

# Kurzweil SMP-26 Sampling Option Kit Installation

This document describes the procedure for installing the SMP-26 Sampling Option Kit in all models of the K2600.

This document is intended only for qualified Kurzweil service technicians. Installation by unauthorized personnel will void the warranty.

There are five primary sections in this document:

- Setup.....Page 3
- Disassembly.....Page 4
- Installation.....Page 8
- Reassembly.....Page 13
- Diagnostics.....Page 14

Please read the introductory sections carefully before proceeding with disassembly.

## Important Notices

This document provides installation instructions for all K2600 units, both with and without the Digital I/O Option (DIO-26). When you get to the installation section, make sure you're following the proper instructions for the unit you're upgrading.



*Note: If you're going to be installing the Digital I/O option as well, we recommend that you install the Digital I/O Option first; this will save you quite a bit of time and effort.*

Four megabytes is the minimum amount of sampling RAM required for the SMP-26 Sampling Option to function; you can install up to 128 Megabytes of sampling RAM. The following table shows the sampling capacity with different amounts of RAM. Refer to the K2600 *Musician's Reference* for more information on SIMM requirements.

## Sampling RAM and Approximate Sampling Times

Total RAM	Sampling Mode	Sampling Rate in KHz				Total Sampling Time (min:sec)
		29.4	32.0	44.1	48.0	
16M	Mono	4:20	4:16	3:04	2:48	
	Stereo	2:16	2:08	1:28	1:20	
32M	Mono	9:20	8:32	6:08	5:36	
	Stereo	4:32	4:16	2:56	2:40	
64M	Mono	18:40	17:04	12:16	11:12	
	Stereo	9:04	8:32	5:52	5:20	
128M	Mono	37:20	34:08	24:32	22:24	
	Stereo	18:08	17:04	11:44	10:40	

## Before Beginning the Installation

Back up the K2600's RAM 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.

## Tools and Materials Required For Installation

- #2 (medium) Phillips screwdriver
- #1 (small) Phillips screwdriver
- 3-inch thick padded blocks (for keyboard models)
- Cables for diagnostics:
  - Two analog audio cables—1/4-inch stereo plug to male XLR
  - Digital loopback cable—male XLR to female XLR
  - Optical digital cable—at least 12 inches in length

You'll need a flat work area large enough to accommodate the disassembled K2600. Most tabletops will work for rack models, but you'll need at least a 60-by-40-inch surface for keyboards. The foam blocks listed in the required materials will protect the wheels and sliders on keyboard units, and will make all the relevant parts easy to reach.

## Components of the SMP-26 Sampling Option Kit

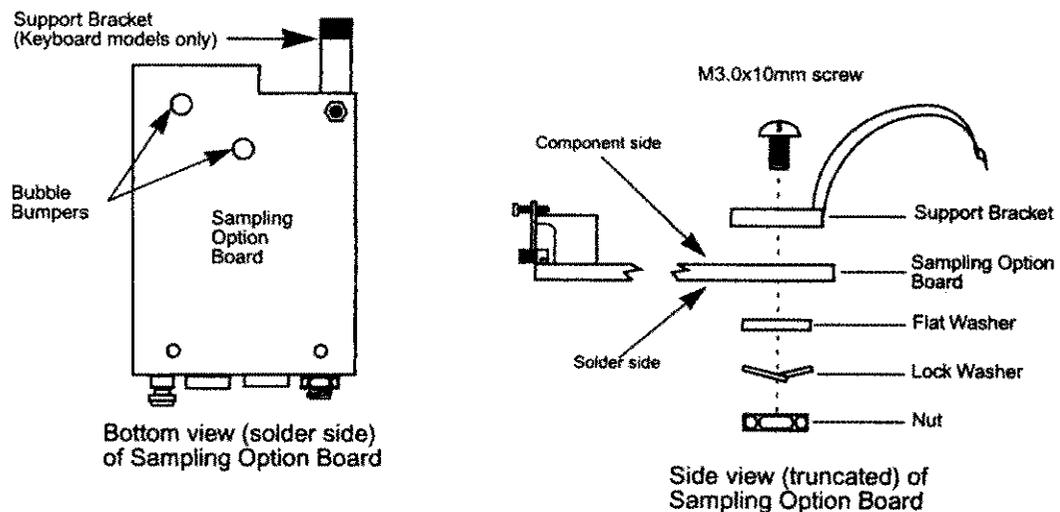
The Sampling Option kit is shipped with parts that accommodate all K2500 and K2600 models. You won't need all of the parts listed below.

Used on	Description	Quantity
All	Sampling Option Board	1
All	Digital I/O Board <sup>1</sup>	1
K2500/X	Data Ribbon Cable 34PIN 560 mm (long)	1
K2600/X/R	Data Ribbon Cable 34-pin 400 mm (medium)	1
K2500R	Data Ribbon Cable 34-pin 280 mm (short)	1
All	Optical Cable 3-pin 380 mm	1
All	Digital I/O Cable 6-pin 380 mm	1
All	I/O Monitor Cable 5-pin 380 mm	1
All	Cable Clamp	2
K2500/X K2600/X	Round-head Screw M3 X 10	9
K2500R K2600R	Flat-head Screw 3 X 10 BLK	4
K2500/X K2600/X	Nut M3	1
K2500/X K2600/X	Flat Washer M3	1
K2500/X K2600/X	Lock Washer M3	1
K2500R K2600R	Bumper (Donut)	1
K2500R K2600/X/R	Bumper (Bubble)	2
K2600/X	Support Bracket (curved)	1
K2500/X	Support Bracket (angled)	1

1. Not required if the Digital I/O Option (DIO-26) is installed in the unit.

## Setup

1. Remove the jumper from location GJ1 on the Sampling Option Board.
2. Turn the Sampling Option Board over, and attach two self-adhesive Bubble Bumpers to the bottom of the board. Looking at the board as shown in Figure 1, attach one bumper 35 mm (about 1 <sup>3</sup>/<sub>8</sub> inches) from the left edge, and 25 mm (about an inch) from the top edge. Attach the second bumper 75 mm (just under 3 inches) from the left edge, and 60 mm (just under 2 <sup>3</sup>/<sub>8</sub> inches) from the top edge. These bumpers prevent the Sampling Option Board from making contact with other components in keyboard models. In rack models, they prevent contact with the side panel.
3. If you're installing the Sampling Option in a keyboard model, proceed with Step 4. For rack-model installations, skip Step 4 and proceed to Step 5.
4. Attach the Support Bracket to the board, as shown in Figure 1. Note that the screw and bracket are on the component side of the board, while the washers and nuts are on the solder side.



**Figure 1 Bumper attachments (all models); Bracket attachment (keyboards only)**

5. Insert one end of the medium-length Data Ribbon Cable into socket J1101 on the Sampling Option Board. Make sure to connect the cable so that the red edge is on the Pin-1 side of the socket, as shown in Figure 2. (Pin 1 is marked on the Sampling Option Board).

Don't fold the cable over the socket (see Figure 2). If the cable is not positioned properly, connect the other end of the cable to the Sampling Option Board. Use a Cable Clamp to secure the cable to its socket.

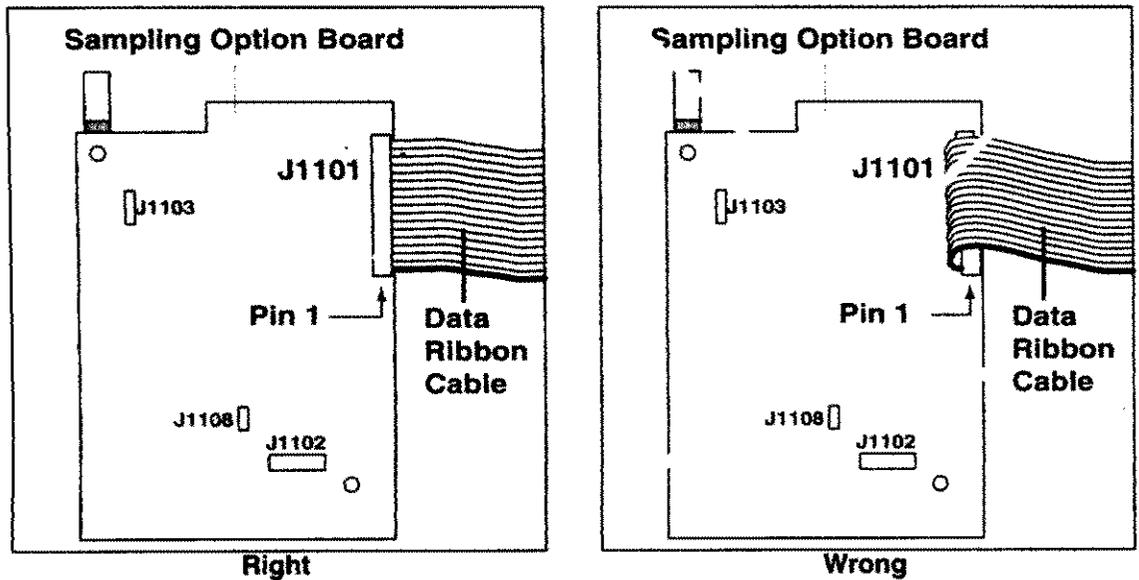


Figure 2 Proper positioning of Data Ribbon Cable

6. Plug either end (it doesn't matter which) of the 6-pin Digital I/O Cable into socket J1102 on the Sampling Option Board.
7. Plug either end of the 5-pin I/O Monitor Cable into socket J1103 on the Sampling Option Board.
8. Plug either end of the 3-pin Optical Out Cable into socket J1108 on the Sampling Option Board.
9. This completes the setup procedure. Turn to page 4 for disassembly instructions.

## Disassembly

There's a Disassembly subsection for both keyboard and rack models. The rack-model subsection begins on page 7.

### Disassembly for Keyboard Models

1. Unplug all external wires, cables, and connectors from the K2600 and turn the unit so the keyboard is facing you.
2. Grasp the rear of the unit, and tip it up toward you, onto a soft nonscratching surface, so that the unit rests on its keyslip (the front edge).
3. Using a #2 Phillips screwdriver, remove the **C** screws on the bottom of the unit, as shown in Figures 3 and 4. Each screw may be in any one of the three slots of each group along the bottom of the unit. There are seven screws on the K2600, and eight on the K2600X.
4. Using a #2 Phillips screwdriver, remove the ten **B** screws attaching the instrument's endcaps (see Figures 3 and 4). Slide the Endcap Locking Brackets out of the endcaps. You may need to use a flat-blade screwdriver.

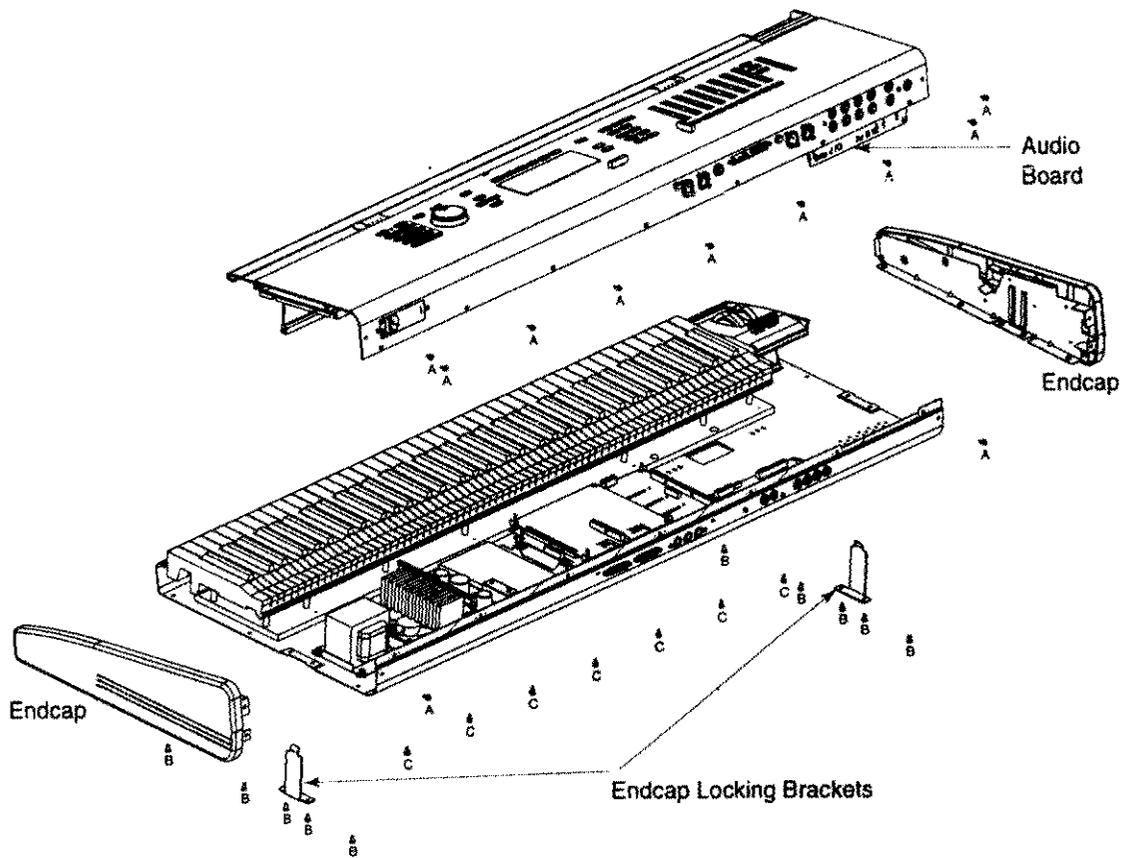
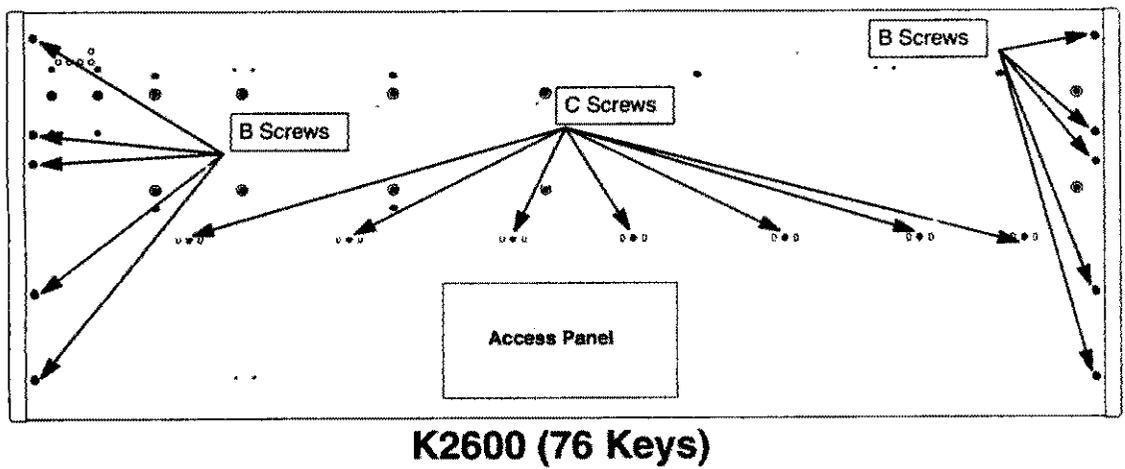
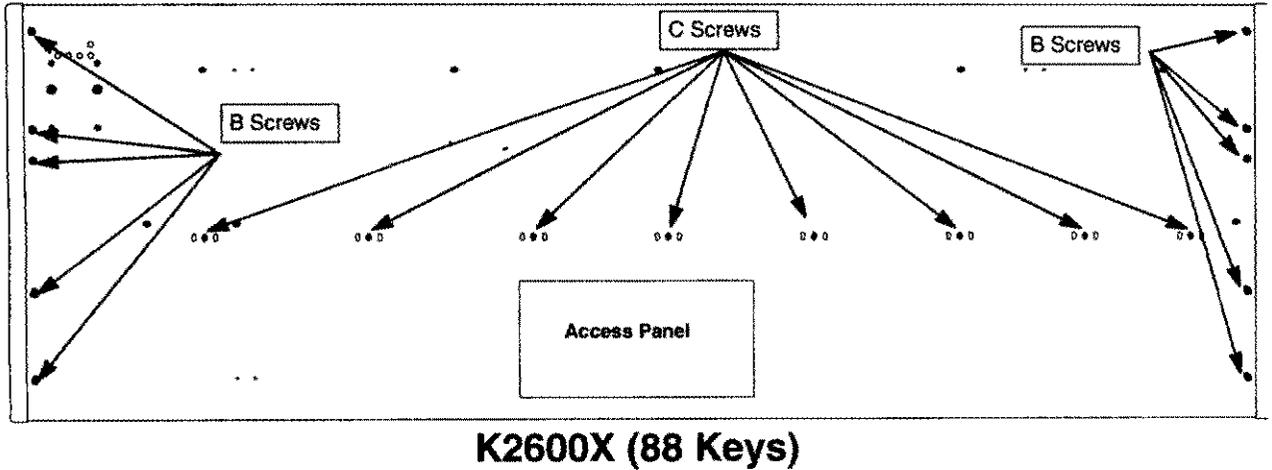
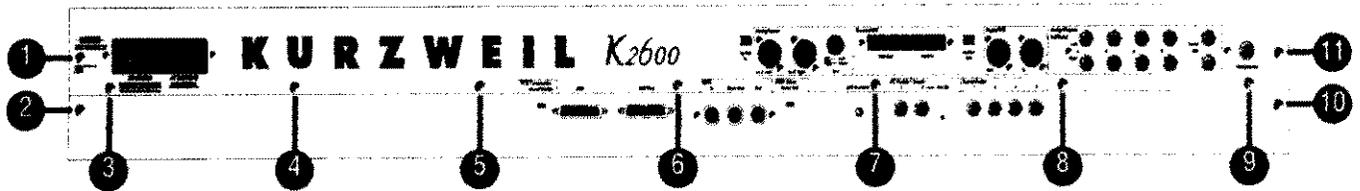


Figure 3 Exploded View of K2600 (76 keys)



**Figure 4 K2600 B and C Screws**

5. Set the unit back down on the bottom. Then use a #2 Phillips screwdriver to remove the 11 A screws on the rear panel of the unit, as shown in Figure 5. Be careful to remove only the screws indicated.

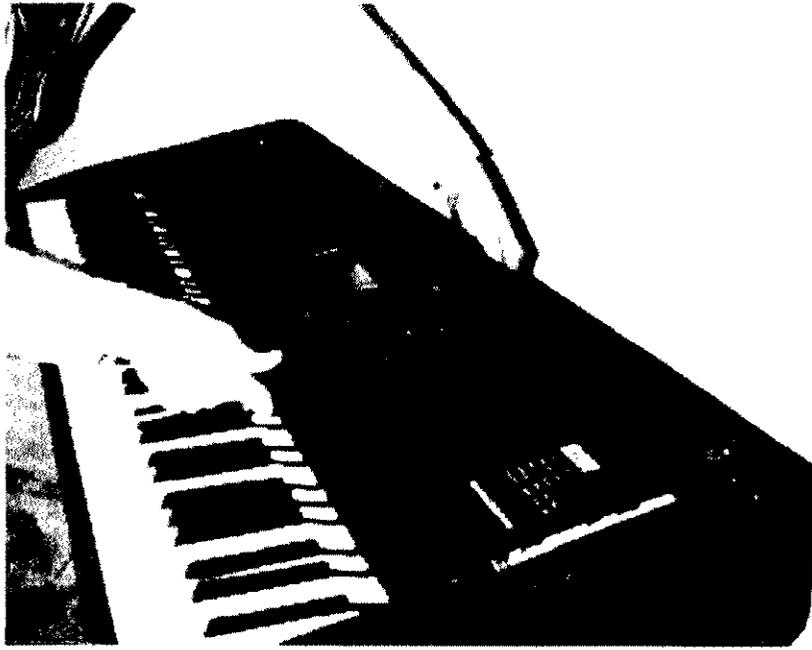


**Figure 5 K2600 A Screws**

6. Slide the endcaps out of the ends of the unit.
7. Place the foam blocks behind the K2600. These pads will prevent damage to the K2600's Alpha Wheel and sliders, and will hold the top cover at a height that makes it convenient to reach the components you're installing.

**!** *Caution: The Audio Board protrudes from the bottom of the top cover, and is susceptible to damage. Be very careful not to rest the Audio Board on any part of the enclosure.*

8. Grasp the top cover as shown in Figure 6. Lift the top cover straight up, then flip it over onto the foam blocks.



**Figure 6**      **Removing the top cover**

This completes the disassembly. Turn to page 8 for installation instructions.

### **Disassembly for Rack Models**

1. Unplug all external wires, cables, and connectors from the K2600R and turn the unit so that the front panel faces you.
2. Using a #2 Phillips screwdriver, remove the eight long M4 Screws on the left and right sides of the K2600R. See Figure 7.
3. Using a #1 Phillips screwdriver, remove the two small M3 Screws located on the top edge of the rear panel.

4. Lift the top cover from the back, slide it off and place it aside. Notice that there is a groove on the top edge of the front panel; the top cover fits snugly into this groove.

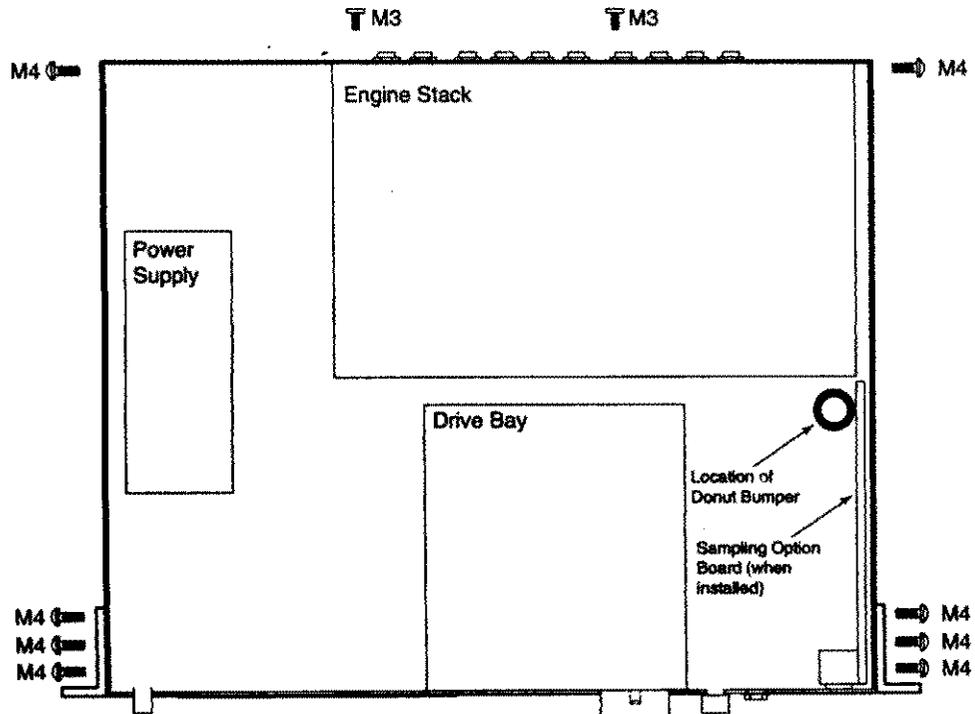


Figure 7 Top view of K2600R

This completes the disassembly. Proceed with the installation instructions below.

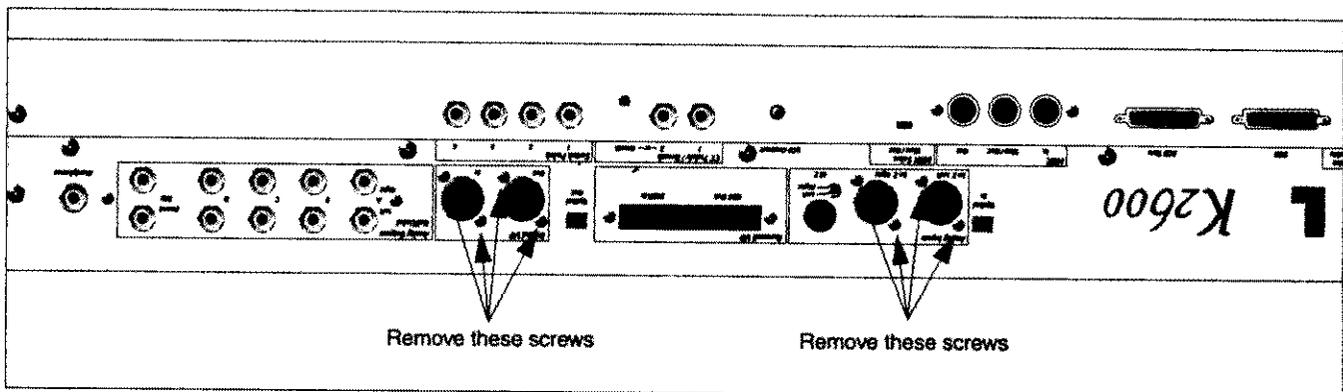
## Installation

This section consists of four subsections. You'll need to read only one of them, depending on the configuration of the unit you're upgrading. If you plan to install the Digital I/O Option (DIO-26) as well, you'll save time and effort if you install the Digital I/O Option first.

- Keyboard Models Without the Digital I/O Option . . . . . Page 8
- Keyboard Models With the Digital I/O Option . . . . . Page 10
- Rack Models Without the Digital I/O Option . . . . . Page 11
- Rack Models With the Digital I/O Option . . . . . Page 12

### Keyboard Models Without the Digital I/O Option

1. Using a #1 Phillips screwdriver, remove the eight screws that secure the cover plates over the rear-panel openings for the Sampling Option Board and Digital I/O Board (see Figure 8).



**Figure 8** Removing the cover plates

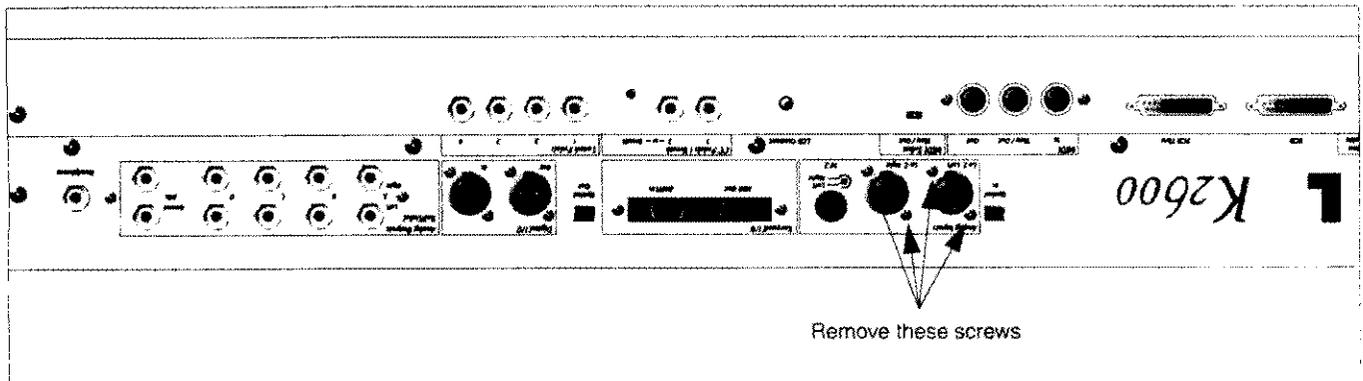
2. Plug the unconnected end of the 6-pin Digital I/O Cable into socket J1201 on the Digital I/O Board. The connectors on this cable are keyed so that they will connect to the board only one way.
3. Plug the unconnected end of the 5-pin I/O Monitor Cable into connector J706, located on the Audio Board (as you look at the opened unit, the Audio Board is at the left, near the floppy drive). These connectors are also keyed.
4. Plug the unconnected end of the 3-pin Optical Out Cable into socket J1205 on the Digital I/O Board. These connectors are also keyed.
5. Remove the cap from the optical jack on the Digital I/O Board, and set the cap aside. Insert the Digital I/O Board into the K2600, aligning the input/output jacks with the holes in the rear panel of the K2600. Using four M3.0 x 10.0 mm Black Round-head Screws, secure the Digital I/O Board to the rear panel. Replace the cap on the optical jack.
6. On the Sampling Option Board, remove the nut and washer from the 1/4-inch jack. Remove the cap from the optical jack. Set these parts aside.
7. Insert the Sampling Option Board into the K2600, aligning the input jacks with the holes in the rear panel. Once the jacks are in position, slide the support bracket carefully down the inside of the support wall until the bracket snaps into the first slot in the support wall. The board should fit into place without being forced. Be careful not to flex the board; doing so could damage the surface-mounted components and cause intermittent operation.
8. Using four M3.0 x 10.0mm Black Round-head Screws, secure the Sampling Option Board to the rear panel.
9. Replace the cap on the optical jack, then replace the washer and nut on the 1/4-inch jack.
10. Plug the unconnected end of the Data Ribbon Cable into socket J801—near the middle of the left edge of the CPU Board. Use a Cable Clamp to secure the cable to its socket. Don't fold or crease this cable.

This completes the installation. Turn to page 13 for reassembly instructions.

## Keyboard Models With the Digital I/O Option

If the unit already contains the Digital I/O Option (or if you're about to install it), you won't need the small Digital I/O Board supplied with the Sampling Option Kit, since the same digital I/O jacks are incorporated into the Digital I/O Option.

1. Using a #1 Phillips screwdriver, remove the four screws that secure the cover plate over the rear-panel openings for the Sampling Option Board (see Figure 9).



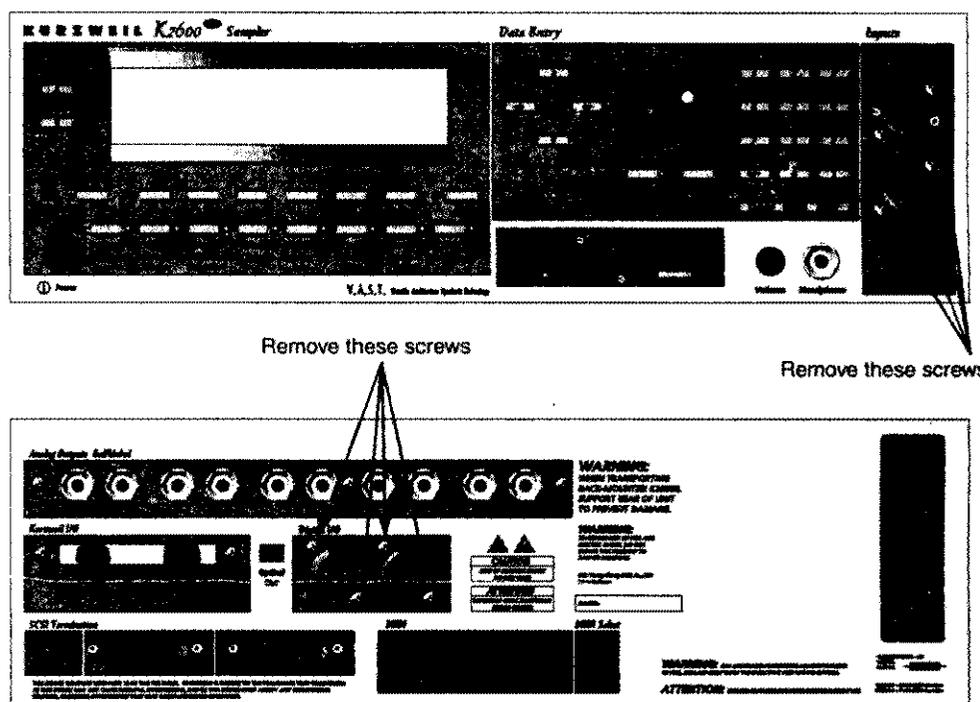
**Figure 9** Removing the cover plates

2. Plug the unconnected end of the 6-pin Digital I/O Cable into socket J1002 on the Digital I/O Board. The connectors on this cable are keyed so that they will connect to the board only one way.
3. Plug the unconnected end of the 5-pin I/O Monitor Cable into connector J611, located on the Audio Board (as you look at the opened unit, the Audio Board is at the left, near the floppy drive). These connectors are also keyed.
4. Plug the unconnected end of the 3-pin Optical Out Cable into socket J1003 on the Digital I/O Board. These connectors are also keyed.
5. On the Sampling Option Board, remove the nut and washer from the 1/4-inch jack. Remove the cap from the optical jack. Set these parts aside.
6. Insert the Sampling Option Board into the K2600, aligning the input jacks with the holes in the rear panel. Once the jacks are in position, slide the support bracket carefully down the inside of the support wall until the bracket snaps into the first slot in the support wall. The board should fit into place without being forced. Be careful not to flex the board; doing so could damage the surface-mounted components and cause intermittent operation.
7. Using four M3.0 x 10.0mm Black Round-head Screws, secure the Sampling Option Board to the rear panel.
8. Replace the cap on the optical jack, then replace the washer and nut on the 1/4-inch jack.
9. Plug the unconnected end of the Data Ribbon Cable into socket J801—near the middle of the left edge of the CPU Board. Use a Cable Clamp to secure the cable to its socket. Don't fold or crease this cable.

This completes the installation. See page 13 for reassembly instructions.

## Rack Models Without the Digital I/O Option

1. Using a #1 Phillips screwdriver, remove the eight screws that secure the cover plates over the openings for the sampling input jacks (front panel) and digital I/O jacks (rear panel). See Figure 10. Note that this figure shows a K2600R with the Sampling Option and Digital I/O Option already installed. The unit you're working on won't have jacks in either of these locations.



**Figure 10** Removing the cover plates

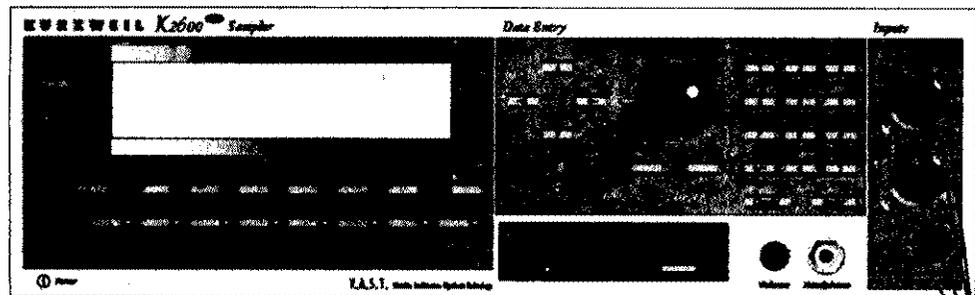
2. Plug the unconnected end of the 6-pin Digital I/O Cable into socket J1201 on the Digital I/O Board. The connectors on this cable are keyed so that they will connect to the board only one way.
3. Plug the unconnected end of the 5-pin I/O Monitor Cable into connector J706, located on the Audio Board. These connectors are also keyed.
4. Plug the unconnected end of the 3-pin Optical Out Cable into socket J1205 on the Digital I/O Board. These connectors are also keyed.
5. Remove the cap from the optical jack on the Digital I/O Board, and set the cap aside. Insert the Digital I/O Board into the K2600, aligning the input/output jacks with the holes in the rear panel of the K2600. Using four M3.0 x 10.0 mm Black Round-head Screws, secure the Digital I/O Board to the rear panel. Replace the cap on the optical jack.
6. On the Sampling Option Board, remove the nut and washer from the 1/4-inch jack. Remove the cap from the optical jack. Set these parts aside.

7. Insert the Sampling Option Board into the K2600, with the Data Ribbon Cable pointing upward. Align the input jacks with the holes in the front panel.
8. Using four M3.0 x 10.0mm Black Flat-head Screws, secure the Sampling Option Board to the front panel.
9. Replace the cap on the optical jack, then replace the washer and nut on the 1/4-inch jack.
10. Plug the unconnected end of the Data Ribbon Cable into socket J801—near the middle of the left edge of the CPU Board. Use a Cable Clamp to secure the cable to its socket.
11. Attach the self-adhesive Donut Bumper on the inside of the bottom panel of the K2600R. Refer to Figure 7 on page 8. The bumper should just touch the Sampling Option Board, without putting pressure on the board. This prevents the board from moving to the left and making contact with other components.

This completes the installation. Turn to page 14 for reassembly instructions.

### **Rack Models With the Digital I/O Option**

1. Using a #1 Phillips screwdriver, remove the four screws that secure the cover plate over the openings for the sampling input jacks (on the front panel). See Figure 11. Note that this figure shows a K2600R with the Sampling Option already installed. The unit you're working on won't have any jacks in this location.



Remove these screws

**Figure 11** Removing the cover plate

2. In order to make cable connections, you'll need to detach the Digital I/O Board temporarily. Using a #2 Phillips screwdriver, remove the four screws surrounding the digital I/O jacks. Also remove the two screws on either side of the Kurzweil I/O jacks. Pull the Digital I/O board carefully toward you until you have easy access to connectors J1002 and J1003.
3. Plug the unconnected end of the 6-pin Digital I/O Cable into socket J1002 on the Digital I/O Board. The connectors on this cable are keyed so that they will connect to the board only one way.
4. Plug the unconnected end of the 5-pin I/O Monitor Cable into connector J611, located on the Audio Board (as you look at the opened unit, the Audio Board is at the left, near the floppy drive). These connectors are also keyed.

5. Plug the unconnected end of the 3-pin Optical Out Cable into socket J1003 on the Digital I/O Board. These connectors are also keyed.
6. Reinsert the Digital I/O Board into the K2600R, aligning the jacks with the holes in the rear panel. Replace the four screws surrounding the digital I/O jacks, and the two screws on either side of the Kurzweil I/O jacks.
7. On the Sampling Option Board, remove the nut and washer from the 1/4-inch jack. Remove the cap from the optical jack. Set these parts aside.
8. Insert the Sampling Option Board into the K2600, with the Data Ribbon Cable pointing upward. Align the input jacks with the holes in the front panel.
9. Using four M3.0 x 10.0mm Black Flat-head Screws, secure the Sampling Option Board to the front panel.
10. Replace the cap on the optical jack, then replace the washer and nut on the 1/4-inch jack.
11. Plug the unconnected end of the Data Ribbon Cable into socket J801—near the middle of the left edge of the CPU Board. Use a Cable Clamp to secure the cable to its socket.
12. Attach the self-adhesive Donut Bumper on the inside of the bottom panel of the K2600R. Refer to Figure 7 on page 8. The bumper should just touch the Sampling Option Board, without putting pressure on the board. This prevents the board from moving to the left and making contact with other components.

This completes the installation. Turn to page 14 for reassembly instructions.

## Reassembly

### Reassembly for Keyboard Models

**!** *Caution: Recall that the Audio Board protrudes from the bottom of the top cover, and is susceptible to damage. Be very careful not to rest the Audio Board on any part of the enclosure.*

1. Lift the top cover, and place it back onto the body of the K2600. Make sure that the cables aren't pinched between the top and bottom of the instrument. Look inside the unit from both ends and make sure that there aren't any cables pinched between the support and the bottom of the enclosure.
2. Set the endcaps back in place, and replace the A screws, but don't tighten them.
3. Grasp the rear of the unit, and tip it up toward you, so that the unit rests on its keyslip.
4. While pushing in on one of the endcaps, insert an Endcap Locking Brackets into its slot. Repeat for the other endcap.
5. Replace the B screws, followed by the C screws. Note that the C screws are self-threading; to avoid stripping the threads, start the screws by hand before using a screwdriver. If a thread *does* become stripped, use an adjacent screw hole. Tighten the screws once they're all in place.

Diagnostics

6. Connect the CPU Connector end of the Data Ribbon Cable to J818 on the CPU board. Use a Cable Clamp to secure the cable in place.
7. Set the unit back down on its bottom, and tighten the A screws.

This completes the reassembly. Turn to page 14 and proceed with the diagnostic tests.

### Reassembly for Rack Models

1. When you have completed all connections, slide the top cover back on. Be sure to fit the front top edge of the cover into the groove on the top of the front panel.
2. Replace the eight M4 screws in the left and right sides of the unit. Then replace the two small M3 screws along the top edge of the rear panel.

This completes the reassembly. Turn to page 14 and proceed with the diagnostic tests.

## Diagnostics

You'll need the following cables to run the diagnostics:

- (2) Analog Audio Patch Cables: 1/4-inch stereo phone plug to male XLR connector
- (1) Digital loopback cable: XLR male to XLR female
- (1) Optical cable: 12 inches or longer

The audio cables should be 1/4-inch TRS (stereo phone plug) to male XLR, wired as follows:

Tip      XLR Pin2  
Ring     XLR Pin3  
Sleeve   XLR Pin 1

1. Power up the K2600 and turn the volume all the way down.
2. Remove all cables from your K2600 except the AC power cord. The Sampling Option diagnostics generate high amplitude sounds that could harm you and your sound system. The test will also result in false failures if any superfluous cables are in place.
3. Press and release the Exit button while the **Please wait...** message is displayed. This will bring up the K2600 Boot Loader (shown below), which lets you run diagnostics.

```
----- K2600 Boot Loader v1.00 -----  
  
  Install System      Hard Reset  
  Install Objects    Run Diags  
  Run System         Fixed Diags  
  
                               [OK]
```

4. The Boot Loader's menus resemble K2600 dialogs. They consist of a series of labels and a highlight bar you use to select a label. Use the arrow buttons to highlight **Run Diags**. Then press the OK soft button to run the diagnostic tests.

5. Press any button to continue when the RAM erasure message appears.
6. Choose **SamplingOpt** from the Diagnostics menu.
7. Choose **Test complete sampling option**, and follow the instructions that appear in the K2600 display.
8. When the diagnostic tests finish running, a message will appear telling you if the tests passed or failed. If one or more tests have failed, turn off power and review the installation procedure, checking for errors in installation. When the diagnostics complete successfully, continue with the next step.
9. After completion of the diagnostic check, power down and up again, going into normal operation. Press the **Master** mode button followed by the **Sample** soft button. You should now be on the sampling page. Insert a stereo analog audio source (CD or tape player, etc.) into the 1/4-inch HiZ jack (on the rear panel of keyboard models, and on the front panel of rack models). Set the value of the Input parameter to **Analog**, set Src to **Ext**, then Select Gain and adjust the Alpha Wheel until the Level Meters indicate a signal with no **CLIP** indication (The Master LED will also flash when clipping occurs).
10. Insert headphones into the K2600 headphone jack, or playback equipment into the Mix outputs. Turn the volume up to a useful level. The sound should go on and off when Mon is changed from **On** to **Off** with the Alpha Wheel. Make sure that right/left channel input is coming out of the right/left channel output and that the signal is not distorted. If channels are reversed, missing, or distorted, check the cable connections to the Audio, Engine, and Sampling Option Boards.

This completes the entire installation and testing procedure for the Sampling Option.