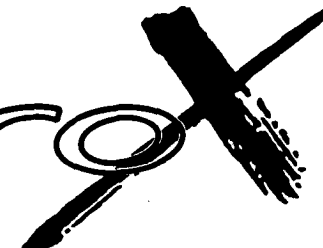


SERVICE MANUAL

01/W *pro*

01/W *pro* 

CONTENTS

1. SPECIFICATIONS	1
2. STRUCTURAL DIAGRAM	2
3. BLOCK DIAGRAM	10
4. CIRCUIT DIAGRAM	11-a
5. P.C. BOARDS	12
6. HOW TO DISASSEMBLE	17
7. HARDWARE SPECIFICATIONS	35
8. DIAGNOSTIC TEST	37
9. REFERENCE DATA	46
10. PARTS LIST	77

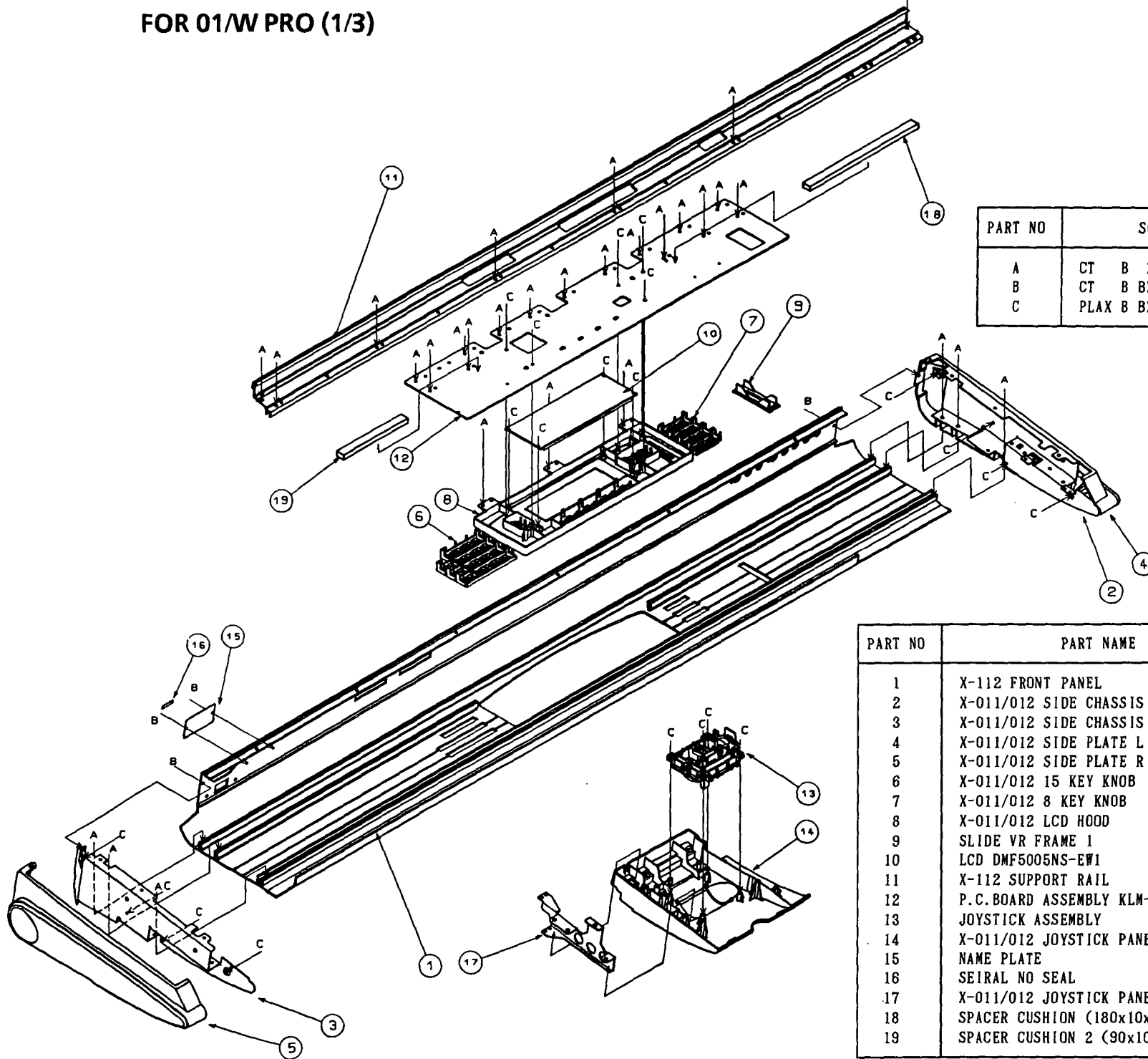
KORG

1. SPECIFICATIONS

Tone generation method	: AI ² square synthesis system (full digital processing)
Tone generator	: 32 voices, 32 oscillators(single mode) ; 16 voices, 32 oscillators(double mode)
Keyboard	: 01/WproX : 88 notes, with initial and aftertouch sensitivity, and piano-type response 01/Wpro : 76 notes, with initial and aftertouch sensitivity
Waveform memory	: PCM 80 Mbits
Effects	: two digital multi-effect systems
Programs	: 200 Programs
Combinations	: 200 Combinations
Sequencer section	: 10 Songs, 100 Patterns, maximum 48,000 notes, 16 tracks, 16 timbers (dynamic voice allocation)
Control inputs	: Damper pedal, Assignable pedals 1,2
Outputs	: 1/L, 2/R, 3, 4, headphones
Floppy disk drive	: 3.5 inch 2DD (for Program/Combination/Drum Kit/Global parameters/Sequence data/MIDI data and for Standard- MIDI files)
PCM card slot	: PCM data
PROG/SEQ card slot	: for Program/Combination/Drum Kit/Global parameters /Sequence data
MIDI	: IN, OUT, THRU
Display	: LCD 64 x 240 dots, full dot matrix, with backlight
Power consumption	: 20W
Dimensions	: 01/WproX : 1475(W) x 514.5(D) x 136.5(H) mm 01/Wpro : 1266.5(W) x 344(D) x 115.5(H) mm
Weight	: 01/WproX...35.2kg 01/Wpro...16.5kg

※ Appearance and specifications are subject to change without notice
for product improvement.

2. STRUCTURAL DIAGRAM

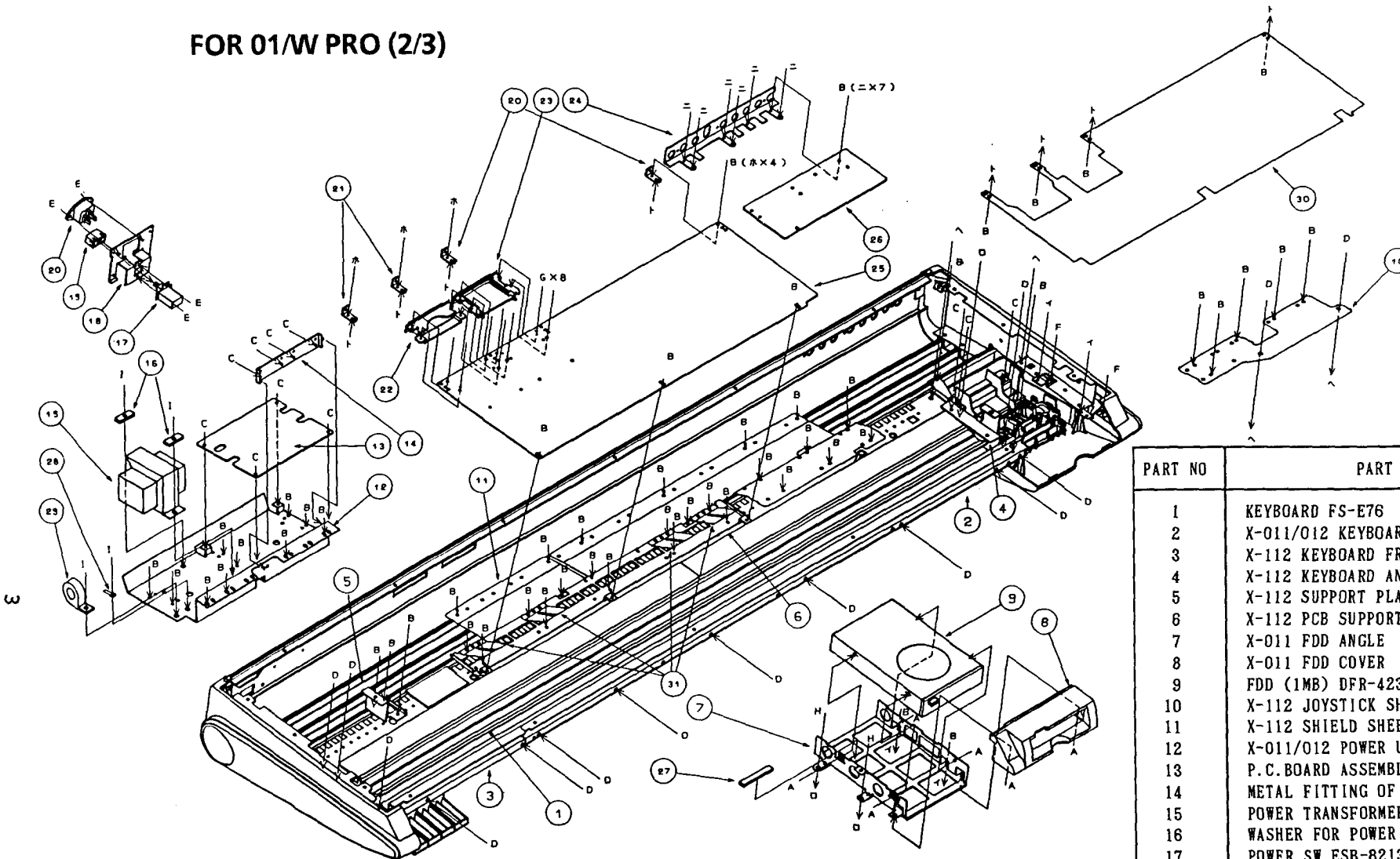


PART NO	SCREWS	PART CODE
A	CT B ZMC 3 x 8	715230308
B	CT B BZMC 3 x 8	715260308
C	PLAX B BZMC 3 x 8	745060308

PART NO	PART NAME	PART CODE
1	X-112 FRONT PANEL	641030000
2	X-011/012 SIDE CHASSIS L	641021100
3	X-011/012 SIDE CHASSIS R	641021200
4	X-011/012 SIDE PLATE L	646038400
5	X-011/012 SIDE PLATE R	646038401
6	X-011/012 15 KEY KNOB	620023500
7	X-011/012 8 KEY KNOB	620023400
8	X-011/012 LCD HOOD	646038500
9	SLIDE VR FRAME 1	646028200
10	LCD DMF5005NS-EW1	313002500
11	X-112 SUPPORT RAIL	641030300
12	P.C. BOARD ASSEMBLY KLM-1533	001153300
13	JOYSTICK ASSEMBLY	-----
14	X-011/012 JOYSTICK PANEL	646039600
15	NAME PLATE	-----
16	SEIRAL NO SEAL	-----
17	X-011/012 JOYSTICK PANEL SUPPORT	641021300
18	SPACER CUSHION (180x10x5)	500017900
19	SPACER CUSHION 2 (90x10x5)	500018100

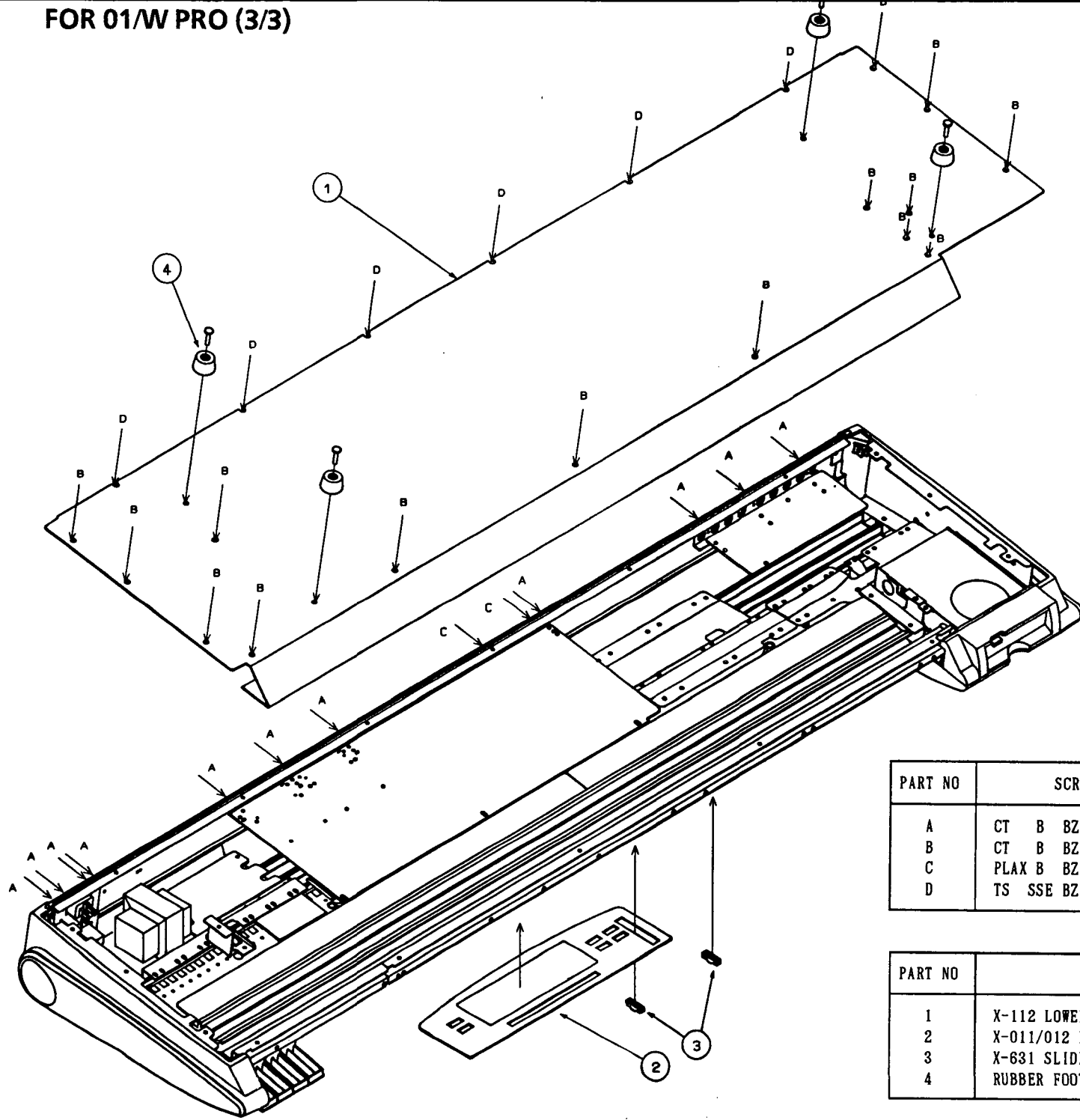
→P.8

FOR 01/W PRO (2/3)



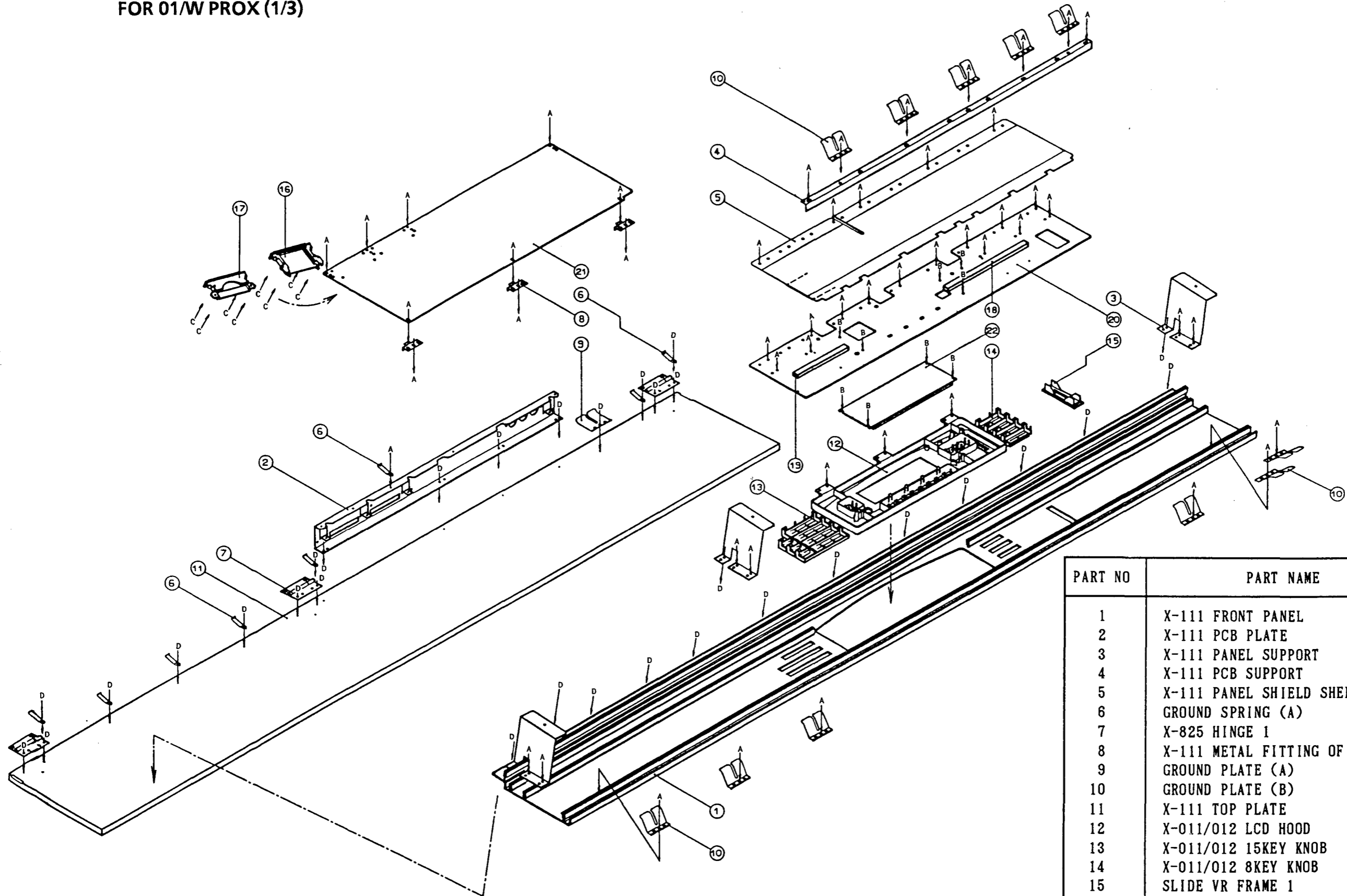
PART NO	PART NAME	PART CODE
1	KEYBOARD FS-E76	420004500
2	X-011/012 KEYBOARD FRONT ANGLE	641020300
3	X-112 KEYBOARD FRONT ANGLE (SMALL)	641029900
4	X-112 KEYBOARD ANGLE	641029600
5	X-112 SUPPORT PLATE D	641029800
6	X-112 PCB SUPPORT PLATE	641029700
7	X-011 FDD ANGLE	641020500
8	X-011 FDD COVER	646038600
9	FDD (1MB) DFR-423E02A	435000700
10	X-112 JOYSTICK SHIELD SHEET	630017700
11	X-112 SHIELD SHEET	630017600
12	X-011/012 POWER UNIT CHASSIS	641020400
13	P.C. BOARD ASSEMBLY KLM-1530	001153000
14	METAL FITTING OF REGULATOR	641020600
15	POWER TRANSFORMER TC-046	400012700
16	WASHER FOR POWER TRANSFORMER	641022900
17	POWER SW ESB-8213V	375007800
18	METAL FITTING OF POWER SW	641021400
19	X-952 POWER SW KNOB	620023100
20	INLET SOCKET	-----
21	X-952 L TYPE ANGLE	641019800
22	X-011/012 CARD GUIDE	646039400
23	X-011/012 CARD SLOT	646039500
24	X-813A JACK PLATE	641007800
25	P.C. BOARD ASSEMBLY KLM-1589	001158900
26	P.C. BOARD ASSEMBLY KLM-1529	001152900
27	SHIELD FORM 71TS5-3 (L=25mm)	540018900
28	LUG N-3	672001600
29	DATA LINE FILTER ESD-R-25D-B	525000100
30	X-112 PCB SHIELD SHEET	630018200
31	GROUND PLATE (B)	641032000

PART NO	SCREWS	PART CODE
A	CT B ZMC 3 x 6	715230306
B	CT B ZMC 3 x 8	715230308
C	CT B ZMC 3 x 10	715230310
D	CT B ZMC 4 x 10	715230410
E	CT B BZMC 3 x 8	715260308
F	PLAX B BZMC 3 x 8	745060308
G	PLAX B BZMC 3 x 10	745060310
H	TP2G B ZMC 4 x 20	725030420
I	TS SSE ZMC 4 x 10	715130411



PART NO	SCREWS	PART CODE
A	CT B BZMC 3 x 8	715260308
B	CT B BZMC 4 x 10	715260410
C	PLAX B BZMC 3 x 8	745060308
D	TS SSE BZMC 4 x 10	715160411

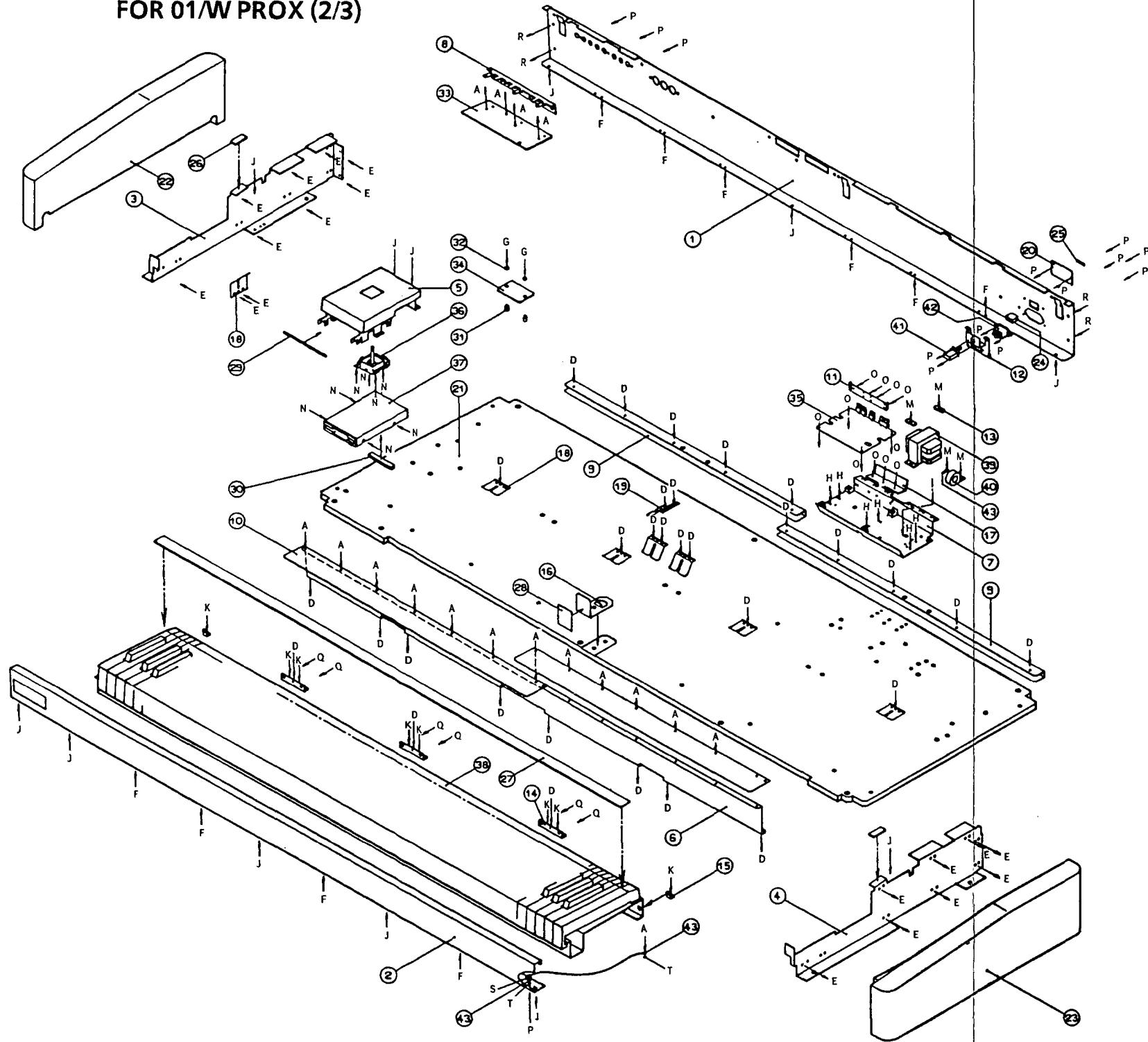
PART NO	PART NAME	PART CODE
1	X-112 LOWER CASE	641030100
2	X-011/012 LCD WINDOW	630015600
3	X-631 SLIDE VR KNOB	620019700
4	RUBBER FOOT FF-001	500018500



PART NO	SCREWS	PART CODE
A	CT B ZMC 3 x 8	715230308
B	PLAX B BZMC 3 x 8	745060308
C	PLAX B BZMC 3 x 10	745060310
D	TP1 B BZMC 3 x 10	715060310

PART NO	PART NAME	PART CODE
1	X-111 FRONT PANEL	641029500
2	X-111 PCB PLATE	641031100
3	X-111 PANEL SUPPORT	641030600
4	X-111 PCB SUPPORT	641031200
5	X-111 PANEL SHIELD SHEET	630018100
6	GROUND SPRING (A)	640084900
7	X-825 HINGE 1	641001100
8	X-111 METAL FITTING OF PCB	641030800
9	GROUND PLATE (A)	641031900
10	GROUND PLATE (B)	641032000
11	X-111 TOP PLATE	645015300
12	X-011/012 LCD HOOD	646038500
13	X-011/012 15KEY KNOB	620023500
14	X-011/012 8KEY KNOB	620023400
15	SLIDE VR FRAME 1	646028200
16	X-011/012 CARD SLOT	646039500
17	X-011/012 CARD GUIDE	646039400
18	SPACER CUSHION (180x10x5)	500017900
19	SPACER CUSHION 2 (90x10x5)	500018100
20	PANEL PCB KLM-1533	001153300
21	MAIN PCB KLM-1589	001158900
22	LCD DMF500NS-EW1	313002500

FOR 01/W PROX (2/3)



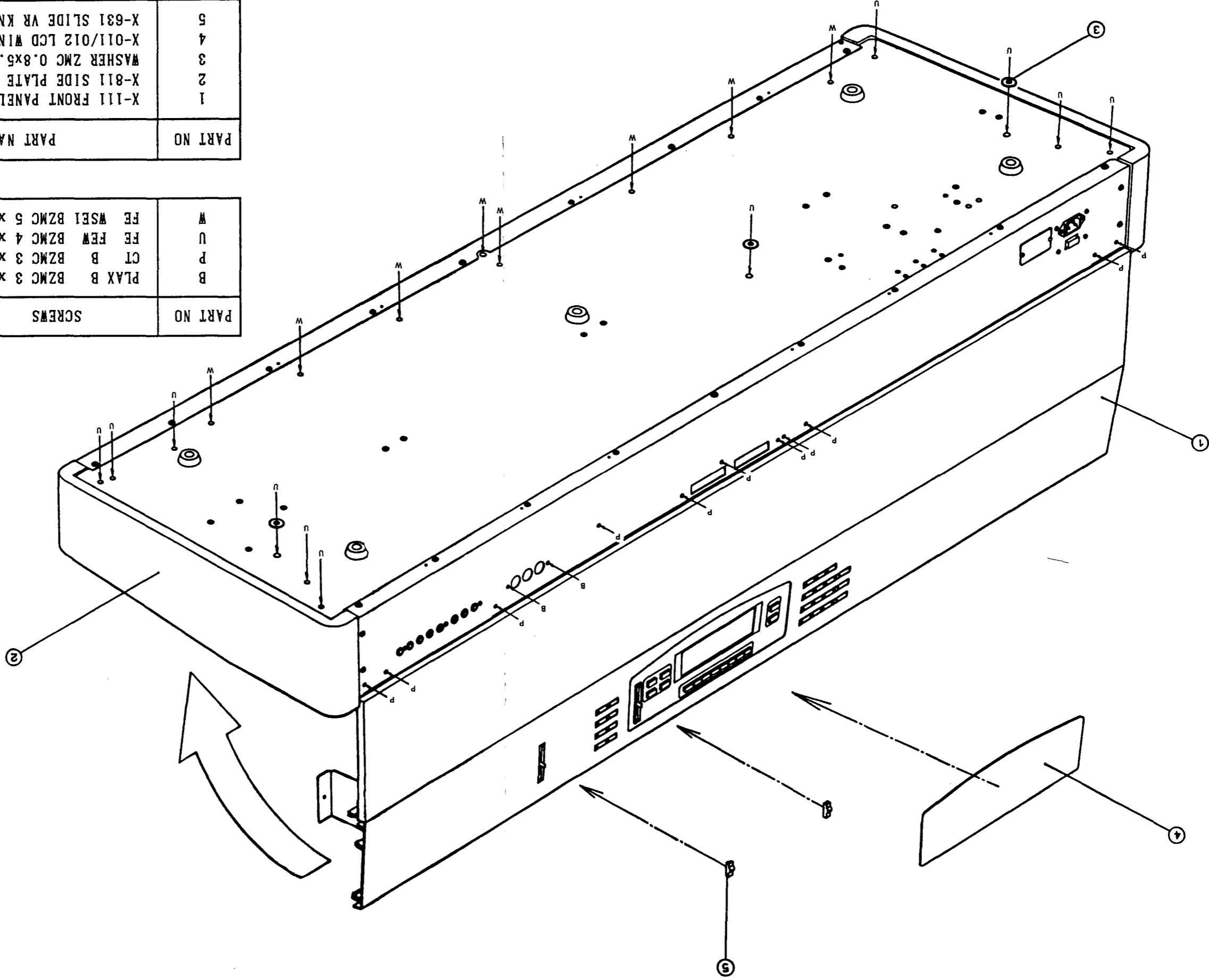
PART NO	PART NAME	PART CODE
1	X-111 REAR PANEL	641030900
2	X-111 FRONT BAR	641031000
3	X-111 SIDE CHASSIS L	641030500
4	X-111 SIDE CHASSIS R	641035001
5	X-111 JOYSTICK PANEL	641033500
6	X-811 SHIELD ANGLE	641010105
7	X-011/012 POWER UNIT CHASSIS	641020400
8	X-813A JACK PLATE	641007800
9	X-811 SHIELD SHEET A	630012300
10	X-811 KEYBOARD SHIELD SHEET	630012100
11	METAL FITTING OF REGULATOR	641020600
12	METAL FITTING OF POWER SW	641021400
13	WASHER FOR POWER TRANSFORMER	641022900
14	KEYBOARD ANGLE (TYPE ME)	640079000
15	METAL FITTING OF KEYBOARD	640080200
16	X-111 FRONT BAR SPACER	641030700
17	X-111 HEAT SINK	560007300
18	GROUND PLATE (A)	641031900
19	GROUND PLATE (B)	641032000
20	NAME PLATE	-----
21	X-111 BOTTOM PLATE	645015400
22	X-811 SIDE PLATE L	645012600
23	X-811 SIDE PLATE R	645012601
24	X-952 POWER SW KNOB	620023100
25	SERIAL NO SEAL	-----
26	CUSHION FOR SIDE PLATE	500012000
27	FELT FOR KEYBOARD (BLACK)	550013800
28	X-111 FRONT BAR CUSHION	500019000
29	X-111 FRONT CUSHION L	500019200
30	SHIELD FORM 71TS13-6 (L=76mm)	540019400
31	COLLAR BUSHING TA-305	540005803
32	COLLAR BUSHING TB-300	540005900
33	JACK PCB KLM-1529	001152900
34	AFTER TOUCH PCB KLM-1590	001159000
35	POWER SUPPLY PCB KLM-1530	001153000
36	X-631 JOYSTICK BOX	646028000
37	FDD DFR 423E02A (1MB)	435000700
38	KEYBOARD 101490 A88	420003300
39	POWER TRANSFORMER TC-046	400012700
40	EMI FERRITE 2643-480102	525000400
41	POWER SW ESB-8213V	375007800
42	INLET SOCKET PA-125-10	540012400
43	LUG	-----

PART NO	SCREWS	PART CODE
A	CT B ZMC 3 x 8	715230308
B	PLAX B BZMC 3 x 8	745060308
D	TP1 B BZMC 3 x 10	715060310
E	TP1 B BZMC 3 x 16	715060316
F	TP1 FEW BZMC 3 x 12	717060312
G	TP1 B ZMC 3 x 20	715030320
H	FE B ZMC 3 x 12	705030312
J	FE FEW BZMC 4 x 14	707060414
K	NLFE FEW BZMC 4 x 14	707160414

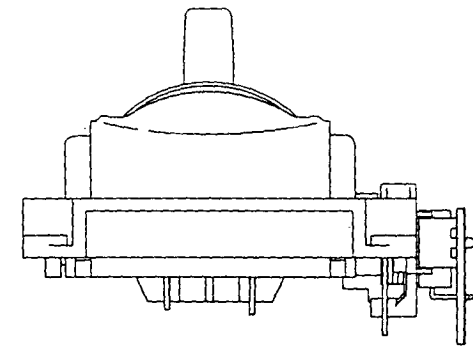
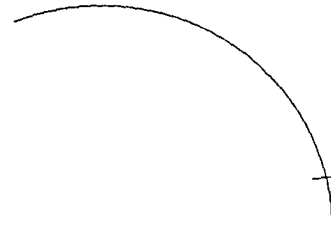
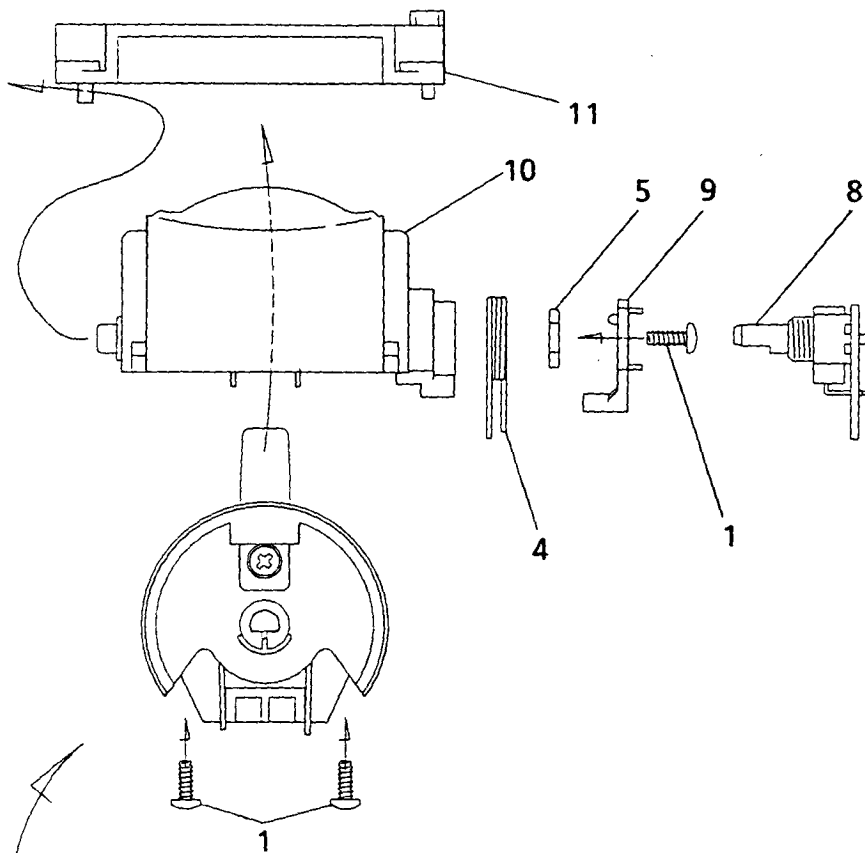
PART NO	SCREWS	PART CODE
L	VN ZMC 7	773030700
M	TS SSE ZMC 4 x 10	715130411
N	CT B ZMC 3 x 6	715230306
O	CT B ZMC 3 x 10	715230310
P	CT B BZMC 3 x 8	715230308
Q	TP2G B ZMC 4 x 8	725030408
R	TP2G FEW BZMC 3 x 8	727060308
S	FHN ZMC 3	770030300
T	TWU ZMC 3	784030300

PART NO	PART NAME	PART CODE
1	X-111 FRONT PANEL	641029500
2	X-811 SIDE PLATE L	645012600
3	WASHER ZMC 0.8x5.7x19.6	540016700
4	X-011/012 LCD WINDOW	630015600
5	X-631 SLIDE VR KNOB	620019700

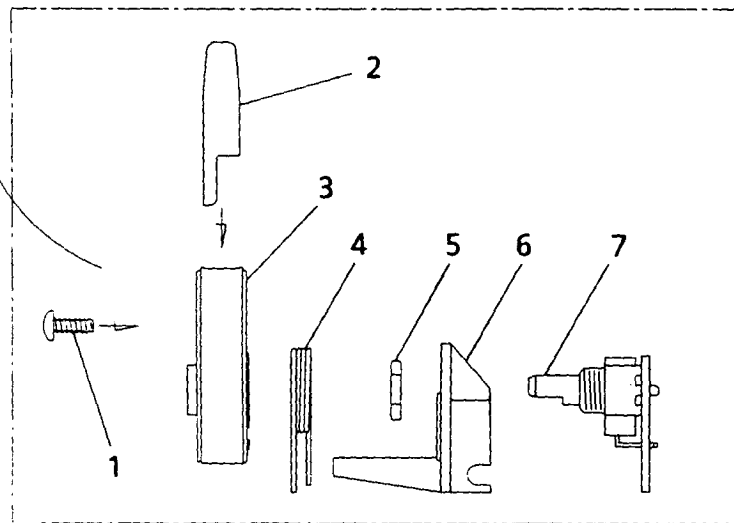
PART NO	SCREWS	PART CODE
B	PLAX B BZMC 3 x 8	745060308
P	CT B BZMC 3 x 8	715230308
U	FE FEW BZMC 4 x 18	707060418
W	FE WSEI BZMC 5 x 20	790061520



FOR JOYSTICK ASSY OF 01/WPRO

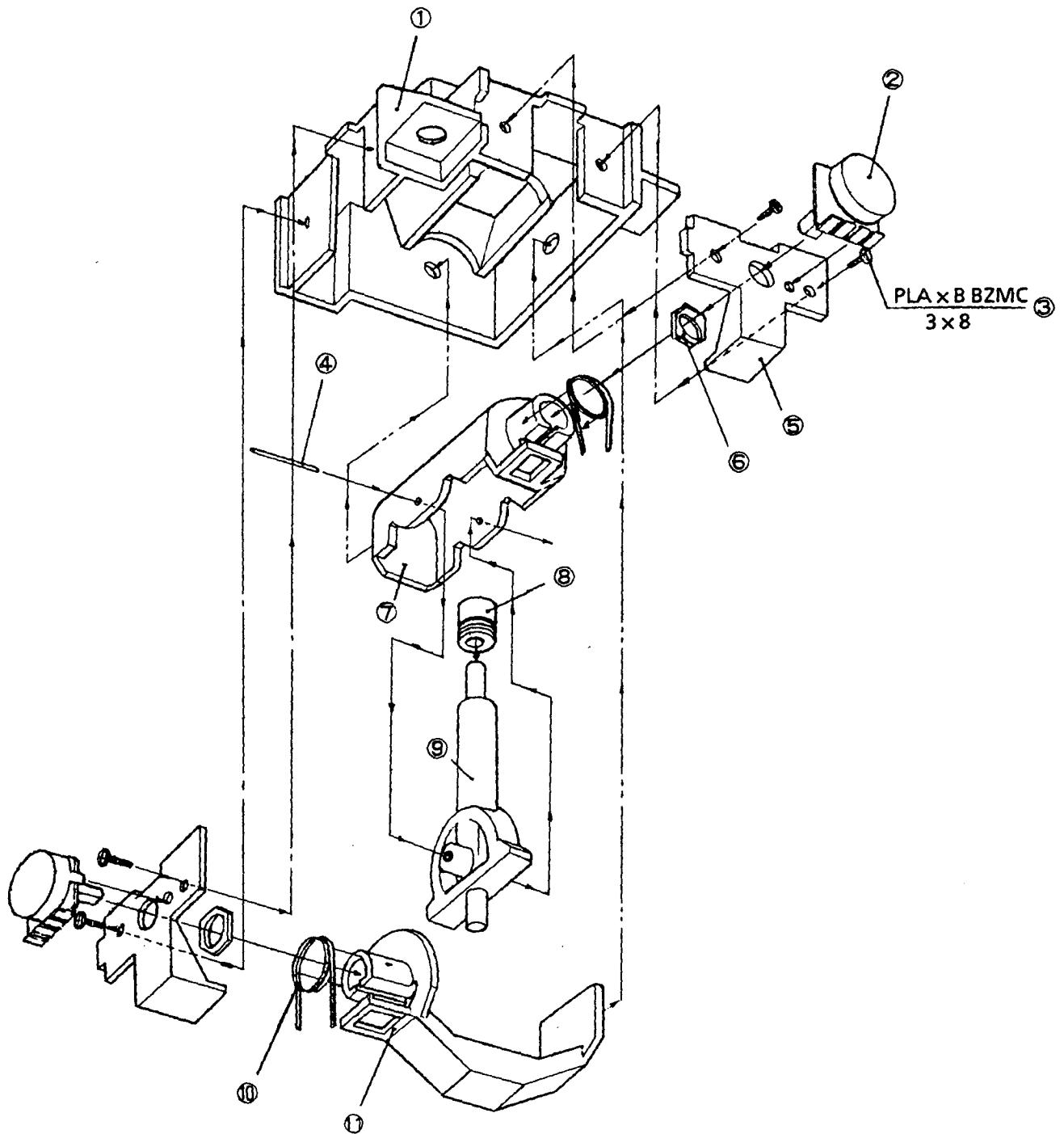


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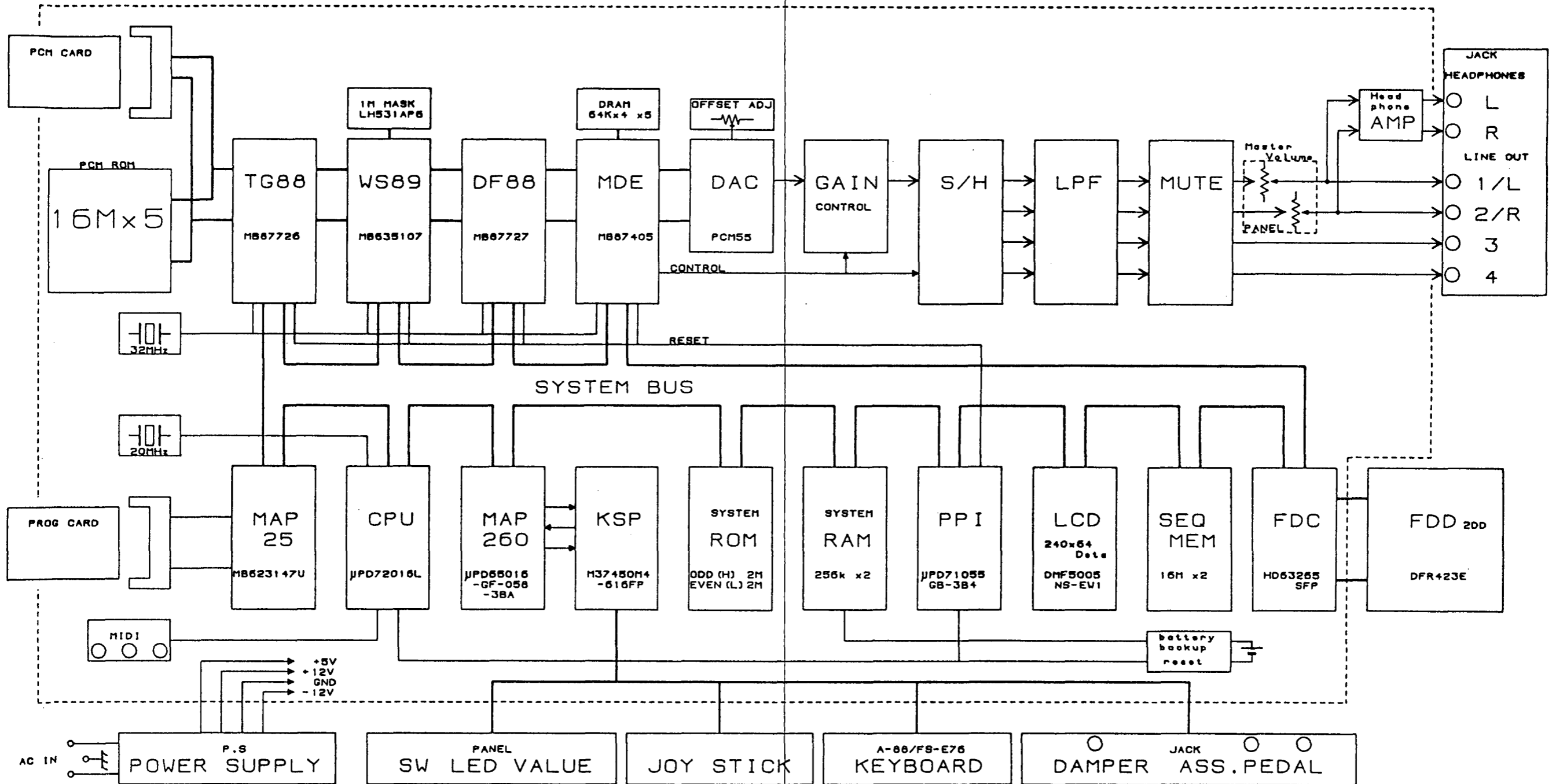
PART NO	PART NAME	PART CODE
1	SCREW PLAX B BZMC 3 x 8	745060308
2	X-011/012 JOYSTICK LEVER	646039200
3	X-011/012 JOYSTICK WHEEL	646039300
4	X-011/012 WHEEL SPRING	644006200
5	NUT VN BZMC 9	773060902
6	X-011/012 WHEEL SUPPORT	646039100
7,8	VR RK11K1140 (SPECIAL CURVE B)	360023600
9	X-011/012 VR PLATE	646039000
10	X-011/012 JOYSTICK COVER	646040000
11	X-011/012 JOYSTICK FRAME	646038900

FOR JOYSTICK ASSY OF 01/W PROX



PART NO	PART NAME	PART CODE
1	X-631 JOYSTICK BOX	646028000
2	VR RK1631110RZ2A 10KB	360021300
3	SCREW PLAX B BZMC 3 x 8	745060308
4	X-631 LEVER PIN	644003800
5	X-631 VR PLATE	646027600
6	NUT VN ZMC 7	773030700
7	X-631 JOYSTICK X_SUPPORT	646027700
8	X-631 LEVER KNOB	620019600
9	X-631 JOYSTICK LEVER	646027900
10	X-707 WHEEL SPRING	640089900
11	X-631 JOYSTICK Y_SUPPORT	646027800

3. BLOCK DIAGRAM

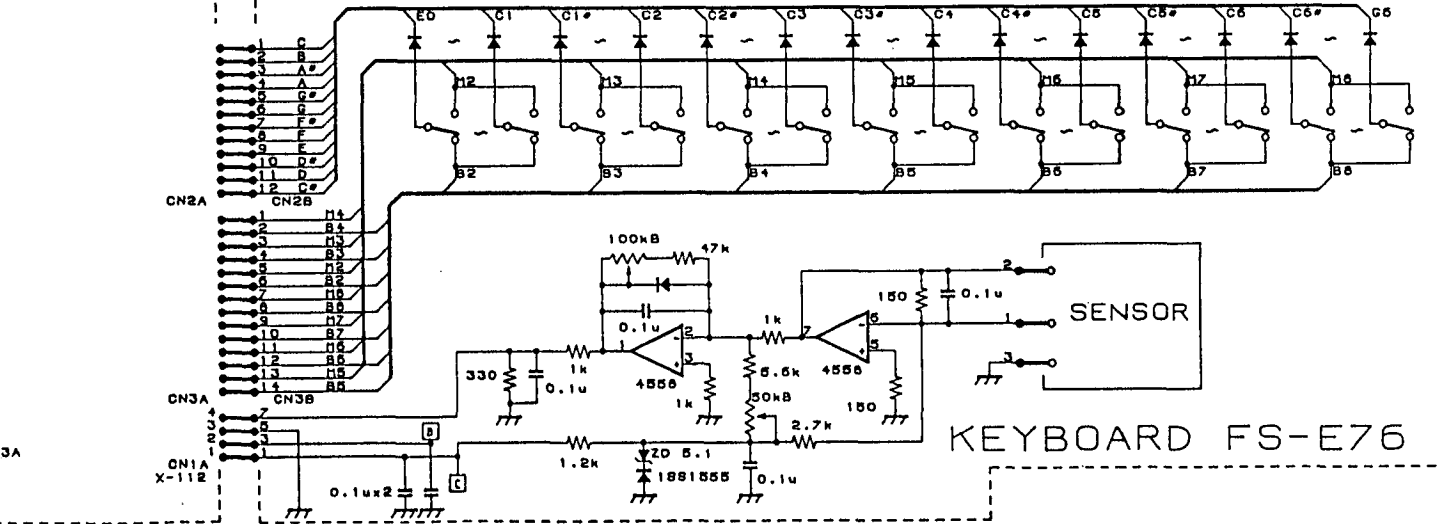
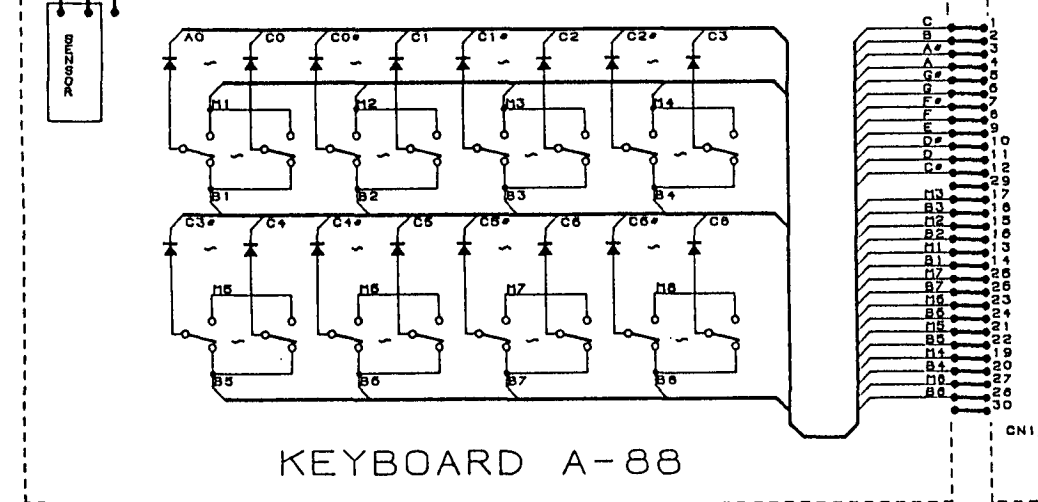
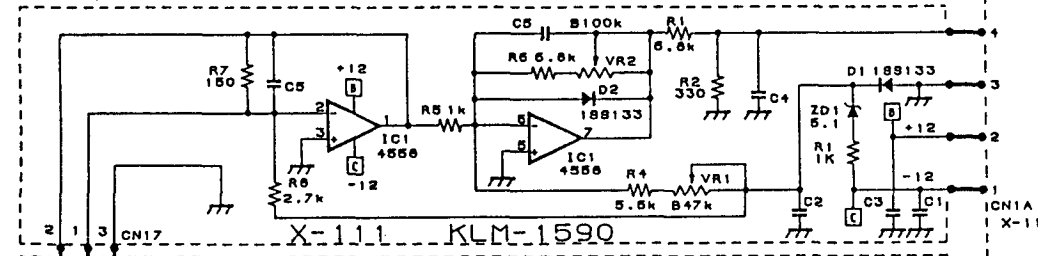
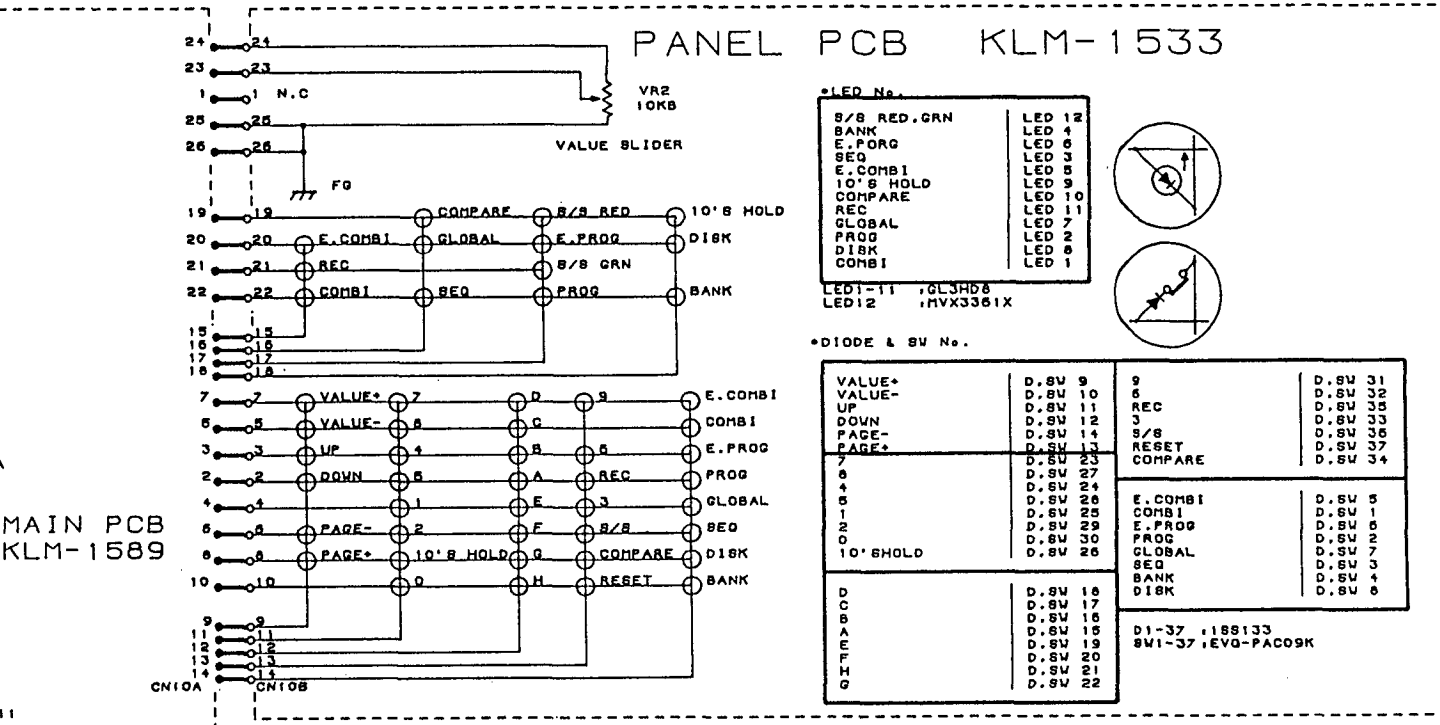
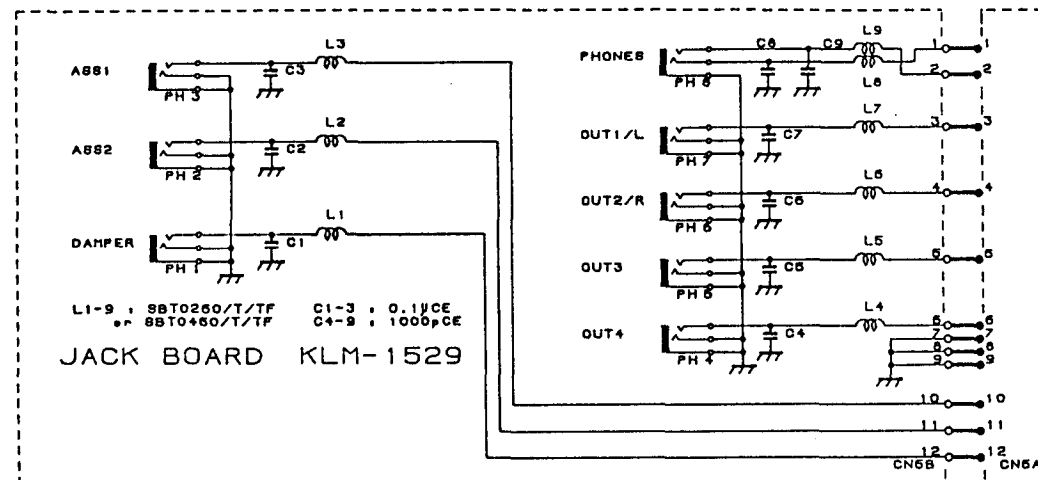
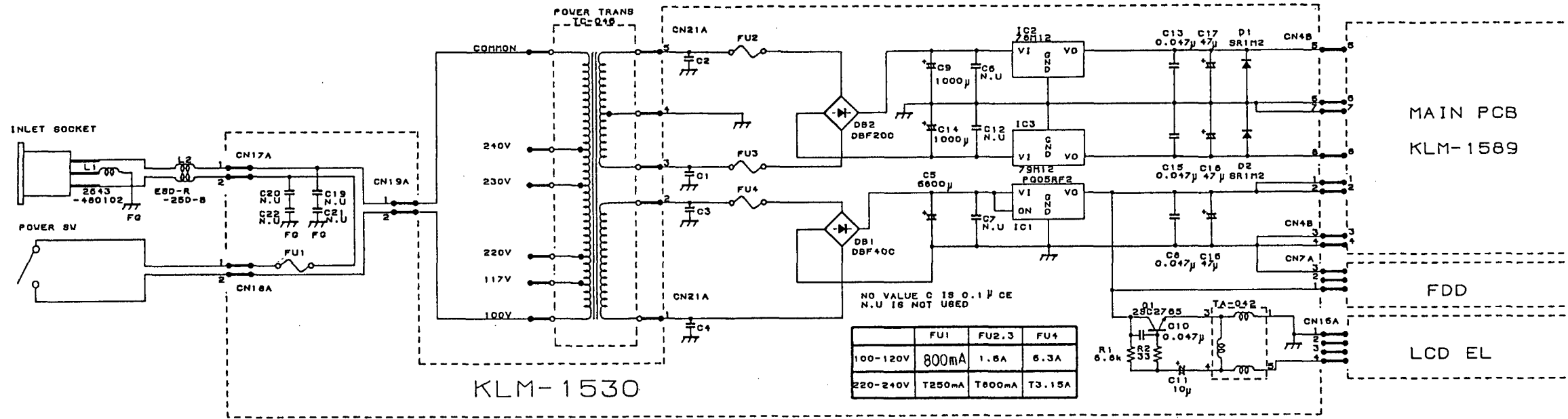


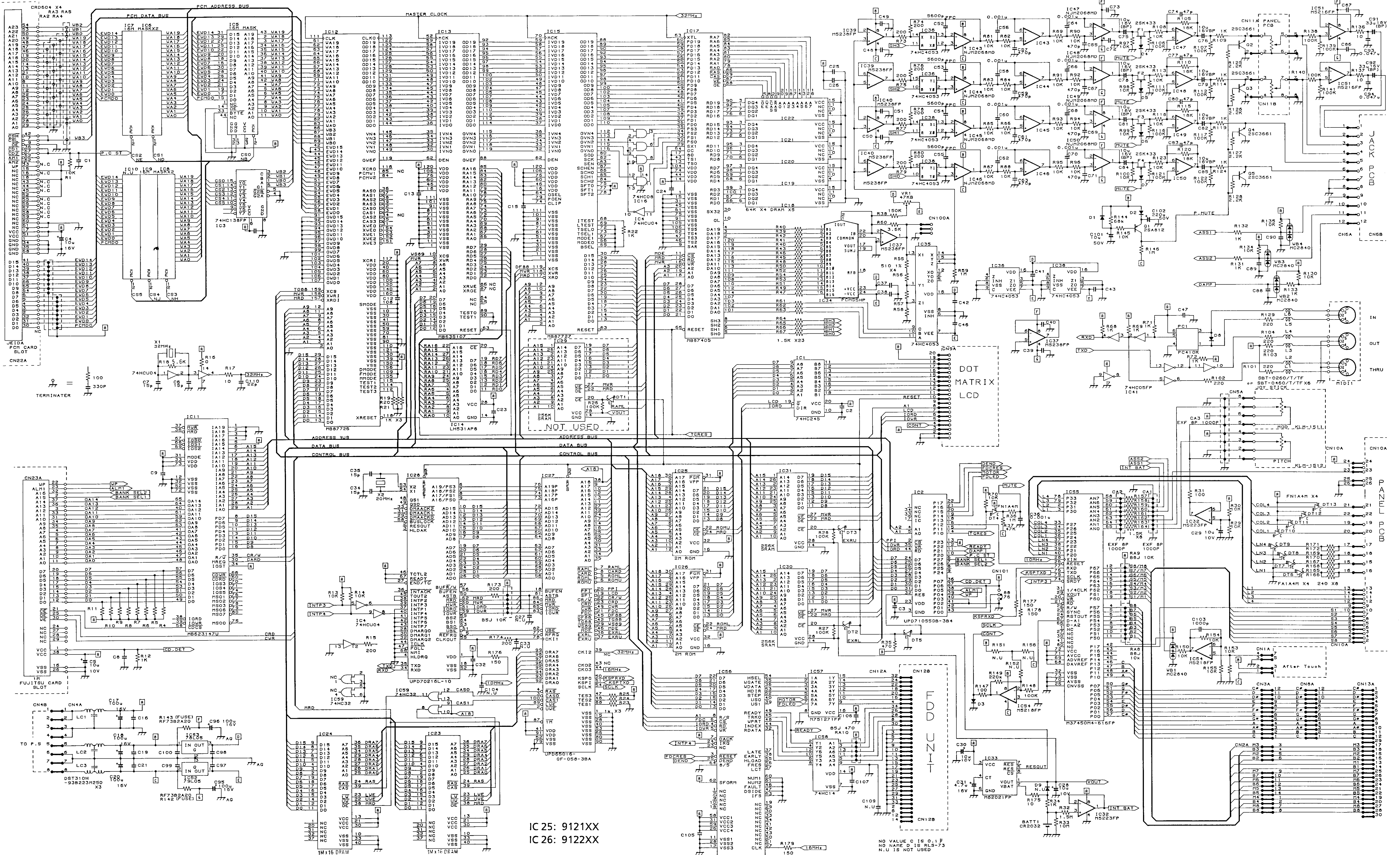
SYSTEM ROM

IC 25: 9121XX
IC 26: 9122XX

4. CIRCUIT DIAGRAM

KLM-1529/1530/1533/1590

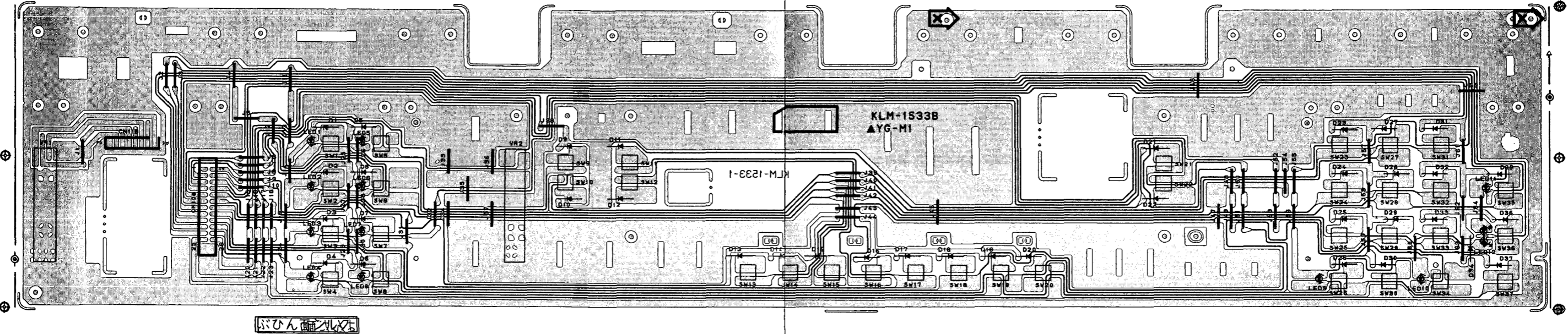




IC 25: 9121XX
IC 26: 9122XX

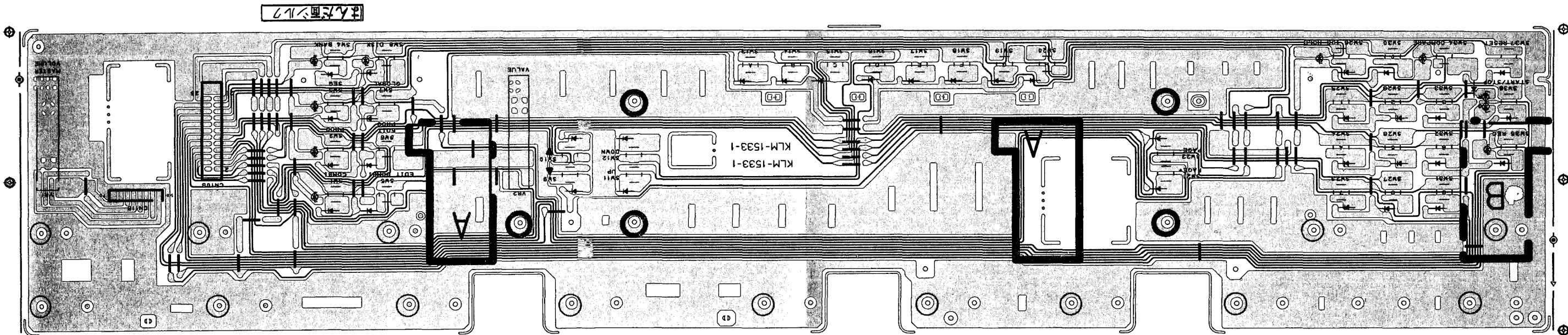
5. P.C. BOARDS

KLM-1533



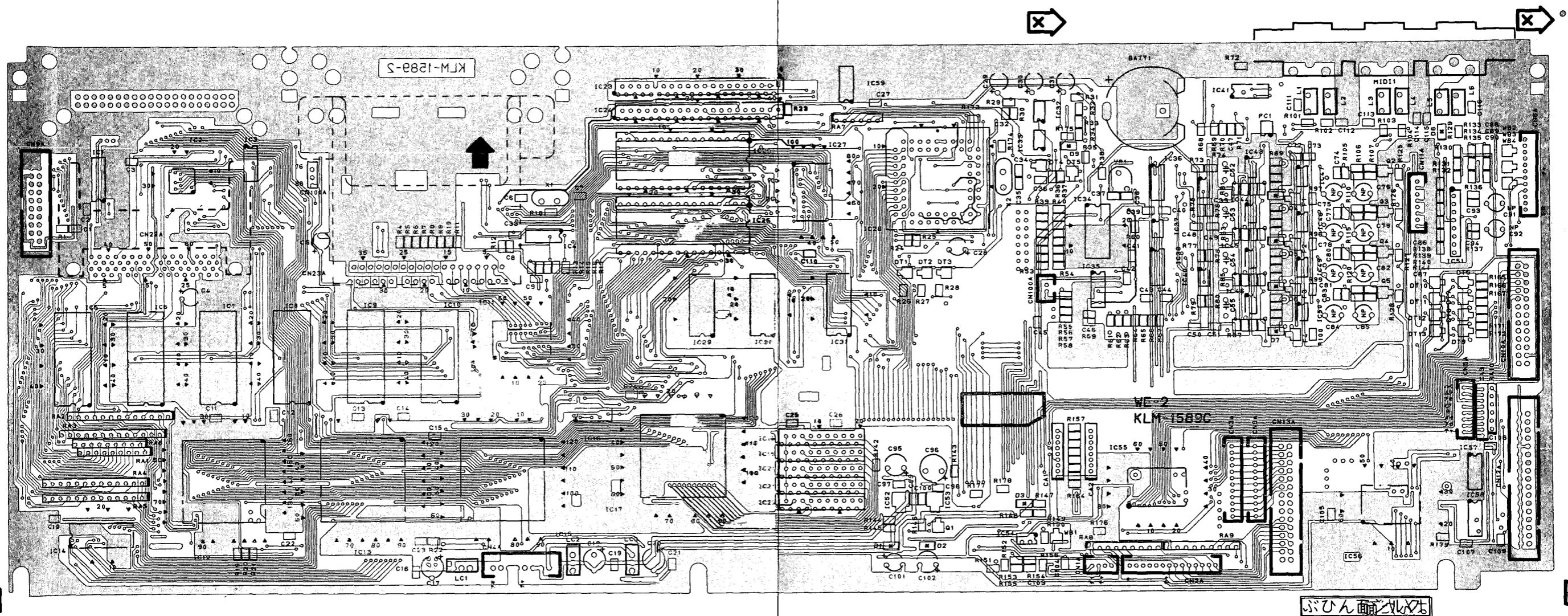
MOUNT PARTS SIDE

NO MOUNT PARTS SIDE



KLM-1533

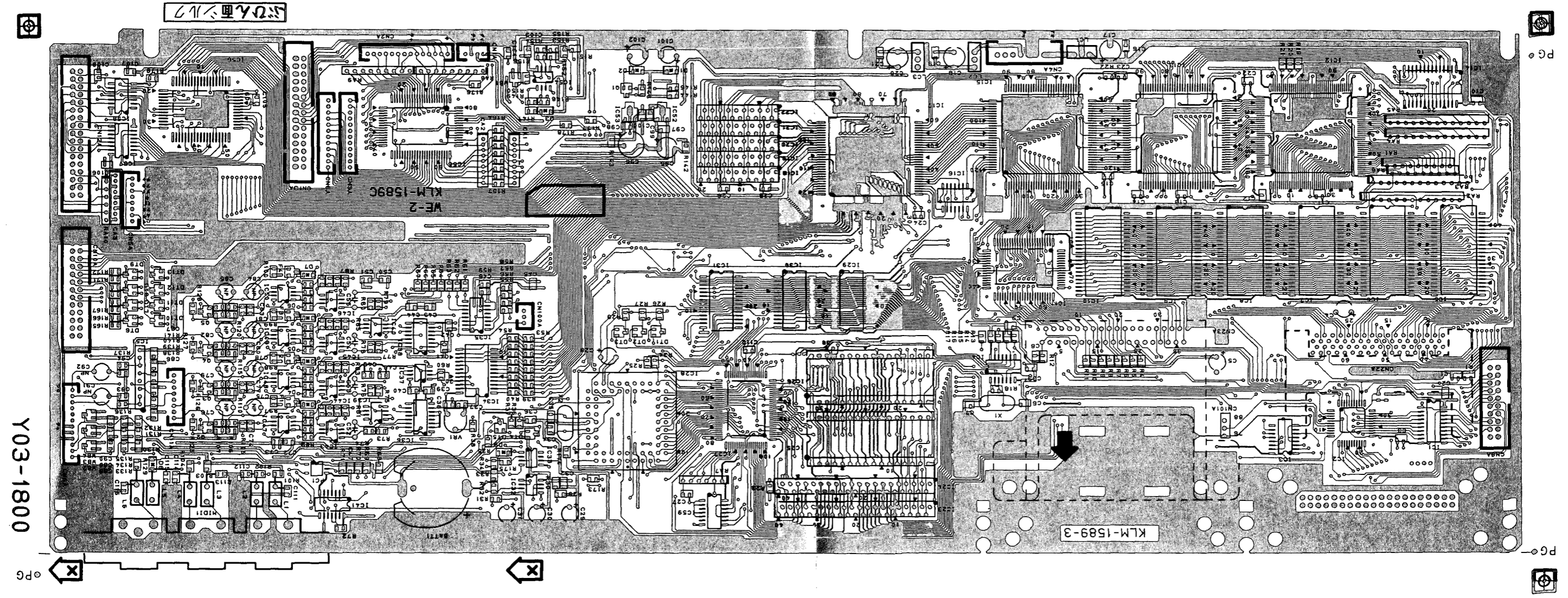
KLM-1589



180° ±0.1

NO MOUNT PARTS SIDE

MOUNT PARTS SIDE



Y03-1800

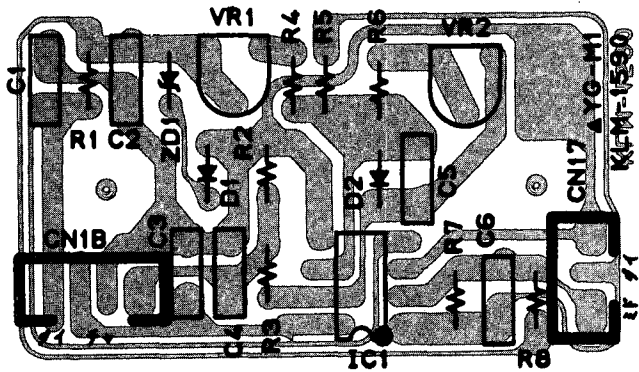
PG

PG

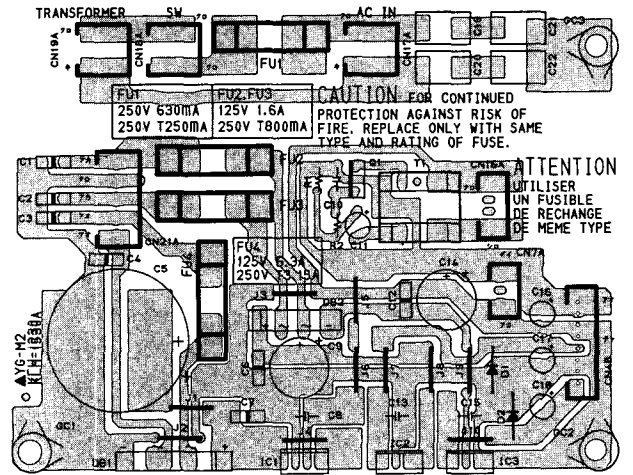
PG

KLM-1589

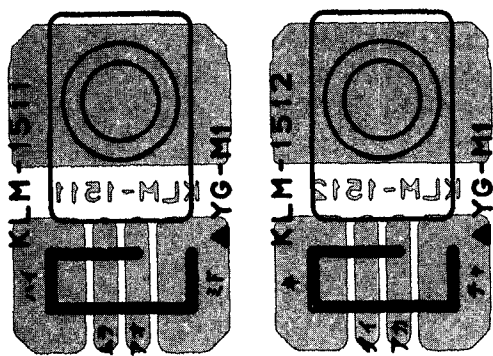
KLM-1590



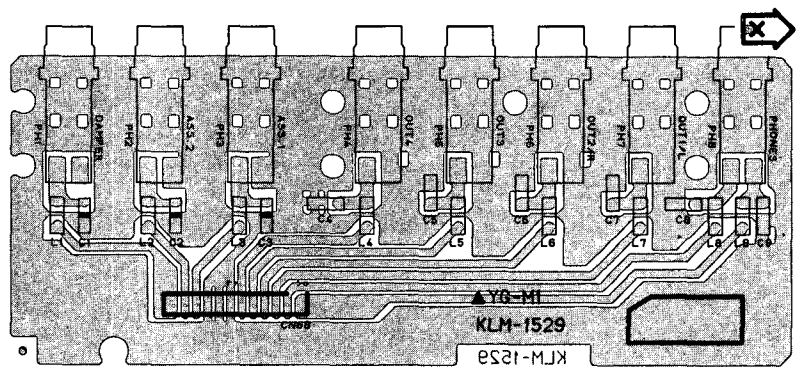
KLM-1530



KLM-1511/1512

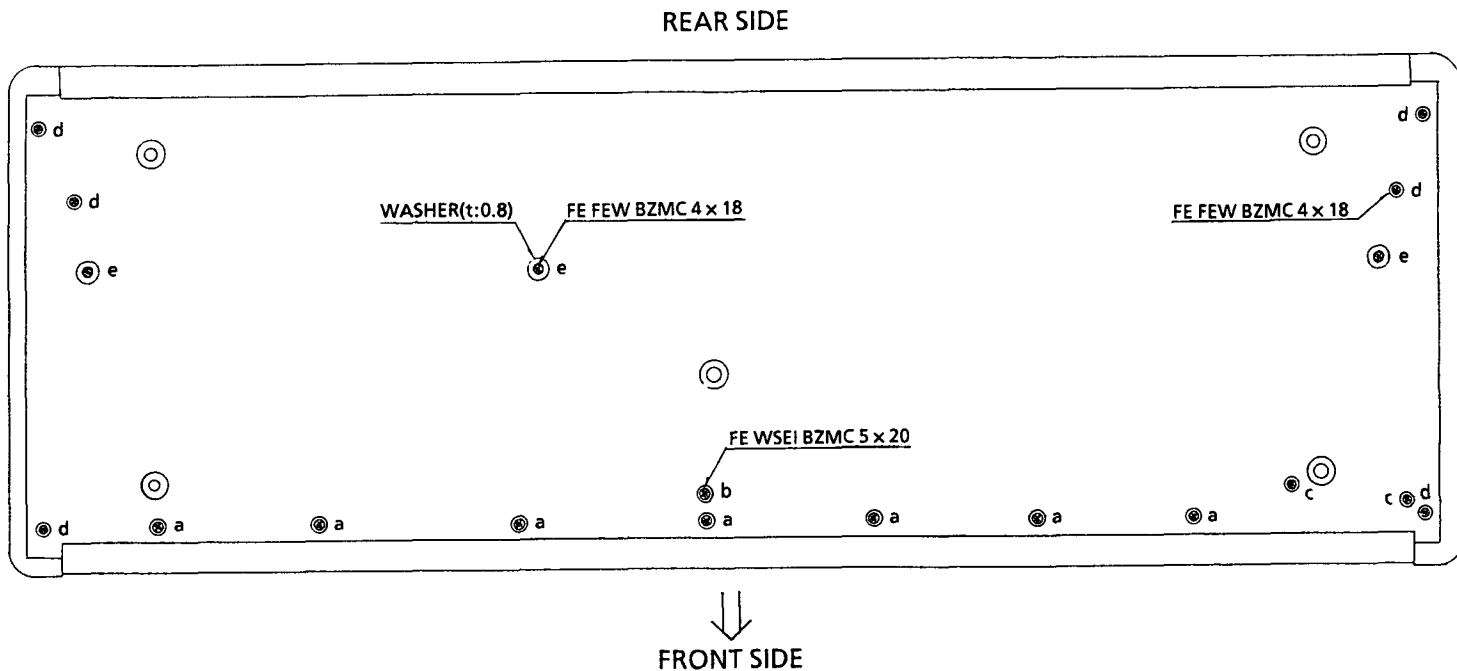


KLM-1529



6. HOW TO DISASSEMBLE

FOR 01/W PROX



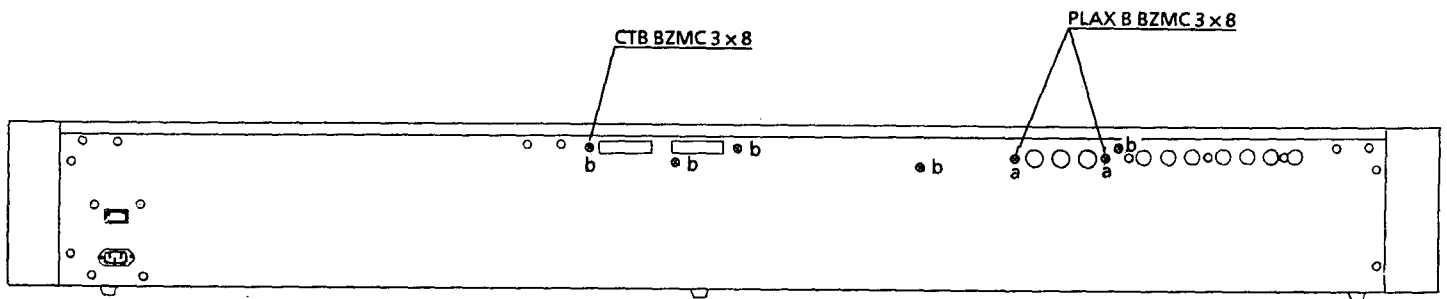
To open the upper case,

- (1) Remove 3pcs. of the following screws with which the upper case is fixed on the lower case.

[FE FEW BZMC 4 x 18] x 3

The screws which are used on the lower case are as follows.

for KEYBOARD (MARK : a)	[FE WSE1 BZMC 5 x 20] x 7
for FRONT BAR SPACER (MARK : b)	[FE WSE1 BZMC 5 x 20] x 1
for JOYSTICK PANEL (MARK : c)	[FE FEW BZMC 4 x 18] x 2
for SIDE PLATES (MARK : d)	[FE FEW BZMC 4 x 18] x 6
for UPPER CASE (MARK : e)	[FE FEW BZMC 4 x 18] x 3



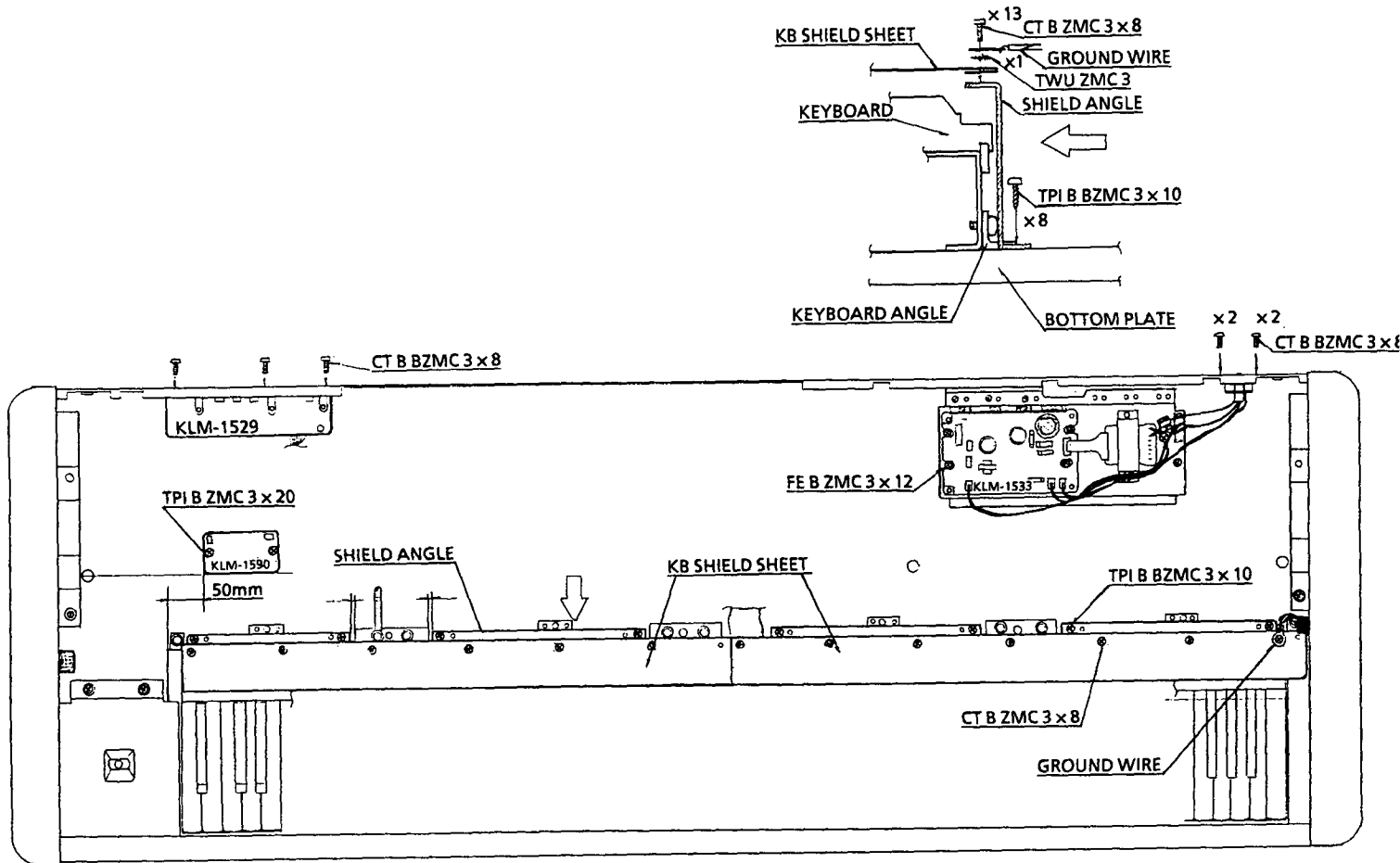
(2) Remove 7pcs. of the following screws on the rear panel.

(MARK : a) [PLAX B BZMC 3 x 8] x 2
 (MARK : b) [CT B BZMC 3 x 8] x 5

※ If you don't remove these screws, you can not open the upper case.

(3) Open the upper case with noting that it should not touch the card slot of the rear panel and the both side plates.

※ A piece of stick is required to support the upper case when you repair the OI/WproX with opening the upper case.



To remove the jack p.c.b.(KLM-1529), remove 3pcs. of the screws on the rear panel.

[CT B BZMC 3 x 8] x 3

To remove the metal fitting of the power switch, remove 4pcs. of the screws on the rear panel.

[CT B BZMC 3 x 8] x 4

To remove the power unit, remove 6pcs. of the screws on the power unit.

[FE B ZMC 3 x 12] x 6

To remove the after_touch p.c.b.(KLM-1590), remove 2pcs. of the screws on the after_touch p.c.b..

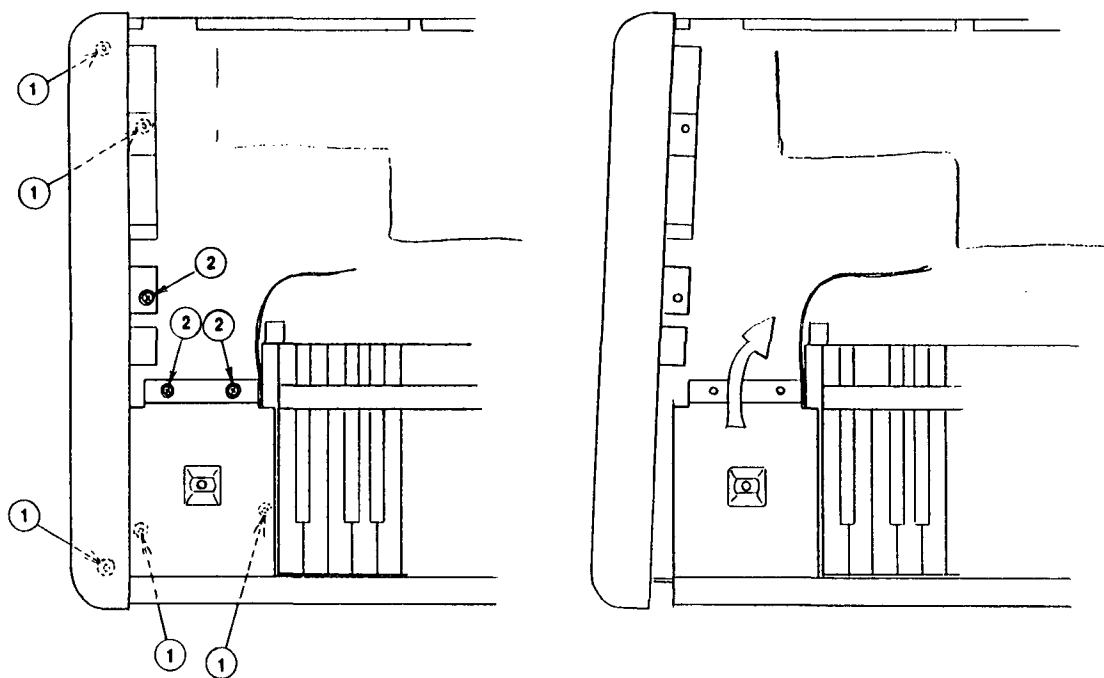
[TPI B ZMC 3 x 20] x 2

To remove the keyboard shield sheet, remove 14pcs. of the screws on the keyboard shield sheet.

[CT B ZMC 3 x 8] x 13
 [TWU ZMC 3] x 1

To remove the shield angle, remove 8pcs. of the screws on the shield angle.

[TPI B BZMC 3 x 10] x 8



1. To remove the joystick panel,

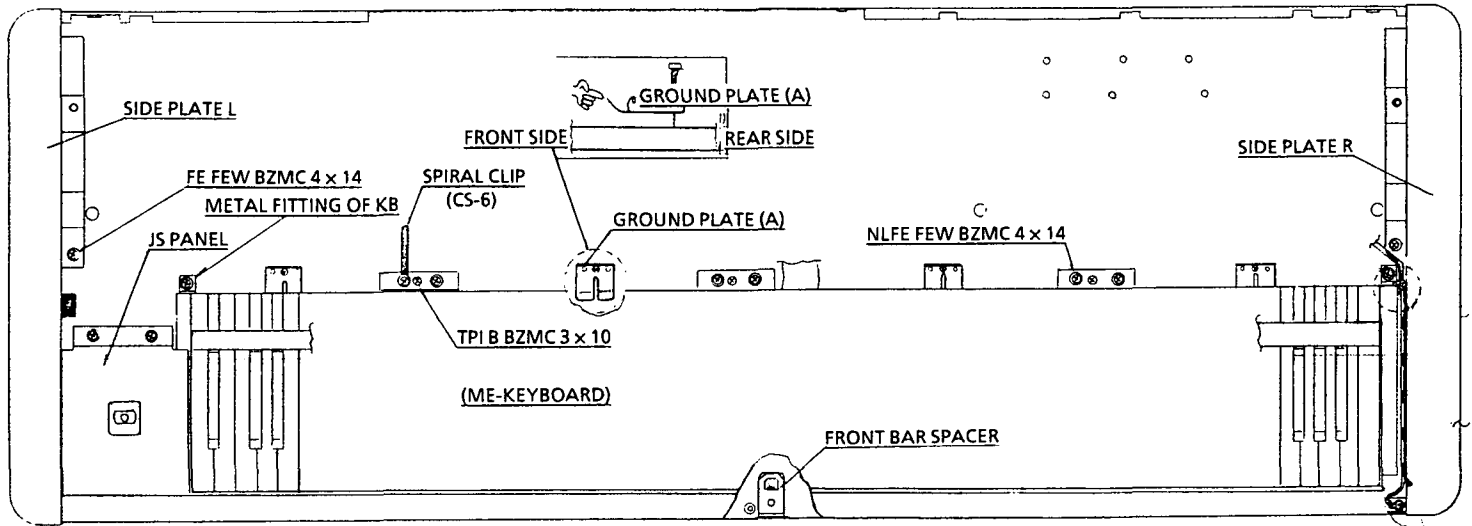
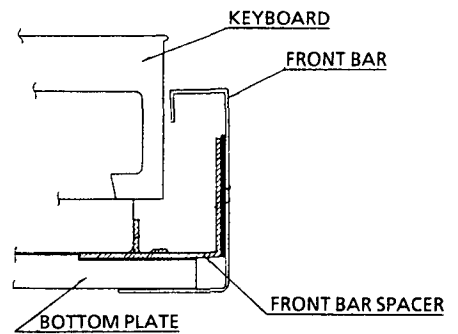
(1) Remove 4pcs. of the screws on the side plate L.

[FE FEW BZMC 4 x 18] x 3
 [FE FEW BZMC 4 x 14] 1

(2) Remove 4pcs. of the screws on the joystick panel.

[FE FEW BZMC 4 x 18] x 2
 [FE FEW BZMC 4 x 14] x 2

(3) Move the side plate L and remove the joystick panel.



2. To remove the keyboard,

(1) Remove 7pcs. of the screws on the back of the lower case.

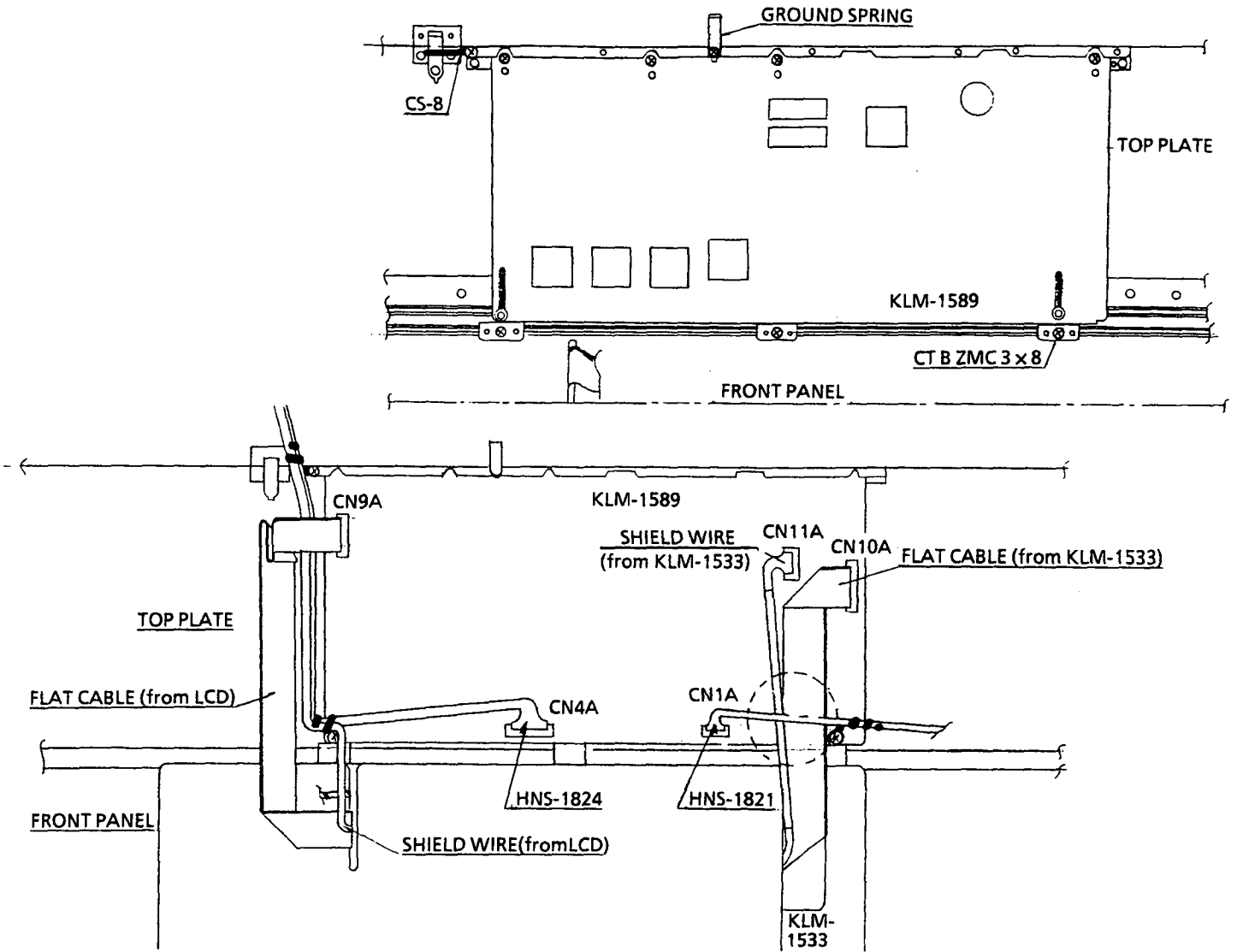
[FE WSE1 BZMC 5 x 20] x 7

(2) Remove 11pcs. of the screws on the keyboard.

[TP1 B BZMC 3 x 10] x 3

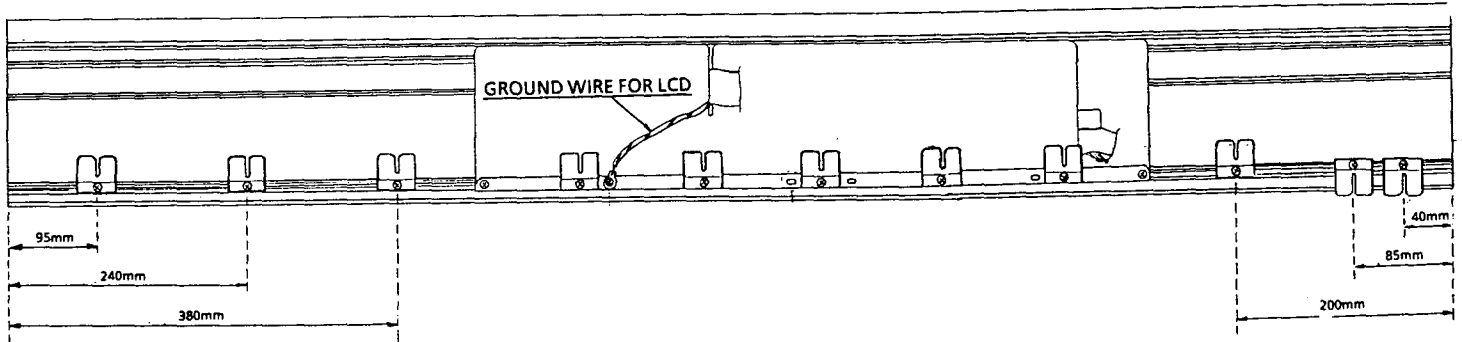
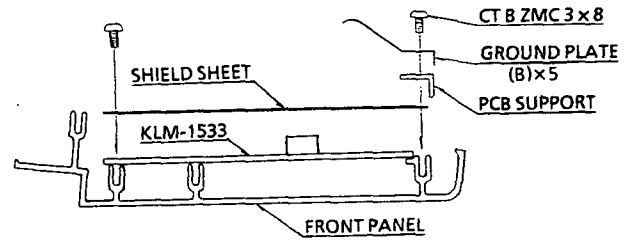
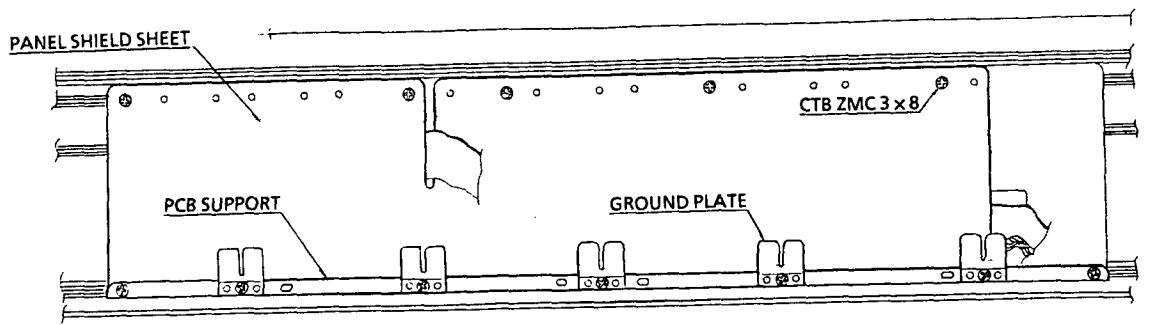
[NLFE FEW BZMC 4 x 14] x 8

(3) Remove the keyboard carefully as it doesn't hit the side plate R.



To remove the main p.c.b. (KLM-1589),

- (1) Remove all the harnesses on the main p.c.b..
- (2) Remove 7pcs. of the screws on the main p.c.b. and remove the main p.c.b..
 [CT B ZMC 3 x 8] x 7



To remove the panel p.c.b. (KLM-1533),

(1) Remove 11pcs. of the screws on the ground plates.

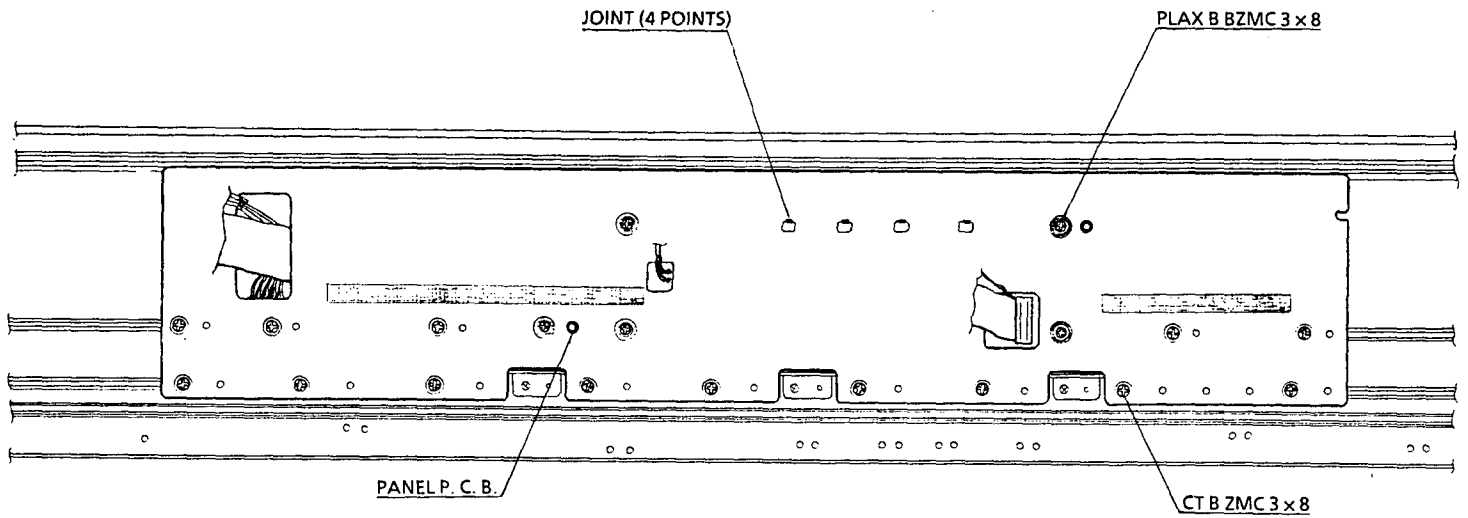
[CT B ZMC 3 x 8] x 11

(2) Remove 2pcs. of the screws on the pcb support.

[CT B ZMC 3 x 8] x 2

(3) Remove 5pcs. of the screws on the shield sheet.

[CT B ZMC 3 x 8] x 5



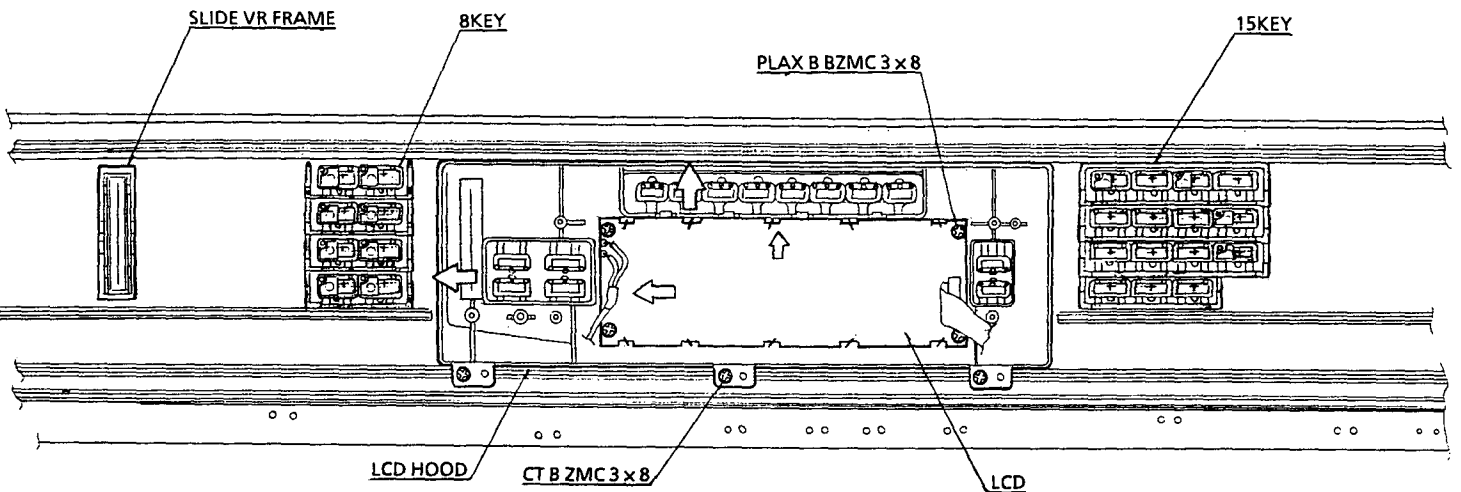
(4) Remove 14pcs. of the screws on the panel p.c.b..

[CT B ZMC 3 x 8] x 14

(5) Remove 5pcs. of the screws (mark : ⊙) on the panel p.c.b..

[PLAX B BZMC 3 x 8] x 5

(6) Remove the joints of the LCD hood and remove the panel p.c.b..



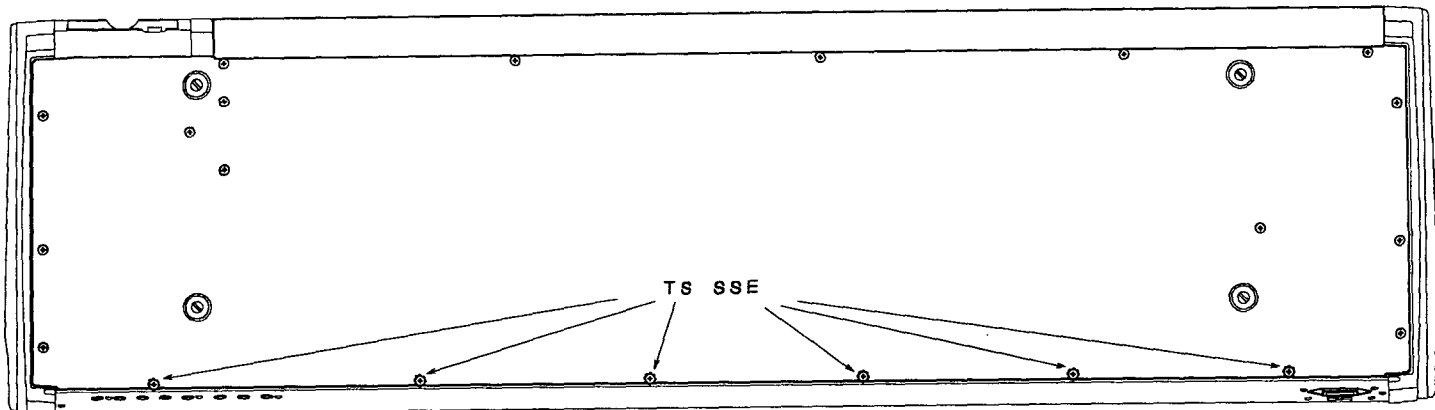
1. Remove the LCD.

[PLAX B BZMC 3 x 8] x 4

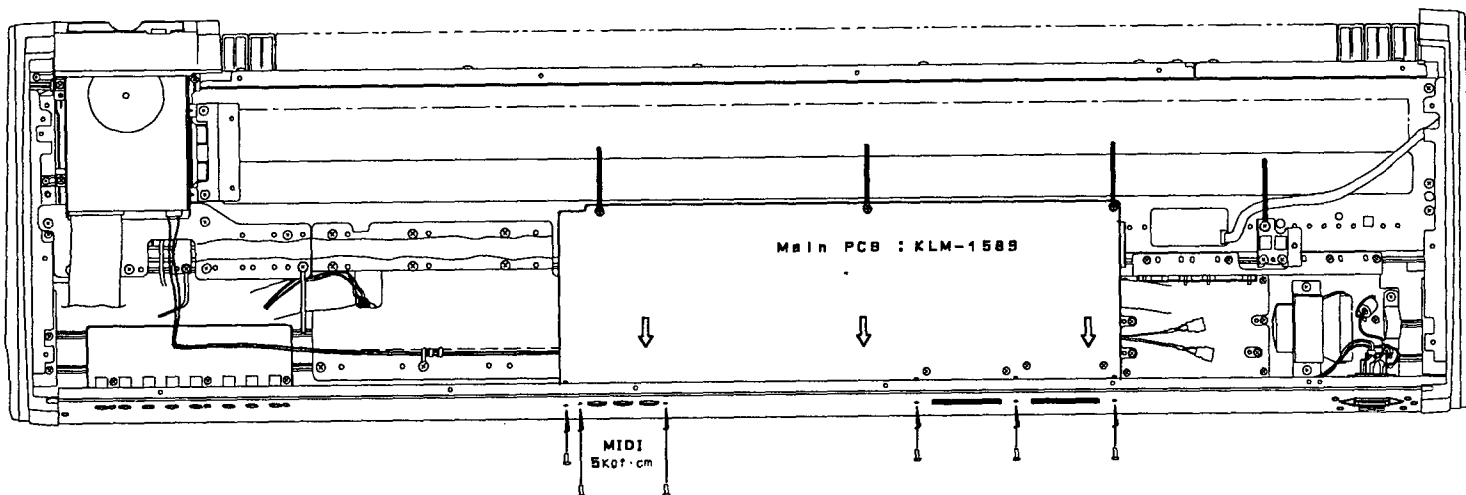
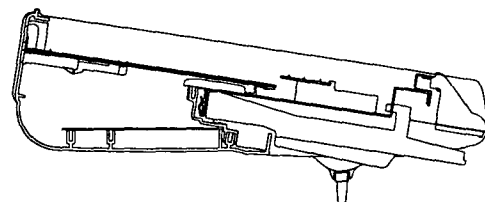
2. Remove the LCD hood.

[CT B ZMC 3 x 8] x 3

FOR 01/W PRO

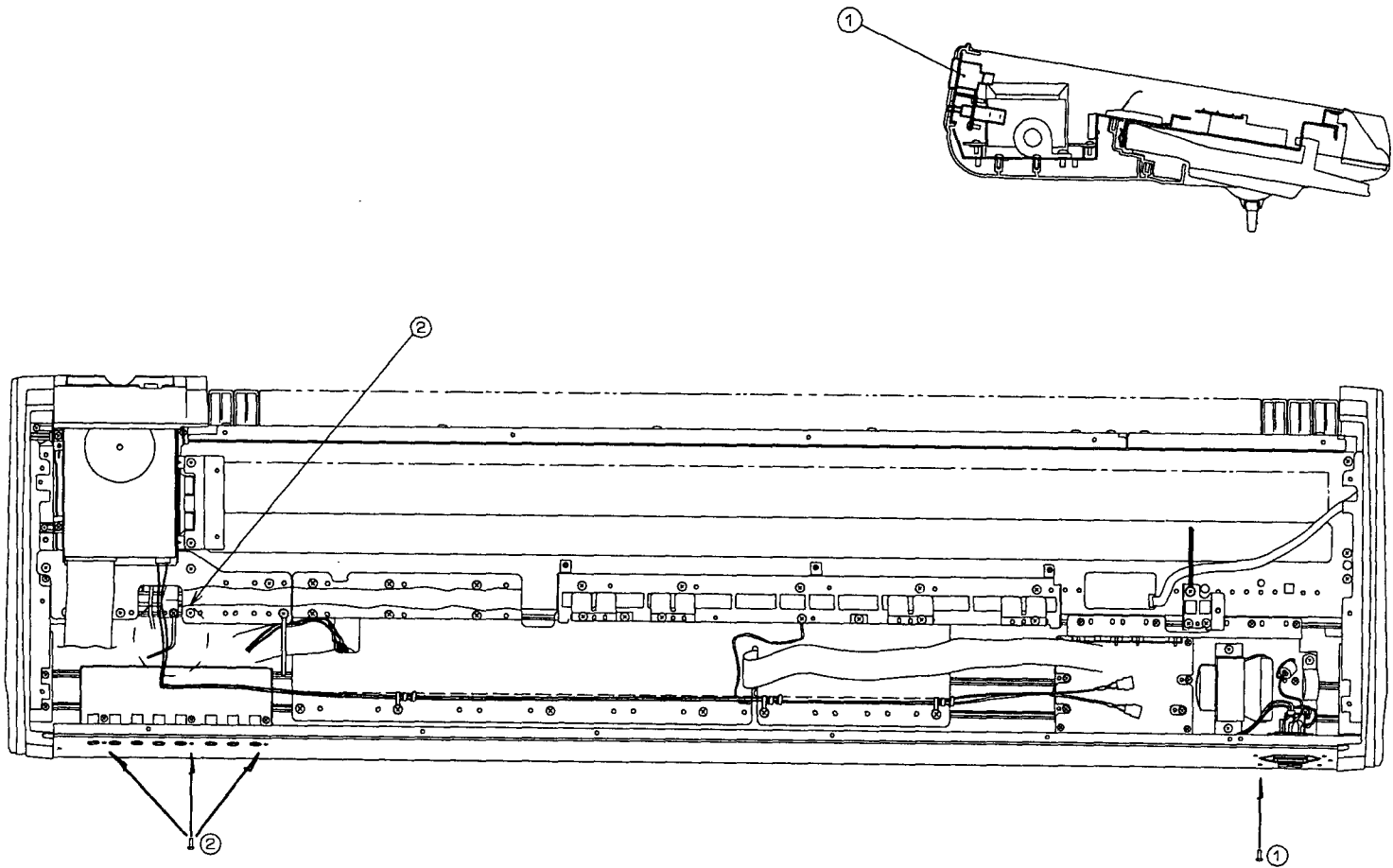


To remove the lower case, remove the 21pcs. of the screws on the lower case.
 [CT B BZMC 4 x 10] x 15
 [TS SSE BZMC 4 x 10] x 6



To remove the main p.c.b. (KLM-1589),

- (1) Remove 6pcs. of the screws on the rear panel.
 [CT B BZMC 3 x 8] x 4
 [PLAX B BZMC 3 x 8] x 2
- (2) Remove 3pcs. of the screws on the side of the keyboard.
 [CT B ZMC 3 x 8] x 3
- (3) Remove the main p.c.b. with noting the card slot.



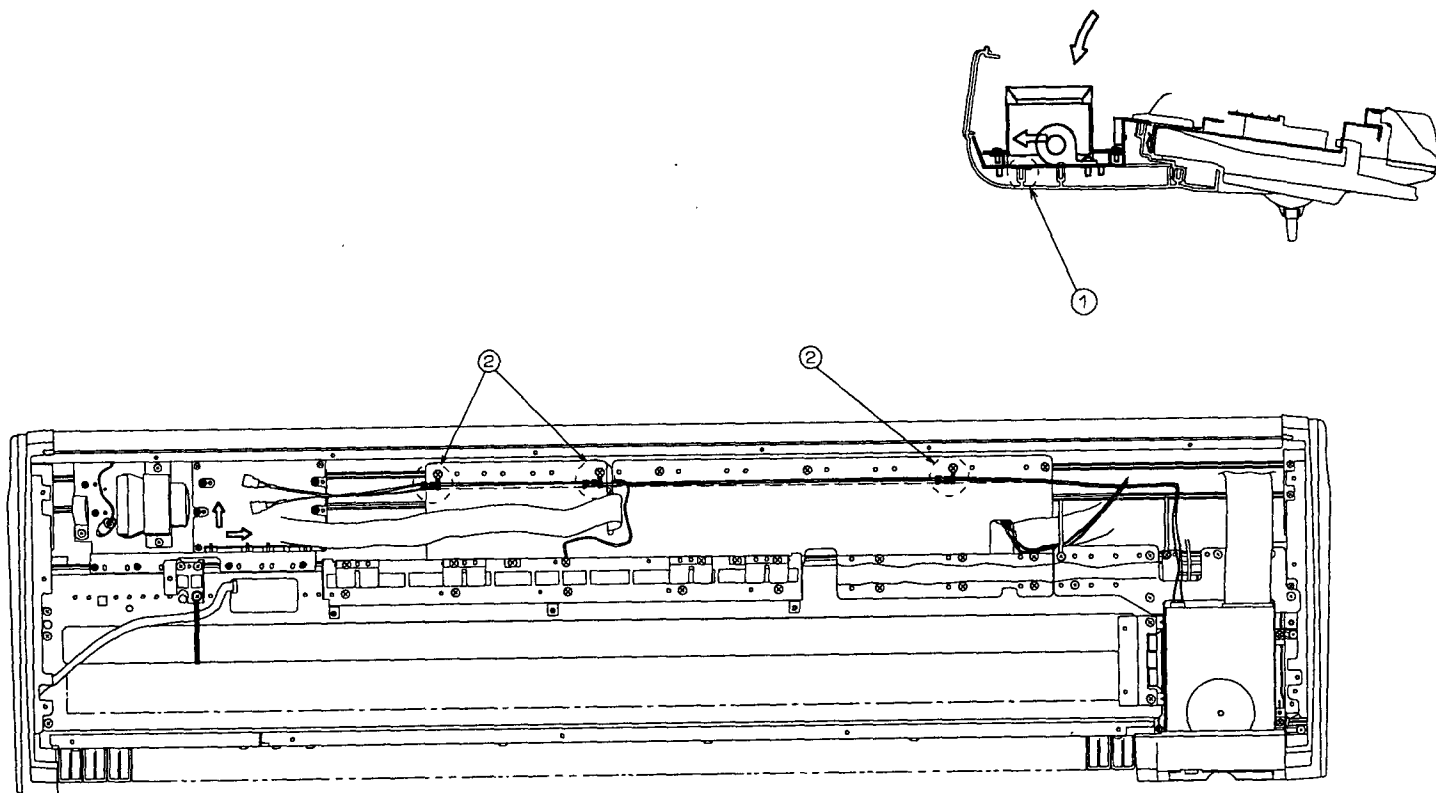
To remove the jack p.c.b. (KLM-1529) and the metal fitting of the power switch,

- (1) Remove 4pcs. of the screws on the rear panel and remove the metal fitting of the power switch.

[CT B BZMC 3 x 8] x 4

- (2) Remove 3pcs. of the screws on the rear panel and remove the jack p.c.b..

[CT B BZMC 3 x 8] x 3

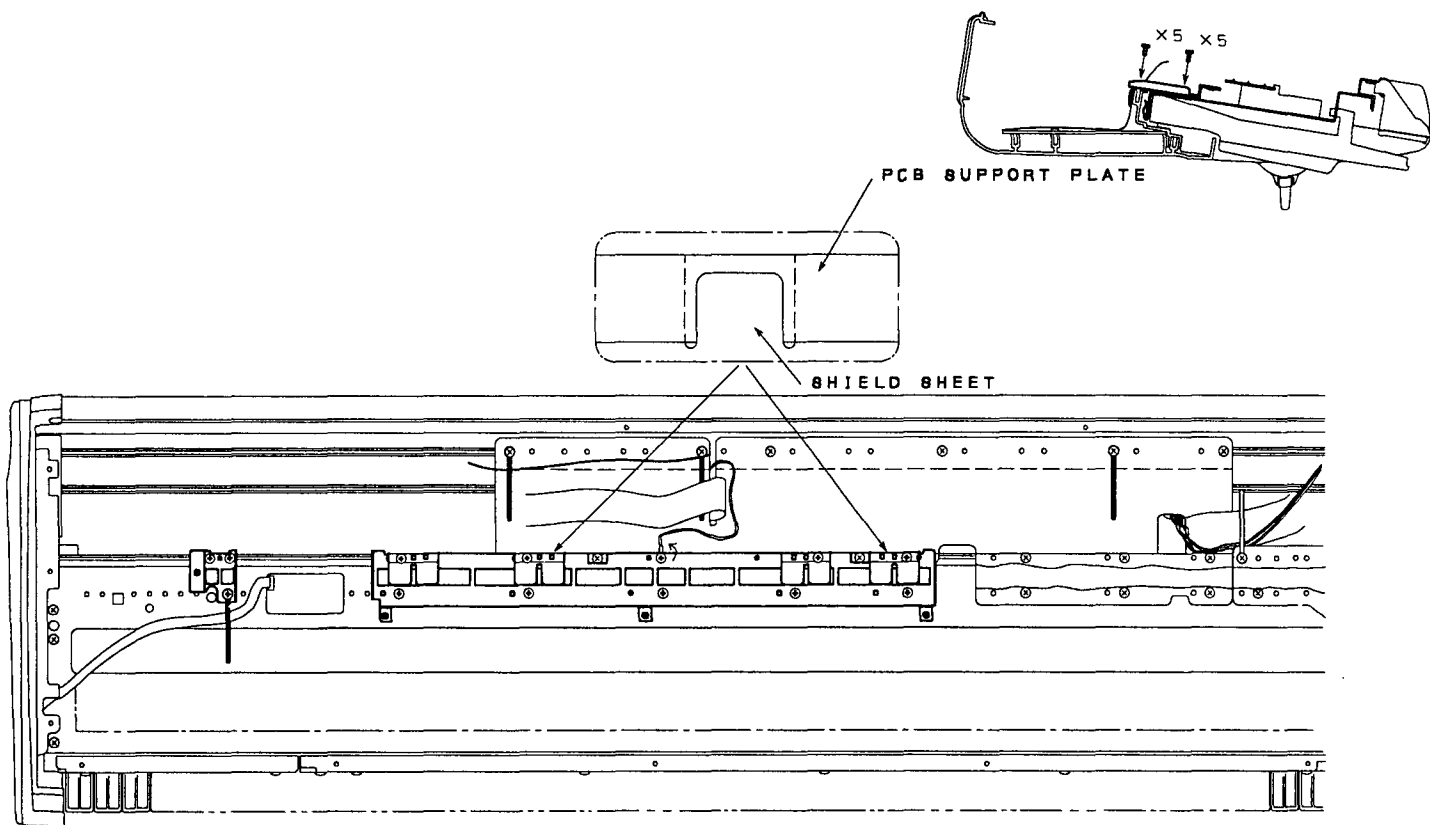


To remove the power supply unit and the harnesses for the power supply,

- (1) Remove 6pcs. of the screws on the power supply unit and remove the power supply unit.

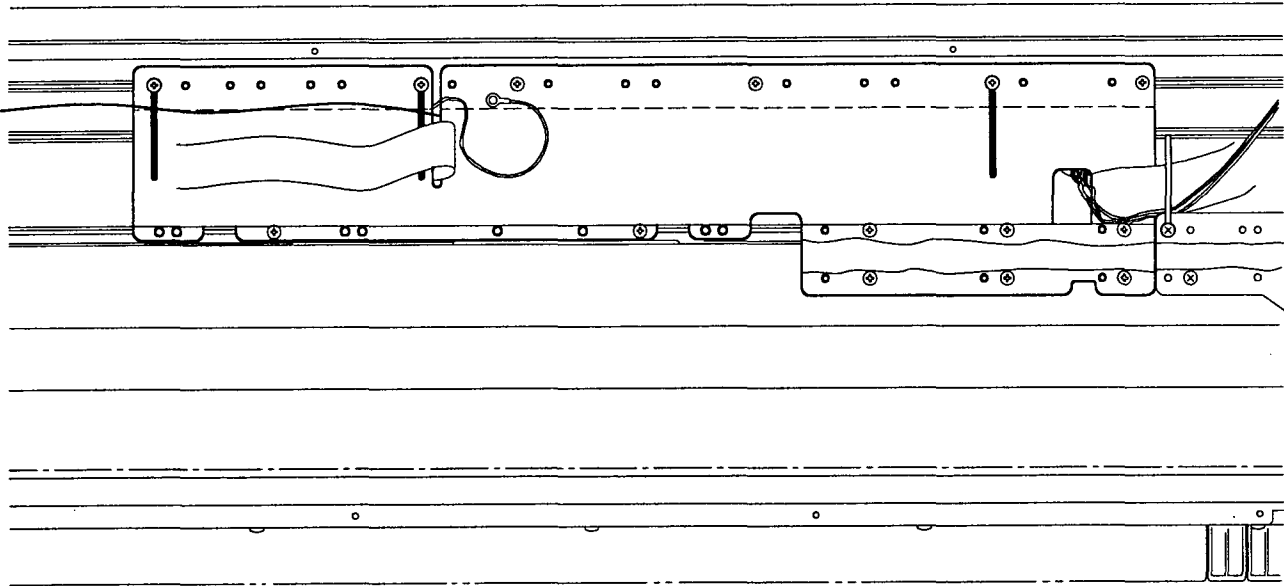
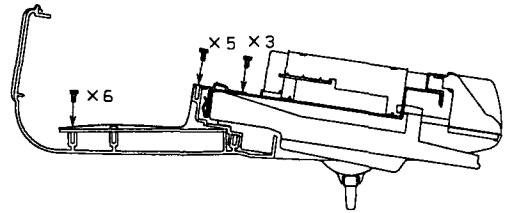
[CT B ZMC 3 x 10] x 10

- (2) Loosen 3pcs. of the spiral clips on the panel p.c.b. and remove the harnesses.



To remove the pcb support plate and ground plate B, remove 5pcs. each of the screws on the support rail and the keyboard.

[CT B ZMC 3 x 8] x 10



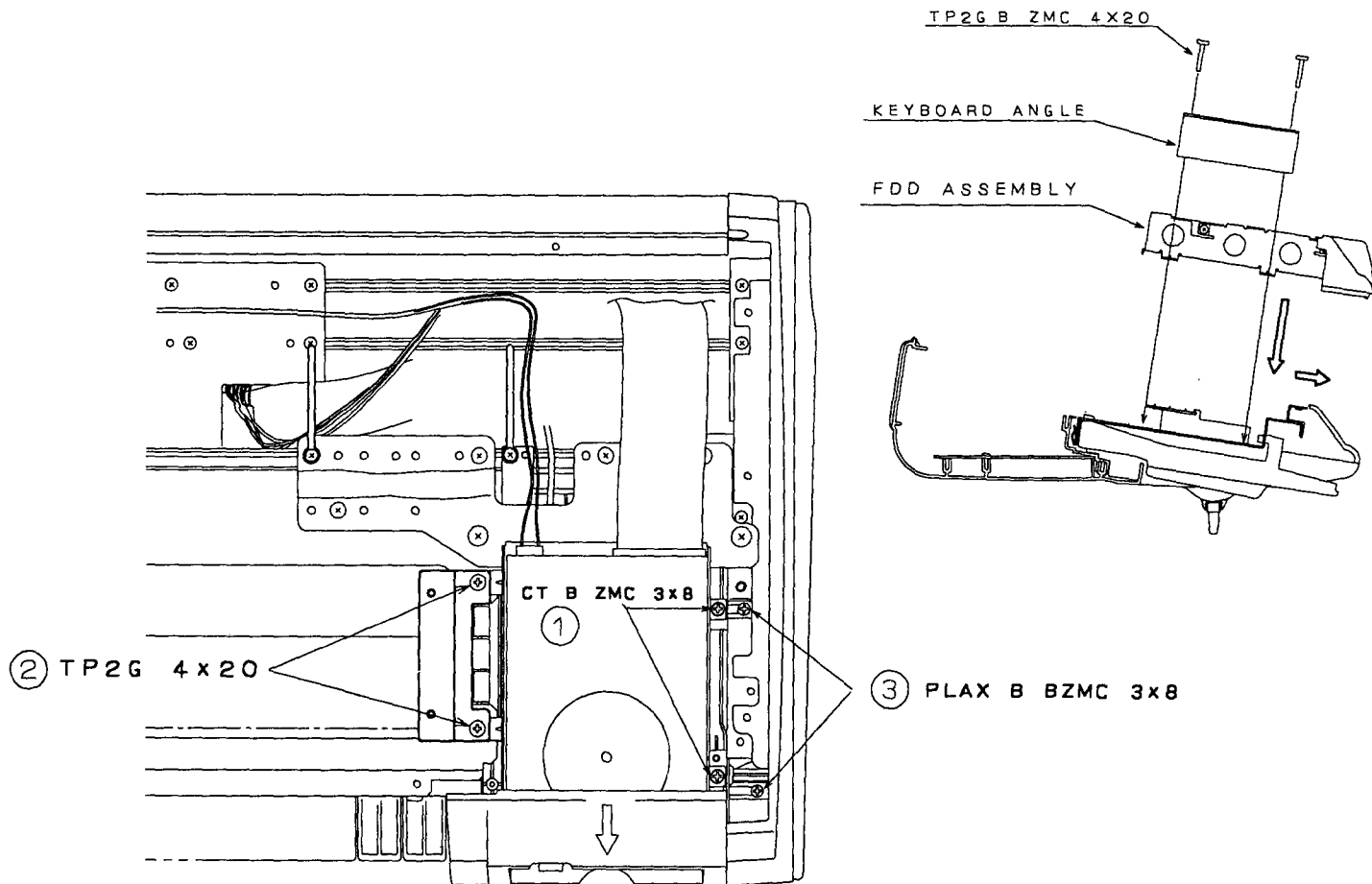
To remove the shield sheet,

- (1) Remove 5pcs. of the screws on the support rail and 3pcs. of the screws of the keyboard.

[CT B ZMC 3 x 8] x 8

- (2) Remove 6pcs. of the screws on the panel p.c.b. and remove the shield sheet.

[CT B ZMC 3 x 8] x 6



To remove the FDD,

(1) Remove 2pcs. of the screws on the FDD.

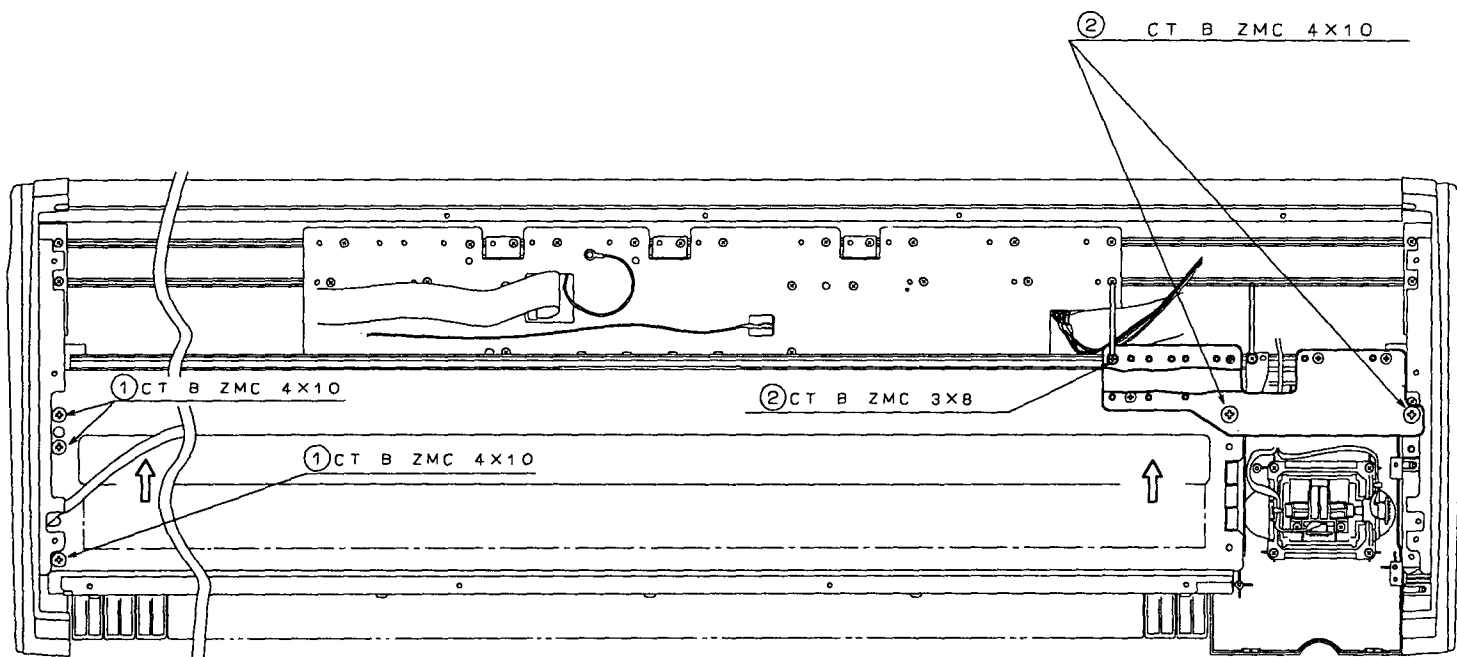
[CT B ZMC 3 x 8] x 2

(2) Remove 2pcs. of the screws on the keyboard angle and remove the FDD.

[TP2G B ZMC 4 x 20] x 2

(3) Remove 2pcs. of the screws on the joystick panel.

[PLAX B BZMC 3 x 8] x 2



To remove the keyboard and the joystick shield sheet,

(1) Remove 3pcs. of the screws on the keyboard.

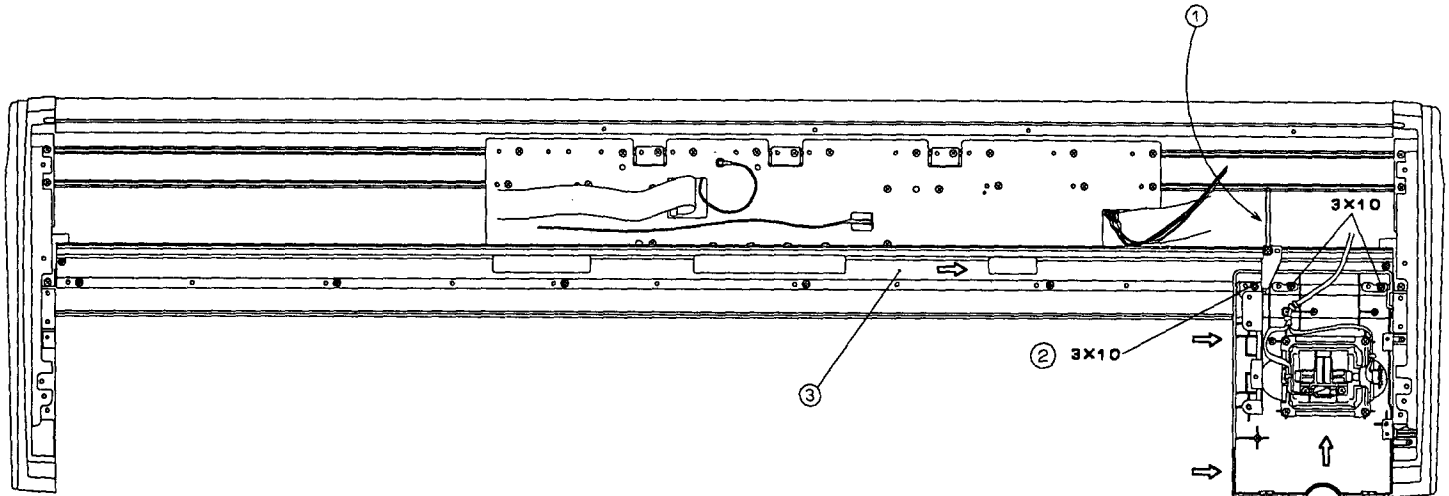
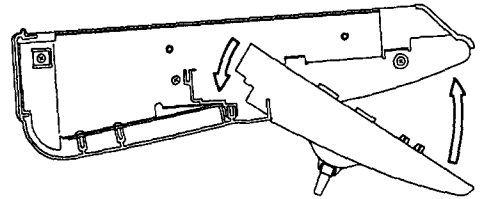
[CT B ZMC 4 x 10] x 3

(2) Remove 7pcs. of the screws on the joystick shield sheet.

[CT B ZMC 4 x 10] x 2

[CT B ZMC 3 x 8] x 5

(3) Remove the keyboard and the joystick shield sheet.



To remove the joystick panel support rail,

- (1) Remove 2pcs. of the screws on the joystick panel support.

[CT B ZMC 3 x 10] x 1

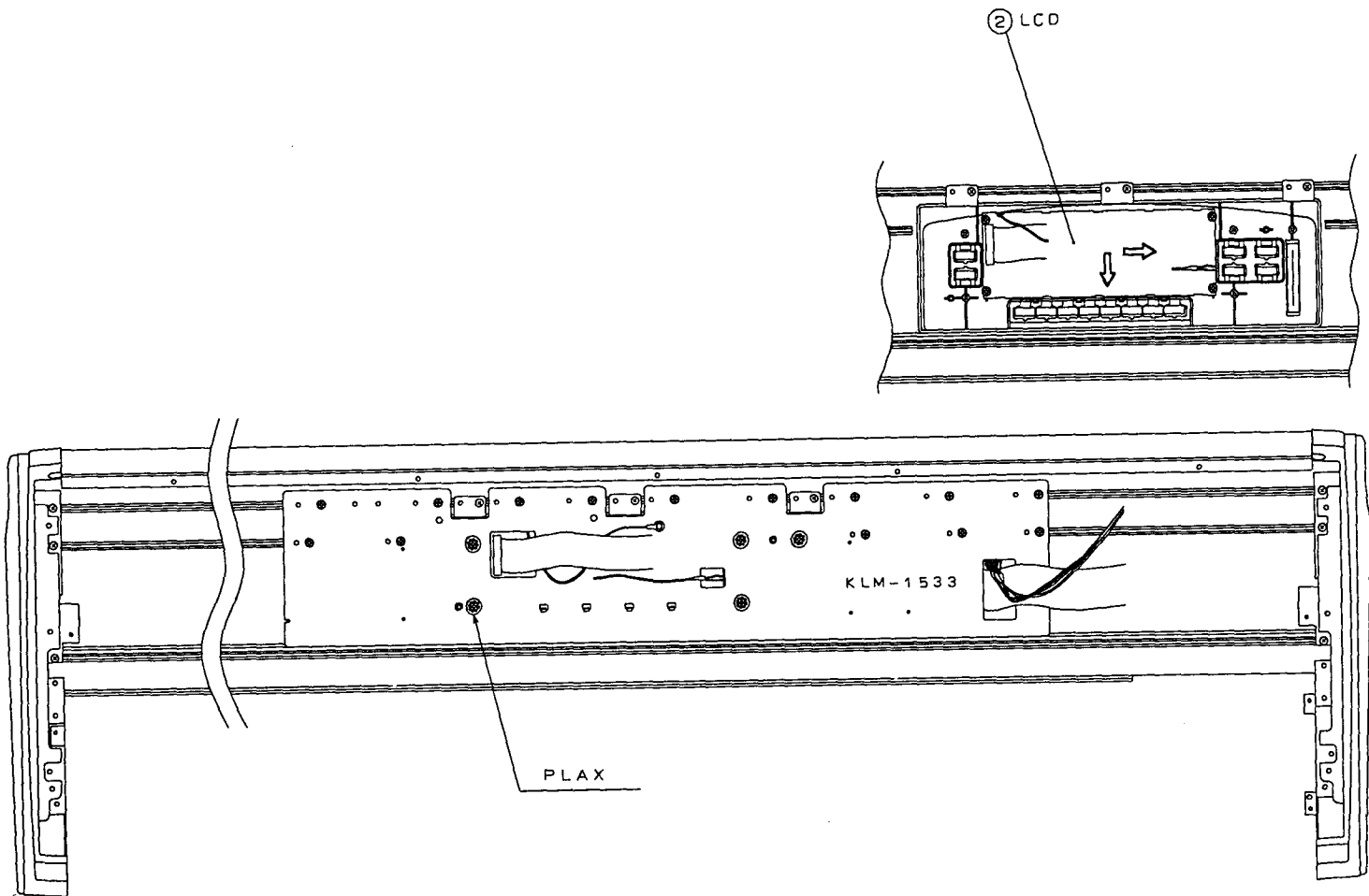
[CT B ZMC 3 x 8] x 1

- (2) Remove 2pcs. of the screws on the joystick panel and remove the joystick panel.

[CT B ZMC 3 x 10] x 2

- (3) Remove 7pcs. of the screws on the support rail and remove the support rail.

[CT B ZMC 3 x 8] x 7



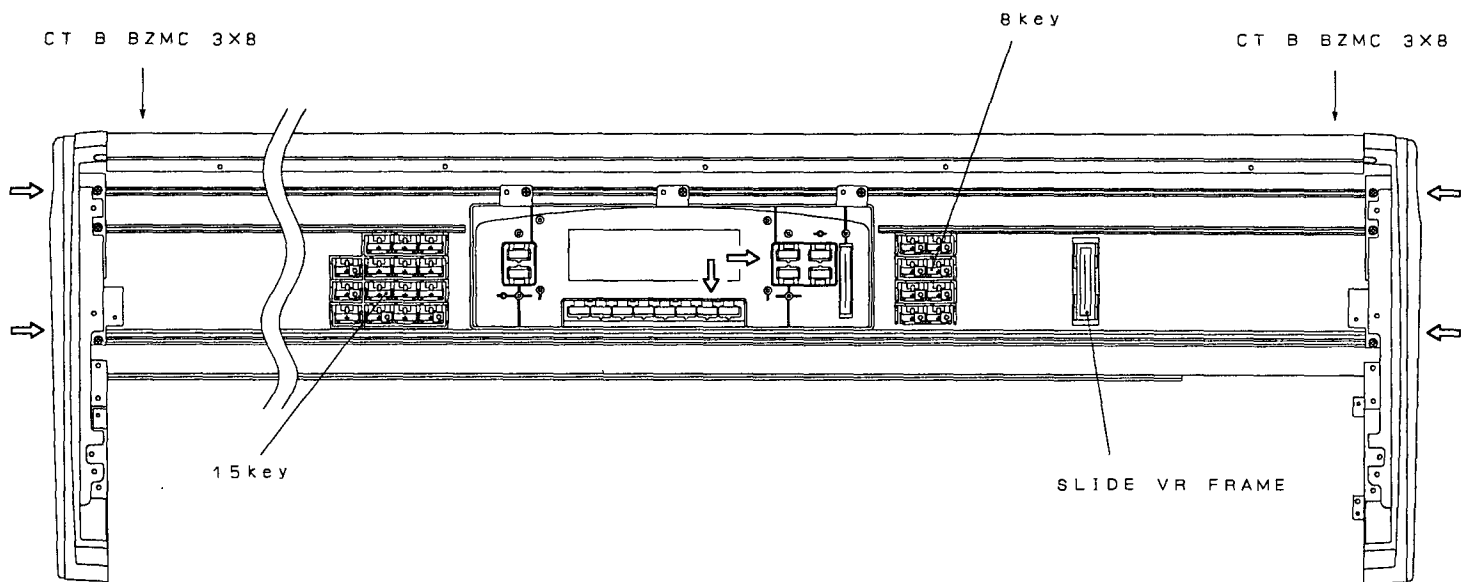
To remove the LCD and panel p.c.b. (KLM-1533),

- (1) Remove 19pcs. of the screws on the panel p.c.b. and remove the panel p.c.b..

[CT B ZMC 3 x 8] x 14
 [PLAX B BZMC 3 x 8] x 5

- (2) Remove 4pcs. of the screws on the LCD and remove the LCD.

[PLAX B BZMC 3 x 8] x 4



To remove the LCD hood and the side plate,

(1) Remove 3pcs. of the screws on the LCD hood and remove the LCD hood.

[CT B ZMC 3 x 8] x 3

(2) Remove 6pcs. of the screws on the side plates.

[CT B ZMC 3 x 8] x 6

(3) Remove 2pcs. of the screws on the rear panel and remove the side plates.

[CT B BZMC 3 x 8] x 2

7. HARDWARE SPECIFICATIONS

P.C. BOARDS :

KLM-1511/12	JOYSTICK P.C.B. (01/Wpro only)
KLM-1589	MAIN P.C.B.
KLM-1529	JACK P.C.B.
KLM-1530	POWER SUPPLY P.C.B.
KLM-1533	PANEL P.C.B.
KLM-1590	TOUCH_SENCE P.C.B. (01/WproX only)

MAIN ICs :

UPD71055GB-10-3B4	PPI (Peripheral Interface)
UPD70216L-10	CPU
UPD65016GF-058-3BA	MAP260 (Decoder)
HD63265SFP	FDC (Floppy Disk Controller)
M37450M4-601FP	KSP (Key Scan Processor)
MB87405PF	MDE (Multi Digital Effect)
MB623147PF	MAP25 (Decoder/Card Buffer)
MB87726PF	TG88 (Tone Generator)
MB87727PF	DF88 (Digital Filter)
MB635107PF-G-LBND	WS89 (Wave Shaper)
PCM55HP	DAC (D/A Converter)
LH5375NB	Wave ROM
LH5375ND	Wave ROM
LH5375NE	Wave ROM
LH5375NH	Wave ROM
LH5375NJ	Wave ROM

«Regarding the order of the diagnostic test card»

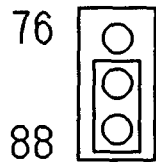
When you order the diagnostic test card for the 01/W_series including the 01R/W, please order from us with the following code number and the product name.

PART CODE	PART NAME	PRODUCT NAME
810000203	OTP ROM CARD	01/W FD & 01/W
810000203	OTP ROM CARD	01/WproX & 01/Wpro
810000203	OTP ROM CARD	01R/W

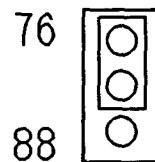
01/W Series P.C. Board List

P. C. BOARD PRODUCT NAME	MAIN	JACK	PANEL	POWER SUPPLY	JOYSTICK
01/W	KLM-1537 001153700	KLM-1529 001152900	KLM-1533 001153300	KLM-1530 001153000	KLM-1511/12 001151100
01/W FD	KLM-1528 001152800	KLM-1529 001152900	KLM-1533 001153300	KLM-1530 001153000	KLM-1511/12 001151100
01/W PRO	KLM-1589 001158900	KLM-1529 001152901	KLM-1533 001153301	KLM-1530 001153000	KLM-1511/12 001151101
01/W PROX	KLM-1589 001158900	KLM-1529 001152901	KLM-1533 001153301	KLM-1530 001153000	/
NOTE	By changing the establishment of the jumper switch on the KLM-1589 p.c.b., the mode is changed for PRO or PROX.	A board in harness is used on the KLM-1529 p.c.b. for the 01/W or 01/W FD. The harness is connected with a connector on the KLM-1529 p.c.b..	The color of the board in harness for the slide VR is different between the 01/W, 01/W FD and the 01/WPRO, 01/WPROX. 01/W, 01/W FD → BLACK 01/WPRO, 01/WPROX → WHITE	This p.c.b. is used for all kinds of the 01/W series in common.	The length of the harness on this p.c.b. is different between the 01/WPRO, and 01/W, 01/W FD.

The establishment of the jumper switch (CN101A) is as follows.



in case of the 01/WPROX



in case of the 01/WPRO

8. DIAGNOSTIC TEST

《Before you start the diagnostic test》

This diagnostic test corresponds to the O1/Wpro series which the system ROM version is #58 or later. Once this diagnostic test is started, the data in the O1/WproX (O1/Wpro) is initialized. If necessary data are memorized in it, please save the data into RAM cards or a floppy disk before starting the test.

《Starting the test program》

1. Connect MIDI IN and OUT with a MIDI cable.
2. Insert a PCM card (XSC-801) and a diagnostic test card into each card slot and turn the power ON.
At this time the protect switch of the test card must be OFF.
3. When the test program starts, the following tests are automatically carried out.

- * System ROM Check Sum (Internal Test #00)
- * Internal RAM Test (Internal Test #01)
- * RAM Card Test (Internal Test #02)
- * LCD RAM Test (Internal Test #03)
- * TG & DF CPU I/F Test (Internal Test #04)
- * Internal Battery Test (Internal Test #05)
- * Card Battery Test (Internal Test #06)
- * MIDI Loop Test (Internal Test #07)
- * PCM ROM TG I/F Test (Internal Test #08)
- * PCM Card TG I/F Test (Internal Test #09)

If any error occurs to the result of the internal test, the error message will be indicated in the LCD and the panel LEDs will go on and off.

When the internal test finishes normally, the program proceeds to TEST 1 : SW & LED TEST.

Then, when you turn the power ON while pressing '3' and 'RESET' to start the test mode, you can omit the PCM card test and the MIDI loop test.

In case that the protect switch of the RAM card is ON at the internal test #02 : RAM CARD TEST, the following message is indicated in the LCD.

* Error : Protect

In case that an error occurs at the internal test #04 : TG I/F TEST, the following message is indicated in the LCD.

1) In case that an error occurs between the TG and the LCD,

- * Voice flag
- * TG too long busy
- * Voice on flag

2) In case that an error occurs between the DF and the CPU,

- * VDA * EXC
- * VDF * PAN

In case that MIDI IN and OUT are not connected with a MIDI cable at the internal test #07 : MIDI LOOP TEST, the following message is indicated in the LCD.

* Error : OUT -X-→ IN (no connect)

In case that PCM card (XSC-801) is not inserted at the internal test #09 : PCM Card TG I/F Test, the following message is indicated in the LCD.

PCM Verify
Card PCM
Address : 00000000 Expect : 4BFE Read : 8000

When the internal test is finished normally, remove the MIDI cable from MIDI IN and MIDI OUT on the rear panel.

《TEST 2 : PANEL SW & LED TEST》

The test of the panel switches and the confirmation of the LED's lighting are carried out.

1. Confirm that all the LEDs light red.
2. Press each switch according to the turn which is indicated in the LCD and confirm that they work correctly.
The turn to press the switches is as follows.

COMBI, PROG, SEQ, BANK, EDIT COMBI, EDIT PROG, GLOBAL, DISK,
▲, ▼, UP, DOWN, A, B, C, D, E, F, G, H, PAGE+, PAGE-,
7, 4, 1, 10's HOLD/-, 8, 5, 2, 0, 9, 6, 3,
COMPARE, REC/WRITE, START/STOP, RESET

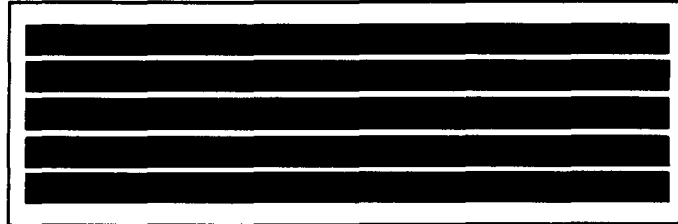
As for the switches whose LEDs light, confirm that the LEDs light red when the switches are pressed and then the LEDs light green when the switches are released.

3. When this check is finished to the RESET switch, the test program proceeds to the next automatically.

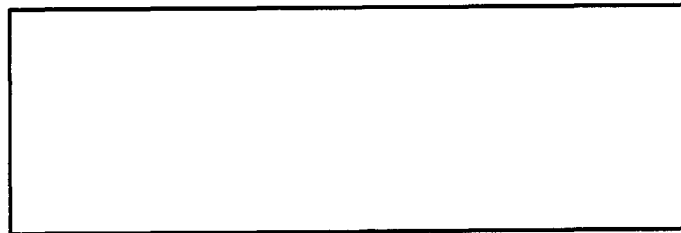
《TEST 3 : LCD PIXEL TEST》

The test of the LCD's indication is carried out.

1. Confirm that all the dots in the LCD light.
If nothing is wrong with the LCD, press RESET to proceed to the next.



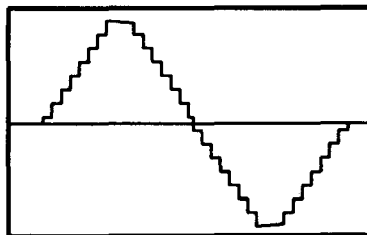
2. Confirm that all the dots in the LCD go out.
If nothing is wrong with the LCD, press RESET to proceed to the next.



《TEST 4 : MDE/DF TEST》

MDE and DF88 are checked.
Connect an oscilloscope to OUTPUT 1.

1. Confirm that the output waveform of the MDE test is as follows.



MDE TEST WAVEFORM

If this test is N.G., check the circuit connected with MDE (IC17) and the analog circuit.

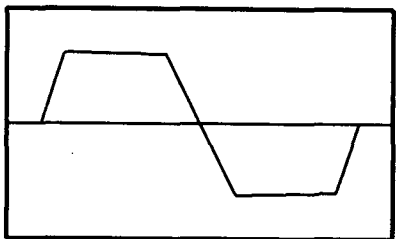
If this test is O.K., press RESET to proceed to the next.

2. Confirm that an explosion sound is output normally at the DF test.
If this test is N.G., check the circuit between DF88 (IC15) and MDE (IC17).
If this test is O.K., press RESET to proceed to the next.

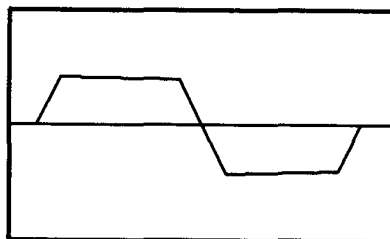
《TEST 5 : WS TEST》

WS is checked with its test waveform.

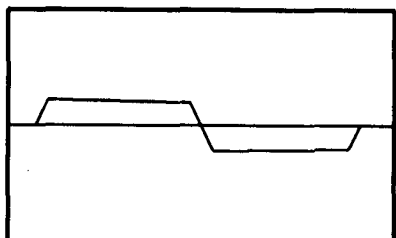
Confirm the following waveform appears when A, B, C or D is pressed.



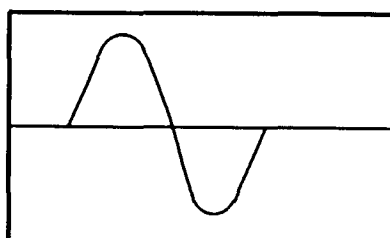
WS TEST WAVEFORM [A]



WS TEST WAVEFORM [B]



WS TEST WAVEFORM [C]



WS TEST WAVEFORM [D]

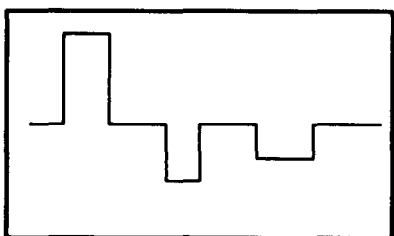
Check to the test waveform D and if this test is N.G., check the circuit connected with TG (IC12) and WS (IC13).

If this test is O.K., press RESET to proceed to the next.

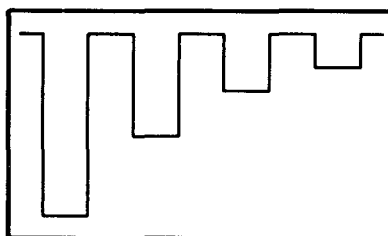
《TEST 6 : TG TEST》

TG is checked with its test waveform.

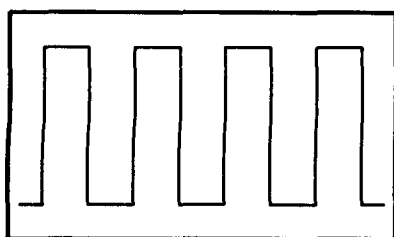
Confirm the following waveform appears when one of A~H is pressed.



TG TEST WAVEFORM [A]



TG TEST WAVEFORM [B] ~ [D]



TG TEST WAVEFORM [E] ~ [H]

The waveforms of B~D are different at their output levels.
 The waveforms of E~H are different at their terms of cycle.
 Check to the test waveform H and if this test is N.G., check the
 circuit connected with TG (IC12).

If this test is O.K., press RESET to proceed to the next.

《TEST 7 : NOISE & OUTPUT TEST》

The remaining noise and the output signal level from each output jack
 are checked.

Set the master VR to the MAX and connect an oscilloscope or a noise meter
 to the OUTPUT jack which is to be checked.

1. Press any of A~F switches and measure the noise level of each OUTPUT
 jack with a noise meter.
 Confirm that the noise level of each OUTPUT jack is less than the
 regulation.
 After confirming the noise level of Ph-R of 'F', press RESET to
 proceed to the next check.

2. Press any of A~F switches and measure the output signal level of each
 OUTPUT jack with an oscilloscope.
 Confirm that the signal level of each OUTPUT jack is less than the
 regulation and each is the sine wave.
 Also, confirm that each output signal level changes at OUT-1 and OUT-2
 when the master VR is operated.
 After confirming the output signal level of Ph-R of 'F', press 'RESET'
 to proceed to the next.

	remaining noise	output signal level	frequency
OUT-1	-77.0dBu ↓	4.2 ~ 7.8 Vp-p	488 Hz
OUT-2	-77.0 dBu ↓	4.2 ~ 7.8 Vp-p	412 Hz
OUT-3	-76.0 dBu ↓	4.6 ~ 8.6 Vp-p	305 Hz
OUT-4	-76.0 dBu ↓	4.6 ~ 8.6 Vp-p	244 Hz
Ph-L	-78.0 dBu ↓	2.0 ~ 4.0 Vp-p	548 Hz
Ph-R	-78.0 dBu ↓	2.0 ~ 4.0 Vp-p	610 Hz

The regulations of the remaining noise and the output signal level

《TEST 8 : KEYBOARD & AFTERTOUCHE TEST》

The contact of the keyboard, the velocity and the aftertouch are checked.

1. Press the keys from the top key in accordance with the indication in the LCD. When the value of the velocity is between 20 and 100, the test program proceeds to the next key.
When the check is finished to the bottom key, it proceeds to the aftertouch check automatically.
2. Confirm that the aftertouch value is indicated in the LCD when any key is pressed strongly and the value changes between 0 and 127.
When this check is finished, press RESET to proceed to the next.

《TEST 9 : A/D TEST》

The A/D test of the joystick, the VALUE slider, the ASS. pedals 1 & 2, the damper pedal are carried out.

1. Confirm that the X and Y values of the joystick are indicated in the LCD and that each value changes when the joystick is operated.

When moved to left, Joy-X : -127.
When moved to right, Joy-X : 127.
When moved away from you, Joy-Y : 127.
When moved toward you, Joy-Y : -127.
When not moved, Joy-X, Y : 0.
When the check is finished, press RESET to proceed to the next.
2. Confirm that the value in the LCD changes between 0 (MIN) and 127 (MAX) when the VALUE slider is operated.
3. Confirm that the value in the LCD changes between 0 and 127 when an EXP-2 is connected to the ASS.pedal 1 or 2 and it is operated.
4. Connect a damper pedal to the damper jack and confirm that the value becomes ON when the pedal is pressed and that the value becomes OFF when the pedal is released.
When all the checks are finished, press RESET to proceed to the menu screen.

《MENU SCREEN》

Selecting any number of 0 - 9 in the LCD with ten keys allows you to test the following.

0 : FDD	5 : WS
1 : A/D Monitor	6 : TG
2 : Switch & LED	7 : Noise & Level
3 : LCD	8 : Keyboard & AT
4 : MDE / DF	9 : A/D Converter

There are some other functions which correspond to the 'A', 'D', 'G', 'H' switches.

- A : PCM ROM Check Sum
- D : PCM CARD Check Sum (For XSC-801)
- G : END → Refer to «FINISHING THE TEST MODE»
- H : CPY → Refer to «COPY OF THE DIAGNOSTIC TEST CARD»

※ It takes a long time to complete A : PCM ROM Check Sum and D : PCM CARD Check Sum. Especially, it takes about 6 minutes to complete A : PCM ROM Check Sum.

1. PCM ROM Check Sum

The internal PCM ROM is checked.

The operation is as follows.

When 'A' is pressed, 'Wait a minute' is indicated and the check starts.

It takes about 6 minutes to complete this check.

When it is finished normally, 'Completed' is indicated in the LCD.

2. PCM CARD Check Sum

The PCM CARD XSC-801 is checked.

The operation is as follows.

Confirm that a PCM card is inserted into the PCM card slot.

When 'D' is pressed, 'Wait a minute' is indicated in the LCD and the check starts.

It takes about 2 minutes to complete this check.

When it is finished normally, 'Completed' is indicated in the LCD.

«TEST 0 : FDD TEST»

The floppy disk drive is checked.

It takes much longer to complete this test than the others. If you don't need to check it, proceed to «FINISHING THE TEST MODE».

1. Press '0'.

2. Insert the floppy disk for this check into the FDD and press 'CHECK' to start the FDD test.

The protector of this floppy disk must be OFF at this time.

It takes about 3 minutes to complete this test. If it is O.K., all the LEDs will light and 'Completed' will be indicated in the LCD. If it is N.G., all the LEDs will go on and off and the error message will be indicated in the LCD.

3. When the check is finished, press 'REC/WRITE' to proceed to the menu screen.

《FINISHING THE TEST MODE》

1. When the diagnostic test card and the PCM card are removed from each slot and 'END' is pressed, the preload data is loaded automatically and the program proceeds to the normal mode. But the sequence data is not loaded.
2. After finishing the test mode, check the sound.

《COPY OF THE DIAGNOSTIC TEST CARD》

The O1/WproX and the O1/Wpro have the copy function of the RAM card for the diagnostic test and the data can be copied into the the other RAM card.

Note that the internal data is initialized by using this function as well as the diagnostic test because this test is in the test mode.

The operation is as follows.

1. Insert the diagnostic test card into the PROG/SEQ DATA slot and set the protect switch of the RAM card to be OFF.
2. Turn the power ON while pressing '3' and 'RESET' to start the test mode.
3. When the test mode is started, press 'REC/WRITE' to proceed to the menu screen.
4. Remove the diagnostic test card from the slot and insert a new RAM card.
Set the protect switch of the card to be OFF.
5. When 'CPY' is pressed, 'Save Start' is indicated in the LCD and the test data is saved into the new RAM card.
When saving is completed, 'Completed' is indicated in the LCD.
6. Remove the RAM card and then press 'END' to finish the test mode.

《INITIALIZING THE INTERNAL DATA》

When you turn the power ON while pressing 'RESET' and any of 'COMPARE', '3', '6' or '9' together, the version number of the system ROM is indicated in the LCD and the internal data is initialized.

Then, if you would like to know the version number of the system ROM only, turn the power ON while pressing only 'RESET' - you will see the version number in the LCD without initializing the internal data.

《THE D/A OFFSET ADJUSTMENT ON THE KLM-1589 P.C. BOARD》

The D/A offset has been adjusted when the product is released on the market but you need to adjust it only in case that the D/A converter and its connected electronic parts are changed.

Connect a digital volt meter to 1pin and 3pin of the connector CN100A on the KLM-1589 p.c.board. Then, confirm the offset voltage is 0V.

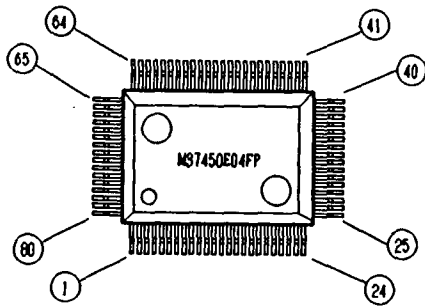
If it is slipped off, adjust it with the VR1.

When you adjust it with the oscilloscope, the voltage range should be less than 5mV.

9. REFERENCE DATA

M37450M4-601FP (KSP)

PIN ASSIGNMENT



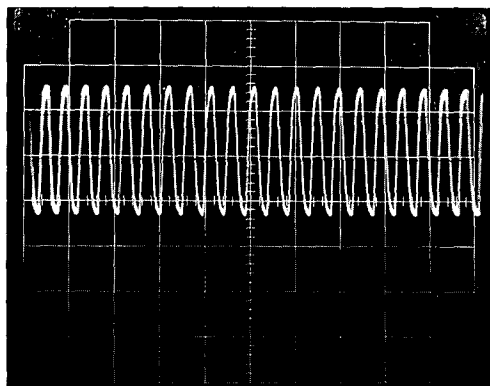
M37450M4-601FP

PIN FUNCTION

PIN MARK	PIN NAME	I/O	PIN MARK	PIN NAME	I/O
VCC, VSS	POWER SUPPLY	-	P50~P57	I/O PORT 5	I/O
CNVSS	CNVSS	I	P60~P67	I/O PORT 6	I/O
RESET	RESET IN	I	VREF	REFERENCE VOLT.	I
XIN	CLOCK IN	I	ADVREF	A-D REF. VOLTAGE	I
XOUT	CLOCK OUT	O	DAVREF	D-A REF. VOLTAGE	I
Φ	TIMMING OUT	O	AVSS	ANALOG VSS	-
SYNC	SYNC. SIGNAL OUT	O	AVCC	ANALOG VCC	-
R/W	READ/WRITE STATUS OUT	O	D-A1 D-A2	ANALOG OUT	O O
P00~P07	I/O PORT 0	I/O	RD	READ SIG. OUT	O
P10~P17	I/O PORT 1	I/O	WR	WRITE SIG. OUT	O
P20~P27	I/O PORT 2	I/O	RESETOUT	RESET SIG. OUT	O
P30~P37	I/O PORT 3	I/O	RXD	SERIAL DATA IN	I
P40~P42	I/O PORT 4	I	TXD	SERIAL DATA OUT	O

CHECK POINT FOR M37450M4-601FP

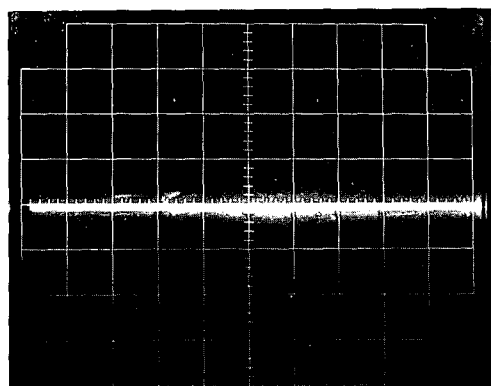
1. XIN (28pin)



T=0.1mS

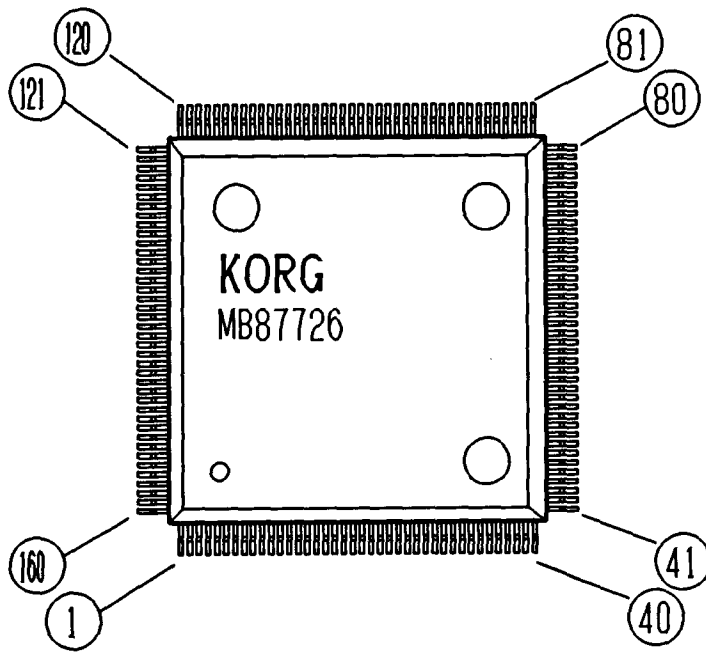
2V/0.2uS div

2. RXD (77pin)



2V/5mS div

MB87726 (TG88)
PIN ASSIGNMENT

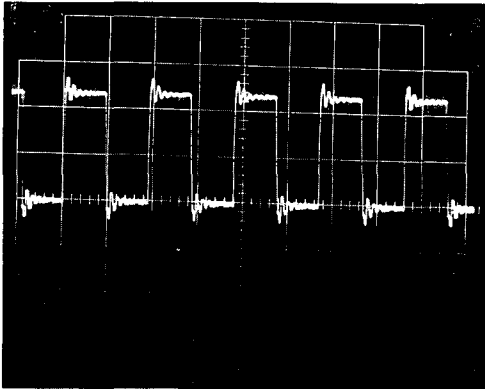


MB87726 (TG88)
PIN FUNCTION

PIN NAME	I/O	FUNCTION
VDD	-	+5V
VSS	-	GND
SMODE	I	Sub TG Mode (H:Sub TG L:Master TG)
FMODE	I	Sampling Rate Switch (H:48KHz L:30KHz)
XRESET	I	Low Active Initial Clear
CLK	I	Master Clock
XCRO	O	System Counter Reset for Sub TG Chip
XCRI	I	System Counter Reset from Master TG Chip
TEST0-3	I	Test Mode Selector
XCSI	I	Chip Select
XWRI	I	Write Pulse Input from CPU
XRDI	I	Read Pulse Input from CPU
AO-9	I	Address Input from CPU
DO-7	I/O	Data Input from CPU
D8-15	I/O	Data Input for 16bit Data Bus
DMODE	I	CPU I/F Data Bus Syze Select (L:8bit H:16bit)
EWDO-15	I	Even-address Wave Data In (from Wave ROM)
OWDO-15	I	Odd-address Wave Data In (from Wave ROM)
WAO-19	O	Address Bus for Wave ROM or RAM
WBO-3	O	Bank Number Out for Wave ROM (16 Banks)
ODO-19	O	Voice Data Out for External Filters or MDE
VNO-4	O	Voice Number Out
RASO-3	O	for D-RAM
CASO-3	O	for D-RAM
OWEO-3	O	Write Enable for MDE
OWEF	O	Write Enable for New Filter Chip (MB87727)

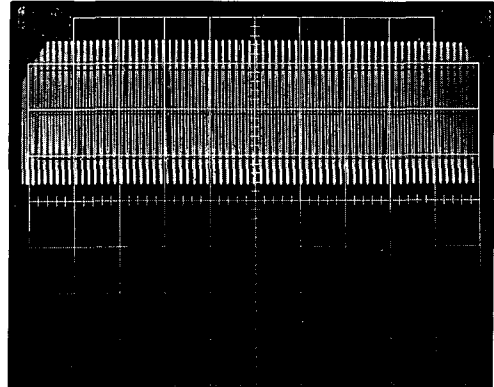
CHECK POINT FOR MB87726

1. OWEF (119pin)



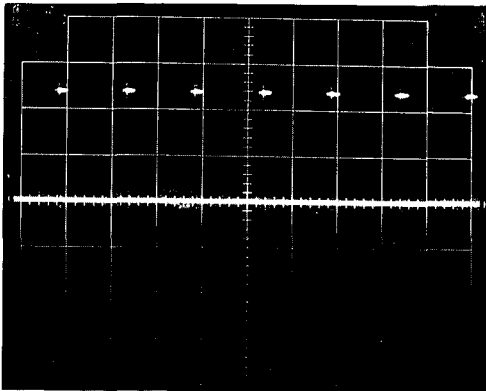
duty cycle of 50% $T=0.1\mu\text{s}$
2V/0.5 μs div

2. CLK (111pin)



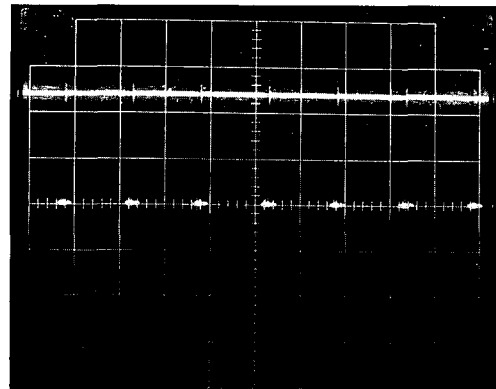
1V/0.2 μs div

3. OD0~OD18 (144~123pin)

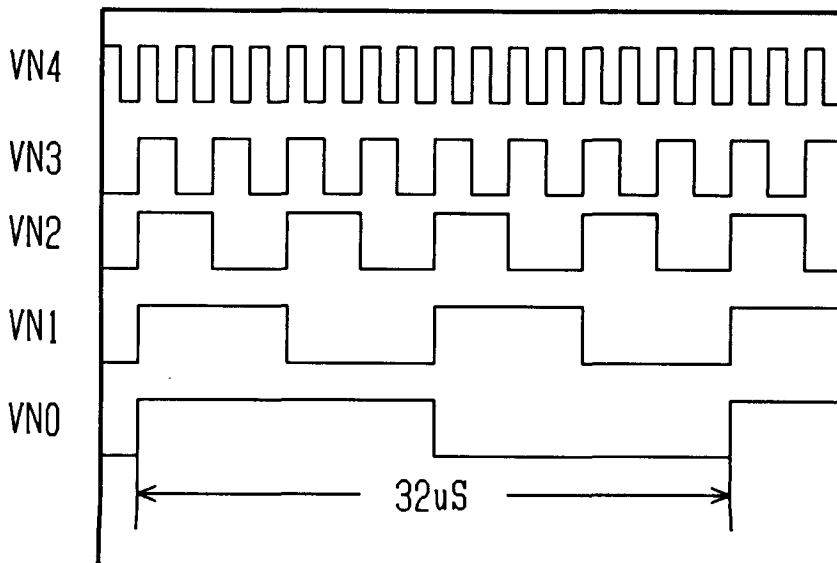


2V/20 μs div

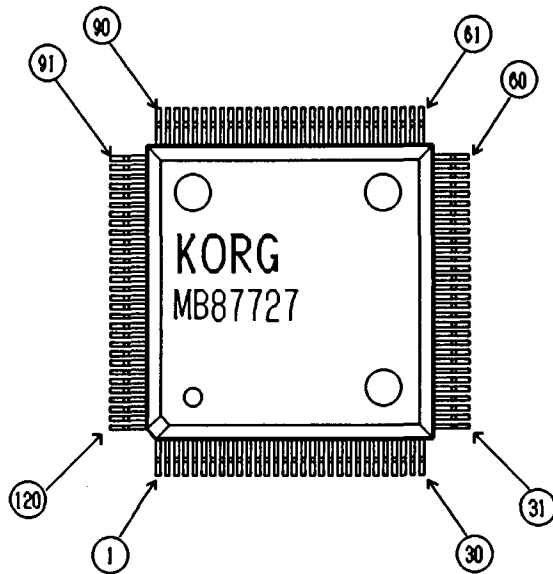
4. OD19 (122pin)



2V/20 μs div



MB87727 (DF88)
PIN ASSIGNMENT



MB87727 (DF88)
PIN FUNCTION

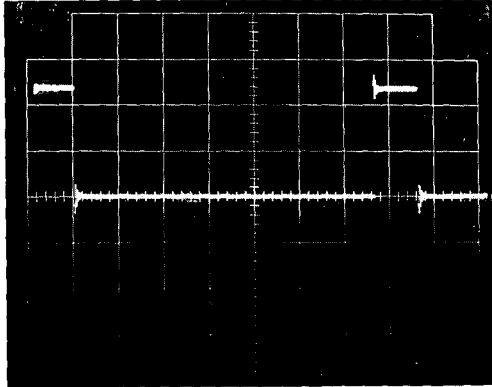
NO.	I/O	PIN NAME	GROUP	NOTE
1	-	VSS	-	
2	I	A0	A	CPU ADDRESS
3	I	A1		
4	I	A2		
5	I	A3		
6	I	A4		
7	I	A5		
8	I	A6		
9	I	A7		
10	I	A8		
11	-	VSS	-	
12	I	A9	B	CPU ADDRESS
13	I/O	D0		CPU DATA BUS
14	I/O	D1		
15	I/O	D2		
16	-	VDD	-	
17	I/O	D3	B	CPU DATA BUS
18	I/O	D4		
19	I/O	D5		
20	I/O	D6		
21	-	VSS	-	
22	I/O	D7	C	CPU DATA BUS
23	I/O	D8		
24	I/O	D9		
25	I/O	D10		
26	I/O	D11		
27	I/O	D12		
28	I/O	D13		
29	I/O	D14		
30	I/O	D15		

NO.	I/O	PIN NAME	GROUP	NOTE
31	-	VSS	-	
32	I	IVNO	D	TG VOICE NO.
33	I	IVN1		
34	I	IVN2		
35	I	IVN3		
36	I	IVN4		TG VOICE DATA
37	I	IVD0		
38	I	IVD1		
39	I	IVD2		
40	I	IVD3		
41	-	VSS	-	
42	I	IVD4	E	TG VOICE DATA
43	I	IVD5		
44	I	IVD6		
45	I	IVD7		
46	-	VDD	-	
47	I	IVD8	E	TG VOICE DATA
48	I	IVD9		
49	I	IVD10		
50	I	IVD11		
51	-	VSS	-	
52	I	IVD12	F	TG VOICE DATA
53	I	IVD13		
54	I	IVD14		
55	I	IVD15		
56	I	IVD16		
57	I	IVD17		
58	I	IVD18		
59	I	IVD19		
60	-	VDD	-	
61	-	VSS	-	
62	I	DEN	G	TG VOICE DATA ENABLE
63	I	XRES		SYSTEM RESET
64	I	OSEL		PARALLEL OUT FORMAT SELECT
65	I	BSEL		CPU DBUS BIT LENGTH SELECT
66	I	MODE0		FILTER MODE SELECT
67	I	MODE1		
68	I	ITEST		
69	I	LTEST		LSI TESTER MODE SELECT
70	I	MCK		MASTER CLOCK
71	-	VSS	-	
72	I	TSELO	H	NOT USE
73	I	TSEL1		OUTPUT DATA CLIPER ON/OFF DATA SHIFT SELECT BIT0
74	I	CLIP		
75	I	SFT0		
76	-	VDD	-	
77	I	SFT1	H	DATA SHIFT SELECT BIT1
78	I	SFT2		DATA SHIFT SELECT BIT2
79	O	POEN		PARALLEL OUT VOICE DATA ENABLE
80	O	SOD		SERIAL OUT DATA

NO.	I/O	PIN NAME	GROUP	NOTE
81	-	VSS	-	
82	0	SCK	I	SERIAL OUT BIT CLOCK
83	0	SEN		SERIAL OUT DATA ENABLE
84	0	SCH2		SERIAL OUT CH NO. BIT2
85	0	SCH1		SERIAL OUT CH NO. BIT1
86	0	SCHO		SERIAL OUT CH NO. BIT0
87	0	SCHEN		SERIAL OUT CH DATA ENABLE
88	0	OD19		VOICE/MIX
89	0	OD18		PARALLEL
90	0	OD17		OUTPUT
91	-	VSS	-	
92	0	OD16	J	OUTPUT
93	0	OD15		
94	0	OD14		
95	0	OD13		
96	0	OD12		
97	0	OD11		
98	0	OD10		
99	0	OD9		
100	0	OD8		
101	-	VSS	-	
102	0	OD7	K	OUTPUT
103	0	OD6		
104	0	OD5		
105	0	OD4		
106	-	VDD	-	
107	0	OD3	K	OUTPUT
108	0	OD2		
109	0	OD1		
110	0	OD0		
111	-	VSS	-	
112	0	OVN4	L	PARALLEL OUT
113	0	OVN3		VOICE NO.
114	0	OVN2		
115	0	OVN1		
116	0	OVNO		
117	I	XRD		CPU RD ENABLE
118	I	XWR		CPU WR ENABLE
119	I	XCS	CHIP SELECT	
120	-	VDD	-	

CHECK POINT FOR MB87727

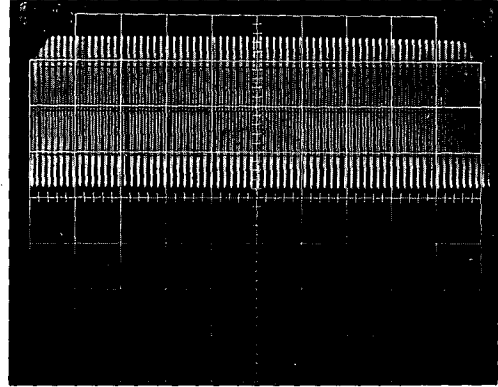
1. OVNO~OVN3 (116~113pin)



T=16uS

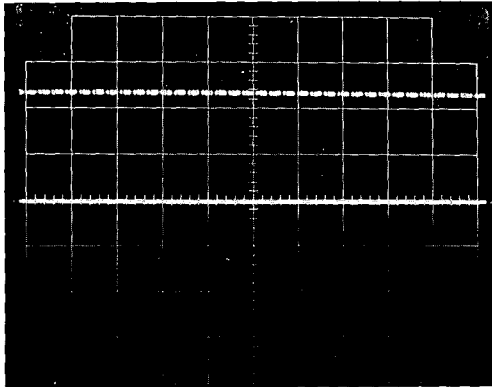
2V/2uS div

2. MCK (52pin)



2V/0.2uS div

3. ODO~OD19 (110~88pin)

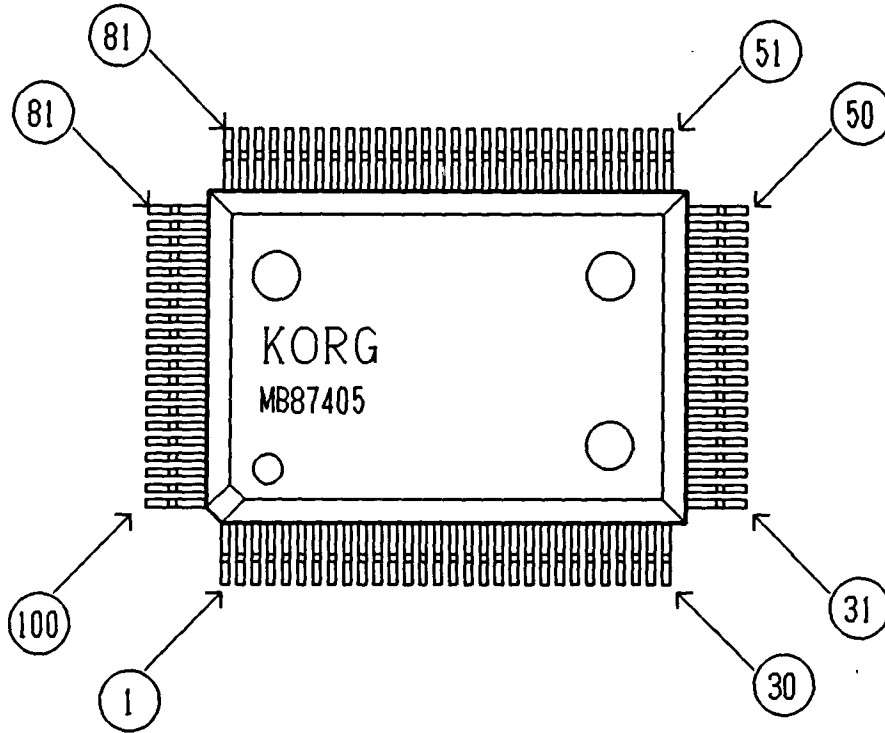


2V/0.1mS div

CLASSIFICATION OF TERMINALS FOR DF88

CLASSIFICATION	TERMINALS
CPU INTERFACE	BSEL, XCS, XRD, XWR AO~A9, DO~D15
PARALLEL OUT (MDE1 INTERFACE)	OSEL, ODO~OD19 OVNO~OVN4, POEN
SERIAL OUT (MDE2 INTERFACE)	SOD, SCK, SEN SCHO~SCH2, SCHEN
MIXER	SFTO~SFT2, CLIP
PARALLEL IN (TG, DF INTERFACE)	IVDO~IVD19 IVNO~IVN4, DEN
MASTER CLOCK	MCK
RESET	XRES
FILTER MODE	MODE0~MODE1
TEST MODE	ITEST, LTEST TSELO, TSEL1
POWER SUPPLY	VDD1~VDD6 VSS1~VSS12

MB87405 (MDE)
PIN ASSIGNMENT

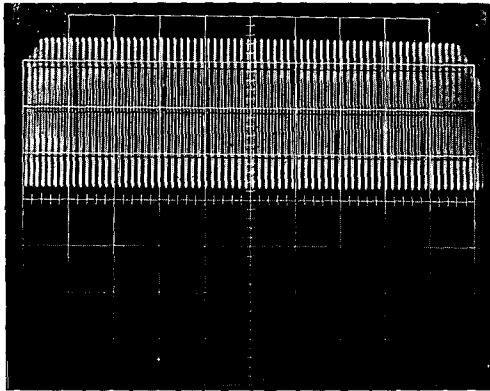


MB87405 (MDE)
PIN FUNCTION

PIN NAME	I/O	PIN NAME	I/O	PIN NAME	I/O
80	I	OE	0	SX1, SX32	0
CS	I	WE	0	PDO~PD19	I
RD	I	RA0~RA7	0	GC	I
WR	I	RDO~RD19	I/O	RESET	I
A0~A2	I	DAO~DA19	0	XTL	I
DO~D7	I/O	SH0~SH3	0	TS0~TS5	I
RAS	0	SAR	I	VDD0~VDD3	---
CAS	0	OL	0	VSS0~VSS7	---

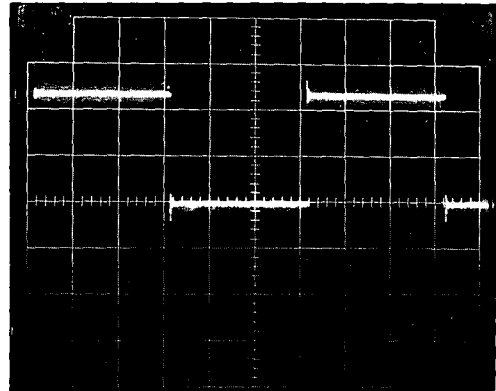
CHECK POINT FOR MB87405

1. XTL (63pin)



1V/0.2uS div

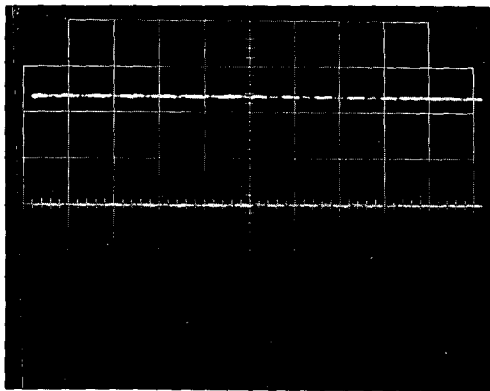
2. SX1 (29pin)



duty cycle of 50% T=32uS

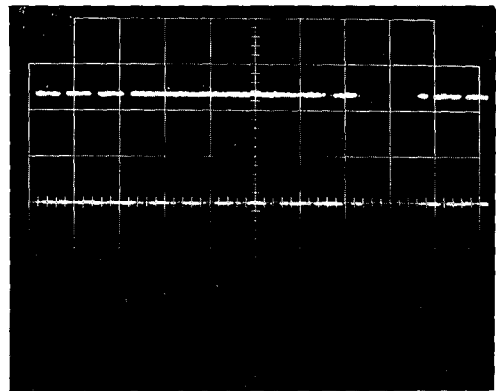
2V/5uS div

3. DA4~DA18 (114~120, 2, 3pin)



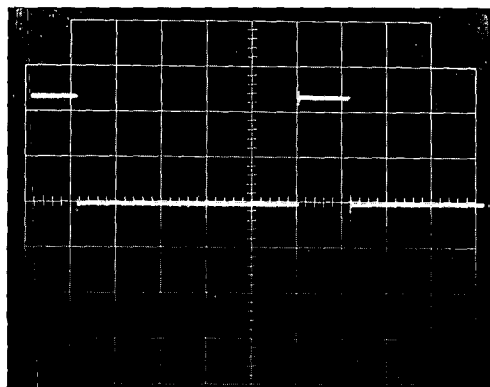
2V/2mS div

4. DA19 (4pin)



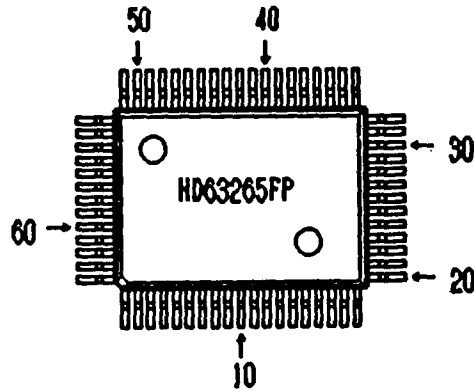
2V/10mS div

5. SH0~SH4 (5~8pin)



2V/5uS div

HD63265FP (FDC)
PIN ASSIGNMENT



HD63265FP (FDC)
PIN FUNCTION

PIN NO.	I/O	TERMINAL NAME	PIN NO.	I/O	TERMINAL NAME
1	-	NC	17	I/O	D4
2	-	NC	18	-	NC
3	I	RESET	19	-	NC
4	I	E (RD)	20	I/O	D5
5	I	R/W (WR)	21	I/O	D6
6	I	CS	22	I/O	D7
7	I	DACK	23	0	DREQ
8	I	RS	24	0	iRQ
9	-	NC	25	I	DEND
10	-	NC	26	-	VCC4
11	-	VSS1	27	-	CLK
12	-	VSS3	28	-	VSS2
13	I/O	D0	29	-	NC
14	I/O	D1	30	-	NC
15	I/O	D2	31	-	VCC2
16	I/O	D3	32	I	RDATA

PIN NO.	I/O	TERMINAL NAME	PIN NO.	I/O	TERMINAL NAME
33	-	NC	49	I	READY
34	-	NC	50	-	NC
35	0	WGATE	51	-	NC
36	0	WDATA	52	0	STEP
37	0	LATE	53	0	HDiR
38	0	EARLY	54	0	HSEL
39	0	US1	55	0	HLOAD
40	0	US0	56	0	FRES
41	-	NC	57	0	LCT
42	-	NC	58	-	VCC1
43	-	NC	59	-	VCC3
44	I	iNDEX	60	I	NUM1
45	I	TRK0	61	I	NUM2
46	I	FAULT	62	I	SFORM
47	I	DSiDE	63	I	iFS
48	I	WPRT	64	I	8" / 5"

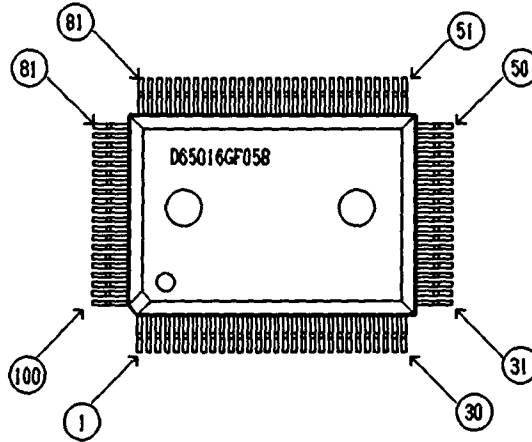
μ PD71055GB-10-3B4 (PPI)

PIN FUNCTION

PIN NAME	I/O	FUNCTION	PIN NAME	I/O	FUNCTION
D7~D0	I/O	Data Bus	RESET	I	Reset
CS	I	Chip Select	P07~P00	I/O	I/O Port0
RD	I	Read Strobe	P17~P10	I/O	I/O Port1
WR	I	Write Strobe	P27~P20	I/O	I/O Port2
A1, A0	I	Address	IC	---	Internally Connected

μ PD65016GF (MAP260)

PIN ASSIGNMENT



μ PD65016-XXX-3BA (MAP260)

PIN FUNCTION

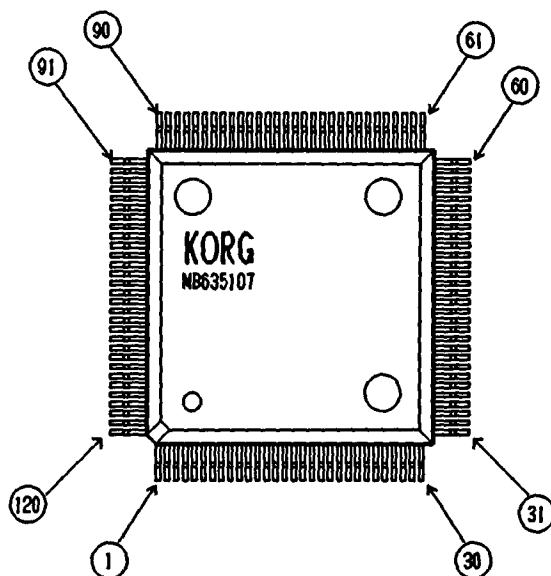
PIN NO.	PIN NAME	I/O	FUNCTION
01	GND	-----	
02	VDD	-----	
03	CAS0	0	column address strobe to D_RAM
04	RAS	0	row address strobe to D_RAM
05	ROML	0	lower byte ROM chip select
06	ROMU	0	upper byte ROM chip select
07	RAML	0	lower byte S_RAM chip select
08	RAMU	0	upper byte S_RAM chip select
09	A17	0	address out
10	A16	0	address out
11	A13	0	address out
12	A15	0	address out
13	A14	0	address out
14	A08	0	address out
15	GND	-----	
16	A07	0	address out
17	A09	0	address out
18	PWR	0	S_RAM write enable (protectable write)
19	SP1	0	I/O chip select out
20	PPI	0	PPI chip select low active
21	FDC	0	FDC chip select low active
22	SP2	0	I/O chip select out
23	SP3	0	I/O chip select out
24	A10	0	address out
25	A06	0	address out
26	A05	0	address out
27	A12	0	address out
28	GND	-----	
29	VDD	-----	
30	A04	0	address out

PIN NO.	PIN NAME	I/O	FUNCTION
31	A03	0	address out
32	A11	0	address out
33	A02	0	address out
34	A01	0	address out
35	A00	0	address out
36	MSP1	0	memory chip select out
37	MSP2	0	memory chip select out
38	CK01	0	clock out
39	CK12	I	clock in
40	GND		-----
41	MCLK	I	master clock
42	TG88	0	TG88 chip select low active
43	CK02	0	clock out
44	CK03	0	clock out (1/2 CK12)
45	DF88	0	DF88 chip select low active
46	MDE	0	MDE chip select low active
47	TES3	I	TEST mode active high
48	SP1	0	chip select out
49	CK00	0	clock out
50	KSP	0	serial data out to key scanner (RxD)
51	KSPI	I	serial data in from key_scanner (TxD)
52	VDD		-----
53	GND		-----
54	SCLK	0	serial clock out to key_scanner (SCLK)
55	XRES	I	reset_input low active
56	AD00	I	address data multiplex in from V50FDC
57	AD01	I	address data multiplex in from V50FDC
58	AD02	I	address data multiplex in from V50FDC
59	AD03	I	address data multiplex in from V50FDC
60	AD04	I	address data multiplex in from V50FDC
61	AD05	I	address data multiplex in from V50FDC
62	AD06	I	address data multiplex in from V50FDC
63	AD07	I	address data multiplex in from V50FDC
64	AD08	I	address data multiplex in from V50FDC
65	GND		-----
66	AD09	I	address data multiplex in from V50FDC
67	AD10	I	address data multiplex in from V50FDC
68	AD11	I	address data multiplex in from V50FDC
69	AD12	I	address data multiplex in from V50FDC
70	AD13	I	address data multiplex in from V50FDC
71	AD14	I	address data multiplex in from V50FDC
72	AD15	I	address data multiplex in from V50FDC
73	A16P	I	address in from V50FDC
74	A17P	I	address in from V50FDC
75	A18P	I	address in from V50FDC
76	A19P	I	address in from V50FDC
77	RFRQ	I	from V50FDC
78	CK11	I	clock in
79	VDD		-----
80	GND		-----

PIN NO.	PIN NAME	I/O	FUNCTION
81	ASTB	I	address strobe in from V50FDC
82	UBE	I	upper bank enable in
83	IOWR	I	I/O write enable in from V50FDC
84	MWR	I	memory write enable in from V50FDC
85	IORD	I	I/O read enable in from V50FDC
86	MRDI	I	memory read enable in from V50FDC
87	1M	I	1M D_RAM mode select (low → 1M D_RAM)
88	TES1	I	TEST MODE
89	LWE	O	D_RAM lower byte write enable
90	TES2	I	TEST MODE
91	UWE	O	D_RAM upper byte write enable
92	DRA0	O	D_RAM address out
93	DRA1	O	D_RAM address out
94	DRA2	O	D_RAM address out
95	DRA3	O	D_RAM address out
96	DRA4	O	D_RAM address out
97	DRA5	O	D_RAM address out
98	DRA6	O	D_RAM address out
99	DRA7	O	D_RAM address out
100	CAS1	O	column address strobe to D_RAM

MB635107 (WS89)

PIN ASSIGNMENT



MB635107 (WS89)

PIN FUNCTION

PIN NAME	I/O	FUNCTION
A5~A0	I	CPU address in
D7~D0	I	CPU data in
XWR	I	CPU write enable
XCS	I	CPU chip select
IVD19~IDVO	I	sound data bus from TG88
IVN4~IVNO	I	voice number from TG88
DEN	I	data enable from TG88 (OWEF)
RA16~RA0	O	TABLE_ROM address
RD7~RDO	I	TABLE_ROM data
XRWE	O	S_RAM write enable for TABLE_RAM
XROE	O	S_RAM output enable for TABLE_RAM
OVD19~OVDO	O	sound data out to DF88
OVN4~OVNO	O	voice number out to DF88
OWEF	O	data enable to DF88
MCK	I	master clock
XRES	I	system reset
TEST1, 2	O	TEST MODE
VDD	---	+5V
VSS	---	GND

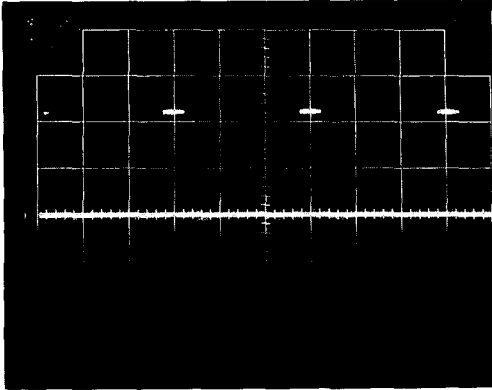
MB635107 (WS89) PIN I/O

NO.	I/O	PIN NAME	NO.	I/O	PIN NAME	NO.	I/O	PIN NAME	NO.	I/O	PIN NAME
1	---	VSS	26	I/O	RD4	51	---	VSS	76	---	VDD
2	I	A0	27	I/O	RD5	52	I	MCK	77	0	RA9
3	I	A1	28	I/O	RD6	53	I	IVD13	78	0	RA10
4	I	A2	29	I/O	RD7	54	I	IVD14	79	0	RA11
5	I	A3	30	I	IVNO	55	I	IVD15	80	0	RA12
6	I	A4	31	---	VSS	56	I	IVD16	81	---	VSS
7	I	A5	32	I	IVN1	57	I	IVD17	82	0	RA13
8	---	N.C.	33	I	IVN2	58	I	IVD18	83	0	RA14
9	I	XWR	34	I	IVN3	59	I	IVD19	84	0	RA15
10	I	XCS	35	I	IVN4	60	---	VDD	85	0	RA16
11	---	VSS	36	I	IVD0	61	---	VSS	86	0	XRWE
12	I	D0	37	I	IVD1	62	I	DEN	87	0	XROE
13	I	D1	38	I	IVD2	63	I	XRES	88	0	OWEF
14	I	D2	39	I	IVD3	64	---	N.C.	89	I	TEST0
15	I	D3	40	I	IVD4	65	---	N.C.	90	I	TEST1
16	---	VDD	41	---	VSS	66	0	RA0	91	---	VSS
17	I	D4	42	I	IVD5	67	0	RA1	92	0	OVD19
18	I	D5	43	I	IVD6	68	0	RA2	93	0	OVD18
19	I	D6	44	I	IVD7	69	0	RA3	94	0	OVD17
20	I	D7	45	I	IVD8	70	0	RA4	95	0	OVD16
21	---	VSS	46	---	VDD	71	---	VSS	96	0	OVD15
22	I/O	RDO	47	I	IVD9	72	0	RA5	97	0	OVD14
23	I/O	RD1	48	I	IVD10	73	0	RA6	98	0	OVD13
24	I/O	RD2	49	I	IVD11	74	0	RA7	99	0	OVD12
25	I/O	RD3	50	I	IVD12	75	0	RA8	100	0	OVD11

NO.	I/O	PIN NAME	NO.	I/O	PIN NAME	NO.	I/O	PIN NAME	NO.	I/O	PIN NAME
101	---	VSS	106	---	VDD	111	---	VSS	116	0	OVN3
102	0	OVD10	107	0	OVD6	112	0	OVD2	117	0	OVN2
103	0	OVD9	108	0	OVD5	113	0	OVD1	118	0	OVN1
104	0	OVD8	109	0	OVD4	114	0	OVD0	119	0	OVNO
105	0	OVD7	110	0	OVD3	115	0	OVN4	120	---	VDD

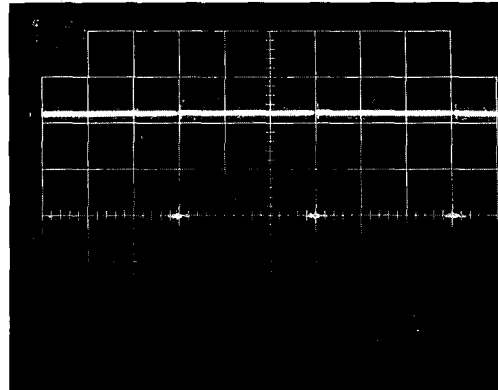
CHECK POINT FOR MB635107

1. OD18~OD0 (93~114pin)



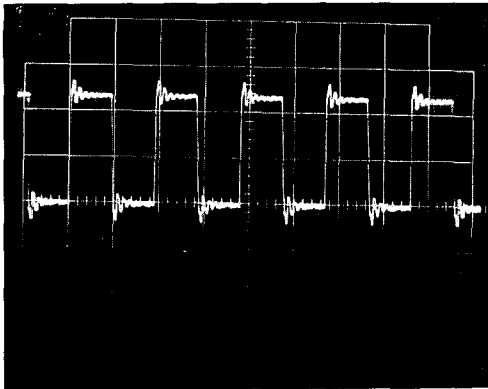
2V/5uS div

2. OD19 (92pin)



2V/5uS div

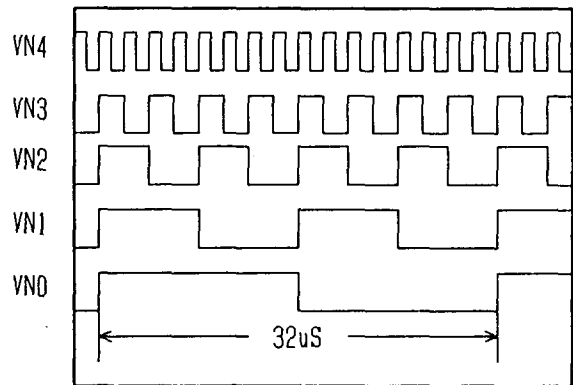
3. OWEF (88pin)



duty cycle of 50%

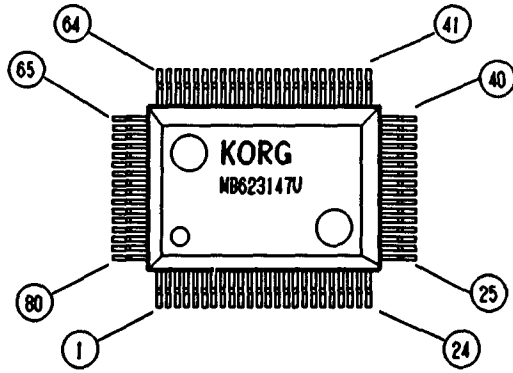
2V/0.5uS div

4. OVN4~0 (115~119pin)



duty cycle of 50%

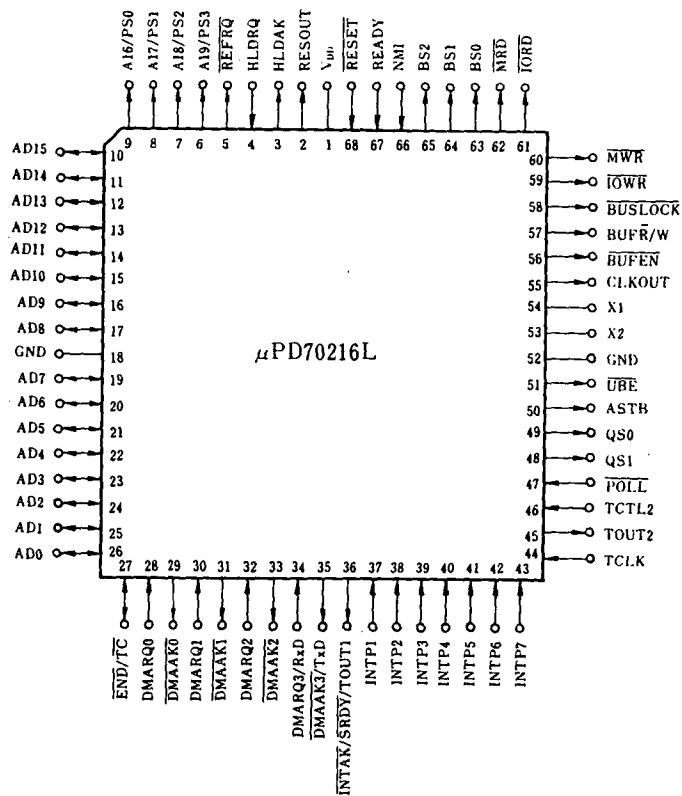
MB623147U (MAP25)
PIN ASSIGNMENT



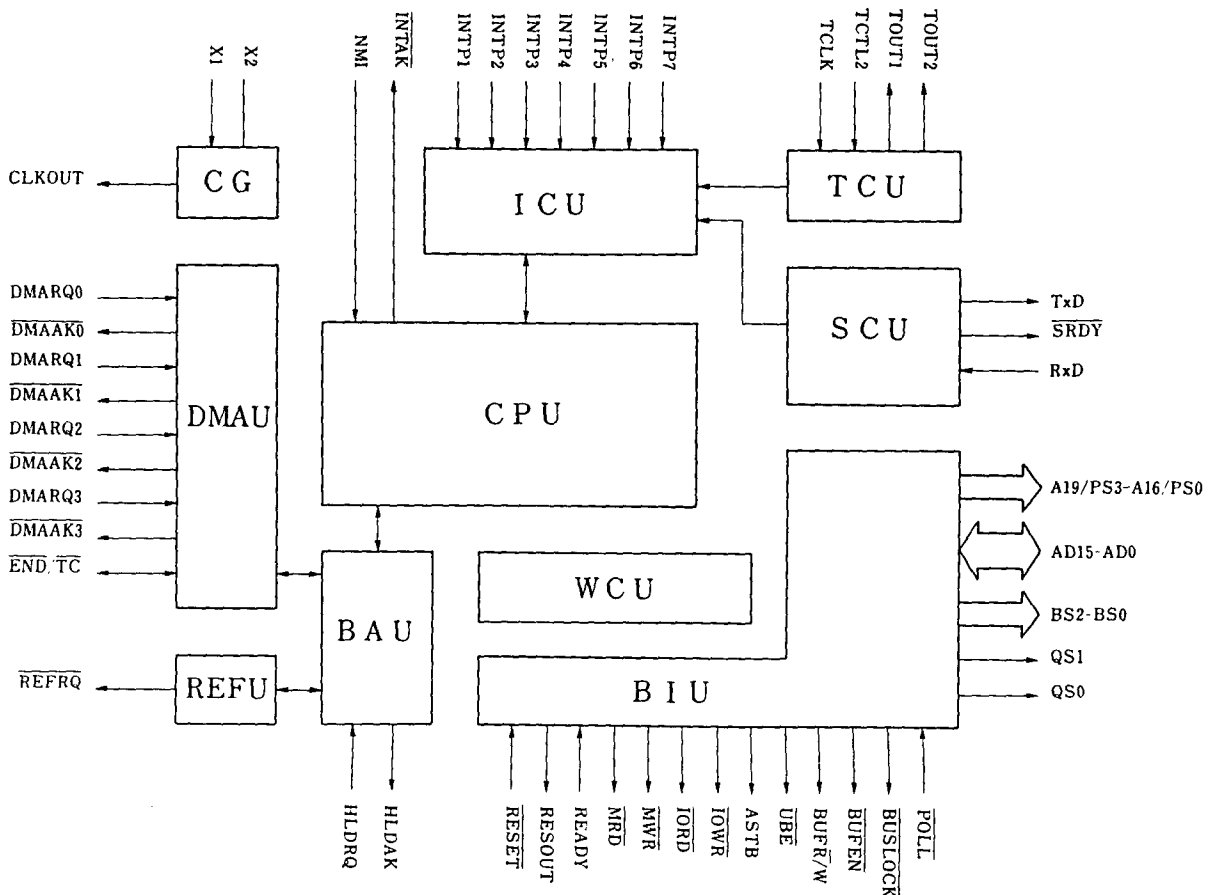
MB623147U (MAP25)
PIN FUNCTION

NO.	I/O	PIN NAME	NO.	I/O	PIN NAME	NO.	I/O	PIN NAME	NO.	I/O	PIN NAME
1	I	IA19	21	I	IA8	41	O	OA7	61	O	OA11
2	I	IA18	22	I	IA7	42	O	OA6	62	O	OA9
3	I	IA17	23	I	IA6	43	O	OA5	63	O	OA8
4	I	IA16	24	I	IA5	44	O	OA4	64	O	OA13
5	I	IA15	25	I	IA4	45	O	OA3	65	O	OA14
6	I	IA14	26	I	IA3	46	O	OA2	66	O	CDWR
7	I	IA13	27	I	IA2	47	O	OA1	67	O	IOS0
8	I/O	PD7	28	I	IA1	48	O	OA0	68	O	IOS1
9	I/O	PD6	29	I	IA0	49	I/O	D0	69	O	IOS2
10	I/O	PD5	30	I	MREQ	50	I/O	D1	70	O	IOS3
11	I/O	PD4	31	I	MODE	51	I/O	D2	71	O	IOS4
12	---	VSS	32	---	VSS	52	---	VSS	72	---	VSS
13	I/O	PD3	33	---	VDD	53	I/O	D3	73	---	VDD
14	I/O	PD2	34	I	IOST	54	I/O	D4	74	O	IOS5
15	I/O	PD1	35	I	R/W	55	I/O	D5	75	O	MS00
16	I/O	PDO	36	O	MRD	56	I/O	D6	76	O	MS01
17	I	IA12	37	O	MWR	57	I/O	D7	77	O	MS02
18	I	IA11	38	O	IORD	58	O	CDCS	78	O	MS03
19	I	IA10	39	O	IOWR	59	O	OA10	79	O	MS06
20	I	IA9	40	O	OA12	60	O	CDRD	80	O	MS07

μ PD70216L-10 (CPU)
PIN ASSIGNMENT



μ PD70216 INTERNAL BLOCK DIAGRAM



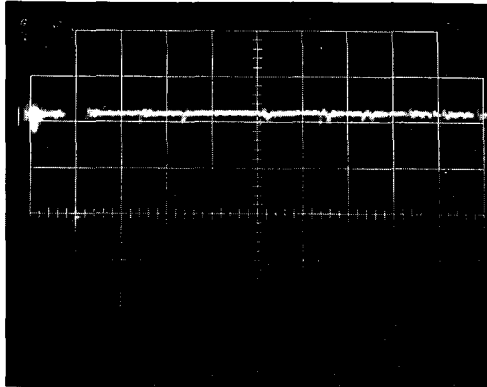
μ PD70216L-10 (CPU)

PIN FUNCTION

PIN NAME	I/O	FUNCTION
AD15-ADO	I/O	Address Bus/Data Bus
A19/PS3-A16/PS0	0	Address / Processor Status
REFRQ	0	Refresh Request
HLDRQ	I	Hold Request
HLDK	I	Hold Acknowledge
RESET	I	Reset
RESOUT	0	Reset Output
READY	I	Ready
NMI	I	Non Maskable Interrupt
MRD	0	Memory Read Strobe
MWR	0	Memory Write Strobe
IORD	0	I/O Read Strobe
IOWR	0	I/O Write Strobe
ASTB	0	Address Strobe
UBE	0	Upper Byte Enable
BUSLOCK	0	Bus Lock
POLL	I	Poll
BUFR/W	0	Buffer Read/Write
BUFEN	0	Buffer Enable
X2-X1	I	Crystal IN
CLKOUT	0	Clock Output
BS2-BS0	0	Bus Status
QS1-QS0	0	Queue Status
TOUT2	0	Timer Output 2
TCTL2	I	Timer Control 2
TCLK	I	Timer Clock
INTP7-INTP1	I	Interrupt from Peripherals
INTACK	0	Interrupt Acknowledge
TxD	0	Transmit Data
RxD	I	Receive Data
DMAACK2-DMAACK0	0	DMA Acknowledge 2-0
DMARQ2-DMARQ0	I	DMA Request 2-0
END/TC	I/O	End/Terminal Count
VDD	-----	
GND	-----	
IC	-----	

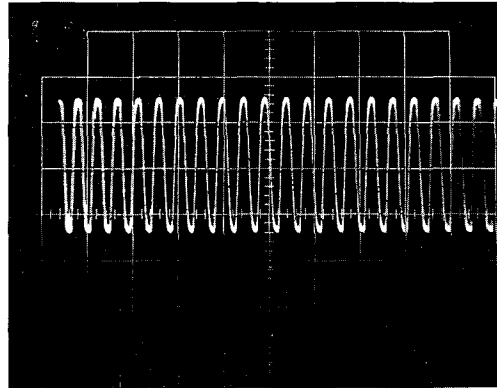
CHECK POINT FOR μ PD70216L-10

1. INTP3 (39pin)



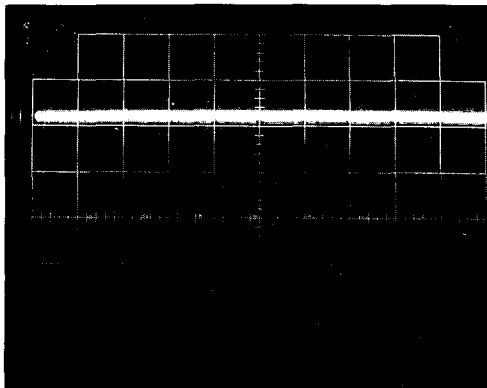
2V/20uS div

2. CLKOUT (55pin)



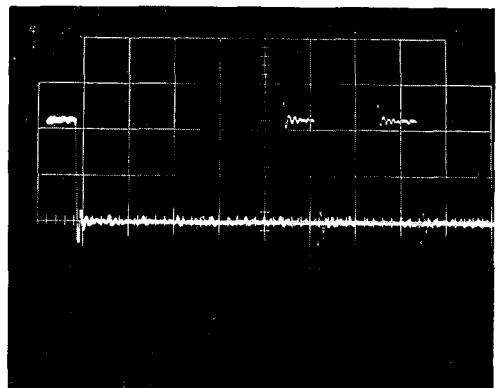
2V/0.2uS div

3. REFRQ (5pin)



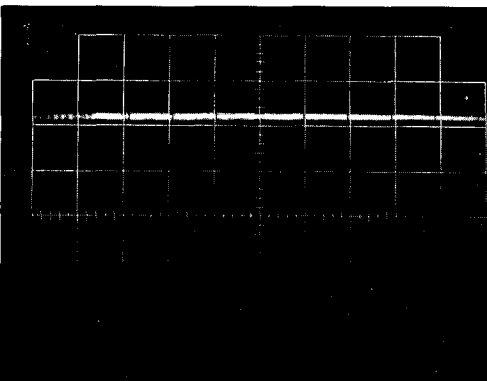
2V/20uS div

4. UBE (51pin)



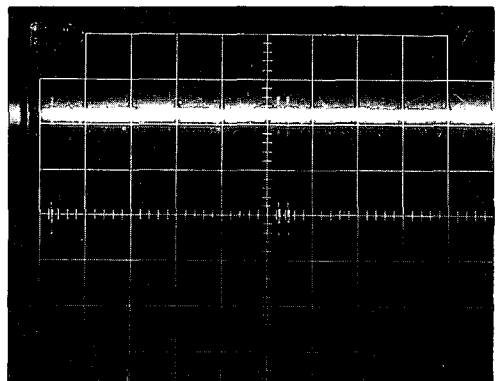
2V/0.5uS div

5. IOWR (59pin)



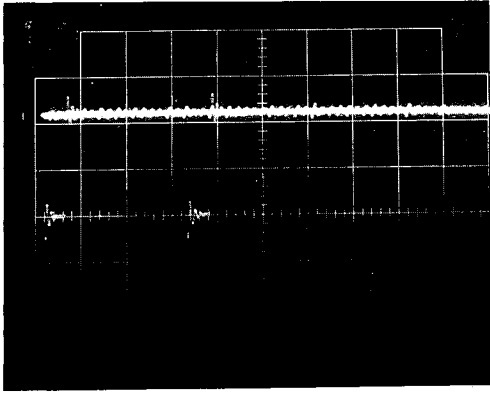
2V/0.5uS div

6. IORD (61pin)



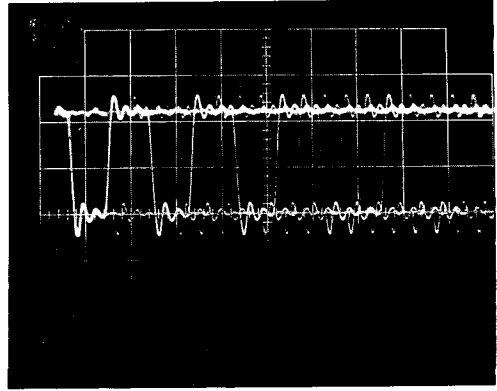
2V/20uS div

7.MWR (60pin)



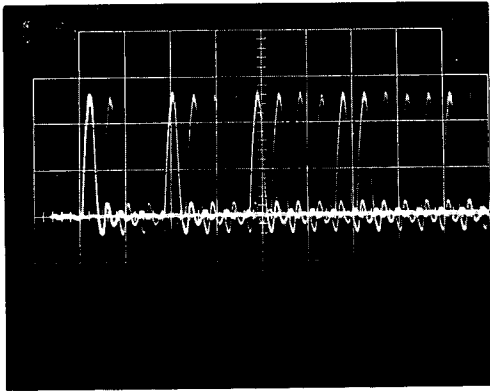
2V/2uS div

8.MRD (62pin)



2V/0.2uS div

9.ASTB (50pin)

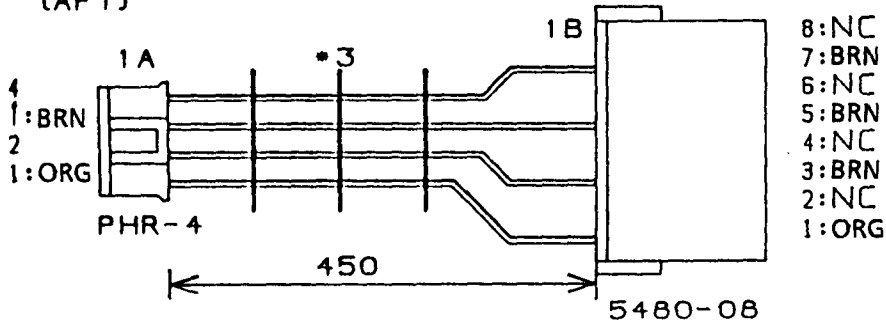


2V/0.2uS div

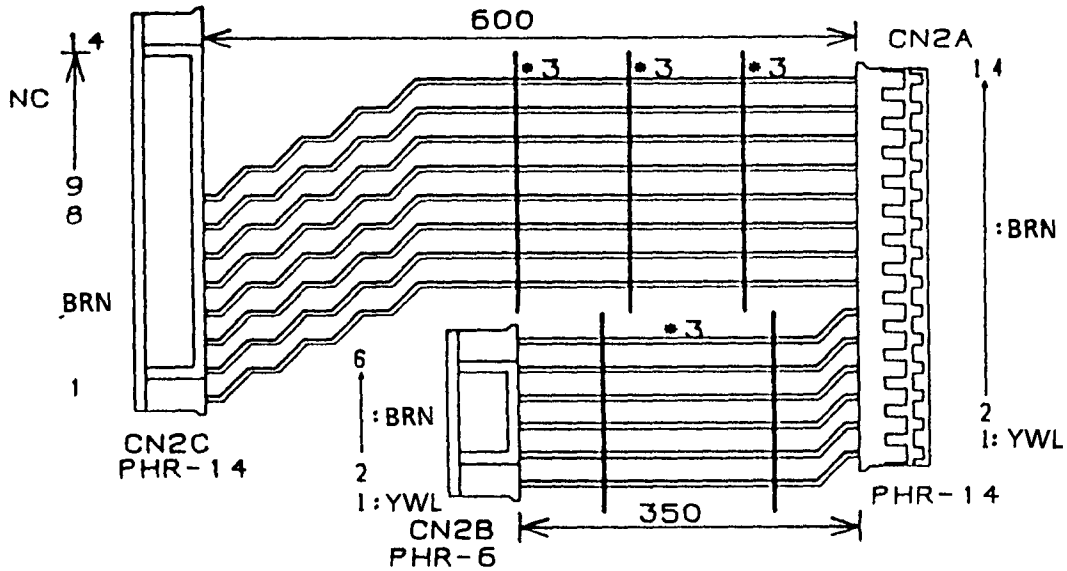
FOR HARNESSES

FOR 01/W PRO

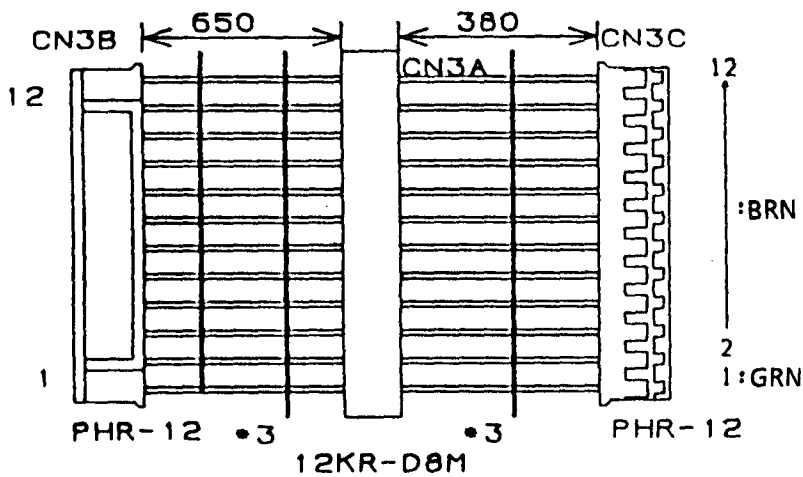
HNS-1771
(AFT)



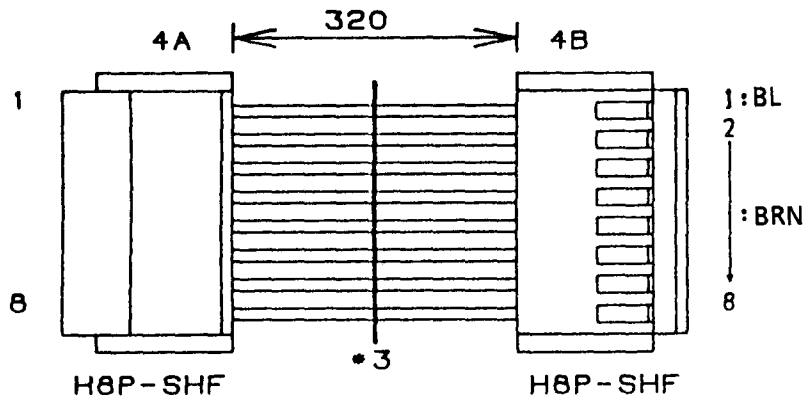
HNS-1772
(KBD-1)



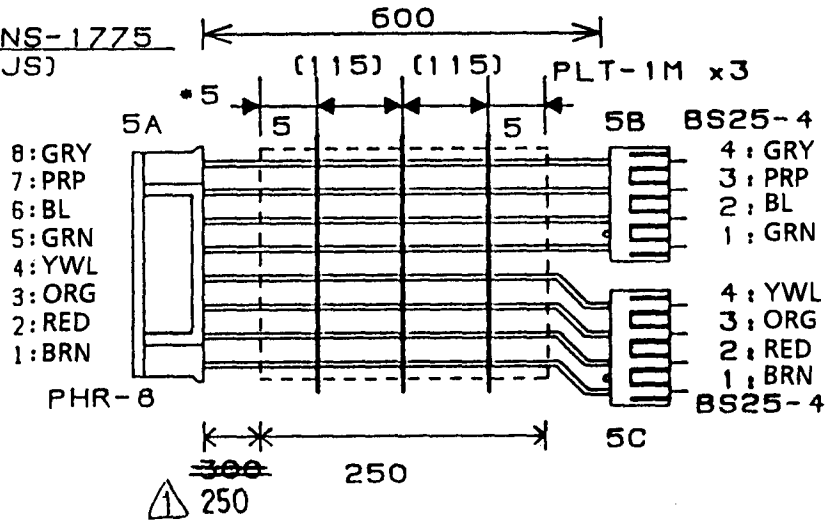
HNS-1773
(KBD-2)



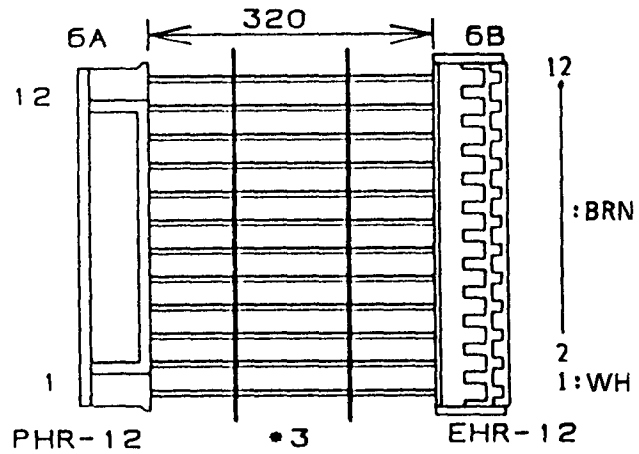
HNS-1774
(PS)



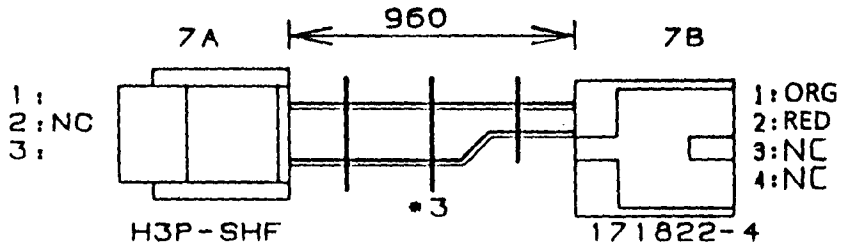
HNS-1775
(JS)



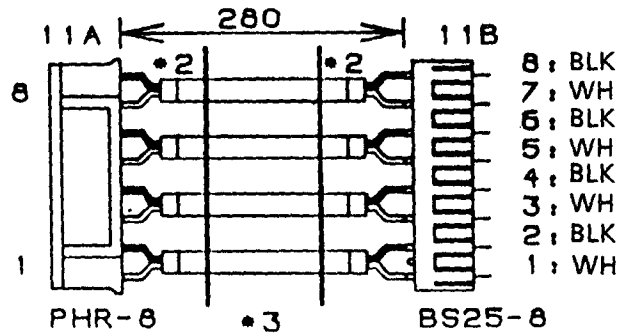
HNS-1776
(JACK)



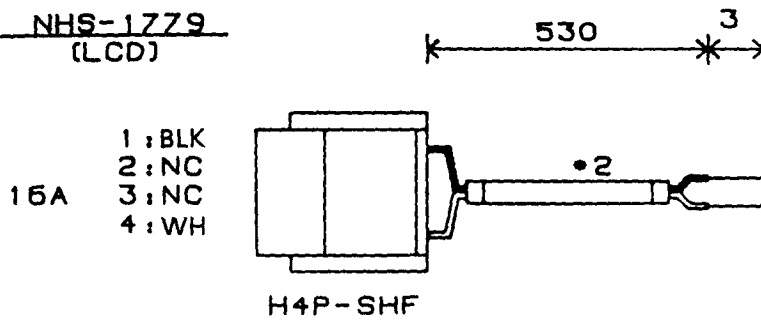
HNS-1777
(FDD)



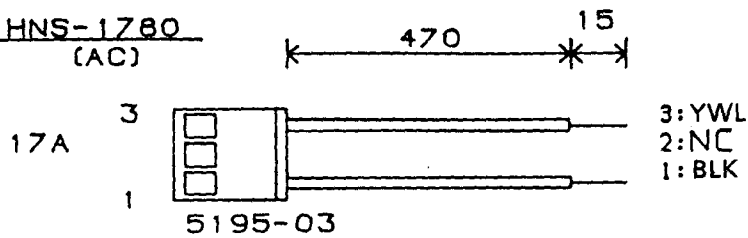
HNS-1778
(PANEL)



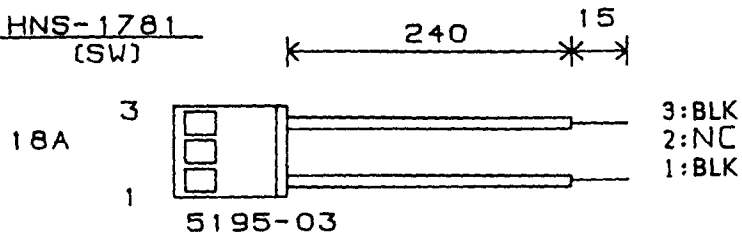
NHS-1779
(LCD)



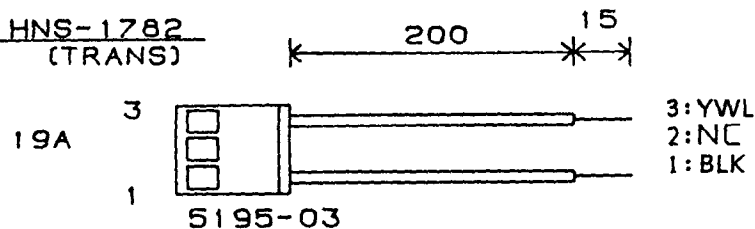
HNS-1780
(AC)



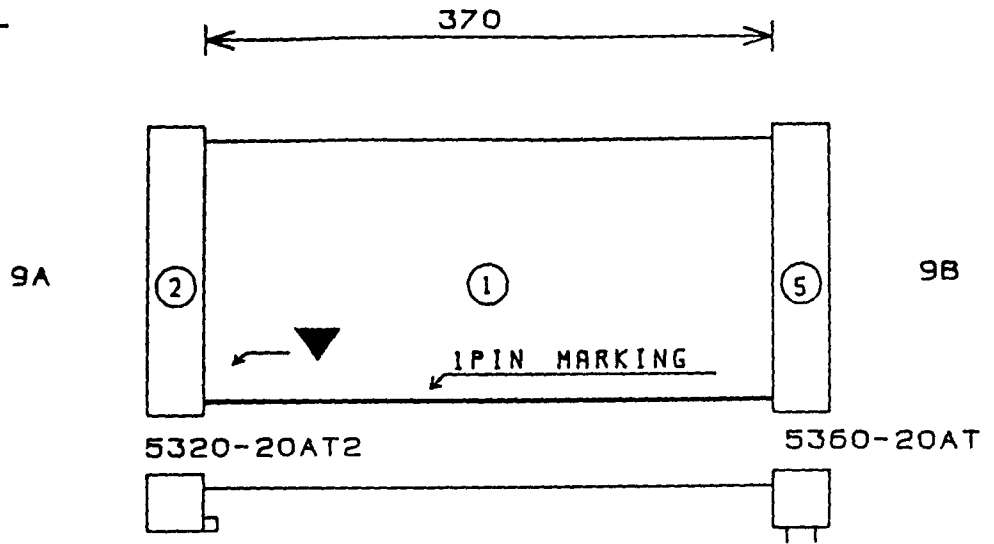
HNS-1781
(SW)



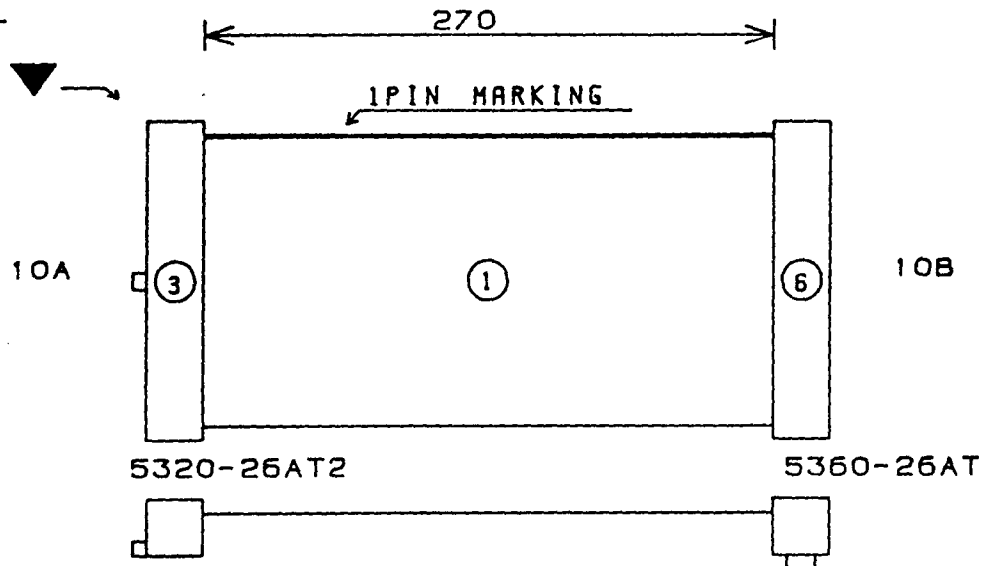
HNS-1782
(TRANS)



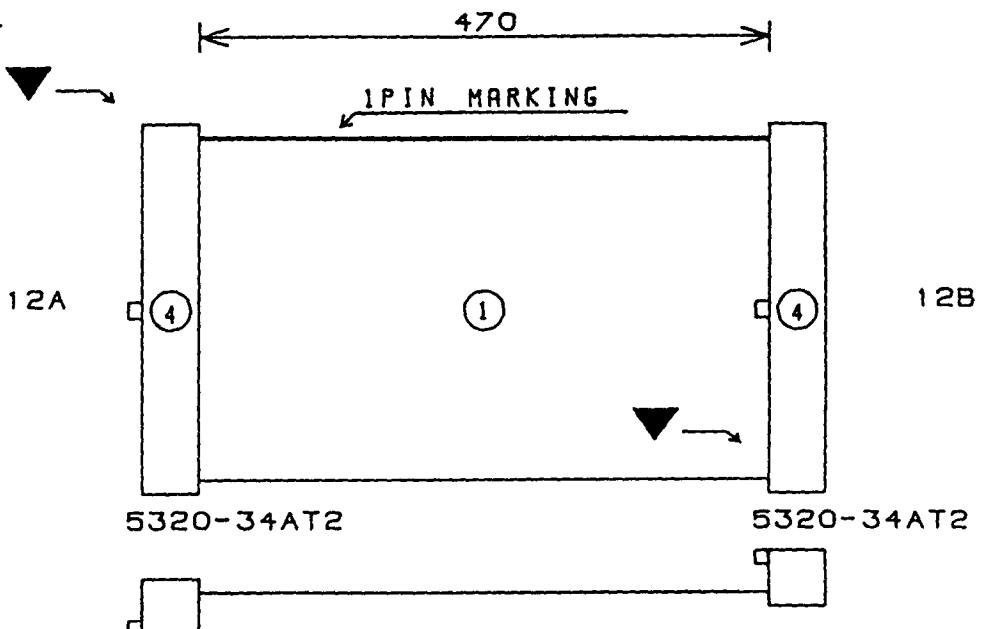
HNS-1783
(LCD)



HNS-1784
(PANEL)

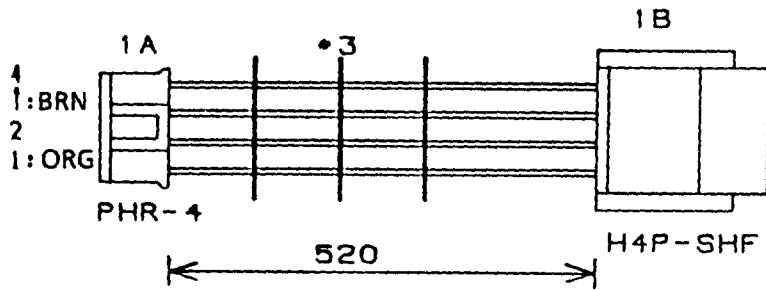


HNS-1785
(FDD)

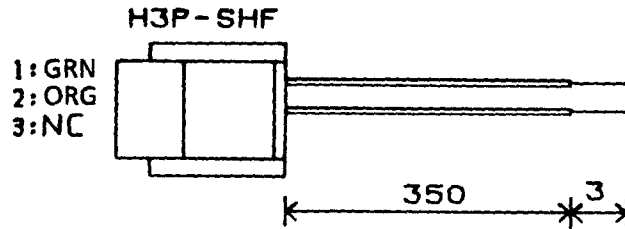


FOR 01/W PROX

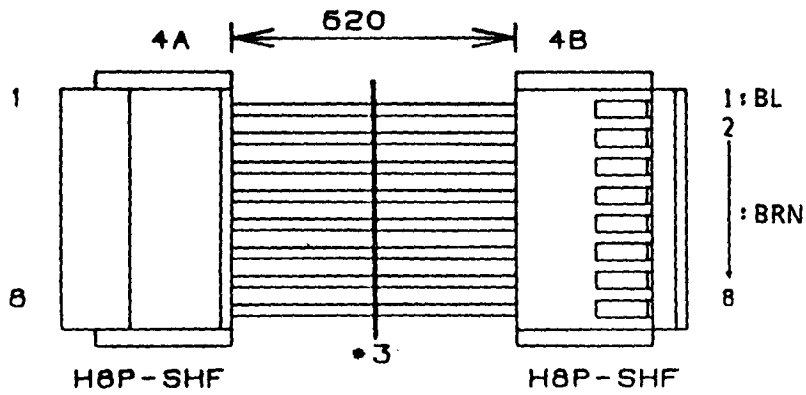
HNS-1021
(AFT MAIN)



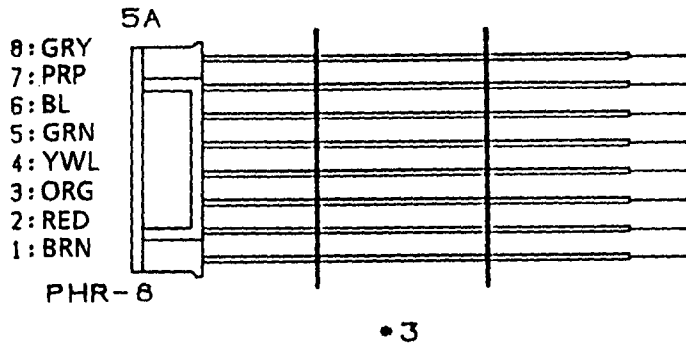
HNS-1022
(AFT KBD)



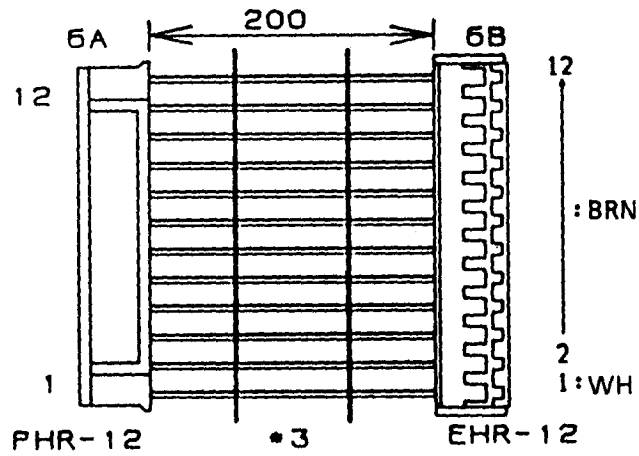
HNS-1024
(PS)



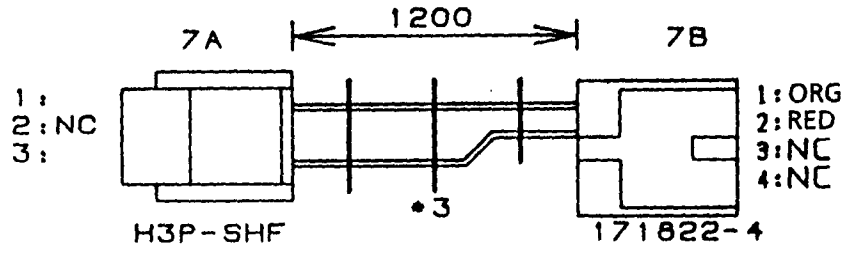
HNS-1825
(JS)



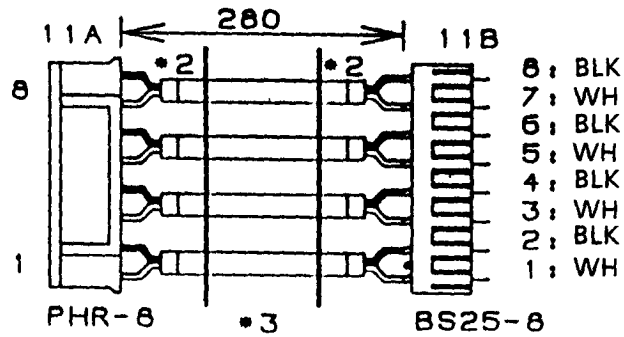
HNS-1826
(JACK)



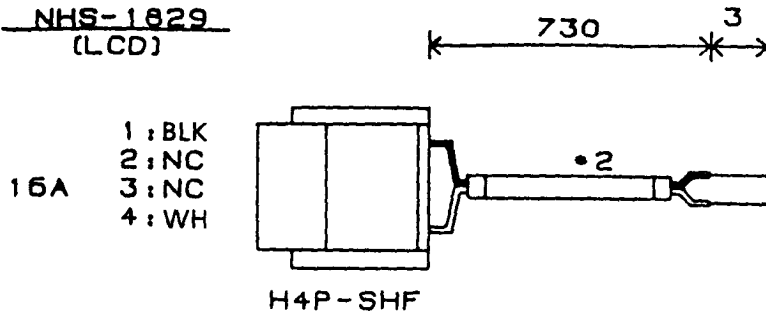
HNS-1827
(FDD)



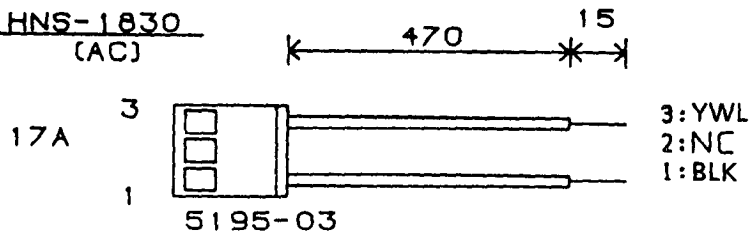
HNS-1828
(PANEL)



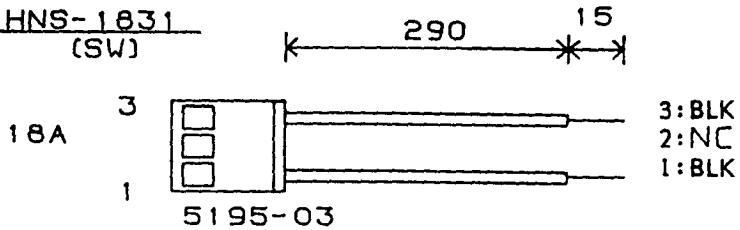
HNS-1829
(LCD)



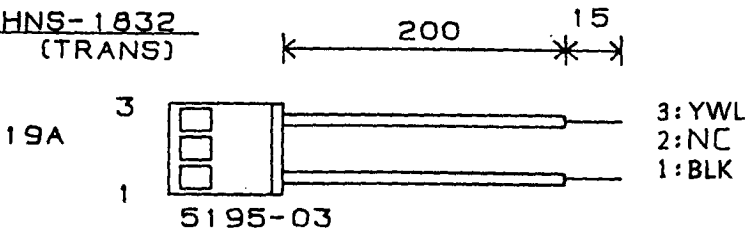
HNS-1830
(AC)



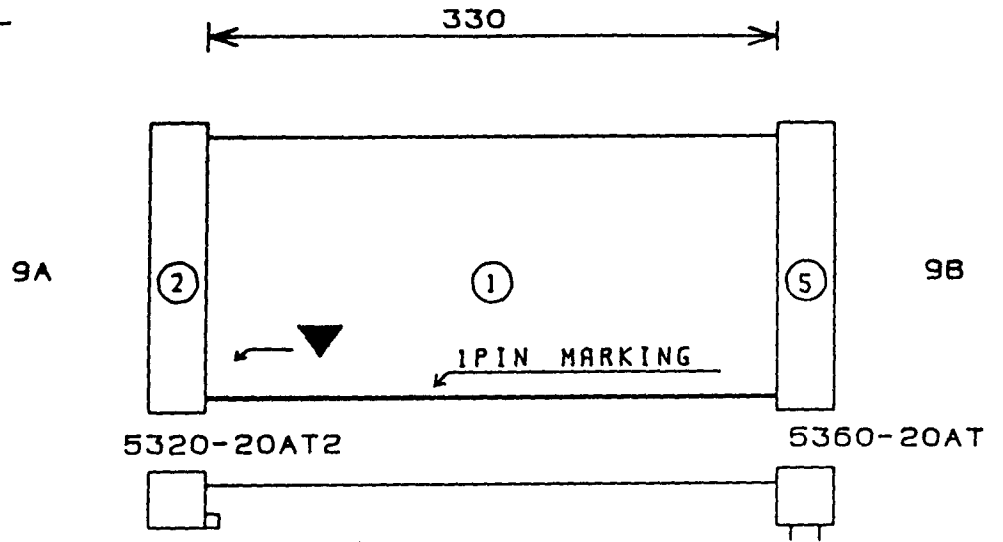
HNS-1831
(SW)



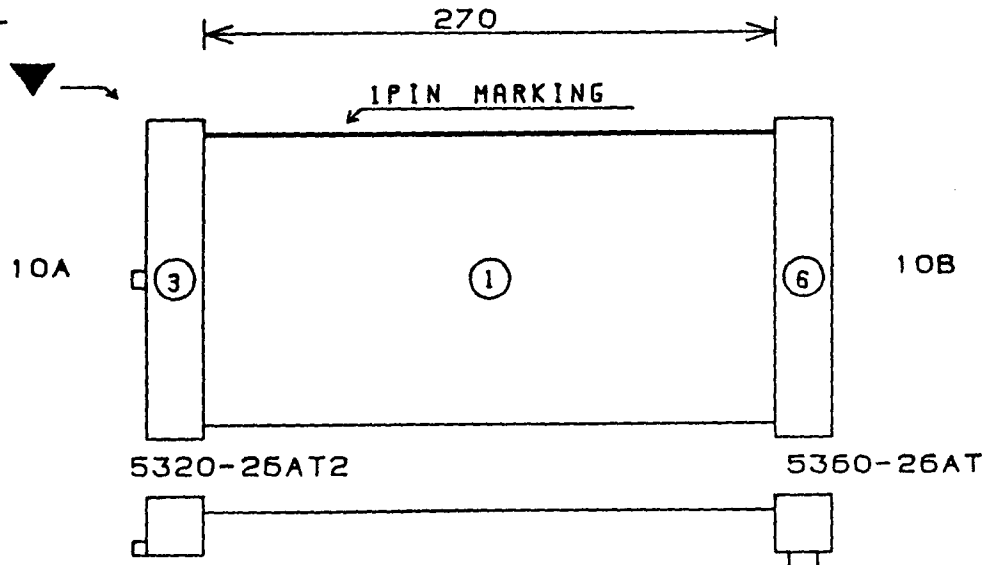
HNS-1832
(TRANS)



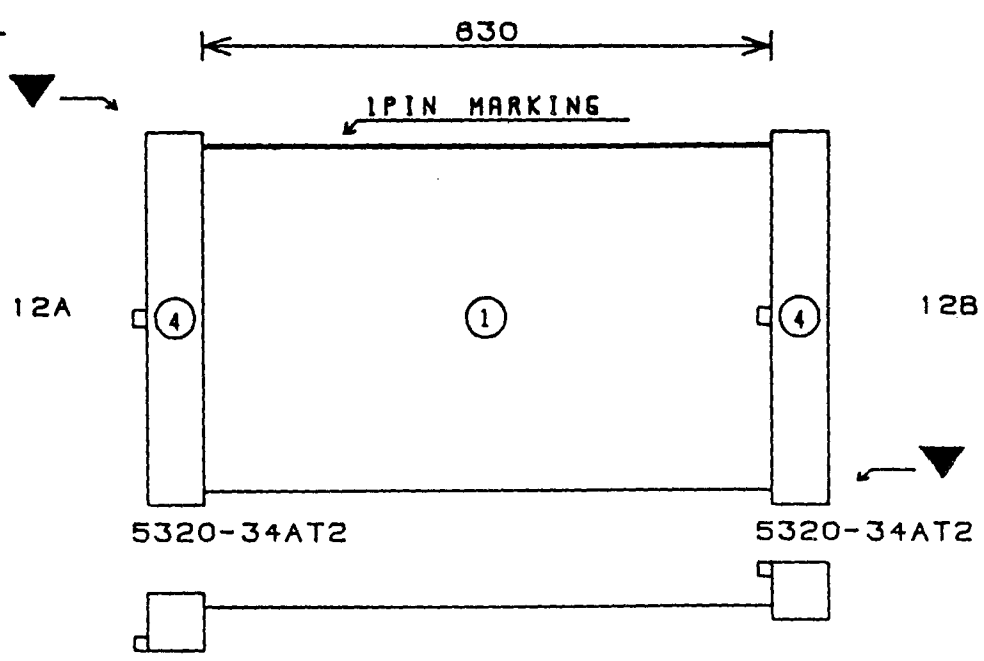
HNS-1833
(LCD)



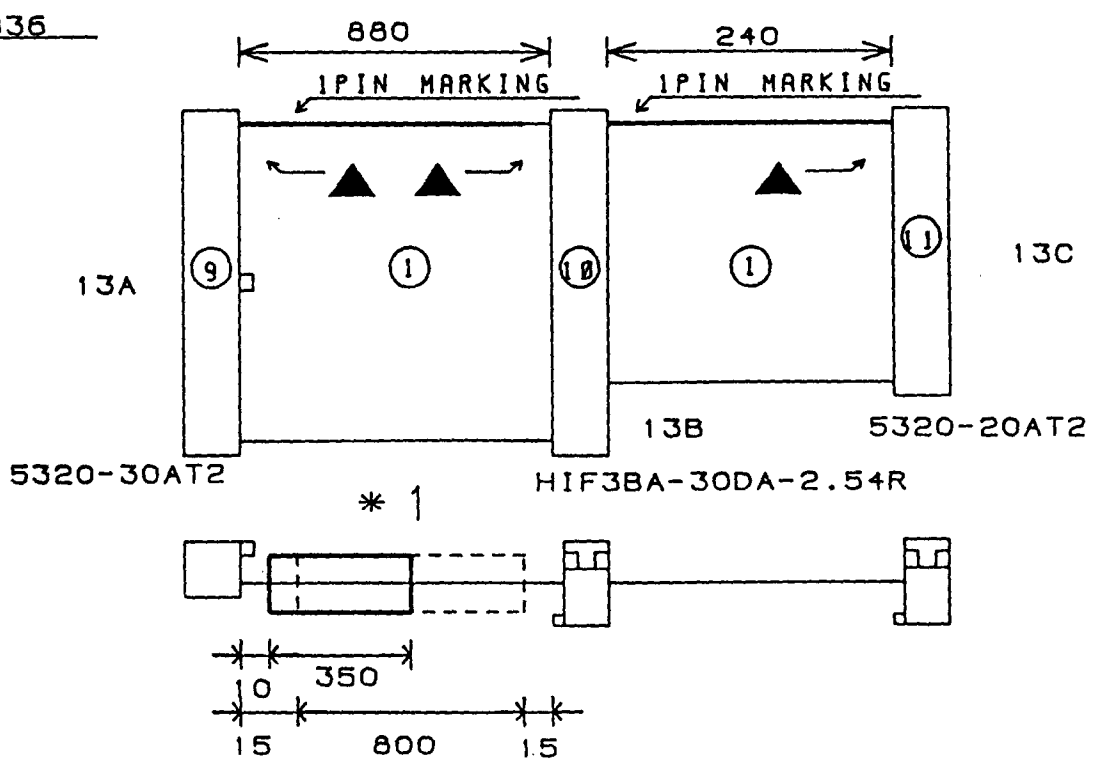
HNS-1834
(PANEL)



HNS-1835
(FDD)



HNS-1836
(KBD)



10. PARTS LIST

FOR 01/W PROX

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
001152900	P.C. BOARD ASSEMBLY KLM-1529	M.PART	JACK PCB	1
001153000	P.C. BOARD ASSEMBLY KLM-1530	M.PART	POWER SUPPLY PCB	1
001153300	P.C. BOARD ASSEMBLY KLM-1533	M.PART	PANEL PCB	1
001158900	P.C. BOARD ASSEMBLY KLM-1589	M.PART	MAIN PCB	1

304000070	TR 2SA812-T1 (M5-7)	1589		1
304020020	TR 2SC2785 T K	1530		1
304020230	TR 2SC3661-TA/TB(3K)	1589		4
304030130	TR FA1A4M-T1B	1589		7
304030140	TR FN1A4M-T1B	1589		5
304060070	FET 2SK433-T12-C	1589		4

310011300	BRIDGE DIODE DBF-20C	1530		1
310011400	BRIDGE DIODE DBF-40C	1530		1

312010700	LED GL3HD43	1533		11
312010900	LED GL3ED8	1533		1

313002500	LCD DMF5005NS-EW1	M.PART		1

314000300	DIODE 1S-2473 T-77	1533		37
314001300	DIODE 1SS-133 T-77	1590		2
314001400	DIODE RLS-73 TE-11	1589		8
314023900	ZENER DIODE RD5.1ESB1-T	1590		1
314025700	DIODE SR1M-2 TP-B	1530		2
315000500	DOUBLE DIODE MC-2840-T12-1	1589		4

320001261	IC UPD71055GB-10-3B4	1589	PPI	1
320001272	IC UPD70216L-10	1589	CPU	1
320001283	IC UPD65016GF-058-3BA	1589	MAP260	1
320003202	IC TC511664Z-10	1589	S_RAM	2
320004132	IC HD63265SFP (64P QFP)	1589	FDC	1
320009001	IC NJM4558DV	1590	OP. AMP	1
320009078	IC NJM78M12FA	1530	REGULATOR	1
320009079	IC NJM79M12FA	1530	REGULATOR	1
320011026	IC M5216L	1589	OP. AMP	1
320011141	IC M5M27C201K-15	1589	EP_ROM	2
320011152	IC M37450M4-616FP	1589	KSP	1
320012052	IC MB87405PF (QFP120)	1589	MDE	1
320012066	IC MB81464-10PSZ (ZIP)	1589	D_RAM	5
320012072	IC MB623147PF (QFP80)	1589	MAP25	1
320012084	IC MB87726PF (QFP160)	1589	TG88	1
320012085	IC MB87727PF (QFP120)	1589	DF88	1
320012092	IC MB635107PF-G-LBND	1589	WS89	1
320013036	IC PQ05RF2	1530	REGULATOR	1
320013040	IC LH5375NB	1589	WAVE_ROM	1
320013041	IC LH5375ND	1589	WAVE_ROM	1
320013042	IC LH5375NE	1589	WAVE_ROM	1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
320013043	IC LH5375NH	1589	WAVE_ROM	1
320013044	IC LH5375NJ	1589	WAVE_ROM	1
320036005	IC PCM55HP	1589	DAC	1
324001005	IC UPD74HC14GS-E2 (SOP)	1589	HC_MOS	1
324001006	IC UPD74HCU04GS-E2 (SOP)	1589	HC_MOS	1
324001008	IC UPD74HC32GS-E2 (SOP)	1589	HC_MOS	1
324001009	IC UPD74HC138GS-E2 (SOP)	1589	HC_MOS	1
324001012	IC UPD74HC245GS-E2 (SOP)	1589	HC_MOS	1
324001018	IC UPD74HC4053GS-E2(SOP)	1589	HC-MOS	3
324001029	IC UPD74HC08GS-E2 (SOP)	1589	HC_MOS	1
324001037	IC UPD43256AGU-10/12L-E2	1589	S_RAM	2
324009004	IC NJM78L05UA	1589	REGULATOR	1
324009005	IC NJM79L05UA	1589	REGULATOR	1
324009013	IC NJM2068MD-TE3	1589	OP. AMP	8
324011002	IC M5223FP-600C (8P SOP)	1589	OP. AMP	1
324011005	IC M5238FP-600C (8PSOP)	1589	OP. AMP	3
324011006	IC M5218FP-600C (8PSOP)	1589	OP. AMP	1
324011010	IC M751271FP (16P SOP)	1589	INVERTER	1
324011013	IC M62021FP-600C	1589	RESET	1
324011015	IC M74HC05FP-31B (SOP)	1589	HC-MOS	1
324013001	IC LH531AP6	1589	TABLE_ROM	1

334000500	SB COIL SBT-0260 TF	1529		9
		1589		6
334000600	PHOTO COUPLER PC-410K-TP	1589		1

335006000	CRYSTAL OSC. AT-49 20.00MHZ	1589		1
335006600	CRYSTAL OSC. AT-49 32MHZ	1589		1

350002347	SEMI FIXED VR RH0615C S4 47K	1589		1
		1590		1
350002410	SEMI FIXED VR RH0615C 15 100K	1590		1

360021300	VR RK1631110RZ2A 10KB	M.PART		2
365007800	SLIDE VR RS30111AC00NB 10KB	1533		1
365008000	SLIDE VR RS30112AC00JB 10KBX2	1533		1

375007800	POWER SW ESB-8213V	M.PART		1
375010500	TOUCH SW EVQ-PAC09K-A	1533		37

400012500	INVERTER TRANSFORMER TA-042	1530		1
400012700	POWER TRANSFORMER TC-046	M.PART		1

420003300	KEYBOARD 101490 A-88	M.PART		1

422006001	ME KEY TYPE C CBO4820	M.PART		---
422006002	ME KEY TYPE D CBO4821	M.PART		---
422006003	ME KEY TYPE E CBO4822	M.PART		---

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
422006004	ME KEY TYPE F CBO4823	M.PART		---
422006005	ME KEY TYPE G CBO4824	M.PART		---
422006006	ME KEY TYPE A CBO4825	M.PART		---
422006007	ME KEY TYPE B CBO4826	M.PART		---
422006008	ME KEY TYPE BLACK CBO4831	M.PART		---
422006012	ME KEY TYPE G'	M.PART		---
422006013	ME KEY TYPE E'	M.PART		---

422008101	KEY CONTACT PCB 88H (FOR A-88)	M.PART		---
422008102	KEY CONTACT PCB 88L (FOR A-88)	M.PART		---

430008106	FD XSD-OOP PRO	M.PART	PRELOAD DISK	1

435000700	FDD DFR423E02A (1MB)	M.PART		1

454004400	PHONE JACK YKB21-5010	1529		8

464001900	FUSE 250V 800MA SB800	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	100JP	1
464002200	FUSE 125V 1.6A SB1.6	M.PART	117US	2
		M.PART	117CN	2
		M.PART	117EX	2
		M.PART	100JP	2
464002800	FUSE 125V 6.3A SB6.3	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	100JP	1
464061401	FUSE 250V T250MA	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
464061901	FUSE 250V T800MA	M.PART	240UK	1
		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
464061901	FUSE 250V T800MA	M.PART	240UK	2
464062501	FUSE 250V T3.15A	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	240UK	1

471000301	CONNECTOR TOP B3P-SHF-1	1530		1
		1590		1
471000401	CONNECTOR TOP B4P-SHF-1	1530		1
		1590		1
471000801	CONNECTOR TOP B8P-SHF-1	1530		1
		1589		1
471050500	CONNECTOR TOP B5P-VH	1530		1
471061200	CONNECTOR TOP B12B-EH	1529		1
471070300	CONNECTOR TOP B3B-PH	1589		1
471070400	CONNECTOR TOP B4B-PH	1589		1
471070800	CONNECTOR TOP B8B-PH	1589		2
471071200	CONNECTOR TOP B12B-PH	1589		2
471071400	CONNECTOR TOP B14B-PH	1589		1
471090200	CONNECTOR TOP 5096-02C	1530		3
474011300	CARD CONNECTOR HGC0338-01-010	1589		1
474014400	HEADER 20P 5332-20T2	1589		1
474014500	HEADER 30P 5332-30T2	1589		1
474014600	HEADER 34P 5332-34T2	1589		1
474014701	HEADER 26P 5332-26T2	1589		1
474015400	CARD CONNECTOR FCN-565P068-G/C	1589		1
474018200	PIN HEADER PS-3PF-S4T1-PKL1	1589		1

475001821	HARNESS HNS-1821	M.PART		1
475001822	HARNESS HNS-1822	M.PART		1
475001824	HARNESS HNS-1824	M.PART		1
475001825	HARNESS HNS-1825	M.PART		1
475001826	HARNESS HNS-1826	M.PART		1
475001827	HARNESS HNS-1827	M.PART		1
475001828	HARNESS HNS-1828 (BOARD IN)	1533		1
475001829	HARNESS HNS-1829	M.PART		1
475001830	HARNESS HNS-1830	M.PART		1
475001831	HARNESS HNS-1831	M.PART		1
475001832	HARNESS HNS-1832	M.PART		1
475001833	HARNESS HNS-1833	M.PART		1
475001834	HARNESS HNS-1834 (BOARD IN)	1533		1
475001835	HARNESS HNS-1835	M.PART		1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
475001836	HARNESS HNS-1836	M.PART		1
480001324	IC SOCKET 32P DICF-32CS-E	1589		2
480010200	3P DIN JACK SOCKET YKF51-5046	1589		1
480010340	IC SOCKET PLPS-N68B-T	1589		1
480010350	SOCKET PS-2SH4-1	1589		1
500012000	CUSHION FOR SIDE PLATE	M.PART		2
500017900	SPACER CUSHION (180x10x5)	M.PART		1
500018100	SPACER CUSHION 2 (90x10x5)	M.PART		1
500019000	X-111 FRONT BAR CUSHION	M.PART		1
500019200	X-111 FRONT CUSHION L	M.PART		1
515002300	FUSE HOLDER S-N5057 #01	1530		8
520001700	LITHIC BATTERY CR2032	1589		1
525000100	DATA LINE FILTER ESD-R-25D-B	M.PART		1
525000400	EMI FERRITE 2643-480102	M.PART		1
540005803	COLLAR BUSHING TA-305	M.PART		2
540005900	COLLAR BUSHING TB-300	M.PART		2
540007200	WIRE BAND PLT-1M	M.PART		7
540008600	SPIRAL CLIP CS-8	M.PART		3
540008601	SPIRAL CLIP CS-6	M.PART		2
540012400	INLET SOCKET PA-125-10	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	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	240UK	1
		M.PART	100JP	1
540013100	CLIP A-1T	M.PART		3
540016700	WASHER ZMC 0.8x5.7x19.6	M.PART		3
540019400	SHIELD FORM 71TS13-6 (L=76mm)	M.PART		1
550013800	FELT FOR KEYBOARD (BLACK)	M.PART		1
560007300	X-111 HEAT SINK	M.PART		1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
575014600	LED SPACER LS-15-4 L=4mm	1533		11
575014700	LED SPACER LS-15-3 L=3mm	1533		1
600003200	AC CORD UC-948-J02	M.PART	117EX	1
600003300	AC CORD UC-953-J01	M.PART	117US	1
		M.PART	117CN	1
600003500	AC CORD SC-304-J01	M.PART	240AU	1
600003800	AC CORD DC-480-J01	M.PART	100JP	1
600004700	AC CORD EC-652-E03	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230WG	1
		M.PART	230SC	1
600004800	AC CORD EC-472-J01	M.PART	230SE	1
600004900	AC CORD BH-322-J01	M.PART	240UK	1
620019600	X-631 LEVER KNOB	M.PART		1
620019700	X-631 SLIDE VR KNOB	M.PART		2
620023100	X-952 POWER SW KNOB	M.PART		1
620023400	X-011/012 8KEY KNOB	M.PART		1
620023500	X-011/012 15KEY KNOB	M.PART		1
630012100	X-811 KEYBOARD SHIELD SHEET	M.PART		2
630012300	X-811 SHIELD SHEET A	M.PART		2
630015600	X-011/012 LCD WINDOW	M.PART		1
630018100	X-111 PANEL SHIELD SHEET	M.PART		1
640079000	KEYBOARD ANGLE (TYPE ME)	M.PART		3
640080200	METAL FITTING OF KEYBOARD	M.PART		2
640084600	GROUNDING CONTACT	1530		3
640084900	GROUND SPRING (A)	M.PART		8
640089900	X-707 WHEEL SPRING	M.PART		2
641001100	X-825 HINGE 1	M.PART		3
641007800	X-813A JACK PLATE	M.PART		1
641010500	X-811 SHIELD ANGLE	M.PART		1
641020400	X-011/012 POWER UNIT CHASSIS	M.PART		1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
641020600	METAL FITTING OF REGULATOR	M.PART		1
641021400	METAL FITTING OF POWER SW	M.PART		1
641022900	X-011/012 WASHER FOR P.TRANSFORMER	M.PART		2
641029500	X-111 FRONT PANEL	M.PART		1
641030500	X-111 SIDE CHASSIS L	M.PART		1
641030501	X-111 SIDE CHASSIS R	M.PART		1
641030600	X-111 PANEL SUPPORT	M.PART		3
641030700	X-111 FRONT BAR SPACER	M.PART		1
641030800	X-111 METAL FITTING OF PCB	M.PART		3
641030900	X-111 REAR PANEL	M.PART		1
641031000	X-111 FRONT BAR	M.PART		1
641031100	X-111 PCB PLATE	M.PART		1
641031200	X-111 PCB SUPPORT	M.PART		1
641031900	GROUND PLATE (A)	M.PART		6
641032000	GROUND PLATE (B)	M.PART		14
641033500	X-111 JOYSTICK PANEL	M.PART		1
644003800	X-631 LEVER PIN	M.PART		1
645012600	X-811 SIDE PLATE L	M.PART		1
645012601	X-811 SIDE PLATE R	M.PART		1
645015300	X-111 TOP PLATE	M.PART		1
645015400	X-111 BOTTOM PLATE	M.PART		1
646027600	X-631 VR PLATE	M.PART		2
646027700	X-631 JOYSTICK X_SUPPORT	M.PART		1
646027800	X-631 JOYSTICK Y_SUPPORT	M.PART		1
646027900	X-631 JOYSTICK LEVER	M.PART		1
646028000	X-631 JOYSTICK BOX	M.PART		1
646028200	SLIDE VR FRAME 1	M.PART		1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
646038500	X-011/012 LCD HOOD	M.PART		1
646039400	X-011/012 CARD GUIDE	M.PART		1
646039500	X-011/012 CARD SLOT	M.PART		1
649007400	BATTERY HOLDER	1589		1

FOR 01/W PRO

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
001151100	P.C. BOARD ASSEMBLY KLM-1511	M.PART	JOYSTICK PCB	1
001152900	P.C. BOARD ASSEMBLY KLM-1529	M.PART	JACK PCB	1
001153000	P.C. BOARD ASSEMBLY KLM-1530	M.PART	POWER SUPPLY PCB	1
001153300	P.C. BOARD ASSEMBLY KLM-1533	M.PART	PANEL PCB	1
001158900	P.C. BOARD ASSEMBLY KLM-1589	M.PART	MAIN PCB	1

304000070	TR 2SA812-T1 (M5-7)	1589		1
304020020	TR 2SC2785 TK	1530		1
304020230	TR 2SC3661-TA/TB(3K)	1589		4
304030130	TR FA1A4M-T1B	1589		7
304030140	TR FN1A4M-T1B	1589		5
304060070	FET 2SK433-T12-C	1589		4

310011300	BRIDGE DIODE DBF-20C	1530		1
310011400	BRIDGE DIODE DBF-40C	1530		1

312010700	LED GL3HD43	1533		11
312010900	LED GL3ED8	1533		1

313002500	LCD DMF5005NS-EW1	M.PART		1

314000300	DIODE 1S-2473 T-77	1533		37
314001400	DIODE RLS-73 TE-11	1589		8
314025700	DIODE SR1M-2 TP-B	1530		2
315000500	DOUBLE DIODE MC-2840-T12-1	1589		4

320001261	IC UPD71055GB-10-3B4	1589	PPI	1
320001272	IC UPD70216L-10	1589	CPU	1
320001283	IC UPD65016GF-058-3BA	1589	MAP260	1
320003202	IC TC511664Z-10	1589	S_RAM	2
320004132	IC HD63265SFP (64P QFP)	1589	FDC	1
320009078	IC NJM78M12FA	1530	REGULATOR	1
320009079	IC NJM79M12FA	1530	REGULATOR	1
320011026	IC M5216L	1589	OP. AMP	1
320011141	IC M5M27C201K-15	1589	EP_ROM	2
320011152	IC M37450M4-616FP	1589	KSP	1
320012052	IC MB87405PF (QFP120)	1589	MDE	1
320012066	IC MB81464-10PSZ (ZIP)	1589	D_RAM	5
320012072	IC MB623147PF (QFP80)	1589	MAP25	1
320012084	IC MB87726PF (QFP160)	1589	TG88	1
320012085	IC MB87727PF (QFP120)	1589	DF88	1
320012092	IC MB635107PF-G-LBND	1589	WS89	1
320013036	IC PQ05RF2	1530	REGULATOR	1
320013040	IC LH5375NB	1589	WAVE_ROM	1
320013041	IC LH5375ND	1589	WAVE_ROM	1
320013042	IC LH5375NE	1589	WAVE_ROM	1
320013043	IC LH5375NH	1589	WAVE_ROM	1
320013044	IC LH5375NJ	1589	WAVE_ROM	1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
320036005	IC PCM55HP	1589	DAC	1
324001005	IC UPD74HC14GS-E2 (SOP)	1589	HC_MOS	1
324001006	IC UPD74HCU04GS-E2 (SOP)	1589	HC_MOS	1
324001008	IC UPD74HC32GS-E2 (SOP)	1589	HC_MOS	1
324001009	IC UPD74HC138GS-E2 (SOP)	1589	HC_MOS	1
324001012	IC UPD74HC245GS-E2 (SOP)	1589	HC_MOS	1
324001018	IC UPD74HC4053GS-E2(SOP)	1589	HC-MOS	3
324001029	IC UPD74HC08GS-E2 (SOP)	1589	HC_MOS	1
324001037	IC UPD43256AGU-10/12L-E2	1589	S_RAM	2
324009004	IC NJM78L05UA	1589	REGULATOR	1
324009005	IC NJM79L05UA	1589	REGULATOR	1
324009013	IC NJM2068MD-TE3	1589	OP. AMP	8
324011002	IC M5223FP-600C (8P SOP)	1589	OP. AMP	1
324011005	IC M5238FP-600C (8PSOP)	1589	OP. AMP	3
324011006	IC M5218FP-600C (8PSOP)	1589	OP. AMP	1
324011010	IC M751271FP (16P SOP)	1589	INVERTER	1
324011013	IC M62021FP-600C	1589	RESET	1
324011015	IC M74HC05FP-31B (SOP)	1589	HC-MOS	1
324013001	IC LH531AP6	1589	TABLE_ROM	1

334000500	SB COIL SBT-0260 TF	1529		9
		1589		6
334000600	PHOTO COUPLER PC-410K-TP	1589		1

335006000	CRYSTAL OSC. AT-49 20.00MHZ	1589		1
335006600	CRYSTAL OSC. AT-49 32MHZ	1589		1

350002347	SEMI FIXED VR RH0615C S4 47K	1589		1

360023600	VR RK11K1140(X-011/012) 10KB	1511/12		2
365007800	SLIDE VR RS30111AC00NB 10KB	1533		1
365008000	SLIDE VR RS30112AC00JB 10KBX2	1533		1

375007800	POWER SW ESB-8213V	M. PART		1
375010500	TOUCH SW EVQ-PAC09K-A	1533		37

400012500	INVERTER TRANSFORMER TA-042	1530		1
400012700	POWER TRANSFORMER TC-046	M. PART		1

420004500	KEYBOARD FS-E76	M. PART		1

422006701	KEY TYPE C/F NB10754	M. PART		---
422006702	KEY TYPE D NB10755	M. PART		---
422006703	KEY TYPE B/E NB10756	M. PART		---
422006704	KEY TYPE G NB10757	M. PART		---
422006705	KEY TYPE A NB10758	M. PART		---
422006707	KEY TYPE BLACK NB10760	M. PART		---
422006800	KEY SPRING AA05543	M. PART		---

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
422007300	KEY TYPE E'	M.PART		---
422007301	KEY TYPE G'	M.PART		---
422007201	KEY CONTACT SW UNIT (12 POINTS)	M.PART		---
422008107	KEY CONTACT SW UNIT (7 POINTS)	M.PART		---
422008108	KEY CONTACT SW UNIT (9 POINTS)	M.PART		---
422008201	KEY CONTACT PCB ASSEMBLY L(FS-E76)	M.PART		---
422008202	KEY CONTACT PCB ASSEMBLY H(FS-E76)	M.PART		---
430008106	F.D. XSC-OOP PRO	M.PART		1
435000700	FDD DFR423E02A (1MB)	M.PART		1
454004400	PHONE JACK YKB21-5010	1529		8
464001900	FUSE 250V 800MA SB800	M.PART	100JP	1
		M.PART	117EX	1
		M.PART	117CN	1
		M.PART	117US	1
464002200	FUSE 125V 1.6A SB1.6	M.PART	100JP	2
		M.PART	117EX	2
		M.PART	117CN	2
		M.PART	117US	2
464002800	FUSE 125V 6.3A SB6.3	M.PART	100JP	1
		M.PART	117EX	1
		M.PART	117CN	1
		M.PART	117US	1
464061401	FUSE 250V T250MA	M.PART	240AU	1
		M.PART	240GE	1
		M.PART	220GE	1
		M.PART	230FR	1
		M.PART	230GE	1
		M.PART	230WG	1
		M.PART	230SE	1
		M.PART	240UK	1
		M.PART	230SC	1
		M.PART	240AF	1
464061901	FUSE 250V T800MA	M.PART	240AU	2
		M.PART	220GE	2
		M.PART	240GE	2
		M.PART	230GE	2
		M.PART	240AF	2
		M.PART	230FR	2
		M.PART	240UK	2
		M.PART	230SC	2
		M.PART	230WG	2
		M.PART	230SE	2
464062501	FUSE 250V T3.15A	M.PART	240UK	1

PART CODE	PART NAME/SPECIFICATION	P.C.BOARD	NOTE	Q'TY
464062501	FUSE 250V T3.15A	M.PART	230GE	1
		M.PART	240AF	1
		M.PART	230SE	1
		M.PART	230SC	1
		M.PART	230WG	1
		M.PART	230FR	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	220GE	1

471000301	CONNECTOR TOP B3P-SHF-1	1530		1
471000401	CONNECTOR TOP B4P-SHF-1	1530		1
471000801	CONNECTOR TOP B8P-SHF-1	1530		1
		1589		1
471050500	CONNECTOR TOP B5P-VH	1530		1
471061200	CONNECTOR TOP B12B-EH	1529		1
471070300	CONNECTOR TOP B3B-PH	1589		1
471070400	CONNECTOR TOP B4B-PH	1589		1
471070800	CONNECTOR TOP B8B-PH	1589		2
471071200	CONNECTOR TOP B12B-PH	1589		2
471071400	CONNECTOR TOP B14B-PH	1589		1
471090200	CONNECTOR TOP 5096-02C	1530		3
474011300	CARD CONNECTOR HGC0338-01-010	1589		1
474014400	HEADER 20P 5332-20T2	1589		1
474014500	HEADER 30P 5332-30T2	1589		1
474014600	HEADER 34P 5332-34T2	1589		1
474014701	HEADER 26P 5332-26T2	1589		1
474015400	CARD CONNECTOR FCN-565P068-G/C	1589		1
474018200	PIN HEADER PS-3PF-S4T1-PKL1	1589		1

475001771	HARNESS HNS-1771	M.PART		1
475001772	HARNESS HNS-1772	M.PART		1
475001773	HARNESS HNS-1773	M.PART		1
475001774	HARNESS HNS-1774	M.PART		1
475001775	HARNESS HNS-1775 (BOARD IN)	1511/12		1
475001776	HARNESS HNS-1776	M.PART		1
475001777	HARNESS HNS-1777	M.PART		1
475001778	HARNESS HNS-1778 (BOARD IN)	1533		1
475001779	HARNESS HNS-1779	M.PART		1
475001780	HARNESS HNS-1780	M.PART		1
475001781	HARNESS HNS-1781	M.PART		1
475001782	HARNESS HNS-1782	M.PART		1
475001783	HARNESS HNS-1783	M.PART		1
475001784	HARNESS HNS-1784 (BOARD IN)	1533		1
475001785	HARNESS HNS-1785	M.PART		1

480001324	IC SOCKET 32P DICF-32CS-E	1589		2
480010200	3P DIN JACK SOCKET YKF51-5046	1589		1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
480010340	IC SOCKET PLPS-N68B-T	1589		1
480010350	SOCKET PS-2SH4-1	1589		1
500017900	SPACER CUSHION (180x10x5)	M.PART		1
500018100	SPACER CUSHION 2 (90x10x5)	M.PART		1
500018500	RUBBER FOOT FF-001	M.PART		4
515002300	FUSE HOLDER S-N5057 #01	1530		8
520001700	LITHIC BATTERY CR2032	1589		1
525000100	DATA LINE FILTER ESD-R-25D-B	M.PART		1
525000400	EMI FERRITE 2643-480102	M.PART		1
540007200	WIRE BAND PLT-1M	M.PART		8
540008600	SPIRAL CLIP CS-8	M.PART		7
540008601	SPIRAL CLIP CS-6	M.PART		1
540012400	INLET SOCKET PA-125-10	M. PART	240AF	1
		M. PART	220GE	1
		M. PART	240GE	1
		M. PART	240AU	1
		M. PART	230FR	1
		M. PART	230GE	1
		M. PART	240UK	1
		M. PART	230SE	1
		M. PART	230SC	1
		M. PART	230WG	1
		M. PART	100JP	1
		M. PART	117US	1
		M. PART	117EX	1
		M. PART	117CN	1
540018900	SHIELD FORM 71TS5-3	M. PART		1
540019000	CLIP S-8	M. PART		2
575014600	LED SPACER LS-15-4 L=4mm	1533		11
575014700	LED SPACER LS-15-3 L=3mm	1533		1
600003200	AC CORD UC-948-J02	M. PART	117EX	1
600003300	AC CORD UC-953-J01	M. PART	117CN	1
		M. PART	117US	1
600003500	AC CORD SC-304-J01	M. PART	240AU	1
600003800	AC CORD DC-480-J01	M. PART	100JP	1
600004700	AC CORD EC-652-E03	M. PART	240AF	1
		M. PART	220GE	1
		M. PART	230GE	1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
600004700	AC CORD EC-652-E03	M.PART	230WG	1
		M.PART	230FR	1
		M.PART	230SC	1
		M.PART	240GE	1
600004800	AC CORD EC-472-J01	M.PART	230SE	1
600004900	AC CORD BH-323-J02	M.PART	240UK	1
620019700	X-631 SLIDE VR KNOB	M.PART		2
620023100	X-952 POWER SW KNOB	M.PART		1
620023400	X-011/012 8KEY KNOB	M.PART		1
620023500	X-011/012 15KEY KNOB	M.PART		1
630015600	X-011/012 LCD WINDOW	M.PART		1
630017600	X-112 SHIELD SHEET	M.PART		1
630017700	X-112 JOYSTICK SHIELD SHEET	M.PART		1
630018200	X-112 PCB SHIELD SHEET	M.PART		1
640084600	GROUNDING CONTACT	1530		3
641007800	X-813A JACK PLATE	1529		1
641019800	X-952 L TYPE ANGLE	M.PART		4
641020300	X-011/012 KEYBOARD FRONT ANGLE	M.PART		1
641020400	X-011/012 POWER UNIT CHASSIS	M.PART		1
641020500	X-011 FDD ANGLE	M.PART		1
641020600	METAL FITTING OF REGULATOR	M.PART		1
641021100	X-011/012 SIDE CHASSIS L	M.PART		1
641021200	X-011/012 SIDE CHASSIS R	M.PART		1
641021300	X-011/012 JOYSTICK PANEL SUPPORT	M.PART		1
641021400	METAL FITTING OF POWER SW	M.PART		1
641022900	X-011/012 WASHER FOR P. TRANSFORMER	M.PART		2
641029600	X-112 KEYBOARD ANGLE	M.PART		1
641029700	X-112 PCB SUPPORT PLATE	M.PART		1
641029800	X-112 SUPPORT PLATE D	M.PART		1
641029900	X-112 KEYBOARD ANGLE (SMALL)	M.PART		1

PART CODE	PART NAME/SPECIFICATION	P.C. BOARD	NOTE	Q'TY
641030000	X-112 FRONT PANEL	M.PART		1
641030100	X-112 LOWER CASE	M.PART		1
641030300	X-112 SUPPORT RAIL	M.PART		1
641032000	GROUND PLATE (B)	M.PART		4
644006200	X-011/012 WHEEL SPRING	M.PART		2
646028200	SLIDE VR FRAME 1	M.PART		1
646038400	X-011/012 SIDE PLATE L	M.PART		1
646038401	X-011/012 SIDE PLATE R	M.PART		1
646038500	X-011/012 LCD HOOD	M.PART		1
646038600	X-011 FDD COVER	M.PART		1
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
646039400	X-011/012 CARD GUIDE	M.PART		1
646039500	X-011/012 CARD SLOT	M.PART		1
646039600	X-011/012 JOYSTICK PANEL	M.PART		1
646040000	X-011/012 JOYSTICK COVER	M.PART		1
649007400	BATTERY HOLDER	1589		1

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 håndtering.
Udskiftning må kun ske med batteri af samme
fabrikat og type.
Levér det brugte batteri tilbage til leverandør ren.

ADVERSEL

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

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som
rekommenderas av apparatillverkaren.
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

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