Data i/o's

FLX500™
Operator's Guide

w w w . D a t a i o . c o m

PN 096-0258-001

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C o n t e n t s

Chapter 1

Running a Job
and Overview

Warnings and Cautions

|		
⚠️	**Electrostatic Discharge**	**Electrostatic Discharge (ESD) may cause damage. Discharge static electricity to a common ground.**
⚠️	**Crush Hazard**	**Moving machine parts can cause injury and can move without notice. Keep clear and keep cover closed while operating.**
⚠️	**Heavy**	**Do not attempt to lift the FLX500 alone—requires two people. Do not attempt to lift the FLX500 with the modules in place— remove all modules first.**
⚠️	**High Voltage**	**Do not remove covers. No user serviceable parts.**
⚠️	**Radio Interference**	**This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

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FLX500 and TaskLink
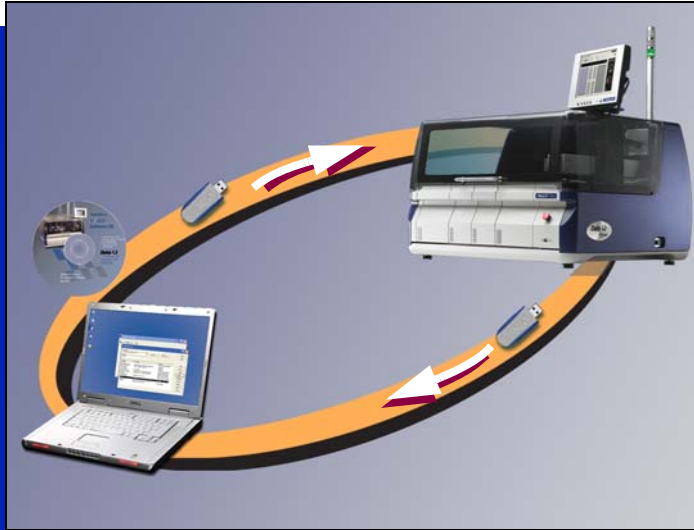
The Data I/O FLX500 is a desktop solution for production programming and handling of semiconductor devices.

TaskLink™ for FLX500® (included on a CD for installation on an external PC) is software required to create and manage jobs to run on the FLX500. A job is all the information required to program a specified number of devices.

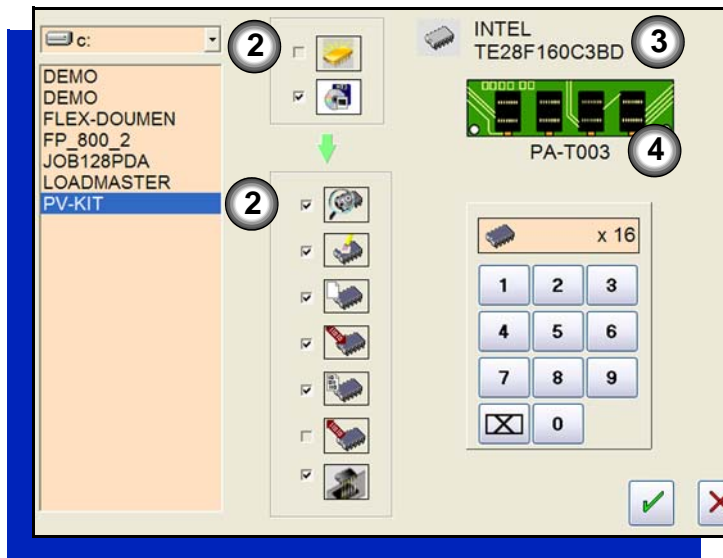⚠ ***»»» CAUTION ««« FLX500 file corruption possible. Do not install TaskLink onto the FLX500.***

A USB drive (or network) is used to transfer jobs (and software) between TaskLink and the FLX500.

To create a job in TaskLink, see or the Help file within TaskLink. ∎

Running a Job

With the FLX500 set up (see page 15 to install modules and page 22 to install Socket Adapters) and ready to run a job:

> ⚠️ *»»» CAUTION ««« Electrostatic Discharge may cause damage. Discharge static against a common ground or use a wrist strap. A ground connection is on the front of the unit.*

1. **Press the** Job File **button.**

2. **Select a drive and your job file name;** PV-Kit**, for example.**

3. **Place a tray of input devices on the left Tray Module with the bevelled corner to the far left. Ensure that the devices match the part number in the dialog.**

4. **Verify that the Socket Adapter number in the dialog matches the number on**
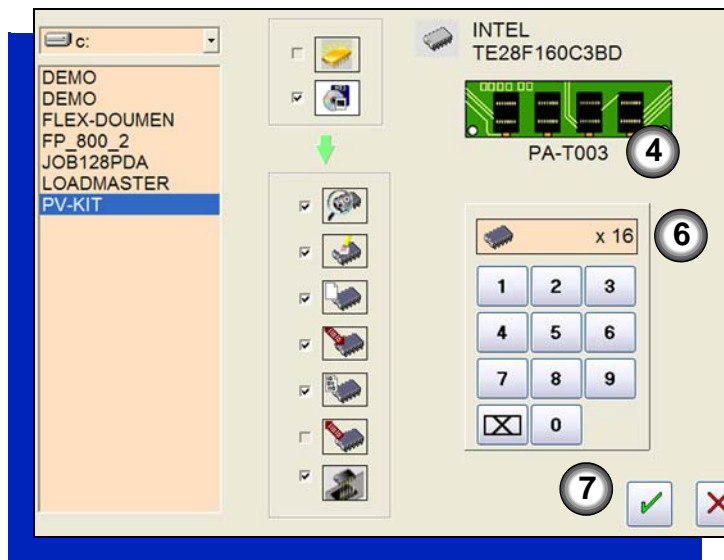
all the installed Socket Adapters. If not, or if they are not installed,

5. **Load a blank tray onto the right Tray Module.**

6. **Enter or edit a pass quantity if it is not already set.**

7. **Press** OK **[✓].**

8. **Set pin 1 orientation.**

9. **Press** Start Job **[▶]. The progress bar will clear just before starting.**

   If a message appears indicating that you need a Tray Map, ∎

FLX500 Operator's Guide
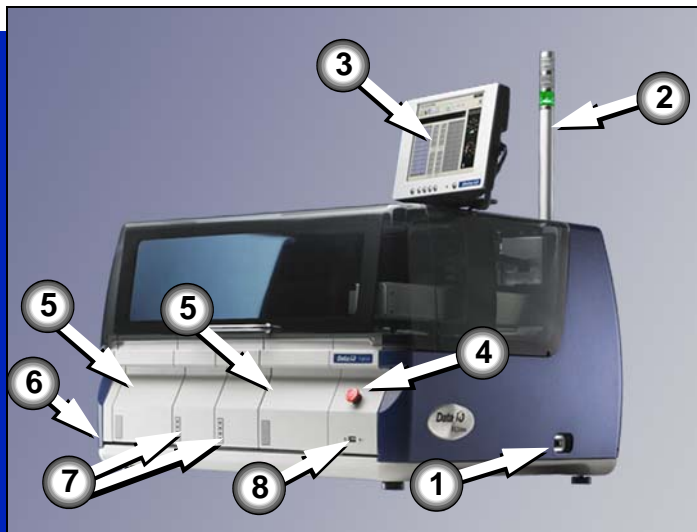
Use TaskLink to Create a Job
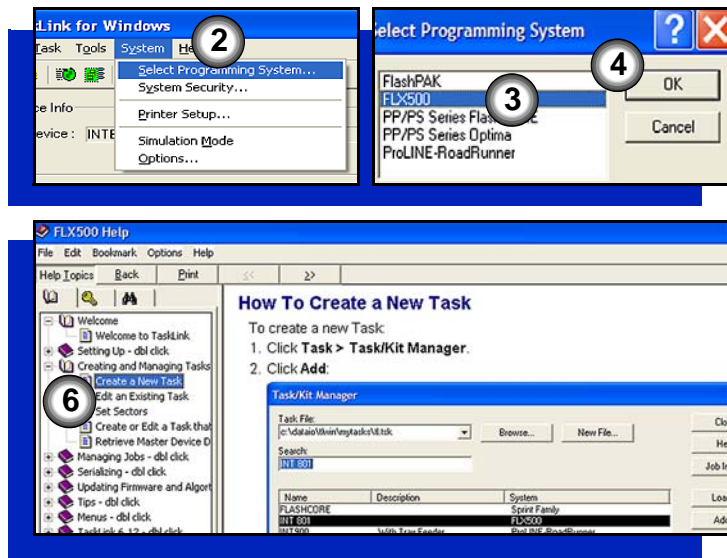
Within TaskLink there is a Help file to assist you in creating a job. After TaskLink is installed on a PC:

1. **Double-click the TaskLink icon.**

2. **Under the System Menu click** Select Programming System.

3. **Select** FLX500**.**

4. **Click** OK**.**

5. **Under the Help Menu select** Help Topics**.**

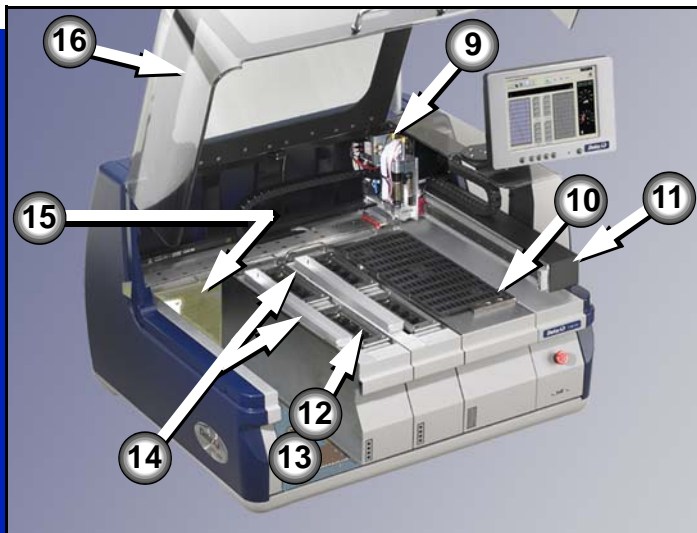6. **In the list of Help topics select** Creating and Managing Tasks **>** Create a New Task**.** ∎

Feature Locator

1. **Power Switch (momentary rocker switch)**
2. **Light Tower**
3. **Monitor**
4. **Emergency Stop (E-Stop)**
5. **Tray Modules**
6. **Static Ground connection**
7. **Programmer Modules**
8. **USB Port**

9. **PNP Head**

10. **Tray Magnet**

11. **Gantry**

12. **Socket Adapter**

13. **Actuator Plate**

14. **Reject Bins**

15. **Communication wall (Serial Number)**

16. **Cover**

Socket #1 (with four adapters installed)
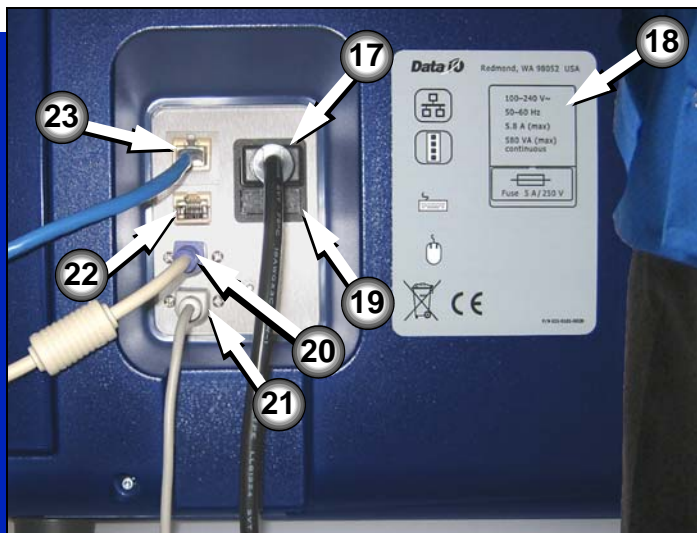
17. **AC Power connection**

18. **Power requirements**

19. **Fuse compartment**

20. **Keyboard[1] connection**

21. **Mouse[1] connection**
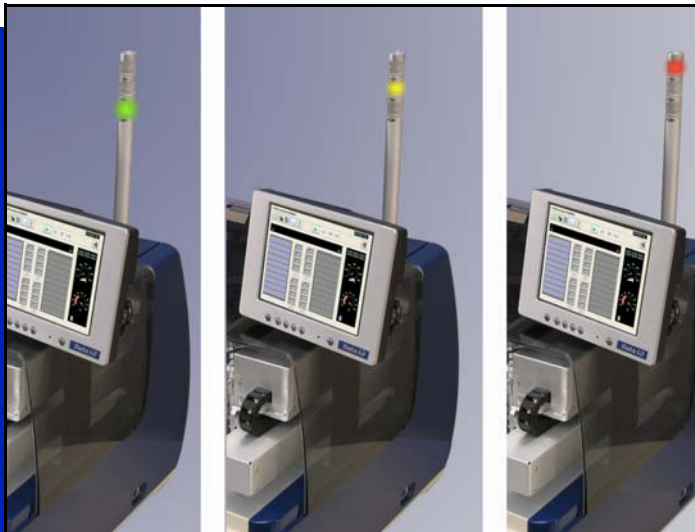
22. **Serial Number Server[1] Port**

23. **Ethernet[1] Port**
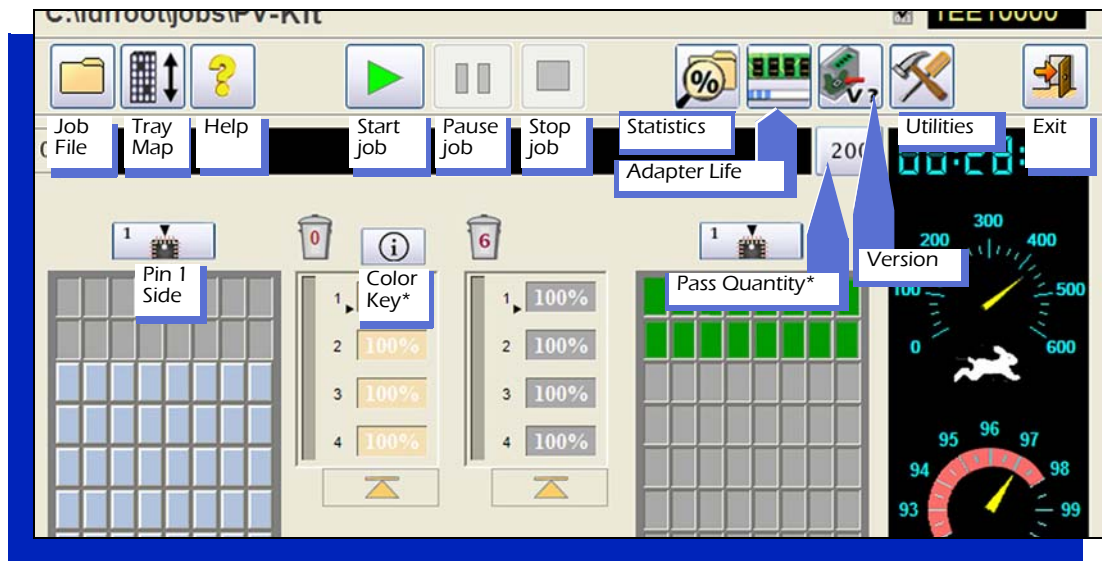
[1]Not required to run a job. ■

Tower Lamp Interpretations

- **Green** - Normal (programming). No operator action is needed. Also, it is okay to remove the USB memory stick.

- **Yellow** - Normal stop such as *output media full* or *input media empty*. Operator assistance is imminent. Also lights when files are being transferred— do not remove the USB memory stick.

- **Red** - Programming or current operation has stopped (or cannot begin). Operator assistance needed or service is required. ∎

Button Names

C:\drrootjobs\PV-Kit

| Job File | Tray Map | Help | | Start job | Pause job | Stop job | | Statistics | | Utilities | Exit |

Adapter Life

Pin 1 Side

Color Key*
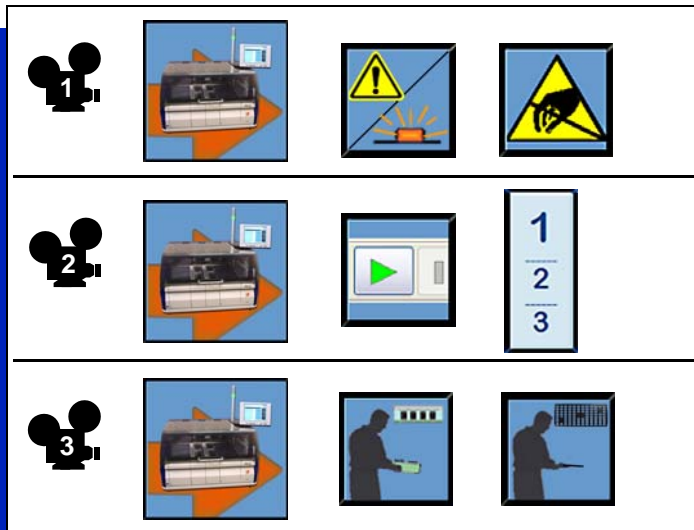
Pass Quantity*

Version

* Some versions only ■

Paths to Videos

Click these icons in the on-screen Help to view videos corresponding to the text noted.

(To open the Help, click the question mark on the main window.)

1. Plugging in an antistatic wrist strap.

2. Selecting a job and pass quantity.

3. Installing a Tray. ∎

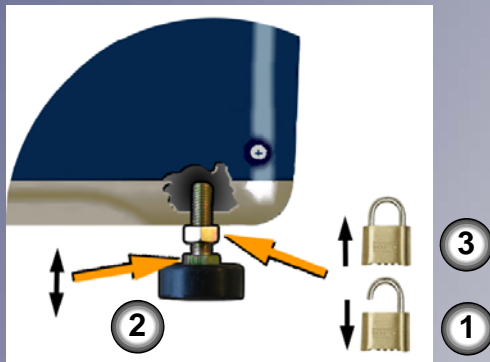**Chapter 2**

Machine Setup

# Leveling

Place the FLX500 on a solid, level surface.

> *»»» CAUTION ««« Heavy. Requires two people to lift. Remove all modules prior to lifting. 38 kg (84 lbs) without modules.*

The machine was leveled prior to shipping. Ensure that it is still level. If it is not, then level your table or adjust the feet of the FLX500.

To level with the feet:

1. Loosen the locking nut.

2. Rotate the foot up or down as required.

3. Tighten the locking nut. ■

Installing the Modules
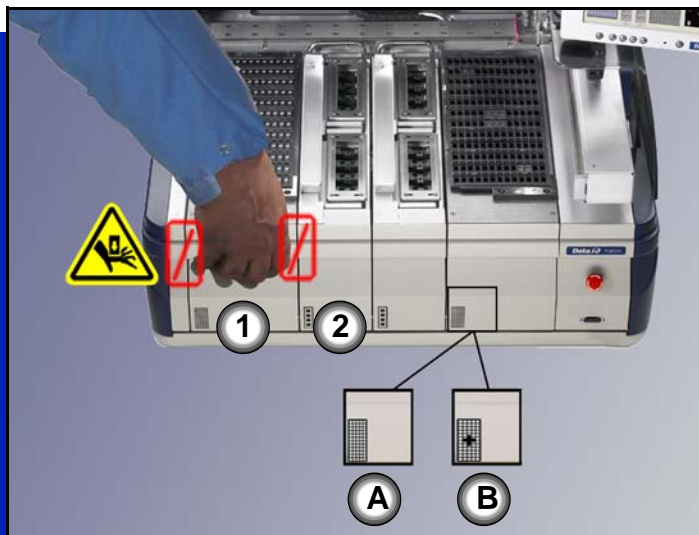
To install the modules (power can be on or off):

> **»»» CAUTION ««« *Pinch Point. As you grasp the module (installing or removing), do not let your hand extend beyond the sides of the module or it will get pinched.***
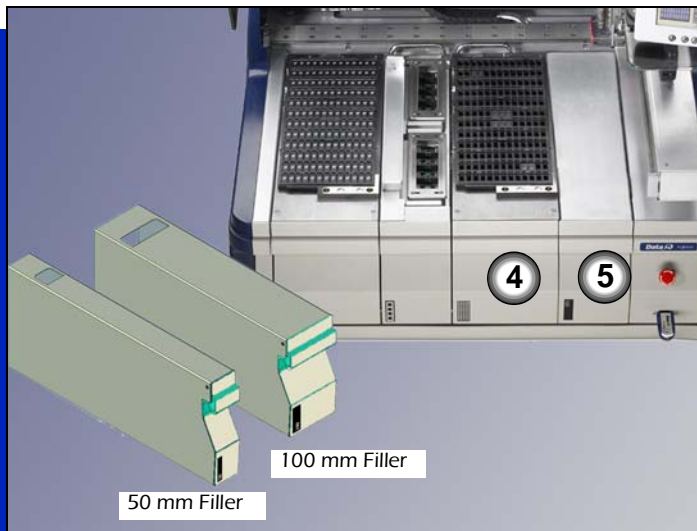
1. Install a Tray Module (without a tray) on the left side. Depending on your tray, use the standard size module (A) or oversized module (B).

> **»»» CAUTION ««« *Programmer Modules are heavy— 6.3 Kg (15 lbs). Grasp firmly.***

2. Install a Programmer Module next to the Tray Module.

100 mm Filler

50 mm Filler

3. **If you have two Programmer Modules, install the second one next to the first.**

4. **Install another Tray Module for the output.**

5. **If you have only one Programmer Module (as shown) or use oversize Tray Modules, install the appropriate Filler Module in the empty space on the right.** ■

Switching on the Power

The color key

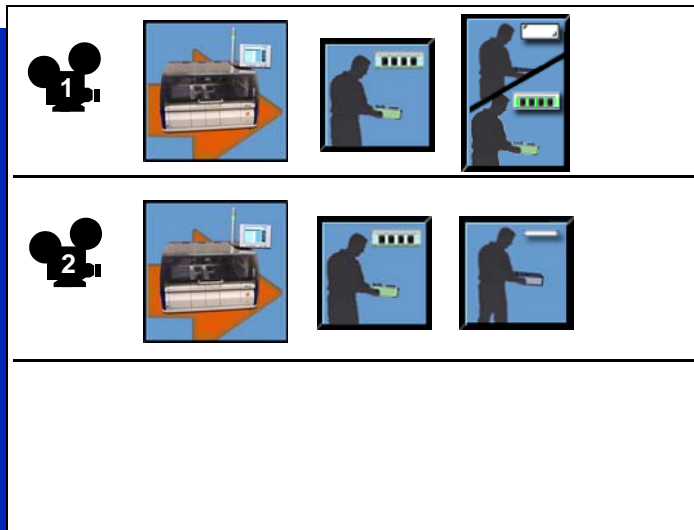**Power can be switched on or off without modules or Socket Adapters installed.**

1. **To switch the power on, push the power switch and release it.**

Socket status is displayed on the main window with color. Press the i button (i) to see the color key (some versions only). ■

Paths to Videos

Click these icons in the on-screen Help to view videos corresponding to the text noted.

(To open the Help, click the question mark on the main window.)

1. **Installing Programmer and Tray Modules.**

2. **Installing Filler Modules.** ■

Chapter 3

Job Setup

Removing a Socket Adapter

»»» CAUTION ««« **Electrostatic Discharge may damage adapters and devices. Discharge static against a common ground or use a wrist strap.**
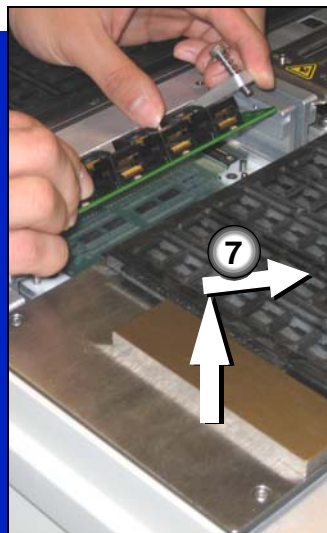
NOTE: The correct Socket Adapter ID number for the selected Job is displayed on the Job File **dialog.**

To change the Socket Adapter:

1. **Stop or Pause a job (see).**

2. **Open the cover.**

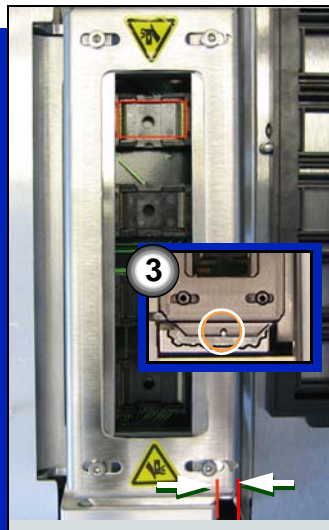3. **Remove the Reject Bin(s).**

»»» CAUTION ««« **Pinch point. Keep fingers away from the Actuator Plate when pushing the** Actuator Down **and** Actuator Up **buttons.**

4. **Ensure that the Actuator is in the up position (sockets closed). If it is not, then press the** Actuator Up **button for the appropriate Socket Adapter.**

5. **Slide the Actuator Plate out of the grooved bracket.**

6. **With a 4 mm Allen Wrench (Hex key driver), unscrew the two screws and lift the Adapter Bracket.**

7. **Without touching the gold surfaces on the bottom of the Socket Adapter, lift it up off the dowel pins, and out.** ■

Installing a Socket Adapter

To install a Socket Adapter, perform steps 1 through 7 for *Removing a Socket Adapter*, and then:

1. Insert the correct Socket Adapter, making sure that it seats on the dowel pins.

2. Tighten the adapter bracket screws.

3. Slide the Actuator Plate into the grooved bracket until it snaps in place at the detent.

4. Replace the Reject Bin(s).

    NOTE: Next you must adjust the Actuator Plate for the current device: see "Adjusting the Actuator Plates" on page 23.

    NOTE: Only programmers with the correct Socket Adapters will be available for programming. ■
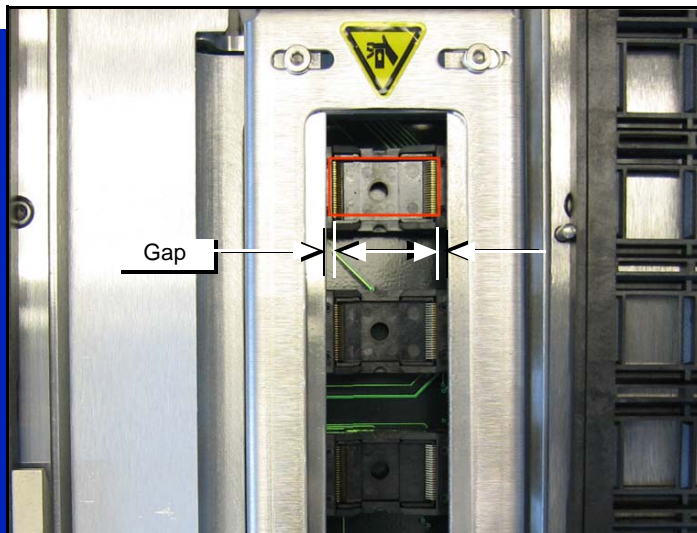
Adjusting the Actuator Plates

To adjust an Actuator Plate for your device (a job must be paused or stopped):

1. Open the cover.

2. Ensure that the correct Socket Adapter is installed.

3. Install the Actuator Plate (see step 3 on the previous page).

4. With a 2 mm Allen Wrench, loosen both screws for one sliding bar and slide it inboard (toward center) as far as it will go.
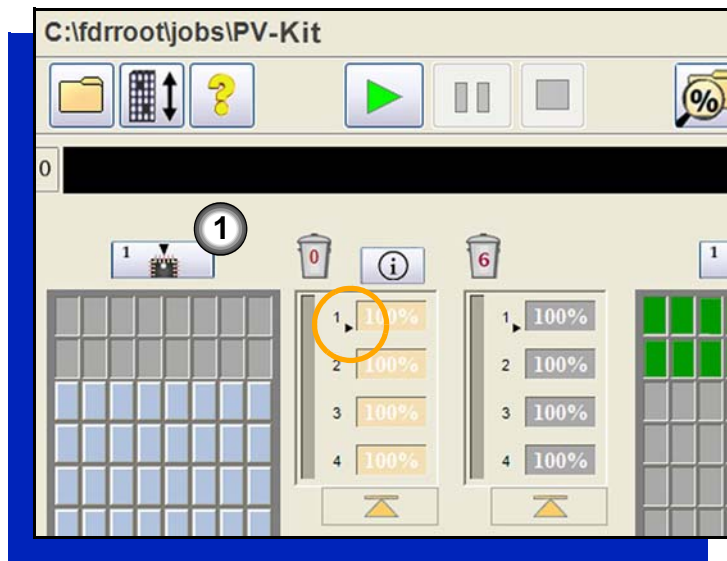
Gap

5. Then slide the bar outboard just far enough to allow a device to fit into the socket.

6. Tighten the two screws for that bar.

7. Perform steps 4, 5 and 6 for the other bar.

   NOTE: All programmers to be used must have correctly adjusted Actuator Plates. ■

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Pin 1 Orientation

After placing a tray full of your target devices onto the left Tray Module, and an empty tray onto the right Tray Module:

1. **Set pin 1 orientation with the** Pin Orientation **button. The black triangle on the button points to the pin 1-side of the device. It should match the orientation of the devices in the tray. If it does not, click the button until the arrow points to the correct side.**

   NOTE: A job must be Paused or Stopped before setting Pin orientation.

The main window indicates the side of the programmer where pin 1 will be placed (some versions only). This is useful for manually placed devices such as when programming from a master device. ∎

Updating Software

When future FLX500 updates become available, you can update the application software, System firmware, or the firmware for the FlashCORE programmers (for current version see):

1. At a computer, download the update files to a USB memory stick (one was included with the FLX500).

2. With the power off, insert the USB stick into the FLX500 (see).

3. Install the Programmer Module(s) in either of the two center positions.

4. Switch the power on (press and release the switch once).
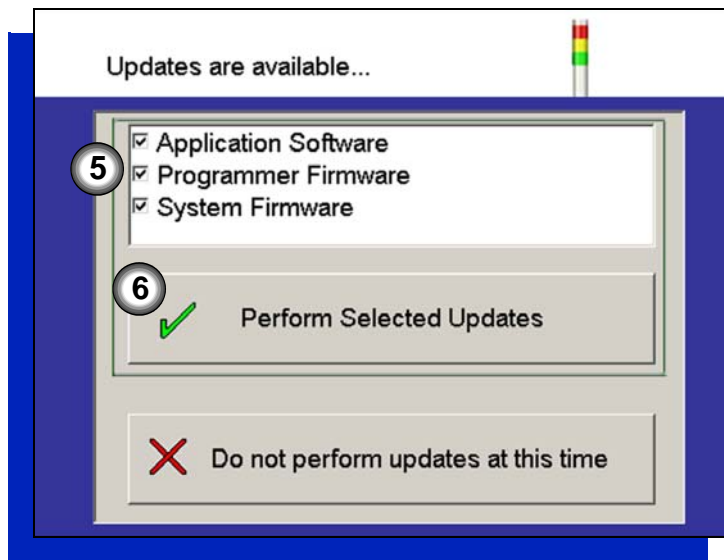
5. **When the update dialog displays, check or uncheck the items as desired (checking all items recommended).**

⚠️ *»»» CAUTION ««« Programmer corruption possible. Do not interrupt machine power during update.*

6. **Push** Perform Selected Updates **and wait for it to complete. The machine will restart.**

   NOTE: If you have other FLX500 Programmer Modules, updating all of them to the same version is recommended. ■

Paths to Videos

Click these icons in the on-screen Help to view videos corresponding to the text noted.

(To open the Help, click the question mark on the main window.)

1. **Changing a Socket Adapter.**

2. **Adjusting the Actuator Plate.**

3. **Setting Pin 1 orientation.**

4. **Updating Software.** ■

Chapter 4

Operation

Entering Tray Dimensions

To enter tray dimensions:

> *NOTE: You must have the tray specifi-cations sheet or an accurate measuring tool such as a caliper.*

1. **Click the** Tray Map **button.**

> *NOTE: If there are no existing tray dimensions, the boxes in the Tray Map dialog will display zeros (as shown).*

2. **Enter the number of rows and columns by pushing (clicking) the boxes in the dimension lines.**

3. **Enter accurate dimensions for M, M1 + Tab, M2 and M3.**

   Watch the video in the on-screen Help

to see a method of reducing measurement error by measuring more than one pocket and dividing the sum by the number of pockets.

NOTE: Not all trays have a tab on them, in which case M1+ Tab is the same as M1.

4. Click OK [✓]. ∎
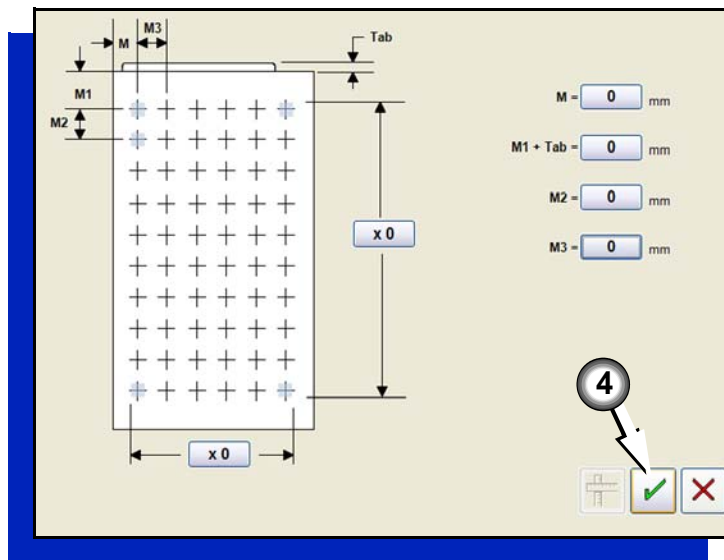
Pausing and Stopping Jobs
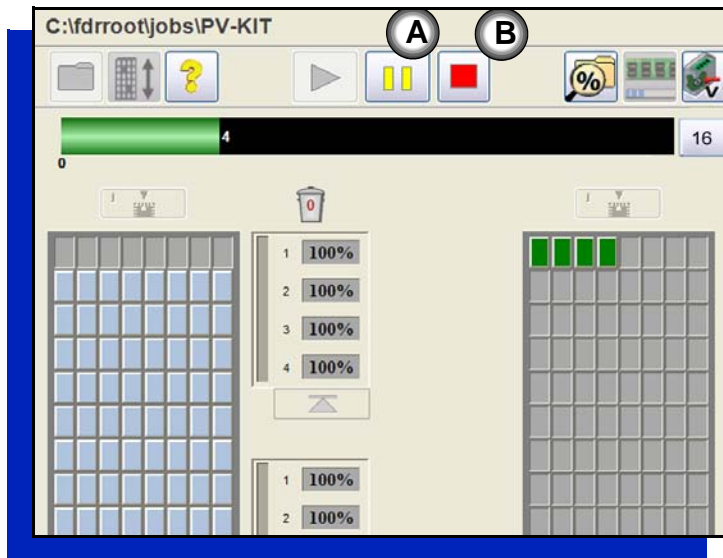
A job ends when it programs the *Pass* quantity.

You can stop a job before it ends by pushing the Stop Job **Button (B). However, pushing** Stop Job **ends the statistics report and internally resets the count of programmed devices to zero.**

The next time you push Start Job [▶] , **the count will start at zero.** Stop Job **also removes devices from the programmers and probes.**

Pause a job by pushing the Pause Job **Button (A).** Pause Job **does not end the statistics report and will continue the** *programmed devices* **count if you push** Start **again (without pushing** Stop**).**
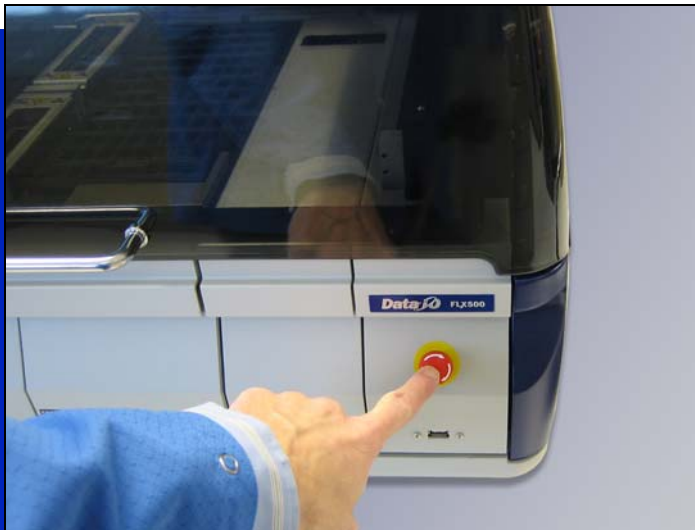
Pause **does not remove devices from the programmers or probes.**

Pushing the Emergency Stop will stop the gantry immediately. It does not clear devices from the programmers.

»»» CAUTION «««   Pinch point. Pushing the Emergency Stop button does not remove power from the programmers—the Socket Actuator will still move down and open the sockets if the button on the screen is pushed. Keep fingers, arms, and clothing away from the adapter area.

To recover from an Emergency Stop, twist the button clockwise until it pops outward.To restart programming, follow the on-screen instruction. ∎

Changing the Pass Quantity
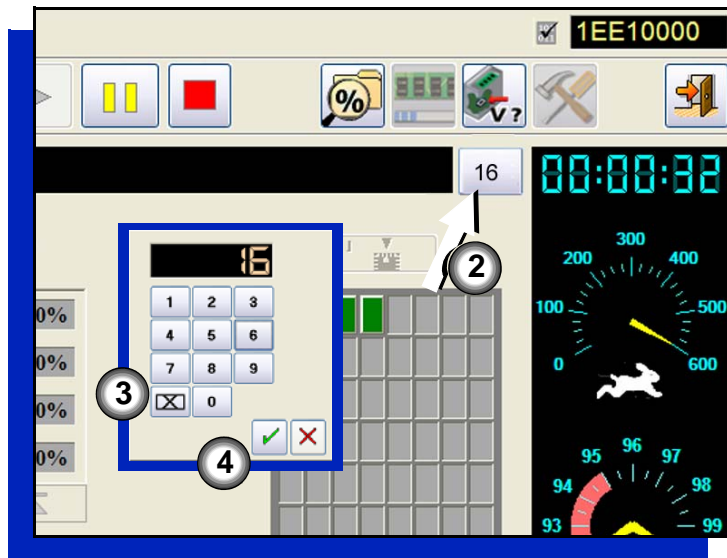
To change the *Pass* quantity (number of devices to program) . . .

. . . before starting the job:

1A. Push the Job File **button.**

2A. Use the calculator to set the new *Pass* quantity. (The keypad X deletes the current number.)

. . . after starting the job (*some versions*):

1.   Push Pause Job**.**

2.   Push the Pass Quantity **button.**

3.   Use the calculator to set the new *Pass* quantity. (The keypad X deletes the current number.)

4.   Push OK **[✓]** ■

Changing Tray Pocket Status
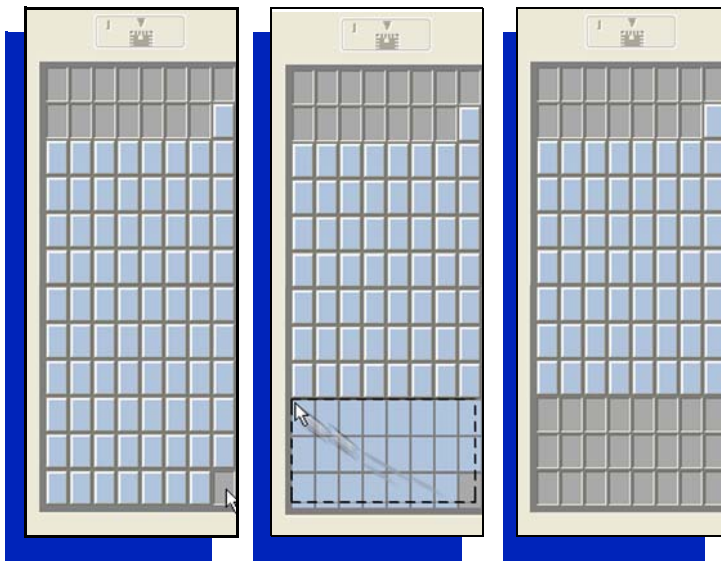
The tray images on the main window display the status of each pocket automatically. If the images do not display the current status of your trays (due to job interruptions or a new input tray that is not full) you can change the status as follows:
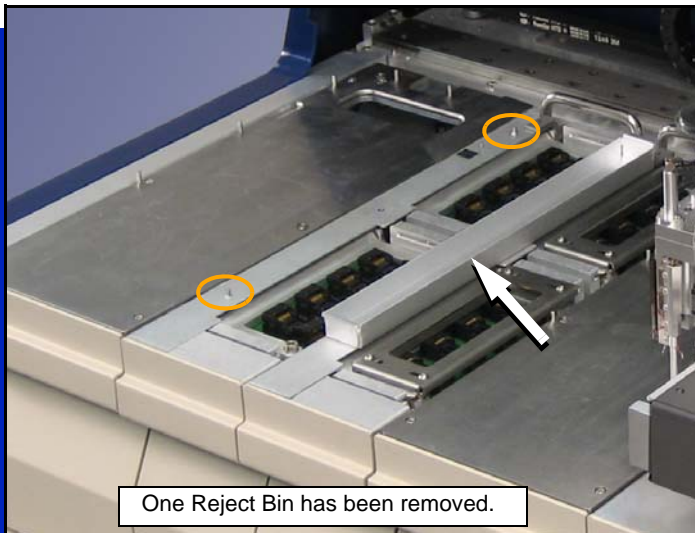
1. Pause or stop the job.

2. Push (click) an image of a device in a tray. It changes to show the alternate status—for the input tray, if it showed an unprogrammed device, it now shows no device.

    Or, to change many devices at once:

    Push and drag your finger (or stylus) to include the desired number of devices, then release. All the included pockets change to the same status as the one you started with. ■

Emptying the Reject Bin

One Reject Bin has been removed.

To empty the Reject Bin(s), lift straight up off the work surface.

> *NOTE: When the Reject Bin is removed and replaced, it is assumed to have been emptied; the Reject Bin indicator will then indicate zero.*

Replace the bin so that the two pins line up with the holes in the bin.
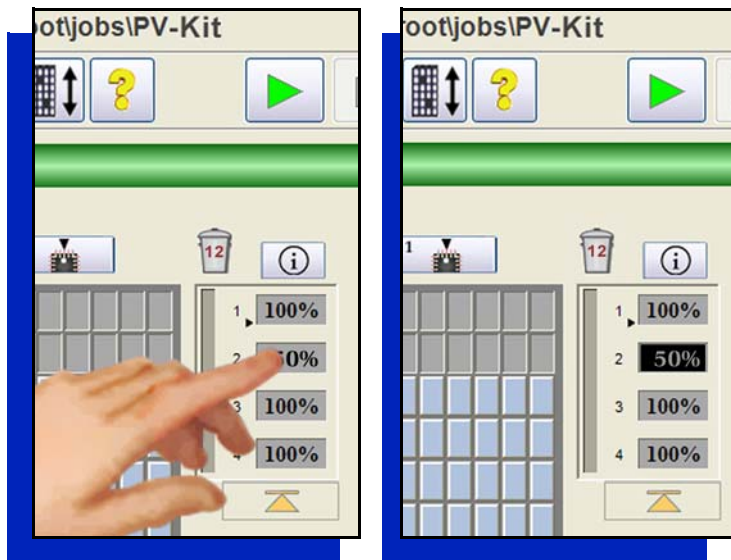
> *»»» CAUTION «««   Machine damage is possible if the bin is installed incorrectly. The gantry might strike it. Ensure that both pins mate with the holes in the bin and that the bin bottom makes full contact with the work surface. ■*

Disabling a Socket

A poorly performing socket can be disabled.

To disable a socket:

1. Pause or Stop the job if one is running (see "Pausing and Stopping Jobs" on page 32).

2. When the socket is empty, push the image of the socket on the monitor.

    The socket image changes to black.

To re-enable it, push it again. ∎

Disabling a Probe

If one of the probes is experiencing problems, it can be disabled.

To disable a probe:

1. **Pause or Stop the job if one is running (see "Pausing and Stopping Jobs" on page 32).**

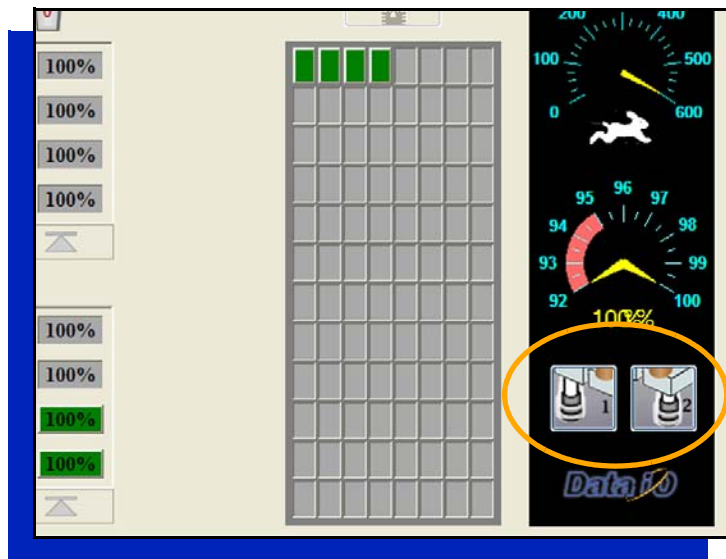2. **Push the** Disable Probe 1 **(or** 2**) button on the main window.**

To re-enable it, push the button again. ∎

Socket Adapter Life
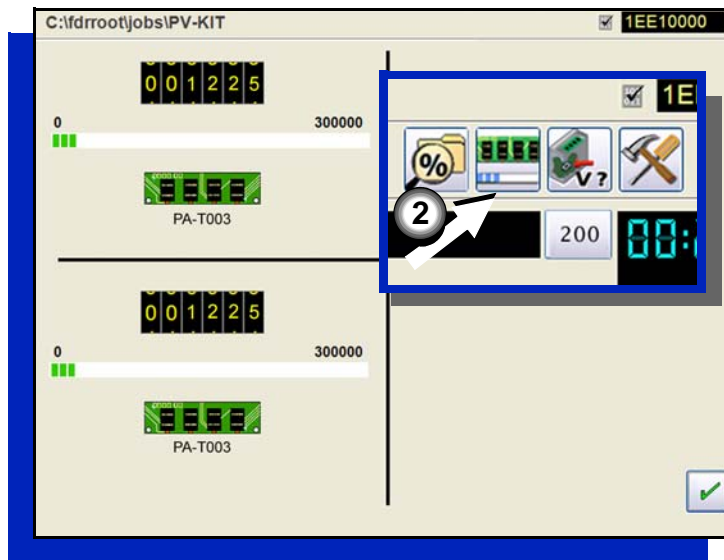
The life of each Socket Adapter can be checked by viewing the dialog displaying actuation cycles.

To view adapter life:

1. **Stop a job if one is running.**

2. **Push the** Adapter Life **button on the main window.**

When the cycle progress bar turns red, the adapter is near end of life (as determined by the socket manufacturer).

If an adapter reaches end of life, its image on the main window blinks (some versions).

Push OK **[✓] to close the dialog.** ∎

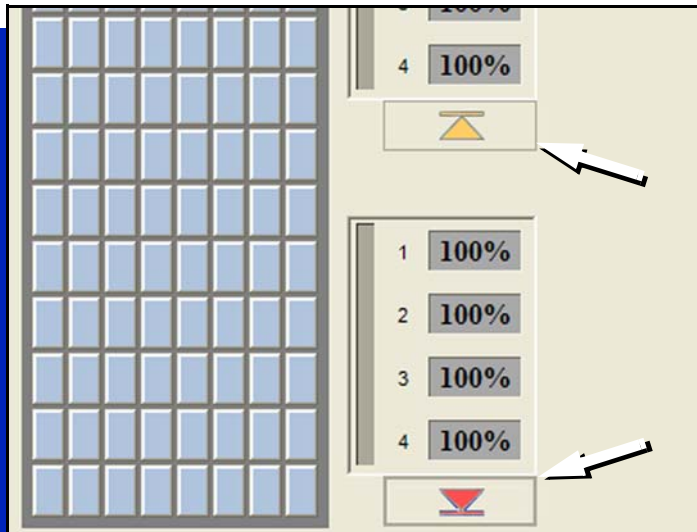# Opening and Closing Sockets

The FLX500 opens and closes sockets as needed, automatically—for example, to insert a master device (determined by the TaskLink job). If you need to open or close a socket at other times:

»»» CAUTION ««« *Pinch point. The Actuator Plate lowers when the red Socket Actuation button is pushed, and can injure you. Keep fingers, arms and clothing away from the Socket Adapter area.*

1. Pause or Stop the job if one is running (see "Pausing and Stopping Jobs" on page 32).

2. To open sockets (red) or close them (orange), push the Socket Actuation button beneath the image of the desired adapter on the main window.

   Push it again to toggle it. ∎

Viewing Job Statistics

To view job statistics:

1. **Push the** Statistics **button;**

and then to view socket statistics:

2. **Push the button for the desired socket. Information displays for that socket only.**

Push OK **[✓] to close the dialog.** ∎

Viewing Version Numbers
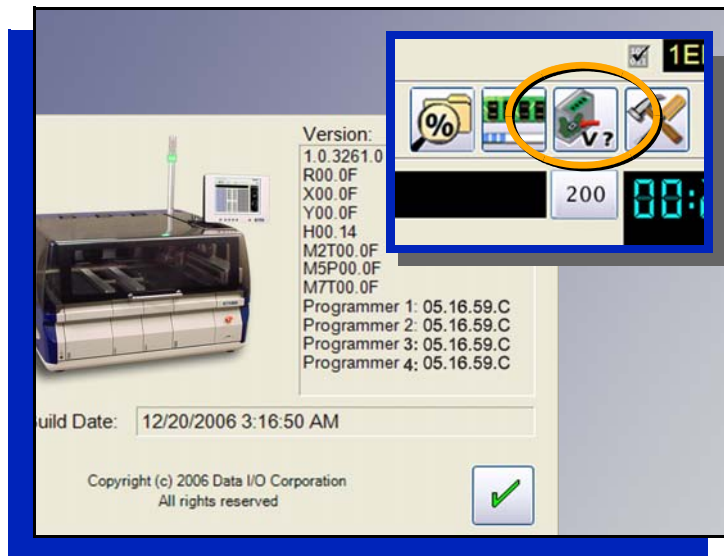
Version numbers for the FLX500, as well as for the programmers, are available from the main window:

- **Push the** Version **button.**

    *NOTE: Programmer 1 **is the far left programmer.***
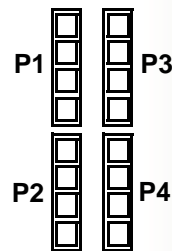
Push OK **[✓] to close the dialog.** ■

Exiting and Shutting Off
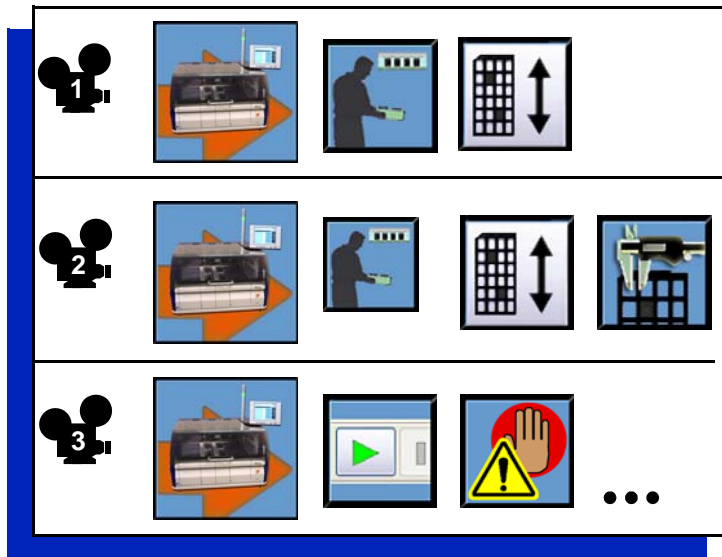
You can close the FLX500 Application without switching off the power. To close the FLX500 Application:

1. Stop the job if one is running (see "Pausing and Stopping Jobs" on page 32).

2. Push the Exit button,

   then to switch the power off:

3. Push and release the Power Switch on the right side of the machine. ■

Paths to Videos

Click these icons in the on-screen Help to view videos corresponding to the text noted.

(To open the Help, click the question mark on the main window.)

1. Entering tray dimensions.
2. Taking tray measurements.
3. Pausing and stopping jobs.
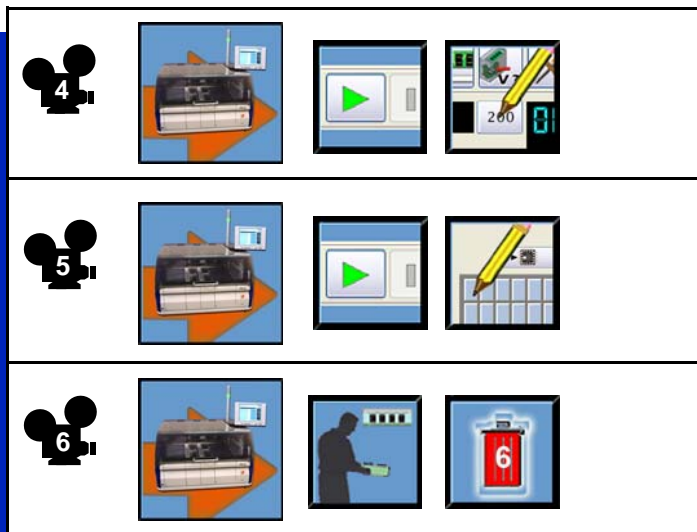
4. **Changing the Pass quantity.**
5. **Changing tray pocket status.**
6. **Emptying the Reject Bin.**
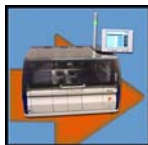
7. **Socket Adapter Life.**

8. **Viewing job Statistics.** ∎

Chapter 5

Troubleshooting
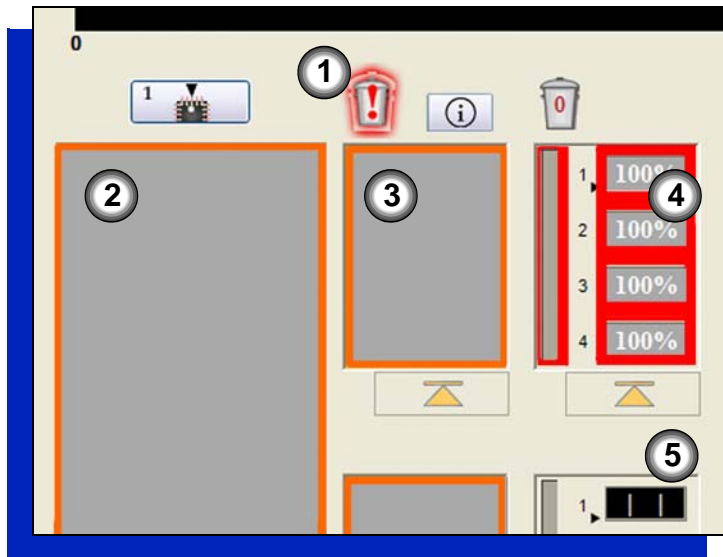
Viewing Errors

Error messages appear as dialog boxes or graphics displaying on the monitor. Remedy the condition indicated and, for dialog boxes, click OK [✓].

Some messages appear on the monitor in the real-time display of the work surface, (varies with version) such as:

1. **Left Reject Bin not installed.**

2. **No input tray installed.**

3. **No Socket Adapter installed.**

4. **Wrong Socket Adapter installed for the currently selected job.**

5. **Stacked devices in socket.**

If you cannot correct the error condition, contact Data I/O Technical Support or your Data I/O representative. ∎

Error Resolution

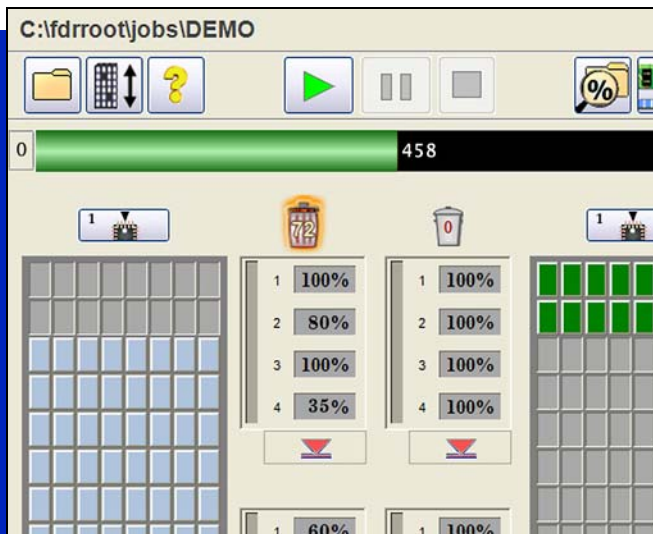| Programming Error message/graphic	Resolution
A socket displays white: Device continuity error. Device programming is automatically retried; device is rejected if error persists.	• Continue, or • **Pause** the job and check that: you have the correct device for the job (view the **Job File** window for device), orientation is correct (page 25), and pins are not bent.
A socket displays red: device program error, verify error, erase error, or blank check error.	Continue. To check for specific error, view Socket Statistics (page 41).

Non-Programming Error	Resolution
Tray appears as a solid yellow rectangle: no tray map for current job.	Enter tray dimensions at the Tray Map window (page 30).
A socket turns orange after start-up: unknown device(s) in sockets. (Skipped some Self-tests.)	• Remove the device(s) and continue programming, or • To run the Self-test fully, exit the FLX500 Application, switch the power switch Off (push and release) and then switch it On.
Head fails to identify a module fiducial.	Clean the fiducials with clean, dry, compressed air. Retry.
Input or output tray is blinking: the tray is empty/full.	Replace the tray.
Device placement errors in all sockets.	Check the Actuator Plate adjustment (see page 23).

Non-Programming Error	Resolution
All sockets are disabled.	• Re-enable the sockets and clean them, or • replace the Socket Adapter with a new one.
The gantry failed to home.	• Release the E-Stop, or • Manually move the gantry several cm by pushing the E-Stop first, pushing the gantry, then releasing the E-Stop.
No Socket Adapter.	Install the correct Socket Adapter. See the job dialog for adapter identification.
Reject Bin is full.	Empty the Reject Bin(s) by lifting it up off the pins and dumping the contents.
No job selected.	Go to the job dialog and select a drive letter and job name. Click the **OK** [✓] button. ∎

Troubleshooting Tips
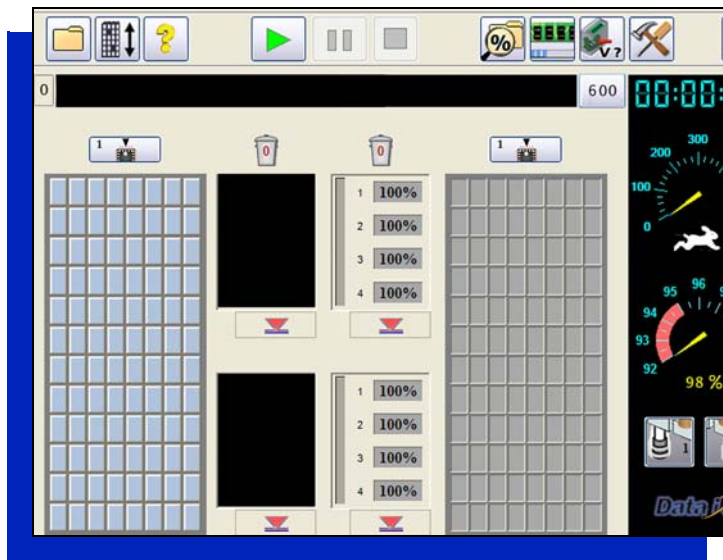
If you experience communication problems, the red tower lamp lights and the programmer image turns black. To see if the problem is related to a Socket Adapter or a programmer:

1. Remove both Socket Adapters (see "Removing a Socket Adapter" on page 20).

2. Remove the Programmer Module.

3. Re-install the module. Red adapter images may appear indicating missing adapters.

If the programmer still displays black, contact Data I/O Support (page 53). If the image is no longer black, the Socket Adapters may be causing the trouble. Confirm this by re-installing the adapters to see if the problem returns. ∎

Correspondence

Many questions can be answered by visiting the Knowledge Base on our Web site. In your browser address line enter: www.dataio.com/support then click **Knowledge Base**.

Register and log in, or log in anonymously.

If you wish to contact Data I/O Technical Support or a service center see the next page. Please remember to include the following:

- FLX500 Serial Number. It is printed on the communication wall of your machine.

- The error message text (or graphic) if there is one.

- Device manufacturer and part number if device related.

For the latest version of this guide, click **Support**, then **Operator Manuals** on our Web site.

Technical Support

Contact your local Data I/O representative.
To find your local representative, visit
http://www.dataio.com/contact/repsearch.asp
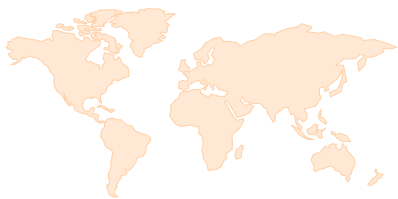
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