

The P-51 CamLift



The Visionary Digital P-51 CamLift is a precision linear actuator that is used to control the up and down (Z movement) of your camera and optics. The following is a basic guide to the set-up and use of your P-51 CamLift.



Carriage

Lower Limit Adjustment Knob

Lift Mounting Plate

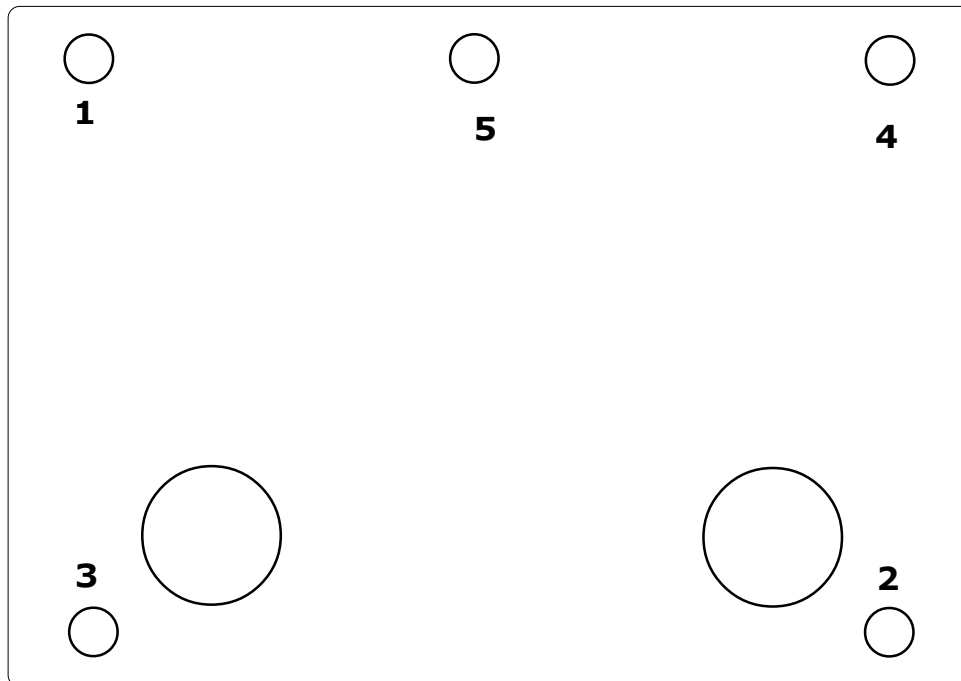
Setting up the P-51 CamLift

The P-51 CamLift comes with a 3 foot wide by 2 foot deep black powder coated base. The top is powder coated steel and the core is made of a $\frac{3}{4}$ inch thick solid composite material. There are five mounting holes in the base plate each has a threaded steel insert inside. There are three in the back and two in the front.

Place the base plate on a suitable flat table or counter top allowing some room on all sides. It is advisable to have at least 12 inches on the left and right sides of the base plate in order to leave room for the other components and accessories you will want to use.

Locate the 5 stainless steel socket head cap screws that came with the lift. They are one inch long and are threaded $\frac{1}{4}$ -20 and accept a $\frac{3}{16}$ hex wrench.

Center the lift at the back of the base plate and carefully position over the mounting holes. Take care not to drag the lift over the base plate it is heavy and could scratch the base plate. Slide the socket head cap screws through the holes in the P-51 lift mounting plate and into the base plate. **IMPORTANT:** do not try and tighten any of the cap screws until ALL have been started by hand. Once they have been started, use the supplied wrench and tighten them all down. Use the tightening sequence below as a guide



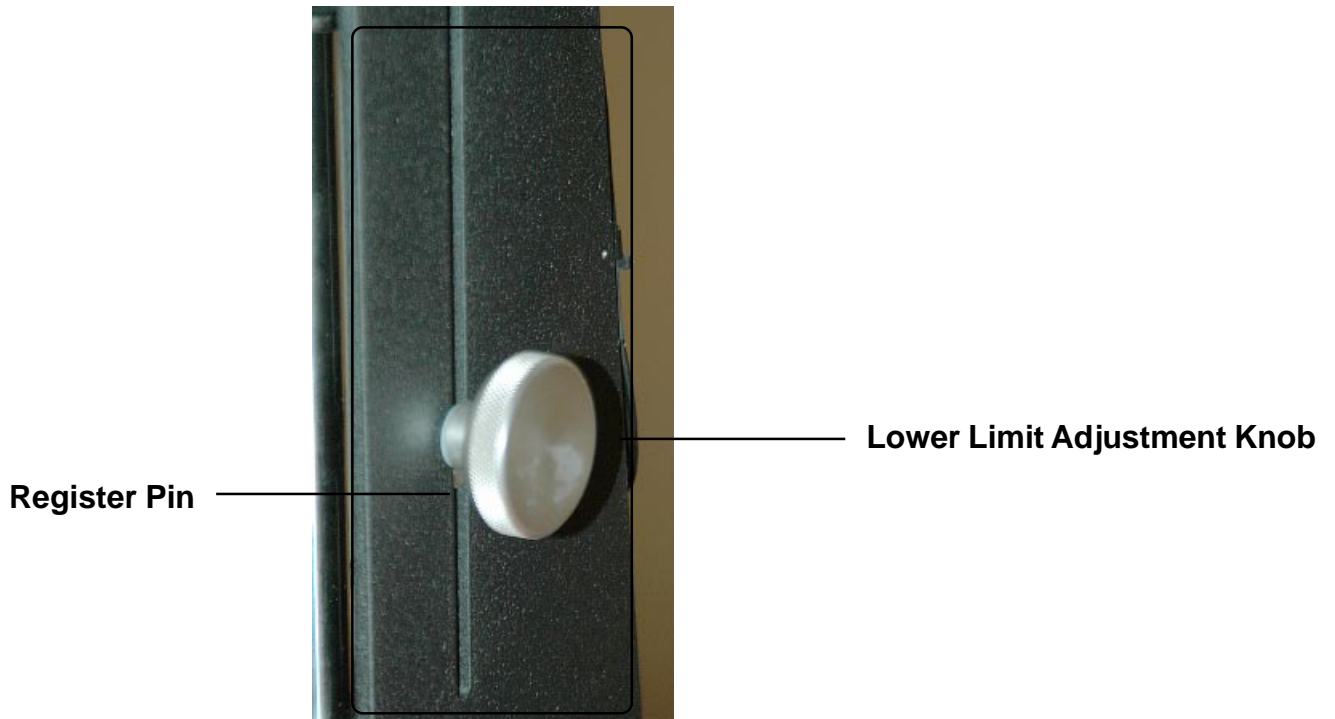
Mounting plate tightening sequence

Connecting the P-51 electronic controller.



- #1 Connect the top limit switch plug to the "Top Limit" socket
- #2 Connect the lower limit switch plug to the "Lower Limit" socket
- #3 Connect the nine (9) pin serial cable or the serial to USB adapter into the socket labeled "Computer" NOTE: If you are using a serial to USB adapter the drivers need to be loaded and the adapter function before you proceed.
- #4 Plug the supplied power supply into an AC receptacle and connect the power plug into the port marked "Power"

Please note the orientation of the lower limit switch block. If your P-51 arrived with the knob and block unmounted please mount the block with the register pin in the slot BELOW the knob.



Setting the lower limit refers to setting a limit as to how far down you will allow the carriage to move. This is important because don't want to accidentally drive the lens into your subject. For this reason we recommend that before running the lift for the first time set the lower limit switch .

To set the switch simply loosen the knob and slide it to the desired point When the bottom of the carriage reaches the top to the knob it will stop

IMPORTANT: You should always set the lower limit stop so that the carriage with camera and lens attached can not come in contact with your subject or work materials. Note the simple instructions on page 7 "Lower Limit Adjustment Knob."

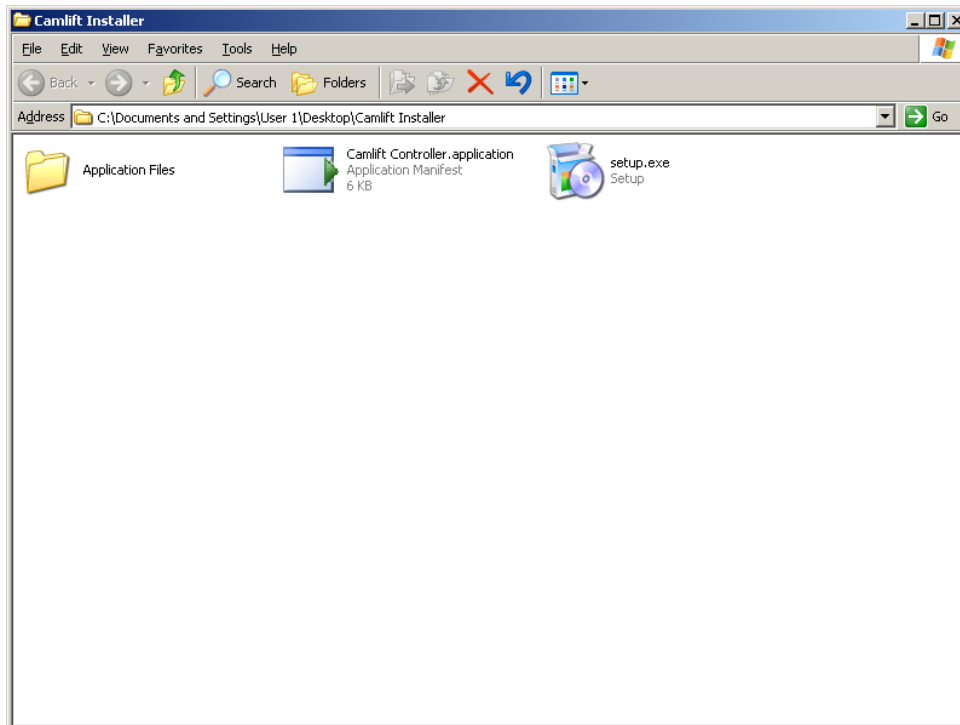
Loading Software for the P-51 V 9.0.21022.8

The drivers supplied for this unit are Windows based only. They operate correctly on Windows 95, 98, NT, XP and Windows 2000 platforms.

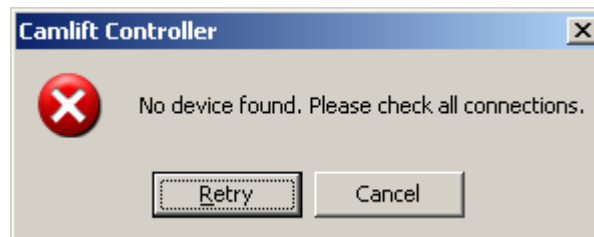
Your Computer must have Microsoft .Net Version 3.5 or higher.

Locate the folder (Camlift Installer) and open it.

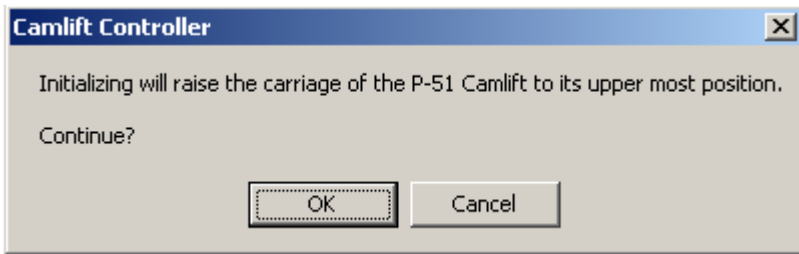
Double click on the setup icon and follow the on screen instructions.



After the program has installed it will try to start the CamLift. Make sure that the lift is connected to the computer via the serial connector and powered, if it is not connected you will get the following message.

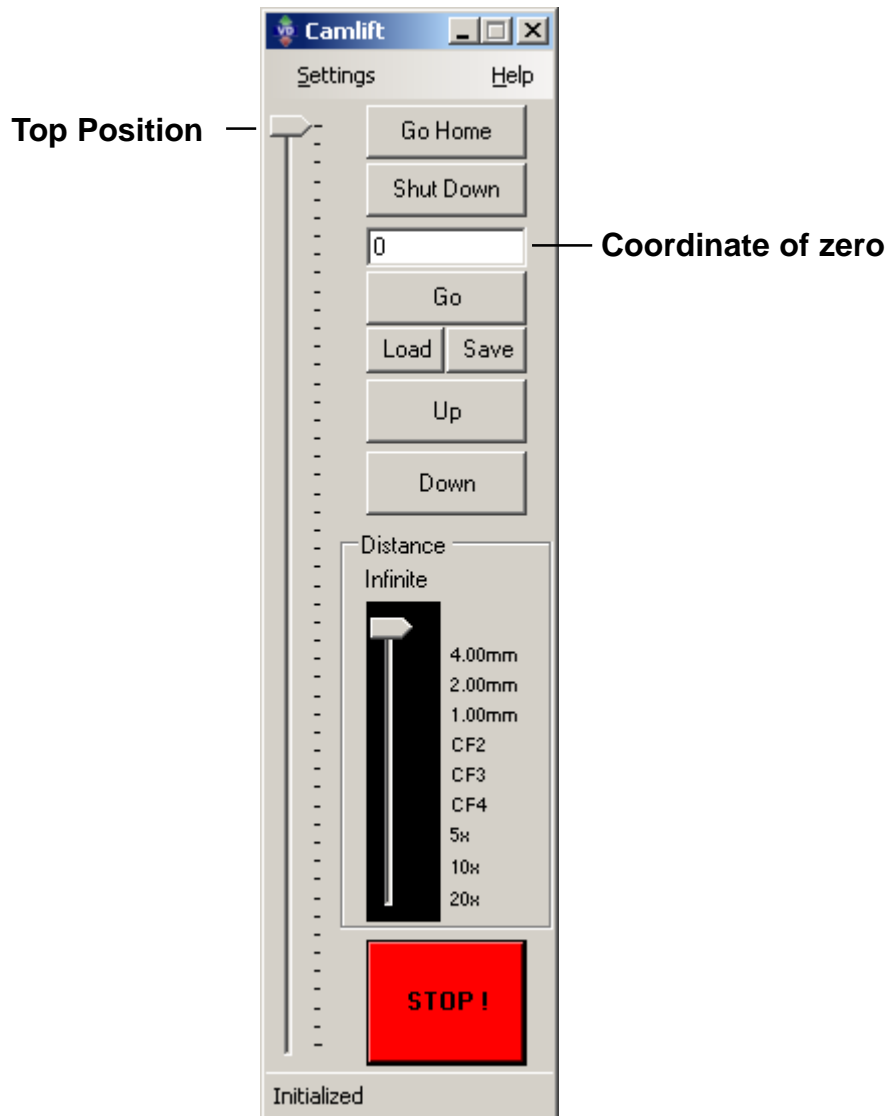


If the CamLift is connected properly the following message will appear.

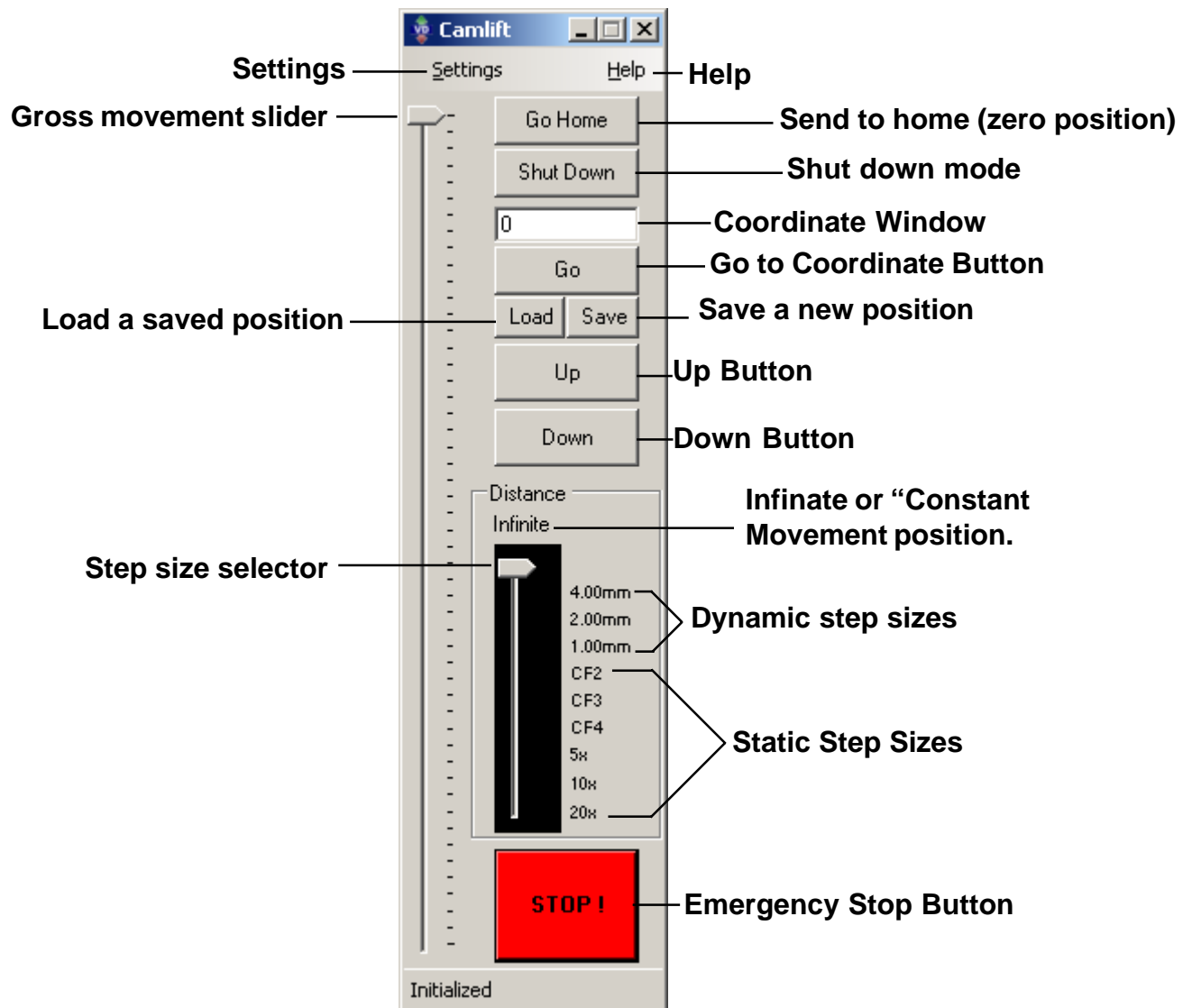


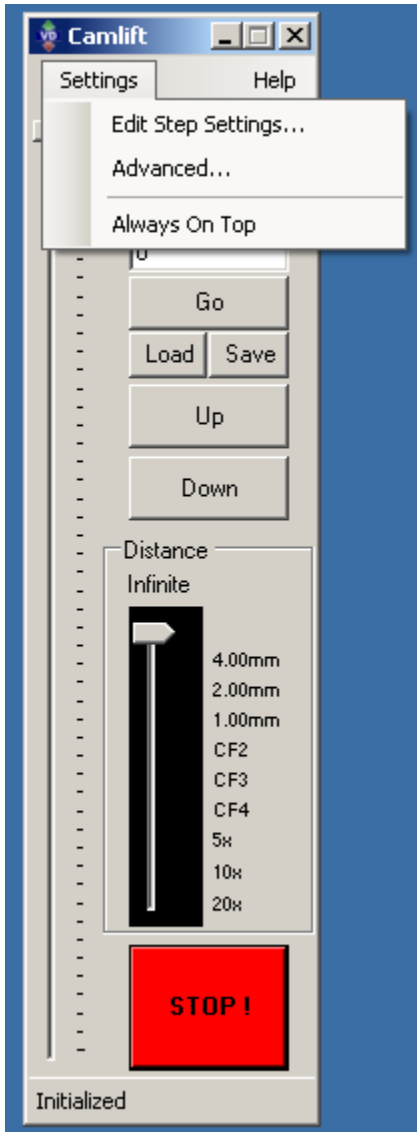
Click OK

The CamLift Carriage will run to the top and stop at the top limit switch. The GUI will appear on screen and the coordinate window will show a value of zero as the position.



Basic Interface Overview.





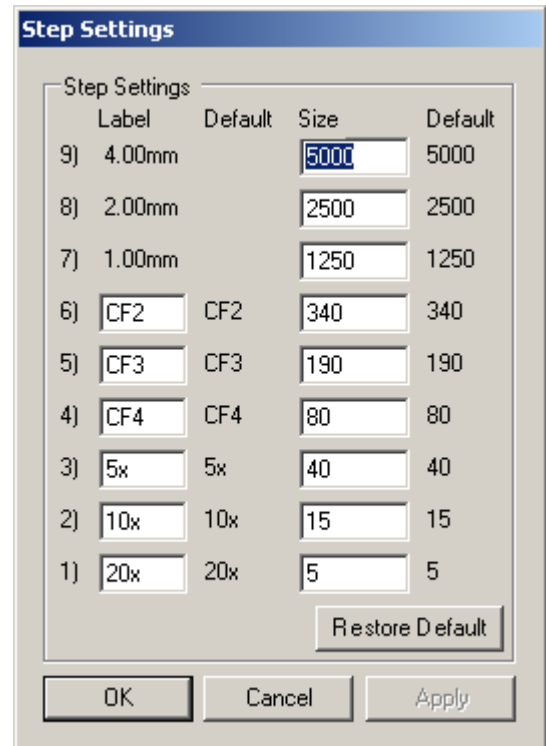
Settings:

Under the “**Settings**” tab there are three options.

The first is **Edit Step Settings**. This will allow you to customize the size of any given step as well as assign a custom name to that step.

Advanced. These settings deal with how fast the lift can run as well as how fast or slow it starts and stops. These settings should not be changed unless there is a specific reason to do so.

Always on Top. When this is checked the P-51 CamLift control or GUI will always stay on the foreground of the screen. Uncheck it and it will revert to the background anytime another program is selected.



In “**Step Settings**” You have two columns. The left column lists the **Label** or descriptive name of the step. Example. **4.0mm** moves the lift 4 millimeters. **CF2** moves the lift the a distance equal to the depth of field of the CF2 at Maximum magnification.

The right column lists the **Size**, or number of micro steps the motor moves to achieve the distance listed on the left. Example, in order for the lift to move up or down **1.0mm** the motor must deliver **1,250** micro steps.

Step sizes #7,8,and 9 are “**Dynamic**” they will read on the GUI in millimeters relative to the number of micro steps placed in the “Size column on the right. Example. If you change the number of micro step listed for the 1.0mm movement from 1,200 to 1,875 the 1.0mm will change to 1.5mm on the GUI. This is the same for the Dynamic steps.

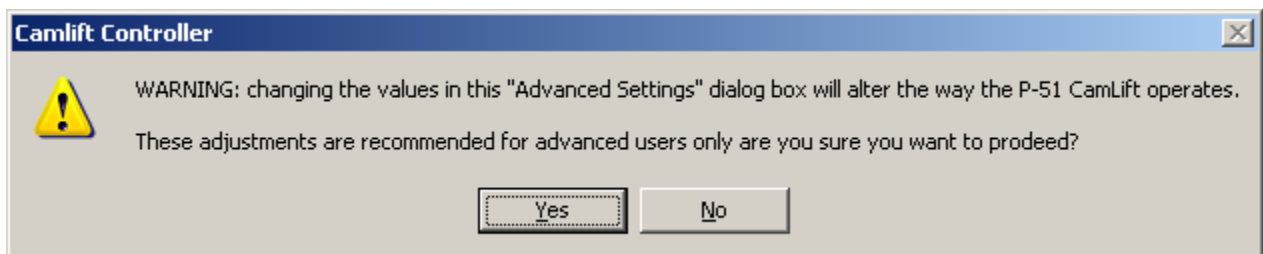
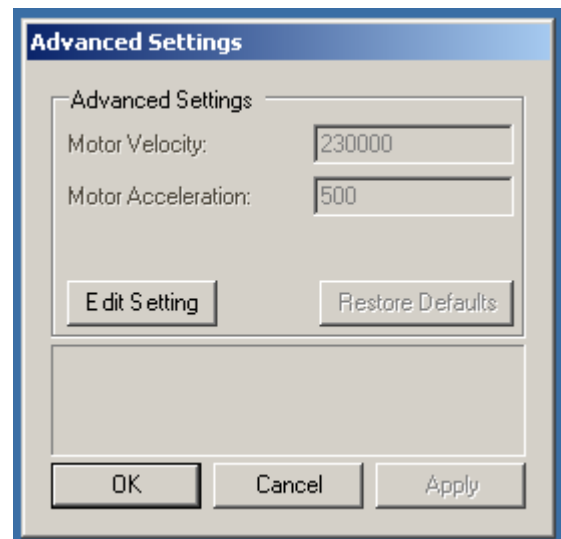
These settings are typically used to accommodate the variety of macro lenses, Magnification ranges and depth of field variants. Once you choose a lens, magnification and aperture setting you have removed the variables and should make a step size that covers your depth of field with 10-15% overlap

Step sizes 1-6 are “**Static**” They are marked with the systems objective numbers. the default values are set to the minimum depth of field of each objective. For composite work this guarantees a slight overlap of image detail. These values can also be changed. a good example would be if you are shooting a number of images with one of the CF objectives at its lowest magnification (higher depth of field) and are stopping down the iris (More depth of field) you might decide to make the step size a bit larger to minimize the number of images in a composite stack. At this point you might consider increasing the number of micro steps for that objective by 10% at a time and check after you have taken a couple of images to determine the overlap.

You can rename the objectives if you wish. Example, If you are using the CF3 objective only for a series of images but require its lowest, and highest magnification as well as stopping down the Iris, you might consider this. Change the micro step value for CF2 and CF4 to work with your lowest and highest mag .You could now name CF2, CF3 Low and rename CF4 to CF3 Hi. This option lets you set and use multiple settings on the fly for a single objective.

“Settings Advanced”

When you select **Advanced** under **Settings** this is the window you will see. Click on **Edit Setting** and the warning dialog box will appear. Click **Yes** to proceed.



Motor velocity

Advanced Settings

Advanced Settings

Motor Velocity:

Motor Acceleration:

Increasing this value will speed up the lift; decreasing the value will slow it down.

Motor Acceleration

Advanced Settings

Advanced Settings

Motor Velocity:

Motor Acceleration:

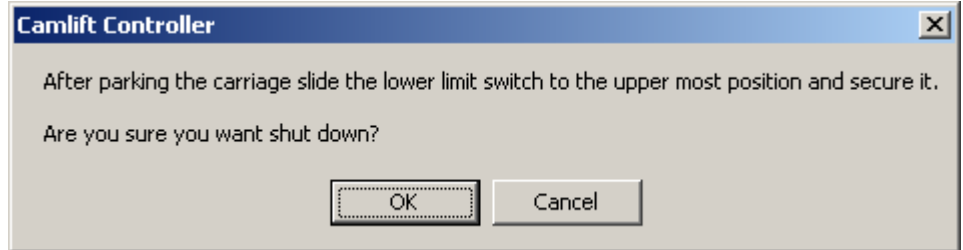
A lower value will cause the motor to slow or ramp down before stopping. It will also cause the motor to ramp up prior to full speed.

Go Home Button:

The Home button will send the carriage to the top of the actuator (Home) and reset the Coordinate to Zero. (0)

Shut Down

This command will terminate the session and send the lift to an upper most position. It will instruct the user to slide the lower limit switch knob to its uppermost position prior to shutting down the system.



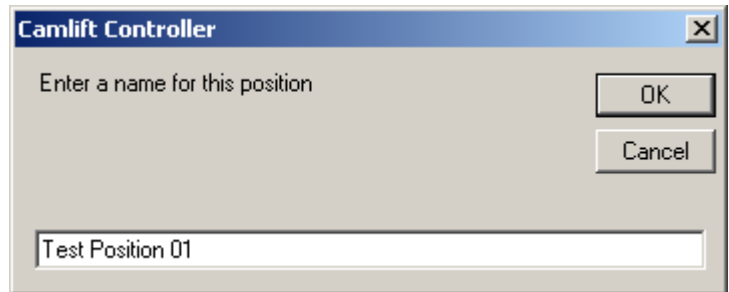
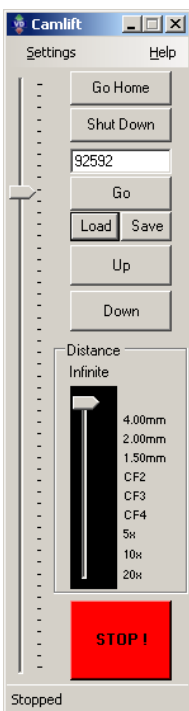
Coordinate Window:

Coordinate Window

When the Carriage in the "Home " position the coordinate window will read 0 . As the carriage moves down, the numbers of micro steps increase. If you need to have the carriage return to an exact position at the end of a series of moves you may type the coordinate you want into the window and click (GO). The carriage will return to the exact spot.

Save

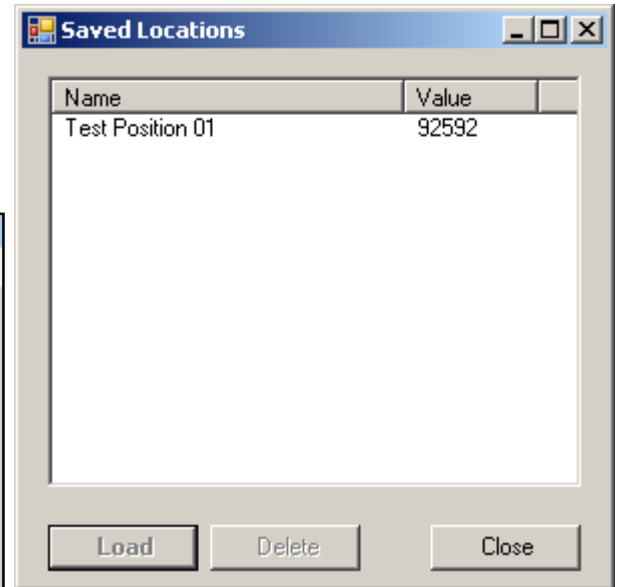
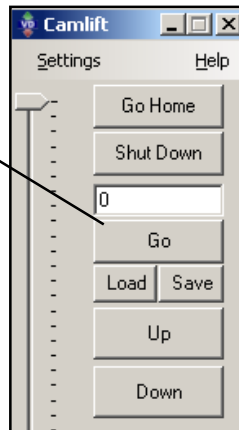
When you want to save a position so that you can come back to it again simply click the **Save** button. Then name your position and click **OK**. For an example we label this position "Test Position 01" Note the coordinate window displays the position as **92592**.



Load

When you click the **Load** button, a window appears showing you all saved positions with names and coordinates. select the one you want and click Load or just double click your selection.

Next you simply Click **GO** on the main GUI and the lift will move to the saved location.



UP and Down Buttons:

Duh.

Step size selector:

When this slider is set all the way to the top the movement will be in Infinite mode. Moving it down will allow you to select the single step size you want.

Infinite or “Constant Movement position:

This is the default position of the step size selector when you first start the P-51. This setting will allow you to click and hold either the up or down buttons to control movement. As long as you hold down the button the carriage will move. It will stop only when the button is released or when it reaches the travel limit.

Gross movement slider:

This slider bar allows you to click and drag the indicator to an approximate position in order to move large movements without needing to hold the up or down button in infinite mode. It is handy after close up high mag work is finished and a lens change may be desired. By dragging the slider to a point near the top, the carriage will move until it reaches that point and stop.

Emergency Stop Button:

If you for any reason need to stop the carriage movement, click on the Emergency Stop **button**.

Let's practice:

Grab the **Gross Movement Slider** bar by clicking on the slider and dragging it about 1/2 of the way down. The carriage will move to that point and stop.

Next, noting the step size is in the Infinite position, click and hold the **Down** button until the carriage moves a couple of inches or so and release it. Now try it in the **UP** position. Now bring the Carriage to the top by clicking Home.

We need to address the lower limit stop.

Loosen the **Lower Limit Adjustment Knob** and slide it up the side of the P-51 about 4 inches from its highest possible position. Tighten the Knob.

Now press and hold the **DOWN** button and watch as the carriage moves down. Keep holding the button and the carriage will stop when it senses the lower limit. at this point you can only move **Up**. unless you loosen the limit knob and lower it.

This device will prevent you from accidentally driving the front of your lens into your work if you set it.

IMPORTANT: You should always set the lower limit stop so that the carriage with camera and lens attached can not come in contact with your subject or work materials. Note the simple instructions on page 6 "Lower Limit Adjustment Knob."

At this point you are ready to mount your camera and start shooting.