



3

Applications Overview

Overview

Introduction

This chapter explains how to set up for a new board and define parameters for tooling, vision, squeegees, stencil cleaning and related operations.

In this chapter

This chapter is divided into the following sections:

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Setting Up the Vision System	27
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PCB Information

Introduction

To enter PCB information, select *Product information* from the *Setup* menu, or click the Edit PCB Information icon:



The options available under the *Setup Product Information* window are organized into three tabs depending on the system configuration:



ATTENTION

The Stencil Position tab only appears on machines with manual stencil positioning.

In this section

Refer to the following:

	Topic	See Page
	PCB Tab	3
	Stencil Tab	5
	Stencil Position Tab	7



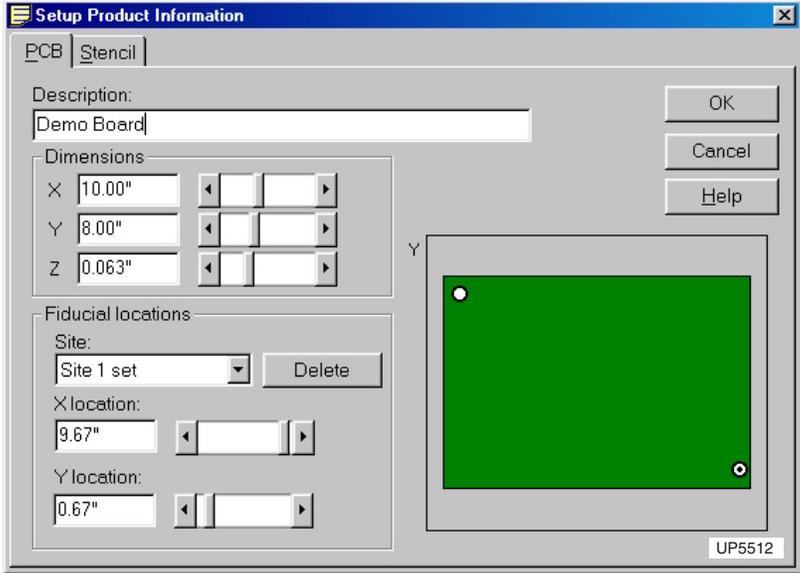
PCB Tab

Introduction

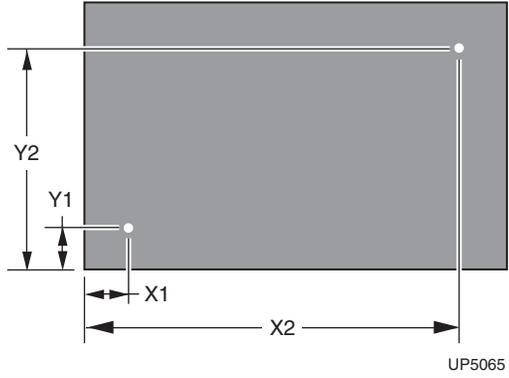
The PCB tab provides controls to enter the board description and dimensions, and the coordinates of the board fiducials.

Using the PCB Tab

To use the PCB tab:

Step	Action
1	<p>Click on the PCB tab.</p> 
2	<p>Click in the <i>Description</i> box and type a product description (not the product name). The product name is usually the same as the product file name.</p>
3	<p>Click in the <i>Dimensions</i> box and use the scroll or arrow buttons to set the board length, width, and depth (or enter information using the keyboard).</p> <p>As an alternative, double-click in the data boxes and type in the new values using the numeric keypad.</p> <p>Enter the board dimensions as accurately as possible, although minor errors in X or Y will be compensated for by the Accuflex adaptive setup software.</p> <ul style="list-style-type: none"> • X is the length in contact with the conveyor belt. The X dimension is used to calculate the position of the board stop, so that the board is central in the X direction to the stencil • Y is the width between the front and rear rails. The Y dimension positions the conveyor system. By default the rails are 0.5mm (.195 in.) wider than the programmed board width. If necessary, change this value in the Tooling dialog, Rails tab. • Z is the thickness (depth) of the PCB. The Z dimension calculates the printing position of the table when it is raised to printing height.



Step	Action
4	<p>Enter the fiducial locations. You can roughly position the fiducials by clicking in the PCB image. The coordinates of the board fiducials are measured from the corner of the PCB as shown.</p> 
5	Select the fiducial number from the <i>Site</i> list.
6	Click in the <i>X location</i> box and type the X coordinate of the site. Or, adjust the scroll to the right of the field.
7	Click in the <i>Y location</i> box and type the Y coordinate of the site. Or, adjust the scroll to the right of the field.
8	Select another fiducial from the Site list. Enter coordinates for at least two fiducials. You may enter coordinates for as many as ten fiducials.
9	To delete a fiducial select it and press Delete.
10	<p>Press the Adjust Rail button if you are finished and want the rail to move to the width of the board you just programmed.</p> <hr/> <div style="display: flex; align-items: center;">  <div> <p>ATTENTION</p> <p>To avoid a jam, a board must not be located on the conveyor when adjusting the rail width.</p> </div> </div> <hr/>



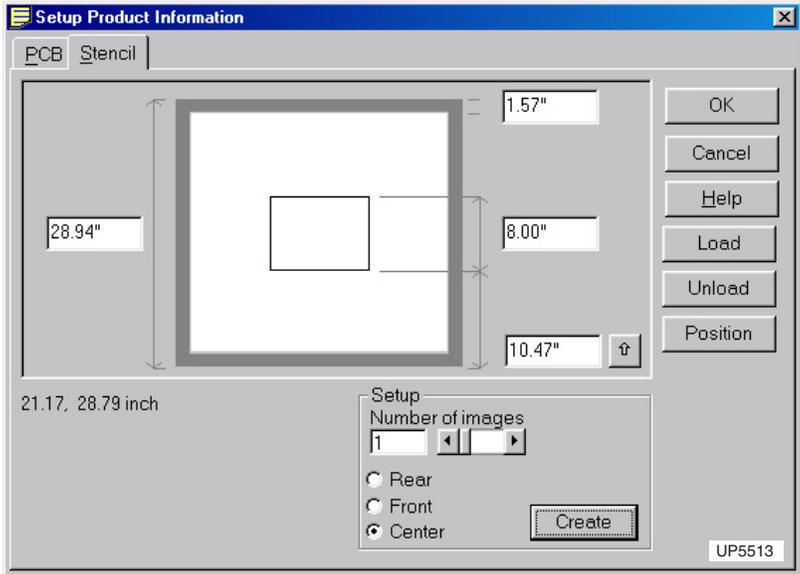
Stencil Tab

Introduction

The Stencil tab permits the user to alter the position of the board image on the stencil and position the stencil in the correct position for printing.

Setting Up Stencil Position

To set up the stencil position:

Step	Action
1	Select the Stencil tab. 
2	Set the <i>Number of images</i> using the scroll control.
3	If you have set just one image, click <i>Front</i> , <i>Center</i> , or <i>Rear</i> to indicate where on the stencil the image is placed. You may have multiple board images on one stencil.
4	Click <i>Create</i> .
5	Click on the desired board image. The current coordinates of that image appear.
6	If necessary, type the actual values in the coordinate boxes.
7	Press the <i>Enter</i> key on the keyboard to save the new values.



Positioning the Correct Image

To position the correct image in the printing position:

Step	Action
	<p>ATTENTION</p> <p>The Programmable Stencil Positioning System is an option.</p>
1	Click on the board image position you want to use.
2	Click <i>Position</i> . The stencil will move backwards or forwards to position the correct image over the printing area.
3	To exit the dialog, click <i>OK</i> .
4	<p>If manual rails are enabled and the Y dimension has changed, you are prompted to adjust the rails when the tabs are clicked.</p> <div data-bbox="656 783 1263 961" data-label="Image"> </div>



Stencil Position Tab

Manual Stencil Positioning

To use the Stencil Position tab to manually position the stencil:

Step	Action
1	<p>Select the Stencil Position tab.</p> <div data-bbox="673 472 779 577" style="float: left; margin-right: 10px;"> </div> <div data-bbox="803 504 1015 546" style="font-weight: bold; font-size: 1.2em;"> ATTENTION </div> <div data-bbox="803 567 1485 661"> <p>The Stencil Position Tab does not appear on machines with the Programmable Stencil Positioning System option installed.</p> </div> <div data-bbox="695 745 1494 1333" style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p style="font-size: 0.8em; margin-top: 5px;">Select the POSITION button to move the camera to Fiducial 1 Press OK when finished</p> <p style="text-align: right; font-size: 0.8em;">UP5350</p> </div>
2	<p>Select the <i>Position</i> button. A prompt instructs you to place the stencil at a specific mark on the y axis. Click <i>OK</i>.</p>
3	<p>Another prompt tells you to place a board on the track. Click <i>OK</i>.</p>
4	<p>The PCB loads and the camera moves to Fiducial 1.</p>
5	<p>Move Fiducial 1 on the PCB to the center of the live video display using the arrows.</p> <div data-bbox="673 1606 779 1711" style="float: left; margin-right: 10px;"> </div> <div data-bbox="803 1638 1015 1680" style="font-weight: bold; font-size: 1.2em;"> ATTENTION </div> <div data-bbox="803 1701 1510 1795"> <p>To the left of the arrows, a window with scroll bar allows you to adjust the amount of movement each click of an arrow produces.</p> </div>



Step	Action
6	<p>Select <i>Stencil View</i> and move to the same fiducial using the arrows. We are concerned with the image in the Y direction (top to bottom in the window).</p> <p>When both the Stencil and PCB views show the fiducial centered in the Y direction, press <i>OK</i>.</p>
7	<p>Select <i>Stencil View</i> before manually moving the stencil to position the fiducial in the center of the screen.</p> <p>When Stencil View is selected, the up and down camera move arrows are not available.</p>
8	<p>Select <i>Board View</i> before moving the camera to Fiducial 1.</p>
9	<p>Select the <i>Position</i> button to position the camera over Fiducial 1. Fiducials must be entered in the PCB information tab first.</p>



Setting Print Parameters

Introduction

This section explains the setting of the following parameters:

- Print speeds
- Squeegee pressures
- Print stroke
- Print gap
- Snap-off speed and distance
- Print mode

Print Profile Dialog

Choose *Print profile* from the *Setup* menu or click the Edit Print Profile icon.



The Print profile dialog appears. The options are split into two tabs:

- The Standard tab provides controls to set print speed and pressure, the print stroke limits, snap-off speed, and distance.
- The Advanced tab provides print mode, paste kneading parameters, and vacuum control.

In this section

Refer to the following:

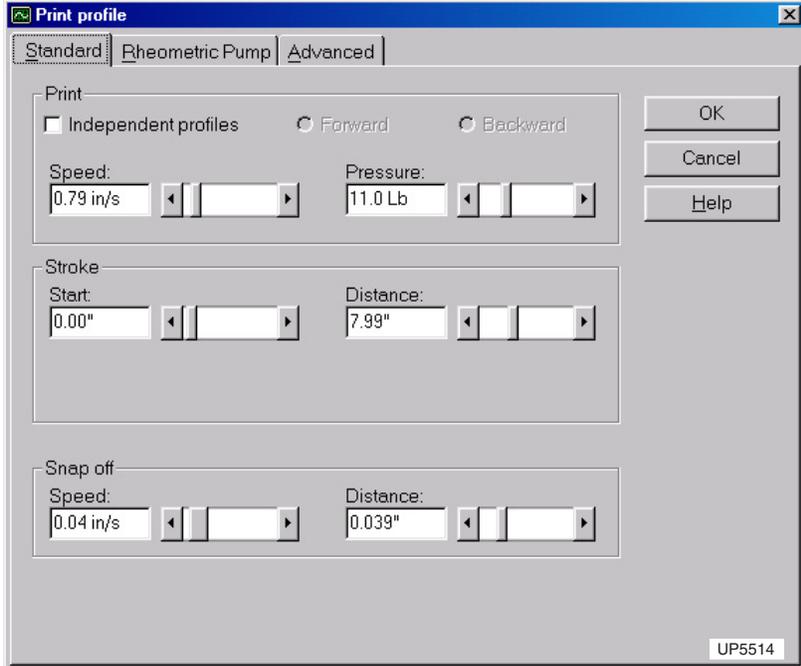
Topic	See Page
Standard Tab	10
Advanced Tab	12



Standard Tab

Using the Standard Tab

To set standard print parameters:

Step	Action
1	Select the standard tab. 
2	You can set the print speed and pressure independently for each direction of print, or set them to be the same. To set independent forward and reverse profiles: <ol style="list-style-type: none"> 1. Check the <i>Independent profiles</i> box. 2. Select <i>Forward</i> or <i>Backward</i> for each Print speed or Print pressure setting. To keep the forward and reverse profiles the same, clear the Independent profiles box.
3	Print speed determines how quickly the squeegee moves across the stencil. This is an important variable. The solder paste needs time to roll into apertures on the stencil. To set the forward and reverse print speeds, click in the <i>Speed</i> box and type the print speed, or scroll to the required value.



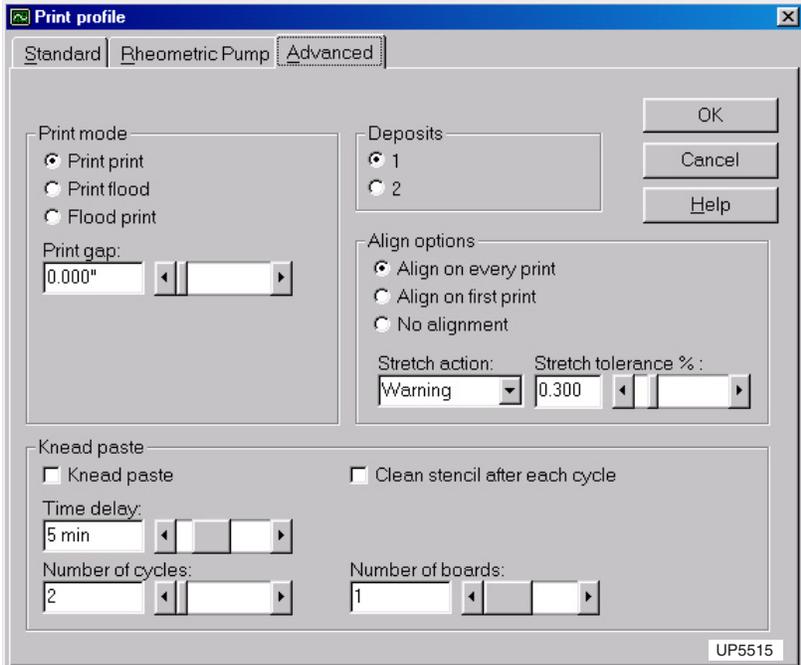
Step	Action
4	<p>Print pressure, or squeegee pressure, is the force applied by the squeegees during the printing stroke.</p> <ul style="list-style-type: none"> • Too little causes smearing on the stencil and poor deposition. • Too much can cause <i>scooping</i>—loss of paste from larger areas—especially with a polyurethane squeegee. <hr/> <div style="display: flex; align-items: center;">  <div> <p>ATTENTION</p> <p>The squeegee zero pressure must be calibrated before printing. Calibration is explained later in this chapter.</p> </div> </div> <hr/> <p>To set the forward and reverse print pressures, click in the <i>Pressure</i> box and type the pressure required, or scroll to the required value.</p>
5	<p>Stroke start and distance dimensions are calculated automatically when you set the board dimensions.</p> <ul style="list-style-type: none"> • <i>Stroke start</i> is the distance from the fixed rail to the position of the squeegee where the stroke begins or ends. • <i>Distance</i> is the distance that the squeegee travels when printing a board. The default is the Y axis dimension of the board.
6	<p>To override the print stroke and the stroke start settings:</p> <ol style="list-style-type: none"> 1. Click in the <i>Stroke start</i> box and type the required value, or use the scroll box. 2. Click in the <i>Distance</i> box and type the required value, or use the scroll box.
7	<p>The squeegee forward offset is the distance from the zero position to the start of the squeegee travel.</p> <p>This is to overcome the excessively wide glue lines common in the manufacture of stencils.</p> <p>To set the offset, click in the <i>Squeegee forward offset</i> entry box and type the required value, or use the scroll box.</p>
8	<p>After printing, the table moves down a few millimeters to separate the board from the stencil.</p> <p>The speed at which the table moves down is called the Snap-off speed. A slower speed helps the paste release properly from the stencil apertures on small areas.</p> <ul style="list-style-type: none"> • To set the snap-off speed, click in the <i>Speed</i> box and type the required value, or use the scroll box.
9	<p>The distance over which the snap-off speed is maintained is called the Snap-off distance. Excessive distance and/or excessively slow snap-off speed will increase cycle time.</p> <ul style="list-style-type: none"> • To set the snap-off distance, click in the <i>Distance</i> box and type the required value, or use the scroll box to change the display.



Advanced Tab

Using the Advanced Tab

To set advanced print parameters:

Step	Action
1	Select the Advanced tab. 
2	<p>The <i>Print mode</i> refers to the type action performed on the forward and backward strokes of the printhead.</p> <p>During a Print stroke the squeegee is in full contact with the stencil and pushes solder paste through the apertures onto the PCB.</p> <p>During a Flood stroke the squeegee pushes solder paste across the surface of the stencil without being in contact with the stencil.</p> <p>Three combinations of strokes, or print modes, are available:</p> <ul style="list-style-type: none"> • Print/Print • Print/Flood • Flood/Print <p>To set the Print Mode, click the appropriate button in the Print mode section of the dialog.</p>
3	<p>A print cycle is made up of a forward and backward stroke.</p> <p>There may be a printing deposit made on the forward stroke, the backward stroke, or both.</p> <p>In the Deposits section of the dialog, click on either 1 or 2.</p> <p>See <i>Print Mode and Number of Deposits</i> for an explanation of the effect of selecting 1 or 2 deposits with each of the three print modes.</p>



Step	Action
4	<p>Print gap is the distance between the stencil and the board during the print stroke. Normally it will be left at the default value of zero (on-contact).</p> <p>To set the print gap, click in the <i>Print Gap</i> entry box and type the required value, or use the scroll box.</p>
5	<p>To enable kneading of paste during production, check the <i>Knead paste</i> box.</p> <p>The time that paste on the stencil is allowed to stand idle before a knead paste cycle is triggered is called the <i>Knead paste Time delay</i>. Adjust the scroll to give the desired time delay.</p> <p>Adjust the number of cycles performed after a paste cycle is triggered with the <i>Number of cycles</i> scroll.</p> <p>When the Time delay expires, the number of boards included in the knead paste cycle may be set with the <i>Number of boards</i> scroll. The paste will be kneaded until that number of boards passes.</p>
6	<p>To clean the stencil after every knead paste cycle, check <i>Clean stencil after each cycle</i>.</p>
7	<p>To align board and stencil fiducials on every print, check <i>Align on every print</i>.</p> <p>To align board and stencil fiducials on the first print only, check <i>Align on first print</i>. Subsequent boards will be aligned to the first board position.</p> <p>If no alignment of board and stencil fiducials is desired, check <i>No alignment</i>.</p>
8	<p>When using vacuum board supports, you can control when the vacuum is turned off.</p> <ul style="list-style-type: none">• To turn off the vacuum immediately after the print cycle has completed, check the <i>Vacuum off after print</i> box.• To turn off the vacuum after the board has been lowered from the print position, clear the <i>Vacuum off after print</i> box.
9	<p>To exit the Print parameters dialog, click <i>OK</i> or <i>Cancel</i>.</p>



Print Mode and Number of Deposits

This following explains the result of selecting one or two deposits for each of the three print modes.

Print Mode	Deposits	Effect
Print Print	1	A single printing stroke per board, alternating forward for one board, reverse for the next.
Print Print	2	Forward and reverse printing strokes for every board.
Print Flood	1	A reverse printing stroke followed by a forward flood stroke for every board.
Print Flood	2	The above pattern repeated for every board.
Flood Print	1	A forward flood stroke followed by a reverse printing stroke for every board.
Flood Print	2	The above pattern repeated for every board.



Adjusting Tooling for the Board

Introduction

You need to set tooling parameters for each board type you intend to print. This is done in the Tooling Dialog.

To view the Tooling dialog, choose *Tooling* from the *Setup* menu, or click on the Edit Tooling Profile icon.



The information under the Tooling dialog is split into three tabs:



UP5070

- Controls in the Support tab position the board supports automatically, or record the positions of board supports which you position manually.
- Controls in the Rails tab position the conveyor rail at the correct width for the board being printed.
- Controls in the Offsets tab move the board stop, or stencil positions.

In this section

Refer to the following:

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Board Supports - General Information	16
Using the Automatic Grid	17
Placing Individual Supports Using Auto Tooling	18
Placing Board Supports Manually	18
Using Manual Tooling with Vacuum Supports	18
Moving Board Supports - Manual Tooling	19
Moving Board Supports - Auto Tooling	20
Deleting Support Posts - Manual Tooling	20
Deleting Support Posts - Auto Tooling	21
Checking Post Positions	21
Automatic Rail Width Adjustment	22
Manual Rail Width Adjustment	23
Setting Offsets	25



Board Supports - General Information

The manual tooling and auto-tooling options use different methods of placing board supports.

With manual tooling, the Accuflex is equipped with 48 support posts, twelve each of four different styles. Additional posts may be purchased.

A venturi vacuum support kit may also be purchased as an option. This kit includes vacuum supports which assist in holding warped boards.

When placing supports using Auto Tooling, you can define a rectangular grid of posts within the board area by setting the number of supports you want in each direction and letting the Accuflex determine their locations.

You may then add or delete supports, or move any support to a new position



ATTENTION

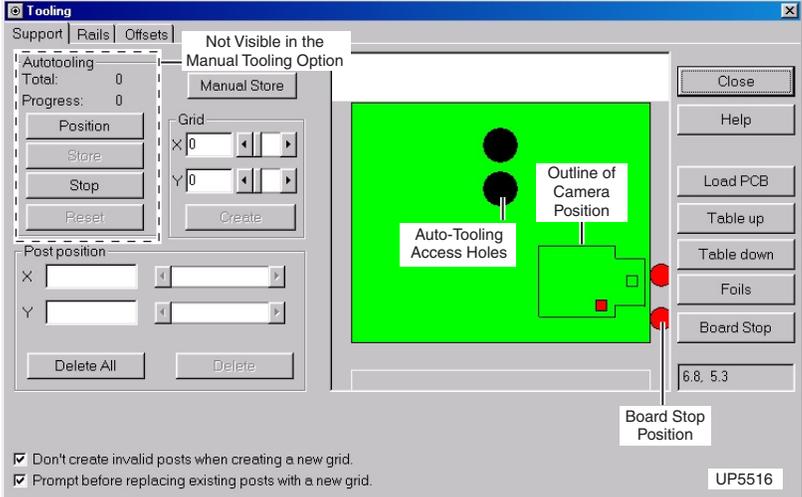
DO NOT ATTEMPT TO OVERRIDE the Accuflex safety interlock system. The camera carriage, which positions the board supports, moves very fast and could cause injury. The safety interlocks prevent you from placing your hand near the table, the board supports, or the carousel during operation of the auto-tooling system.



Using the Automatic Grid

Defining Board Support Positions

To define the positions of board supports using the automatic grid:

Step	Action
1	<p>Click on the Support tab.</p> 
2	Set the number of supports you want in the X direction using the X scroll control in the Grid area of the dialog.
3	Set the number of supports you want in the Y direction using the Y scroll control in the Grid area of the dialog.
4	Click <i>Create</i> .
5	<p>The Accuflex prevents you from placing a post too near an obstruction such as a conveyor rail, another post, the auto-tooling access holes, or the board stop position. In such a case, the following message will appear:</p> <p>The grid is not complete because some positions are too close to tooling holes or the board stop sensor.</p>



Placing Individual Supports Using Auto Tooling

Procedure

To place board supports using the auto-tooling system:

Step	Action
1	Click Position in the <i>Autotooling</i> area of the dialog. The system will automatically place the support posts on the table.
2	To halt the operation, click <i>Stop</i> .
3	To return the supports to the carousel, click <i>Store</i> . The autotooling carousel holds up to 48 board supports.

Placing Board Supports Manually

Procedure

To place supports in the positions calculated using the manual system:

Step	Action
1	Click on one of the post representations in the PCB diagram. The X and Y co-ordinates of the post will appear in the Post position area of the dialog.
2	Position a standard tooling post in the location at these coordinates.
3	Delete the standard post and replace it with a vacuum post, if desired.
4	Repeat for each post in the grid.

Using Manual Tooling with Vacuum Supports

Procedure

To specify a vacuum post, click the *Vacuum post* control (instead of the *Standard post* control), and proceed placing supports manually.



ATTENTION

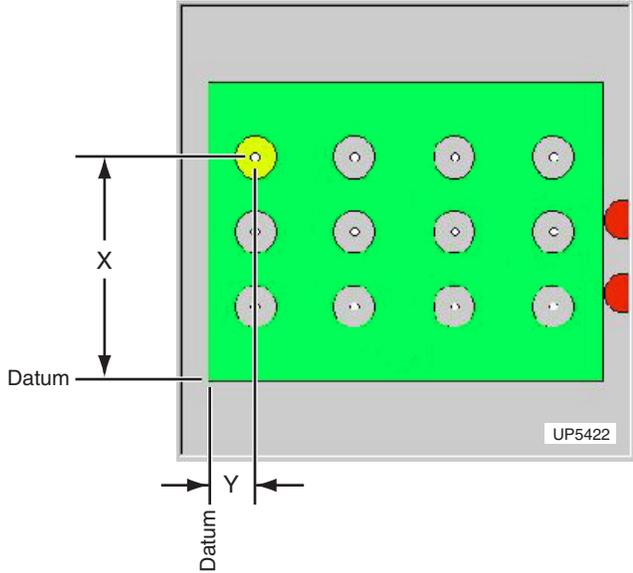
If you are using the manual tooling system with the venturi vacuum support kit, you can position up to four vacuum posts in place of standard posts.



Moving Board Supports - Manual Tooling

Procedure

To move board supports with manual tooling:

Step	Action
1	<p>Click on the image of the support action you want to move.</p>  <p>The diagram shows a green rectangular board support grid within a grey frame. A yellow circle highlights the top-left support. A vertical double-headed arrow labeled 'X' indicates the distance from a horizontal datum line to the center of the yellow support. A horizontal double-headed arrow labeled 'Y' indicates the distance from a vertical datum line to the center of the yellow support. The label 'UP5422' is in the bottom right corner of the grid.</p>
2	<p>The X and Y coordinates appear in the post position area of the dialog.</p>
3	<p>Move the support position by one of the following methods:</p> <ul style="list-style-type: none">• Drag the support to its new required location, or,• Type the coordinates in the X and Y post position boxes.



Moving Board Supports - Auto Tooling

Procedure

To move board supports with Auto Tooling:

Step	Action
 ATTENTION If there are currently support posts on the table, the following message will be displayed: There are posts on the table. Store these first.	
1	Click <i>OK</i> to the above mentioned message.
2	Click <i>Store</i> to return all the supports to the carousel.
3	Proceed by repositioning the supports.

Deleting Support Posts - Manual Tooling

Procedure

To delete support posts:

Step	Action
1	Click on the representation of the support that you want to delete.
2	Click <i>Delete</i> .
3	To delete all the posts specified graphically, click on <i>Delete All</i> .



Deleting Support Posts - Auto Tooling

Procedure

To delete support posts with Auto Tooling:

Step	Action
	<p>ATTENTION</p> <p>If there are currently support posts on the table, the following message will be displayed: There are posts on the table. Store these first.</p>
4	Click <i>OK</i> to the above mentioned message.
5	Click <i>Store</i> to return all the supports to the carousel.
6	Proceed by deleting the supports.

Checking Post Positions

Procedure

To check post positions:

Step	Action
1	Click on <i>PCB in</i> to load a board.
2	Click on <i>Table up</i> to bring the table to tooling height.
3	Click on <i>Board Stop</i> to toggle the board stop up and down.



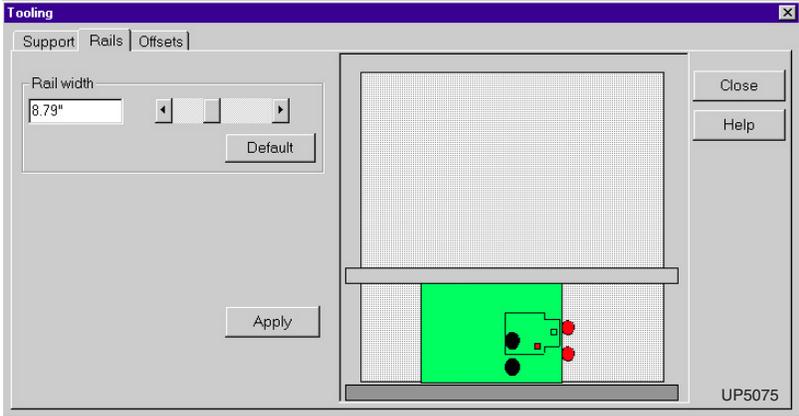
Automatic Rail Width Adjustment

Introduction

Either the front or the rear rail of the AccuFlex is fixed. The other rail moves under manual or optional automatic control to accommodate the width of your board.

Procedure

To adjust the rail width:

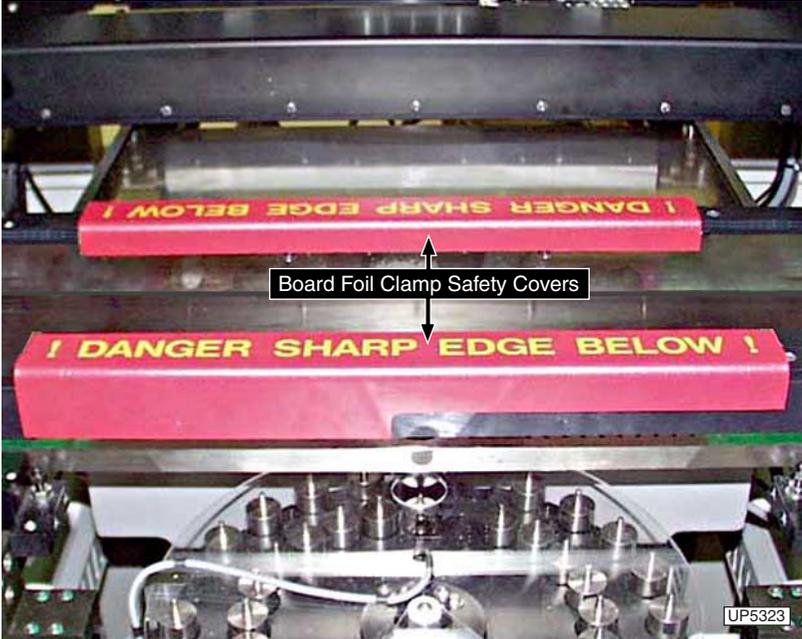
Step	Action
1	Click on the Rails tab of the Tooling dialog. 
2	The printer will set the default width 0.5mm wider than the board width specific in the PCB Information dialog.
3	Change the conveyor width by clicking on the arrow controls to increase or decrease in .5mm steps. Or, click the rail width box and type the required dimension.
4	Press <i>Apply</i> , or press <i>Default</i> to return to the original setting.



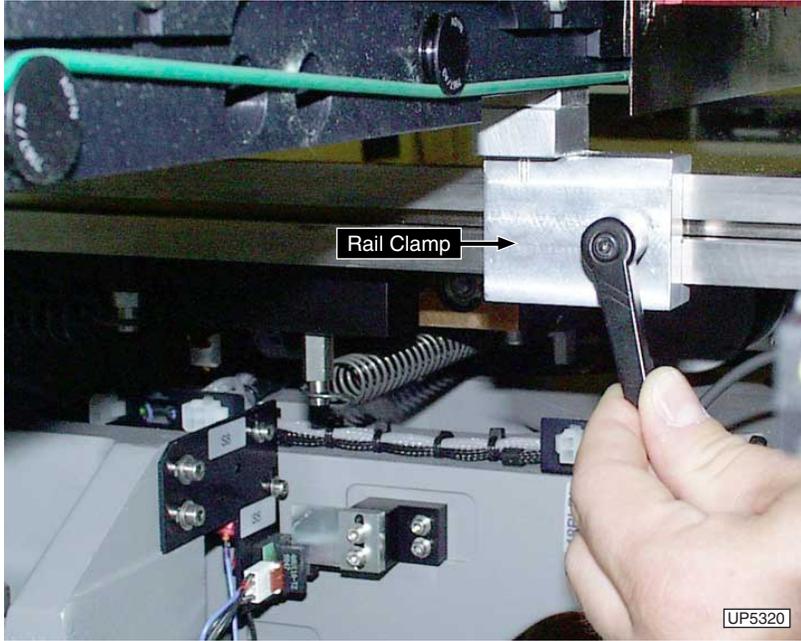
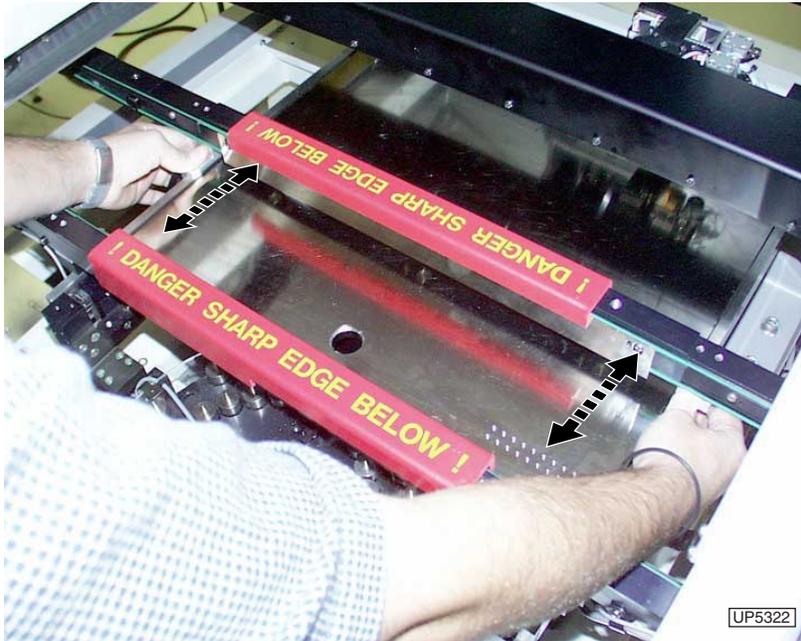
Manual Rail Width Adjustment

Procedure

To manually adjust the rail width:

Step	Action
	ATTENTION Board clamping foil edges are extremely sharp. Do not touch the board clamping foils. To prevent risk of injury, apply foil safety covers before manually adjusting rails, setting up, cleaning, or servicing the printer.
1	Install the board foil clamp safety covers. 



Step	Action
2	<p>Release both rail clamps.</p>  <p style="text-align: right;">UP5320</p>
3	<p>Grasp the rail as shown and position to the approximate board width.</p>  <p style="text-align: right;">UP5322</p>
4	<p>Place a board on each end of the rails, slide the boards along the rails and adjust the rail width so that the boards are not binding (.020in. overplay).</p>
5	<p>Tighten both rail clamps by moving them to the locked position.</p>
6	<p>Remove the board foil clamp safety covers.</p>



Setting Offsets

Introduction

To set up the alignment system, you load the board to its position at the board stop, and then move the camera to the expected fiducial positions.

On some stencils the board image may be in an unexpected position, making it unlikely that the board or stencil fiducials are visible.

If this is the case, you will need to adjust either the board stop position, which moves the board in the X direction, or the stencil, which moves it in the Y direction, until you see both board and stencil fiducials in the camera field of view.

Stencil Y Offset

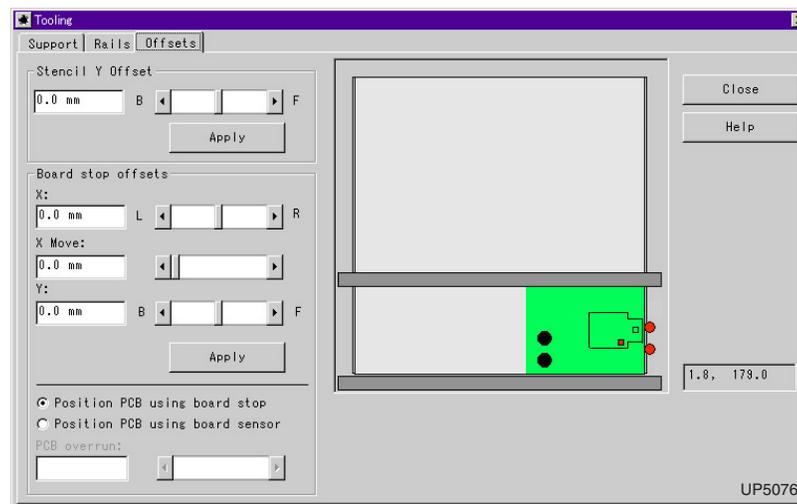
Adjusting the Stencil Y offset moves the stencil position backwards or forwards relative to the board.

Board Stop Offsets

The Board stop offsets area of the dialog are for moving the board stop position left or right for more specialized applications.

Adjusting the X offset moves the board and board stop position left or right relative to the stencil. X move defines the distance that the board overshoots the printing position when first loaded. It is then brought back to the printing position under computer control. *This control is normally only used in conjunction with product dedicated tooling.*

Y offset defines the position of the board stop actuator across the width of the board. This could be useful if the normal position coincides with a routed hole or other feature on the board edge.



In this section

Refer to the following:

Topic	See Page
Setting Stencil Y Offsets	26
Setting Board Stop Offsets	26
Positioning the PCB Using the Board Stop	26



Setting Stencil Y Offsets

Procedure

To enter a Stencil Y offset:

Step	Action
1	Click in the relevant box and type a new value. Or, use the corresponding scrolls to adjust the values.
2	Click <i>Apply</i> to move the stencil to the new position.

Setting Board Stop Offsets

To adjust the Board Stop offsets:

Step	Action
1	Click in the relevant box and type a new value. Or, use the corresponding scrolls to adjust the values.
2	Click <i>Apply</i> .

Positioning the PCB Using the Board Stop

Introduction

There are two buttons at the bottom left of the Offsets Tab Dialog:

Position PCB using board stop is the default. This applies to the information immediately above.

Position PCB

In certain cases, such as when heavier boards are printed, you may use the board stop sensor to stop board travel on the conveyor. In this situation the board will overshoot the stop position by a certain distance.

When *Position PCB using board sensor* is made active, the PCB overrun field immediately below it also becomes active. The scroll bar to the right controls the distance it takes to return the board to the printing position under computer control.



Setting Up the Vision System

Introduction

The vision system uses a camera which moves over the entire printing area between the board and the stencil. The camera can look upwards to the stencil and downwards to the board.

In this Section

The following is covered:

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Optimizing the Vision System	31
Optimizing the Vision System with Manual Stencil Positioning	32
Calibrating the Table	32
Performing a Test Align	32
Setting Offsets	33
Setting Independent Offsets	34
How to Improve the Fiducial Learn Results	35
Changing the Correlation Box	37
Fiducial Location Options	38
Teaching Pads and Apertures as Fiducials	39



Vision System Description

How the Vision System Works

This table describes how the vision system works:

Stage	Description
1	For board and stencil fiducials to be calibrated, the system must learn at least four fiducials, two on the board and two on the stencil.
2	A board moves to the board stop position and is raised to vision height.
3	The camera locates the fiducials on the board, compares them to the saved PCB model, then locates the fiducials on the stencil.
4	The print table is then moved, in the X, Y, and Theta directions, as necessary, to position the board precisely under the stencil.
5	The table moves upwards to the print position.

Location Modes

There are two basic methods that the vision system uses to locate fiducials:

The Boundary Tracking mode. This mode outlines the shape of a fiducial, and then stores the values for the area and perimeter of the fiducial, and the height and width of a *bounding box* that surrounds and touches the fiducial on four sides.

When identifying a feature, Boundary Tracking compares the area, perimeter, and bounding box size of objects in the field of view to the stored fiducial values. When these values are within the tolerances set for each parameter, the vision system confirms that the fiducial was found.

The Correlation search mode. This mode uses a statistical method of comparison (normalized correlation) to find a *model* of the fiducial image.

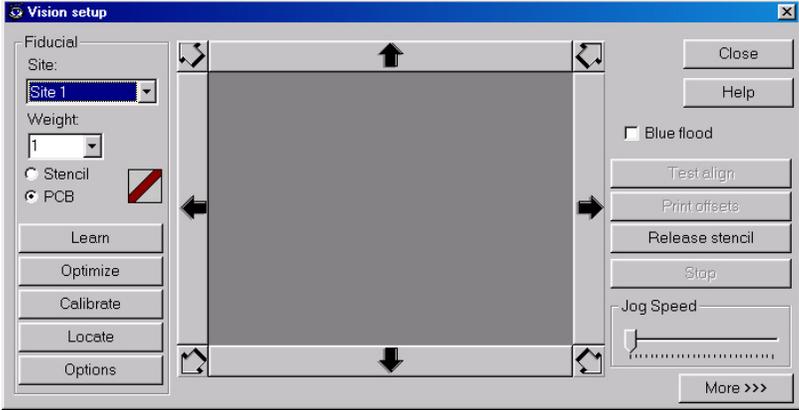
When a fiducial is learned, a box is drawn around its image. The entire contents of the box are stored as a fiducial model. During *Locate*, the vision system moves the stored *model* around the field of view searching for a match. If a section of the field of view contains the same information, within the set tolerance, as the stored *model*, the vision system confirms the fiducial was found.



Accessing the Vision System

Procedure

To access the vision system:

Step	Action
1	Select <i>Vision</i> from the Setup menu or click the Edit Vision Profile icon. <div style="text-align: center; margin-top: 10px;">  </div>
2	Click <i>Yes</i> in answer to the question: Do you want to convey a PCB to the alignment position for vision setup?
3	Place a board on the conveyor input side.
4	Click <i>OK</i> . The Vision Setup dialog displays. <div style="text-align: center; margin-top: 10px;">  </div>
5	The <i>Move:</i> field in the lower right shows the rate of camera movement produced by each click of an arrow button. You can adjust this value by using the scroll bar to the right or typing directly into the field.



Learning Fiducials

Procedure

The system needs to learn the board and stencil fiducials individually. Follow these steps.

Step	Action
1	If a fiducial is not seen in the field of view, or if it is close to one edge, it may be necessary to move the camera. Use the arrow buttons to view the fiducial in the center of the field of vision.
2	Select <i>Stencil</i> from the option button under the Site selector box .
3	Select a fiducial site in the Site selector box.
4	Click <i>Learn</i> . Or, double click on the fiducial.
<div style="display: flex; align-items: center;">  <div> <h3>ATTENTION</h3> <p>The camera will not detect a fiducial image if it, or its surrounding area, is very dark. If this is the case, check the Blue flood box to add blue coloring to the image, and then proceed. The default state is Blue flood <i>ON</i>.</p> </div> </div>	
5	Click on the fiducial image. In most cases, the vision system will learn the fiducial and respond with the following message: Fiducial learned, the fiducial is unique.
6	Click <i>OK</i> if the above mentioned dialog appears. You will return to the vision system dialog, where the Not Learned symbol, <div style="text-align: center; margin: 10px 0;">  </div> <p>will have been replaced by an icon of the fiducial, for example</p> <div style="text-align: center; margin: 10px 0;">  </div>
7	If the learn was unsuccessful you will need to click More>> and adjust parameters before re-learning the fiducial.
8	Select PCB from the option button under the <i>Site</i> selector box.
9	Learn the corresponding PCB fiducial as you did the stencil fiducial. Repeat the above steps for each remaining pair of fiducials.
10	Repeat the above steps for each remaining pair of fiducials.



Optimizing the Vision System

Procedure

To optimize the vision system.

Step	Action
1	When the camera is at a fiducial site, both stencil fiducials and board fiducials must be as near the center of the field of view.
2	It may be necessary to move the stencil forward or backward in the Y direction, or to move the board stop to achieve a movement in the X direction.
3	You can enter the X and Y offsets directly, or, for automatic optimization, click <i>Optimize</i> . The stencil and board will be moved under system control to their optimal positions and the board will eject and be repositioned.



Optimizing the Vision System with Manual Stencil Positioning

Procedure

With manual stencil positioning, move the stencil as follows:

Step	Action
1	Click <i>Release stencil</i> .
2	Move the stencil by hand.
3	Click <i>Clamp stencil</i> .

Calibrating the Table

Introduction

The system runs an automatic routine in which it learns the relationship between the physical movement of the table and the movement of the board fiducials in the camera field of view.

Procedure

To calibrate the table,;

Step	Action
1	Click <i>Calibrate</i> . The sequence runs automatically.
2	Click <i>OK</i> to store the calibration settings.



ATTENTION

This procedure is done once for each board file. When this board file is re-loaded, a new calibration is not necessary.

Performing a Test Align

Procedure

Check that the vision system has learned to successfully align board and stencil.

To perform a test alignment, click *Test Align* in the Vision Setup window. The board moves to its alignment position. Errors encountered will be displayed on the monitor.



Setting Offsets

Introduction

After printing a new board using a new setup, inspect for registration accuracy. Compensate for inaccuracies by setting a print offset.

Offsets can be set the same for both directions, or independent. Independent offsets compensate for a stencil that may stretch different amounts in each print direction.

The Print Offsets window, described in step four, has two tabs, X,Y, \emptyset , and X,Y,Y. The X,Y, \emptyset is described.

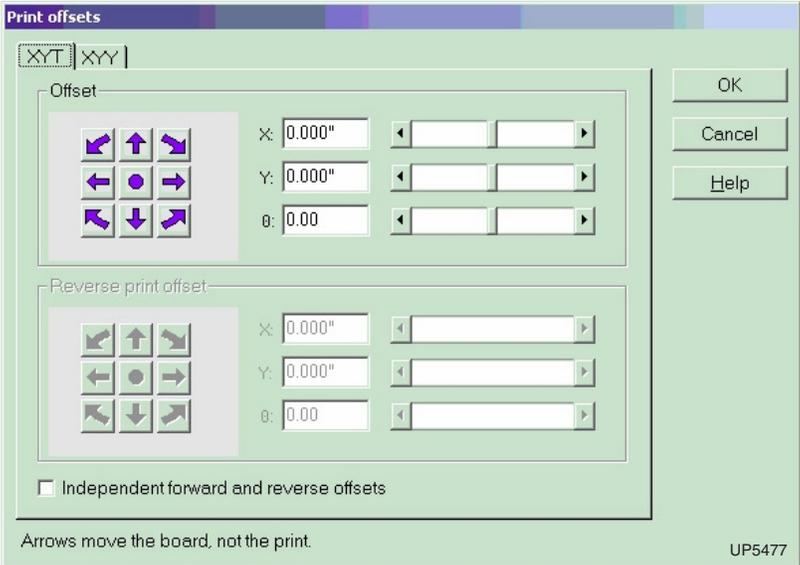


ATTENTION

The XYY tab (X, Y₁, and Y₂ configuration) is unavailable in this release.

Procedure

To set offsets:

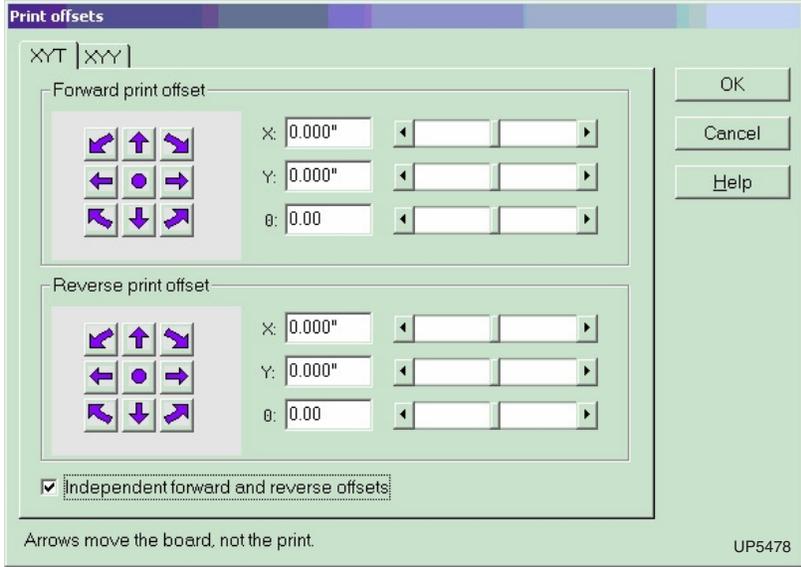
Step	Action
1	<p>In the Vision set up dialog, click <i>Print offsets</i>. The Print Offsets dialog displays.</p> 
2	<p>To set the mode, click the X, Y, \emptyset (<i>Theta</i>) tab. (The XYY tab is inactive.) Note that only one set of offset controls is active. This is because the Independent forward and reverse offsets box is not checked.</p>
3	<p>Set an offset value by clicking in the appropriate offset value box and typing the required value, or, increase or decrease the existing values by clicking on the white arrow heads to the right of each.</p>
4	<p>Alternatively, click on the blue directional arrows to change the values.</p>
5	<p>The blue dot button in the center returns all values to zero.</p>
6	<p>The X,Y, \emptyset control calculates the required movement in each adjuster and moves them accordingly.</p>



Setting Independent Offsets

Procedure

To set independent offset values for forward and reverse printing:

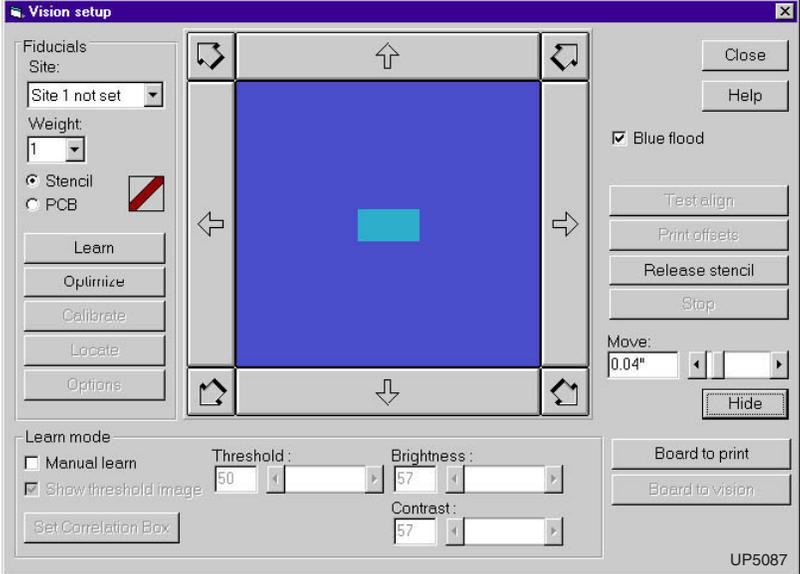
Step	Action
1	<p>Check the <i>Independent forward and reverse offsets</i> box. The second area of controls are now active in the dialog.</p> 
2	Set an offset value by clicking in the appropriate offset value box and typing the required value, or, increase or decrease the existing values by clicking on the white arrow heads to the right of each.
3	Alternatively, click on the blue directional arrows to change the values.
4	The blue dot button in the center returns all values to zero.



How to Improve the Fiducial Learn Results

Procedure

To improve fiducial learn results:

Step	Action
1	<p>Select <i>Vision</i> from the Setup menu or click the Edit Vision Profile icon.</p>  <p>The extended Vision setup window displays.</p> 
2	Adjust the controls in the Learn mode portion of the dialog by clicking <i>Manual learn</i> .
3	Obtain the best possible contrast between the fiducial and its surrounding area by adjusting the scroll controls for Brightness and Contrast.
	<h3>ATTENTION</h3> <p>The image you see in the vision window is a gray-scale image. There is a binary light threshold below which the image is considered to be dark, and above which it is considered to be light. You may check the <i>Show threshold image</i> box and adjust the threshold setting for a better image.</p>



Step	Action
4	<p>If the system sees more than one item in its field of view, it may not be able to distinguish between them when locating a fiducial.</p> <p>Make the fiducial unique within the field of view.</p> <p>If Correlation mode is used, consider the whole correlation box to be the effective fiducial and not an individual mark.</p> <p>Try making the fiducial unique by altering the size or position of the box within the camera field of view.</p>



Changing the Correlation Box

Procedure

To change the correlation box:

Step	Action
1	Click <i>Set Correlation</i> box.
2	Click on and drag a corner of the correlation box to change its shape.
3	Click <i>OK</i> .



ATTENTION

If Blue flood is not checked, and Show threshold image box is checked, do not attempt to define a new correlation box. This will turn part of the monitor screen dark and the correlation box will not be visible in that area.



Fiducial Location Options

Introduction

A fiducial site may be located with two modes.

These may be independently set for each fiducial site.

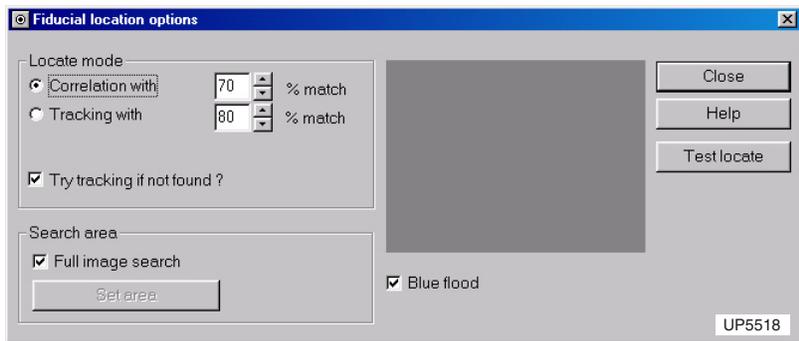
Fiducial images vary somewhat from stored information. During a locate, a 100% match between stored information and a fiducial in the camera field of view is unlikely.

You must establish a level of acceptability using the Location options dialog.

The amount of contrast, and the reflectivity of the fiducial will determine the percent match value.

Procedure

To set the locate options for each fiducial:

Step	Action
1	Select the fiducial in the Site selection box.
2	Click <i>Options</i> to display the Location options dialog. 
3	Choose either the <i>Correlation with</i> , or <i>Tracking with</i> option button to select the locate mode.
4	Set the % <i>match</i> value on <i>Correlation</i> and/or <i>Tracking</i> as required.  <p>ATTENTION</p> <p>The default values are excellent starting points. You might set a lower value, if, for example, the paste deposits reflect light unevenly.</p>
5	Test the ability of the vision system to locate a given fiducial by clicking <i>Test Locate</i> .



Teaching Pads and Apertures as Fiducials

Introduction

To teach non-standard vision targets, such as pads and apertures, you must train the system to recognize their unique aspects.

PCB pads appear in sets of identical multiples in the field of view. Although groups of pads look the same, there are methods to make a pad unique.

For a specific region of a board, identify at least two target pads, and the corresponding apertures on the stencil. It is best for the targets to be located at opposite ends of the board.

A portion of a QFP, SIP, SOT89, SOT, single pads, or a chip cap group at the edge of the board will work well as fiducials. Dips and single chip caps should not be used.

Procedure

To teach these non-standard targets:

Step	Action
1	Click on the Vision Setup icon in the main window.
2	Click <i>YES</i> to the message: Do you want to convey a PCB to the alignment position for vision?
3	Click the <i>MORE</i> button.
4	Check the <i>Manual Learn</i> box.
5	Click the <i>Set correlation box</i> button.
6	Position the camera over the target with the pad image as close as possible to the center of the field of view.
7	Check the <i>Adjust correlation</i> box and click <i>OK</i> .
8	Draw a box around the fiducial and some unique features in the immediate area. Avoid any targets that might change from board to board.
9	Double click on the target pad in the chosen device.
10	Perform step 5 through 9 for the at least two targets on both board and stencil.
11	Click the <i>Optimize</i> button.
12	Click the <i>Calibrate</i> button.
13	Click the <i>Test Align</i> button.
14	Click the <i>More</i> button.
15	Click the <i>Board to Print</i> button.
16	Check the alignment results to see that the board is aligned properly to the stencil.
17	Click the <i>Board to Vision</i> button, then the <i>Hide</i> button, then the <i>Close</i> button.
18	Click <i>YES</i> to the message: Do you want to unload the PCB?



Squeegee Calibration

Introduction

The Accuflex uses one of two methods for applying squeegee pressure:

- Open-loop (standard) control. The system applies pressure calculated from stored parameters.
- Closed-loop (optional) control. The pressure is constantly measured and may be adjusted during the print stroke.

You need to calibrate zero pressure for both front and rear squeegees. This calibration applies to a particular pair of squeegees, and is stored in the board file.

You can remove and refit the same pair of squeegees without the need to re-calibrate.



ATTENTION

Calibrating the squeegee zero pressure is not the same as setting squeegee printing pressures.



CAUTION

Do not begin printing until this calibration has been carried out. Failure to comply can result in damage to the machine or stencil!

In this Section

The following is covered:

Topic	See Page
Squeegee Calibration Dialog	41
Squeegee Defaults - Standard Tab	42
Calibrate the Squeegee Zero Pressure - Open Loop	43
Calibrate the Squeegee Zero Pressure - Closed Loop	44
Advanced Tab - Open Loop	45
Advanced Tab - Closed Loop	46



Squeegee Calibration Dialog

Access

To access the Squeegee calibration dialog, select *Squeegees* from the **Setup** menu or click the Calibrate Squeegees icon.



Squeegee Calibration Tabs

The options in the Squeegee calibration window are split into two tabs:



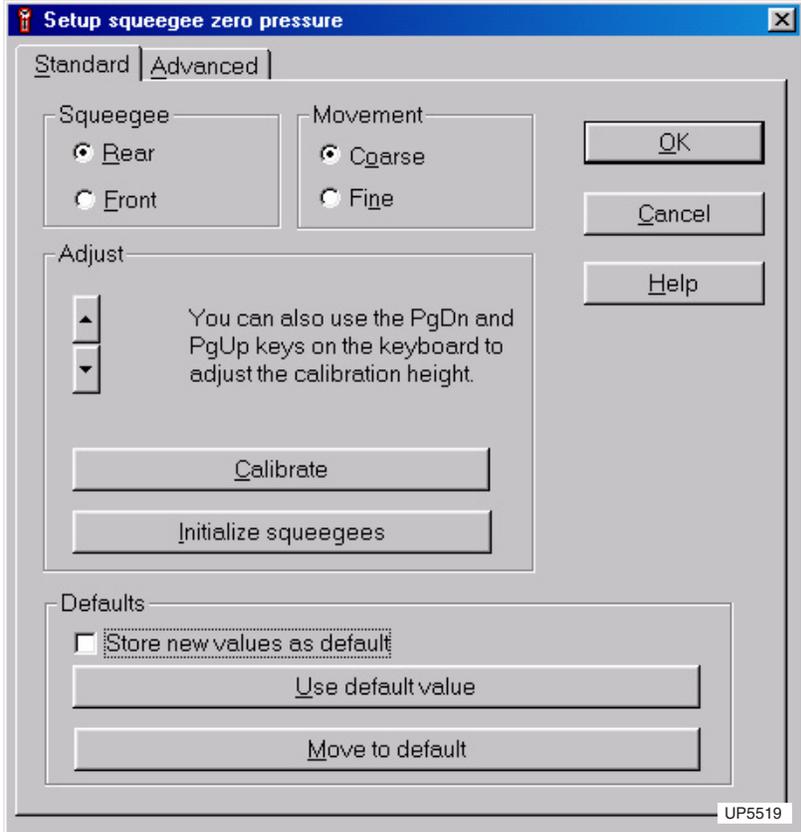
- Standard tab which provides controls to set the squeegee zero pressure point.
 - Advanced tab which provides some general controls to:
 - Set the step values
 - Set the squeegee heights
-



Squeegee Defaults - Standard Tab

Introduction

Squeegee defaults are described below. The Standard tab of the open loop system is shown; The closed loop tab is identical with respect to defaults.

Step	Action
1	<p>Click on the Standard tab in the Squeegee calibration window.</p> 
2	<p>Each squeegee has an independent default position, saved as machine parameters, not board file parameters. You can change the default positions using this dialog.</p>
3	<p>To save the new squeegee positions as new defaults, check the <i>Store new values as default</i> box. The new values will become effective when you click <i>OK</i> to leave the dialog.</p>
4	<p>To move a squeegee to the current default position, select <i>Front</i> or <i>Rear</i> squeegee as required and click <i>Move to front/rear squeegee default</i>.</p>
5	<p>To reload the default position as the current calibrated position, click <i>Use front/rear squeegee default</i></p>



Calibrate the Squeegee Zero Pressure - Open Loop

Procedure

To calibrate the squeegee zero pressure on open loop systems:

Step	Action
	<p>ATTENTION</p> <p>The squeegees must be the ones you will use for printing, but any stencil may be fitted. The stencil is easily damaged. Do not force the squeegee against the stencil.. No board is required.</p>
1	Fit the squeegees.
2	Click <i>Rear</i> to identify the squeegee being calibrated.
3	Click <i>Initialize squeegees</i> to begin the calibration process.
4	Click <i>Coarse</i> to select large incremental moves.
5	Click the <i>Up</i> and <i>Down</i> arrow buttons to move the selected squeegee down until it is near the stencil surface.
6	Click <i>Fine</i> to select small incremental moves.
7	Click the <i>Down</i> arrow button until the squeegee just contacts the stencil across its full length. Use the <i>Up</i> arrow to move it up slightly, if necessary.
8	Click <i>Calibrate</i> to store the setting.
9	Click <i>Front</i> and repeat Steps 1 to 5 to calibrate the front squeegee zero pressure.



Calibrate the Squeegee Zero Pressure - Closed Loop

Procedure

To calibrate the squeegee zero pressure on closed loop systems:

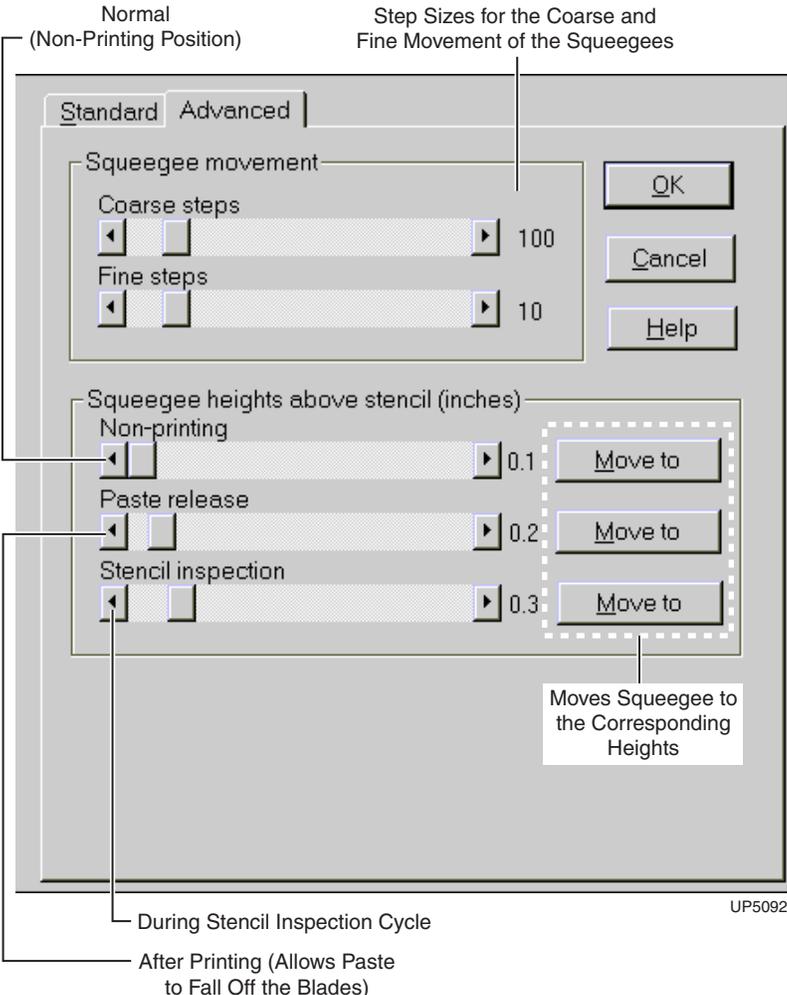
Step	Action
	<p>ATTENTION</p> <p>The squeegees must be the ones you will use for printing, but any stencil may be fitted. The stencil is easily damaged. Do not force the squeegee against the stencil. No board is required.</p>
1	Fit the squeegees.
2	Click <i>Rear</i> to identify the squeegee being calibrated.
3	Click <i>Find zero</i> to automatically move the squeegee to the calibration point.
4	Click <i>Calibrate</i> to store the setting. You may further fine tune the position of the squeegees using the arrow buttons before clicking <i>Calibrate</i> .
5	Click <i>Front</i> and repeat Steps 3 and 4 to calibrate the front squeegee zero pressure.
6	To view the readings taken during the last print cycle, select <i>Squeegee feedback chart</i> from the Utilities menu.



Advanced Tab - Open Loop

Introduction

The Advanced Squeegee Tab differs slightly with open and closed loop systems, as explained below:

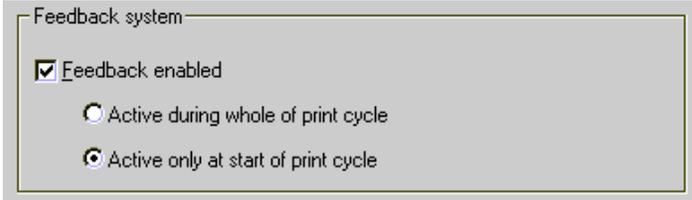
Step	Action
1	<p>Click on the Advanced tab.</p> 
2	Use the scrolls to control the coarse and fine incremental steps that the squeegee makes when calibrating the squeegee zero pressure.
3	Use the scroll to define the height above the stencil of the non-printing squeegee. The squeegee in the non-printing position.
4	Use the scroll to define the squeegee height above the stencil after a print has occurred. This allows paste to be released from the squeegee. The squeegee then returns to the non-printing height.
5	Use the scroll to define the squeegee height above the stencil during a stencil inspection.



Advanced Tab - Closed Loop

Introduction

If your printer is fitted with closed-loop squeegee control, the advanced tab displays additional items:

Step	Action
1	Click the Advanced tab.  <small>UP5093</small>
2	Select whether you want continuous correction of squeegee pressure while printing.
3	Check if you want continuous correction: <ul style="list-style-type: none">• at the start of the print cycle, or,• during the entire print cycle.



Automatic Paste Dispenser

Introduction

The Accuflex paste dispenser option automatically places solder paste on the stencil. You can define where paste is positioned, the amount deposited, and how often it is dispensed during production.

The automatic paste dispenser is equipped with 2 nozzles, 3mm and 5mm. Start with the smaller one and increase the size if you want to dispense more paste.

Regulating the Air Pressure

The paste dispense pressure regulator on the pneumatics panel of the printer regulates the air pressure.

Start with a setting of 0.5 Bar (7–8 psi), and increase or decrease as necessary.

Paste Dispenser

Details of the paste dispensing setup for a product are stored in the product file.

Choose *Paste dispenser* on the **Setup** menu or click the Edit Paste Dispense Profile icon.



The options available under Paste dispenser are split into two tabs:

Use the Standard tab to:

- Enable paste dispensing
- Set the dispensing frequency and number of dispensing passes per cycle
- Set the paste dispenser speed
- Set the left/right length of the paste dispensing stroke

Use the Advanced tab to:

- Set up the necessary timing values
- Set the Y offset for the dispense cycle

In this Section

The following is covered:

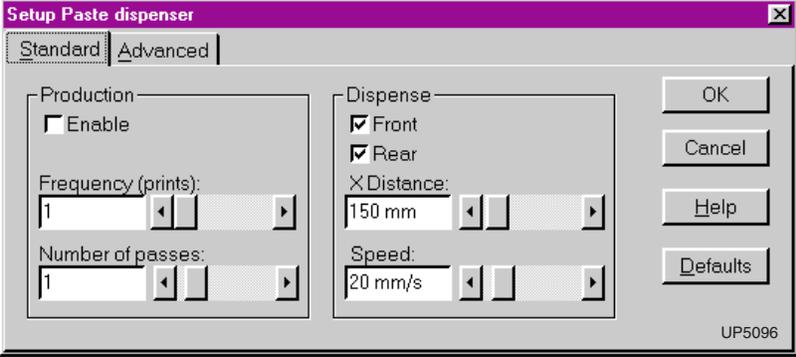
Topic	See Page
Enable Paste Dispensing (Standard Tab)	48
Setup Paste Dispenser (Advanced Tab)	49
Cleaning the Paste Dispenser	50
Refilling the Paste Dispenser	51



Enable Paste Dispensing (Standard Tab)

Procedure

To enable paste dispensing during production, use Setup Paste dispenser Standard tab as follows:

Step	Action
	<p>Chemical Hazard</p> <p>Solder paste contains lead. Lead poses a potential risk to health and the environment. Areas internal to the machine, including stencils, squeegees and used stencil cleaning paper contain or come in contact with solder paste. Consult the solder paste manufacturer's Material Safety Data Sheets prior to using the printer. Properly dispose of all waste material according to manufacturer's instructions. Failure to comply could result in personal injury and/or damage to the environment.</p>
1	<p>Click on the Standard tab.</p> 
2	<p>Check the <i>Production Enable</i> box.</p>
3	<p>Click in the <i>Frequency</i> box. Type the number of prints between paste dispensing operations.</p>
4	<p>Click in the <i>Number of passes</i> box. Type the number of times paste dispenses for one operation.</p>
5	<p>Click in the <i>X distance</i> box. Type the distance in the X direction over which paste is to be dispensed.</p>
6	<p>Click in the <i>Speed</i> box. Type the speed at which the paste dispenser is to move. The speed controls the amount of paste deposited.</p>
7	<p>Check <i>Front</i> to enable paste dispensing at the front of the stencil.</p>
8	<p>Check <i>Rear</i> to enable paste dispensing at the rear of the stencil.</p>
9	<p>Click <i>Defaults</i> to load the default values.</p>



Setup Paste Dispenser (Advanced Tab)

Procedure

Use the Advanced tab of the Setup Paste dispenser as follows.

Step	Action
1	Adjust the <i>Start</i> interval scroll to give the required start delay. This is the time interval between air pressure application to the dispenser cartridge and the start of carriage motion across the stencil, when paste begins flowing.
2	Adjust the <i>Suck back</i> interval scroll to the required value. This specifies the time at the end of paste dispenser travel during which air is removed from the paste dispenser cartridge. This prevents excess paste from being deposited on the stencil due to residual air pressure.
3	Adjust the <i>Paste Y Offset</i> scroll to set the position for paste to be dispensed. A value of 0mm puts paste at the board front and rear edges. A positive value puts paste that distance outside the board edges A negative value puts the paste that distance inside the board edges.
4	Click <i>OK</i> to exit the Setup Paste dispenser dialog.



Cleaning the Paste Dispenser



Chemical Hazard

Solder paste contains lead. Lead poses a potential risk to health and the environment. Areas internal to the machine, including stencils, squeegees and used stencil cleaning paper contain or come in contact with solder paste. Consult the solder paste manufacturer's Material Safety Data Sheets prior to using the printer. Properly dispose of all waste material according to manufacturer's instructions. Failure to comply result in personal injury and/or damage to the environment.

Repeated deposits of solder paste may cause build-up which can interfere with squeegee action.

Remove accumulated paste deposits regularly.



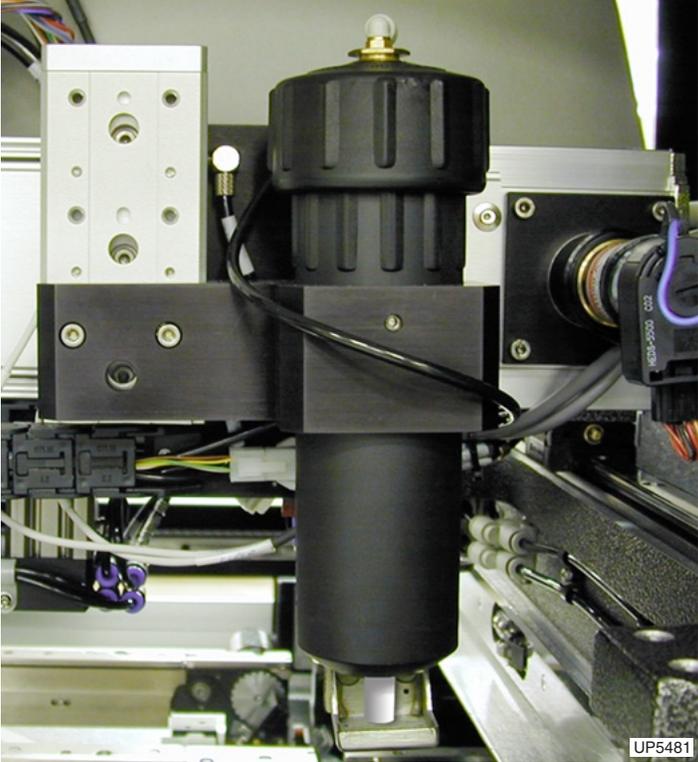
Refilling the Paste Dispenser

Procedure

Change the paste cartridge as follows:

Step	Action
	<p>Chemical Hazard</p> <p>Solder paste contains lead. Lead poses a potential risk to health and the environment. Areas internal to the machine, including stencils, squeegees and used stencil cleaning paper contain or come in contact with solder paste. Consult the solder paste manufacturer's Material Safety Data Sheets prior to using the printer. Properly dispose of all waste material according to manufacturer's instructions. Failure to comply result in personal injury and/or damage to the environment.</p>
1	<p>Access the Utilities dialog by clicking the Printer Utilities icon.</p> 
2	<p>Click the Paste tab.</p>
3	<p>Click <i>Change cartridge</i>.</p>
4	<p>Lift the front cover.</p>



Step	Action
5	Unscrew the top of the cartridge cover and lift out the empty paste cartridge.  UP5481
6	Take off the nozzle. It is advisable to clean the nozzle at this point.
7	Remove the caps from the new cartridge and attach the nozzle.
8	Put the new cartridge in the holder and screw the cover back on. The dispenser uses the common Pyle-type solder paste cartridge.
9	Click the close box to exit the dialog.



Setting the Stencil Cleaner Parameters

Introduction

The Accuflex provides automatic stencil cleaning during the print run.

This may be accomplished with a standard cleaning system, or a vacuum-assisted stencil cleaning option.

This feature is not a substitute for regular cleaning and maintenance. The machine and stencil must be routinely cleaned and maintained according to schedule.

The vacuum-assisted version uses a vacuum pump to help remove debris from the stencil apertures during a wipe and filter the paste from the air.

Setup Stencil Cleaner Dialog

Choose *Stencil cleaner* from the **Setup** menu or click the Edit Stencil Clean Profile icon.



The information in the Setup stencil cleaner dialog is split into two tabs:



- The Standard tab provides controls:
 - the stencil cleaning mode description (dry wipe, wet wipe, or both; number of passes per cycle) and cycle frequency and speed.
 - the wipe stroke distance and starting point
- The Advanced tab provides controls for less frequently used parameters:
 - Duration of paper contact with the wetting bar before a wet cleaning cycle, quantity of fluid applied to the paper.
 - Control of the vacuum pump (if fitted).
 - Control of the paper advance mechanism during stencil cleaning.
 - Control the sequencing of wet and dry wipes.

In this Section

The following is covered:

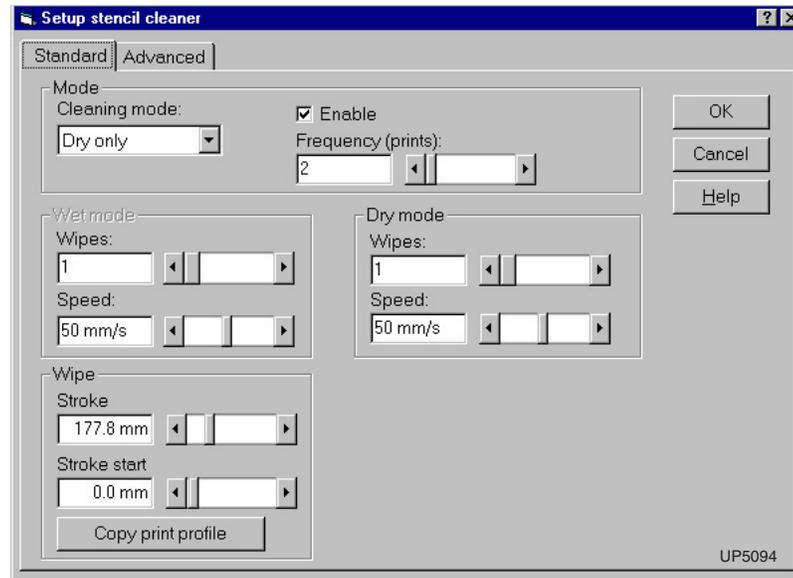
Topic	See Page
Set Up the Stencil Cleaner (Standard Tab)	54
Set Up the Stencil Cleaner (Advanced Tab)	57



Set Up the Stencil Cleaner (Standard Tab)

Introduction

In the Stencil cleaning window click on the Standard tab. The Stencil cleaning mode, Wet, Dry, and Wipe modes are explained in the following tables.





Stencil Cleaning Mode

This table explains the Stencil Cleaning Mode parameters in the Standard tab of the Setup stencil cleaner window.

Step	Action
1	Under Stencil Cleaning Mode, choose: <ul style="list-style-type: none"> to clean the stencil automatically during production, check the <i>Enable</i> box; to disable this function uncheck the box. wet, dry, or wet and dry cleaning, and, the frequency of cleaning.
2	To set the cleaning mode, click: <ul style="list-style-type: none"> <i>Dry Only</i>, to wipe the stencil with dry paper. The Wet cycle parameters are ignored. <i>Wet Only</i>, to wipe the stencil with wet paper, controlled by the Wet Cycle parameters. The Dry cycle parameters are ignored. Wet and Dry wipes the stencil with wet paper, then again with dry paper.
3	Click in the <i>Frequency</i> box and type the number of prints between cleaning cycles, or use the scroll to adjust the value.
4	Define these parameters for both wet and dry modes: The number of wipes (wet and dry) in each cleaning cycle. The speed that the cleaning paper passes across the stencil for both wet and dry passes.
5	To change both the number of wipes and the speed of the wipes, click in the appropriate box and type the required value. Alternatively, use the scroll control to adjust the value.

Wet Mode

Adjust the settings in the wet mode section of the Standard tab.

Step	Action
1	If you choose wet (or wet and dry) cleaning, The Wet mode section of the dialog becomes active. Fluid from the canister is pumped into a wetting bar which acts as a reservoir.
2	Define the <i>Frequency</i> , the number of wet wipes in each cleaning cycle.
3	Define the <i>Speed</i> that the cleaning paper passes across the stencil for the wet passes.
4	Type the values or use the scroll.



Dry Mode

Adjust the settings in the dry mode section of the Standard tab.

Step	Action
1	If you choose dry (or wet and dry) cleaning, The Dry mode section of the dialog becomes active.
2	Define the <i>Frequency</i> , the number of dry wipes in each cleaning cycle.
3	Define the <i>Speed</i> that the cleaning paper passes across the stencil for the wet passes.
4	Type the values or use the scroll.

Wipe Mode

Adjust the settings in the wipe mode section of the Standard tab.

Step	Action
1	Set the limits of stencil cleaner travel during the cleaning stroke. The default is 10mm beyond the furthest aperture on the stencil. You may increase the value, if desired. Distances are set from the fixed rail.
2	To set the clean stroke to the same value as the print stroke, press the <i>Copy print profile</i> button.
3	If the stroke and the start point are not the same as the print stroke, adjust them as follows: <ul style="list-style-type: none"> • Set the stroke length in the <i>Stroke</i> value by typing or adjusting the scroll. • Set the Stroke start by value by typing or adjusting the scroll.



Set Up the Stencil Cleaner (Advanced Tab)

Introduction

Define the dry, wet, or mixed wipe modes in this tab.

Defining the Wet Mode

To define the wet mode on the Advanced tab:

Step	Action
1	In the Prime paper duration field, type the time required for the cleaning paper to be wetted, or use the scroll.
2	Check <i>Advance paper for each wet pass</i> to use a new portion of cleaning paper on each wet wipe. This is applicable if you have more than one wet wipe in each cycle.
3	Check <i>Wet paper for each wipe</i> to apply cleaning fluid to the cleaning paper on each wipe. This is applicable if you have more than one wet wipe in each cycle.

Defining the Dry Mode

To define the dry mode on the Advanced tab:

Step	Action
1	Check <i>Vacuum on during dry wipe</i> to turn on the vacuum pump on each dry wipe. This is applicable if you have the vacuum-assisted stencil cleaning option.
2	Check <i>Advance paper for each dry pass</i> to use a new portion of cleaning paper on each dry wipe. This is applicable if you have more than one dry cleaning wipe in each cycle.



Defining the Mixed (Wet and Dry) Mode

To define the mixed (wet and dry) mode on the Advanced tab:

Step	Action
1	Check the <i>Alternate wet/dry</i> check box to alternate wet and dry wipes. Check this box only if there are more than one dry or wet passes programmed per cycle. Normally, the wet and dry sequencer performs all the wet passes together and all the dry passes together, the order being determined by the <i>Start with ... option</i> buttons.
2	If there are a different number of wet and dry passes in each cycle, the sequencer will alternate wet and dry cycles until it exceeds the lower number and will then complete the cycle with the remaining mode.
3	Choose <i>Start with wet wipe</i> or <i>Start with dry wipe</i> as required.
4	25 CFM is required to operate the optional venturi vacuum system.



Defining the Product Transfer Method

Introduction

The direction of board travel through the machine has been factory set. However, the AccuFlex allows you to change it.

When the machine is initialized, any board inside will be moved out on the conveyor. Initialize direction defines the side of the machine on which a board will be ejected.

You can select machine interface protocols such as SMEMA, and use them independently with the machine to the left, the machine to the right, both, or neither.



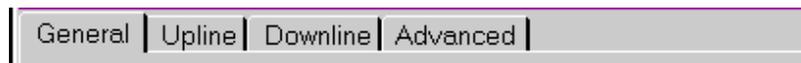
ATTENTION

There are hardware differences with each interface protocol. The proper protocol must be ordered with the printer.

Product Transfer / FMI Dialog

To access the Board Transfer/FMI dialog, choose *Product transfer* from the *Configure* menu, and then choose *FMI* from the resulting sub-menu.

The options available under the Utilities menu item are split into four tabs:

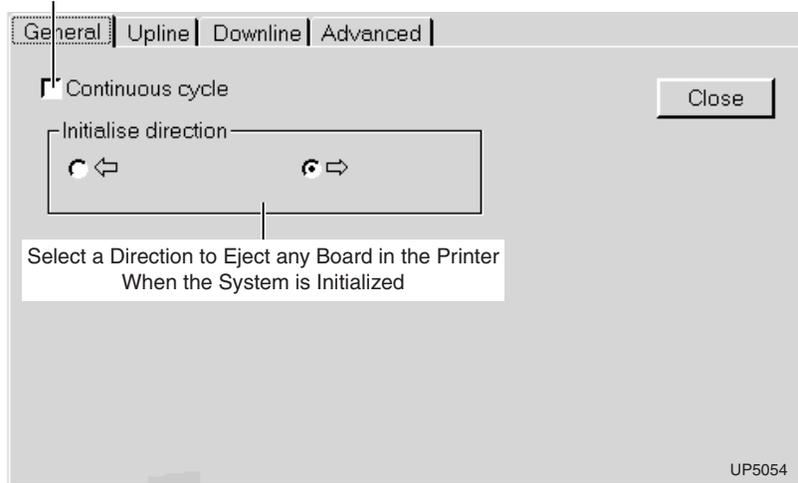


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General Tab

Use the General tab to define the conveyor configuration and define the direction that boards are purged on initialization.

Print in Continuous Mode
(Not Used in Normal Production Mode)



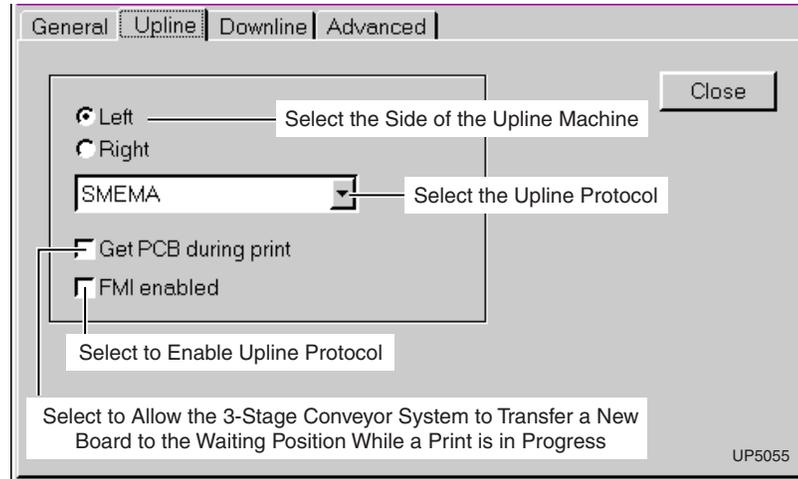
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Upline / Downline Tabs

Use the Upline tab and the similar Downline tab to define the Upline and Downline board transfer protocols.

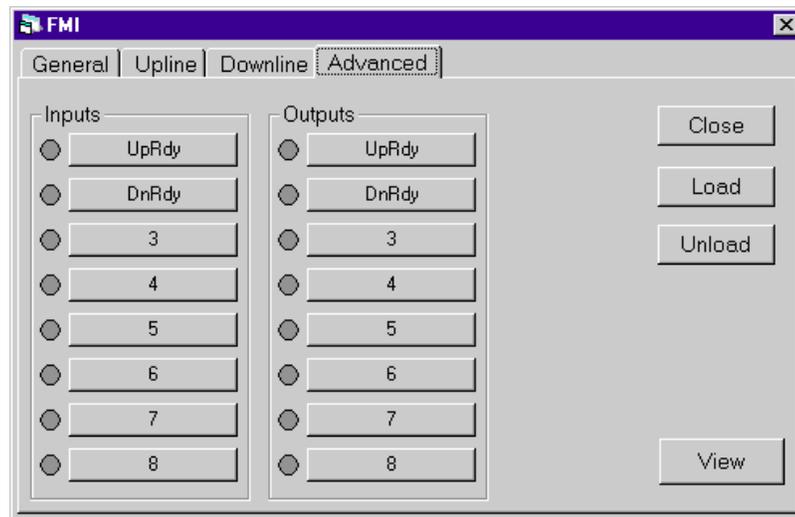
The downline FMI dialog is similar to the upline FMI dialog in appearance and operation.



Advanced Tab

Use the Advanced tab to edit the FMI protocols

Click a button to turn on a condition.



ATTENTION

The Board transfer protocols - Advanced dialog is intended for use by experienced engineers only.

Use only with the direction of Speedline Field Service Engineers.