

Installing or reinstalling Ubuntu Linux and EMC2

IMPORTANT—Installing Linux/EMC2 will completely overwrite your current operating system as well as all data and programs on your computer. The hard drive will be reformatted. Save all g-code and other important files to a floppy, CD or USB flash drive before continuing with installation.

If installing on a non-Sherline computer, make sure it meets the minimum performance specifications before attempting to install:

- 800 MHz processor speed minimum (Pentium III or newer)
- 512 Mb RAM minimum (Sherline installs 1 Gb)
- 20 GB hard drive (40 or more recommended)
- 25-pin parallel port
- CD or DVD drive

Sherline cannot guarantee that any particular computer, even if it meets the basic specs above, will work when installing Linux/EMC2. Dell computers, for example, seem to have a lot of difficulties with this installation. This is why we offer our own computer as an option.

Linux is a highly stable and capable operating system, and many applications like OpenOffice are available at no cost so you can do word processing, spreadsheets and more. However, Sherline cannot offer technical support for software provided by others. See www.linux.org for more on other programs designed to work under Linux. Also, if you go beyond the recommendations in these instructions to set up a dual-boot system or make other modifications to the basic installation, you must be experienced enough to proceed on your own or with the help of the Linux group.

Upgrades: Should You Change to Ubuntu and EMC2?

If you currently own an older Sherline CNC computer that utilizes the RedHat version of Linux, switching to Ubuntu may not be possible due to hardware conflicts. If you have the newer Debian version, chances are good you will be able to upgrade, but you have to ask yourself if it is worth the effort. The main advantages of EMC2 are that it allows you to use subprograms and it adds a CNC lathe program. If you have no need for these features your might want to leave well enough alone.

Ubuntu Installation with EMC2 v6.00

Computers with Windows® OS—Turn on your computer, open the CD/DVD drive door and insert the Sherline installation CD into your DVD drive. If the computer boots off the new Linux CD, skip down to the “Load Ubuntu/EMC2” section that follows. If it boots off the hard drive or other drive instead, you will have to enter the BIOS to change the boot device order so it boots off the DVD. Here is how:

Changing the boot order in the BIOS

The BIOS is the “Basic Input/Output System,” or the built-in software that determines what a computer can do without accessing programs from a disk or drive. Most computers are set to start up or “boot” off the hard drive.

Since Ubuntu is being transferred from a CD, you will need to make sure that your computer is set to look for an operating system on the CD/DVD drive before it checks the main hard drive. This setting is made in the computer’s BIOS.

To enter the BIOS, turn your computer on and immediately hit either the [F2] key or the [Delete] key. (On-screen instructions will tell you which key to hit.) A menu screen used to manage the computer’s “BIOS” should appear.

CAUTION: Follow directions carefully, as changes to the BIOS affect basic computer function.

- When the BIOS screen opens, use the arrow keys on your keyboard to move down to “Advanced Bios Features.” Press [Enter]. You should see a menu screen that says, “Boot Device Priority” or similar wording.
- Use your arrow keys to highlight this selection and press [Enter]. You will now see a list of boot devices and their priority order. If CD/DVD is already listed as the first boot device, you can press the [Escape] button and skip to the next section. If another device (usually the hard drive) is listed as first priority, use your arrow keys to move to and highlight “CD/DVD.” Press the [F10] key.

Load Ubuntu/EMC2

Insert the Linux installation disk into the CD/DVD drive of your computer and close the drive door. A few screens will appear briefly, and after a few seconds you will see a black screen with a command prompt that says, “boot: _”. You have about 30 seconds to type the word “install” and hit the [Enter] key on your keyboard. The screen will change to the Ubuntu logo, and it will take several minutes to begin the loading process. (There is no progress bar during this time.) When complete, the first of several screens will appear.

Completing the Ubuntu Installation

Welcome Screen—(1 of 7) Here you can choose the language for your installation. (English is the default.) Select your language of choice and then click the [Forward] button on the window to proceed.

Where Are You?—(2 of 7) Select the Region (country) from the first list and the Time Zone of your location from the second list. As an alternative, you can click your cursor on your approximate location on the world map and choose the closest major city. When done, click the [Forward] button to proceed.

Keyboard Layout—(3 of 7) Select “USA” (or your keyboard layout if different) and then click the [Forward] button to proceed.

Prepare Disk Space—(4 of 7) Two options will appear:

- **Erase and use the entire disk** (Recommended)
- Specify Partitions Manually (Dual boot option for advanced computer users only.)

Click on [Forward] when ready to proceed.

Who Are You?—(5 of 7) For both your name and login, enter “sherline” in all lower case letters in each of the boxes. Note that passwords and accounts are all case sensitive. Below the boxes is a line that says, “Require my password to log in.” Make this option active and click on [Forward] to continue.

NOTE: If you do not enter a user account, the system will not automatically launch you to the desktop. Instead, a login screen will appear, where you must enter “root” and the password you supplied earlier (“sherline” by default). It is strongly recommended you create a user account, as the root account has access to all vital system functions, which you may not wish to be logged into at all times. An inadvertent typing error here can do damage that can be difficult or impossible to repair. The EMC2 will function using either login.

If you choose a password of your own other than “sherline,” you must note or remember it for future use. Then use your personal password instead whenever the instructions call for use of the “sherline” password. (If you do establish a personal password, don’t forget to inform the technician if you send your computer in to Sherline for service.)

(NOTE: There is no screen 6 of 7.)

Ready to Install—(7 of 7) This is the last chance in the setup to make any changes to your selections to this point. After you click “Install” it will begin to automatically partition your system, and all data on that drive will be lost. If you are satisfied with your choices, click [Install] to proceed. A screen will say “Installing System, Copying Files,” and a progress bar will count down the installation status. Installation times will vary depending on the size of your hard drive. For example, a 40 Gb hard drive takes approximately 7 minutes to complete. When done a screen will say, “Installation Complete.”

Installation Complete— Once the partitioner is finished installing the system, a pop-up will appear that states the installation is complete and you must reboot. Click the [Restart Now] button, and the CD will be ejected. Remove the CD and close the drive door. Wait while the computer restarts.

When the desktop reappears, in the login box enter “sherline” (or the words you previously selected) as the user and password and select [Log In].

To open EMC2 and begin working with CNC

On your desktop there should be four icons displayed that will say *Sherline Mill Inch*, *Sherline Mill MM*, *Sherline Lathe Inch* or *Sherline Lathe MM*. Click on the one that corresponds to your machine (mill or lathe) and leadscrew pitch (inch or metric). This will open the appropriate version of EMC2 so you can start working.

Instructions on how to use EMC2 and G-code can be found on the *Instructions and Utilities* CD in a folder labeled “Instructions.” Additional information and help can be found on-line at <http://www.linuxcnc.org>. You can also find the most current version of the instructions on the Sherline web site by going to www.sherline.com/CNCinstructions.htm. Instructions can be viewed on both Windows® and Linux machines in .PDF or .HTML formats.

Other Programs Available

A .DOC version of the instructions for Microsoft Word® is also included on the CD. It can also be opened on your Linux machine using the free **OpenOffice** word processing program. **OpenOffice** is a powerful, open source office suite that can be downloaded at no charge from the internet at <http://www.openoffice.org/>. It includes programs for word processing, spreadsheets, presentation, graphics, databases and can open files created in many common file formats. Sherline’s CNC computer does offer internet connectability and can run programs like OpenOffice if it is your only computer. If you want to use a Windows PC for your word processing, CAD/CAM programs and g-code file generation, OpenOffice is available for Windows users as well.

In order to download and install OpenOffice you will need a relatively fast internet connection. At least a DSL connection is recommended or download times may be unacceptably long for large files. Though many users prefer to generate CAD drawings on their Windows laptop or desktop computer, the computer supplied by Sherline is capable of running many useful Linux programs in addition to EMC2.