PB UP: "127" |
| 40 | **MIDI Chk**<br>**040** | Connect a PC which has installed the driver and main unit [USB] terminal with a USB cable. Set the through mode on PC and execute the test.<br>Confirm that the C4 note is output and "**MIDI OK**" is displayed on the LCD. |

| TEST No | LCD display | Test descriptions, judging conditions, etc. |
|---|---|---|
| 41 | **Conn Chk**<br>**041** | Enter the test with the [START/STOP] button and "**Conn C1**" will be displayed on the LCD. When a USB cable is connected to the [USB TO DEVICE] and [USB TO HOST] terminals, "**Conn C2**" is displayed on the LCD.<br>Disconnect the USB cable from the [USB TO DEVICE] and [USB TO HOST] terminals and then connect a USB storage device to [USB TO DEVICE] terminal.<br>Confirm that the C4 note is output and "**Conn OK**" is displayed on the LCD. |
| 42 | **Strg Chk**<br>**042** | Connect a USB storage device to the [USB TO DEVICE] terminal and press the [START/STOP] button to execute the test.<br>Make sure that "**Strg OK**" is displayed on the LCD. |
| 43 | **Adpt Chk**<br>**043** | Checks the function to detect connection/disconnection of the AC adaptor.<br>1. "**Adpt Out**" is displayed on the LCD when the test is executed.<br>2. "**Adpt In**" is displayed on the LCD when the AC adaptor is removed from the [DC IN] jack.<br>3. Insert the AC adaptor into the [DC IN] jack.<br>4. Make sure that the C4 sound is produced and "**Adpt OK**" is displayed on the LCD. |
| 54 | **Rom Chk2**<br>**054** | Checks the ROM connected to the CPU bus.<br>Make sure that "**Rom OK**" is displayed on the LCD.<br>It will take about 1 minutes for the check. |
| 55 | **Ram Chk2**<br>**055** | Checks the RAM connected to the CPU bus.<br>Make sure that "**Ram OK**" is displayed on the LCD. |
| 56 | **FRomChk2**<br>**056** | Checks the FROM connected to the CPU bus.<br>Make sure that "**FRom OK**" is displayed on the LCD.<br>It will take about 2 minutes for the check. |
| 59 | **Factory**<br>**059** | Initializes the entire backup area to reset to the factory default.<br>"**Fact**" is displayed on the LCD during the test.<br>"**Fact End**" is displayed on the LCD when the test is finished. |
| 60 | **TestExit**<br>**060** | This will leave the test program and change to the play mode. |

## • Other Tests

### Noise Level Check

Connect the level meter (with JIS-C filter) to the L/R of the [PHONES/OUTPUT] jack. (33 ohms load)
Set the [MASTER VOLUME] to the maximum level and check the noise level.
· PHONES L, R: –70 dBu or less

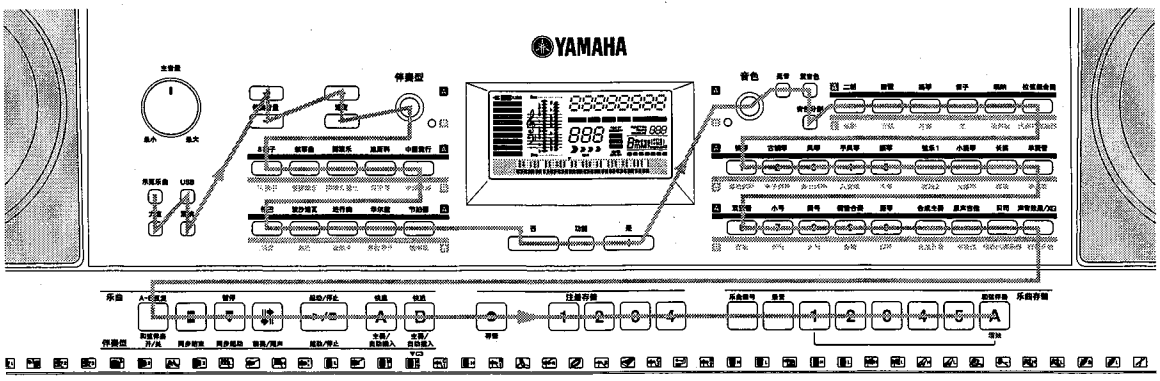
### Popping Noise Check

Connect the oscilloscope to the L/R of the [PHONES/OUTPUT] jack and turn on and then off the [STANDBY/ON] switch. Make sure that popping noise level is 1.0 Vp-p or less, and that no abnormal sound or popping noise is output from the speakers.

## Switch test item list

| Turn | SW Name | LCD Display | Note Number |
|---|---|---|---|
| 1 | 示范乐曲 | Demo | C2 |
| 2 | 力度 | Touch | C#2 |
| 3 | USB | USB | D2 |
| 4 | 混响 | Reverb | D#2 |
| 5 | 伴奏音量[+] | A-VOL UP | E2 |
| 6 | 伴奏音量[-] | A-VOL DW | F2 |
| 7 | 速度[+] | Temp UP | F#2 |
| 8 | 速度[-] | Temp DW | G2 |
| 9 | 伴奏型 | Style AB | G#2 |
| 10 | 8拍子 | 8BEAT | A2 |
| 11 | 叙事曲 | BALLAD | A#2 |
| 12 | 摇滚乐 | ROCK | B2 |
| 13 | 迪斯科 | DISCO | C3 |
| 14 | 中国流行 | GD WUSHI | C#3 |
| 15 | 伦巴 | RUMBA | D3 |
| 16 | 波沙诺瓦 | BOSSANVA | D#3 |
| 17 | 进行曲 | MARCH | E3 |
| 18 | 华尔兹 | WALTZ | F3 |
| 19 | 节拍器 | METRO. | F#3 |
| 20 | [-/否] | -/NO | G3 |
| 21 | 功能 | Function | G#3 |
| 22 | [+/是] | +/YES | A3 |
| 23 | 音色 | Voice AB | A#3 |
| 24 | 延音 | Sustain | B3 |
| 25 | 双音色 | Dual | C4 |
| 26 | 音色分割 | Split | C#4 |
| 27 | 二胡 | ERHU | D4 |
| 28 | 琵琶 | PIPA | D#4 |
| 29 | 扬琴 | YANGQIN | E4 |
| 30 | 笛子 | DIZI | F4 |
| 31 | 唢呐 | SUONA | F#4 |
| 32 | 拉弦组合奏 | ENSEMBLE | G4 |
| 33 | 钢琴 | PIANO | G#4 |
| 34 | 古钢琴 | HARPSI. | A4 |
| 35 | 风琴 | C.ORGAN | A#4 |
| 36 | 手风琴 | ACCORD | B4 |

| Turn | SW Name | LCD Display | Note Number |
|---|---|---|---|
| 37 | 振琴 | VIBES | C5 |
| 38 | 弦乐 1 | STRINGS1 | C#5 |
| 39 | 小提琴 | VIOLIN | D5 |
| 40 | 长笛 | FLUTE | D#5 |
| 41 | 单簧管 | CLARINET | E5 |
| 42 | 双簧管 | OBOE | F5 |
| 43 | 小号 | TRAMPET | F#5 |
| 44 | 圆号 | HORN | G5 |
| 45 | 铜管合奏 | BRASS | G#5 |
| 46 | 竖琴 | HARP | A5 |
| 47 | 合成主奏 | SYN LEAD | A#5 |
| 48 | 原声吉他 | ACO.GTR | B5 |
| 49 | 贝司 | BASS | C6 |
| 50 | 声音效果 /XG | SE/XG | C#6 |
| 51 | 和弦伴奏开 / 关 | ACMP | D6 |
| 52 | 同步停止 | S.Stop | D#6 |
| 53 | 同步起动 | S.Start | E6 |
| 54 | 前奏 / 尾声 | Intro | F6 |
| 55 | 起动 / 停止 | Str/Stp | F#6 |
| 56 | 主奏 / 自动插入 A | Main A | G6 |
| 57 | 主奏 / 自动插入 B | Main B | G#6 |
| 58 | 存储 | Memory | A6 |
| 59 | 注册存储[1] | Regist 1 | A#6 |
| 60 | 注册存储[2] | Regist 2 | B6 |
| 61 | 注册存储[3] | Regist 3 | C7 |
| 62 | 注册存储[4] | Regist 4 | C#7 |
| 63 | 乐曲编号 | Song No. | D7 |
| 64 | 录音 | REC | D#7 |
| 65 | 乐曲[1] | Song 1 | E7 |
| 66 | 乐曲[2] | Song 2 | F7 |
| 67 | 乐曲[3] | Song 3 | F#7 |
| 68 | 乐曲[4] | Song 4 | G7 |
| 69 | 乐曲[5] | Song 5 | G#7 |
| 70 | 乐曲[A] | Song A | A7 |
| 71 | PORTAMENTO | Portamen | A#7 |



# ■ USER DATA BACKUP

To backup user data to external devices, use the "Musicsoft Downloader".
You can use the Musicsoft Downloader to transfer "Backup Data", "External Song", "External Style" including the five User Songs stored on the instrument, to a computer.

**List of data that can be backed up**

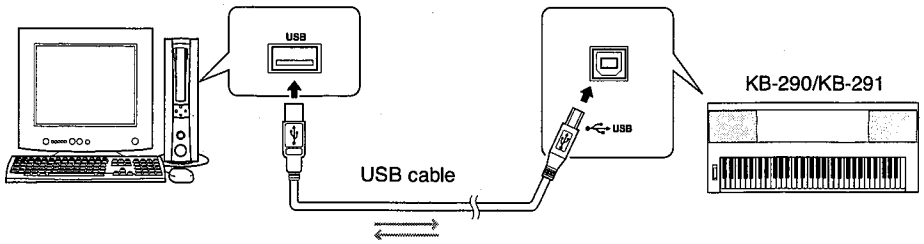
- Registration Memory
- Tuning
- Pitch Bend Range
- Touch Response On/Off
- Touch Response Sensitivity
- Split Point
- Style Volume
- Song Volume
- Portamento Time
- Freeze Mode On/Off
- Battery Type
- User Songs (Songs recorded on this instrument)
- Style No. 191 (Loaded Style data)

## PREPARATION

PC (Personal Computer)
AB type USB cable of less than about 3 meters
MIDI-USB Driver *1
Musicsoft Downloader (MSD) *1

*1: Obtain these programs Yamaha official website.
URL>> http://www.downlead.yamaha.com/

Install these software in PC beforehand.




## BACKUP PROCEDURE

1. Turn off the power of the instrument.
2. End all the application software.
3. Exit from any power-saving mode of the computer (such as suspended, sleep, standby).
4. Connect the instrument to the PC with a USB cable.
5. Turn on the power of the instrument.
6. Click the Control Panel on PC.
7. Click "USB-MIDI Driver" on the Control Panel to open the dialog box.
8. Remove the check from the check box next the word "Thru ON/OFF" in the dialog box.
9. Start up the Musicsoft Downloader.
10. If you click "Electronic Musical Instruments" in the Musicsoft Downloader display, and then "System Drive", a file named "KB-290.BUP" will appear in the lower right corner of the Musicsoft Downloader display.
    This is the backup file. For details about how to transmit backup file using the Musicsoft Downloader application, refer to the Online help in the application.

**NOTE:** Preset Song data cannot be transmitted from the instrument.
While the computer is connected to the instrument, you should wait for six seconds or more between these operations: (1) when turning the power of the instrument off then on again, or (2) when alternately connecting/disconnecting the USB cable.

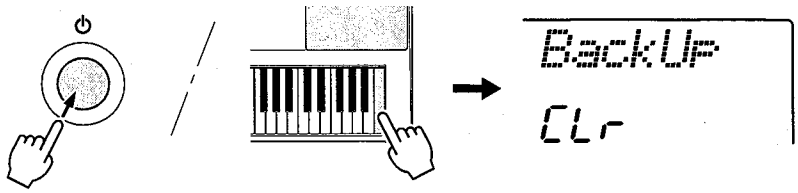
- The backup data, including the five User Songs is transmitted/received as a single file. As a result, all backup data will be overwritten every time you transmit or receive. Keep this in mind when transferring data.
- We recommend that you use a power adaptor rather than batteries when transferring data. The data can be corrupted if the batteries fail during the transfer.
- Do not rename the backup file on the computer. If you do so, it will not be recognized when transferred to the instrument.

# ■ INITIALIZATION

This function erases backed up settings and backed up Song/Style data independently and restores the initial default settings.

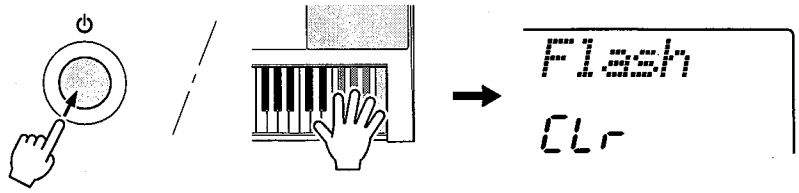
## Initializing the Settings

All backup data (not including the Song and Style files transferred from a computer) can be initialized to the factory default settings. To do this, simultaneously hold down the highest key and turn on the power. "BackUp CLr" appears briefly on the display.




## Deleting the Song and Style Files Transferred from a Computer

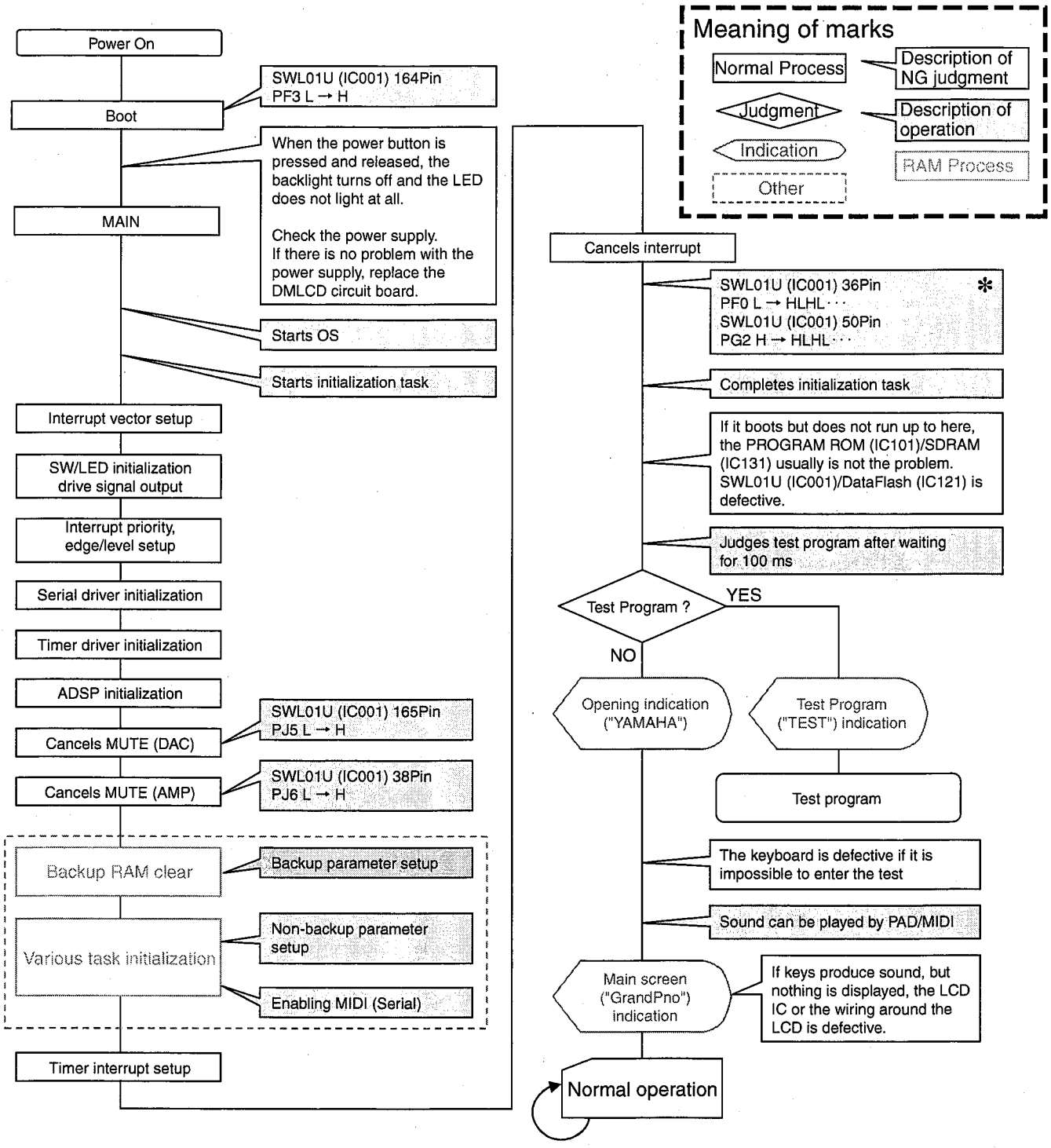
To clear all Songs and Styles transferred from a computer to the internal memory, simultaneously hold down the highest white key with the three highest black keys, and turn on the power. "Flash CLr" appears briefly on the display.

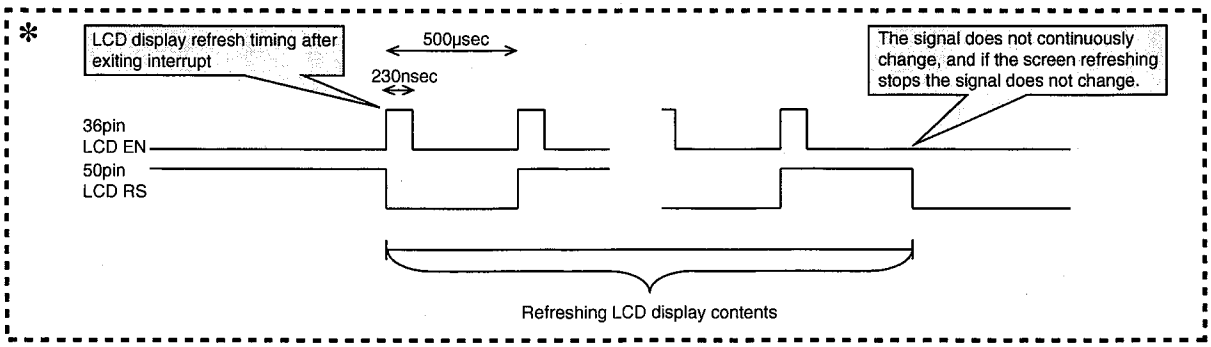



NOTE

- *When you execute the Flash Clear operation, data you have purchased will also be cleared. Be sure to save data you want to keep to a computer.*

# ■ SYSTEM BOOTING FLOWCHART



# ■ DMLCD CIRCUIT BOARD CHECK METHOD

The DMLCD Circuit Board is provided with test points for service check purposes.
Check the test points on the DMLCD Circuit Board if the following symptoms appear.

## Symptoms and check items

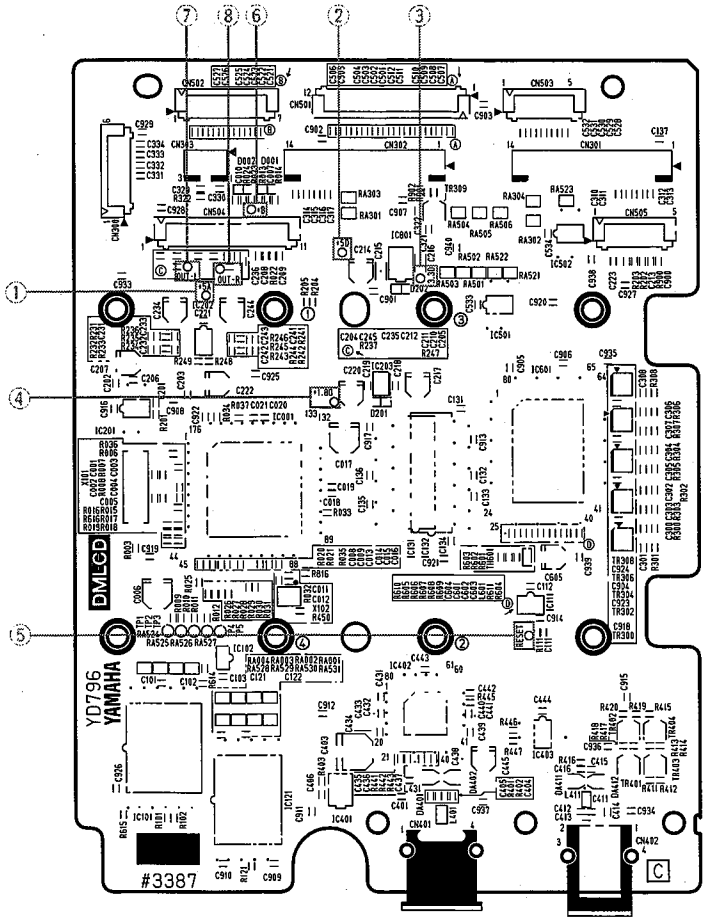
① No LCD display with Power SW ON --> Check items 2 to 6 sequentially
② No sound or distorted sound --> Check items 1, 7 and 8

### Test Point

| NO. | Test Point | Circuit | Judgment criteria | Measured by | Parts with possible defects |
|---|---|---|---|---|---|
| 1 | +5A | 5 V power for analog circuit | 5V±0.2V | Multimeter | IC100 (On AMJK Circuit Board) |
| 2 | +5D | 5 V power for digital circuit | 5V±0.2V | Multimeter | IC100 (On AMJK Circuit Board) |
| 3 | +3.3D | 3.3 V power for digital circuit | 3.3V±0.1V | Multimeter | IC801 |
| 4 | +1.8D | 1.8 V power for digital circuit | 1.8V±0.1V | Multimeter | IC203 |
| 5 | RESET | CPU & memory reset signal | 3.3V±0.3V | Multimeter | IC111 |
| 6 | +B | Battery voltage detection | 11V±1V | Multimeter | R108 or FT1 (On AMJK Circuit Board) |
| 7 | DAC-L | DAC output L channel | There shall be audio output without distortion. | Signal Checker | IC201 or IC202 |
| 8 | DAC-R | DAC output R channel | There shall be audio output without distortion. | Signal Checker | IC201 or IC202 |

Note: Use the standard AC adapter PA-150A for check operation.

### DMLCD Circuit Board (WZ269300)




Component side

# Digital Keyboard

# KB-290

# KB-291

# PARTS LIST

## ■ CONTENTS



**Notes : DESTINATION ABBREVIATIONS**

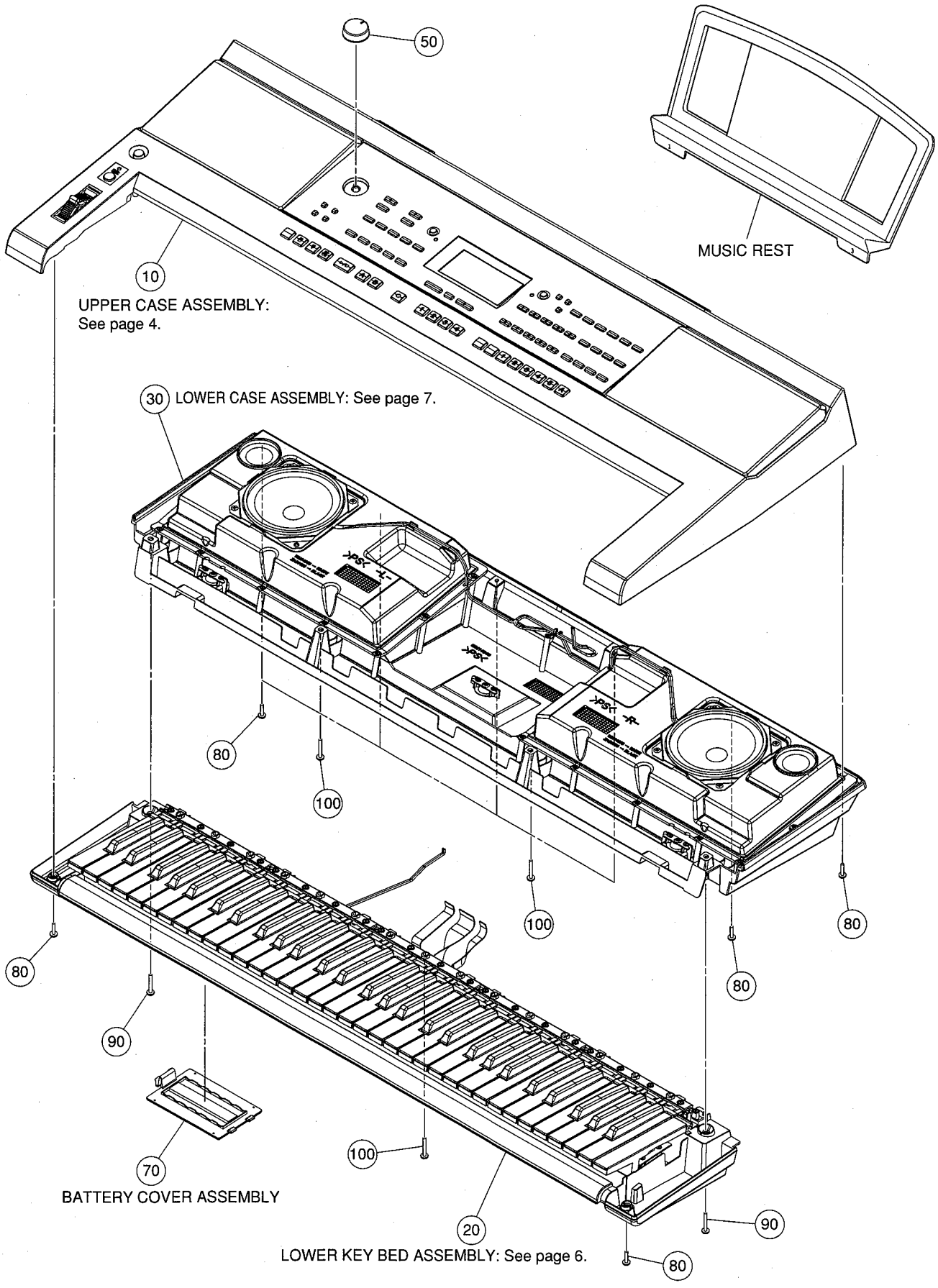
| | | | |
|---|---|---|---|
| A : | Australian model | M : | South African model |
| B : | British model | O : | Chinese model |
| C : | Canadian model | P : | Blazillian model |
| D : | German model | Q : | South-east Asia model |
| E : | European model | T : | Taiwan model |
| F : | French model | U : | U.S.A. model |
| H : | North European model | V : | General export model (110V) |
| I : | Indonesian model | W : | General export model (220V) |
| J : | Japanese model | N,X : | General export model |
| K : | Korean model | Y : | Export model |

## ■ 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.

# ■ OVERALL ASSEMBLY

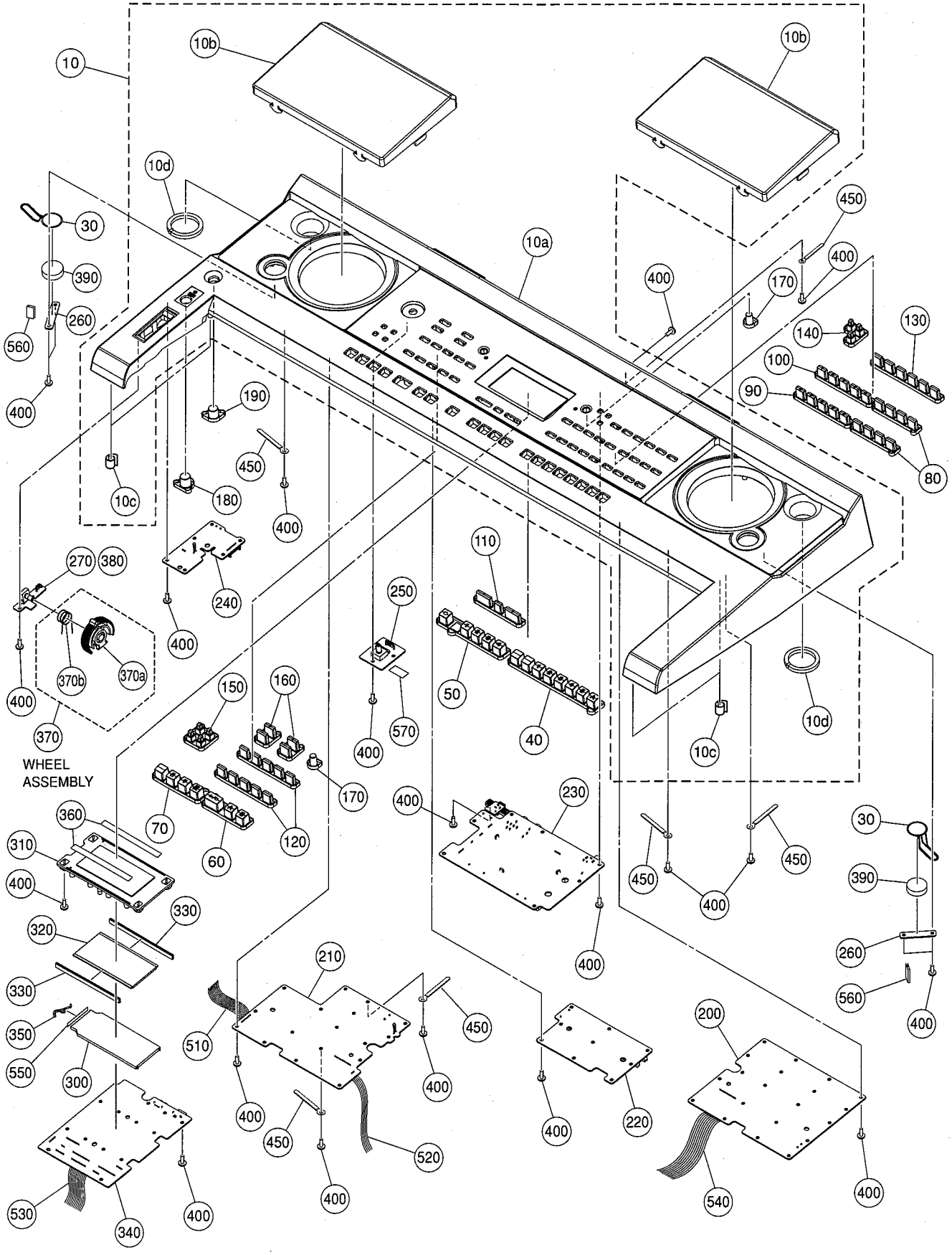


| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | | QTY | RANK |
|---|---|---|---|---|---|---|---|---|
| | | OVERALL ASSEMBLY | | 総組立 | KB-290/KB-291 | | | |
| | -- | OVERALL ASSEMBLY | | 総組立 | KB-290 | (ZA31090) | | |
| | -- | OVERALL ASSEMBLY | | 総組立 | KB-291 | (ZA32190) | | |
| 10 | -- | UPPER CASE ASSEMBLY | | 上ケースAss'y | KB-290 | (ZA30930) | | |
| 10 | -- | UPPER CASE ASSEMBLY | | 上ケースAss'y | KB-291 | (ZA32110) | | |
| 20 | -- | LOWER KEY BED ASSEMBLY | | 下ケース鍵盤Ass'y | | (ZA30680) | | |
| 30 | -- | LOWER CASE ASSEMBLY | | 下ケースAss'y | | (ZA30660) | | |
| 50 | **VU43240R** | KNOB V BLACK | | Vツマミ | MASTER VOLUME | | | 01 |
| 70 | **WR080100** | BATTERY COVER ASSEMBLY | | 電池蓋Ass'y | | | | 02 |
| 80 | **WE98740R** | BIND HEAD TAPPING SCREW-B | 3.0X12 MFZN2W3 | Bタイト+BIND | | | 8 | 01 |
| 90 | **WF48930R** | BIND HEAD TAPPING SCREW-B | 3.0X20 MFZN2W3 | Bタイト+BIND | | | 2 | 01 |
| 100 | **WF491001** | BIND HEAD TAPPING SCREW-B | 3.0X16 MFZN2W3 | Bタイト+BIND | | | 3 | 01 |
| | -- | NAME PLATE | CHN | 銘板ラベル | KB-290 | (ZA31220) | | |
| | -- | NAME PLATE | CHN | 銘板ラベル | KB-291 | (ZA35760) | | |
| | | ACCESSORIES | | 付属品 | | | | |
| * | **ZC352300** | MUSIC REST GRAY WITH BAG | | 譜面板袋入り | KB-290 | | | |
| * | **ZC352400** | MUSIC REST BLACK WITH BAG | | 譜面板袋入り | KB-291 | | | |
| ⚠ | **WR527200** | AC ADAPTOR | PA-150A CHN | ACアダプター | | | | |
| | **VP622500** | EXP PEDAL | EP-1 | EXPペダル | | | | |

*: New Parts

RANK: Japan only

# ■ UPPER CASE ASSEMBLY

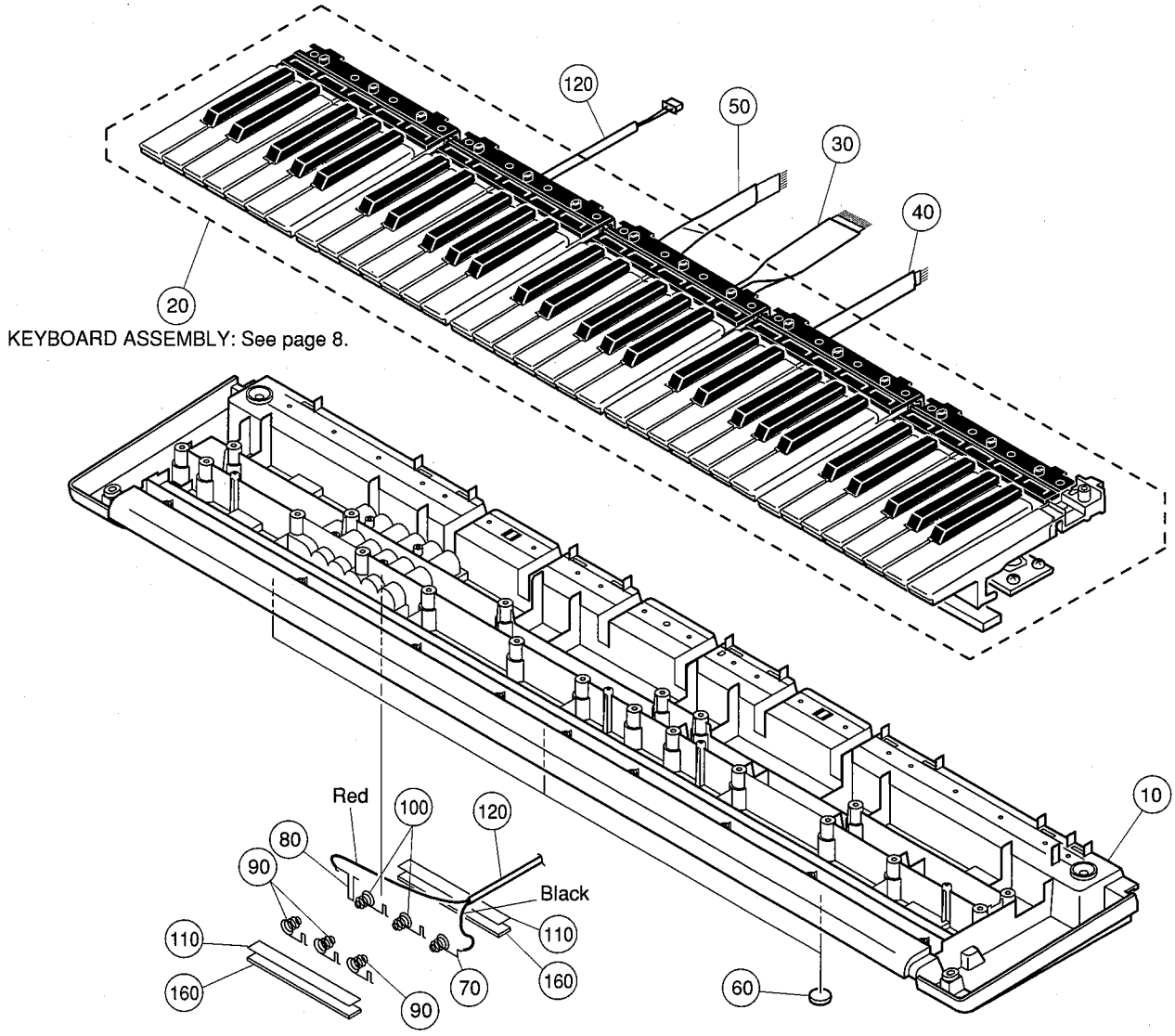


| | REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|---|
| | | | UPPER CASE ASSEMBLY | | 上ケースAss'y | KB-290/KB-291 | | |
| | | -- | UPPER CASE ASSEMBLY | | 上ケースAss'y | KB-290 (ZA30930) | | |
| | | -- | UPPER CASE ASSEMBLY | | 上ケースAss'y | KB-291 (ZA32110) | | |
| * | 10 | ZD452800 | UPPER CASE SUB ASSEMBLY | | 上ケースサブAss'y | KB-290 | | |
| * | 10 | ZD452900 | UPPER CASE SUB ASSEMBLY | | 上ケースサブAss'y | KB-291 | | |
| * | 10a | ZA305800 | UPPER CASE | | 上ケース塗装印刷品 | KB-290 | | |
| * | 10a | ZA305900 | UPPER CASE | | 上ケース塗装印刷品 | KB-291 | | |
| * | 10b | ZA309200 | SP GRILLE ASSEMBLY | | SPグリルAss'y | KB-290 | 2 | |
| * | 10b | ZA321000 | SP GRILLE ASSEMBLY | | SPグリルAss'y | KB-291 | 2 | |
| | 10c | WG818300 | NONWOVEN FABRIC CLOTH | | 不織布 | | 4 | 01 |
| | 10d | -- | CUSHION | 120X5X5 | クッション | (WM16930) | 2 | |
| * | 30 | X0159B00 | LOUD SPEAKER | 3.0cm | スピーカ | TWEETER | 2 | |
| * | 40 | WZ390300 | PN SWITCH | x8 | PNスイッチ | SONG NO.,...SONG 1/2/3/4/5/A | | |
| * | 50 | WZ390200 | PN SWITCH | x5 | PNスイッチ | MEMORY,REGIST 1/2/3/4 | | |
| * | 60 | WZ390100 | PN SWITCH | x3 | PNスイッチ | START/STOP,MAIN A/B | | |
| * | 70 | WZ390000 | PN SWITCH | x4 | PNスイッチ | ACMP,SYNCRO STOP, SYNCRO START,INTRO/ENDING | | |
| * | 80 | WZ390600 | PN SWITCH | x4 | PNスイッチ | STRINGS1,...CLARINET, SYN LEAD,...SE/XG | 2 | |
| * | 90 | WZ390400 | PN SWITCH | x5 | PNスイッチ | OBOE,...HARP | | |
| * | 100 | WZ390900 | PN SWITCH | x5 | PNスイッチ | PIANO,...VIBES | | |
| * | 110 | WZ390800 | PN SWITCH | x3 | PNスイッチ | FUNCTION,+/YES,-/NO | | |
| * | 120 | WZ390700 | PN SWITCH | x5 | PNスイッチ | 8BEAT,...GD WUSHI, RUMBA,...METRO. | 2 | |
| * | 130 | WZ391200 | PN SWITCH | x6 | PNスイッチ | ERHU,...ENSEMBLE | | |
| * | 140 | WZ391500 | PN SWITCH | x3 | PNスイッチ | SUSTAIN,DUAL,SPLIT | | |
| * | 150 | WZ391400 | PN SWITCH | x4 | PNスイッチ | DEMO,USB,TOUCH,REVERB | | |
| * | 160 | WZ391300 | PN SWITCH | x2 | PNスイッチ | STYLE VOL.[+],[-], TEMPO [+],[-] | 2 | |
| * | 170 | WZ391600 | PN SWITCH | x1 | PNスイッチ | STYLE,VOICE | 2 | |
| * | 180 | WZ391800 | PN SWITCH | x1 | PNスイッチ | PORTAMENTO | | |
| * | 190 | WZ391700 | PN SWITCH | x1 | PNスイッチ | STANDBY/ON | | |
| * | 200 | WZ269500 | CIRCUIT BOARD | PNR | PNRシート | | | |
| * | 210 | WZ269600 | CIRCUIT BOARD | PNL | PNLシート | | | |
| * | 220 | WZ269700 | CIRCUIT BOARD | PNC | PNCシート | | | |
| * | 230 | WZ270000 | CIRCUIT BOARD | AMJK | AMJKシート | | | |
| * | 240 | WZ269800 | CIRCUIT BOARD | PNP | PNPシート | | | |
| * | 250 | WZ270100 | CIRCUIT BOARD | MV | MVシート | | | |
| * | 260 | WZ270300 | CIRCUIT BOARD | TW | TWシート | | 2 | |
| * | 270 | WZ270200 | CIRCUIT BOARD | PB | PBシート | | | |
| | 300 | WT651300 | BACK LIGHT ASSEMBLY | PT | バックライトAss'y | | | 07 |
| * | 310 | WZ373000 | LCD PANEL | | LCDパネル成形品 | | | |
| * | 320 | WZ330100 | LCD DISPLAY | | 液晶ディスプレイ | | | |
| * | 330 | WZ963200 | RUBBER CNNECTOR | ZEBRA | ゴムコネクター | | 2 | |
| * | 340 | WZ269300 | CIRCUIT BOARD | DMLCD | DMLCDシート | | | |
| | 350 | -- | CONNECTOR ASSEMBLY | BL 2P L=70 | BL線材 | (WC60540) | | |
| | 360 | -- | NONWOVEN FABRIC CLOTH | 5X8 | 不織布 | (V706870) | 2 | |
| | 370 | VY79310R | WHEEL ASSEMBLY | | ホイールAss'y | PITCH BEND | | 04 |
| | 370a | VY75080R | WHEEL | | ホイール | } | | 03 |
| | 370a | VY750810 | WHEEL | | WHEEL | } | | 01 |
| | 370b | VT44010R | SPRING | | ホイールバネ | | | 03 |
| | 380 | TX920280 | GREASE | G-31KA 50g | グリス | (VE96850) | | 38 |
| | 390 | WD365700 | SPONGE | 27 | スポンジ | | 2 | 01 |
| | 400 | WE774301 | BIND HEAD TAPPING SCREW-B | 3.0X8 MFZN2W3 | Bタイト十BIND | | 92 | 01 |
| | 450 | CB829850 | CORD HOLDER | S-34B | 束線止め | | 6 | 03 |
| | 510 | -- | CONNECTOR ASSEMBLY | PNP PH-9P | PNP束線 | (ZA53660) | | |
| | 520 | -- | CONNECTOR ASSEMBLY | PN PHR-3P | PN束線 | (ZC35770) | | |
| | 530 | -- | CONNECTOR ASSEMBLY | PNL PH-14P | PNL束線 | (ZA57650) | | |
| | 540 | -- | CONNECTOR ASSEMBLY | PNL PH-14P | PNL束線 | (ZA57650) | | |
| | 550 | -- | NONWOVEN CLOTH | | 不織布 | (WH34740) | | |
| | 560 | -- | NONWOVEN CLOTH | 10X7X0.35 | 不織布 | (WN91440) | 2 | |
| | 570 | -- | NONWOVEN CLOTH | 36X12X0.35 | 不織布 | (WM89180) | | |

*: New Parts

RANK: Japan only

# ■ LOWER KEY BED ASSEMBLY



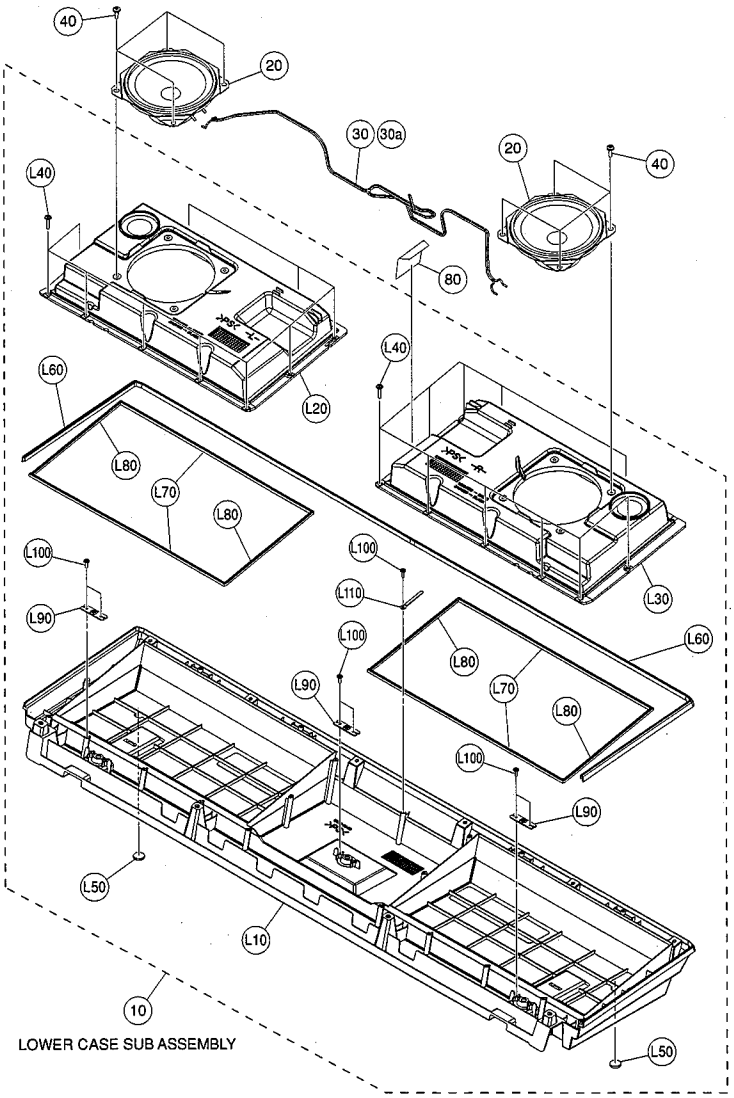

KEYBOARD ASSEMBLY: See page 8.

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| | | LOWER KEY BED ASSEMBLY | | 下ケース鍵盤Ａｓｓ'ｙ | KB-290/KB-291 | | |
| | -- | LOWER KEY BED ASSEMBLY | | 下ケース鍵盤Ａｓｓ'ｙ | (ZA30680) | | |
| 10 | **WD83950R** | LOWER CASE F | FRONT | 下ケース成形品（Ｆ） | | | 08 |
| 20 | **WE126700** | KEYBOARD ASSEMBLY | 16N C61 P2M | １６Ｎ－Ｃ６１－２Ｍ | | | 14 |
| 30 | -- | CONNECTOR ASSEMBLY | 12P L=250 | 束線 | (ZA27390) | | |
| 40 | -- | CONNECTOR ASSEMBLY | 5P L=250 | 束線 | (ZA26060) | | |
| 50 | -- | CONNECTOR ASSEMBLY | 7P L=200 | 束線 | (ZA26420) | | |
| 60 | **WW693500** | RUBBER FOOT | | ゴム脚 | | 3 | 01 |
| 70 | **WD87920R** | SPRING TERMINAL A | | 接点バネＡ | | | 01 |
| 80 | **WD87930R** | SPRING TERMINAL B | | 接点バネＢ | | | 01 |
| 90 | **WD87940R** | SPRING TERMINAL C | | 接点バネＣ | | 3 | 01 |
| 100 | **WD87970R** | SPRING TERMINAL D | | 接点バネＤ | | 2 | 01 |
| 110 | -- | NONWOVEN CLOTH | | 不織布 | (WD89680) | 2 | |
| 120 | -- | CONNECTOR ASSEMBLY | BATT XH-3P (RED/BLACK) | ＢＡＴＴ束線 | (ZA53710) | | |
| 160 | -- | CUSHION (PE) | 98X6X1 | クッション（ＰＥ） | (WU97160) | 2 | |

*: New Parts

RANK: Japan only

# ■ LOWER CASE ASSEMBLY



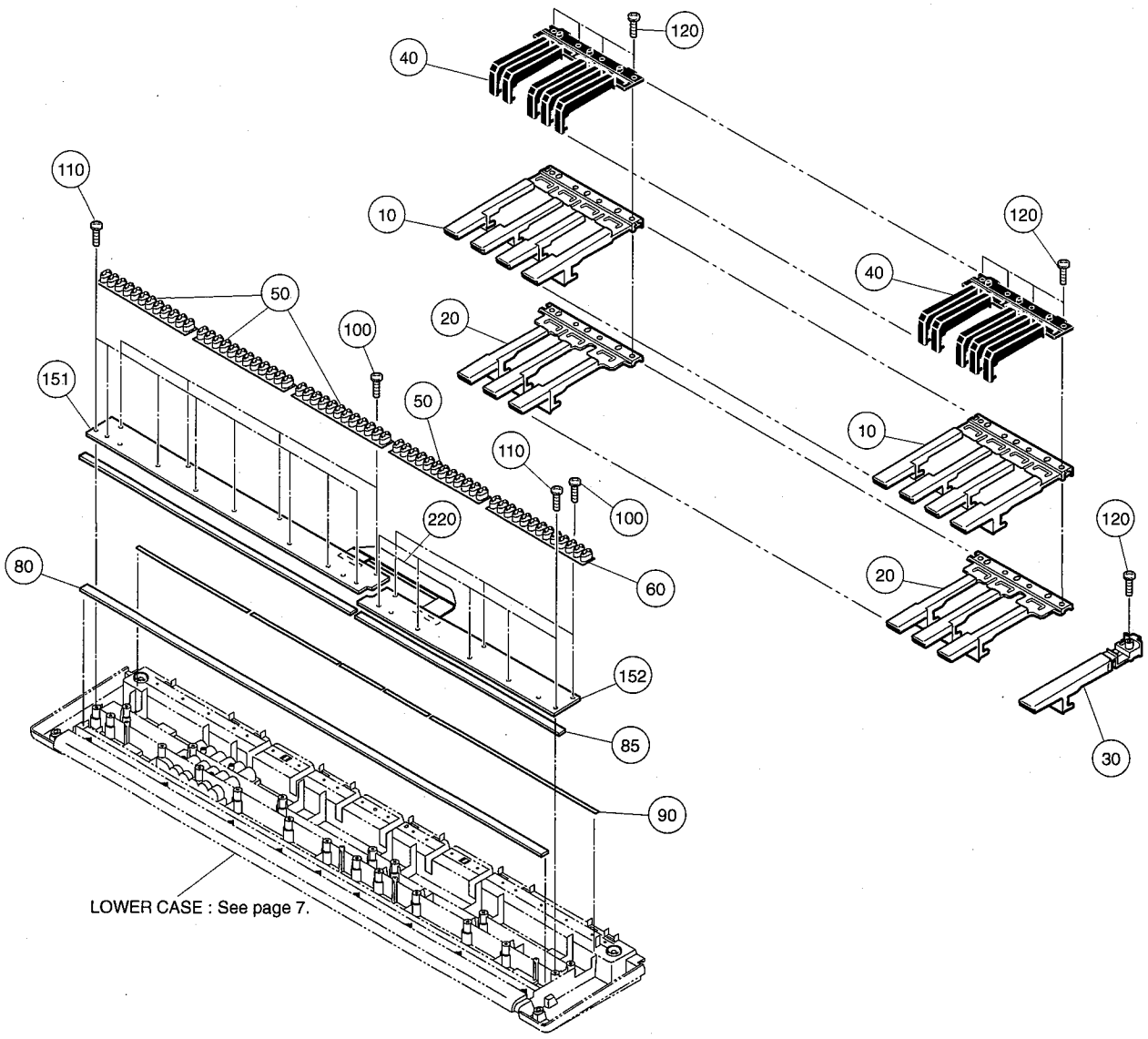

LOWER CASE SUB ASSEMBLY

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| | | LOWER CASE ASSEMBLY | | 下ケースAss'y | KB-290/KB-291 | | |
| | -- | LOWER CASE ASSEMBLY | | 下ケースAss'y | (ZA30660) | | |
| 10 | **WM170500** | LOWER CASE SUB ASSEMBLY | | 下ケースサブAss'y | | | 10 |
| * 20 | **YE096A00** | LOUD SPEAKER | 12.0cm 6ohm 6W | スピーカ | WOOFER | 2 | |
| 30 | -- | CONNECTOR ASSEMBLY | SP 4P | SP束線Ass'y | (ZA35470) | | |
| 40 | **WE97460R** | BIND HEAD TAPPING SCREW-B | 4.0X8 MFZN2W3 | Bタイト十BIND | | 8 | 01 |
| 80 | -- | NONWOVEN CLOTH | | 不織布 | (ZE20590) | | |
| | **WM170500** | LOWER CASE SUB ASSEMBLY | | 下ケースサブAss'y | | | 10 |
| L10 | **WM143400** | LOWER CASE R | REAR | 下ケース成形品R | | | 08 |
| L20 | **WM171000** | SP-BOX L ASSEMBLY | LEFT | スピーカボックス L | | | 05 |
| L30 | **WM171100** | SP-BOX R ASSEMBLY | RIGHT | スピーカボックス R | | | 05 |
| L40 | **WE98740R** | BIND HEAD TAPPING SCREW-B | 3.0X12 MFZN2W3 | Bタイト十BIND | | 20 | 01 |
| L50 | **WW693500** | RUBBER FOOT | | ゴム脚 | | 2 | 01 |
| L60 | **WJ974700** | CUSHION (PE) | 685X15X1 | クッション(PE) | | 2 | 01 |
| L70 | **WH265000** | CUSHION (PE) | 332X8X1 | クッション(PE) | | 4 | 01 |
| L80 | **WH265100** | CUSHION (PE) | 176X8X1 | クッション(PE) | | 4 | 01 |
| L90 | **VI104400** | LEG HOLDER | CH | 脚取り付け金具天津製 | | 3 | |
| L100 | **WE774301** | BIND HEAD TAPPING SCREW-B | 3.0X8 MFZN2W3 | Bタイト十BIND | | 7 | 01 |
| L110 | **CB829850** | CORD HOLDER | S-34B | 束線止め | | | 03 |

*: New Parts

RANK: Japan only

# ■ KEYBOARD ASSEMBLY

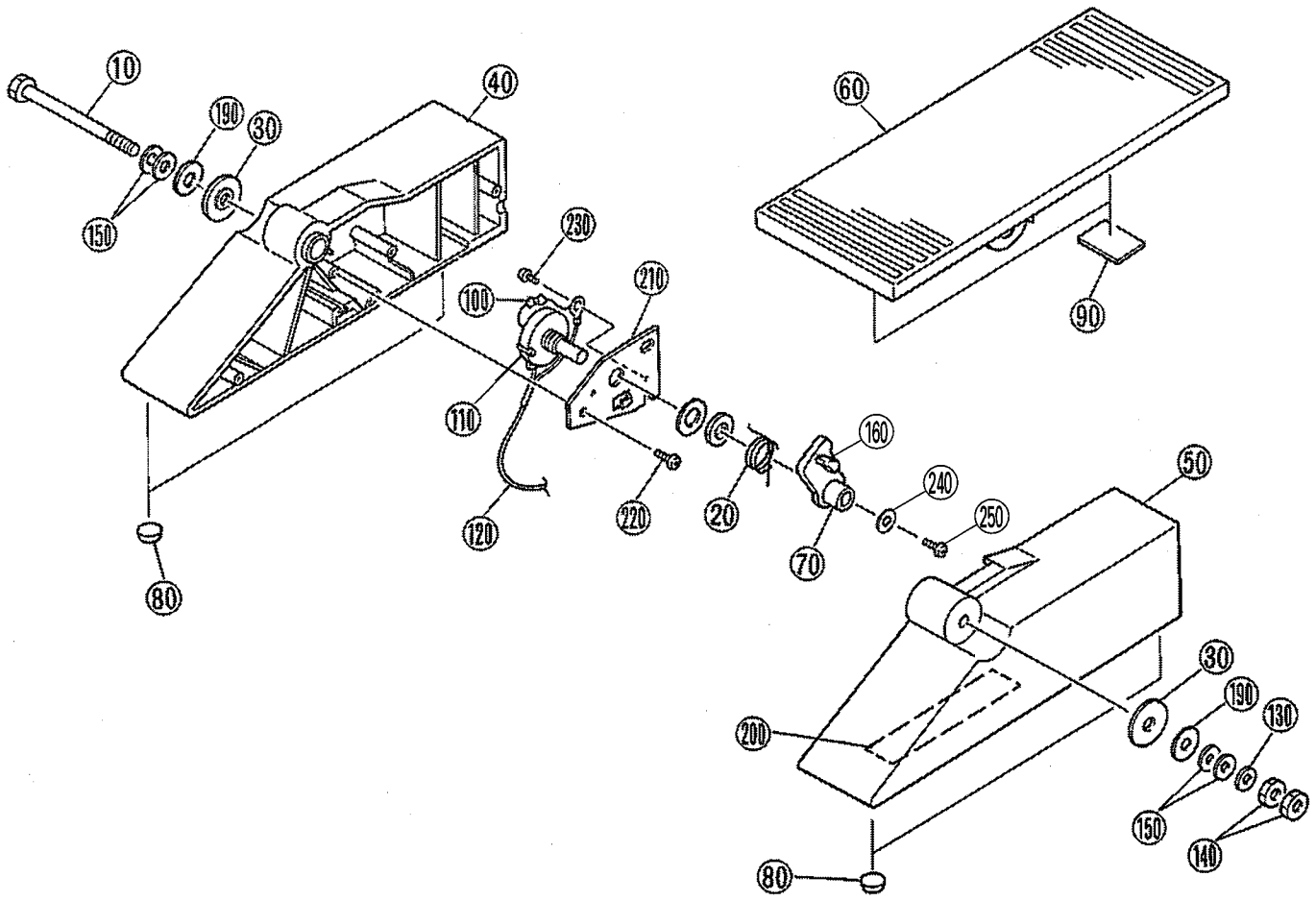



| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| | | KEYBOARD ASSEMBLY | | 16N－C61－2M | KB-290/KB-291 | | |
| | **WE126700** | KEYBOARD ASSEMBLY | 16N C61 P2M | 16N－C61－2M | | | 14 |
| 10 | **V3412600** | WHITE KEYS | 16N CEGB | 白鍵 C E G B | | 5 | |
| 10 | **WB12520R** | WHITE KEYS | 16N CEGB | 白鍵 C E G B | | 5 | 02 |
| 20 | **V3412700** | WHITE KEYS | 16L DFA | 白鍵 D F A | | 5 | |
| 20 | **WB12530R** | WHITE KEYS | 16L DFA | 白鍵 D F A | | 5 | 02 |
| 30 | **V476030R** | WHITE KEY | 16N C' | 白鍵 C ' | | | 02 |
| 40 | **VZ27170R** | BLACK KEYS | 16N | 黒鍵 | | 5 | 02 |
| 40 | **VZ271710** | BLACK KEYS | 16N | 黒鍵 | | 5 | 03 |
| 50 | **V3413601** | RUBBER CONTACT | 16N-2M OCT 2M | 接点ゴム16N2M | | 4 | 04 |
| 60 | **V747740R** | RUBBER CONTACT | 16N-2M 13K 2M | 接点ゴム16N2M | | | 04 |
| 80 | **VZ303000** | FELT WHITE L | LOWER 11X827 | フェルト L | | | 02 |
| 85 | **VZ302901** | FELT WHITE U | UPPER 836X5 | フェルト U | | | 02 |
| 90 | **WA52510R** | CUSHION SHEET | | クッションシート | | | 01 |
| 100 | **WE774301** | BIND HEAD TAPPING SCREW-B | 3.0X8 MFZN2W3 | Bタイト＋BIND | | 7 | 01 |
| 110 | **WH899400** | BIND HEAD TAPPING SCREW-P | 3.0X12 MFZN2W3 SP | Pタイト＋BIND | | 13 | 01 |
| 120 | **WF49200R** | BIND HEAD TAPPING SCREW-P | 3.0X20 MFZN2W3 | Pタイト＋BIND | | 21 | 01 |
| 151 | **V869530R** | CIRCUIT BOARD | 61L-MK | シート 6 1 L | | | 04 |
| 152 | **V869550R** | CIRCUIT BOARD | 61H-MK | シート 6 1 H | | | 06 |
| 220 | **V869620R** | CONNECTOR ASSEMBLY | 16N-2M-C61 L=210 | 中継束線 | | | 01 |

*: New Parts

RANK: Japan only

# ■ EXP PEDAL




| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| | | EXP PEDAL | | EXPペダル | KB-290/KB-291 | | |
| | **VP622500** | EXP PEDAL | EP-1 | EXPペダル | | | |
| 10 | **WF762700** | HEX HEAD BOLT | 6.0X65 MFZN2W3 | ボルトHEX | | | |
| 20 | **VP607300** | TORSION COIL SPRING | EP-1 | ねじりコイルバネ | | | |
| 30 | -- | EXP SHAFT BUSH | | EXP軸受 | (WW83830) | 2 | |
| 40 | **CB036831** | FRAME A | | フレームA | | | 04 |
| 50 | **CB036840** | FRAME B | | フレームB | | | 04 |
| 60 | **CB036851** | EXP.PEDAL PLATE | | 踏板 | | | 04 |
| 70 | **VP607400** | ACTUATOR | EP-1 | アクチュエータ | | | |
| 80 | **VP796900** | FOOT | EPDM | スベリ座 | | 4 | |
| 90 | **CC021910** | FELT | | フェルト | | 2 | 01 |
| 100 | **HF855270** | CARBON RESISTOR | 270.0 1/4 J ST | カーボン抵抗 | | | 01 |
| 100 | **VP759200** | CARBON RESISTOR | 270.0 1/4 J FORM. | カーボン抵抗P=25 | | | |
| 110 | **WR160800** | ROTARY VARIABLE RESISTOR | 20.0K RK16Y11 | ローターリーVR | | | |
| 120 | **VP889100** | EXP CORD | | EXPコード | | | |
| 120 | **WM055800** | RCA CABLE | XM-0068 | RCAケーブル | | | |
| 130 | **WF723600** | PLAIN WASHER SMALL | 6X11.5X0.8 MFZN2W3 | 平座金小型丸 | | | 01 |
| 140 | **WF782700** | HEX NUT | #3 6.0 | 六角ナット | | 2 | |
| 150 | **WF724600** | CONICAL SPRING WASHER | 1L 6.0 MFZN2W3 | 皿バネ座金 | | 4 | |
| 160 | -- | SILICONE GREASE | G-30H | シリコングリス | (0412108) | | |
| 190 | **WF724500** | PLAIN WASHER | 6.0X16X1.0 MFZN2W3 | 平座金みがき丸 | | 2 | |
| 200 | -- | NAME PLATE | EP-1 | 銘板天津製 | (VL64520) | | |
| 210 | -- | VOLUME PLATE | EP-1 | ボリューム金具 | (WU30740) | | |
| 220 | **WE774800** | BIND HEAD TAPPING SCREW-P | 3.0X8 MFZN2W3 | PタイトBIND | | 3 | 01 |
| 230 | **WE974100** | BIND HEAD TAPPING SCREW-C | 3.0X6 MFZN2W3 | CタイトBIND | | | 01 |
| 240 | **WG808000** | PLAIN WASHER | 3.0X8X1.0 MFZN2W3 | 平座みがき丸 | | | 01 |
| 250 | -- | BIND HEAD TAPPING SCREW-B | 2.0X6 MFNI33 | BタイトBIND | (WK86970) | | |

*: New Parts

RANK: Japan only

# ■ ELECTRICAL PARTS

## AMJK

| | REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|---|
| | | | ELECTRICAL PARTS | | 電気部品 | KB-290/KB-291 | | |
| * | | **WZ270000** | CIRCUIT BOARD | AMJK | AMJKシート | (WZ26990)(YD800D0) | | |
| * | | **WZ269300** | CIRCUIT BOARD | DMLCD | DMLCDシート | (WZ26920)(YD796C0)(YE803A0) | | |
| * | | **WZ270100** | CIRCUIT BOARD | MV | MVシート | (WZ26940)(YD799C0) | | |
| * | | **WZ270200** | CIRCUIT BOARD | PB | PBシート | (WZ26940)(YD799C0) | | |
| * | | **WZ269700** | CIRCUIT BOARD | PNC | PNCシート | (WZ26940)(YD799C0) | | |
| * | | **WZ269600** | CIRCUIT BOARD | PNL | PNLシート | (WZ26940)(YD799C0) | | |
| * | | **WZ269800** | CIRCUIT BOARD | PNP | PNPシート | (WZ26940)(YD799C0) | | |
| * | | **WZ270300** | CIRCUIT BOARD | TW | TWシート | (WZ26940)(YD799C0) | | |
| * | | **WZ269500** | CIRCUIT BOARD | PNR | PNRシート | (WZ69670)(YD925C0) | | |
| | | **V869550R** | CIRCUIT BOARD | 61H-MK | シート61H | (V869540)(X2335D0) | | 06 |
| | | **V869530R** | CIRCUIT BOARD | 61L-MK | シート61L | (V869520)(X2336C0) | | 04 |
| * | | **WZ270000** | CIRCUIT BOARD | AMJK | AMJKシート | (WZ26990)(YD800D0) | | |
| | | **WE774301** | BIND HEAD TAPPING SCREW-B | 3.0X8 MFZN2W3 | Bタイト+BIND | | 3 | 01 |
| | | -- | SILICON GREASE | G-746 | シリコングリス | (0412125) | | |
| | | -- | SILICON GREASE | X-113A G746 | シリコングリス | (VA79810) | | |
| | CN100 | **VK024600** | CONNECTOR | 52147 2P TE | ワイヤートラップ | | | 01 |
| | CN101 | **VL844700** | CONNECTOR | XH 3P TE | ベーススツキポスト | | | 01 |
| | CN103 | **VI878300** | CONNECTOR | 51048 5P TE | ケーブルホルダー | | | 01 |
| | CN103 | **VZ34170R** | CONNECTOR | 51048 5P TE | ケーブルホルダー天津 | | | |
| | CN203 | **VK024900** | CONNECTOR | 52147 5P TE | ワイヤートラップ | | | 01 |
| | CN204 | **VI878300** | CONNECTOR | 51048 5P TE | ケーブルホルダー | | | 01 |
| | CN204 | **VZ34170R** | CONNECTOR | 51048 5P TE | ケーブルホルダー天津 | | | |
| | CN205 | **VK024700** | CONNECTOR | 52147 3P TE | ワイヤートラップ | | | 01 |
| | CN209 | **VL844800** | CONNECTOR | XH 4P TE | ベーススツキポスト | | | 01 |
| | CN210 | **VK024600** | CONNECTOR | 52147 2P TE | ワイヤートラップ | | | 01 |
| | CN211 | **VI878300** | CONNECTOR | 51048 5P TE | ケーブルホルダー | | | 01 |
| | CN211 | **VZ34170R** | CONNECTOR | 51048 5P TE | ケーブルホルダー天津 | | | |
| | CN212 | **VI878900** | CONNECTOR | 51048 11P TE | ケーブルホルダー | | | 01 |
| | CN212 | **VY66880R** | CONNECTOR | 51048 11P TE | ケーブルホルダー天津 | | | |
| | D103 | **VY71710R** | DIODE | LT2A02-E JI | ダイオード | | | 01 |
| | D103 | **WV008801** | DIODE | 2A02-A0 TE-52 | ダイオード | | | |
| * | FT001 | **ZA675500** | FET | TJ20A10M3 | FET | | | |
| ⚠ | FZ1 | **ZE036600** | FUSE | T 2.5A 250V (P) | ヒューズ250V | | | 01 |
| | IC100 | **X5887A0R** | IC | BA50BC0T | IC | REGULATOR +5V 1.0A | | 03 |
| * | IC101 | **YE334A00** | IC | TDA7266SA | IC | 7W+7W DUAL BRIDGE AMPLIFIER | | |
| | IC102 | **XP844A00** | IC | NJM4556AL | IC | OP AMP | | 02 |
| ⚠ | JK100 | **WZ704400** | DC CONNECTOR | DC-502-AG-PBT-2.0 | 電源コネクタ | DC IN 12V | | |
| | JK200 | **LB101870** | PHONE CONNECTOR | JACK YKB21-5006 | ホーンコネクタ | PHONES/OUTPUT | | 03 |
| | JK200 | **VV943300** | PHONE CONNECTOR | JACK HTJ-064-04A | ホーンコネクタ | | | 02 |
| | JK201 | **VM467200** | PIN CONNECTOR | JACK LCZ3.4-1 1P | ピンコネクタ 1P | EXP.PEDAL | | |
| | JK201 | **WH945500** | PIN CONNECTOR | JACK YKB11-0843N 1P | ピンコネクタ 1P | | | |
| | JK202 | **VC68750R** | PHONE CONNECTOR BLACK | JACK YKB21-5014 | ホーンコネクタ(黒) | SUSTAIN | | 01 |
| | JK202 | **WE24520R** | PHONE CONNECTOR BLACK | JY-6314-01-020 | ホーンコネクタ(黒) | | | |
| | K200 | -- | HEAT SINK | | 放熱板 | (WZ49930) | | |
| | WH001 | -- | WIRING ASSEMBLY | 5P L=50 | 束線 | (ZA17530) | | |
| | WH002 | -- | WIRING ASSEMBLY | 11P L=50 | 束線 | (ZA18490) | | |
| | WH003 | -- | WIRING ASSEMBLY | 5P L=50 | 束線 | (ZA17530) | | |
| | C100 | **UR828220** | ELECTROLYTIC CAPACITOR | 220.00 10.0V RX TP | ケミコン | | | 01 |
| | C101 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C101 | **VC694810** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C102 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C102 | **VC694810** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C103 | **UR867100** | ELECTROLYTIC CAPACITOR | 10.00 50.0V RX TP | ケミコン | | | 01 |
| | C104 | **V3773100** | ELECTROLYTIC CAPACITOR | 4700.0 25.0V FORM. | ケミコン | | | |
| | C105 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C105 | **VC694810** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C107 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C107 | **VC694810** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C202 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C203 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| | C209 | **V5516600** | POLYESTER FILM CAPACITOR | 1.0000 50V J | マイラーコン | | | |
| | C209 | **VE327200** | MONOLITHIC POLYESTER F. CAP. | 1.0 50V J RX TP | 積層マイラーコン | | | 02 |
| | C209 | **VU838100** | MONOLITHIC POLYESTER F. CAP. | 1.0000 50V J | 積層マイラーコン | | | |
| | C210 | **V5516600** | POLYESTER FILM CAPACITOR | 1.0000 50V J | マイラーコン | | | |
| | C210 | **VE327200** | MONOLITHIC POLYESTER F. CAP. | 1.0 50V J RX TP | 積層マイラーコン | | | 02 |
| | C210 | **VU838100** | MONOLITHIC POLYESTER F. CAP. | 1.0000 50V J | 積層マイラーコン | | | |
| | C211 | **VR02620R** | CERAMIC CAPACITOR | 1000P 63V K | セラコンB | | | |
| | C211 | **WW465700** | CERAMIC CAPACITOR | 1000P 63V K | セラコン | | | 01 |

*: New Parts

RANK: Japan only

# AMJK

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| C212 | **VR02620R** | CERAMIC CAPACITOR | 1000P 63V K TATEJI | セラコン B | | | |
| C212 | **WW465700** | CERAMIC CAPACITOR | 1000P 63V K TATETE | セラコン | | | 01 |
| C213 | **UR837470** | ELECTROLYTIC CAPACITOR | 47.00 16.0V RX TP | ケミコン | | | 01 |
| C214 | **UR867100** | ELECTROLYTIC CAPACITOR | 10.00 50.0V RX TP | ケミコン | | | 01 |
| C217 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z TATET | 半導体セラコン | | | 01 |
| C217 | **VC694810** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z TATET | 半導体セラコン | | | 01 |
| C218 | **UR838100** | ELECTROLYTIC CAPACITOR | 100.00 16.0V RX TP | ケミコン | | | 01 |
| C219 | **UR838100** | ELECTROLYTIC CAPACITOR | 100.00 16.0V RX TP | ケミコン | | | 01 |
| C221 | **FG65210R** | CERAMIC CAPACITOR | 100P 50V J RX TP | セラコン(SL) | | | 01 |
| C222 | **FG65210R** | CERAMIC CAPACITOR | 100P 50V J RX TP | セラコン(SL) | | | 01 |
| C225 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z TATET | 半導体セラコン | | | 01 |
| C225 | **VC694810** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z TATET | 半導体セラコン | | | 01 |
| C230 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| C237 | **UR837470** | ELECTROLYTIC CAPACITOR | 47.00 16.0V RX TP | ケミコン | | | 01 |
| C240 | **WW465400** | CERAMIC CAPACITOR | 220P 63V K | セラコン | | | |
| C241 | **WW465400** | CERAMIC CAPACITOR | 220P 63V K | セラコン | | | |
| C244 | **UR866100** | ELECTROLYTIC CAPACITOR | 1.00 50.0V RX TP | ケミコン | | | 01 |
| C244 | **V351190R** | ELECTROLYTIC CAPACITOR | 1.00 50.0V TP | ケミコン | | | |
| C245 | **UR866100** | ELECTROLYTIC CAPACITOR | 1.00 50.0V RX TP | ケミコン | | | 01 |
| C245 | **V351190R** | ELECTROLYTIC CAPACITOR | 1.00 50.0V TP | ケミコン | | | |
| C246 | **VC69480R** | SEMICONDUCTOR CERAMIC CAP. | 0.1000 25V Z | 半導体セラコン | | | 01 |
| C247 | **UR837470** | ELECTROLYTIC CAPACITOR | 47.00 16.0V RX TP | ケミコン | | | 01 |
| C248 | **UR837470** | ELECTROLYTIC CAPACITOR | 47.00 16.0V RX TP | ケミコン | | | 01 |
| ⚠ D100 | **VB941200** | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| -102 | **VB941200** | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| ⚠ D100 | **VD631600** | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| -102 | **VD631600** | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| D104 | **WR195300** | DIODE | 1D4 26 | ダイオード | | | |
| D105 | **WR195300** | DIODE | 1D4 26 | ダイオード | | | |
| J100 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| J101 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| J105 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| J106 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| J200 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| J201 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| L200 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| R100 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| -102 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R103 | **HF457150** | CARBON RESISTOR | 15.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R105 | **HF456271** | CARBON RESISTOR | 2.7K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R106 | **HF456271** | CARBON RESISTOR | 2.7K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R107 | **HF457470** | CARBON RESISTOR | 47.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R108 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R109 | **HF45727R** | CARBON RESISTOR | 27.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R110 | **HF45822R** | CARBON RESISTOR | 220.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R111 | **HF457470** | CARBON RESISTOR | 47.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R202 | **HF456680** | CARBON RESISTOR | 6.8K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R203 | **HF456680** | CARBON RESISTOR | 6.8K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R205 | **HF457330** | CARBON RESISTOR | 33.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R210 | **HF454100** | CARBON RESISTOR | 10.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R211 | **HF454100** | CARBON RESISTOR | 10.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R212 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| -214 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R215 | **--** | JUMPER WIRE | 0.55 TIN | ジャンパー線 | (VA07890) | | |
| R220 | **HF45722R** | CARBON RESISTOR | 22.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R221 | **HF457150** | CARBON RESISTOR | 15.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R222 | **HF457150** | CARBON RESISTOR | 15.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R223 | **HF45727R** | CARBON RESISTOR | 27.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R224 | **HF457150** | CARBON RESISTOR | 15.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R225 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R226 | **HF45710R** | CARBON RESISTOR | 10.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R230 | **HF454150** | CARBON RESISTOR | 15.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R232 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R233 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R234 | **HF45610R** | CARBON RESISTOR | 1.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R235 | **HF45610R** | CARBON RESISTOR | 1.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R236 | **HF454150** | CARBON RESISTOR | 15.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R240 | **HF45710R** | CARBON RESISTOR | 10.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R241 | **HF45710R** | CARBON RESISTOR | 10.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R242 | **HF457180** | CARBON RESISTOR | 18.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |

*: New Parts

RANK: Japan only

## AMJK and DMLCD

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| R243 | **HF457180** | CARBON RESISTOR | 18.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R244 | **HF456120** | CARBON RESISTOR | 1.2K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R245 | **HF45615R** | CARBON RESISTOR | 1.5K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R246 | **HF457470** | CARBON RESISTOR | 47.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R247 | **HF457470** | CARBON RESISTOR | 47.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R248 | **HF45547R** | CARBON RESISTOR | 470.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R249 | **HF457150** | CARBON RESISTOR | 15.0K 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R250 | **HF45510R** | CARBON RESISTOR | 100.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| R251 | **HF454100** | CARBON RESISTOR | 10.0 1/4 J AX TP | カーボン抵抗 | | | 01 |
| TR101 | **IC174070** | TRANSISTOR | 2SC1740S R,S | トランジスタ 2SC | | | 01 |
| TR101 | **V2797700** | TRANSISTOR | 2SC5395-T112-E/F | トランジスタ 2SC | | | 01 |
| TR101 | **WC292100** | TRANSISTOR | KTC3199-Y-AT/P | トランジスタ | | | 01 |
| TR101 | **WC398400** | TRANSISTOR | 2N5551C-AT/P | トランジスタ | | | 01 |
| TR101 | **WE43600R** | TRANSISTOR | KTC3199 GR,BL | トランジスタ NPN | | | |
| TR102 | **VV91240R** | TRANSISTOR | 2SA933AS TP R,S TE | トランジスタ 2SA | | | 01 |
| TR102 | **WZ853400** | TRANSISTOR | KTA1266-GR-AT/P GR | トランジスタ | | | 01 |
| TR200 | **V2797700** | TRANSISTOR | 2SC5395-T112-E/F | トランジスタ 2SC | | | 01 |
| -205 | **V2797700** | TRANSISTOR | 2SC5395-T112-E/F | トランジスタ 2SC | | | 01 |
| TR200 | **WC398400** | TRANSISTOR | 2N5551C-AT/P | トランジスタ | | | 01 |
| -205 | **WC398400** | TRANSISTOR | 2N5551C-AT/P | トランジスタ | | | 01 |
| * | **WZ269300** | CIRCUIT BOARD | DMLCD | DMLCDシート | (WZ26920)(YD796C0)(YE803A0) | | |
| CN300 | **VF72830R** | CONNECTOR | 52147 6P TE | ワイヤートラップ | | | 01 |
| CN301 | **VE35260R** | CONNECTOR | PH 14P TE | ベースポスト | | | 01 |
| CN302 | **VE35260R** | CONNECTOR | PH 14P TE | ベースポスト | | | 01 |
| CN303 | **VB38990R** | CONNECTOR | PH 3P TE | ベースポスト | | | 01 |
| CN401 | **WH382500** | USB CONNECTOR | UAR27 4P SE | USBコネクタ | USB TO DEVICE | | 01 |
| CN401 | **WK450700** | USB CONNECTOR | YKF45-0033N 4P SE | USBコネクタ | | | 01 |
| CN401 | **WQ353300** | USB CONNECTOR | KM13200073 4P SE | USBコネクタ | | | |
| CN402 | **V6802600** | USB CONNECTOR | 4P SE | USBジャック | USB TO HOST | | 02 |
| CN402 | **WR890200** | USB CONNECTOR | KM13200074 4P SE | USBコネクタ | | | |
| CN501 | **VK02560R** | CONNECTOR | 52147 12P TE | ワイヤートラップ | | | 01 |
| CN502 | **VK025100** | CONNECTOR | 52147 7P TE | ワイヤートラップ | | | 01 |
| CN503 | **VK024900** | CONNECTOR | 52147 5P TE | ワイヤートラップ | | | 01 |
| CN504 | **VK025501** | CONNECTOR | 52147 11P TE | ワイヤートラップ | | | 01 |
| CN505 | **VK024900** | CONNECTOR | 52147 5P TE | ワイヤートラップ | | | 01 |
| C001 | **US661220** | CERAMIC CAPACITOR (CHIP) | 22P 50V J RECT. | チップセラ(CH) | | | |
| C002 | **US661220** | CERAMIC CAPACITOR (CHIP) | 22P 50V J RECT. | チップセラ(CH) | | | |
| C003 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -005 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C006 | **UF01747R** | ELECTROLYTIC CAPACITOR(CHIP) | 47 6.3V | チップケミコン | | | 01 |
| C007 | **US662100** | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C008 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C009 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C010 | **US662100** | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C011 | **US662470** | CERAMIC CAPACITOR (CHIP) | 470P 50V K RECT. | チップセラ(B) | | | 01 |
| C012 | **US634100** | CERAMIC CAPACITOR (CHIP) | 0.010 16V K RECT. | チップセラ(B) | | | 01 |
| C013 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -016 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C017 | **UF01747R** | ELECTROLYTIC CAPACITOR(CHIP) | 47 6.3V | チップケミコン | | | 01 |
| C018 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -021 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C101 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -103 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C111 | **US662100** | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C112 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C121 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C122 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C131 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -136 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C201 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -206 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C207 | **UF037100** | ELECTROLYTIC CAPACITOR(CHIP) | 10 16V | チップケミコン | | | 01 |
| C208 | **US662100** | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C209 | **US662100** | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C210 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -212 | **US635100** | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C213 | **US663100** | CERAMIC CAPACITOR (CHIP) | 1000P 50V K RECT. | チップセラ(B) | | | 01 |
| C214 | **UF037100** | ELECTROLYTIC CAPACITOR(CHIP) | 10 16V | チップケミコン | | | 01 |
| C215 | **WN019700** | CERAMIC CAPACITOR (CHIP) | 2.200 16V K RECT. | チップセラ | | | 01 |

*: New Parts

RANK: Japan only

# DMLCD

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| C216 | WN019700 | CERAMIC CAPACITOR (CHIP) | 2.200 16V K RECT. | チップセラ | | | 01 |
| C217 | UF037100 | ELECTROLYTIC CAPACITOR(CHIP) | 10 16V | チップケミコン | | | 01 |
| C218 | WK145900 | CERAMIC CAPACITOR (CHIP) | 0.47 10V K 1005 | チップセラ | | | 01 |
| C219 | WK145900 | CERAMIC CAPACITOR (CHIP) | 0.47 10V K 1005 | チップセラ | | | 01 |
| C221 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C222 | UF037100 | ELECTROLYTIC CAPACITOR(CHIP) | 10 16V | チップケミコン | | | 01 |
| C223 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C231 | US634100 | CERAMIC CAPACITOR (CHIP) | 0.010 16V K RECT. | チップセラ(B) | | | 01 |
| C232 | US663270 | CERAMIC CAPACITOR (CHIP) | 2700P 50V K RECT. | チップセラ(B) | | | |
| C233 | US663270 | CERAMIC CAPACITOR (CHIP) | 2700P 50V K RECT. | チップセラ(B) | | | |
| C234 | UF06610R | ELECTROLYTIC CAPACITOR(CHIP) | 1 50V | チップケミコン | | | 01 |
| C235 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C241 | US634100 | CERAMIC CAPACITOR (CHIP) | 0.010 16V K RECT. | チップセラ(B) | | | 01 |
| C242 | US663270 | CERAMIC CAPACITOR (CHIP) | 2700P 50V K RECT. | チップセラ(B) | | | |
| C243 | US663270 | CERAMIC CAPACITOR (CHIP) | 2700P 50V K RECT. | チップセラ(B) | | | |
| C244 | UF06610R | ELECTROLYTIC CAPACITOR(CHIP) | 1 50V | チップケミコン | | | 01 |
| C245 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C300 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| -308 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C310 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| -317 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C321 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C322 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C329 | US663100 | CERAMIC CAPACITOR (CHIP) | 1000P 50V K RECT. | チップセラ(B) | | | 01 |
| C401 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C403 | UF03810R | ELECTROLYTIC CAPACITOR(CHIP) | 100 16V | チップケミコン | | | 01 |
| C406 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C414 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C431 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C432 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C433 | WG251600 | CERAMIC CAPACITOR (CHIP) | 4.7 6.3V K RECT. | チップセラ | | | 01 |
| C434 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -437 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C438 | WG251600 | CERAMIC CAPACITOR (CHIP) | 4.7 6.3V K RECT. | チップセラ | | | 01 |
| C439 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C440 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C441 | WG251600 | CERAMIC CAPACITOR (CHIP) | 4.7 6.3V K RECT. | チップセラ | | | 01 |
| C442 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -444 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C445 | UF037100 | ELECTROLYTIC CAPACITOR(CHIP) | 10 16V | チップケミコン | | | 01 |
| C501 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| -512 | US662100 | CERAMIC CAPACITOR (CHIP) | 100P 50V J RECT. | チップセラ(CH) | | | |
| C521 | US662220 | CERAMIC CAPACITOR (CHIP) | 220P 50V K RECT. | チップセラ(B) | | | 01 |
| -532 | US662220 | CERAMIC CAPACITOR (CHIP) | 220P 50V K RECT. | チップセラ(B) | | | 01 |
| C533 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C534 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C601 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -604 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C605 | UF037100 | ELECTROLYTIC CAPACITOR(CHIP) | 10 16V | チップケミコン | | | 01 |
| C900 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -929 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| C933 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| -940 | US635100 | CERAMIC CAPACITOR (CHIP) | 0.100 16V Z RECT. | チップセラ(F) | | | 01 |
| D001 | VT332900 | DIODE | 1SS355 TE-17 TP | ダイオード | | | 01 |
| D001 | WG139300 | DIODE | KDS4148U-RTK/P TE | ダイオード | | | |
| D002 | VT332900 | DIODE | 1SS355 TE-17 TP | ダイオード | | | 01 |
| D002 | WG139300 | DIODE | KDS4148U-RTK/P TE | ダイオード | | | |
| DA401 | V9424900 | DIODE ARRAY | 1SS372 TE85L | ダイオードアレイ | | | 01 |
| DA401 | WV973800 | DIODE ARRAY | DB3J316F0L 0.10A X | ダイオードアレイ | | | |
| DA402 | V9424900 | DIODE ARRAY | 1SS372 TE85L | ダイオードアレイ | | | 01 |
| DA402 | WV973800 | DIODE ARRAY | DB3J316F0L 0.10A X | ダイオードアレイ | | | |
| DA411 | V9424900 | DIODE ARRAY | 1SS372 TE85L | ダイオードアレイ | | | 01 |
| DA411 | WV973800 | DIODE ARRAY | DB3J316F0L 0.10A X | ダイオードアレイ | | | |
| DA412 | V9424900 | DIODE ARRAY | 1SS372 TE85L | ダイオードアレイ | | | 01 |
| DA412 | WV973800 | DIODE ARRAY | DB3J316F0L 0.10A X | ダイオードアレイ | | | |
| IC001 | YA876A01 | IC | SWL01U | IC | CPU | | 05 |
| * IC101 | YE164C00 | IC | MX29GL256ELT2I-90Q | IC | FLASH ROM PROG./WAVE | | |
| IC102 | X5896A00 | IC | SN74LVC1G08DCKR | IC | AND GATE | | 01 |
| IC102 | X5896B00 | IC | SN74LVC1G08DCKR AN | IC | | | 01 |
| IC102 | X6068A0R | IC | TC7SZ08FU | IC | | | 01 |

*: New Parts

RANK: Japan only

# DMLCD

| REF NO. | PART NO. | DESCRIPTION | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|
| IC102 | YA350A00 | IC | 74LVC1G08GW | IC | | 01 |
| IC111 | X4374A0R | IC | S-80136ANMC-JCVT2G | IC | SYSTEM RESET | 01 |
| IC111 | X5888A0R | IC | BD45365G | IC | | 01 |
| IC121 | X3042E00 | IC | MX29LV160DBTI-70G | IC | FLASH ROM 16M | 03 |
| IC131 | X2590C00 | IC | W9816G6IH-7 | IC | SDRAM 16M | 04 |
| IC131 | X5693C00 | IC | M12L16161A-7TG2K | IC | | 04 |
| IC131 | X5693D00 | IC | M12L16161A-7TG2K S | IC | | |
| IC201 | X6040A01 | IC | AK4385ET | IC | DAC | 03 |
| IC202 | YA326A00 | IC | BA4580RF-E2 | IC | OP AMP | 01 |
| IC203 | YC287A00 | IC | RP130Q181D-TR-F | IC | REGULATOR +1.8V | 01 |
| IC401 | X7569A00 | IC | R5520H001B-T1-FE | IC | USB HIGH-SIDE POWER SW. | 03 |
| * IC402 | YD645A00 | IC | R8A66597FP#RF1S | IC | USB2.0 HOST CONTROLLER | |
| IC403 | X5647A00 | IC | SN74LV32APWR | IC | OR | 01 |
| IC403 | XY945B00 | IC | TC74VHC32FT(EL,K) | IC | | |
| IC501 | X7284A00 | IC | SN74LV138APWR | IC | DECODER | 01 |
| IC501 | XZ495B00 | IC | TC74VHC138FT(EL,K) | IC | | 01 |
| IC502 | X7284A00 | IC | SN74LV138APWR | IC | DECODER | 01 |
| IC502 | XZ495B00 | IC | TC74VHC138FT(EL,K) | IC | | 01 |
| IC601 | X3148A0R | IC | NT3881DFG-01 | IC | LCD DRIVER | 05 |
| IC601 | XZ987A0R | IC | ML9040A-B01GAZ03A | IC | | 05 |
| IC601 | YC471A00 | IC | SPLC780D1-001A-HQ1 | IC | | |
| IC801 | YD113A00 | IC | RP131H331D-T1-FE | IC | REGULATOR +3.3V | 01 |
| L401 | WG834800 | COIL | DLW21HN900SQ2L | コイル | | 01 |
| L411 | WE863900 | CHIP INDUCTOR | DLP11SN900HL2L | チップインダクタ | | 01 |
| L431 | WK139000 | CHIP INDUCTOR | 600 ohm BK1005HM601-T | チップインダクタ | | 01 |
| L601 | WK139000 | CHIP INDUCTOR | 600 ohm BK1005HM601-T | チップインダクタ | | 01 |
| R003 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R006 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R007 | RD459100 | CARBON RESISTOR (CHIP) | 1.0M 63M J RECT. | チップ抵抗 | | 01 |
| R008 | RD45547R | CARBON RESISTOR (CHIP) | 470.0 63M J RECT. | チップ抵抗 | | 01 |
| R009 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| -012 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R013 | RD456820 | CARBON RESISTOR (CHIP) | 8.2K 63M J RECT. | チップ抵抗 | | 01 |
| R014 | RD456220 | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | 01 |
| R015 | RD455100 | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | 01 |
| -017 | RD455100 | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | 01 |
| R018 | RD45522R | CARBON RESISTOR (CHIP) | 220.0 63M J RECT. | チップ抵抗 | | 01 |
| R019 | RD45747R | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | 01 |
| -022 | RD45747R | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | 01 |
| R023 | WU570200 | CARBON RESISTOR (CHIP) | 8.2K 63M D RECT. | チップ抵抗 | | 01 |
| R024 | WU568800 | CARBON RESISTOR (CHIP) | 2.2K 63M D RECT. | チップ抵抗 | | 01 |
| R025 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R026 | RD456220 | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | 01 |
| R027 | RD458470 | CARBON RESISTOR (CHIP) | 470.0K 63M J RECT. | チップ抵抗 | | |
| -029 | RD458470 | CARBON RESISTOR (CHIP) | 470.0K 63M J RECT. | チップ抵抗 | | |
| R030 | RD454220 | CARBON RESISTOR (CHIP) | 22.0 63M J RECT. | チップ抵抗 | | 01 |
| R031 | RD454220 | CARBON RESISTOR (CHIP) | 22.0 63M J RECT. | チップ抵抗 | | 01 |
| R032 | RD45515R | CARBON RESISTOR (CHIP) | 150.0 63M J RECT. | チップ抵抗 | | 01 |
| R033 | RD455100 | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | 01 |
| R034 | RD45747R | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | 01 |
| R037 | RD455100 | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | 01 |
| R101 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R111 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R121 | RD457100 | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | 01 |
| R201 | RD45747R | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | 01 |
| R202 | RD456100 | CARBON RESISTOR (CHIP) | 1.0K 63M J RECT. | チップ抵抗 | | 01 |
| R203 | RD45747R | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | 01 |
| R204 | RD456100 | CARBON RESISTOR (CHIP) | 1.0K 63M J RECT. | チップ抵抗 | | 01 |
| R205 | RD456100 | CARBON RESISTOR (CHIP) | 1.0K 63M J RECT. | チップ抵抗 | | 01 |
| R231 | RD456330 | CARBON RESISTOR (CHIP) | 3.3K 63M J RECT. | チップ抵抗 | | |
| R232 | RD456330 | CARBON RESISTOR (CHIP) | 3.3K 63M J RECT. | チップ抵抗 | | |
| R233 | RD456220 | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | 01 |
| R234 | RD45518R | CARBON RESISTOR (CHIP) | 180.0 63M J RECT. | チップ抵抗 | | 01 |
| R235 | RD45518R | CARBON RESISTOR (CHIP) | 180.0 63M J RECT. | チップ抵抗 | | 01 |
| R236 | RD456220 | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | 01 |
| R237 | RD455100 | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | 01 |
| R241 | RD456330 | CARBON RESISTOR (CHIP) | 3.3K 63M J RECT. | チップ抵抗 | | |
| R242 | RD456330 | CARBON RESISTOR (CHIP) | 3.3K 63M J RECT. | チップ抵抗 | | |
| R243 | RD456220 | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | 01 |
| R244 | RD45518R | CARBON RESISTOR (CHIP) | 180.0 63M J RECT. | チップ抵抗 | | 01 |

*: New Parts

RANK: Japan only

# DMLCD and MV/PB/PNC/PNL/PNP/TW

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| R245 | **RD45518R** | CARBON RESISTOR (CHIP) | 180.0 63M J RECT. | チップ抵抗 | | | 01 |
| R246 | **RD456220** | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | | 01 |
| R247 | **RD455100** | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | | 01 |
| R248 | **RD456100** | CARBON RESISTOR (CHIP) | 1.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R249 | **RD45615R** | CARBON RESISTOR (CHIP) | 1.5K 63M J RECT. | チップ抵抗 | | | 01 |
| R300 | **RD45747R** | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | | 01 |
| -308 | **RD45747R** | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R322 | **RD456100** | CARBON RESISTOR (CHIP) | 1.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R401 | **RD45000R** | CARBON RESISTOR (CHIP) | 0.00 63M J RECT. | チップ抵抗 | | | 01 |
| R402 | **RD45000R** | CARBON RESISTOR (CHIP) | 0.00 63M J RECT. | チップ抵抗 | | | 01 |
| R403 | **RD457220** | CARBON RESISTOR (CHIP) | 22.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R411 | **RD456220** | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | | 01 |
| R412 | **RD456270** | CARBON RESISTOR (CHIP) | 2.7K 63M J RECT. | チップ抵抗 | | | 01 |
| R413 | **RD457100** | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R414 | **RD45747R** | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R415 | **RD457100** | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R416 | **RD45615R** | CARBON RESISTOR (CHIP) | 1.5K 63M J RECT. | チップ抵抗 | | | 01 |
| R417 | **RD45747R** | CARBON RESISTOR (CHIP) | 47.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R418 | **RD457100** | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R419 | **RD45612R** | CARBON RESISTOR (CHIP) | 1.2K 63M J RECT. | チップ抵抗 | | | 01 |
| R420 | **RD456100** | CARBON RESISTOR (CHIP) | 1.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R441 | **RF456560** | CARBON RESISTOR (CHIP) | 5.6K D RECT. | チップ抵抗 | | | |
| R442 | **RD457100** | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R443 | **RD457100** | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R445 | **RD455100** | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | | 01 |
| -447 | **RD455100** | CARBON RESISTOR (CHIP) | 100.0 63M J RECT. | チップ抵抗 | | | 01 |
| R450 | **RD45000R** | CARBON RESISTOR (CHIP) | 0.00 63M J RECT. | チップ抵抗 | | | 01 |
| R601 | **RD45615R** | CARBON RESISTOR (CHIP) | 1.5K 63M J RECT. | チップ抵抗 | | | 01 |
| R602 | **RD45522R** | CARBON RESISTOR (CHIP) | 220.0 63M J RECT. | チップ抵抗 | | | 01 |
| R603 | **RD454680** | CARBON RESISTOR (CHIP) | 68.0 63M J RECT. | チップ抵抗 | | | 01 |
| R604 | **RD457100** | CARBON RESISTOR (CHIP) | 10.0K 63M J RECT. | チップ抵抗 | | | 01 |
| R605 | **RD456220** | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | | 01 |
| -609 | **RD456220** | CARBON RESISTOR (CHIP) | 2.2K 63M J RECT. | チップ抵抗 | | | 01 |
| R610 | **RF45791R** | CARBON RESISTOR (CHIP) | 91.0K D RECT. | チップ抵抗 | | | |
| R614 | **RD45000R** | CARBON RESISTOR (CHIP) | 0.00 63M J RECT. | チップ抵抗 | | | 01 |
| R615 | **RD45000R** | CARBON RESISTOR (CHIP) | 0.00 63M J RECT. | チップ抵抗 | | | 01 |
| R900 | **RD45000R** | CARBON RESISTOR (CHIP) | 0.00 63M J RECT. | チップ抵抗 | | | 01 |
| R901 | **RD45515R** | CARBON RESISTOR (CHIP) | 150.0 63M J RECT. | チップ抵抗 | | | 01 |
| R902 | **RD45515R** | CARBON RESISTOR (CHIP) | 150.0 63M J RECT. | チップ抵抗 | | | 01 |
| RA001 | **WH213400** | RESISTOR ARRAY | 47K X 4 | 抵抗アレイ | | | 01 |
| -004 | **WH213400** | RESISTOR ARRAY | 47K X 4 | 抵抗アレイ | | | 01 |
| RA301 | **WH209400** | RESISTOR ARRAY | 1.0K X 4 | 抵抗アレイ | | | |
| RA302 | **WH209400** | RESISTOR ARRAY | 1.0K X 4 | 抵抗アレイ | | | |
| RA303 | **WH213400** | RESISTOR ARRAY | 47K X 4 | 抵抗アレイ | | | 01 |
| RA304 | **WH213400** | RESISTOR ARRAY | 47K X 4 | 抵抗アレイ | | | 01 |
| RA501 | **WH209400** | RESISTOR ARRAY | 1.0K X 4 | 抵抗アレイ | | | |
| -503 | **WH209400** | RESISTOR ARRAY | 1.0K X 4 | 抵抗アレイ | | | |
| RA504 | **WH213400** | RESISTOR ARRAY | 47K X 4 | 抵抗アレイ | | | 01 |
| -506 | **WH213400** | RESISTOR ARRAY | 47K X 4 | 抵抗アレイ | | | 01 |
| RA521 | **WH207000** | RESISTOR ARRAY | 100 X 4 | 抵抗アレイ | | | 01 |
| -523 | **WH207000** | RESISTOR ARRAY | 100 X 4 | 抵抗アレイ | | | 01 |
| RA524 | **WH206200** | RESISTOR ARRAY | 47 X 4 | 抵抗アレイ | | | 01 |
| -531 | **WH206200** | RESISTOR ARRAY | 47 X 4 | 抵抗アレイ | | | 01 |
| TH601 | **V9140600** | CHIP THERMISTOR | ERTJ1VT152J 1.5K | チップサーミスタ | | | |
| TR300 | **WB12320R** | TRANSISTOR ARRAY | IMB10A T110 | トランジスタアレイ | | | 05 |
| TR302 | **WB12320R** | TRANSISTOR ARRAY | IMB10A T110 | トランジスタアレイ | | | 05 |
| TR304 | **WB12320R** | TRANSISTOR ARRAY | IMB10A T110 | トランジスタアレイ | | | 05 |
| TR306 | **WB12320R** | TRANSISTOR ARRAY | IMB10A T110 | トランジスタアレイ | | | 05 |
| TR308 | **WB12320R** | TRANSISTOR ARRAY | IMB10A T110 | トランジスタアレイ | | | 05 |
| TR309 | **VY67760R** | DIGITAL TRANSISTOR | DTC123JKA TP | デジタルトランジスタ | | | 01 |
| TR401 | **VV556500** | TRANSISTOR | 2SA1037AK Q,R,S TP | トランジスタ 2SA | | | 01 |
| TR401 | **WC529500** | TRANSISTOR | KTA1504S-Y,GR-RTK/ | トランジスタ | | | |
| TR402 | **VV556400** | TRANSISTOR | 2SC2412K Q,R,S TP | トランジスタ | | | 01 |
| TR403 | **VV556400** | TRANSISTOR | 2SC2412K Q,R,S TP | トランジスタ | | | 01 |
| TR404 | **VV556500** | TRANSISTOR | 2SA1037AK Q,R,S TP | トランジスタ 2SA | | | 01 |
| TR404 | **WC529500** | TRANSISTOR | KTA1504S-Y,GR-RTK/ | トランジスタ | | | |
| X101 | **WE19440R** | QUARTZ CRYSTAL UNIT | 16.9344MHz HC-49S-SM | 水晶振動子 | | | 01 |
| X102 | **WU303100** | RESONATOR QUARTZ | C3SD48.0MGE 48MHz | 水晶振動器 | | | |
| * | **WZ270100** | CIRCUIT BOARD | MV | MVシート | (WZ26940)(YD799C0) | | |

*: New Parts

RANK: Japan only

# MV/PB/PNC/PNL/PNP/TW and PNR and 61L-MK ad 61H-MK

| | REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|---|
| * | | WZ270200 | CIRCUIT BOARD | PB | P B シート | (WZ26940)(YD799C0) | | |
| * | | WZ269700 | CIRCUIT BOARD | PNC | P N C シート | (WZ26940)(YD799C0) | | |
| * | | WZ269600 | CIRCUIT BOARD | PNL | P N L シート | (WZ26940)(YD799C0) | | |
| * | | WZ269800 | CIRCUIT BOARD | PNP | P N P シート | (WZ26940)(YD799C0) | | |
| * | | WZ270300 | CIRCUIT BOARD | TW | T W シート | (WZ26940)(YD799C0) | | |
| | CN200 | VI878300 | CONNECTOR | 51048 5P TE | ケーブルホルダー | | | 01 |
| | CN200 | VZ34170R | CONNECTOR | 51048 5P TE | ケーブルホルダー天津 | | | |
| | CN800 | VB85880R | CONNECTOR | PH 9P SE | ベースポスト | | | 01 |
| | CN802 | VI878100 | CONNECTOR | 51048 3P TE | ケーブルホルダー | | | 01 |
| | CN802 | VZ34160R | CONNECTOR | 51048 3P TE | ケーブルホルダー天津 | | | |
| | CN803 | VB38990R | CONNECTOR | PH 3P TE | ベースポスト | | | 01 |
| | CN804 | VE35260R | CONNECTOR | PH 14P TE | ベースポスト | | | 01 |
| | CN806 | VI878400 | CONNECTOR | 51048 6P TE | ケーブルホルダー | | | 01 |
| | CN806 | VY66850R | CONNECTOR | 51048 6P TE | ケーブルホルダー天津 | | | 01 |
| | CN900 | VB85880R | CONNECTOR | PH 9P SE | ベースポスト | | | 01 |
| | CN901 | VK024700 | CONNECTOR | 52147 3P TE | ワイヤートラップ | | | 01 |
| | CN902 | VI878100 | CONNECTOR | 51048 3P TE | ケーブルホルダー | | | 01 |
| | CN905 | VI878000 | CONNECTOR | 51048 2P TE | ケーブルホルダー | | | 01 |
| | CN905 | VY66830R | CONNECTOR | 51048 2P TE | ケーブルホルダー天津 | | | |
| | LD868 | WM279800 | LED | BL-B6141K-FP11-AT | LED | STYLE | | 01 |
| | LD960 | WM279800 | LED | BL-B6141K-FP11-AT | LED | PORTAMENTO | | 01 |
| | VR2 | VZ48630R | ROTARY VR | B10K EVJ05DF20B14 | ロータリーVR | PITCH BEND | | 03 |
| | VR200 | WC70980R | ROTARY VARIABLE RESISTOR | A 5.0K XV014111YGP | 二連ロータリーVR | MASTER VOLUME | | 02 |
| | WH001 | -- | WIRING ASSEMBLY | 3P L=100 | 束線 | (ZA17230) | | |
| | WH002 | -- | WIRING ASSEMBLY | 5P L=200 | 束線 | (ZA26040) | | |
| | WH003 | -- | WIRING ASSEMBLY | 3P L=50 | 束線 | (ZA25600) | | |
| | WH004 | -- | WIRING ASSEMBLY | 6P L=50 | 束線 | (ZA17690) | | |
| | WH005 | -- | WIRING ASSEMBLY | TWL 2P L=100 | TWL束線 | (ZA37800) | | |
| | D605 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | -608 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | D605 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | -608 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | D605 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| | -608 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| | D800 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | -808 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | D800 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | -808 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | D800 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| | -808 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| | D960 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | D960 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | D960 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| * | | WZ269500 | CIRCUIT BOARD | PNR | P N R シート | (WZ69670)(YD925C0) | | |
| | CN700 | VE35260R | CONNECTOR | PH 14P TE | ベースポスト | | | 01 |
| | CN701 | VI878000 | CONNECTOR | 51048 2P TE | ケーブルホルダー | | | 01 |
| | CN701 | VY66830R | CONNECTOR | 51048 2P TE | ケーブルホルダー天津 | | | |
| | CN702 | VI878000 | CONNECTOR | 51048 2P TE | ケーブルホルダー | | | 01 |
| | CN702 | VY66830R | CONNECTOR | 51048 2P TE | ケーブルホルダー天津 | | | |
| | LD735 | WM279800 | LED | BL-B6141K-FP11-AT | LED | VOICE | | 01 |
| | WH701 | -- | WIRING ASSEMBLY | 2P L=75 | 束線 | (ZA25430) | | |
| | WH702 | -- | WIRING ASSEMBLY | TWR 2P L=320 | TWR束線 | (ZA37790) | | |
| | D700 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | -708 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | D700 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | -708 | VD631600 | DIODE | 1SS133,176,HSS104 | ダイオード | | | 01 |
| | D700 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| | -708 | VV43780R | DIODE | 1N4148(DO-34) | ダイオード天津製 | | | 01 |
| | | V869530R | CIRCUIT BOARD | 61L-MK | シート61L | (V869520)(X2336C0) | | 04 |
| | CN04 | VK02560R | CONNECTOR | 52147 12P TE | ワイヤートラップ | | | 01 |
| | CN05 | VK025100 | CONNECTOR | 52147 7P TE | ワイヤートラップ | | | 01 |
| | D001 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | -072 | VB941200 | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| | D001 | WP977700 | DIODE | HSS4148TA-E Q TE | ダイオード | | | |
| | -072 | WP977700 | DIODE | HSS4148TA-E Q TE | ダイオード | | | |
| | | V869550R | CIRCUIT BOARD | 61H-MK | シート61H | (V869540)(X2335D0) | | 06 |
| | CN01 | VK02560R | CONNECTOR | 52147 12P TE | ワイヤートラップ | | | 01 |

*: New Parts

RANK: Japan only

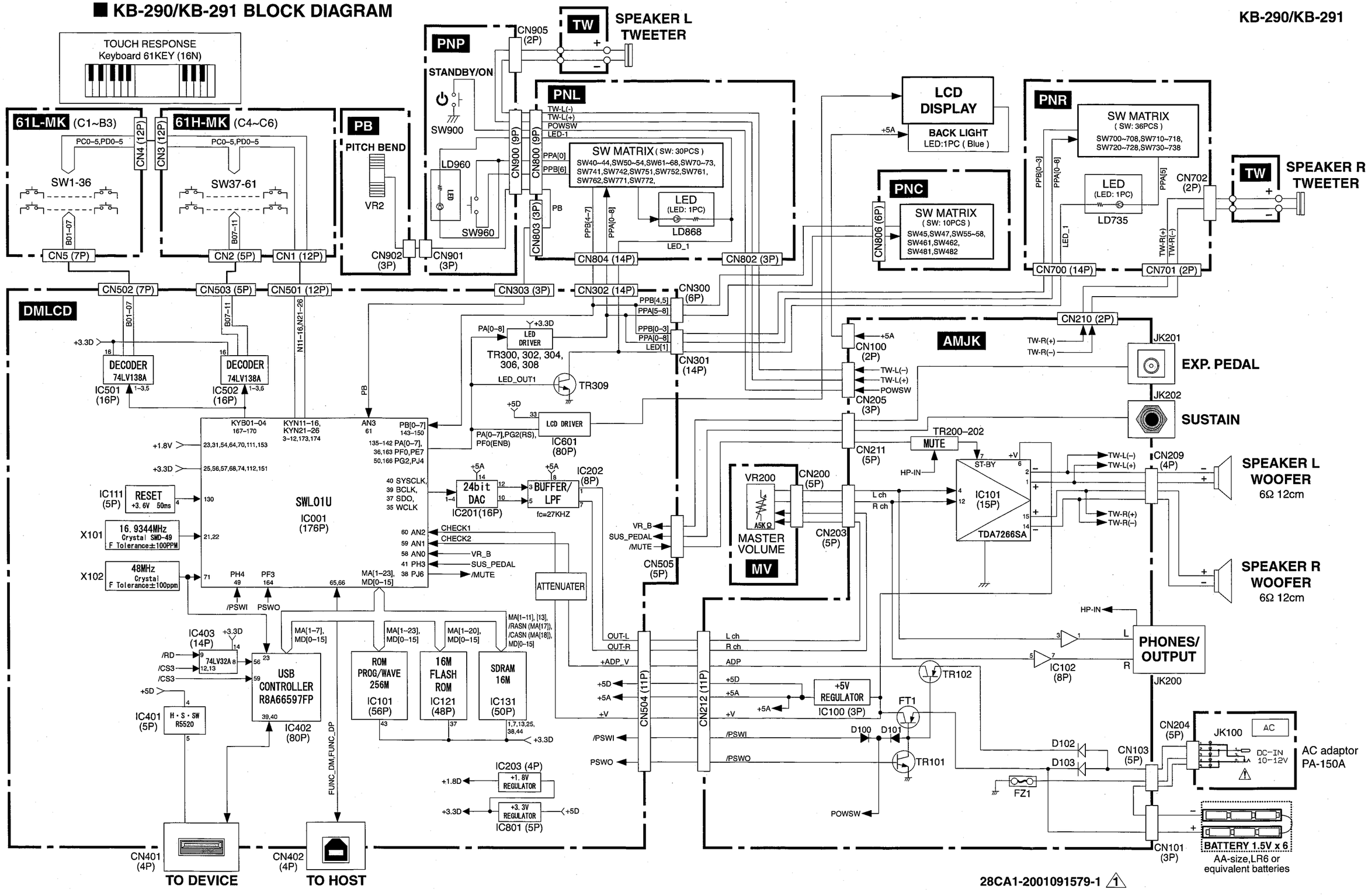
# 61H-MK

| REF NO. | PART NO. | DESCRIPTION | | 部品名 | REMARKS | QTY | RANK |
|---|---|---|---|---|---|---|---|
| CN02 | **VK024900** | CONNECTOR | 52147 5P TE | ワイヤートラップ | | | 01 |
| CN03 | **VK02560R** | CONNECTOR | 52147 12P TE | ワイヤートラップ | | | 01 |
| D073 | **VB941200** | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| -122 | **VB941200** | DIODE | 1SS133,1SS176 TE-5 | ダイオード | | | 01 |
| D073 | **WP977700** | DIODE | HSS4148TA-E Q TE | ダイオード | | | |
| -122 | **WP977700** | DIODE | HSS4148TA-E Q TE | ダイオード | | | |
| * | **X0159B00** | LOUD SPEAKER | 3.0cm | スピーカ | TWEETER | | |
| * | **YE096A00** | LOUD SPEAKER | 12.0cm 6ohm 6W | スピーカ | WOOFER | | |
| * | **WZ330100** | LCD DISPLAY | | 液晶ディスプレイ | | | |

*: New Parts

RANK: Japan only

# ■ KB-290/KB-291 BLOCK DIAGRAM




28CA1-2001091579-1 /1

28CA1-2001091579-1 /1

■ KB-290/KB-291 BLOCK DIAGRAM

# ■ KB-290/KB-291 OVERALL CIRCUIT DIAGRAM (AMJK, DMLCD, MV, PB, PNC, PNL, PNR, PNP, TW, 61H-MK, 61L-MK)

DMLCD

LCD DRIVER

SDRAM 16M

FLASH ROM 16M

SYSTEM RESET

FLASH ROM PROG./WAVE

CPU (SWL01U)

USB2.0 HOST CONTROLLER

USB HIGH-SIDE POWER SW.

USB TO DEVICE

USB TO HOST

OR

OR

DECODER

DECODER

DAC

OP AMP

REGULATOR +3.3V

REGULATOR +1.8V

AND GATE

28CC1-2001092347 ⚠1

61H-MK (C4~C6)

28CC1-8822437

61L-MK (C1~B3)

28CC1-8822436

XX : Not installed

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

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

PNC

28CC1-2001092348

PNR

28CC1-2001092349 ⚠1

PNL

28CC1-2001092348

TW

SPEAKER R TWEETER

28CC1-2001092348

TW

SPEAKER L TWEETER

28CC1-2001092348

PNP

STANDBY/ON

PORTAMENTO

28CC1-2001092348

PB

PITCH BEND

28CC1-2001092348

MV

MASTER VOLUME

28CC1-2001092348

to BACK LIGHT ASSEMBLY

AMJK

REGULATOR +5V

12V ⎓ AC adaptor PA-150A

EXP. PEDAL

SUSTAIN

7W+7W DUAL BRIDGE AMPLIFIER

OP AMP

PHONES/OUTPUT

SPEAKER L WOOFER

SPEAKER R WOOFER

28CC1-2001092346 ⚠2