

!Read This First!

Important Information about K2000 Option ROM Installation

If you are installing **both** option ROMs (Contemporary and Orchestral) into a Kurzweil K2000, or, if you are adding one of these option ROMs to a K2000 that already has the other option ROM installed, you may need to perform a special hardware modification. Read the section below to determine if you must perform this modification, then follow the remaining steps in this document if the modification is required.

If you are installing only a **single** option ROM into the K2000, then you do not need to perform the hardware modification described in this document, and can proceed with the instructions in the *K2000 and K2000R Sound ROM Option Kits Installation Manual* (Part No. 910230).

Determining if a K2000 Requires the Hardware Modification

The hardware modification is required by units that will be fitted with both option ROMs *and* have one of the Engine board revisions shown in the table below. Other units require only a jumper change if they will be fitted with both option ROMs.

Engine Board Type	Action
Calvin Rev. A	<i>perform hardware modification (see "Performing the Hardware Modification", on page 3)</i>
Calvin Rev. B	<i>perform hardware modification (see "Performing the Hardware Modification", on page 3)</i>
Calvin Rev. B2	<i>perform hardware modification (see "Performing the Hardware Modification", on page 3)</i>
Calvin Rev. C	<i>move jumper JP7 (see "Jumper Change for Calvin Rev. C and Janis Boards", on page 2)</i>
Janis (any Rev.)	<i>move jumper JP7 (see "Jumper Change for Calvin Rev. C and Janis Boards", on page 2)</i>

How to Determine Engine Board Type (Without Disassembling K2000)

You can determine whether the K2000 has a Calvin or a Janis board (though not the revision level of the Calvin board) without opening the unit. To do this, simply start the K2000 and observe the startup message. This message displays the operating system version, and is appended with the letter "J" if the unit has a Janis board. No letter is appended to the operating system version number if the unit has a Calvin board. For example, if the startup message says "Version 3.16J" the K2000 has a Janis board; if the message says "Version 3.16" the K2000 has a Calvin board. Proceed to "How to Determine Engine Board Type and Revision Level", below.

If the K2000 has a Janis board, then you do not need to perform the hardware modification described in this document, and should now proceed with the instructions in "Jumper Change for Calvin Rev. C and Janis boards", below.

How to Determine Engine Board Type and Revision Level

Open the K2000 or K2000R as described in the "Disassembly" section of the *K2000 and K2000R Sound ROM Option Kits Installation Manual*.

Locate the unit's Engine board. It's shown in Figure 1 of the "Disassembly" section of the *K2000 and K2000R Sound ROM Option Kits Installation Manual* and also on page 4 of this document. The part number above the Sound ROM Expansion Connector - J12 on the Engine board - indicates the board type and revision level.

Janis Board:

If directly above the Sound ROM Expansion Connector – J12 on the Engine board – you see the text, "BOARD P/N 331030", then this is a Janis board. Also, on Janis boards the chip installed in location U37 has the word "JANIS" printed on it. Janis boards do not require the hardware modification; if you have determined that you have a Janis board, then you should now proceed with the instructions in "Jumper Change for Calvin Rev. C and Janis boards", below.


Calvin Board:

If directly above the Sound ROM Expansion Connector – J12 on the Engine board – you see the board part number, "BOARD P/N 331004-01", then this is a Calvin board. Also, on Calvin boards the chip installed in location U37 has the abbreviation "CAL" printed on it. Depending on the revision level of the Calvin board, it may require the hardware modification.

The revision of the board is shown to the right of the board part number. Calvin boards were made in four revision levels: REV A, REV B, REV B2, and REV C. If you see the text "BOARD P/N 331004-01 REV C" directly above the Sound ROM Expansion Connector, J12, then this is a REV C board and does not require the hardware modification; in this case, you should now proceed with the instructions in "Jumper Change for Calvin Rev. C and Janis boards", below. All other revision levels of Calvin boards require the hardware modification; proceed to "Performing the Hardware Modification" on page 3.

Jumper Change for Calvin Rev. C and Janis Boards

If you have verified that the K2000 Engine Board is either a Rev C Calvin board or any Rev Janis board, the special hardware modification described in the rest of this document is NOT required. A jumper change is required, however, for Rev C Calvin boards and Rev Janis boards that will be fitted with both of the optional sound ROMs. To do this, remove the push-on jumper connected between JP7, pins 1 and 2. (JP7 is located between the four EPROM sockets and connector J1, next to JP1. Since it is not on all boards, it is not shown in the illustration on page 4.) Install the push-on jumper between JP7, pins 1 and 3. Pin 3 is on the left, pin 2 is on the right and pin 1 is in the middle as the MIDI and SCSI jacks point upwards.

 **NOTE:** *Some boards may use a wire jumper soldered between JP7, pins 1 and 2. In this case the wire jumper must be removed and a new wire jumper should be soldered between JP7, pins 1 and 3.*

Proceed to the instructions in the *K2000 and K2000R Sound ROM Option Kits Installation Manual*.

Performing the Hardware Modification

The procedure described in this section is only required if the K2000 will be fitted with both option ROMs and has a Calvin Rev. A, B, or B2 Engine Board. You will require the following to perform the hardware modification:

- needlenose pliers
- wire clippers
- soldering iron
- solder
- 30 gauge Kynar insulated wire-wrap wire

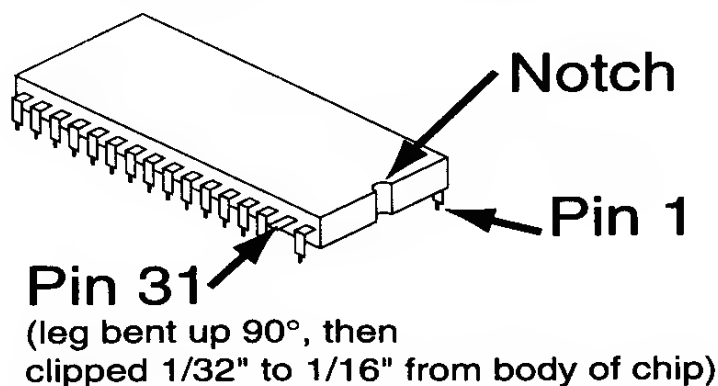
1. Carefully note the location of the Engine and Setup EPROMs, then remove the four EPROMs from sockets, U2, U3, U5, and U6. New Setup and Engine chips are provided as part of the ROM option upgrade.

! CAUTION: The EPROM sockets on the K2000 Engine board are labeled incorrectly. The Engine sockets are labeled "SETUP" and the Setup sockets are labeled "ENG". Therefore, you must be extra careful when reinstalling the EPROMs to put the Setup chips into sockets U2 and U5 and the Engine chips into sockets U3 and U6. For the correct positioning of these EPROMs, refer to the illustration on page 4.

You will be soldering a wire to one leg of each of the Setup EPROMs. Since this will **irreversibly** change the EPROMs, read the following steps carefully before continuing.


2. Take each of the new Setup EPROMs provided with the ROM option kit and use needlenose pliers to carefully bend pin 31 upwards until it points 90° from its original position. After bending the pin, clip it approximately 1/32" to 1/16" from the body of the EPROM. The pin must be clipped sufficiently short that when the EPROM is reinserted the pin won't come in contact with pins on the adjacent EPROM. See the illustration below.

! CAUTION: These pins can only be bent once -- do not attempt to bend the pin again if it was not bent correctly the first time. It will almost certainly break if bent repeatedly.



After bending each leg, put a small drop of solder onto it. This will make it easier to subsequently attach a wire to the leg.

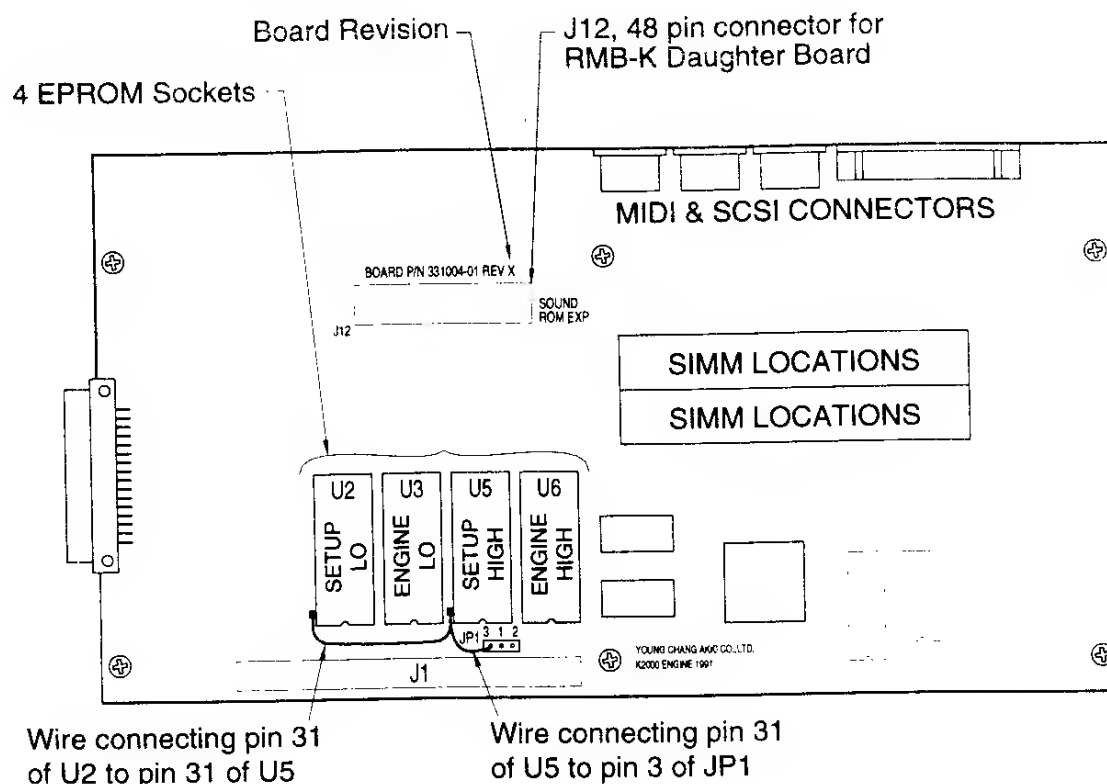
3. Locate Jumper post JP1. Remove the push-on jumper (shunt) attached between pins 1 and 3 on JP1.

 **NOTE:** There is a very small possibility that some boards may use a wire jumper soldered between JP1, pins 1 and 3. In this case removal of the jumper is not required.

4. Prepare a 1" long, 30 gauge Kynar insulated wire-wrap wire. Strip 1/8" of insulation from both ends of the wire. Solder one end to the base of pin 3 of JP1. (Pin 3 is the left of the three pins when the MIDI and SCSI jacks are pointing upwards.) Let the other end of the wire hang free.

CAUTION: When soldering the wire to JP1, make sure that the wire is installed close to the plastic base so there is room remaining to install a jumper. After soldering, scrape any flux off the four sides of the square post on JP1, pin 3. Flux remaining on the post can cause a bad connection when the push-on jumper is replaced.

5. Plug the low byte Setup EPROM (with pin 31 bent and clipped, as described above) into the U2 socket, and the high byte Setup EPROM (with pin 31 bent and clipped, as described above) into the U5 socket. See the illustration below for part locations and orientation.



6. Prepare a 2 1/2" long, 30 gauge Kynar insulated wire-wrap wire. Strip 1/8" of insulation from both ends of the wire. Put one end of this wire together with the free end of the wire-wrap wire attached to JP1, pin 3 and twist them together. Apply a very small amount of solder to the two wires. Solder the twisted soldered end of these two wires to pin 31 of the high byte Setup EPROM installed in socket U5. Be sure to situate the wires so that they won't interfere with the insertion or removal of the Engine EPROMs in sockets U3 and U6. Furthermore, be careful not to create a short circuit between U5 and U3 when you solder the wire to U5.

7. Solder the free end of the wire attached to U5, pin 31 to pin 31 of the low byte Setup EPROM installed in socket U2.

8. Re-install the push-on jumper attached between pins 1 and 3 on JP1. Pin 3 is the leftmost of the three pins when the MIDI and SCSI jacks are pointing upwards. Pin 1 is the middle pin.

9. Replace the Engine EPROMs into the locations they were previously installed, or install the new Engine EPROMs, if they were included in the ROM option kit. The low byte Engine EPROM should be installed in location U3 and the high byte Engine EPROM should be installed in location U6.

This completes the special hardware modification. To complete the ROM option installation, proceed to the appropriate installation instructions in the K2000 and K2000R Sound ROM Option Kits Installation Manual.