Chapter 8
Maintenance and Troubleshooting

Preventive Maintenance

With a modicum of care, your K2600 will give you years of use and enjoyment. There are just a few important points to keep in mind.

Proper installation is essential to the health and welfare of your K2600. Keyboard models should always rest on a hard flat surface—and on its rubber feet, not on the bottom panel. Rack models should be mounted in a standard 19-inch MIDI rack, or should rest on a hard flat surface. In this case it must rest on its rubber feet, and not on the bottom panel.

Never block the ventilation openings; doing so can cause overheating that will seriously damage your K2600. To provide adequate ventilation, the rear panel should be at least four inches from any vertical surface (for both keyboard and rack models). Try to minimize the amount of dust in the environment.

The K2600's RAM backup battery, along with any PRAM, sample RAM, or ROM block options you may install, are the only user-serviceable parts in the K2600. The only part you should ever disassemble on your K2600 is the access panel on the bottom of the instrument—removing anything else will void your product warranty.

Cleaning Your K2600

It's a good idea to remove dust from your K2600 occasionally. You may also want to remove fingerprints. You can clean the K2600's front panel with a soft damp cloth, and use a mild soap or detergent. Never use strong cleaners or solvents, and never spray anything on the front panel or into the ventilation holes. Any cleaners you may want to use should be applied to your cleaning cloth; you can then carefully wipe the surfaces of the K2600.

Floppy Disk Drive Maintenance

As long as you're reasonably careful to keep dirt and dust out of the floppy disk drive, you shouldn't have any problems. If, however, you start to experience errors or failures in loading or saving, it may be due to dirt in the floppy drive mechanism. See your dealer for information regarding products and techniques for floppy drive cleaning.

Battery Replacement

The K2600 uses a 3-volt lithium coin-cell battery (CR2032) for program RAM backup (sample RAM is not battery-backed). Unlike a typical alkaline battery—whose voltage output declines over the life of the battery—a lithium cell maintains a stable voltage until it's almost out of power. Once it has used up almost all of its power, however, its voltage drops rapidly. Consequently, to avoid the risk of losing the contents of your program RAM, you should replace the battery as soon as your K2600 warns of low battery voltage.

The battery in your K2600 will last for several years (fewer if you add the P/RAM-26 option, which approximately doubles the load on the battery).You'll know the battery is losing power when the display says BATTERY VOLTAGE IS LOW during powerup. When you see this warning, replace the battery as soon as possible.

Replacing the battery requires you to open an access panel on the underside of your instrument. This is the same panel you would open to install program RAM (P/RAM-26), sample RAM, or ROM sound block options.

1. Obtain a CR2032 lithium coin cell; any store that sells batteries for small electronic appliances is likely to have them in stock.

2. Make sure you have backups of any RAM objects (not including samples) in the K2600 that you really care about. A quick way to make backups is to use the save function in Disk mode, and choose to save everything instead of choosing one bank at a time.

   Warning: Turn off your K2600 and disconnect the power cable!

3. Carefully place your K2600 upside down on a padded level surface, with the front of the instrument toward you. Keyboard owners should use soft, sturdy foam under the ends of the instrument, to protect the wheels and sliders.

4. Locate the access panel. On keyboard models, it's about 6 by 13 inches in size, slightly to the right of center, toward the back of the instrument. On rack models, it's about 7 by 12 inches, and takes up a large portion of the underside of the instrument.

5. Remove the screws that hold the access panel in place—eight for the keyboard and six for the rack—and swing the panel open from the front. It hinges at the back, and rests in a position that's convenient for referring to the diagram that's printed on the inside of the panel.

6. Locate the battery slot. It's toward the far edge of the circuit board, toward the rear of the instrument.

7. Put the new battery in an easily-accessible location. Once you remove the old battery, you'll have about 30 seconds to install the new one before you lose data from program RAM. If you install the new battery within 30 seconds, you probably won't have to reload any program-RAM objects.

8. To snap the old battery out of its retaining clip, lift up on the front of the battery (there's a notch at the front of the clip, where you can get a bit of leverage), then push the battery toward you from behind. If necessary, carefully use a small screwdriver or other object to push the battery out.

9. Snap the new battery in place, with the plus side up. Make sure that it snaps securely into the retaining clip.

10. Replace the access panel and loosely install the screws, starting with those closest to the hinge (the back) of the access panel. When the screws are loosely in place, tighten them all.

Note to K2500 owners: On 2500-series instruments, the LEDs on the front panel flash three times when battery voltage is low. This isn't necessarily the case with the K2600—in fact on rack models, the LEDs always flash three times at powerup.

Scanner Diagnostics

There's an onboard diagnostic program that enables you to check your battery and confirm front panel button functions.

To enter the Scanner Diagnostics, simply press **4**, **5**, and **6** (on the alphanumeric buttonpad) simultaneously while in Program mode. The K2600 responds by lighting each LED in sequence and then displaying something like the following (the display says K2500, but the diagnostics have been updated for the K2600).

```
K2600 SCANNER DIAGNOSTICS VERSION 5.00
(PRESS "EXIT" AND "ENTER" TO EXIT)
BATTERY=3.2VOLTS, WHEEL CENTER=128

XXXXXX
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The battery voltage and wheel center values may be different on your unit. The line represented by XXXX gives a readout identifying the buttons you press.

The diagnostic program can also be used to check out the front panel components. If you move the Alpha Wheel clockwise, the numbers will go 0-1-2-3-0-1-2...while counterclockwise should produce 3-2-1-0-3-2-1... If you press a button, its name will be shown and if it is one of the mode buttons, its associated LED should flash.

The third line of the display shows the results of two measurements that are made whenever your K2600 is turned on. The battery voltage will be about 4.3 volts for new batteries, gradually declining over time to 3.2 volts, at which point you will begin to receive warnings (see *Battery Replacement* on page 8-2). The line referring to the Wheel is relevant for keyboard models only.

Maximizing Music and Minimizing Noise

Your K2600 quite possibly has the lowest noise and widest dynamic range of any instrument in your studio. The following tips will enable you to make the most of this, and optimize the K2600's audio interface to your other equipment.

Setting your audio levels appropriately is the key to optimizing the signal-to-noise ratio of any piece of equipment. It's best to increase the output level *digitally* (by editing programs) instead of increasing the gain of your amplifier or mixing board. This is because a digital gain increase is completely noiseless, whereas an analog increase will proportionally increase hum and noise from the connecting cabling and from the K2600 itself.

Increasing the volume digitally can be accomplished in three different ways. You can increase the volume of all programs assigned to a given MIDI channel by selecting the CHANNELS page

in MIDI mode and setting the OutGain parameter to the desired level (in 6dB steps). For songs that use multiple MIDI channels, you'll need to do this for each channel. Alternatively you can increase the volume of a single program by going to the OUTPUT page in the Program Editor and setting the Gain parameter to the desired level, again in 6dB steps. For finer adjustment, there's the Adjust parameter on the F4 AMP page.

Increasing the level too much can cause clipping distortion when multiple notes are triggered with high attack velocity. For dense songs played through the same outputs, you will probably be able to increase the volume by only 6 dB or so without risk of distortion. For monophonic instruments (lead guitar) or single instrument tracks (such as drums), a substantially greater boost is generally possible.

For the absolute maximum signal quality (with the exception of digital output, of course), use the separate analog outputs. These are connected almost directly to the 18-bit digital-to-analog converters with a minimum of noise-inducing processing circuitry. A total dynamic range of over 100dB is available at these outputs. The MIX outputs are naturally somewhat noisier because they represent the noise of the individual outputs mixed together, and the signal must travel through more circuitry to reach them.

Ground Hum

A common problem with all electrical musical gear is the hum that can occur in connecting cables due to AC ground loops. The best way to avoid ground loop noise when integrating the K2600 into a stage or studio environment is to use the K2600's balanced audio outputs, and to be sure that the mixing board, amplifier, or other equipment receiving the K2600 audio signal has a balanced input circuit.

If you can't use the K2600 audio outputs in a balanced manner, there are a few things you can do to reduce ground hum. Although "3-prong to 2-prong" AC adapters are frequently used to break ground loops, they also break the safety ground that protects you from electric shock. These adapters can be dangerous; don't use them! Furthermore, although using these adapters may reduce low-frequency hum, high-frequency line noise (such as motor switching noise) is likely to get worse in this case, since the K2600's AC noise filter will have no output for the noise it filters if you disable the ground.

You can effectively reduce hum by increasing your output signal levels as described in the previous section. Other safe procedures include plugging your mixing board and amplifier into the same AC output as your K2600, and making sure that all of your gear is properly grounded. If you're using an external SCSI device, plug it into the same outlet as well.

AC isolation transformers are extremely effective at eliminating ground loops, and are recommended for critical installations in which you can't use the K2600's balanced outputs. A 75-watt transformer is sufficient for the K2600.

Use the shortest possible cable, with the heaviest possible ground (shield) wire, to connect your K2600 to the mixing board or amplifier. This helps to reduce the potential difference between the chassis of the K2600 and the chassis of a mixing board or amplifier that has unbalanced inputs— thus reducing the level of ground hum.

Finally, magnetic fields can be a source of interference. The area surrounding the K2600's Alpha Wheel and alphanumeric buttonpad is sensitive to fields from large transformers in power amps; keep them at least a foot away from the K2600's front panel. Smaller gear like drum machines and hardware sequencers can also cause interference.

Power Problems and Solutions

The K2600 is quite tolerant of voltage fluctuations, noise, and transients in the AC power it receives. The input line filter and grounded power cable will protect against even large amounts of noise from motors and the like while the built-in filter coupled with the fuse will protect against all but the largest transients. If your installation is actually suffering from line noise or transients, most likely your other equipment will be suffering more than your K2600.

Very low line voltage or severe voltage dips are a problem for any computer-based instrument. When the K2600 is set for 120 volt input (the normal North American setting), it should function down to 90 volts. If the line voltage drops below 90 volts, a special circuit halts all activity to protect against software crashes or damage. When the line voltage returns to and stays at an acceptable level for at least one second, the computer will automatically restart. The net effect is just as if you had performed a soft reset. Continuous low line voltage or transient dips will never produce symptoms other than unexpected soft resets as just described. Any other problems such as distortion, disk errors, or lost data are caused by something other than line voltage fluctuations.

Soft resets from line voltage dips are most common. These are easily identified because the reset occurs coincident with the building lights dimming, stage lights or power amps being switched on, or air-conditioning equipment starting up. The solution in all cases is to get a more direct connection between your K2600 (and any other computer-based equipment) and the building's power. Floodlights, large power amplifiers, and motor-operated devices should use a separate extension cord; preferably they should be plugged into a separate circuit.

Chronic low line voltage is best confirmed by measurement. Readings below 100-105 volts mean that even small dips could cause resets, while readings below 95 volts (accounting for meter inaccuracies) are a definite problem. Again, the best solution is to separate your heavy lighting and amplifier loads from your K2600 and other synths on separate extension cords or separate circuits when possible. If the actual building voltage is that low, we recommend using an external step-up transformer or voltage regulator. We *do not* recommend changing the line voltage selector to 100 volts (or 220 volts in Europe) because overheating or blown fuses may occur if you leave the K2600 at the lower setting and use it later at a normal voltage level.

Troubleshooting

Naturally, we've done everything possible to ensure that your K2600 arrives free of defects. And there's a good chance that there's nothing wrong, even if you're not seeing the proper display or hearing the sounds. Carefully check the following things:

Make sure that your power supply is at the right voltage, and is functioning properly.

Make sure the power cable is connected properly.

Adjust the display contrast if necessary (on keyboard models, there's a knob on the rear panel; on rack models, the knob is on the front panel, above the power switch). If you still have trouble seeing the display, it's time to contact your dealer.

Make sure your audio cables are fully connected to the K2600 and to your sound system. You may want to switch your audio cables, unless you're sure they're functioning properly.

For rack models, make sure that your MIDI connections are correct, and that your MIDI cables are functional. You should have at least one MIDI cable, which should be connected from the MIDI Out port of your MIDI source to the MIDI In port of the K2600.

Check that the K2600's Volume slider is at least partially up.

Check the volume level of your sound system.

Lower the volume of your sound system, and turn the K2600 off, then on again (this is called a power cycle).

Press the **+/-**, **0**, and **Clear** buttons (on the alphanumeric buttonpad) at the same time. This is called a soft reset.

As a last resort, save to disk any RAM objects you've created, and perform a hard reset. Do this by pressing the Master-mode button, then pressing the **Reset** soft button (at the lower right of the display). The K2600 will warn you about deleting everything (only RAM objects will be deleted). Press **Yes**. After a few seconds, the power-up display should appear.

Also check the suggestions on the following pages. If it's still not happening, the next step is to shut off the power and call your dealer.

Other Possible Problems

No Sound, No Display, No LEDs Illuminated

1. AC line cord not fully inserted into outlet or unit. If using a multiple outlet box, check its plug.

2. Power not on at AC power source (wall outlet). Check with a different appliance.

3. Power switch not on (either the unit or multiple outlet box).

4. Incorrect voltage selection setting. REFER TO QUALIFIED SERVICE PERSONNEL.

No Sound

1. Volume control turned all the way down on the K2600 or on amplifier or mixer.

2. Amplifier or mixer not turned on.

3. Cabling is not correct; see Chapter 2 of the *Musician's Guide*, and read about the various cable connections you need to make: power, audio, MIDI. There's more about audio configurations in Chapter 19 of the *Musician's Guide*. Also check that your amplifier, mixer and speaker connections are correct.

4. MIDI volume has been assigned to a control source which has sent a value of 0. Pressing the **Panic** soft button will reset all controls, and resolve this problem.

Left MIX Output Seems Louder Than Right MIX Output When Used Individually

This is normal. When a cable is plugged into the left MIX output alone, both the left AND the right audio signals are routed to the jack. When a cable is plugged into the right MIX output alone, only the right channel audio signal is heard.

Volume Knob Has No Effect

1. Separate outputs are in use; the volume knob does not affect the separate outputs.

2. MIDI volume has been assigned to a control source which has sent a value of 0.

Programs, Setups, Songs, or Other Objects Are Missing

Battery has run down or has been disconnected. If the battery has failed, the message "Battery voltage is low - X.X volts" (where X.X is less than 3.0) will appear in the display on powerup. All user data will be permanently lost if this occurs. See *Battery Replacement* on page 8-2.

Cannot Mount or Read Disk

1. Disk is not MS-DOS (or Akai, Ensoniq, or Roland) format.

2. Disk is damaged.

Cannot Write to Floppy Disk

1. Disk is not MS-DOS formatted.

2. Disk is write protected.

3. Sample is copy protected.

4. Disk is damaged.

Cannot Format Disk

1. Disk is damaged.

2. Disk is write protected.

3. You have instructed the K2600 to format a double-density (720K) disk as a high-density (1.4M) disk. Note: Punching a hole in a double-density disk case to try to make the K2600 read it as a high-density disk is not a good idea.