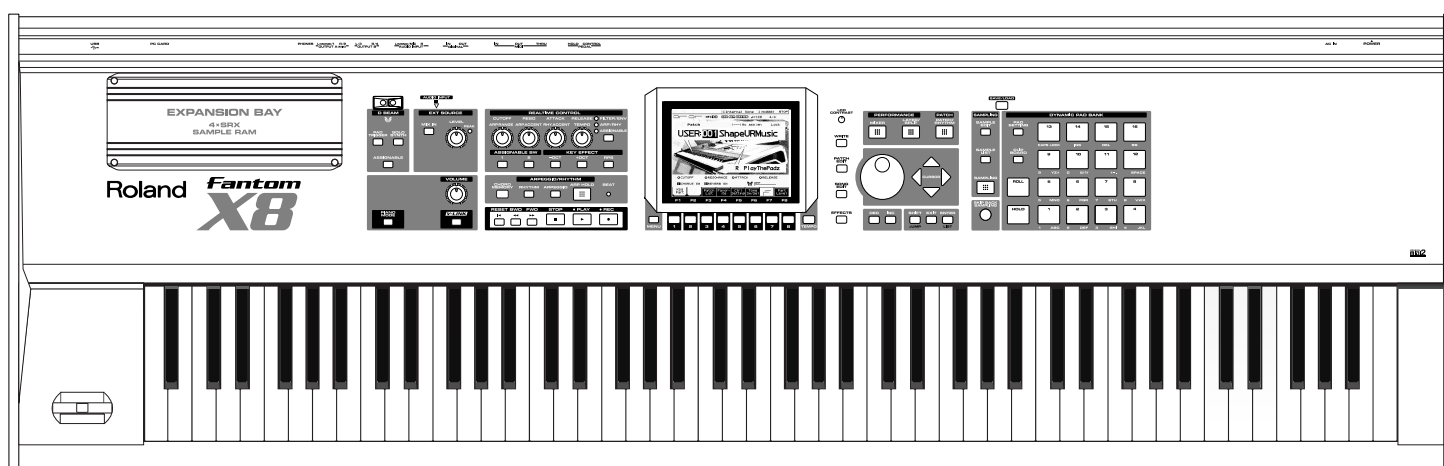


# Fantom X8

## SERVICE NOTES Issued by RJA

### TABLE OF CONTENTS

|                                                          |    |                                                                        |    |
|----------------------------------------------------------|----|------------------------------------------------------------------------|----|
| SPECIFICATIONS.....                                      | 2  | CIRCUIT BOARD(LCD, INVERTER, JACK,<br>PANEL-C KEYTOP, INLET, AFT)..... | 56 |
| LOCATION OF CONTROLS .....                               | 4  | CIRCUIT BOARD(LCD, INVERTER, JACK,<br>PANEL-C KEYTOP, INLET, AFT)..... | 58 |
| LOCATION OF CONTROLS PARTS LIST .....                    | 6  | CIRCUIT DIAGRAM(JACK 1) .....                                          | 60 |
| EXPLODED VIEW .....                                      | 8  | CIRCUIT DIAGRAM(JACK 2) .....                                          | 62 |
| EXPLODED VIEW PARTS LIST .....                           | 11 | CIRCUIT DIAGRAM(JACK 3) .....                                          | 64 |
| WIRING DIAGRAM.....                                      | 12 | CIRCUIT DIAGRAM(JACK 4) .....                                          | 66 |
| PARTS LIST.....                                          | 14 | CIRCUIT DIAGRAM(JACK 5) .....                                          | 68 |
| MAIN BOARD SETTING FOR SELECTING MODEL<br>PROCEDURE..... | 24 | CIRCUIT DIAGRAM(PANEL-C KEYTOP) .....                                  | 70 |
| CHECKING THE VERSION NUMBER.....                         | 24 | CIRCUIT DIAGRAM(LCD).....                                              | 72 |
| USERS DATA SAVE AND LOAD.....                            | 25 | CIRCUIT DIAGRAM(INVERTER).....                                         | 73 |
| TEST MODE.....                                           | 25 | CIRCUIT DIAGRAM(INLET) .....                                           | 73 |
| RESTORING THE FACTORY SETTINGS.....                      | 33 | CIRCUIT DIAGRAM(AFTER) .....                                           | 73 |
| SYSTEM SOFTWARE UPDATE PROCEDURE .....                   | 33 | CIRCUIT BOARD(EXP BASE) .....                                          | 74 |
| KEYBOARD PARTS LIST .....                                | 36 | CIRCUIT DIAGRAM(EXP BASE).....                                         | 76 |
| BLOCK DIAGRAM.....                                       | 38 | CIRCUIT BOARD(PC CARD 1).....                                          | 78 |
| CIRCUIT BOARD(MAIN 1) .....                              | 40 | CIRCUIT BOARD(PC CARD 2).....                                          | 78 |
| CIRCUIT BOARD(MAIN 2) .....                              | 41 | CIRCUIT DIAGRAM(PC CARD) .....                                         | 79 |
| CIRCUIT DIAGRAM(MAIN 1).....                             | 42 | ERROR MESSAGES.....                                                    | 80 |
| CIRCUIT DIAGRAM(MAIN 2).....                             | 44 |                                                                        |    |
| CIRCUIT DIAGRAM(MAIN 3).....                             | 46 |                                                                        |    |
| CIRCUIT DIAGRAM(MAIN 4).....                             | 48 |                                                                        |    |
| CIRCUIT DIAGRAM(MAIN 5).....                             | 50 |                                                                        |    |
| CIRCUIT BOARD(PANEL-A KEYTOP,<br>PANEL-B KEYTOP).....    | 52 |                                                                        |    |
| CIRCUIT DIAGRAM(PANEL-A KEYTOP,<br>PANEL-B KEYTOP).....  | 54 |                                                                        |    |



**Copyright © 2004 ROLAND CORPORATION**

All rights reserved. No part of this publication may be reproduced in any form without the written permission of ROLAND CORPORATION.

# SPECIFICATIONS

Fantom-X8:  
Synthesizer Keyboard (Conforms to General MIDI 2 System)

## Keyboard

88 keys (Progressive Hammer action Mechanism and channel aftertouch)

## Sound Generator Section

### Maximum Polyphony

128 voices (shared with the sampling section)

### Parts

16 parts

### Wave Memory

128 M bytes (16-bit linear equivalent)

### Waveforms

1,480

### Preset Memory

Patches: 1,024 + 256 (GM2)  
Rhythm Sets: 40 + 9 (GM2)  
Performances: 64

### User Memory

Patches: 256  
Rhythm Sets: 32  
Performances: 64

### Card Memory (PC card)

Patches: 256  
Rhythm Sets: 32  
Performances: 64

### Effects

Multi-Effects: 3 systems, 78 types  
Chorus: 3 types  
Reverb: 5 types  
Input Effects: 6 types  
Mastering Effects: 3-band compressor

## Sampling Section

### Data Format

16-bit linear (File Type: .WAV / .AIFF)

### Sampling Frequency

44.1 kHz (fixed)

### Maximum Sampling Time

- When sampling memory isn't expanded (32 MB)  
mono: 360 sec. approx., stereo: 180 sec. approx.
- When sampling memory is expanded with DIMM (544 MB)  
mono: 108 min. approx., stereo: 54 min. approx.

### Number of Samples

User memory: 2,000 (maximum total approximately 32 MB)  
Card memory: 7,000 (PC card)

## Sequencer Section

### Tracks

Phrase tracks (16 MIDI channels per track): 16  
Tempo track: 1  
Beat track: 1

### Patterns

100

### Resolution

480 TPQN

### Tempo

5-300

### Note Capacity

approx. 400,000 notes

### Song Length

9,998 measures

### Recording Method

Realtime recording, Step recording

## Others

### Arpeggio

Preset: 128  
User: 128

### Rhythm Pattern

Preset: 256 (32 groups)  
User: 256 (32 groups)

## Chord Memory

Preset: 64  
User: 64

## Display

Graphic 320 x 240 dots backlit LCD (Color)

## Pads

16 pads, Velocity and Aftertouch sensitive

## Controllers

Pitch Bend/Modulation Lever  
Control Knob x 4  
Assignable Switch x 2  
D Beam Controller

## Connectors

Headphones Jack  
A (MIX) Output Jacks (L/MONO, R): 1/4 inch TRS phone type  
B Output Jacks (L, R): 1/4 inch phone type  
Input Jacks (L/MONO/MIC, R): 1/4 inch phone type  
Hold Pedal Jack (Half Pedal recognition)  
Control Pedal Jack (assignable)  
MIDI Connectors (IN, OUT, THRU)  
USB Connector (supports file transfer (mass storage class) and MIDI)  
Digital Audio Interface (COAXIAL INPUT/OUTPUT)  
AC Inlet

## Expansion Slots

- Expansion of waveforms and patches for the internal sound generator  
SRX expansion boards: 4 slots
- Expansion of sampling memory  
DIMM: 1 slot (supports 128 MB, 256 MB, 512 MB (3.3 V))

## External Storage Device

PC card: 1 slot (supports SmartMedia and CompactFlash using a PC card adapter)

## Power Supply

AC 117 V, AC 230 V, AC 240 V (50/60 Hz)  
AC 220 V (60 Hz)

## Power Consumption

17 W

## Dimensions

1,408 (W) 455 (D) x 165 (H) mm  
55-7/16 (W) x 17-15/16 (D) x 6-1/2 (H) inches

## Weight

29.5 kg / 65 lbs 1 oz

## Accessories

Owner's Manual  
English:(#72564812)  
Japanese:(#72564078)  
Sample Data (Audio) CD:(#\*\*\*\*\*)

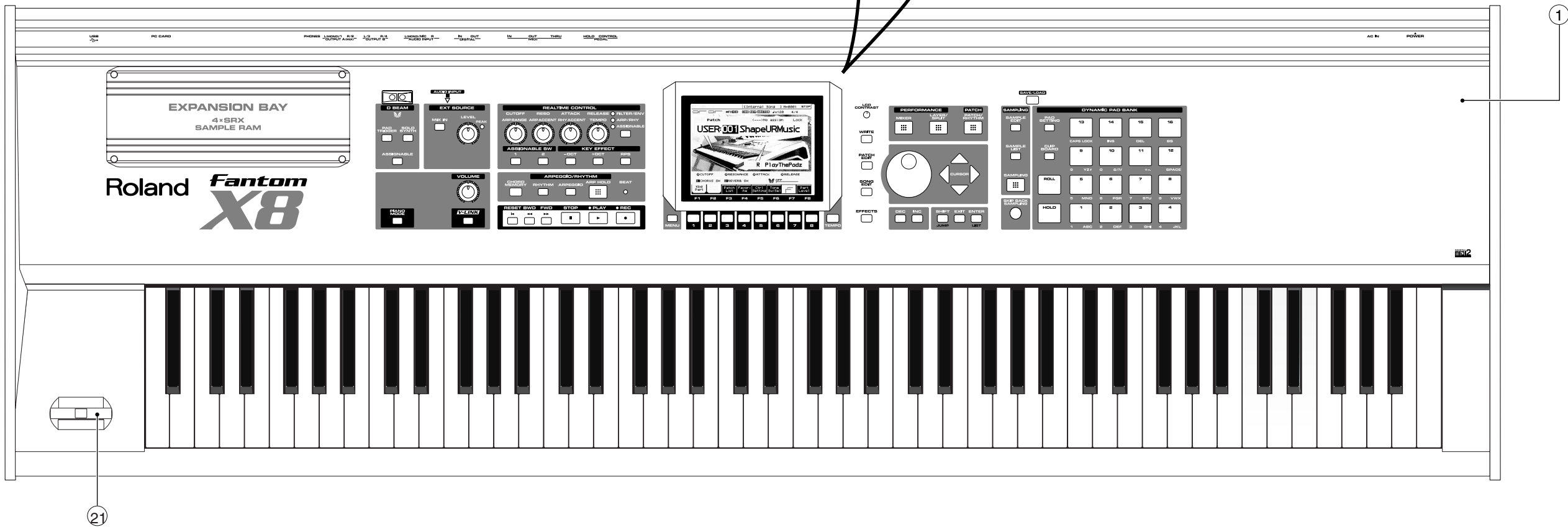
CD-ROM (Editor, USB MIDI driver):(#03569745)  
Sticker:(#40565990)  
HEXAGON WRENCH (2.5MM):(#03236623)  
PC Card Protector:(#03120712)  
Power Cord  
100V:(#03340956)  
120V:(#00894378)  
230V:(#00894389)  
240VA:(#23495124)  
240VE:(#00907001)

## Options

Wave Expansion Board: SRX Series  
Keyboard Stand: [X6] [X7] KS-12 / [X8] KS-17  
Pedal Switch: DP series  
Foot Switch: BOSS FS-5U  
Expression Pedal: EV-5

\* *In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.*

**[REAR]**



# LOCATION OF CONTROLS PARTS LIST

## [TOP]

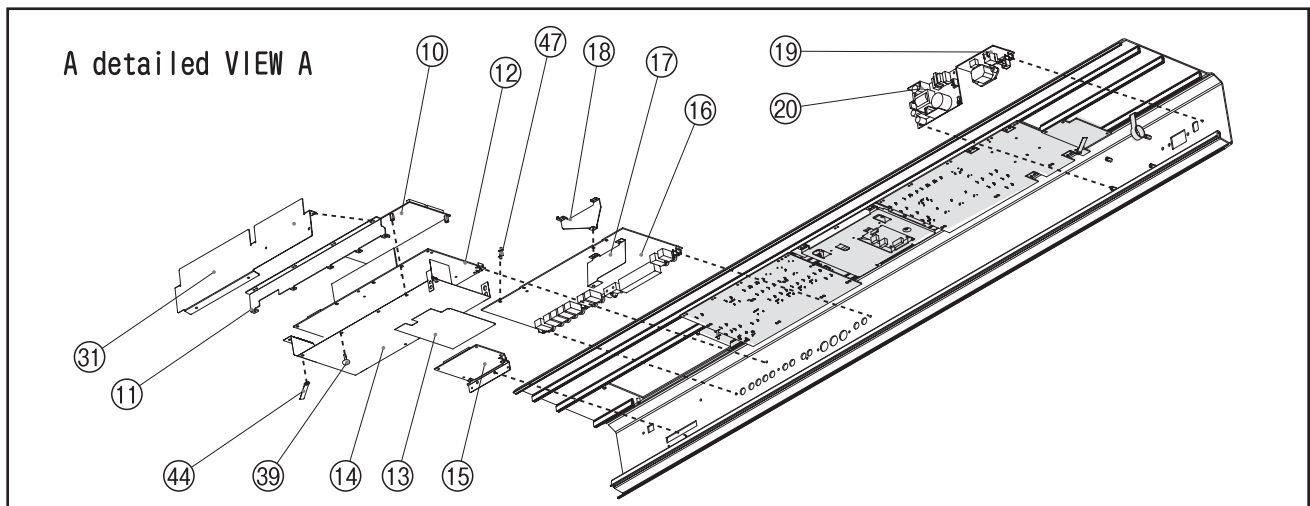
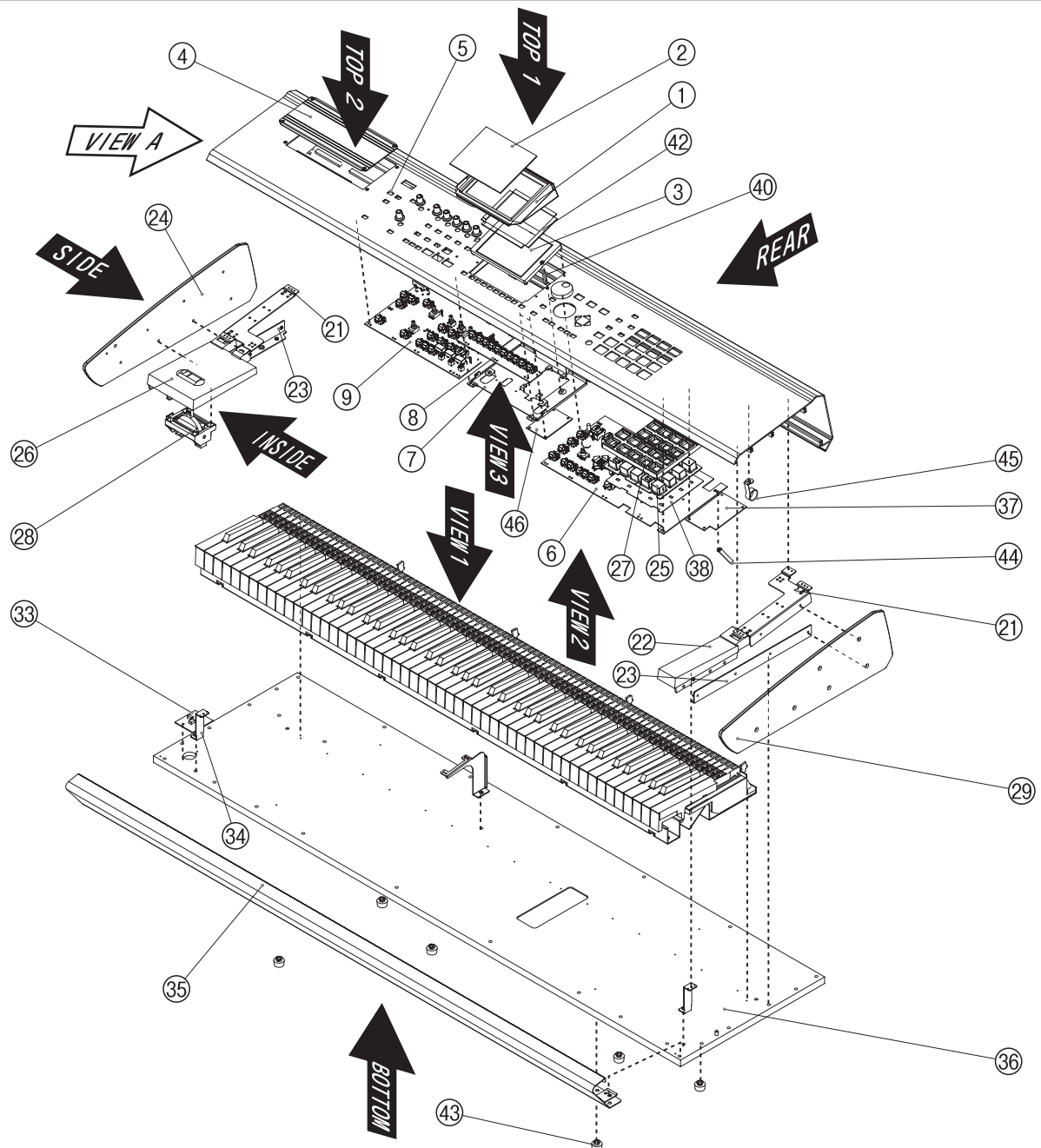
| NO | PART CODE | CATEGORY          | PART NAME                  | DESCRIPTION                | Q'TY |
|----|-----------|-------------------|----------------------------|----------------------------|------|
| 1  | 03562478  | CASING            | TOP PANEL                  |                            | 1    |
| 2  | 03562112  | CASING            | DISPLAY COVER              |                            | 1    |
| 2  | 03560889  | DISPLAY UNIT      | LCD                        | KCG057QV1DB-G00            | 1    |
| 3  | 03565245  |                   | DISPLAY ESCT               |                            |      |
| 3  | 03565234  | KNOB,BUTTON       | J R-KNOB                   | SF-ELA BLK/SLV             | 2    |
| 4  | 03126167  | POTENTIOMETER     | 12M/M ROTARY POTENTIOMETER | EVJY10FB6A24               | 2    |
| 4  | 03565234  | KNOB,BUTTON       | J R-KNOB                   | SF-ELA BLK/SLV             | 4    |
| 4  | 03126178  | POTENTIOMETER     | 9M/M ROTARY POTENTIOMETER  | EVUF2JFK3B14               | 4    |
| 5  | 22485303  | KNOB,BUTTON       | D R-KNOB(ALPHA-DIAL)       | L BLK 248-303              | 1    |
| 5  | 01905467  | ENCODER           | ROTARY ENCODER             | EVE GC1 F20 24B            | 1    |
| 6  | 01343089  | CASING            | ESCUTCHEON                 | D-BEAM CONTROLLER ESCT BLK | 1    |
| 7  | 01900612  | DIODE             | DIODE                      | TPS611                     | 1    |
| 7  | 12169368  | MISCELLANEOUS     | LED SPACER                 | LDS-40B                    | 1    |
| 8  | 03126134  | DIODE             | LED                        | TLN233                     | 1    |
| 8  | 02230578  | MISCELLANEOUS     | LED SPACER                 | LDS-50R                    | 1    |
| 9  | 03120890  | KNOB,BUTTON       | D S-KEYTOP                 | SX1H-B GRS                 | 18   |
| 9  | 02125167  | DIODE             | LED (YELLOW)               | SLI-343DCT32W              | 18   |
| 9  | 01340290  | SWITCH            | TACT SWITCH                | EVQ11A H=5.0               | 18   |
| 10 | 01011656  | DIODE             | LED (RED)                  | SLR-332VR3F                | 5    |
| 10 | 12169406  | MISCELLANEOUS     | LED SPACER                 |                            | 5    |
| 11 | 03120890  | KNOB,BUTTON       | D S-KEYTOP                 | SX1H-B GRS                 | 1    |
| 11 | 03122112  | DIODE             | LED(BLUE)                  | SLR-343BBT3F               | 1    |
| 11 | 01340290  | SWITCH            | TACT SWITCH                | EVQ11A H=5.0               | 1    |
| 12 | 03120890  | KNOB,BUTTON       | D S-KEYTOP                 | SX1H-B GRS                 | 9    |
| 12 | 01340290  | SWITCH            | TACT SWITCH                | EVQ11A H=5.0               | 9    |
| 13 | 03120889  | KNOB,BUTTON       | D S-KEYTOP                 | SX2H-B GRS                 | 7    |
| 13 | 01340290  | SWITCH            | TACT SWITCH                | EVQ11A H=5.0               | 14   |
| 14 | 03565190  | KNOB,BUTTON       | KEYTOP STOP                |                            | 1    |
| 14 | 00894645  | SWITCH            | TACT SWITCH                | SKECAF WITHOUT LED         | 1    |
| 15 | 00894645  | SWITCH            | TACT SWITCH                | SKECAF WITHOUT LED         | 1    |
| 15 | 03565212  | KNOB,BUTTON       | KEYTOP PLAY                |                            | 1    |
| 16 | 00894645  | SWITCH            | TACT SWITCH                | SKECAF WITHOUT LED         | 1    |
| 16 | 03565223  | KNOB,BUTTON       | KEYTOP REC                 |                            | 1    |
| 17 | 01012078  | DIODE             | LED (GREEN)                | SLR-332MG3F                | 1    |
| 17 | 12169406  | MISCELLANEOUS     | LED SPACER                 |                            | 1    |
| 18 | 01783923  | KNOB,BUTTON       | N S-KEYTOP                 | MD1H                       | 5    |
| 18 | 02894090  | DIODE             | LED (ORNG)                 | SLR-343DUT32               | 5    |
| 19 | 01455901  | MISCELLANEOUS     | LED SPACER                 | LH-36-9                    | 1    |
| 19 | 00127367  | DIODE             | LED (RED)/GREEN)           | SPR-39MVW                  | 1    |
| 20 | 03562256  | POTENTIOMETER     | ROTARY POTENTIOMETER       | EVUF2AE20B14               | 1    |
| 21 | 03234723  | POWER SUPPLY UNIT | BENDER                     | PB-H0204                   | 1    |
| 22 | 01234090  | KNOB,BUTTON       | D T-KEYTOP                 | MX4B BLK                   | 1    |
| 22 | 01340290  | SWITCH            | TACT SWITCH                | EVQ11A H=5.0               | 4    |
| 23 | 02013090  | KNOB,BUTTON       | F C-KEYTOP                 | MX1H CLR                   | 1    |
| 23 | 03122112  | DIODE             | LED(BLUE)                  | SLR-343BBT3F               | 1    |
| 23 | 01340290  | SWITCH            | TACT SWITCH                | EVQ11A H=5.0               | 1    |
| 24 | 03562145  | KNOB,BUTTON       | RUBBER SW                  |                            | 1    |
| 24 | 03122067  | CASING            | RUBBER SW ESCT             |                            | 1    |
| 24 | 03128767  | PICK UP,SENSOR    | PRESSURE SENSOR SHEET      |                            | 1    |

## [REAR]

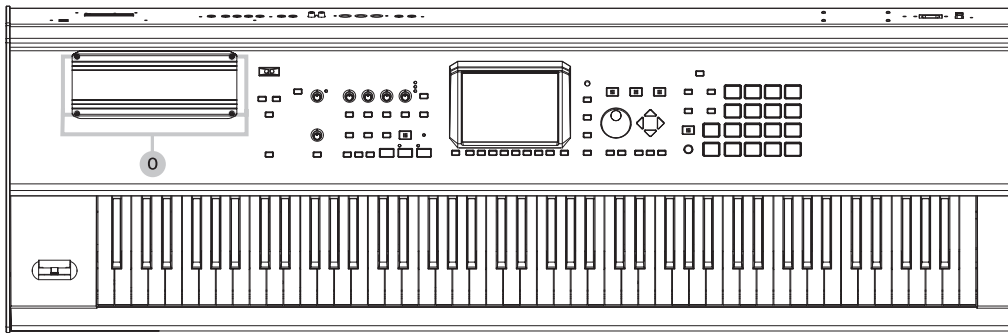
| NO                                                                          | PART CODE | CATEGORY          | PART NAME          | DESCRIPTION     | Q'TY |
|-----------------------------------------------------------------------------|-----------|-------------------|--------------------|-----------------|------|
| 25                                                                          | 72568467  | CASING            | BOTTOM COVER ASSY  |                 | 1    |
| 26                                                                          | 32490595  | KNOB,BUTTON       | P S-KEY            | MX BLK          | 1    |
| 26                                                                          | *****     | SWITCH            | PUSH SWITCH        |                 | 1    |
| 27                                                                          | *****     | AC INLET, OUTLET  | AC INLET           |                 | 1    |
| When you order the above parts, please order the 72564312 INLET BOARD ASSY. |           |                   |                    |                 |      |
| 28                                                                          | 03562156  | CASING            | PC CARD ESCUTCHEON | BLK             | 1    |
| 28                                                                          | 02900867  | JACK,EXT TERMINAL | CARD EJECTOR       | SCAB1A5600      | 1    |
| 29                                                                          | 02781189  | JACK,EXT TERMINAL | USB CONNECTOR      | YKF45-0021      | 1    |
| 30                                                                          | 13449275  | JACK,EXT TERMINAL | 6.5MM JACK         | YKB21-5074      | 2    |
| 31                                                                          | 13429274  | JACK,EXT TERMINAL | MIDI SOCKET        | YKF51-5041      | 1    |
| 32                                                                          | 03231812  | JACK,EXT TERMINAL | RCA(PIN)           | YKC21-4173      | 1    |
| 33                                                                          | 13449283  | JACK,EXT TERMINAL | 6.5MM JACK         | HLJ7101-01-3010 | 4    |
| 34                                                                          | 13449258  | JACK,EXT TERMINAL | 6.5MM JACK         | HLJ4306-01-3080 | 1    |
| 35                                                                          | 13449284  | JACK,EXT TERMINAL | 6.5MM JACK         | HLJ7001-01-3010 | 2    |



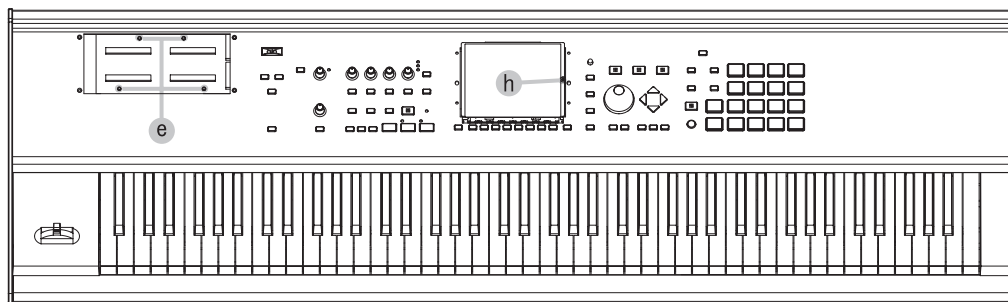
# EXPLODED VIEW



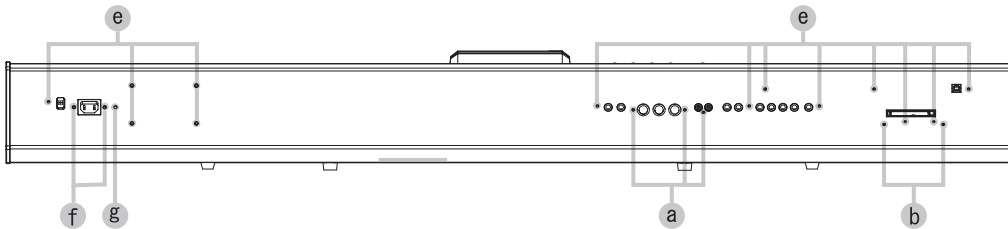
TOP 1



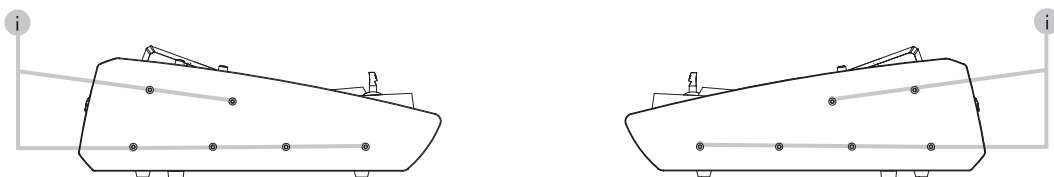
TOP 2



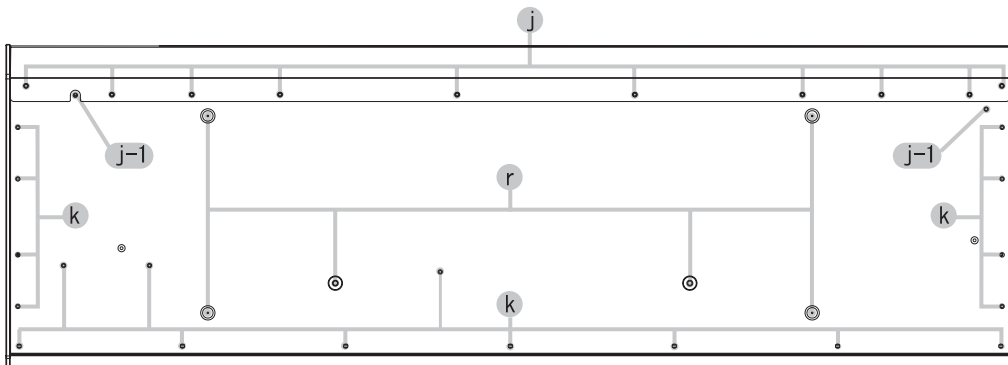
REAR



SIDE

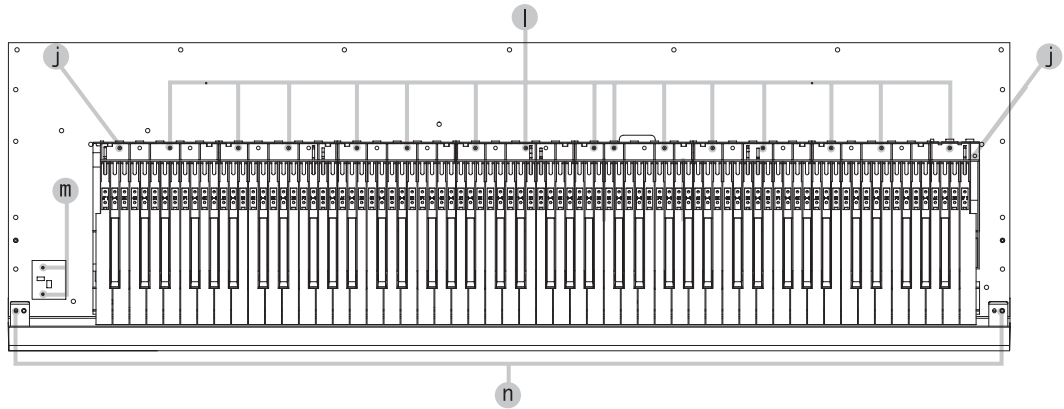


REAR

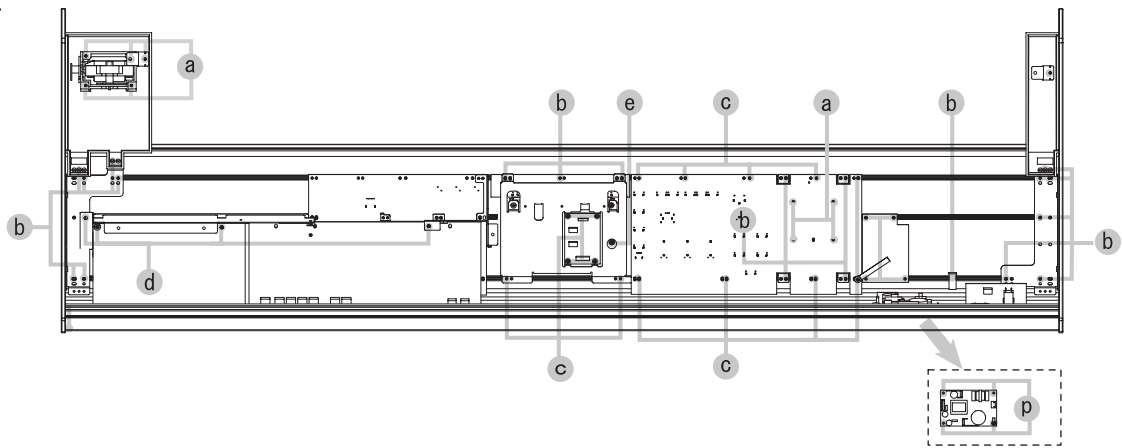


※ You can remove the TOP COVER, when you remove the SCREW k and j-1.

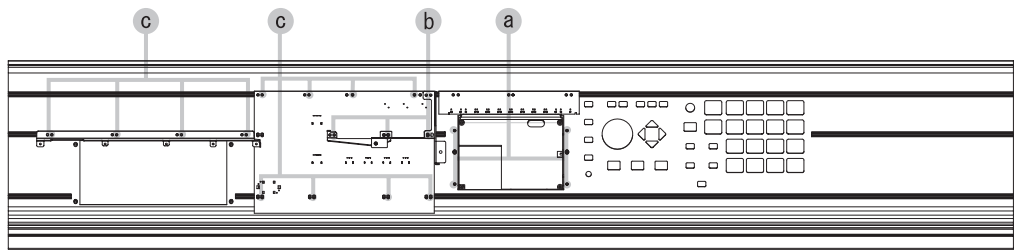
VIEW 1



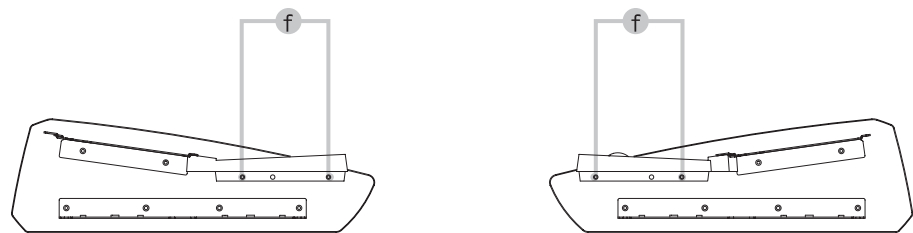
VIEW 2



VIEW 3



INSIDE



# EXPLODED VIEW PARTS LIST

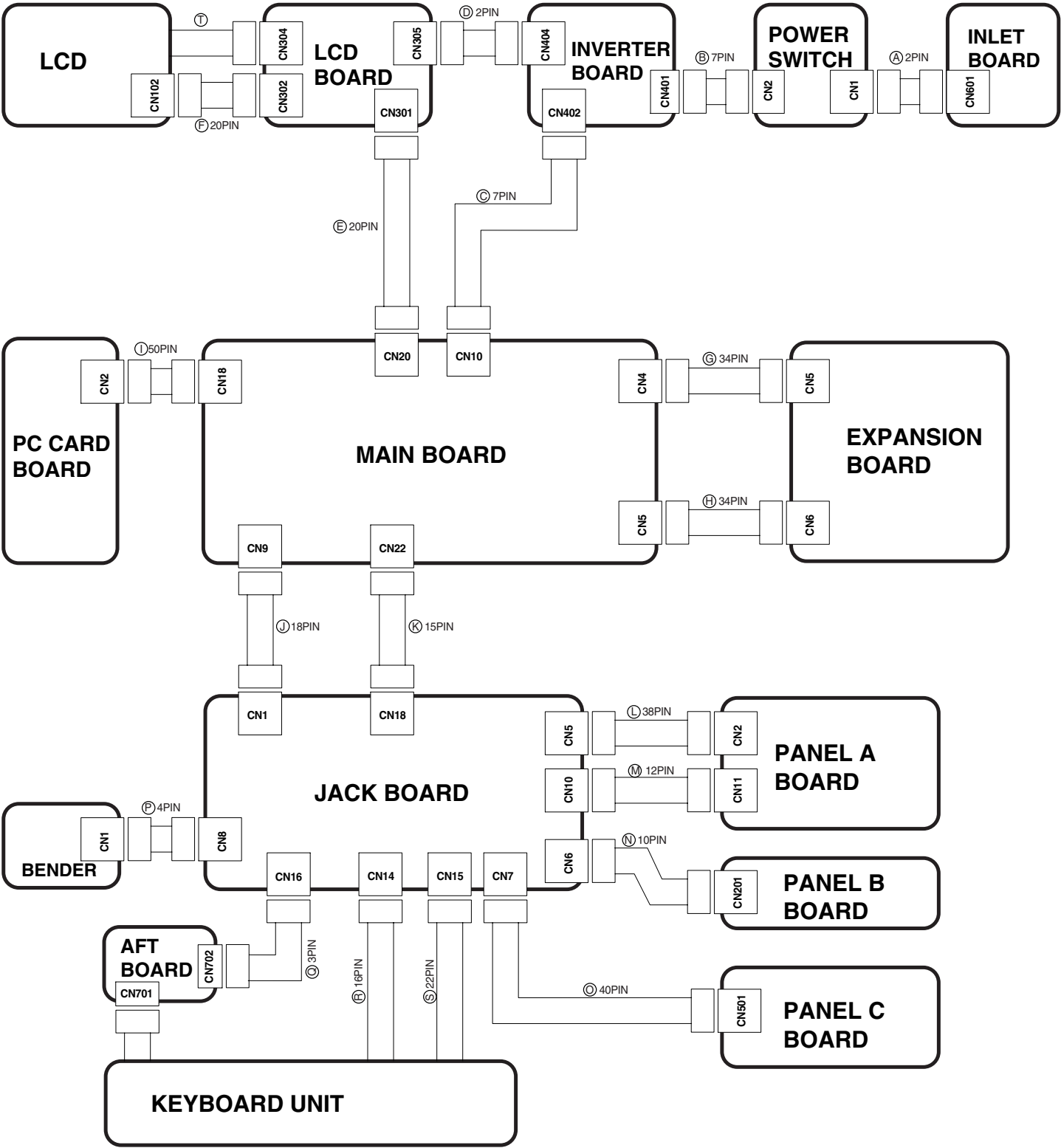
## [PARTS]

| No                                                                                                                                              | PART CODE | CATEGORY          | Part name                    | Description     | Q'TY |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|------------------------------|-----------------|------|
| 1                                                                                                                                               | 03565245  | CASING            | DISPLAY ESCT                 |                 | 1    |
| 2                                                                                                                                               | 03562112  | CASING            | DISPLAY COVER                |                 | 1    |
| 3                                                                                                                                               | 03560889  | DISPLAY UNIT      | LCD                          | KCG057QV1DB-G00 | 1    |
| 4                                                                                                                                               | 03562456  | CASING            | EXP COVER                    |                 | 1    |
| 5                                                                                                                                               | 03562478  | CASING            | TOP PANEL                    |                 | 1    |
| 6                                                                                                                                               | 72564334  | PWB ASSY          | PANEL-C KEYTOP ASSY          |                 | 1    |
| 7                                                                                                                                               | 03562467  | CHASSIS           | DISPLAY HOLDER               |                 | 1    |
| 8                                                                                                                                               | 72564278  | PWB ASSY          | PANEL-B KEYTOP ASSY          |                 | 1    |
| 9                                                                                                                                               | 72564256  | PWB ASSY          | PANEL-A KEYTOP ASSY          |                 | 1    |
| 10                                                                                                                                              | 72235090  | PWB ASSY          | EXP BASE BOARD ASSY          |                 | 1    |
| 11                                                                                                                                              | 03230067  | CHASSIS           | PWB HOLDER MAIN              |                 | 1    |
| 12                                                                                                                                              | 72564734  | PWB ASSY          | MAIN BOARD ASSY              |                 | 1    |
| NOTE:When you replace the MAIN BOARD ASSY for repairing, be sure to perform the "MAIN BOARD SETTING FOR SELECTING MODEL PROCEDURE"(to see P24). |           |                   |                              |                 |      |
| In addition, we supply the MAIN BOARD ASSY of FANTOM-X6 setting for spare parts.                                                                |           |                   |                              |                 |      |
| 13                                                                                                                                              | 03670345  | MISCELLANEOUS     | INSULATING SHEET             |                 | 1    |
| 14                                                                                                                                              | 03670323  | MISCELLANEOUS     | SHIELD SHEET MAIN            |                 | 1    |
| 15                                                                                                                                              | 72564245  | PWB ASSY          | PC CARD BOARD ASSY           |                 | 1    |
| 16                                                                                                                                              | 72565112  | PWB ASSY          | JACK BOARD ASSY              |                 | 1    |
| 17                                                                                                                                              | 03670334  | MISCELLANEOUS     | SHIELD SHEET JACK            |                 | 1    |
| 18                                                                                                                                              | 03230078  | CHASSIS           | PWB HOLDER JACK              |                 | 1    |
| 19                                                                                                                                              | 01785823  | POWER SUPPLY UNIT | SWITCHING REGULATOR          | A1DU2L3B034     | 1    |
| 20                                                                                                                                              | 72564312  | PWB ASSY          | INLET BOARD ASSY             |                 | 1    |
| 21                                                                                                                                              | 03230045  | CHASSIS           | PANEL ANGLE                  |                 | 2    |
| 22                                                                                                                                              | 00788912  | CASING            | END BLOCK R                  |                 | 1    |
| 23                                                                                                                                              | 03230034  | CASING            | SIDE ANGLE                   |                 | 2    |
| 24                                                                                                                                              | 03128289  | CASING            | SIDE PANEL L                 |                 | 1    |
| 25                                                                                                                                              | 03562145  | KNOB,BUTTON       | RUBBER SW                    |                 | 1    |
| 26                                                                                                                                              | 00788901  | CASING            | END BLOCK L                  |                 | 1    |
| 27                                                                                                                                              | 03122067  | CASING            | RUBBER SW ESCT               |                 | 1    |
| 28                                                                                                                                              | 03234723  | BENDER UNIT       | BENDER                       | PB-H0204        | 1    |
| 29                                                                                                                                              | 03128290  | CASING            | SIDE PANEL R                 |                 | 1    |
| 30                                                                                                                                              | 72349667  | KEYBOARD ASSY     | KEYBOARD-AFT ASSY            | PA-588-F        | 1    |
| 31                                                                                                                                              | 03236401  | CHASSIS           | MAIN BOARD HOLDER            |                 | 1    |
| 32                                                                                                                                              | 03234878  | CHASSIS           | STAY                         |                 | 1    |
| 33                                                                                                                                              | 72565089  | PWB ASSY          | AFT BOARD ASSY               |                 | 1    |
| 34                                                                                                                                              | 03230056  | CHASSIS           | END BLOCK HOLDER             |                 | 2    |
| 35                                                                                                                                              | 03230023  | CASING            | BLIND                        |                 | 1    |
| 36                                                                                                                                              | 72568467  | CASING            | BOTTOM BOARD                 |                 | 1    |
| 37                                                                                                                                              | 72565490  | PWB ASSY          | INVERTER BOARD ASSY          |                 | 1    |
| 38                                                                                                                                              | 03128767  | PICK UP,SENSOR    | PRESSURE SENSOR SHEET        |                 | 1    |
| 39                                                                                                                                              | 40016589  | MISCELLANEOUS     | NYLON RIVET                  | NRP-335         | 1    |
| 40                                                                                                                                              | 03670734  | MISCELLANEOUS     | SPACER M3X20                 | HEX             | 1    |
| 41                                                                                                                                              | 00670734  | MISCELLANEOUS     | PWB SPACER                   | WLS-12-0        | 1    |
| 42                                                                                                                                              | 03567790  | CASING            | DISPLAY CUSHION              |                 | 4    |
| 43                                                                                                                                              | 12359105  | MISCELLANEOUS     | RUBBER FOOT W                | RS-09 235-105   | 6    |
| 44                                                                                                                                              | 40120967  | MISCELLANEOUS     | COATING CLIP                 | CS-3            | 3    |
| 45                                                                                                                                              | 40016545  | MISCELLANEOUS     | LOCKING TOOL FOR INSULOK TIE | SKM-1           | 1    |
| 46                                                                                                                                              | 72567756  | PWB ASSY          | LCD BOARD ASSY               |                 | 1    |
| 47                                                                                                                                              | 01902756  | MISCELLANEOUS     | PWB SPACER                   | RSPS-12L        | 4    |

## [SCREWS]

| No     | PART CODE | Part name     | Description                   | Q'TY |
|--------|-----------|---------------|-------------------------------|------|
| a      | 40011312  | SCREW 3X8     | BINDING TAPTITE P BZC         | 19   |
| b      | 40011101  | SCREW 3X8     | BINDING TAPTITE B BZC         | 32   |
| c      | 40011056  | SCREW 3X6     | BINDING TAPTITE B ZC          | 29   |
| d      | 40013690  | SCREW M3X8    | VWH TAPTITE B ZC              | 6    |
| e      | 40011490  | SCREW M3X6    | PAN MACHINE W/SW BZC          | 22   |
| f      | 40011123  | SCREW 4X8     | BINDING TAPTITE B BZC         | 6    |
| g      | 40010345  | SCREW M4X10   | BINDING MACHINE FE BZC        | 1    |
| h      | 40013078  | SCREW M3X10   | PAN MACHINE W/SW FE ZC        | 1    |
| i      | 40346289  | SCREW 4X12    | OVAL HEAD TAPTITE B NI        | 12   |
| j, j-1 | 40013023  | SCREW M4X25   | PAN HEAD DOUBLE SEMS FE BZC   | 10   |
| k      | 40128512  | SCREW 4X25X20 | PAN WASHER HEAD TAPTITE B BZC | 20   |
| l      | 40346201  | SCREW 4X20    | TRUSS TAPPING TWIN BZC        | 15   |
| m      | 40010734  | SCREW 3X12    | BINDING HEAD TAPPING A1 FE ZC | 2    |
| n      | 40012145  | SCREW 4X14    | TRUSS TAPPING A BZC           | 2    |
| o      | 40561190  | SCREW M3X10   | HEX SOCKET HEAD SPW NI        | 4    |
| p      | 40017934  | SCREW M3X6    | PAN MACHINE W/SW+PW FE ZC     | 4    |
| q      | 22150501  | STAND OFF     | M3 L10C                       | 4    |
| r      | 40010745  | SCREW 3X16    | BINDING HEAD TAPPING A1 FEZC  | 6    |

WIRING DIAGRAM



| NO | PART CODE | PART NAME | DESCRIPTION            | NO | PART CODE                             | PART NAME    | DESCRIPTION           |
|----|-----------|-----------|------------------------|----|---------------------------------------|--------------|-----------------------|
| A. | 03120801  | WIRING W3 |                        | J. | 03234689                              | BAN CARD     | BNCD-P=1.00-K-18-650  |
| B. | 03565034  | WIRING W3 |                        | K. | 03565023                              | WIRING W2    |                       |
| C. | 03234667  | WIRING W1 |                        | L. | 03236423                              | BAN CARD     | BNCD-P=1.00-K-38-450  |
| D. | 03564923  | WIRING W1 |                        | M. | 02344034                              | WIRING       | 12X250-P2.0-PHR-PHR-F |
| E. | 03565356  | BAN CARD  | BNCD-P=0.50-K-20-700   | N. | 03129301                              | BAN CARD     | BNCD-P=1.00-K-10-400  |
| F. | 03565367  | BAN CARD  | BNCD-P=0.50-K-20-60    | O. | 03236412                              | BAN CARD     | BNCD-P=1.00-K-40-550  |
| G. | 03129323  | BAN CARD  | BNCD-P=1.00-K-34-60    | P. | 02342067                              | WIRING       | 4X450-P2.0-PHR-PHR-F  |
| H. | 03129323  | BAN CARD  | BNCD-P=1.00-K-34-60    | Q. | 03234712                              | RIBBON CABLE | JWFFV 3X850-P2.0      |
| I. | 03565345  | BAN CARD  | BNCD-S-P=0.50-K-50-220 | R. | 02565078                              | BAN CARD     | BNCD-P=1.25-K-16-700  |
|    |           |           |                        | S. | 02565089                              | BAN CARD     | BNCD-P=1.25-K-22-650  |
|    |           |           |                        | T. | This wiring is included the LCD UNIT. |              |                       |



PARTS LIST

**SAFETY PRECAUTIONS:**  
The parts marked  have safety-related characteristics. Use only listed parts for replacement.

**CONSIDERATION ON PARTS ORDRING**  
When ordering any parts listed in the parts list, please specify the following items in the order sheet.

|     | QTY | PART NUMBER | DESCRIPTION   | MODEL NUMBER |
|-----|-----|-------------|---------------|--------------|
| Ex. | 10  | 22575241    | Sharp Key     | C-20/50      |
|     | 15  | 2247017300  | Knob (orange) | DAC-15D      |

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

NOTE: The parts marked # are new. (initial parts)

|                    |                                                    |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
|--------------------|----------------------------------------------------|---------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| CASING             |                                                    |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
| #                  | 72568467                                           | BOTTOM BOARD              |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | NOTE: 'BOTTOM BOARD' includes the following parts. |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
|                    | 12359105                                           | RUBBER FOOT W             | RS-09 235-105      |                                                                                                                                                                                                                                                                                                                                                                                           | 6                |
|                    | *****                                              | WOOD ANCHOR NUT B M4X11.5 | BZC                |                                                                                                                                                                                                                                                                                                                                                                                           | 2                |
|                    | *****                                              | STRAIGHT PIN 6X20         | FOR WOOD           |                                                                                                                                                                                                                                                                                                                                                                                           | 2                |
|                    | 03230023                                           | BLIND                     |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03567790                                           | DISPLAY CUSHION           |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 4                |
|                    | 03562112                                           | DISPLAY COVER             |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
| #                  | 03562456                                           | EXP COVER                 |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03565245                                           | DISPLAY ESCT              |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03122067                                           | RUBBER SW ESCT            |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
| #                  | 03562478                                           | TOP PANEL                 |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03230034                                           | SIDE ANGLE                |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 2                |
|                    | 00788912                                           | END BLOCK R               |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 00788901                                           | END BLOCK L               |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03128290                                           | SIDE PANEL R              |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03128289                                           | SIDE PANEL L              |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
| CHASSIS            |                                                    |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
| #                  | 03562467                                           | DISPLAY HOLDER            |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03230067                                           | PWB HOLDER MAIN           |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03230078                                           | PWB HOLDER JACK           |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03236401                                           | MAIN BOARD HOLDER         |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03234878                                           | STAY                      |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03230045                                           | PANEL ANGLE               |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 2                |
|                    | 03230056                                           | END BLOCK HOLDER          |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 2                |
| KNOB, BUTTON       |                                                    |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
|                    | 01234090                                           | D T-KEYTOP                | MX4B BLK           |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 32490595                                           | P S-KEY                   | MX BLK             |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03565234                                           | J R-KNOB                  | SF-ELA BLK /SLV    |                                                                                                                                                                                                                                                                                                                                                                                           | 6                |
|                    | 22485303                                           | D R-KNOB(ALPHA-DIAL)      | L BLK 248-303      |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 03562145                                           | RUBBER SW                 |                    |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
| SWITCH             |                                                    |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
|                    | 01340290                                           | TACT SWITCH               | EVQ11A H=5.0       | SW2,SW3,SW13,SW20,SW19,SW18,SW17,S<br>W16,SW1,SW14,SW4,SW12,SW11,SW10,S<br>W8,SW7,SW6,SW5,SW15 on PANEL-A<br>BOARD,<br>SW201,SW202,SW203,SW204,SW210,SW20<br>5,SW206,SW207,SW208,SW209 on PANEL-<br>B BOARD<br>,SW516,SW503,SW518,SW514,SW513,SW51<br>2,SW520,SW515,SW521,SW522,SW523,SW5<br>19,SW506,SW511,SW501,SW517,SW505,SW<br>507,SW508,SW509,SW510,SW502,SW504 on<br>PANEL-C BOARD | 10<br>+19<br>+23 |
|                    | 00894645                                           | TACT SWITCH               | SKECAF WITHOUT LED | SW21,SW23,SW22 on PANEL-A BOARD                                                                                                                                                                                                                                                                                                                                                           | 3                |
| JACK, EXT TERMINAL |                                                    |                           |                    |                                                                                                                                                                                                                                                                                                                                                                                           |                  |
|                    | 02781101                                           | USB CONNECTOR             | YKF45-0020         |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 02781189                                           | USB CONNECTOR             | YKF45-0021         | JK1 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                         | 1                |
|                    | 02900867                                           | CARD EJECTOR              | SCAB1A5600         |                                                                                                                                                                                                                                                                                                                                                                                           | 1                |
|                    | 02900834                                           | CARD CONECTR              | SCAA1A2300         | CN1 on PC CARD BOARD                                                                                                                                                                                                                                                                                                                                                                      | 1                |
|                    | 13429274                                           | MIDI SOCKET               | YKF51-5041         | JK1 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                         | 1                |
|                    | 03231812                                           | RCA(PIN)                  | YKC21-4173         | JK12 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                        | 1                |
|                    | 13449258                                           | 6.5MM JACK                | HLJ4306-01-3080    | JK7 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                         | 1                |
|                    | 13449275                                           | 6.5MM JACK                | YKB21-5074         | JK2,JK3 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                     | 2                |
|                    | 13449283                                           | 6.5MM JACK                | HLJ7101-01-3010    | JK8,JK11,JK9,JK10 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                           | 4                |
|                    | 13449284                                           | 6.5MM JACK                | HLJ7001-01-3010    | JK6,JK4 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                     | 2                |

|                   |                                                                                                                                                                                                                                     |                     |                             |    |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------|----|
| DISPLAY UNIT      |                                                                                                                                                                                                                                     |                     |                             |    |
|                   | 03560889                                                                                                                                                                                                                            | KCG057QV1DB-G00     | LCD                         | 1  |
|                   | NOTE: Replacement KCG057QV1DB-G00 should be made on a unit base.                                                                                                                                                                    |                     |                             |    |
| POWER SUPPLY UNIT |                                                                                                                                                                                                                                     |                     |                             |    |
| △                 | 01785823                                                                                                                                                                                                                            | A1DU2L3B034         | SWITCHING REGULATOR         | 1  |
|                   | NOTE: Replacement A1DU2L3B034 should be made on a unit base.                                                                                                                                                                        |                     |                             |    |
| BENDER UNIT       |                                                                                                                                                                                                                                     |                     |                             |    |
|                   | 03234723                                                                                                                                                                                                                            | PB-H0204            | BENDER                      | 1  |
|                   | NOTE: Replacement PB-H0204 should be made on a unit base.                                                                                                                                                                           |                     |                             |    |
| KEYBOARD ASSY     |                                                                                                                                                                                                                                     |                     |                             |    |
|                   | 72349667                                                                                                                                                                                                                            | PA-588-F            | KEYBOARD-AFT ASSY           | 1  |
|                   | NOTE: See 'KEYBOARD PARTS LIST' for details.                                                                                                                                                                                        |                     |                             |    |
| PCB ASSY          |                                                                                                                                                                                                                                     |                     |                             |    |
|                   | 72564734                                                                                                                                                                                                                            | MAIN BOARD ASSY     |                             | 1  |
|                   | NOTE: 'MAIN BOARD ASSY' includes the following parts.                                                                                                                                                                               |                     |                             |    |
|                   | 03670045                                                                                                                                                                                                                            | SHEET               | K4E(10)-55X15T15S           | 1  |
|                   | 03670034                                                                                                                                                                                                                            | SHEET               | K4E(10)-23X20T15S           | 1  |
|                   | NOTE: When you replace the MAIN BOARD ASSY for repairng, be sure to perform the "MAIN BOARD SETTING FOR SELECTING MODEL PROCEDURE"(to see P24).<br>In addition, we supply the MAIN BOARD ASSY of FANTOM-X6 setting for spare parts. |                     |                             |    |
|                   | 72235090                                                                                                                                                                                                                            | EXP BASE BOARD ASSY |                             | 1  |
|                   | NOTE: 'EXP BASE BOARD ASSY' includes the following parts.                                                                                                                                                                           |                     |                             |    |
|                   | 02019034                                                                                                                                                                                                                            | PWB SPACER          | RSPLS-12L                   | 4  |
|                   | 01902756                                                                                                                                                                                                                            | PWB SPACER          | RSPS-12L                    | 4  |
|                   | 72564278                                                                                                                                                                                                                            | PANEL-B KEYTOP ASSY |                             | 1  |
|                   | NOTE: 'PANEL-B KEYTOP ASSY' includes the following parts.                                                                                                                                                                           |                     |                             |    |
|                   | 03120889                                                                                                                                                                                                                            | D S-KEYTOP          | SX2H-B GRS                  | 4  |
|                   | 03120890                                                                                                                                                                                                                            | D S-KEYTOP          | SX1H-B GRS                  | 2  |
|                   | 72564256                                                                                                                                                                                                                            | PANEL-A KEYTOP ASSY |                             | 1  |
|                   | NOTE: 'PANEL-A KEYTOP ASSY' includes the following parts.                                                                                                                                                                           |                     |                             |    |
|                   | 01343089                                                                                                                                                                                                                            | ESCUTCHEON          | D-BEAM CONTROLLER ESCT BLK  | 1  |
|                   | 03565223                                                                                                                                                                                                                            | KEYTOP REC          |                             | 1  |
|                   | 03565212                                                                                                                                                                                                                            | KEYTOP PLAY         |                             | 1  |
|                   | 03565190                                                                                                                                                                                                                            | KEYTOP STOP         |                             | 1  |
|                   | 03120890                                                                                                                                                                                                                            | D S-KEYTOP          | SX1H-B GRS                  | 16 |
|                   | 03120889                                                                                                                                                                                                                            | D S-KEYTOP          | SX2H-B GRS                  | 1  |
|                   | 01783923                                                                                                                                                                                                                            | N S-KEYTOP          | MD1H                        | 1  |
|                   | 12169368                                                                                                                                                                                                                            | LED SPACER          | LDS-40B                     | 1  |
|                   | 12169406                                                                                                                                                                                                                            | LED SPACER          |                             | 6  |
|                   | 02230578                                                                                                                                                                                                                            | LED SPACER          | LDS-50R                     | 1  |
|                   | 01455901                                                                                                                                                                                                                            | LED SPACER          | LH-36-9                     | 1  |
|                   | 72564245                                                                                                                                                                                                                            | PC CARD BOARD ASSY  |                             | 1  |
|                   | NOTE: 'PC CARD BOARD ASSY' includes the following parts.                                                                                                                                                                            |                     |                             |    |
|                   | 03562156                                                                                                                                                                                                                            | PC CARD ESCUTCHEON  | BLK                         | 1  |
|                   | 03562167                                                                                                                                                                                                                            | PC CARD HOLDER      | HOLDER                      | 1  |
|                   | 40343367                                                                                                                                                                                                                            | SCREW M2X14         | PAN MACHINE W/SW+SMALL PWZC | 4  |
| #                 | 72567756                                                                                                                                                                                                                            | LCD BOARD ASSY      |                             | 1  |
| △                 | 72564312                                                                                                                                                                                                                            | INLET BOARD ASSY    |                             | 1  |
|                   | 72564334                                                                                                                                                                                                                            | PANEL-C KEYTOP ASSY |                             | 1  |
|                   | NOTE: 'PANEL-C KEYTOP ASSY' includes the following parts.                                                                                                                                                                           |                     |                             |    |
|                   | 01783923                                                                                                                                                                                                                            | N S-KEYTOP          | MD1H                        | 4  |
|                   | 02013090                                                                                                                                                                                                                            | F C-KEYTOP          | MX1H CLR                    | 1  |
|                   | 03120889                                                                                                                                                                                                                            | D S-KEYTOP          | SX2H-B GRS                  | 2  |
|                   | 03120890                                                                                                                                                                                                                            | D S-KEYTOP          | SX1H-B GRS                  | 10 |
|                   | 02123012                                                                                                                                                                                                                            | ENCODER HOLDER      |                             | 1  |
| #                 | 72565089                                                                                                                                                                                                                            | AFT BOARD ASSY      |                             | 1  |
| #                 | 72565112                                                                                                                                                                                                                            | JACK BOARD ASSY     |                             | 1  |
|                   | NOTE: 'JACK BOARD ASSY' includes the following parts.                                                                                                                                                                               |                     |                             |    |
| #                 | 03670001                                                                                                                                                                                                                            | SHEET               | K4E(10)-77X55T15S           | 1  |
|                   | 40342856                                                                                                                                                                                                                            | COATING CLIP        | CP-1S                       | 3  |
| #                 | 72565490                                                                                                                                                                                                                            | INVERTER BOARD ASSY |                             | 1  |

| IC         |                          |                            |                                                                                        |         |
|------------|--------------------------|----------------------------|----------------------------------------------------------------------------------------|---------|
| 02903723   | HD6417706                | IC (32BIT CPU)             | IC1 on MAIN BOARD                                                                      | 1       |
| 02900978   | M66291GP                 | IC (USB CONTROLLER)        | IC56 on MAIN BOARD                                                                     | 1       |
| 03456167   | S1D13705F00A200          | IC (LCD-DRIVER CPU PERIPH) | IC128 on MAIN BOARD                                                                    | 1       |
| 03566067   | T6TV2TBG-00067           | IC (CUSTOM)                | IC102 on MAIN BOARD                                                                    | 1       |
| 03562223   | UPD23C128040BLGY-819-MJH | IC (MASK ROM)              | IC104 on MAIN BOARD                                                                    | 1       |
| 03124989   | UPD23C128040ALGY-535-MJH | IC (MASK ROM)              | IC33 on MAIN BOARD                                                                     | 1       |
| 03124978   | UPD23C128040ALGY-536-MJH | IC (MASK ROM)              | IC28 on MAIN BOARD                                                                     | 1       |
| 03562234   | UPD23C128040BLGY-818-MJH | IC (MASK ROM)              | IC103 on MAIN BOARD                                                                    | 1       |
| 03560589   | TC58DVM92A1TG00BBH       | IC (FLASH MEMORY)          | IC53 on MAIN BOARD                                                                     | 1       |
| *****      | MBM29LV160BE70TN-E1      | IC (FLASH MEMORY)          | IC19 on MAIN BOARD                                                                     | 1       |
| 03342201   | K4S281632E-TC75          | IC (SDRAM)                 | IC20,IC2,IC24,IC6 on MAIN BOARD                                                        | 4       |
| 03237689   | M12L64164A-7T            | IC (MEMORY DRAM)           | IC106 on MAIN BOARD                                                                    | 1       |
| 03017590   | UDA1351TS                | IC (DIR DAC)               | IC75 on MAIN BOARD                                                                     | 1       |
| 03231701   | AK4527BVQ                | IC (AD/DA)                 | IC60 on MAIN BOARD                                                                     | 1       |
| 01458401   | TC74LVX4245FS(EL)        | IC (TTL)                   | IC114,IC112 on MAIN BOARD                                                              | 2       |
| 01901623   | TC74LVXC3245FS           | IC (CMOS)                  |                                                                                        | 2       |
| 03231678   | TC7WZ74FU(TE12L)         | IC (CMOS)                  |                                                                                        | 1       |
| 03459745   | HD74LVC540ATELL-E        | IC (CMOS)                  | IC111 on MAIN BOARD                                                                    | 1       |
| 03346267   | HD74LV273ATELL-E         | IC (CMOS)                  | IC90 on MAIN BOARD                                                                     | 1       |
| 01349590   | TC7WU04FU(TE12L)         | IC (CMOS)                  | IC16,IC26 on MAIN BOARD                                                                | 2       |
| 01677689   | HD74HC238FPEL            | IC (CMOS)                  | IC96 on MAIN BOARD                                                                     | 1       |
| 03015390   | TC74HCT273AF(EL)         | IC (CMOS)                  | IC54 on MAIN BOARD                                                                     | 1       |
| 01455312   | TC7WH74FU                | IC (CMOS)                  | IC115 on MAIN BOARD                                                                    | 1       |
| 01675034   | TC74VHC138FT(EL)         | IC CMOS                    | IC99,IC98 on MAIN BOARD                                                                | 2       |
| 01675023   | TC74VHC139FT(EL)         | IC (CMOS)                  | IC107,IC108,IC110 on MAIN BOARD                                                        | 3       |
| 01783523   | TC74VHCT245AFT(EL)       | IC (CMOS)                  | IC119,IC118,IC117 on MAIN BOARD                                                        | 3       |
| 01890367   | TC74VHC175FT(EL)         | IC (CMOS)                  | IC52 on MAIN BOARD                                                                     | 1       |
| 01348956   | TC7SH00FU(TE85L)         | IC (CMOS)                  | IC105 on MAIN BOARD                                                                    | 1       |
| 02451923   | HD74LV74ATELL            | IC (CMOS)                  |                                                                                        | 1       |
| 01348945   | TC7SH32FU(TE85L)         | IC (CMOS)                  | IC130 on MAIN BOARD                                                                    | 1       |
| 02456756   | TC74VHCT04AFT(EL)        | IC (CMOS)                  | IC9 on MAIN BOARD                                                                      | 1       |
| 02675667   | HD74LV21ATELL            | IC (CMOS)                  | IC91 on MAIN BOARD                                                                     | 1       |
| 02451690   | HD74LV08ATELL            | IC (CMOS)                  | IC94 on MAIN BOARD                                                                     | 1       |
| 02129334   | TC7WH08FU(TE12L)         | IC (CMOS)                  | IC120 on MAIN BOARD                                                                    | 1       |
| 02675656   | HD74LV11ATELL            | IC (CMOS)                  | IC92 on MAIN BOARD                                                                     | 1       |
| 02675689   | HD74LV245ATELL           | IC (CMOS)                  | IC1,IC2,IC3 on EXP BASE BOARD,<br>IC3,IC44,IC40,IC8,IC7,IC5 on MAIN<br>BOARD           | 6<br>+3 |
| 03015234   | HD74LV32ATELL            | IC (CMOS)                  | IC113,IC14,IC50 on MAIN BOARD                                                          | 3       |
| 02675645   | HD74LV04ATELL            | IC (CMOS)                  | IC17,IC10 on MAIN BOARD                                                                | 2       |
| 02451912   | HD74LV00ATELL            | IC (CMOS)                  | IC74,IC116 on MAIN BOARD                                                               | 2       |
| 01348901   | TC7SH04FU(TE85L)         | IC (CMOS)                  |                                                                                        | 1       |
| 15189261   | M5218AFP-600E            | IC (BIPOLAR OP AMP)        | IC71,IC70,IC68,IC61,IC59 on MAIN<br>BOARD,                                             | 5<br>+5 |
| 00344390   | TA7805F(TE16L)           | IC (REGULATOR)             | IC18,IC16,IC19,IC25,IC24 on JACK BOARD                                                 |         |
| 02671545   | PQ070XZ01ZP              | IC (REGULATOR)             | IC58 on MAIN BOARD                                                                     | 1       |
| 03125089   | PQ1CY1032ZP              | IC (SWITCHING REGULATOR)   | IC101,IC57 on MAIN BOARD                                                               | 2       |
| 02900690   | P2027A-08TR              | IC                         | IC100 on MAIN BOARD                                                                    | 1       |
| 01785178   | TC9271FS                 | IC (DIGITAL OUT IF)        | IC89 on MAIN BOARD                                                                     | 1       |
| 15199937   | M51953BFP-600C           | IC (RESET)                 | IC62 on MAIN BOARD                                                                     | 1       |
| 15189186   | UPC4570C                 | IC (BIPOLAR OP AMP)        | IC18 on MAIN BOARD                                                                     | 1       |
| 01785012   | HA17324                  | IC (BIPOLAR OP AMP)        | IC4,IC2,IC3 on PANEL-A BOARD                                                           | 3       |
| 01783589   | HD74HC4052FPEL           | IC (CMOS)                  | IC1 on PANEL-A BOARD                                                                   | 1       |
| 02894301   | HA17324ARPEL(FP-14DN)    | IC (CMOS OP)               | IC14 on JACK BOARD, IC503, IC501 on<br>PANEL-C BOARD                                   | 2<br>+1 |
| 03127267   | HD6433061G45FP           | IC (16BIT CPU)             | IC502 on PANEL-C BOARD                                                                 | 1       |
| 00129278   | SSC1080F0B               | IC                         | IC2 on JACK BOARD                                                                      | 1       |
| 15269219H0 | HD74LS05FPEL             | IC (TTL)                   | IC5 on JACK BOARD                                                                      | 1       |
| 01121834   | TC7W74FU TE12L           | IC                         | IC12 on JACK BOARD                                                                     | 1       |
| 01783656   | HD74HC4053FPEL           | IC CMOS                    | IC6 on JACK BOARD                                                                      | 1       |
| 15249104   | TC7S04F(TE85L)           | IC (CMOS)                  | IC23 on JACK BOARD                                                                     | 1       |
| 00567534   | TC74VHC138F(EL)          | IC (CMOS)                  | IC22 on JACK BOARD                                                                     | 1       |
| 01908678   | TC74VHCU04FT(EL)         | IC (CMOS)                  | IC9,IC8 on JACK BOARD                                                                  | 2       |
| 02451712   | HD74LV14ATELL            | IC (CMOS)                  | IC17 on JACK BOARD                                                                     | 1       |
| 15289105   | UPC4570G2-E2             | IC (BIPOLAR OP AMP)        | IC1 on JACK BOARD                                                                      | 1       |
| 15289151   | NJM2904M-TE3             | IC (OP AMP)                | IC20 on JACK BOARD                                                                     | 1       |
| 02900545   | PC410LKNIP               | IC (PHOTO COUPLER)         | IC21,IC15,IC10,IC7 on JACK BOARD                                                       | 4       |
|            |                          |                            | IC11 on JACK BOARD                                                                     | 1       |
| TRANSISTOR |                          |                            |                                                                                        |         |
| 02900778   | PW MOSFET XP132A1275SR   | TRANSISTOR                 | Q17 on MAIN BOARD                                                                      | 1       |
| 15309101   | 2SA1037AKT146R           | TRANSISTOR                 | Q11,Q12 on MAIN BOARD,<br>Q28 on JACK BOARD                                            | 2<br>+1 |
| 15329103T0 | 2SK880-GR(TE85R)         | FET                        | Q7,Q8,Q10,Q9 on MAIN BOARD,<br>Q31 on JACK BOARD                                       | 4<br>+1 |
| 00239812   | DTC114EUT106             | TRANSISTOR                 | Q14,Q15,Q16,Q18,Q13 on MAIN BOARD,<br>Q16,Q17,Q10,Q11,Q12,Q14,Q15,Q13 on<br>JACK BOARD | 5<br>+8 |
| 03126145   | 2SA933ASTPR              | TRANSISTOR                 | Q2 on PANEL-A BOARD                                                                    | 1       |
| 15129626   | 2SD1468S TP Q            | TRANSISTOR                 | Q3 on PANEL-A BOARD                                                                    | 1       |

| TRANSISTOR |          |                         |                    |                                                                                                                                                                                                                                                                                                                                              |                 |
|------------|----------|-------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|            | 15319101 | 2SC2412KR T146          | TRANSISTOR         | Q42 on JACK BOARD,<br>Q501 on PANEL-C BOARD                                                                                                                                                                                                                                                                                                  | 1<br>+1         |
|            | 00901523 | 2SA1681 (SC-62)(POW SW) | TRANSISTOR         | Q34 on JACK BOARD                                                                                                                                                                                                                                                                                                                            | 1               |
|            | 01121289 | 2SC4081 T106 QRS        | TRANSISTOR         | Q24,Q23,Q18,Q19 on JACK BOARD                                                                                                                                                                                                                                                                                                                | 4               |
|            | 02671023 | 2SC3052-T12-1E          | TRANSISTOR         | Q35,Q41 on JACK BOARD                                                                                                                                                                                                                                                                                                                        | 2               |
|            | 15319105 | 2SC3326-A               | TRANSISTOR         | Q30,Q25,Q27,Q32,Q33,Q37,Q38,Q39,Q40,Q<br>26 on JACK BOARD                                                                                                                                                                                                                                                                                    | 10              |
|            | 00239801 | DTA114EU T-106          | TRANSISTOR         | Q20 on JACK BOARD                                                                                                                                                                                                                                                                                                                            | 1               |
|            | 02451378 | RN2427                  | TRANSISTOR         | Q3,Q8,Q7,Q4,Q5,Q9,Q6 on JACK BOARD                                                                                                                                                                                                                                                                                                           | 7               |
|            | 15329533 | RN2307(TE85R)           | TRANSISTOR         | Q21 on JACK BOARD                                                                                                                                                                                                                                                                                                                            | 1               |
|            | 02671267 | RT1N141C-T12-1          | TRANSISTOR         | Q29,Q36 on JACK BOARD                                                                                                                                                                                                                                                                                                                        | 2               |
|            | 15329511 | DTC114TKT146            | DIGITAL TRANSISTOR | Q43 on JACK BOARD                                                                                                                                                                                                                                                                                                                            | 1               |
|            | 15329531 | RN1308-TE85R            | TRANSISTOR         | Q22 on JACK BOARD                                                                                                                                                                                                                                                                                                                            | 1               |
| DIODE      |          |                         |                    |                                                                                                                                                                                                                                                                                                                                              |                 |
|            | 01780045 | RB051L-40               | SCHOTTKY DIODE     | D4 on MAIN BOARD                                                                                                                                                                                                                                                                                                                             | 1               |
|            | 15339130 | MA142WK-(TX)            | ARRAY DIODE        | DA8,DA6,DA7,DA9 on MAIN BOARD,<br>DA4,DA2,DA1,DA3 on JACK BOARD,<br>DA503,DA505,DA502,DA501,DA504,DA51<br>3,DA512,DA511,DA510,DA509,DA508,DA5<br>07,DA506 on PANEL-C BOARD                                                                                                                                                                   | 4<br>+13<br>+4  |
|            | 01897189 | MA147-(TX)              | ARRAY DIODE        | DA3,DA2,DA5,DA4 on MAIN BOARD,<br>DA7,DA6,DA8,DA9,DA11,DA12,DA13,DA<br>14,DA15,DA5 on JACK BOARD                                                                                                                                                                                                                                             | 4<br>+10        |
|            | 15019126 | 1SS133 T-77             | SWITCHING DIODE    | D18,D29,D28,D27,D26,D25,D24,D23,D22,D<br>21,D1,D19,D17,D16,D6,D2,D3,D20,D5,D15,<br>D7,D8,D10,D11,D12,D13,D14,D4 on PAN-<br>EL-A BOARD,<br>D204,D201,D203,D205,D206,D207,D208,D2<br>09,D210,D202 on PANEL-B BOARD                                                                                                                             | 10<br>+28       |
|            | 01900612 | TPS611                  | DIODE              | Q1 on PANEL-A BOARD                                                                                                                                                                                                                                                                                                                          | 1               |
|            | 03126134 | TLN233                  | LED                | LED23 on PANEL-A BOARD                                                                                                                                                                                                                                                                                                                       | 1               |
|            | 03122112 | SLR-343BBT3F            | LED(BLUE)          | LED14 on PANEL-A BOARD,<br>LED522 on PANEL-C BOARD                                                                                                                                                                                                                                                                                           | 1<br>+1         |
|            | 02894090 | SLR-343DUT32            | LED (ORNG)         | LED18 on PANEL-A BOARD,<br>LED501,LED523,LED508,LED515 on PAN-<br>EL-C BOARD                                                                                                                                                                                                                                                                 | 1<br>+4         |
|            | 02125167 | SLI-343DCT32W           | LED (YELLOW)       | LED15,LED2,LED16,LED11,LED10,LED9,L<br>ED8,LED7,LED5,LED4,LED3,LED1,LED17<br>on PANEL-A BOARD,<br>LED509,LED502,LED510,LED516,LED503<br>on PANEL-C BOARD                                                                                                                                                                                     | 13<br>+5        |
|            | 01012078 | SLR-332MG3F             | LED (GREEN)        | LED19 on PANEL-A BOARD                                                                                                                                                                                                                                                                                                                       | 1               |
|            | 01011656 | SLR-332VR3F             | LED (RED)          | LED21,LED13,LED12,LED6,LED20 on<br>PANEL-A BOARD                                                                                                                                                                                                                                                                                             | 5               |
|            | 00127367 | SPR-39MVW               | LED (RED/GREEN)    | LED22 on PANEL-A BOARD                                                                                                                                                                                                                                                                                                                       | 1               |
|            | 03564390 | SML-212DTT86            | LED                | LED520,LED527,LED518,LED528,LED504,L<br>ED526,LED525,LED524,LED521,LED519,LE<br>D517,LED514,LED513,LED512,LED511,LE<br>D507,LED505,LED506 on PANEL-C<br>BOARD                                                                                                                                                                                | 18              |
|            | 01121323 | DA204U T106             | DIODE ARRAY        | DA16 on JACK BOARD                                                                                                                                                                                                                                                                                                                           | 1               |
|            | 01121334 | DAN202U T106            | ARRAY DIODE        | DA10 on JACK BOARD                                                                                                                                                                                                                                                                                                                           | 1               |
|            | 00129767 | RD10M-T1B B2            | ZENER DIODE        | D1 on JACK BOARD                                                                                                                                                                                                                                                                                                                             | 1               |
| RESISTOR   |          |                         |                    |                                                                                                                                                                                                                                                                                                                                              |                 |
|            | 00567112 | RPC05T 471 J            | MTL.FILM RESISTOR  | R177,R169,R179,R167 on MAIN BOARD,<br>R27,R20,R100,R30,R26,R21,R28,R108,R29,R<br>92,R91,R84,R25 on JACK BOARD                                                                                                                                                                                                                                | 4<br>+13        |
|            | 00566967 | RPC05T 470 J            | MTL.FILM RESISTOR  | R284,R292,R79,R282,R283,R337,R290,R285,<br>R400,R338,R401,R294,R293,R291,R289,R288,<br>R287,R286,R399 on MAIN BOARD,<br>R514,R513 on PANEL-C BOARD                                                                                                                                                                                           | 19<br>+2        |
|            | 01011856 | RPC05T 0R0 J            | MTL.FILM RESISTOR  | R68,R412,R427,R429,R439,R456,R73,R411,R<br>41,L18,L17,L16,R147,R113,R87,R305,R136,R<br>140,R144,R157,R214,R419,R304,R410,R306,<br>R307,R308,R309,R397,R403,R409,R239,R141<br>on MAIN BOARD<br>,R160,R3,R227,R217,R178,R236,R99,R16,R73<br>,R58,R52,R37,R33,R19,R18,R97,R6,R185,R15<br>on JACK BOARD ,R522,R516,R523,R515 on<br>PANEL-C BOARD | 33<br>+5<br>+18 |
|            | 00567067 | RPC05T 221 J            | MTL.FILM RESISTOR  | R421,R422 on MAIN BOARD,<br>R125,R82,R81,R80,R79 on JACK BOARD                                                                                                                                                                                                                                                                               | 2<br>+5         |
|            | 00567556 | RPC05T 105 J            | MTL.FILM RESISTOR  | R50,R99,R156 on MAIN BOARD,<br>R141 on JACK BOARD                                                                                                                                                                                                                                                                                            | 3<br>+1         |
|            | 00567478 | RPC05T 334 J            | MTL.FILM RESISTOR  | R173,R216 on MAIN BOARD                                                                                                                                                                                                                                                                                                                      | 2               |
|            | 00567467 | RPC05T 274 J            | MTL.FILM RESISTOR  | R230 on MAIN BOARD                                                                                                                                                                                                                                                                                                                           | 1               |
|            | 00567445 | RPC05T 184 J            | MTL.FILM RESISTOR  | R170,R212 on MAIN BOARD                                                                                                                                                                                                                                                                                                                      | 2               |
|            | 00567412 | RPC05T 104 J            | MTL.FILM RESISTOR  | R420,R227,R222,R211,R208,R199,R172,R415,<br>R416,R236,R417,R418,R168 on MAIN<br>BOARD,<br>R89,R131,R123,R116,R95,R83,R134,R172,R7<br>6,R142,R145,R157,R169,R183,R204,R209,R16<br>1 on JACK BOARD                                                                                                                                             | 13<br>+17       |

| RESISTOR |                     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                       |  |
|----------|---------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--|
| 00567289 | RPC05T 103 J        | MTL.FILM RESISTOR | R2,R6,R10 on EXP BASE BOARD,<br>R118,R119,R134,R139,R150,R164,R165,R166,<br>R174,R114,R176,R44,R188,R175,R110,R109,<br>R105<br>,R84,R82,R195,R43,R42,R40,R39,R25,R13,R4<br>14,R80,R437,R393,R395,R413,R428,R430,R3<br>92,R436,R446,R438,R445,R449,R453,R455,R<br>238,R396,R431,R266,R451,R244,R247,R390,<br>R243,R313,R358,R363,R364,R365,R381,R241<br>,R384,R387,R388,R248 on MAIN BOARD<br>,R38,R5,R10,R11,R14,R13,R2,R165,R106,R88<br>,R208,R207,R203,R202,R182,R96,R127,R86,R<br>135,R12,R148 on JACK BOARD ,R517 on<br>PANEL-C BOARD | 62<br>+3<br>+1<br>+21 |  |
| 00567389 | RPC05T 563 J        | MTL.FILM RESISTOR | R255,R256 on MAIN BOARD,<br>R149 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2<br>+1               |  |
| 00567245 | RPC05T 472 J        | MTL.FILM RESISTOR | R193,R159,R161,R171,R53,R194,R196,R200,<br>R218,R228,R163 on MAIN BOARD,<br>R87 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11<br>+1              |  |
| 00567378 | RPC05T 473 J        | MTL.FILM RESISTOR | R408,R229,R231,R234 on MAIN BOARD,<br>R105,R78,R136,R138,R146,R229,R230,R234,<br>R187 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4<br>+9               |  |
| 00567201 | RPC05T 272 J        | MTL.FILM RESISTOR | R225,R205,R197,R232 on MAIN BOARD,<br>R150,R223,R174,R173 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4<br>+4               |  |
| 00566934 | RPC05T 330 J        | MTL.FILM RESISTOR | R72,R350,R348,R346,R345,R344,R71,R349,R<br>74,R75,R76,R314,R323,R325,R326,R335,R34<br>3,R7,R450,R1,R2,R3,R347,R6,R368,R8,R10,R<br>63,R70,R435,R434,R433,R432,R4 on MAIN<br>BOARD                                                                                                                                                                                                                                                                                                                                                          | 34                    |  |
| 00567190 | RPC05T 222 J        | MTL.FILM RESISTOR | R133 on MAIN BOARD,<br>R102,R110 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1<br>+2               |  |
| 00566923 | RPC05T 270 J        | MTL.FILM RESISTOR | R146,R145 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2                     |  |
| 00566867 | RPC05T 100 J        | MTL.FILM RESISTOR | R441,R261,R260,R442,R262,R263 on MAIN<br>BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6                     |  |
| 00566912 | RPC05T 220 J        | MTL.FILM RESISTOR | R302,R425,R424,R423,R367,R366,R342,R340<br>,R34,R298,R297,R130,R100,R45,R339,R426,R<br>341,R300 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                             | 18                    |  |
| 00567178 | RPC05T 152 J        | MTL.FILM RESISTOR | R148 on MAIN BOARD,<br>R186 on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1<br>+1               |  |
| 00567312 | RPC05T 183 J        | MTL.FILM RESISTOR | R235 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 00567023 | RPC05T 101 J        | MTL.FILM RESISTOR | R315,R316,R183,R246,R245,R187,R182,R181<br>,R58,R57,R51,R320,R318,R54,R321,R331,R36<br>9,R370,R371,R372,R375,R378,R454,R317 on<br>MAIN BOARD,<br>R184,R35,R45,R71,R77,R177,R231,R31,R156<br>on JACK BOARD,<br>R505,R501,R504,R507,R508,R510,R511,R502<br>on PANEL-C BOARD                                                                                                                                                                                                                                                                 | 24<br>+8<br>+9        |  |
| 00567156 | RPC05T 102 J        | MTL.FILM RESISTOR | R322,R319,R233,R226,R206,R198,R91 on<br>MAIN BOARD,<br>R7,R120,R224,R4,R85,R113,R225,R176,R155<br>on JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                           | 7<br>+9               |  |
| 00567134 | RPC05T 681 J        | MTL.FILM RESISTOR | R55,R158,R101 on MAIN BOARD,<br>R213,R167,R152,R139,R74,R212,R129 on<br>JACK BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3<br>+7               |  |
| 01904956 | RR0816P-821-D       | MTL.FILM RESISTOR | R361 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 01904945 | RR0816P-120-D       | MTL.FILM RESISTOR | R359 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 02014945 | MCR50 JZH J 0R0     | MTL.FILM RESISTOR | R407 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 03342845 | RR0816P-151-D       | MTL.FILM RESISTOR | R360 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 02673401 | RR0816P-102-D       | MTL.FILM RESISTOR | R353,R357 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2                     |  |
| 03239556 | RR0816Q-100-D       | MTL.FILM RESISTOR | R354 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 03239523 | RR0816Q-390-D       | MTL.FILM RESISTOR | R355 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 01896278 | MCR18EZHJ 2R2       | MTL.FILM RESISTOR | R273 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 03018878 | RR0816P-471-D       | MTL.FILM RESISTOR | R356 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 02673423 | RR0816P-162-D       | MTL.FILM RESISTOR | R351 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                     |  |
| 01457145 | EXBE10C103J         | RESISTOR ARRAY    | RA63,RA13,RA74,RA19,RA39,RA29,RA24,<br>RA22,RA51,RA17,RA78,RA14,RA61,RA11,<br>RA7,RA5,RA1,RA16,RA42 on MAIN<br>BOARD                                                                                                                                                                                                                                                                                                                                                                                                                      | 19                    |  |
| 03232623 | EXB28V0R0JX         | RESISTOR-ARRAY    | RA101 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                     |  |
| 03015056 | EXB2HV470JV         | RESISTOR-ARRAY    | RA18,RA15,RA12,RA23 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4                     |  |
| 02904601 | EXB2HV104JV         | RESISTOR-ARRAY    | RA108 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                     |  |
| 02904445 | EXB2HV330JV         | RESISTOR-ARRAY    | RA4,RA28,RA21,RA10 on MAIN BOARD<br>,RA5,RA1,RA2,RA3,RA4 on PC CARD<br>BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4<br>+5               |  |
| 03015290 | EXB28V104JX         | RESISTOR-ARRAY    | RA109 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                     |  |
| 03015278 | EXB28V220JX         | RESISTOR-ARRAY    | RA98,RA100 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2                     |  |
| 02898923 | EXBE10C104J         | RESISTOR-ARRAY    | RA104,RA106 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2                     |  |
| 03015301 | R-ARRAY EXB28V330JX | RESISTOR-ARRAY    | RA88,RA121,RA93,RA89 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4                     |  |
| 03015289 | EXB28V103JX         | RESISTOR-ARRAY    | RA95,RA92,RA116,RA90,RA91,RA102,RA9<br>4 on MAIN BOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7                     |  |
| 02456878 | EXB2HV220JV         | RESISTOR-ARRAY    | RA60,RA50,RA62,RA107,RA20,RA27,RA8,<br>RA34,RA36,RA37,RA40,RA56,RA54,RA52,<br>RA43,RA105,RA33,RA117,RA110,RA111,R<br>A103,RA9,RA115,RA3,RA99,RA97,RA118,<br>RA96,RA86,RA119,RA77,RA73,RA120 on<br>MAIN BOARD                                                                                                                                                                                                                                                                                                                              | 33                    |  |

| RESISTOR      |                         |                            |                                                                                                                                                                                                                                                        |  |     |
|---------------|-------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|
| 02457790      | MNR14 EOAB J 330        | RESISTOR-ARRAY             |                                                                                                                                                                                                                                                        |  | 2   |
| 01906678      | MNR14 EOAB J 103        | RESISTOR-ARRAY             | RA1,RA16 on JACK BOARD                                                                                                                                                                                                                                 |  | 8   |
|               |                         |                            |                                                                                                                                                                                                                                                        |  | +2  |
| 01906667      | MNR14 EOAB J 100        | RESISTOR-ARRAY             | RA25,RA24,RA6,RA4,RA3,RA2 on JACK BOARD                                                                                                                                                                                                                |  | 22  |
|               |                         |                            |                                                                                                                                                                                                                                                        |  | +6  |
| 13749190      | SR50TR 100 J            | CARBON RESISTOR            | R8,R7 on PANEL-A BOARD                                                                                                                                                                                                                                 |  | 2   |
| 13749765T0    | SR25TRE 470 J           | CARBON RESISTOR            | R23 on PANEL-A BOARD                                                                                                                                                                                                                                   |  | 1   |
| 13749771T0    | SR25TRE 820 J           | CARBON RESISTOR            | R22 on PANEL-A BOARD                                                                                                                                                                                                                                   |  | 1   |
| 13749773T0    | SR25TRE 101 J           | CARBON RESISTOR            | R2,R13,R4,R3,R1 on PANEL-A BOARD                                                                                                                                                                                                                       |  | 5   |
| 13749779T0    | SR25TRE 181 J           | CARBON RESISTOR            | R17 on PANEL-A BOARD                                                                                                                                                                                                                                   |  | 1   |
| 13749781T0    | SR25TRE 221 J           | CARBON RESISTOR            | R21,R16 on PANEL-A BOARD                                                                                                                                                                                                                               |  | 2   |
| 13749797T0    | SR25TRE 102 J           | CARBON RESISTOR            | R14,R19 on PANEL-A BOARD                                                                                                                                                                                                                               |  | 6   |
| 13749799T0    | SR25TR 122J             | CARBON RESISTOR            | R15 on PANEL-A BOARD                                                                                                                                                                                                                                   |  | 1   |
| 13749805T0    | SR25TRE 222 J           | CARBON RESISTOR            | R6 on PANEL-A BOARD                                                                                                                                                                                                                                    |  | 1   |
| 13749811T0    | SR25TRE 392 J           | CARBON RESISTOR            | R5,R10 on PANEL-A BOARD                                                                                                                                                                                                                                |  | 2   |
| 13749821T0    | SR25TRE 103 J           | CARBON RESISTOR            | R30,R28,R26,R18,R11,R24 on PANEL-A BOARD                                                                                                                                                                                                               |  | 6   |
| 13749837T0    | SR25TRE 473 J           | CARBON RESISTOR            | R12 on PANEL-A BOARD                                                                                                                                                                                                                                   |  | 1   |
| 13749839T0    | SR25TRE 563 J           | CARBON RESISTOR            | R20 on PANEL-A BOARD                                                                                                                                                                                                                                   |  | 1   |
| 13749859T0    | SR25TRE 394 J           | CARBON RESISTOR            | R9 on PANEL-A BOARD                                                                                                                                                                                                                                    |  | 1   |
| 00567290      | RPC05T 123 J            | MTL.FILM RESISTOR          | R521 on PANEL-C BOARD                                                                                                                                                                                                                                  |  | 1   |
| 00567367      | RPC05T 393 J            | MTL.FILM RESISTOR          | R518 on PANEL-C BOARD                                                                                                                                                                                                                                  |  | 1   |
| 00567456      | RPC05T 224 J            | MTL.FILM RESISTOR          | R524 on PANEL-C BOARD                                                                                                                                                                                                                                  |  | 1   |
| 00567501      | RPC05T 474 J            | MTL.FILM RESISTOR          | R506,R509,R503,R512 on PANEL-C BOARD                                                                                                                                                                                                                   |  | 4   |
| 01450490      | NTH5G1M33B103J          | THERMISTOR RESISTOR        | R519 on PANEL-C BOARD                                                                                                                                                                                                                                  |  | 1   |
| 03128889      | EXBV8V222JV             | RESISTOR-ARRAY             | RA502,RA503,RA504,RA501 on PANEL-C BOARD                                                                                                                                                                                                               |  | 4   |
| 15399561      | RPC18T 330 J            | CARBON RESISTOR            | R61 on JACK BOARD                                                                                                                                                                                                                                      |  | 1   |
| 15399567      | RPC18T 560 J            | CARBON RESISTOR            |                                                                                                                                                                                                                                                        |  | 4   |
| 15399573      | RPC18T 101 J            | CARBON RESISTOR            | R226 on JACK BOARD                                                                                                                                                                                                                                     |  | 1   |
| 15399583      | RPC18T 271 J            | CARBON RESISTOR            | R68,R67 on JACK BOARD                                                                                                                                                                                                                                  |  | 2   |
| 15399565      | RPC18T 470 J            | CARBON RESISTOR            | R221,R222,R219,R65,R64,R63,R62,R220 on JACK BOARD                                                                                                                                                                                                      |  | 8   |
| 00566956      | RPC05T 390 J            | MTL.FILM RESISTOR          | R69,R70 on JACK BOARD                                                                                                                                                                                                                                  |  | 2   |
| 00567001      | RPC05T 750 J            | MTL.FILM RESISTOR          | R126,R235 on JACK BOARD                                                                                                                                                                                                                                |  | 2   |
| 00567034      | RPC05T 121 J            | MTL.FILM RESISTOR          | R75 on JACK BOARD                                                                                                                                                                                                                                      |  | 1   |
| 00567078      | RPC05T 271 J            | MTL.FILM RESISTOR          | R90,R72 on JACK BOARD                                                                                                                                                                                                                                  |  | 2   |
| 00567089      | RPC05T 331 J            | MTL.FILM RESISTOR          | R232,R153,R206,R168,R140,R130,R211 on JACK BOARD                                                                                                                                                                                                       |  | 7   |
| 00567212      | RPC05T 332 J            | MTL.FILM RESISTOR          | R158,R166,R151,R143,R137,R132,R122,R115,R34,R170,R128,R210,R214,R233,R205,R215 on JACK BOARD                                                                                                                                                           |  | 16  |
| 00567256      | RPC05T 562 J            | MTL.FILM RESISTOR          | R119,R111,R112,R118 on JACK BOARD                                                                                                                                                                                                                      |  | 4   |
| 00567267      | RPC05T 682 J            | MTL.FILM RESISTOR          | R32 on JACK BOARD                                                                                                                                                                                                                                      |  | 1   |
| 00567323      | RPC05T 223 J            | MTL.FILM RESISTOR          | R164,R180,R181,R163 on JACK BOARD                                                                                                                                                                                                                      |  | 4   |
| 00567345      | RPC05T 333 J            | MTL.FILM RESISTOR          | R107,R94,R104,R101,R98 on JACK BOARD                                                                                                                                                                                                                   |  | 5   |
| 00567390      | RPC05T 683 J            | MTL.FILM RESISTOR          | R109 on JACK BOARD                                                                                                                                                                                                                                     |  | 1   |
| 00567401      | RPC05T 823 J            | MTL.FILM RESISTOR          | R93 on JACK BOARD                                                                                                                                                                                                                                      |  | 1   |
| 00567423      | RPC05T 124 J            | MTL.FILM RESISTOR          | R103 on JACK BOARD                                                                                                                                                                                                                                     |  | 1   |
| 15399501      | RPC18T 0R0 J            | MTL.FILM RESISTOR          | R66 on JACK BOARD                                                                                                                                                                                                                                      |  | 1   |
| 15399952      | MCR50JZH470 1/2W        | CHIP RESISTOR              | R188,R121,R114,R189 on JACK BOARD                                                                                                                                                                                                                      |  | 4   |
| 00126134      | EXB-A10E103J            | RESISTOR ARRAY             | RA9,RA7,RA11,RA12,RA14,RA17,RA5 on JACK BOARD                                                                                                                                                                                                          |  | 7   |
| 01906656      | MNR14 EOAB J 000        | RESISTOR-ARRAY             | RA19,RA18 on JACK BOARD                                                                                                                                                                                                                                |  | 2   |
| POTENTIOMETER |                         |                            |                                                                                                                                                                                                                                                        |  |     |
| 03126178      | EVUF2JFK3B14            | 9M/M ROTARY POTENTIOMETER  | VR6,VR5,VR2,VR4 on PANEL-A BOARD                                                                                                                                                                                                                       |  | 4   |
| 03126167      | EVJY10FB6A24            | 12M/M ROTARY POTENTIOMETER | VR1,VR3 on PANEL-A BOARD                                                                                                                                                                                                                               |  | 2   |
| 03562256      | EVUF2AE20B14            | ROTARY POTENTIOMETER       | VR501 on PANEL-C BOARD                                                                                                                                                                                                                                 |  | 1   |
| CAPACITOR     |                         |                            |                                                                                                                                                                                                                                                        |  |     |
| 02129534      | ECJ1VB1H102K            | CERAMIC CAPACITOR          | C386 on MAIN BOARD,<br>C189,C44,C21,C188,C224 on JACK BOARD                                                                                                                                                                                            |  | 1   |
|               |                         |                            |                                                                                                                                                                                                                                                        |  | +5  |
| 01674334      | ECUV1H101JCV            | CERAMIC CAPACITOR          | C232,C447,C139,C234,C240,C243,C265,C99 on MAIN BOARD,<br>C91,C97,C96,C95,C94,C143,C92,C76,C90,C89,C88,C87,C86,C80,C93,C192,C79,C82,C84,C204,C78,C193,C158,C191,C190,C166,C83,C75,C85,C77,C203,C81 on JACK BOARD                                        |  | 8   |
|               |                         |                            |                                                                                                                                                                                                                                                        |  | +32 |
| 01674712      | ECJ1VF1A105Z            | CERAMIC CAPACITOR          | C75,C290 on MAIN BOARD,<br>C104 on JACK BOARD                                                                                                                                                                                                          |  | 2   |
|               |                         |                            |                                                                                                                                                                                                                                                        |  | +1  |
| 01674701      | ECJ1VF1E104Z 0.1UF/16VK | CERAMIC CAPACITOR          | C30,C21,C22,C23,C26,C27,C33,C29,C31,C20,C11,C28,C19,C18,C16,C15,C14,C12,C34,C10,C9,C8,C7,C1,C13,C32 on EXP BASE BOARD,<br>C443,C225,C224,C442,C196,C450,C192,C191,C190,C186,C183,C199,C449,C451,C452,C453,C454,C455,C181,C222,C460,C462,C470,C472,C444 |  | 276 |

## CAPACITOR

|   |            |                       |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|---|------------|-----------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |            |                       |                    | ,C122,C171,C129,C128,C127,C125,C201,C131,C123,C132,C121,C120,C119,C103,C102,C101,C100,C98,C124,C143,C175,C173,C438,C170,C435,C169,C130,C144,C178,C142,C141,C140,C138,C137,C136,C135,C134,C133,C167,C413,C404,C336,C406,C407,C408,C409,C410,C272,C412,C403,C334,C333,C307,C305,C299,C297,C280,C279,C439,C275,C411,C385,C340,C342,C343,C344,C346,C350,C352,C405,C372,C402,C387,C390,C391,C392,C393,C394,C396,C399,C400,C401,C353,C424,C230,C276,C420,C421,C422,C423,C229,C270,C227,C418,C425,C427,C428,C429,C226,C430,C431,C432,C433,C434,C228,C241,C267,C261,C259,C257,C252,C248,C247,C419,C245,C417,C238,C237,C236,C233,C66,C231,C97,C414,C415,C416,C246,C36,C52,C51,C50,C49,C48,C47,C45,C43,C42,C41,C40,C39,C53,C37,C14,C15,C16,C17,C18,C38,C96,C35,C20,C21,C6,C23,C30,C33,C34,C19,C200,C54,C70,C69,C68,C73,C77,C65,C64,C63,C92,C93,C57,C56,C55,C74 on MAIN BOARD,C2 on PC CARD BOARD,C178,C172,C176,C174,C171,C144,C131,C120,C227,C128,C180,C181,C183,C185,C194,C205,C206,C211,C116,C222,C220,C64,C6,C7,C8,C10,C12,C25,C26,C29,C72,C62,C115,C65,C70,C68,R228,C73,C99,C101,C107,C108,C111,C114,C30,C66 on JACK BOARD,C303,C302 on LCD BOARD,C521,C520,C519 on PANEL-C BOARD,C71,C27,C72,C164,C165,C263,C264,C440,C441,C26 on MAIN BOARD,C25,C24 on MAIN BOARD,C140 on JACK BOARD,C283,C318 on MAIN BOARD,C323,C310,C300,C328 on MAIN BOARD,C285,C277 on MAIN BOARD,C303,C332,C327,C316 on MAIN BOARD,C258,C253 on MAIN BOARD,C4,C3,C2,C6,C25,C5,C17 on EXP BASE BOARD,C284,C274 on MAIN BOARD,C363,C365 on MAIN BOARD,C375,C461,C459,C398,C395,C360,C358,C397 on MAIN BOARD,C1 on PC CARD BOARD,C437 on MAIN BOARD,C180,C149,C239,C273,C94,C31,C166,C150,C145,C188,C308,C278,C281,C282,C296,C168,C298,C309,C315,C324,C335,C345,C271,C339,C354,C349,C351,C341,C266 on MAIN BOARD,C448,C384,C126,C118,C104,C426,C95,C456,C59,C46,C44,C29,C22,C13 on MAIN BOARD,C2,C4,C5,C12,C15,C1,C20,C21,C24,C25,C30,C31,C13,C3 on PANEL-A BOARD,C11,C10 on PANEL-A BOARD,C14 on PANEL-A BOARD,C16,C18,C26,C28 on PANEL-A BOARD,C6 on PANEL-A BOARD,C301 on LCD BOARD,C508 on PANEL-C BOARD,C22,C23 on PANEL-A BOARD,C9,C7 on PANEL-A BOARD,C501 on PANEL-C BOARD,C19,C17,C32,C8,C33 on PANEL-A BOARD,C522 on PANEL-C BOARD,C514,C515,C505,C516,C517,C513,C512,C511,C510,C518,C509,C504,C503,C502,C506,C507 on PANEL-C BOARD,C106 on JACK BOARD,C138 on JACK BOARD,C22,C110,C23 on JACK BOARD | 10<br>2<br>+1<br>2<br>4<br>2<br>4<br>2<br>2<br>8<br>36<br>2<br>2<br>8<br>+1<br>1<br>2<br>2<br>2<br>2<br>4<br>1<br>2<br>29<br>14<br>14<br>2<br>1<br>4<br>1<br>+1<br>+1<br>2<br>2<br>+1<br>5<br>+1<br>16<br>1<br>1<br>3 |
|   | 01674190   | ECUV1H150JCV          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01674423   | ECUV1H471JCV          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01674689   | ECJ1VF1H473Z          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02126434   | ECHU1H821JX5          | POLYEST. CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01899223   | ECHU1H102JX5          | POLYEST. CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03346089   | ECHU1C682JX5          | POLYEST. CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01904856   | ECEV1CA470WR          | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03454790   | EEE1CA221P            | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 15369109   | ECEV0JA101SP          | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 15369152   | ECEV1CA100SR          | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03454789   | EEE1CA220WR           | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03454812   | EEE1CA470SP           | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03343045   | EEE0JA101SP           | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
| # | 02345145   | RV2-16V101M-R         | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02897045   | ECEV1CA220WR          | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02783412   | 6SVP150 OS-CON        | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01120301   | ECEV1CA221P 220UF     | CHEMICAL CAPASITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03564345   | EEE1AA102P            | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02345201   | RV2-6V220MU-RR2       | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03454912   | EEE1HA2R2SR           | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02015778   | ECEV1AA102P           | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 03458790   | EEE1CS100SR           | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01896589   | SK4-0J106MZ4-RA       | TANTALUM CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 13519641   | DD308-959F104Z50      | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 13519661   | DD104-989SL150J50     | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 13529509   | DD106-999F103Z50      | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02018701   | DD104-989SL680J50     | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 13639150M0 | ECEA1CKS100B 10UF/16V | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 13639569M0 | ECEA1EKA470B          | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 13669266   | ECEA1EKS100B          | CAPACITOR          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 02018690   | R2A-16V101M-T2        | CHEMICAL CAPACITOR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01674389   | ECUV1H221JCV          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 00568456   | ECJ1VF1C474Z          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01674167   | ECUV1H100DCV          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |
|   | 01674212   | ECUV1H220JCV          | CERAMIC CAPACITOR  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                       |

| CAPACITOR              |                                 |                    |                                                                                                                              |    |     |
|------------------------|---------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------|----|-----|
| 01674612               | ECJ1VB1H103K                    | CERAMIC CAPACITOR  | C123,C187,C139,C126,C124,C121,C119,C113,C109,C14,C125,C63,C13,C2,C15,C16,C17,C18,C19,C20,C5 on JACK BOARD                    | 21 |     |
| 00674423               | ECA0JM102B 1000U /6.3V          | CHEMICAL CAPACITOR | C9 on JACK BOARD                                                                                                             | 1  |     |
| 01127078               | ECA0JM471B                      | CHEMICAL CAPACITOR | C11,C3 on JACK BOARD                                                                                                         | 2  |     |
| 01454889               | RA2-16V470MT2 470UF /16V        | CHEMICAL CAPACITOR | C155,C164 on JACK BOARD                                                                                                      | 2  |     |
| 01900823               | RA2-16V100M-T2                  | CHEMICAL CAPACITOR | C117 on JACK BOARD                                                                                                           | 1  |     |
| 01902867               | RA2-25V101M-T2                  | CHEMICAL CAPACITOR | C208,C161,C135,C146,C149,C154,C132,C167,C207,C127,C130 on JACK BOARD                                                         | 11 |     |
| 01906501               | RA2-16V220M-T2                  | CHEMICAL CAPACITOR | C156,C165,C137 on JACK BOARD                                                                                                 | 3  |     |
| 02014912               | RA2-25V100MT2                   | CERAMIC CAPACITOR  | C182,C175,C209,C177,C186,C170,C105,C210,C173,C179,C184 on JACK BOARD                                                         | 11 |     |
| 02894390               | RA2-25V330MC-T2                 | CHEMICAL CAPACITOR | C214,C215,C217,C169,C219 on JACK BOARD                                                                                       | 5  |     |
| 02900523               | EEE1CA101WP                     | CHEMICAL CAPACITOR | C98,C100 on JACK BOARD                                                                                                       | 2  |     |
| 13639552M0             | ECEA1CU331B 16V /330UF CHEMICAL | CHEMICAL CAPACITOR | C67,C195,C71,C69 on JACK BOARD                                                                                               | 4  |     |
| 13529132               | RPE132-901F104Z50               | CERAMIC CAPACITOR  | C405,C403 on INVERTER BOARD                                                                                                  | 2  |     |
| 01900834               | RA2-16V101M-T2                  | CHEMICAL CAPACITOR | C404 on INVERTER BOARD                                                                                                       | 1  |     |
| INDUCTOR, COIL, FILTER |                                 |                    |                                                                                                                              |    |     |
| 03125167               | SLF12565T-470M2R4               | CHOKO COIL         | L1 on MAIN BOARD                                                                                                             | 1  |     |
| 03566334               | EMI FILTER                      | NFW31SP106X1E4L    |                                                                                                                              | 1  |     |
| 01565578               | N1608Z601T01                    | FERRITE-BEAD       | L36,L35,L34,L33,L32,L31,L30,L29,L28,L27,L26,L8,L20,L24,L23,L7,L22,L6,L21,L25,L19,L14,L13,L12,L11,L10,L9,L37,L5 on MAIN BOARD | 29 | +33 |
| 01909645               | EXCML16A270U                    | FERRITE-BEAD       | L4,L3,R237 on MAIN BOARD                                                                                                     | 3  |     |
| 00903167               | N2012Z601T02 (CHIP)             | FERRITE-BEAD       | L25,L24 on JACK BOARD                                                                                                        | 2  |     |
| CRYSTAL, RESONATOR     |                                 |                    |                                                                                                                              |    |     |
| 00894034               | MA-406 16.000MHZ TE24           | CRYSTAL            | X2 on MAIN BOARD                                                                                                             | 1  |     |
| 15299170               | MC-406 32.768KHZ                | CRYSTAL            | X1 on MAIN BOARD                                                                                                             | 1  |     |
| 01340745               | MA-406 12MHZ                    | CRYSTAL            | X4 on MAIN BOARD                                                                                                             | 1  |     |
| 02673134               | MA-406 16.9344MHZ               | CRYSTAL            | X3 on MAIN BOARD                                                                                                             | 1  |     |
| 00894023               | MA-406 20.000MHZ TE24           | CRYSTAL            | X1 on JACK BOARD                                                                                                             | 1  |     |
| ENCODER                |                                 |                    |                                                                                                                              |    |     |
| 01905467               | EVE GC1 F20 24B                 | ROTARY ENCODER     | EN501 on PANEL-C BOARD                                                                                                       | 1  |     |
| CONNECTOR              |                                 |                    |                                                                                                                              |    |     |
| 03230623               | 54104-5092                      | CONNECTOR          | CN18 on MAIN BOARD,<br>CN2 on PC CARD BOARD                                                                                  | 1  | +1  |
| 03126067               | 18FMN-BMTTN-A-TFT               | CONNECTOR          | CN9 on MAIN BOARD,<br>CN1 on JACK BOARD                                                                                      | 1  | +1  |
| 03345856               | 34FMN-BMTTN-A-TFT               | CONNECTOR          | CN5,CN4 on MAIN BOARD                                                                                                        | 2  |     |
| 13369570               | B2B-PH-K-S (2P)                 | CONNECTOR          | CN21 on MAIN BOARD                                                                                                           | 1  |     |
| 13369562               | B15B-PH-K-S JST                 | CONNECTOR          | CN22 on MAIN BOARD,<br>CN18 on JACK BOARD                                                                                    | 1  | +1  |
| 13369592               | B7B-XH-A(7P) JST                | CONNECTOR          | CN10 on MAIN BOARD,<br>CN402 on INVERTER BOARD                                                                               | 1  | +1  |
| 03457478               | 20FLT-SM1-TB                    | CONNECTOR          | CN20 on MAIN BOARD,<br>CN301,CN302 on LCD BOARD                                                                              | 1  | +2  |
| 03126045               | 34FMN-STK-A                     | CONNECTOR          | CN5,CN6 on EXP BASE BOARD                                                                                                    | 2  |     |
| 02010078               | TX25-80P-6ST-E1                 | CONNECTOR          | CN4,CN3,CN2,CN1 on EXP BASE BOARD                                                                                            | 4  |     |
| 02782478               | 10FMN-STK                       | CONNECTOR          | CN201 on PANEL-B BOARD                                                                                                       | 1  |     |
| 03126034               | 38FMN-STK-A                     | CONNECTOR          | CN2 on PANEL-A BOARD                                                                                                         | 1  |     |
| 13369564               | B12B-PH-K-S JST                 | CONNECTOR          | CN11 on PANEL-A BOARD,<br>CN10 on JACK BOARD                                                                                 | 1  | +1  |
| 02566489               | SM02(8.0)B-BHS-TB               | CONNECTOR          | CN304 on LCD BOARD                                                                                                           | 1  |     |
| 01349645               | S2(4-2.3)B-XH-A                 | CONNECTOR          | CN305 on LCD BOARD                                                                                                           | 1  |     |
| 03126090               | 40FMN-SMT-A-TF                  | CONNECTOR          | CN501 on PANEL-C BOARD                                                                                                       | 1  |     |
| 13439311               | 520314-2                        | CONNECTOR          | CN701 on AFT BOARD                                                                                                           | 1  |     |
| 13369598               | 52147-0310 3PIN                 | WIRE TRAP          | CN702 on AFT BOARD,<br>CN16 on JACK BOARD                                                                                    | 1  | +1  |
| 01908667               | 22FE-BT-VK-N                    | CONNECTOR          | CN15 on JACK BOARD                                                                                                           | 1  |     |
| 01908645               | 16FE-BT-VK-N                    | CONNECTOR          | CN14 on JACK BOARD                                                                                                           | 1  |     |
| 02782467               | 10FMN-BTK                       | CONNECTOR          | CN6 on JACK BOARD                                                                                                            | 1  |     |
| 03126078               | 38FMN-BMTTN-A-TFT               | CONNECTOR          | CN5 on JACK BOARD                                                                                                            | 1  |     |
| 03126089               | 40FMN-BMTTN-A-TFT               | CONNECTOR          | CN7 on JACK BOARD                                                                                                            | 1  |     |
| 03013989               | B4B-PH-K-S JST(PB FREE)         | CONNECTOR          | CN8 on JACK BOARD                                                                                                            | 1  |     |
| 02673145               | B2(4-2.3)B-XH-A                 | CONNECTOR          | CN404 on INVERTER BOARD                                                                                                      | 1  |     |
| 13369556               | B8B-XH-A JST                    | CONNECTOR          | CN401 on INVERTER BOARD                                                                                                      | 1  |     |

WIRING, CABLE

|   |          |              |                        |   |
|---|----------|--------------|------------------------|---|
|   | 03234667 | WIRING W1    |                        | 1 |
| # | 03564923 | WIRING W1    |                        | 1 |
| # | 03565023 | WIRING W2    |                        | 1 |
| # | 03565034 | WIRING W3    |                        | 1 |
|   | 02342067 | WIRING       | 4X450-P2.0-PHR-PHR-F   | 1 |
|   | 02344034 | WIRING       | 12X250-P2.0-PHR-PHR-F  | 1 |
|   | 03120801 | WIRING W3    |                        | 1 |
|   | 03234712 | RIBBON CABLE | JWV 3X850-P2.0         | 1 |
|   | 03129301 | BAN CARD     | BNCD-P=1.00-K-10-400   | 1 |
|   | 03129323 | BAN CARD     | BNCD-P=1.00-K-34-60    | 2 |
|   | 03234689 | BAN CARD     | BNCD-P=1.00-K-18-650   | 1 |
|   | 03236412 | BAN CARD     | BNCD-P=1.00-K-40-550   | 1 |
|   | 03236423 | BAN CARD     | BNCD-P=1.00-K-38-450   | 1 |
| # | 03565345 | BAN CARD     | BNCD-S-P=0.50-K-50-220 | 1 |
| # | 03565356 | BAN CARD     | BNCD-P=0.50-K-20-700   | 1 |
| # | 03565367 | BAN CARD     | BNCD-P=0.50-K-20-60    | 1 |
|   | 02565078 | BAN CARD     | BNCD-P=1.25-K-16-700   | 1 |
|   | 02565089 | BAN CARD     | BNCD-P=1.25-K-22-650   | 1 |

TRANSFORMER

|   |          |                          |             |                          |   |
|---|----------|--------------------------|-------------|--------------------------|---|
| △ | 02019478 | (7KQ5) 19832A            | PULSE TRANS | T1 on JACK BOARD         | 1 |
|   | 03561389 | EL-INVERTOR DHE1105B-5VE | TRANSFORMER | MOD401 on INVERTER BOARD | 1 |

PICKUP, SENSOR

|  |          |                       |  |  |   |
|--|----------|-----------------------|--|--|---|
|  | 03128767 | PRESSURE SENSOR SHEET |  |  | 1 |
|--|----------|-----------------------|--|--|---|

SCREW

|  |          |               |                               |  |    |
|--|----------|---------------|-------------------------------|--|----|
|  | 40010345 | SCREW M4X10   | BINDING MACHINE FE BZC        |  | 1  |
|  | 40561190 | SCREW M3X10   | HEX SOCKET HEAD SPW NI        |  | 4  |
|  | 40010734 | SCREW 3X12    | BINDING HEAD TAPPING A1 FE ZC |  | 2  |
|  | 40012145 | SCREW 4X14    | TRUSS TAPPING A BZC           |  | 2  |
|  | 40346201 | SCREW 4X20    | TRUSS TAPPING TWIN BZC        |  | 15 |
|  | 40013690 | SCREW M3X8    | VWH TAPTITE B ZC              |  | 3  |
|  | 40128512 | SCREW 4X25X20 | PAN WASHER HEAD TAPTITE B BZC |  | 20 |
|  | 40346289 | SCREW 4X12    | OVAL HEAD TAPTITE B NI        |  | 12 |
|  | 40011056 | SCREW 3X6     | BINDING TAPTITE B ZC          |  | 29 |
|  | 40011101 | SCREW 3X8     | BINDING TAPTITE B BZC         |  | 32 |
|  | 40011123 | SCREW 4X8     | BINDING TAPTITE B BZC         |  | 6  |
|  | 40239734 | SCREW 3X6     | VWH B-TIGHT ZC                |  | 5  |
|  | 40011312 | SCREW 3X8     | BINDING TAPTITE P BZC         |  | 19 |
|  | 40013078 | SCREW M3X10   | PAN MACHINE W/SW FE ZC        |  | 1  |
|  | 40343367 | SCREW M2X14   | PAN MACHINE W/SW+SMALL PWZC   |  | 4  |
|  | 40011490 | SCREW M3X6    | PAN MACHINE W/SW BZC          |  | 22 |
|  | 40012912 | SCREW M4X20   | PAN HEAD DOUBLE SEMS FE ZC    |  | 2  |
|  | 40013023 | SCREW M4X25   | PAN HEAD DOUBLE SEMS FE BZC   |  | 10 |
|  | 40017934 | SCREW M3X6    | PAN MACHINE W/SW+PW FE ZC     |  | 4  |
|  | 22150501 | STAND OFF     | M3 L10C                       |  | 4  |
|  | 40011745 | HEX NUT M4    | SPRING NUT FE ZC              |  | 1  |
|  | 40010745 | SCREW 3X16    | BINDING HEAD TAPPING A1 FEZC  |  | 6  |

PACKING

|   |          |                      |  |  |   |
|---|----------|----------------------|--|--|---|
| # | 03670301 | ACCESSORY PAD        |  |  | 1 |
| # | 03670290 | UPPER PAD CENTER     |  |  | 1 |
|   | 03235889 | SIDE PAD L           |  |  | 1 |
|   | 03235901 | PAD LOWER PAD CENTER |  |  | 1 |
|   | 03235890 | SIDE PAD R           |  |  | 1 |
| # | 03569990 | PACKING CASE         |  |  | 1 |

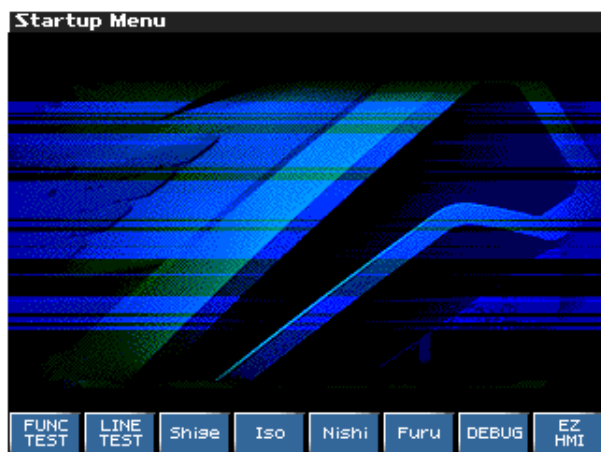
MISCELLANEOUS

|   |          |                   |                          |                   |    |
|---|----------|-------------------|--------------------------|-------------------|----|
|   | 03346289 | IC SOCKET         | 61816-61103              | CN2 on MAIN BOARD | 1  |
| # | 40566001 | DOUBLE-FACED TAPE | #500 W100MM 20M 18P (CM) |                   | 1  |
|   | 40122812 | ACETATE TAPE      | NITTO NO.5 BLK W15MM 30M |                   | 40 |
|   | 40122901 | DOUBLE-FACED TAPE | #501F W10MM 20M 20P (CM) |                   | 2  |
|   | 03236612 | HARNESS CLIP      | HC-6                     |                   | 1  |
|   | 22265286 | KEY FELT          | 226-286                  |                   | 1  |
|   | 40565990 | LABEL STICKER     |                          |                   | 1  |
|   | 40565956 | LABEL             | FCC LOGO MARK            |                   | 1  |
| # | 03670334 | SHIELD SHEET JACK |                          |                   | 1  |
| # | 03670345 | INSULATING SHEET  |                          |                   | 1  |
| # | 03670323 | SHIELD SHEET MAIN |                          |                   | 1  |
|   | 03670734 | SPACER M3X20      | HEX                      |                   | 1  |
|   | 00670734 | PWB SPACER        | WLS-12-0                 |                   | 1  |
|   | 40016589 | NYLON RIVET       | NRP-335                  |                   | 1  |
|   | 40120967 | COATING CLIP      | CS-3                     |                   | 3  |

| MISCELLANEOUS          |          |                              |                              |   |
|------------------------|----------|------------------------------|------------------------------|---|
|                        | 40016512 | INSULOK TIE                  | 80M/M T-18S                  | 4 |
|                        | 40016545 | LOCKING TOOL FOR INSULOK TIE | SKM-1                        | 1 |
|                        | 40014589 | WARNING SEAL                 | 102-103                      | 1 |
| ACCESSORIES (STANDARD) |          |                              |                              |   |
| △                      | 03340956 | AC CORD SET                  | 100V YA-101/YP-3NB           | 1 |
| △                      | 00894378 | AC CORD SET                  | 120V SP301+IS14 SJT18/3      | 1 |
| △                      | 00894389 | AC CORD SET                  | 230V SP22+IS14 H05VV-F3G1.0  | 1 |
| △                      | 23495124 | AC CORD SET                  | 240VA SC-144-JO1 ES303-10HMA | 1 |
| △                      | 00907001 | AC CORD SET                  | 240VE KP-610 GTTBS-3 KS-31A  | 1 |
|                        | 03569745 | CD-ROM                       | V1.00                        | 1 |
|                        | 72564078 | OWNER'S MANUAL               | JAPANESE                     | 1 |
|                        | 72564812 | OWNER'S MANUAL               | ENGLISH                      | 1 |
|                        | *****    | LEAFLET USER TOUROKU ANNAI   |                              | 1 |
|                        | *****    | SAMPLING CD                  |                              | 1 |
|                        | 03120712 | CARD PROTECTOR               |                              | 1 |
|                        | 03236623 | HEXAGON WRENCH (2.5MM)       |                              | 1 |
|                        | 40232334 | WARRANTY CARD                | MOCHIKOMI JAPAN ONLY         | 1 |

# MAIN BOARD SETTING FOR SELECTING MODEL PROCEDURE

1. Turn on the power of the Fantom.
2. Press the [MENU] button to display the Menu window.
3. Turn the [VALUE] dial to select "Utility," and then press the [ENTER] button.
4. Press the [4]
5. Press the buttons in the order of [SHIFT] ,[4],[5],[1],[8], and the LCD display will show as follows.



6. Press the [F8 (EZHMI)] button to display the [Service Utility].



7. Press the [+OCT] button twice to display the [3.PJCODE] .

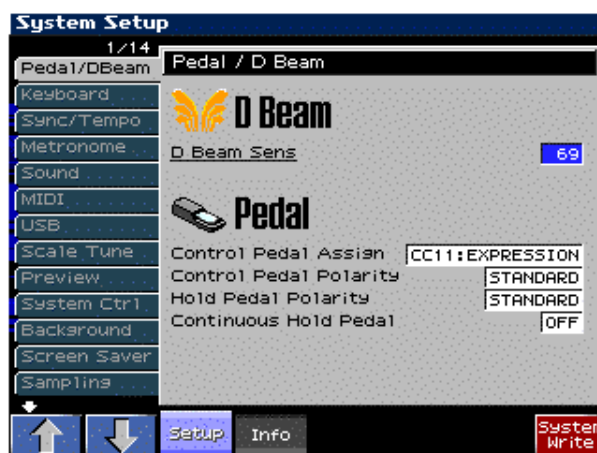


8. Press the [F1],[F2] or [F3] to select the model.  
[F1]: 61keys -> Fantom-X6  
[F2]: 76keys -> Fantom-X7  
[F3]: 88keys -> Fantom-X8
9. Turn off and turn on the power again

## CHECKING THE VERSION NUMBER

The display sample is for Fantom-X7. about X6,X8 display portion of X7 is X6 and X7.

1. Turn on the power of the Fantom-X.
2. Press the [MENU] button to access the Menu window.
3. Use the [CURSOR] up/down buttons to select "System," and then press the [ENTER] button.
4. The System Setup screen will appear, and the LCD display will show as follows.



5. Press the [4] button "System Info".
6. Use [1 (▲)] [2 (▼)] to select "Version Info." The Version Info screen will appear, and the LCD display will show the program version number.



## USERS DATA SAVE AND LOAD

### Backing Up User Data (User Backup)

Here's how all user data in the user area can be saved on a memory card.

The following user data will be saved.

- Performances
- Patches
- Rhythm sets
- Rhythm Patterns
- Rhythm Groups
- Multisamples
- Songs
- Samples
- Pattern sets
- RPS sets
- Arpeggio styles
- Chord forms
- System settings

\* In order to execute User Backup, the memory card must have approximately 16 MB or more free area.

1. Insert a memory card into the slot.
2. Turn on the power of the Fantom.
3. Press the [MENU] button to display the Menu window.
4. Turn the [VALUE] dial to select "Utility," and then press the [ENTER] button.
5. In the Utility screen, press [1 (User Backup)].  
A message will ask you for confirmation.
6. To execute the backup, press [8 (Exec)].  
To cancel, press [7 (Cancel)].

### Restoring User Data that You Backed Up (User Restore)

Here's how user data saved on a memory card by the User Backup operation can be reloaded back into the user memory of the Fantom-X.

When you execute User Restore, the current contents of the user area will be completely erased.

1. Into the slot, insert the memory card on which user data has been saved.
2. Turn on the power of the Fantom.
3. Press the [MENU] button to display the Menu window.
4. Turn the [VALUE] dial to select "Utility," and then press the [ENTER] button.
5. In the Utility screen, press [2 (User Restore)].  
A message will ask you for confirmation.
6. To proceed with the restoration, press [8 (Exec)].  
To cancel, press [7 (Cancel)].
7. When the display indicates "Please Power Off," turn the power off, then on again.

## TEST MODE

The display sample is for Fantom-X7. about X6,X8 display portion of X7 is X6 and X7.

### Required equipment

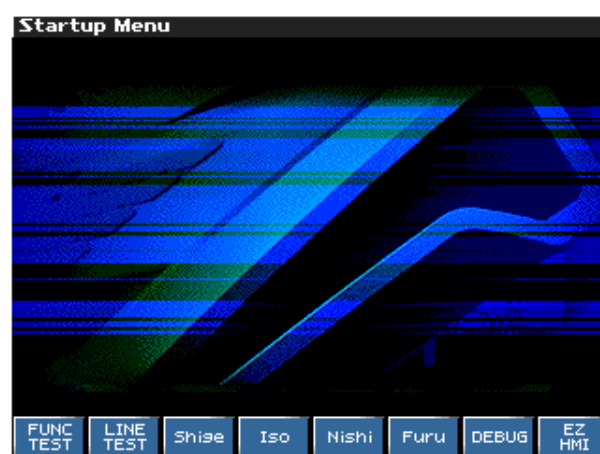
1. Monitor speakers
2. MIDI cables
3. Audio cables
4. PCS-31 (stereo phone plug <=> monaural phone plug x 2)
5. Coaxial (PIN) cable
6. USB cable
7. PC CARD
8. 512 MB DIMM (for DIMM specifications, refer to Main Specifications)
9. Wave expansion boards: SRX series, 4 pcs.
10. Computer (with USB connector; OS may be Windows Me, Windows 2000, or Windows XP)
11. Expression pedal (e.g., EV-5)
12. Test device for applying a force of 3(kgf) (e.g., push-pull gauge) or Weight 3 kg

### Test mode procedure

Before you begin Test mode, make sure that the power is turned off, detach the EXP COVER from the bottom panel of the Fantom, and insert the DIMM and expansion boards you provided.

### Starting up Test Mode

1. Turn on the power of the Fantom.
2. Press the [MENU] button to display the Menu window.
3. Turn the [VALUE] dial to select "Utility," and then press the [ENTER] button.
4. Press the [4]
5. Press the buttons in the order of [SHIFT] ,[4],[5],[1],[8], and the LCD display will show as follows.



When you press the [2] button (LINE TEST), the LCD display will show as follows, and Test mode will start up.

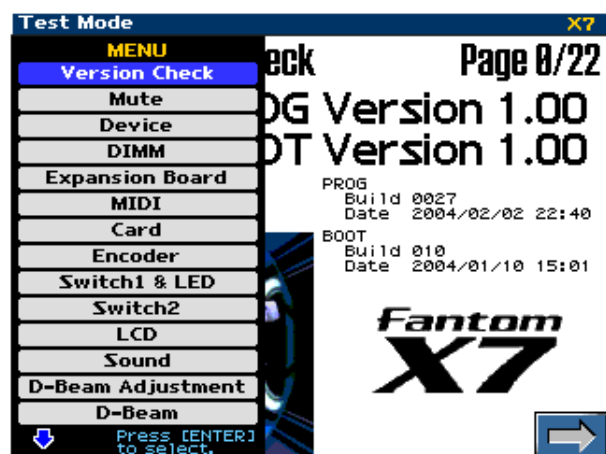


## Basic operation in Test mode

Basic operation of the controls will be as follows.

- [8] To the next test screen
- [1] To the previous test screen
- [SHIFT]+[8] Forcibly move to the next test screen
- [SHIFT]+[1] Forcibly move to the previous test screen
- [MENU] Select test items

When you enter the test item select screen, the LCD display will show as follows.



Use the [VALUE] dial, [INC][DEC] buttons, or [CURSOR] up/down buttons to select a test item, and press the [ENTER] button.

## Test items

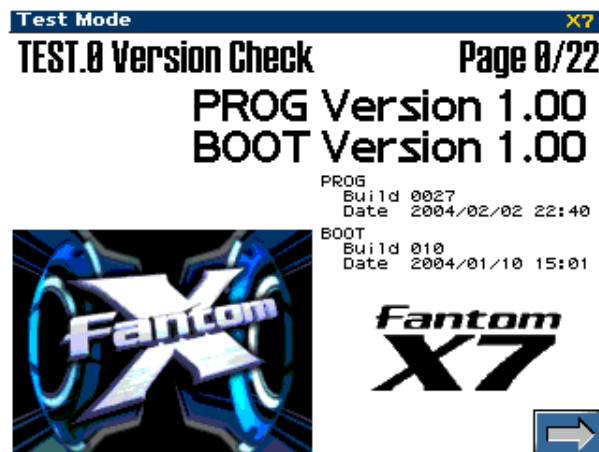
Test the following twenty items.

0. Version Check
1. Mute
2. Device
3. DIMM
4. Expansion Board
5. MIDI Test
6. Card
7. Encoder Test
8. Switch1 & LED Test
9. Switch2
10. LCD Test
11. Sound Test
12. D-Beam Adjustment
13. D-Beam

14. Pad Adjustment
15. Pad Velocity Test
16. Pad Aftertouch Test
17. A/D Test
18. Keyboard Test
19. USB
20. Noise Test
21. Factory Reset
22. Completed

## 0. VERSION check

When you enter Test mode, you will begin from the VERSION check item.



The LCD display shows the program version number.

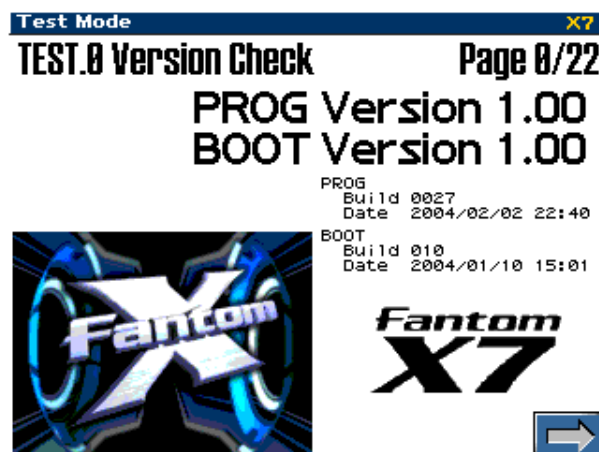
All LEDs will light.

Press the [8] button to proceed to the next test item.

## 1. MUTE test

This tests the mute circuit on the jack board.

The LCD display will show as follows, and a built-in demo song will begin playing.



Verify that an audio signal is being output from the [PHONES] jack and the [OUTPUT A L/R] jacks.

Then verify that the audio signal is muted while you press the [4] button.

Press the [8] button to proceed to the next test item.

## 2. DEVICE test

This tests various devices located on the main board.

When you enter the DEVICE test, the LCD display will show as follows, and device testing will begin automatically.

Test Mode X7

TEST.2 Device

Page 2/22



|                  |    |
|------------------|----|
| 1: FLASH (NOR)   | OK |
| 2: FLASH (NAND)  | OK |
| 3: SD-RAM (MAIN) | OK |
| 4: SD-RAM (SMPL) | OK |
| 5: SD-RAM (DSP)  | OK |
| 6: WAVE ROM      | NG |
| 7: WX            | OK |
| 8: USBC          | NG |



Devices corresponding to LCD display indications

| LCD display indication | Corresponding main board device |
|------------------------|---------------------------------|
| 1:FLASH (NOR)          | IC19                            |
| 2:FLASH (NAND)         | IC53                            |
| 3:SD-RAM (MAIN)        | IC2,6                           |
| 4:SD-RAM (SMPL)        | IC20,24                         |
| 5:SD-RAM(DSP)          | IC106                           |
| 6:WAVE ROM             | IC28,IC33,IC103,IC104           |
| 7:XV                   | IC102                           |
| 8:USBC                 | IC56                            |

If all test results are OK, you will automatically proceed to the next test item.

3. DIMM test

This tests the DIMM socket and peripheral circuits.  
When you enter the DIMM test, the LCD display will show as follows, and the DIMM test will begin automatically.

Test Mode X7

TEST.3 DIMM

Page 3/22



DIMM Socket:

DIMM Read/Write:

NG

NG



If the test result is OK, you will automatically proceed to the next test item.

4. Expansion Board test

This tests the Expansion Board socket and peripheral circuits.  
When you enter the Expansion Board test, the LCD display will show as follows, and the Expansion Board test will begin automatically.

Test Mode X7

TEST.4 Expansion Board

Page 4/22



Slot-A:

Slot-B:

Slot-C:

Slot-D:

NG

NG

NG

NG



If the test result is OK, you will automatically proceed to the next test item.

5. MIDI test

This tests MIDI connectivity.  
When you enter the MIDI test without any MIDI cable connected between MIDI IN and MIDI OUT, the LCD display will show as follows.

Test Mode X7

TEST.5 MIDI

Page 5/22

Status: Disconnect



Please, Connect MIDI In and Out.



Use a MIDI cable to connect the MIDI IN and MIDI OUT .  
If the test result is OK, you will automatically proceed to the next test item.

6. Card

This tests the PC CARD connector and peripheral circuits.  
When you enter the Card test, the LCD display will show as follows.

Test Mode X7

TEST.6 Card

Page 6/22



Protect= OK

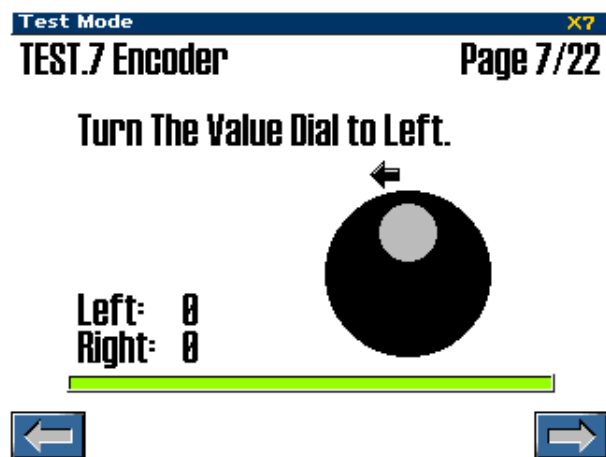
Please, Remove The Card.



Next insert the PC CARD (formatted; no protect label) into the PC card slot.  
When the test result is OK, the display will indicate “Read/Write=OK Please,Remove The Card”.  
When you remove the inserted PC CARD, you will automatically proceed to the next test item.

## 7. Encoder

When you enter the Encoder test, the LCD display will show as follows.



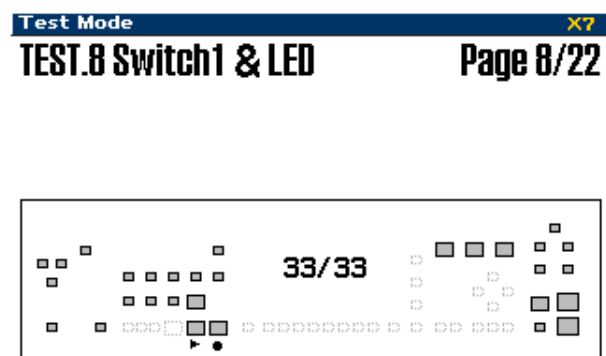
Continue turning the [VALUE] dial toward the left, and verify that the LCD display indicates "Left: 72 OK."

Next, continue turning the [VALUE] dial toward the right, and verify that the LCD display indicates "Right: 72 OK." You will then automatically proceed to the next test item.

## 8. Switch1 & LED

This tests the operation of LED-equipped switches.

When you enter the Switch 1 & LED test, the LCD display will show as follows.



**1:PAD\_TRIGGER**

One LED-equipped panel switch will light.

When you press that switch, the next LED-equipped switch will light.

Repeat this until all switches are OK, and you will automatically proceed to the next test item.

Pressing two or more switches simultaneously is not valid.

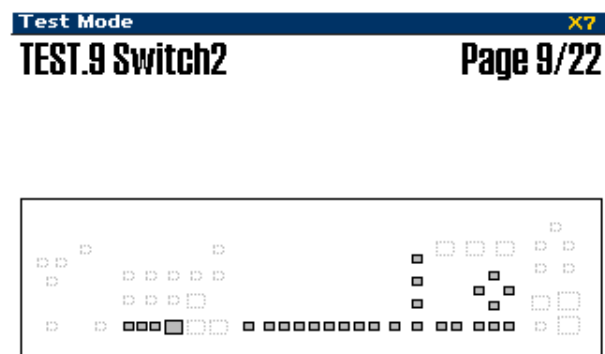
Switches with an LED window will produce the OK result when they are pressed once. In the case of switches (without a window) located next to exposed LEDs, the OK result will be produced when you press the switch the number of times corresponding to the number of exposed LEDs.

When the display for all switches has become lighter, and the test results are OK, you will automatically proceed to the next test item.

## 9. Switch2

This tests the operation of switches that were not checked in the Switch1 & LED test.

When you enter the Switch2 test, the LCD display will show as follows.



One by one, press each switch shown in the LCD display.

Verify that the indication in the LCD display for the corresponding switch becomes lighter.

When the indications of all switches have become lighter and the test results are OK, you will automatically proceed to the next test item.

## 10. LCD

This tests the operation of the LCD display.

When you enter the LCD test, the LCD display will show as follows.



**Press 'F8' For Test.**

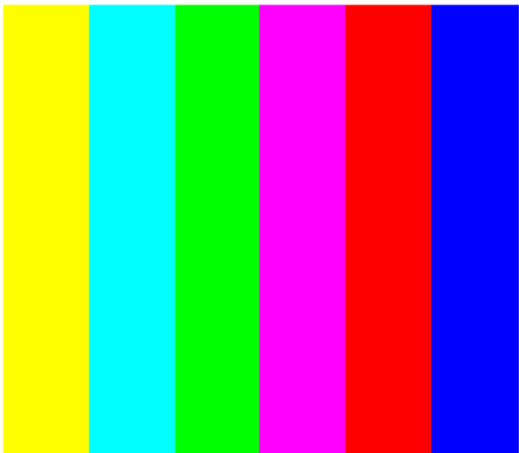
When you press the [8] button you will proceed to the eight-level grayscale test. The LCD display will show as follows.



Turn the [LCD CONTRAST] knob, verify that eight-levels of grayscale are displayed, and set the knob to the optimal contrast.

When you press the [8] button you will proceed to the color display test. The

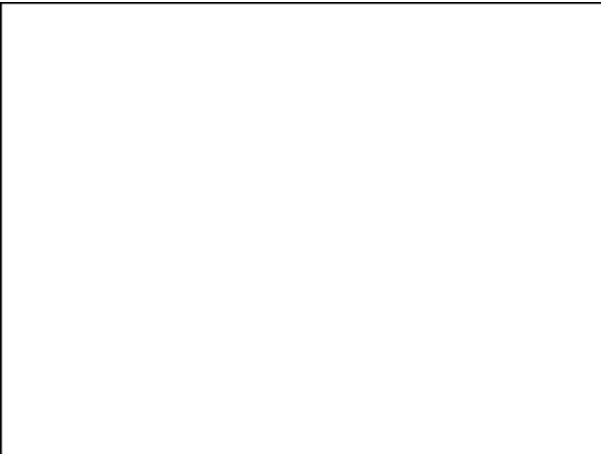
LCD display will show as follows.



When you press the [8] knob, you will proceed to the all-pixels-displayed test. The LCD display will show as follows.



Verify that there are no missing dots, and that the darkness is consistent. When you press the [8] button, you will proceed to the all-pixels-on test. The LCD display will show as follows.

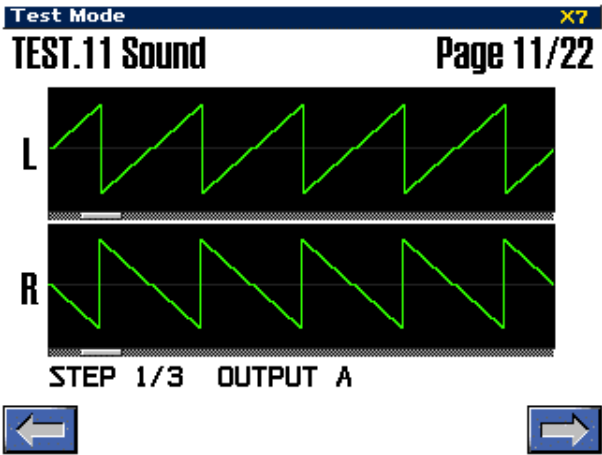


Verify that there is no obtrusive dirt or dust. Press the [8] button to proceed to the next test item.

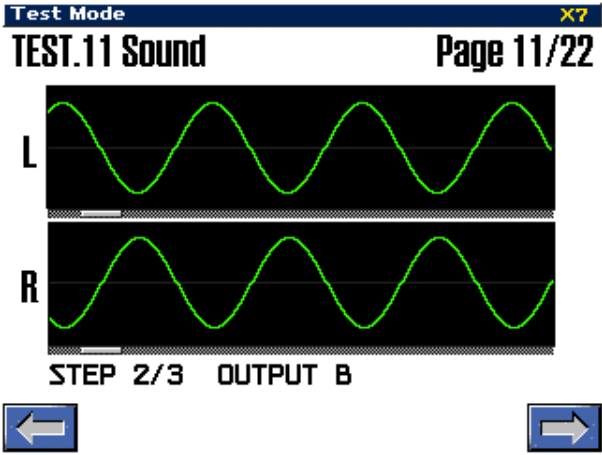
11. Sound test

This tests the audio input/output circuitry. First you will test the [OUTPUT A L (MONO)] jack and [INPUT L/R] jack circuitry. Connect the stereo side of the PCS-31 to the [OUTPUT A L (MONO)] jack, connect the PCS-31's monaural L channel to the [INPUT L] jack, and the PCS-31's monaural R channel to the [INPUT R] jack. Insert a dummy plug into the [OUTPUT A R] jack, and turn the [VOLUME OUTPUT] knob and [VOLUME INPUT] knob all the way toward the right (MAX).

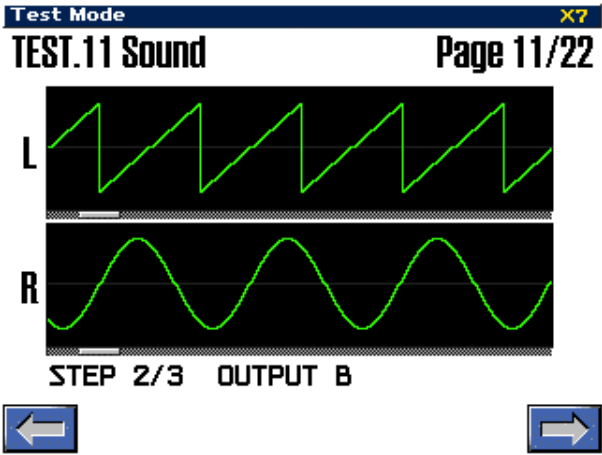
Verify that the LCD display shows a sawtooth wave and another sawtooth wave (of inverted phase relative to the upper one) below, as follows.



Next you will test the circuitry of the [OUTPUT A R] jack. Connect the stereo side of the PCS-31 to the [OUTPUT A R] jack, connect the PCS-31's monaural L channel to the [INPUT L] jack, and connect the PCS-31's monaural R channel to the [INPUT R] jack. Turn the [VOLUME OUTPUT] knob and the [VOLUME INPUT] knob all the way toward the right (MAX). Verify that the LCD display shows a sine wave above and another sine wave (of inverted phase relative to the upper one) below, as follows.

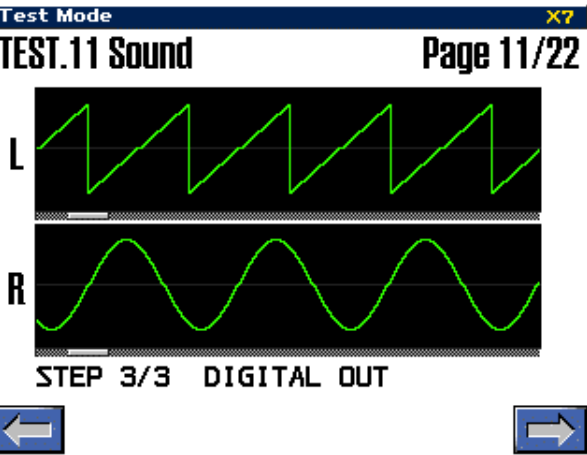


When you press the [8] button you will proceed to the test of the [OUTPUT B L/R] jack circuit. Use an audio cable to connect the [OUTPUT B L] jack to the [INPUT L] jack, and the [OUTPUT B R] jack to the [INPUT R] jack. Turn the [VOLUME INPUT] knob all the way toward the right (MAX). Verify that the LCD display shows a sawtooth wave above and a sine wave below, as follows.



When you press the [8] button you will proceed to the test of the [DIGITAL INPUT OUTPUT] jacks. Use a COAXIAL (pin) cable to connect the [DIGITAL INPUT] and [DIGITAL OUT] jack.

Verify that the LCD display shows a sawtooth wave above and a sine wave below, as follows.



Press the [8] button to proceed to the next test item.

12. D-Beam Adjustment test

This adjusts the sensitivity of the [D BEAM] controller. This adjustment sets the optimal sensitivity for the controller by making adjustments for two distances from the [D BEAM] controller; at 5 cm and at 45 cm.

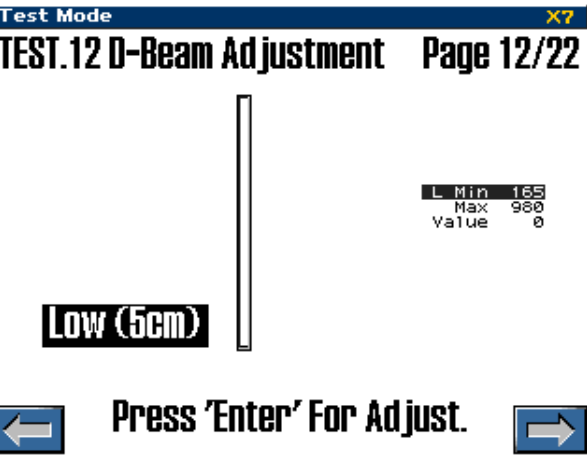
Before you begin this test: The location of the Fantom must satisfy the following conditions.

Do not place objects nearby the Fantom. (It must be at least 30 cm from surrounding objects.)

Place the Fantom at a distance from large flat surfaces such as ceiling or walls. (It must be at least 100 cm away from such surfaces.)

Do not place the Fantom where strong light, such as direct sunlight or electric light, can fall on it.

When you enter the D-Beam Adjustment test, the LCD display will show as follows.



First make the “5 cm” setting for the [D BEAM] controller. The LCD display will indicate “Low (5cm).”

Place your hand in parallel with the panel surface at a vertical distance of 5 cm from the [D BEAM] controller, and press the [ENTER] button. Do not move your hand while the lower part of the LCD display shows “Now Adjusting...”

When the setting has been completed, you will automatically proceed to the next setting.

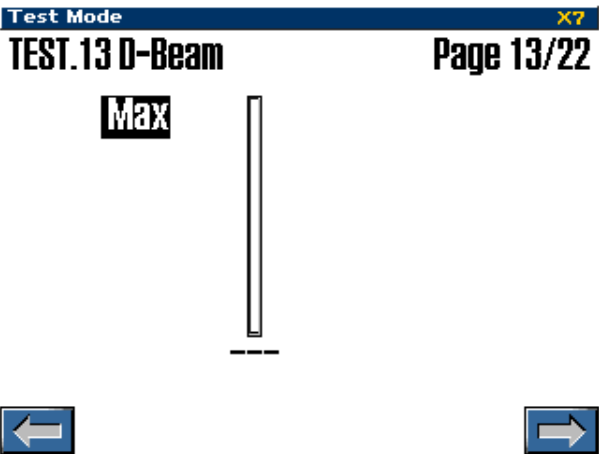
Make the “45 cm” setting for the [D BEAM] controller. The LCD display will indicate “High (45cm).”

Place your hand in parallel with the panel surface at a vertical distance of 45 cm from the [D BEAM] controller, and press the [ENTER] button. Do not move your hand while the lower part of the LCD display shows “Now Adjusting...”

When the setting has been completed, you will automatically proceed to the next test item.

13. D-Beam test

This tests the operation of the [D BEAM] controller. When you begin the D-Beam test, the LCD display will show as follows.



First you will test the [D BEAM] controller. The LCD display will show “Max.”

Place your hand above the [D BEAM] controller, and move that hand downward.

Verify that the LCD display shows the maximum value (L 127) when your hand is approximately 5 cm from the surface of the panel.

If the test result is OK, the LCD display will show “Min.”

Place your hand above the [D BEAM] controller, and move that hand upward.

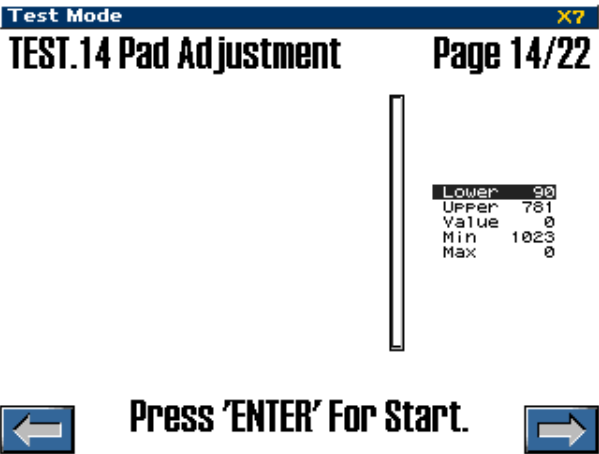
Verify that the LCD display shows the minimum value (L 0) when your hand is approximately 45 cm from the surface of the panel.

If the test result is OK, you will automatically proceed to the next test item.

14. Pad Adjustment

This adjusts the [DYNAMIC PAD] sensitivity. This adjustment sets the optimal [DYNAMIC PAD] sensitivity relative to a force of 3 (kgf) applied to the [DYNAMIC PAD].

When you enter the Pad Adjustment test, the LCD display will show as follows.



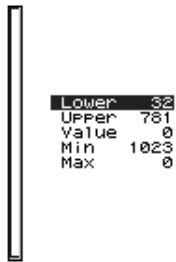
When you press the [ENTER] button, every [DYNAMIC PAD] will blink, and the LCD display will show as follows.

Test Mode

X7

TEST.14 Pad Adjustment

Page 14/22



←

Press 'PAD' For Adjust.

→

Using the push-pull gauge you provided, apply pressure of 3 (kgf) to [DYNAMIC PAD 4].

When you press the [ENTER] button, the setting will be saved and you will automatically proceed to the next test item.

15. Pad Velocity

This tests [DYNAMIC PAD] operation.

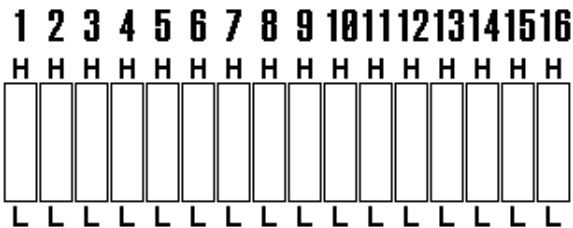
When you enter the Pad Velocity test, every [DYNAMIC PAD] will blink, and the LCD display will show as follows.

Test Mode

X7

TEST.15 Pad Velocity

Page 15/22



←

→

Lightly press each [DYNAMIC PAD] from [1] through [16].

Verify that the LED of the [DYNAMIC PAD] you press changes from blinking to lit, and that in the LCD display the "L" indication for the corresponding button becomes lighter.

Strongly press each [DYNAMIC PAD] from [1] through [16].

Verify that the LED of the [DYNAMIC PAD] you press changes from lit to dark, and that in the LCD display the "H" indication for the corresponding button becomes lighter.

If the test result is OK, you will automatically proceed to the next test item.

16. Pad Aftertouch

This tests [DYNAMIC PAD] operation.

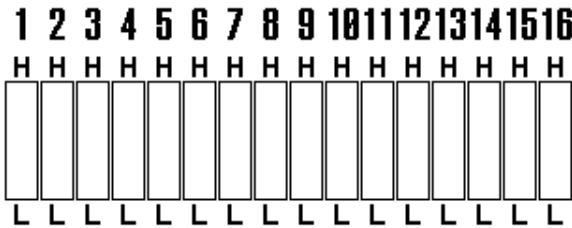
When you enter the Pad Velocity test, every [DYNAMIC PAD] will blink, and the LCD display will show as follows.

Test Mode

X7

TEST.16 Pad Aftertouch

Page 16/22



←

→

Strongly and slowly press each [DYNAMIC PAD] from [1] through [16].

Verify that the LED of the [DYNAMIC PAD] you press changes from blinking to dark, and that in the LCD display the bar graph for the corresponding button becomes lighter.

If the test result is OK, you will automatically proceed to the next test item.

17. A/D

This tests the operation of each rotary control and slide control.

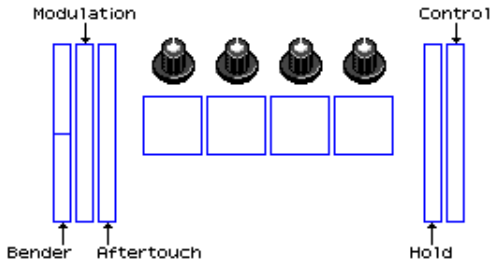
When you enter the A/D test, the LCD display will show as follows.

Test Mode

X7

TEST.17 A/D

Page 17/22



←

→

One by one, operate all controls (other than the [VOLUME OUTPUT] knob and the [VOLUME INPUT] knob), including the bender, aftertouch, [CONTROL] jack (connect an expression pedal such as the EV-5), and [HOLD] jack (connect an expression pedal such as the EV-5), to adjust through their variable range from MAX to MIN.

Verify that the corresponding indicator in the LCD display becomes lighter.

When all indicators have become light, and the test results are OK, you will automatically proceed to the next test item.

## 18. Keyboard

This tests the keyboard.

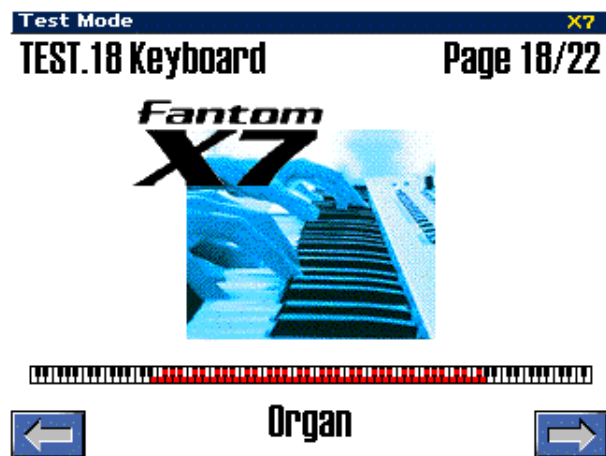
When you enter the keyboard test, the LCD display will show as follows.



Perform the eight-note check. Play the keyboard to check.

Also verify that the volume changes according to the strength with which you press the key.

When you press the [8] button, the sound will change, and the LCD display will show as follows.



Perform the two-note check. Play the keyboard to check.

Press the [8] button to proceed to the next test item.

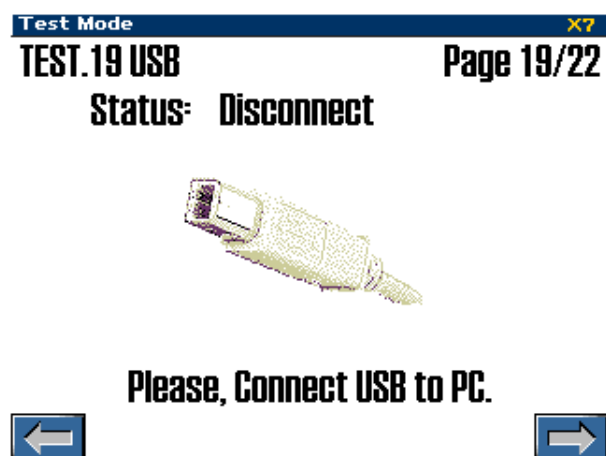


When you do not check the all key, you can not proceed to the next test items.

## 19. USB

This tests USB operation.

When you enter the USB test, the LCD display will show as follows.



Connect a USB cable to your computer (one that has a USB connector; the OS can be either Windows Me, Windows 2000, or Windows XP).

If the test result is OK, the display will indicate "Status: Connect USB Test Completed!"

On your computer, use the Safely Remove Hardware icon shown in the taskbar at the lower right of the screen to break the connection with the Fantom-X.

Press the [8] button to proceed to the next test item.

## 20. Noise test



1. Check the noise is soundig or not.
2. Press the [8] button to proceed to the next test item.

## 21. Factory Reset

This perform a Factory Reset.

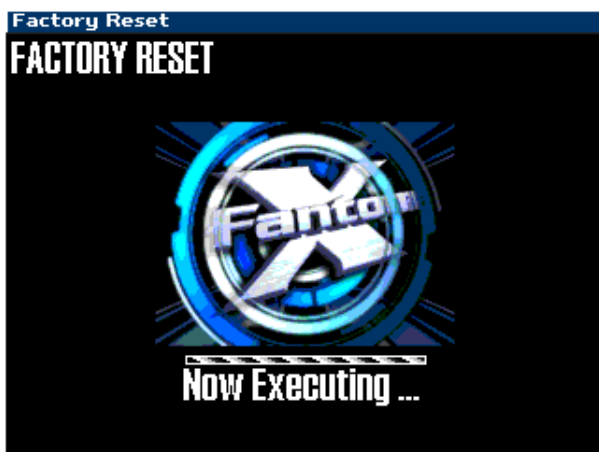
The LCD display will show as follows.



**Press 'ENTER' to Factory Reset.**



When you press the [ENTER] button, the LCD display will show as follows, and the factory reset will be executed automatically.



When the factory reset is completed, the LCD display will show as follows, and you will exit Test mode.



**COMPLETED**  
**Please Power Off.**

Turn off the power of the Fantom.

## RESTORING THE FACTORY SETTINGS

This restores all data in the Fantom-X to the factory-set condition (Factory Reset).



If there is important data you've created that's stored in the Fantom-As's internal memory, all such data is discarded when a Factory Reset is performed (the data of the internal user memory will be lost). If you want to keep the existing data, save it on a PC CARD or save it on via USB to your computer

1. Press [MENU] to open the Menu window.
2. Press to select "Utility," and then press [ENTER].
3. Press [3 (Factory Reset)].  
A message will ask confirmation.
4. Press [8 (Exec)] to execute the Factory Reset.  
\* To cancel, press [7 (Cancel)].
5. When the display indicates "Please Power Off," turn the power off, then on again.

## SYSTEM SOFTWARE UPDATE PROCEDURE

The Fantom-X uses flash memory as its program ROM, and can be updated using either of the following two methods.

### 1. Updating from a computer via a USB cable

(Time required: approximately 3 minutes)

### 2. Updating from PC CARD via the Fantom's PC card slot

(Time required: approximately 3 minutes)

### 1. Updating from a computer via a USB cable

#### Required items

1. UPDATE DATA FOR SERVICE CD-ROM (#17041422)
2. A computer (with a USB connector; the OS can be either Windows Me, Windows 2000, or Windows XP)  
\* You cannot use a Mac under any circumstances.
3. One PC card (64 MB or more free space) or PC
4. Used to back up user data
5. USB cable

If user memory contains important data, save the data (refer to Saving and Loading User Data) before you perform the update procedure.

#### Procedure

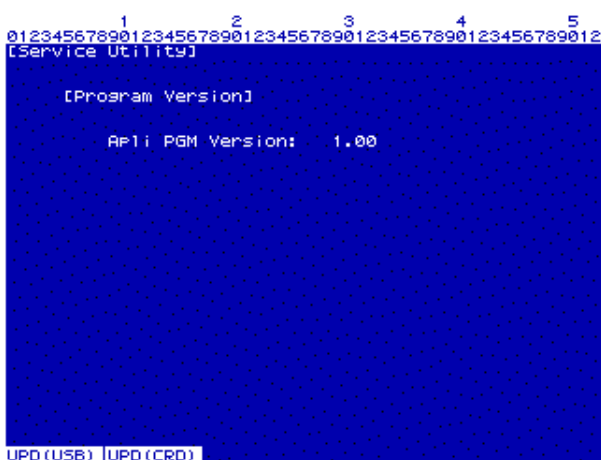
1. Turn on the power of the Fantom-X.
2. Press the [MENU] button to access the Menu window.
3. Use the [CURSOR] up/down buttons to select "System," and then press the [ENTER] button.
4. The System Setup screen will appear, and the LCD display will show as follows.



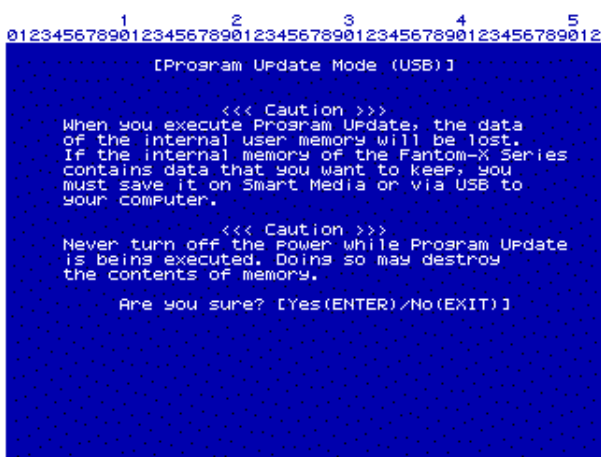
5. Press the [4] button "System Info".
6. Use [1 (▲)] [2 (▼)] to select "Version Info." The Version Info screen will appear, and the LCD display will show as follows.



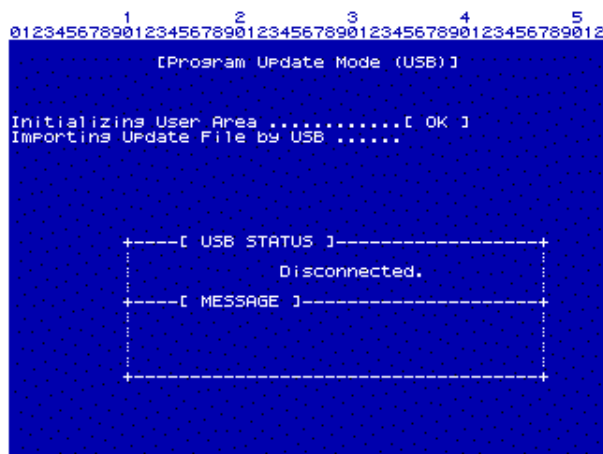
7. Press buttons in the order of [SHIFT]->[7]->[8]->[7]->[8].
8. The "Service Utility" screen will appear, and the LCD display will show as follows.



9. When you press the [1] button, the [Program Update Mode (USB)] screen will appear, and the LCD display will show as follows.



10. Press the [ENTER] button. The LCD display will show "Initializing...." and will then show as follows.
11. If you decide to cancel the update, press the [EXIT] button before you press the [ENTER] button. (If you execute the update, all user data will be erased.)



At this time " [USB STATUS] " will indicate the status of the USB connection.  
 [USB STATUS] Disconnected. The computer is not connected.  
 [USB STATUS] connected. The Fantom-X is connected to the computer.  
 [USB STATUS] Receiving. Data is being received from the computer.

12. Turn on the power of the computer.
13. Use a USB cable to connect the computer to the Fantom-X. (The computer will detect the Fantom-X as a removable disk drive.)  
 Verify that the LCD display of the Fantom-X indicates " [USB STATUS] connected. "
14. Insert the UPDATE CD-ROM (#17041422) into your computer, and navigate to the "Roland" folder of the CD-ROM.
15. Copy the file "fanx.bin" file (located within the "Roland" folder) to the Fantom-X (removable disk).  
 The Fantom-X will receive the data from the computer.  
 Verify that the LCD display of the Fantom-X indicates " [USB STATUS] Receiving. "  
 When the LCD display of the Fantom-X shows the " [USB STATUS] Connected. " indication for ten seconds or longer, this indicates that the copy has been completed.
16. On your computer, use the Safely Remove Hardware icon in the taskbar at the lower right of the screen to disconnect the Fantom-X from your computer.
17. Press the [ENTER] button. After a time, the display will indicate "Completed. Please, PowerOff." The update procedure has been completed.
18. Turn the power of the Fantom-X off and then on again, and perform the version check and execute Test mode.

## Cautions when updating via USB

After you have pressed the [ENTER] button at the end of the procedure described above, never turn off the power of the Fantom-X until the indication of "Completed. Please, PowerOff." has appeared. If the power is turned off during this time, the program will be erased.  
 You must restart your computer before you begin the update procedure.

## 2. Updating from PC CARD via the Fantom's PC card slot

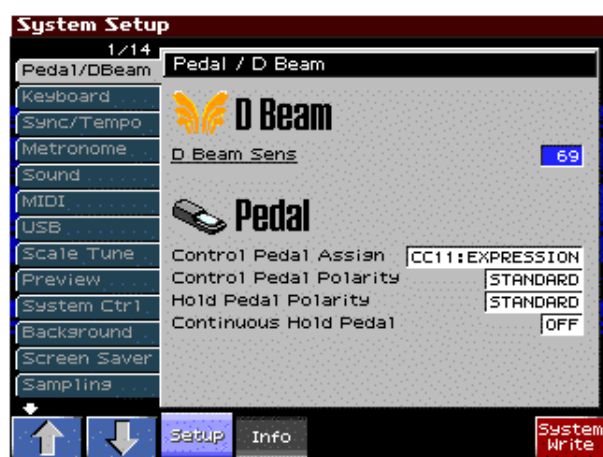
### Required items

- UPDATE DATA FOR SERVICE CD-ROM (#17041420)
- Computer (the OS can be either Windows Me, Windows 2000, or Windows XP)
- \* You cannot use a Mac under any circumstances.
- PC cards (one with 32 MB or more free space, one with 32 MB or more free space (used to back up user data))
- \* In addition, substitution to PC is possible for user data back up.
- PC CARD reader/writer

If user memory contains important data, save the data (refer to Saving and Loading User Data) before you perform the update procedure.

## Procedure

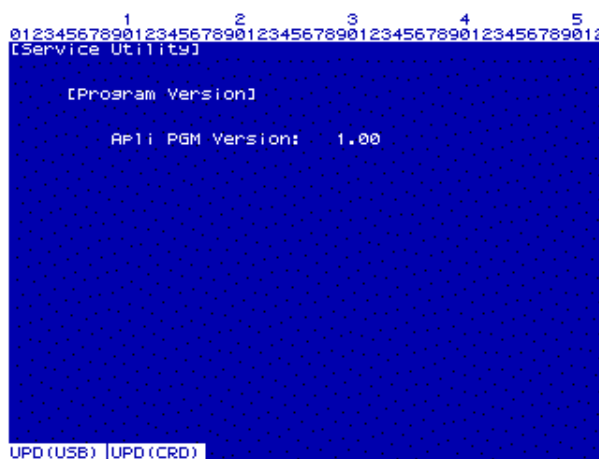
1. Create an update card.
2. Turn on the power of your computer.
3. Insert a 32 MB or larger PC card into the PC CARD reader/writer connected to your computer, and format it.
4. Insert the UPDATE CD-ROM (#17041420) into your computer, and navigate to the "Roland" folder within the CD-ROM.
5. Copy the entire "Roland" folder with its contents onto the PC card.
6. Turn on the power of the Fantom-X.
7. Press the [MENU] button to access the Menu window.
8. Use the [CURSOR] up/down buttons to select "System," and then press the [ENTER] button.
9. The System Setup screen will appear, and the LCD display will show as follows.



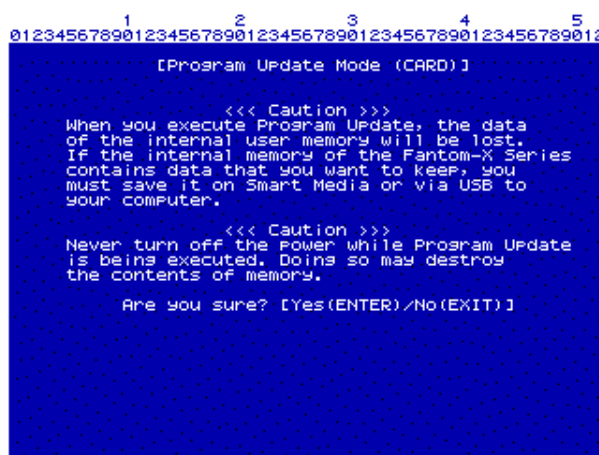
10. Press the [4] button "System Info."
11. Use [1 (.)] [2 (.)] to select "Version Info." The Version Info screen will appear, and the LCD display will show as follows.



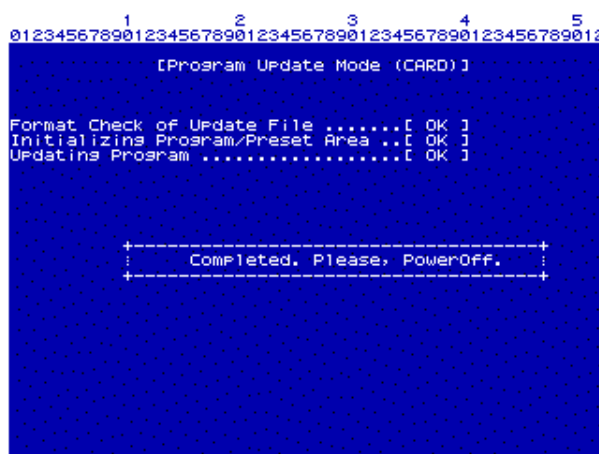
12. Press the buttons in the order of [SHIFT]->[7]->[8]->[7]->[8].
13. The "Service Utility" screen will appear, and the LCD display will show as follows.



14. Press the [2] button to access the [Program Update Mode (CARD)] screen. The LCD display will show as follows.



15. Press the [ENTER] button. After a time, the display will indicate "Completed. Please, PowerOff." The update procedure has been completed.



16. If you decide to cancel the update procedure, press the [EXIT] button before you press the [ENTER] button.
17. Turn the power of the Fantom-X off and then on again, and perform the version check and execute Test mode.

## Cautions when updating via PC card

After you have pressed the [ENTER] button at the end of the procedure described above, never turn off the power of the Fantom-X until the indication of "Completed. Please, PowerOff." has appeared. If the power is turned off during this time, the program will be erased.

You must restart your computer before you begin the update procedure.

# KEYBOARD PARTS LIST

For the procedure for repairing the keyboard section, see the PA-5 service noted(P/No. 17059023)

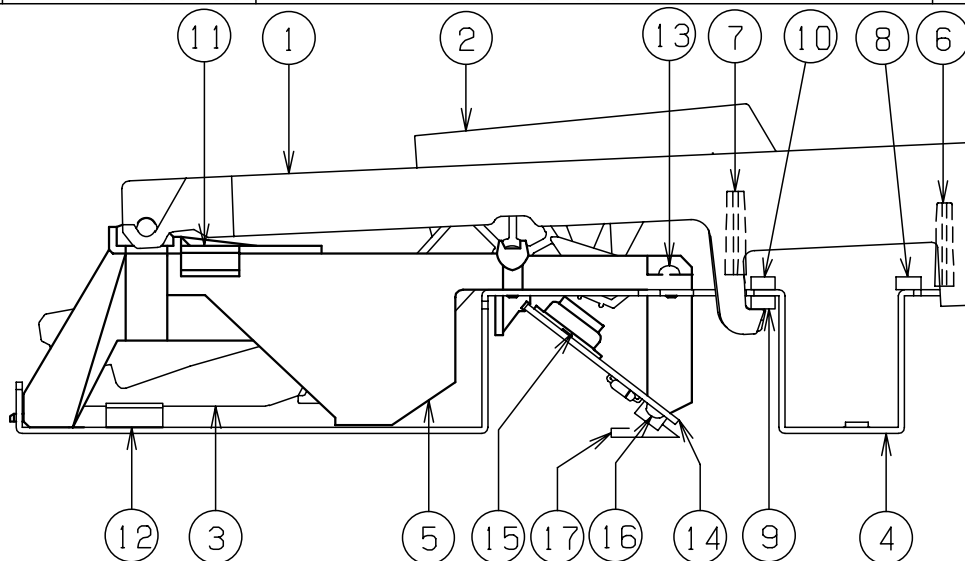
## PA-5 AFT-SERVICE ASSY PARTS LIST

| No.  | PARTS No. | PARTS NAME                        | Qty. |
|------|-----------|-----------------------------------|------|
| 1    | 01894234  | PA-5 N-KEY A                      | 7    |
|      | 01894245  | PA-5 N-KEY B                      | 8    |
|      | 01894256  | PA-5 N-KEY C                      | 7    |
|      | 01894267  | PA-5 N-KEY D                      | 7    |
|      | 01894278  | PA-5 N-KEY E                      | 7    |
|      | 01894289  | PA-5 N-KEY F                      | 7    |
|      | 01894290  | PA-5 N-KEY G                      | 7    |
|      | 01894312  | PA-5 N-KEY A'                     | 1    |
| 2    | 01894323  | PA-5 N-KEY C'                     | 1    |
|      | 01894334  | PA-5 SHARP-KEY                    | 36   |
| 3    | 01906756  | PA-5 HAMMER-1                     | 22   |
|      | 01906767  | PA-5 HAMMER-2                     | 22   |
|      | 01906778  | PA-5 HAMMER-3                     | 22   |
|      | 01906789  | PA-5 HAMMER-4                     | 22   |
| 4    | 72238601  | PA-5 CHASSIS 88P-B ASSY           | 1    |
|      | 01894412  | PA-5 CHASSIS 88P                  | 1    |
|      | 01894434  | PA-5 SUB CHASSIS 12P              | 7    |
|      | 01894445  | PA-5 SUB CHASSIS 4P               | 1    |
|      | 01894923  | PA-4A GUIDE BUSHING C             | 52   |
|      | 00019912  | PA-4 GUIDE BUSHING S-KEY          | 36   |
|      | 02016901  | PA-5 KEY CUSHION A                | 1    |
|      | 02904401  | PA-5 KEY CUSHION B                | 1    |
|      | 03128178  | PA-5 AFTERTOUC 88P                | 1    |
|      | 02016945  | PA-5 HAMMER CUSHION B             | 1    |
|      | 02904390  | PA-5 HAMMER CUSHION D             | 1    |
|      | 40012256  | SCREW M3X10 BINDING B-TITE FE ZC  | 37   |
| 14   | 71564612  | PA-5 PWB LOW ASSY                 | 1    |
|      | 71564623  | PA-5 PWB MID ASSY                 | 1    |
|      | 71564634  | PA-5 PWB HI ASSY                  | 1    |
| * 15 | 01898956  | PA-5 RUBBER SWITCH 12P            | 8    |
|      | 40011267  | SCREW 3X6 BINDING TAPTITE P FE ZC | 22   |
|      | 02016989  | BNCD-P=1.25-K-16-80               | 1    |

\* : \* :Item 15 marked \* is included in each unit of 14.

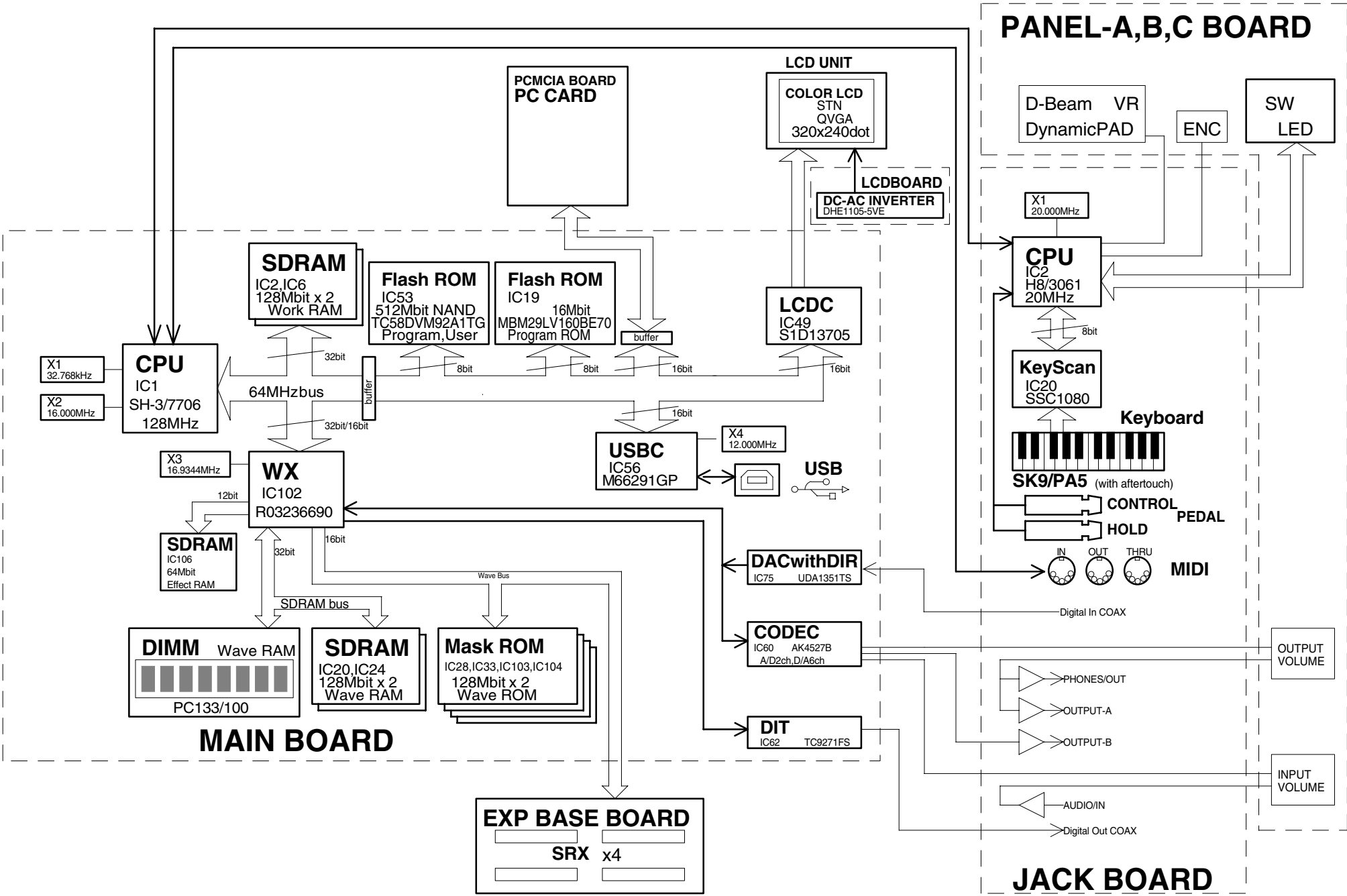
The following parts are not included the Keyboard Assy.

|          |                      |   |
|----------|----------------------|---|
| 02565078 | BNCD-P=1.25-K-16-700 | 1 |
| 02565089 | BNCD-P=1.25-K-22-650 | 1 |





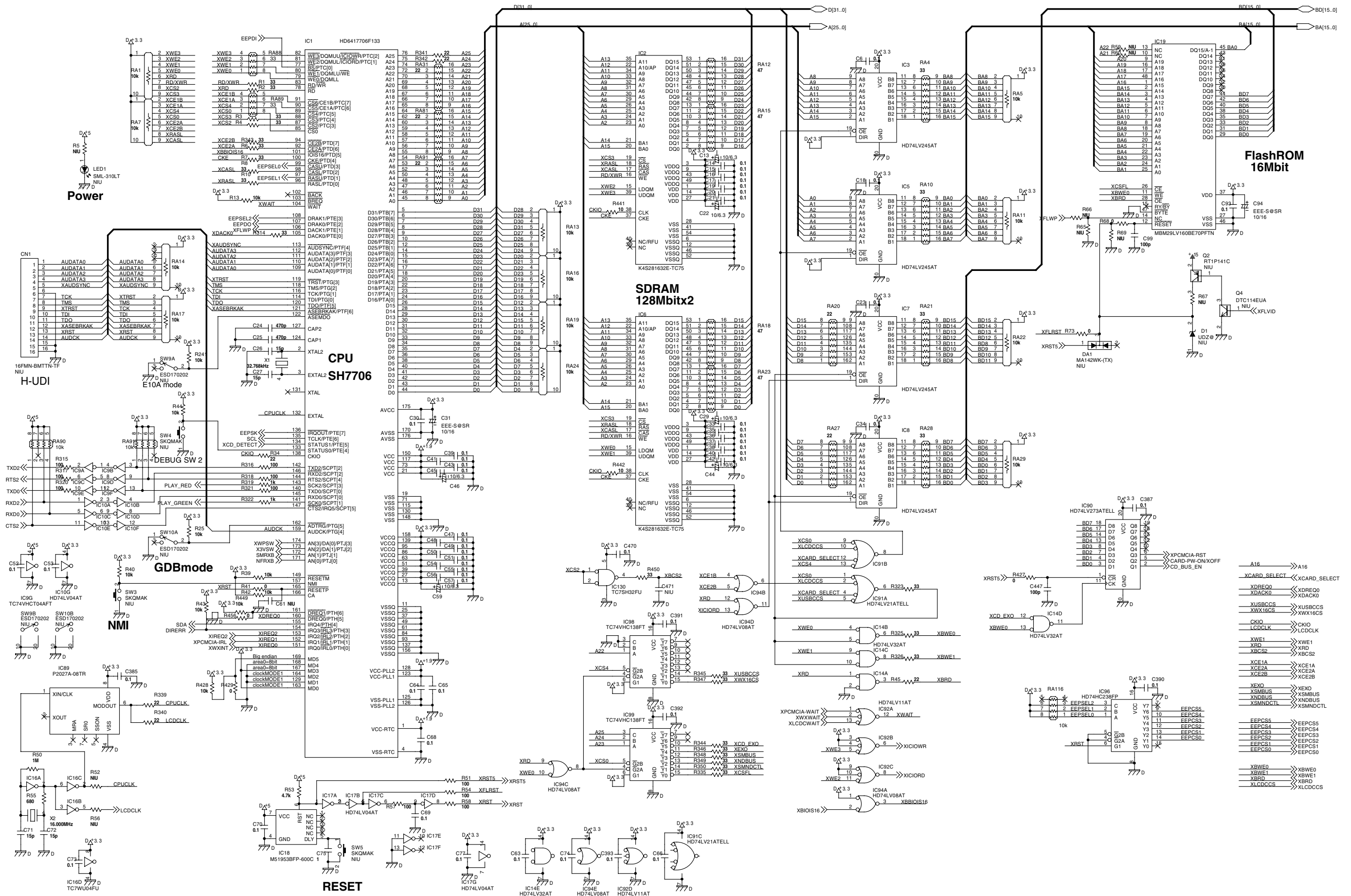
BLOCK DIAGRAM







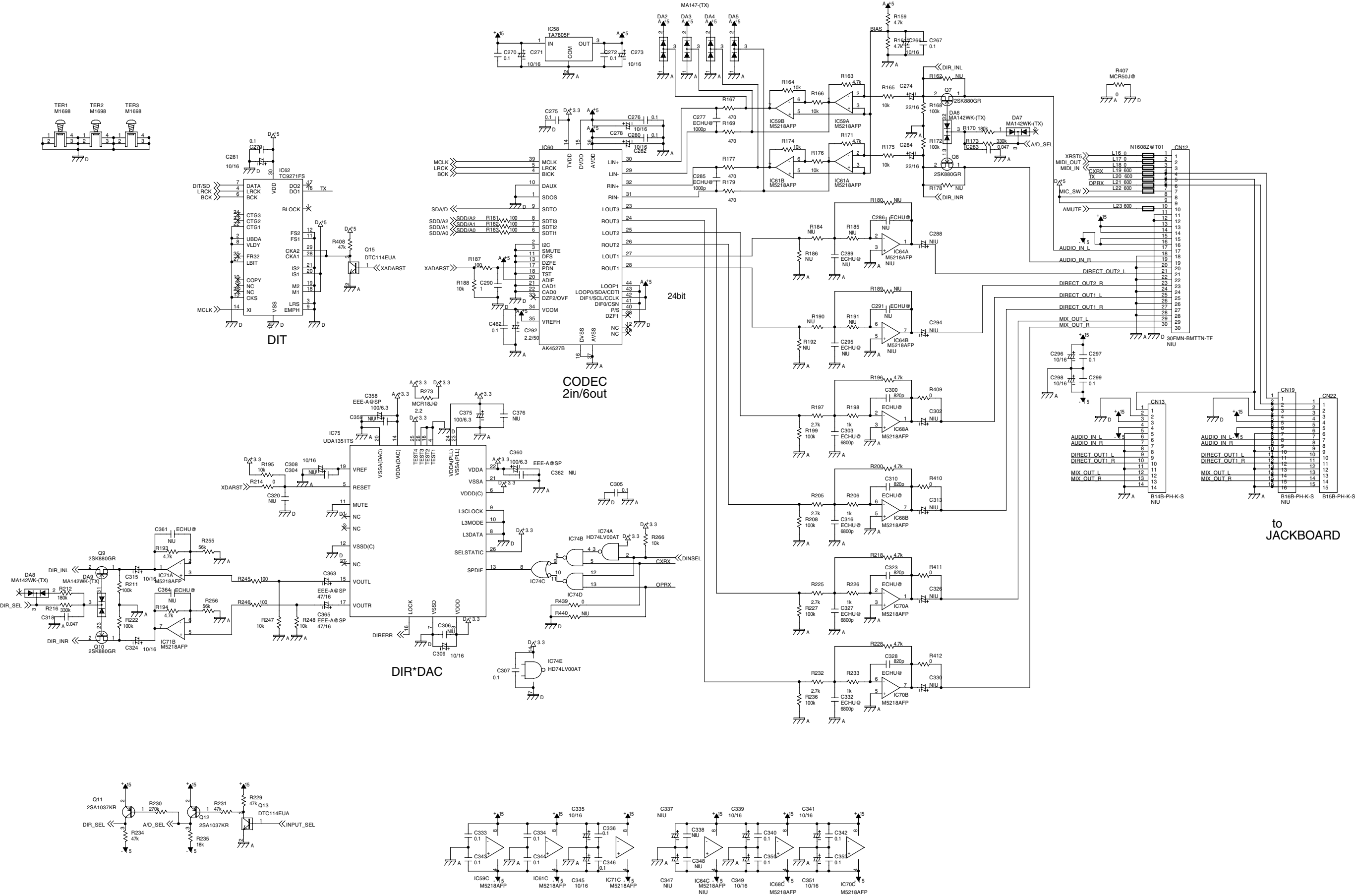
CIRCUIT DIAGRAM(MAIN 1)



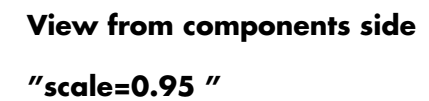




CIRCUIT DIAGRAM(MAIN 4)

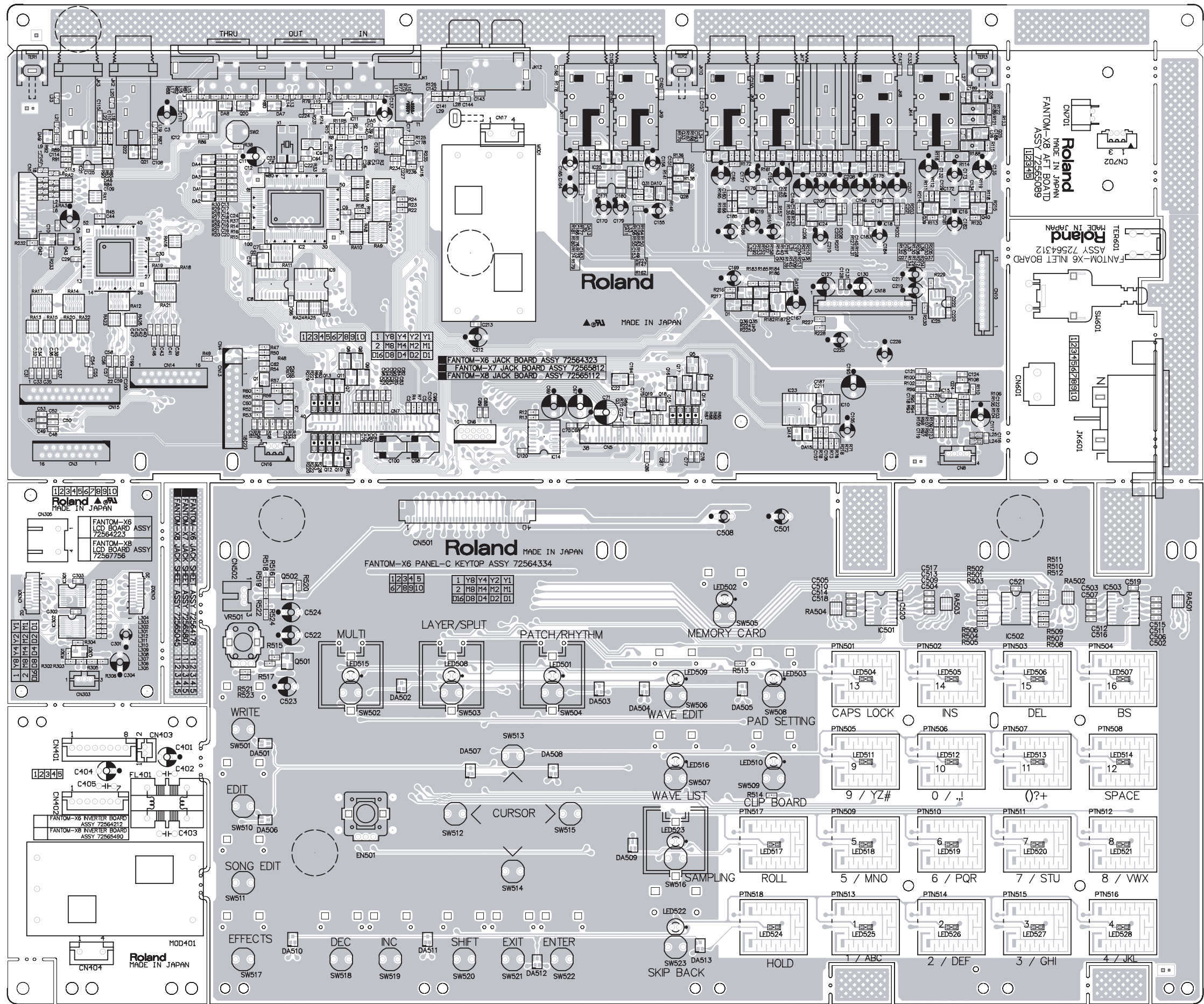








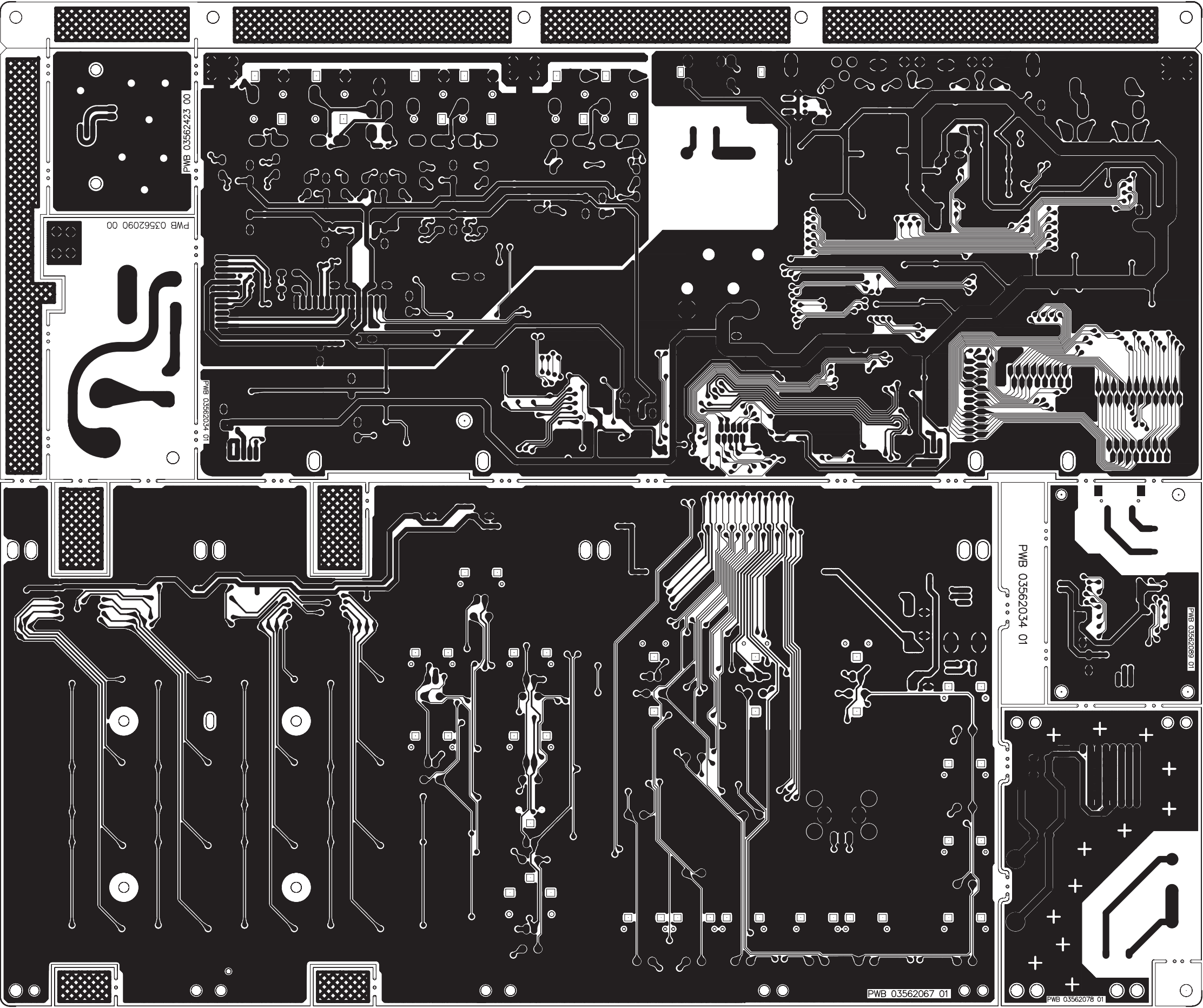
## CIRCUIT BOARD(LCD, INVERTER, JACK, PANEL-C KEYTOP, INLET, AFT)



**View from components side**

**"scale=0.95 "**

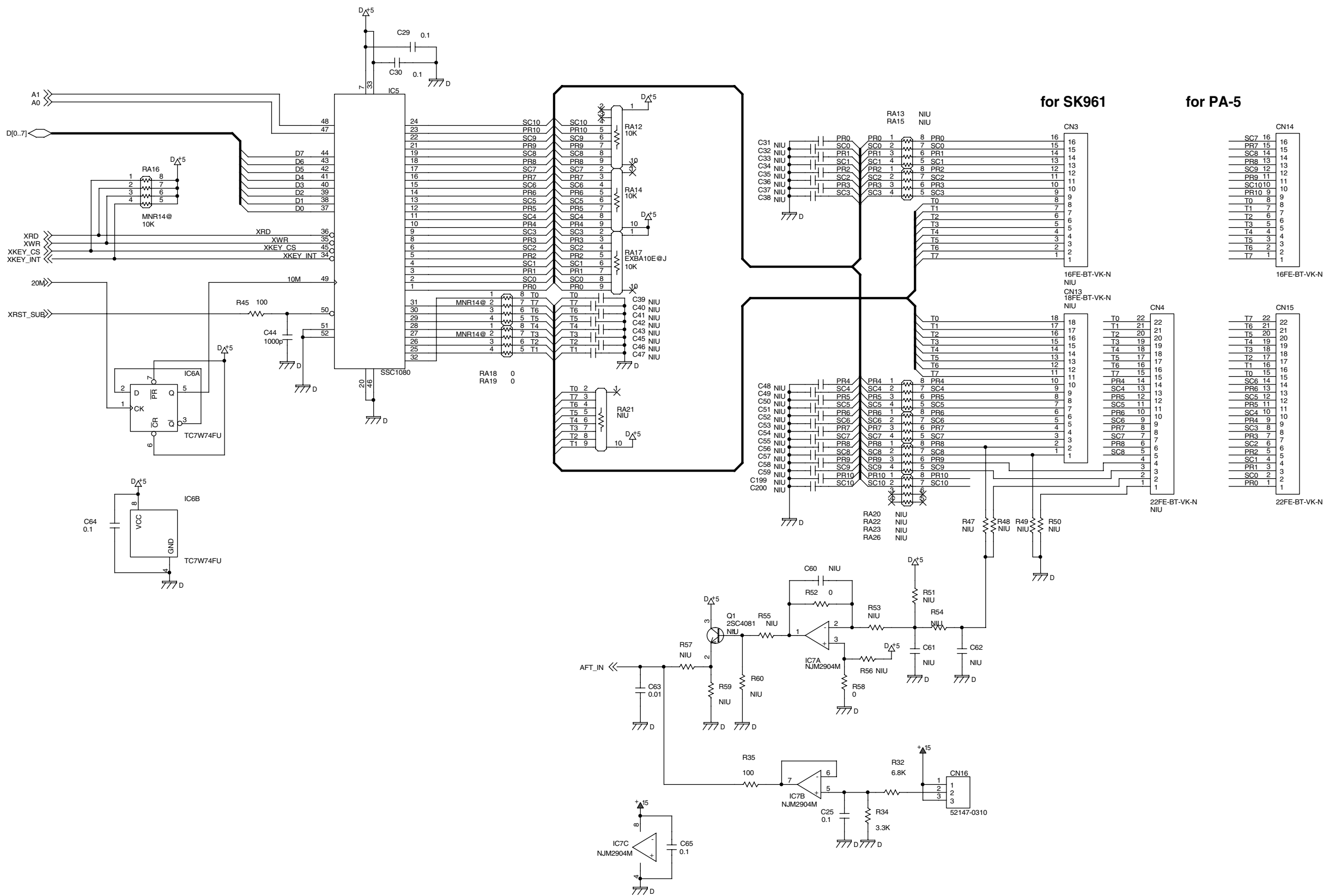
CIRCUIT BOARD(LCD, INVERTER, JACK, PANEL-C KEYTOP, INLET, AFT)



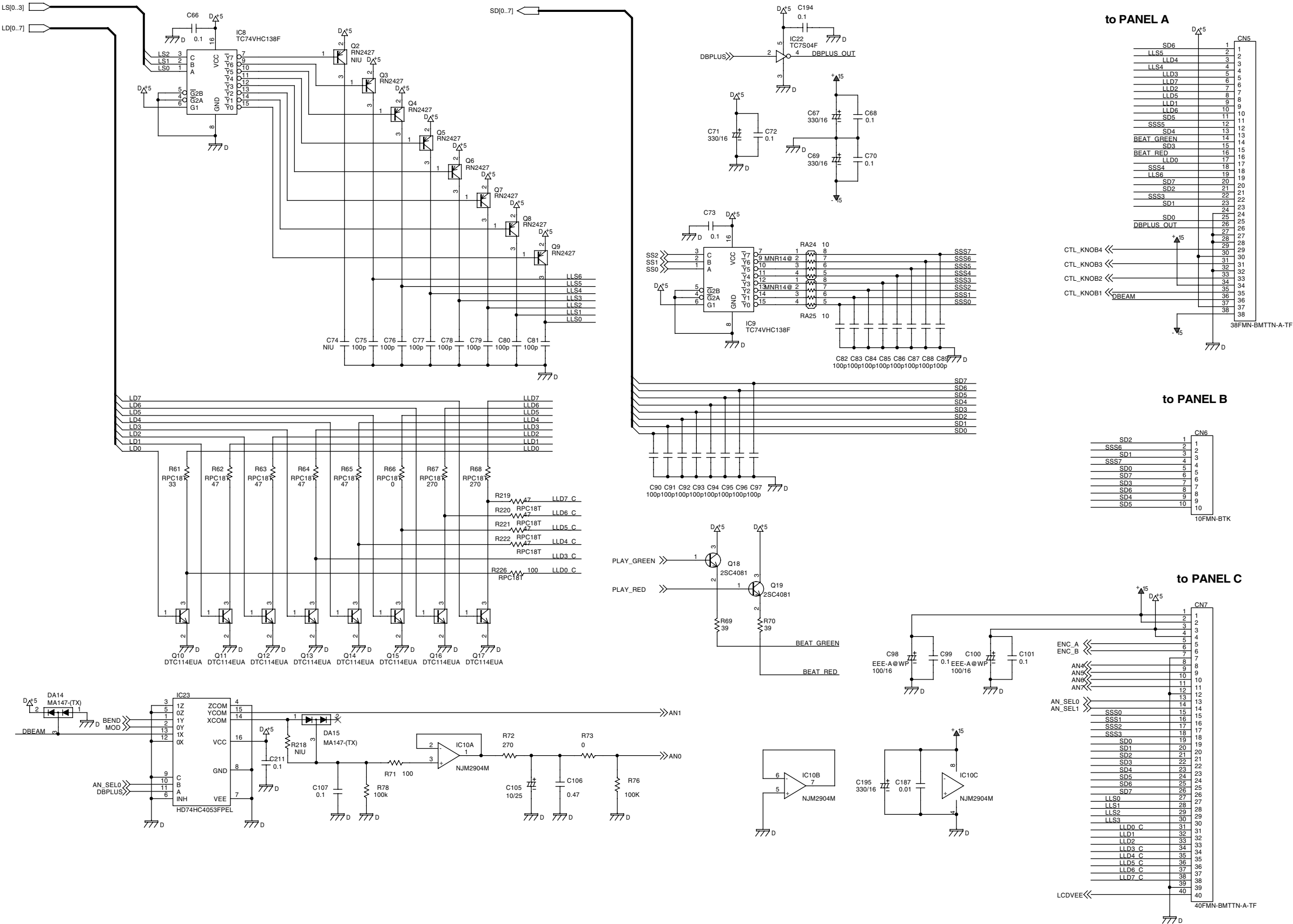
View from foil side  
"scale=0.95 "



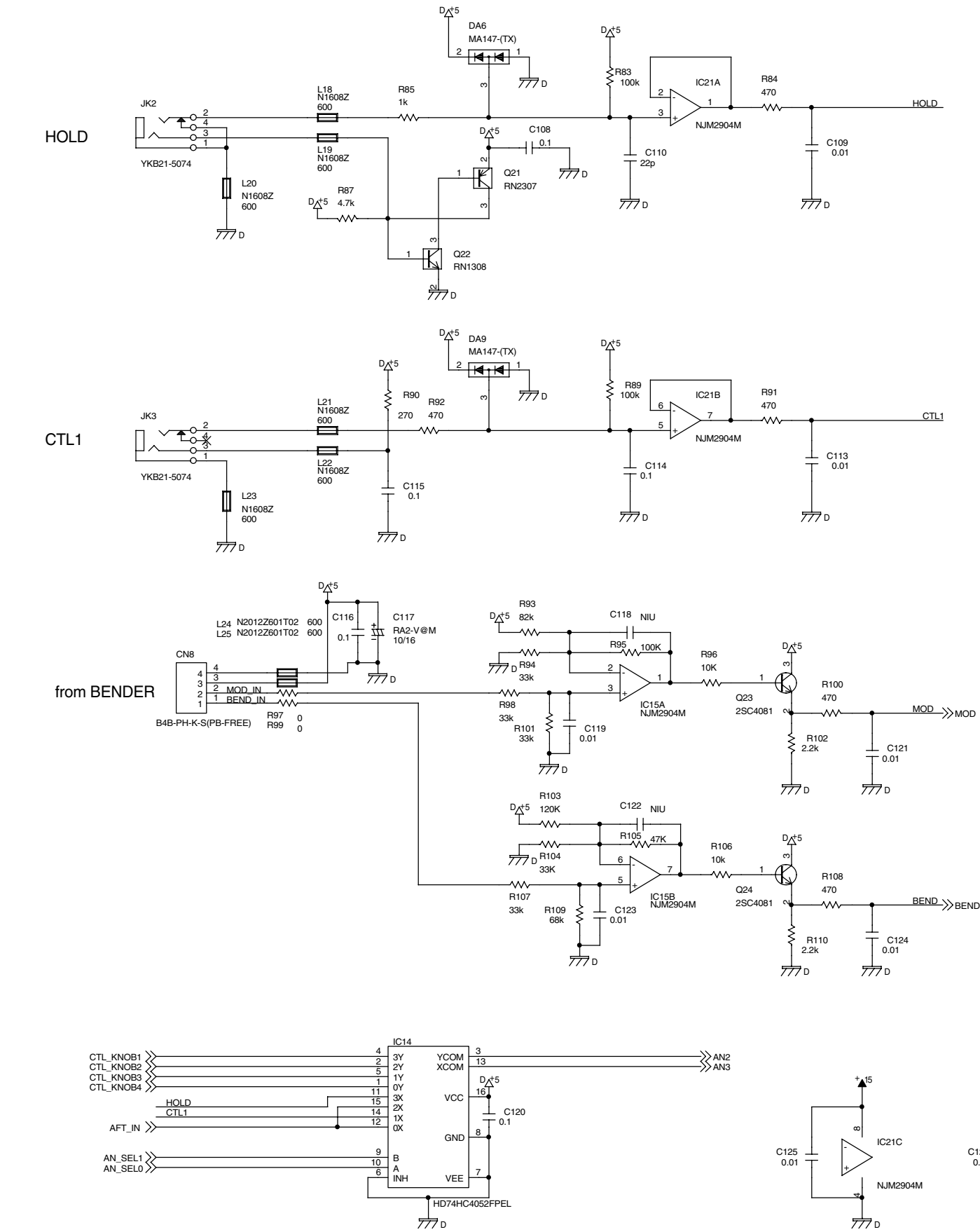
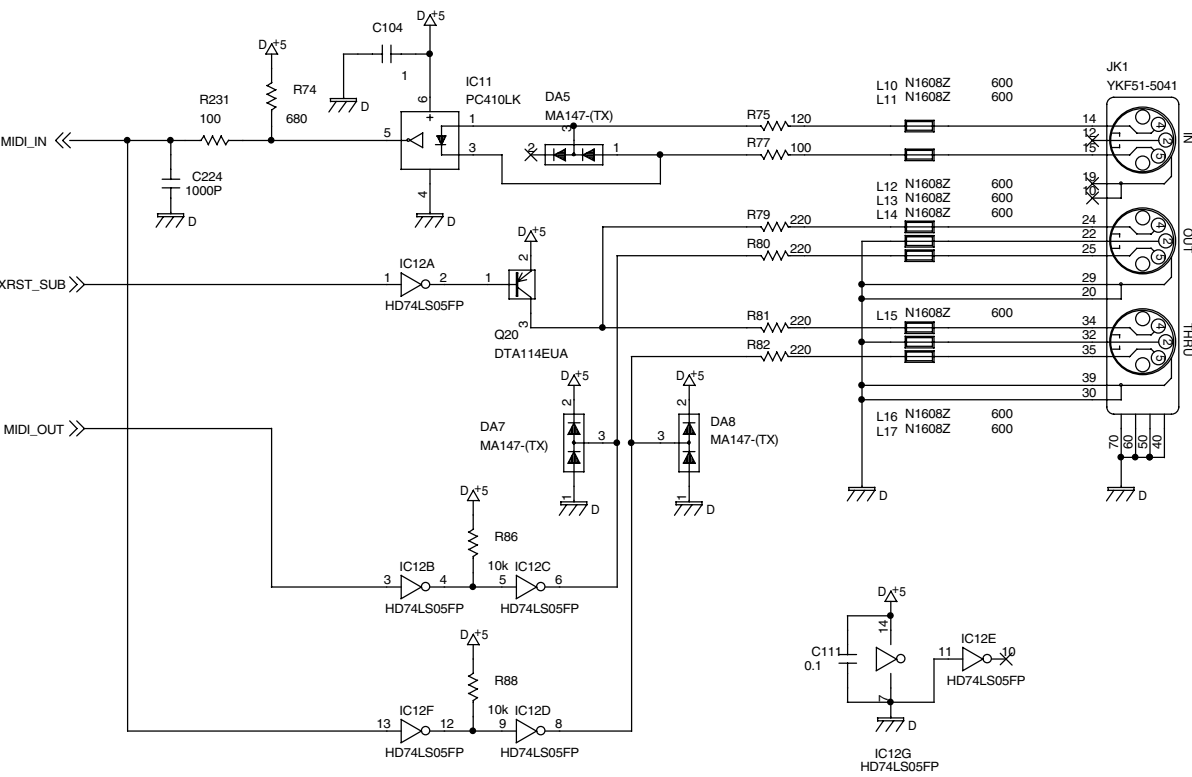
CIRCUIT DIAGRAM(JACK 2)



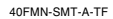
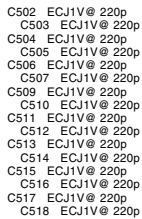
CIRCUIT DIAGRAM(JACK 3)



CIRCUIT DIAGRAM(JACK 4)

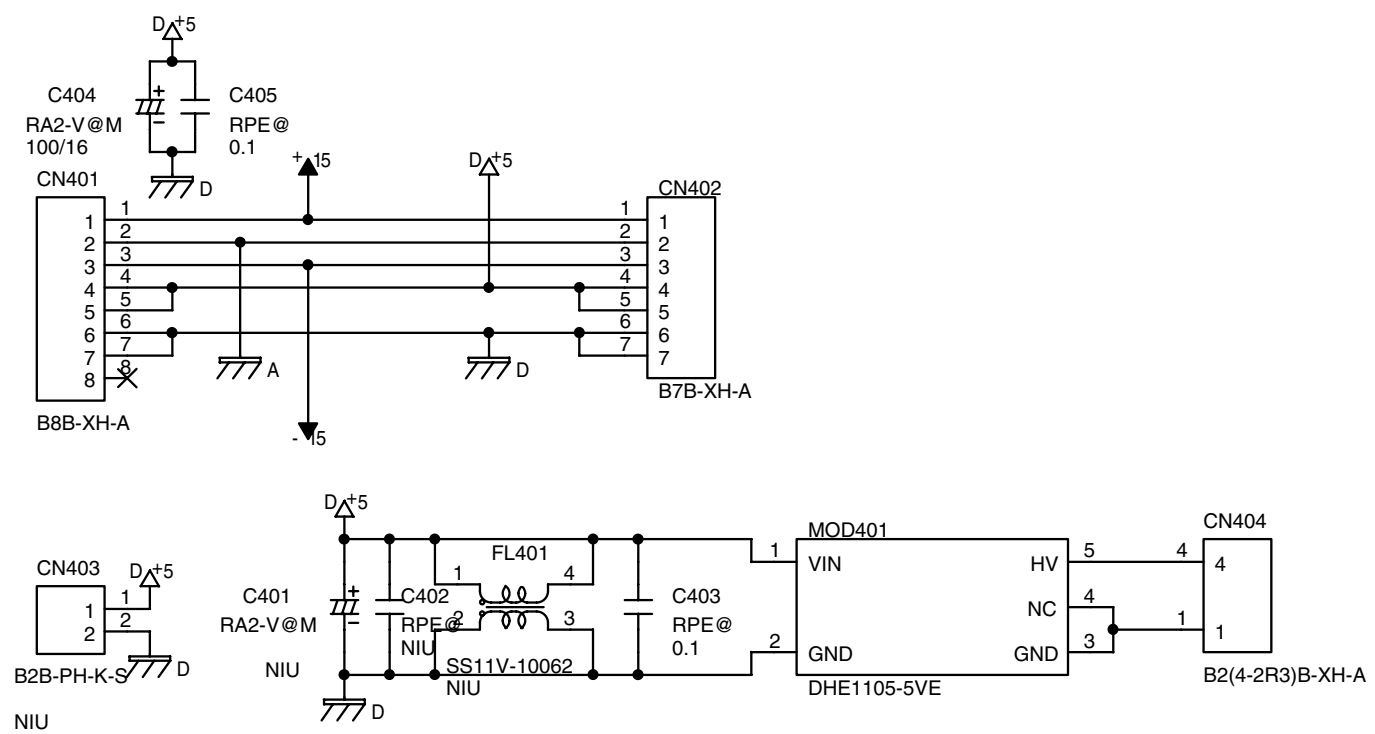




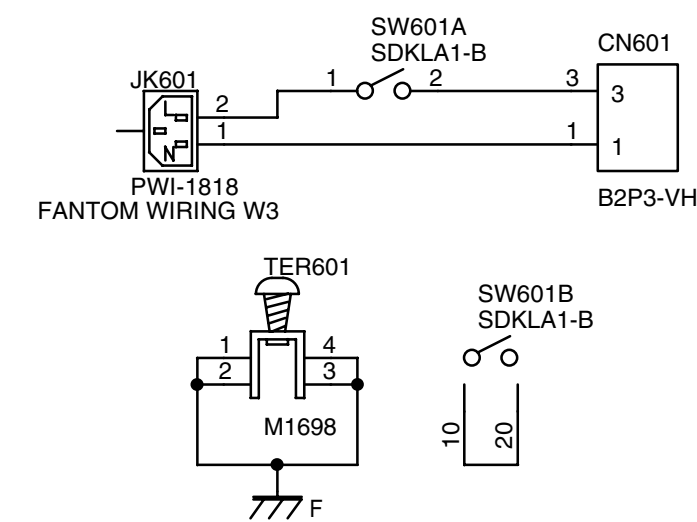




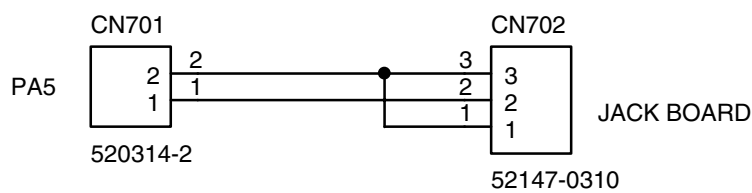
CIRCUIT DIAGRAM(INVERTER)



CIRCUIT DIAGRAM(INLET)



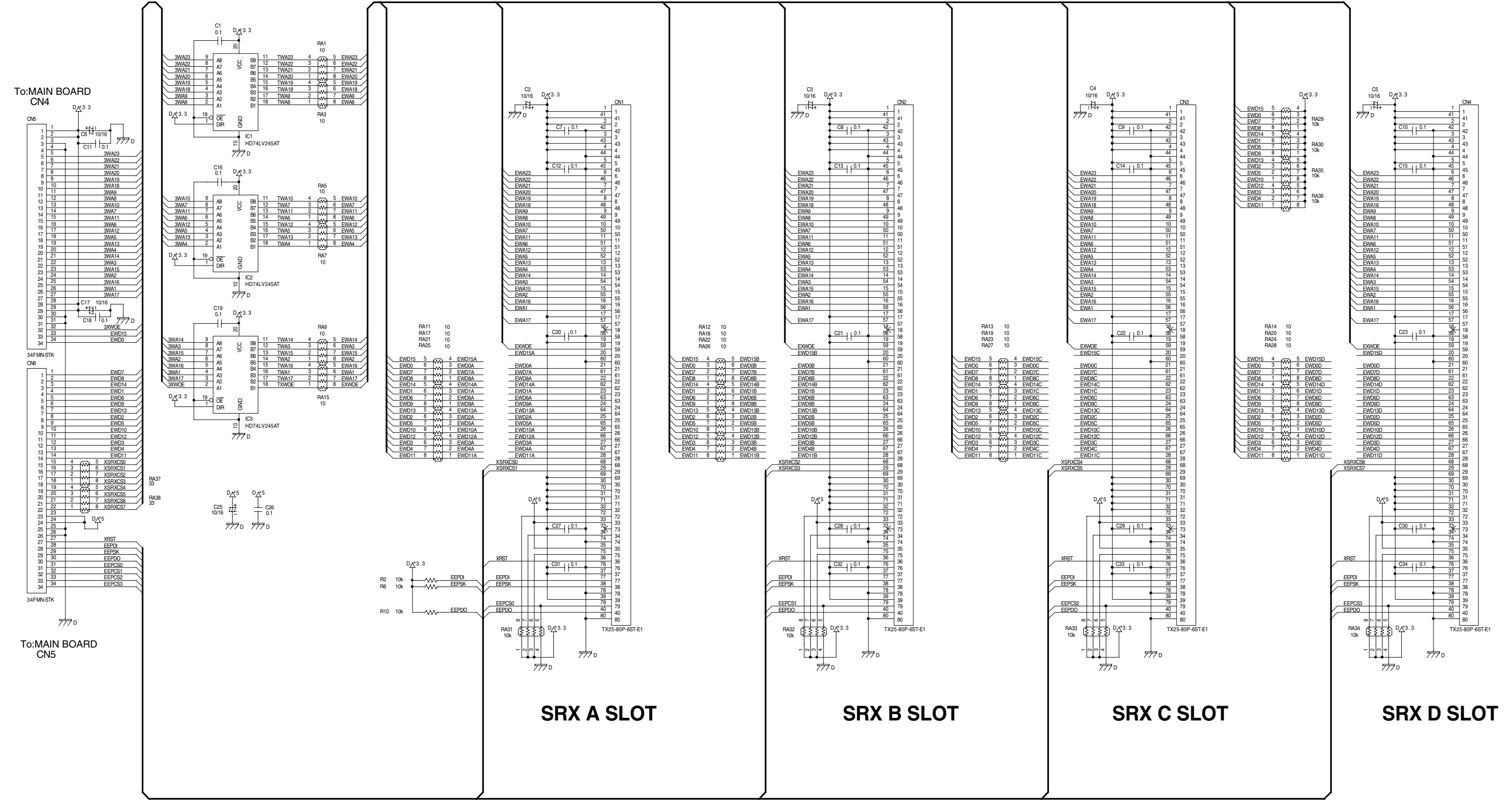
CIRCUIT DIAGRAM(AFTER)



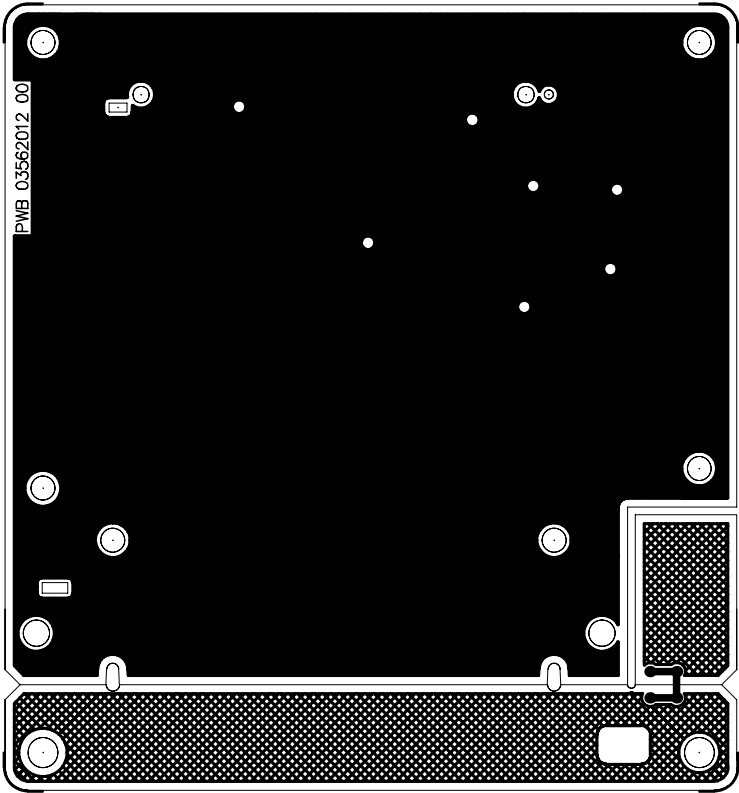




CIRCUIT DIAGRAM(EXP BASE)

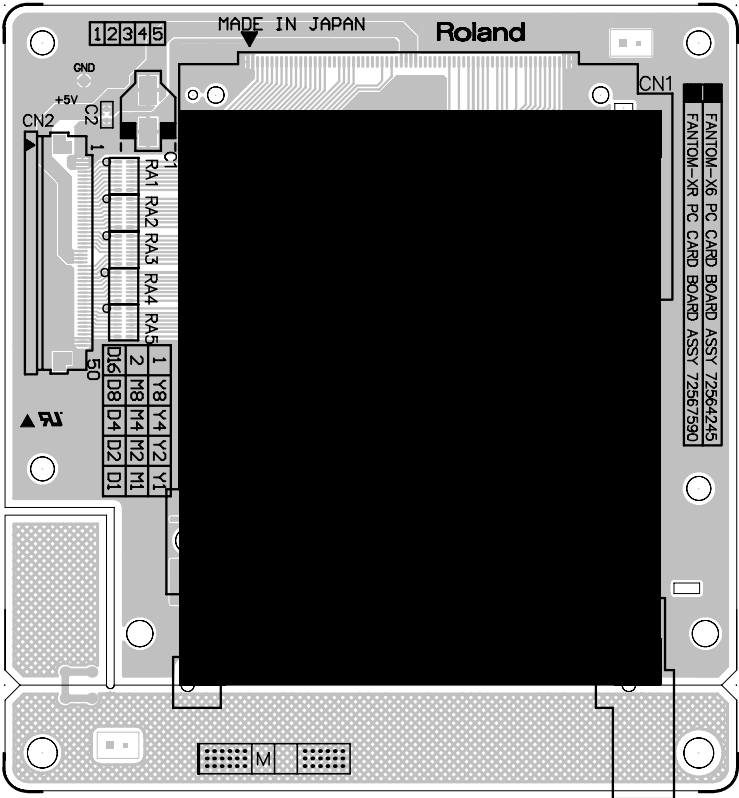


CIRCUIT BOARD(PC CARD 1)



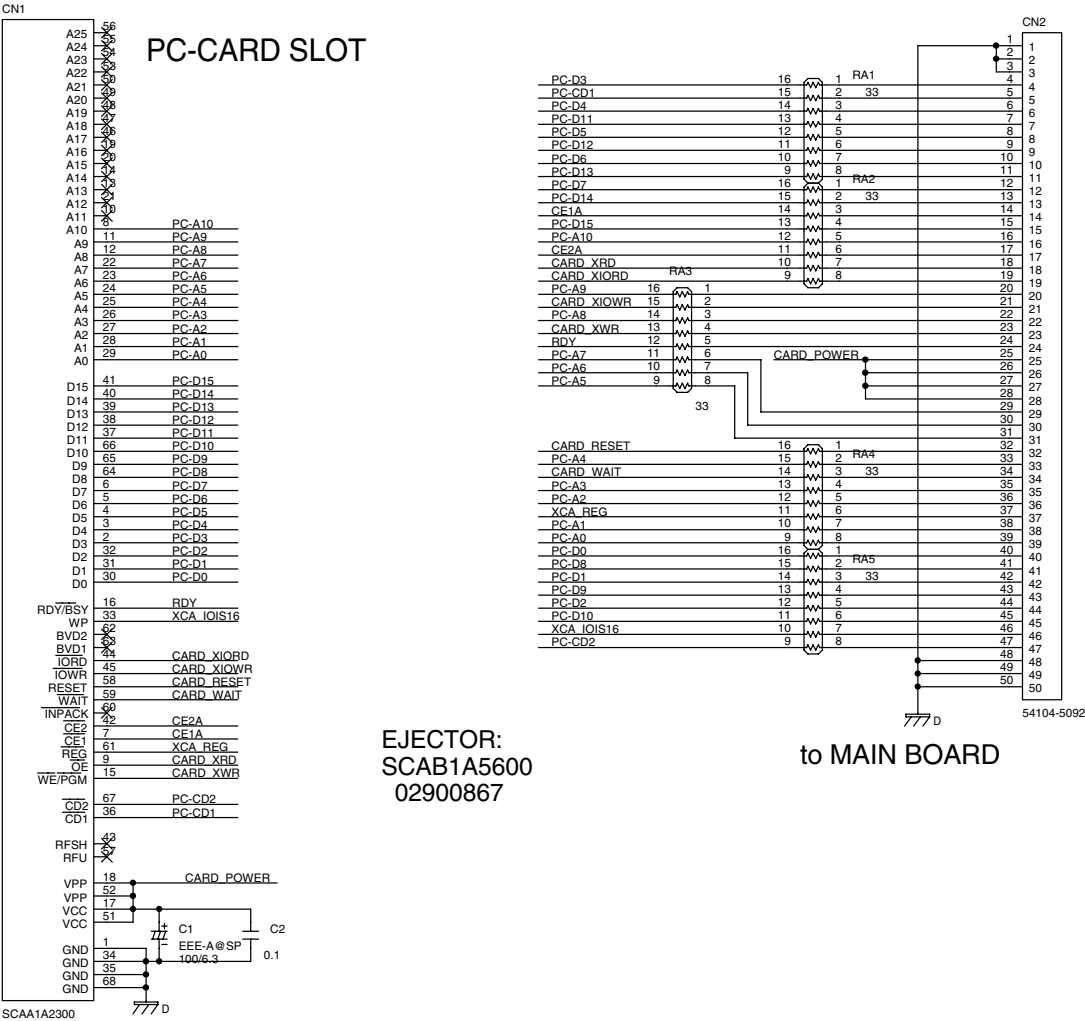
View from foil side

CIRCUIT BOARD(PC CARD 2)



View from components side

CIRCUIT DIAGRAM(PC CARD)



EJECTOR:  
SCAB1A5600  
02900867

to MAIN BOARD

## ERROR MESSAGES

If an incorrect operation is performed, or if processing could not be performed as you specified, an error message will appear. Refer to the explanation for the error message that appears, and take the appropriate action.

| Message                                 | Meaning                                                                                                                                   | Action                                                                                                                                                                                                                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cannot Edit Preset Sample!</b>       | This is a preset sample, and therefore cannot be edited.                                                                                  | —                                                                                                                                                                                                                                      |
| <b>Card Not Ready!</b>                  | A memory card is not inserted in the slot.                                                                                                | Insert a memory card into the slot.                                                                                                                                                                                                    |
| <b>Data not found</b>                   | The data for placement is not specified.                                                                                                  | —                                                                                                                                                                                                                                      |
| <b>Empty Pattern</b>                    | The Pattern has no data in it, so the Pattern Call message cannot be recorded in Step Recording.                                          | —                                                                                                                                                                                                                                      |
| <b>Empty Sample!</b>                    | The sample contains no data.                                                                                                              | Select a sample that contains data.                                                                                                                                                                                                    |
| <b>Empty Song!</b>                      | The song has not been recorded, and therefore cannot be played.                                                                           | Select a song that contains data.                                                                                                                                                                                                      |
| <b>File Name Duplicate</b>              | A file with the same name already exists.                                                                                                 | Delete the file bearing the same name from the disk, and if overwriting and saving the data, merely save the file. If you do not want to delete the file with the same name from the disk, either save the file with a different name. |
| <b>Illegal File!</b>                    | The Fantom-X cannot use this file.                                                                                                        | —                                                                                                                                                                                                                                      |
| <b>Memory Damaged!</b>                  | The contents of memory may have been damaged.                                                                                             | Please perform the Factory Reset operation. If this does not resolve the problem, please contact your dealer or the nearest Roland Service Center.                                                                                     |
| <b>Memory Full!</b>                     | Saving is not possible because there is insufficient space in the user area or memory card.                                               | Delete unneeded data.                                                                                                                                                                                                                  |
| <b>MIDI Offline!</b>                    | There is a problem with the MIDI cable connection.                                                                                        | Check that the MIDI cable has not been disconnected or broken.                                                                                                                                                                         |
| <b>No More Note Numbers!</b>            | A maximum of 16 different note numbers can be used in one style of the arpeggio/rhythm function.                                          | Please delete unneeded notes.                                                                                                                                                                                                          |
| <b>No More Sample Numbers!</b>          | The sample cannot be divided any further.<br>Since fewer than 256 consecutive sample numbers are vacant, no further sampling is possible. | Erase unneeded samples in order to allocate 256 or more consecutive sample numbers.                                                                                                                                                    |
| <b>No More Song Numbers!</b>            | No more songs can be saved. A maximum of 256 songs can be handled simultaneously for both the user bank and card bank.                    | Please delete unneeded songs.                                                                                                                                                                                                          |
| <b>Now Playing!</b>                     | Since the Fantom-X is playing, this operation cannot be executed.                                                                         | Stop playback before you execute the operation.                                                                                                                                                                                        |
| <b>Permission Denied!</b>               | The file is protected.                                                                                                                    | —                                                                                                                                                                                                                                      |
| <b>Playback Tempo Range Over</b>        | Tempo values exceed the allowable limit, and data is created in which the closest time available within the allowable range is specified. | —                                                                                                                                                                                                                                      |
| <b>Recording Parameter Error</b>        | You are attempting to begin recording after a looped segment.                                                                             | You are attempting to begin recording within or before a looped segment.                                                                                                                                                               |
| <b>Rec Over Flow</b>                    | Since a large amount of recorded data was input all at once, it could not be processed correctly.                                         | Reduce the amount of recorded data.                                                                                                                                                                                                    |
| <b>Sample Length Too Short!</b>         | The sample is too short, and cannot be edited correctly.                                                                                  | If the sample is extremely short, editing may not produce the desired result.                                                                                                                                                          |
| <b>Sample Memory Full!</b>              | Since there is insufficient sample memory, no further sampling or sample editing is possible.                                             | Erase unneeded samples.                                                                                                                                                                                                                |
| <b>Song Full</b>                        | Since the maximum number of notes that can be recorded in a song or pattern has been exceeded, no further recording/editing is possible.  | Use the track edit Delete or Erase commands to remove unneeded data from the song/pattern that you are recording/editing.                                                                                                              |
| <b>Song Format Error</b>                | This song is damaged.                                                                                                                     | This song cannot be used.                                                                                                                                                                                                              |
| <b>Song Not Found</b>                   | The selected song cannot be found.                                                                                                        | —                                                                                                                                                                                                                                      |
| <b>Too Many Sample Selected!</b>        | The operation cannot be executed, since marks are assigned to more than one sample.                                                       | Either clear the marks, or mark only one sample.                                                                                                                                                                                       |
| <b>Unformatted!</b>                     | The memory card is in an unsupported format.                                                                                              | Format the memory card.                                                                                                                                                                                                                |
| <b>You Cannot Assign</b>                | The sample cannot be assigned to a pad.                                                                                                   | Assign To Pad requires that all pads be playing a rhythm set.<br>Assign a rhythm set to the Pad part.<br>Turn off the RPS function.<br>Turn off the rhythm switch.<br>Turn off the ARPEGGIO/RHYTHM function.                           |
| <b>You Cannot Copy This Message</b>     | This message cannot be copied.                                                                                                            | —                                                                                                                                                                                                                                      |
| <b>You Cannot Erase This Message</b>    | This message cannot be erased.                                                                                                            | —                                                                                                                                                                                                                                      |
| <b>You Cannot Move This Message</b>     | This message cannot be moved.                                                                                                             | —                                                                                                                                                                                                                                      |
| <b>You Cannot Quick Play S-MRC Song</b> | This is a SuperMRC song; it cannot be played back in Quick Play.                                                                          | Save the data as an MRC Pro song.                                                                                                                                                                                                      |
| <b>Rhythm Note Range Over!</b>          | The pad selected for Assign To Pad is outside the range of the rhythm set.                                                                | Select a pad that is within the range of the rhythm set.                                                                                                                                                                               |