K2000 and K2000R P-RAM Option Kit Installation Manual

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P-RAM Option Installation Kit

This document will instruct Kurzweil service technicians in the installation of the P-RAM Option kit. It is intended *only* for qualified Kurzweil service technicians. Installation by unqualified personnel will void the warranty.

Important Notices

Installation of the P-RAM Option kit will completely erase the K2000's or K2000R's RAM. Unlike a normal power-down, which clears only the sample RAM, this installation will delete all user-defined objects: programs, setups, songs, intonation tables, velocity and pressure maps, etc. Please be sure that the contents of RAM have been backed up before you begin this installation. If the owner of the unit has not already done it, you can quickly back up all of these objects by entering Disk mode, pressing the Save soft button, and selecting the option "Everything" to save all RAM objects to a floppy or hard disk.

If you are installing the P-RAM Option kit in a K2000 (the keyboard version of the K2000), you must also install Kurzweil 2000 series Engine software Version 1.1 or later. The P-RAM Option kit will not function without this software update. You can check the Engine software version of any K2000 by turning it on. The software version will be displayed briefly as the unit is powering up. The K2000R (the rack-mount version of the K2000) ships with Engine software Version 1.1 or later, so the update is not necessary.

Warning

If you are installing the P-RAM Option kit in a K2000, you must install the K2000 FK1 Fan kit *before* installing the P-RAM kit. Failure to comply with this requirement may seriously damage the unit, and may void the warranty. The K2000R is equipped with a fan as a standard component.

Tools Required for Installation

#1 Phillips screwdriver
#2 Phillips screwdriver
Soldering iron

Components for P-RAM Option Kit Installation

Item 1	P-RAM Option PCB (printed circuit board)
Item 2	P-RAM Option board cable
Item 3	Two "Z-bend" mounting brackets
Item 4	Two fastening screws (M3.0 x 14 mm) These are for the K2000 *only*
Item 5	Two lock washers

Before Installing

You'll need to run diagnostic tests before and after installing the P-RAM option kit. This will ensure that the unit is functioning properly before the installation, and will help you to identify any difficulties you might encounter with the installation.

The diagnostic test requires a blank Kurzweil-formatted floppy disk (DOS 1.44M) to be inserted into the floppy disk drive. If you don't already have a formatted disk, now would be a good time to format one. It is also recommended that you connect a SCSI device (like an external hard disk drive) to the unit's SCSI port, to enable you to test the operation of the SCSI link.

IMPORTANT: Be sure that the unit's volume is all the way down, or that it is disconnected from any audio system. The Sound ROM and Sound RAM tests generate high-amplitude signals which could damage your sound system.

To run the internal diagnostic software, start with the unit's power off. Press and hold the 1, 2, and 3 buttons on the alphanumeric buttonpad, and turn the unit on. A short menu will appear, prompting you to select a hard reset or diagnostics. Use the Alpha Wheel to select diagnostics, then press ENTER.

A menu of tests will appear. The test you'll be running is called the "burn-in" test, and includes most of the tests on the diagnostic menu. To run the diagnostics, press the leftmost soft button. This starts the burn-in test. See the note on the following page before proceeding with the test.

NOTE: If you do not insert a blank floppy disk into the floppy disk drive before starting the diagnostics, the sequence of tests will freeze at the floppy test. If this happens, you will have to turn the unit off, then start the diagnostics again, inserting the floppy disk before starting the test.

The time required for the entire burn-in test depends on the amount of sample RAM installed in the unit. The SoundRAM test requires approximately 20 seconds per megabyte of sample RAM, and the remaining tests take a total of approximately 5 minutes. As each test is run, the display will indicate the status of the test. Mark the results of each test on the checklist included at the end of this manual.

All of the diagnostic tests should pass the first burn-in test (unless you do not connect a SCSI device to the SCSI port, in which case the SCSI test will fail). A failure of any of the tests indicates that the component in question is either malfunctioning or is not installed. Malfunctioning components should be repaired before proceeding further. Refer to the K2000 service manual. When the faulty component is repaired or replaced, the diagnostics should be run again. Repeat this process until all tests have passed.

Although the SCSI test will fail if you do not have a SCSI device connected to the SCSI port, this does not necessarily indicate a malfunction in the SCSI link.

When you've corrected any malfunctions that may have occurred, and run a successful diagnostic test, you're ready to proceed with the P-RAM Option kit installation.

Beginning the Installation

The installation procedure is divided into three parts: disassembly, installation, and reassembly. Parts 1A–4A explain the P-RAM Option kit installation for the K2000. Parts 1B–3B describe the installation for the K2000R. Part 1B begins on page 6.

Part 1A K2000 Disassembly

IMPORTANT: You must install the FK1 fan kit before installing the P-RAM Option kit. Failure to comply with this requirement can seriously damage the K2000 and can void the warranty.

1 Unplug all external wires, cables and connectors from the K2000.

2 Turn the unit face down on a soft carpet or foam pad, with the keys pointing toward you.

3 Using a #2 Phillips screwdriver, remove the six screws that fasten the bottom enclosure to the top enclosure (the enclosure is the K2000's outer case). There is one screw in each corner of the bottom enclosure, and two in the middle.

4 Lift the edge of the bottom enclosure that is closest to you. See Figure 1. If the fan kit has already been installed, be sure to disconnect the fan/hard disk drive power cable from the K2000's audio board before removing the bottom enclosure completely. See Figure 4. **Be sure that there are no cables connected between the bottom and top enclosures.** If there are any ribbon cables to be disconnected, make note of the orientation of the red border of the ribbon cable, so you can reconnect it properly. Set the bottom enclosure aside.

Part 2A K2000 P-RAM Option Installation

5 Figure 2 shows a closeup of the K2000 Engine board. Refer to Figure 2 and locate Pin 30 on the Engine board connector labeled J2. Pin 30 is located toward the rear of the unit. (It's the second pin from the back edge of J2, in the row toward the center of the board.) Take the P-RAM Option Kit cable (Item 2) and solder its green wire to Pin 30.

6 Locate the diode labeled D1, near the right front corner of the Engine board. Solder the Option kit cable's white wire to the lead on the *left* side of the diode. You may want to disconnect the ribbon cable leading to the audio board for easier access. If you do so, be sure to note the orientation of the red border of the ribbon cable so you can reconnect it properly.

7 Locate the 64-pin connector labeled "PROCESSOR EXP" (J1) near the left front corner of the Engine board. See Figure 2.

8 Remove the two screws to the left and right of connector J1 (see Figure 3). You can discard these screws, as they will not be reused.

9 Take the P-RAM Option board (Item 1) and with the components facing up, press its connector into connector J1 on the Engine board. See Figure 3. The P-RAM Option board connector is keyed to prevent improper connections.

10 Put one lock washer (Item 5) on each of the supplied screws (Item 4).

11 Insert one screw and washer through the hole in each of the mounting brackets (Item 3).

12 Carefully thread the screws into the holes on either side of connector J1. Tighten the screws until the mounting brackets press against the P-RAM Option board. **Do not overtighten the screws or you may damage the enclosure.**

13 Take the P-RAM Option board cable (Item 2) and plug it onto the keyed connector on the P-RAM Option board. See Figure 3.

The installation is now complete, and you can reassemble the unit.

Part 3A K2000 Reassembly

14 Lift the bottom enclosure, place its back edge (the edge with the Kurzweil logo) on the back edge of the top enclosure and hold the unit partially open as shown in Figure 4.

15 Reconnect the fan/hard disk drive power cable, and if a hard disk drive is present, reconnect the hard disk drive ribbon cable. Make sure the red border of the cable is on the Pin 1 side of the connector.

16 Carefully close the unit and replace the six enclosure fastening screws.

17 Plug the power cable into the K2000 and turn the unit on. Place your hand over the fan intake to make sure that it is pulling air INTO the enclosure. You should also feel a slight movement of air OUT of the Pitch and Mod Wheel openings. Turn the unit off again.

18 Run the diagnostic tests again. To enter diagnostic mode, press and hold buttons 1, 2, and 3 on the alphanumeric buttonpad, and turn the unit on. Use the Alpha Wheel to select the Diagnostics option, and press ENTER. Select the burn-in test and press ENTER. Mark the results of each test in the second column of the checklist.

The results for each test of the second diagnostic test should match those of the first. If any test fails the second diagnostic test after passing the first, repair or replace the component indicated, and run the burn-in test again. Repeat this process until all tests have passed. If the PSRAM test fails the second diagnostic test, turn off the unit, remove the bottom enclosure, and check that your solder joints and connections are in place, and that the P-RAM board is seated properly. If the test still fails after reassembly, the P-RAM Option kit may be defective, and should be replaced.

19 If all tests pass, check the amount of program RAM by entering either Song mode or Disk mode and viewing the amount of available RAM shown in the top line of the display. There should be approximately 760K of available RAM. If the display shows a smaller amount of available RAM, check the P-RAM installation again.

Part 4A K2000 Maintenance

IMPORTANT: Be sure to instruct the owner of the unit that the fan vent opening should be vacuumed every two or three months to clean the fan filter. Please see the last page of this manual.

Part 1B K2000R Disassembly

1 Unplug all external wires, cables and connectors from the K2000R. Place it on a worktable with the front panel facing you.

2 Remove the ten screws which secure the cover. There are four screws on each side of the K2000R, and two at the top edge of the rear panel.

3 Slide the cover away from you and lift it off. See Figure 5.

Part 2B K2000R P-RAM Option Installation

4 Locate the P-RAM Option cable (item 2). Refer to Figures 5 and 6, and locate the capacitor labeled C15 on the Engine board. Solder the cable's green wire to the side of the capacitor toward the rear of the unit (the side closest to the label "C15").

5 Locate the diode labeled D1, near the right front corner of the Engine board. Solder the Option kit cable's white wire to the lead toward the left side of the diode (the side nearest the label "D1").

6 Locate the 64-pin connector labeled "PROCESSOR EXP" (J1) near the left front corner of the Engine board. See Figures 5 and 6.

7 Remove the two screws to the left and right of connector J1. Save these screws, as you will reuse them to secure the P-RAM Option board. Disregard Item 4 (the M3 x 14 mm screws) as they are intended for the K2000 only.

8 Take the P-RAM Option board (Item 1) and with the components facing up, press its connector into connector J1 on the Engine board. The P-RAM Option board connector is keyed to prevent improper connections.

9 Put one lock washer (Item 5) on each of the screws that you removed in Step 7.

10 Insert one screw and washer through the hole in each of the mounting brackets (Item 3).

11 Thread the screws into the holes on either side of connector J1. Tighten the screws until the mounting brackets press against the P-RAM Option board.

12 Take the P-RAM Option board cable (Item 2) and plug it onto the keyed connector on the P-RAM Option board.

The installation is now complete, and you can reassemble the unit.

Part 3B K2000R Reassembly

13 Slide the K2000R's cover on from the rear, and tighten the ten fastening screws.

14 Run the diagnostic tests again.To enter diagnostic mode, press and hold buttons 1, 2, and 3 on the alphanumeric buttonpad, and turn the unit on. Use the Alpha Wheel to select the Diagnostics option, and press ENTER. Select the burn-in test and press ENTER. Mark the results of each test in the second column of the checklist.

All tests should pass the second diagnostic operation. If any test fails, repair or replace the component indicated, and run the burn-in test again. Repeat this process until all tests have passed. If the PSRAM test fails the second diagnostic test, turn off the unit, remove the bottom enclosure, and check that your solder joints and connections are in place, and that the P-RAM board is seated properly. If the test still fails after reassembly, the P-RAM Option kit may be defective, and should be replaced.

15 If all tests pass, check the amount of program RAM by entering either Song mode or Disk mode and viewing the amount of available RAM shown in the top line of the display. There should be approximately 760K of available RAM. If the display shows a smaller amount of available RAM, check the P-RAM installation again.

Diagnostic Test Checklist

Technician's name: _____ Date: ___/___/___

Model: ____ K2000 ____ K2000R **Serial No.** _____

Customer's Name: _____

Before Installation

Test Name:	PASS	FAIL
LCD	_____	_____
Boot EPROM	_____	_____
Setup EPROM	_____	_____
PSRAM	_____	_____
I/O Port	_____	_____
Interrupt	_____	_____
Audio Board	_____	_____
Floppy	_____	_____
SCSI	_____	_____
Sound ROM	_____	_____
Sound RAM	_____	_____

After Installation

Test Name:	PASS	FAIL
LCD	_____	_____
Boot EPROM	_____	_____
Setup EPROM	_____	_____
PSRAM	_____	_____
I/O Port	_____	_____
Interrupt	_____	_____
Audio Board	_____	_____
Floppy	_____	_____
SCSI	_____	_____
Sound ROM	_____	_____
Sound RAM	_____	_____

Notice to Service Technicians

Please detach this sheet and return it to K2000 owners. It contains important information regarding the maintenance of the fan filter.

Notice to K2000 Owners

Thanks for purchasing the P-RAM Option kit for the K2000. This option increases your "program" RAM from approximately 120K to approximately 760K, enabling you to store hundreds of programs, setups, songs, and other objects.

Installation of the P-RAM Option kit in the K2000 requires the installation of a cooling fan. If your dealer has not notified you of this requirement, please be sure that a fan has been installed before using your RAM-enhanced K2000. Also take note of the following important information.

K2000 Fan Filter Maintenance

Every two or three months, vacuum the fan filter to rid it of dust. Depending on conditions, you may have to clean the fan filter more often. Failure to keep the fan filter clean can result in serious damage to your K2000! This fan maintenance is not required for the K2000R.

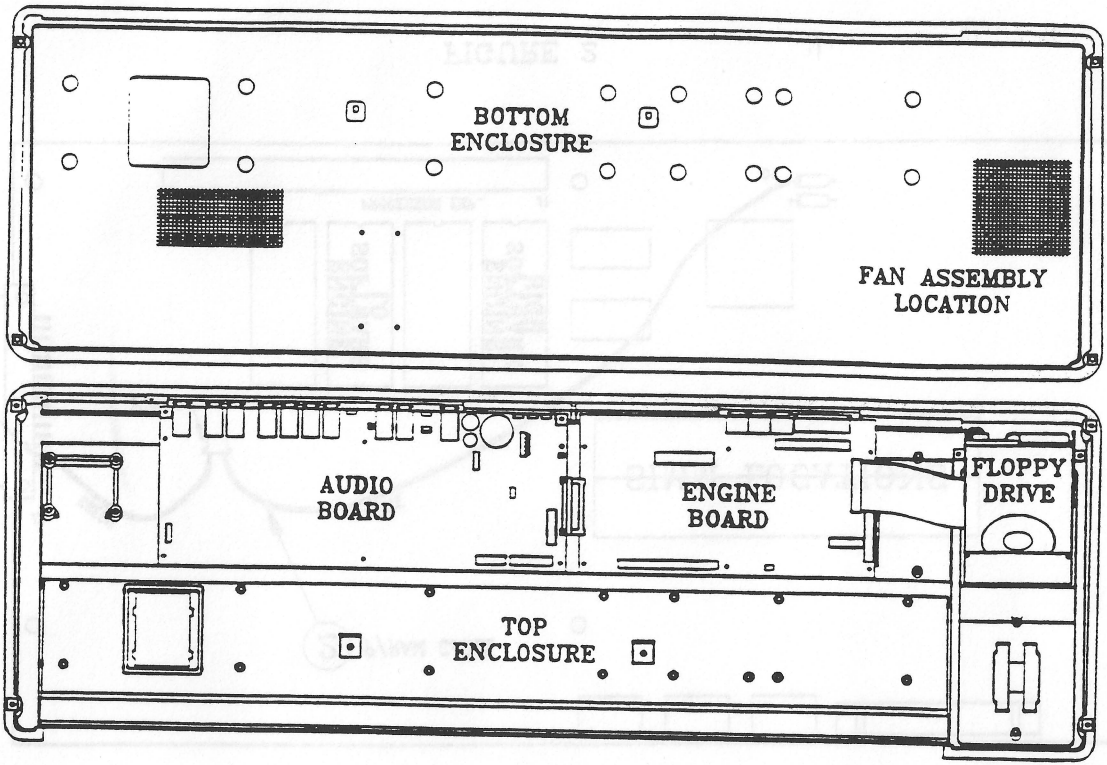
BOTTOM
ENCLOSURE
FAN ASSEMBLY
LOCATION
AUDIO
BOARD
ENGINE
BOARD
FLOPPY
DRIVE
TOP
ENCLOSURE

FIGURE 1

K2000
ENGINE BOARD

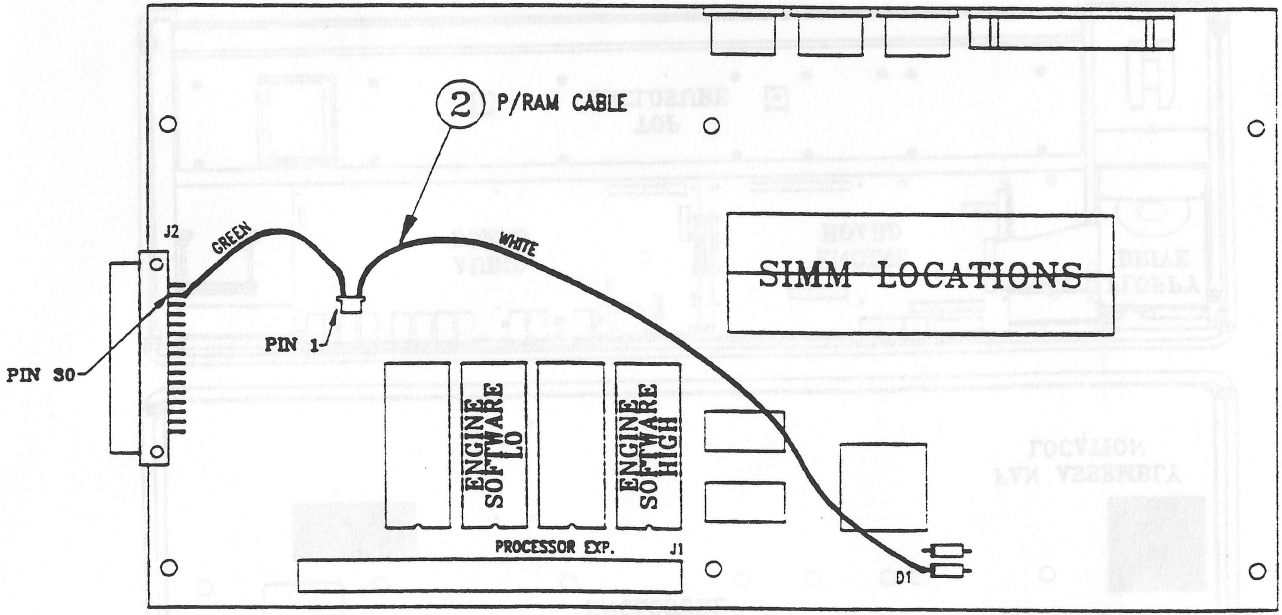

FIGURE 2

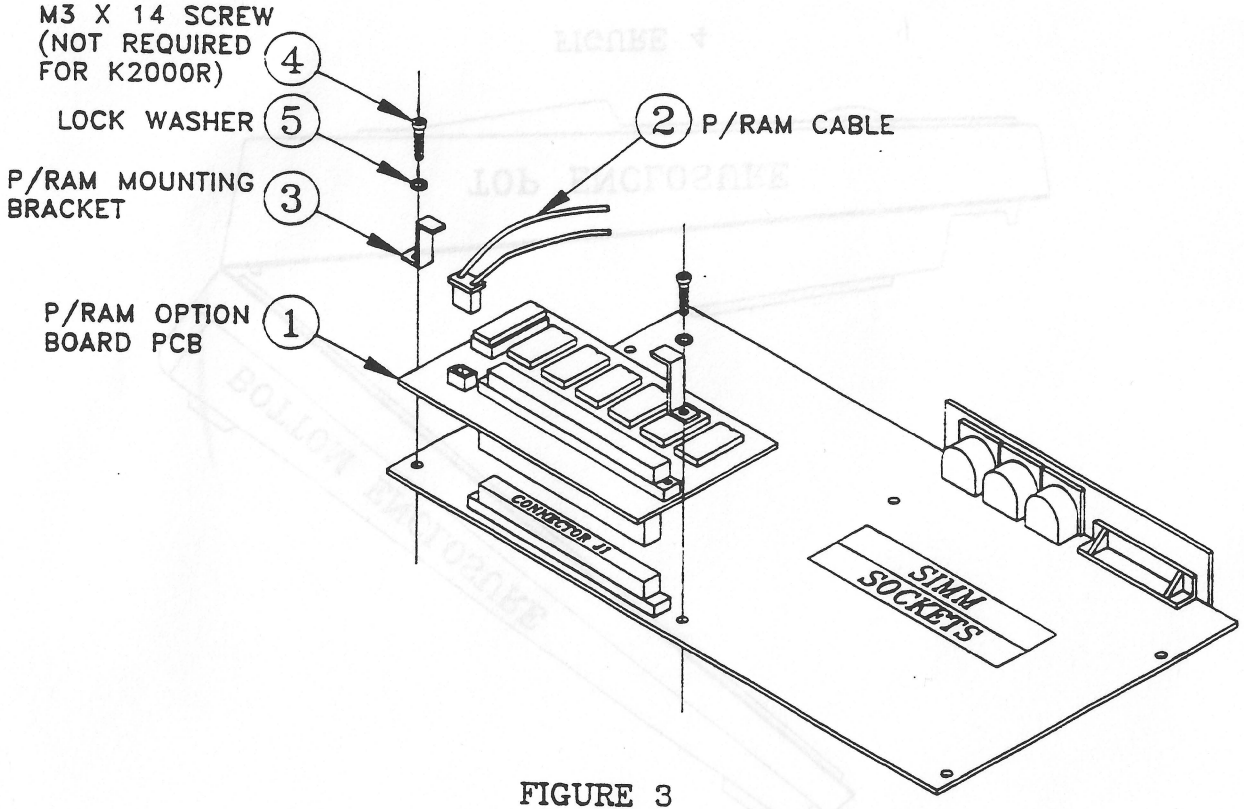
M3 X 14 SCREW
(NOT REQUIRED
FOR K2000R)
4
LOCK WASHER
5
P/RAM MOUNTING
BRACKET
3
2
P/RAM CABLE
P/RAM OPTION
BOARD PCB
1
CONNECTOR J1
SIMM
SOCKETS

FIGURE 3

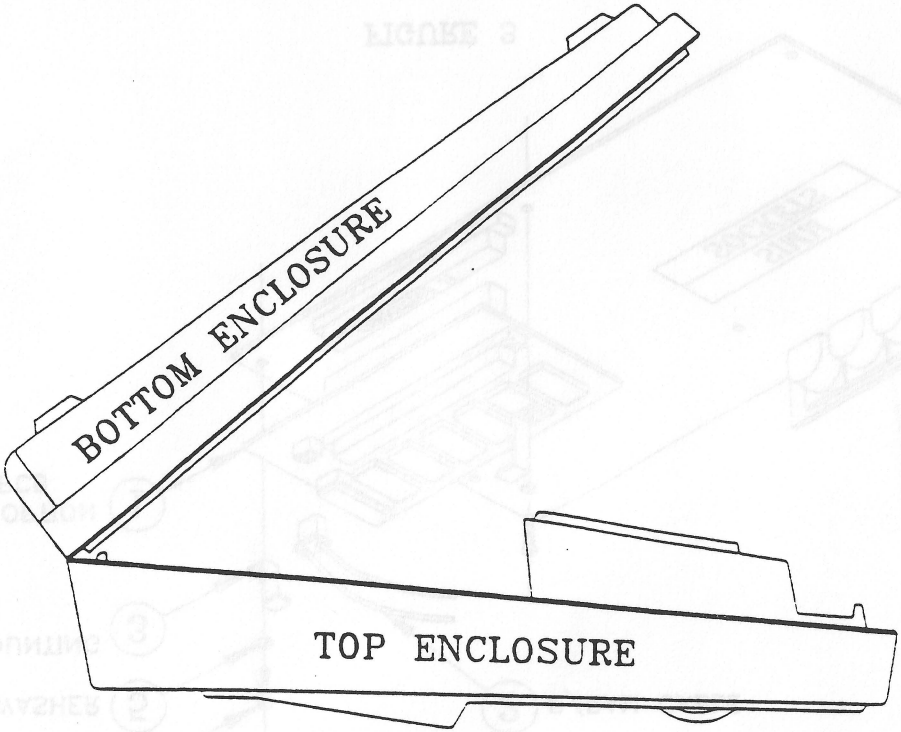

FIGURE 4

TOP
COVER
BATTERY HOLDER
AUDIO BOARD
CONNECTOR BOARD
ENGINE BOARD
HEAT SINK
TRANSFORMER
FLOPPY DRIVE/
OPTIONAL
HARD DRIVE

FIGURE 5

K2000R
ENGINE BOARD

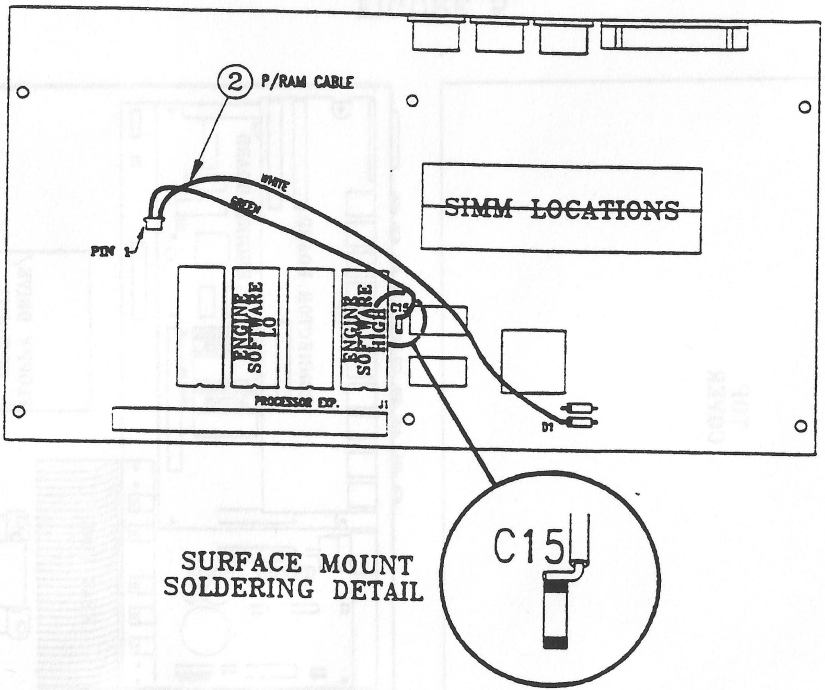

FIGURE 6