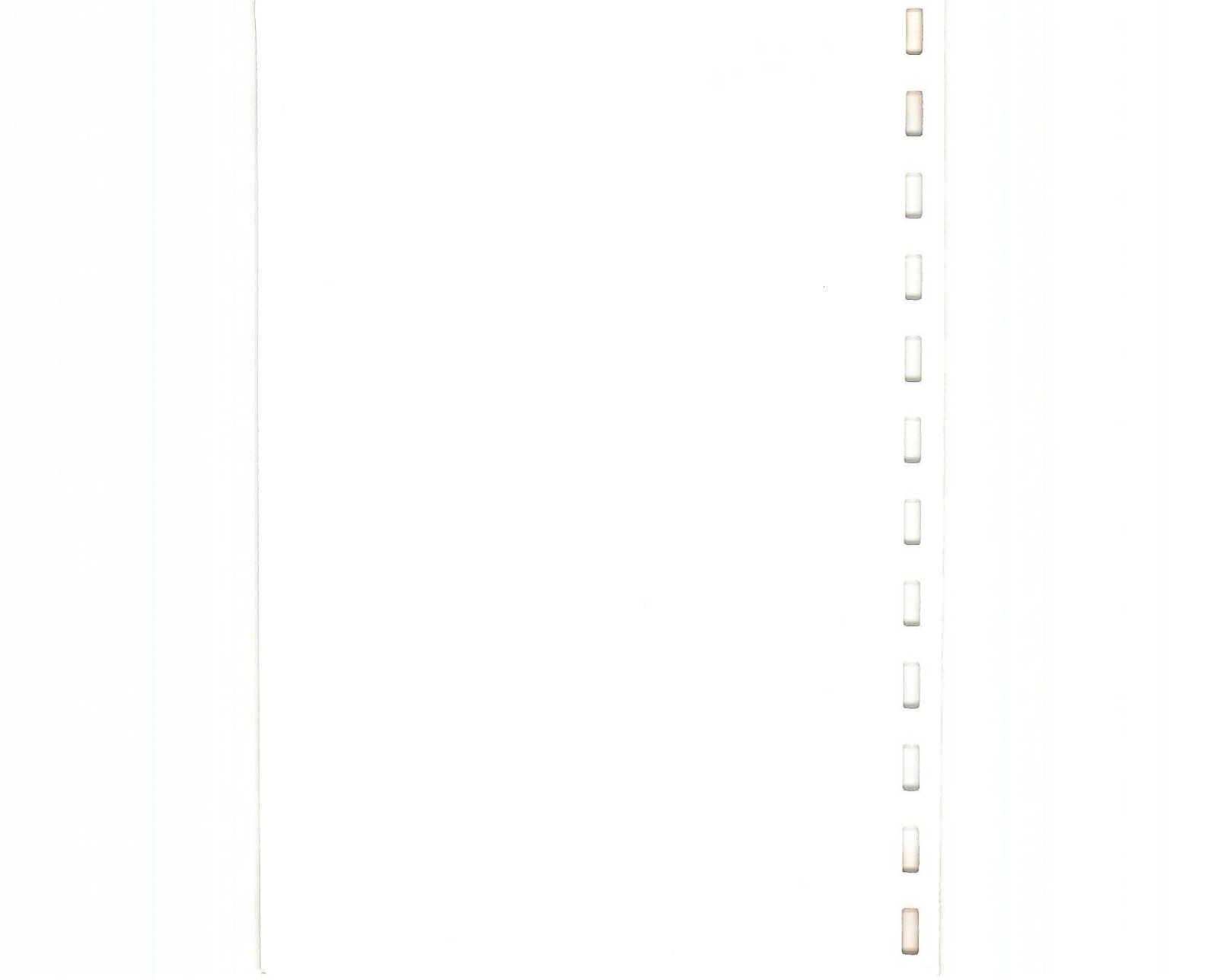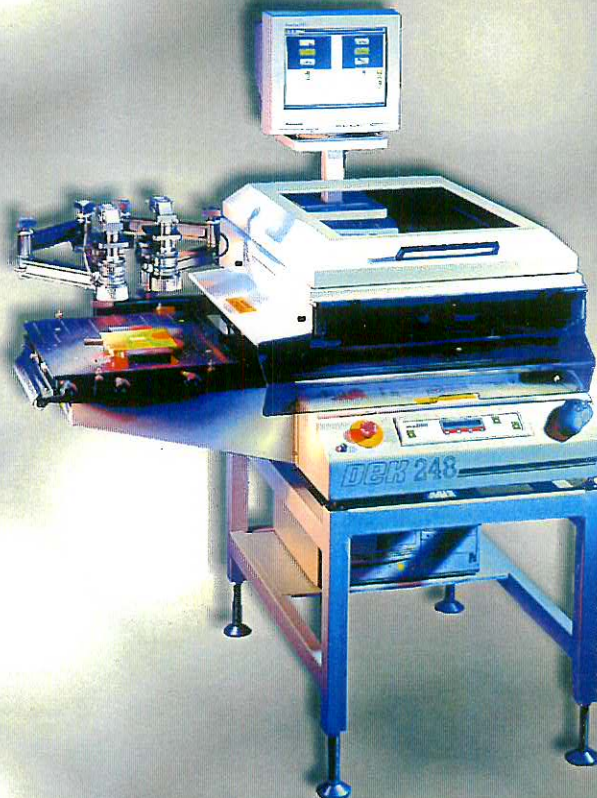# DEK

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**Pocket Reference
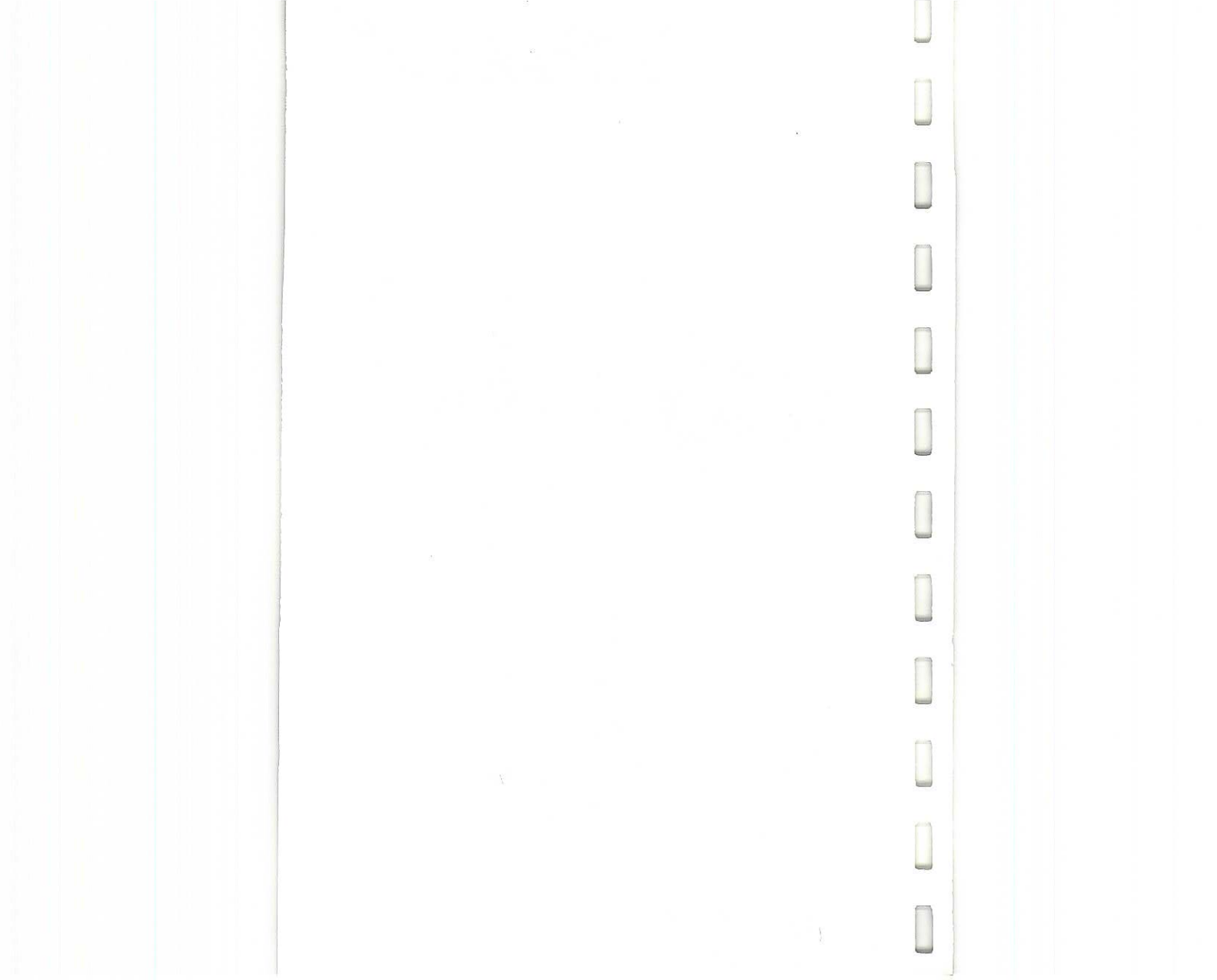Operator Guide**

DeK 248

Pocket Reference
Operator Guide

DEK Part No. 248215

DEK 248

POCKET REFERENCE GUIDE

Issue 2 Dec 98

Firmware Version XP126 (Version 1.00)

CONTENTS

This pocket reference guide has been extracted from the 248 Operator Manual. For in-depth detail of any of the operations detailed in this reference guide refer to the Operator Manual.

The right hand pages in this guide have been left blank for the user to write their own notes. This allows the guide to be customized by the operator so that training notes and hands on experience can be recorded as personal notes.

This reference guide describes the following topics:

1. The method of setting up a new menu, detailed in 7 stages, see Summary.

2. Retrieving an existing menu file.

3. An abbreviated list of error messages more commonly found on the machine.

NEW PRODUCT SET UP - Summary

STAGE 1
Power Up and Initialise Machine

⇩

STAGE 2
Load Screen

⇩

STAGE 3
Tooling Set Up

⇩

STAGE 4A
Product File
Edit Parameters

STAGE 4B
Load Product File

⇩

NON-VISION

VISION

STAGE 5A
Non-Vision
Clear Mylar Flap Print

STAGE 5B
DEK Align 4
White Mylar Flap Print

⇩

STAGE 6A
Non-Vision
Set Up

STAGE 6B
DEK Align 4
Set Up

⇩

STAGE 7A
Non-Vision
Running a Product

STAGE 7B
DEK Align 4
Running a Product

NOTES

1. *The method of setting up a new menu is detailed in 7 stages.*

   Use only the required section from each stage.

1. Check air supply connected and reading 70 PSI.

2. Select mains switch to ON (1).

3. If DA4 vision option fitted:
   a. Switch ON UPS *(see Note 1)*.
   b. Ensure system PC auto-starts *(see Note 2)*.
   c. Ensure monitor auto-starts *(see Note 3)*.

4. Wait for the following message to be displayed:
   'SYSTEM' to Initialise

5. Press System button, *(see Note 4)*.

6. Current menu page displayed on the machine control panel
   (see Note 5).

NOTES

1. Switching on the UPS provides power to the system PC and protects the PC software in the event of an emergency power shutdown.

2. The system PC is normally left in the switched 'ON' configuration so that when the UPS is switched on the system PC auto-starts. (Switch the system PC to 'ON' if switched off.)

3. The vision monitor is normally left in the switched 'ON' configuration so that when the UPS is switched on the monitor auto-starts. (Switch the monitor 'ON' if switched off.)

4. Initializing consists of homing every axis in turn, there is a slight time delay whilst this takes place. The machine is set up for the last menu used.

5. Current edit menu displayed.

STAGE 2 - Load Screen

1. Open machine front cover.
2. Ensure the screen clamp is in the raised position.
2. Insert screen into machine until fully homed.
3. Lower screen clamp and secure by fully tightening the locking screw *(see figure)*.
4. Lower front cover.
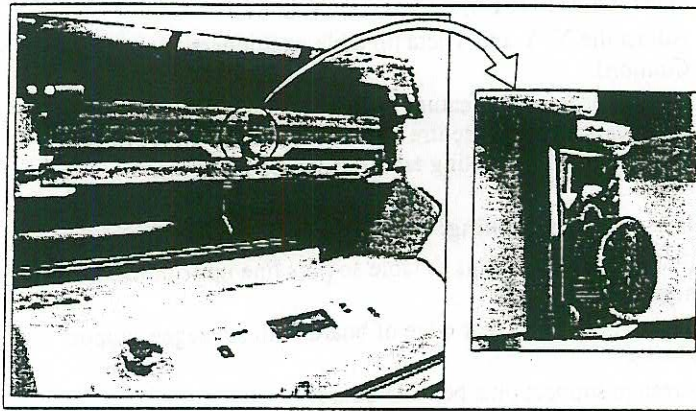
Step 3

1. Ensure that the table clamps are unlocked. (Control panel reads 'CLMPOFF'.)

2. Adjust the X, Y and Theta (θ) table positioners to zero, *(see Caution)*.

3. Select an aperture feature from the stencil. Measure the distance from the centre (down and across). Transfer measurements to tooling table. Align board to mark.

Standard Vacuum Tooling:

i. Fit board location pins to table so pins line up with location holes in board.

ii. Support front and rear edge of board with squeegee support blocks.

iii. Arrange support pins beneath board.

iv. Arrange vacuum supports beneath board.

AutoEdge Clamping (option)

i. Position and secure the fixed rail to the tooling table.

ii. Using the PCB to be printed as a guide, position and secure the clamping rail to the tooling table.

iii. Position and secure the fixed and clamping blocks.

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

v. Adjust the fixed block to leave a 1mm - 2mm gap between the board and block.

vi. Arrange magnetic tooling pins to support underside of the board.

NOTES

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

1. Select Mode option to Step.
2. Press Enter.
3. Scroll to desired menu using scroll up/down key, select Enter to edit selected menu (if no editing is required for the selected menu press Clear to accept menu and proceed to Step 20).
4. Edit Menu Name if required by using scroll up/down key, press Enter after each selected digit. Press Clear to accept new menu name.
5. To edit menu press Enter twice. Select the required print mode using scroll up/down key, select Enter. *(See Note 1.)*
6. Set the Print Gap using scroll up/down key, select Enter.
7. Set Deposits using scroll up/down key, select Enter.
8. Set forward print speed (Fwd Carr Spd) using the scroll up/down key, select Enter.
9. Set reverse print speed (Rev Carr Spd) using the scroll up/down key, select Enter.
10. Set Inspection Rate using scroll up/down key, select Enter.
11. Set Alignment Rate using scroll up/down key, select Enter.
12. Set Front Limit using scroll up/down key, select Enter.
13. Set Rear Limit using scroll up/down key, select Enter.
14. Set Hopover (if required) using scroll up/down key, select Enter.
15. Set Separation Speed using scroll up/down key, select Enter.
16. Set Table In Dly using scroll up/down key, select Enter.
17. Set Squeegee Dly using scroll up/down key, select Enter.
18. Set Hopover Dly (if required) using scroll up/down key select Enter.
19. Set Pressure Value and select Enter, *(see Note 2)*.
20. Press Clear to accept and run the edited menu.

NOTES

1. *Select print sequence dependent upon squeegee assembly to be fitted:*

PRNT/PFLD	Print/Flood	Squeegee/Floodblade
FLD/PRNT	Flood/Print	Floodblade/Squeegee
PRNT/PRNT	Print/Print	Single diamond-section squ'gee
DBL/SQUG	Double Squeegee	Two squeegee fit

2. *This facility enables the operator to make a record of the value of squeegee pressure, (this parameter can only be set at the squeegee pressure mechanism).*

STAGE 4B - Load Product File

1. Select **Edit**.
2. Scroll to desired menu using up and down arrow keys.
3. Press **Clear.**

NOTES

STAGE 5A - Non-Vision - Clear Mylar Flap Print

1. Select Mode option to **Step**.
2. In the product menu file edit **Print Gap** parameter to **1.00mm**, *(see Note 1)*.
3. Set tooling for board to be printed.
4. Load board.
5. Press **Go** button/buttons, (pneumatics activate).
6. Fit Mylar flap onto the four location pins ensuring flap is level on board.
7. Press **Go** button/buttons, table transfers to printhead.
8. Open front cover. Press **Up** and **Down** arrow buttons to set contact height, *(see Note 2)*.
9. Press **Enter** (sets contact height).
10. Use **Up** and **Down** arrow buttons to select required print height.
11. Press **Enter** (sets print height). Close front cover.
12. Press **GO** button/buttons *(see Note 3)*.
13. Use arrow keys to position front squeegee (Set Front Print Limit?).
14. Press **Enter** (sets Front Print Limit).
15. Use arrow buttons to position rear squeegee (Set Rear Print Limit?).
16. Press **Enter** (sets Rear Print Limit).
17. Fit squeegees or floodblades, *(see Note 4)*.
18. Load paste to screen and wet blade.
19. Press **GO** button/buttons, (machine performs a print).

Refer to Stage 6A Non-Vision Set-Up

NOTES

1. *Allows for the thickness of the Mylar flap.*

2. *Table rises, when top of board touches the underside of screen, release the up and down arrow buttons.*

3. *If protected menus are selected Steps 12 to 16 are by-passed.*

4. *To fit Floodblades proceed as follows:*

   i. *Select **Edit**.*

   ii. *Press **Enter** to page down to Print Mode.*

   iii. *Use the up and down arrow buttons to select the required Print Mode, press **Clear**.*

1. Select Mode option to **Step**.
2. In the product menu file edit **Print Gap** parameter to **1.00mm,** *(see Note 1)*.
3. Set tooling for board to be printed.
4. Press **Go** button/buttons, (pneumatics activate).
5. Fit Mylar flap onto the four location pins ensuring flap is level on board.
6. Press **Go** button/buttons, table transfers to printhead *(see Note 2)*.
7. Open front cover. Press **Up** and **Down** arrow buttons to set contact height, *(see Note 3)*.
8. Press **Enter** (sets contact height).
9. Use **Up** and **Down** arrow buttons to select required print height.
10. Press **Enter** (sets print height). Close front cover.
11. Press **GO** button/buttons *(see Note 4)*.
12. Use arrow keys to position front squeegee (Set Front Print Limit?).
13. Press **Enter** (sets Front Print Limit).
14. Use arrow buttons to position rear squeegee (Set Rear Print Limit?).
15. Press **Enter** (sets Rear Print Limit). *(See Note 5.)*
16. Fit squeegees or floodblades *(see Note 6)*.
17. Load paste to the screen and wet the blade.
18. Press **GO** button/buttons. Machine performs a print, table moves to the table-out position.

Refer to Stage 6B - DEK Align Set Up for vision alignment of the Mylar print.

NOTES

1. *Allows for the thickness of the Mylar flap.*

2. *If after pressing GO the table does not move, ensure that the vision inhibit signal is disabled in the vision configuration page.*

3. *Table rises, when top of Mylar touches the underside of screen, release the up and down arrow buttons*

4. *If protected menus are selected Steps 11 to 14 are by-passed.*

5. *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. Repeat Steps 11 to 15 or abort the set up.*

6. *To fit Floodblades proceed as follows:*

    i.   *Select **Edit**.*

    ii. *Press **Enter** to page down to Print Mode.*

    iii. *Use the up and down arrow buttons to select the required Print Mode, press **Clear**.*

(Carry out Stage 5A prior to the following procedure.)

1. Press **GO** button/buttons, (Pneumatics de-activated).
2. At control panel select table clamps to **CLMPOFF**.
3. Use X, Y and Theta positioners to align board features to stencil image, *(see Caution and Note 1)*.
4. Remove Mylar flap from tooling table.
5. In the product menu file edit **Print Gap** parameter to **0.00mm**.
6. Select the Mode option to **Run**. (The board is now correctly aligned for print operations.)
7. Select GO button/buttons to perform print on the board.

NOTES

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

1. *Align board to stencil figure below refers.*
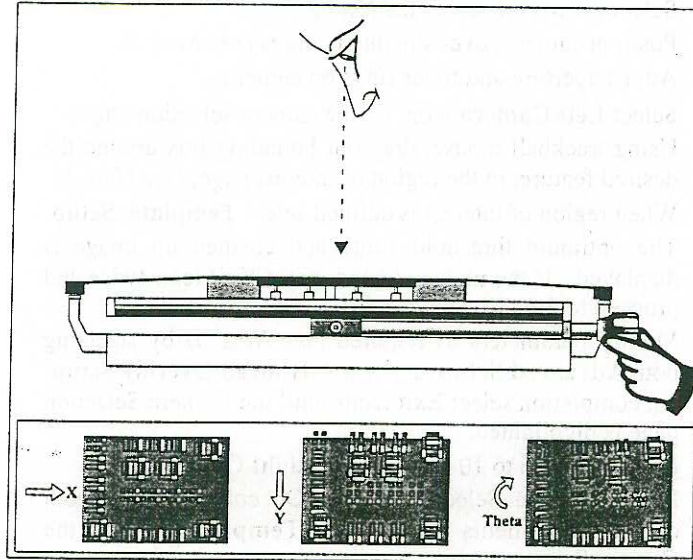
(Carry out Stage 5B prior to the following procedure.)

1.   Ensure the DA4 is switched ON *(see Note 1)*.
2.   Using the trackball mouse, select **Set Up** icon on the vision monitor, (Vision System Access Page).
3.   Select the **Mylar** icon, *(see Note 2)*.
4.   Position cameras over suitable features *(see Note 3)*.
5.   Adjust aperture and focus rings on cameras.
6.   Select **Left Camera** icon, (in the camera selection page).
7.   Using trackball mouse, drag out bounding box around the desired feature, in the region of interest page, *(see Note 4)*.
8.   When region of interest is defined select **Template Setup**.
9.   The optimum threshold value and cleaned up image is displayed. If the image is good, press **Exit** icon **twice** and proceed to Step 11.
10. Modify parameters as required *(see Note 5)* by selecting both **Advanced Setup** and then **Advanced Overlay Setup**. On completion select **Exit** icons until the Camera Selection page is highlighted.
11. Repeat Steps 6 to 10 to set up the **Right Camera**.
12. In the Camera Selection Page. On completion of both camera alignments select **Save Template** icon in the Camera Selection page.
13. In the Product Menu file edit the **Print Gap** to **0.00mm**.
14. In the Product menu file set up **Alignment Rate** as required.
15. Remove white Mylar flap from tooling table.
16. Load board to be printed onto the tooling table.

The board is now ready to print.

Refer to Stage 7B DEK Align 4 - Running a Product

1. *DA4 is enabled by ensuring that the UPS and system PC respectively are switched ON.*

2. *Select Mylar if a reference image is required for vision set up, or PCB if a correctly aligned PCB is to be used.*

3. *For best effects, features should have a good contrast with the surrounding board, and have as few tracks and other pads near to them as possible. For greatest alignment accuracy, features should be near diagonally opposite corners.*

4. *Region of interest is the feature selected for alignment and is displayed as:*

    Mylar alignment - Black image on a white background
    PCB alignment - White image on a black background

5. *Page parameters:*

    i.   *Threshold Parameter - determines the value of the grey scale, below which the image is converted to black and above it is converted to white.*

    ii. *Minimum Feature Size - determines the minimum number of adjacent pixels to the image that are treated as a feature and NOT cleaned up.*

    iii. *Enlargement Factor - controls the misalignment tolerance, acceptable when the live image is located within the enlarged area.*

    iv. *Template Aligned Colour - enables colour of the template to be set to either green or blue.*

(Carry out Stages 5A and 6A prior to the following procedure.)

1. Set **Alignment Rate = 0**
2. Select Mode option to **Run**.
3. Place board on location pins.
4. Press **GO** button/buttons.

(Carry out Stages 5B and 6B prior to the following procedure.)

1. Press **GO** button/buttons, (pneumatics activated).
2. Align the PCB to the stored images (red templates) on the monitor using the X, Y and Theta (θ) adjusters until both red templates turn green, *(see Note 1)*.
3. Ensure Mode option to **Run**.
4. Press **GO** button/buttons, (tooling table moves in to printhead for print cycle).

NOTES

1. *The monitor displays live images of PCB features via the cameras. The current reference templates are also displayed on the monitor (in red) over both live images. Once the PCB is sufficiently aligned each template changes colour to green (or blue if configured). The PCB is now ready to be printed.*

ERROR MESSAGES

Listed below are errors more commonly associated with general machine operation in the production environment.

If errors that are not listed here are displayed or an error repeats, then call a technician to either clear the error or log and investigate

Air Pressure Error

Check air line connected & reading 70 P.S.I.

Front/Rear Limit Error

Limits set at edit menu are not achievable. Adjust front and rear print limits to give a print stroke of 20mm beyond each edge (for a 50mm board stroke should be 90mm).

Motor Power (+24V) or E-Stop Error

Check E Stop button are released.

Print Carriage Error

Check carriage path for obstructions and remove.

Squeegee Error

Check squeegee up/down movement for obstructions and remove.

Table Lift Error

Check table movement path for obstruction and remove.

(Continued).....

Machine Cover Open Error

Check both machine covers are closed.

'GO' Button To Recover

Printer requests operator to acknowledge initialization, check protocol and press GO.

RS Table Error

Check RS table movement for obstruction and remove.

Vision Not Ready

Check vision system is connected and switched on. Check vision system is enabled and set up.

NOTES