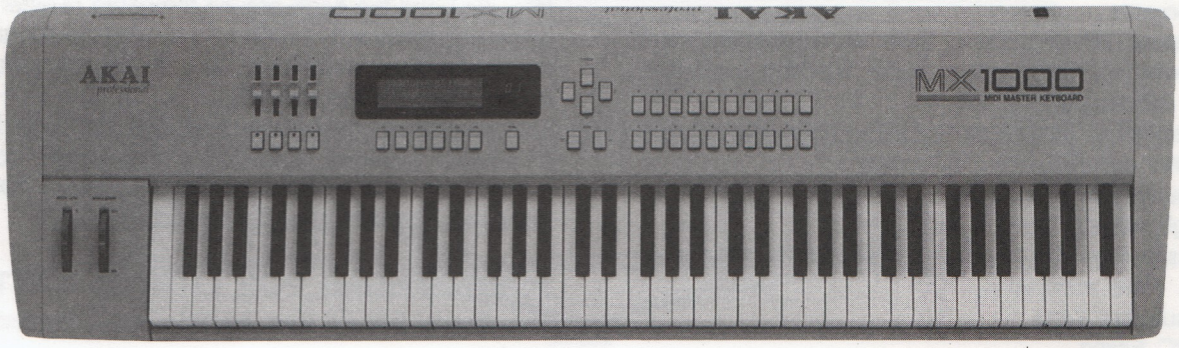
AKAI SERVICE MANUAL



MIDI MASTER KEYBOARD

MODEL MX1000

PIANO SOUND BOARD

MODEL PM76 (OPTION)

SPECIFICATIONS

Keyboard	76 keys (E0-G6) with velocity dynamics, after touch
Display	Liquid crystal display (40 characters x 8 lines)
Internal memory	100 Programs, 4 Program Chains Battery backed-up
External memory	Memory card BR-16 (optional), Save/Load as MIDI System Exclusive messages
Built in controls	Power switch, Pitch bend wheel, Modulation wheel, 4 assignable MIDI control switches/sliders, Function keys (F1-F6), Panic key, Cursor keys (up/down/left/right), Data keys (increment/decrement), Numerical keys (0-9) x 2, Memory protect switch, LCD contrast adjuster
Connection jacks	MIDI-In/Thru/Out x 4 (individual), Foot switch jacks x 4, Foot pedal jacks x 4, Sustain jack x 1, Program up/down jack x 1, Memory card slot, AC inlet, Audio output jack space (for the optional PM76 piano sound board), Output level control, Output jacks (L / R), Stereo headphone jack
Rated voltage	AC 100V 50/60 Hz for Japan, AC 120V 60 Hz for USA and Canada, AC 220V for Europe except UK, AC 240V for UK and Australia
Power Consumption	9.5 W (AC100V),12 W (AC120V)
Dimensions	1280 (W) x 110 (H) x 380 (D) (Unit:mm)
Weight	20.5kg
Optional items	BR-16 IC Memory card, PM76 piano sound board

Standard accessories

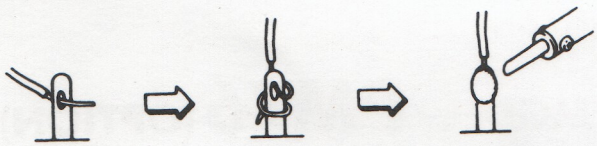
AC power cord	x 1
Operator's manual	x 1

* For improvement purposes, specifications and design are subject to change without notice.

★SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ (*) symbol are critical for safety. Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.
   These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing micro-switch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder, droplets, etc.) do not remain inside the set.

SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit.
The Leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal-input/output connectors, etc.) and the earth ground through a resister of 1500 ohms paralleled with a 0.15 μF capacitor, under the unit's normal working conditions. The leakage-current should be less than 0.5 mA rms AC.
The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 Mohms.

PRECAUTIONS FOR LITHIUM BATTERY

The lithium battery may explode when heated excessively.
[OBSERVE THE FOLLOWING WHEN REPLACING]

- Replace with the same make and type only.
- Use soldering iron in "recommended way" only.
- Place battery in correct polarity.
- Do not short the terminals.
- Do not charge battery.
- Do not dispose of battery in fire.



[DANGER]



[RECOMMENDED WAY]

★INFORMATION

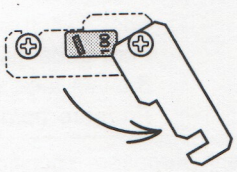
PRIMARY DESTINATION INDICATION

Primary destinations of units are indicated with the following letters.

Letter	Primary Destination
A	USA
B	UK
C	Canada
E	Europe (except UK)
J	Japan
S	Australia
V	Germany
U	Universal Area
Y*	Custom version

VOLTAGE CONVERSION

Before connecting the power cord, SET the VOLTAGE SELECTOR located on the bottom plate to the voltage used in your area. Loosen both the screws and turn the switch cover as shown below then set the VOLTAGE SELECTOR so that the correct voltage is indicated.

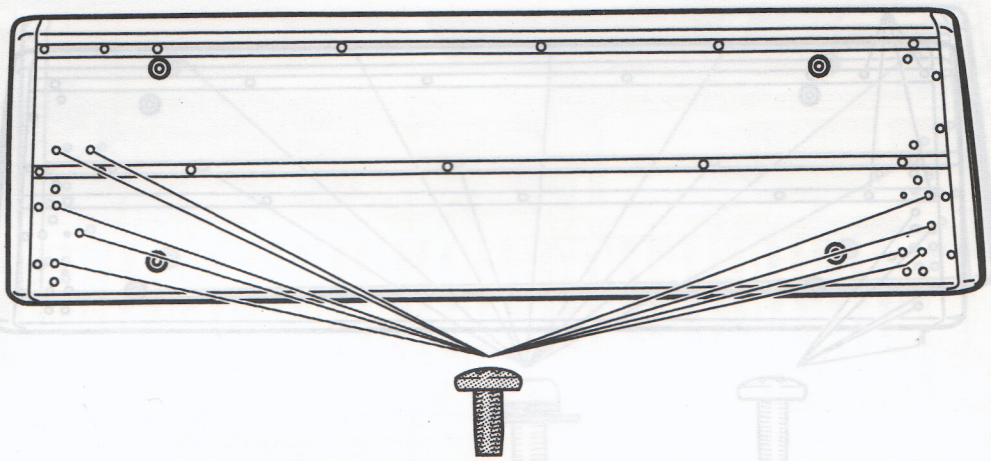


I.DISASSEMBLY

In case of trouble, etc, necessitating dismantling, please dismantle in the order shown in the illustrations. Reassemble in the reverse order.

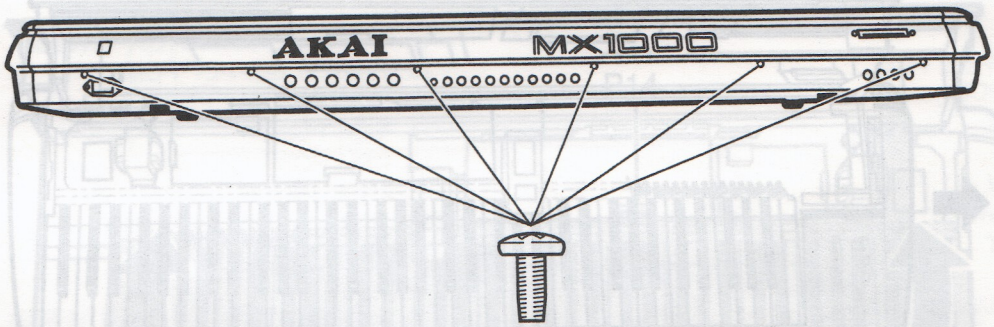
1-1.HOW TO OPEN THE TOP PANEL

1



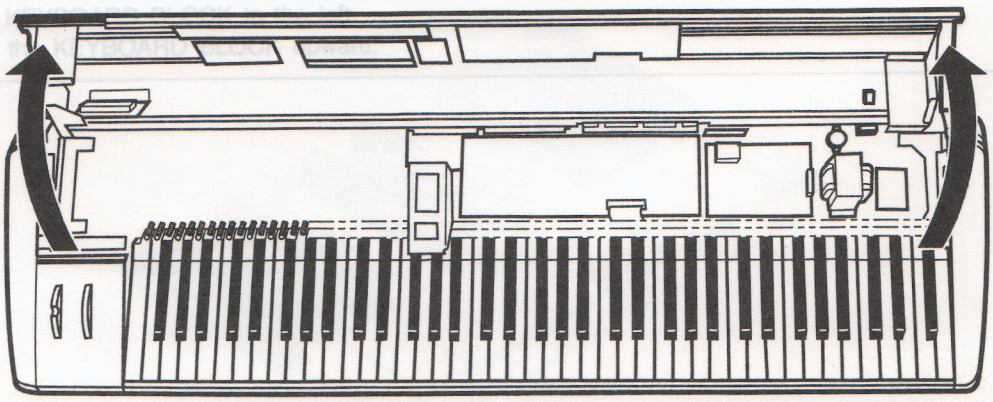
Remove 9 (gold colored) screws.

2



Remove 6 screws

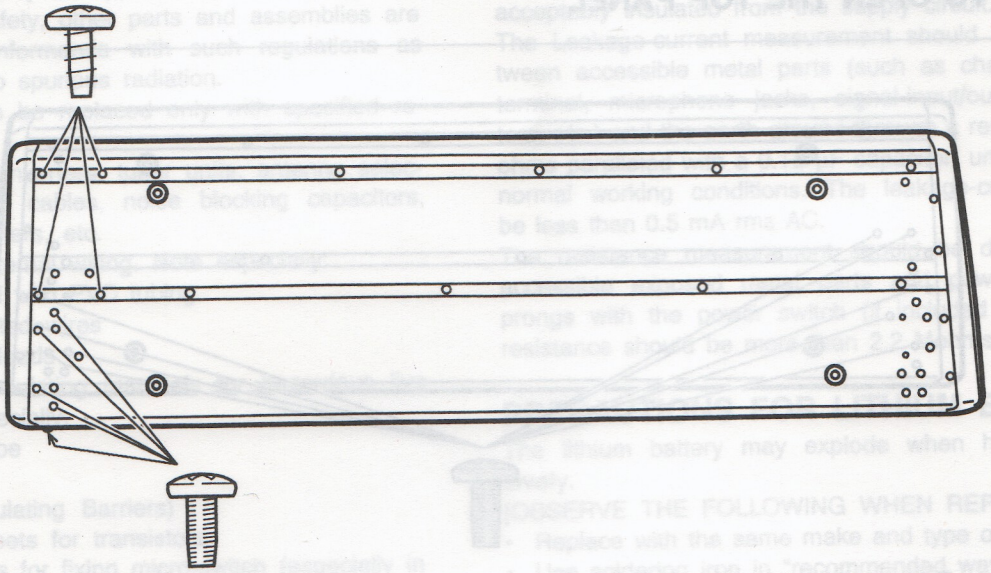
3



Open the TOP PANEL as shown.

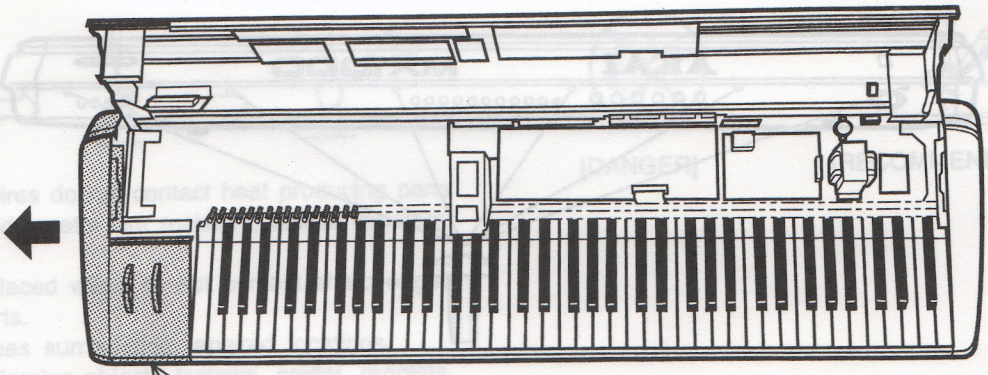
I-2.HOW TO DISMANTLE THE BENDER BLOCK

1



Remove 9 screws.

2

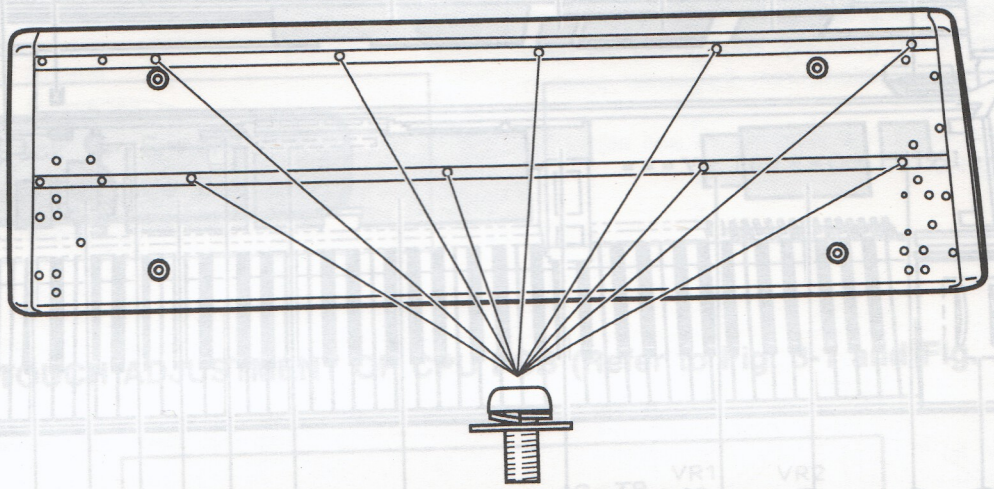


Move the BENDER BLOCK as shown.

1-3. HOW TO DISMANTLE THE KEYBOARD BLOCK

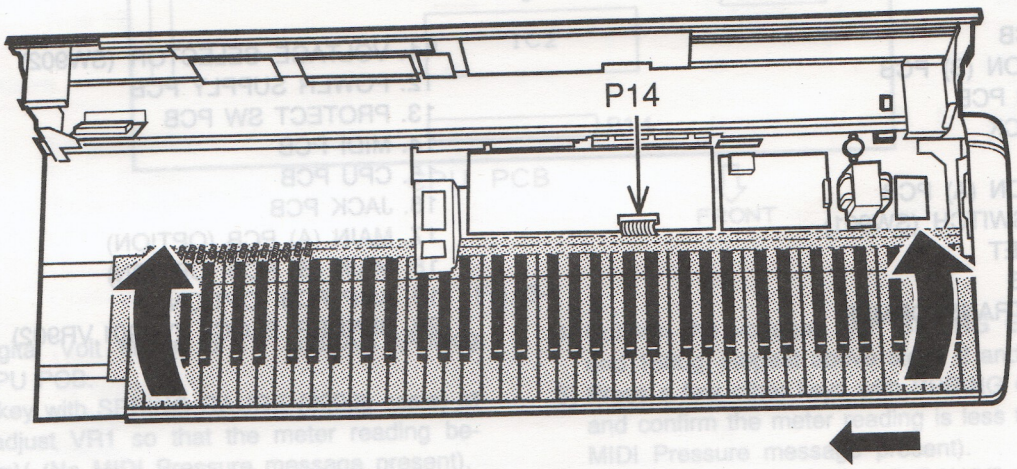
(Remove the BENDER BLOCK first)

1



Remove 9 screws.

2.



1) Disconnect the connector P14 on the CPU PCB.
2) Move the KEYBOARD BLOCK to the left.
3) Slowly lift the KEYBOARD BLOCK upward.

II. PRINCIPAL PARTS LOCATION

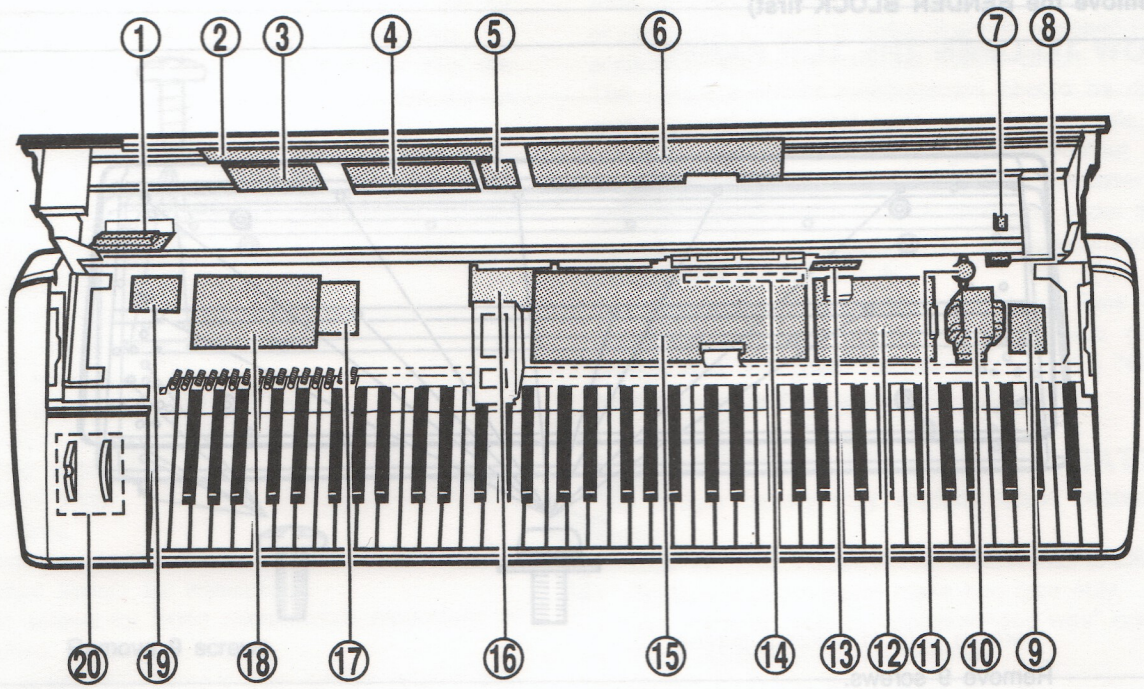


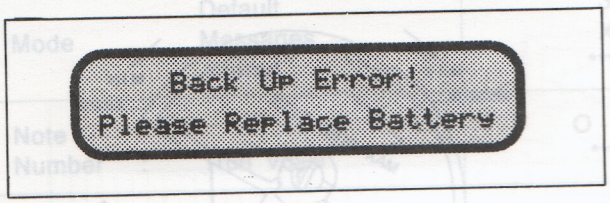
Fig. 2-1

1. CARD PCB
2. OPERATION (B) PCB
3. SLIDE VR PCB
4. LCD BLOCK
5. LED PCB
6. OPERATION (A) PCB
7. POWER SWITCH (SW901)
8. AC SOCKET
9. FUSE PCB
10. POWER TRANSFORMER
11. VOLTAGE SELECTOR (SW902)
12. POWER SUPPLY PCB
13. PROTECT SW PCB
14. MIDI PCB
15. CPU PCB
16. JACK PCB
17. MAIN (A) PCB (OPTION)
18. MAIN (B) PCB (OPTION)
19. AMP PCB (OPTION)
20. BENDER BLOCK (VR901,VR902)

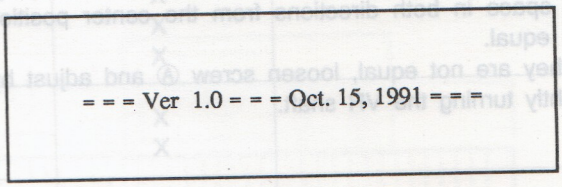
III.ELECTRICAL ADJUSTMENT

* SUPPLEMENTARY INFORMATION

[Memory Clear]
Hold "F1" and "F6" buttons pressed and turn the unit on to clear the memory. The following display will appear on LC Display for a few seconds before the initial screen is displayed. This sets all the parameters to their factory default values.



[Version Check]
Hold "F1" and "F2" buttons pressed and turn the unit on to check the software version number. The version number is displayed for a few seconds as shown before the initial screen is displayed.



3-1.AFTER-TOUCH ADJUSTMENT OF CPU PCB (Refer to Fig. 3-1 and Fig. 3-2)

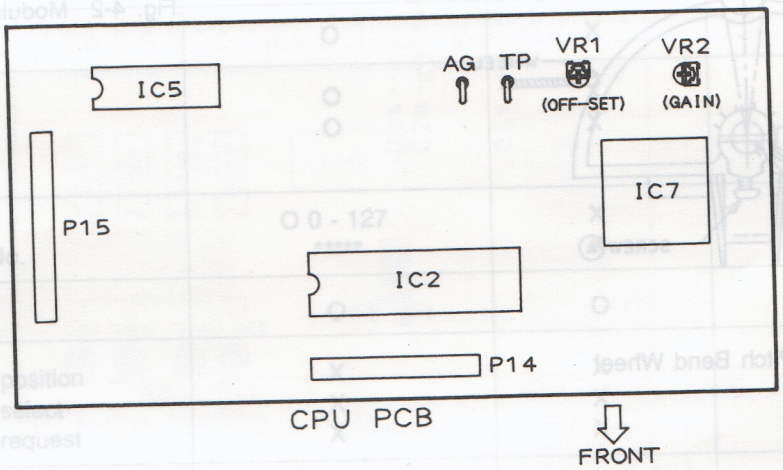


Fig. 3-1

1) Connect Digital Volt Meter to TP and AG (Analog GND) on CPU PCB.
2) Press "C3" key with SPRING GAUGE (2000g scale) at 650g and adjust VR1 so that the meter reading becomes 300mV (No MIDI Pressure message present).
3) Press "C3" key with SPRING GAUGE at 1500g for approximately 20 seconds and adjust VR2 so that the meter reading becomes 3.2 V (MIDI Pressure data 127 message present).
4) Confirm the voltages with SPRING GAUGE at 650g and 1500g. Repeat above steps 2 and 3 if necessary.
5) Press a few other keys with SPRING GAUGE at 500g and confirm the meter reading is less than 500mV (No MIDI Pressure message present).
6) Press the keys with SPRING GAUGE at 1400g and the immediate reading on the meter is between 0.5 to 2.0 V (MIDI Pressure data 1 to 79 present).

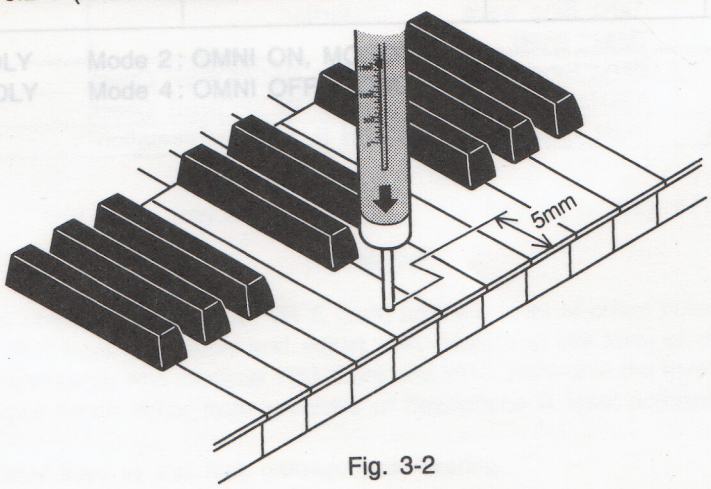


Fig. 3-2

IV. HOW TO MOUNT THE PITCH BEND AND MODULA TION WHEELS

NOTE: Only when the VR of the PITCH BEND or MODULATION is replaced, the following adjustment is necessary.

4-1. PITCH BEND VR

1) Mount the wheel to the VR, then coincide the markers on the wheel and VR shaft as shown Fig. 4-1 and tighten screw Ⓐ .
2) While pressing the any key, move the PITCH BEND WHEEL up and down gradually, confirm that the playing space in both directions from the center position are equal.
3) If they are not equal, loosen screw Ⓐ and adjust by slightly turning the VR shaft.

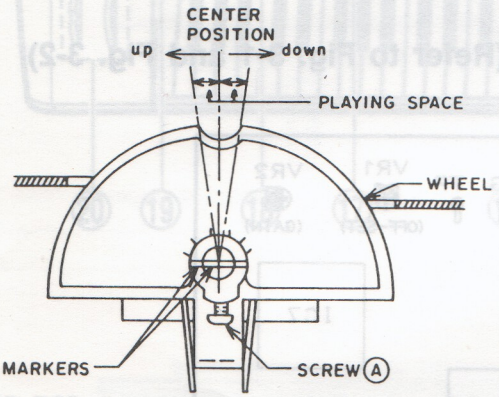


Fig. 4-1 Pitch Bend Wheel

4-2. MODULATION VR

1) Mount the wheel to the VR and turn both the wheel and VR shaft fully to their maximum position, then tighten the screw Ⓐ .

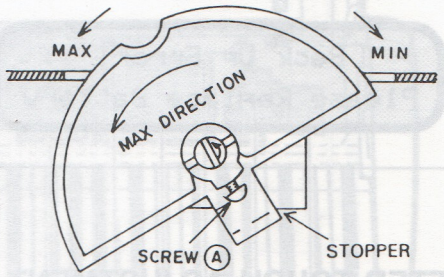
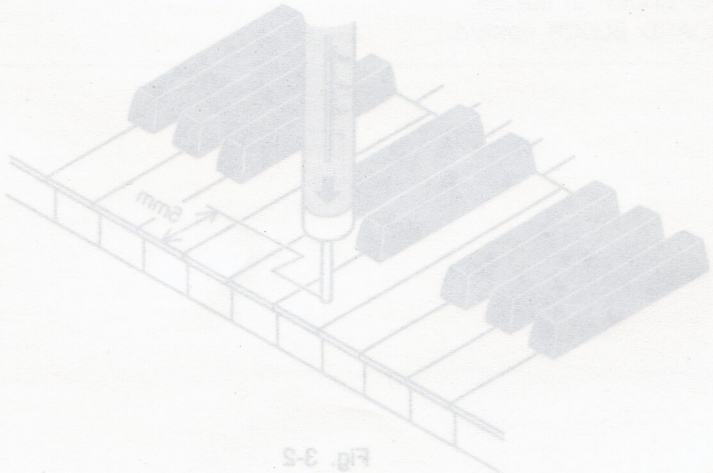


Fig. 4-2 Modulation Wheel



V. MIDI IMPLEMENTATION CHART

[MASTER KEYBOAD]
Model MX1000 MIDI Implementation Chart Version : 1.0

Function	Transmitted	Recognized	Remarks
Basic Channel — Default	1 - 16	X	* Memorized
Basic Channel — Changed	1 - 16	X	
Mode — Default	3	X	
Mode — Messages	X	X	
Mode — Altered	*****	X	
Note Number : True Voice	O - 127	X	
	*****	X	
Velocity — Note On	O 9nH V = 0 - 127	X	
Velocity — Note Off	O 8nH V = 0 - 127	X	
After Touch — Key's	X	X	
After Touch — Ch's	O	X	
Pitch Bender	O	X	7 bit resolution
Control Change	O	X	Selectable
	O	X	
Program Change : True No.	O 0 - 127	X	
	*****	X	
System Exclusive	O	O	All programs
System Common : Song position	X	X	
System Common : Song select	X	X	
System Common : Tune request	X	X	
System Real Time : Clock	X	X	
System Real Time : Commands	X	X	
Aux Messages : Local ON/OFF	X	X	
Aux Messages : All Notes OFF	O	X	
Aux Messages : Active Sense	X	X	
Aux Messages : Reset	X	X	
Note :			

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO O : Yes
Mode 3 : OMNI OFF,POLY Mode 4 : OMNI OFF, MONO X : No

VI. PM76 (OPTIONAL) ELECTRICAL ADJUSTMENT

NOTE:

1) After the PM76 (piano sound board) installation, confirm the following adjustment items (all VRs have been pre-adjusted).
2) TEST MODE
   Use this test mode for confirmation and adjustment. With the POWER ON, press the "F6" button and then use the numerical keys (on the right side of the DATA buttons) to input 7 7 1 4 . To disengage the mode, press either the "△" or "▽" DATA key.
3) Before the adjustment, leave the unit on for more than 5 minutes to warm it up.

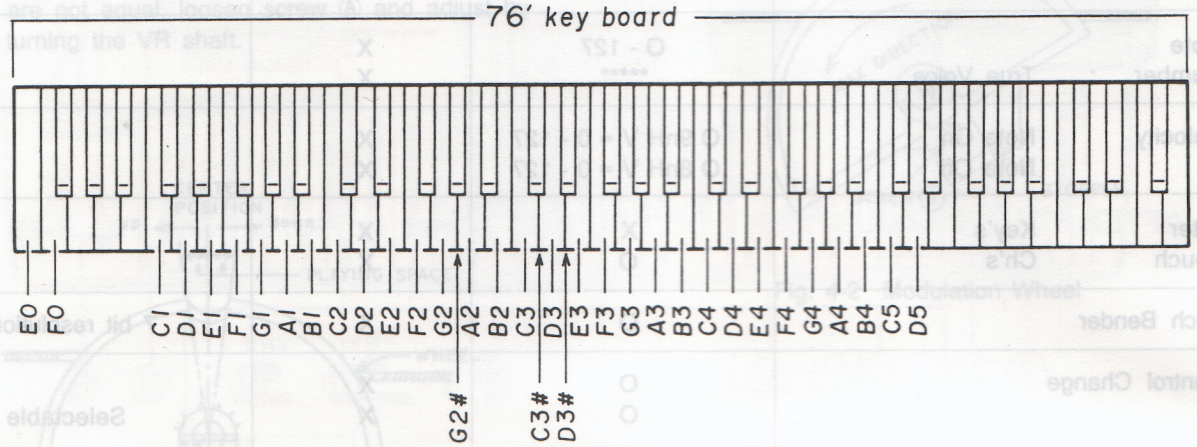


Fig. 6-1

KEY NO	CONTENTS	PURPOSE
E0	NO sound	L ch/ R ch OFF-SET Adjustment
F0	NO sound	L ch/ R ch OFF-SET Adjustment
C1	NO sound	S/N (16 voices) check
G1	NO sound	L ch OFF-SET Adjustment
A1	NO sound	L ch OFF-SET Adjustment
B1	NO sound	L ch OFF-SET Adjustment
C2	NO sound	R ch OFF-SET Adjustment
D2	NO sound	R ch OFF-SET Adjustment
E2	NO sound	R ch OFF-SET Adjustment
G2#	1kHz Sawtooth	MSB confirmation
A2	Piano release	MSB Adjustment
B2	20Hz Sine wave	FREQ. RESPONSE Check
C3	1kHz Sine wave	FREQ. RESPONSE Check, Distortion
C3#	1kHz Sine wave (Max. level)	Distortion
D3	6kHz Sine wave	FREQ. RESPONSE Check
D3#	12kHz Sine wave	FREQ. RESPONSE Check
G3 - D5	1kHz Sine wave	PAN (L to R) confirmation

6-1. OFFSET ADJUSTMENT

1) Set the unit to the TEST MODE.
2) Set the VOLUMES as follows.
   LEVEL ..... MAX (Rear side)
   MODULATION ..... MIN
   MIDI control sliders VR..... MAX
3) Connect an oscilloscope to "LINE OUT" via a milli-voltmeter as shown in Fig. 6-2.

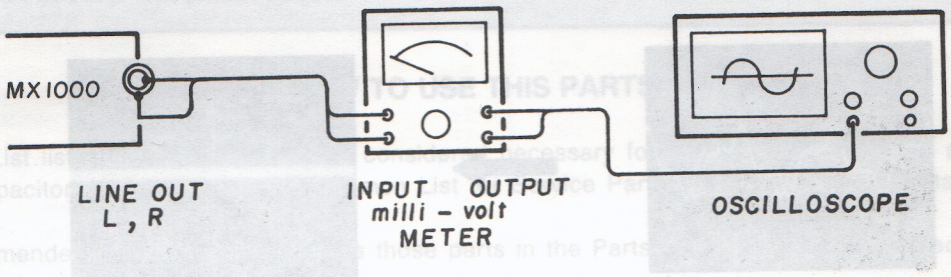


Fig.6-2

* A milli-voltmeter is used as an amplifier in this case. A low-noise high gain amplifier can be substituted.

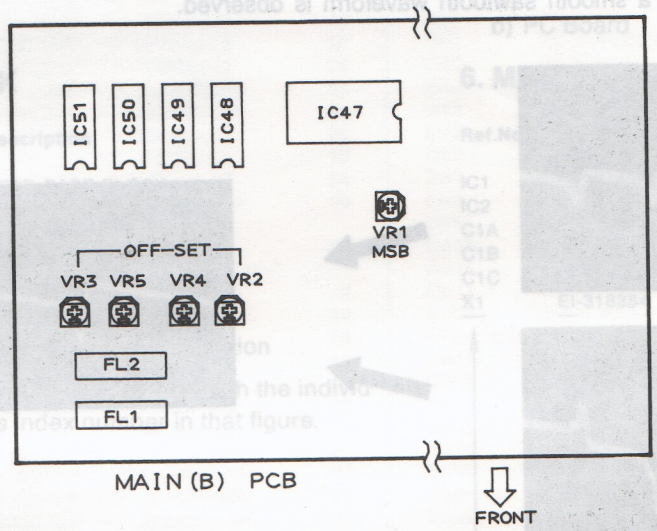


Fig.6-3

4) Play "B1" key repeatedly while observing the waveform on the scope and adjust VR3 (Lch) so that the level of offset pulses are minimum.
5) Similarly, play "C2" key repeatedly while observing the waveform on the scope and adjust VR2 (Rch) so that the level of offset pulses are minimum.

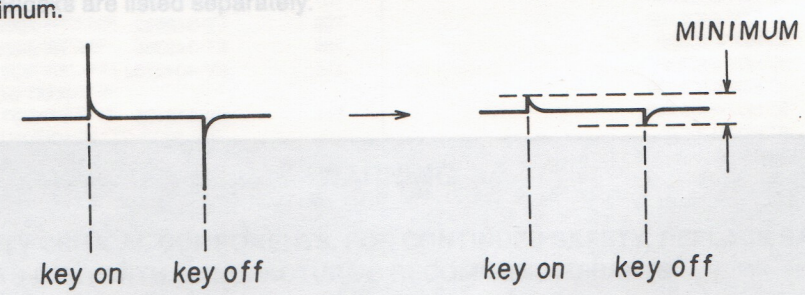


Fig. 6-4

6) Play "G1" and "A1" keys alternately and adjust VR 5 (Lch) until the level of offset pulses are minimum.
7) Similarly, play "D2" and "E2" keys alternately and adjust VR4 (Rch) until the level of offset pulses are minimum.
8) Play "E0" and "F0" keys alternately and readjust VR3 (Lch) and VR2 (Rch) until the level of key off pulses are minimum.
9) Confirm that the click noise heard either from speakers or headphone is least noticeable.

* **CAUTION:** Do not play other keys as this may damage your hearing.

6-2.MSB ADJUSTMENT

1) Set the unit to the TEST MODE
2) Set the VOLUME as follows.
   LEVEL .....MAX (Rear side)
   MODULATION .....MIN
   MIDI control sliders VR .....MAX
3) Connect an oscilloscope to "LINE OUT" via a milli-voltmeter as shown in Fig. 6-2.
4) Play "A2" key and adjust VR1 so that the signal level is minimum and the sound heard from the speaker or headphone is least noticeable.

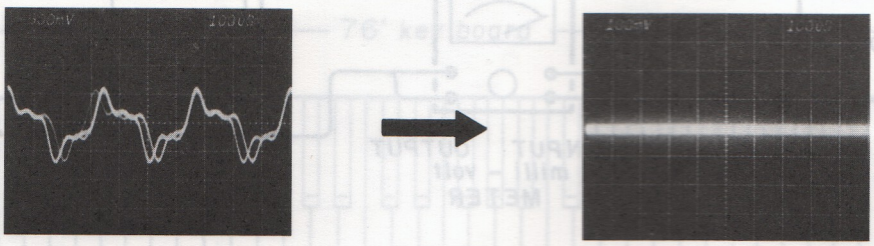


Fig. 6-5

5) Play "G2#" key and confirm that a smooth sawtooth waveform is observed.

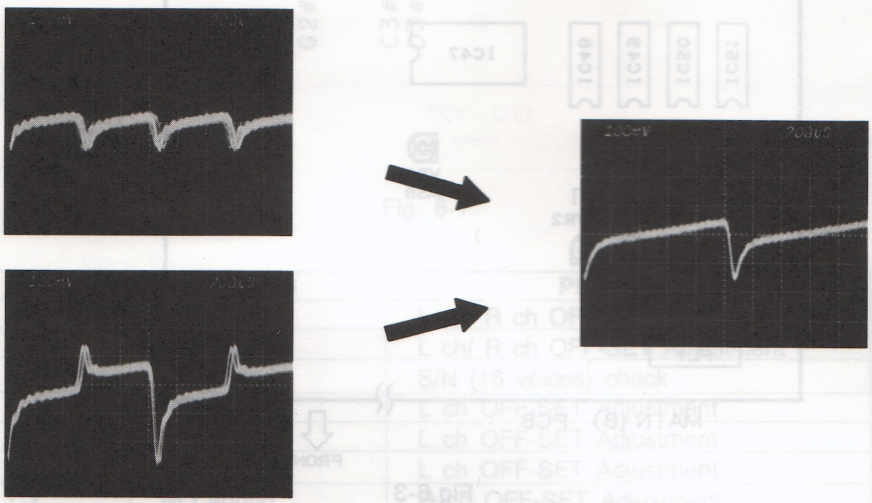


Fig. 6-6

VII. PARTS LIST

ATTENTION

1. **When placing an order for parts, be sure to list Part No., Model No. and the description of eachpart. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.**
2. **Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.**
3. **Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.**

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

2. HEAD BASE BLOCK

Ref.No.	Part No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20×03STL CMT
4	ZS-536488	BID20×08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in that figure.

The available PC Board Blocks are listed separately.

b) PC Board

6. MAIN PC BOARD

Ref.No.	Part No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A] : AAL (U.S.A) [S] : SAA (Australia)
[B] : BEAB (England) [U] : U/T (Universal Area)
[C] : CSA (Canada)
[E] : CEE (Europe) [V] : VDE (Germany)
[J] : JPN (Japan) [Y] : Custom Version

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

WARNING

⚠ (*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ (*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉDE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT.

1.RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref.No.	Part No.	Description
1	BK-405576J	KEYBOARD BLK SK37613A 76KEY
2	*BT-405673J	TRANS POW L1031
3	*EC-379161	BATTERY LITHIUM BR2330-1HF
4	*ED-383753J	D SILICON DBF20B 100V/2.0A
5	ED-301911	D SILICON H DS448
6	ED-344280	D SILICON H GMA-01-FY2 F05
7	ED-396064J	D ZENER H HZS4C1
8	*ED-387783J	D ZENER H HZS6C3L
9	*ED-306983	D ZENER H HZ12 C3
10	*EF-355398	FUSE BET T 250V 2.00A [E,V,B,S]
11	*EF-359342	FUSE BET T 250V 400MA [E,V,B,S]
12	*EF-358974	FUSE BET T 250V 630MA [E,V,B,S]
13	*EF-306950	FUSE TSC A 250V 2.00A [J]
14	*EF-306124	FUSE TSC A 250V 630MA [J]
15	*EF-309388	FUSE TSC A 250V 800MA [J]
16	*EF-306954	FUSE TSC 125V 2.00A [C,A]
17	*EF-305703	FUSE TSC 125V 630MA [C,A]
18	*EF-309391	FUSE TSC 125V 800MA [C,A]
19	EH-400999J	COMP C EXF-P8101MW
20	EH-370520	COMP C EXF-P8102ZW
21	EH-383155J	COMP R RGLD8X103J
22	EH-379500	FILTER EMI EXC-EMT102BC
23	EH-402162J	FILTER LC YC258BLR-5589N
24	EI-397343J	IC AM27C256-150DC [BLANK ROM]
25	EI-404362J	IC AM27C256-150DC MX1000 V1.0 [PROGRAM ROM]
26	EI-389612J	IC AM27C512-150DC [BLANK ROM]
27	EI-396535J	IC CD74AC573E
28	EI-379585	IC CD74HC4053E
29	EI-384770J	IC FLR-L6009
30	EI-386287J	IC HD74AC00P
31	EI-389061J	IC HD74AC04P
32	EI-396536J	IC HD74AC138P
33	EI-389060J	IC HD74AC158P
34	EI-388711J	IC HD74HC00P
35	EI-387934J	IC HD74HC04P
36	EI-405203J	IC HD74HC126P
37	EI-386289J	IC HD74HC138P
38	EI-393701J	IC HD74HC139P
39	EI-388707J	IC HD74HC244P
40	EI-388712J	IC HD74HC245P
41	EI-397085J	IC HD74HC30P
42	EI-388709J	IC HD74HC32P
43	EI-388567J	IC HD74HC573P
44	EI-386294J	IC HD74HC574P
45	EI-404258J	IC HD74LS47P
46	EI-388749J	IC HM62256LP-12
47	EI-384771J	IC ITP-L6009
48	EI-379461	IC LC3517ASL-15
49	EI-378276	IC LC7981
50	EI-402130J	IC L9002-S00L-HN62324BP-C48
51	EI-402129J	IC L9002-S00M-HN62324BP-C49
52	EI-402133J	IC L9002-S01L-HN62324BP-C50
53	EI-402132J	IC L9002-S01M-HN62324BP-C51
54	EI-402135J	IC L9002-S02L-HN62324BP-C52
55	EI-402134J	IC L9002-S02M-HN62324BP-C53
56	EI-402136J	IC L9002-S03M-HN62324BP-C55
57	EI-366121	IC MB89251AP-G
58	EI-378204	IC MB89371-P-G
59	EI-362553	IC MN41464-12
60	EI-393323J	IC M5218AL-771
61	EI-348785	IC M5220L
62	EI-360043	IC M5220P
63	EI-362587	IC M5238L
64	EI-405570J	IC M62021L
65	*EI-336995	IC NJM78L05A
66	*EI-405568J	IC NJM78M12FA
67	*EI-405567J	IC NJM79M12FA
68	EI-388409J	IC OPA602AM
69	EI-378297	IC PCM54HP
70	EI-402137J	IC PIANO-S03L-HN62324BP-C54
71	EI-405623J	IC PST576D-2
72	EI-402127J	IC SCOEF10-512 9753-004 LSB
73	EI-402128J	IC SCOEF11-512 9753-005 MSB
74	EI-360054J1	IC TC74HC174AP
75	EI-405566J	IC TSS-MB63H188
76	*EI-377101	IC UPC7805HF
77	EI-384768J	IC UPD70216G-8
78	EI-405572J	IC UPD78C10AGQ-36
79	EI-404281J	IC.AM27C512-150DC PM76L V1.0 [PROGRAM ROM]
80	EI-404280J	IC.AM27C512-150DC PM76M V1.0 [PROGRAM ROM]
81	EI-354123	OSC CE CSA120MT 12.000000MHZ
82	EI-400975J	OSC X'TAL CX0-042C 27.6840MHZ
83	EI-365811	OSC X'TAL NR18 16.000MHZ
84	EJ-386137J	DIN J YKF51-5033 5P
85	EJ-354105	PHONE J 2P HLJ0520-110 6.3
86	EJ-405749J	PHONE J 2P HLJ4305-3030 SN 6.3
87	EJ-353031	PHONE J 3P HLJ0520-010
88	EJ-405579J	PHONE J 3P HLJ4305-3040 SN 6.3
89	*EJ-358632	SOCKET INLET SOT-16 3P [AC SOCKET]
90	EJ-380944J	SOCKET 75080950 34P [MEMORY CARD JACK]
91	EL-728382J	EL BACK LIGHT
92	EM-382317J	IND LCD EDM-MPJ2COW
93	EM-388542J	IND LE GL-9P040
94	EO-394178J	COIL FIX 2 SBT-0240 400N
95	EO-402139J	COIL FIX 2 SNT-S20
96	EQ-348929	RELAY SIG G5A-237P 2TR 12V
97	*ER-328278	R FUSE H ERD2FC 1/4W 10R0G
98	*ER-345751	R FUSE H S10 ERD2FC 1/4W 15R0G
99	*ER-200972	R FUSE H S10 ERD2FC 1/4W 33R0G
100	*ER-332225	R FUSE H S10 ERD2FC 1/4W 56R0G
101	*ES-354236	SW SEESAW SDDJA1153A 01-1 [POWER SW]
102	*ES-405677J	SW SELECT ESE-3799T
103	ES-370202	SW SLIDE SSSB02F22A 2-02-02N [PROTECT SW]
104	ES-393405J	SW TACT B3J-1
105	ES-393406J	SW TACT B3J-2 LED
106	ET-354167	DETECTOR PC900V
107	ET-405321J	TR 2SA1524
108	ET-349592	TR 2SC3400 F05
109	ET-349366	TR 2SC3402 F05
110	EV-404275J	VR ROTARY RK09K1110 L=25 B503 [LCD CONTRAST]
111	EV-378175	VR ROTARY RK0971220 B203X2 [OUTPUT LEVEL]
112	EV-354254	VR ROTARY 16L10XOW 103 CUSTOM2 [MODULATION]
113	EV-354253	VR ROTARY 16P20X3T A503 [PITCH BEND]
114	EV-365876	VR SLIDE VJ4513-2PVNB5 103

2. P.C BOARD BLK

Ref.No.	Part No.	Description
1	BA-L1031A020A	PC CPU BLK MX1000
2	BA-L1031A030A	PC OPERATION A BLK MX1000
3	BA-L1031A040A	PC OPERATION B BLK MX1000
4	BA-L1031A050A	PC (#) JACK BLK MX1000
5	BA-L1031A070A	PC POWER BLK MX1000

PC (#) JACK BLK CONSISTS OF FOLLOWING P.C BOARD.

- JACK P.C BOARD
- MIDI P.C BOARD
- PROTECT SW P.C BOARD
- FUSE P.C BOARD
- LED P.C BOARD
- SLIDE VR P.C BOARD
- CARD P.C BOARD

3. CPU P.C BOARD

Ref.No.	Part No.	Description
BT1	*EC-379161	BATTERY LITHIUM BR2330-1HF
CR1	EH-370520	COMP C EXF-P8102ZW
CR2	EH-400999J	COMP C EXF-P8101MW
CR3	EH-400999J	COMP C EXF-P8101MW
D1	ED-344280	D SILICON H GMA-01-FY2 F05
D2	ED-344280	D SILICON H GMA-01-FY2 F05
D3	ED-396064J	D ZENER H HZS4C1
IB1	EH-383155J	COMP R RGLD8X103J
IB2	EH-383155J	COMP R RGLD8X103J
IB3	EH-383155J	COMP R RGLD8X103J
IC1	EI-405572J	IC UPD78C10AGQ-36
IC2	EI-405566J	IC TSS-MB63H188
IC3-A	EI-404362J	IC AM27C256-150DC MX1000 V1.0 [PROGRAM ROM]
IC3-B	EI-397343J	IC AM27C256-150DC [BLANK ROM]
IC4	EI-388749J	IC HM62256LP-12
IC5	EI-378204	IC MB89371-P-G
IC6	EI-366121	IC MB89251AP-G
IC7	EI-378276	IC LC7981
IC8	EI-379461	IC LC3517ASL-15
IC9	EI-379461	IC LC3517ASL-15
IC10	EI-393701J	IC HD74HC139P
IC11	EI-386289J	IC HD74HC138P
IC12	EI-386289J	IC HD74HC138P
IC13	EI-388707J	IC HD74HC244P
IC14	EI-388707J	IC HD74HC244P
IC15	EI-388712J	IC HD74HC245P
IC16	EI-405570J	IC M62021L
IC17	EI-397085J	IC HD74HC30P
IC18	EI-388711J	IC HD74HC00P
IC19	EI-387934J	IC HD74HC04P
IC20	EI-405203J	IC HD74HC126P
IC21	EI-388709J	IC HD74HC32P
IC22	EI-393323J	IC M5218AL-771
IC23	EI-388567J	IC HD74HC573P
IC24	EI-386294J	IC HD74HC574P
P14	EJ-365834	PLUG RK-H341TD-0190 34P
P15	EJ-365834	PLUG RK-H341TD-0190 34P
R8	*ER-345751	R FUSE H S10 ERD2FC 1/4W 15R0G
R9	*ER-332225	R FUSE H S10 ERD2FC 1/4W 56R0G
TR1	ET-405321J	TR 2SA1524
TR2	ET-405321J	TR 2SA1524
TR3	ET-405321J	TR 2SA1524
TR4	ET-405321J	TR 2SA1524
TR5	ET-405321J	TR 2SA1524
VR1	EV-307629	R S-FIX H RH0621C 0.30W 223
VR2	EV-307625	R S-FIX H RH0621C 0.30W 472
X1	EI-354123	OSC CE CSA120MT 12.000000MHZ

4. OPERATION A P.C BOARD

Ref.No.	Part No.	Description
D1	ED-301911	D SILICON H DS448
D2	ED-301911	D SILICON H DS448
D3	ED-301911	D SILICON H DS448
D4	ED-301911	D SILICON H DS448
D5	ED-301911	D SILICON H DS448
D6	ED-301911	D SILICON H DS448
D7	ED-301911	D SILICON H DS448
D8	ED-301911	D SILICON H DS448
D9	ED-301911	D SILICON H DS448
D10	ED-301911	D SILICON H DS448
D11	ED-301911	D SILICON H DS448
D12	ED-301911	D SILICON H DS448
D13	ED-301911	D SILICON H DS448
D14	ED-301911	D SILICON H DS448
D15	ED-301911	D SILICON H DS448
D16	ED-301911	D SILICON H DS448
D17	ED-301911	D SILICON H DS448
D18	ED-301911	D SILICON H DS448
D19	ED-301911	D SILICON H DS448
D20	ED-301911	D SILICON H DS448
D21	ED-301911	D SILICON H DS448
D22	ED-301911	D SILICON H DS448
D23	ED-301911	D SILICON H DS448
D24	ED-301911	D SILICON H DS448
D25	ED-301911	D SILICON H DS448
D26	ED-301911	D SILICON H DS448
SW1	ES-393405J	SW TACT B3J-1
SW2	ES-393405J	SW TACT B3J-1
SW3	ES-393405J	SW TACT B3J-1
SW4	ES-393405J	SW TACT B3J-1
SW5	ES-393405J	SW TACT B3J-1
SW6	ES-393405J	SW TACT B3J-1
SW7	ES-393405J	SW TACT B3J-1
SW8	ES-393405J	SW TACT B3J-1
SW9	ES-393405J	SW TACT B3J-1
SW10	ES-393405J	SW TACT B3J-1
SW11	ES-393405J	SW TACT B3J-1
SW12	ES-393405J	SW TACT B3J-1
SW13	ES-393405J	SW TACT B3J-1
SW14	ES-393405J	SW TACT B3J-1
SW15	ES-393405J	SW TACT B3J-1
SW16	ES-393405J	SW TACT B3J-1
SW17	ES-393405J	SW TACT B3J-1
SW18	ES-393405J	SW TACT B3J-1
SW19	ES-393405J	SW TACT B3J-1
SW20	ES-393405J	SW TACT B3J-1
SW21	ES-393405J	SW TACT B3J-1
SW22	ES-393405J	SW TACT B3J-1
SW23	ES-393405J	SW TACT B3J-1
SW24	ES-393405J	SW TACT B3J-1
SW25	ES-393405J	SW TACT B3J-1
SW26	ES-393405J	SW TACT B3J-1
1	SK-405675J	KNOB SW ASSIST B3J-1TYPE LG

5. OPERATION B P.C BOARD

Ref.No.	Part No.	Description
D1	ED-301911	D SILICON H DS448
D2	ED-301911	D SILICON H DS448
D3	ED-301911	D SILICON H DS448
D4	ED-301911	D SILICON H DS448
D5	ED-301911	D SILICON H DS448
D6	ED-301911	D SILICON H DS448
D7	ED-301911	D SILICON H DS448
D8	ED-301911	D SILICON H DS448
D9	ED-301911	D SILICON H DS448
D10	ED-301911	D SILICON H DS448
D11	ED-301911	D SILICON H DS448
SW1	ES-393406J	SW TACT B3J-2 LED
SW2	ES-393406J	SW TACT B3J-2 LED
SW3	ES-393406J	SW TACT B3J-2 LED
SW4	ES-393406J	SW TACT B3J-2 LED
SW5	ES-393405J	SW TACT B3J-1
SW6	ES-393405J	SW TACT B3J-1
SW7	ES-393405J	SW TACT B3J-1
SW8	ES-393405J	SW TACT B3J-1
SW9	ES-393405J	SW TACT B3J-1
SW10	ES-393405J	SW TACT B3J-1
SW11	ES-393405J	SW TACT B3J-1
1	SK-405675J	KNOB SW ASSIST B3J-1TYPE LG
2	SK-393408J	KNOB SW ASSIST B3J-2 LED LG

6. JACK P.C BOARD

Ref.No.	Part No.	Description
D1	ED-301911	D SILICON H DS448
D2	ED-301911	D SILICON H DS448
D3	ED-301911	D SILICON H DS448
D4	ED-301911	D SILICON H DS448
D5	ED-301911	D SILICON H DS448
D6	ED-301911	D SILICON H DS448
D7	ED-301911	D SILICON H DS448
J1	EJ-354105	PHONE J 2P HLJ0520-110 6.3
J2	EJ-354105	PHONE J 2P HLJ0520-110 6.3
J3	EJ-354105	PHONE J 2P HLJ0520-110 6.3
J4	EJ-354105	PHONE J 2P HLJ0520-110 6.3
J5	EJ-354105	PHONE J 2P HLJ0520-110 6.3
J6	EJ-405579J	PHONE J 3P HLJ4305-3040 SN 6.3
J7	EJ-405579J	PHONE J 3P HLJ4305-3040 SN 6.3
J8	EJ-405579J	PHONE J 3P HLJ4305-3040 SN 6.3
J9	EJ-405579J	PHONE J 3P HLJ4305-3040 SN 6.3
J10	EJ-405579J	PHONE J 3P HLJ4305-3040 SN 6.3
TR1	ET-349592	TR 2SC3400 F05
TR2	ET-349592	TR 2SC3400 F05
TR3	ET-349592	TR 2SC3400 F05
TR4	ET-349592	TR 2SC3400 F05
TR5	ET-349592	TR 2SC3400 F05
TR6	ET-349592	TR 2SC3400 F05
TR7	ET-349592	TR 2SC3400 F05
VR3	EV-404275J	VR ROTARY RK09K1110 L=25 B503 [LCD CONTRAST]

7. MIDI P.C BOARD

Ref.No.	Part No.	Description
D101	ED-301911	D SILICON H DS448
FL101	EH-379500	FILTER EMI EXC-EMT102BC
FL102	EH-379500	FILTER EMI EXC-EMT102BC
FL103	EH-379500	FILTER EMI EXC-EMT102BC
FL104	EH-379500	FILTER EMI EXC-EMT102BC
FL105	EH-379500	FILTER EMI EXC-EMT102BC
FL106	EH-379500	FILTER EMI EXC-EMT102BC
FL107	EH-379500	FILTER EMI EXC-EMT102BC
FL108	EH-379500	FILTER EMI EXC-EMT102BC
FL109	EH-379500	FILTER EMI EXC-EMT102BC
FL110	EH-379500	FILTER EMI EXC-EMT102BC
FL111	EH-379500	FILTER EMI EXC-EMT102BC
FL112	EH-379500	FILTER EMI EXC-EMT102BC
IC101	EI-387934J	IC HD74HC04P
IC102	EI-387934J	IC HD74HC04P
J11	EJ-386137J	DIN J YKF51-5033 5P
J12	EJ-386137J	DIN J YKF51-5033 5P
J13	EJ-386137J	DIN J YKF51-5033 5P
PH1	ET-354167	DETECTOR PC900V

8. PROTECT SW P.C BOARD

Ref.No.	Part No.	Description
SW1	ES-370202	SW SLIDE SSSB02F22A 2-02-02N [PROTECT SW]

9. FUSE P.C BOARD

Ref.No.	Part No.	Description
C301	*EC-338411	C CE V DE7 FZ 103P 400AC
F4-A	*EF-309388	FUSE TSC A 250V 800MA [J]
F4-B	*EF-309391	FUSE TSC 125V 800MA [C,A]
F4-C	*EF-359342	FUSE BET T 250V 400MA [E,V,B,S]

10. LED P.C BOARD

Ref.No.	Part No.	Description
D1	EM-388542J	IND LE GL-9P040
D2	EM-388542J	IND LE GL-9P040
IC1	EI-404258J	IC HD74LS47P
IC2	EI-404258J	IC HD74LS47P

11. SLIDE VR P.C BOARD

Ref.No.	Part No.	Description
VR4	EV-365876	VR SLIDE VJ4513-2PVNB5 103
VR5	EV-365876	VR SLIDE VJ4513-2PVNB5 103
VR6	EV-365876	VR SLIDE VJ4513-2PVNB5 103
VR7	EV-365876	VR SLIDE VJ4513-2PVNB5 103

12. CARD P.C BOARD

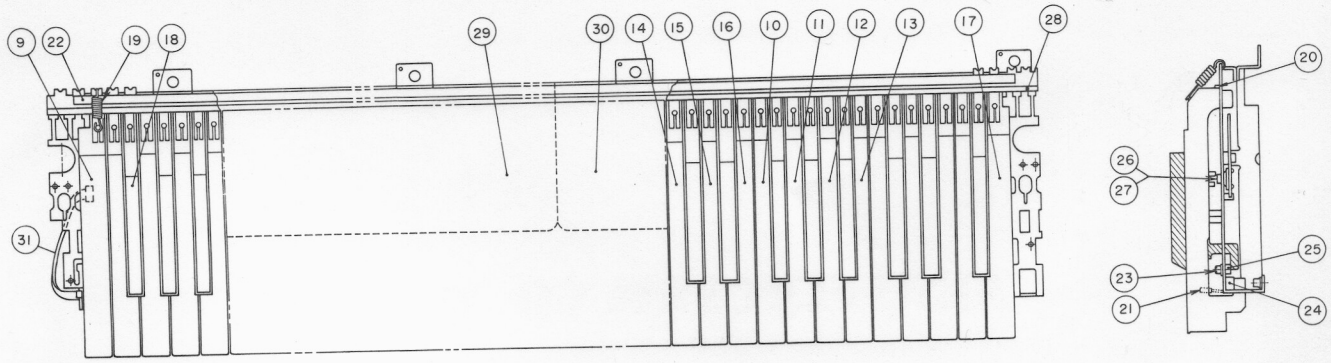
Ref.No.	Part No.	Description
J17	EJ-380944J	SOCKET 75080950 34P [MEMORY CARD JACK]
W15	EW-405563J	WIRE ASSY L1031 W15 34P

13. POWER P.C BOARD

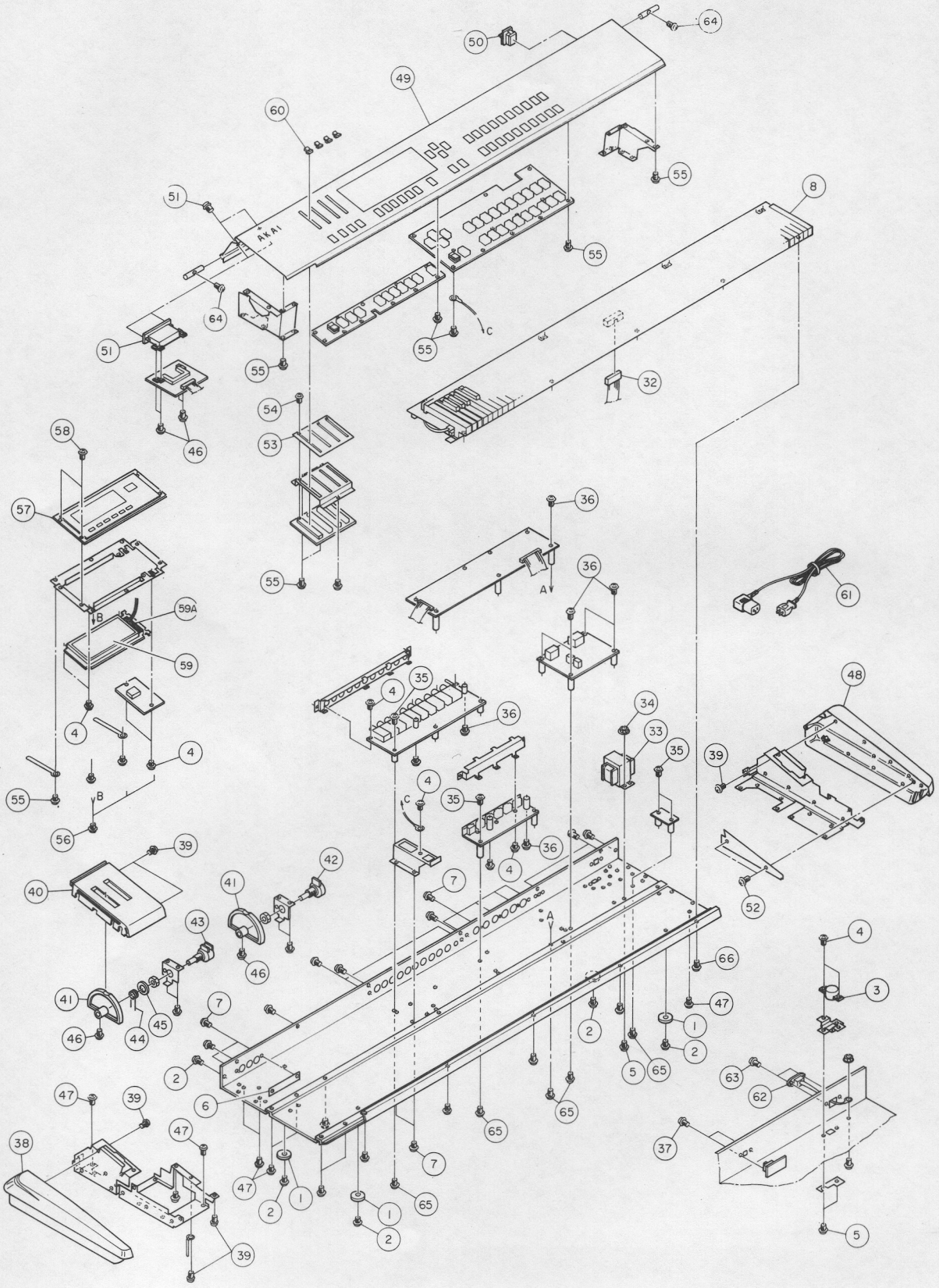
Ref.No.	Part No.	Description
D1	*ED-383753J	D SILICON DBF20B 100V/2.0A
D2	*ED-383753J	D SILICON DBF20B 100V/2.0A
D3	*ED-306983	D ZENER H HZ12 C3
D4	*ED-306983	D ZENER H HZ12 C3
D5	*ED-387783J	D ZENER H HZS6C3L
IC1	*EI-405568J	IC NJM78M12FA
IC2	*EI-405567J	IC NJM79M12FA
IC3	*EI-377101	IC UPC7805HF
IC4	*EI-336995	IC NJM78L05A
IC5	*EI-360772	IC NJM79L05A
R1	*ER-328278	R FUSE H ERD2FC 1/4W 10R0G
L1	*BT-390145J	TRANS PULSE NI05-05-5
F1-A	*EF-306124	FUSE TSC A 250V 630MA [J]
F1-B	*EF-305703	FUSE TSC 125V 630MA [C,A]
F1-C	*EF-358974	FUSE BET T 250V 630MA [E,V,B,S]
F2-A	*EF-306124	FUSE TSC A 250V 630MA [J]
F2-B	*EF-305703	FUSE TSC 125V 630MA [C,A]
F2-C	*EF-358974	FUSE BET T 250V 630MA [E,V,B,S]
F3-A	*EF-306950	FUSE TSC A 250V 2.00A [J]
F3-B	*EF-306954	FUSE TSC 125V 2.00A [C,A]
F3-C	*EF-355398	FUSE BET T 250V 2.00A [E,V,B,S]

14. FINAL ASSEMBLY

Ref.No.	Part No.	Description
1	SA-332850	FOOT ROUND SHAPED
2	ZS-609006	T2BR40X10STL CMT
3	*ES-405677J	SW SELECT ESE-3799T
4	ZS-358936	ST BID30X06STL CMT
5	ZS-380701J	ST BID30X10STL NI3 EARTH L0CK
6	SC-407234J	HOLDER PHONE OPTION
7	ZS-381032J	ST BID30X08STL NI3 EARTH LOCK
8	BK-405576J	KEYBOARD BLK SK37613A 76KEY
9	SK-732971J	KEY WHITE EE
10	SK-732972J	KEY WHITE F
11	SK-732973J	KEY WHITE G
12	SK-732974J	KEY WHITE A
13	SK-732975J	KEY WHITE B
14	SK-732976J	KEY WHITE C
15	SK-732977J	KEY WHITE D
16	SK-732978J	KEY WHITE E
17	SK-732979J	KEY WHITE G
18	SK-726773J	KEY BLACK
19	ZG-726774J	SP KEY
20	SZ-726775J	FRICTION FULCRUM
21	MB-726776J	GUIDE RUBBER
22	SZ-726777J	SPONGE
23	BZ-726778J	AFTER SENSOR BLK MX76
24	TC-726779J	FELT
25	TC-726780J	FELT
26	MB-726781J	RUBBER FULCRUM 6
27	MB-726782J	RUBBER FULCRUM 7
28	SZ-726783J	TAPE FULCRUM
29	BA-732980J	PC SWP BASE A BLK MX1000
30	BA-732981J	PC SWP BASE B BLK MX1000
31	SZ-726786J	SHEET AFTER SENSOR
32	EW-405708J	WIRE ASSY L1031 W14 34P
33	*BT-405673J	TRANS POW L1031
34	ZW-609434	N FRANGE 30STL CMT
35	ZS-608321	PAN30X06STL CMT PW080
36	ZS-379405	BID30X06STL CMT
37	ZS-355555	BID26X06STL NI3
38	SP-406414J	PANEL SIDE (L)
39	ZS-345062	PT BR40X10STL CMT
40	SP-406417J	PANEL BEND
41	MI-354552B	WHEEL (B)
42	EV-354253	VR ROTARY 16P20X3T A503 [PITCH BEND]
43	EV-354254	VR ROTARY 16L10XOW 103 CUSTOM2 [MODULATION]
44	ZG-354553	SP BEND
45	ZW-354258-A	WASHER AX80
46	ZS-310984	PT BR30X08STL CMT
47	ZS-322570	ST BID40X08STL NI3
48	SP-406420J	PANEL SIDE (R)
49	SP-407089J1	PANEL TOP MX1000
50	*ES-354236	SW SEESAW SDDJA1153A 01-1 [POWER SW]
51	SE-383777J	ESCUTCHEON IC CARD
52	ZS-360952	PT BR30X08STL NI3
53	SE-407090J	SHEET SLIDE VR
54	ZS-304464	PAN20X03STL BNI
55	ZS-325495	T2BR30X06STL CMT
56	ZS-490228	T2BID30X08STL CMT
57	SE-407091J	WINDOW LCD
58	ZS-353340	CTS20X06STL CMT
59	EM-382317J	IND LCD EDM-MPJ2COW
59A	EL-728382J	EL BACK LIGHT
60	SK-407264J	KNOB SLIDE (A)
61-A	*EW-400891J	AC CORD250S KP210KS16BY A J [J]
61-B	*EW-405532J	AC CORD250S KP30KS16Y SJT B CA [C,A]
61-C	*EW-403993J	AC CORD200SKP4819DKS31A B E [E,V]
61-D	*EW-368422	AC CORD200 KS-116AGTBS [B]
61-E	*EW-368418	AC CORD200SKP550KS16 B S [S]
62	*EJ-358632	SOCKET INLET SOT-16 3P [AC SOCKET]
63	ZS-362534	T2CTS30X10STL BNI
64	ZS-537085	BID20X05STL CMT
65	ZS-338591	BID30X08STL NI3
66	ZS-407429J	PAN50X10STL NI3 SW.PW



FINAL ASSEMBLY



NOTE:
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.