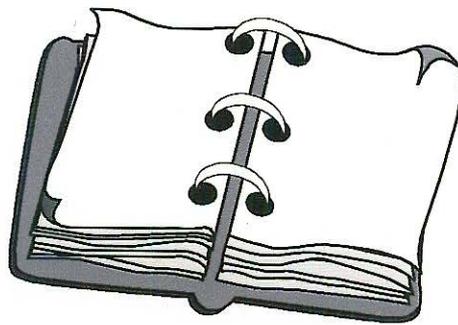


CONTENTS





248 OPERATOR MANUAL

MANUAL ERRORS
 MANUAL CHANGE REQUEST FORM
 MANUAL AMENDMENT STATE
 DEK WORLDWIDE

CHAPTER 1 SAFETY

MACHINE SAFETY FEATURES	1.1
Introduction	1.1
Warning and Caution Notices	1.1
General	1.2
Emergency Stop	1.2
Printhead Covers	1.2
Safety Guards	1.2
Foot Switch	1.2
Two Button Control	1.3
EMERGENCY SHUTDOWN	1.4
PROTECTION FROM HIGH VOLTAGE	1.5
Mechanisms	1.5
110V-240V	1.5
Hazard Warning	1.5
Earth Bonding	1.6

CHAPTER 2 OVERVIEW

INTRODUCTION	2.1
CONTROL PANEL	2.2
PRINthead ENCLOSURE	2.3
VISION SYSTEM	2.4
TOOLING TABLE ASSEMBLY	2.5
TOOLING OPTIONS	2.6
Standard Vacuum Tooling	2.6
AutoEdge Clamping	2.7
CAMERA ARMS	2.8
SVGA MONITOR	2.9
VISION INTERFACE	2.10

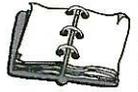
CHAPTER 3 PRODUCT RUNNING

INTRODUCTION	3.1
Power Up	3.1
Initialisation Sequence	3.3
Resetting the Batch Number	3.3
PRINTER MODES	3.3
RUNNING WITH DEK ALIGN 4	3.4
RUNNING WITH NO VISION	3.6



PRODUCT MENU CHANGE	3.7
Product Menu File	3.7
Menu Name	3.7
Print Mode	3.7
Print Gap	3.8
Deposits	3.8
Forward Print Speed	3.8
Reverse Carriage Speed	3.8
Inspection Rate	3.8
Alignment Rate	3.9
Front Print Limit	3.9
Rear Print Limit	3.9
Hop-over	3.9
Separation Speed	3.10
Table In Delay	3.10
Squeegee Delay	3.10
Hop Over Delay	3.10
Pressure Value	3.10
TOOLING	3.11
Vacuum Tooling	3.11
AutoEdge Clamping	3.12
BOARD ALIGNMENT (DA4 VISION).	3.14
Introduction	3.14
Reference Image	3.16
BOARD ALIGNMENT (NON-VISION)	3.19
Direct Sight Method	3.19
Flap Register Method	3.21
SCREEN CHANGE	3.23
SQUEEGEE CHANGE	3.24
Squeegee Pressure Setting	3.27
ERROR MESSAGES	3.28
CHAPTER 4 CONSUMABLE REPLENISHMENTS	
INTRODUCTION	4.1
Regulations.	4.1
Competence Level	4.1
SOLDER PASTE REPLENISHMENT	4.2
Load Paste	4.2
Paste Removal	4.3
Solvent Advice	4.4
SQUEEGEE BLADE REPLACEMENT.	4.5
Worn or Damaged Blades	4.5

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
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NO PART OF THIS MANUAL MAY BE REPRODUCED, TRANSMITTED IN ANY FORM OR MEANS, ELECTRONICALLY OR MECHANICALLY, INCLUDING PHOTOCOPYING AND RECORDING, FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN PERMISSION OF DEK PRINTING MACHINES LTD.

EVERY EFFORT HAS BEEN MADE DURING THE COMPOSITION OF THIS MANUAL TO ENSURE THAT THE INFORMATION HAS BEEN CLEARLY PRESENTED AND CORRECT IN ALL RESPECTS.

IF DURING THE USE OF THIS MANUAL ERRORS OR OMISSIONS ARE FOUND, OR THE READER CONSIDERS THAT IMPROVEMENTS ARE NECESSARY TO OVERCOME ANY AMBIGUITY OR INACCURACIES, A COPY OF THE FORM OVERLEAF SHOULD BE COMPLETED AND EITHER FAXED OR FORWARDED TO THE ADDRESS BELOW, ACCOMPANIED WITH A COPY OF THE RELEVANT PAGE AND/OR FIGURE OF THE MANUAL WITH THE RECOMMENDATION.

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MEMORANDUM

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RE: [Illegible subject line]

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MANUAL CHANGE REQUEST FORM

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COMPANY:	
ORIGINATOR:	Name/Dept:
	Date:
MACHINE	Type:
	Serial Number:
	Software:
MANUAL CHAPTER/FIGURE REF:	
RECOMMENDATION:	
ENCLOSURES:	

INTERNAL USE ONLY	
MANUAL CHANGE	Accepted:
	Rejected (State Reason):
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CHANGE DETAILS:	
OTHER MANUALS AFFECTED:	
CHANGE CARRIED OUT BY:	Name: _____
AUTHORISED BY:	Name: _____ Date: _____
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MEMO

MEMORANDUM FOR THE RECORD

DATE: 10/15/54

TO: SAC, NEW YORK

FROM: SAC, NEW YORK

SUBJECT: [Illegible]

**MANUAL AMENDMENT STATE****ISSUE 9 - NOVEMBER 1998**

In line with the DEK policy of continual improvement this manual is periodically up-issued to reflect the latest machine enhancements and controlled by the Manual Amendment State shown above.

Changes to the manual are by individual chapter only, the latest up-issue of each is recorded in the table below and also at the foot of every page within that chapter.

Operator Manual in 1 Volume

Title	Pages	Issue State
Flysheet	2	Iss 9. Nov 98
Contents	4	Iss 9. Nov 98
Prelims	6	Iss 9. Nov 98
Chapter 1	8	Iss 9. Nov 98
Chapter 2	12	Iss 9. Nov 98
Chapter 3	30	Iss 9. Nov 98
Chapter 4	8	Iss 9. Nov 98

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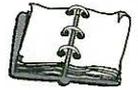
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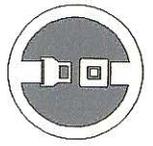
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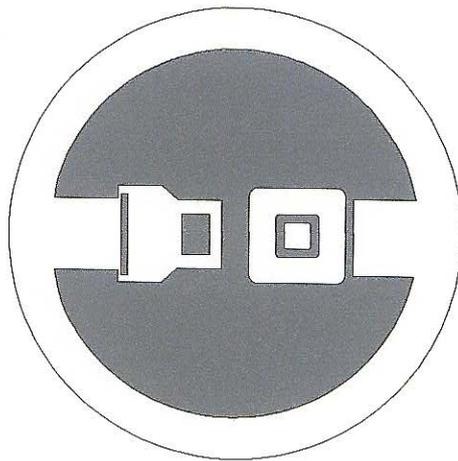
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CHAPTER 1

SAFETY





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CHAPTER 1

TABLE



**SAFETY**

MACHINE SAFETY FEATURES

Introduction This chapter describes the various safety features that are incorporated into the machine to provide a safe operating and maintenance environment for the operator.

Warning and Caution Notices WARNING notices draw the attention of operators/maintainers to possible 'general' or 'functional' hazards which may cause loss of life, serious injury or ill health. These hazards are either inherent in the machine or arise during the operation/implementation of procedures.

An example warning notice is shown below:

**WARNING**

LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. ENSURE ALL ELECTRONICS COVERS AND MAIN MACHINE COVERS ARE FITTED BEFORE OPERATING THIS EQUIPMENT.

CAUTION notices alert personnel to the possibility of damage occurring to the machine material which is likely to arise following the departure from laid-down procedures. Caution notices do not imply danger to personnel.

An example caution notice is shown below:

CAUTION

ANTI-STATIC HANDLING. Standard precautions must be adhered to when handling electronic cards and configuring and inserting into the enclosures.



1954

ATOMIC SPECTROSCOPY

Introduction

Atomic spectra are produced when the atoms of an element are excited to a higher energy level and then return to a lower energy level. The energy difference between the two levels is emitted as light of a specific wavelength. This light can be analyzed to determine the identity and concentration of the element.

The most common method for determining the concentration of an element in a sample is by comparing the intensity of its spectral lines to those of a known standard. This is done by measuring the absorbance of the sample and the standard at the same wavelength.

The intensity of the spectral lines is proportional to the concentration of the element in the sample. This relationship is known as the Beer-Lambert law.

There are several factors that can affect the intensity of the spectral lines, such as the path length of the sample and the concentration of the element. It is important to control these factors to ensure accurate results.

The most common method for determining the concentration of an element in a sample is by comparing the intensity of its spectral lines to those of a known standard. This is done by measuring the absorbance of the sample and the standard at the same wavelength.

The intensity of the spectral lines is proportional to the concentration of the element in the sample. This relationship is known as the Beer-Lambert law.





General

The following safety features provide safe operating conditions for both the operator and the machine:

- Emergency Stop Loop - an emergency safety shut down press button switch located on the left hand side of the control panel.
- Printhead Covers - when opened cuts power to the machines moving parts.
- Safety Guards - Prevent access to the machine whilst the machine is operating.
- Two Button Control - ensuring that the operators hands are clear of moving parts during GO function operations.
- Foot Switch - all GO button functions may be operated by the foot switch option. With this option the printhead cover interlock prevents access to moving parts during the print cycle.

Emergency Stop

Pressing the emergency stop button cuts all electrical power to the machine. A message for recovery is displayed on the front panel.

Printhead Covers

Safety covers above and to the front of the printer are interlocked with the power drive to the printing mechanisms. On opening a cover all power to moving mechanisms ceases.

NOTE

The printhead cover can be opened when adjusting the table height in step (set-up) mode. The printhead carriage is immobilised but table lift-off remains available for setting contact height and print height.

Safety Guards

Safety guards/panels are fitted as follows:

- A safety panel is fitted to the right hand side of the machine to prevent access when the table is moving inwards.
- Safety guards are fitted to the lift mechanism casting on both sides of the machine to prevent injury between the casting and machine structure during table lift operations.
- A protective guard is fitted to the lift mechanism casting to eliminate the possibility of injury between the table drive cylinder and table.
- A roller blind action safety guard is fitted to the lift mechanism casting to prevent injury between the table out stop and table.
- A mechanical guard plate fitted to the printhead structure prevents access to the inboard end of the table when the table is out.

Foot Switch

If fitted, this option provides the GO button function. In this mode the printhead cover interlock still continues to prevent operator access to moving parts during a print cycle.



Two Button Control The machine operates a two button control safety feature (with the keyswitch in position 1) which requires to be pressed simultaneously in order to become active. The positioning of these (GO) buttons is needed to maintain maximum safety for the operator during certain operations. LED lamps indicate that the buttons are active

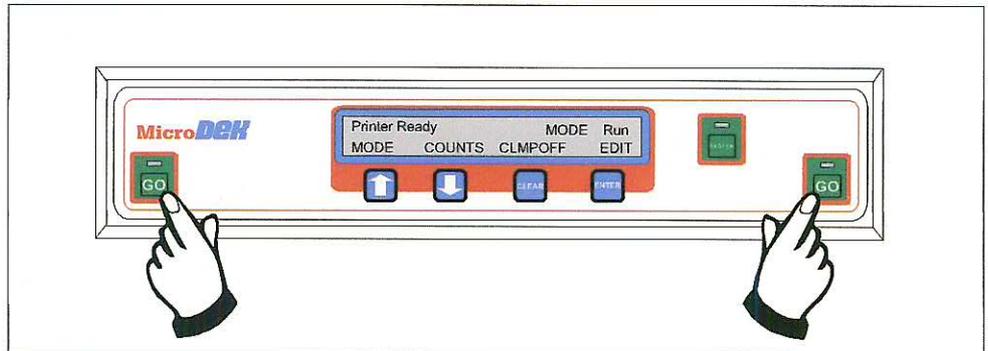


Figure 1-1 GO Function Buttons

The two button control function is active with the keyswitch in position 1. This function may be overridden to a one GO button function (left button) by turning the machine keyswitch to position 2.

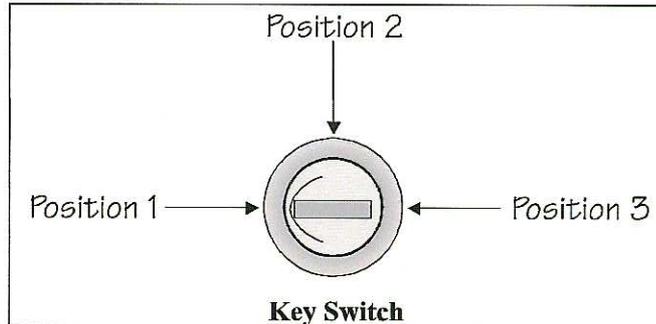


Figure 1-2 Keyswitch Positions



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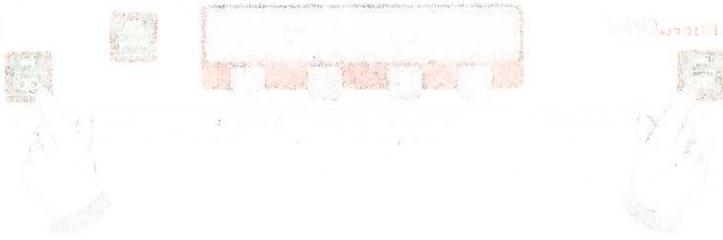


Figure 1.

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Figure 2.



EMERGENCY SHUTDOWN

The machine is fitted with an Emergency Stop (E Stop) push button control switch located at the left hand side of the control panel. Pressing this push button (or raising the printhead cover) produces the following actions:

- Power is cut to the print carriage motor and table lift actuator.
- Air in the table drive cylinder is vented.

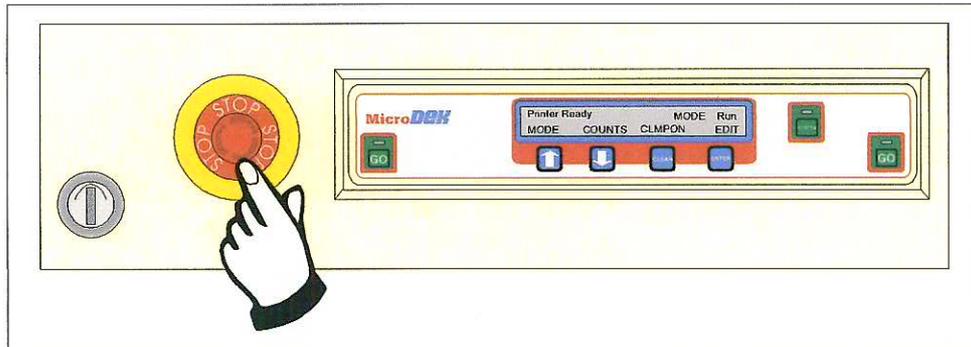


Figure 1-3 E-Stop Positions (machine front access panel)

Recovery

To recover the machine unlatch the E Stop button by depressing with a slight twist to the right and releasing. Close the front and top covers, press the **SYSTEM** button and the following actions occur:

- Squeegee lifts.
- Print carriage drives to the rear.
- Table lowers.
- Air is restored to the table cylinder followed by table out.

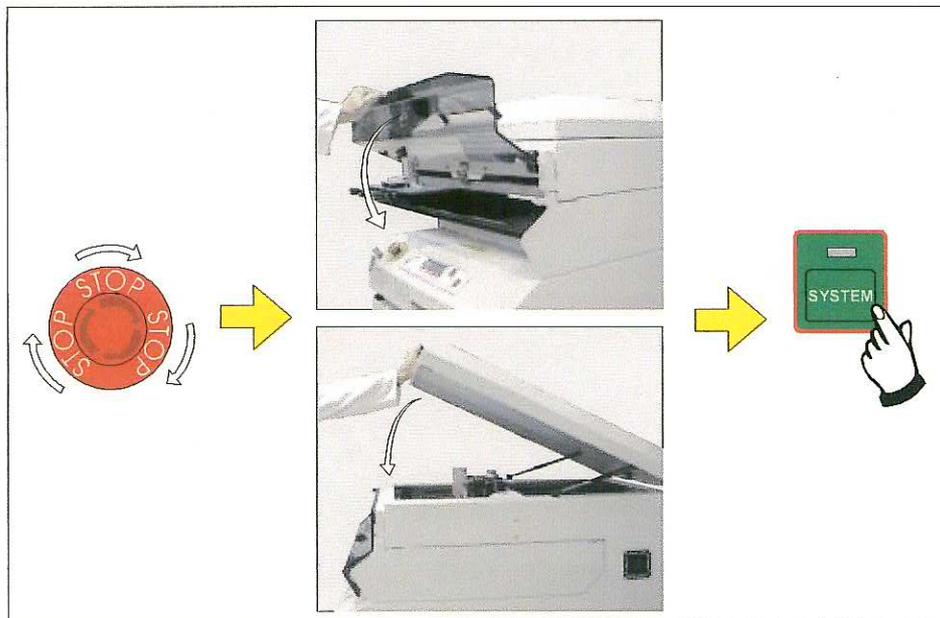


Figure 1-4 Recovery Sequence



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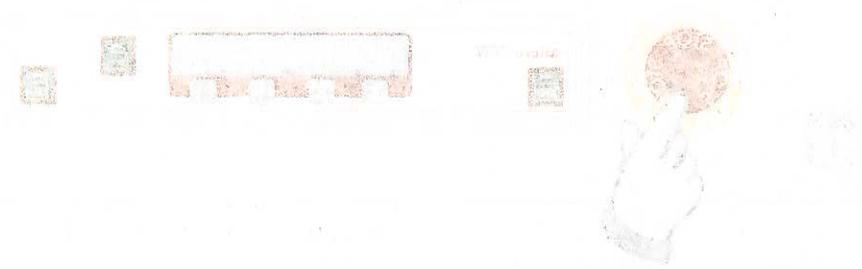


Figure 1 - Bus Stop Location

The following information is for your information only. It is not intended to be used as a basis for any action. The information is provided for your information only. It is not intended to be used as a basis for any action.



Figure 2 - Bus Stop Location

**PROTECTION FROM HIGH VOLTAGE****Mechanisms**

The machine incorporates Class 1 electrical protection according to the IEC 536 requirement 1:1993.

Machine mechanisms are powered by voltages less than 50V and do not pose an electrical hazard to personnel.

110V-240V

Where (110V-240V) incoming supply voltage is present, protection is afforded by controlling access to the service tray. The machine is fitted with a mains switch that cuts power to terminations down stream of the isolator.

NOTE

If the mains is switched OFF prior to switching off the UPS, the system PC and vision monitor remains operational for 10 seconds so to carry out an orderly shutdown of Windows.

Hazard Warning

A hazard warning label is placed on the outside of the service tray where dangerous voltage (110V-240V) terminations are present within the enclosure. The service tray is not fitted with a safety lock.

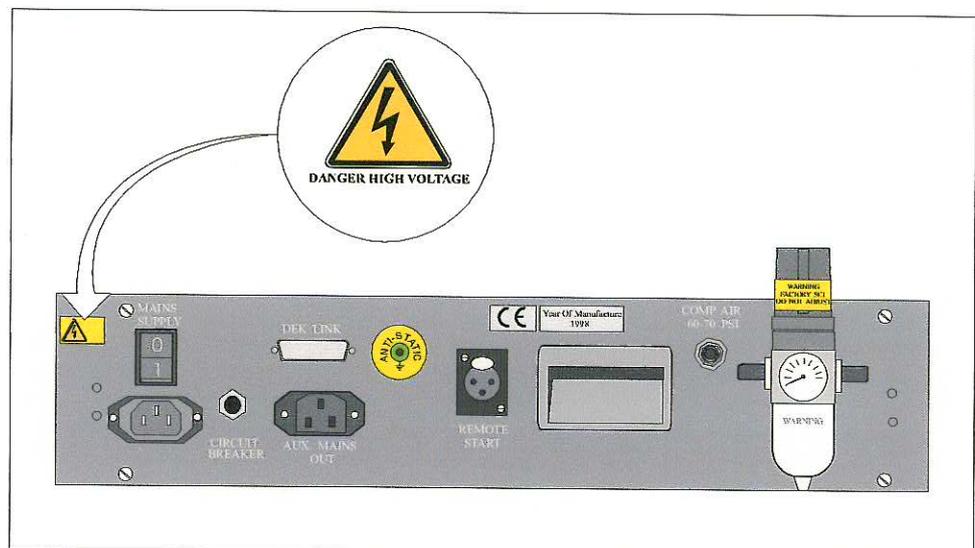


Figure 1-5 Service Tray (Hazard Warning)

**WARNING**

LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. ENSURE ALL ELECTRONICS COVERS AND MAIN MACHINE COVERS ARE FITTED BEFORE OPERATING THIS EQUIPMENT.

E STOP CIRCUIT. THE E STOP CIRCUIT FITTED TO THE MACHINE ONLY ISOLATES THE 24 VOLT SUPPLY TO THE MAIN CONTACTORS. LETHAL VOLTAGES ARE STILL PRESENT ON THE MACHINE AFTER THE E STOP HAS BEEN ACTIVATED.



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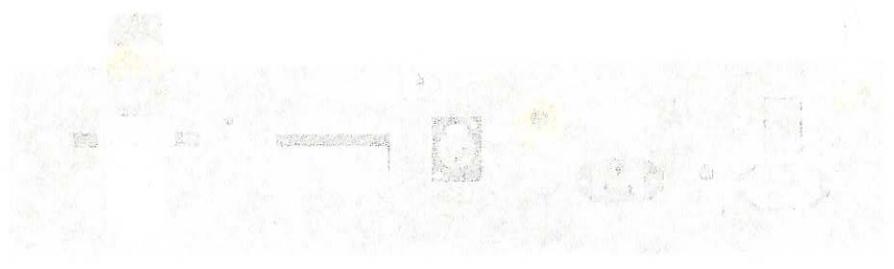


Diagram Description

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Earth Bonding

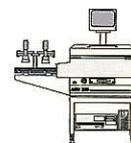
All external metal surfaces are mechanically and electrically bonded to the machine earth point. The bonding wire used is identified by its green and yellow insulation and is commonly used to earth bond throughout. Care should be taken when removing these links that when they are replaced they are secured tightly and cleanly.



IN SENATE, January 11, 1961.

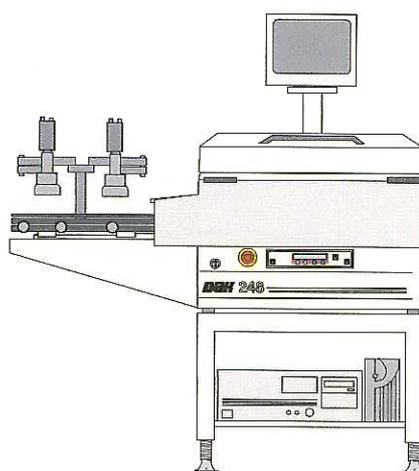
REPORT

STATE OF CALIFORNIA
DEPARTMENT OF
AGRICULTURE



CHAPTER 2

OVERVIEW



CHAPTER 2

OF BRITAIN



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OVERVIEW

INTRODUCTION The 248 machine is a flexible, semi-auto, surface mount screen printer which can be configured to accept the DEKalign 4 vision system

The overview within this chapter highlights areas on the machine that is relevant to the operator.

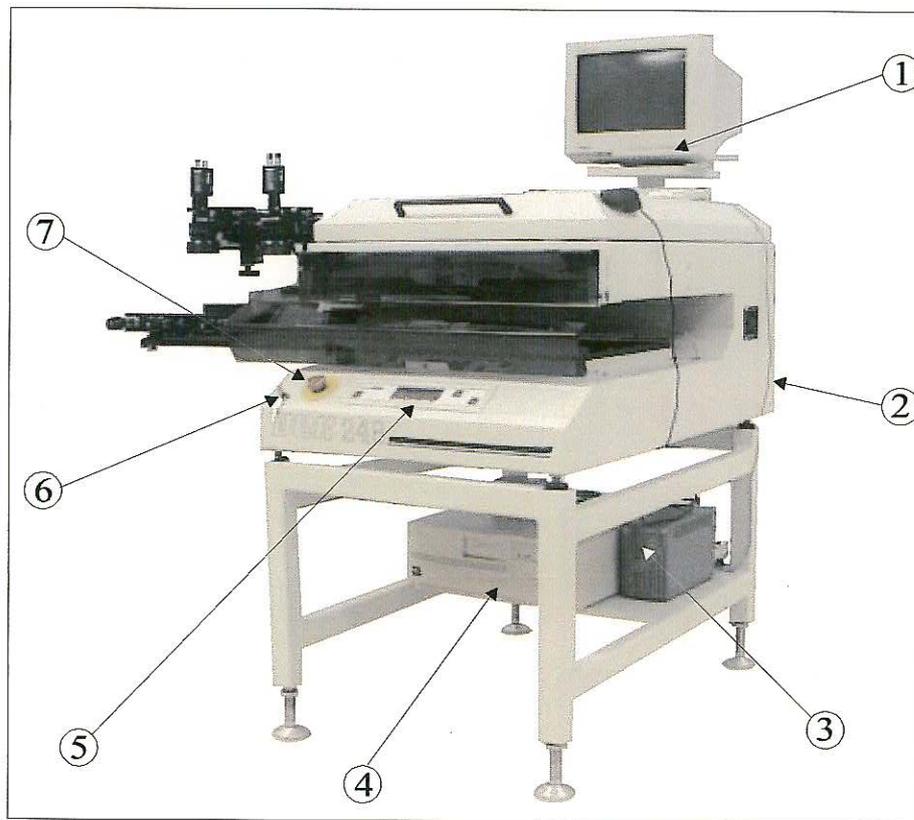


Figure 2-1 Operator Controls

Item	Description
1	Monitor (vision option)
2	Mains Power Switch (at rear of machine)
3	UPS (Uninterruptible Power Supply)
4	System PC
5	Control Panel
6	Keyswitch
7	Emergency Stop Button (E Stop)

SECRET

EXHIBIT C-100 - This exhibit contains a copy of the report of the...
The report was prepared by the...
The report is classified as...

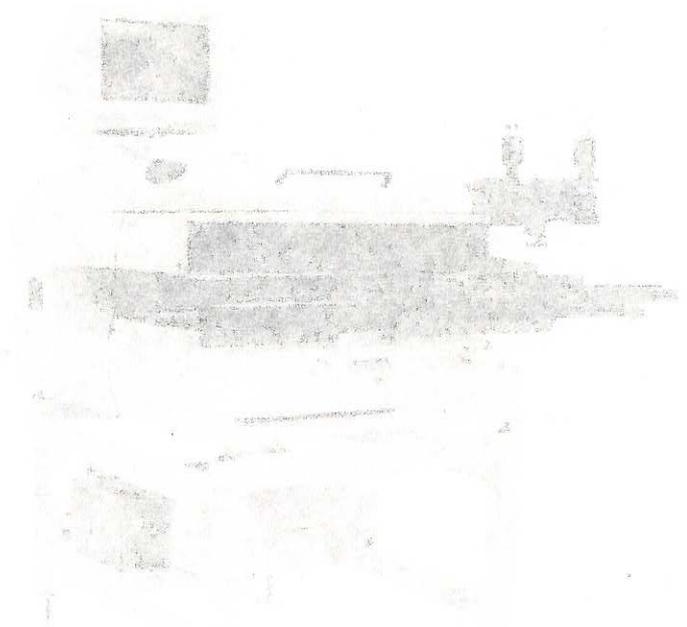


Figure 1 - Equipment shown in Exhibit C-100

Item	Description	Quantity
1	...	1
2	...	1
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5	...	1
6	...	1
7	...	1
8	...	1
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CONTROL PANEL

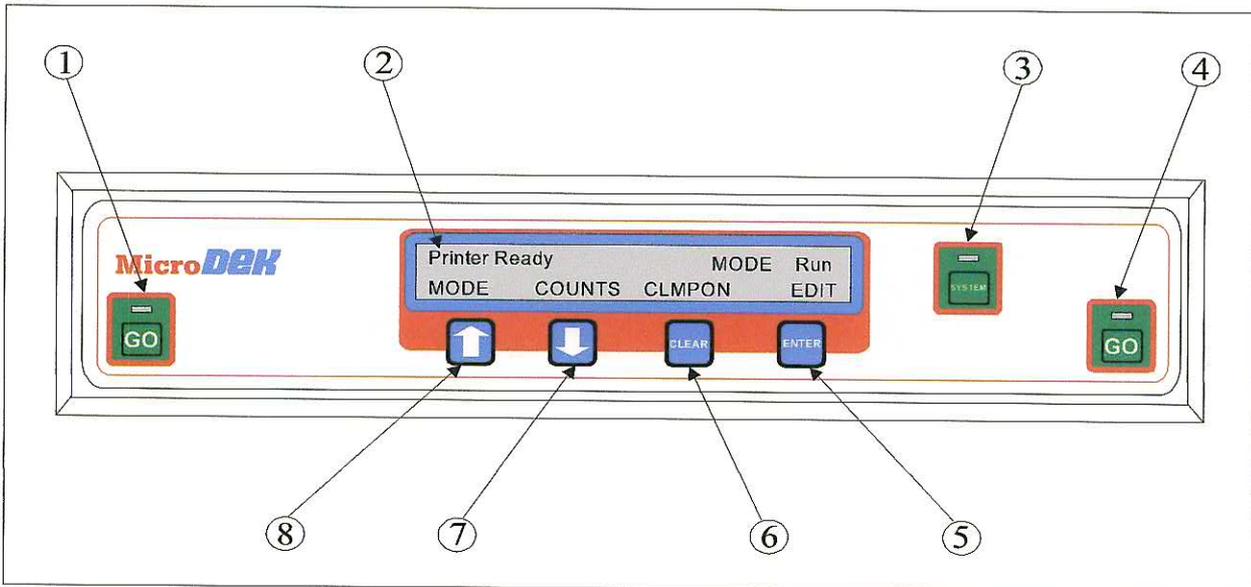


Figure 2-2 Control Panel

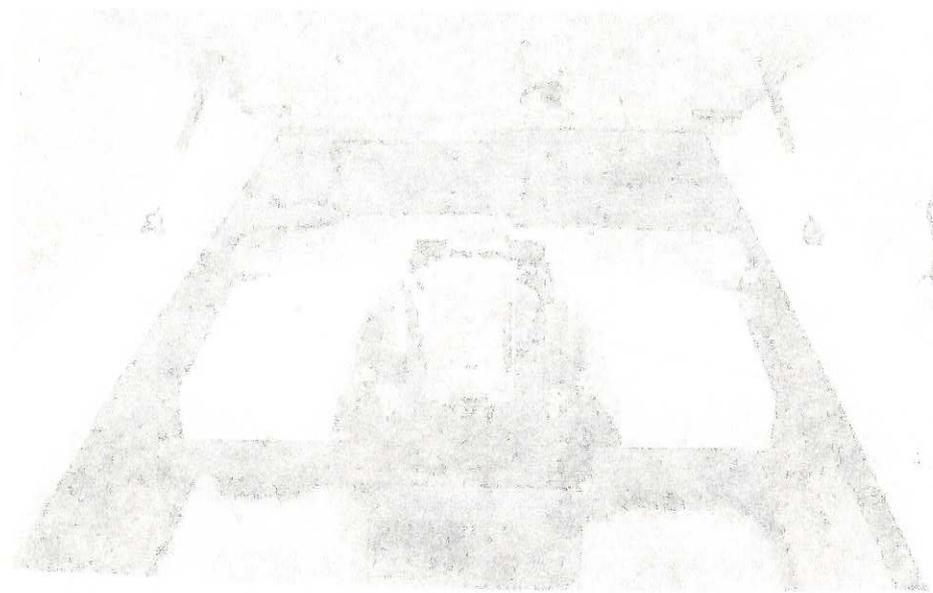
Item	Description
1	System GO Button
2	LCD Display
3	SYSTEM Function Button
4	System GO Button
5	ENTER Function Button
6	CLEAR Function Button
7	DOWN Function Button
8	UP Function Button



PRINthead ENCLOSURE



Item	Description
1	Printhead
2	Screen Stencil
3	Squeegee Assembly
4	Squeegee Pressure Assembly
5	Squeegee Pressure Thumbwheel



From the Department of
 Architecture
 The University of Texas at Austin
 Austin, Texas



VISION SYSTEM



Figure 2-3 DEK Align 4 Vision System

Item	Description
1	SVGA Monitor
2	Trackball Mouse (moveable)
3	Camera Assembly (Left Hand)
4	Camera Assembly (Right Hand)

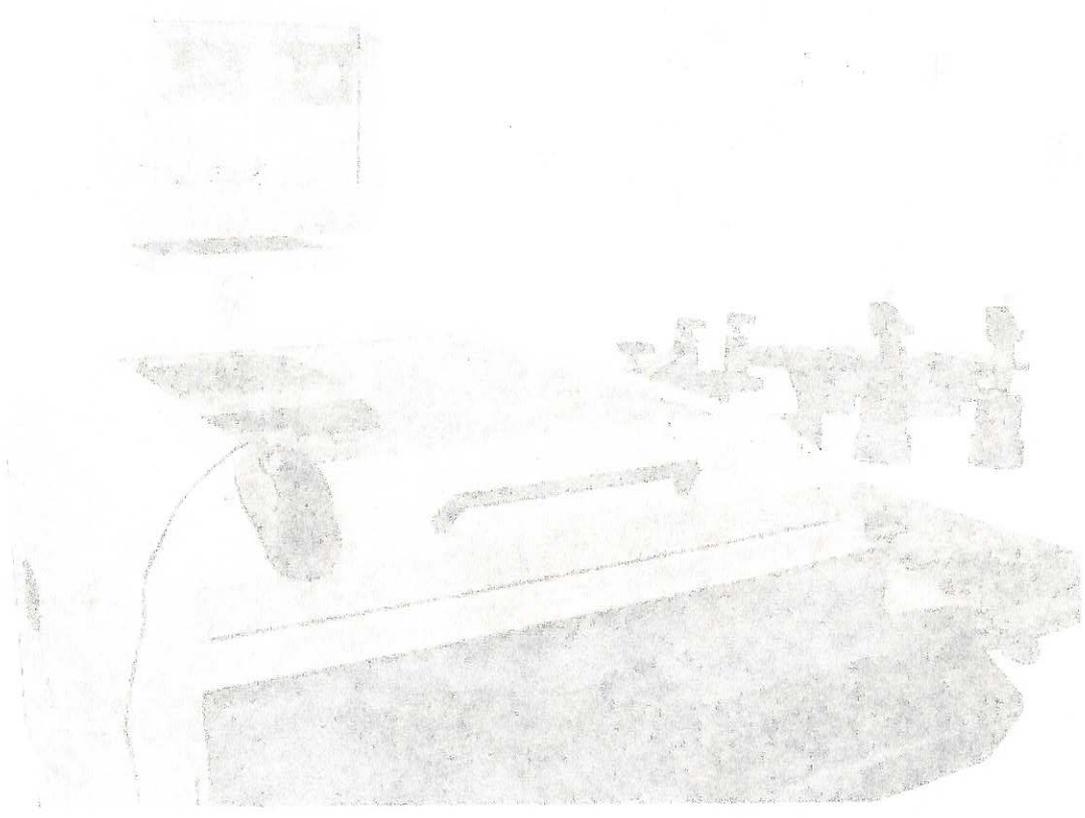


Figure 2-1 DR 100-17-100

Item	Description
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TOOLING TABLE ASSEMBLY

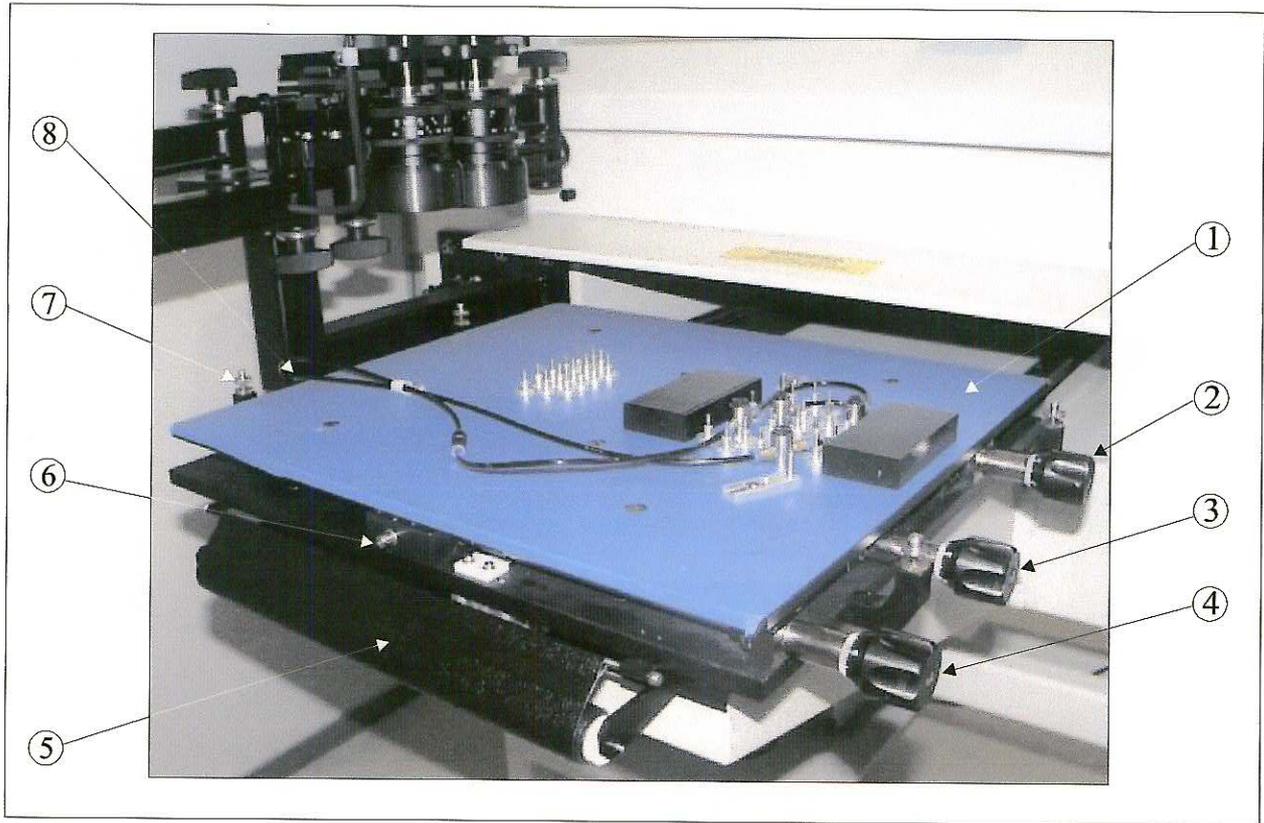


Figure 2-4 Tooling Table Assembly

Item	Description
1	Tooling Baseplate
2	Table Alignment Adjuster (Y Axis)
3	Table Alignment Adjuster (Theta Axis)
4	Table Alignment Adjuster (X Axis)
5	Safety Roller Blind
6	Micrometer Shaft for X Axis Positioning
7	Mylar Flap Location Pins (4 positions)
8	Pneumatic Multi-Connector Point (underside of table)

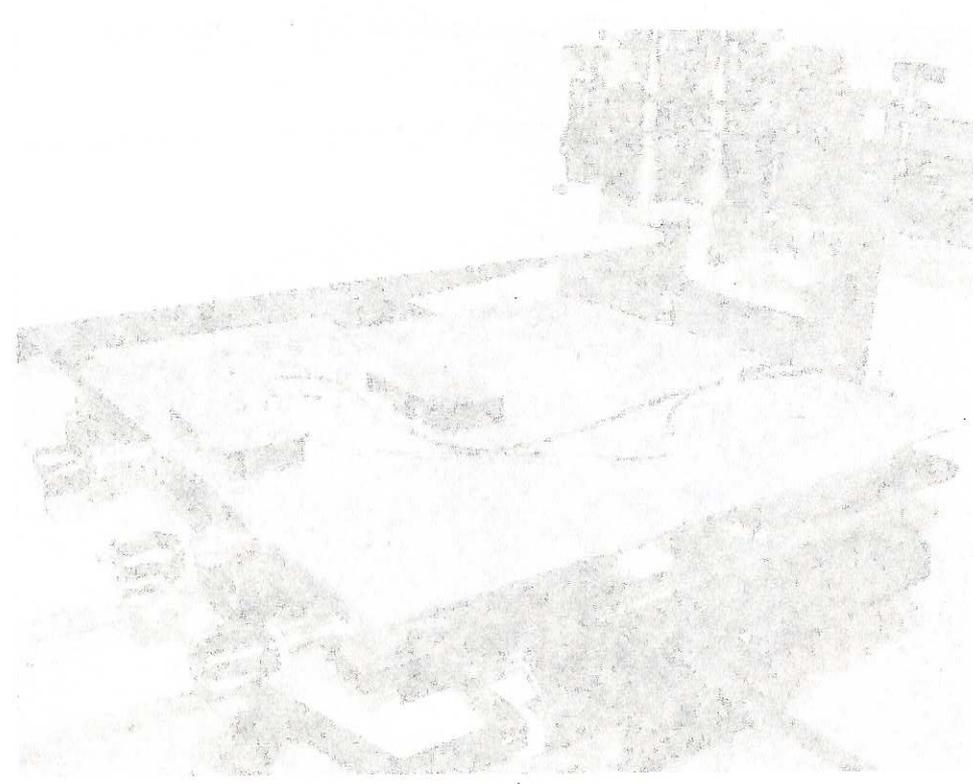


Figure 1. Seedling tray.

Item	Quantity
1. Seedling tray	1
2. Soil	1
3. Water	1
4. Seedling tray	1
5. Soil	1
6. Water	1
7. Seedling tray	1
8. Soil	1
9. Water	1



TOOLING OPTIONS

The following tooling options are available for the 248 printer:

- Standard Vacuum Tooling
- AutoEdge Clamping (optional)

Standard Vacuum Tooling

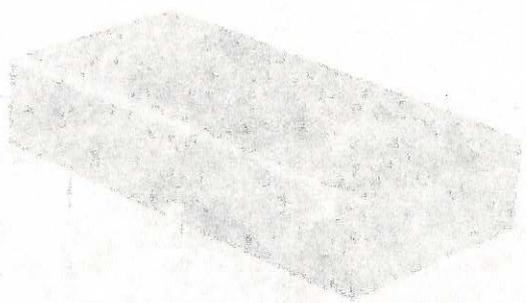


Figure 2-5 Standard Vacuum Tooling

Item	Description
1	Vacuum Support
2	Support Pin
3	Board Location Pin
4	Squeegee Support Block

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AutoEdge Clamping

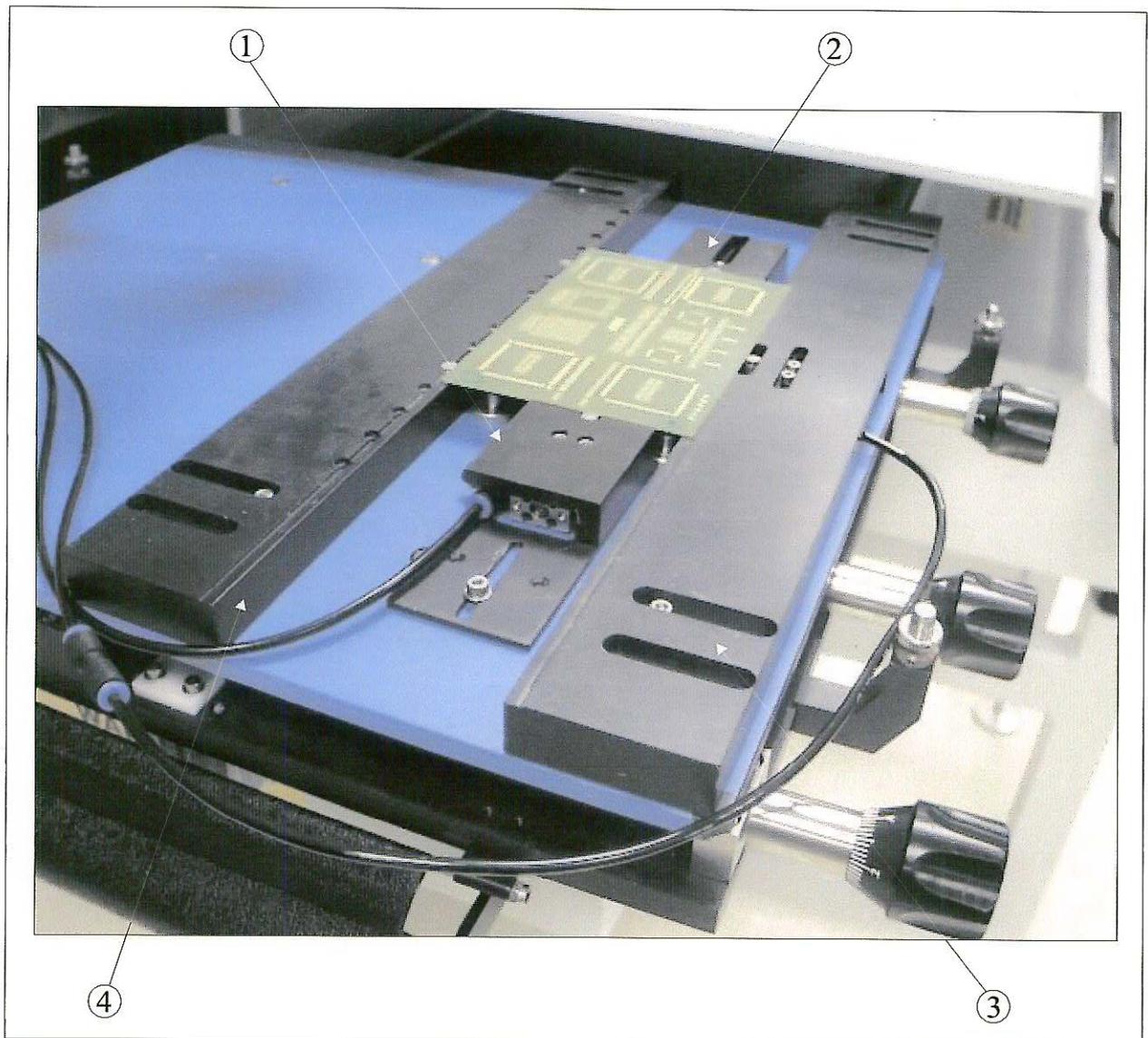


Figure 2-6 AutoEdge Clamping

Item	Description
1	Clamping Block
2	Fixed Block
3	Clamping Rail (pneumatically activated)
4	Fixed Rail (Rear)

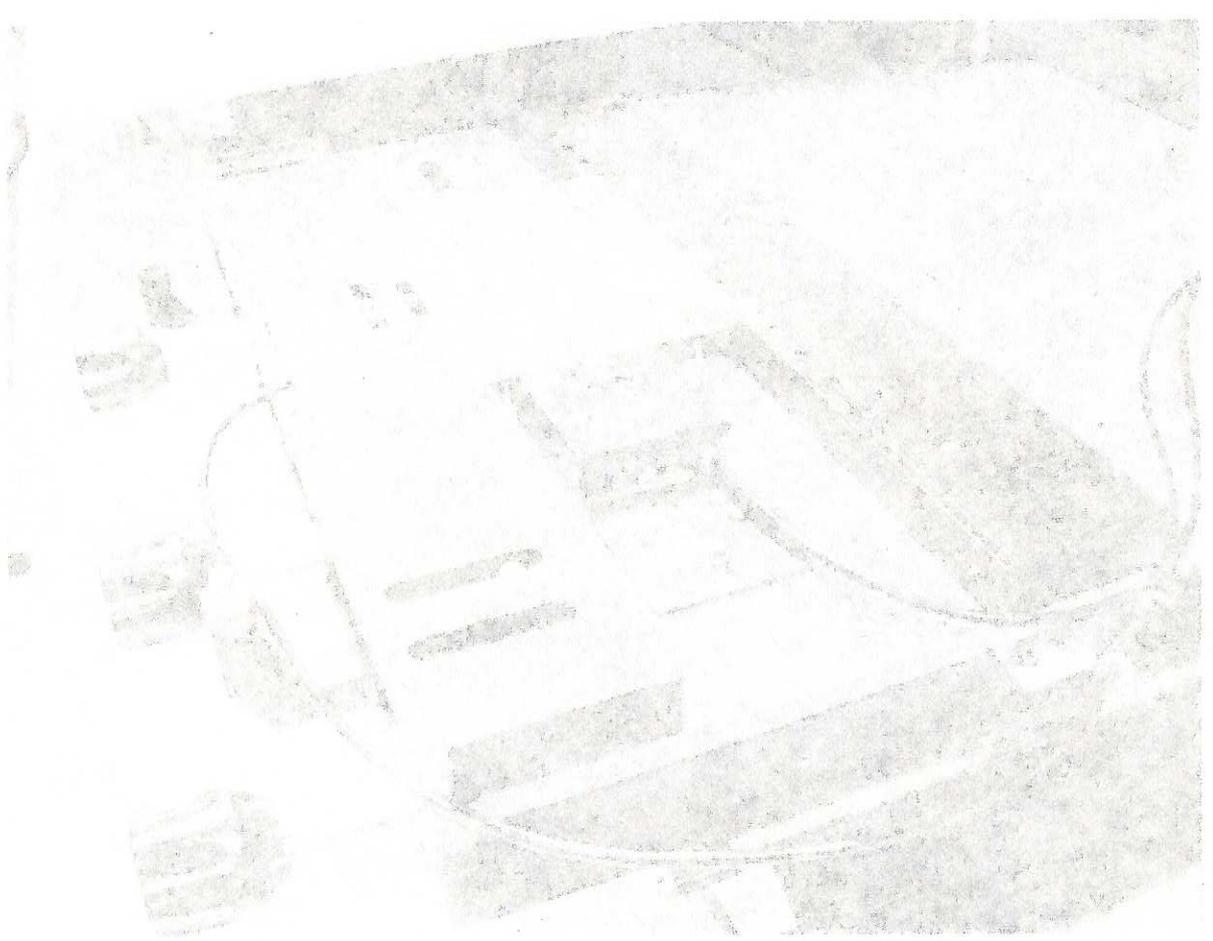


Figure 1 - Aerial photograph

Feature	Description
1	Building
2	Field
3	Field
4	Field
5	Field
6	Field
7	Field
8	Field
9	Field
10	Field
11	Field
12	Field
13	Field
14	Field
15	Field
16	Field
17	Field
18	Field
19	Field
20	Field



CAMERA ARMS

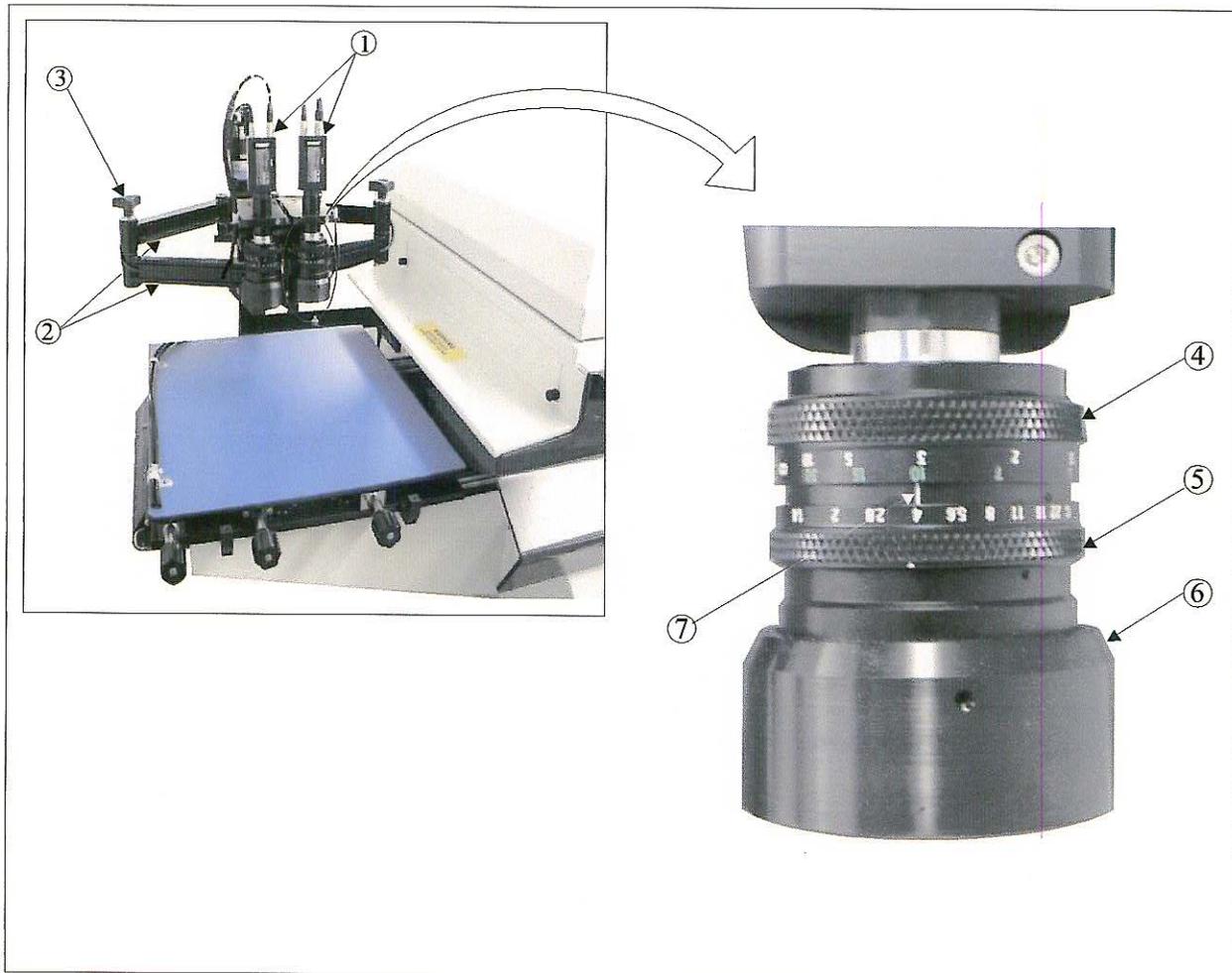


Figure 2-7 Camera Adjustment

Item	Description
1	Left and Right Cameras
2	Camera Support Arms (2 Positions)
3	Control Knob (4 Positions)
4	Focus Ring
5	Aperture Ring
6	Light Ring
7	White Indicator Mark

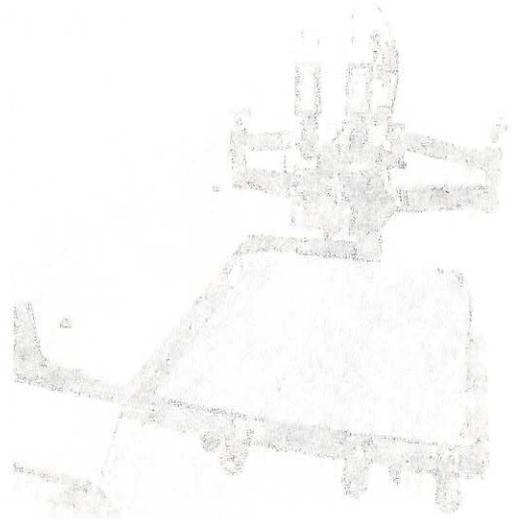
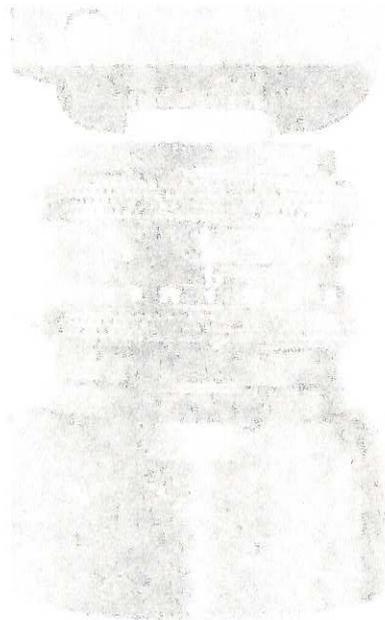


Figure 1. Component Adjustment

Item	Description
1	Adjustment screw
2	Adjustment nut
3	Adjustment washer
4	Adjustment spring
5	Adjustment pin
6	Adjustment plate
7	Adjustment bracket



SVGA MONITOR

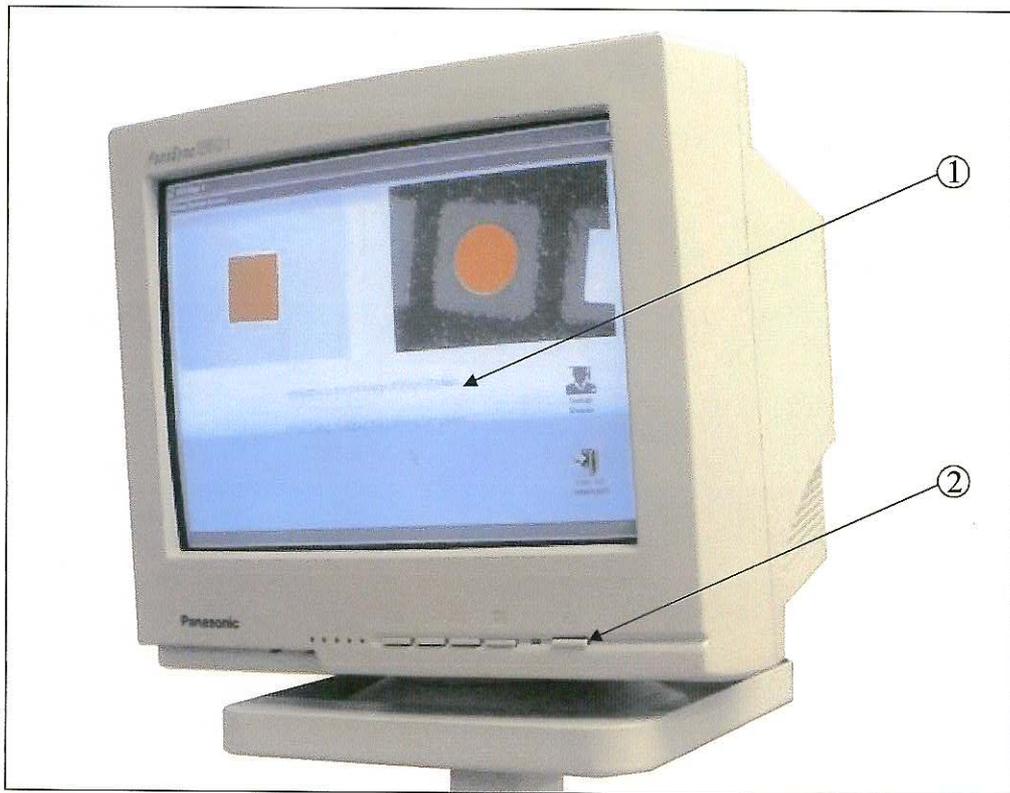
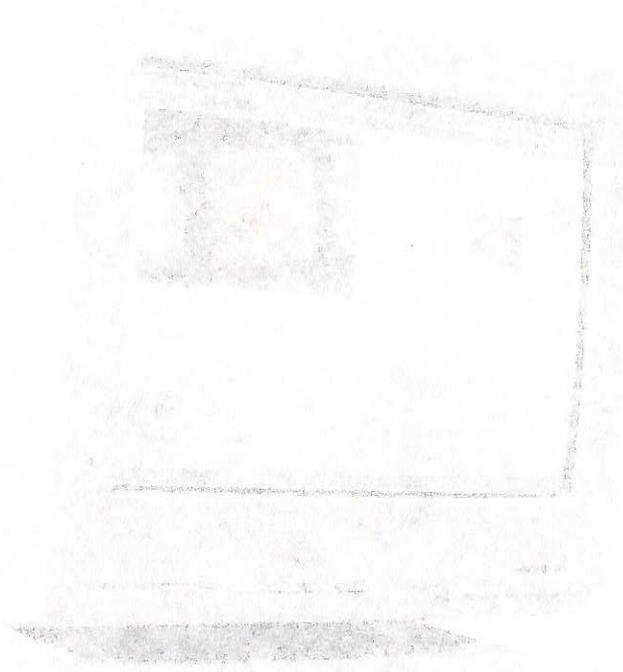


Figure 2-8 SVGA Monitor

Item	Description
1	DA4 Vision Interface
2	Monitor Control ON/OFF Switch

DATE: [Date]

TO: [Recipient Name]



[Faint text, possibly a signature or name]

[Faint text, possibly a title or position]

[Faint text, possibly a date]

[Faint text, possibly a reference number]



VISION INTERFACE

The vision data is displayed as picture-in-picture windows (one for each camera) in the upper half of the display. Vision command icons are also displayed in the lower half of the display area.

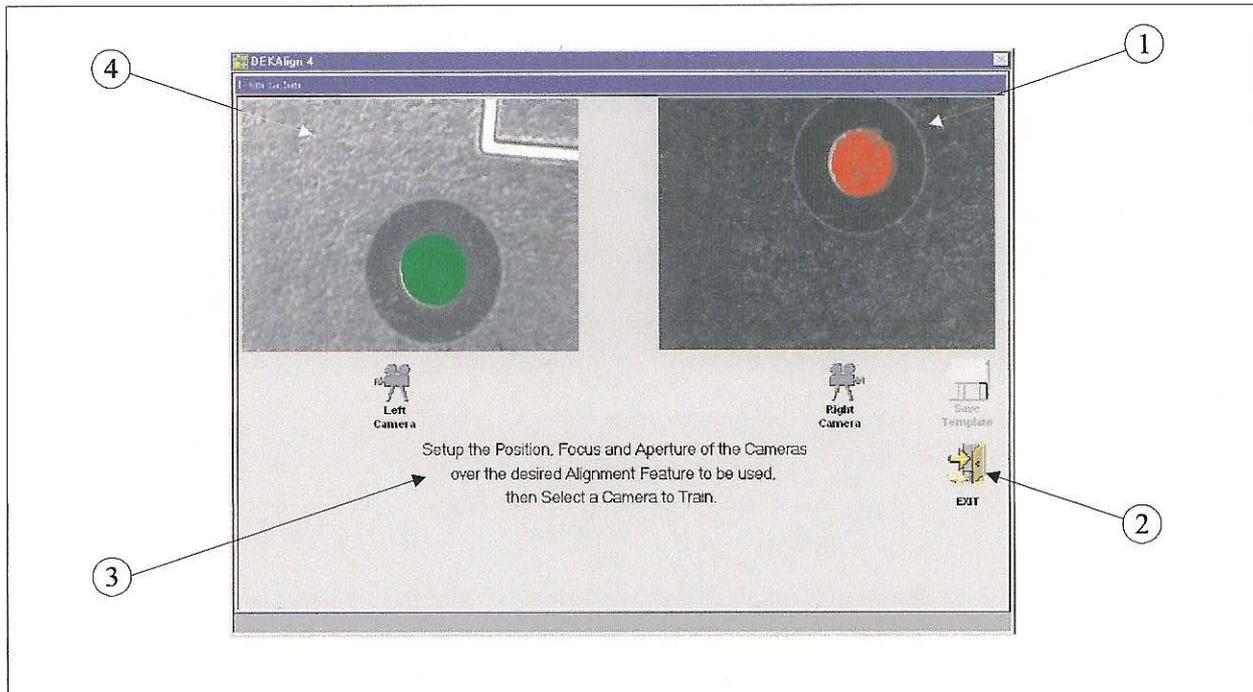


Figure 2-9 Vision Display

Item	Description
1	Right Camera Display
2	Vision Icon Button
3	Operator Information
4	Left Camera Display

1. The purpose of this report is to provide a summary of the results of the investigation conducted during the period from 1956 to 1957.

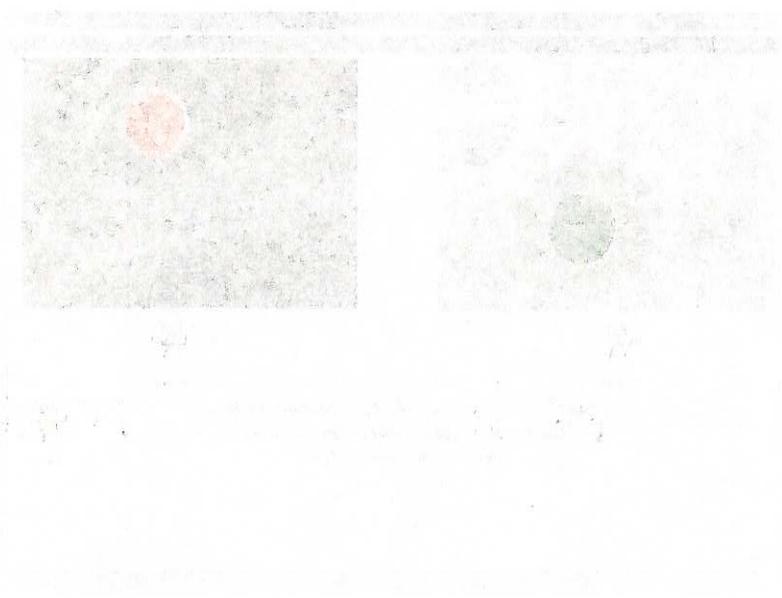
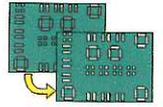


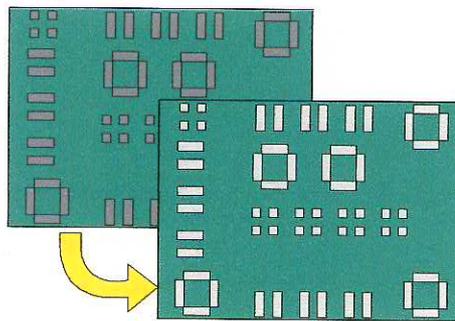
Figure 1. Results of the investigation.

Order	Description
1	1. First stage of the process
2	2. Second stage of the process
3	3. Third stage of the process
4	4. Fourth stage of the process



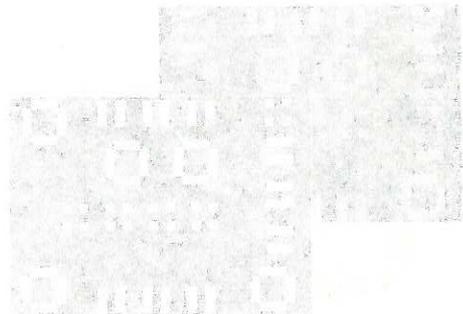
CHAPTER 3

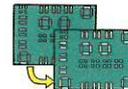
PRODUCT RUNNING



CHAPTER 3

PROJECT READING





PRODUCT RUNNING

INTRODUCTION Product running for the 248 machine is carried out with either no vision or the DEK Align 4 vision system option fitted, both procedures are described separately in this chapter.

Power Up

The following procedure is carried out for powering up the printer:

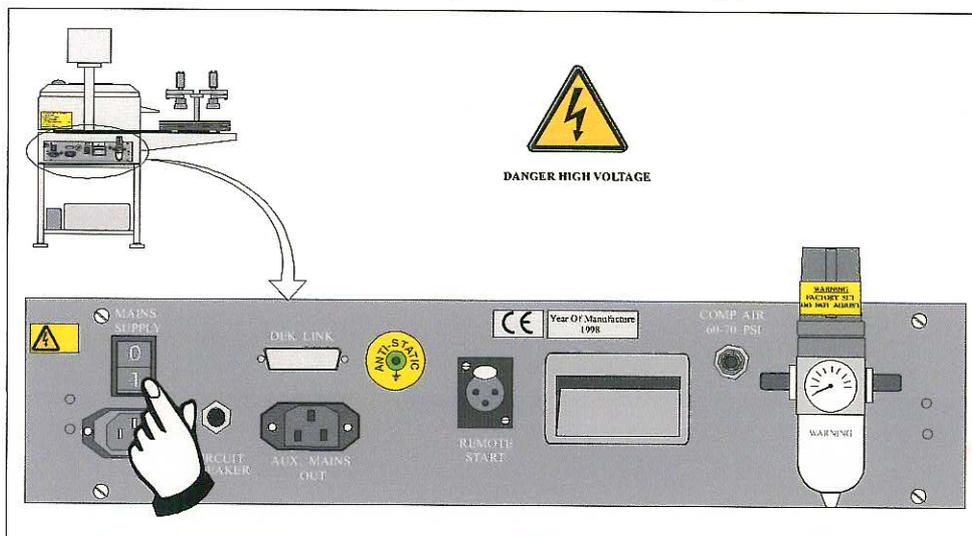
1. At the rear panel connect the air supply and check that the pressure is set between 60 psi and 70 psi.



WARNING

LETHAL VOLTAGES. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. ENSURE ALL ELECTRONICS COVERS AND MAIN MACHINE COVERS ARE FITTED BEFORE OPERATING THE EQUIPMENT.

2. At the rear panel turn the mains power switch to ON (1).



Step 2

3. The machine control panel displays the following message, '**SYSTEM**' to Initialise.
4. If DA4 vision option is fitted, carry out the following:
 - a. Switch the UPS unit to ON.
 - b. Ensure system PC auto-starts.
 - c. Ensure vision monitor auto-starts.

NOTE

Switching on the UPS provides power to the system PC and protects the PC software in the event of an emergency power shutdown. Power is also supplied to the monitor.

The system PC and monitor unit is normally left in the 'ON' configuration (ie at shutdown only the UPS unit is switched off).

If either the system PC or monitor fails to auto-start then ensure that both units are switched to 'ON'.



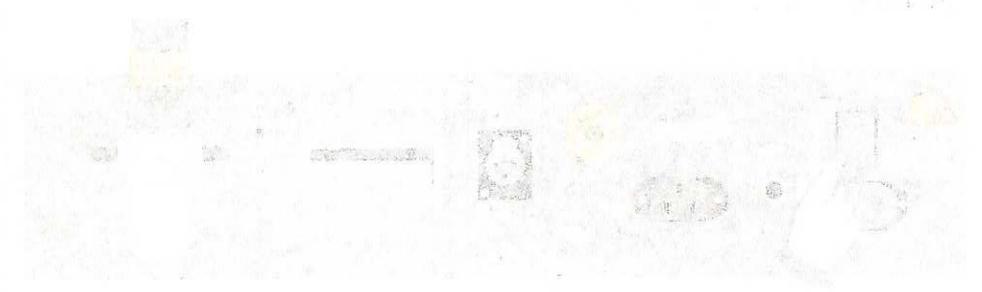
STANDARDIZATION

The following standard is intended to be used as a guide for the standardization of the standardization process. The standardization process is a continuous process that requires the standardization of the standardization process. The standardization process is a continuous process that requires the standardization of the standardization process.

Standardization



The standardization process is a continuous process that requires the standardization of the standardization process. The standardization process is a continuous process that requires the standardization of the standardization process.

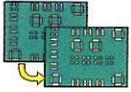


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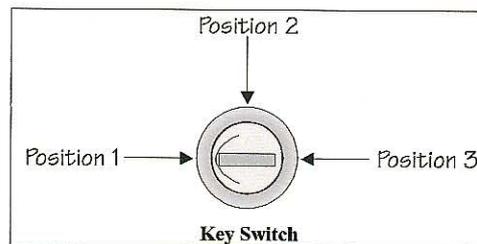
The standardization process is a continuous process that requires the standardization of the standardization process. The standardization process is a continuous process that requires the standardization of the standardization process.

The standardization process is a continuous process that requires the standardization of the standardization process. The standardization process is a continuous process that requires the standardization of the standardization process.



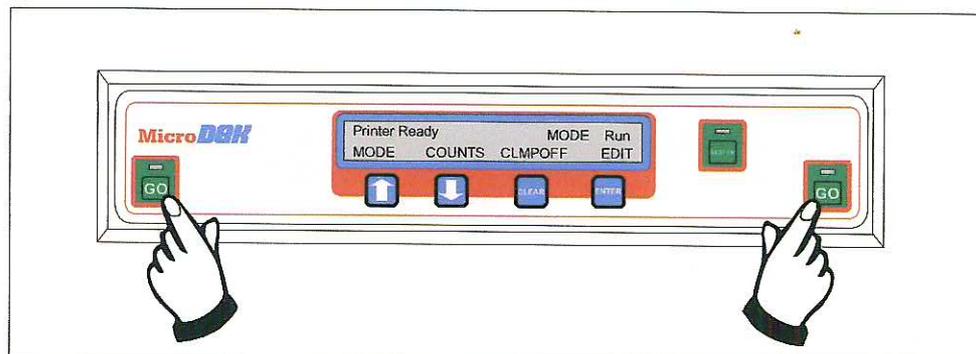
Step 4 / Step 5

5. Press the **SYSTEM** button on the machine control panel.
6. Insert machine key and select the required keyswitch position:
 - Position 1 - Two GO key button operation
 - Position 2 - One GO key button operation
 - Position 3 - Diagnostic mode



Step 6

7. Press **GO** button/button at the machine control panel.



Step 7

8. Select the product menu file to be used and configure the machine as described in the Product Menu Change paragraph of this chapter.

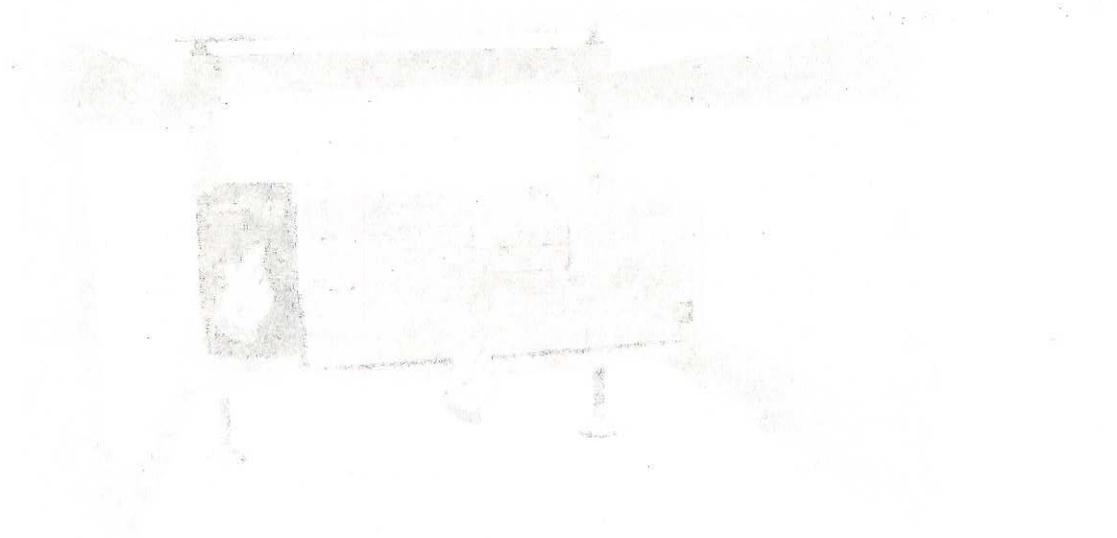
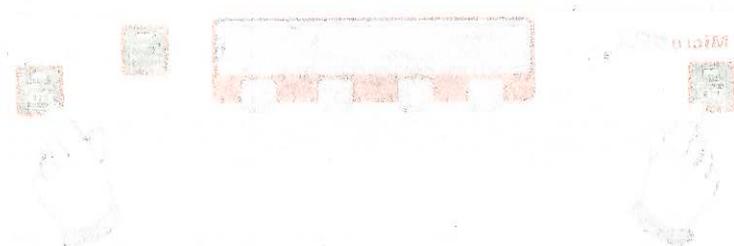


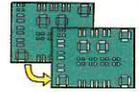
Fig. 1

The diagram illustrates the layout of the experimental apparatus. It shows a rectangular structure with a central area and several smaller rectangular sections. The diagram is oriented horizontally and appears to be a top-down view of the setup.

Fig. 2



The diagram shows the hands holding the object in a way that allows for measurement. The grid pattern on the object is used to determine the dimensions of the sample being measured.

**Initialisation Sequence**

During initialisation the machine seeks a logical starting point for operation, irrespective of the current position of the mechanisms.

An initialisation occurs during the following actions:

- Power Up (after selecting 'System' button)
- E Stop (post E Stop recovery and 'System' button selection)
- Abort (selection of the 'Abort' control panel function key)

The following mechanisms move to their 'home' position during initialisation:

- Squeegee Up
- Printhead Carriage
- RS Table (fully down and to the table-out position)

**Resetting the
Batch Number**

The total number of boards printed (print cycles) since the last reset of the batch counter is displayed at the printer ready page. To reset the batch counter carry out the following:

1. At the printer ready page select **COUNT** (down arrow button) to display the current batch count and total number of print cycles to date.
2. Press **CLEAR** to reset the batch counter to zero. (The total cycles is a permanent count indicator and cannot be reset.)

PRINTER MODES

The following Printer Modes are available on the 248 machine:

- Run
- Paste
- Step

Run

Selecting the printer mode to Run allows access for the operator to the machine print cycle. This is the normal operating mode of the printer. Pressing the **GO** button/buttons initiates a print cycle.

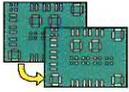
Paste

Selecting the printer mode to Paste allows the operator to replenish the print screen with paste.

1. Pressing the **GO** button/buttons retracts the squeegee mechanism.
2. Pressing the **GO** button/buttons moves the squeegee to its original position.
3. Pressing the **GO** button/buttons resumes the current operation.

Step

The printer mode selected to Step allows adjustment of the settings of the current process by stepping through a print cycle. Pressing the **GO** buttons/button starts the next step. The selected **MODE-Step** is displayed on the LCD display panel.



RUNNING WITH DEK ALIGN 4

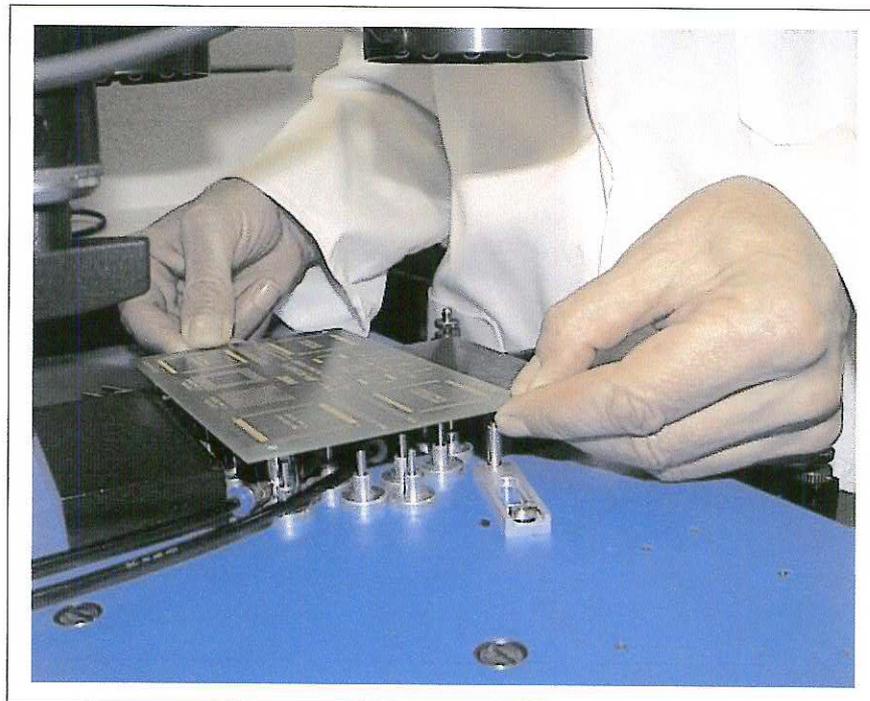
The following sequence is performed after vision alignment of the board to be printed has been completed. Machine vision set up is fully detailed in the Product Menu Change section of this chapter (Board Alignment -DA4 option).

At the machine control panel select Mode to **Run** and carry out the following steps:

1. Load the board to be printed onto the tooling table locations pins (or AutoEdge Clamp if option fitted).

NOTE

Ensure that the tooling table and DEK Align has been set up for the menu file loaded.



Step 1

2. Press **GO** button/buttons (to activate the vacuum tooling or AutoEdge clamps).
3. If either of the reference images on the monitor display are red, align the board image to the reference image by adjusting the **X**, **Y** and **Theta** (θ) adjusters, until the images turn green or blue (dependent upon colour option selected).

NOTE

i. If the template inhibit signal is enabled the machine cannot initiate a print cycle until both templates turn green.

ii. If the inhibit signal setting in the vision configuration page is set to disabled then Step 3 is not required.

The first part of the report is devoted to a description of the field work...

In the field, the principal problem was to obtain a good...

The first part of the report is devoted to a description of the field work...

The first part of the report is devoted to a description of the field work...



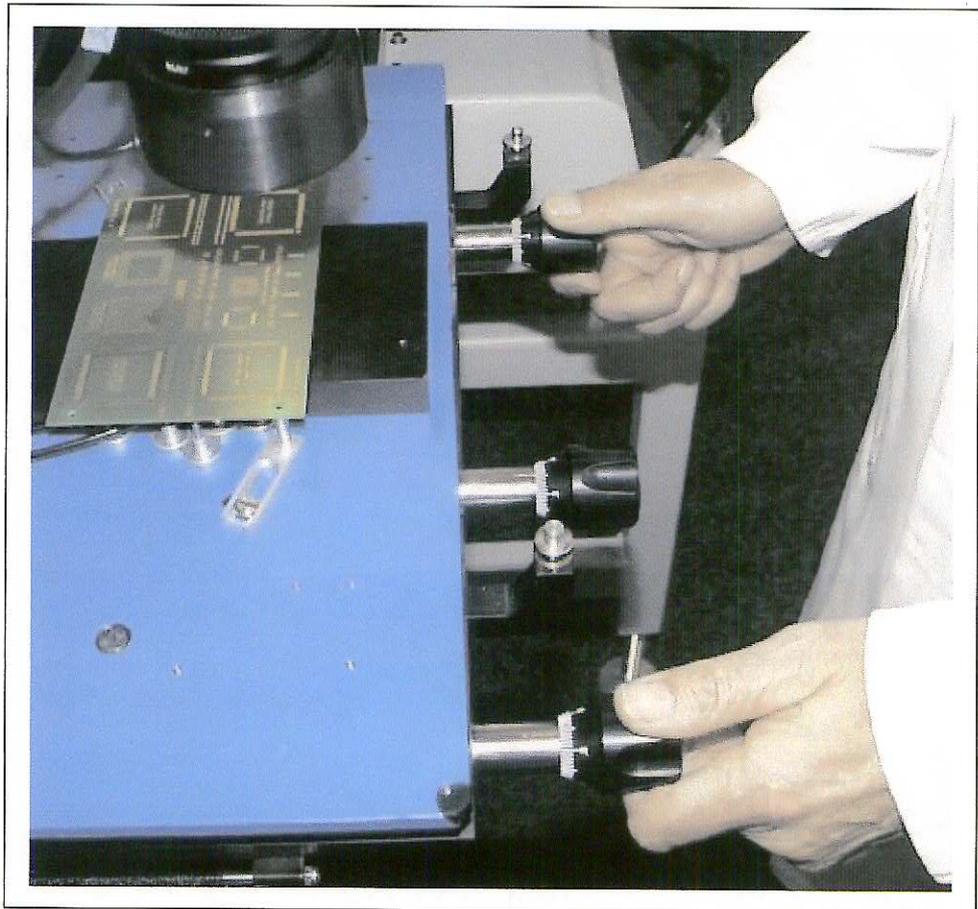
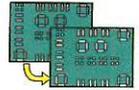
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The first part of the report is devoted to a description of the field work...

The first part of the report is devoted to a description of the field work...

**Step 3**

4. Press **GO** button/buttons to initiate the print cycle, the table clamps lock and the table is driven into the printhead enclosure.
5. At the end of the print cycle remove the board from the tooling table.

NOTE

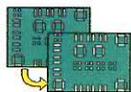
If the print menu Inspection parameter = 0 then the tooling vacuum/AutoEdge clamping is de-activated permitting the operator to remove the board from the table. Otherwise pneumatics will remain activated until the GO button/buttons is pressed (ie on completion of board inspection).

6. Repeat from Step 1 onwards to continue printing boards.



Faint, illegible text block, possibly a caption or description of the image above.

Faint, illegible text block, possibly a continuation of the caption or description.



RUNNING WITH NO VISION

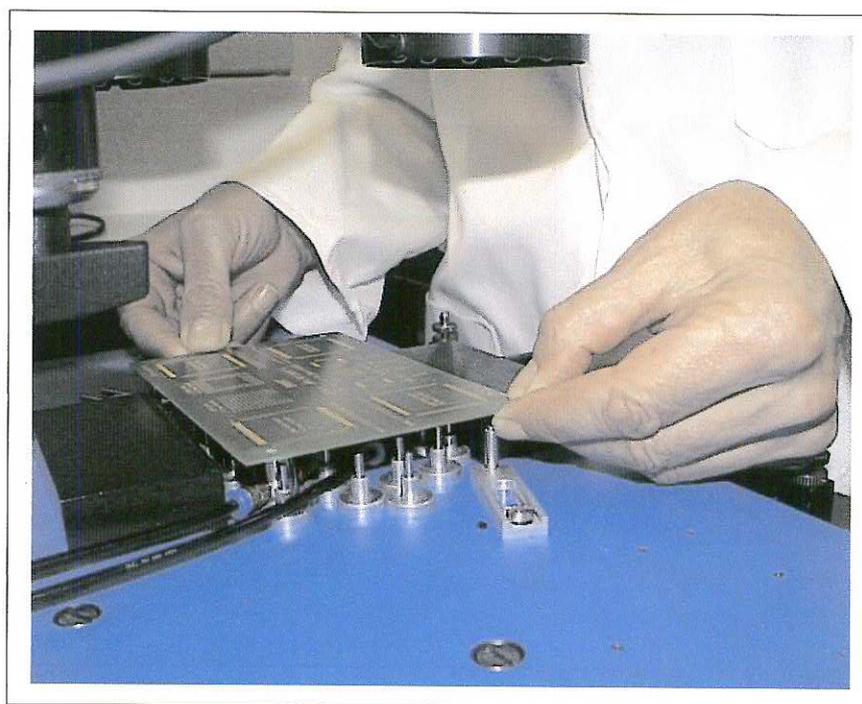
The following sequence is performed after alignment of the first board to be printed has been completed (ie - board alignment using clear Mylar flap). Board alignment is fully detailed in the Product Menu Change section of this chapter (Board Alignment - Non-vision)

In the control panel select Mode to **Run** and carry out the following steps:

1. Load the board to be printed onto the tooling table locations pins (or AutoEdge Clamp if option fitted).

NOTE

Ensure that the tooling table has been set up for the menu file loaded.



Step 1

2. Press **GO** button/buttons, (to activate the vacuum tooling or AutoEdge clamps).
3. Press **GO** button/buttons to initiate the print cycle, (table clamps lock and the table moves into the printhead enclosure).
4. At the end of the print cycle remove the board from the tooling table.

NOTE

If the print menu Inspection parameter=0, then the tooling vacuum/AutoEdge clamping is de-activated permitting the operator to remove the board from the table. Otherwise pneumatics will remain activated until the GO button/buttons is pressed (ie on completion of board inspection).

5. Repeat from Step 1 onwards to continue printing boards.

The following is a list of the items that were found in the...

The following is a list of the items that were found in the...

The following is a list of the items that were found in the...



Figure 1

The following is a list of the items that were found in the...

The following is a list of the items that were found in the...

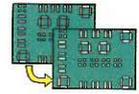
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The following is a list of the items that were found in the...

The following is a list of the items that were found in the...

The following is a list of the items that were found in the...

**PRODUCT MENU CHANGE**

The operator may be required to carry out a product menu change to the machine, details of the areas which may be affected are listed:

- Product Menu File
- Tooling Table
- Board Alignment (DA4 Vision option)
- Board Alignment (Non-vision)
- Screen Change
- Squeegee Change

Product Menu File Changing the Product Menu File alters the machine parameters which are preset and unique to that particular product. Changing one of the preset 35 stored menus to a new one is achieved as follows:

1. In the control panel select Mode to **Step**.
2. Press **ENTER**.
3. In the 'Edit Parameters' window, scroll to the desired menu (1-35) using the up/down function key.
4. Selecting **ENTER** opens the selected menu parameter pages, (if editing of selected menu is not required, select **CLEAR** to load menu).

The sequential list of parameters is as follows:

Menu Name This enables the operator to edit the current name of the selected menu. A total of 4 alpha-numeric digits can be selected by using the up/down function keys, ie DEK1, pressing the ENTER button after each selected digit.

Press **CLEAR** to accept the new menu name.

NOTE

Pressing and holding either up/down key increments the numeric sequence in groups of 5, ie 5mm; 10mm; 15mm etc.

Print Mode The Print Mode parameter enables the operator to select the following print sequences dependent upon squeegee assembly fit:

- Print/Flood (PRNT/FLD)
- Flood/Print (FLD/PRNT)
- Print/Print (PRNT/PRNT)
- Double Squeegee (DBL/SQUG)

Print/Flood Selects the sequence for the print and flood stroke - print/flood or flood/print. This option is used when fitting a single trailing or diamond-section squeegee blade in conjunction with a flood blade attachment.

Select 'PRNT/FLD' to set a front to rear print stroke at the reverse speed, beginning with the print stroke from the front.

Flood/Print Select 'FLD/PRNT' to set a rear to front print cycle beginning with a rear to front flood-stroke at the forward speed, followed by the front to rear print.

NOTE

The print stroke in Print/Flood or Flood/Print is always front to rear at the reverse speed.



RESOLUTION NO. 100-100-100

The Board of Directors of the City of Chicago, Illinois, do hereby resolve that the following items be placed on the agenda for the meeting of the Board of Directors to be held on the 15th day of February, 1998.

- 1. Approval of the minutes of the meeting of the Board of Directors held on the 15th day of January, 1998.
- 2. Approval of the report of the City Manager for the month of January, 1998.
- 3. Approval of the report of the City Treasurer for the month of January, 1998.
- 4. Approval of the report of the City Clerk for the month of January, 1998.
- 5. Approval of the report of the City Auditor for the month of January, 1998.

It is the policy of the City of Chicago, Illinois, to maintain the highest quality of service to the citizens of the City. It is the policy of the City of Chicago, Illinois, to maintain the highest quality of service to the citizens of the City.

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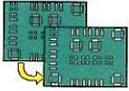
It is the policy of the City of Chicago, Illinois, to maintain the highest quality of service to the citizens of the City. It is the policy of the City of Chicago, Illinois, to maintain the highest quality of service to the citizens of the City.

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RESOLUTION NO. 100-100-100



- Print/Print** Select 'PRNT/PRNT' where a single diamond section squeegee is fitted. 'Hop-over' is active causing the blade to hop over the paste roll and pick it up on the opposite side when printing in both directions.
- Double Squeegee** Select 'DBL/SQUG' when the two independent squeegees are fitted, 'hop-over' is not active.
NOTE
Detailed squeegee/flood blade information is provided in the Squeegee Change section of this chapter.
- Print Gap** The Print Gap is the distance from the top face of the product (PCB) to the underside of the screen
- | | |
|-----------|--------|
| Minimum | 0.00mm |
| Maximum | 23.5mm |
| Increment | 0.1mm |
- Deposits** The Deposits parameter selects the number of print strokes (paste deposits) per print cycle
- | | |
|-----------|---|
| Minimum | 1 |
| Maximum | 2 |
| Increment | 1 |
- Forward Print Speed** The 'Fwd Carr Spd' parameter sets the print carriage speed from the rear to front movement.
- | | |
|------------|----------|
| Minimum | 10mm/sec |
| Maximum | 70mm/sec |
| Increments | 1mm/sec |
- Reverse Carriage Speed** The 'Rev Carr Spd' parameter sets the print carriage speed front to rear for both speed options
- | | |
|------------|----------|
| Minimum | 10mm/sec |
| Maximum | 70mm/sec |
| Increments | 1mm/sec |
- Inspection Rate** The Inspection Rate sets the frequency for print inspection at the load board position. Effectively adding a step in the print sequence retaining the vacuum (or AutoEdge clamping) until the operator presses the GO button/buttons.
- | | |
|------------|--|
| Minimum | 0 cycles (inspection disabled) |
| Maximum | 100 cycles (ie inspection activated once every 100 cycles) |
| Increments | 1 cycle |



The first part of the project is to determine the total number of...

1980

The second part of the project is to determine the total number of...

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The third part of the project is to determine the total number of...

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The fourth part of the project is to determine the total number of...

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The fifth part of the project is to determine the total number of...

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The sixth part of the project is to determine the total number of...

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The seventh part of the project is to determine the total number of...

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The eighth part of the project is to determine the total number of...

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The ninth part of the project is to determine the total number of...

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The tenth part of the project is to determine the total number of...

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The eleventh part of the project is to determine the total number of...

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The twelfth part of the project is to determine the total number of...

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The thirteenth part of the project is to determine the total number of...

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The fourteenth part of the project is to determine the total number of...

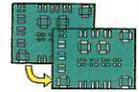
1980

The fifteenth part of the project is to determine the total number of...

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The sixteenth part of the project is to determine the total number of...

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Alignment Rate The Alignment Rate sets the frequency of a pause for an alignment check/adjustment at the load board position. This parameter is used with the vision option and requires the operator to press GO on completion of X,Y, and Theta alignment to continue the print cycle.

NOTE

During this sequence the vacuum (or AutoEdge clamping) is ON and the table clamps are OFF.

Minimum	0 (alignment rate disabled)
Maximum	20 (alignment required every 20 products)
Increments	1 cycle

Front Print Limit Selecting 'Front Limit' determines the position at which the squeegee blade commences its travel across the screen. This position is relative to the inner edge of the front cross member of the screen frame.

NOTE

This parameter setting is subject to a validity test, carried out by the machine, and automatically determines if the setting is within machine limits. If outside limits the control panel will indicate 'Front/Rear Limit Error' and invites the operator to either abort the setting or retry with new parameters.

Minimum	0mm
Maximum	340mm
Increments	2mm

Rear Print Limit Selecting 'Rear Limit' determines the position at which the rear squeegee blade commences its travel across the screen. This position is relative to the inner edge of the front cross member of the screen frame.

NOTE

This parameter setting is subject to a validity test, carried out by the machine, and automatically determines if the setting is within machine limits. If outside limits the control panel will indicate 'Front/Rear Limit Error' and invites the operator to either abort the setting or retry with new parameters.

Minimum	90mm
Maximum	450mm
Increments	2mm

Hop-over Selecting 'Hopover' is used in the Print/Print cycle mode and relates to the distance that the squeegee travels over the paste before it drops down the other side to commence the next print stroke.

Minimum	10mm
Maximum	50mm
Increments	2mm

NOTE

Used only in the single diamond squeegee mode.



The University of Chicago Library is pleased to announce the acquisition of a new copy of the book 'The History of the United States' by James Osgood Smith. This book is a comprehensive history of the United States, covering the period from the first settlement to the present. It is a valuable resource for students and scholars alike.

The book is available in both hardcover and paperback editions. The hardcover edition is priced at \$12.50, and the paperback edition is priced at \$7.50. Both editions are available in English and Spanish. The book is currently in stock and can be ordered through the University of Chicago Library website or by contacting the library directly.

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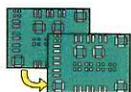
The book is a comprehensive history of the United States, covering the period from the first settlement to the present. It is a valuable resource for students and scholars alike.

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The book is a comprehensive history of the United States, covering the period from the first settlement to the present. It is a valuable resource for students and scholars alike.



Separation Speed Selecting 'Separation Spd' determines the speed at which the product (PCB) is lowered from the screen over the first 3mm of the table descent following printing.

Minimum	10%
Maximum	100%
Increments	1%

Table In Delay The 'Table In Dly' sets a time delay between pressing GO and the start of the table movement. This allows time to test the efficiency of the vacuum supports on the PCB.

Minimum	0 sec
Maximum	10 secs
Increments	0.5 sec

Squeegee Delay The 'Squeegee Dly' sets a delay between the end of the print stroke and the raising of the squeegee. Used in conjunction with the separation speed parameter for fine-pitch printing. ie - If the delay is set to zero, separation of the board and raising of the squeegee occur simultaneously

Minimum	0 sec
Maximum	10 secs
Increments	0.5 sec

Hop Over Delay The 'Hopover Dly' sets the delay before the hop over to allow paste to fall from the squeegee blade.

Minimum	0 sec
Maximum	10 secs
Increments	0.5 sec

Pressure Value The 'Pressure Value' enables the operator to record the pressure value for squeegee pressure used for the selected menu.

NOTE

This function does not set the pressure parameter of the squeegees. Squeegee pressure is set by the operator at the printhead. Squeegee Change section of this chapter refers.

Minimum	0 kg
Maximum	14.5 kg
Increments	0.5 kg

5. On completion of editing selected menu pressing '**CLEAR**' saves all parameter changes and loads the menu ready for use.



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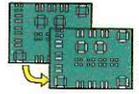
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TOOLING

The tooling table has two configurable options:

- Vacuum Tooling (fitted as standard to all machines)
- AutoEdge Clamping (optional)

Either option may require adjustment to accept the new board size.

CAUTION

TOOLING. Do not adjust X,Y and Theta positioners when table is locked this damages the table gearing.

Prior to tooling set-up ensure that the table clamps are unlocked, (select 'CLMPOFF' in the LCD control panel).

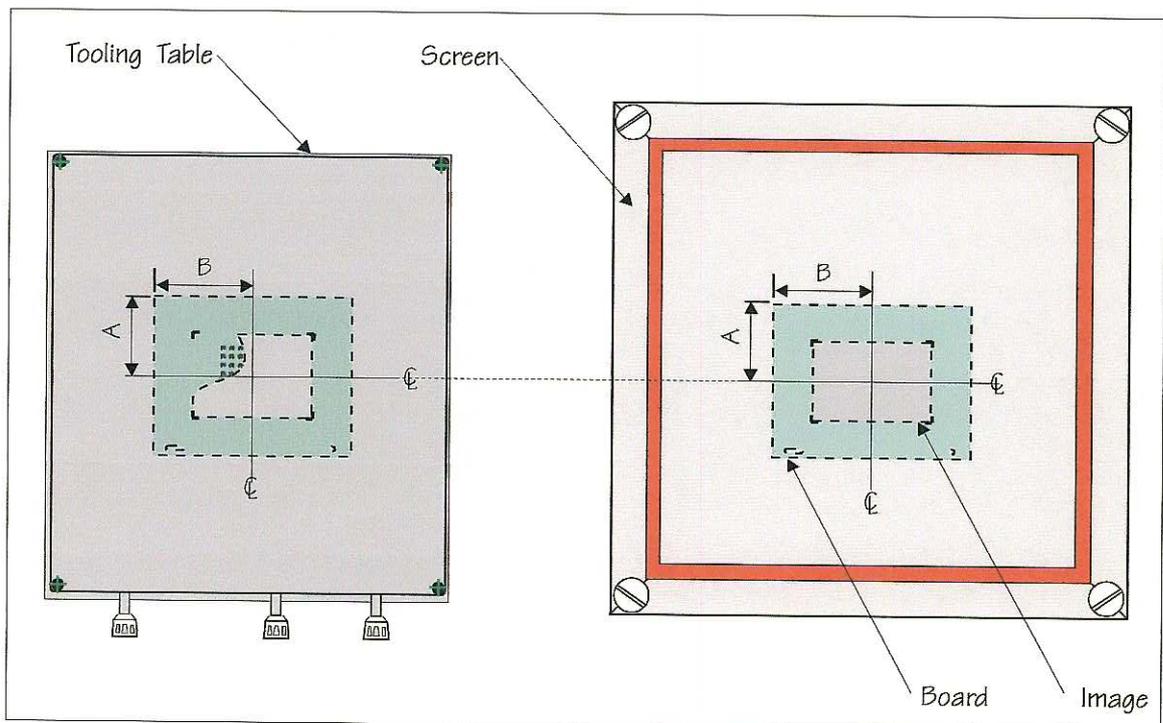
Vacuum Tooling

1. Remove the existing tooling pin supports from beneath the board.
2. Centralize the tooling table by setting the X, Y and Theta (θ) positioners on the tooling table to zero.

NOTE

When the X, Y and Theta (θ) table positioners are set to zero values, the centre of the tooling plate is the same as that of the centre of the screen frame, (when the table is moved to the table-in position).

3. Estimate the required tooling position.



Step 3



1. The purpose of this report is to provide a summary of the activities of the institution during the reporting period.

2. The following information is provided for your information:

3. The total number of students enrolled in the institution during the reporting period was 1,234.

4. The total number of students who graduated during the reporting period was 456.

5. The total number of students who were employed during the reporting period was 789.

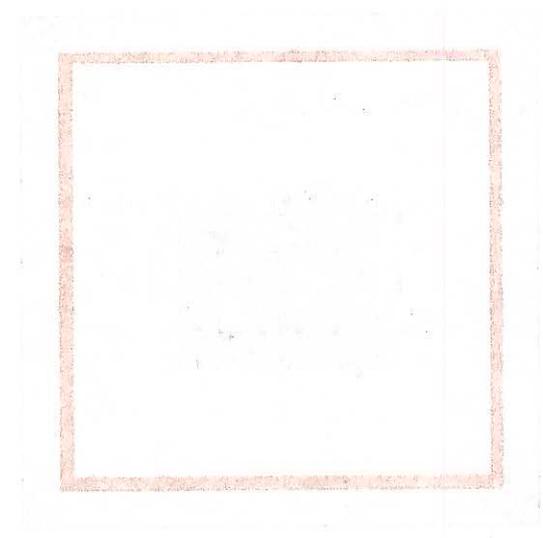
6. The total number of students who were employed during the reporting period was 789.

7. The total number of students who were employed during the reporting period was 789.

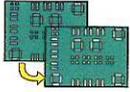
8. The total number of students who were employed during the reporting period was 789.

9. The total number of students who were employed during the reporting period was 789.

10. The total number of students who were employed during the reporting period was 789.



Page 1



4. Fit a required number of adjustable board location pins to the table so that they line up and engage with any of the four locating holes on the new board. Tighten the location pin adjusters to the table.

NOTE

Three sizes of board location pins is provided with the machine tooling (2 off each): 3mm, 4mm and 1/8" inch.

5. Support the front and rear edge of the PCB using the magnetic squeegee support blocks.
6. Arrange the magnetic support pins to support the underside of the new board.
7. Arrange the vacuum supports to suit and connect the air lines to the pneumatic 2 point multi-connector situated at the rear (underside) of the tooling table.



Figure 3-2 Typical Tooling Layout (PCB Removed)

The board is now ready for alignment to the screen, refer to the Board Alignment sections of this chapter (vision or non-vision).

**AutoEdge
Clamping**

The AutoEdge Clamping option effectively replaces the vacuum support facility, offered with the vacuum tooling, and utilizes the pneumatic air supply to provide the PCB with edge clamping.

NOTE

If AutoEdge clamping option is used ensure that the machine vacuum ejector is by-passed, (DA4 Stand Alone Manual - Board Support Tooling refers).

1. Remove the existing tooling pin supports from beneath the board.
2. Centralize the tooling table by setting the X, Y and **Theta** (θ) positioners on the tooling table to zero.

NOTE

When the X, Y and Theta (θ) table positioners are set to zero values, the centre of the tooling plate is the same as that of the centre of the screen frame, (when the table is moved to the table-in position).

The first part of the experiment is to determine the value of the constant k in the equation $F = kx$. This is done by measuring the force exerted by the spring for various displacements x .

The second part of the experiment is to determine the value of the constant k in the equation $F = kx$. This is done by measuring the force exerted by the spring for various displacements x .

The third part of the experiment is to determine the value of the constant k in the equation $F = kx$. This is done by measuring the force exerted by the spring for various displacements x .

The fourth part of the experiment is to determine the value of the constant k in the equation $F = kx$. This is done by measuring the force exerted by the spring for various displacements x .

The fifth part of the experiment is to determine the value of the constant k in the equation $F = kx$. This is done by measuring the force exerted by the spring for various displacements x .

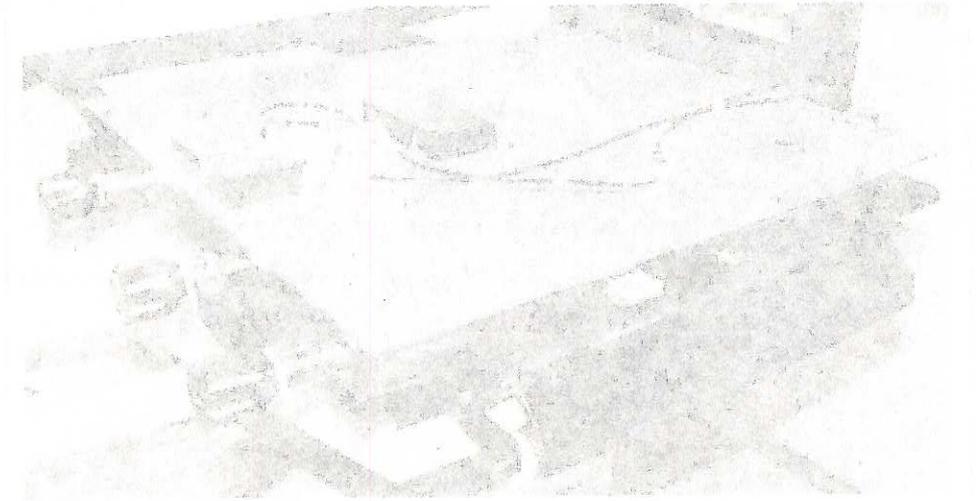


Figure 1. A photograph of the experimental setup for determining the constant k .

The data obtained from the experiment are shown in the table below. The first column is the displacement x in meters, and the second column is the force F in newtons.

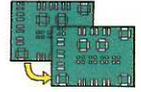
The data show that the force F is directly proportional to the displacement x . This is consistent with the equation $F = kx$.

The slope of the line of best fit is 100 N/m . This is the value of the constant k .

The value of k is 100 N/m . This is the value of the constant k .

The value of k is 100 N/m . This is the value of the constant k .

The value of k is 100 N/m . This is the value of the constant k .



3. Estimate the required tooling position, (Step 3 figure of Vacuum Tooling refers).
4. Position the clamping rail to the front of the tooling table ensuring that an air line is connected to the pneumatic actuator. (The other end of the air line is connected to one of the multi-connector points sited at the rear of the tooling table).
5. Position the rear fixed rail to the tooling table.
6. Position the PCB to the calculated position on the table so that the front and rear edges sit in the recessed edges of the clamping and fixed rails. Secure both the clamping rail and fixed rail in position.

NOTE

Adjust the front clamping rail to leave a 1mm-2mm gap between the board and rail.

7. Position the right-hand fixed block up to the right edge of the PCB and secure into position on the table.
 8. Position the left-hand clamping block up to the left edge of the PCB, leaving a 1mm-2mm gap between the board and block, secure the block into position on the tooling table.
 9. Connect an air line between the clamping block pneumatic actuator and the second multi-connector point on the rear of the tooling table.
 10. Arrange the magnetic support pins to support the underside of the new board.
- Tooling table set up is now complete.

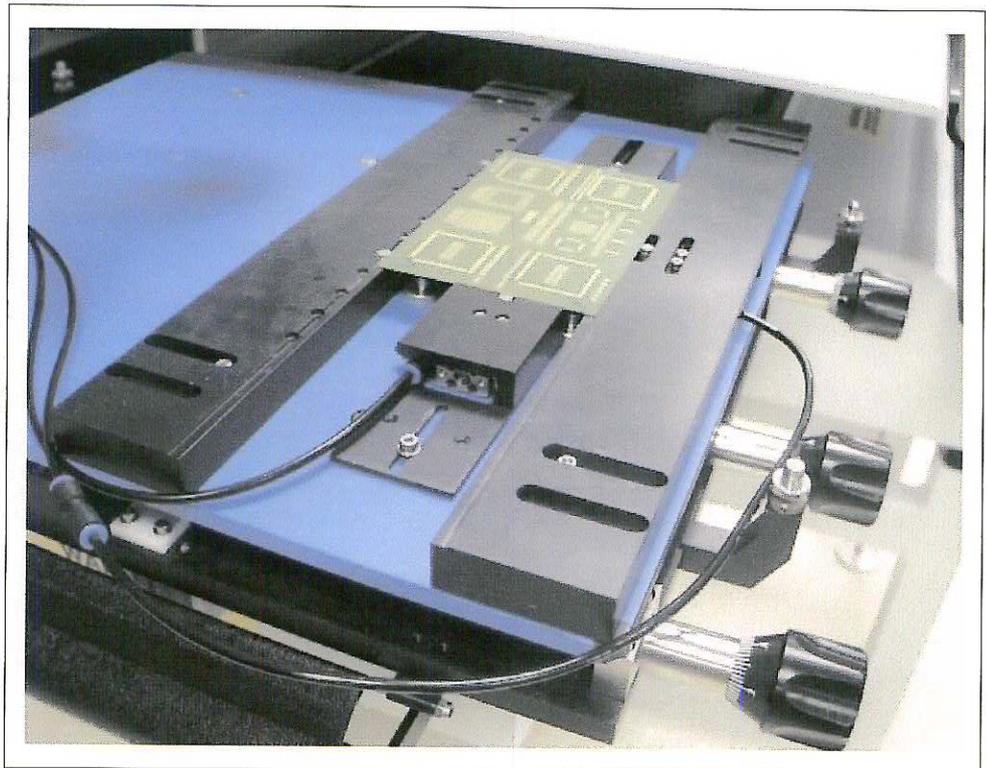


Figure 3-3 AutoEdge Clamp with Board



The first part of the report discusses the current situation in the field of...

The second part of the report discusses the current situation in the field of...

The third part of the report discusses the current situation in the field of...

The fourth part of the report discusses the current situation in the field of...

The fifth part of the report discusses the current situation in the field of...

The sixth part of the report discusses the current situation in the field of...

The seventh part of the report discusses the current situation in the field of...

The eighth part of the report discusses the current situation in the field of...

The ninth part of the report discusses the current situation in the field of...

The tenth part of the report discusses the current situation in the field of...

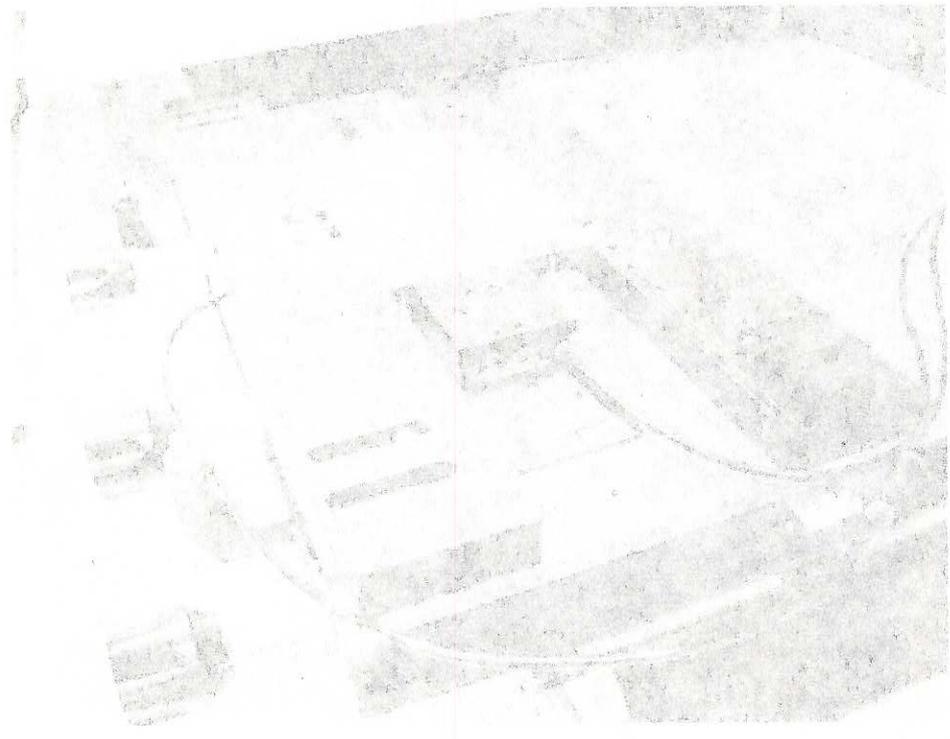
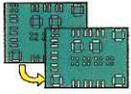


Figure 1: Aerial view of the site showing the layout of the buildings and roads.



BOARD ALIGNMENT (DA4 VISION)

Introduction

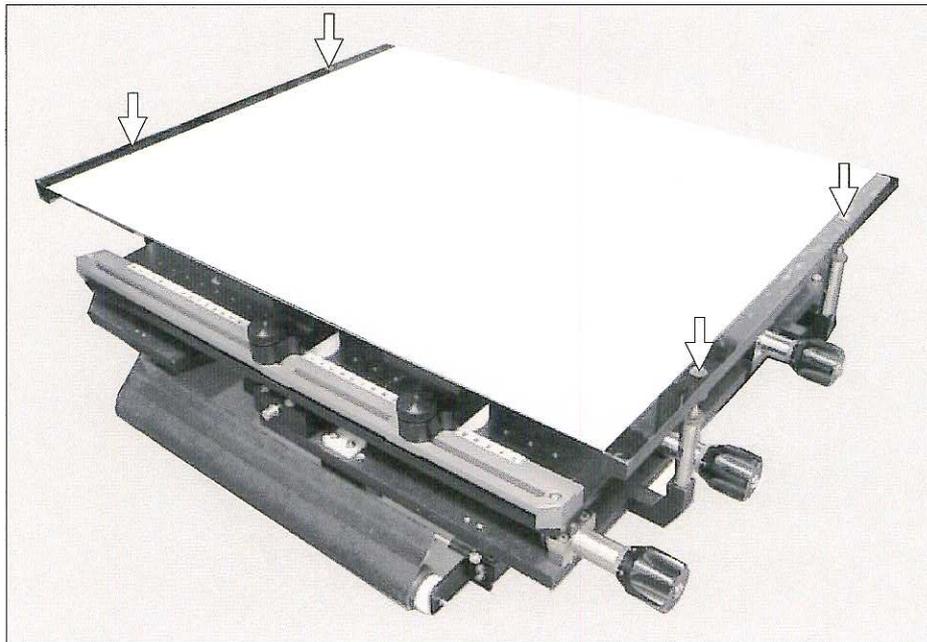
A board must be properly aligned with the screen before printing can take place.

With the DEK Align 4 vision option fitted, board alignment is achieved by:

- Obtaining a reference image of the screen stencil utilizing the vision system and white Mylar flap register.
- Aligning the first board to be printed to the reference image.

To achieve this carry out the following procedures:

1. At the control panel select Mode option to **Step**.
2. In the product menu file edit **Print Gap** parameter and set at **1.00mm**, (to allow for the thickness of the Mylar flap).
3. Set tooling for board to be printed. (Refer to the Tooling section of this chapter.)
4. Press **GO** button/buttons. Table clamps and pneumatics are activated.
5. Fit the white Mylar flap register over the tooling table and position the Mylar locating holes onto the four tooling table location pins.



Step 5

6. Ensure that the Mylar flap is level on the board by setting the four height adjusters on each tooling table location pin.
7. Press **GO** button/buttons. The table is driven to the print position.
8. 'Set Contact Height?' is displayed. Use the arrow keys to select the required contact height.
9. Press **ENTER** to confirm the contact height setting, (value is not displayed but is stored in the product menu).

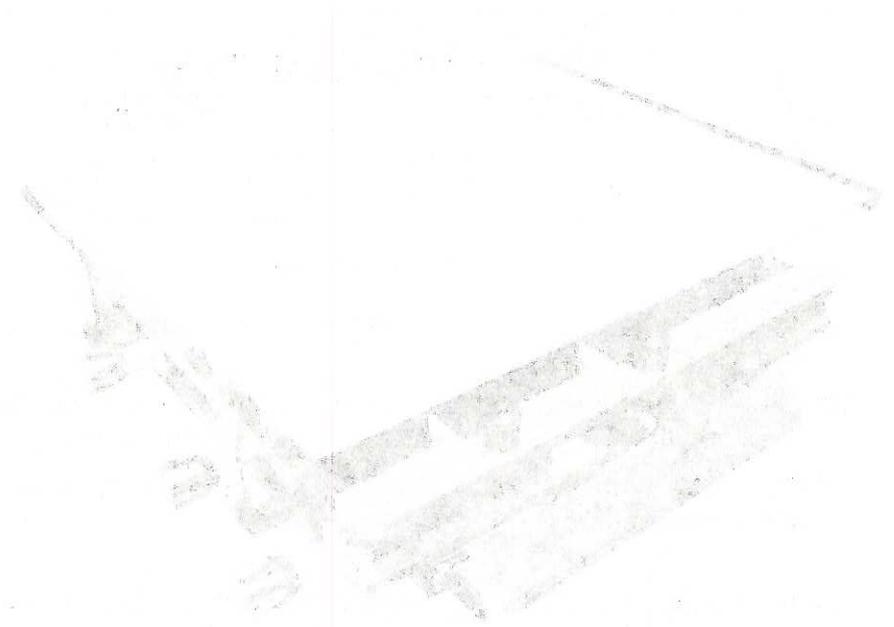
(S) (U) (F) (C) (E) (D) (A) (G) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z)

CONFIDENTIAL

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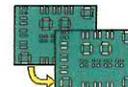
This information is being furnished to you for your information only. It is not to be disseminated outside your organization.

This information is being furnished to you for your information only. It is not to be disseminated outside your organization.



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10. 'Set Print Height?' is displayed. Use arrow keys to set the table height to desired print height.
11. Press **ENTER** to confirm the print height setting. Close the front cover.
12. 'Align Board/Next Step?' is displayed. Press **GO** button./buttons.
13. 'Set Front Print Limit' is displayed at the control panel.
14. Use the arrow keys to drive the print carriage to the required front print stroke limit.
15. Press **ENTER** to confirm.
16. 'Set Rear Print Limit' is displayed at the control panel
17. Use the arrow keys to drive the print carriage to the required rear print stroke limit.
18. Press **ENTER** to confirm.

NOTE

A validity test is carried out by the machine to ensure that the distance between the front and rear limits is greater than 90mm. If the test fails a message 'Front/Rear Limit Error' is displayed at the control panel. The operator is then invited to repeat Steps 13-18 or to abort the set up.



Step 18 (Note)

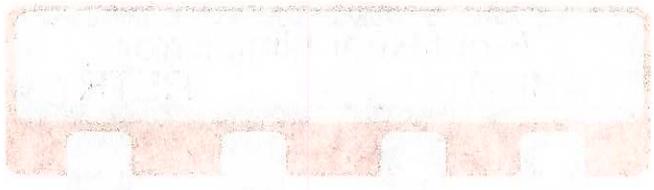
19. Fit squeegees or floodblades. (Refer to the Squeegee Change section in this chapter).
20. Load paste to the screen and wet the blade. (Refer to the Solder Paste Replenishment chapter of this manual for detailed instructions.)
- 21 Press **GO** button/buttons. Machine performs a print, table moves to table-out position.

A reference image is printed onto the white Mylar flap. Refer to the Reference Image section of this chapter for vision alignment of the Mylar print.

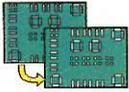


1952

The first part of the report is a general introduction to the project. It discusses the objectives and the scope of the work. The second part is a detailed description of the methods used in the study. This includes a description of the experimental setup and the procedures followed. The third part of the report is a discussion of the results obtained. It compares the findings with previous work in the field and discusses the implications of the results. The final part of the report is a conclusion and a list of references.



The following table shows the results of the experiments. The first column is the independent variable, the second column is the dependent variable, and the third column is the standard deviation. The data shows a clear trend, indicating that the independent variable has a significant effect on the dependent variable.



Reference Image

Before print operations can be carried out the vision system requires setting up so that a reference image of the stencil is obtained. This is achieved by using the printed image of the white Mylar flap.

Carry out the following procedures to set up the reference image:

<p>Vision System Access Page</p> <p>STEP 1 Select Setup Vision</p>	
<p>Main Setup Page</p> <p>STEP 2 (Select type of template required) Select Mylar icon</p>	
<p>Camera Selection Page</p> <p>STEP 3 Select Left Camera to train for solder feature (ie pad) on Mylar print.</p>	
<p>Region of Interest Setup Page</p> <p>STEP 4 Create region of interest around selected image by creating bounding box using the trackball mouse. When region is defined press Setup Template button. NOTE Drag out bounding box by using left mouse button whilst moving the mouse.</p>	



1. The following information is required for the purpose of the program. It should be filled out by the participant and submitted to the program manager.

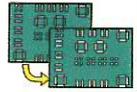
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Participant Information

Program Information

Additional Information

Remarks



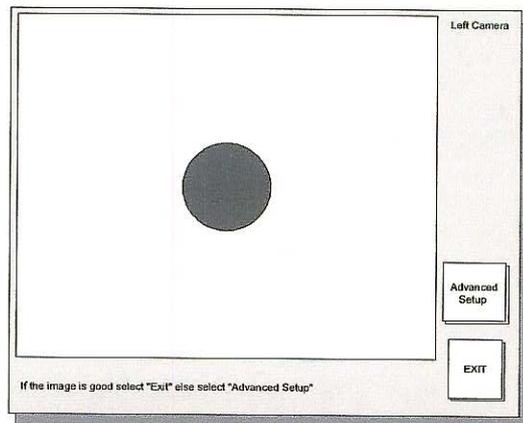
Template Setup Page

STEP 5

The optimum threshold value and cleaned up image is displayed.
If template is acceptable select **Exit** button **twice** and proceed to Step 7.
Otherwise select **Advanced Setup** button to proceed to Step 6.

NOTE

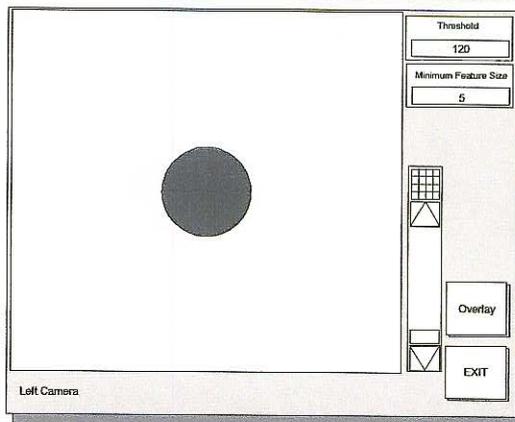
Mylar - black image on white background



Advanced Template Setup Page

STEP 6

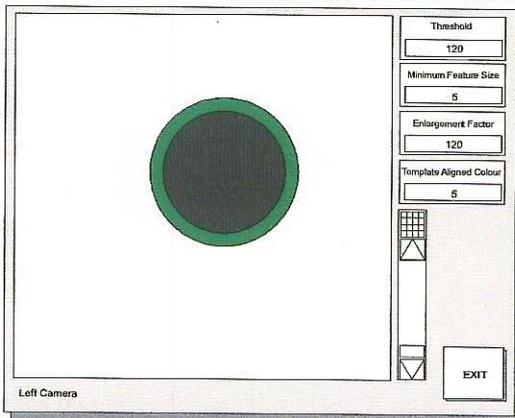
Advanced Setup facility enables modification of selected parameters.
Pressing **Overlay** opens the overlay setup page.
Selecting **Exit** moves page back to Template Setup page.



Overlay Setup Page

STEP 6a

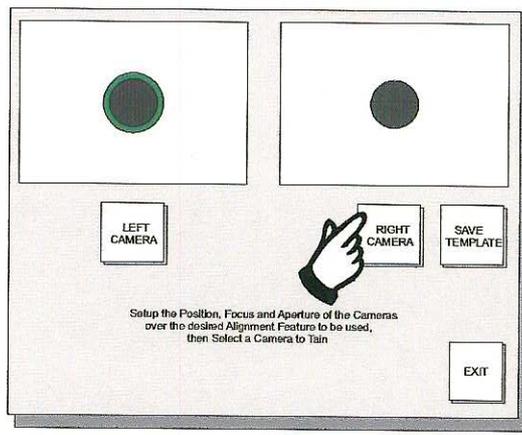
Outer area - live image of the Mylar Flap
Outer circle - overlay
Inner circle - live video image of alignment feature seen through the overlay.
Select **Exit** button 4 times until the **Camera Selection Page** is highlighted.



Camera Selection Page

STEP 7

Repeat Steps 3 - 6a for right hand camera setup.





10/10/10

EXHIBIT A - FORM 1 (REV. 10/10/10)

840 1000

1. Name of the party: [Faint text]



2. Description of the property: [Faint text]

3. Description of the interest: [Faint text]



4. Description of the encumbrance: [Faint text]

5. Description of the release: [Faint text]

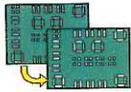


6. Description of the release: [Faint text]

7. Description of the release: [Faint text]



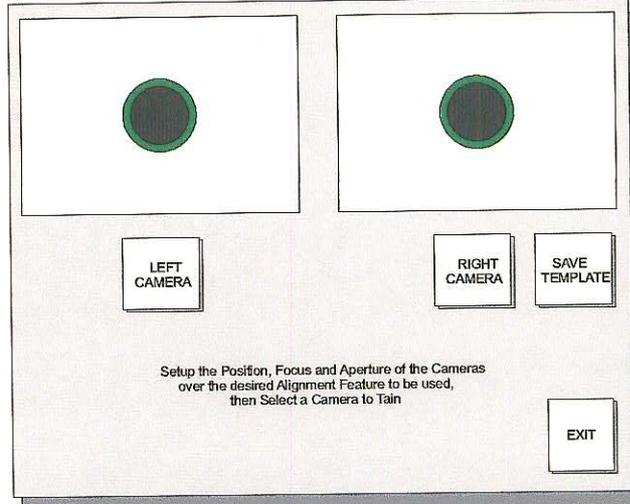
8. Description of the release: [Faint text]



Camera Selection Page

STEP 8

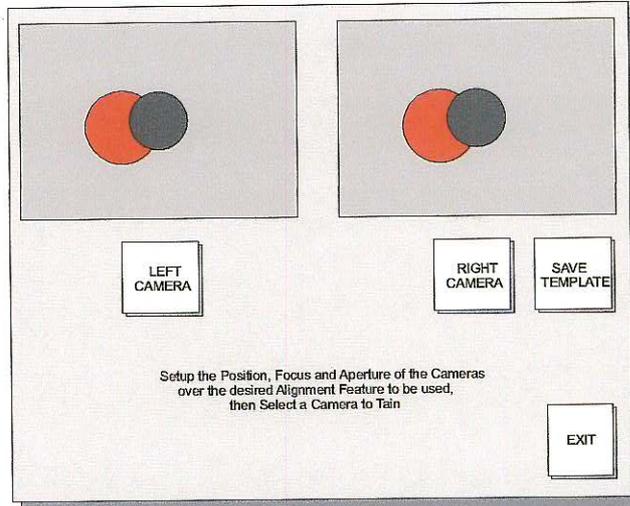
On completion of both camera alignments select **Save Template**.



Main Setup Page

STEP 9

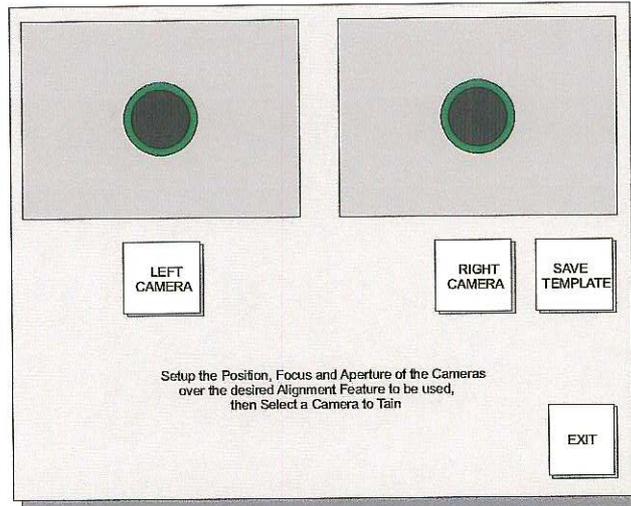
In the product menu file edit **Print Gap** and reset to **0.00mm**.
In the product menu file set up **Alignment Rate** as required.
Remove Mylar flap from tooling table.
Fit board to tooling.
Press **GO** button/buttons to initiate pneumatics.



Camera Selection Page

STEP 11

Align the PCB features to the stored reference images.
(If required re-position board by adjusting the X, Y and Theta positioners.)
Press **GO** button/buttons to initiate a print cycle.



[Faint, illegible text in the top-left quadrant]

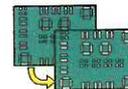
[Faint, illegible text in the top-right quadrant]

[Faint, illegible text in the middle-left quadrant]

[Faint, illegible text in the middle-right quadrant]

[Faint, illegible text in the bottom-left quadrant]

[Faint, illegible text in the bottom-right quadrant]

**BOARD ALIGNMENT (NON-VISION)**

Two methods can be used to align the reference board with the screen stencil:

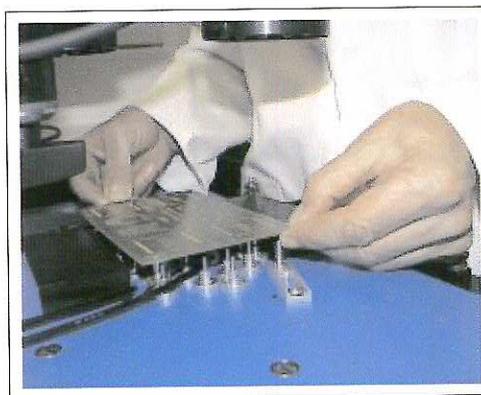
- Direct Sight Method (screen to board)
- Flap Register Method (clear Mylar flap)

Direct Sight Method Sighting the board through the screen is an obvious and direct means of checking board to stencil alignment.

However with brass or stainless sheet stencils, the physical difficulty of looking down through the screen, precludes this method from being first choice. It is particularly useful as a simple first check of the tooling set-up.

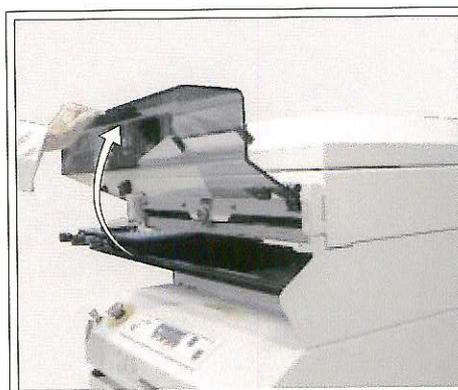
Carry out the following procedures for aligning board:

1. Place the reference board onto the board location pins (or AutoEdge clamp if option fitted).



Step 1

2. At the control panel select run mode option to **Step**.
3. Press **GO** button/buttons. Vacuum tooling or AutoEdge clamps are activated.
4. Press **GO** button/buttons. The table is driven to the print position.
5. Open the front cover.



Step 5



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UNITED STATES DEPARTMENT OF THE INTERIOR

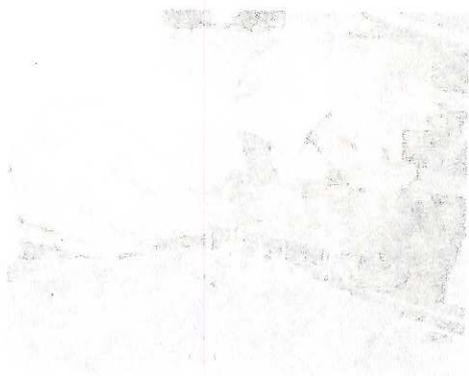


Fig. 1

UNITED STATES DEPARTMENT OF THE INTERIOR

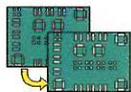


Fig. 2

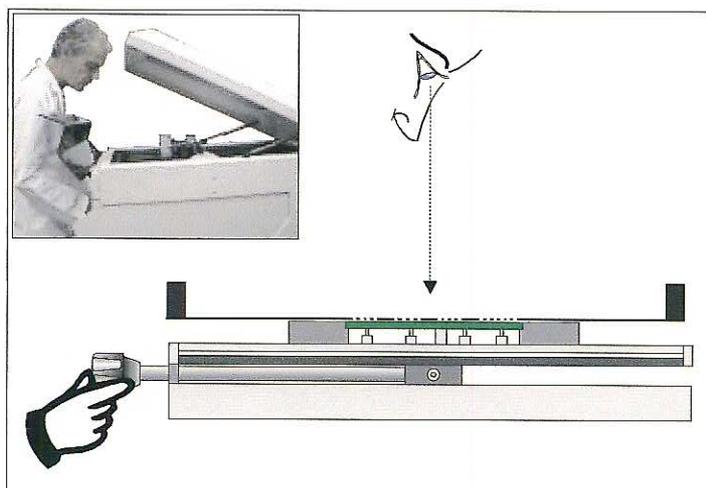
UNITED STATES DEPARTMENT OF THE INTERIOR

UNITED STATES DEPARTMENT OF THE INTERIOR

UNITED STATES DEPARTMENT OF THE INTERIOR



6. 'Set Contact Height?' is displayed. Use the arrow keys to select the required contact height.
7. Press **ENTER** to confirm the contact height setting, (value is not displayed but is stored in the product menu).
8. 'Set Print Height?' is displayed. Use arrow keys to set the table height to desired print gap.
9. Press **ENTER** to confirm the print gap setting. Close the front cover.
10. 'Align Board/Next Step?' is displayed. Open the front and top cover, sight through the screen stencil onto the board below.
11. Use the X, Y and Theta positioners to align board features to the stencil image.



Step 11

9. Close cover on completion of alignment.
10. Press **GO** Button/buttons.

Print Stroke Limits

Although a print is not required for this procedure, settings for front and rear limits must satisfy a validity test, (difference between the front and rear limits must be greater than 90mm).

Carry out the following steps to set the front and rear print limits:

1. '**Set Front Print Limit**' is displayed at the control panel.
2. Use the arrow keys to drive the print carriage to the required front print stroke limit.
3. Press **ENTER** to confirm.
4. '**Set Rear Print Limit**' is displayed at the control panel
5. Repeat steps 2 and 3 for the rear print stroke limit setting.
6. On completion of setting print limits, at the control panel select **NOPRINT**, the table moves out of the printhead enclosure.
7. Fit required squeegees to printhead, select mode option to **Run**.
8. Carry out print cycle.



1. The first part of the report is a description of the work done during the past year. It includes a list of the projects which have been completed and a brief description of the results obtained. It also includes a list of the projects which are being carried on at present and a brief description of the progress made on each of them.

2. The second part of the report is a description of the work done during the past year. It includes a list of the projects which have been completed and a brief description of the results obtained. It also includes a list of the projects which are being carried on at present and a brief description of the progress made on each of them.

3. The third part of the report is a description of the work done during the past year. It includes a list of the projects which have been completed and a brief description of the results obtained. It also includes a list of the projects which are being carried on at present and a brief description of the progress made on each of them.

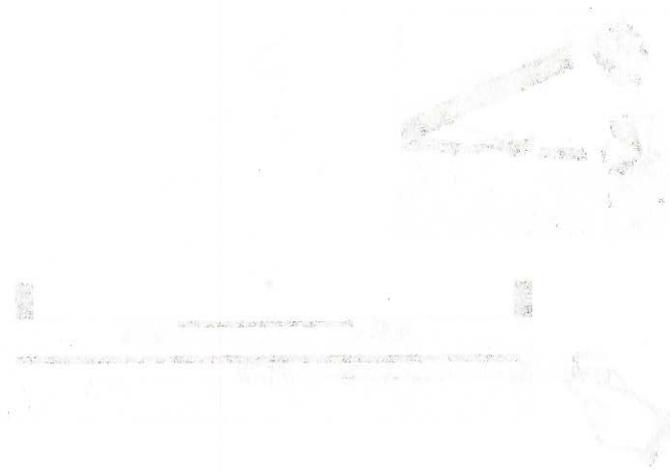


Figure 1

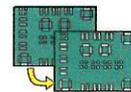
4. The fourth part of the report is a description of the work done during the past year. It includes a list of the projects which have been completed and a brief description of the results obtained. It also includes a list of the projects which are being carried on at present and a brief description of the progress made on each of them.

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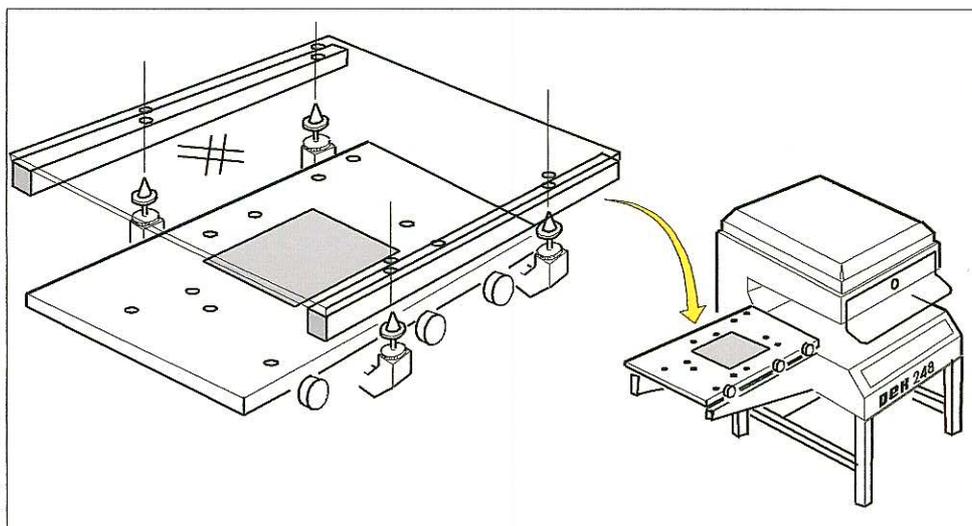
7. The seventh part of the report is a description of the work done during the past year. It includes a list of the projects which have been completed and a brief description of the results obtained. It also includes a list of the projects which are being carried on at present and a brief description of the progress made on each of them.

8. The eighth part of the report is a description of the work done during the past year. It includes a list of the projects which have been completed and a brief description of the results obtained. It also includes a list of the projects which are being carried on at present and a brief description of the progress made on each of them.

**Flap Register
Method**

This alignment method is more accurate and is carried out at the table-out position. Carry out the following procedures for flap set up and print:

1. At the control panel select run Mode option to **Step**.
2. In the product menu file edit **Print Gap** parameter and set at **1.00mm**, (to allow for the thickness of the Mylar flap).
3. Set tooling for board to be printed. (Refer to the Tooling section of this chapter.)
4. Load board.
5. Press **GO** button/buttons. Table clamps and pneumatics are activated.
6. Fit the clear Mylar flap onto the four tooling table locating pins.

**Step 6**

7. Ensure that the Mylar flap is level on the board by setting the four height adjusters on each tooling table location pin.
8. Press **GO** button/buttons. The table is driven to the print position.
9. 'Set Contact Height?' is displayed. Open the front cover. Use the arrow keys to select the required contact height.
10. Press **ENTER** to confirm the contact height setting, (value is not displayed but is stored in the product menu).
11. 'Set Print Height?' is displayed. Use arrow keys to set the table height to desired print height.
12. Press **ENTER** to confirm the print height setting. Close the front cover.
13. 'Align Board/Next Step?' is displayed. Press **GO** button/buttons.
14. 'Set Front Print Limit' is displayed at the control panel.
15. Use the arrow keys to drive the print carriage to the required front print stroke limit.
16. Press **ENTER** to confirm.
17. 'Set Rear Print Limit' is displayed at the control panel



1950

THE UNIVERSITY OF CHICAGO

DEPT. OF CHEMISTRY

The following is a list of the papers published in the Journal of Chemical Physics during the year 1950.

1. J. H. Van Vleck and J. H. Schrieffer, "Theory of Superconductivity," *Phys. Rev.* **83**, 279 (1950).

2. R. P. Taylor, "The Structure of the Hydrogen Molecule," *Proc. Roy. Soc. (London)* **A203**, 156 (1950).



3. J. H. Van Vleck, "The Theory of the Paramagnetic Resonance of the Free Electron," *Phys. Rev.* **83**, 270 (1950).

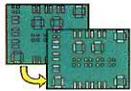
4. R. P. Taylor, "The Structure of the Hydrogen Molecule," *Proc. Roy. Soc. (London)* **A203**, 156 (1950).

5. J. H. Van Vleck, "The Theory of the Paramagnetic Resonance of the Free Electron," *Phys. Rev.* **83**, 270 (1950).

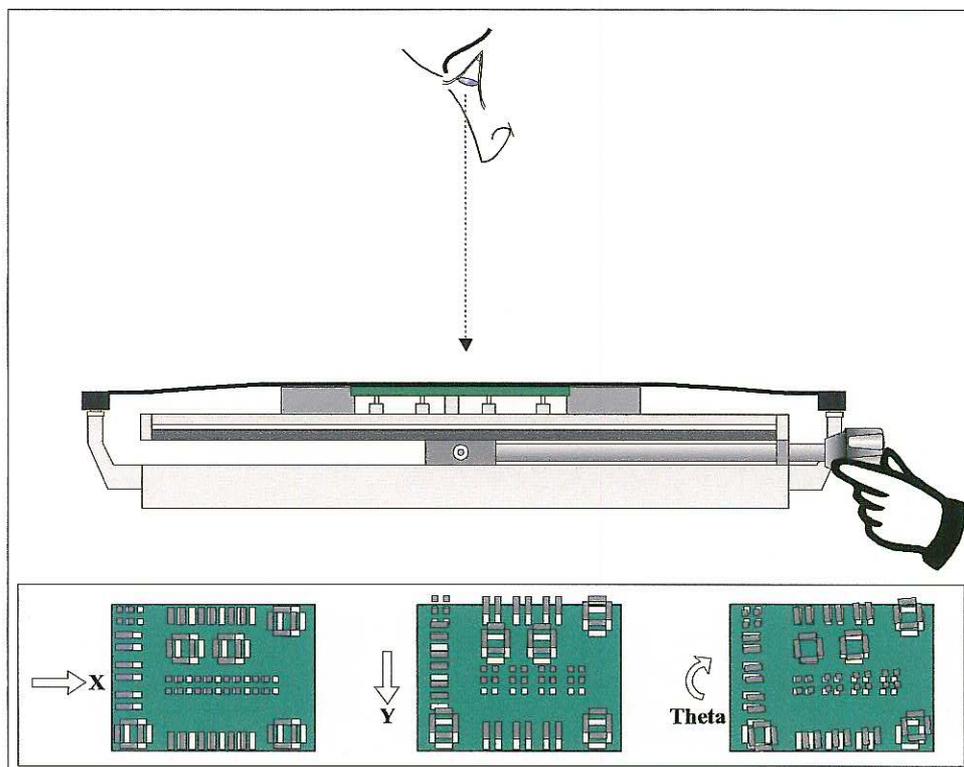
6. R. P. Taylor, "The Structure of the Hydrogen Molecule," *Proc. Roy. Soc. (London)* **A203**, 156 (1950).

7. J. H. Van Vleck, "The Theory of the Paramagnetic Resonance of the Free Electron," *Phys. Rev.* **83**, 270 (1950).

8. R. P. Taylor, "The Structure of the Hydrogen Molecule," *Proc. Roy. Soc. (London)* **A203**, 156 (1950).



18. Use the arrow keys to drive the print carriage to the required rear print stroke limit.
19. Press **ENTER** to confirm.
20. Fit squeegees or floodblades. (Refer to the Squeegee Change section in this chapter).
21. Load paste to the screen and wet the blade. (Refer to the Solder Paste Replenishment chapter of this manual for detailed instructions.)
22. Press **GO** button/buttons. Machine performs a print, table moves to table-out position.
23. Press **GO** button/buttons. Pneumatics are de-activated.
24. At the control panel select the table clamps to **CLMPOFF**.
25. Use the X, Y and Theta positioners to align board features to the stencil image.



Step 25

26. Remove the Mylar flap from the tooling table.
NOTE
The printed Mylar image can be retained for reference during the product print batch.
27. In the product menu file edit **Print Gap** parameter and reset to **0.00mm**.
28. Select the Mode option to **Run**.
NOTE
The board is now correctly aligned for print operations.
29. Select **GO** button/buttons to perform print on the board.

MEMO

MEMORANDUM FOR THE RECORD

Subject: [Illegible]



[Illegible]

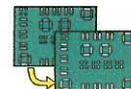
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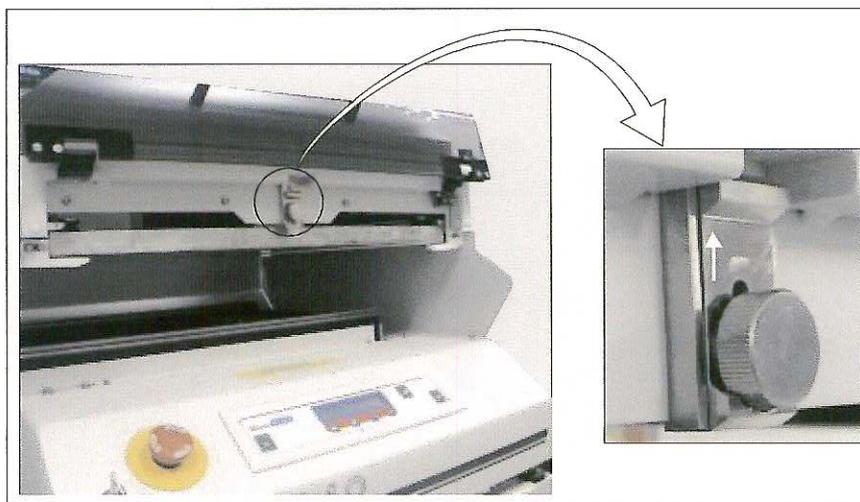
[Illegible]

[Illegible]



SCREEN CHANGE The following steps details the procedure for changing screens

1. Ensure that the squeegee mechanism is in the raised position.
2. Lift the front machine cover.
3. Turn the screen clamp locking screw counter clockwise. Raise the sprung loaded clamp clear of the screen frame.



Step 3

4. With the screen clamp in the raised position, carefully pull the screen out of the machine, (slight resistance is encountered during initial release due to the spring loaded clamps).
5. Clean the screen in accordance with information provided in the Consumable Replenishments chapter (Solvent Advice).

NOTE

If replacing the screen, remove the 4 screen rollers and refit to new screen.

6. Carefully insert the screen into the machine until fully homed.



Step 6

7. Lower the screen clamp in front of the screen frame and secure in place by fully tightening the locking screw (clockwise).



1944

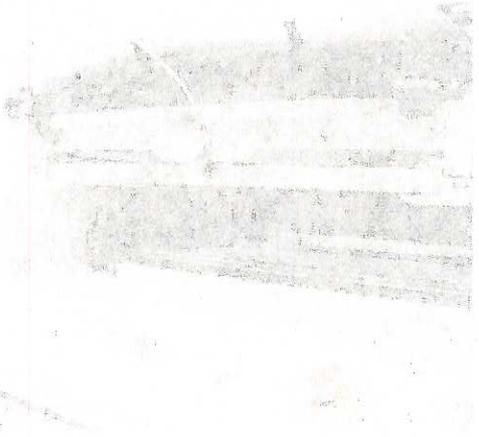
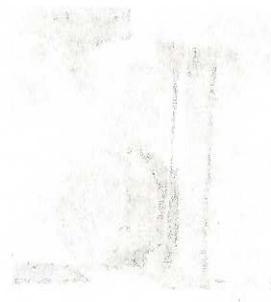
THE NATIONAL ARCHIVES

848 3488

1. The first photograph shows the interior of the building.

2. The second photograph shows the exterior of the building.

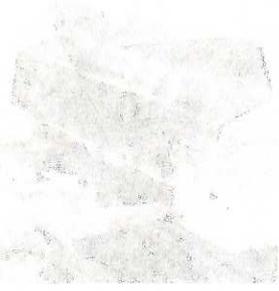
3. The third photograph shows the interior of the building.



4. The fourth photograph shows the interior of the building.

5. The fifth photograph shows the interior of the building.

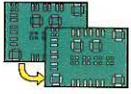
6. The sixth photograph shows the interior of the building.



7. The seventh photograph shows the interior of the building.

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8. Close the front machine cover.
9. Raise the machine top cover.
10. Carry out solder paste replenishment to the screen in accordance with the Consumable Replenishments chapter of this manual (Solder Paste Replenishments).

SQUEEGEE CHANGE

During any product file change there may be a requirement to change the existing paste transfer system to one of the following options:

- Squeegee Trailing Edge
- Squeegee Diamond Edge



WARNING

SOLDER PASTE AND SOLVENTS. WHEN USING OR HANDLING ANY SOLDER PASTE OR SOLVENT FORMULATION THE MANUFACTURERS' RECOMMENDED SAFETY PRECAUTIONS MUST BE STRICTLY ADHERED TO.

PROTECTIVE CLOTHING. APPROVED PROTECTIVE CLOTHING SHOULD BE WORN BY SOLDER PASTE AND SOLVENT HANDLERS AT ALL TIMES TO ELIMINATE FUME INHALATION, EYE CONTACT, SKIN CONTACT AND INGESTION.

Trailing Edge Option If the print mode of the new product menu requires double squeegees, fit trailing edge squeegees.

NOTE

Required squeegee length = the length of the board + 20mm.

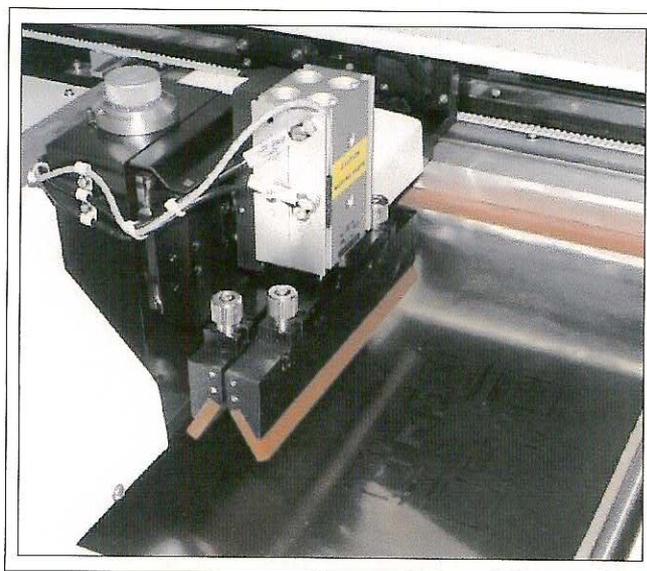
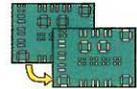


Figure 3-4 Trailing Edge Squeegee Configuration

The rear squeegee is identified by the fouling pin recess in the squeegee holder. Spacing between the hand nuts is wider than those of the front squeegee



Diamond Edge Squeegee

For product file requiring print mode single squeegee, fit a diamond edge squeegee.

NOTE

Required squeegee length = the length of the board + 20mm.

The single squeegee is fitted to the front squeegee mounting position and can be configured with a flood blade.

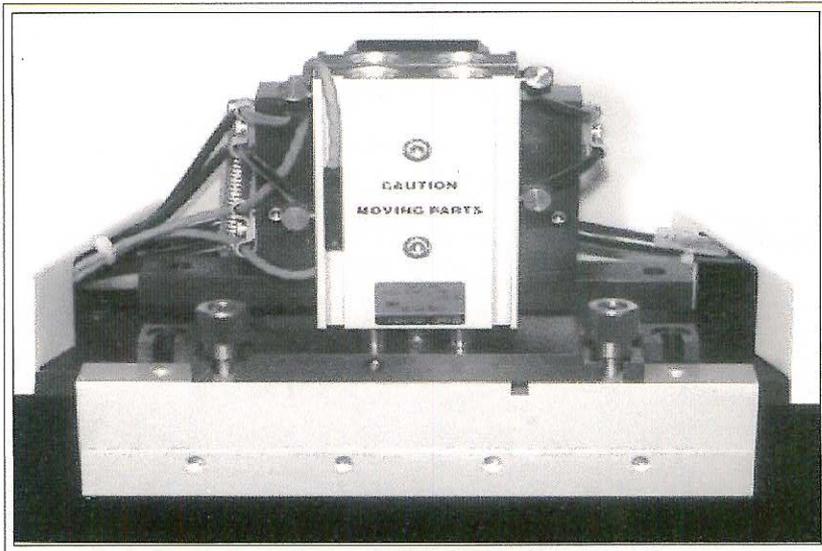


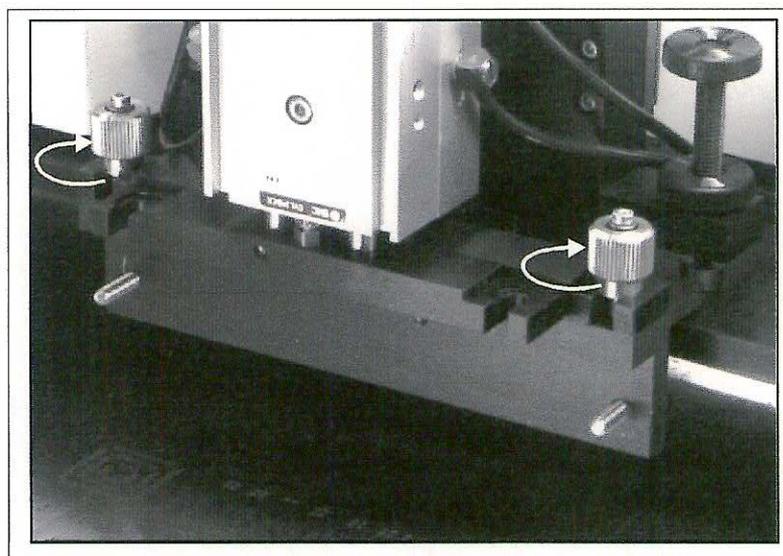
Figure 3-5 Diamond Squeegee Configuration

Flood Blade

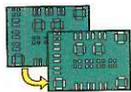
When printing with ink, a flood blade and single squeegee configuration is required. This is achieved using either a Flood/Print or Print/Flood mode.

To fit a flood blade proceed as follows:

1. Using the two knurled knobs, locate and secure the flood mounting plate to the rear squeegee position.



Step 1

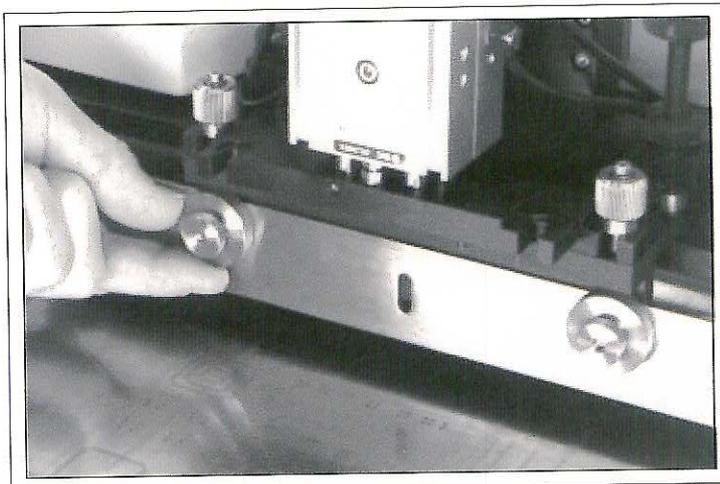


2. Offer the flood blade to the two flood mounting plate spigots. Locate an eccentric spacer into each blade slot.

NOTE

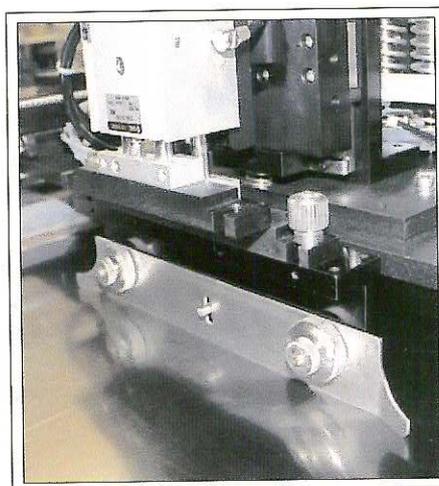
The two eccentric spacers are used to level the flood blade to the screen.

3. Fit the two knurled hand nuts to the mounting plate spigots and lightly clamp the blade by tightening the two hand nuts.



Step 3

4. When the flood blade mounting is fully down, level the blade to the screen stencil.



Step 4

5. Perform a step mode cycle.
6. When the rear squeegee pneumatic actuator is fully down, the flood blade mounting abuts the squeegee carriage. The flood blade can now be adjusted by rotating the knurled eccentric spacer by hand.

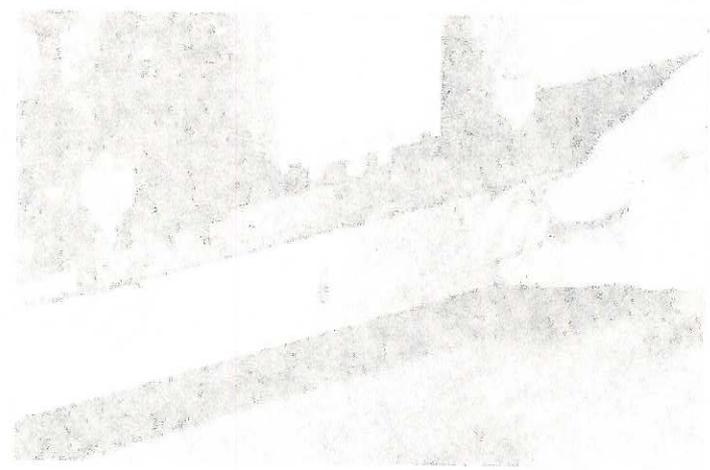
NOTE

Flood blade gap is set between 0.2mm - 0.5mm.

7. When setting is correct, firmly tighten the locking hand nuts.



The following information was obtained from a review of the files of the [redacted] and [redacted] on [redacted] and [redacted].

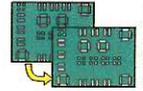


This photograph was taken on [redacted] at [redacted] and shows the [redacted] and [redacted] buildings.



This photograph was taken on [redacted] at [redacted] and shows the [redacted] and [redacted] buildings.

The information contained in this report is confidential and should be handled accordingly.

**Paste Deflector**

Deflectors are fitted to each end of the squeegee blade holders. Height adjustment of the deflectors must be carried out when squeegee pressure is applied to the screen. Adjust the height of the deflectors so they are just touching the screen.

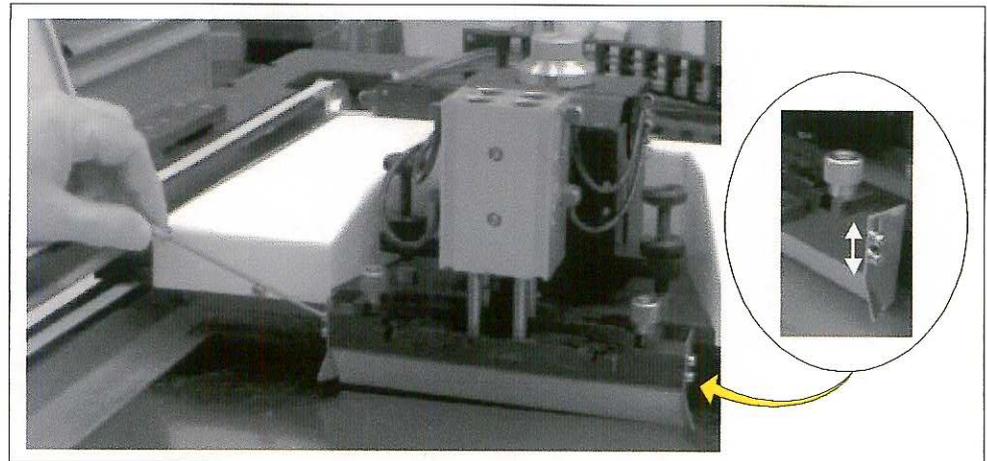


Figure 3-6 Fitting Paste Deflectors

The following table details squeegee fit requirements for specified product file print modes.

Squeegee / Flood Blade	Print Mode
One Squeegee Fitted (Diamond Edge)	PRINT/PRINT (with Hop Over)
Two Squeegees Fitted (Trailing Edge)	DBL SQUEEGEE
Flood Blade	FLOOD/PRINT or PRINT/FLOOD

Squeegee Pressure Setting

The Squeegee Pressure Setting is adjusted to suit the printing conditions required. The calibrated thumbwheel allows approximate repeat pressure settings in the range 0kg - 15kg.

Set the squeegee as follows:

1. Adjust the squeegee pressure knob starting with a light pressure during test printing and slowly increasing the pressure until an acceptable image is obtained.
2. Finally increase the pressure slightly to adjust for slight variations in environmental paste conditions and boards.

NOTE

On completion of correct squeegee pressure setting for a particular product, the operator may record the setting pressure in the product menu file. Product Menu Change section (Pressure Value) of this chapter refers.

Department of Physics, University of Chicago, Chicago, Illinois 60637

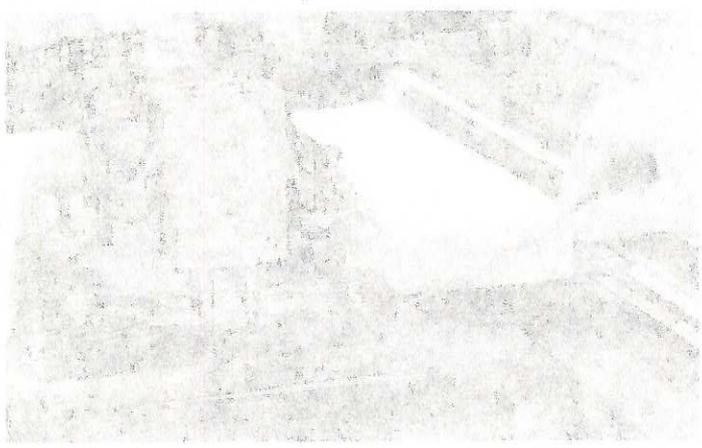


Figure 1: A photograph of a white rectangular object, possibly a piece of paper or a component, resting on a dark surface.

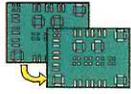
The following table lists the values of the various parameters used in the calculations.

Table 1: Values of the various parameters used in the calculations.

The values of the various parameters used in the calculations are listed in Table 1.

References

The authors would like to thank the following people for their help and assistance during the course of this project: ...



ERROR MESSAGES

If a malfunction prevents the machine from completing its task, an error message is displayed at the operator display panel

The following table of error messages may be displayed during printing operations, interpretation of these error messages and possible recovery are also listed.

Error Message	Interpretation	Recovery
Air Pressure Error	Air line not connected	Restore air supply
	Pressure low, 60-70 psi required at inlet	Seek technical help
	Faulty switch or requires calibration	Replace/recalibrate switch
Front/Rear Limit Error	Difference between front and rear limits is less than 90mm	Press RETRY to attempt recovery
Motor Power / E Stop Error	+24V supply to motor has failed	Unlatch E Stop button Press SYSTEM button to attempt reset Seek technical help
Print Carriage Error	Motor drive failed	Seek technical help
	Motor drive clutch slipping	Seek technical help
	Carriage drive belt broken	Seek technical help
RS Table Error	Table drive mechanism failed	Seek technical help
	Obstruction to table movement	Seek technical help
	Reed switches faulty incorrectly positioned	Seek technical help
Squeegee Error	Squeegee up/down movement obstructed	Remove obstruction
	Pneumatic mechanism has failed	Seek technical help
	Detector failure/faulty	Seek technical help
Table Lift Error	Drive actuator failure	Check for obstruction. Seek technical help
	Table down datum switch faulty / incorrectly positioned	Seek technical help
Machine Cover Open	Continuity of cover switch interlock loop broken	Seek technical help
	Cover switches/activating magnet faulty/ incorrectly positioned	Seek technical help
SYSTEM To Recover	Diagnostic mode has been entered before the printer has been initialized, ie by powering up with the selector switch to position 3 (diagnostics)	Press SYSTEM button to restore +24V supply

It is noted that the information contained in this report is classified as SECRET.

The information in this report is classified as SECRET because it contains information that is so classified.

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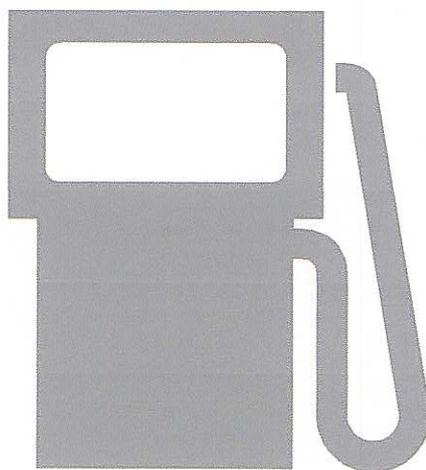
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CHAPTER 4

CONSUMABLE REPLENISHMENTS

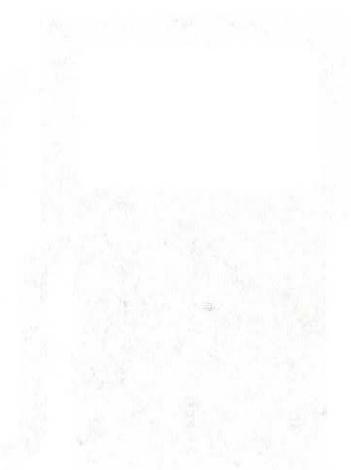




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CHAPTER 4

CONSISTENT REPLENISHMENTS





CONSUMABLE REPLENISHMENTS

INTRODUCTION This chapter describes the general replenishment and disposal processes needed for machine husbandry. It details the procedures to perform the following tasks:

- Solder paste replenishment.
- Squeegee blade replacement

Regulations The safety and environmental aspects of machine operation is described, however it should be noted that local or national regulations may vary for countries outside the UK or EEC. Machine operators should be made aware of regulations that relate to local conditions.

Competence Level These procedures can only be performed by personnel who have trained to a minimum of DEK operator level.



SOLDER PASTE REPLENISHMENT

The following is a description of the recommended procedure for solder replenishment and removal of solder paste residues.

WARNING



SOLDER PASTE AND SOLVENTS. WHEN USING OR HANDLING ANY SOLDER PASTE OR SOLVENT FORMULATION THE MANUFACTURERS' RECOMMENDED SAFETY PRECAUTIONS MUST BE STRICTLY ADHERED TO.

PROTECTIVE CLOTHING. APPROVED PROTECTIVE CLOTHING SHOULD BE WORN BY SOLDER PASTE AND SOLVENT HANDLERS AT ALL TIMES TO ELIMINATE FUME INHALATION, EYE CONTACT, SKIN CONTACT AND INGESTION.

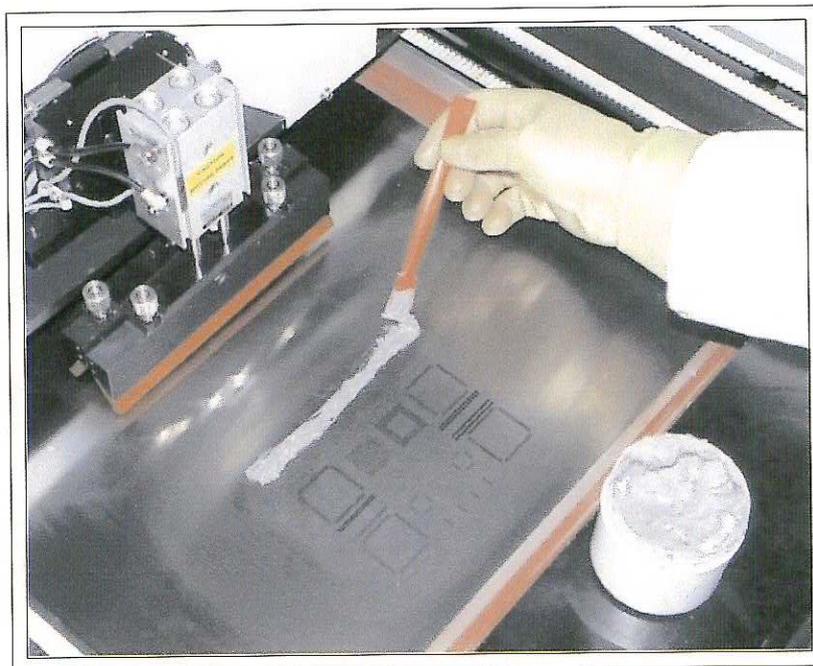
Load Paste

Paste can be manually loaded onto the screen during a print cycle. This is carried out by the operator at an appropriate juncture, ie at the end of a print cycle.

Load paste to the screen as detailed in the following steps:

1. At the control panel select mode option to **PASTE**.
2. Press the **GO** button/buttons, the squeegee mechanism retracts and is moved to the rear of the print stroke position.
2. Raise the machine cover.
3. Paste is supplied in small pots with a spatula for application. Carry out paste replenishment as detailed:

A quantity of paste is applied onto the screen just in front of the leading edge of the squeegee blade and spread along the full length of the squeegee blade. This ensures that the paste deposited forms a good roll during print.



Step 3



FOR THE PARTIAL BIRTH ABORTION

The following information is provided for your information and to help you understand the partial birth abortion procedure.

WARNING

Partial birth abortion is a surgical procedure that is performed in a hospital or ambulatory surgical center. It is a procedure that is performed on a fetus that is at least 14 weeks old.

The procedure is performed by a doctor who is trained in the procedure. The procedure is performed by a doctor who is trained in the procedure.

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Figure 1



Food Safety





4. On completion of replenishment, ensure spatula, pots of paste and cloths etc are removed from the machine. Lower the machine cover.
5. Press the **GO** button/buttons, moves the squeegee to its original position.
6. Pressing the **GO** button/buttons again resumes the current operation.

Paste Removal

During continuous printing operations paste residue build up may occur with the same screen in use and with the squeegee option fitted. This build up can affect the print quality of the print process, ie paste in apertures, paste 'tramlining' on the screen and residue on squeegee blades.

Before loading paste the operator should ensure that any 'old' residue is cleaned away from the screen and squeegee blades.

To clean the screen effectively, it is recommended that the operator removes the screen from the machine during this operation, (Product Running - Screen Removal chapter of this manual refers).

The warning for solder paste handling must be observed during any cleaning operation.



WARNING

RECOMMENDED SOLVENTS. ANY SOLVENTS USED MUST COMPLY WITH LOCAL ENVIRONMENTAL GUIDELINES. DEK RECOMMEND USING SOLVENTS THAT ARE ENVIRONMENTALLY FRIENDLY, IE CFC FREE AND WATER BASED. SOLVENTS USED MUST HAVE FAST EVAPORATION RATES AND FLASH POINT SPECIFICATIONS GREATER THAN 39°C.

If the paste to be removed is still workable, remove the paste from the screen using a spatula and replace into the paste pot. Smear deposits are removed using a cleaning cloth dampened with a suitable paste remover.

NOTE

Large deposits left on the screen can only be removed and re-used if they remain workable, paste that has been exposed to unfavourable conditions for long periods should not be re-used. Always consult process information before recycling paste for use and re-seal and store the product in accordance with manufacturers' data sheets.

Dispose of waste materials in accordance with local authority disposal instructions.

The first part of the report deals with the general situation of the country and the progress of the work during the year.

The second part of the report deals with the results of the work during the year. It is divided into two main sections: the first section deals with the results of the work in the field of research and the second section deals with the results of the work in the field of administration.

CONCLUSION

The work during the year has been carried out in accordance with the plan and has resulted in a number of important findings. It is hoped that these findings will be of use to the community.



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The work during the year has been carried out in accordance with the plan and has resulted in a number of important findings. It is hoped that these findings will be of use to the community.



Solvent Advice

The following solvents can be used for cleaning screens and squeegees, however this list is not complete and does not mean that any solvent not mentioned is compatible with DEK machines:

- Rosstech 106 FE
- Rosstech 162 ND
- Acetone

DEK are continuously evaluating alternative solvents. If you wish to use a particular type of solvent, but are unsure of its suitability for DEK machines, then please contact the DEK Customer Support Group.

NOTE

Rosstech 147 FD is used within DEK manufacturing division and has found to be compatible with DEK under screen cleaner units. Any solvent with similar properties to 147 FD should be suitable to use on DEK under screen cleaner units. If you are unsure about a particular solvent then please contact the DEK Customer Support Group.

WARNING



RECOMMENDED SOLVENTS. ANY SOLVENTS USED MUST COMPLY WITH LOCAL ENVIRONMENTAL GUIDELINES. DEK RECOMMEND USING SOLVENTS THAT ARE ENVIRONMENTALLY FRIENDLY, IE CFC FREE AND WATER BASED. SOLVENTS USED MUST HAVE FAST EVAPORATION RATES AND FLASH POINT SPECIFICATIONS GREATER THAN 39°C.

SOLDER PASTE AND SOLVENTS. WHEN USING OR HANDLING ANY SOLDER PASTE OR SOLVENT FORMULATION THE MANUFACTURERS' RECOMMENDED SAFETY PRECAUTIONS MUST BE STRICTLY ADHERED TO.

PROTECTIVE CLOTHING. APPROVED PROTECTIVE CLOTHING SHOULD BE WORN BY SOLDER PASTE AND SOLVENT HANDLERS AT ALL TIMES TO ELIMINATE FUME INHALATION, EYE CONTACT, SKIN CONTACT AND INGESTION.



The following information was obtained from a review of the files of the [redacted] and is being furnished to you for your information.

Very truly yours,

[redacted]

[redacted]

[redacted]

REFERENCE:

[redacted]



[redacted]

[redacted]

**SQUEEGEE BLADE REPLACEMENT**

Two occasions exist when the operator may be required to change squeegees:

- Worn or damaged blades during printing.
- Changing to a new product menu (Product Running chapter (Squeegee Change) of this manual refers).

Used blades contain residues of solder paste please observe the following warning:

**WARNING**

SOLDER PASTE AND SOLVENTS. WHEN USING OR HANDLING ANY SOLDER PASTE OR SOLVENT FORMULATION THE MANUFACTURERS' RECOMMENDED SAFETY PRECAUTIONS MUST BE STRICTLY ADHERED TO.

PROTECTIVE CLOTHING. APPROVED PROTECTIVE CLOTHING SHOULD BE WORN BY SOLDER PASTE AND SOLVENT HANDLERS AT ALL TIMES TO ELIMINATE FUME INHALATION, EYE CONTACT, SKIN CONTACT AND INGESTION.

Worn or Damaged Blades

Poor board print quality may occur if squeegee blades are found to be either worn or damaged. At a suitable juncture during printing operations, ie at the end of a print cycle, the following steps should be carried out:

1. Raise the machine cover.
2. Carry out squeegee change in accordance with the Product Running chapter of this manual (Squeegee Change).
3. Close the machine cover.
4. Press **GO** button/buttons.



**CONSUMABLE REPLENISHMENTS
SQUEEGEE BLADE REPLACEMENT**

***DEK* 248**

DEAN 248

OFFICE OF THE DEAN
UNIVERSITY OF CALIFORNIA

