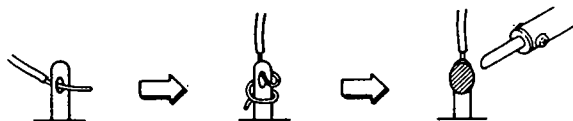




## PRECAUTIONS DURING SERVICING

- Parts identified by the  $\triangle$  symbols are critical for safety. Replace only with parts number specified.
- 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.
- Use specified internal wiring. Note especially:
  - Wires covered with PVC tubing
  - Double insulated wires
  - High voltage leads
- Use specified insulating materials for hazardous live parts. Note, especially:
  - Insulation Tape
  - PVC tubing
  - Spacers (Insulating Barriers)
  - Insulation sheets for transistors
  - Plastic screws for fixing microswitch (especially in turntable)
- When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



- Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

- Check that replaced wires do not contact sharp edged or pointed parts.
- Also check areas surrounding repaired locations.
- Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

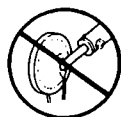
## SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 M ohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for **C** or **A**, specified insulation resistance should be head-phone jacks, line-in-out jacks, etc. more than 2.2 M ohms (ground terminals, microphone jacks).

## 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 recharge battery.
- Do not dispose of battery in fire.



[DANGER]



[RECOMMENDED WAY]

## ★ INFORMATION

### SYMBOLS FOR PRIMARY DESTINATION

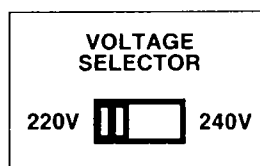
Alphabet indicates the destination of the units as listed below.

Symbols	Principal Destinations
<b>A</b>	USA
<b>B</b>	UK
<b>C</b>	Canada
<b>E</b>	Europe (except UK)
<b>J</b>	Japan
<b>S</b>	Australia
<b>V</b>	W. Germany only
<b>U</b>	Universal Area
<b>Y*</b>	Custom version

### VOLTAGE CONVERSION

(**V, E, B, S** Model only)

Before connecting the power cord, set the VOLTAGE SELECTOR located on the bottom plate with a screw-driver so that the correct voltage is indicated.



# I. SPECIFICATIONS

## [Sampler Section]

Sampling rate.....	40 kHz (fixed)
Sampling time.....	13.1 seconds standard (750k bytes), or 26.2 seconds with sound memory expansion option (EXM003, 750k bytes)
Frequency response.....	20 Hz~18 kHz
Data format.....	12 bit sample resolution with special non-linear format for reduced noise
Tuning range.....	+ 1/2 octave, - 1 octave
Preset sounds.....	32 drums
Voice.....	16

## [Sequencer Section]

Note.....	60,000 (512k bytes)
Timing resolution.....	96 divisions per 1/4 note
Sequence.....	99
Track per Sequence.....	99
Output MIDI channels.....	16
Song mode.....	20 songs, 256 steps per song
Drum pads.....	16 (velocity and pressure sensitive)
Sync mode.....	SMPTE, MIDI time code, MIDI clock, MIDI song position pointer FSK24, Pulse, 1/4 note clicks

## [Rear Panel Inputs/Outputs]

Record input.....	1 (record input gain switch: HI, MID, LOW) Input level (balanced) HI: -65dBm, Impedance 45k ohms MID: -45 dBm, Impedance 45k ohms LOW: -27 dBm, Impedance 45k ohms
Assignable mix outputs.....	8 Standard output level 0dBv, Impedance 600 ohms

Stereo outputs.....	2 (left & right) Standard output level -3 dBv, Impedance 600 ohms
Echo send mixer output....	1 (output level control ×1) Standard output level -1.5 dBv, Impedance 600 ohms
Echo return inputs.....	2 (left & right) Standard inputs level -3 dBv, Impedance 10k ohms
Sync input.....	1 (dual function-also trigger input, balanced, input level control ×1) Input level 0.5 Vp-p ~ 1 Vp-p
Sync output.....	1 Output level 1 Vp-p, Impedance 220 ohms
Metro output.....	1 (clicks)
MIDI input.....	2
MIDI output.....	4 (independent)
Foot switch inputs.....	2

## [GENERAL]

Display.....	320 character LCD display with graphics
Disk drive.....	3.5" 2DD (793k bytes formatted capacity)
Computer.....	80186 (10 MHz)
Power requirement.....	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.....	30W for Japan 32W for other countries
Dimensions.....	495 (W) × 127 (H) × 471 (D) mm
Weight.....	10.5 kg

## [Accessories]

Standard accessories.....	3.5" 2DD × 4 (Drum sound data)
Optional accessories.....	EXM003 Memory Expansion Board SC-X614 Soft case for MPC60

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

③ **DISK key**

To access the disk functions, press the DISK key and the following screen will appear.

```

===== Save / Load =====
1) Save Sequence      2) Save All Seqs/Song
3) Save Drum Sound   4) Save all Sounds
5) Load/View/Erase/Rename files
6) Erase/format disk

Select Option:
    
```

Fig. 2-4

This screen displays a list of disk options. To select one, type the number of the desired option. Each of the options are described in detail in the following sections.

④ **TEMPO/SYNC key**

**TEMPO.....** This feature is useful, for example, to quickly switch between the normal playing tempo and a slower tempo for recording.

**SYNC.....** This feature is used to select the type of SYNC signal of the MPC60 to receive SYNC from an external device or tape. There are seven possible type of SYNC which the MPC60 will accept, but only one may be active at one time.

⑤ **DRUM MIX key**

To adjust the individual volume and pan settings for the stereo mix outputs, press DRUM MIX and the following screen will appear:

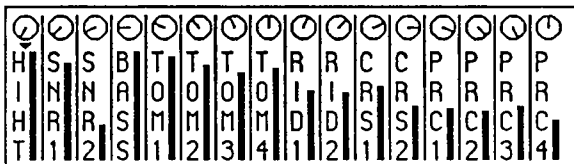


Fig. 2-5

This is a simulation of a 16 channel stereo mixer. For each channel, there is a four letter abbreviation of a drum, a graphic representation of a volume slider, and a graphic representation of a rotary pan control.

⑥ **SOUND key**

The SOUNDS key provides access to all functions associated with the creation.

⑦ **SONG MODE key**

To enter song mode, press the SONG MODE key. The following screen will appear:

```

===== SONG MODE =====
Song#: 8      End:LOOP      Loop step: 20
----- Contents of step#: 4 -----
Sequence#:02      Repetitions:4
Name:Roger's_tune...  Size (bars): 2
-----
Bar:124.01.00      Time=00:00:00:00
<Insert B4> <Delete> <Step-1> <Step+1>
    
```

Fig. 2-6

While this screen is showing, the MPC60 is in SONG mode, meaning that if play is entered, the active song will play instead of the active sequence.

⑧ **EDIT key**

The EDIT key encompasses the following functions related to editing of the active sequence:

- Viewing/changing the ending status
- Viewing all time signature changes
- Creating a new time signature/number of bars format
- Inserting blank bars into a sequence
- Deleting specified bars from a sequence
- Copying a section and inserting it elsewhere within the sequence
- Copying a single track to another area or merging it with other data
- Copying an entire sequence to another sequence

When the EDIT key is pressed, the following screen is displayed:

```

===== Edit Sequence =====
1) Time Sig / # of Bars / Ending Status
2) Create new time sig / # of bars
3) Insert Blank Bars  4) Delete Bars
5) Copy Bars          6) Copy/merge tracks
7) Copy one sequence to another
8) Convert song to long sequence
Select Option:
    
```

Fig. 2-7

Pressing a single number key will cause the screen for the selected function to be displayed.

⑨ **STEP EDIT key**

The STEP EDIT function allows the contents of the active track to be edited in precise detail.

Every parameter of every note, drum or other type of midi event is displayed in on-screen fields for detailed editing.

⑩ **Edit LOOP key**

This function causes a specified number of bars within a sequence to repeat in a loop to allow quick recording or editing of that section.

⑪ **MIDI key**

The MIDI key provides access to a number of parameters related to Midi.

- Assign the 4 Midi outputs.
- Assign incoming Midi notes numbers to the internal drums.
- Assign outgoing drums to Midi note numbers.
- Remove selected event types from the Midi input data.
- Select the Midi channel which the internal drums play from.
- Set the 'Midi soft through' feature.

⑫ **OTHER key**

The OTHER key function has many uses.

- The two metronome adjustment.
- The two foot switch input
- The 'Free sequence memory' display

- ⑬ **WAIT FOR KEY** key  
This acts as a 'remote play switch' to start the sequence. If **PLAY RECORD** or **OVER DUB** mode is entered while the **WAIT FOR KEY** function is on, the sequence will not begin to play until a key (any key) is played on the Midi keyboard.
- ⑭ **AUTO PUNCH** key  
The auto punch function, when set to **ON**, enables **OVERDUB** or **RECORD** modes to be automatically entered and exited at preset times while playing.
- ⑮ **TRANSPOSE** key  
This function allows you to transpose a track up or down by a specified amount on a specified range of the bars in real time.
- ⑯ **2nd SEQ** key  
This feature will be implemented in a future version of software. Currently, it has no function.
- ⑰ **COUNT IN** key  
This function causes a single bar of metronome 'clicks' to play before the sequence starts playing or recording, acting as a 'count in' or 'countdown' before recording this part.
- ⑱ **MAIN SCREEN** key  
Pressing the **MAIN SCREEN** key at any time will return you back to the main 'power-up' screen of MPC 60 without damaging any data.

### 3. REC/PLAY keys (Refer to Fig. 2-3)

These ten keys operate similarly to the transport keys on a tape recorder, with some very useful additions.

- ① **PLAY START** key  
This key causes the sequence to begin playing from the beginning.
- ② **PLAY** key  
This key causes the sequence to begin playing from the current position within the sequence, displayed in the 'Bar': field in the **PLAY/RECORD** screen.
- ③ **STOP** key  
This key causes the sequence to stop playing.
- ④ **OVERDUB** key  
This key, when pressed simultaneously with either **PLAY** or **PLAY START**, causes **OVERDUB** mode to be entered, in which new notes may be recorded onto the active track, but existing notes will not be erased. While **OVERDUB** mode is active, the light above the **OVERDUB** key goes on.
- ⑤ **RECORD** key  
This key, when pressed simultaneously with either **PLAY** or **PLAY START**, causes **RECORD** mode to be entered, in which new notes may be recorded onto the active track while existing notes are erased, just like a tape recorder. While **RECORD** mode is active, the light above the **RECORD** key goes on.
- ⑥ '<<' key  
This key causes the current position within the sequence to move to the previous bar.
- ⑦ '>>' key  
This key causes the current position within the sequence to move to the next bar.
- ⑧ '<' key  
This key causes the current position within the sequence to move to the previous step. The step size is normally one 1/16 note. However, it is possible to this value by changing the 'Note value' field in the **TIMING CORRECT** screen.
- ⑨ '>' key  
This key causes the current position within the sequence to move to the next step. The step size is normally one 1/16 note. However, it is possible to this value by changing the 'Note value' field in the **TIMING CORRECT** screen.
- ⑩ **LOCATE** key  
This key is used to instantly go to a specific position within the active sequence. When pressed, it displays the following screen:

```

===== Locate =====
Press Softkeys To Go To Markers:
Marker A: 001.01.00
Marker B: 001.01.00
Marker C: 001.01.00
-----
Bar:001.01.00           Time:00:00:00:00
<Goto 'A'><Goto 'B'><Goto 'C'><Load 'Now'>

```

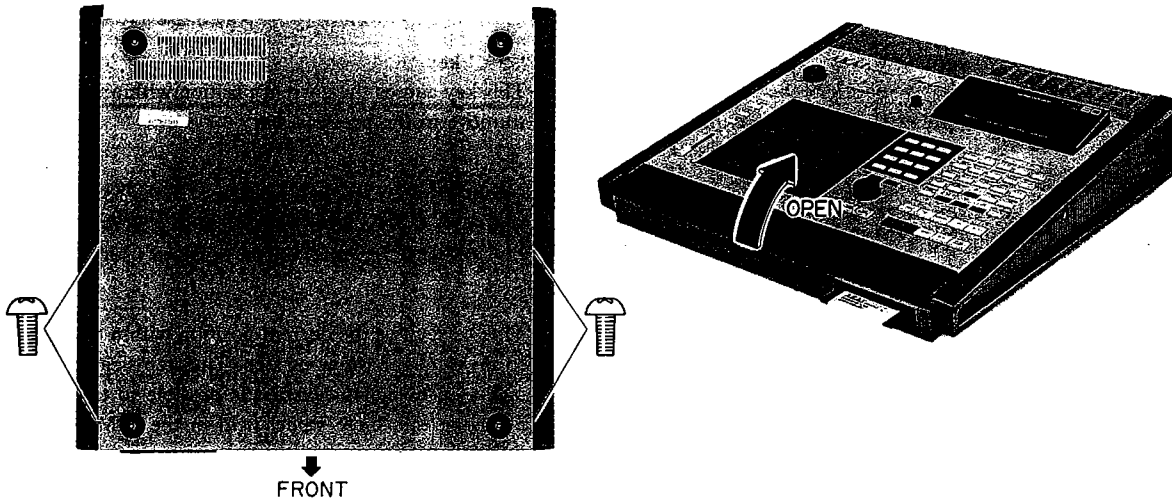
Fig. 2-8

There are three sequence position markers, labeled A, B and C. Pressing softkey 1, 2 or 3 causes either marker A, B or C, respectively, to be loaded into the 'Bar' position, having the effect of 'going' to that location. Pressing **SOFTKEY 4**, <Load'Now'>, causes the contents of the 'Bar' field to be loaded into the marker field currently containing the cursor. To load any of the three markers, move the cursor to it and enter the desired bar numbers in the format: 'bar.note.clock' (separated by '.', in the numeric keypad). If you only want to enter the bar number, type it, followed by **ENTER**, and the note and clock numbers will be automatically reset.

### III. DISASSEMBLY

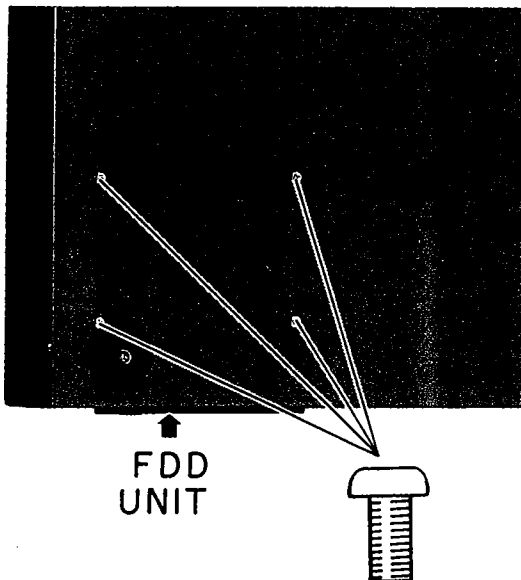
In case of trouble, etc, necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

#### 1. HOW TO OPEN THE FRONT PANEL

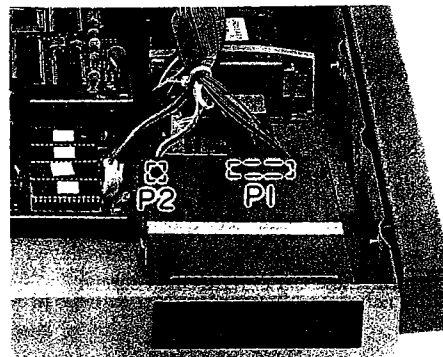


Remove 4 screws and then open the FRONT PANEL

#### 2. HOW TO DISMANTLE THE FDD UNIT



Remove 4 screws and open the FRONT PANEL.



Disconnect connectors P1 and P2, then remove the FDD UNIT.

# IV. PRINCIPAL PARTS LOCATION

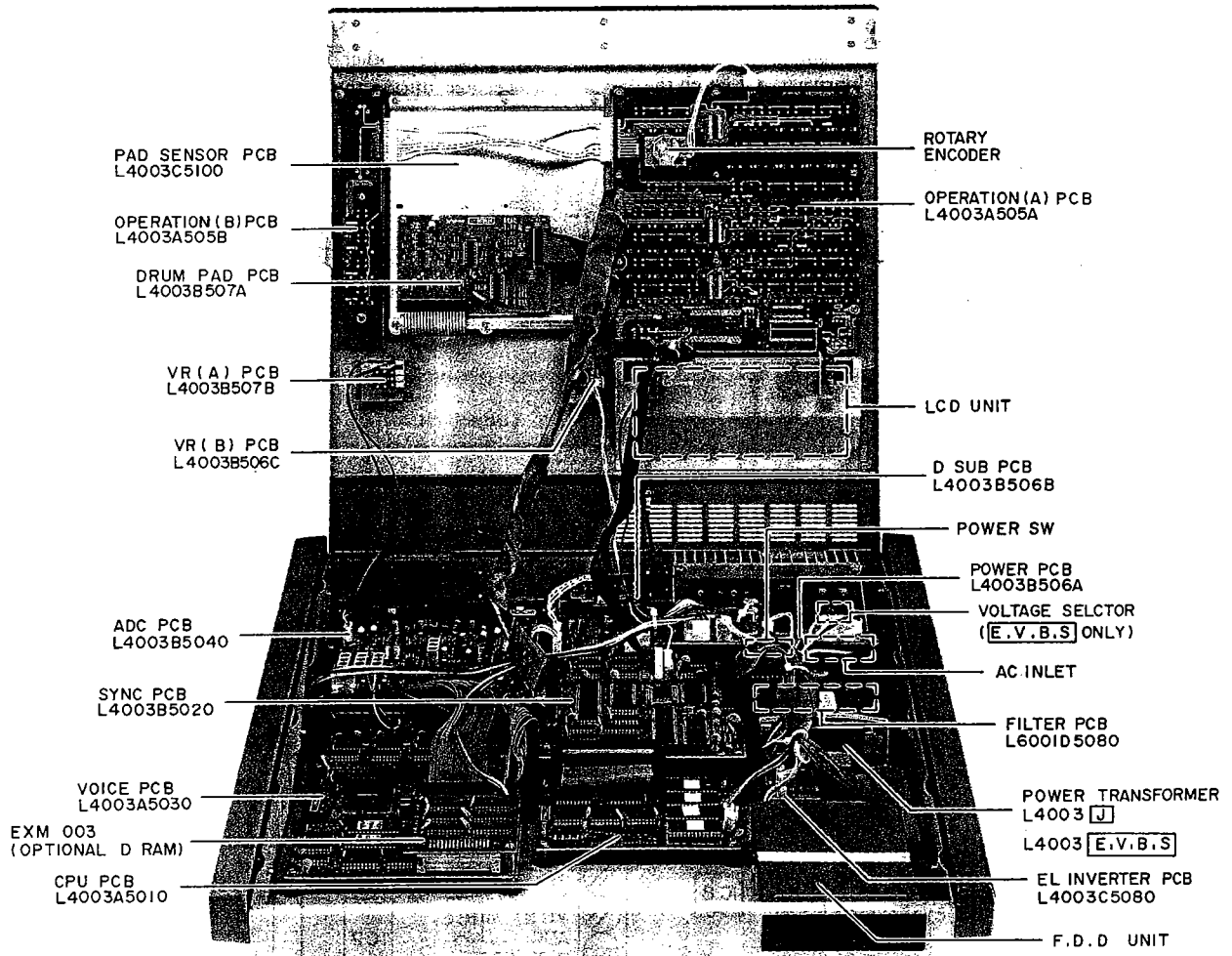


Fig. 4-1

# V. ADJUSTMENT

[TEST MODE]

- \* This test mode is used for adjusting and inspecting the Model MPC60.
- \* Insert the TEST DISK into the disk drive, then switch the power ON. The following menu will appear on the LC-display a few seconds later indicating that the unit is set to test mode. (Fig. 5-1)

- \* Once in the test mode, testing functions can be selected by pressing the DATA ENTRY key on the control panel.
- \* Inputs from keys other than the DATA ENTRY key are not accepted during the test mode.
- \* For the termination of the test mode, switch the power OFF and remove the test disk.

```

===== MPC60 Test Functions =====
1) DAC Trim (15Hz out #8)
2) ADC Monitor
3) CPU RAM test
4) Battery CRAM test
5) Sound Memory test
    
```

Fig. 5-1

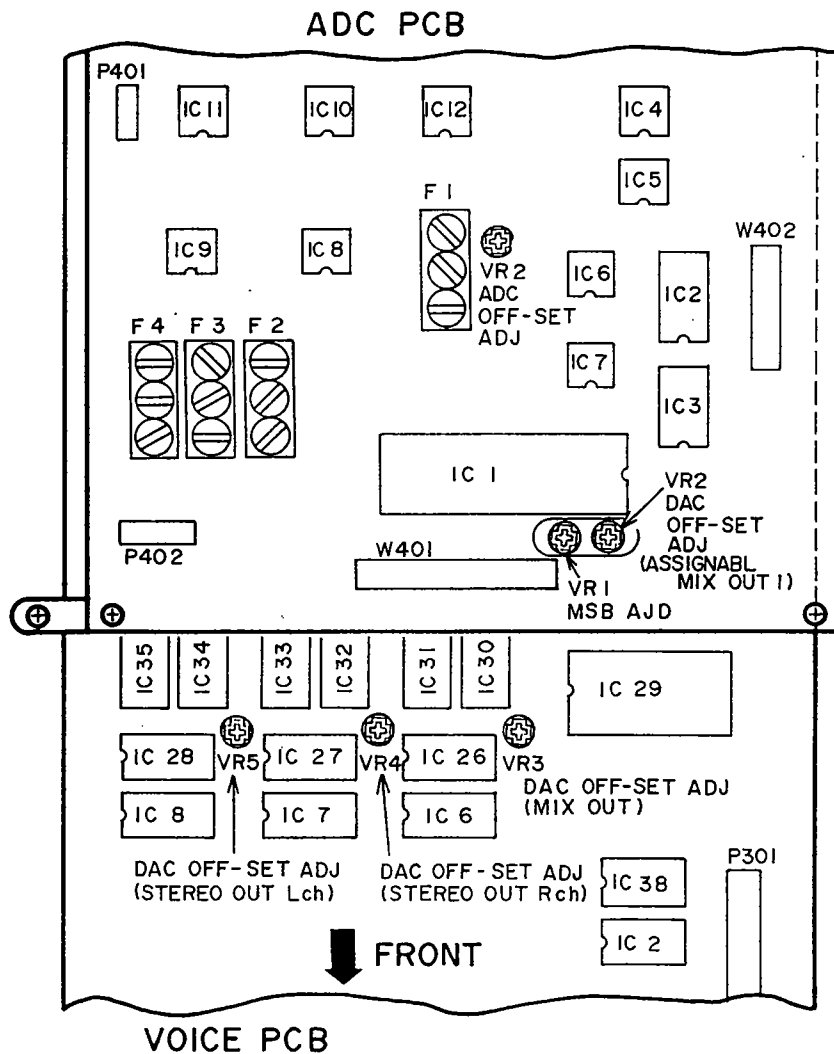


Fig. 5-2



**5-1. Adjustment of A/D converter OFF-SET (ADC PCB)**

1. Select "2) ADC Monitor" by pressing the DATA ENTRY key. Then the LC-display will change as shown below indicating that the unit enters the OFF-SET adjustment mode. (Refer to Fig. 5-3).

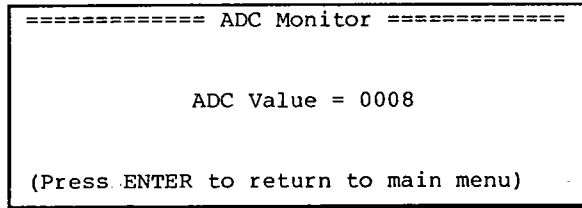


Fig. 5-3

2. Set the indicated ADC-value between 0003 and 000E by adjusting VR2 on the ADC PCB.
3. Press the ENTER key when the adjustment is completed.

**5-2. D/A converter MSB-adjustment (VOICE PCB)**

1. Select "1) DAC Trim (15 Hz out #8)" by pressing the DATA ENTRY key. The LC-display will change as shown below, indicating that the sine wave for MSB adjustment is being loaded. (Refer to Fig. 5-4)

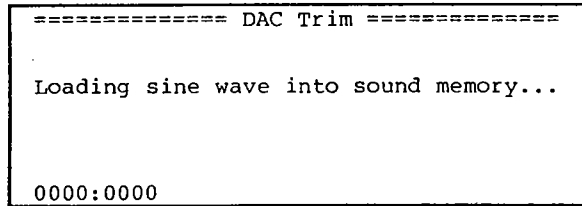


Fig. 5-4

2. Then the following screen will appear to indicate that the sine wave has been loaded and the MSB adjustment mode is set. (Refer to Fig. 5-5)

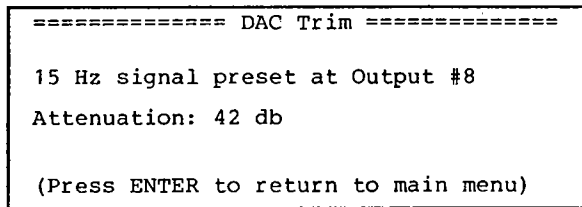


Fig. 5-5

3. Connect the oscilloscope to terminal [8] of [ASSIGN-ABLE MIX OUT] located on the rear panel. (The attenuation level can be altered in 6dB steps with the DATA CONTROL dial. The adjustment range is between 36dB and 48dB.)

If notches appear in the waveform displayed on the oscilloscope as shown Fig. 5-6, adjust VR1 on the VOICE PCB as shown Fig. 5-7.

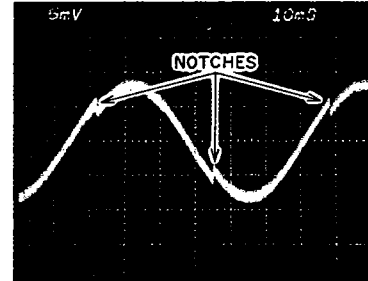


Fig. 5-6

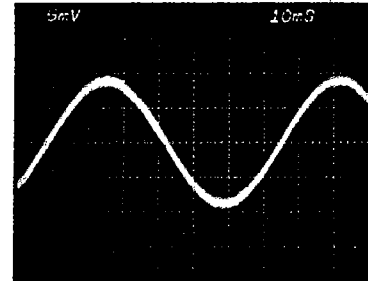


Fig. 5-7

**5-3. Adjustment of D/A converter OFF-SET (VOICE PCB)**

1. At first, switch the MCP60 OFF to terminate the test mode. Then switch power ON again, and load the data of the DRUM SOUND DATA "STUDIO-SET" (Standard accessories) in DISK mode.
2. Press the "FULL LEVEL" key on the left of the front panel to set the unit to FULL LEVEL mode. Press the "BASS DRUM" pad and adjust each VR so that there is no click noise during sustain. The outputs and their corresponding VRs are as follows.

ASSIGNABLE MIX OUT 1 .....	VR2
MIX OUT .....	VR3
STEREO OUT RIGHT CH .....	VR4
STEREO OUT LEFT CH.....	VR5

Note: Connect the corresponding output of the MCP60 to an amplifier and adjust each VR according to the sound coming out of the speaker.

#### 5-4. RAM checks

For testing each section of RAM operation, a RAM test software in test mode is used as shown in the Fig. 5-1. These programs test the function of each RAM and indicates if the LSI of each RAM functions correctly or not. In case of faultless operation, "OK" will appear on the LC-display, while malfunctions are indicated by "ERROR". The "ERROR" display contains messages pointing out which LSI and peripheral circuit to be checked.

##### 5-4-1. CPU RAM TEST

1. Set the MPC60 to TEST MODE. (Refer to page 10 "TEST MODE")
2. Select "3) CPU RAM TEST" by pressing the DATA ENTRY key and the screen shown in fig. 5-8 will appear on the LC-display.

```
CPU RAM TEST (Seg 0000; PASS # 0001)
```

Fig. 5-8

3. If the CPU RAM function is normal, the LC-display will show the message as in fig. 5-9. If "ERROR" is displayed, the function is abnormal. Check it's circuit and the LSI.

```
CPU RAM OK  
  
(Press ENTER to return to main menu)
```

Fig. 5-9

4. When the test is completed, press ENTER key to return to the main menu (Refer to Fig. 5-1).

##### 5-4-2. BATTERY CRAM TEST

1. Select "4) BATTERY CRAM TEST" by pressing the DATA ENTRY key. The screen as shown in the fig. 5-10 will appear on the LC-display.

```
=====CRAM Test =====  
  
Select type of CRAM test:  
  
1) Full CRAM Read / Write test  
2) Read only CRAM test
```

Fig. 5-10

Select the test function required by pressing DATA ENTRY.

2. If the CRAM function is normal, the LC-display will indicate the message as shown in the Fig. 5-11. If "ERROR" is displayed, the function is abnormal. Check its circuit and the LSI.

```
CRAM OK  
  
(Press ENTER to return to main menu)
```

Fig. 5-11

3. When the test is completed, press ENTER key to return to the main menu on the LC-display (Refer to Fig. 5-1).

##### 5-4-3. Sound Memory Test

1. Select "5) Sound Memory Test" by pressing the DATA ENTRY key. The screen shown in Fig. 5-12 will appear on the LC-display.

```
===== Sound Memory Test =====  
  
Indicate sound memory configuration:  
  
1) Half MEG (NO memory expansion card)  
2) Full MEG (Expansion card installed)
```

Fig. 5-12

If the optional Expansion DRAM "EXM003" is equipped, select "2) Full MEG".

2. If the DRAM function is normal, the test will be carried out automatically in order of Fig. 5-13, 5-14 and 5-15 after which the display will change to the screen as shown in the Fig. 5-16.

```

===== Sound Memory Test =====
Writing 5550 ( hex ) ...
Reading 5550 ( hex ) ...

```

Fig. 5-13

```

===== Sound Memory Test =====
Writing AAA0 ( hex ) ...
Reading AAA0 ( hex ) ...

```

Fig. 5-14

```

===== Sound Memory Test =====
Writing Address check Data ...
Reading Address check Data ...

```

Fig. 5-15

```

SOUND MEM. OK

(Press ENTER to return to main menu)

```

Fig. 5-16

If the screen as shown in Fig. 5-17 appears on the LC-display, it means that the DRAM does not function normally. Check its circuit and the LSI.

```

LSI ERROR ADDR.00080003
Expected = 5550 Read = FFF0
Voice PCB      Extension card
|ok| |ok|  BAD  |ok|
|ok| |ok|  BAD  |ok|
|ok| |ok|  BAD  |ok|
(Press ENTER to return to main menu)

```

Fig. 5-17

- \* When "2) Full MEG" test is selected while "EXM003" is not equipped, the screen as shown above will appear indicating errors in the RAM circuit of the Extension card.

Note: These RAM test mode programs only indicate if their functions are normal or not, but they do not apply to each BUS LINE and LSI. Use these programs as a guidance for checking the function of RAMs.

#### 5-5. PROCEDURE OF CPU ROM (CPU PCB IC2 TO IC5) Version Check

- \* This Version Check is for checking the EP-ROM Version used for the CPU of the MCP60.

1. Switch the MPC60 on without inserting a floppy disk.
2. When the "Main Screen" appears on the LC-display, press the COMMAND key "OTHER" first, then "SOFT KEY4".  
Note: There will be indication of "SOFT KEY4" on the LC-display in the "OTHER" mode.
3. After pressing "SOFT KEY4" key the "Debug Function" screen appears on the LC-display from which the production date of the EP-ROM can be detected. (Refer to Fig. 5-18)
4. To terminate the Version Check mode, press the "MAIN SCREEN" key.

```

===== Debug Functions =====
Date of this version: 12/14/87
Voices off After Playing: YES
Help Codes: OFF

(sync)

```

Fig. 5-18

# VI. THE MIDI IMPLEMENTATION CHART

This section contains the Midi implementation charts for the MPC60. There are two charts-one for the drum sampler section, and one for the sequencer section.

[Drums sampler section]

Model MPC60 MIDI Implementation Chart Version: 1.0

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	16 1-16	16 1-16	memorized
Mode Default Messages Altered	3 × *****	3 × ×	
Note Number : True voice	0-127 *****	0-127 0-127	
Velocity Note ON Note OFF	○ ○ (Always=64)	○ ×	
After Key's Touch Ch's	× ×	○ ○	Used in 'Note repeat' feature
-Pitch Bender	×	×	
Control 20 Change	○	○	Hihat decay cont.
Prog Change : True #	× *****	× ×	
System Exclusive	○	○	See note 2
System : Song Pos : Song Sel Common : Tune	× × ×	× × ×	
System : Clock Real Time : Commands	× ×	× ×	
Aux : Local ON/OFF : All Notes OFF Messages : Active Sense : Reset	× × × ×	× ○ (when stop pressed) × ×	
Notes			

Mode 1: OMNI ON, POLY  
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO  
Mode 4: OMNI OFF, MONO

○: Yes  
×: No

[Sequencer section]

Model MPC60 MIDI Implementation Chart Version: 1.0

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	1-16	1-16	memorized
	Changed	1-16	1-16	memorized
Mode	Default	3	1	
	Messages	×	×	
	Altered	*****	×	
Note Number		0-127	0-127	
	: True voice	*****	0-127	
Velocity	Note ON	○	○	
	Note OFF	○	○	
After Touch	Key's	○	○	
	Ch's	○	○	
Pitch Bender		○	○	
Control Change	0 - 121	○	○	See note 1
Prog Change	: True #	○ *****	○ 0-127	
System Exclusive		○	○	See note 2
System Common	: Song Pos	×	○	
	: Song Sel	×	○	
	: Tune	×	×	
System Real Time	: Clock	○	○	
	: Commands	○	○	
Aux Messages	: Local ON/OFF	×	×	
	: All Notes OFF	○	×	
	: Active Sense	×	×	
	: Reset	×	×	
Notes				

Mode 1: OMNI ON, POLY  
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO  
Mode 4: OMNI OFF, MONO

○: Yes  
×: No

**Note 1:**

When the control code 64 (damper or sustain pedal) is received while recording, it is not recorded. Instead, all notes currently on at that time are held on until the sustain pedal is released, even if the individual notes are released. This allows multiple overdubs on the same track to have different and independent sustain pedal times.

**Note 2:**

The follow system exclusive messages, unique to the MPC60, are sent and received:

**Drum mixer volume change:**

11110000	System exclusive header
01000111	Akai ID (47 H)
0000XXXX	Unit number (midi channel # 1-16)
01000100	44H
01000XXX	Akai product ID (MPC60=45H)
00000001	Parameter ID: 01 = Drum mix volume
000XXXXX	Drum number (0-31)
0XXXXXXX	Data: 0 (off) - 127(full volume)

**Drum mixer pan change:**

11110000	System exclusive header
01000111	Akai ID (47H)
0000XXXX	Unit number (midi channel # 1-16)
01000100	44H
01000XXX	Akai product ID (MPC60 = 45H)
00000010	Parameter ID: 02 = Drum mix pan
000XXXXX	Drum number (0-31)
0000XXXX	Data: 0 (full left) - 14 (full right)

**Echo mixer volume change:**

11110000	System exclusive header
01000111	Akai ID (47 H)
0000XXXX	Unit number (midi channel # 1-16)
01000100	44H
01000XXX	Akai product ID (MPC60=45H)
00000011	Parameter ID: 03 = Drum mix volume
000XXXXX	Drum number (0-31)
0XXXXXXX	Data: 0 (off) - 127(full volume)

**Drum tuning change:**

11110000	System exclusive header
01000111	Akai ID (47H)
0000XXXX	Unit number (midi channel # 1-16)
01000100	44H
01000XXX	Akai product ID (MPC60 = 45H)
00000100	Parameter ID:04 = Drum mix volume
000XXXXX	Drum number (0-31)
0XXXXXXX	Pitch data MSB
0XXXXXXX	Pitch data LSB

The above two bytes comprise a 14 bit pitch change word. Range =0 - 4000H in increments of 1/2 cent (2000H = no change).

# VII. PARTS LIST

**ATTENTION**

1. When placing an order for parts, be sure to list Part No., Model No., and the description of each part. 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
2-1x	BH-T2023A320A	HEAD BASE BLOCK
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

A small "x" indicates that this part is not shown in the Photo or Illustration.

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

This number corresponds with the Figure Number.

b) PC Board

### 6. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
6-C1B	EC-350949	C MMY V 223M 250DC [J]
6-C1C	EC-338397	C MMY V 223M 125AC [C,A]
6-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) [V]: VDE(W. Germany)  
 [E]: CEE(Europe) [Y]: Custom Version  
 [J]: JPN(Japan)

SP (Service Parts) Classification

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

- The available PC Board Blocks are listed separately.
5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

**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 SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.**

**MODEL MPC60**

**1. RECOMMENDED SPARE PARTS**

Ref. No.	Part No.	Description
1	BB-375768	FROPPY DISK MF353C-62M
2	*BT-378272	TRANS POW L4003 C,A [A,C,Y1] [T901]
3	*BT-378273	TRANS POW L4003 E,V,B,S [E,V,B,S] [T901]
4	*BT-378271	TRANS POW L4003 J [J] [T901]
5	BT-379599	TRANS PULSE D32-48
6	ED-359863	D LED LN81CV-(LF) AK ORANGE
7	*ED-365819	D SILICON CTU-12R 200/ 6.0A
8	*ED-365818	D SILICON CTU-12S 200/ 6.0A
9	*ED-330319	D SILICON DBA10B 100/1.0A
10	*ED-361055	D SILICON DS135E-UB1
11	ED-301911	D SILICON H DS448
12	ED-378184	D ZENER H HZ3BLL
13	ED-378219	DETECTOR PC 6N137
14	*EF-364518	FUSE BET T 250V 2.50A [B]
15	*EF-355374	FUSE BET T 250V 500MA [B]
16	*EF-623125	FUSE SEMKO T [E,V,S]
17	*EF-593706	FUSE SEMKO T 250V 500MA [E,V,S]
18	*EF-311839	FUSE TSC A 250V 1.60A [J]
19	*EF-326639	FUSE TSC A 250V 3.15A [J]
20	*EF-309388	FUSE TSC A 250V 800MA [J]
21	*EF-310229	FUSE TSC 125V 1.00A [C,A]
22	*EF-309392	FUSE TSC 125V 1.25A [C,A]
23	*EF-323080	FUSE TSC 125V 3.15A [C,A]
24	EH-359185	COMP R RKC1/8B8 103J
25	EH-378283	DL ADL-050SH7P
26	EI-379592	IC AD7523JN
27	EI-378285	IC CD74HCT173
28	EI-378141	IC CD74HC4051
29	EI-379585	IC CD74HC4053
30	EI-369660	IC CXK5816PN-12L
31	EI-376734	IC F74AC74P
32	EI-355891	IC HD74LS32P
33	EI-365804	IC HD7406P
34	EI-365806	IC HD75188P
35	EI-365805	IC HD75189P
36	EI-378277	IC I-0055
37	EI-360954	IC IR9311
38	EI-379605	IC LA6339
39	EI-378276	IC LC7981
40	EI-378293	IC L4003
41	EI-378197	IC MBL80186-10-CR-G-C
42	EI-378294	IC MBM27C256-15-ADR15-5-V1.0
43	EI-378296	IC MBM27C256-15-ADR15-6-V1.0
44	EI-378198	IC MBM27C512-20-ADR15-1-V1.0
45	EI-378200	IC MBM27C512-20-ADR15-2-V1.0
46	EI-378201	IC MBM27C512-20-ADR15-3-V1.0
47	EI-378203	IC MBM27C512-20-ADR15-4-V1.0
48	EI-378218	IC MB81C4256-10-G
49	EI-379657J	IC MB89255A-P-G
50	EI-378204	IC MB89371-P-G
51	EI-378214	IC MC74F08N
52	EI-379586	IC MC74F157N
53	EI-378212	IC MC74F158N
54	EI-378215	IC MC74F32N
55	EI-375346	IC MM74HCO4N
56	EI-375347	IC MM74HC14N
57	EI-349719	IC M5218P
58	EI-360043	IC M5220P
59	*EI-348123	IC M5230L
60	EI-362588	IC M5238P
61	EI-336995	IC NJM78L05A
62	*EI-360772	IC NJM79L05A

Ref. No.	Part No.	Description
63	EI-378297	IC PCM54HP
64	EI-377067	IC PCM77P
65	EI-364253	IC PST520D-2
66	EI-365798	IC SED9420CAC
67	*EI-365820	IC STR9005
68	EI-378286	IC TC4516BP
69	EI-378284	IC TC74HCT245P
70	EI-378211	IC TC74HCT573P
71	EI-379583	IC TC74HCT574P
72	EI-360037	IC TC74HC00P
73	EI-360039	IC TC74HC08P
74	EI-375222	IC TC74HC125P
75	EI-378216	IC TC74HC126P
76	EI-360025	IC TC74HC138P
77	EI-372578	IC TC74HC153P
78	EI-365840	IC TC74HC155P
79	EI-372550	IC TC74HC161P
80	EI-360054	IC TC74HC174P
81	EI-360053	IC TC74HC175P
82	EI-360042	IC TC74HC259P
83	EI-360036	IC TC74HC32P
84	EI-378217	IC TC74HC390
85	EI-365831	IC TC74HC393P
86	EI-365803	IC TC74HC4002P
87	EI-375205	IC TC74HC541P
88	EI-360028	IC TC74HC74P
89	EI-379598	IC TM2764AD-20-ADR15-7-V1.0
90	EI-379594	IC UPC814C
91	EI-379593	IC UPD5200C
92	EI-378275	IC UPD72066C
93	EI-371671	IC UPD78C11G-044-36
94	EI-354123	OSC CE CSA120MT 12.000000MHZ
95	EI-378205	OSC X'TAL AT-51 20.000000MHZ
96	EI-365811	OSC X'TAL NR18 16.000MHZ
97	EI-378290	OSC X'TAL TD308A 35.84MHZ
98	*EJ-358633	SOCKET INLET SOT-17 2P [J,E,V,B,S,Y1]
99	EM-378267	IND LCD 240082
100	*EO-360068	COIL LF LF-2 B
101	EO-378291	FILTER LC 258BLR-5326N 18KHZ
102	ES-365943	SW EWT-XDFK2550B
103	*ES-364478	SW SEESAW SDDT SPST TYPEA T8.5
104	*ES-306430	SW SLIDE J-S4013#01 01-2
105	ES-379609	SW SLIDE SSSP***** [REC GAIN]
106	ES-349474	SW TACT SKHHAM004A
107	ET-353899	TR 2SA1317 S,T,U
108	ET-305463	TR 2SA970 GR,BL
109	*ET-356817	TR 2SB891 Q,R
110	ET-307195	TR 2SC2240 GR,BL
111	ET-308977	TR 2SC2274K F F05
112	ET-360067	TR 2SC3330 T,U F05
113	*ET-354083	TR 2SD1189 Q,R
114	EV-379613	VR ROTARY EVHCCAP20B53 B502
115	EV-379614	VR ROTARY EWKE2AP20A14 A103X2
116	EV-365876	VR SLIDE VJ4513-2PVNB5 103 [HIHAT DECAY]
117	EV-379610	VR V012L-PLHJ20U A103 [MIX OUT LEVEL]
118	EV-378278	VR V012L-PLHJ20U B103 [SYNC LEVEL]
119	*EZ-378206	BATTERY LITHIUM CL2020 IHF



## 2. P.C BOARD BLOCK

Ref. No.	Part No.	Description
1	BA-L4003A020A	PC(##) OPERATION BLK MPC60
2	BA-L4003A050A	PC CPU BLK MPC60
3	BA-L4003A070A	PC SYNC BLK MPC60
4	BA-L4003A040A	PC VOICE BLK MPC60
5	BA-L4003A060A	PC ADC BLK MPC60
6	BA-L4003A030A	PC(##) DRUM PAD BLK MPC60

### NOTE

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

- \* OPERATION (A) P.C BOARD
- \* OPERATION (B) P.C BOARD

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

- \* DRUM PAD P.C BOARD
- \* VR (A) P.C BOARD

## 3. OPERATION (A) P.C BOARD

Ref. No.	Part No.	Description
D1	ED-359863	D LED LN81CV-(LF) AK ORANGE
D2	ED-359863	D LED LN81CV-(LF) AK ORANGE
D3	ED-359863	D LED LN81CV-(LF) AK ORANGE
D4	ED-359863	D LED LN81CV-(LF) AK ORANGE
D5	ED-359863	D LED LN81CV-(LF) AK ORANGE
D6	ED-359863	D LED LN81CV-(LF) AK ORANGE
D7	ED-359863	D LED LN81CV-(LF) AK ORANGE
D8	ED-359863	D LED LN81CV-(LF) AK ORANGE
D9	ED-359863	D LED LN81CV-(LF) AK ORANGE
D10	ED-359863	D LED LN81CV-(LF) AK ORANGE
D11	ED-361055	D SILICON DS135E-UB1
IB1	EH-359185	COMP R RKC1/8B8 103J
IC1	EI-371671	IC UPD78C11G-044-36
IC2	EI-379598	IC TM2764AD-20-ADR15-7-V1.0
IC3	EI-378211	IC TC74HCT573P
IC4	EI-360025	IC TC74HC138P
IC5	EI-360042	IC TC74HC259P
IC6	EI-360042	IC TC74HC259P
IC7	EI-336995	IC NJM78L05A
SW1	ES-349474	SW TACT SKHHAM004A
SW2	ES-349474	SW TACT SKHHAM004A
SW3	ES-349474	SW TACT SKHHAM004A
SW4	ES-349474	SW TACT SKHHAM004A
SW5	ES-349474	SW TACT SKHHAM004A
SW6	ES-349474	SW TACT SKHHAM004A
SW7	ES-349474	SW TACT SKHHAM004A
SW8	ES-349474	SW TACT SKHHAM004A
SW9	ES-349474	SW TACT SKHHAM004A
SW10	ES-349474	SW TACT SKHHAM004A
SW11	ES-349474	SW TACT SKHHAM004A
SW12	ES-349474	SW TACT SKHHAM004A
SW13	ES-349474	SW TACT SKHHAM004A
SW14	ES-349474	SW TACT SKHHAM004A
SW15	ES-349474	SW TACT SKHHAM004A
SW16	ES-349474	SW TACT SKHHAM004A
SW17	ES-349474	SW TACT SKHHAM004A
SW18	ES-349474	SW TACT SKHHAM004A
SW19	ES-349474	SW TACT SKHHAM004A
SW20	ES-349474	SW TACT SKHHAM004A
SW21	ES-349474	SW TACT SKHHAM004A
SW22	ES-349474	SW TACT SKHHAM004A
SW23	ES-349474	SW TACT SKHHAM004A
SW24	ES-349474	SW TACT SKHHAM004A
SW25	ES-349474	SW TACT SKHHAM004A
SW26	ES-349474	SW TACT SKHHAM004A
SW27	ES-349474	SW TACT SKHHAM004A
SW28	ES-349474	SW TACT SKHHAM004A

Ref. No.	Part No.	Description
SW29	ES-349474	SW TACT SKHHAM004A
SW30	ES-349474	SW TACT SKHHAM004A
SW31	ES-349474	SW TACT SKHHAM004A
SW32	ES-349474	SW TACT SKHHAM004A
SW33	ES-349474	SW TACT SKHHAM004A
SW34	ES-349474	SW TACT SKHHAM004A
SW35	ES-349474	SW TACT SKHHAM004A
SW36	ES-349474	SW TACT SKHHAM004A
SW37	ES-349474	SW TACT SKHHAM004A
SW38	ES-349474	SW TACT SKHHAM004A
SW39	ES-349474	SW TACT SKHHAM004A
SW40	ES-349474	SW TACT SKHHAM004A
SW41	ES-349474	SW TACT SKHHAM004A
SW42	ES-349474	SW TACT SKHHAM004A
SW43	ES-349474	SW TACT SKHHAM004A
SW44	ES-349474	SW TACT SKHHAM004A
SW45	ES-349474	SW TACT SKHHAM004A
SW46	ES-349474	SW TACT SKHHAM004A
SW47	ES-349474	SW TACT SKHHAM004A
SW48	ES-349474	SW TACT SKHHAM004A
SW49	ES-349474	SW TACT SKHHAM004A
SW50	ES-349474	SW TACT SKHHAM004A
SW51	ES-349474	SW TACT SKHHAM004A
SW52	ES-349474	SW TACT SKHHAM004A
X1	EI-354123	OSC CE CSA120MT 12.000000MHZ
1	EJ-358691	SOCKET IC DILB28P-8J

## 4. OPERATION (B) P.C BOARD

Ref. No.	Part No.	Description
D1	ED-359863	D LED LN81CV-(LF) AK ORANGE
D2	ED-359863	D LED LN81CV-(LF) AK ORANGE
D3	ED-359863	D LED LN81CV-(LF) AK ORANGE
D4	ED-359863	D LED LN81CV-(LF) AK ORANGE
SW1	ES-349474	SW TACT SKHHAM004A
SW2	ES-349474	SW TACT SKHHAM004A
SW3	ES-349474	SW TACT SKHHAM004A
SW4	ES-349474	SW TACT SKHHAM004A
VR1	EV-365876	VR SLIDE VJ4513-2PVB5 103 [HIHAT DECAY]

## 5. CPU P.C BOARD

Ref. No.	Part No.	Description
DL1	EH-378283	DL ADL-050SH7P
D2	ED-301911	D SILICON H DS448
D3	ED-378184	D ZENER H HZ3BLL
D4	ED-301911	D SILICON H DS448
D5	ED-301911	D SILICON H DS448
IC1	EI-378197	IC MBL80186-10-CR-G-C
IC2	EI-378198	IC MBM27C512-20-ADR15-1-V1.0
IC3	EI-378200	IC MBM27C512-20-ADR15-2-V1.0
IC4	EI-378201	IC MBM27C512-20-ADR15-3-V1.0
IC5	EI-378203	IC MBM27C512-20-ADR15-4-V1.0
IC6	EI-369660	IC CXX5816PN-12L
IC7	EI-378204	IC MB89371-P-G
IC8	EI-378204	IC MB89371-P-G
IC9	EI-378211	IC TC74HCT573P
IC10	EI-378211	IC TC74HCT573P
IC11	EI-378211	IC TC74HCT573P
IC12	EI-378212	IC MC74F158N

Ref. No.	Part No.	Description
IC13	EI-378212	IC MC74F158N
IC14	EI-378212	IC MC74F158N
IC15	EI-365840	IC TC74HC155P
IC16	EI-360028	IC TC74HC74P
IC17	EI-360036	IC TC74HC32P
IC18	EI-375347	IC MM74HC14N
IC19	EI-378214	IC MC74F08N
IC20	EI-360037	IC TC74HCOOP
IC21	EI-378215	IC MC74F32N
IC23	EI-365803	IC TC74HC4002P
IC24	EI-375222	IC TC74HC125P
IC25	EI-378216	IC TC74HC126P
IC26	EI-355891	IC HD74LS32P
IC27	EI-365805	IC HD75189P
IC28	EI-378217	IC TC74HC390
IC29	EI-378217	IC TC74HC390
IC30	EI-372550	IC TC74HC161P
IC31	EI-378218	IC MB81C4256-10-G
IC32	EI-378218	IC MB81C4256-10-G
IC33	EI-378218	IC MB81C4256-10-G
IC34	EI-378218	IC MB81C4256-10-G
IC35	EI-364253	IC PST520D-2
J101	EJ-378207	DIN J TCS4450-01-1011 [MIDI IN 1]
J102	EJ-378207	DIN J TCS4450-01-1011 [MIDI IN 2]
J103	EJ-378207	DIN J TCS4450-01-1011 [MIDI OUT 1]
J104	EJ-378207	DIN J TCS4450-01-1011 [MIDI OUT 2]
J105	EJ-378207	DIN J TCS4450-01-1011 [MIDI OUT 3]
J106	EJ-378207	DIN J TCS4450-01-1011 [MIDI OUT 4]
PH1	ED-378219	DETECTOR PC 6N137
PH2	ED-378219	DETECTOR PC 6N137
TR1	ET-353899	TR 2SA1317 S,T,U
TR2	ET-360067	TR 2SC3330 T,U F05
X1	EI-378205	OSC X'TAL AT-51 20.000000MHZ
1	*EZ-378206	BATTERY LITHIUM CL2020 IHF
2	EJ-358691	SOCKET IC DILB28P-8J

## 6. SYNC 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
IC1	EI-379657J	IC MB89255A-P-G
IC2	EI-378275	IC UPD72066C
IC3	EI-365798	IC SED9420CAC
IC4	EI-378276	IC LC7981
IC5	EI-369660	IC CXK5816PN-12L
IC6	EI-378211	IC TC74HCT573P
IC7	EI-378284	IC TC74HCT245P
IC8	EI-360053	IC TC74HC175P
IC9	EI-378285	IC CD74HCT173
IC10	EI-360028	IC TC74HC74P
IC11	EI-365840	IC TC74HC155P
IC12	EI-365831	IC TC74HC393P
IC13	EI-372578	IC TC74HC153P
IC14	EI-372578	IC TC74HC153P
IC15	EI-360028	IC TC74HC74P
IC16	EI-360028	IC TC74HC74P
IC17	EI-375346	IC MM74HCO4N
IC18	EI-360039	IC TC74HC08P
IC19	EI-360039	IC TC74HC08P
IC20	EI-375347	IC MM74HC14N

Ref. No.	Part No.	Description
IC21	EI-360039	IC TC74HC08P
IC22	EI-365804	IC HD7406P
IC23	EI-365806	IC HD75188P
IC24	EI-378286	IC TC4516BP
IC25	EI-360954	IC IR9311
IC26	EI-362588	IC M5238P
IC27	EI-362588	IC M5238P
IC28	EI-362588	IC M5238P
IC29	EI-349719	IC M5218P
IC30	EI-378277	IC I-0055
IC31	EI-375346	IC MM74HCO4N
J201	EJ-353031	PHONE J 3P HLJ0520-010 [SYNC IN]
J202	EJ-353031	PHONE J 3P HLJ0520-010 [SYNC OUT]
J203	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [FOOT SW 1]
J204	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [FOOT SW 2]
J205	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [METRO OUT]
P201	EJ-378279	PLUG RA-H502SD-1190 50P
P202	EJ-378282	PLUG RF-H202TD-1190 20P
P203	EJ-378282	PLUG RF-H202TD-1190 20P
P204	EJ-365834	PLUG RK-H341TD-0190 34P
P205	EJ-378269	PLUG B10P-ER 10P
R65	*ER-325114	R CB H S10 FS RDS 1/4W 330J
R66	*ER-325114	R CB H S10 FS RDS 1/4W 330J
VR1	EV-378278	VR V012L-PLHJ20U B103 [SYNC LEVEL]
X1	EI-365811	OSC X'TAL NR18 16.000MHZ

## 7. VOICE P.C BOARD

Ref. No.	Part No.	Description
F1	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F2	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F3	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F4	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F5	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F6	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F7	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F8	EO-378291	FILTER LC 258BLR-5326N 18KHZ
IC1	EI-378293	IC L4003
IC2	EI-375346	IC MM74HCO4N
IC3	EI-379583	IC TC74HCT574P
IC4	EI-379583	IC TC74HCT574P
IC5	EI-360054	IC TC74HC174P
IC6	EI-360054	IC TC74HC174P
IC7	EI-360054	IC TC74HC174P
IC8	EI-360054	IC TC74HC174P
IC9	EI-375222	IC TC74HC125P
IC10	EI-375205	IC TC74HC541P
IC11	EI-360025	IC TC74HC138P
IC12	EI-379585	IC CD74HC4053
IC13	EI-378141	IC CD74HC4051
IC14	EI-379586	IC MC74F157N
IC15	EI-379586	IC MC74F157N
IC16	EI-379586	IC MC74F157N
IC17	EI-378294	IC MBM27C256-15-ADR15-5-V1.0
IC18	EI-378296	IC MBM27C256-15-ADR15-6-V1.0
IC19	EI-378218	IC MB81C4256-10-G
IC20	EI-378218	IC MB81C4256-10-G
IC21	EI-378218	IC MB81C4256-10-G
IC22	EI-378218	IC MB81C4256-10-G
IC23	EI-378218	IC MB81C4256-10-G
IC24	EI-378218	IC MB81C4256-10-G
IC25	EI-376734	IC F74AC74P
IC26	EI-360054	IC TC74HC174P

Ref. No.	Part No.	Description
IC27	EI-360054	IC TC74HC174P
IC28	EI-360054	IC TC74HC174P
IC29	EI-378297	IC PCM54HP
IC30	EI-379585	IC CD74HC4053
IC31	EI-379585	IC CD74HC4053
IC32	EI-379585	IC CD74HC4053
IC33	EI-379585	IC CD74HC4053
IC34	EI-379585	IC CD74HC4053
IC35	EI-379585	IC CD74HC4053
IC36	*EI-360772	IC NJM79L05A
IC37	*EI-336995	IC NJM78L05A
IC38	EI-360037	IC TC74HC00P
IC39	EI-360043	IC M5220P
IC40	EI-360043	IC M5220P
IC41	EI-360043	IC M5220P
IC42	EI-360043	IC M5220P
J301	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 1]
J302	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 2]
J303	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 3]
J304	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 4]
J305	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 5]
J306	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 6]
J307	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 7]
J308	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [CH 8]
L1	EO-379607	COIL FIX 2 8RBS 151K
L2	EO-379607	COIL FIX 2 8RBS 151K
P301	EJ-378280	PLUG RA-H502TD-1190 50P
P302	EJ-365834	PLUG RK-H341TD-0190 34P
P304	EJ-378287	PLUG RP148B30P-1TD2-03 48P
VR1	EV-336768	R S-FIX H RH0621C 0.30W104
VR2	EV-307626	R S-FIX H RH0621C 0.30W103
VR3	EV-307626	R S-FIX H RH0621C 0.30W103
VR4	EV-307626	R S-FIX H RH0621C 0.30W103
VR5	EV-307626	R S-FIX H RH0621C 0.30W103
X1	EI-378290	OSC X'TAL TD308A 35.84MHZ

### 8. ADC P.C BOARD

Ref. No.	Part No.	Description
D1	ED-301911	D SILICON H DS448
F1	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F2	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F3	EO-378291	FILTER LC 258BLR-5326N 18KHZ
F4	EO-378291	FILTER LC 258BLR-5326N 18KHZ
IC1	EI-377067	IC PCM77P
IC2	EI-379592	IC AD7523JN
IC3	EI-379593	IC UPD5200C
IC4	EI-360043	IC M5220P
IC5	EI-362588	IC M5238P
IC6	EI-379594	IC UPC814C
IC7	EI-362588	IC M5238P
IC8	EI-360043	IC M5220P
IC9	EI-360043	IC M5220P
IC10	EI-362588	IC M5238P
IC11	EI-362588	IC M5238P
IC12	EI-362588	IC M5238P
IC13	EI-336995	IC NJM78L05A
J401	EJ-353031	PHONE J 3P HLJ0520-010 [REC IN]
J402	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [OUT-L]

Ref. No.	Part No.	Description
J403	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [OUT-R]
J404	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [MIX OUT]
J405	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [EFFECT RETURN-R]
J406	EJ-354105	PHONE J 2P HLJ0520-110 6.3 [EFFECT RETURN-L]
L1	EO-379607	COIL FIX 2 8RBS 151K
L2	EO-379607	COIL FIX 2 8RBS 151K
R26	ER-333363	R CB H S10 FS RDS 1/4W 120J
R27	ER-333363	R CB H S10 FS RDS 1/4W 120J
SW1	ES-379609	SW SLIDE SSSP***** [REC GAIN]
TR1	ET-307195	TR 2SC2240 GR,BL
TR2	ET-307195	TR 2SC2240 GR,BL
TR3	ET-305463	TR 2SA970 GR,BL
TR4	ET-305463	TR 2SA970 GR,BL
VR1	EV-379610	VR V012L-PLHJ20U A103 [MIX OUT LEVEL]
VR2	EV-336768	R S-SIX H RH0621C 0.30W104

### 9. DRUM PAD 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
IC1	EI-375346	IC MM74HC04N
IC2	EI-379605	IC LA6339
IC3	EI-362588	IC M5238P
IC4	EI-362588	IC M5238P
P701	EJ-378282	PLUG RF-H202TD-1190 20P
P702	EJ-379603	PLUG 20FR-ST

### 10. VR (A) P.C BOARD

Ref. No.	Part No.	Description
VR1	EV-379614	VR ROTARY EWKE2AP20A1.4 A103X2

