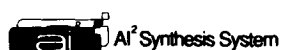


SERVICE MANUAL

i4S

Interactive Music Workstations



CONTENTS

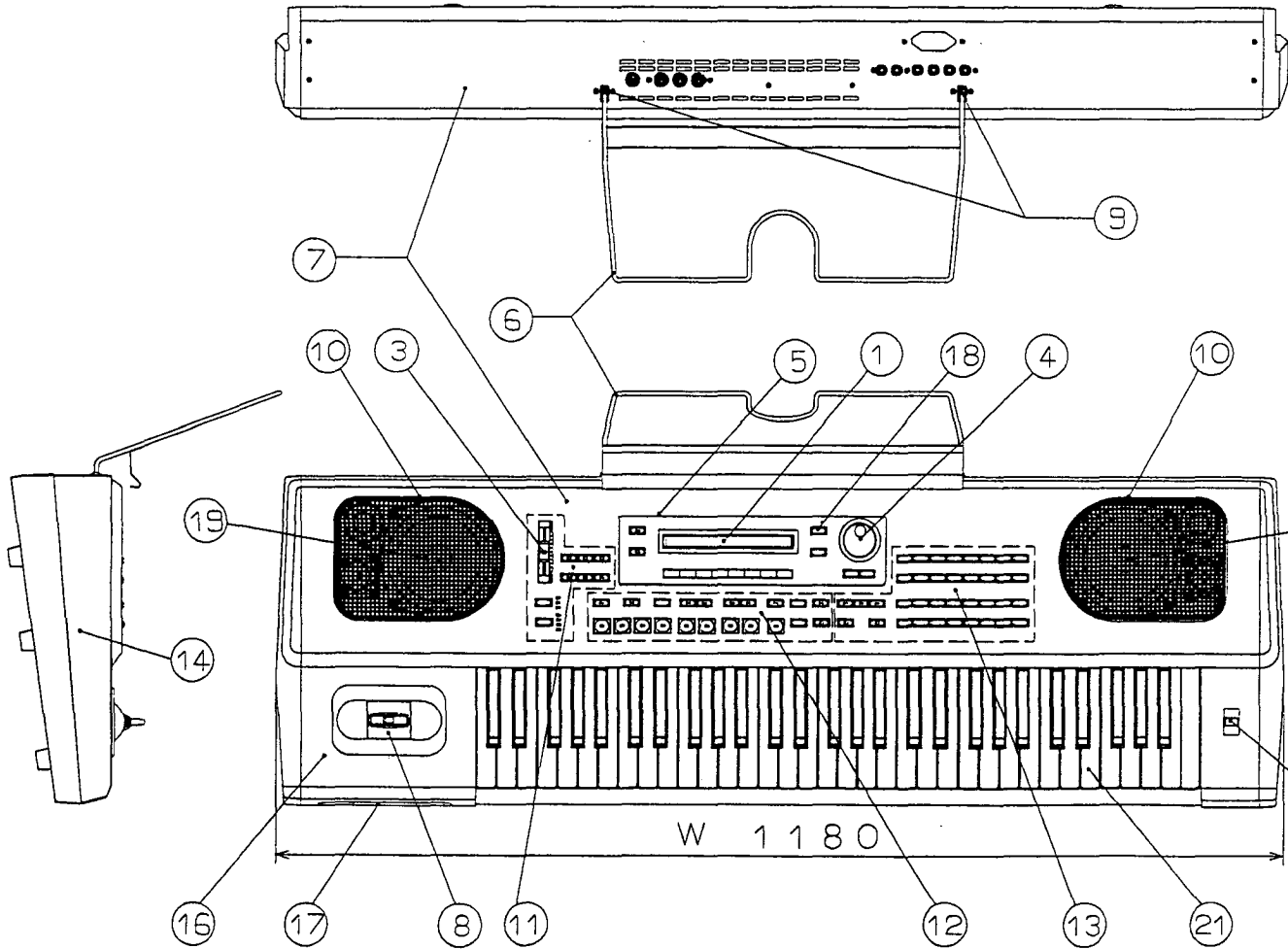
1. SPECIFICATIONS	1
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KORG

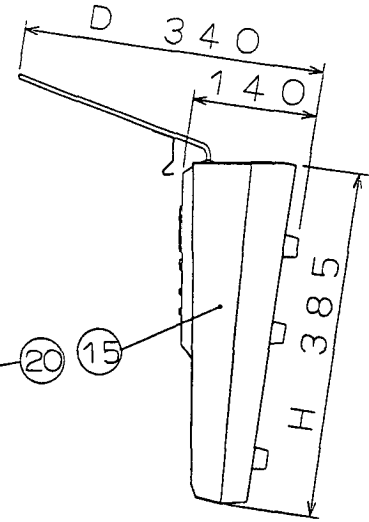
1. SPECIFICATIONS

Tone generation method	:	AI square synthesis system (full digital processing)
Tone generator	:	32 voices 32 oscillators (Single Mode) 16 voices 32 oscillators (Double Mode)
Keyboard	:	61 key with aftertouch sensitive FP-9
Waveform memory	:	16 Mbit Mask ROM x 3 (6 Mbyte) 340 MULTI sounds 164 DRUM sounds
Quantization	:	12 bit and 8 bit
Sampling frequency	:	31.25kHz
Programs	:	ROM ; 128 programs + 1 drum set program (for GM) ROM ; 64 programs + 5 drum set programs RAM ; 64 programs + 2 drum set programs
Styles	:	ROM ; 48 styles RAM ; 4 styles
Arrangements	:	64 arrangements
Backing sequencer	:	10 songs
Song play	:	Direct from Disk Play 16 tracks / 16 multi timbers
Sequencer memory	:	40,000 events (Backing sequencer + Sequencer)
Effects	:	47 muti digital effects
Memory backup	:	RAM (GLOBAL + PROGRAM + STYLE + ARRANGEMENT) backup battery CR2032 & IC M62021
Control inputs	:	Damper pedal, Assignable pedal, EC5
Inputs	:	L/MONO (impedance L : 6.9k Ω MONO : 3.45k Ω) R (impedance : 6.9k Ω)
Outputs	:	L/MONO (impedance L : 1.1k Ω MONO : 550 Ω residual noise : less than -85dBm) R (impedance : 1.1k Ω residual noise : less than -85dBm) PHONES (impedance : 10 Ω residual noise : less than -86dBm)
MIDI	:	IN, OUT, THRU
Display	:	40 x 2 LCD with LED back light
Floppy disk drive	:	3.5 inch 2DD disk drive (720k MS-DOS format)
Power amplifire	:	15W x 2
Speakers	:	13cm x 2, 4cm x 2
Dimensions	:	1,180(W) x 385(D) x 140(H)mm
Weight	:	18.5kg
Power consumption	:	40W

* Specifications and design are subject to change without notice
for the purpose of product enhancement.



W = 1180
 D = 340
 H = 385
 Weight = 18.5

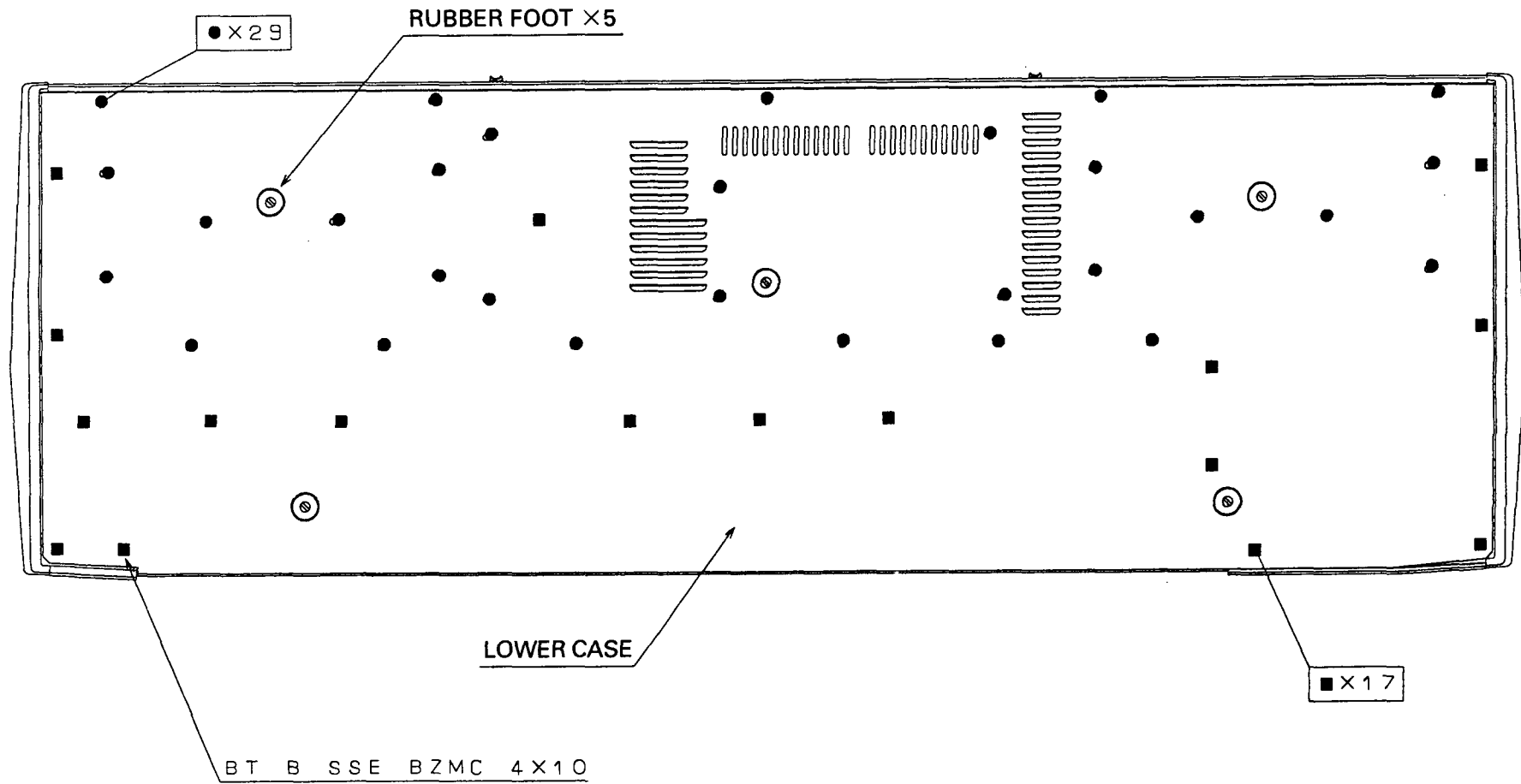


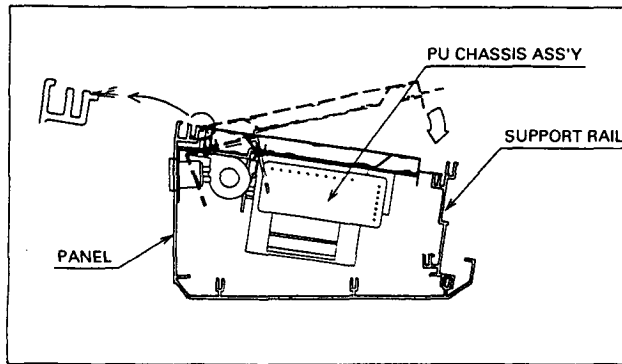
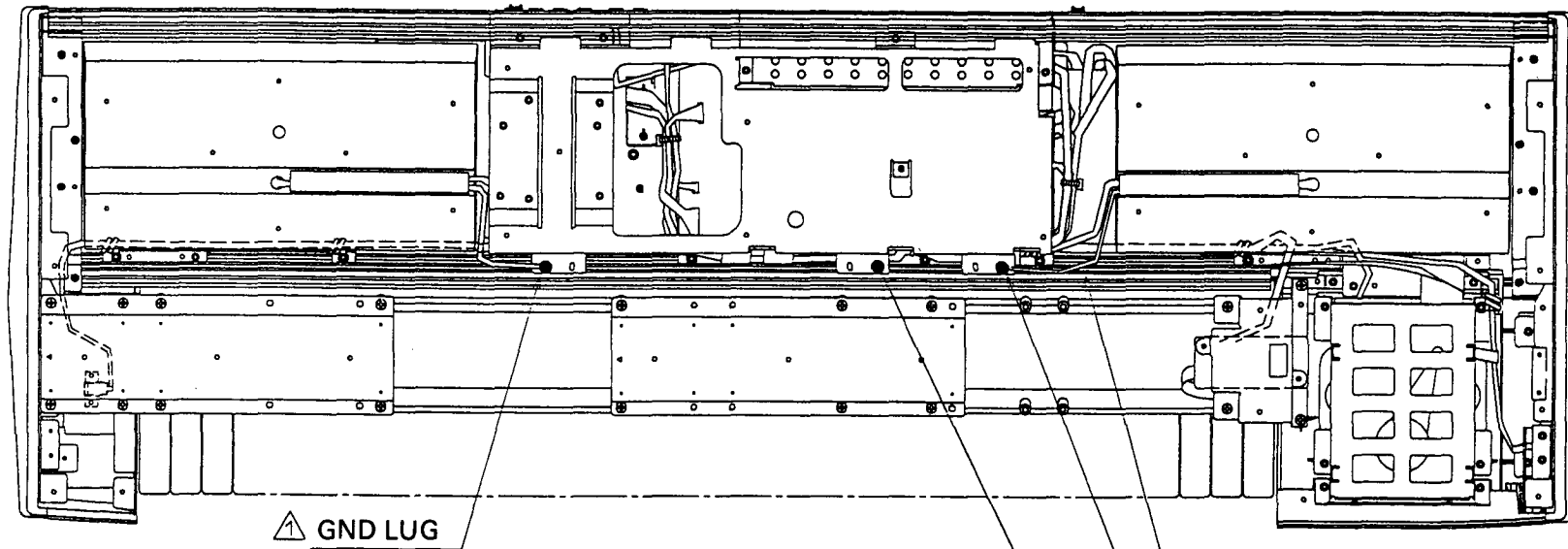
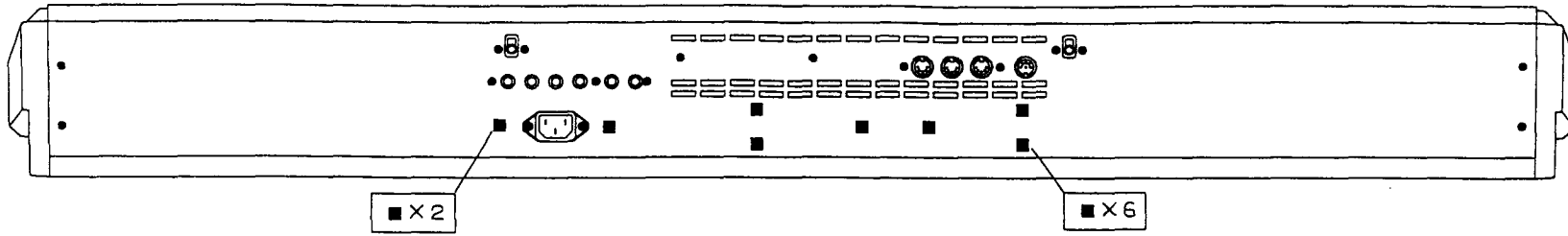
2. FULL VIEW

PART NO.	PART NAME	PART CODE
1	LCD DMC2079NY-LY	31300300C
2	X-825M POWER SW KNOB BLK	620021600
3	X-323 SVR KNOB KOC-E40364	620026600
4	X-323 ENCODER KNOB KOC-E40363	620026700
5	X-323 LCD WINDOW KOC-E30190	630020400
6	X-181 MUSIC STAND KOC-C30410	641040600
7	X-323 PANEL KOC-C10153	641041182
8	X-D11/D12 JOYSTICK COVER	646040000
9	X-181 MUSIC STAND HOLDER	646045300
10	X-323 SPEAKER GRILL ASSY	646045500
11	X-323 KNOB BLOCK ASSY 1 H30061	646045700
12	X-323 KNOB BLOCK ASSY 2 H30062	646045800
13	X-323 KNOB BLOCK ASSY 3 H30063	646045900
14	X-323 SIDE PLATE L KOC-E10105/6	646050100
15	X-323 SIDE PLATE R KOC-E10107/8	646050200
16	X-323 JS PANEL KOC-E10109	646050300
17	X-323 FDD COVER KOC-20153	646050400
18	X-323 LCD HOOD KOC-E10104	646050500
19	X-323 SPEAKER BOX ASSY L	410004200
20	X-323 SPEAKER BOX ASSY R	410004300
21	TP/S SYNTH+WEIGHT+PCB+AFT# 61	420005000

3. DISASSEMBLY

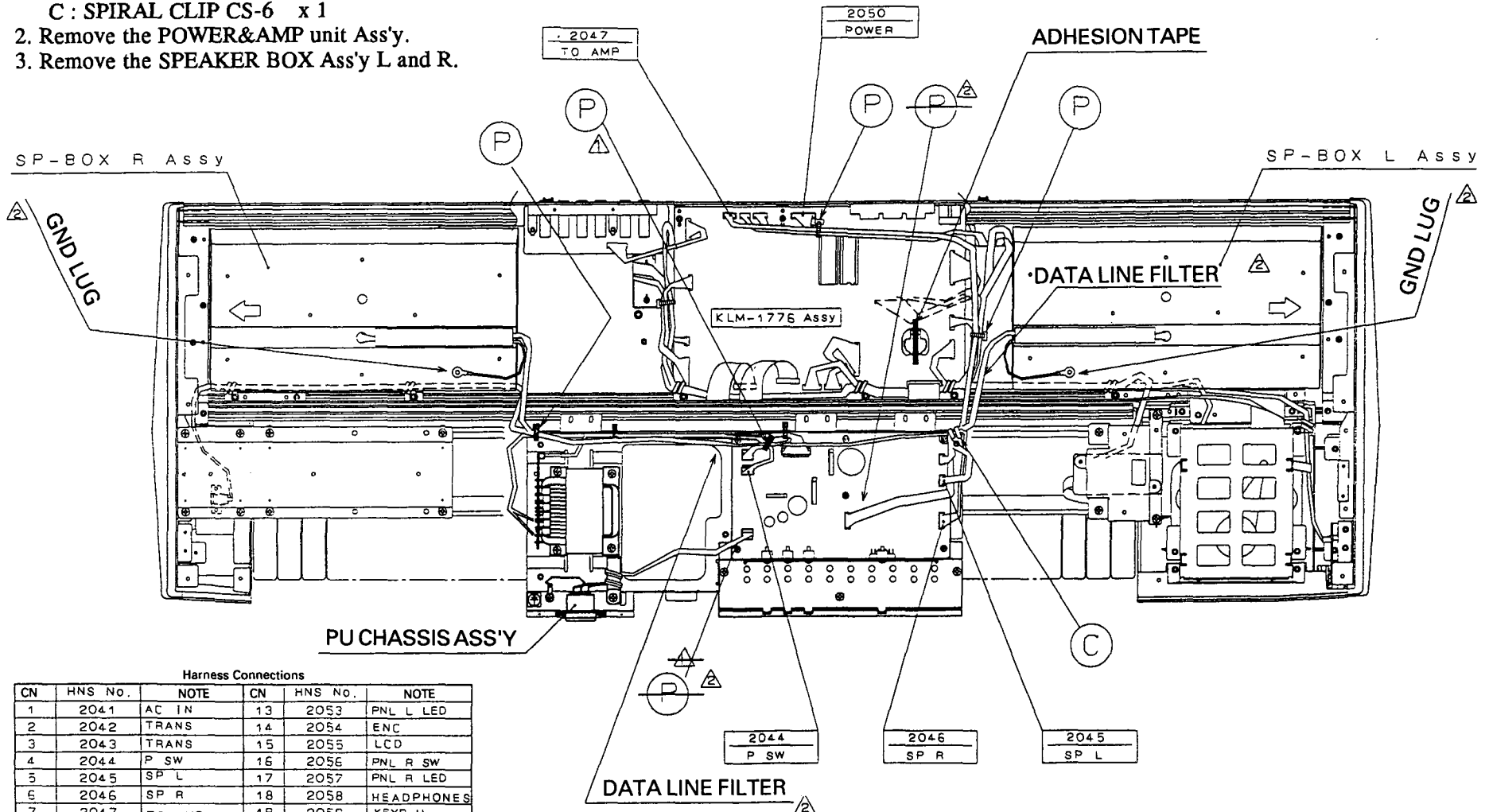
1. Remove all the screws on the BOTTOM CASE
[BT B BZMC 4 x 10] x 29 (mark ●)
[BT B SSE BZMC 4 x 10] x 17 (mark ■)
2. Remove the BOTTOM CASE.





1. Remove 3pcs. of the screws on the POWER& unit chassis.
[BT B ZMC 3 x 8] x 3 (mark ●)
2. Remove 8pcs. of the screws on the REAR PANEL.
[BT B ZMC 3 x 8] x 8 (mark ■)
3. Lift the POWER& unit Ass'y.
In case that checking the KLM-1776 pcb (main),
stand the POWER& unit Ass'y on the SUPPORT RAIL.

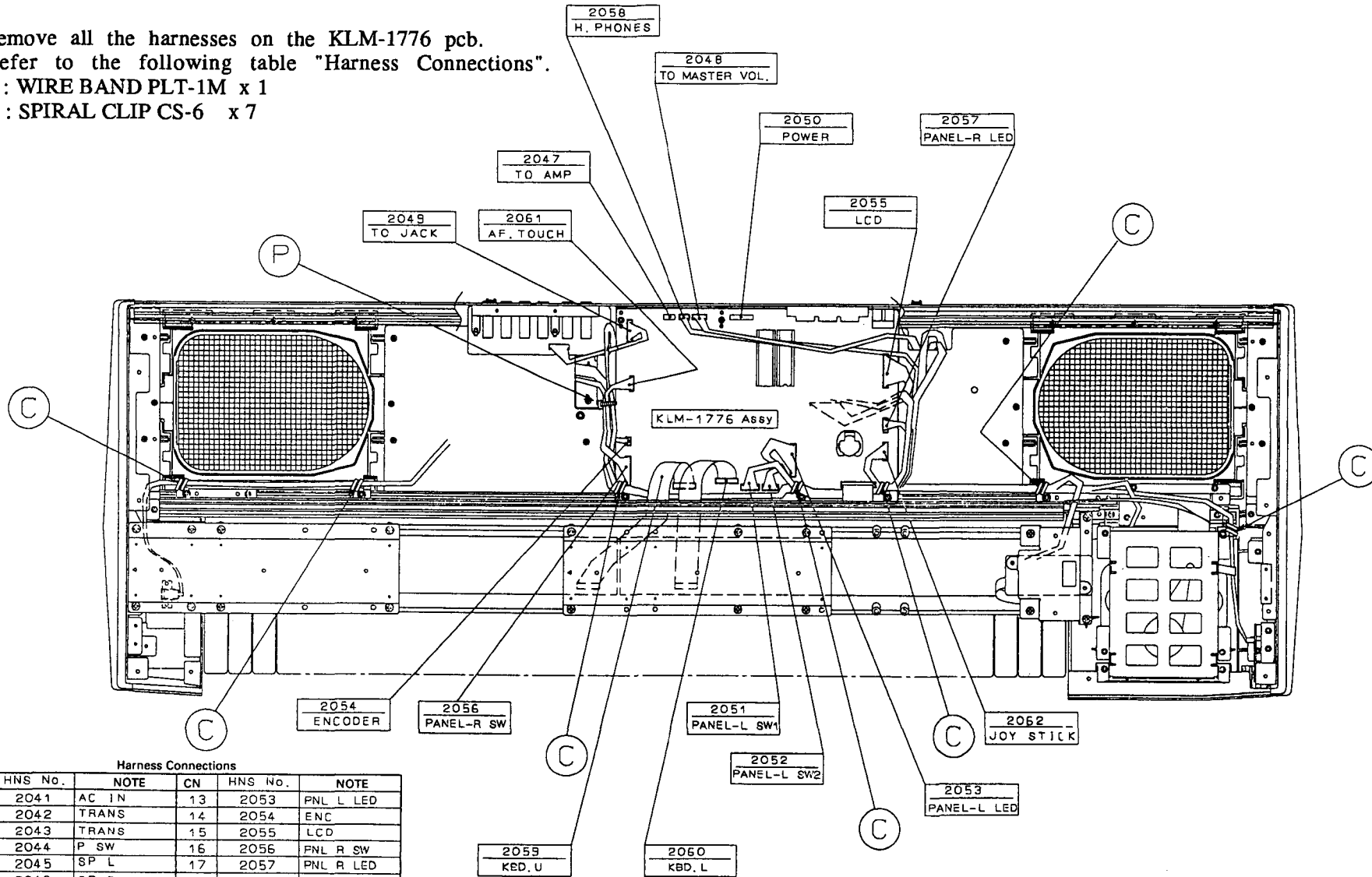
1. Remove all the harnesses on the POWER& unit Ass'y.
Refer to the following table "Harness Connections".
P : WIRE BAND PLT-1M x 4
C : SPIRAL CLIP CS-6 x 1
2. Remove the POWER& unit Ass'y.
3. Remove the SPEAKER BOX Ass'y L and R.



Harness Connections

CN	HNS No.	NOTE	CN	HNS No.	NOTE
1	2041	AC IN	13	2053	PNL L LED
2	2042	TRANS	14	2054	ENC
3	2043	TRANS	15	2055	LCD
4	2044	P SW	16	2056	PNL R SW
5	2045	SP L	17	2057	PNL R LED
6	2046	SP R	18	2058	HEADPHONES
7	2047	TO AMP	19	2059	KEYB U
8	2048	TO MASTER	20	2060	KEYB L
9	2049	TO JACK	21	2061	AFT
10	2050	POWER	22	2062	JOYSTICK
11	2051	PNL L SW1	23	FDD HARNESS	
12	2052	PNL L SW2			

1. Remove all the harnesses on the KLM-1776 pcb.
 Refer to the following table "Harness Connections".
 P : WIRE BAND PLT-1M x 1
 C : SPIRAL CLIP CS-6 x 7

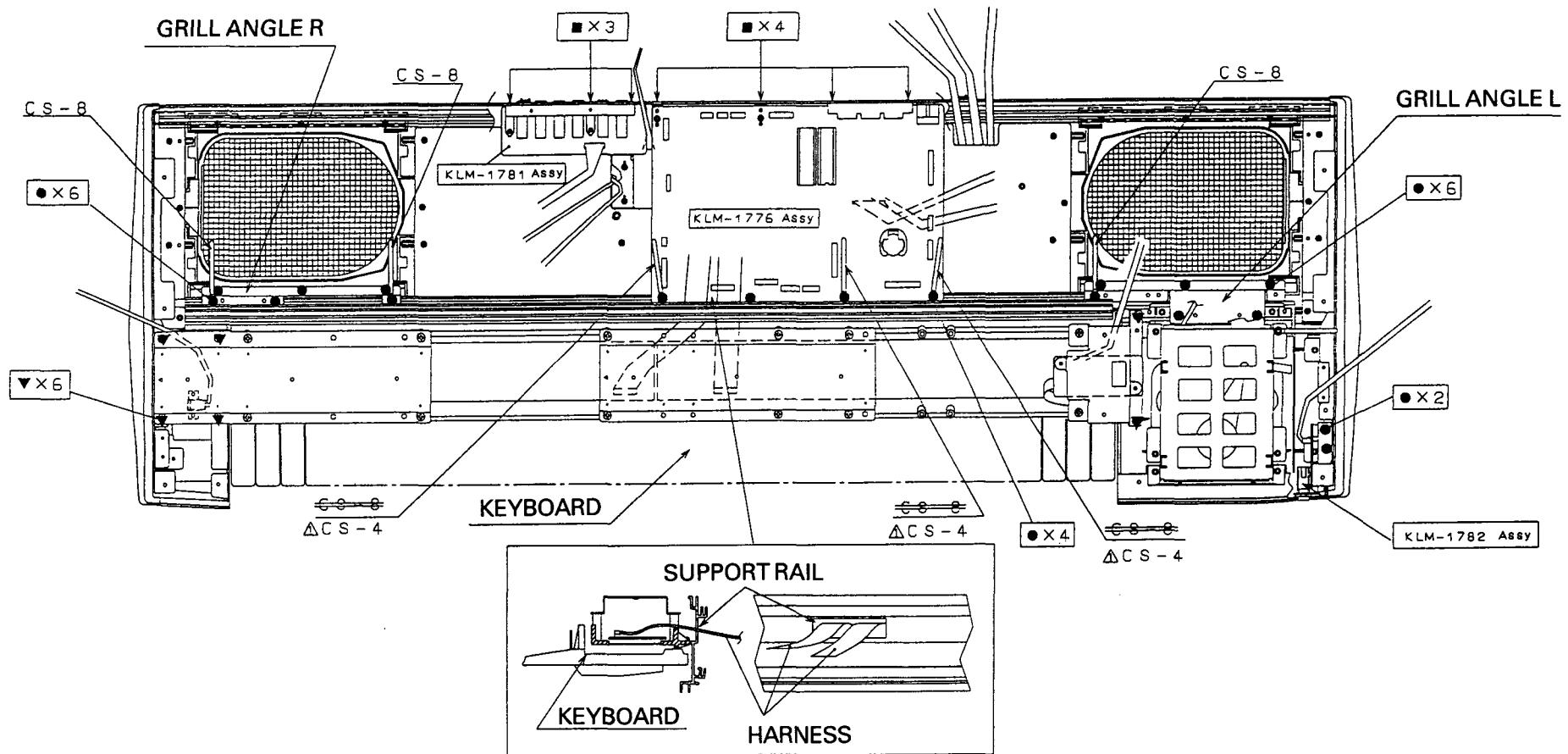


Harness Connections

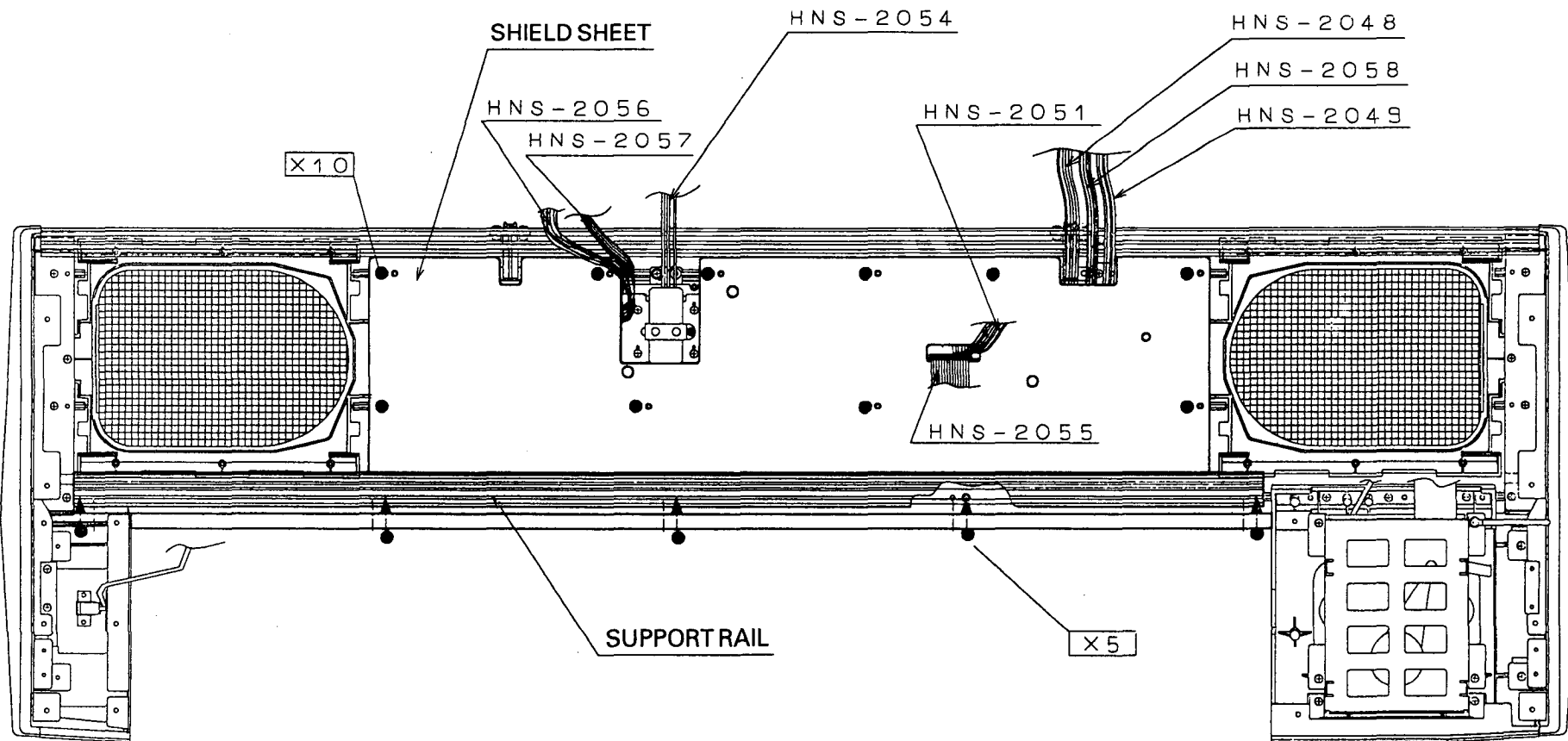
CN	HNS No.	NOTE	CN	HNS No.	NOTE
1	2041	AC IN	13	2053	PNL L LED
2	2042	TRANS	14	2054	ENC
3	2043	TRANS	15	2055	LCD
4	2044	P SW	16	2056	PNL R SW
5	2045	SP L	17	2057	PNL R LED
6	2046	SP R	18	2058	HEADPHONES
7	2047	TO AMP	19	2059	KEYB U
8	2048	TO MASTER	20	2060	KEYB L
9	2049	TO JACK	21	2061	AFT
10	2050	POWER	22	2062	JOYSTICK
11	2051	PNL L SW1	23	FDD HARNESS	
12	2052	PNL L SW2			

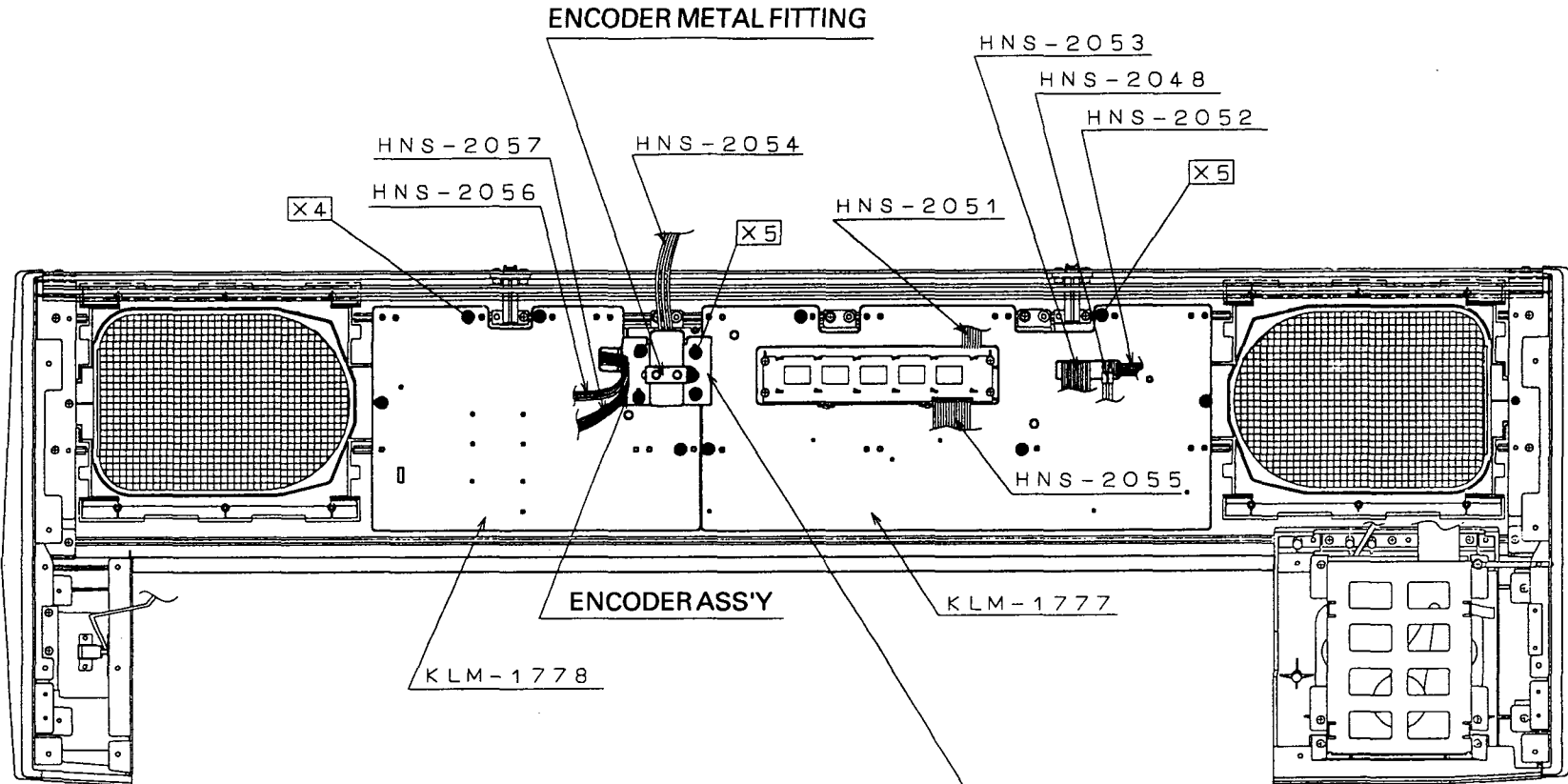
1. Remove 4pcs. of the screws on the KLM-1776 pcb.
[BT B ZMC 3 x 8] x 4 (mark●)
2. Remove 4pcs. of the screws on the REAR PANEL.
[BT B BZMC 3 x 8] x 4 (mark■)
3. Remove the KLM-1776 pcb.
4. Remove 3pcs. of the screws on the REAR PANEL.
[BT B BZMC 3 x 8] x 3 (mark■)
5. Remove the KLM-1781 pcb.

6. Remove 2pcs. of the screws on the SIDE CHASSIS L.
[BT B ZMC 3 x 8] x 2 (mark●)
7. Remove the KLM-1782 pcb.
8. Remove each 6pcs. of the screws on the GRILL ANGLE L and R.
[BT B ZMC 3 x 8] x 12 (mark●)
9. Remove the GRILL ANGLE L and R.
10. Remove 6pcs. of the screws on the KEYBOARD Ass'y.
[BT B ZMC 4 x 10] x 6
11. Remove the KEYBOARD Ass'y.



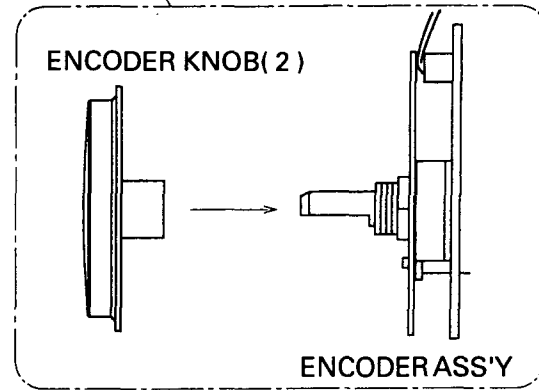
1. Remove 5pcs. of the screws on the SUPPORT RAIL.
[BT B ZMC 3 x 8] x 5 (mark ●)
2. Remove the SUPPORT RAIL.
3. Remove 10pcs. of the screws on the SHIELD SHEET.
[BT B ZMC 3 x 8] x 10 (mark ●)
4. Remove the SHIELD SHEET.

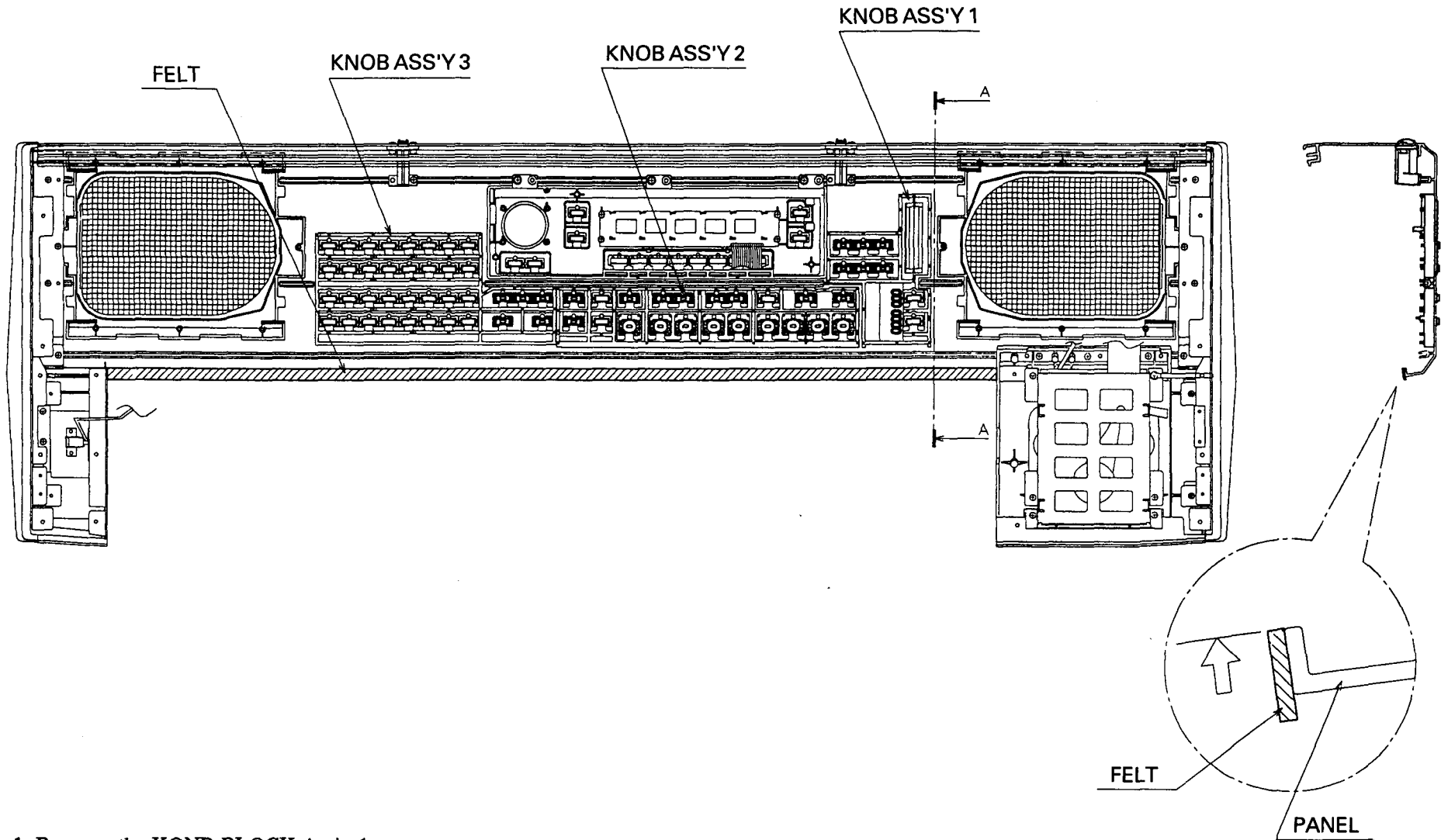




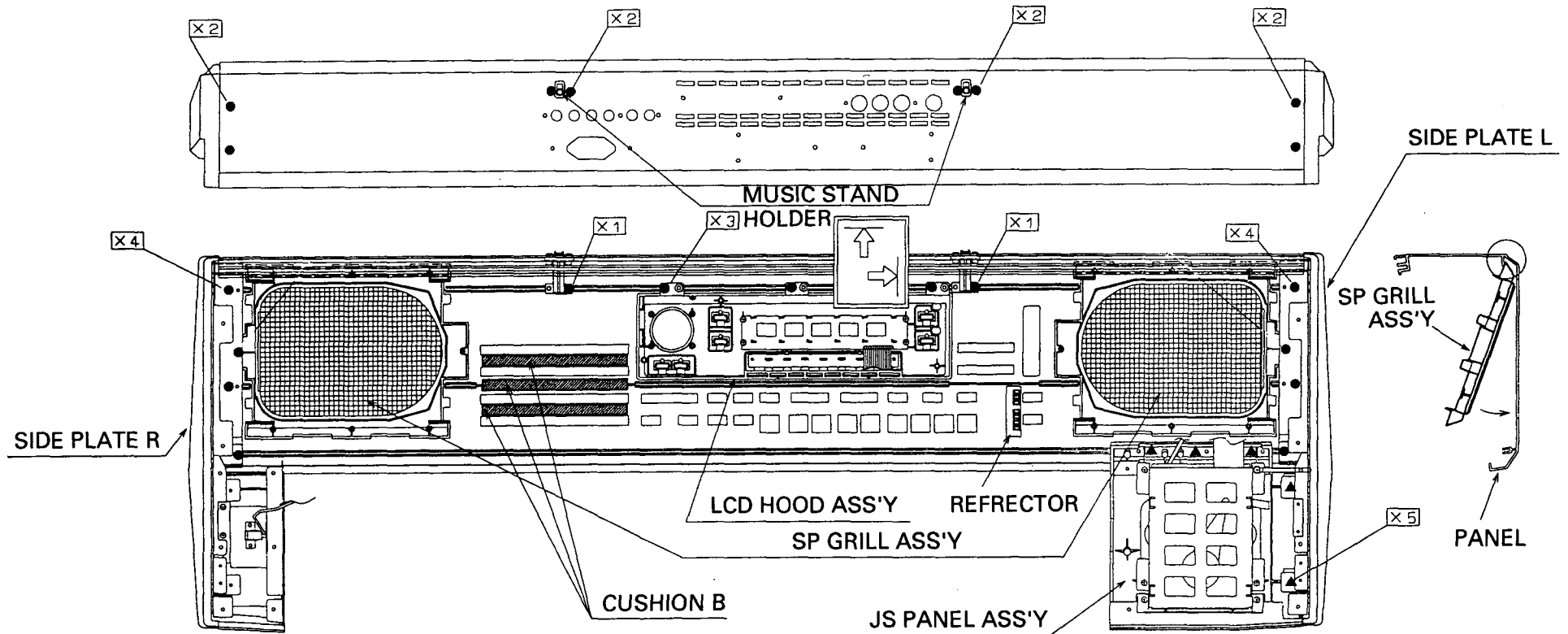
6

1. Remove 5pcs. of the screws on the ENCODER MEATL FITTING.
[BT B ZMC 3 x 8] x 5 (mark ●)
2. Remove the ENCODER Ass'y.
3. Remove 4pcs. of the screws on the KLM-1778 pcb.
[BT B ZMC 3 x 8] x 4 (mark ●)
4. Remove the KLM-1778 pcb.
5. Remove 5pcs. of the screws on the KLM-1777 pcb.
[BT B ZMC 3 x 8] x 5 (mark ●)
6. Remove the KLM-1777 pcb.



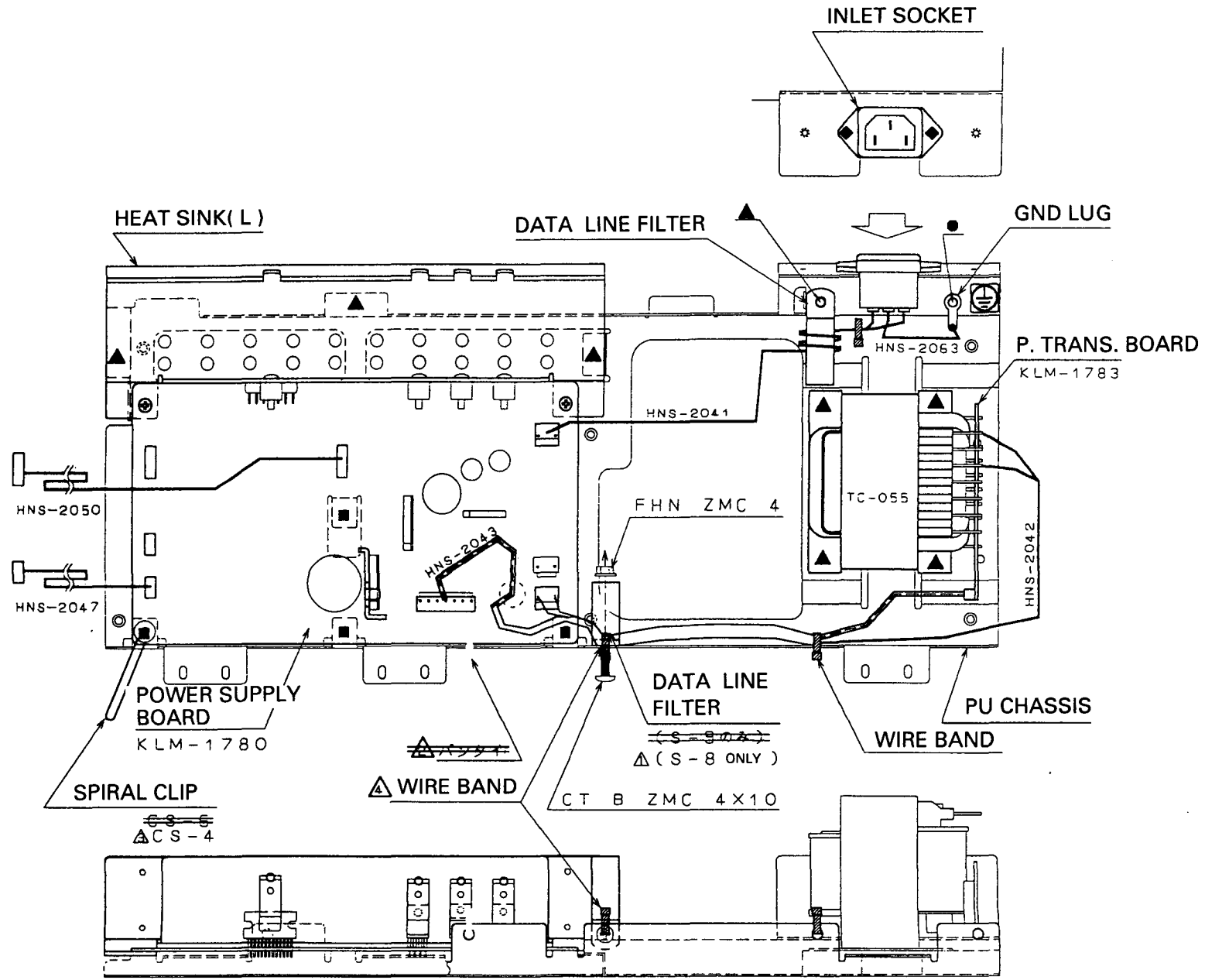


1. Remove the KONB BLOCK Ass'y 1.
2. Remove the KONB BLOCK Ass'y 2.
3. Remove the KONB BLOCK Ass'y 3.

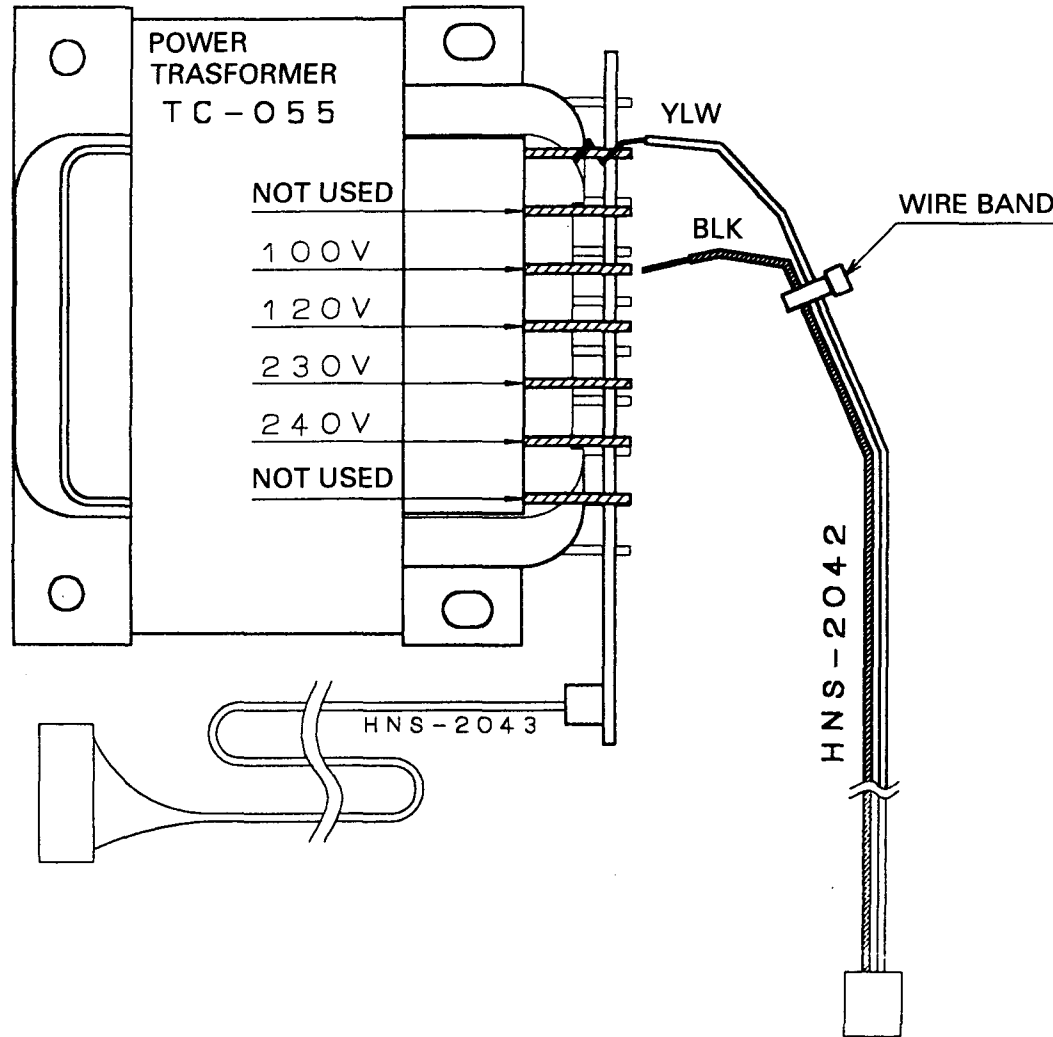


1. Remove 5pcs. of the screws on the JS PANEL Ass'y.
[BT B ZMC 3 x 10] x 5 (mark ▲)
2. Remove the JS PANEL Ass'y.
3. Remove 3pcs. of the screws on the LCD HOOD Ass'y.
[BT B ZMC 3 x 8] x 3 (mark ●)
4. Remove the JS PANEL Ass'y.
5. Remove each 4pcs. of the screws on the SIDE PANEL L and R.
[BT B ZMC 3 x 8] x 4 (mark ●)
6. Remove each 2pcs. of the screws on the REAR PANEL.
[BT B ZMC 3 x 8] x 2 (mark ●)
7. Remove the SIDE PANEL L and R.

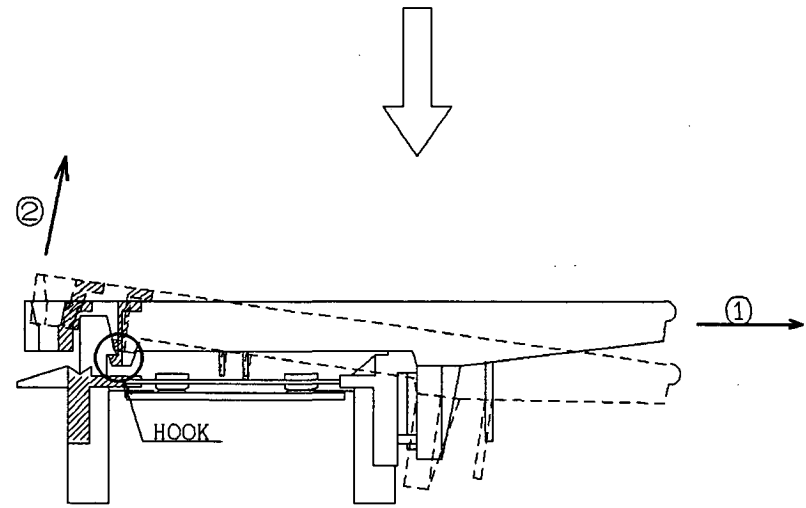
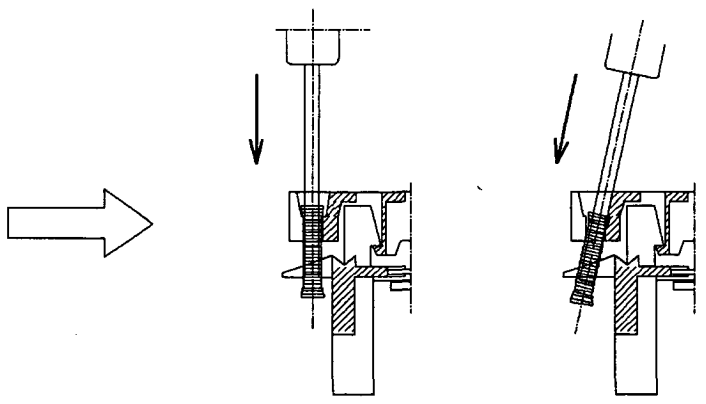
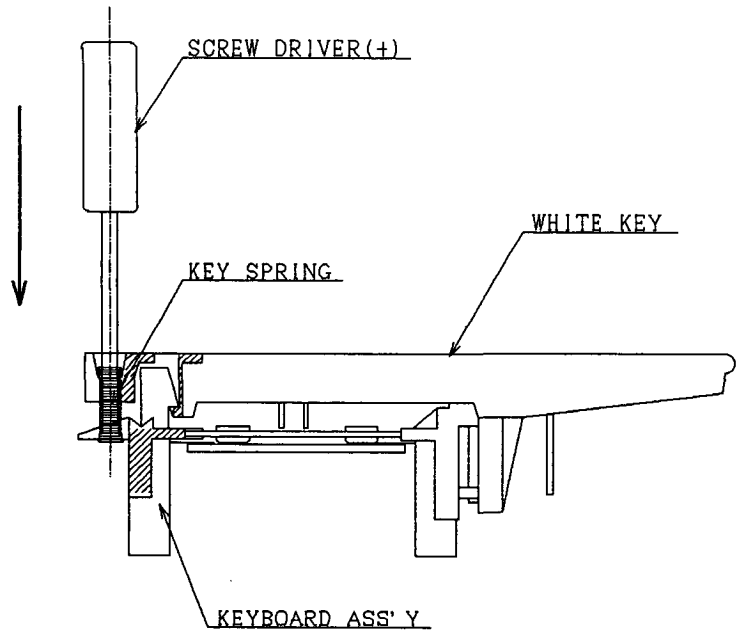
POWER SUPPLY UNIT ASS'Y



POWER TRANSFORMER WIRE CONNECTION



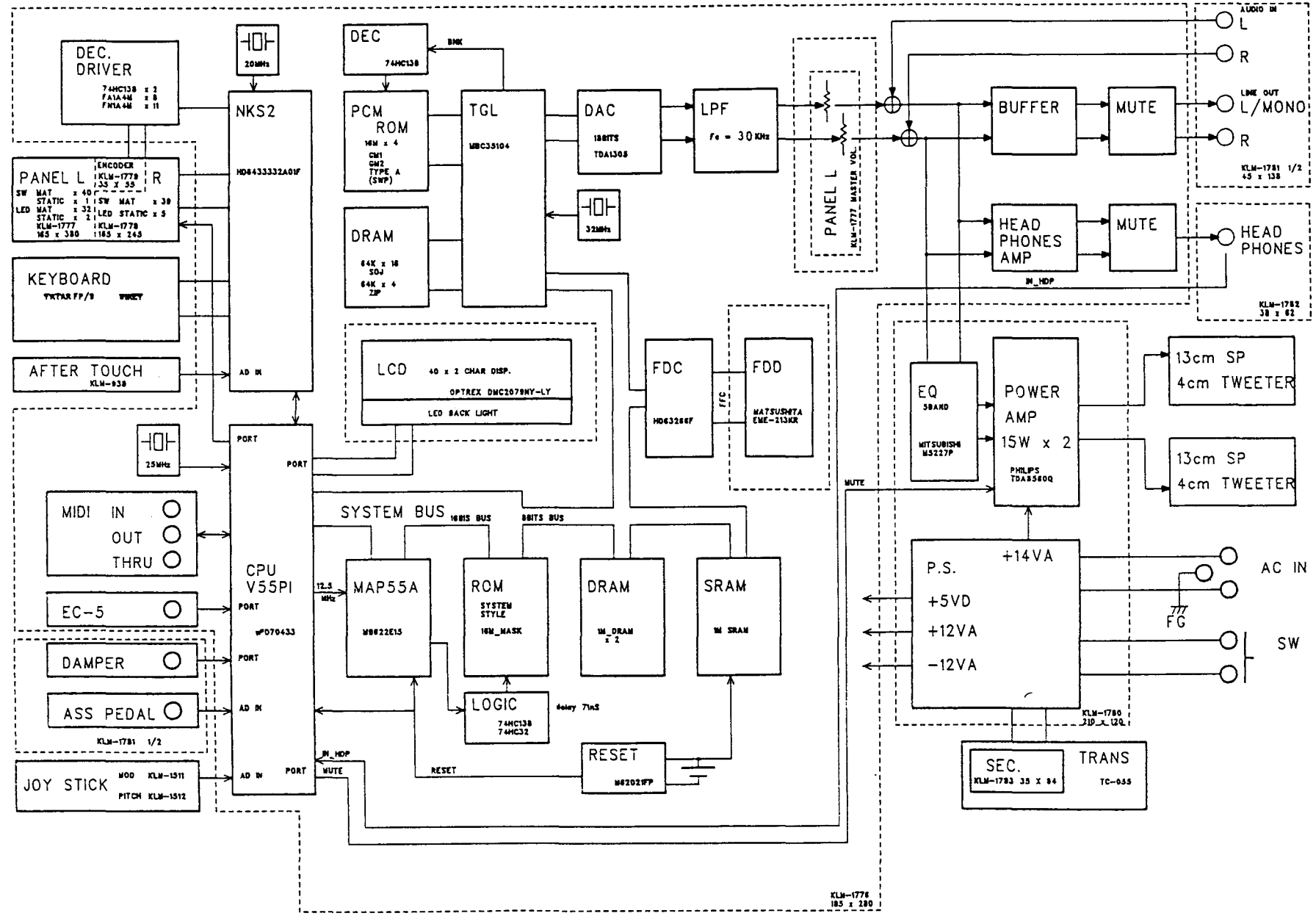
How to remove the FATAR key



14

- 1) Set the screw driver (type +) at the key spring.
- 2) Push down the screw driver slowly and remove the key spring.
- 3) Move the key in accordance with the direction → ①.
- 4) Move the key in accordance with the direction ↑ ② and remove it.

4. BLOCK DIAGRAM



KLM-1511/1512/1777

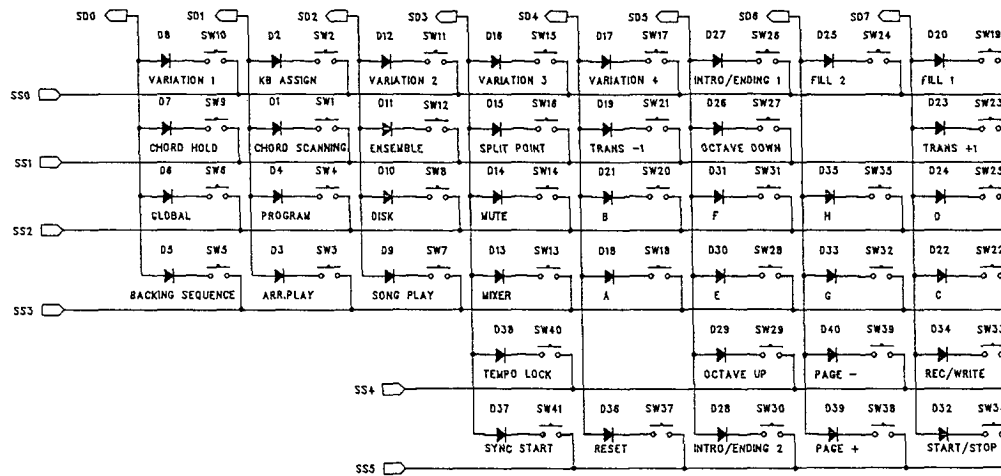
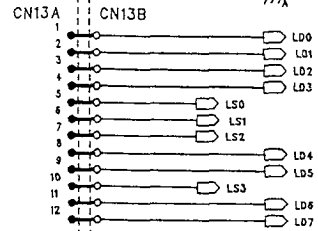
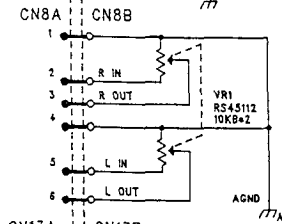
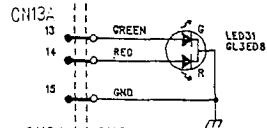
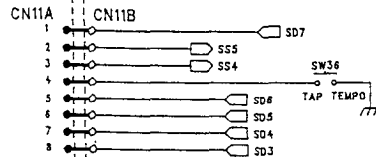
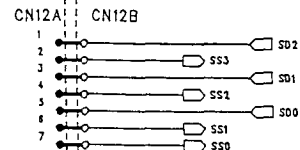
5. CIRCUIT DIAGRAMS

KLM-1776

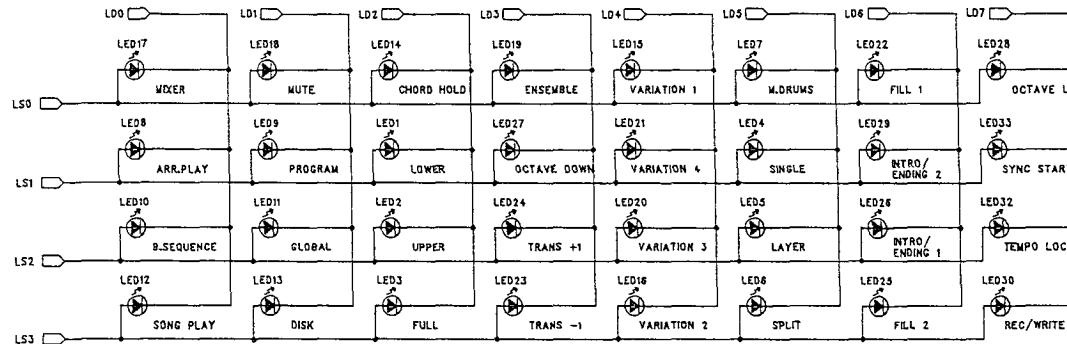
MAIN PCB

KLM-1777

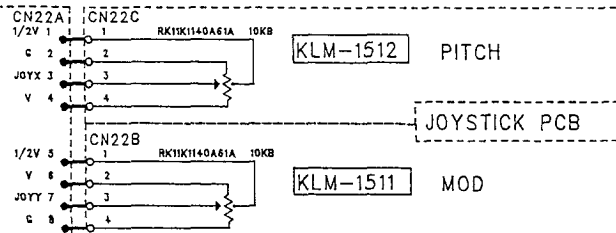
PANEL L PCB



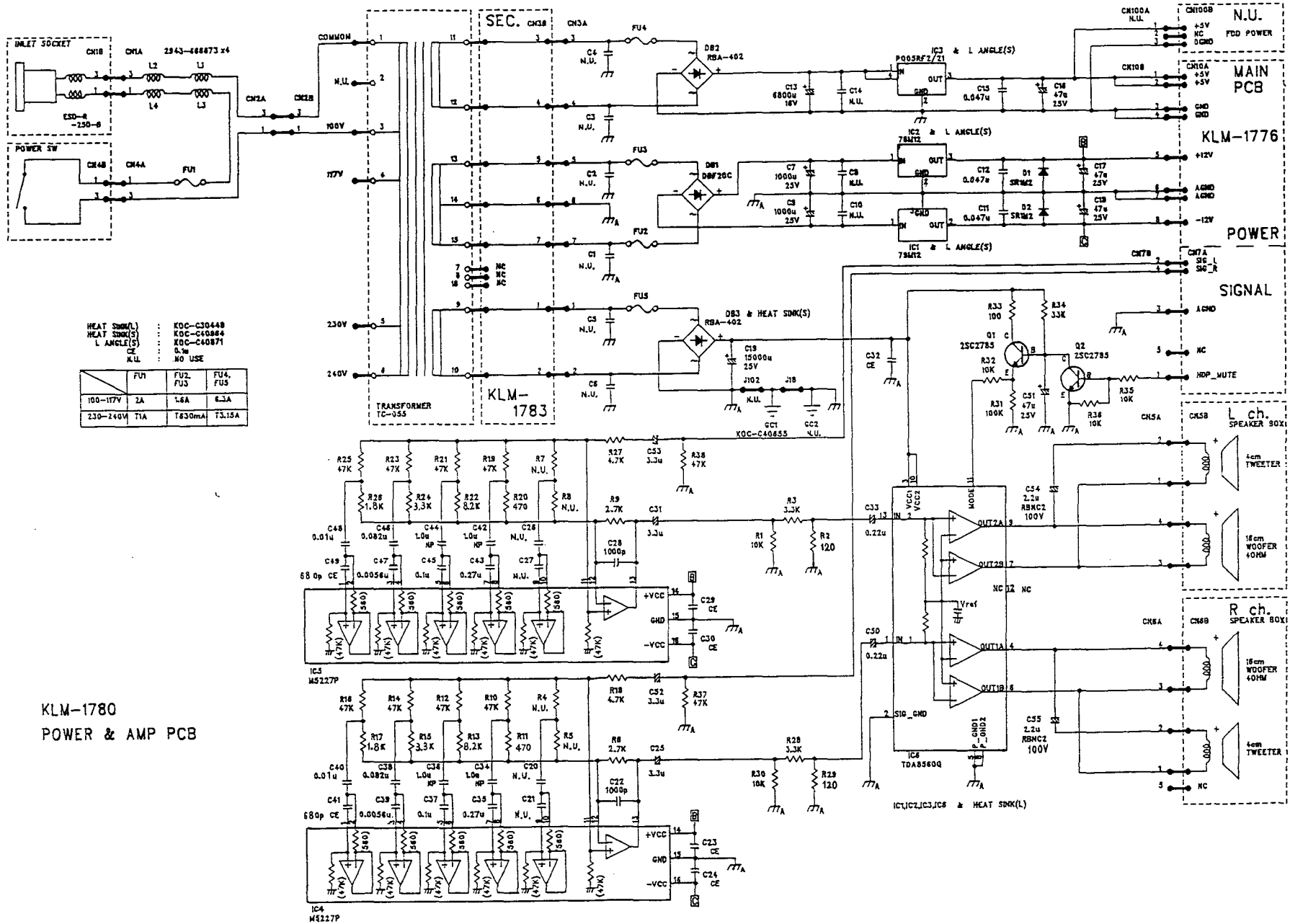
D :1S2473 T-77
SW :EVQ-PAC09K



LED :GL3HD43



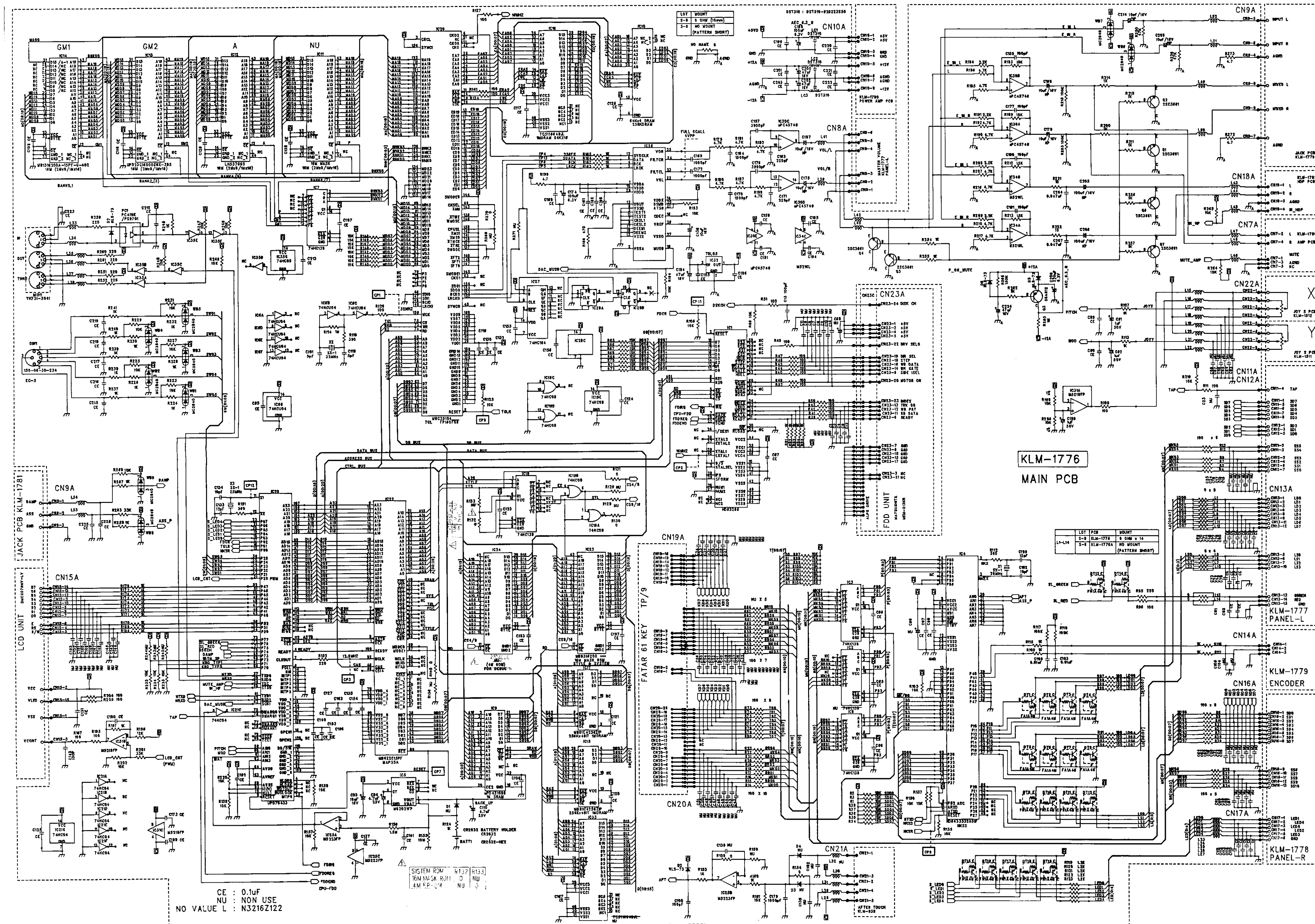
KLM-1780



HEAT SINK(L) : KOC-C30448
 HEAT SINK(S) : KOC-C40864
 L ANGLE(S) : KOC-C40871
 CE : 0.5u
 N.U. : NO USE

	FU1	FU2, FU3	FU4, FU5
100-117V	2A	1.6A	6.3A
230-240V	T1A	T830mA	T3.15A

KLM-1780
POWER & AMP PCB



KLM-1778/1779

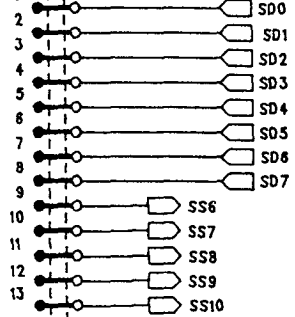
MAIN PCB PANEL R PCB

KLM-1776

KLM-1778

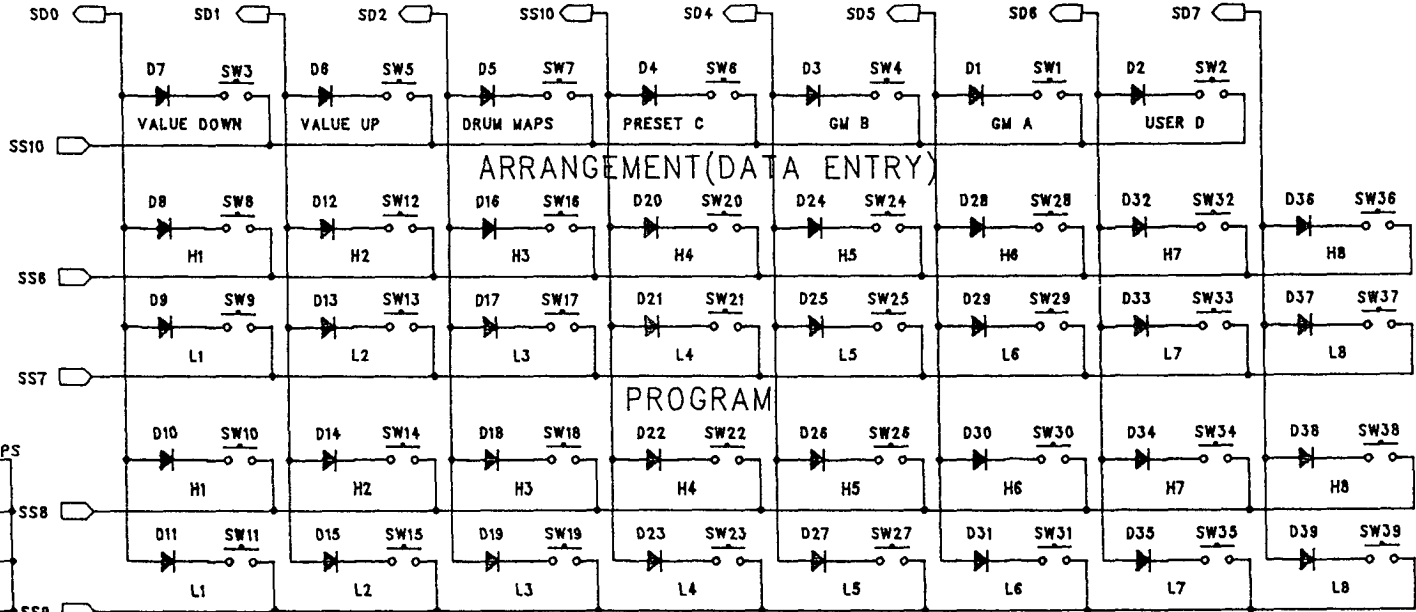
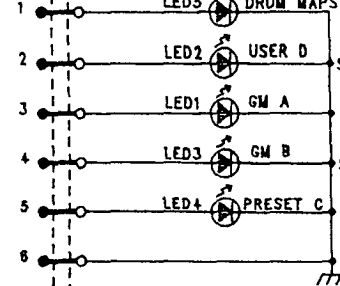
CN16A

CN16B



CN17A

CN17B



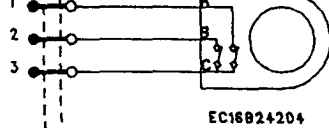
LED :GL3HD43
 SW :EVQ-PAC09K
 D :1S2473 T-77

ENCODER PCB

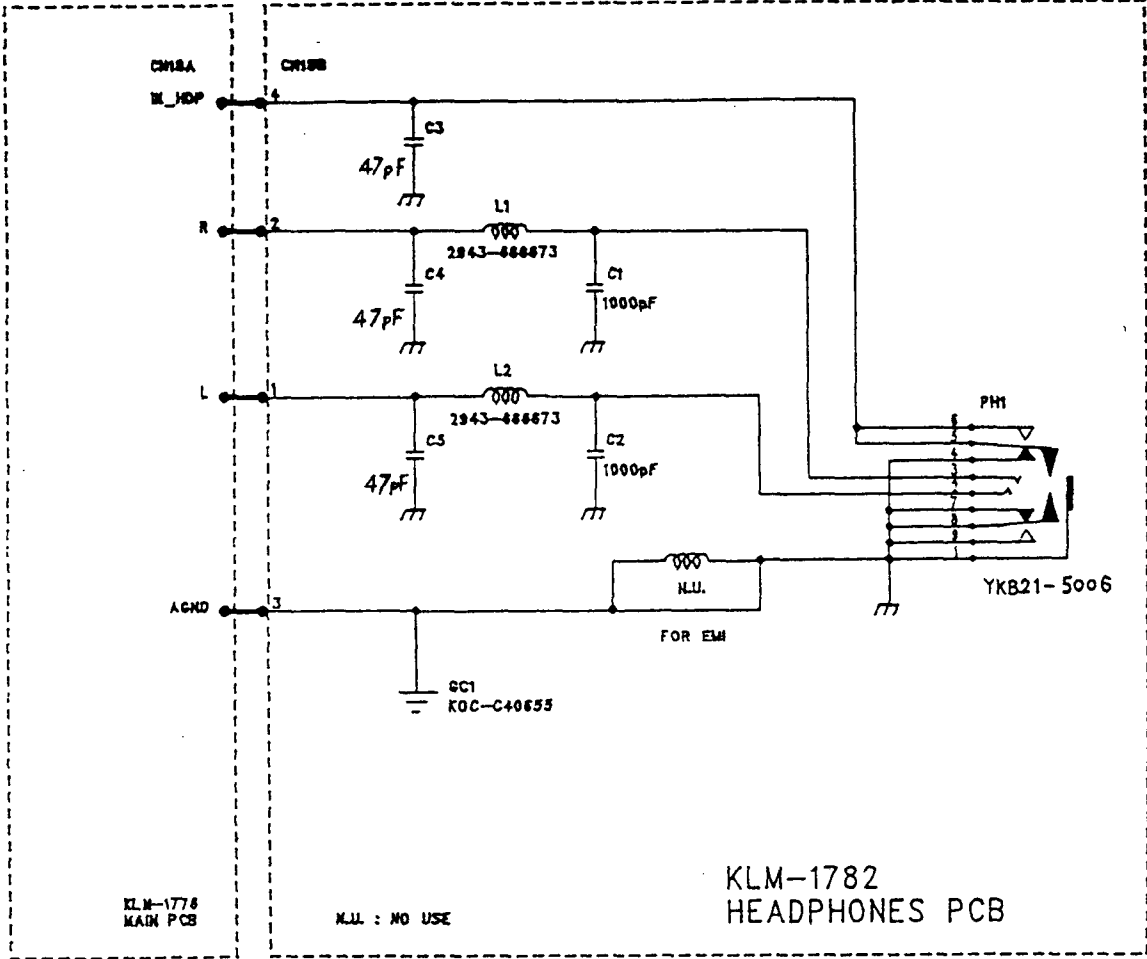
KLM-1779

CN14A

CN14B

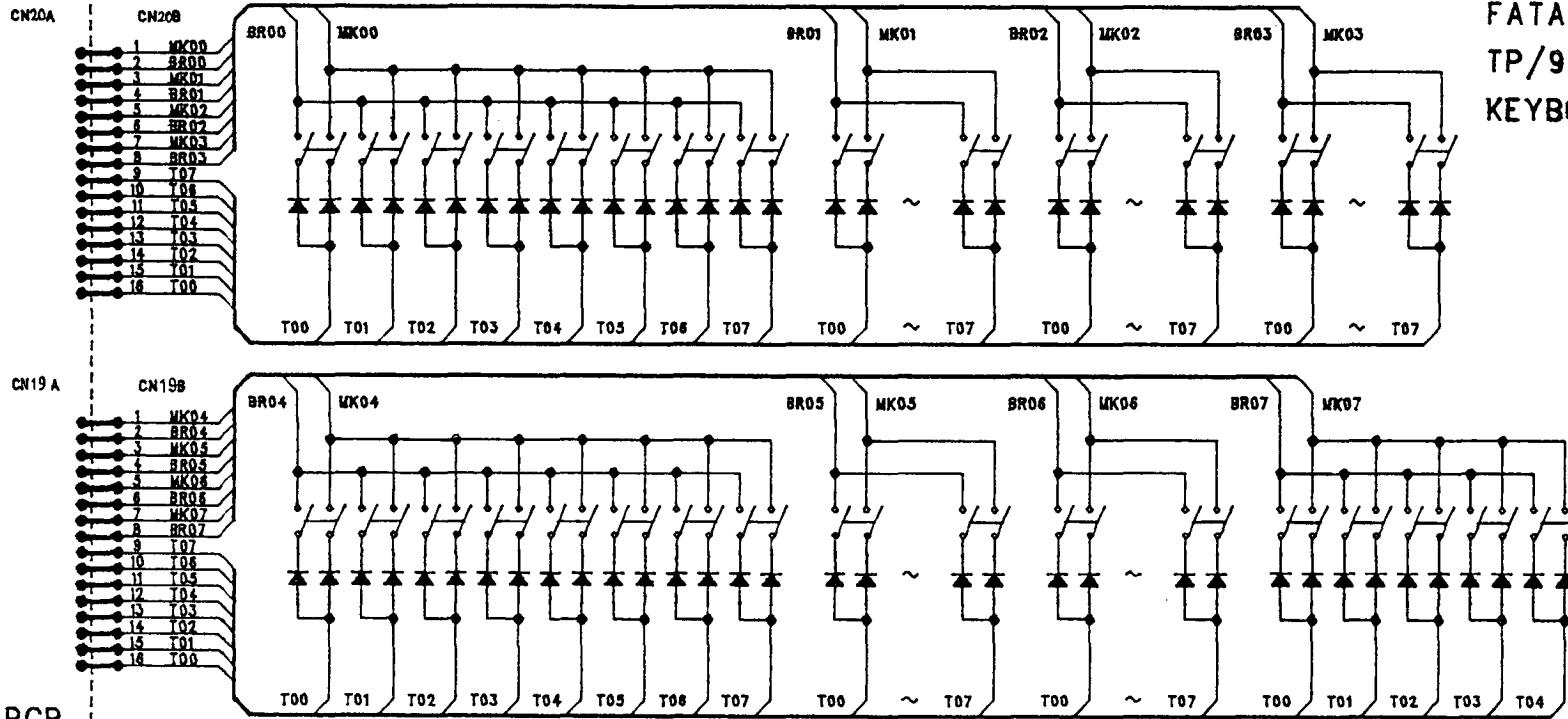


KLM-1782

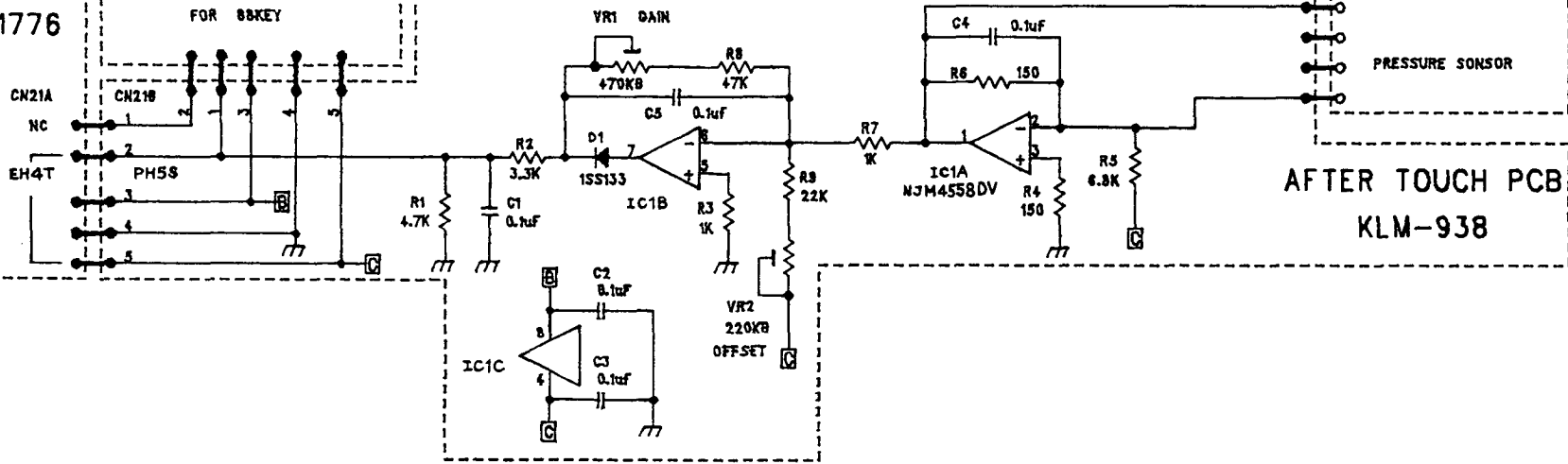


KEYBOARD/KLM-938

FATAR Srl
TP/9 /61
KEYBOARD

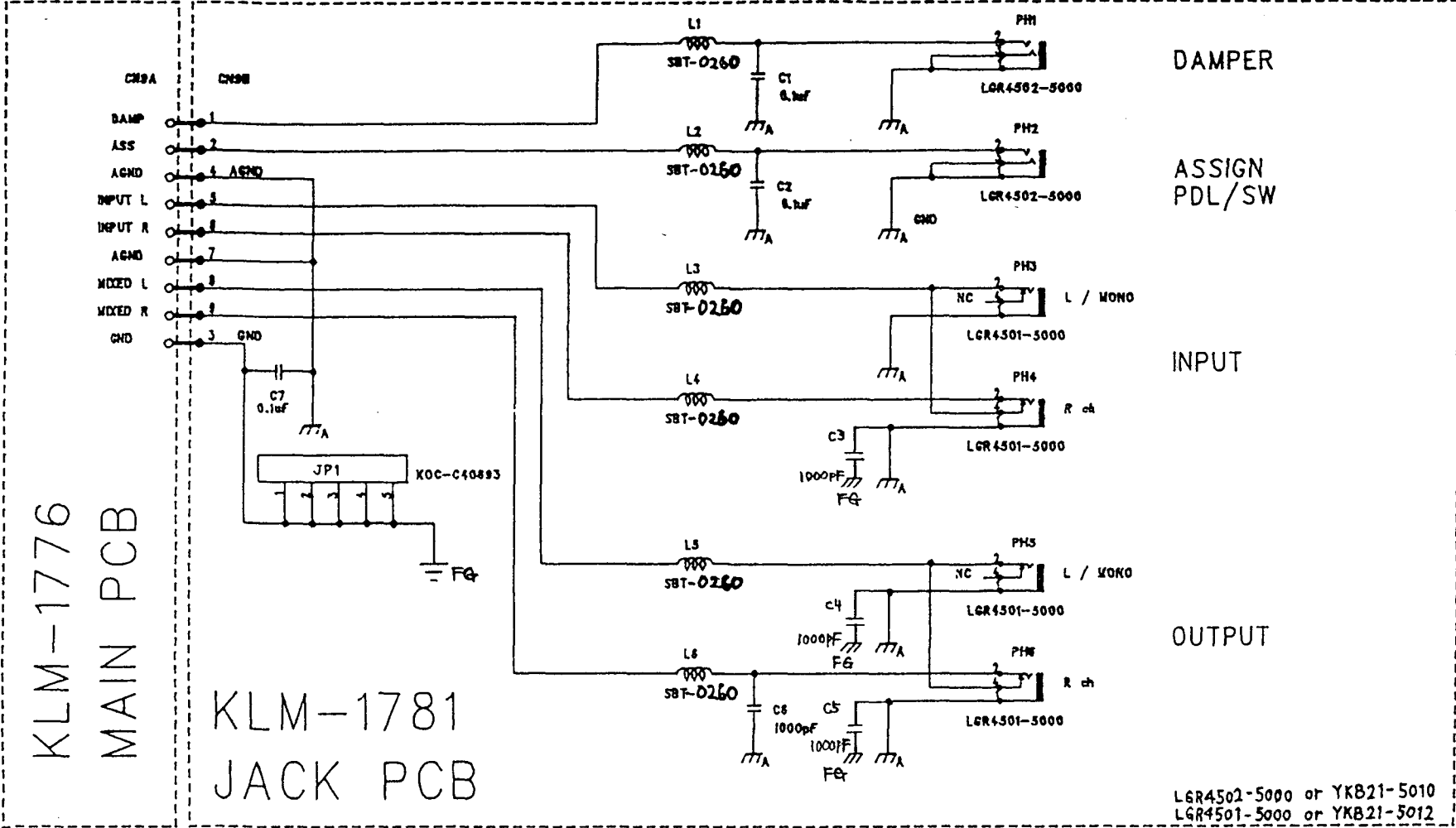


MAIN PCB
KLM-1776



AFTER TOUCH PCB
KLM-938

KLM-1781



KLM-1776
MAIN PCB

KLM-1781
JACK PCB

DAMPER

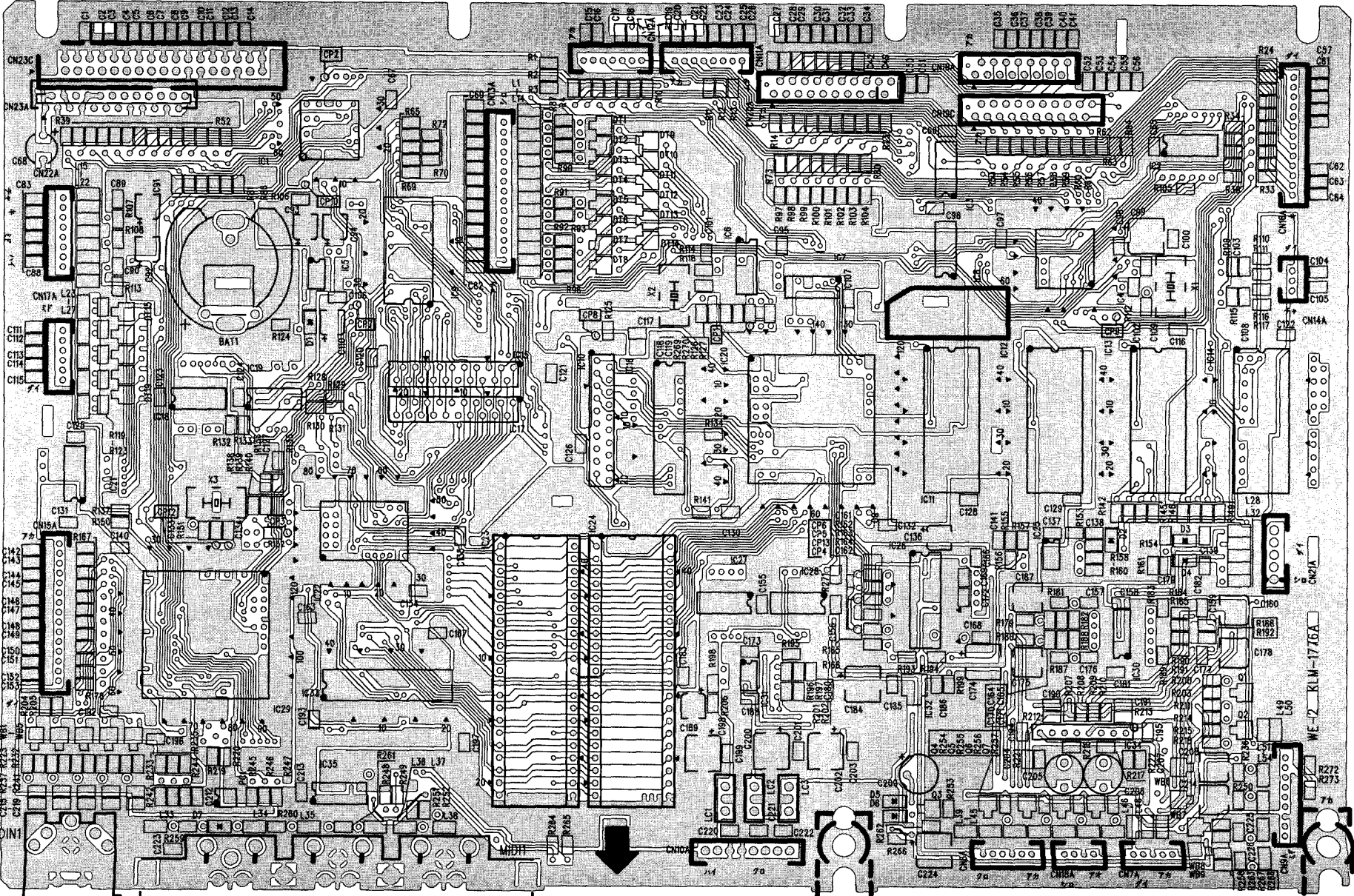
ASSIGN
PDL/SW

INPUT

OUTPUT

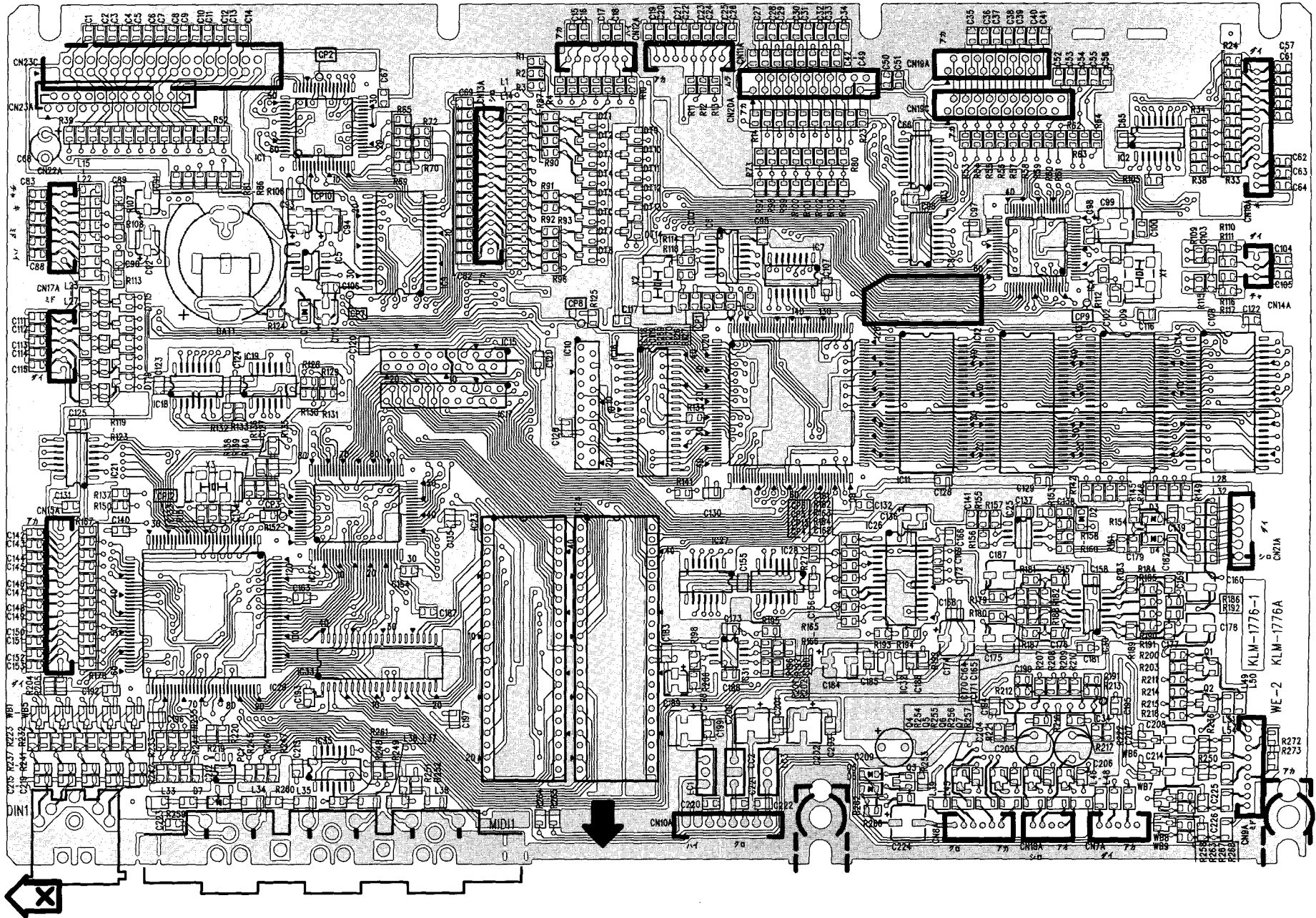
LGR4502-5000 or YKB21-5010
LGR4501-5000 or YKB21-5012

6. P.C. BOARDS

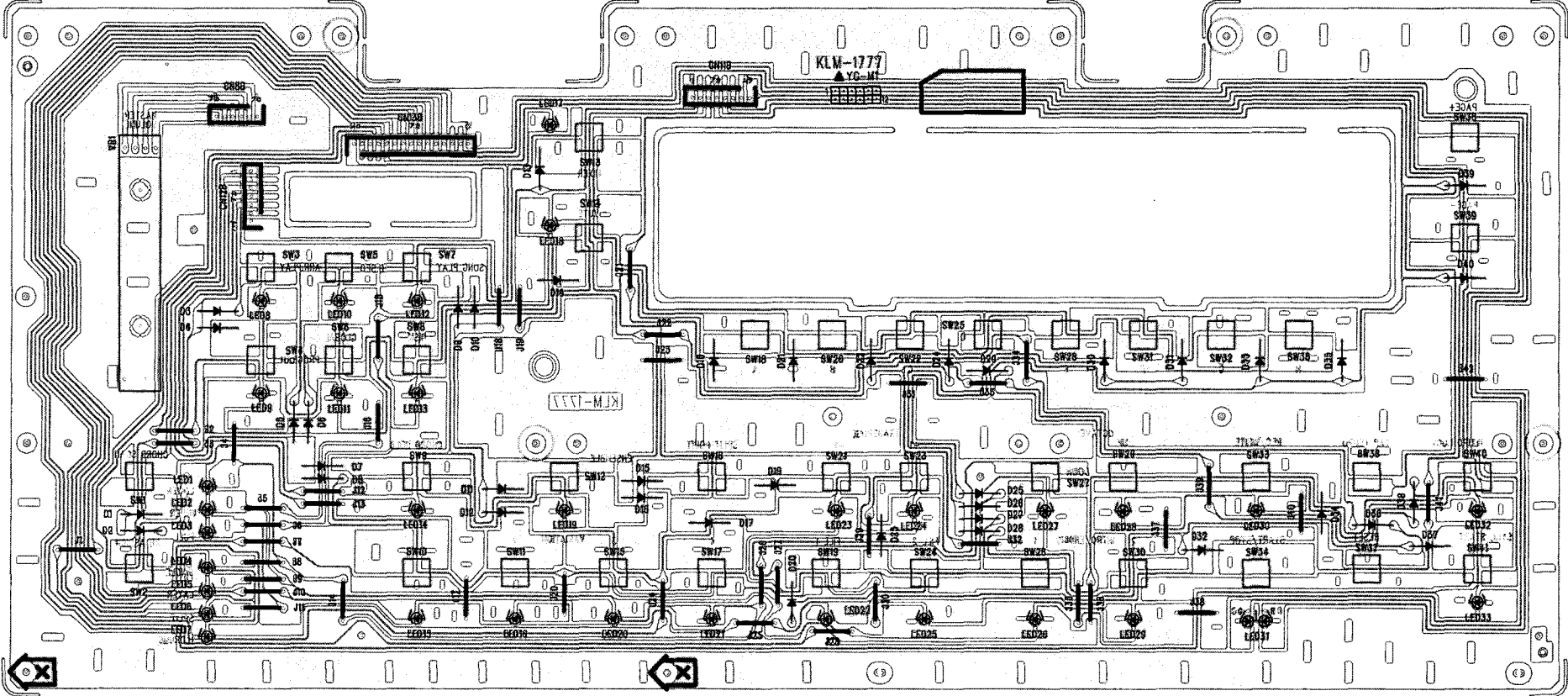


COMPONENT SIDE

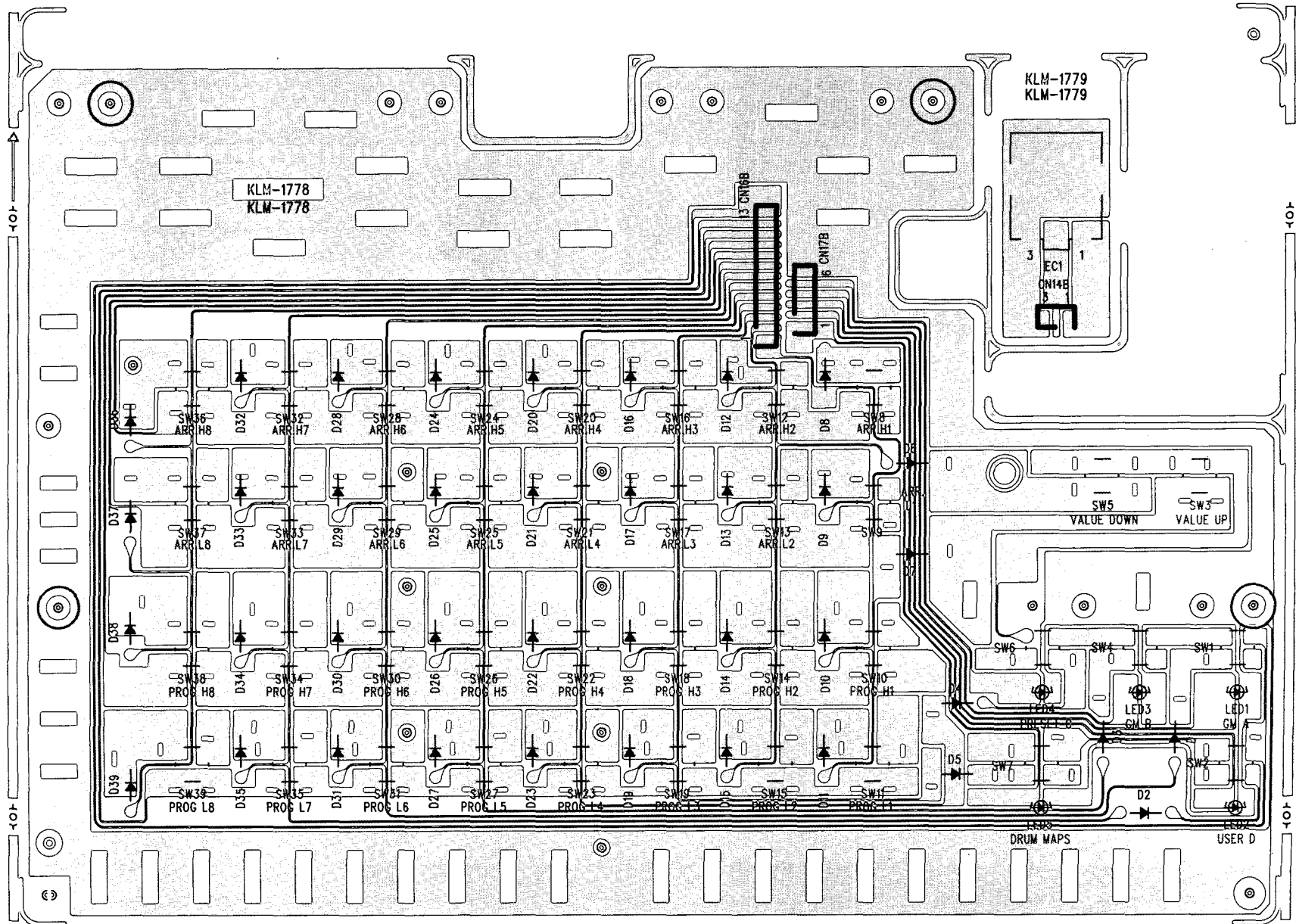
KLM-1776



KLM-1777

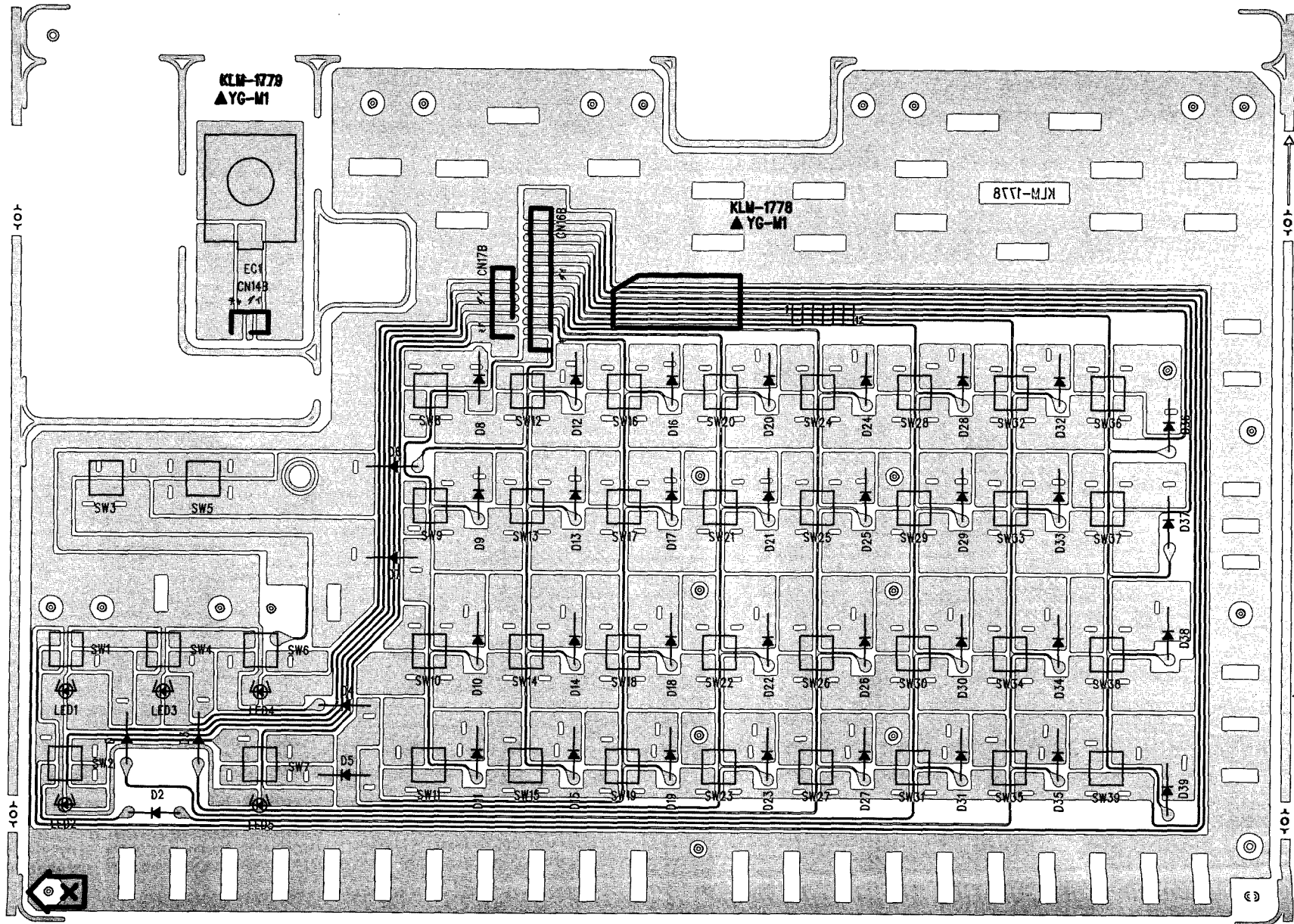


KLM-1778



NO COMPONENT SIDE

KLM-1778



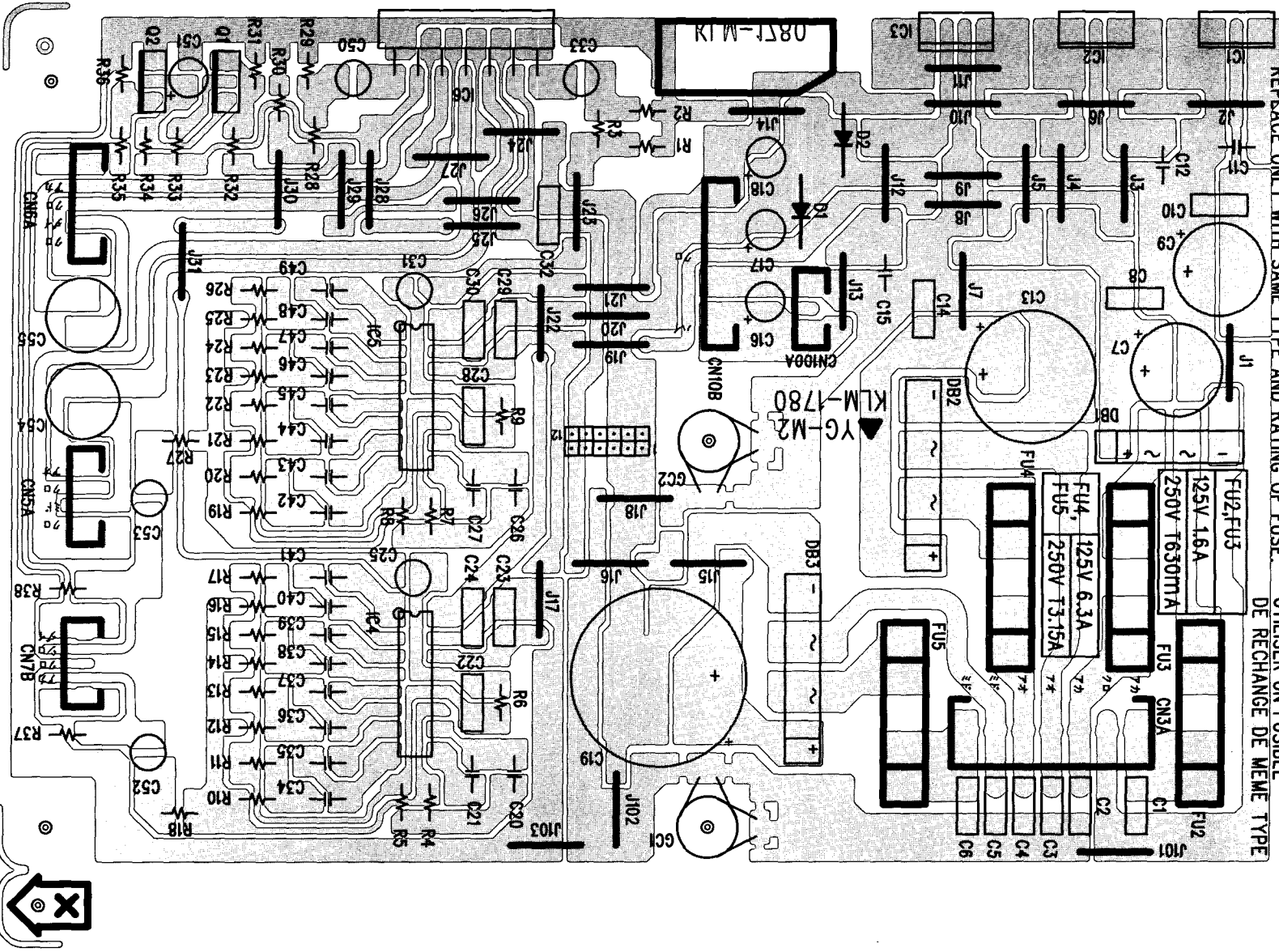
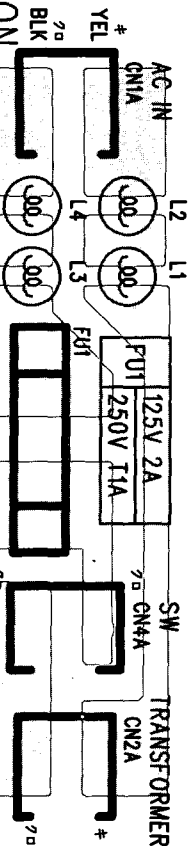
COMPONENT SIDE

CAUTION

FOR CONTINUED PROTECTION AGAINST RISK OF FIRE,
REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.

ATTENTION

UTILISER UN FUSIBLE
DE MÊME TYPE



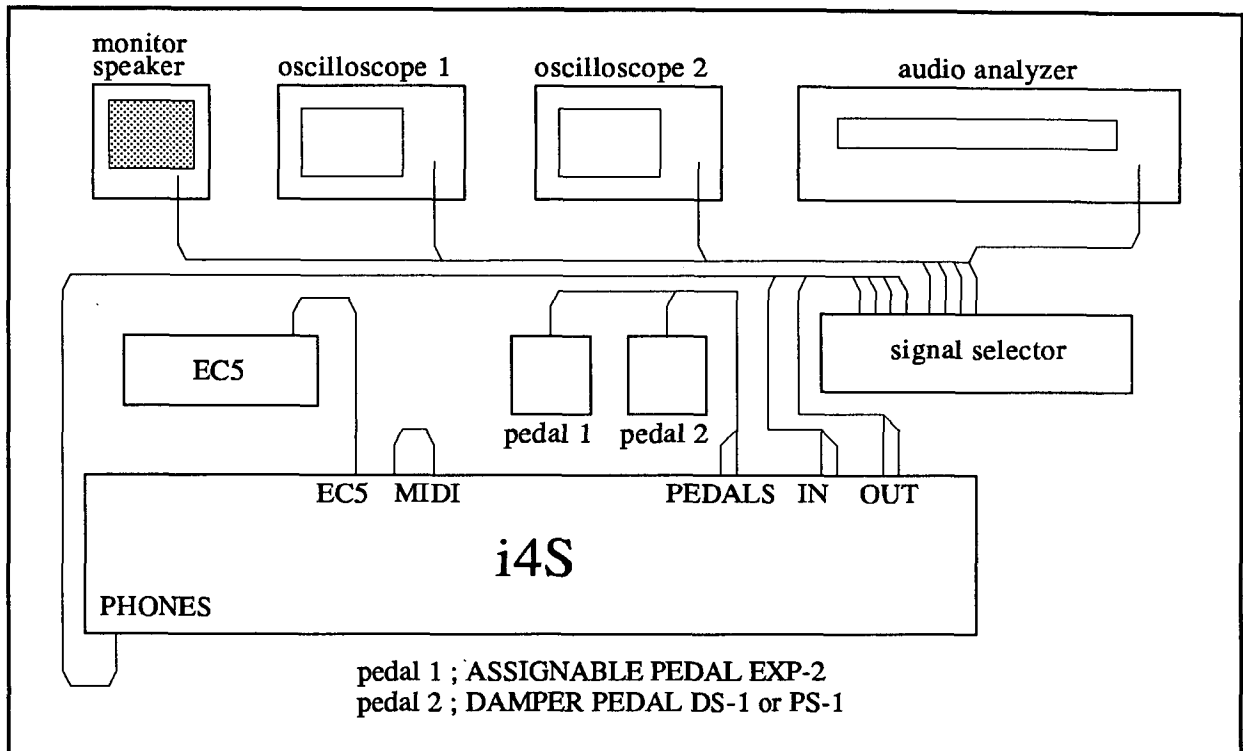
KLM-1781



7. TEST MODE

The i4S has a test mode for checking various functions. When entering the test mode, the internal data of the i4S is initialized. Hence, if the i4S contains any necessary data, save this data on a floppy disk before starting the test mode. The figure below shows the equipments and settings required for conducting the test.

Standard Setup



Starting the Test Mode

- (1) Set a floppy disk formatted by the i2, i3, i4S or X3 in the FDD.
- (2) Set the power switch to ON while pressing [ARR PLAY] and [PROGRAM] on the panel, and the test mode starts.
- (3) When the test mode starts, the internal test is performed automatically. If all test results are normal, transition to the external test item 1 <Panel Switch, LED & Disk Charge> occurs.

XXXX.YY.ZZ	KORGi4s	ROM:***
Interactive Music Workstation		

XXXX.YY.ZZ : Date of update
*** : ROM Ver. No.

LCD display upon start of test mode

1 Panel Switch & LED Check
[Eject a disk]

LCD display upon normal completion of all internal test steps

Internal test item	D A B C (PROG BANK LED) (○ ON ● OFF)
• SystemRom CheckSum	● ● ● ●
• InternalRam Check	● ● ● ○
• LCDRam Check	● ● ○ ●
• NKS I/F Check	● ● ○ ○
• TGL I/F Check	● ○ ● ●
• Battery Check	● ○ ● ○
• MIDI Check	● ○ ○ ●
• PCMRom Verify	● ○ ○ ○
• StyleRom Verify	○ ● ● ●
• HeadPhone Check	○ ● ● ○

- (4) During the internal test, the PROG BANK LEDs indicate the test step in progress as shown above.
- (5) If any abnormality is found in the internal test, the corresponding error message is displayed on the panel LCD and the test step at the moment is indicated by the PROG BANK LEDs.
- (6) The test mode can be started in any of the following ways:

[PROG] + [ARR PLAY] : Ordinary test mode
 [PROG] + [B.SEQ] : Test mode excluding the MIDI and HEADPHONES test steps
 [PROG] + [SONG PLAY] : Test mode excluding internal test
 [PROG] : Display of ROM No. only
 [PROG] + [DISK] : RAM initialization

Internal Test

If any abnormality is found in the internal test, the test stops there but it is possible to proceed to the next test step by pressing [PROG NUM 8].

Internal test item 1

<System ROM CheckSum> Internal Test#01

- (1) System ROM checksum is performed for testing the system ROM and bus line.
- (2) If any abnormality is found, a message is displayed on the panel LCD and the PROG BANK LEDs are set to off as follows:

SystemROMCheckSum [Error: CheckSum]	D A B C ● ● ● ●
--	--------------------

Internal test item 2

<Internal RAM Check> Internal Test#02

- (1) The internal RAM read/write test is performed.
- (2) If any abnormality is found, a message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as shown below.

InternalRAMCheck [Error: DRAM (Write/Read)]	D A B C ● ● ● ○
--	--------------------

When an abnormality of the DRAM is found.

InternalRAMCheck [Error: SRAM (Write/Read)]	D A B C ● ● ● ○
--	--------------------

When an abnormality of the SRAM is found.

Internal test item 3
<LCD RAM Check>

Internal Test#03

- (1) The LCD module RAM read/write test is performed.
- (2) When any abnormality is found, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

LCDRAM Check [Error: Write/Read]	D A B C ● ● ○ ●
---	--------------------

Internal test item 4
<NKS I/F Check>

Internal Test#04

- (1) The NIGEL keyboard scanner interface is checked.
- (2) If any abnormality is found, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

NKS I/F Check [Error: NKS Communication]	D A B C ● ● ○ ○
---	--------------------

Internal test item 5
<TGL I/F Check>

Internal Test#05

- (1) The TGL interface is checked.
- (2) If any abnormality is found, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

TGL I/F Check [Error: TG I/F]	D A B C ● ○ ● ●
--	--------------------

If a TGL interface abnormality is found.

TGL I/F Check [Error: DF I/F]	D A B C ● ○ ● ●
--	--------------------

If a DF interface abnormality is found.

Internal test item 6
<Battery Check>

Internal Test#06

- (1) The backup battery is tested.
- (2) If any abnormality is found, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

Battery Check [Error: Battery Low]	D A B C ● ○ ● ○
---	--------------------

When the battery voltage is less than 3.0 V.

Battery Check [Error: Battery High / No Battery]	D A B C ● ○ ● ○
---	--------------------

When the battery voltage is high or when no battery is installed.

Internal test item 7
<MIDI Check>

Internal Test#07

- (1) MIDI IN and MIDI OUT terminals are connected with a MIDI cable and it is tested that the output MIDI data from MIDI OUT is correctly input to MIDI IN as follows:
- (2) When any abnormality is found, a message is displayed on the LCD and PROG BANK LEDs are set to on and off as follows:

MIDI Check [Error: OUT × IN]	D A B C ● ○ ○ ●
--	--------------------

MIDI OUT and IN are not connected.

MIDI Check [Error: OUT-->IN]	D A B C ● ○ ○ ●
--	--------------------

The data output from MIDI OUT is not input correctly to IN.

Internal test item 8
<PCM Verify>

Internal Test#8

- (1) The PCM ROM bus is tested.
- (2) If any abnormality is found, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

PCM Verify address:AABBBBBB DataCCCC(DDDD)	D A B C ● ○ ○ ○
--	--------------------

AA: Bank where the error was found
BB: Address where the error was found
CC: Data read at the time (incorrect value)
DD: Correct value

Internal test item 9
<Style Verify>

Internal Test#9

- (1) The style ROM bus is tested.
- (2) If any abnormality is found, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

| | |
|--|--------------------|
| Style Verify
address:AABBBBBB Data CC (DD) | D A B C
○ ● ● ● |
|--|--------------------|

AA: Bank where the error was found
BB: Address where the error was found
CC: Data read at the time (incorrect value)
DD: Correct value

Internal test item 10
<HeadPhone check>

Internal Test#10

- (1) The headphone mute terminal is tested.
- (2) If any abnormality is found or no headphone is connected, the following message is displayed on the panel LCD and the PROG BANK LEDs are set to on and off as follows:

| | |
|--|--------------------|
| HeadPhoneCheck
[Error: HeadPhone] | D A B C
○ ● ● ○ |
|--|--------------------|

External Test

Basic operation specification

- [PROG NUM 8] : Go to the next test step.
- [PAGE+] : Go to the next test item.
- [PAGE-] : Return to the preceding test item.
- [A] - [H] : Directly specify the test step for execution.
- [ARR BANK 1] : Directly specify the test item (panel switch & LED).
- [ARR BANK 2] : Directly specify the test item (LCD check).
- [ARR BANK 3] : Directly specify the test item (MDE check).
- [ARR BANK 4] : Directly specify the test item (level check).
- [ARR BANK 5] : Directly specify the test item (noise check).
- [ARR BANK 6] : Directly specify the test item (speaker check).
- [ARR BANK 7] : Directly specify the test item (line-in check).
- [ARR BANK 8] : Directly specify the test item (A/D converter).
- [ADD NUM 1] : Directly specify the test item (keyboard, aftertouch).
- [ADD NUM 2] : Directly specify the test item (disk check).

External test item 1
<Panel Switch & LED & DiskChange> External Test#1

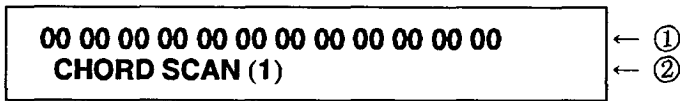
※ Set a floppy disk formatted by i2, i3, i4S or X3 in the FDD before starting the test mode.

- (1) Check to see that all LEDs (including the FDD access indicator) are on.
- (2) Check to see that the LCD back light is lit normally.

| |
|--|
| 1 Panel Switch & LED Check
[Eject a disk] |
|--|

- (3) Eject the disk when "Eject a disk" is displayed on the LCD.
- (4) As "Insert a disk" is displayed on the LCD when no disk is inserted, insert a disk.
- (5) If "Insert a disk" is displayed though a disk has been inserted or if "Eject a disk" is displayed even after disk ejection, the FDD or its peripheral is abnormal.
- (6) If the test ends normally, press [PROG NUM 8] to go to the next test step.

(7) Press the switches in the order displayed on the LCD to confirm the normal function.



```

00 00 00 00 00 00 00 00 00 00 00 00
s0 s1 s2 s3 s4 s5 s6 s7 s8 s9 s10s11
    0          0
sd7sd6sd5sd4 sd3sd2sd1sd0
  
```

- ① The bit image of the pressed switch is displayed.
- ② The switch to be pressed the next time is displayed.

| *** | sd7 | sd6 | sd5 | sd4 | sd3 | sd2 | sd1 | sd0 |
|-----|--------|--------|---------|--------|---------|--------|---------|--------|
| s0 | FILL1 | FILL2 | INTRO_ | VARIA | VARIA | VARIA | KBD | VARIA |
| | | | ENDING1 | -TION4 | -TION3 | -TION2 | _ASSIGN | -TION1 |
| s1 | XPOSE | --- | OCTAVE | XPOSE | SPLIT | ENSEM | CHORD | CHORD |
| | _PLUS | | _DOWN | _MINUS | _POINT | -BLE | _SCAN | _HOLD |
| s2 | D | H | F | B | MUTE | DISK | PROG | GLOBAL |
| s3 | C | G | E | A | MIXER | SONG | ARR | B_SEQ |
| | | | | | | _PLAY | _PLAY | |
| s4 | REC | PAGE | OCTAVE | --- | TEMPO | --- | --- | --- |
| | _WRITE | _MINUS | _UP | | _LOCK | | | |
| s5 | START | PAGE | INTRO_ | RESET | SYNC_SS | --- | --- | --- |
| | _STOP | _PLUS | ENDING2 | | | | | |
| s6 | ARR | ARR | ARR | ARR | ARR | ARR | ARR | ARR |
| | _H8 | _H7 | _H6 | _H5 | _H4 | _H3 | _H2 | _H1 |
| s7 | ARR | ARR | ARR | ARR | ARR | ARR | ARR | ARR |
| | _L8 | _L7 | _L6 | _L5 | _L4 | _L3 | _L2 | _L1 |
| s8 | PROG | PROG | PROG | PROG | PROG | PROG | PROG | PROG |
| | _H8 | _H7 | _H6 | _H5 | _H4 | _H3 | _H2 | _H1 |
| s9 | PROG | PROG | PROG | PROG | PROG | PROG | PROG | PROG |
| | _L8 | _L7 | _L6 | _L5 | _L4 | _L3 | _L2 | _L1 |
| s10 | --- | USER | PRESET | PRESET | PRESET | DRUM | VALUE | VALUE |
| | | | _A | _B | _C | _KIT | _DOWN | _UP |

- (8) For each switch with a corresponding LED, see that the LED is lit in red before pressing the switch.
- (9) Transition to the next test item occurs upon completion of testing all switches.

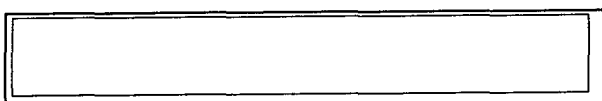
External test item 2
<LCD Check>

External Test#2

- (1) Check to see that all the LCD dots are on.



- (2) Press [PROG NUM 8].
(3) Check to see that the LCD is wholly blank.



- (4) Check to see that the LCD contrast varies.



- (5) Go to the next test item by pressing [PROG NUM 8].

External test item 3
<MDE Check>

External Test#3

- ※ Measure with the MASTER volume set to the MAX level.



- (1) Use an oscilloscope and confirm that the output waveform from OUTPUT L/MONO is normal.
(See Fig. 1.)
(2) Go to the next test item by pressing [PROG NUM 8].

External test item 4
<Level Check>

External Test#4

- ※ Measure with a 32-ohm load connected to PHONE L and PHONE R.
Measure with the MASTER volume set to the MAX level.
Measure with plugs inserted to both OUT L/MONO and OUT R.



- ※ The character in bold [] indicates the selected output.
(1) Measure the output level of OUT L/MONO.
(2) Check to see that the value measured with an audio analyzer is within the test range shown in the table below.
(3) Check to see that the waveform observed with an oscilloscope is a sine wave without distortion as shown in Fig. 2.
(4) Press [PROG NUM 8] to perform the same test for OUT R, PHONE L and PHONE R.

Output level inspection range

| Output | signal level | Frequency |
|--------|-----------------------|-----------|
| OUT L | 16.00 dBu ~ 17.50 dBu | 488 Hz |
| OUT R | 16.00 dBu ~ 17.50 dBu | 412 Hz |
| PHONEL | 5.50 dBu ~ 7.00 dBu | 548 Hz |
| PHONER | 5.50 dBu ~ 7.00 dBu | 610 Hz |

External test item 5

<Noise Check>

External Test#5

※ Measure with the MASTER volume set to the MAX level.

※ Disconnect the plug from LINE IN.

Measure with the plugs inserted to both OUT L/MONO and OUT R.

| | |
|--------------------------------|-----------------|
| 5 Noise Check | LevelMIN |
| [1] [2] [L] [R] | |

※ The character in bold [] indicates the selected output.

(1) Measure the noise level at OUT L/MONO.

(2) See that the value measured with the audio analyzer is within the inspection range shown below.

(3) Use an oscilloscope and check that the output waveform level is 0.

(4) Press [PROG NUM 8] and perform the same test for OUT R, PHONE L and PHONE R.

Noise level test range

| Output | signal level |
|--------|--------------------|
| OUT L | -87.00 dBu or less |
| OUT R | -87.00 dBu or less |
| PHONEL | -84.00 dBu or less |
| PHONER | -84.00 dBu or less |

External test item 6

<Speaker Check>

External Test#6

Measure with the MASTER volume set to the MAX level.

| |
|--------------------------------|
| 6 Speaker Check |
| [L] [R] [l] [r] |

※ The character in bold [] indicates the selected output.

(1) Check the woofer speaker on the L side.

(2) Check normal output sound (1 kHz sine wave) by auditory inspection.
Also check no chattering noise.

(3) Press [PROG NUM 8] and perform the same test for woofer on the R side, and tweeters on the L and R sides.

※ LCD display

L : L side woofer speaker 1 kHz sine wave

R : R side woofer speaker 1 kHz sine wave

l : L side tweeter speaker 14 kHz sine wave

r : R side tweeter speaker 14 kHz sine wave

External test item 7

<LineIn Check>

External Test#7

Measure with the plugs inserted to both OUT L/MONO and OUT R.

| |
|---|
| <p>7 LineIn Check
 [L][R]</p> |
|---|

※ The character in bold [] indicates the selected output.

- (1) Check to see that the input signal (1 kHz 0 dBu sine wave) from the audio analyzer to INPUT L/MONO is normally output from OUT L/MONO.
- (2) Check to see that the value measured with an audio analyzer is within the range shown below and the frequency is correct.
- (3) Check to see that the waveform observed with an oscilloscope is a sine wave without distortion as shown in Fig. 3.
- (4) Press [PROG NUM 8] and perform the same test for INPUT R.

Output level test range

| Input | Output signal level | Frequency | Input signal |
|---------|-----------------------|-----------|---------------|
| INPUT L | 15.00 dBu ~ 16.00 dBu | 1 kHz | 0dBu 1kHz Sin |
| INPUT R | 15.00 dBu ~ 16.00 dBu | 1 KHz | 0dBu 1kHz Sin |

External test item 8

<A/D converter>

External Test#8

Step 1 <Joystick>

- ※ Do not touch the joystick at the time of transition to this test.

| |
|---|
| <p>OOXXOOYY (A)
 JY_XJY_Y</p> |
|---|

O : Displayed when either the maximum or the minimum value is reached.

XX : The A/D value read in the X direction is displayed.

YY : The A/D value read in the Y direction is displayed.

- (1) Move the joystick in four directions to see that the maximum and minimum values of the X and Y are reached.
- (2) When the read A/D value with the joystick at the center is other than 80H or if the joystick is not at the center, the following message is displayed on the LCD at the start of the test:

| |
|--|
| <p>8 A/D converter (A)
 [Error: Joystick (center)]</p> |
|--|

Step 4 <A/D monitor>

- ※ This test step is for repair and is not performed in the ordinary test.
If it is unnecessary, press [PROG NUM 8] to go to the next test.

| |
|---|
| JXxx JYyy BTzz
AFaa ASbb |
|---|

xx : JOYSTICK X
yy : JOYSTICK Y
zz : BATTERY
aa : AFTER TOUCH
bb : ASSIGN PEDAL

- (1) This test step is for monitoring each A/D value.
- (2) The varying A/D value can be read in realtime.

<Keyboard,Aftertouch>

External Test#9

Step 1 <Keyboard>

| | |
|--------------------------------|-------------------|
| 00 00 00 00 00 00 00 00 | Z(A) |
| C 7 | (XXX)(YYY) |

XXX : Tested NOTE name
YYY : Measured velocity value
Z : H : When the monitored velocity value exceeds the upper limit
L : When the monitored velocity value is lower than the lower limit

- (1) Operate the keyboard sequentially with the medium force from the highest key as displayed on the LCD.
- (2) Go to the next key if the velocity value is between 55 and 99.
- (3) Transition to the next test occurs after the lowest key is operated.

Step 2 <Aftertouch>

| | |
|-------------|------------|
| OOXX | (B) |
| AFTR | |

XX : AFTER A/D value
O : Displayed when either the maximum or the minimum value is reached.

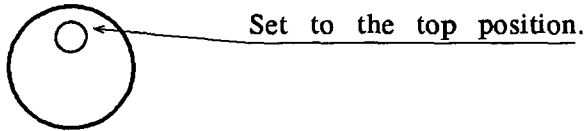
- (1) See that the value varies gradually when pressed with a finger, and that 7F is displayed when pressed hard.
- (2) Go to the next test by pressing [PROG NUM 8].

(3) Automatic transition to the next test occurs upon completion of the test.

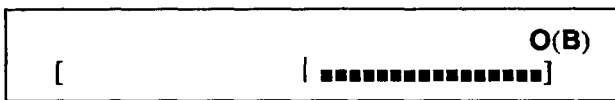
Step 2 <Rotary Encoder >



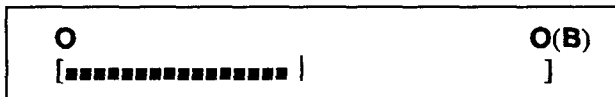
(1) Rotate the rotary encoder to bring the finger catch to the top and press [DOWN].



- (2) Slowly rotate the rotary encoder clockwise by 4 turns.
- (3) See that 'O' is displayed at the end of 4 turns (setting the finger catch to the top position).



- (4) Press [DOWN] and slowly rotate the rotary encoder counterclockwise by 4 turns.
- (5) See that 'O' is displayed at the end of 4 turns (setting the finger catch to the top position).



(5) Go to the next test by pressing [PROG NUM 8].

Step 3 <Pedal>



- (1) Move ASSIGN to MIN and then to MAX to see that the minimum value and maximum values (00 to 7F) are displayed.
See that 'O' is displayed upon arrival at MAX and MIN.



(2) Set each of DAMPER and RmtA - E (EC5) to ON and OFF, and see that 'O' is displayed.



(3) Automatic transition to the next test occurs upon completion of the test.

External test item 10

<PCMROM CheckSum>

External Test#10

※ In ordinary test, press [PROG NUM 8] to go to the next test.

| |
|--|
| 10 PCMROM CheckSum
[GM1][GM1][GM2][323] :pcmX=YYYY/ZZZ |
|--|

X : PCM ROM number
YYYY : Calculated value
ZZZZ : Expected value

(1) Press each of [A] to [D] for check-sum of the corresponding PCM ROM.

[A] : [GM1]=pcmA=3300
[B] : [GM1]=pcmB=B800
[C] : [GM2]=pcmC=D9C6
[D] : [323]=pcmD=E379

(2) After the end of the test, press [PROG NUM 8] to go to the next test.

External test item 11

<Preload>

External Test#11

※ To load the data (preload) at the time of shipment from the factory:

(1) Press any of [A] to [E] matching the destination, and the preloading is executed.

| |
|--|
| Preload
[USA][JPN][GER][ITA][UK] |
|--|

230WG : GER
230IT : ITA
240UK : UK
OTHER : USA

(2) Automatic transition to the ordinary mode occurs upon normal end of preloading.

※ To terminate the test mode without preloading:

(1) Press [PAGE+] for automatic transition to the ordinary mode.

End of Test

Preload check
• 230WG

**ARR11 Polka 1 XPOSE:0
♪=120KB1:D78Trpt&AkkorSP:C4 DR:5**

• 230IT

**ARR11 8 Beat 1 XPOSE:0
♪=120KB1:C11MIDI Piano SP:C4 DR:5**

• 240UK

**ARR11 Just Billy XPOSE:0
♪=140KB1:A15NewTines SP:G3 DR:6**

• OTHER

**ARR11 Mick&Keith XPOSE:0
♪=130KB1:A47 DistGuitar SP:C4 DR:5**

- (1) Check to see that the display is shown as above.
- (2) Eject the disk if inserted and turn the power off to end the test.

FDD check

External test item 0
<Disk Check>

External Test#0

**0 Disk Check (X)
[FUL][SUB]**

X: Indicates the timing of error occurrence.
(Displayed only for test result display.)

- X=1 : Before formatting
- X=2 : During formatting
- X=3 : Verification after formatting
- X=4 : During writing in all sectors
- X=5 : During reading from all sectors
- X=6 : During boot sector and FAT initializing
- X=7 : During file writing
- X=8 : During file reading and verification
- X=9 : During file reading and verification (DMA transfer)

- (1) Turn the power ON while pressing [PROG] and [BACKING SEQ] at the same time.
- (2) Press [ARR NUM 2].
- (3) Insert a floppy disk (2DD disk formatted by i2, i3, i4S or X3) in the FDD and press [A] to start the test.

- (4) When [B] is pressed, a part of the test (disk format type check) is omitted to enable the test to be performed with an unformatted disk.
This test method is used for checking repair. Always press [A] for the shipping test from the factory.
- (5) The selected test is enclosed in bold [] when the test starts.

| | |
|--|--|
| 0 Disk Check
[FUL][SUB] | |
|--|--|

- (6) When any abnormality is found, the following message is displayed.

| | |
|--|------------------------|
| 0 Disk Check
[Error: Drive not Ready | (X)
] |
|--|------------------------|

No disk is inserted.

| | |
|---|------------------------|
| 0 Disk Check
[Error: Data Error | (X)
] |
|---|------------------------|

• Data Error

| | |
|--|------------------------|
| 0 Disk Check
[Error: No File | (X)
] |
|--|------------------------|

The file that should have been written for the test does not exist.

| | |
|--|------------------------|
| 0 Disk Check
[Error: Hard Write/Delete Protect | (X)
] |
|--|------------------------|

The disk is protected from writing.

| | |
|--|------------------------|
| 0 Disk Check
[Error: Disk Type | (X)
] |
|--|------------------------|

The disk is not for the test.

| | |
|---|------------------------|
| 0 Disk Check
[Error: Verify | (X)
] |
|---|------------------------|

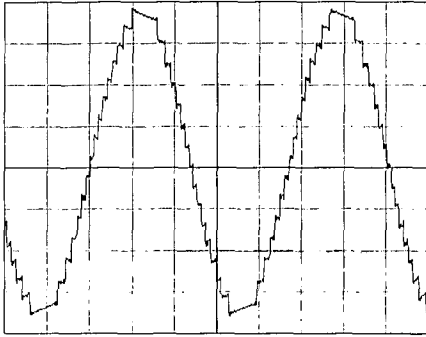
• Verify Error

- (7) The bold [] is cancelled when the test ends.

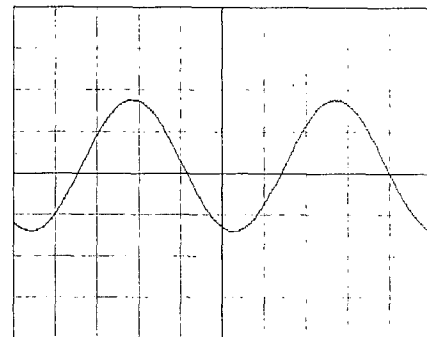
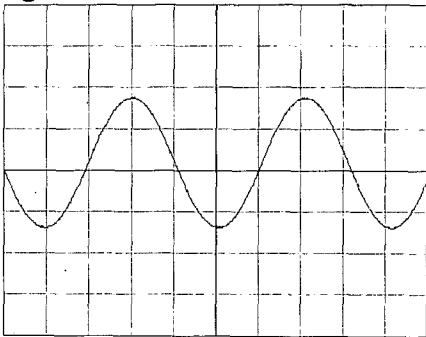
| | |
|--|------------|
| 0 Disk Check
[FUL][SUB] | (O) |
|--|------------|

'O' is displayed when there is no error.

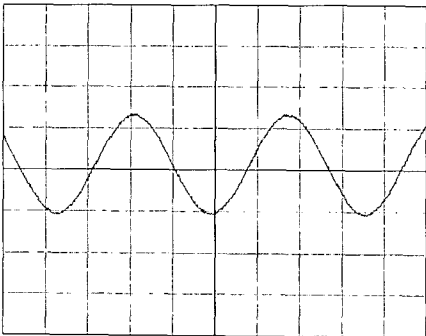
• fig.1 Ext#3 MDE Check



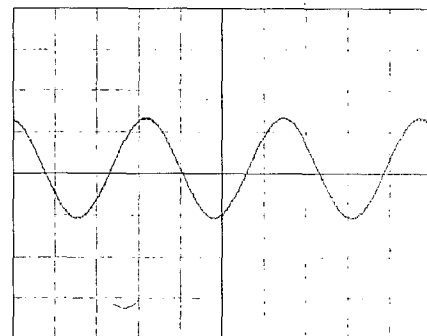
• fig.2 Ext#4 Level Check



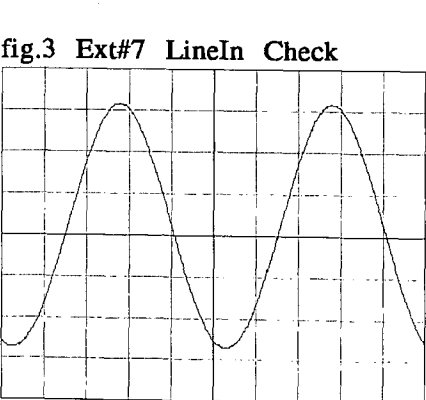
• OUT L/MONO



• OUT R

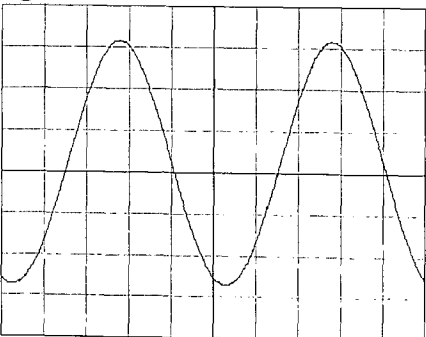


• PHONE L



• PHONE R

• fig.3 Ext#7 LineIn Check



8. REFERENCE DATA

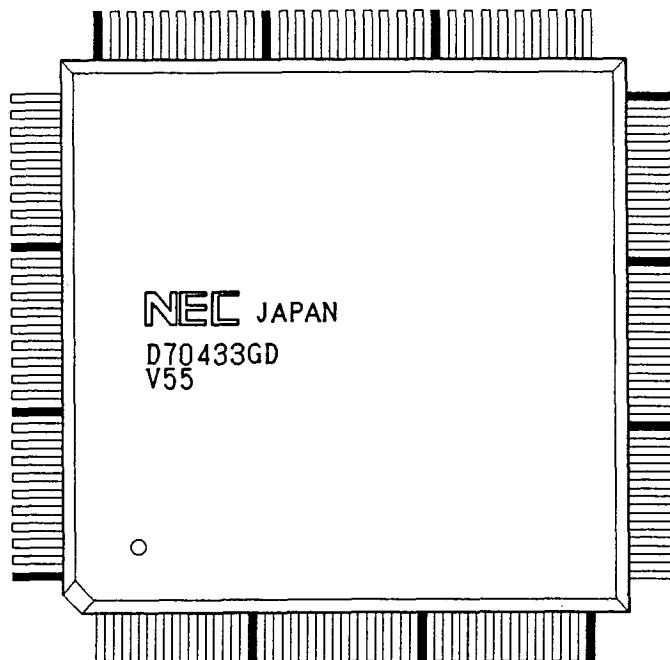
HARDWARE SPECIFICATIONS

KLM-1776 : MAIN P.C.BOARD
 KLM-1777 : PANEL-L P.C.BOARD
 KLM-1778 : PANEL-R P.C.BOARD
 KLM-1779 : ROTARY ENCODER P.C.BOARD
 KLM-1780 : POWER SUPPLY/AMPLIFIRE P.C.BOARD
 KLM-1781 : PHONE JACK P.C.BOARD
 KLM-1782 : HEADPHONES P.C.BOARD
 KLM-1783 : POWER TRANSFORMER SEC. P.C.BOARD
 KLM-938 : AFTERTOUCH P.C.BOARD
 KLM-1511/12 : JOYSTICK P.C.BOARDs

MAIN ICs

| | | |
|--------------------|----------------------------------|------------|
| CPU : | UPD70433GD-5BB | IC29 |
| DECODER : | MB622E15PF(MAP55A) | IC22 |
| TONE GENERATOR : | MBCS35104(TGL) | IC20 |
| KEY SCANNING : | HD643332A01F(NKS2) | IC4 |
| STYLE/SYSTEM ROM : | MB8316200***(16M MASK ROM) | IC23 |
| SYSTEM RAM : | UPD431000AGW-70L(1M SRAM) | IC9 |
| DRAM : | MB81464-10PSZ-G-BB-RS2(64K x 4) | IC10 |
| | TC511664BJL(64K x 16) | IC16 |
| | MB81C4256ZIP(256K x 4) | IC15, IC17 |
| WAVE ROM : | MB8316200-15PF-G-402-HT(for GM1) | IC14 |
| | UPD23C16000BGX-385(for GM2) | IC13 |
| | LH537GG5 | IC12 |
| FD CONTROLLER : | HD63266FP | IC1 |
| D/A CONVERTOR : | TDA1305TN1 | IC20 |

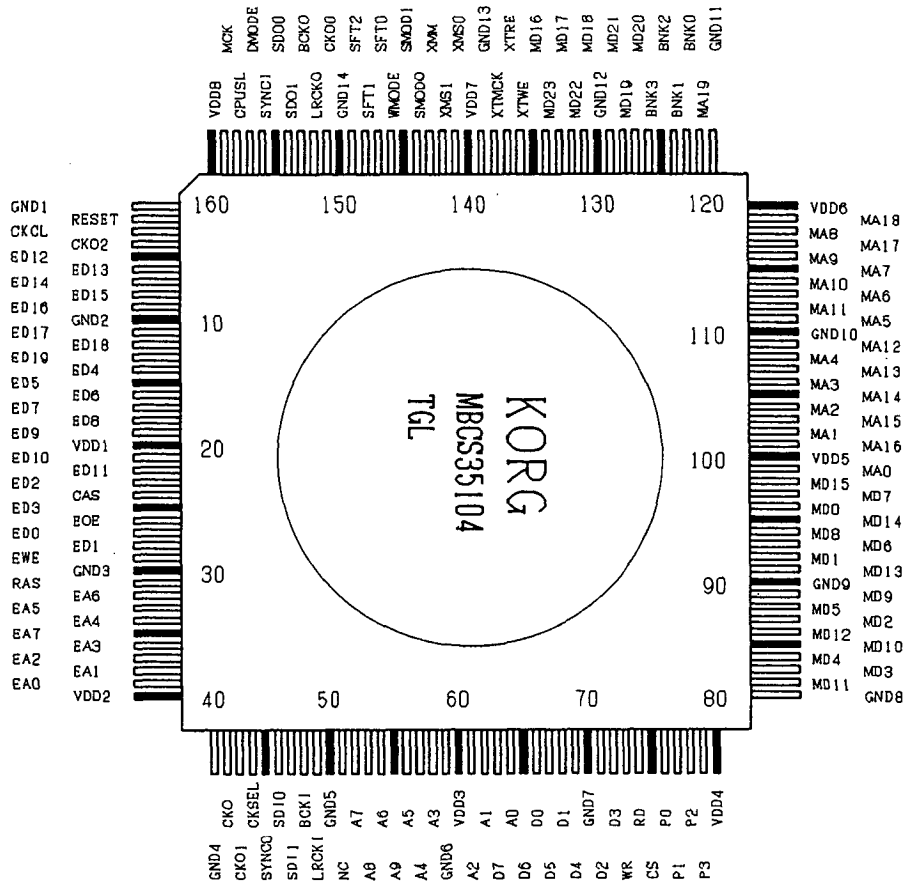
UPD70433GD-5BB(CPU) PIN ASSIGNMENT



UPD70433GD-5BB(CPU) PIN FUNCTION

| PIN NAME | I/O | FUNCTION |
|-------------|-----|---|
| P00-P07 | I/O | PORT 0 |
| NMI | I | NON MASKABLE INTERRUPT |
| INTP0-INTP5 | I | EXTERNAL INTERRUPT REQUEST |
| P20-P21 | I/O | PORT 2 |
| TXD0-TXD1 | O | TRANSMIT DATA OUTPUT |
| RXD0-RXD1 | I | RECEIVE DATA INPUT |
| TXC | O | TRANSMIT CLOCK OUTPUT |
| CTS0 | I | ENABLING SIGNAL INPUT |
| SCK1 | O | SERIAL CLOCK OUTPUT |
| P40-P47 | I/O | PORT 4 |
| P50-P52 | I/O | PORT 5 |
| ANI0-ANI3 | I | ANALOG SIGNAL INPUT |
| P70-P77 | I/O | PORT 7 |
| DMARQ0-1 | I | DMA REQUEST SIGNAL INPUT |
| GND | --- | GROUND |
| VDD | --- | +5V POTENTIAL |
| AVSS | --- | ANALOG GROUND |
| AVDD | --- | ANALOG +5V POTENTIAL |
| AVREF | I | REFERENCE POTENTIAL INPUT
FOR A/D CONVERTER |
| RESET | I | SYSTEM RESET SIGNAL INPUT |
| X1, X2 | I | SYSTEM CLOCK INPUT |
| CLKOUT | O | SYSTEM CLOCK OUTPUT |
| ASTB | O | ADDRESS STROBE SIGNAL OUTPUT |
| RD | O | DATA READ STROBE SIGNAL OUTPUT |
| WRL | O | LOW BIT DATA WRITE STROBE SIGNAL OUTPUT |
| WRH | O | HIGH BIT DATA WRITE STROBE SIGNAL OUTPUT |
| READY | I | READY SIGNAL INPUT |
| DEX | O | DATA BUS ENABLE SIGNAL OUTPUT |
| RAS | O | DRAM ROW ADDRESS LATCH TIMMING SIGNAL
OUTPUT |
| D8/D16 | I | BUS SIZE SELECT INPUT |
| BUSLOCK | O | BUS LOCK SIGNAL OUTPUT |
| POLL | I | POLL SIGNAL INPUT |
| HLDRQ | I | BUS HOLD REQUEST SIGNAL INPUT |
| HLDAK | O | BUS HOLD ACKNOWLEDGE SIGNAL OUTPUT |
| AD0-AD15 | I/O | ADDRESS/DATA SIGNAL |
| A16-A23 | O | ADDRESS SIGNAL OUTPUT |
| IORD | O | I/O READ STROBE SIGNAL OUTPUT |
| IOWR | O | I/O WRITE STROBE SIGNAL OUTPUT |
| DMAAK0-1 | O | DMA ACKNOWLEDGE SIGNAL OUTPUT |
| TCE0-TCE1 | O | DMA FINISH SIGNAL OUTPUT |

MBCS35104 (TGL) PIN ASSIGNMENT



MBCS35104 (TGL) PIN FUNCTION

| PIN NAME | I/O | FUNCTION |
|----------|-----|------------------------------|
| VDD | --- | +5V |
| VSS | --- | Ground |
| Rest | I | System Rest |
| MCK | I | Master Clock |
| CKO | O | 32MHz |
| CKO0-1 | O | CLK/2 duty 50% output |
| CKO2 | O | CLK/4 duty 50% output |
| CKSEL | I | Phase Analog Select for CKO0 |
| CKCL | I | CKO0 Reset input |
| XMM | I | for Test mode |
| XMS2-0 | I | for Test mode |
| XTMCCK | I | for Test mode |
| XTRE | I | for Test mode |
| XTWE | I | for Test mode |

for CPU

| | | |
|-------|-----|-------------------|
| CPUSL | I | CPU select V25/H8 |
| CS | I | Chip select |
| WR | I | CPU WRITE pulse |
| RD | I | CPU READ pulse |
| A0-9 | I | CPU Address Bus |
| D0-9 | I/O | CPU Data Bus |
| P0-3 | O | Output Port |

| | | |
|----------------------------|-----|--|
| for PCM ROM ----- | | |
| MD0-15 | I/O | PCM Memory Data Bus 0-15 |
| MD16-23 | I | PCM Memory Data Bus 16-23 (for 2TGs mode) |
| MA0-19 | O | PCM Memory Address Bus |
| BNK0-3 | O | PCM Memory Bank Select |
| DMODE | I | DECODE Mode Select
H: Decode BNK#
L: Thru BNK# |
| WMODE | I | PCM Memory -word Select
H: 64 osc. , 2TGs Mode
L: 32 osc. , 1TG Mode |
| SYNCO | O | Counter Synchro Output (only 2TGs Mode) |
| SYNCI | I | Counter Synchro Input (only 2TGs Mode) |
| for Serial Interface ----- | | |
| SDO0-1 | O | Serial Data Outout 0,1
SDO0: C ch & D ch
SDO1: A ch & B ch |
| BCKO | O | Bit Clock Output (2MHz, 500nsec.) |
| LRCKO | O | LR Clock Output
L: R ch
H: L ch |
| SDI0-1 | I | Serial Data Input 0,1
SDI0: C ch & D ch
SDI1: A ch & B ch |
| BCKI | I | Bit Clock Input (2MHz, 500nsce.) |
| LRCKI | I | LR Clock Input
L: R ch
H: L ch |
| SMOD0-3 | I | Serial I/F Format Select |
| for DRAM ----- | | |
| EA0-7 | O | DRAM Address |
| ED0-19 | I/O | DRAM Data |
| EWE | O | DRAM WE |
| EOE | O | DRAM OE |
| RAS | O | DRAM RAS |
| CAS | O | DRAM CAS |

TGL check points

1. Voltage check of power supply

Check that a voltage of +5V ($\pm 5\%$) is input at the VDD pin.

$$4.75V \leq VDD \leq 5.25V$$

2. Check of input/output pins, regardless of the CPU interface setting

| PIN NAME | FUNCTION |
|----------|---|
| BCKO | 2.0 MHz bit clock signal outputs to the D/A converter. |
| LRCKO | 31.25 KHz L/R clock signal output to the D/A converter. |

If the voltage level of these pins is +3V or less, check the soldering of peripheral pins and the voltage of the connected device. Also, if any of these pins is 0V or +5V, check to see whether RESET(TGRES) or the master clock(32.0MHz) has been input. If RESET and MCK are normal, and the test mode setting pins have been set as below, check the soldering and the pattern on the circuit board.

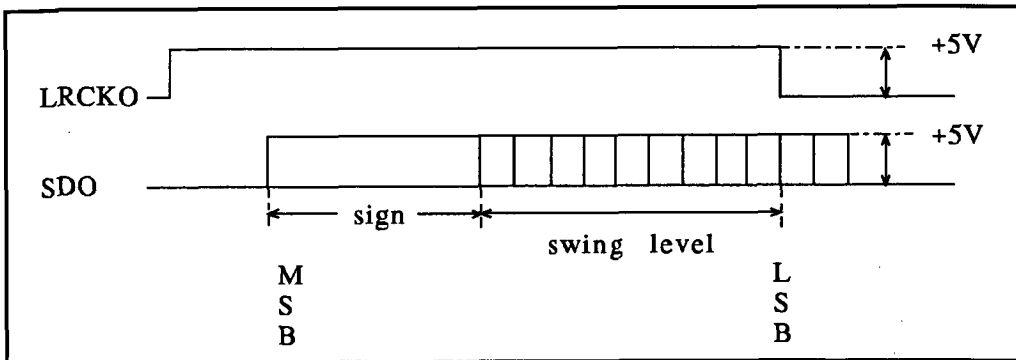
3. Check of input/output pins, when the key on

| PIN NAME | FUNCTION |
|----------|-----------------------------|
| XCS, XWE | Control signal from the CPU |

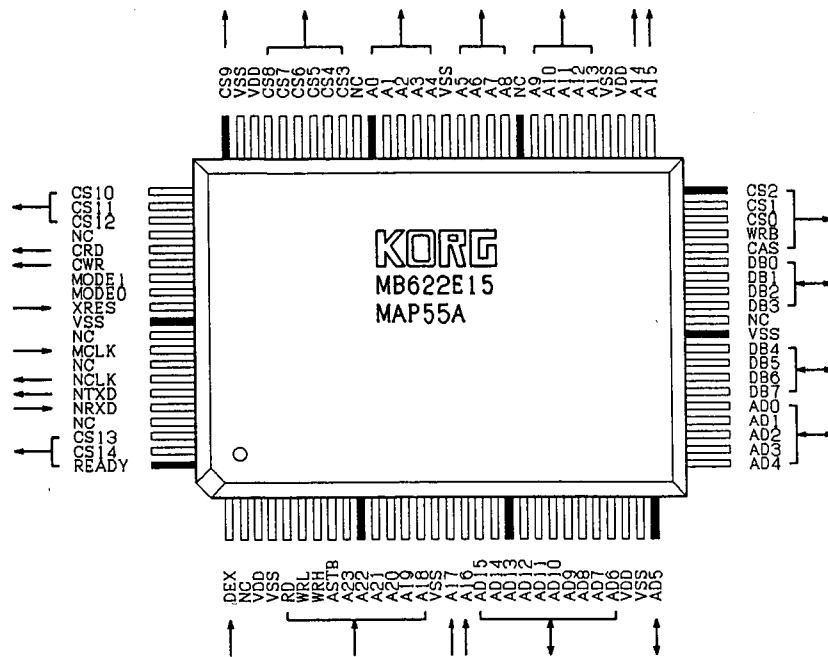
During KEY ON or PROG. CHANGE, check that a low level pulse signal is input from the CPU to the above pins(XSC, XWE). If these signals cannot be observed with the oscilloscope, check the CPU and its peripheral circuits.

| PIN NAME | FUNCTION |
|------------|---|
| SDO0, SDO1 | serial data output to the D/A converter |

In case of observing the waveform with the oscilloscope, it is best to input the LRCK0 clock signal to the external trigger input of the oscilloscope. If the serial data cannot be output, check the PCM address bus. To find whether normal serial data is output or not, check whether there is a different bit from the code bit at the left side of the leading and the trailing edge of LRCK0 on the oscilloscope screen.



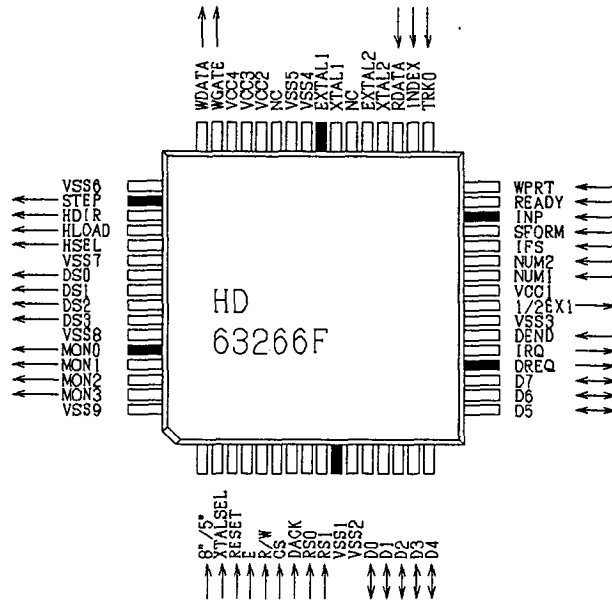
MB622E15 (MAP55A) PIN ASSIGNMENT



MB622E15(MAP55A) PIN FUNCTIONS

| PIN NO | PIN NAME | I/O | FUNCTION |
|--------|----------|-----|---------------------------------|
| 1 | DEX | I | V55 DEX INPUT |
| 5 | RD | I | V55 RD INPUT |
| 6 | WRL | I | V55 WRL INPUT |
| 7 | WRH | I | V55 WRH INPUT |
| 8 | ASTB | I | V55 ASTB INPUT |
| 9-14 | A23-18 | I | ADDRESS INPUT A23-16 |
| 16,17 | A17-16 | I | |
| 18-27 | AD15-6 | I/O | MULTIPLEX DATA BUS A15-0 |
| 30-35 | AD5-0 | I/O | |
| 36-39 | DB7-4 | I/O | 8BIT DATA BUS |
| 42-45 | DB3-0 | I/O | |
| 46 | CAS | O | DRAM CAS OUTPUT |
| 47 | WRB | O | WRITE PULSE OUTPUT |
| 48-50 | CS0-2 | O | CHIP SELECT OUTPUT |
| 51,52 | A15,14 | O | ADDRESS LATCH OUTPUT |
| 55-59 | A13-9 | O | |
| 62-64 | A8-6 | O | |
| 66-71 | A5-0 | O | |
| 72-77 | CS3-8 | O | CHIP SELECT OUTPUT |
| 80-83 | CS9-12 | O | |
| 85 | CRD | O | VDC READ PULSE OUTPUT |
| 86 | CWR | O | VDC WRITE PULSE OUTPUT |
| 87,88 | MODE1-0 | I | DECODE MODE SELECT |
| 89 | XRES | I | SYSTEM RESET INPUT |
| 92 | MCLK | I | MASTER CLOCK INPUT |
| 94 | NCLK | O | SERIAL I/F CLOCK OUTPUT |
| 95 | NTXD | O | SERIAL I/F TRANSMIT DATA OUTPUT |
| 96 | NRXD | I | SERIAL I/F RECIEVE DATA INPUT |
| 98,99 | CS13,14 | O | CHIP SELECT OUTPUT |
| 100 | READY | O | V55 READY OUTPUT |

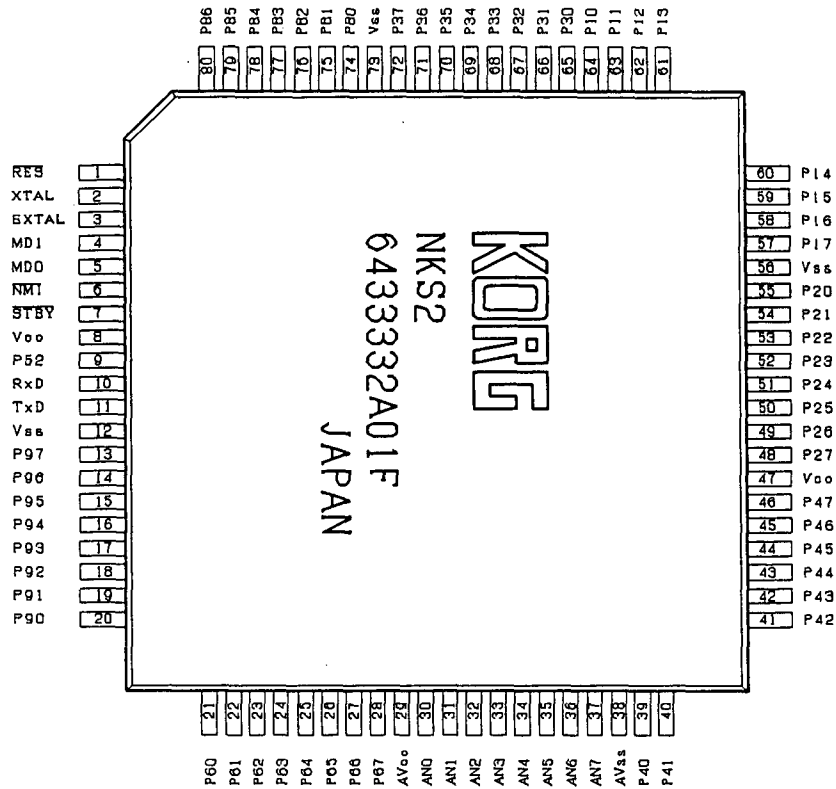
HD63266F (FDC) PIN ASSIGNMENT



HD63266F (FDC) PIN I/O

| PIN NO | I/O | PIN NAME | PIN NO | I/O | PIN NAME |
|--------|-----|----------|--------|-----|----------|
| 1 | I | 8"/5" | 33 | I | TRKO |
| 2 | I | XTALSEL | 34 | I | INDEX |
| 3 | I | RESET | 35 | I | RDATA |
| 4 | I | E,(RD) | 36 | --- | XTAL2 |
| 5 | I | R/W(WR) | 37 | --- | EXTAL2 |
| 6 | I | CS | 38 | --- | NC |
| 7 | I | DACK | 39 | --- | XTAL1 |
| 8 | I | RAS0 | 40 | --- | EXTAL1 |
| 9 | I | RAS1 | 41 | --- | Vss4 |
| 10 | --- | Vss1 | 42 | --- | Vss5 |
| 11 | --- | Vss2 | 43 | --- | NC |
| 12 | I/O | D0 | 44 | --- | Vcc2 |
| 13 | I/O | D1 | 45 | --- | Vcc3 |
| 14 | I/O | D2 | 46 | --- | Vcc4 |
| 15 | I/O | D3 | 47 | O | WGATE |
| 16 | I/O | D4 | 48 | O | WDATA |
| 17 | I/O | D5 | 49 | --- | Vss6 |
| 18 | I/O | D6 | 50 | O | STEP |
| 19 | I/O | D7 | 51 | O | HDIR |
| 20 | O | DREQ | 52 | O | HLOAD |
| 21 | O | IRQ | 53 | O | HSEL |
| 22 | I | DEND | 54 | --- | Vss7 |
| 23 | --- | Vss3 | 55 | O | DS0 |
| 24 | O | 1/2EX1 | 56 | O | DS1 |
| 25 | --- | Vcc1 | 57 | O | DS2 |
| 26 | I | NUM1 | 58 | O | DS3 |
| 27 | I | NUM2 | 59 | --- | Vss8 |
| 28 | I | IFS | 60 | O | MON0 |
| 29 | I | SFORM | 61 | O | MON1 |
| 30 | I | INP | 62 | O | MON2 |
| 31 | I | READY | 63 | O | MON3 |
| 32 | I | WPRT | 64 | --- | Vss9 |

HD6433332A01F (NKS2) PIN ASSIGNMENT



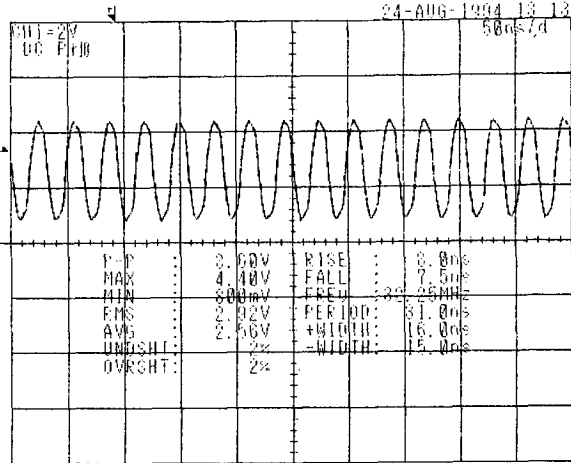
HD6433332A01F (NKS2) I/O PORT MAPPING

| PORT | FUNCTION | I/O | NOTE | i4S |
|--------|------------------------|-----|-------------------|-----|
| P10-17 | LED OUT | O | | ○ |
| P20-23 | LED DECODER | O | | ○ |
| P24 | A/D SEL 0-7/8-15 | O | | × |
| P25-27 | TOUCH PANEL SEL 1-3 | O | | × |
| P30-37 | SWITCH DATA IN | I | | ○ |
| P40-47 | ROTARY ENCODER 1-4 | I | | ○ |
| ATXD | SERIAL DATA OUT | O | | ○ |
| ARXD | SERIAL DATA IN | I | | ○ |
| P52 | NOT USE | I | SYNC MODE: SCK | × |
| P60-67 | KEYBOARD DATA IN | I | | ○ |
| AN0-7 | A/D IN (8CH) | I | | ○ |
| P80-83 | SW & KEYBOARD SEL B0-3 | O | | ○ |
| P84 | SEND READY | O | | × |
| P85 | ASYN/C/SYN/C MODE | I | 0:SYN/C, 1:ASYN/C | ○ |
| P86 | TOUCH PANEL GATE | I | | × |
| P90 | SW & KEYBOARD SEL | O | 0:MAKE, SW | ○ |
| P91 | SW & KEYBOARD SEL | O | 0:BRAKE | × |
| P92-97 | NOT USE | I | | × |

CHECK POINTS

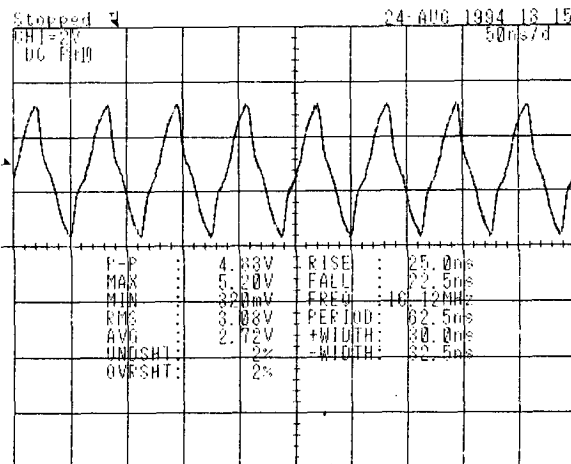
CP1. CLOCK CIRCUIT - TGL

From 6pin of IC6
To 159pin(MCK) of IC20
f=32.00MHz



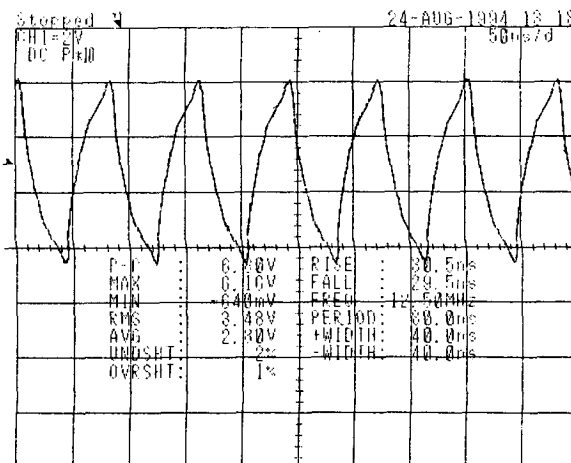
CP2. TGL - FDC

From 151pin(CK00) of IC20
To 40pin(EXTAL1) of IC1
f=16.00MHz



CP3. CPU - MAP55A

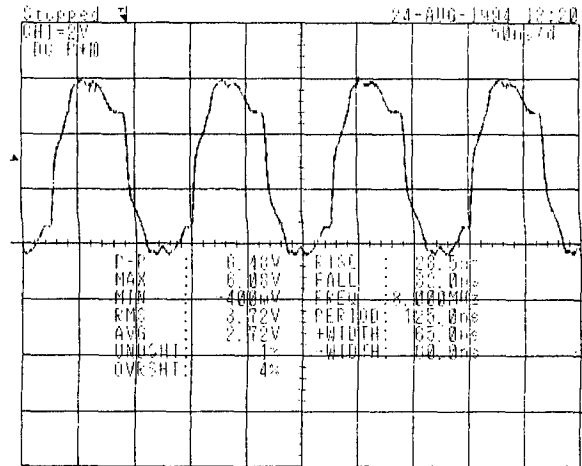
From 7pin(CLKOUT) of IC29
To 92pin(MCLK) of IC22
f=12.50MHz



CP4. TGL - DAC

From 4pin(CKO2) of IC20
To 12pin(SYSCLK) of 26

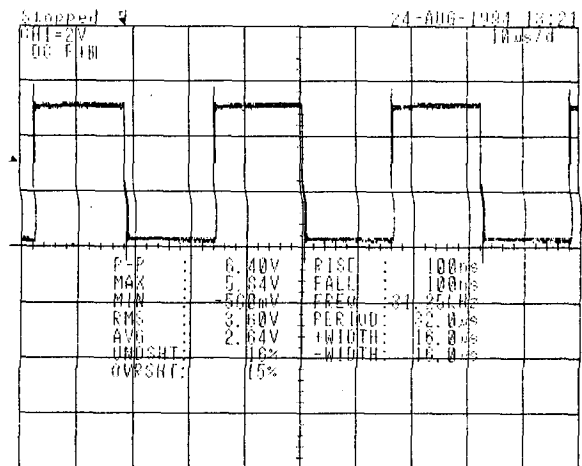
f= 8.00MHz



CP5. TGL - DAC

From 152pin(LRCKO) of IC20
To 5pin(LRCK) of IC26

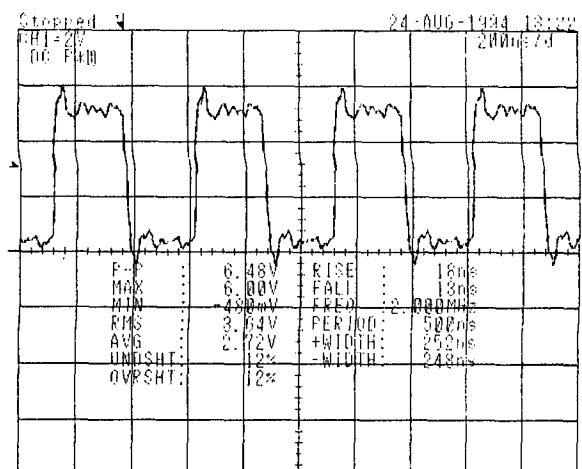
f= 31.25KHz



CP6. TGL - DAC

From 153pin(BCKO) of IC20
To 4pin(BCK) of IC26

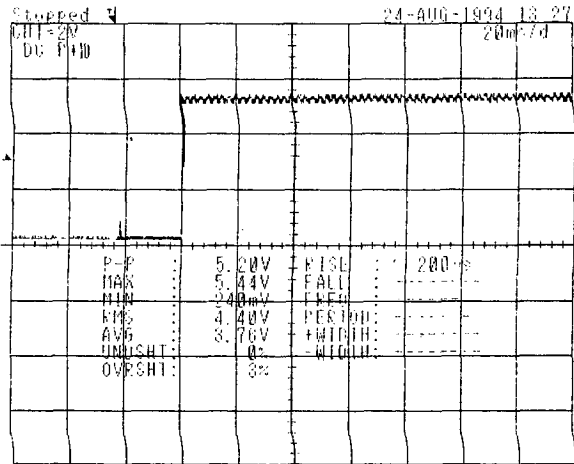
f= 2.00MHz



CP7. RESET - CPU/MAP55A/SRAM

From 7pin(RES) of IC5
 To 8pin(RESET) of IC29,
 89pin(RES) of IC22
 and 30pin(CE2) of IC9

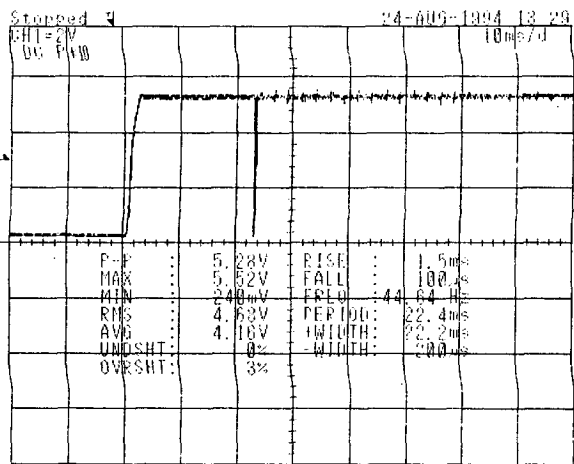
※ When turn the power on



CP8. CPU - TGL

From 16pin(P01) of IC29
 To 2pin(RESET) of IC20

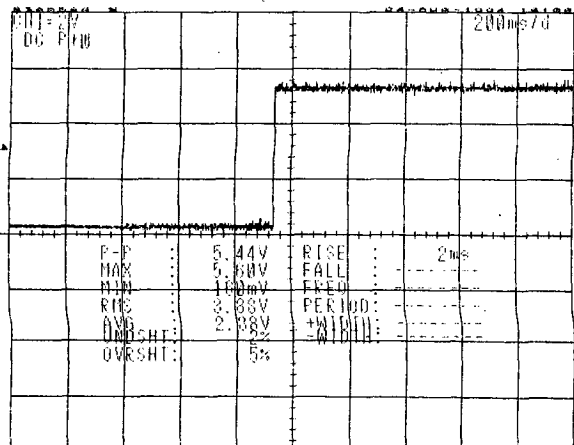
※ When turn the power on



CP9. CPU - NKS2

From 15pin(P00) of IC29
 To 1pin(RESET) of IC4

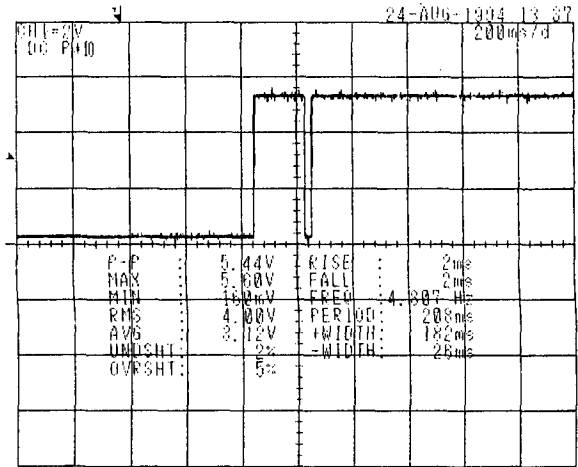
※ When turn the power on



CP10. CPU - FDC

From 17pin(P02) of IC29
To 3pin(RESET) of IC1

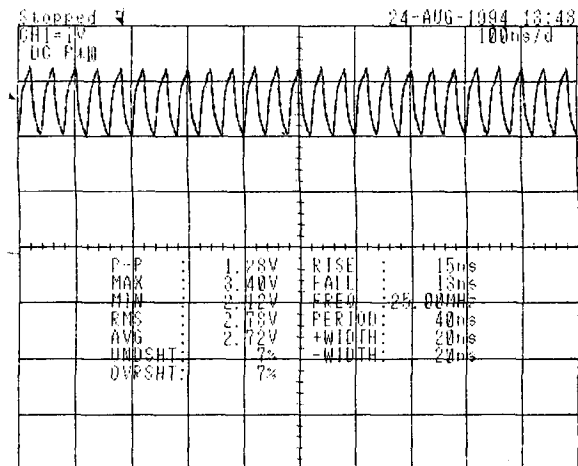
※ When turn the power on



CP12. CRYSTAL - CPU

From X3(SX-1)
To 11pin(X1) of IC29

f=25.00MHz

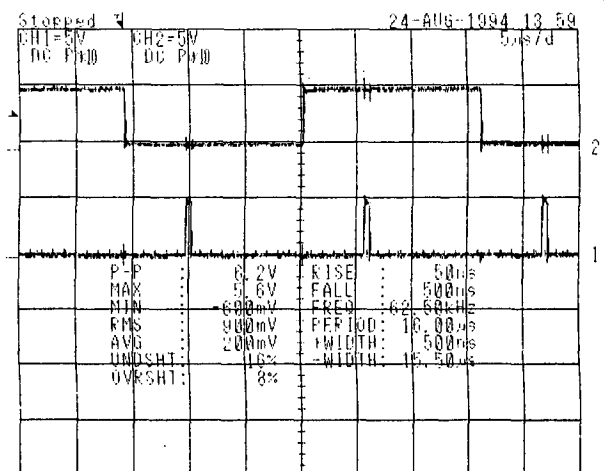


CP13. TGL - DAC

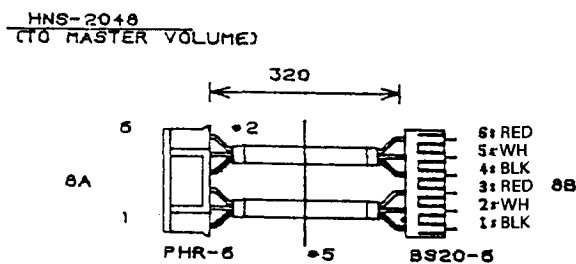
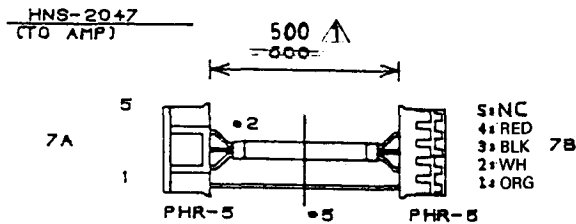
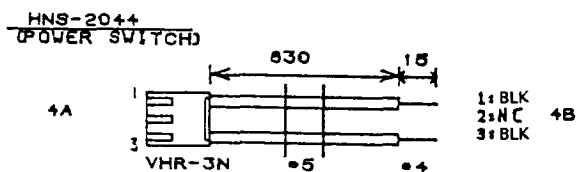
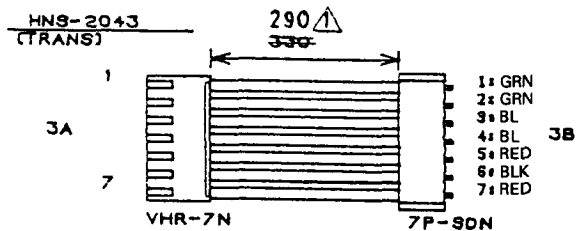
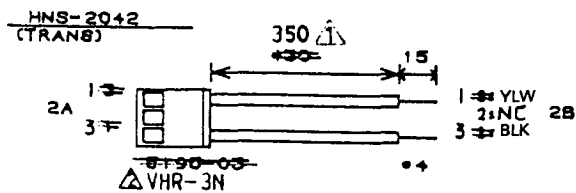
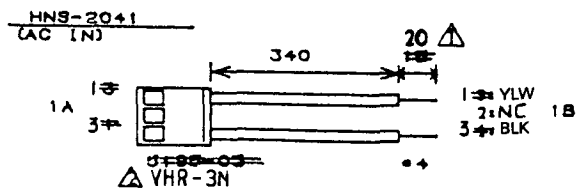
From 155pin(SDO0) of IC20
To 6pin(DATA) of IC26

※ When MDE test waveform

Ch1: DATA
Ch2: LRCK

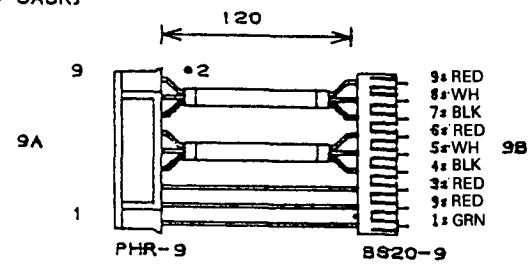


FOR HARNESS

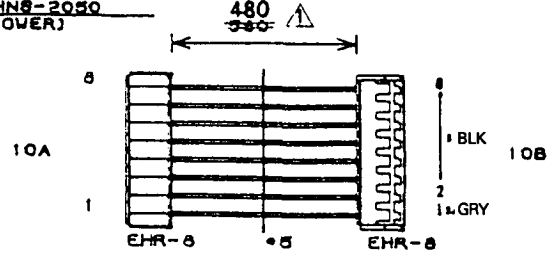


※ **Each harness should be surely connected to each connector in accordance with indentification letter.**

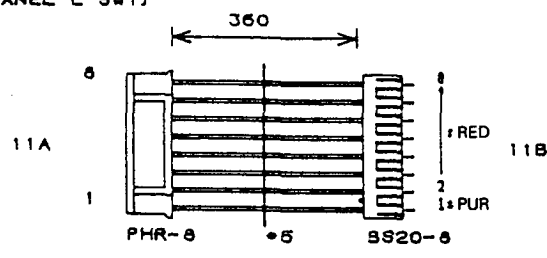
HNS-2049
(TO JACK)



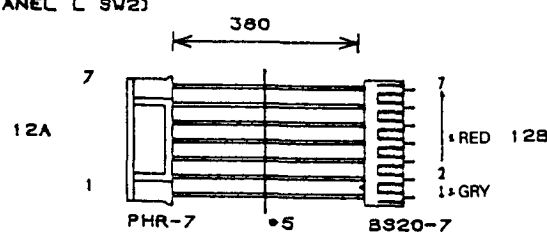
HNS-2050
(POWER)



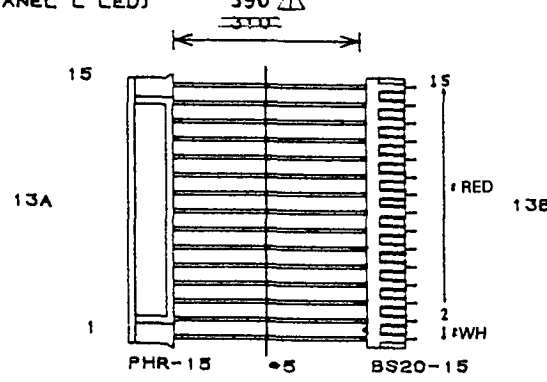
HNS-2051
(PANEL L SW1)



HNS-2052
(PANEL L SW2)

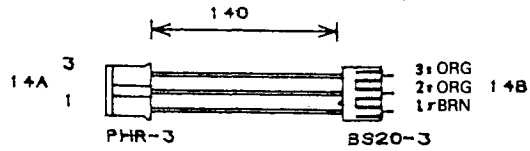


HNS-2053
(PANEL L LED)

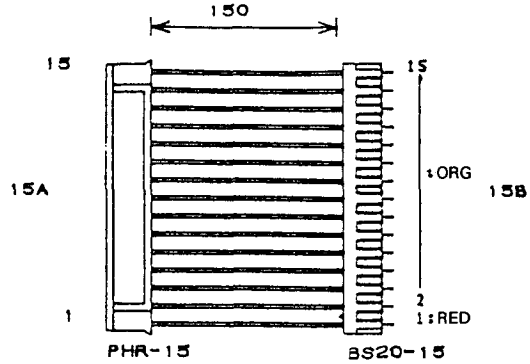


✱ Each harness should be surely connected to each connector in accordance with identification letter.

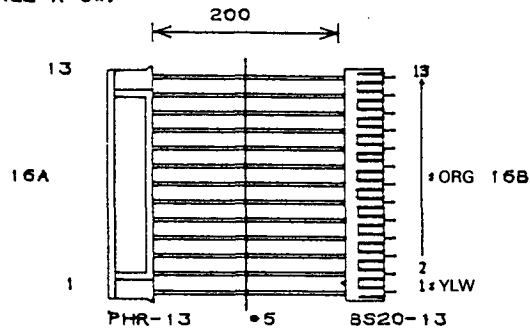
HNS-2054
(ENCODER)



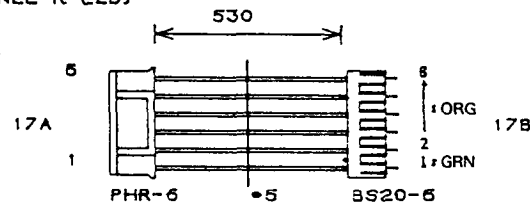
HNS-2055
(LCD)



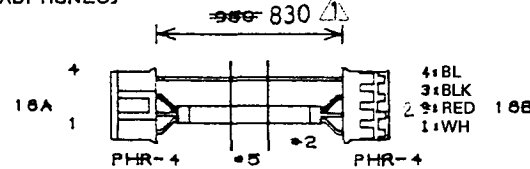
HNS-2056
(PANEL R SW)



HNS-2057
(PANEL R LED)

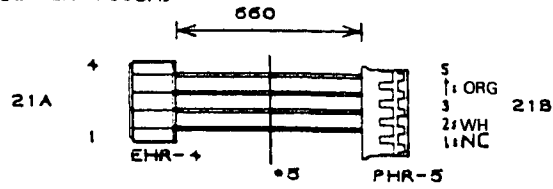


HNS-2058
(HEADPHONES)

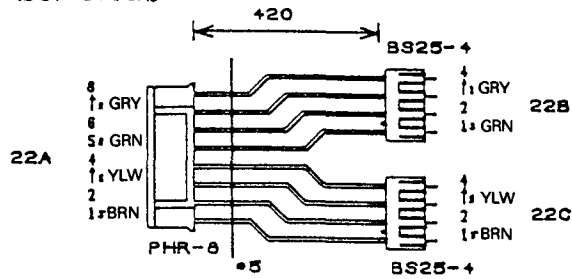


✱ **Each harness should be surely connected to each connector in accordance with indentification letter.**

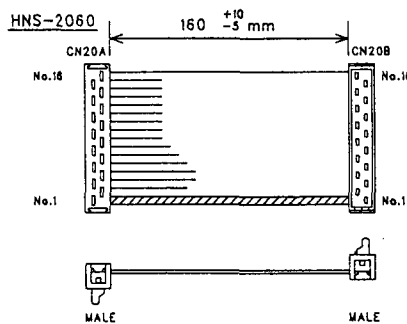
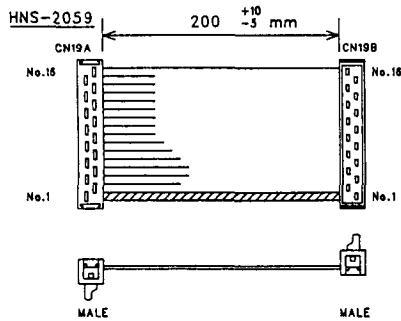
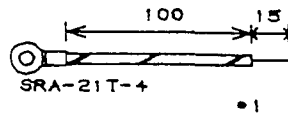
HNS-2051
(AFTER TOUCH)



HNS-2052
(JOY STICK)



HNS-2053
(GND)



• MALE ASSEMBLY
(AMP Micro Match)

| Pin | Part Numbers |
|-----|--------------|
| 18 | 1-215083-6 |

• WIRE : 1.27 PITCH FLAT CABLE

| |
|--------------|
| AWG28 |
| Certified UL |



Each harness should be surely connected to each connector in accordance with identification letter.

FOR MULTI SOUNDS

| No. | MultiSound | GM1 | GM2 | typeA | typeB | No. | MultiSound | GM1 | GM2 | typeA | typeB |
|-----|------------|-----|-----|-------|-------|-----|------------|-----|-----|-------|-------|
| 000 | A.Piano 1 | ... | 011 | ... | ... | 040 | Accordion | 009 | ... | ... | ... |
| 001 | A.Piano1LP | ... | 011 | ... | ... | 041 | AcordionLP | 009 | ... | ... | ... |
| 002 | A.Piano 2 | ... | 010 | ... | ... | 042 | Harmonica | 011 | ... | ... | ... |
| 003 | E.Piano 1 | 006 | ... | ... | ... | 043 | G.Guitar | 002 | 008 | ... | ... |
| 004 | E.Piano1LP | 006 | ... | ... | ... | 044 | G.GuitarLP | 002 | 008 | ... | ... |
| 005 | E.Piano 2 | 001 | ... | 004 | ... | 045 | F.Guitar | 002 | 006 | ... | ... |
| 006 | E.Piano2LP | 001 | ... | 004 | ... | 046 | F.GuitarLP | 002 | 006 | ... | ... |
| 007 | Soft EP | ... | 009 | ... | ... | 047 | F.Guitar V | 002 | 004 | ... | ... |
| 008 | Soft EP LP | ... | 009 | ... | ... | 048 | A.Gtr Harm | ... | ... | 002 | ... |
| 009 | Hard EP | ... | ... | 009 | ... | 049 | E.Guitar 1 | 001 | 007 | ... | ... |
| 010 | Hard EP LP | ... | ... | 009 | ... | 050 | E.Guitr1 V | 001 | 007 | ... | ... |
| 011 | PianoPad 1 | ... | ... | 002 | ... | 051 | E.Guitar 2 | ... | ... | 009 | ... |
| 012 | PianoPad 2 | ... | ... | 002 | ... | 052 | E.Guitar 3 | ... | 005 | ... | ... |
| 013 | Clav | 005 | 002 | ... | ... | 053 | MuteGuitar | 002 | 006 | ... | ... |
| 014 | Clav LP | 005 | 002 | ... | ... | 054 | Funky Gtr | ... | ... | 006 | ... |
| 015 | Harpsicord | 008 | ... | ... | ... | 055 | FunkyGtr V | ... | ... | 005 | ... |
| 016 | HarpsicdLP | 008 | ... | ... | ... | 056 | E.Gtr Harm | ... | ... | 005 | ... |
| 017 | PercOrgan1 | ... | ... | 007 | ... | 057 | DistGuitar | 019 | ... | ... | ... |
| 018 | PercOrg1LP | ... | ... | 007 | ... | 058 | Dist GtrLP | 019 | ... | ... | ... |
| 019 | PercOrgan2 | 002 | 004 | ... | ... | 059 | DistGuitrV | 019 | ... | ... | ... |
| 020 | PercOrg2LP | 002 | 004 | ... | ... | 060 | Over Drive | 016 | ... | ... | ... |
| 021 | Organ 1 | ... | ... | 006 | ... | 061 | OverDrv LP | 016 | ... | ... | ... |
| 022 | Organ 1 LP | ... | ... | 006 | ... | 062 | OverDrv F4 | 008 | ... | ... | ... |
| 023 | Organ 2 | ... | ... | 006 | ... | 063 | MuteDstGtr | ... | ... | 021 | ... |
| 024 | Organ 2 LP | ... | ... | 006 | ... | 064 | MtDstGtr V | ... | ... | 021 | ... |
| 025 | Organ 3 | ... | 012 | ... | ... | 065 | PowerChord | ... | ... | 047 | ... |
| 026 | Organ 4 | ... | ... | 012 | ... | 066 | PowerChd V | ... | ... | 008 | ... |
| 027 | Organ 5 | ... | ... | 009 | ... | 067 | OverDvChrd | 008 | ... | 043 | ... |
| 028 | RotaryOrg1 | 004 | ... | ... | ... | 068 | Gtr Slide | ... | ... | 002 | ... |
| 029 | RotaryOrg2 | ... | ... | 011 | ... | 069 | GtrSlide V | ... | ... | 002 | ... |
| 030 | PipeOrgan1 | 006 | ... | ... | ... | 070 | Sitar 1 | 002 | ... | ... | ... |
| 031 | PipeOrg1LP | 006 | ... | ... | ... | 071 | Sitar 2 | ... | ... | 006 | ... |
| 032 | PipeOrgan2 | ... | ... | 007 | ... | 072 | Sitar 2 LP | ... | ... | 006 | ... |
| 033 | PipeOrg2LP | ... | ... | 007 | ... | 073 | Santur | 003 | ... | ... | ... |
| 034 | PipeOrgan3 | 009 | ... | ... | ... | 074 | Bouzouki | ... | ... | 005 | ... |
| 035 | PipeOrg3LP | 009 | ... | ... | ... | 075 | BouzoukiLP | ... | ... | 005 | ... |
| 036 | Musette | 006 | ... | ... | ... | 076 | Banjo | 005 | ... | ... | ... |
| 037 | Musette V | 006 | ... | ... | ... | 077 | Shamisen | 004 | 002 | ... | ... |
| 038 | Bandneon | ... | ... | 012 | ... | 078 | Koto | 006 | ... | ... | ... |
| 039 | BandneonLP | ... | ... | 012 | ... | 079 | Uood | ... | ... | 003 | ... |

9. WAVE ROM SOUND LIST

GM1: MB8316200-15PF-G-402-HT

GM2: UPD23C16000BGX-385

typeA: LH537FFS

typeB: UPD23C16000BGX-835

| No. | MultiSound | GM1 | GM2 | typeA | typeB | No. | MultiSound | GM1 | GM2 | typeA | typeB |
|-----|------------|-----|-----|-------|-------|-----|------------|-----|-----|-------|-------|
| 080 | Harp | ... | 010 | ... | ... | 120 | Pole | ... | ... | 001 | ... |
| 081 | MandlinTrm | ... | ... | 007 | ... | 121 | Pole LP | ... | ... | 001 | ... |
| 082 | A.Bass 1 | ... | 006 | ... | ... | 122 | Tubular | 005 | ... | ... | ... |
| 083 | A.Bass1 LP | ... | 006 | ... | ... | 123 | Split Drum | ... | 008 | 004 | ... |
| 084 | A.Bass 2 | ... | ... | 006 | ... | 124 | Split Bell | ... | 017 | 007 | ... |
| 085 | A.Bass2 LP | ... | ... | 006 | ... | 125 | Flute | ... | 007 | ... | ... |
| 086 | E.Bass 1 | 002 | 004 | ... | ... | 126 | Pan Flute | 003 | ... | ... | ... |
| 087 | E.Bass1 LP | 002 | 004 | ... | ... | 127 | PanFluteLP | 003 | ... | ... | ... |
| 088 | E.Bass 2 | ... | ... | 008 | ... | 128 | Shakuhachi | 006 | ... | ... | ... |
| 089 | E.Bass2 LP | ... | ... | 008 | ... | 129 | ShakhachLP | 006 | ... | ... | ... |
| 090 | Pick Bass1 | 004 | 002 | ... | ... | 130 | Bottle | 003 | ... | ... | ... |
| 091 | PicBass1LP | 004 | 002 | ... | ... | 131 | Recorder | 005 | ... | ... | ... |
| 092 | Pick Bass2 | ... | ... | 008 | ... | 132 | Ocarina | 002 | ... | ... | ... |
| 093 | Fretless | 001 | 004 | ... | ... | 133 | Oboe | 007 | ... | ... | ... |
| 094 | FretlessLP | 001 | 004 | ... | ... | 134 | EnglishHrn | 015 | ... | ... | ... |
| 095 | Slap Bass1 | 006 | 001 | ... | ... | 135 | Eng.HornLP | 015 | ... | ... | ... |
| 096 | Slap Bass2 | 003 | 002 | ... | ... | 136 | BasoonOboe | 004 | 008 | ... | ... |
| 097 | SlpBass2LP | 003 | 002 | ... | ... | 137 | BsonOboeLP | 004 | 008 | ... | ... |
| 098 | Slap Bass3 | ... | ... | 010 | ... | 138 | Clarinet | 011 | ... | ... | ... |
| 099 | SynthBass1 | 003 | 002 | ... | ... | 139 | ClarinetLP | 011 | ... | ... | ... |
| 100 | SynBass1LP | 003 | 002 | ... | ... | 140 | Bari Sax | 011 | ... | ... | ... |
| 101 | SynthBass2 | 003 | 002 | ... | ... | 141 | Bari.SaxLP | 011 | ... | ... | ... |
| 102 | SynBass2LP | 003 | 002 | ... | ... | 142 | Tenor Sax | 013 | ... | ... | ... |
| 103 | House Bass | ... | ... | 006 | ... | 143 | T.Sax LP | 013 | ... | ... | ... |
| 104 | FM Bass | ... | ... | 004 | ... | 144 | Alto Sax | 009 | ... | ... | ... |
| 105 | FM Bass LP | ... | ... | 004 | ... | 145 | A.Sax LP | 009 | ... | ... | ... |
| 106 | Kalimba | ... | 002 | ... | ... | 146 | SopranoSax | 012 | ... | ... | ... |
| 107 | Music Box | 001 | 001 | ... | ... | 147 | S.Sax LP | 012 | ... | ... | ... |
| 108 | MusicBoxLP | 001 | 001 | ... | ... | 148 | Tuba | 001 | 006 | ... | ... |
| 109 | Log Drum | ... | ... | 005 | ... | 149 | Tuba LP | 001 | 006 | ... | ... |
| 110 | Marimba | ... | 005 | ... | ... | 150 | Horn | 001 | 012 | ... | ... |
| 111 | Xylophone | ... | 007 | ... | ... | 151 | FlugelHorn | ... | ... | 007 | ... |
| 112 | Vibe | ... | 005 | ... | ... | 152 | Trombone 1 | 003 | 005 | ... | ... |
| 113 | Celesta | ... | 002 | ... | ... | 153 | Trombone 2 | 001 | 008 | ... | ... |
| 114 | Glocken | ... | 005 | ... | ... | 154 | Trumpet | 006 | 003 | ... | ... |
| 115 | BrightBell | ... | 003 | ... | ... | 155 | Trumpet LP | 006 | 003 | ... | ... |
| 116 | B.Bell LP | ... | 003 | ... | ... | 156 | Mute TP | 009 | ... | ... | ... |
| 117 | Metal Bell | ... | 002 | ... | ... | 157 | Mute TP LP | 009 | ... | ... | ... |
| 118 | M.Bell LP | ... | 002 | ... | ... | 158 | Brass 1 | ... | ... | 009 | ... |
| 119 | Gamelan | ... | ... | 004 | ... | 159 | Brass 1 LP | ... | ... | 009 | ... |

GM1: MB8316200-15PF-G-402-HT

GM2: UPD23C16000BGX-385

typeA: LH537FFS

typeB: UPD23C16000BGX-835

| No. | MultiSound | GM1 | GM2 | typeA | typeB | No. | MultiSound | GM1 | GM2 | typeA | typeB |
|-----|------------|-----|-----|-------|-------|-----|------------|-----|-----|-------|-------|
| 160 | Brass 2 | 004 | ... | ... | ... | 200 | Clicker | 003 | ... | ... | ... |
| 161 | Brass 2 LP | 004 | ... | ... | ... | 201 | Clicker NT | 001 | ... | ... | ... |
| 162 | StringEns. | 009 | 004 | 005 | ... | 202 | Crickets 1 | 001 | ... | ... | ... |
| 163 | StrEns. V1 | 009 | 004 | 005 | ... | 203 | Crickts1NT | 001 | ... | ... | ... |
| 164 | StrEns. V2 | 009 | 004 | 005 | ... | 204 | Crickets 2 | ... | ... | 001 | ... |
| 165 | StrEns. V3 | 009 | 004 | 004 | ... | 205 | Crickts2NT | ... | ... | 001 | ... |
| 166 | AnaStrings | 005 | ... | ... | ... | 206 | Magic Bell | ... | ... | 001 | ... |
| 167 | PWM | 005 | ... | ... | ... | 207 | Sporing | ... | 001 | ... | ... |
| 168 | Violin | 010 | ... | ... | ... | 208 | Rattle | ... | 002 | ... | ... |
| 169 | Cello | 006 | ... | ... | ... | 209 | Kava 1 | ... | ... | 001 | ... |
| 170 | Cello LP | 006 | ... | ... | ... | 210 | Kava 2 | ... | ... | 001 | ... |
| 171 | Pizzicato | ... | 007 | ... | ... | 211 | Fever 1 | 001 | ... | ... | ... |
| 172 | Voice | 002 | ... | ... | ... | 212 | Fever 2 | 001 | ... | ... | ... |
| 173 | Choir | 006 | ... | ... | ... | 213 | Zappers 1 | ... | ... | 001 | ... |
| 174 | Soft Choir | 001 | ... | ... | ... | 214 | Zappers 2 | ... | ... | 001 | ... |
| 175 | Air Vox | 004 | ... | ... | ... | 215 | Bugs | ... | 014 | ... | ... |
| 176 | Doo Voice | 007 | ... | ... | ... | 216 | Surfy | 001 | ... | ... | ... |
| 177 | DooVoiceLP | 007 | ... | ... | ... | 217 | SleighBell | 002 | ... | ... | ... |
| 178 | Syn Vox | 002 | ... | ... | ... | 218 | Elec Beat | ... | ... | 002 | ... |
| 179 | Syn Vox LP | 002 | ... | ... | ... | 219 | Idling | ... | 003 | ... | ... |
| 180 | White Pad | 002 | ... | ... | ... | 220 | EthnicBeat | ... | ... | 013 | ... |
| 181 | Ether Bell | 004 | ... | ... | ... | 221 | Taps | 001 | 001 | 004 | ... |
| 182 | E.Bell LP | 004 | ... | ... | ... | 222 | Tap 1 | 001 | ... | 002 | ... |
| 183 | Mega Pad | 002 | ... | ... | ... | 223 | Tap 2 | 001 | ... | 002 | ... |
| 184 | Spectrum 1 | ... | ... | 003 | ... | 224 | Tap 3 | 001 | ... | 002 | ... |
| 185 | Spectrum 2 | ... | ... | 002 | ... | 225 | Tap 4 | 001 | 001 | 001 | ... |
| 186 | Stadium | 002 | ... | ... | ... | 226 | Tap 5 | 001 | 001 | ... | ... |
| 187 | Stadium NT | 002 | ... | ... | ... | 227 | Orch Hit | 001 | ... | ... | ... |
| 188 | BrushNoise | 013 | ... | ... | ... | 228 | SnareRI/Ht | ... | ... | 002 | ... |
| 189 | BruNoiseNT | 001 | ... | ... | ... | 229 | Syn Snare | 001 | ... | ... | ... |
| 190 | Steel Drum | 004 | ... | ... | ... | 230 | Rev Snare | ... | ... | 013 | ... |
| 191 | SteelDrmLP | 004 | ... | ... | ... | 231 | PowerSnare | ... | 001 | ... | ... |
| 192 | BrushSwirl | 013 | ... | ... | ... | 232 | Orch Perc | 002 | 002 | 001 | ... |
| 193 | Belltree | 001 | ... | ... | ... | 233 | Crash Cym | 013 | ... | ... | ... |
| 194 | BelltreeNT | 001 | ... | ... | ... | 234 | CrashCymLP | 013 | ... | ... | ... |
| 195 | BeltreV NT | 001 | ... | ... | ... | 235 | CrashLP NT | 001 | ... | ... | ... |
| 196 | Tri Roll | 004 | ... | ... | ... | 236 | China Cym | 002 | ... | ... | ... |
| 197 | TriRoll NT | 001 | ... | ... | ... | 237 | Splash Cym | 002 | ... | ... | ... |
| 198 | Telephon | 002 | ... | ... | ... | 238 | Orch Crash | ... | ... | 013 | ... |
| 199 | TelephonNT | 001 | ... | ... | ... | 239 | Tite HH | 001 | ... | ... | ... |

GM1: MB8316200-15PF-G-402-HT

GM2: UPD23C16000BGX-385

typeA: LH537FFS

typeB: UPD23C16000BGX-835

| No. | MultiSound | GM1 | GM2 | typeA | typeB | No. | MultiSound | GM1 | GM2 | typeA | typeB |
|-----|------------|-----|-----|-------|-------|-----|--------------|-----|-----|-------|-------|
| 240 | Tite HH NT | 001 | ... | ... | ... | 280 | Gt Scratch | 001 | ... | ... | ... |
| 241 | Bell Ride | ... | 002 | ... | ... | 281 | Side Stick | ... | 001 | ... | ... |
| 242 | Ping Ride | ... | 002 | ... | ... | 282 | SideStikNT | ... | 001 | ... | ... |
| 243 | Timpani | ... | 001 | ... | ... | 283 | TimbleSide | ... | ... | 001 | ... |
| 244 | Timpani LP | ... | 001 | ... | ... | 284 | TimblSidNT | ... | ... | 001 | ... |
| 245 | Cabasa | 013 | ... | ... | ... | 285 | Syn Rim | ... | 001 | ... | ... |
| 246 | Cabasa NT | 001 | ... | ... | ... | 286 | Syn Rim NT | ... | 001 | ... | ... |
| 247 | Agogo | ... | 001 | ... | ... | 287 | Open HH | ... | 001 | ... | ... |
| 248 | Cow Bell | ... | 001 | ... | ... | 288 | OpenSyn HH | 001 | ... | ... | ... |
| 249 | Low Bongo | ... | 001 | ... | ... | 289 | CloseSynHH | ... | 001 | ... | ... |
| 250 | Claves | ... | 001 | ... | ... | 290 | Sagat | ... | ... | 001 | ... |
| 251 | Timbale | ... | 001 | ... | ... | 291 | Sagat NT | ... | ... | 001 | ... |
| 252 | WoodBlock1 | ... | 001 | ... | ... | 292 | Sagatty | ... | ... | 001 | ... |
| 253 | WoodBlock2 | ... | 001 | ... | ... | 293 | Sagatty NT | ... | ... | 001 | ... |
| 254 | WoodBlock3 | ... | 001 | ... | ... | 294 | JingleBell | 002 | ... | ... | ... |
| 255 | Taiko Hit | ... | 001 | ... | ... | 295 | Taiko | ... | 002 | ... | ... |
| 256 | Syn Claves | ... | 001 | ... | ... | 296 | Slap Bongo | ... | ... | 001 | ... |
| 257 | Melo Tom | ... | 001 | ... | ... | 297 | Open Conga | ... | 001 | ... | ... |
| 258 | ProccesTom | 001 | ... | ... | ... | 298 | Slap Conga | ... | ... | 001 | ... |
| 259 | Syn Tom 1 | ... | 001 | ... | ... | 299 | Palm Conga | ... | ... | 001 | ... |
| 260 | Syn Tom 2 | ... | 002 | ... | ... | 300 | Mute Conga | ... | 001 | ... | ... |
| 261 | VocalSnare | ... | ... | 002 | ... | 301 | Tabla 1 | ... | ... | 001 | ... |
| 262 | Zap 1 | ... | ... | 001 | ... | 302 | Tabla 2 | ... | ... | 001 | ... |
| 263 | Zap 2 | ... | ... | 001 | ... | 303 | Maracas | ... | 001 | ... | ... |
| 264 | Fret Zap 1 | 001 | ... | ... | ... | 304 | SynMaracas | ... | 001 | ... | ... |
| 265 | Fret Zap 2 | 001 | ... | ... | ... | 305 | SynMarcsNT | ... | 001 | ... | ... |
| 266 | Vibra Slap | 013 | ... | ... | ... | 306 | MuteTriang | 001 | ... | ... | ... |
| 267 | Indust | ... | ... | 001 | ... | 307 | OpenTriang | ... | 001 | ... | ... |
| 268 | Thing | ... | ... | 002 | ... | 308 | Guiro | ... | 002 | ... | ... |
| 269 | Thing NT | ... | ... | 001 | ... | 309 | Guiro LP | ... | 002 | ... | ... |
| 270 | FingerSnap | ... | ... | 001 | ... | 310 | Scratch Hi | 001 | ... | ... | ... |
| 271 | FingSnapNT | ... | ... | 001 | ... | 311 | ScratchiNT | 001 | ... | ... | ... |
| 272 | Tambourine | ... | 001 | ... | ... | 312 | Scratch Lo | 001 | ... | ... | ... |
| 273 | Hand Clap | ... | 001 | ... | ... | 313 | ScratchLoNT | 001 | ... | ... | ... |
| 274 | HandClapNT | ... | 001 | ... | ... | 314 | ScratchDbI | ... | ... | 001 | ... |
| 275 | Gun Shot | 001 | ... | ... | ... | 315 | ScratchDbINT | ... | ... | 001 | ... |
| 276 | Castanet | ... | 001 | ... | ... | 316 | Mini 1a | ... | 001 | 009 | ... |
| 277 | CastanetNT | ... | 001 | ... | ... | 317 | Digital 1 | ... | 002 | 008 | ... |
| 278 | Snap | ... | ... | 001 | ... | 318 | VS 102 | ... | ... | 010 | ... |
| 279 | Snap NT | ... | ... | 001 | ... | 319 | VS 48 | ... | 001 | 009 | ... |

GM1: MB8316200-15PF-G-402-HT

GM2: UPD23C16000BGX-385

typeA: LH537FFS

typeB: UPD23C16000BGX-835

| No. | MultiSound | GM1 | GM2 | typeA | typeB |
|-----|------------|-----|-----|-------|-------|
| 320 | VS 52 | ... | 001 | 009 | ... |
| 321 | VS 58 | 009 | 001 | ... | ... |
| 322 | VS 71 | ... | 001 | 009 | ... |
| 323 | VS 72 | ... | 001 | 009 | ... |
| 324 | VS 88 | ... | 001 | 009 | ... |
| 325 | VS 89 | ... | 001 | 009 | ... |
| 326 | 13-35 | ... | 001 | 009 | ... |
| 327 | DWGSOrgan1 | ... | 001 | 009 | ... |
| 328 | DWGSOrgan2 | ... | 001 | 009 | ... |
| 329 | DWGS E.P. | ... | 001 | 009 | ... |
| 330 | Saw | 009 | 001 | ... | ... |
| 331 | Square | 009 | 001 | ... | ... |
| 332 | Ramp | ... | 001 | 009 | ... |
| 333 | Pulse 25% | ... | 001 | 009 | ... |
| 334 | Pulse 8% | ... | 001 | 009 | ... |
| 335 | Pulse 4% | ... | 001 | 009 | ... |
| 336 | Syn Sine | ... | 010 | ... | ... |
| 337 | Sine | 001 | 009 | ... | ... |
| 338 | DJ Kit 1 | 009 | 001 | 009 | ... |
| 339 | DJ Kit 2 | 010 | 010 | 016 | ... |
| 340 | A.Piano 3 | ... | ... | ... | 088 |

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GM1: MB8316200-15PF-G-402-HT GM2: UPD23C16000BGX-385
typeA: LH537FFS typeB: UPD23C16000BGX-835

FOR DRUM SOUNDS

| No. | DrumSound | GM1 | GM2 | typeA | typeB | No. | DrumSound | GM1 | GM2 | typeA | typeB |
|-----|-------------|-----|-----|-------|-------|-----|------------|-----|-----|-------|-------|
| 000 | Fat Kick | ... | ... | 001 | ... | 041 | Crash LP | 001 | ... | ... | ... |
| 001 | Rock Kick | ... | ... | 001 | ... | 042 | China Cym | 001 | ... | ... | ... |
| 002 | Ambi.Kick | ... | ... | 001 | ... | 043 | China LP | 001 | ... | ... | ... |
| 003 | Crisp Kick | ... | ... | 001 | ... | 044 | Splash Cym | 001 | ... | ... | ... |
| 004 | Punch Kick | ... | ... | 001 | ... | 045 | Splash LP | 001 | ... | ... | ... |
| 005 | Real Kick | ... | 001 | ... | ... | 046 | Orch Crash | ... | ... | 001 | ... |
| 006 | Dance Kick | ... | ... | 001 | ... | 047 | OrchCym LP | ... | ... | 001 | ... |
| 007 | Gated Kick | ... | ... | 001 | ... | 048 | Tite HH | 001 | ... | ... | ... |
| 008 | ProcesKick | ... | 001 | ... | ... | 049 | Open HH | ... | 001 | ... | ... |
| 009 | Metal Kick | ... | 001 | ... | ... | 050 | Pedal HH | 001 | ... | ... | ... |
| 010 | Syn Kick 1 | ... | 001 | ... | ... | 051 | CloseSynHH | ... | 001 | ... | ... |
| 011 | Syn Kick 2 | ... | ... | 001 | ... | 052 | Open SynHH | 001 | ... | ... | ... |
| 012 | Syn Kick 3 | ... | ... | 001 | ... | 053 | Sagat | ... | ... | 001 | ... |
| 013 | Orch B.Drm | ... | ... | 001 | ... | 054 | Ride Edge | ... | 001 | ... | ... |
| 014 | Snare 1 | ... | ... | 001 | ... | 055 | Ride Cup | ... | 001 | ... | ... |
| 015 | Snare 2 | ... | ... | 001 | ... | 056 | Ride Cym 1 | ... | ... | 001 | ... |
| 016 | Snare 3 | ... | ... | 001 | ... | 057 | Ride Cym 2 | ... | ... | 001 | ... |
| 017 | Snare 4 | ... | ... | 001 | ... | 058 | Tom Hi | ... | 001 | ... | ... |
| 018 | PicloSnare | ... | ... | 001 | ... | 059 | Tom Lo | ... | 001 | ... | ... |
| 019 | Soft Snare | ... | ... | 001 | ... | 060 | ProcessTom | 001 | ... | ... | ... |
| 020 | LightSnare | ... | 001 | ... | ... | 061 | SynTom1 Hi | ... | 001 | ... | ... |
| 021 | TightSnare | ... | ... | 001 | ... | 062 | SynTom1 Lo | ... | 001 | ... | ... |
| 022 | Ambi. Snare | ... | ... | 001 | ... | 063 | Syn Tom 2 | ... | 001 | ... | ... |
| 023 | Rev Snare | ... | ... | 001 | ... | 064 | Brush Tom | ... | 001 | ... | ... |
| 024 | RollSnare1 | ... | ... | 001 | ... | 065 | Agogo | ... | 001 | ... | ... |
| 025 | RollSnare2 | ... | ... | 001 | ... | 066 | Lo Bongo | ... | 001 | ... | ... |
| 026 | Rock Snare | ... | 001 | ... | ... | 067 | Hi Bongo | ... | 001 | ... | ... |
| 027 | GatedSnare | ... | 001 | ... | ... | 068 | Slap Bongo | ... | ... | 001 | ... |
| 028 | PowerSnare | ... | 001 | ... | ... | 069 | Claves | ... | 001 | ... | ... |
| 029 | Syn Snare1 | ... | 001 | ... | ... | 070 | Syn Claves | ... | 001 | ... | ... |
| 030 | Syn Snare2 | 001 | ... | ... | ... | 071 | Open Conga | ... | 001 | ... | ... |
| 031 | Gun Shot | 001 | ... | ... | ... | 072 | Slap Conga | ... | ... | 001 | ... |
| 032 | Brush Slap | ... | 001 | ... | ... | 073 | Palm Conga | ... | ... | 001 | ... |
| 033 | BrushSwish | 001 | ... | ... | ... | 074 | Mute Conga | ... | 001 | ... | ... |
| 034 | BrushSwirl | 001 | ... | ... | ... | 075 | Baya 1 | ... | ... | 001 | ... |
| 035 | Brush Tap | ... | 001 | ... | ... | 076 | Baya 2 | ... | ... | 001 | ... |
| 036 | Side Stick | ... | 001 | ... | ... | 077 | Tabla 1 | ... | ... | 001 | ... |
| 037 | Syn Rim | ... | 001 | ... | ... | 078 | Tabla 2 | ... | ... | 001 | ... |
| 038 | VocalSnr 1 | ... | ... | 001 | ... | 079 | Tabla 3 | ... | ... | 001 | ... |
| 039 | VocalSnr 2 | ... | ... | 001 | ... | 080 | Maracas | ... | 001 | ... | ... |
| 040 | Crash Cym | 001 | ... | ... | ... | 081 | Cabasa | 001 | ... | ... | ... |

GM1: MB8316200-15PF-G-402-HT

GM2: UPD23C16000BGX-385

typeA: LH537FFS

typeB: UPD23C16000BGX-835

| No. | DrumSound | GM1 | GM2 | typeA | typeB | No. | DrumSound | GM1 | GM2 | typeA | typeB |
|-----|------------|-----|-----|-------|-------|-----|------------|-----|-----|-------|-------|
| 082 | SynMaracas | ... | 001 | ... | ... | 123 | Log Drum 5 | ... | ... | 001 | ... |
| 083 | MuteTriang | 001 | ... | ... | ... | 124 | Snap | ... | ... | 001 | ... |
| 084 | OpenTriang | ... | 001 | ... | ... | 125 | BrightBell | ... | 001 | ... | ... |
| 085 | Tambourine | ... | 001 | ... | ... | 126 | Metal Bell | ... | 001 | ... | ... |
| 086 | Cowbell | ... | 001 | ... | ... | 127 | Gamelan 1 | ... | ... | 001 | ... |
| 087 | SynCowbell | 001 | ... | ... | ... | 128 | Gamelan 2 | ... | ... | 001 | ... |
| 088 | R-Timbal | ... | ... | 001 | ... | 129 | Celeste | ... | 001 | ... | ... |
| 089 | Hi Timbal | ... | 001 | ... | ... | 130 | Glocken | ... | 001 | ... | ... |
| 090 | Lo Timbal | ... | 001 | ... | ... | 131 | Vibe 1 | ... | 001 | ... | ... |
| 091 | WoodBlock1 | ... | 001 | ... | ... | 132 | Vibe 2 | ... | 001 | ... | ... |
| 092 | WoodBlock2 | ... | 001 | ... | ... | 133 | Vibe 3 | ... | 001 | ... | ... |
| 093 | WoodBlock3 | ... | 001 | ... | ... | 134 | Vibe 4 | ... | 001 | ... | ... |
| 094 | Hand Claps | ... | 001 | ... | ... | 135 | Pole | ... | ... | 001 | ... |
| 095 | Syn Claps | ... | ... | 001 | ... | 136 | TubulBell1 | 001 | ... | ... | ... |
| 096 | Zap 1 | ... | ... | 001 | ... | 137 | TubulBell2 | 001 | ... | ... | ... |
| 097 | Zap 2 | ... | ... | 001 | ... | 138 | TubulBell3 | 001 | ... | ... | ... |
| 098 | Scratch Hi | 001 | ... | ... | ... | 139 | Gt Scratch | 001 | ... | ... | ... |
| 099 | Scratch Lo | 001 | ... | ... | ... | 140 | Chic 1 | ... | ... | 001 | ... |
| 100 | ScratchDbl | ... | ... | 001 | ... | 141 | Chic 2 | ... | ... | 001 | ... |
| 101 | Thing | ... | ... | 001 | ... | 142 | Spectrum 1 | ... | ... | 001 | ... |
| 102 | Mute Cuica | ... | 001 | ... | ... | 143 | Spectrum 2 | ... | ... | 001 | ... |
| 103 | Open Cuica | ... | 001 | ... | ... | 144 | Stadium | 001 | ... | ... | ... |
| 104 | Vibraslap | 001 | ... | ... | ... | 145 | BrushNoise | 001 | ... | ... | ... |
| 105 | Guiro S | ... | 001 | ... | ... | 146 | Gt Slide | ... | ... | 001 | ... |
| 106 | Guiro L | ... | 001 | ... | ... | 147 | Bell Tree | 001 | ... | ... | ... |
| 107 | Castanet | ... | 001 | ... | ... | 148 | Tri Roll | 001 | ... | ... | ... |
| 108 | FingerSnap | ... | ... | 001 | ... | 149 | JingleBell | 001 | ... | ... | ... |
| 109 | Timbales | ... | ... | 001 | ... | 150 | Whistle S | 001 | ... | ... | ... |
| 110 | Kalimba 1 | ... | 001 | ... | ... | 151 | Whistle L | 001 | ... | ... | ... |
| 111 | Kalimba 2 | ... | 001 | ... | ... | 152 | Timpani | ... | 001 | ... | ... |
| 112 | Marimba 1 | ... | 001 | ... | ... | 153 | Taiko Hi | ... | 001 | ... | ... |
| 113 | Marimba 2 | ... | 001 | ... | ... | 154 | Taiko Lo | ... | 001 | ... | ... |
| 114 | Marimba 3 | ... | 001 | ... | ... | 155 | Music Box1 | ... | 001 | ... | ... |
| 115 | Marimba 4 | ... | 001 | ... | ... | 156 | Music Box2 | 001 | ... | ... | ... |
| 116 | Xylofon 1 | ... | 001 | ... | ... | 157 | Clicker 1 | 001 | ... | ... | ... |
| 117 | Xylofon 2 | ... | 001 | ... | ... | 158 | Clicker 2 | 001 | ... | ... | ... |
| 118 | Xylofon 3 | ... | 001 | ... | ... | 159 | Clicker 3 | 001 | ... | ... | ... |
| 119 | Log Drum 1 | ... | ... | 001 | ... | 160 | Crickets | 001 | ... | ... | ... |
| 120 | Log Drum 2 | ... | ... | 001 | ... | 161 | Orch Hit | 001 | ... | ... | ... |
| 121 | Log Drum 3 | ... | ... | 001 | ... | 162 | Metronome1 | ... | 001 | ... | ... |
| 122 | Log Drum 4 | ... | ... | 001 | ... | 163 | Metronome2 | ... | 001 | ... | ... |

GM1: MB8316200-15PF-G-402-HT

GM2: UPD23C1600BGX-385

typeA: LH537FFS

typeB: UPD23C1600BGX-835

10. PARTS LIST

| PART CODE | PART NAME/SPECIFICATION | P.C.BOARD | NOTE | Q'TY | MARK |
|-----------|-----------------------------|-----------|-----------------|------|------|
| 001093800 | P.C.BOARD ASSY KLM-938 | M.PART | AFTERTOUC | 1 | NEW |
| 001151100 | P.C.BOARD ASSY KLM-1511/12 | M.PART | JOYSTICK | 1 | |
| 001177600 | P.C.BOARD ASSY KLM-1776 | M.PART | MAIN | 1 | NEW |
| 001177700 | P.C.BOARD ASSY KLM-1777 | M.PART | PANEL-L | 1 | NEW |
| 001177800 | P.C.BOARD ASSY KLM-1778/79 | M.PART | PANEL-R/ENCODER | 1 | NEW |
| 001178000 | P.C.BOARD ASSY KLM-1780 | M.PART | POWER/AMP | 1 | NEW |
| 001178100 | P.C.BOARD ASSY KLM-1781 | M.PART | JACK | 1 | NEW |
| 001178200 | P.C.BOARD ASSY KLM-1782 | M.PART | HEADPHONES | 1 | NEW |
| 001178300 | P.C.BOARD ASSY KLM-1783 | M.PART | TRANS SEC | 1 | NEW |
| ----- | | | | | |
| 312010700 | LED GL3HD43 | 1777 | | 32 | |
| | | 1778 | | 5 | |
| 312010900 | LED GL3ED8 | 1777 | | 1 | |
| 313003000 | LCD DMC2079NY-LY | M.PART | | 1 | NEW |
| ----- | | | | | |
| 320001328 | IC UPD70433GD-5BB | 1776 | CPU | 1 | |
| 320001343 | IC UPD23C16000BGX-385 | 1776 | WAVE_ROM(GM2) | 1 | |
| 320004538 | IC HD63266F | 1776 | FDC | 1 | |
| 320004556 | IC HD6433332A01F | 1776 | NKS2 | 1 | NEW |
| 320006025 | IC MSM51C464A-7/8ZS | 1776 | D_RAM | 1 | |
| 320009001 | IC NJM-4558D-V | 938 | OP_AMP | 1 | |
| 320009078 | IC NJM78M12FA | 1780 | REGULATER | 1 | |
| 320009079 | IC NJM79M12FA | 1780 | REGULATER | 1 | |
| 320011026 | IC M5216L | 1776 | OP_AMP | 1 | |
| 320011174 | IC M5227P | 1780 | OP_AMP | 2 | NEW |
| 320012098 | IC MB81C4256-70PSZ-G | 1776 | D_RAM | 2 | |
| 320012141 | IC MBCS35104-001PF-G-BND | 1776 | TGL | 1 | |
| 320012146 | IC MB622E15PF-G-LBND | 1776 | MAP55A | 1 | |
| 320012148 | IC MB8316200A-15PF-G-402-HT | 1776 | WAVE_ROM GM1 | 1 | |
| 320012191 | IC MB8316200BP-G-850 | 1776 | SYSTEM&STYLE | 1 | NEW |
| 320013036 | IC PQ05RF2 | 1780 | REGULATER | 1 | |
| 320013052 | IC LH537FFS/LH5370Y7 | 1776 | WAVE_ROM | 1 | |
| 320038003 | IC TDA8560Q | 1780 | POWER AMP | 1 | NEW |
| 324001006 | IC UPD74HCU04GS-E2 (SOP) | 1776 | HC_MOS | 1 | |
| 324001016 | IC UPC4574G2-E2 (SOP) | 1776 | OP_AMP | 1 | |
| 324004011 | IC HD74HC04FPER | 1776 | HC_MOS | 1 | |
| 324004012 | IC HD74HC08FPER | 1776 | HC_MOS | 1 | |
| 324004024 | IC HD74HC74FPER | 1776 | HC_MOS | 1 | |
| 324004050 | IC HD74HC138FPER | 1776 | HC_MOS | 4 | |
| 324004065 | IC HD74HC164FPER | 1776 | HC_MOS | 1 | NEW |
| 324004176 | IC HD74HC05FPER | 1776 | HC_MOS | 1 | |
| 324005003 | IC LC321664AJ-80-TRM | 1776 | D_RAM | 1 | NEW |
| 324009004 | IC NJM78L05UA-TE2 | 1776 | REGULATER | 1 | |
| 324011002 | IC M5223FP-600C (8P SOP) | 1776 | OP_AMP | 1 | |
| 324011013 | IC M62021FP-600C | 1776 | RESET | 1 | |
| 324011017 | IC M5218AFP-600C | 1776 | OP_AMP | 1 | |
| 324011022 | IC M5M51008AFP-70L-TT4 | 1776 | S_RAM | 1 | |
| 324038002 | IC TDA1305T/N2-T | 1776 | DAC | 1 | |
| ----- | | | | | |
| 334000500 | SB COIL SBT-0260 TF | 1781 | | 6 | |
| 334000600 | PHOTO COUPLER PC-410K-TP | 1776 | | 1 | |
| ----- | | | | | |
| 335400060 | CRYSTAL OSC SX-1 25.000MHZ | 1776 | | 1 | |
| ----- | | | | | |

| PART CODE | PART NAME/SPECIFICATION | P.C.BOARD | NOTE | Q'TY | MARK |
|-----------|-------------------------------|--------------|-------|----------|------|
| 335400080 | CRYSTAL OSC SX-1 32.000MHZ | 1776 | | 1 | |
| 335400090 | CRYSTAL OSC SX-1 20.000MHZ | 1776 | | 1 | |
| 350002422 | SEMI FIXED VR RH0615C J5 220K | 938 | | 1 | |
| 350002447 | SEMI FIXED VR RH0615C S5 470K | 938 | | 1 | |
| 360023600 | VR RK11K1140(X-011/012) 10KB | 1511
1512 | | 1
1 | |
| 365008500 | SLIDE VR RS45112AC00EA 10KBX2 | 1777 | | 1 | |
| 370004500 | ROTARY ENCODER EC16B242041SA | 1779 | | 1 | NEW |
| 375007800 | POWER SW ESB-8213V | M.PART | | 1 | |
| 375010500 | TOUCH SW EVQ-PAC09K-A | 1777
1778 | | 41
39 | |
| 400013900 | POWER TRANSFORMER TC-055 | M.PART | | 1 | NEW |
| 402004600 | COIL 2943-666673 | 1780
1782 | | 4
2 | |
| 410004200 | X-323 SPEAKER BOX ASSY L | M.PART | | 1 | NEW |
| 410004300 | X-323 SPEAKER BOX ASSY R | M.PART | | 1 | NEW |
| 420005000 | TP/9SYNTH+WEIGHT+PCB+AFTH 61 | M.PART | | 1 | NEW |
| 435001200 | FDD EME213KRX | M.PART | | 1 | NEW |
| 454004300 | PHONE JACK YKB21-5012 | 1781 | | 4 | |
| 454004400 | PHONE JACK YKB21-5010 | 1781 | | 2 | |
| 454005600 | PHONE JACK YKB21-5006 | 1782 | | 1 | |
| 464002200 | FUSE 125V 1.6A SB1.6 | M.PART | 117US | 2 | |
| | | M.PART | 117CN | 2 | |
| | | M.PART | 117EX | 2 | |
| | | M.PART | 100JP | 2 | |
| 464002300 | FUSE 125V 2A SB2 | M.PART | 117US | 1 | |
| | | M.PART | 117CN | 1 | |
| | | M.PART | 117EX | 1 | |
| 464002300 | FUSE 125V 2A SB2 | M.PART | 100JP | 1 | |
| 464002800 | FUSE 125V 6.3A SB6.3 | M.PART | 117US | 2 | |
| | | M.PART | 117CN | 2 | |
| | | M.PART | 117EX | 2 | |
| | | M.PART | 100JP | 2 | |
| 464061801 | FUSE 250V T630MA | M.PART | 220GE | 2 | |
| | | M.PART | 240GE | 2 | |
| | | M.PART | 240AU | 2 | |
| | | M.PART | 240AF | 2 | |
| | | M.PART | 230GE | 2 | |
| | | M.PART | 230FR | 2 | |
| | | M.PART | 230SE | 2 | |
| | | M.PART | 230WG | 2 | |
| | | M.PART | 230SC | 2 | |

| PART CODE | PART NAME/SPECIFICATION | P.C.BOARD | NOTE | Q'TY | MARK |
|-----------|-------------------------------|-----------|-------|------|------|
| 464061801 | FUSE 250V T630MA | M.PART | 230IT | 2 | |
| | | M.PART | 240UK | 2 | |
| 464062001 | FUSE 250V T1.0A | M.PART | 220GE | 1 | |
| | | M.PART | 240GE | 1 | |
| | | M.PART | 240AU | 1 | |
| | | M.PART | 240AF | 1 | |
| | | M.PART | 230GE | 1 | |
| | | M.PART | 230FR | 1 | |
| | | M.PART | 230SE | 1 | |
| | | M.PART | 230WG | 1 | |
| | | M.PART | 230SC | 1 | |
| | | M.PART | 230IT | 1 | |
| | | M.PART | 240UK | 1 | |
| 464062501 | FUSE 250V T3.15A | M.PART | 220GE | 2 | |
| | | M.PART | 240GE | 2 | |
| | | M.PART | 240AU | 2 | |
| | | M.PART | 240AF | 2 | |
| | | M.PART | 230GE | 2 | |
| | | M.PART | 230FR | 2 | |
| | | M.PART | 230SE | 2 | |
| | | M.PART | 230WG | 2 | |
| | | M.PART | 230SC | 2 | |
| | | M.PART | 230IT | 2 | |
| | | M.PART | 240UK | 2 | |
| ----- | | | | | |
| 480001403 | IC SCOKET 40P DICF-40CS-E | 1776 | | 1 | |
| 480010380 | DIN JACK YKF51-5041 (3P) | 1776 | | 1 | |
| 480010390 | IC SOCKET 42P DICF-42CS-E | 1776 | | 1 | NEW |
| ----- | | | | | |
| 520001900 | LITHIUM BATTERY CR2032-HE2 | 1776 | | 1 | |
| ----- | | | | | |
| 600005100 | AC CORD KP-610 GTBS-3 KS-31AY | M.PART | 240UK | 1 | |
| | | M.PART | 230UK | 1 | |
| 600005300 | AC CORD DC-480-J01 | M.PART | 100JP | 1 | NEW |
| 600005400 | AC CORD EC-652-E03 | M.PART | 220GE | 1 | NEW |
| | | M.PART | 230GE | 1 | |
| | | M.PART | 230FR | 1 | |
| | | M.PART | 230SE | 1 | |
| | | M.PART | 230WG | 1 | |
| | | M.PART | 230SC | 1 | |
| | | M.PART | 230IT | 1 | |
| 600005500 | AC CORD UC-948-J01 | M.PART | 117EX | 1 | NEW |
| 600005700 | AC CORD UC-953-J01 | M.PART | 117US | 1 | NEW |
| | | M.PART | 117CN | 1 | |
| 600005800 | AC CORD SC-111-J01 | M.PART | 240AU | 1 | NEW |
| ----- | | | | | |
| 620021600 | X-825M POWER SW KNOB BLK | M.PART | | 1 | |
| 620026600 | X-323 SVR KNOB KOC-E40364 | M.PART | | 1 | NEW |
| 620026700 | X-323 ENCODER KNOB KOC-E40363 | M.PART | | 1 | NEW |
| ----- | | | | | |
| 630020300 | X-323 PSW PLATE KOC-E30191 | M.PART | | 1 | NEW |
| 630020400 | X-323 LCD WINDOW KOC-E30190 | M.PART | | 1 | NEW |
| 630020500 | X-323 SHIELD SHEET KOC-C30449 | M.PART | | 1 | NEW |
| ----- | | | | | |

| PART CODE | PART NAME/SPECIFICATION | P.C.BOARD | NOTE | Q'TY | MARK |
|-----------|--------------------------------|-----------|------|------|------|
| 640084600 | GROUNDING CONTACT KOC-C40655 | 1780 | | 1 | |
| | | 1782 | | 1 | |
| ----- | | | | | |
| 641019800 | X-952 L TYPE ANGLE | M.PART | | 2 | |
| 641026901 | X-122 L TYPE ANGLE (SMALL) | 1780 | | 4 | |
| 641038500 | X-181 PP SUPPORT PLATE C40907 | M.PART | | 1 | |
| 641040600 | X-181 MUSIC STAND KOC-C30410 | M.PART | | 1 | |
| 641041168 | X-323 PSW CHASSIS KOC-C30446 | M.PART | | 1 | NEW |
| 641041169 | X-323 KB ANGLE L KOC-C30444 | M.PART | | 1 | NEW |
| 641041172 | X-323 JACK PLATE 2 KOC-C40693 | 1781 | | 1 | NEW |
| 641041173 | X-323 HEAT SINK (L) KOC-C30448 | 1780 | | 1 | NEW |
| 641041174 | X-323 PU CHASSIS KOC-C10156 | M.PART | | 1 | NEW |
| 641041175 | X-323 FDD ANGLE KOC-C30443 | M.PART | | 1 | NEW |
| 641041176 | X-323 ENCODER METAL FITTING | 1779 | | 1 | NEW |
| 641041177 | X-323 KB ANGLE CR KOC-C30445 | M.PART | | 2 | NEW |
| 641041178 | X-323 LOWER CASE KOC-C10155 | M.PART | | 1 | NEW |
| 641041179 | X-323 SIDE CHASSIS L C10154-2 | M.PART | | 1 | NEW |
| 641041181 | X-323 SIDE CHASSIS R C10154-1 | M.PART | | 1 | NEW |
| 641041182 | X-323 PANEL KOC-C10153 | M.PART | | 1 | NEW |
| 641041183 | X-323 SUPPORT RAIL KOC-C20285 | M.PART | | 1 | NEW |
| 641041184 | X-323 GRILL METAL FITTING R | M.PART | | 1 | NEW |
| 641041185 | X-323 GRILL METAL FITTING L | M.PART | | 1 | NEW |
| 641041186 | X-323 HEAT SINK (S) KOC-C40964 | 1780 | | 1 | NEW |
| 641041187 | X-323 ENCODER SUPPORTER C40975 | M.PART | | 1 | NEW |
| ----- | | | | | |
| 644006200 | X-011/012 WHEEL SPRING | M.PART | | 2 | |
| 644007400 | GND SPRING (G) KOC-C40970 | M.PART | | 1 | NEW |
| ----- | | | | | |
| 646038900 | X-011/012 JOYSTICK FRAME | M.PART | | 1 | |
| 646039000 | X-011/012 VR PLATE | M.PART | | 1 | |
| 646039100 | X-011/012 WHEEL SUPPORT | M.PART | | 1 | |
| 646039200 | X-011/012 JOYSTICK LEVER | M.PART | | 1 | |
| 646039300 | X-011/012 JOYSTICK WHEEL | M.PART | | 1 | |
| 646040000 | X-011/012 JOYSTICK COVER | M.PART | | 1 | |
| 646045300 | X-181 MUSIC STAND HOLDER | M.PART | | 2 | |
| 646049500 | X-323 SPEAKER GRILL ASSY | M.PART | | 2 | NEW |
| 646049600 | X-323 REFLECTOR KOC-E40362 | M.PART | | 1 | NEW |
| 646049700 | X-323 KNOB BLOCK ASSY 1 H30061 | M.PART | | 1 | NEW |
| 646049800 | X-323 KNOB BLOCK ASSY 2 H30062 | M.PART | | 1 | NEW |
| 646049900 | X-323 KNOB BLOCK ASSY 3 H30063 | M.PART | | 1 | NEW |
| 646050100 | X-323 SIDE PLATE L E10105/6 | M.PART | | 1 | NEW |
| 646050200 | X-323 SIDE PLATE R E10107/8 | M.PART | | 1 | NEW |
| 646050300 | X-323 JS PANEL KOC-E10109 | M.PART | | 1 | NEW |
| 646050400 | X-323 FDD COVER KOC-E20153 | M.PART | | 1 | NEW |
| 646050500 | X-323 LCD HOOD KOC-E10104 | M.PART | | 1 | NEW |

MEMO

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

ADVARSEL!

Lithiumbatteri – Eksplosionsfare ved fejlagtig handtering.
Udskiftning må kun ske med batteri af samme
fabrikat og type.
Levér det brugte batteri tilbage til leverand ø ren.

ADVERSEL

Lithiumbatteri – Eksplosjonsfare.
Ved utskifting benyttes kun batteri som
anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverand ø ren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som
rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's
instructions.

KORG

KORG INC. 15-12, Shimotakaido 1-chome, Suginami-ku, Tokyo 168

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