Chapter 9
Maintenance and Troubleshooting

Preventitive Maintenance

With a modicum of care, your K2500 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 K2500. It 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 on the rear panel; doing so can cause overheating that will seriously damage your K2500! To provide adequate ventilation, the rear panel should be at least four inches from any vertical surface. If you install an internal hard disk, the ventilation opening on the underside of the K2500 must remain unobstructed so the cooling fan can operate properly. Care should be taken to minimize the amount of dust in the environment.

There are no user-serviceable parts in the K2500. Under no circumstances should you attempt to remove any panels (except for battery replacement). If you attempt to open your K2500, you'll risk electric shock, and you'll void your product warranty.

Cleaning your K2500

It's a good idea to remove dust from your K2500 occasionally. You may also want to remove fingerprints. You can clean the K2500'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 K2500.

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 selection and Replacement

The K2500 uses batteries to preserve its internal memory when the power is turned off. The original batteries should last up to two years before they need replacing. Replacement is necessary when the LCD says "BATTERY VOLTAGE IS LOW" during power-up, or when you notice that the LEDs flash three times instead of once during power-up. Once these warnings begin to occur, the batteries should be replaced within a couple of weeks to ensure continued safety of your RAM objects.

To replace the batteries, you'll need access to the rear panel. Remove the battery compartment cover, which is located at the lower right corner of the rear panel as you face it. You may wish to use a small screwdriver. Replace the batteries with three high quality AA size "heavy duty" or alkaline batteries. A capacitor will keep the memory alive for about 30 seconds while changing the batteries, so don't remove the old ones until the new ones are available. Alternatively, it is permissible to have the power cable plugged in and the power on while changing the batteries, in which case memory will be retained as long as power is on. Be sure to insert the new

batteries in the proper direction (the positive terminals should be pointing out). Incorrect insertion won't damage anything but the memory won't receive any power from the batteries.

Most quality brand-name batteries now have "sell by" dates printed on their package. Carbon-zinc batteries will last for at least a year after installation while alkaline batteries should last for at least 2 years provided they are installed before the date on the package. Rechargeable batteries should not be used; the K2500 will not recharge them and their life after charging on an external charger will be only a few months. Battery life is not significantly increased by leaving your K2500 on all the time; batteries may even suffer heat degradation if the K2500 is left on continuously.

User-callable Diagnostics

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

To enter the diagnostic program, simply press the 4, 5, and 6 buttons all at once when in Program Mode. The K2500 will respond by lighting each LED in sequence and then displaying text such as the following on the LCD:

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K2500 SCANNER DIAGNOSTICS VERSION 2.1

(PRESS"EXIT" AND "ENTER" TO EXIT)

BATTERY=4.3VOLTS, WHEEL CENTER=128

XXXXXXXXXXXXXXXXX
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The battery voltage and wheel center values may be different on your unit. You can ignore the Wheel Center reading; it doesn't apply to the K2500. The fourth 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 K2500 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 Selection and Replacement" above). The line referring to the Wheel is only relevant to the keyboard models of the K2500.

Maximizing Music and Minimizing Noise

Your K2500 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 K2500'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. You may have noticed that the K2500's output signal seems less "hot" than most other synths when using the unedited factory sounds. This is to allow virtually any configuration of voice assignment to be used (up to 96 oscillators directed to one output!), and played very loudly with almost no chance of overload distortion. For more controlled

adjustments, 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 K2500 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 CHANLS page in MIDI mode and setting the OutGain parameter to the desired level (in 6dB steps). For multi-timbral sequences (on multiple MIDI channels), you will 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, the Adjust parameter on the F4 AMP page can be used.

Increasing the level too much can cause clipping distortion when multiple notes are triggered with high attack velocity. For dense sequences all played through the same outputs, you will probably only be able to increase the volume by 6dB 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, the individual outputs should be used. 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 all mixed mixed together, and the signal must travel through more circuitry to reach them.

Programs that are routed through the K2500's global effects processor (Output Group A) will also be slightly noisier than programs routed to Output Groups B, C, or D. As with an external effects unit, maximizing the input signal level (using the methods described above) will improve the signal-to-noise ratio of the effects processor. When in Effects mode, you'll see an internal Wet/Dry mix parameter; in the Effects Editor you'll find numerous parameters for setting the level of the various effects. Your best signal-to-noise ratio will be achieved by setting the effects level parameters to maximum and adjusting the Wet/Dry Mix parameter to set the overall effects mix. If you are only using the effects unit for EQ functions, one of the EQ or Tone Control functions accessible through the Program Editor will produce quieter results then the global effects processor's EQ functions (Parametric EQ, Para Bass, Para Mid, or Para Treble, for example).

Ground Hum

A common problem with all electronic musical gear is the hum that can occur in connecting cables due to AC ground loops. Although "3-prong to 2-prong" AC adaptors are frequently used to break ground loops, they also break the safety ground that protects you from electric shock. **Using these adaptors is dangerous, and SHOULD NOT be done!** Furthermore, although using these adaptors may reduce low-frequency hum, high-frequency line noise (such as motor switching noise) is likely to get worse in this case, since the K2500's AC noise filter will have no outlet for the noise it filters if you disable the ground.

To reduce ground hum, you can increase your output signal levels as described earlier in this section. Other safe procedures include plugging your mixing board and amplifier into the same outlet as your K2500, and making sure that all 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. A 75-watt transformer is sufficient for the K2500.

For studio applications, where the utmost signal purity is required, using audio unbalanced-to-balanced line transformers will give you the best results. Each of the K2500's audio outputs can easily drive a 600-ohm transformer.

Finally, magnetic fields can be a source of interference. The area surrounding the K2500's Alpha Wheel and alphanumeric pad is sensitive to fields from large transformers in power amps; keep them at least a foot away from the K2500's front panel. Smaller gear like drum machines and hardware sequencers can also cause interference.

Power Problems and Solutions

The K2500 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 K2500.

Very low line voltage or severe voltage dips are a problem for any computer-based instrument. When the K2500 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 K2500 (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 outlet.

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 K2500 and other synths on separate extension cords or separate circuits when possible. If the actual building voltage is that low, use of an external step-up transformer or voltage regulator is recommended. 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 K2500 at the lower setting and use it later at a normal voltage level.

Troubleshooting

Naturally, we've done everything possible to ensure that your K2500 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 (with the Contrast parameter in Master mode). If for some reason you have trouble reading the display, even after adjusting the Contrast parameter, you can also adjust the contrast by holding down the ENTER button and turning the Alpha Wheel. If this improves the contrast, immediately return to the Contrast parameter and adjust it slightly. This will cause the K2500 to remember the current display contrast level, and should take care of any difficulties you may have been having. If this procedure doesn't work, it's time to contact your dealer.

Make sure your audio cables are fully connected to the K2500 and to your sound system. You may want to switch your audio cables, unless you're sure they're functioning properly.

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 controller to the MIDI In port of the K2500.

Check that the K2500'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 K2500 off, then on again (this is called a power cycle).

Press the +/-, 0, and Clear buttons (on the alphanumeric pad at the far right of the front panel) 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 K2500 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

Condition	Possible Cause

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 K2500 or on amplifier or mixer.

2. Amplifier or mixer not turned on.

3. Cabling is not correct - see Chapter 2 in the *Performance Guide* - Startup, and Chapter 18 in the *Performance Guide* - Audio Outputs. Also check that amplifier, mixer and speaker cabling is 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.

No sound at MIX outputs or headphones.

1. Audio cables are plugged into some or all of the separate outputs. Cables plugged into of the separate outputs will remove some or all of the audio signal from the MIX and headphone outputs. See Chapter 18 in the *Performance Guide*—"Audio Output" for output configurations.

Left MIX output seems louder than Right MIX output when used individually.

    1   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 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, etc. are missing.

    1   Batteries have run down or have been disconnected. If the batteries have failed, the message "Battery voltage is low - X.X volts" (where X.X is less than 3.0) will appear in the display on power-up. All user data will be permanently lost if this occurs. See the information on battery selection and replacement elsewhere in this manual.

LCD is too dark or too light to read.

    1   Contrast not adjusted. Select Master mode and adjust the Contrast parameter. If this fails, hold the ENTER button and turn the alpha wheel clockwise to make display darker; counterclockwise to make it lighter. Then adjust the Master mode Contrast parameter to a higher value if the LCD was too light, or to a lower value if it was too dark.

Cannot mount or read disk.

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

    2   Disk is damaged.

Cannot write floppy disk.

    1   Disk is not MS-DOS formatted.

    2   Disk 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 K2500 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 K2500 read it as a high-density disk is not recommended.