HIGH WATER

Cobra Installation Guide v1.0

Preface

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HighWater's contact information

HighWater Designs Limited
1-6 St. George's Business Park
Alstone Lane
Cheltenham
Gloucestershire
UK
GL51 8HF

Telephone: +44 (0) 1242 542100
Fax: +44 (0) 1242 251600
Email: sales@highwater.co.uk
Web: www.highwater.co.uk

HighWater support department

Telephone: +44 (0) 1242 542102
Email: support@highwater.co.uk
Web: www.4hws.co.uk

Contents

1. Introduction

This chapter includes the following sections:

1.1 Before you begin

Please read the following information before you begin:

- **This manual refers to version 1.0.0 and later of the Cobra software.**
- **You MUST carefully read the safety information contained in chapter 2 BEFORE beginning any work on the equipment and always adhere to the recommended procedures when working on the equipment.**
- **Please carefully read all warnings in this manual and follow any given instructions.**
- Ensure that the room the Cobra system will be situated in has the necessary space for access to the Cobra platesetter. We recommend a 60cm access space on both the left and right-hand sides (40cm minimum) and 90cm in front of the Cobra platesetter. Please refer to Appendix B for more information.
- Read the plate and working environment information in Appendix A and Appendix B. These appendices tell you what plates can be used with the Cobra system and the conditions that the Cobra system should be operated in.
- This manual assumes that an approved, fully functional plate processor is available for development of the plates.

1.2 Introduction to this manual

This manual provides full installation instructions for the Cobra CtP system and covers:

- **Safety notices and requirements** — this information is very important and you must ensure that you fully understand and abide by the safety requirements before starting the installation.
- **Unpacking and moving the Cobra platesetter.**
- **Connecting the workstation to the Cobra platesetter.**
- **Connecting the Cobra platesetter to a power supply.**
- **Attaching the dongle and enabling the Cobra software.**
- **Loading and unloading plates in the Cobra drum.**
- **Producing test plates and carrying out calibration and quality checks.**
- **Plate information.**
- **Brightroom layout and specification.**
- **Safety label information.**
- **Test results.**

This guide does not cover setting up and using the Torrent RIP and other Cobra software. Once you have installed the Cobra platesetter, you should refer to chapter 10 of this manual and also to the **Cobra User Guide** for more details on setting up the software for the user.

Warning: This manual **must** be read before installation commences and, in particular, read the safety information in the next chapter.

2. Safety information

Warning: All engineers **must** read this section and abide by the safety requirements when they start work on the Cobra platesetter.
You must also read the supplied Cobra Safety Information manual.

This section includes the following information:

2.1 Safety information

Cobra, under normal operation, is a **CLASS 1** embedded laser product and is inherently safe for operators because the laser will not operate if the cover is open. This chapter details all the necessary precautions you should take when working on the Cobra platesetter.

All installation/service engineers must be trained and approved by HighWater Designs Limited, and must follow all safety procedures defined in this document. HighWater Designs Limited will accept no responsibility for any damage to equipment or personal injury caused by non-approved engineers, or by failure to follow these safety procedures.

Safety warning

Access to the internal mechanisms is gained by removing Cobra's panels. All panels must be replaced and the mains lead reconnected before leaving the equipment.

With the panels off, beware of the 'pinch' risk from moving mechanical parts. Take care when working around the drum area with the machine in this state.

2.2 Working safely

Protecting yourself from injury

To protect yourself from injury:

- Follow all safety warnings and instructions given in this manual and in the Cobra Test Tool software.
- The edges of a plate are sharp so take great care when handling plates and, in particular, keep the edges of the plate away from your face.

Protecting the Cobra drum and carriage from damage

To protect the Cobra drum and carriage from damage:

- Do not put any object other than a plate into the drum as this could damage Cobra's drum or carriage, or the plate.

Safe plate handling

Plates must be handled with care. Engineers need to be aware of the following guidelines:

- Plate edges are sharp, particularly the corners. Remove plates from packaging carefully and keep plate edges and corners away from your face.
- Handle plates at their edges.
- Contact with human skin can damage the plate's emulsion surface.
- Keep the interleave paper on the emulsion side of the plate during handling, but remove it before placing the plate into the drum.
- Always put the plate into the drum emulsion side up.

2.3 Safety labels

There are a number of labels on the Cobra platesetter. Please ensure that you follow all the necessary safety precautions.

2.4 Laser precautions

Cobra has a single laser source for the plate expose beam: a blue-violet laser diode, rated at 60mW that emits a visible light beam at a nominal wavelength of 405nm. This laser falls into **CLASS 3B**, which means that direct viewing of the laser beam is always hazardous as is viewing direct reflections. Diffuse reflections are normally safe.

Cobra is designed as a **CLASS 1** embedded laser product and is, therefore, safe for the operator. The **CLASS 3** ratings apply as soon as installation/service engineers remove the panels for servicing and the machine is powered on.

Warning: CLASS 3B lasers are dangerous and, if the beam is viewed incorrectly, may cause irreversible retinal damage or blindness. Therefore, you must, where appropriate:

1. Ensure that you, and those working with you, have adequate eye protection against the laser.
2. Ensure that no unauthorized personnel have access to the work area when the laser is exposed.
3. Ensure that no laser light escapes from the work area.
4. Ensure that the room is clear of unauthorized personnel while you are working on the Cobra platesetter.
5. Ensure that appropriate warning signs are displayed on all doors leading to the work area.
6. Leave the Cobra platesetter in a safe state when it is left unattended.
7. Replace and secure all panels before leaving the Cobra work area.

3. Unpacking and moving the Cobra system

This chapter shows you how to unpack the Cobra system from its crate and move it into position in the brightroom. It contains the following sections:

3.1 Tool requirements

The following tools are recommended for unpacking, installing and testing the Cobra system:

- Set of metric Allen keys (for example, 1.5, 2.0, 2.5, 3, 4, 5, 6, 7, 8, 9 and 10mm).
- Set of metric spanners (for example, 4, 5, 5.5, 6, 7, 8, 9, 10, 12, 13 and 14mm).
- Socket set.
- Screwdrivers (preferably electric): flat head and cross point (pozidrive).
- Plate densitometer for density calibration checks.
- Steel metric ruler (1 metre long).
- Magnifying glasses (x10 and x100).

3.2 Crate contents at delivery

Crating of the Cobra system will depend on where the Cobra is being delivered to:

- UK delivery: the Cobra is on an open pallet with the PC in a separate box.
- Rest of the world: the Cobra is in a full crate with the PC packed in front of the machine and the panels packed behind.

  The main crate dimensions are approximately 1110 x 1420 x 1850mm (w x d x h).

  The total weight of Cobra in its crate is approximately 350kg.

Cobra, uncrated and fully assembled weighs 250kg.

Warning: You must take extreme care during lifting and manoeuvring operations, and make sure that the appropriate lifting equipment and an adequate number of people are used to move and install the Cobra system.

3.3 Unpacking the Cobra system

Examining the shock indicators

Before shipping, a number of shock indicators were attached to the Cobra crate and to the wrapped Cobra platesetter. These indicators tell you if the system has been subjected to excessively rough handling during transit between the factory and the customer site.

There is a tilt indicator on both the inside and outside of the crate. On the outside of the crate there may also be a 'Shockwatch' indicator:

Tilt indicator

Shockwatch indicator

These indicators turn red when activated, showing that the crate has been subjected to excessive tipping and/or an impact of some sort. However, this does not necessarily mean that the Cobra platesetter has been damaged.

There are one or more 25g Shockwatch indicators on the Cobra platesetter itself. When these indicators are activated they turn red, signifying that the Cobra platesetter has been subjected to an impact (in which case some damage may have occurred).

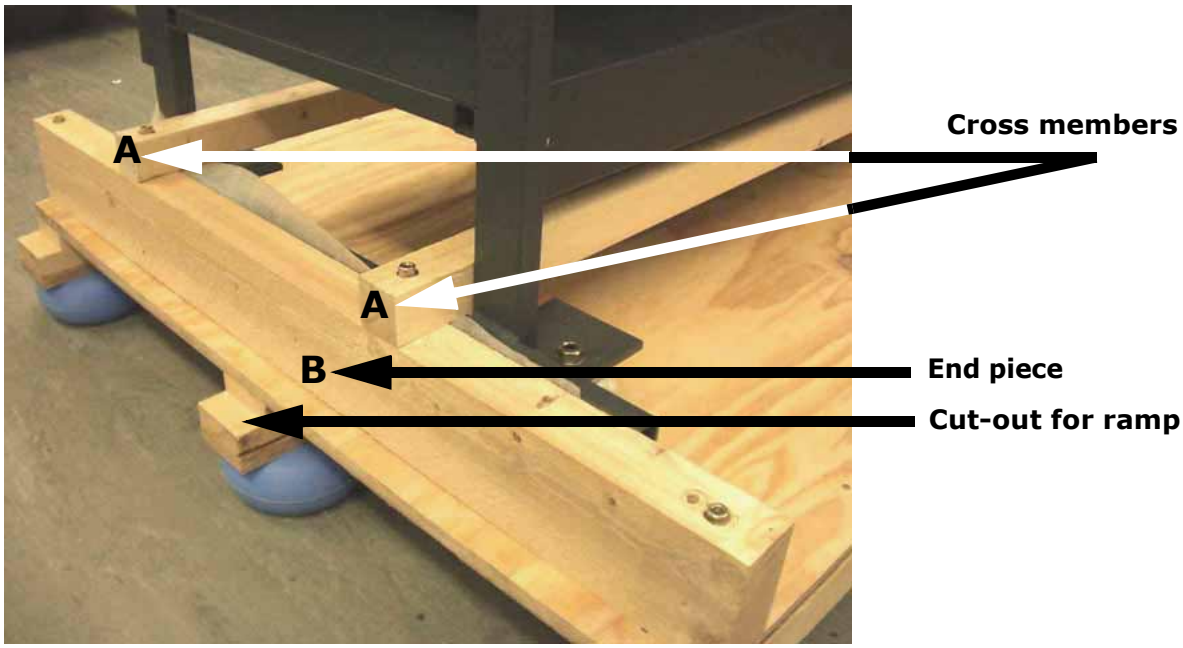
If any of the tilt or Shockwatch indicators have been activated (that is, if they have turned red) then follow the procedure set out on the label, thus:

1. **Do not refuse shipment of the Cobra system.**
2. Make a note on the delivery receipt that the indicator(s) have been activated and inspect the Cobra system for any obvious damage.
3. If any damage is discovered, leave the Cobra system in its original container and packaging and then request immediate inspection from the carrier within 15 days of delivery (or 3 days international). Contact HighWater Designs (or other supplier) to further discuss any problems.

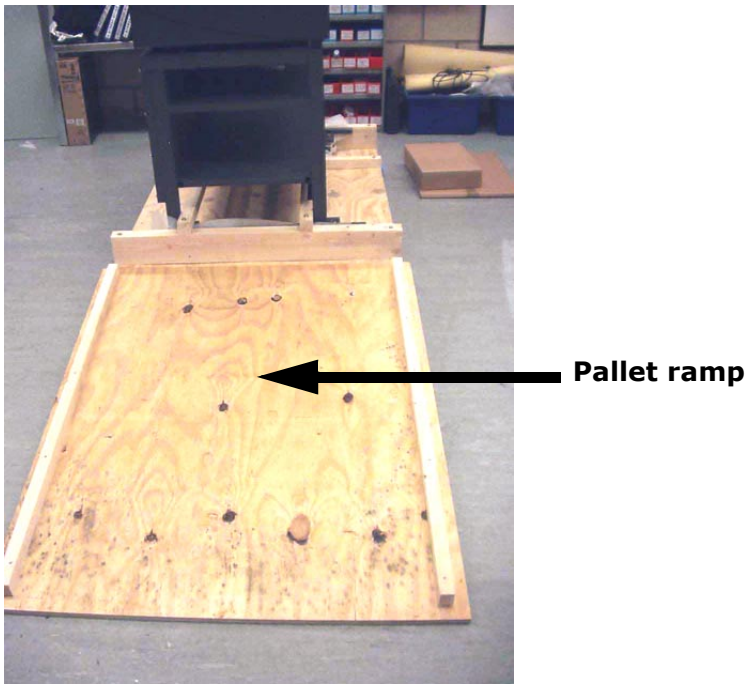
Unpacking the Cobra system

When you are ready to unpack the Cobra system:

1. Site the crate in a suitable space such that there is enough room:
   - To remove the crate top and place it on the floor next to the Cobra.
   - To move the Cobra off the pallet from the side marked 'Ramp This End'.
2. Remove the screws securing the top to the four sides then take the crate lid off. (Later, you will invert the lid to use as a ramp for Cobra to be wheeled off the pallet base.)
3. Locate the crate side on which the ramp floor piece has been attached.
4. Take this side panel off and remove the ramp floor piece by removing the screws marked with a cross and put them to one side.
5. Remove the other three side panels to leave Cobra on its pallet.
6. Move the four side panels away from the work area.
7. Carefully remove the clear plastic wrapping material from around Cobra.
8. Remove the separately packed panels, along with their packaging, and the boxes containing the computer system peripherals and put these safely to one side.
9. Remove the two wooden cross-members (marked **A** below) by removing the securing screws at each end.
10. Remove the ramp end cross piece from the front-left of the Cobra (marked **B** below) by removing the 2 securing screws.

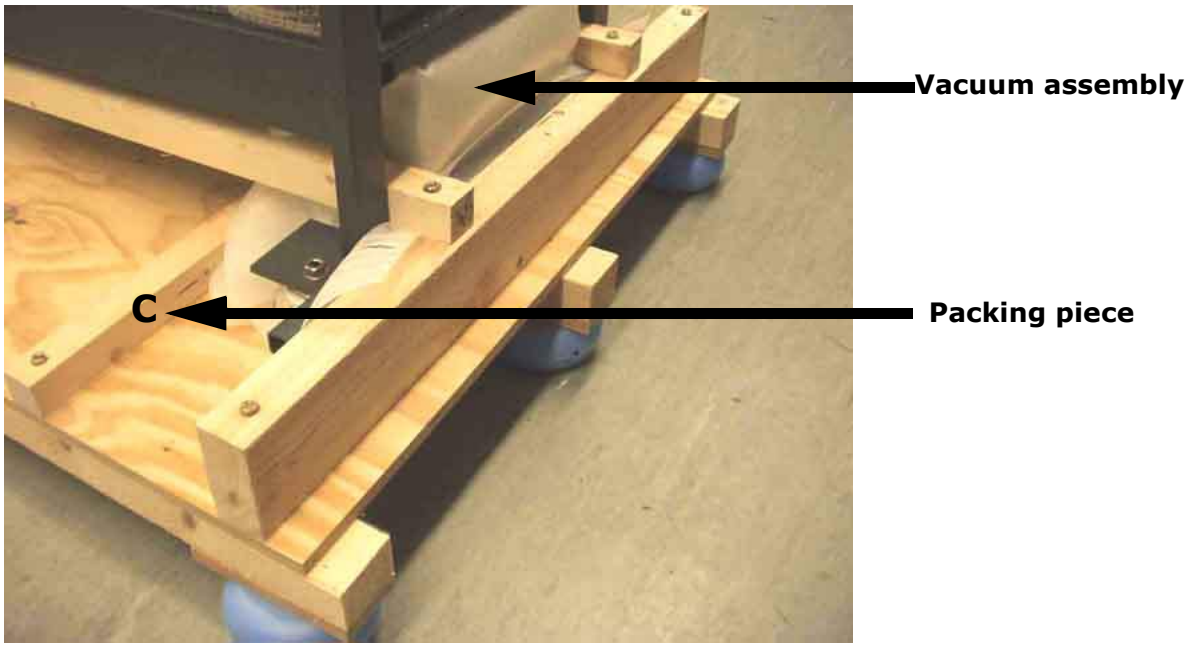


11. Place the inverted crate lid onto the base cut onto the 2” x 1” end. This will act as the ramp:



Note: The pallet base cross members have cut-outs for the ramp piece to sit on.

12. Attach the ramp floor piece to the other end of the ramp.
13. Remove the block wood packing piece (marked **C**) securing the vacuum pump assembly in place, by removing the two screws:



14. Remove the vacuum assembly from the pallet.

The Cobra platesetter is now uncrated and can be moved into position, as described next.

3.4 Moving the Cobra platesetter

Now that the Cobra platesetter is uncrated:

1. Unlock the machine's wheels by rotating the four orange-coloured cogs such that the floor mounting pads are raised up fully. Cobra is now free to move.
2. Wheel Cobra off its pallet and manoeuvre it into position in the brightroom.

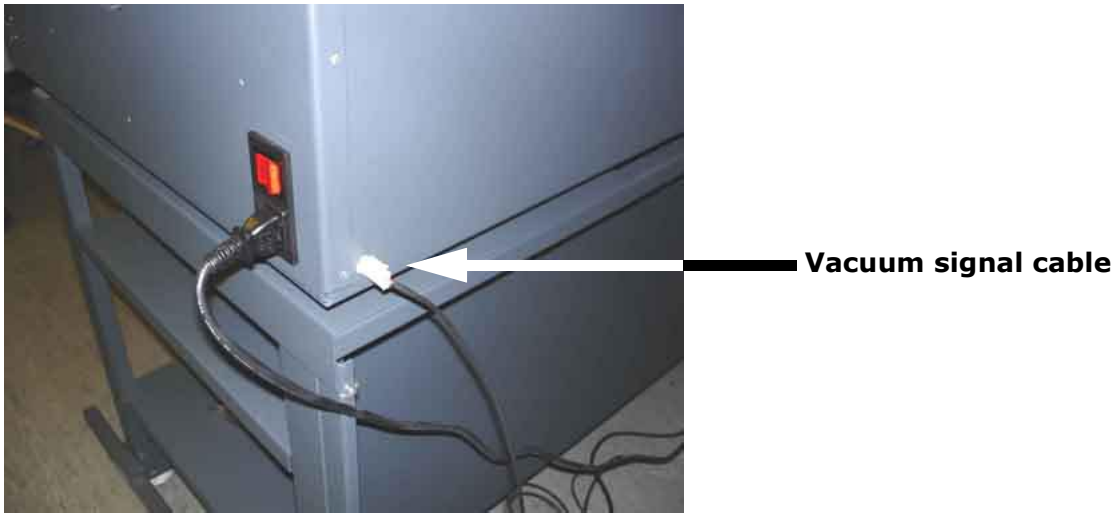
   Notes: Ensure that there is adequate space for access around the Cobra platesetter as specified in Appendix B.

   When wheeling the Cobra down the palette ramp, make sure the machine is supported so that it does not running uncontrollably down the ramp.
3. When Cobra is correctly positioned, lower the stabilizing pads to the floor by rotating the orange toothed cog just above each wheel. Cobra will sit on these four pads.

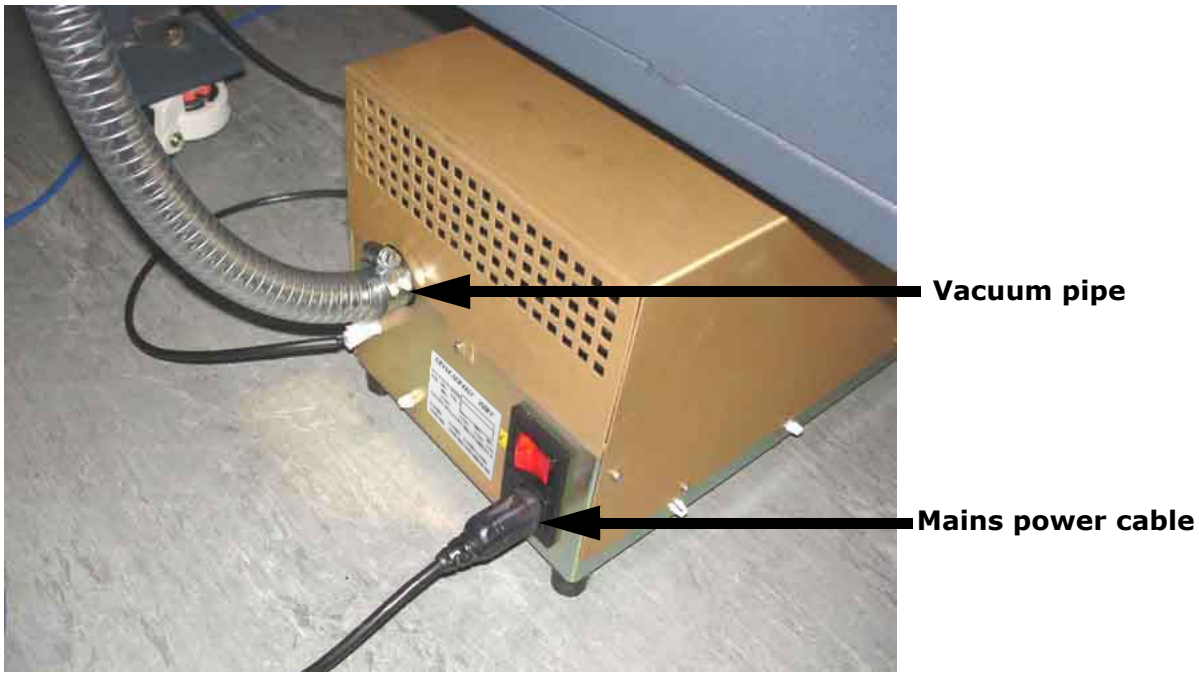
   Note: Levelling the Cobra is not necessary. However, ensure that all four feet are firmly on the floor. If not, move the machine to a more even piece of floor.

Once the Cobra platesetter is in the correct position you can continue with the installation:

1. Unpack the vacuum pump assembly that was shipped underneath the Cobra chassis and that was removed earlier.
2. Site the vacuum pump either on the floor behind the Cobra platesetter or, if the machine needs to be moved, on the bottom shelf of the Cobra chassis.
3. Connect the vacuum pump mains cable to the vacuum pump assembly.
4. Connect the vacuum pump signal cable from the connector on the vacuum pump assembly to the matching connector situated on the Cobra back panel:



5. Connect the vacuum pipe to the vacuum outlet on the vacuum pump assembly and secure with the Jubilee clip provided:



6. Connect the vacuum pump mains plug to a suitable power outlet with the power cord provided.
7. The Cobra is shipped with the front doors wedged open with a foam block. Remove this and check that the doors open with a smooth geared action.

3.5 Removing the transit bolt

The Cobra platesetter is shipped with its optics carriage clamped. Removing the transit bolt allows the optics carriage to be unclamped and prepared for when the power is switched on.

Warning: Do not switch Cobra on with the transit bolt in place.

To remove the transit bolt:

1. Locate the optics carriage clamping pillar. As viewed from the front of the Cobra, this pillar can be found at the top on the left hand side of the drum casting. Remove the M5 screw (usually coloured red) that secures the optics carriage to the pillar. The carriage is now free to move. (The picture shows the bolt as viewed from the front right of the Cobra platesetter.)

   Note: After the screw is removed, the pillar remains in place and should not be removed.

2. Check the drum for debris and vacuum clean, if necessary.

   Note: When Cobra is switched on and a test image sent to the platesetter, the carriage will automatically find its start position, ready to accept a plate (providing the cover is closed).

3.6 Cobra's panels

Cobra has four panels that may need to be fitted or temporarily removed during the installation process. The panels are shown below and the procedures for removing and/or fitting these panels is described in the next sub-sections.

The end panels

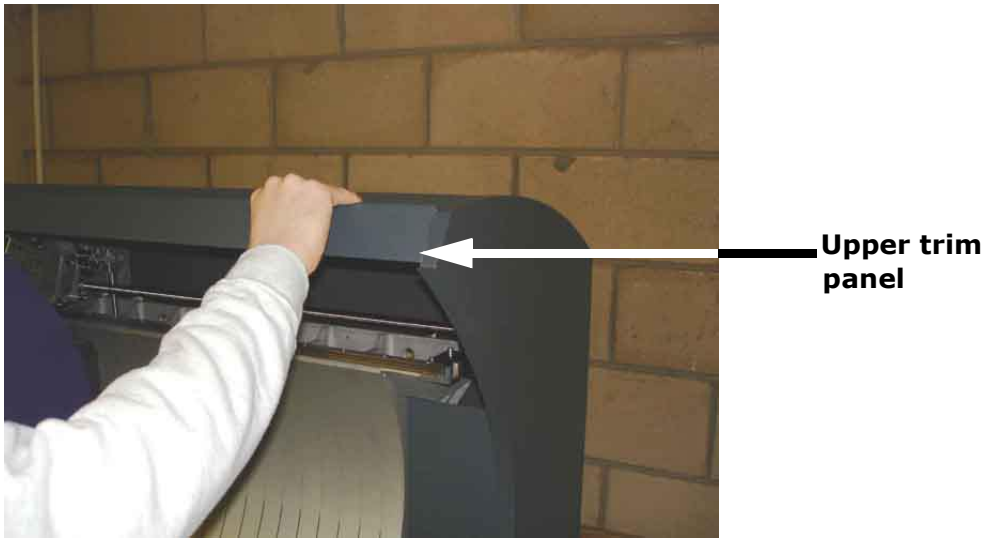
The end panels were shipped at the back of the machine. You should fit these panels to the Cobra platesetter now.

Removing the upper trim panel

Removing the upper trim panel is necessary before removing the service panel.

To remove the upper trim panel:

1. Grasp the right hand side of the upper trim panel and slide it upwards as far as it will go.



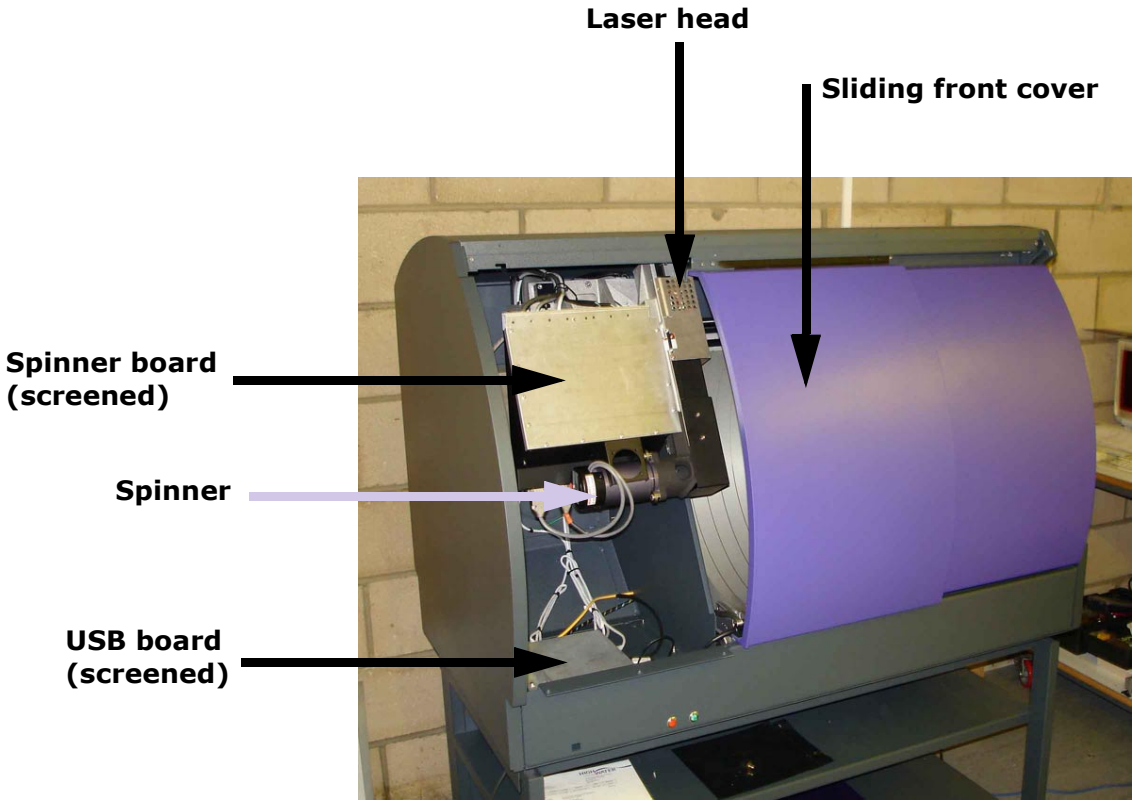
2. Rotate the top part of the trim panel towards you to release the top flange.
3. Carefully withdraw the whole of the right-hand side.
4. Slide the trim panel to the right to remove it completely.

Removing the service panel

To remove the service panel:

1. Remove the upper trim panel as described in the previous sub-section.
2. Remove the three M4x10 screws from the underside of the service panel.
3. Holding the service panel by its edges, apply firm but even pressure inwards to the top of the service panel and slide it to the right.
4. Pull the panel downwards and remove it from the Cobra.

5. With the service cover removed, the Cobra platesetter's internal mechanisms can be accessed:



Refitting the panels

To refit all panels, follow the removal procedure in reverse. Locate the top fixings first when re-fitting the upper trim and service panels.

4. Connecting up the Cobra system

After unpacking the Cobra system and moving it into place, you need to connect the workstation to the Cobra platesetter and then connect the system to a power supply. This chapter contains the following sections:

4.1 Connecting the workstation to the Cobra platesetter

To unpack the workstation and connect it to the Cobra platesetter:

1. Carefully unpack the Cobra workstation.
2. Unpack the monitor, keyboard, mouse and cables and connect them to the workstation.
3. Connect the supplied USB 2.0 cable (already connected to the Cobra USB port situated underneath the Cobra base plate) to the computer workstation's USB port:

4. Connect the customer's CAT5 network cable to the workstation.
5. If the customer ordered a two-computer Cobra system, then the second computer (running the Torrent RIP) can be connected anywhere on the network.

4.2 Connecting the Cobra platesetter to a power supply

Warning: Before powering up the Cobra system, make sure that the transit bolt has been removed, as described in section 3.5 on page 19.

This equipment **must** be earthed.

Four supply sockets are required for connecting the Cobra system to a power supply (one each for the Cobra platesetter, vacuum pump, workstation, monitor). In all installations, the mains cables supplied with the Cobra should be used.

For 110V installations and many European installations, the external mains cables are not fused, protection being given by the appliance's built-in fuses. For 230V installations which require the UK style mains plugs, note that the cables supplied for the engine and vacuum pump are fused with 10A BS1362 fuses, and the cables supplied with the PC and monitor are fused with 3A BS1362 fuses. In the rare event of fuse failure, always replace the fuse with the same type and rating.

The correct vacuum pump assembly must be used for the available supply. The product identification label (located next to the IEC power inlet) clearly indicates either 230V or 110V working.

The Cobra platesetter requires two power outlets, accessible at all times and located as close as possible to the Cobra system. Cobra is rated at 230 volts 4.5 amps, or 110 volts 9 amps, and has a maximum power consumption of 1KW (these figures are based on the platesetter and vacuum pump combined).

To connect the Cobra system to a power supply:

1. It is recommended that the system is run from a 4-way mains distribution block.
2. The Cobra platesetter is delivered fully-assembled (apart from the vacuum pump cable and pipe, computer workstation, monitor, keyboard, mouse and power cables). Connect the supplied power cable to the power inlet on the right-hand side panel of the Cobra platesetter.
3. Connect the vacuum pump.
4. Check that there are no loose cables and that all the cables are plugged in firmly.
5. The computer workstation will also require two power outlets. It is rated at 2.5 amps and has a maximum power consumption of 600W.

Switch on the Cobra platesetter first using the switch on its right-hand side. Then switch on the Cobra workstation and the vacuum pump.

To disconnect power completely from the Cobra:

- Before switching off Cobra, ensure that any imaging functions are complete and that any plate has been removed from Cobra's drum.
- Always shut down the computer workstation first (close down all running applications then select **Shutdown** from the Windows **Start** menu).
- Switch the Cobra platesetter off at the right-hand side.
- Switch off the vacuum pump.
- To remove power completely from all system components, remove the AC power cord from the wall outlet.

5. Starting up and shutting down the Cobra system

This chapter includes the following sections:

5.1 Starting up the Cobra system and logging on

To start up the Cobra system and log on:

1. Switch on the Cobra platesetter using the switch on its right-hand side, then switch on the Cobra workstation and vacuum pump.
2. The Cobra software, which runs under Windows XP Professional, has two logins:

Login type	User name	Password
Engineer This login lets you run the Cobra Test Tool software in engineer mode, which you use to perform standalone tests on Cobra's sub-systems and carry out the quality/calibration checks.	**engineer**	**highwater**
Customer/end-user login	**cobra**	*no password*

3. Log in as **engineer** with the password **highwater**.

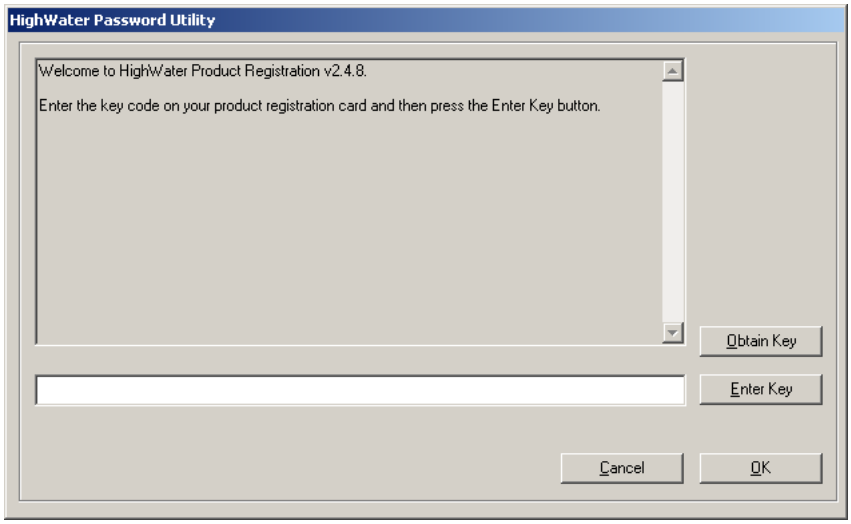
Warning: Do not disclose the engineer login password to anyone, especially end-users, as this login provides access to test facilities, which, if used improperly, could cause personal injury or irreparable damage to the Cobra platesetter.

4. The Cobra Test Tool software will launch automatically.

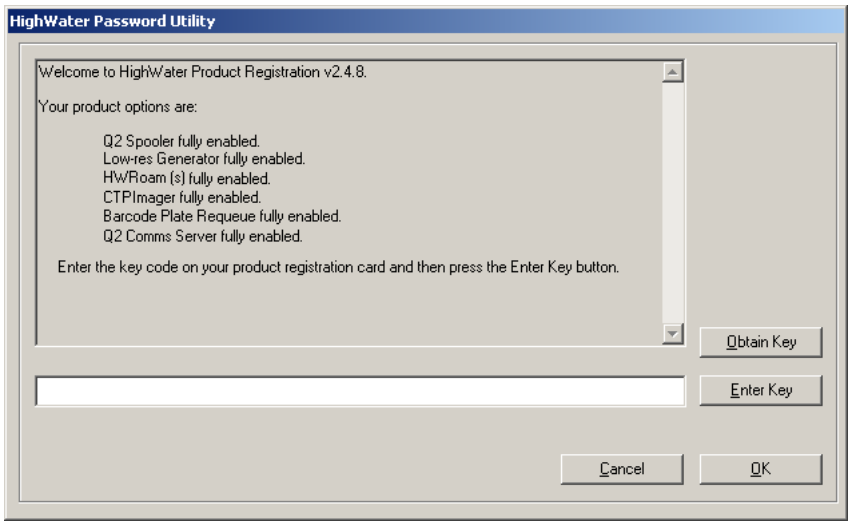
5.2 Enabling the Cobra software

Before you can run the Cobra software for the first time, it needs to be enabled using HighWater's Password Utility program. To do this:

1. If you have not done so already, attach the supplied dongle to the USB port of the machine. You must do this **now**, before you launch the HighWater Password Utility program.
2. When the dongle is attached to the machine, select **Start > Programs > HighWater Designs > Q2vx.x.x > Register Q2** to display the following dialog:



3. Type the supplied keycode (either the sequence of numbers or words) into the white text box at the bottom, then click on the **Enter Key** button.
4. If the keycode is valid, you will see the following message in the main window:



5. Click on the **OK** button to exit the HighWater Password Utility program.

You will now be able to run the Cobra software applications.

5.3 Shutting down the Cobra system

Later, when you are ready to close down the Cobra system:

1. Close down all running applications.
2. Shut down the Windows operating system by selecting **Shutdown** from the **Start** menu.
3. When the computer system has closed down, Cobra can be switched off at the side of the machine.
4. Also switch off the PC monitor and vacuum pump.

6. Initial checks on the Cobra platesetter

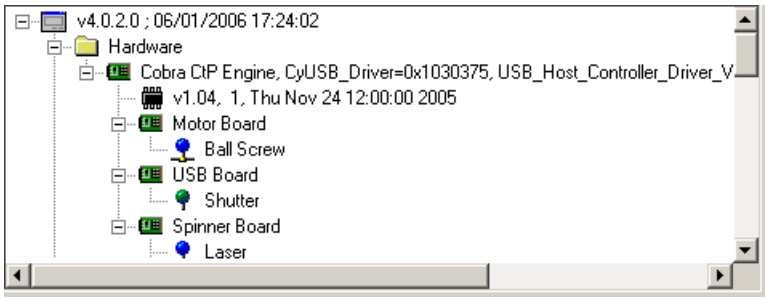
Before going through the plate loading sequence and carrying out the plate tests, you need to carry out some initial checks on the Cobra platesetter, which are described in this chapter.

This chapter covers:

6.1 Checking the Cobra system components

Before you can run through the cleaning procedure and installation tests you should make sure that all the system components are operating correctly. To do this:

1. If it is not already running, launch the Cobra Test Tool by selecting **Start > Programs > HighWater Designs > Cobra Engine v1.x.x > Cobra Test Tool**.
2. In the Cobra Test Tool, click on the **System Tests** tab and select **System Status** from the drop-down menu.
3. Click the **Run Test** button. After a short time (usually less than 10 seconds), the results of the test are displayed, for example:



4. Each of the Cobra platesetter's sub-systems is shown with its corresponding icon:

	An application program. This is a file with the .exe extension.
	A folder. This may not necessarily exist on your computer as it may be used to head a given category, such as 'hardware' or 'software'.
	This indicates hardware inside the CTP engine. Each board in the CTP engine may carry one or more devices.
	This indicates a memory device or other programmable device within the system.
	This indicates a control device within the CTP engine. This may occupy an entire PCB, belong to a collection of control devices on the same PCB, or may even be distributed over more than one PCB. If this icon is displayed, the control device was successfully probed for status and version information.
	This indicates a control device within the CTP engine. If this icon is displayed the control device was probed for status and version information but an error was encountered.
	This indicates a control device within the CTP engine, which may be a software device or some other device which is not on the control bus. If this icon is displayed the component was successfully probed for status and version information.
	This indicates a control device within the CTP engine, which may be a software device or some other device which is not on the control bus. If this icon is displayed the component was probed for status and version information but an error was encountered.
	This icon represents an application, driver or dll file. (These are files with the .exe, .sys or .dll extension.)

If any icon is crossed through in red (for example ), it is not responding and needs to be investigated. In the first instance, check the USB cable connection.

Note: If you cannot identify the cause of the problem, please call a support engineer.

6.2 Cleaning the Cobra drum

Before loading a plate into Cobra, the drum and surrounding area must be checked for loose debris that may have settled during transit or unpacking. Use a soft brush and lint-free cloth (or a vacuum cleaner hose) to clean the drum, if necessary.

7. Loading a plate onto the drum

After cleaning the Cobra drum you are ready to start the plate tests. Before you do these, however, you should load a plate onto the Cobra drum to make sure that the register bar and vacuum are working properly.

This chapter covers the following:

Warning: Make sure that you are familiar with plate handling procedures, as described in section 2.2 on page 10.

7.1 Register bar options

The Cobra platesetter's register bar is double-sided and is configured with a different registration option on each side. The following standard options can be supplied:

Option	SIDE A	SIDE B
1	220mm Bacher notches	3-pin edge registration
2	425mm Bacher notches	3-pin edge registration
3	220mm Bacher notches	425mm Bacher notches

Each machine is supplied with one of the above options, as specified on the customer order. There is only one register bar per machine and bars are not interchangeable.

Custom options are also available, so the register bar may employ a different setup to those listed above.

Note: The Cobra register bar notch systems (both 220mm and 425mm Bacher style) use a round "U" notch on the left-hand side and a square notch on the right-hand side of the bar for plate location. Therefore, the plate must be pre-punched to this same format in order to locate correctly in the Cobra register bar for imaging.

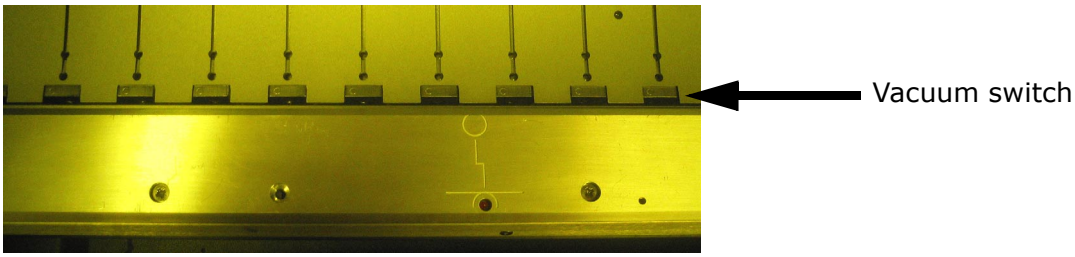
7.2 Selecting the register bar

To select the required register bar:

1. Push the black lever back to disengage the register bar.
2. Rotate the register bar away from you by 180 degrees.
3. Pull the black lever forwards to lock the register bar into the required position.

7.3 Setting up the vacuum

The Cobra platesetter holds the plate in place in the drum using a vacuum, which is applied to up to 16 channels across the drum. Before imaging a plate, you must ensure that the channels covered by the plate are switched on and any unused channels are switched off. You do this using the vacuum switches, which sit just above the register bar:



To switch a vacuum channel on or off:

- **On:** Rotate the vacuum channel switch from left to right (clockwise) to turn the channel on (as indicated by **o** on the switch).
- **Off:** Rotate the vacuum channel switch from right to left (anti-clockwise) to turn the channel off (as indicated by **x** on the switch).

Note: Make sure that all channel switches sit flush with the Cobra drum bed.

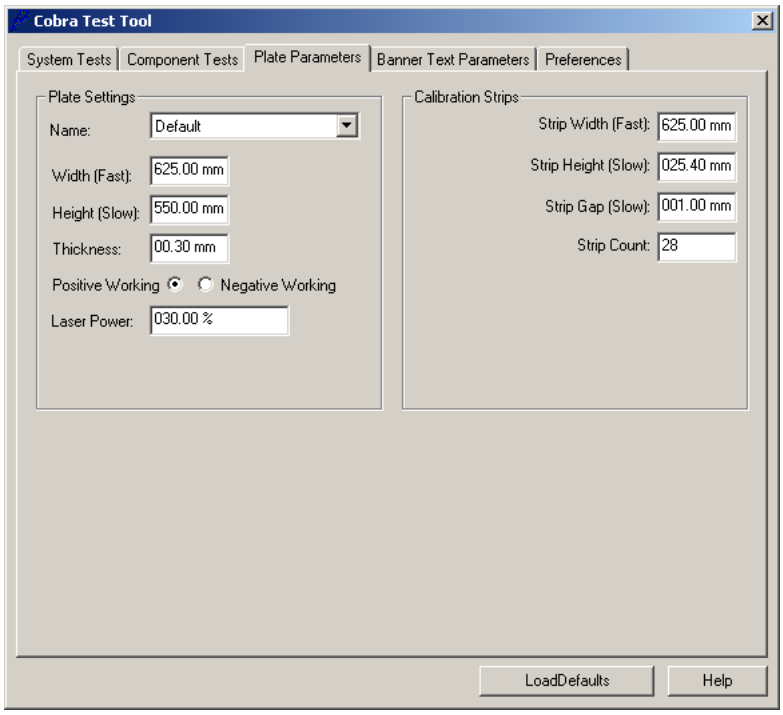
7.4 Loading a plate onto the Cobra drum

WARNING: When handling plates, make sure that you follow the safe working procedures covered in chapter 2.

In order to load a plate into the register bar, the software (either the Cobra Test Tool or the Cobra Console) must be running and set up to ask for a plate to be loaded — the register bar will not function without software telling it to do so. Hence, you need to initiate image output from the Cobra TestTool. This section shows you how to output the calibrations strips job, although which job is output, at this point, is not relevant.

To select the calibration strips job:

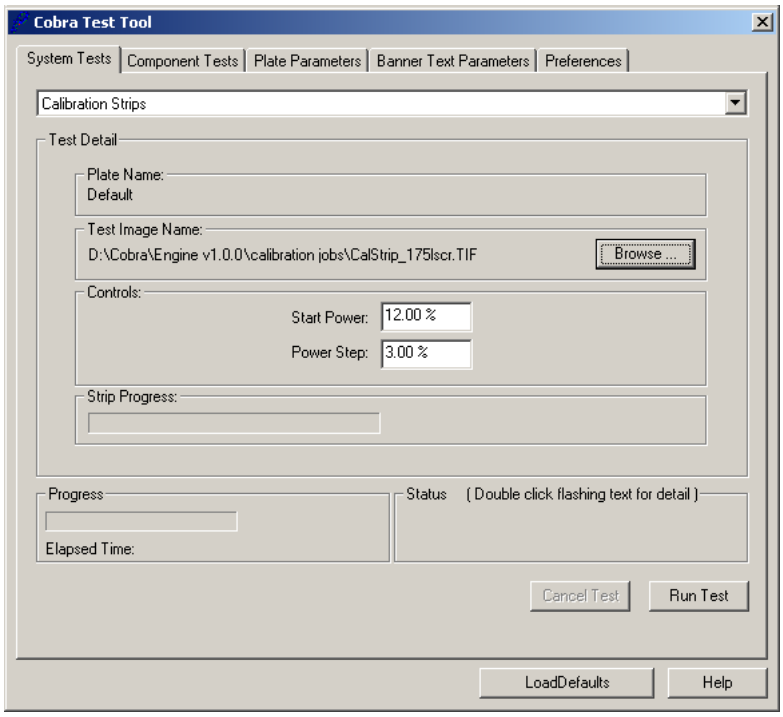
1. If it is not already running, launch the Cobra Test Tool by selecting **Start > Programs > HighWater Designs > Cobra Engine v1.x.x > Cobra Test Tool**.
2. In the Cobra Test Tool, select the **Plate Parameters** tab:



3. Select a suitable plate from the **Name** pull-down menu.

   Notes: The plate names, if any, available on this dialog are created in the Cobra Layout Tool. If no plate is available, you can create one in the Cobra Layout Tool (this is covered in chapter 8).

4. Next, click on the **System Tests** tab and select **Calibration Strips** from the pull-down menu at the top of the pane. The following dialog is displayed:



5. Click on the **Browse** button and select the **CalStrip_175lscr.TIF** file, depending on the screen ruling required, then click on **Open**.

   Note: The default location of these files is D:\Cobra\Engine vx.x.x\calibration jobs.

6. Click on the **Run Test** button and, when prompted, load the plate into the Cobra drum, as described in the following sub-sections.

Before loading the plate

Before loading a plate into Cobra's drum:

1. Switch on the brightroom's yellow light or other safety lighting and close the door.

   Note: Make sure that no-one enters the room while you are loading/unloading plates.

2. Open Cobra's cover.
3. Set the vacuum channels correctly for the plate size, as described in section 7.3.

Loading the plate

Note: The same plate loading method is used for both 3-pin edge registration and notch register systems.

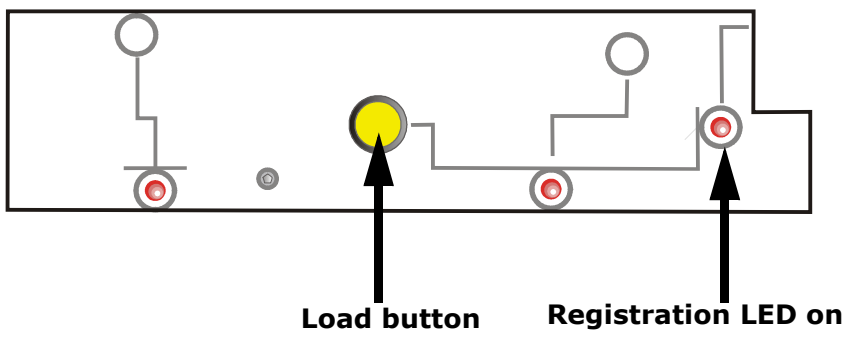
To load the plate:

1. Pick up the plate along its top and bottom edges (typically, with your left hand on the top and your right hand on the bottom of the plate). If required, to provide extra protection to the emulsion surface retain a slip sheet on the emulsion side.
2. Offer the plate into the Cobra drum by flexing it to form a semi-cylindrical shape. Slide the bottom edge of the plate (slightly rotated clockwise such that the bottom right corner of the plate enters first) under the register bar into the approximate registration position and remove the hand holding the lower edge.

   Note: Using this methods avoids the potential for the plate bottom edge snagging on the front edge of the register bar.
3. Use your free hand to arm the register bar by pressing the 'Load' button on the register bar, and assist plate movement to obtain contact with all registration features. Maintain the plate flexed in a tighter radius than the drum with the top hand so that the upper part of the plate is not in contact with the drum.
4. Once contact is attained with all registration features use your free hand to apply light pressure to the register bar.

   Note: You should apply pressure to the register bar cover evenly across the width of the plate (that is, press on the cover centrally to the width of the plate).
5. After a short delay from contacting all the registration features the vacuum pump will start. Once this has happened gradually roll the plate against the drum progressively towards the top edge.
6. If, during this process, contact with one or more of the registration sensors is lost, the registration LED(s) associated with the sensor(s) will flash and the plate can be eased off the drum and slightly repositioned to re-establish contact.
7. After a short delay with the vacuum pump running and all contacts made, the registration LEDs are latched on (as shown below) and the plate load operation is complete.

3-pin edge register bar



8. If you need to abandon the plate load procedure, press the 'Load' button on the register bar to switch off the vacuum pump and to return the register bar to its disarmed state.

9. Visually check that the plate is flush to the Cobra drum. If there is a gap between the drum and the plate then unload the plate and re-load it.
10. When the plate is correctly loaded, wait until the software asks you to close the cover. Close Cobra's cover when asked to do so.
11. Now, Cobra will start its imaging cycle and the Calibration Strips will be output.
12. When Cobra has finished, remove the plate, as described in the next section.

7.5 Unloading the plate

Once the plate has been imaged, unload it as follows:

1. Make sure the plate will not be exposed to any light source that might fog it.
2. Open Cobra's cover.

   Note: Soon after the cover has been opened the vacuum will automatically switch off, thereby releasing the plate.
3. Carefully remove the plate from the drum.

The plate can now be processed, if required.

When you have finished

By now, you should have successfully loaded and unloaded a plate. If you still feel unfamiliar with the plate loading process then practise a few times until you feel more confident.

The following two chapters describe how to create plate definitions and how to carry out the plate tests.

8. Creating the plate definitions

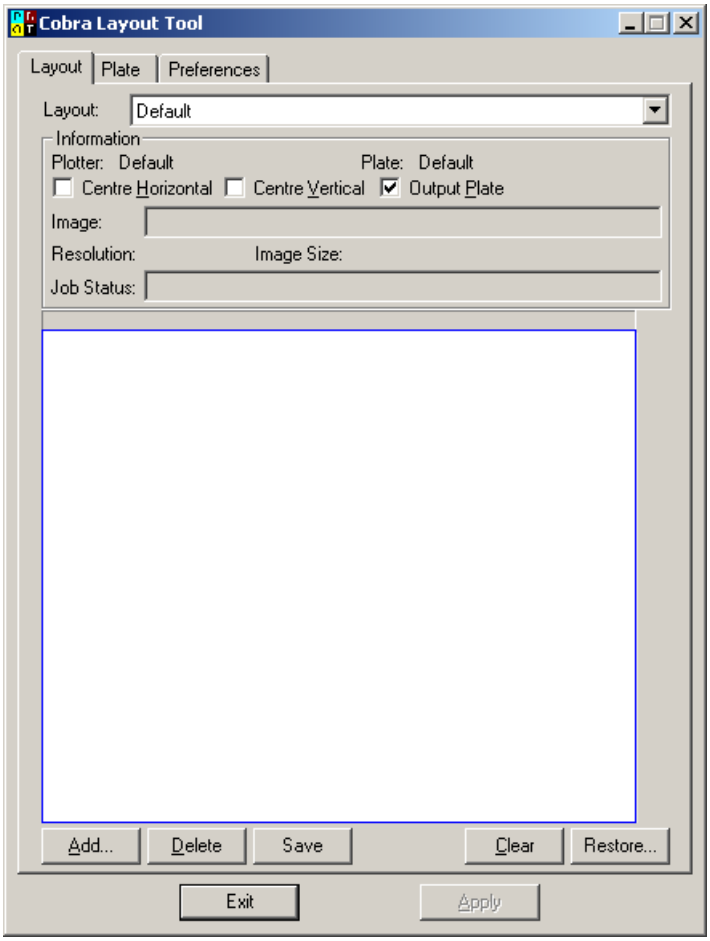
Before you can carry out the plate tests described in chapter 10 you need to create a plate definition for every plate that the customer will be using and that you will be testing. This chapter shows you how to create the plate definitions using the Cobra Layout Tool.

This chapter contains the following sections:

8.1 Launching the Cobra Layout Tool

On the Cobra workstation, launch the Cobra Layout Tool by selecting **Start > Programs > HighWater Designs > Cobra vx.x.x > Cobra Layout Tool**.

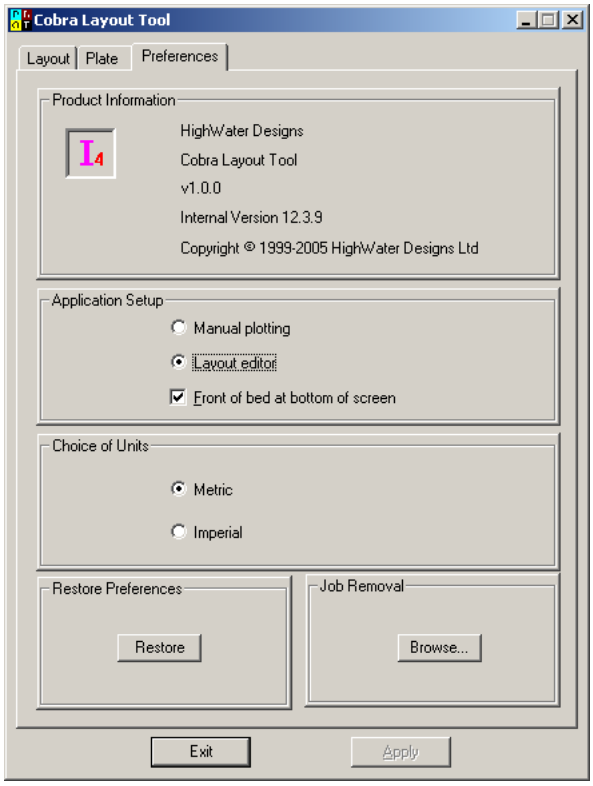
The Cobra Layout Tool software launches:



8.2 Setting the preferences

First, you need to set the preferences. To do this:

1. Click on the **Preferences** tab to view the following pane:

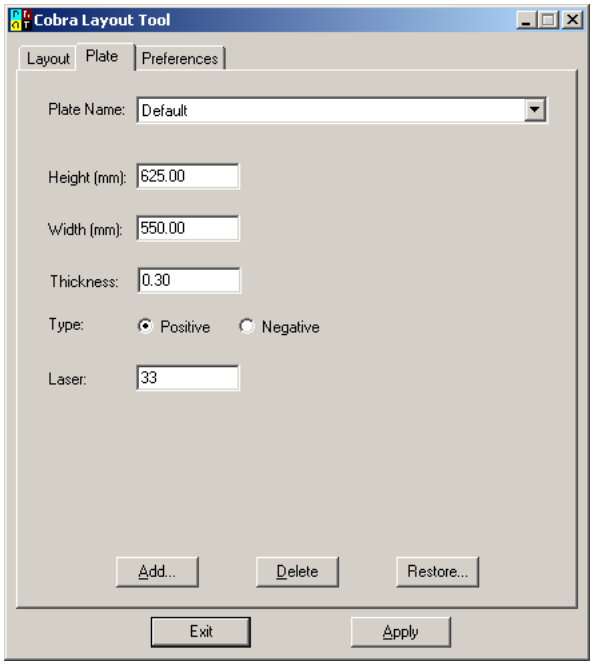


2. In the **Choice Of Units** panel, select either **Metric** to display measurements in millimetres, or **Imperial** to display measurements in inches.
3. Click on the **Apply** button to apply any changes.

8.3 Creating a plate definition

To create a new plate definition:

1. Click on the **Plate** tab to display the following dialog:



2. Make a note of the current **Plate Name** in the menu at the top (you will need to re-select this when you have finished creating plates).
3. Click on the **Add...** button, type a new name for the plate then click on **OK**.

   Note: Make sure that the plate name is meaningful, for example, **GTO46**.
4. Type in the **Height** and **Width** of the plate.

   Note: The height is the dimension from front to back of the Cobra drum. The width is the dimension from left to right of the Cobra drum.
5. Type in the **Thickness** of the plate (usually **0.3** or **0.15** mm).
6. Select **Positive** or **Negative** for the plate **Type**.

   Note: Refer to the plate information in section A.1 on page 81 if you are not sure if the plate type is positive or negative.
7. Leave the **Laser** power setting at the default value.

   Note: The correct laser power will be determined later when you carry out the plate tests described in chapter 9. When you have determined the correct laser power setting for each plate you will return to the Cobra Layout Tool and enter this information for each plate.
8. When you have finished, click on the **Apply** button to apply the changes.
9. Now, create a plate definition for **all** other plates that the customer will be using and that you will be testing.
10. When you have finished creating all the required plate definitions, select the **Plate Name** that was originally displayed when you started the session (see step 2 above) and

click on the **Apply** button. This ensures that the settings of the current layout (those selected on the Layout pane) are not altered.

11. When you have finished, close the Cobra Layout Tool.

The next chapter describes the plate tests that need to be carried out.

9. The plate tests

After transit and installation of the Cobra platesetter you need to check that its operating parts are still correctly aligned and that the platesetter is outputting plates satisfactorily. This chapter takes you through the various tests that need to be carried out.

This detailed chapter is intended mainly for engineers who are not familiar with the plate tests. More experienced engineers can work solely from Appendix C.

This chapter includes the following sections:

Warning: If you are not familiar with the plate tests then read this whole chapter carefully.

9.1 Requirements for the tests

Before you start the tests, please make sure that you have the following:

Requirement	Notes	✔
Plate definition(s)	You need to set up a 'plate definition' for each plate the customer will be using and that you will be testing. Creating the plate definitions is covered in chapter 8. **If you have not already created the required plate definitions, please do so now.**	
Brightroom/darkroom and processor	These are required for outputting and processing the plates required for the plate tests. Ensure that the lighting is suitable for the plates being used (see section B.1 on page 85 for more information).	
Plates	• You will need a minimum of 6 unexposed, good quality plates for the tests. Make sure the plates are compatible with the Cobra system (refer to section A.1 on page 81 for more details). • Unless otherwise stated, you should use the largest available plate size for the tests (maximum 550 x 625mm, 0.3mm thick). It is best to use square-edged plates, although this is not absolutely essential for most tests. **Warning: If plates do not have square edges some measurements may be affected, so you should take this into account when assessing the test results. The following sections have more information about this, where relevant. A simple check of plate squareness is to place one plate against another, emulsion side to emulsion side, and check if the edges line up.**	
1 metre precision steel ruler	This should have as fine rules as possible.	
Magnifying eye glass(es): one with a vernier scale	Ideally, you should have two eyeglasses: **x10** and **x100** magnification.	
Good lighting conditions	The plates you will output contain some very small/fine detail (text, lines, patterns, etc.). Therefore, you should examine the plates under good lighting conditions.	
A large, flat, clean surface	The plates need to remain flat and clean while you are taking measurements.	
Knowledge of vernier scales	For one of the tests you are required to read a vernier scale.	
Plate densitometer	A plate densitometer is required for measuring the density patches off the plates.	

9.2 Guidelines on taking measurements

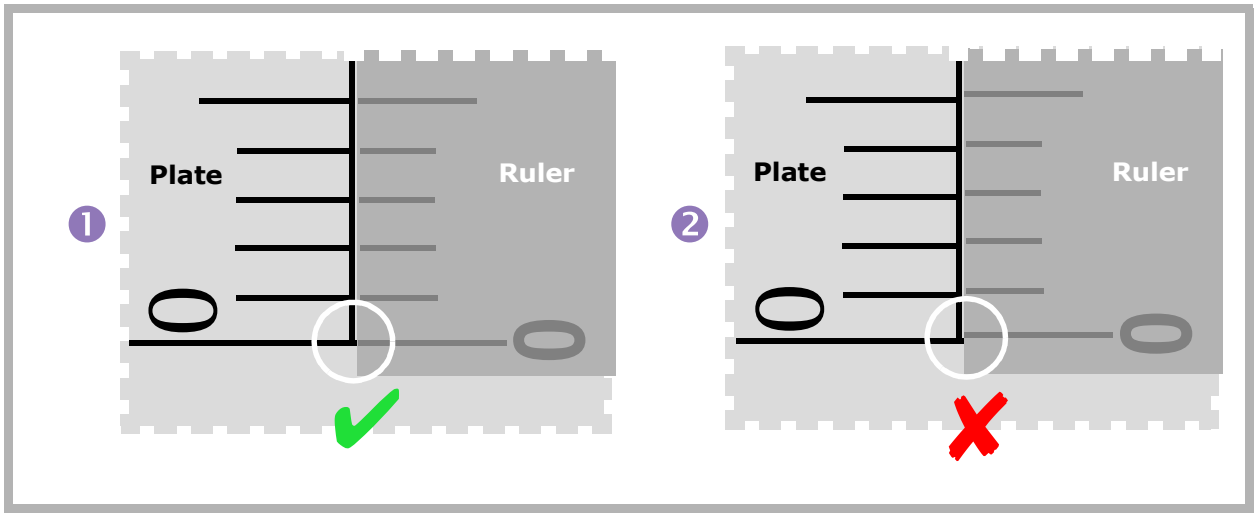
Measuring the rulers on the plates

It is vital that you ACCURATELY measure the rulers (or other objects) on the plates.

Make sure that you line up the 0cm (or other) mark on the steel ruler precisely with the 0cm mark on the plate, as shown in ❶ below.

In ❷ below, the rulers have **not** been accurately aligned so this will introduce an error into any measurements taken.

Note: When aligning the rulers, make sure that your eye is directly above the 0 (or other) marks you are measuring.



When taking measurements, use a magnifying glass with a vernier scale, if possible. When you are experienced at carrying out these tests you may be able to do them accurately enough 'by eye' but, if in doubt, always use a magnifying glass and scale.

Making visual checks

Some of the tests require that you make visual checks of objects on the plate (for example, the laser focus checks) rather than taking measurements with a ruler. Initially, you may find it difficult to assess the quality of the objects until you have gained more experience. Where possible, this manual gives examples of good and bad output to help you to judge the quality of the plate.

9.3 Recording the test results

When you have finished each test, you should record the test results in Appendix C and also follow any instructions for what to do if a test fails.

Warning: Generally, if any of the tests fail, you should call a service engineer. You are **not** permitted to make any adjustment or repair to the Cobra system yourself unless you have the express permission from HighWater Designs Limited to do so. If in any doubt, call a service engineer.

9.4 The plate tests

The following sections of this manual take you through the various tests that are required. Four of the sections show you how to output the test plates, and their subsequent sections show what test(s) to carry out on those plates:

Warning: The order in which you carry out some of the plate tests is important. Please follow any instructions you are given about this.

If possible, most of the plate tests should be performed using the 3-pin edge register bar. This should not affect the results, but if any positional problems are detected then corrective action for these may be simpler.

Some plate tests need to be carried out on both sides of the register bar. The individual plate tests will tell you where this is the case.

The beginning of each test section contains important information about the plates and tests. **Please read this information carefully and follow any given instructions.**

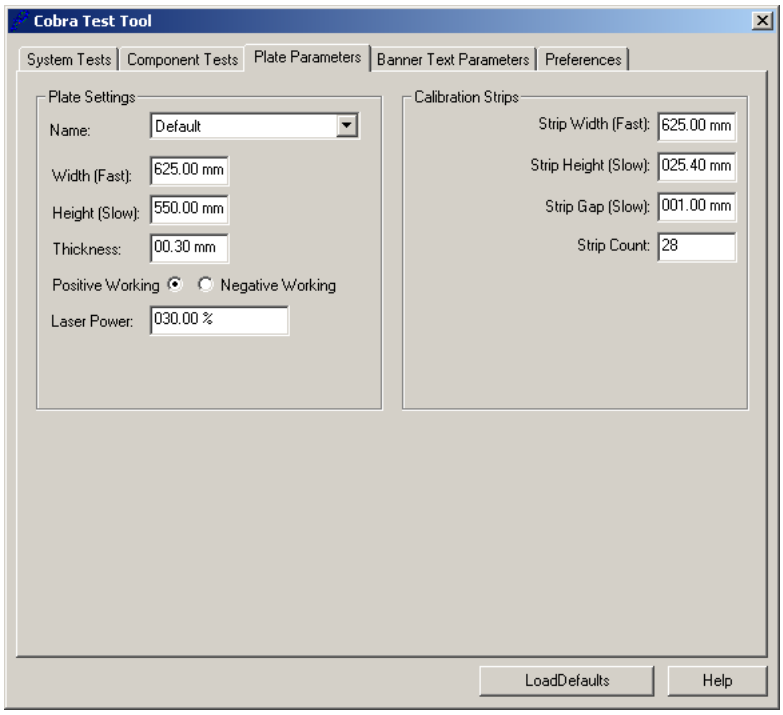
The following sections contain diagrams of plates or parts of the plates that you will be checking. These diagrams are intended for GUIDANCE ONLY and, therefore, may not match the details on the plate exactly.

Plate 1: Calibration Strips

Plate Details	
Plate name	Calibration Strips
Use plate type	Use the largest plate available (max. 550 x 625mm, 0.3mm thick)
Job location on disk	D:\Cobra\Engine vx.x.x\calibration jobs\CalStrip_175lscr.TIF or D:\Cobra\Engine vx.x.x\calibration jobs\CalStrip_200lscr.TIF
Used in test	Test 1a: Laser Power (p47)
Notes	**You must output this plate and carry out the Laser Power test on it before carrying out any other tests.** **If you do not use the largest plate size (550 x 625mm) then, potentially, the plate may be too small to allow the power to increase sufficiently to achieve the required %dot values. In this case, output the plate again but increase the 'Start Power' so that a maximum power of 100% can be output.**

To output the Calibrations Strips job:

1. In the Cobra Test Tool, select the **Plate Parameters** tab:



2. Select the required plate from the **Name** menu and check that the plate settings (**Width**, **Height, Thickness**, etc.) are correct.

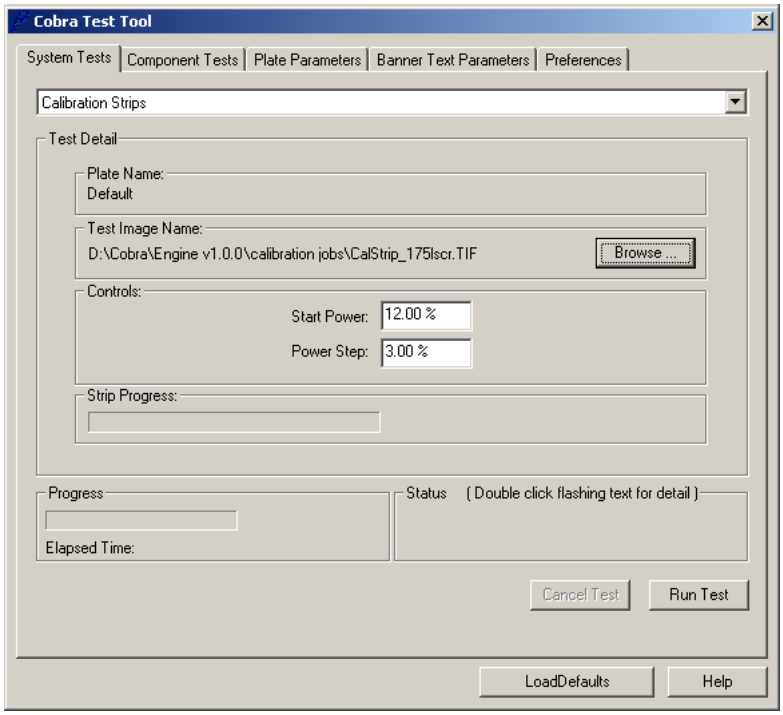
   Notes: The plate names available on this dialog were created in the Cobra Layout Tool. If the required plate is not available you can either create it in the Cobra Layout Tool (this is covered in chapter 8) or you can alter the plate values on this dialog to suit your requirements. If you do this, the values you enter will remain even when you re-launch the Cobra Test Tool program. To restore the values to their initial values (i.e. those set in

the Cobra Layout Tool), re-select the plate **Name** from the pull-down menu.

Do not adjust the Calibration Strips parameters.

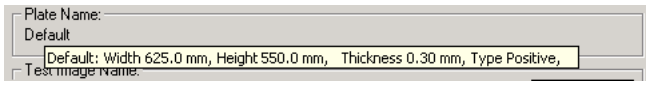
The **Laser Power** value specified here is not relevant to the laser power test detailed in the next section.

3. Next, click on the **System Tests** tab and select **Calibration Strips** from the pull-down menu at the top of the pane. The following dialog is displayed:



4. Check that the **Plate Name** is correct.

   Note: To view the plate details, hover the mouse cursor over the plate name. The plate's width, height, thickness and type are displayed:



5. Click on the **Browse...** button and select the **CalStrip_175lscr.TIF** or **CalStrip_200lscr.TIF** file, depending on the screen ruling required, then click on **Open**.

   Note: The default location of these files is D:\Cobra\Engine vx.x.x\calibration jobs.

6. Enter **12.00 %** for the **Start Power** and **3.00 %** for the **Power Step**.

   Note: If you are not using a full-size plate then set the **Start Power** to **18.00 %**.

7. Click on the **Run Test** button and, when prompted, load the plate into the Cobra drum then close Cobra's cover.

8. The Calibration Strips job is output to the plate.

   Note: As the job is output, you will see the Strip Progress bar move from 0-100 as each strip is output, and the (overall) Progress bar will move, more slowly, from 0-100 to indicate the progress of the full set of calibration strips for this test.

9. When the job has been output, remove the plate from Cobra and process it.

Next, you will carry out the Laser Power test on this plate, as described in the following section.

Test 1a: Laser Power

Test Details	
Test name	Laser Power
Test purpose	This test determines the correct laser power for the plate
Test plate/job	Calibration Strips
Notes	**Warning: This test is ONLY valid for silver (LAP-V) plates. For polymer plates, refer to the laser power setting on the label as this has been calculated to produce the manufacturer's recommended expose energy (µJ/cm²) for the plate on the particular machine. Please contact HighWater Designs if you require more information.** You **must** carry out the laser power test before outputting any other plates as the results of this test are required for all the following tests. Ideally, you should perform a laser power test for each plate thickness used and also on plates from different manufacturers.
Acceptable tolerance	**±10% on factory setting** In any case, the laser power should not go above 80%.
If this test fails	Immediately call a service engineer for advice.

Getting the factory set laser power

Before carrying out the laser power test you need to obtain the factory set laser power value. This is printed on a label on the Cobra platesetter.

The label contains details of the various power levels to be used with the plate types that are supported by Cobra, together with any requirement for a filter, for example:

Recommended Expose Energy			Energy	Power
Plate	**Laser setting**	Filter	uJ/cm2	mW
Silver	**45%**	SilvND	1.9	0.19
VioletPrint	**39%**	PolyND	30	3.0
N91v/LVX	**52%**	PolyND	40	4.0
Fuji LP-NV	**51%**	ZeroND	90	9.1
Lastra LV2	**73%**	ZeroND	130	13.1

Laser	ZeroND	ZeroND	ZeroND	PolyND
Setting	uW	mW	uJ/cm2	uJ/cm2
100%	110	17.3	172	74
75%	77	12.1	120	52
50%	57	9.0	89	38
33%	37.62	5.9	59	25
25%	29	4.6	45	19

Machine	Cb:006	CB52-BV60-EN (230v)		
Laser	Ld:402			
Spinner	Ax063	Date:	Nov-05	

ND filter	mW power	Trans %	ND value
ZeroND	17.5	100%	0
PolyND	7.5	42.9%	0.37
SilvND	0.38	2.17%	1.66

Note: If there is no label on the Cobra machine, carry out the following test but without the factory set reference value.

Please contact HighWater Designs for more information about filters.

Determining the laser power for the plate

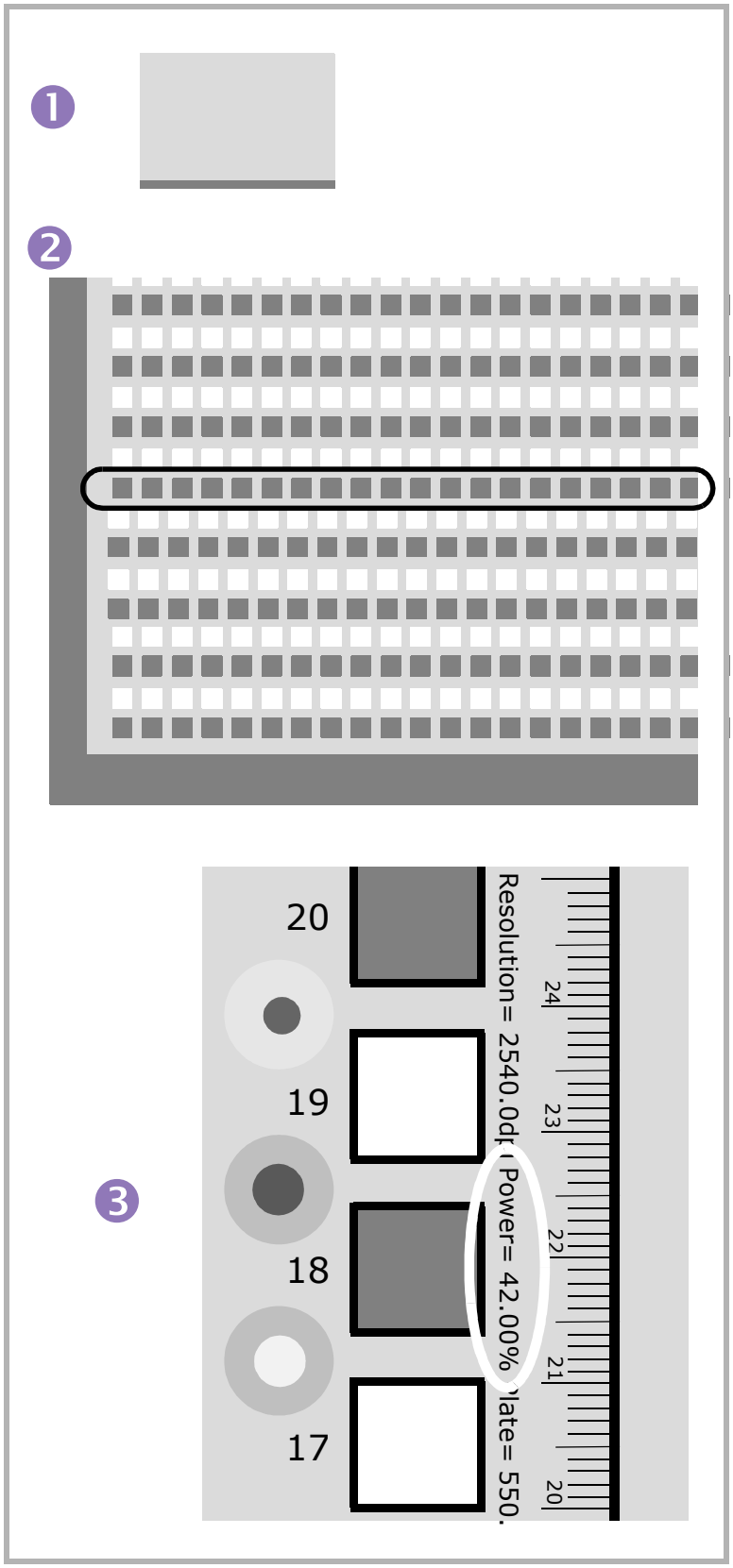
To determine the correct laser power setting for the plate:

1. Place the Calibration Strips job in front of you with the grip edge at the bottom, as shown in ❶.
2. Select any one row of 50% patches to measure, as shown in ❷ (it does not matter which row you choose).
3. Using the plate densitometer, and starting from either the left or right-hand side of the plate, measure each 50% patch in the selected row until you get a reading of approximately 52% for a silver Agfa LAP-V positive working plate.

   Note: For correct readings for other types of plate please contact your dealer.
4. Running down the right-hand edge of the correct patch is a vertical line of text, which includes the date, plate size, job name and resolution, as shown in ❸.

   This text also contains a laser power value (in this example, 42.00%), which is the correct setting for this plate.

   Note: If necessary, keep reading up/down the line of text until you reach the **Power** information.
5. For a test pass, this laser power reading should be within ±10% of the laser power setting on the label.



For example, the correct laser power setting for this plate is 45%, so a power value between 35% and 55% for this plate would constitute a test pass.

Note: If there is no power level label on the Cobra machine, then carry out this test without the factory set reference values.

6. When you have finished, make a note of both the factory set laser power and the laser power that you have measured on the plate in section C.1 on page 90.

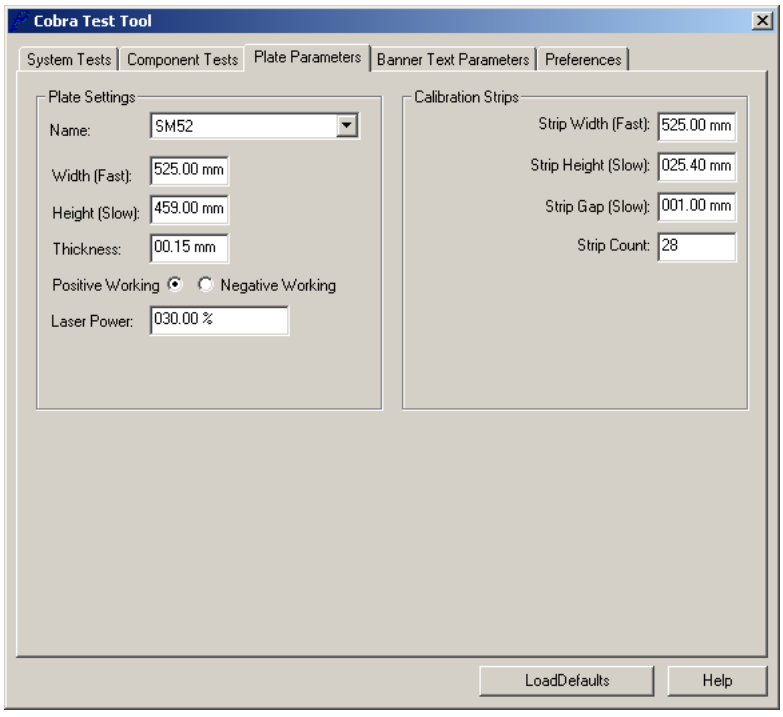
7. If you are using different plate sizes, thicknesses and/or plates from different manufacturers, carry out this laser power test on all those plates: output the Calibration Strips job on each plate type, as described on page 45, then carry out the laser power test on each plate.

Plate 2: SM52 Scaling

Plate Details	
Plate name	SM52 Scaling
Use plate type	If possible, use an SM52 plate (459 x 525mm, 0.15mm thick)
Job location on disk	• **For SM52 sized plates (459 x 525mm or smaller):** D:\Cobra\Engine vx.x.x\Calibration Jobs\Scaling\SM52Size\ Scaling6_447x525.tif • **For plates larger than SM52 size:** D:\Cobra\Engine vx.x.x\Calibration Jobs\Scaling\FullSize\ Scaling6_590x550.tif
Used in tests	Test 2a: Carriage Reference Setup (p54) Test 2b: Fast Axis Scaling (p56) Test 2c: Drum Reference (p57) Test 2d: Plate Registration Skew (p59) Test 2e: Focus and Spot Shape (p60) Test 2f: Beam Bow (p62) Test 2g: Orthogonality (p64)
Notes	**Do not output this job until you have output the Calibration Strips job and determined the correct laser power for the plate (as described on page 45).**

To output the Scaling job:

1. In the Cobra Test Tool, select the **Plate Parameters** tab:



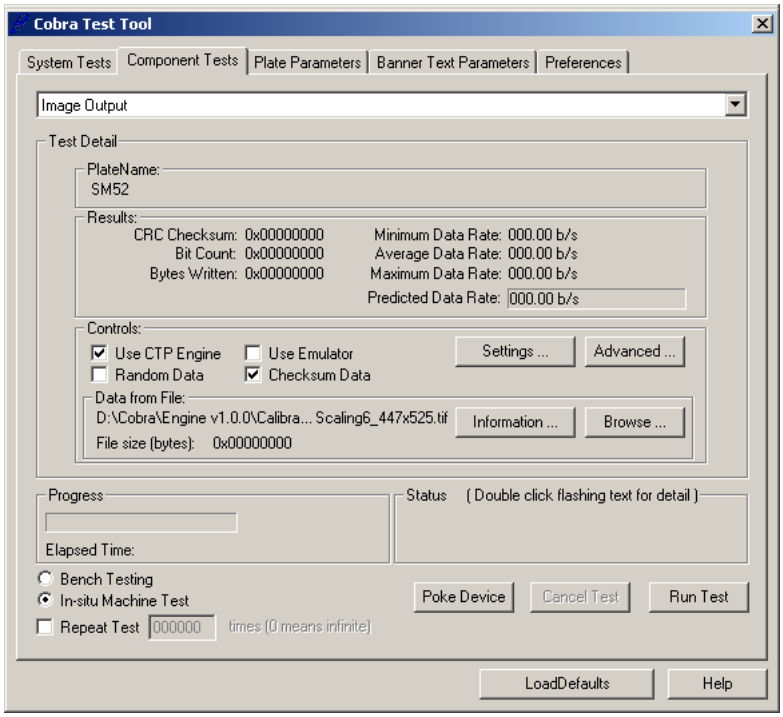
2. Select the SM52 (or other) plate from the **Name** menu and check that the plate settings (**Width**, **Height, Thickness**, etc.) are correct.

   Notes: The plate names available on this dialog are those that have been created in the Cobra Layout Tool. If the required plate is not available you can either create it in the Cobra Layout Tool (this is covered in chapter 8) or you can alter the plate values on this dialog to suit your requirements. If you do this, the values you enter will remain even when you re-launch the Cobra Test Tool program. To restore the values to their initial values (i.e. those set in the Cobra Layout Tool), re-select the plate **Name** from the pull-down menu.

   Any changes you make to the plate details here will not affect the plate details specified in the Cobra Layout Tool.

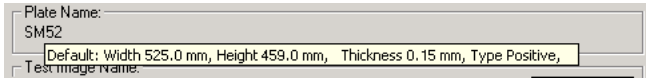
   Do not adjust the Calibration Strips parameters.

3. Next, select the **Component Tests** tab then select **Image Output** from the drop-down menu to display the following:



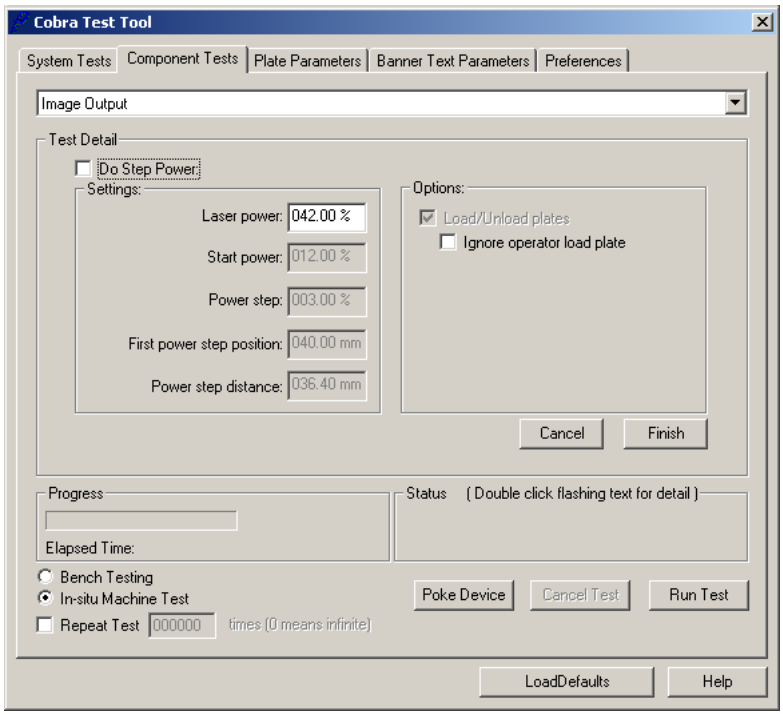
4. Check that the **Plate Name** is correct.

   Note: To view the plate details, hover the mouse cursor over the plate name. The plate's width, height, thickness and type are displayed.



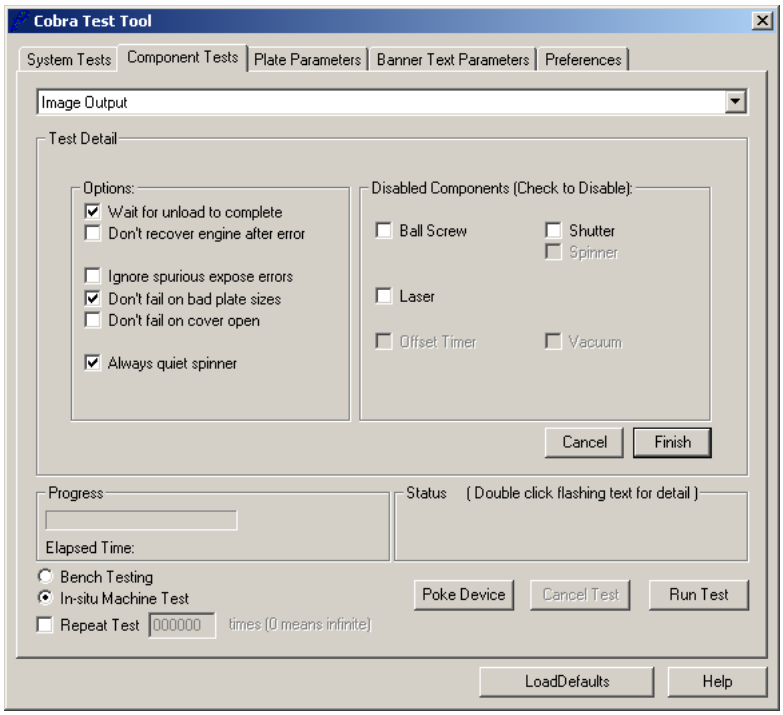
5. Make sure that the **Use CTP Engine** box is checked.
6. Make sure that the **Random Data** box is unchecked.
7. Click on the **Browse...** button to display the Open dialog.

8. Select one of the following files, depending on plate size, then click on the **Open** button:
   - For SM52 sized (or smaller) plates (459x525mm or smaller) select:
     D:\Cobra\Engine vx.x.x\calibration jobs\scaling\SM52Size\Scaling6_447X525.tif
   - For plates larger than SM52 size select:
     D:\Cobra\Engine vx.x.x\calibration jobs\scaling\FullSize\Scaling6_590x550.tif
9. Click on the **Settings...** button to display the following dialog:

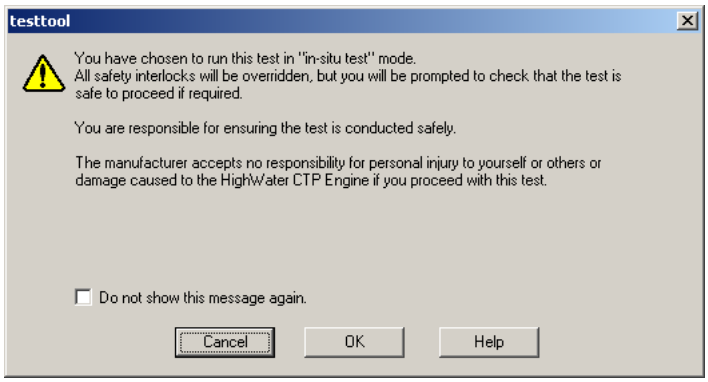


10. Uncheck the **Do Step Power** box.
11. In the Settings panel, set the required **Laser power**, as obtained from the Laser Power test on page 47.
12. Do not select any options in the Options panel.
13. Click on **Finish** to return to the previous dialog.

14. Click on the **Advanced...** button to display the following dialog:



15. Click on the **LoadDefaults** button.
16. Click on **Finish** to return to the previous dialog.
17. Click on the **Run Test** button.
18. The following warning message will appear:



19. Click on **OK** to continue or on **Cancel** if you do not wish to proceed with the test.
20. When prompted, load a plate and when it has been imaged, process it.
21. Now, re-output the job using the other side of the register bar (see section 7.2 on page 32 for details on changing the register bar).

    Note: Mark on this plate which register bar was used.

The following sections detail the tests you need to carry out on this plate.

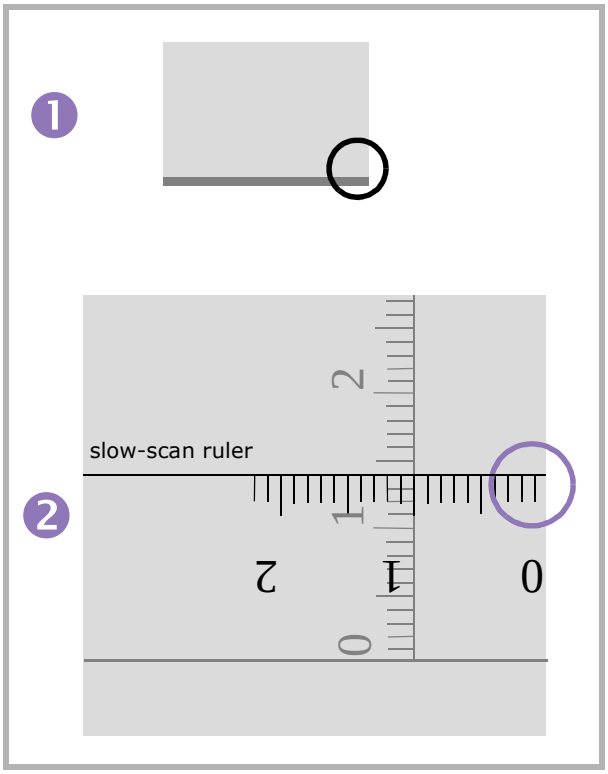
Test 2a: Carriage Reference Setup

Test Details	
Test name	Carriage Reference Setup
Test purpose	Checks the image start position in the slow-scan direction
Test plate/job	SM52 Scaling job
Notes	This test must be carried out on plates that were output on both sides of the register bar.
Acceptable tolerance	**0–0.25mm**. A result between 0.75 and 1mm is a test pass.
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all the tests.

To check the Carriage Reference Setup:

1. Place the Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. In the bottom right-hand corner of the plate you will see two rulers: one along the fast-scan and one along the slow-scan direction, as shown in ❷.

Continued overleaf...



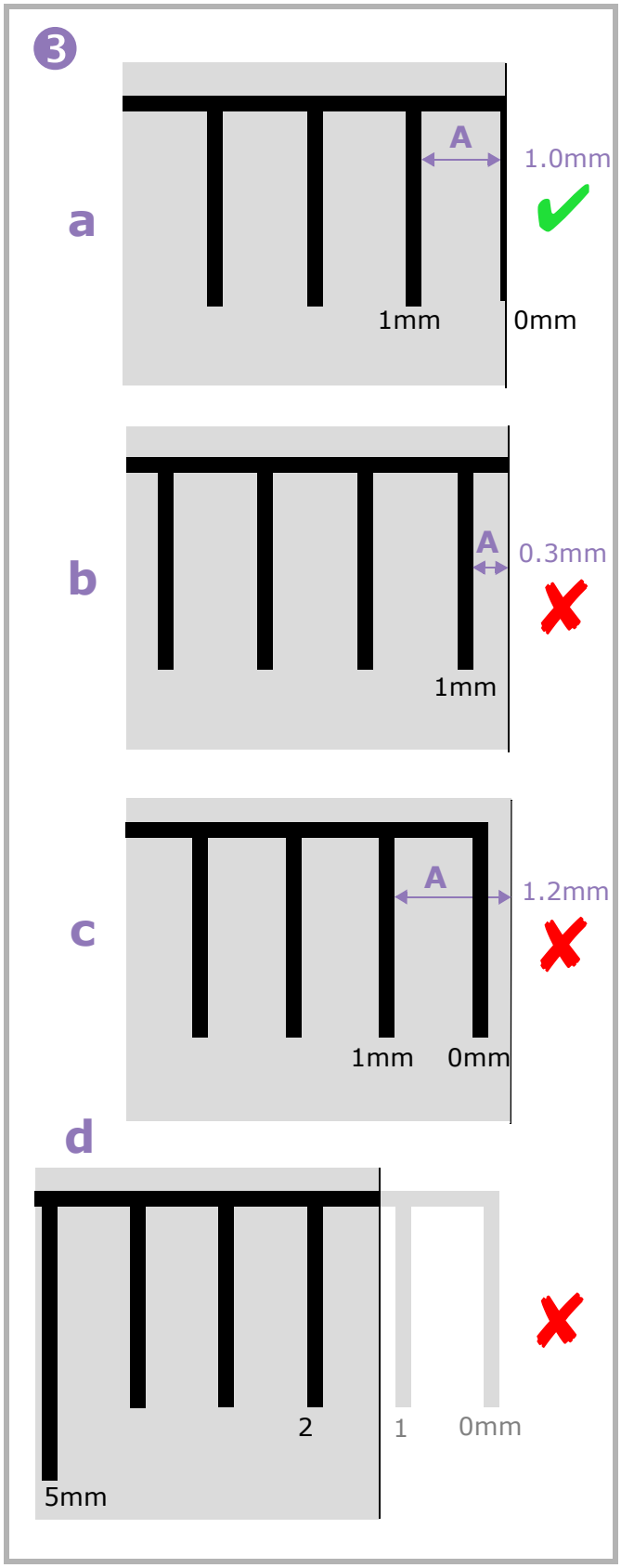
3. On the slow-scan ruler measure the distance between the right edge of the plate and the 1mm mark, i.e. the distance **A** shown in ❸**a**.

   Note: Make sure that there is a 1mm mark. If the first visible mark is the 2mm (or more) mark, as shown in ❸**d**, then the test has failed.

   A tolerance of +0–0.25mm is acceptable for this test, so the width of **A** should be between 0.75 and 1mm for a test pass.

   Note: In the examples shown on the right, ❸**b**, **c** and **d** all constitute a test fail because the measurement from the edge of the plate to the 1mm mark is not between 0.75 and 1mm, or because there is no 1mm mark on the plate.

4. When you have finished, record the results in section C.2 on page 91.



Test 2b: Fast Axis Scaling

Test Details	
Test name	Fast Axis Scaling
Test purpose	This test checks that the image height (i.e. in the fast-scan direction) is accurate
Test plate/job	SM52 Scaling job
Notes	This test assumes that you have used the SM52 scaling job, which will produce a rule of 44cm. If you have used a different sized plate, then measure to the furthest centimetre mark.
Acceptable tolerance	**±0.1mm**
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all tests.

To check the Fast Axis Scaling:

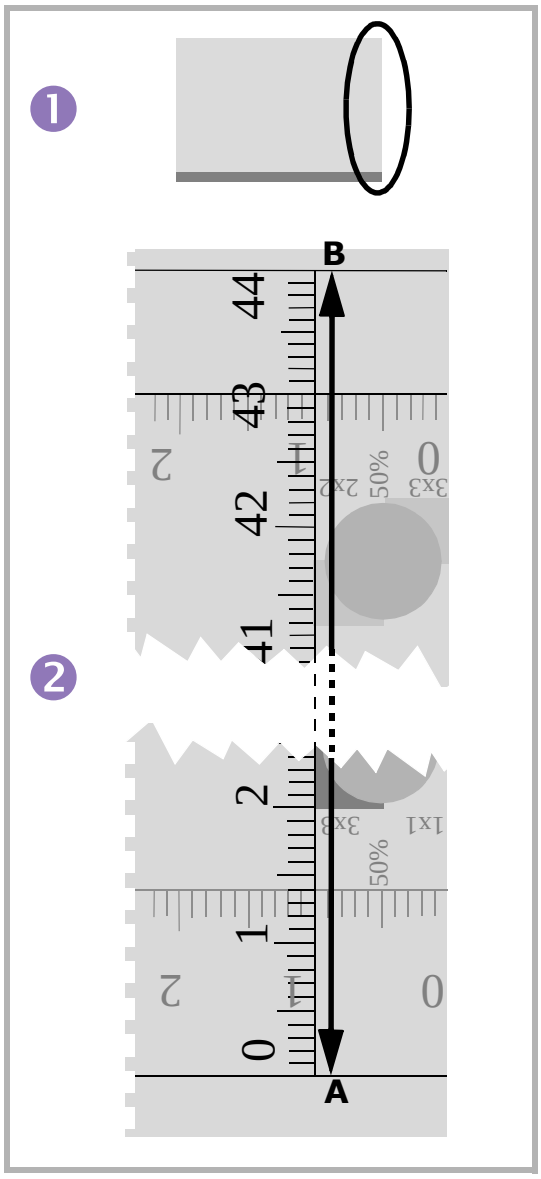
1. Place the SM52 Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. Running down the right-hand side of the plate you will see a ruler labelled from 0 to 44cm, as shown in ❷.

   Note: If you have not used the SM52 size plate, the ruler may be longer or shorter than 44cm.
3. Place the 1 metre steel ruler alongside the ruler on the plate.

   Note: Align the 0cm mark on the steel rule **exactly** with the 0cm mark on the plate, as described in section 9.2 on page 43.
4. **Very carefully** measure the distance between the 0cm and 44cm marks on the plate (or other chosen mark, if the ruler is not 44cm long), as shown in ❷, between points **A** and **B**.

   Note: It may help to use a x10 eye glass to get a more accurate ruler measurement.
5. At the top of the plate where the 44cm (or other) mark lies, carefully read the value on the steel rule.

   For a pass, this measurement should read 44cm ±0.1mm (or the length you have measured ±0.1mm).
6. When you have finished, record the test results in section C.3 on page 92.

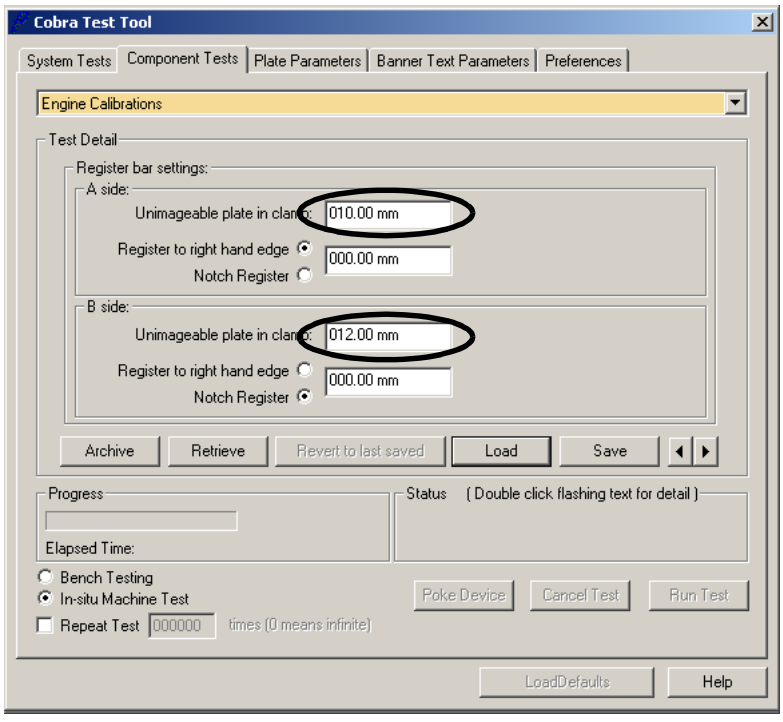


Test 2c: Drum Reference

Test Details	
Test name	Drum Reference
Test purpose	This test checks the fast-scan start position of the laser relative to the front edge of the drum
Test plate/job	SM52 Scaling job
Notes	None
Acceptable tolerance	**±0.1mm**
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all tests.

First, you need to get the drum reference value for the Cobra platesetter. To do this:

1. In the Cobra Test Tool, click on the **Component Tests** tab then select **Engine Calibrations** from the pull-down menu.
2. Click on the scroll right button ▸ to display the Register bar settings window:

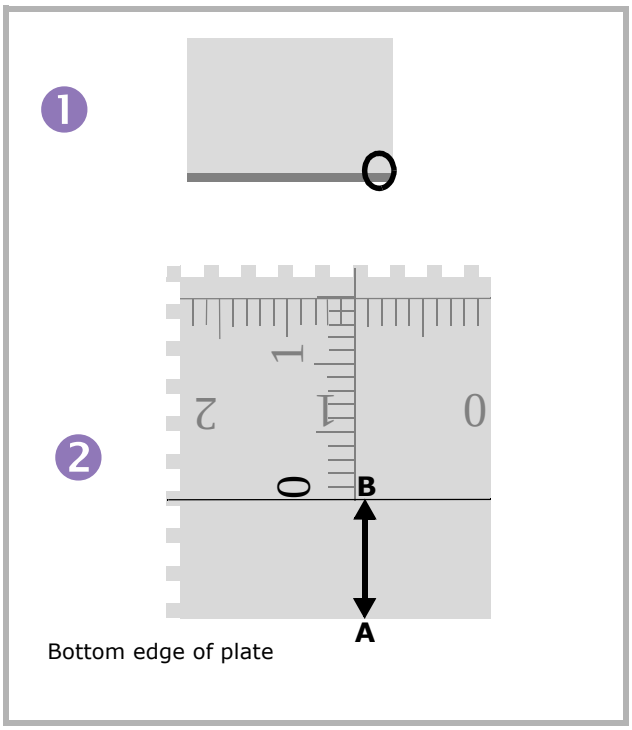


3. Click on the **Load** button.
4. From the register bar 'A side' and 'B side' panels, make a note of the **Unimageable plate in clamp** values (you will compare this to the actual measurement taken from the plate).

To measure the actual unimageable length of the plate:

1. Place the SM52 Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. **Very carefully** measure the distance between the bottom edge of the plate and the 0mm mark on the plate, as shown in ❷, between points **A** and **B**.

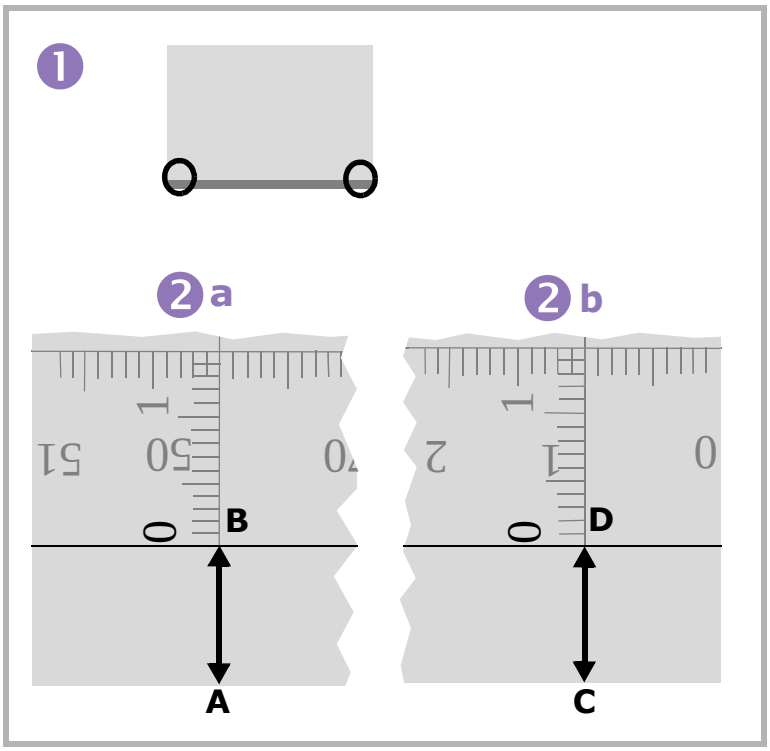
   For a pass, this measurement should be accurate to within ±0.1mm. For example, if the 'Unimageable Plate in Clamp' value obtained from the Cobra Test Tool is 10.00mm, then an actual measurement between 9.9mm and 10.1mm is acceptable.
3. When you have finished, record the test results in section C.4 on page 93.



Test 2d: Plate Registration Skew

Test Details	
Test name	Plate Registration Skew
Test purpose	This test checks that the plate is sitting squarely under the register bar
Test plate/job	SM52 Scaling job
Notes	This test must be carried out on plates that were output on both sides of the register bar.
Acceptable tolerance	**±0.1mm**
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all tests.

To check the Plate Registration Skew:



1. Place the SM52 Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. Near the left-hand edge of the plate, **very carefully** measure the distance between the bottom edge of the plate and the 0cm mark, as shown in ❷a, between points **A** and **B**.
3. Near the right-hand edge of the plate, **very carefully** measure the distance between the bottom edge of the plate and the 0cm mark, as shown in ❷b, between points **C** and **D**.

   For a pass, the measurement **AB** should be within ±0.1mm of measurement **CD**. For example, if **AB** is exactly 10mm, then **CD** must be between 9.9 and 10.1mm.
4. When you have finished, record the test results in section C.5 on page 94.

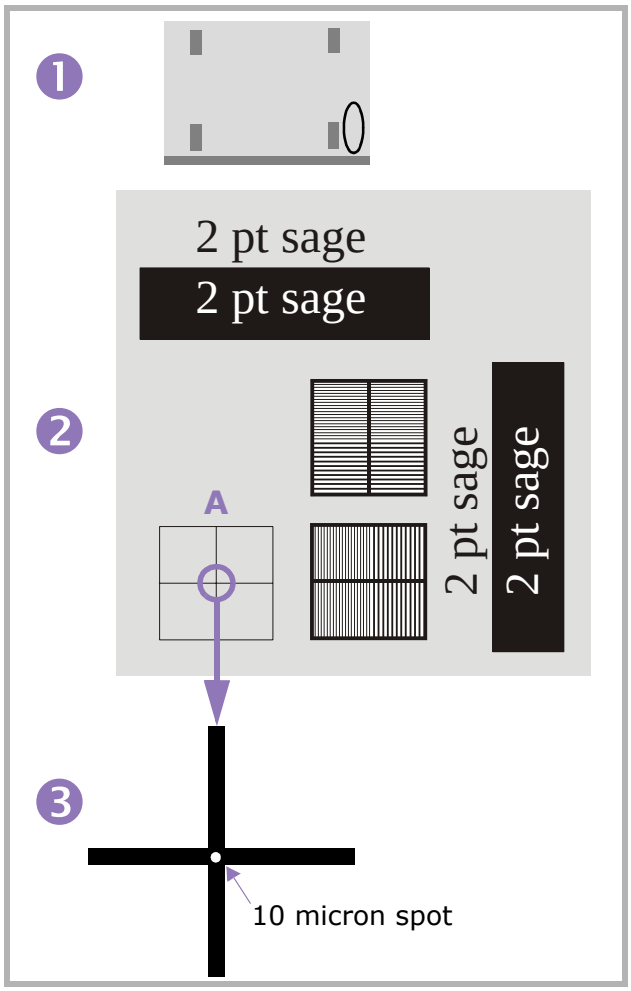
Test 2e: Focus and Spot Shape

Test Details	
Test name	Focus and Spot Shape
Test purpose	These checks are used to judge the laser focus
Test plate/job	SM52 Scaling job
Notes	You will not take any measurements in this section. Instead, you will be making a visual assessment of the laser's focus.
Acceptable results	• The 10 micron spot should be visible. • Lines should be sharp and easily distinguishable from each other. • There should be a visible (but not severe) step at the 50% point in the vignettes. • The 10–40µm lines should be of equal width and there should be no areas where the lines disappear.
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all tests.

To carry out the Focus and Spot Shape checks:

1. Place the SM52 Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. Locate one of the four black rectangles, as shown in ❶. To the right of this rectangle you will see some boxes and 2pt text, as shown in ❷.
3. In the middle of box **A**, where the two lines intersect, there should be a visible 10 micron spot, as shown in ❸.

Continued overleaf...



4. Locate the 2 large vignettes on the plate, as shown in ❹.

   On a correctly set and focused laser there should be a noticeable (but not severe) visible step at the 50% point.

   Note: This occurs when the corners of the Euclidean dot start to bleed into each other.

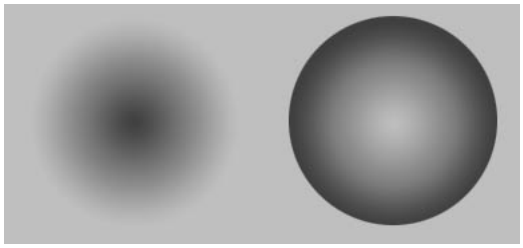
   If there is no apparent step at 50%, this may indicate poor laser focus.

5. Locate the concentric circles and 40µm lines, as shown in ❺ and ❻.

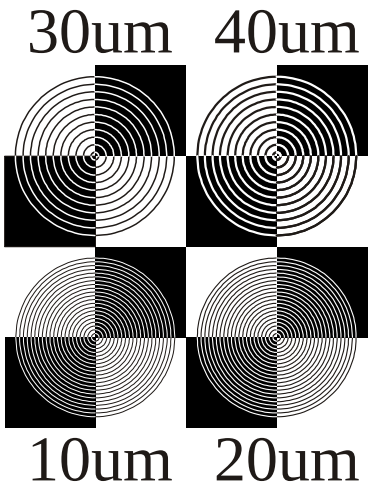
   The spot quality is affected by the laser switching times. At the correct power, a typical Cobra laser and optics should be capable of resolving 10µm lines and dots. Ideally, the white and black lines should be of equal thickness in both the slow and fast axes, as shown in ❺a and ❻a.

6. When you have finished, record the test results in section C.6 on page 95.

❹

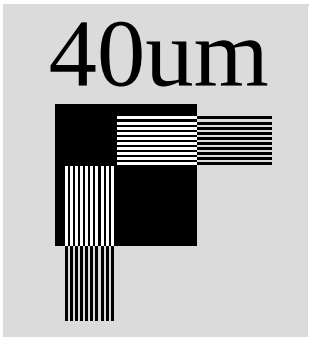


❺

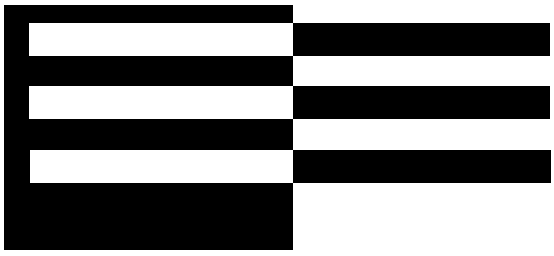


❺a

❻



❻a



Test 2f: Beam Bow

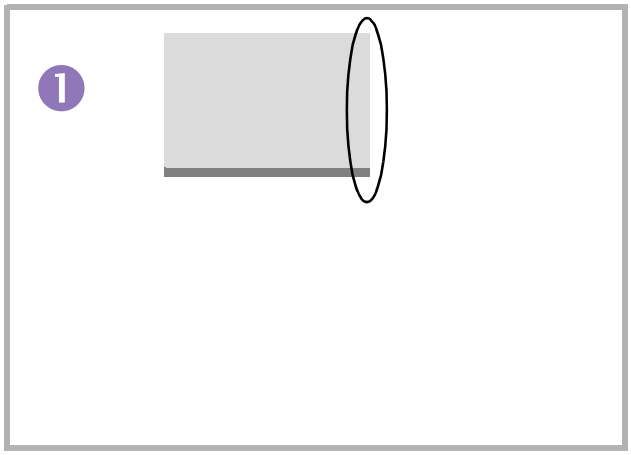
Test Details	
Test name	Beam Bow
Test purpose	This test checks if the laser scans absolutely perpendicularly to the drum surface
Test plate/job	SM52 Scaling job
Notes	You cannot measure the plate accurately if it does not have square edges.
Acceptable tolerance	**±0.1mm**
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all the tests.

To carry out the Beam Bow check:

1. Place the SM52 Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. Running down the right-hand side of the plate you will see a ruler labelled from 0 to 44cm, as shown in ❷ overleaf.

   Note: If you have not used an SM52 size plate, the ruler may not be longer or shorter than 44cm.

Continued overleaf...



3. You need to take three measurements from the right-hand edge of the plate to this ruler, as shown in ❷:

   A Take one measurement at the bottom of the plate, near the 0cm mark.

   B Take one measurement roughly in the middle of the plate, near the 22cm mark (or other mark if you did not use an SM52 size plate).

   C Take one measurement at the top of the plate, near the 44cm mark (or other mark if you did not use an SM52 size plate).

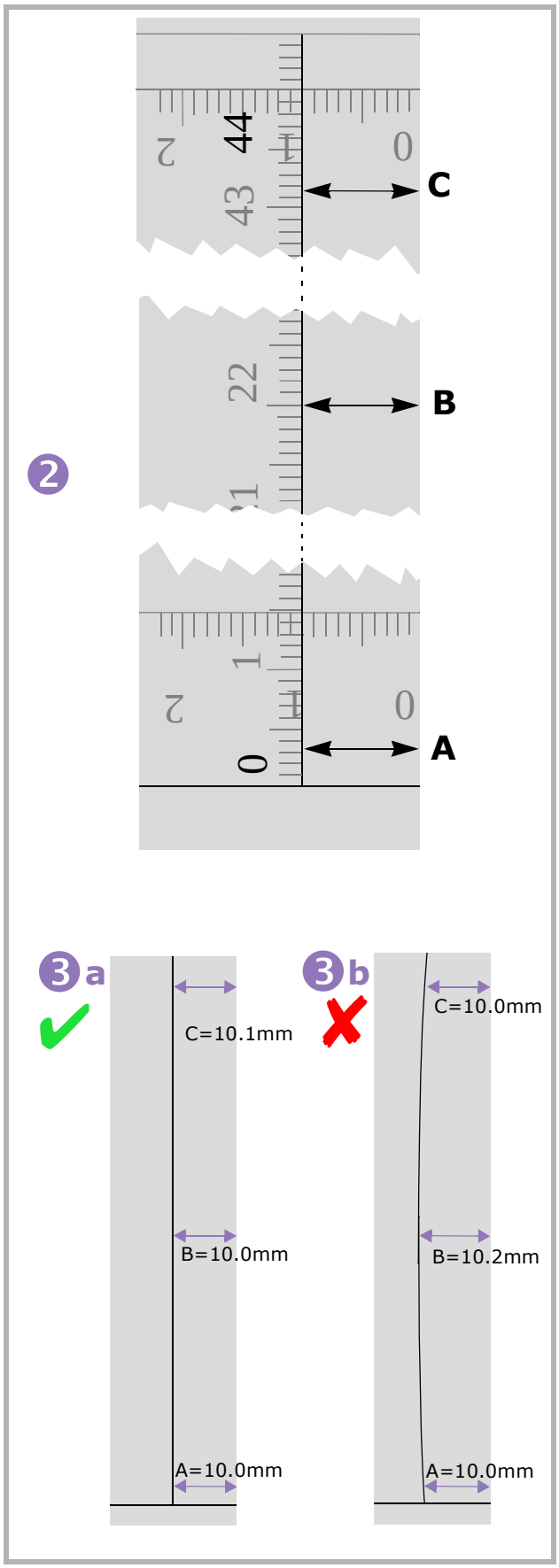
4. If there is no significant bowing of the beam these three measurements **A**, **B** and **C**, should be within ±0.1mm of each other, as shown in ❸**a**. This constitutes a test pass.

   If the beam is bowed then the measurements will not be within ±0.1mm of each other, as shown in ❸**b**.

   Notes: The beam bow has been exaggerated in this diagram. Typically, you would not be able to tell 'by eye' that the beam is bowed.

   If the plate you used was not square, this should be taken into account as it will affect the measurements taken.

5. When you have finished, record the results in section C.7 on page 96.



Test 2g: Orthogonality

Test Details	
Test name	Orthogonality
Test purpose	This test checks that the laser scans perpendicularly to the grip edge of the plate. This is checked by measuring the diagonals across a square feature.
Test plate/job	SM52 Scaling job
Notes	None
Acceptable tolerance	**±0.1mm**
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all tests.

To carry out the Orthogonality check:

1. Place the SM52 Scaling job in front of you with the grip edge at the bottom, as shown in ❶.
2. Running across the top and bottom of the plate, you will see rulers labelled from 0 to 52cm.

   Running down the left and right-hand sides of the plate, you will see rulers labelled from 0 to 44cm.

   Note: If you have not used an SM52 size plate, the rulers may be different lengths to those specified above.
3. You need to take two diagonal measurements across the plate from where the rulers intersect, as shown in ❷: one measurement from **A** to **C**, and one measurement from **B** to **D**.

   For a pass, the measurement **AC** should be within ±0.1mm of measurement **BD**. For example, if **AC** is exactly 10mm, then **BD** must be between 9.9 and 10.1mm.
4. When you have finished, record the results in section C.7 on page 96.

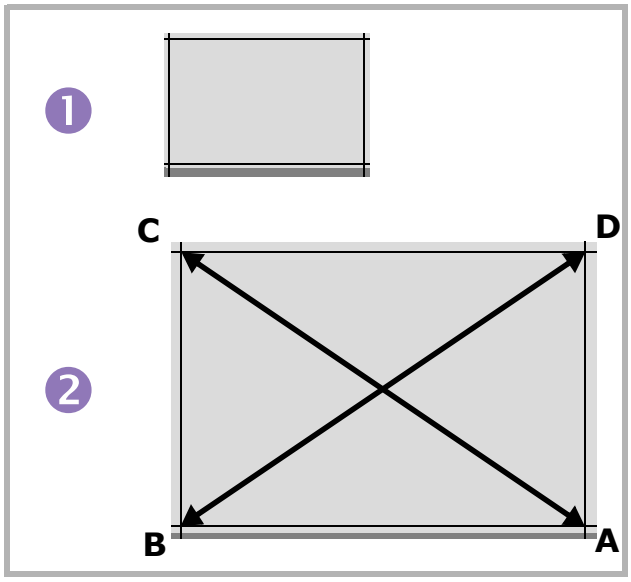
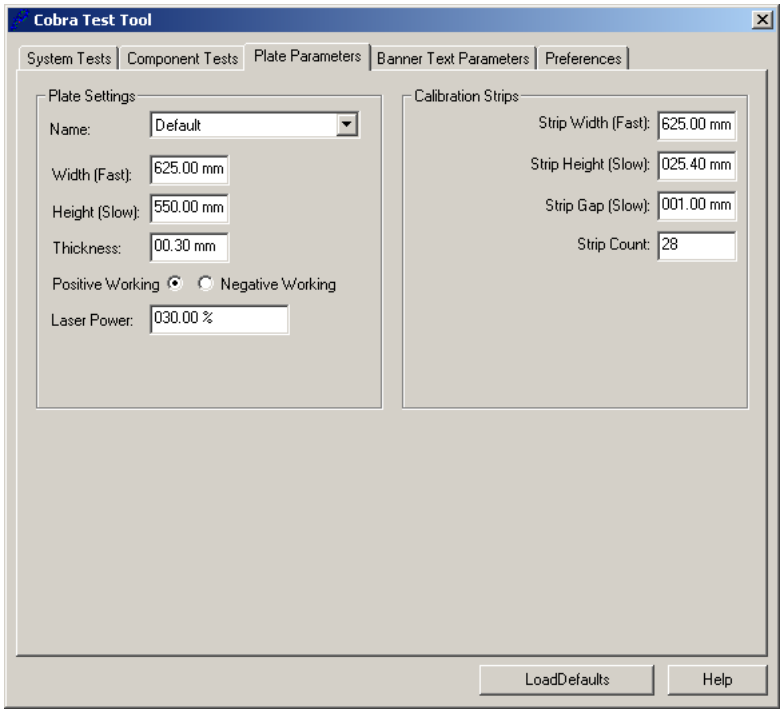


Plate 3: Scaling with Slur

Plate Details	
Plate name	Scaling with Slur
Use plate type	Use the largest plate available (max 550 x 625mm, 0.3mm thick)
Job location on disk	• **For SM52 sized plates (459x525mm or smaller) use:** D:\Cobra\Engine vx.x.x\Calibration Jobs\scaling\SM52Size • **For plates larger than SM52 size use:** D:\Cobra\Engine vx.x.x\Calibration Jobs\scaling\FullSize
Used in test	Test 3a: Plate Registration Repeatability (p68)
Notes	**You need to output this job for both sides of the register bar.** **This plate has a number of separate jobs (usually 8) imaged onto it. It takes approximately 15-20 minutes to image and process this plate. You will need to be present to load/re-load the plate between each job output.** **Do not output this job until after you have output the Calibration Strips job and determined the correct laser power setting for the plates (as described on page 45).**

To output the Scaling with Slur job:

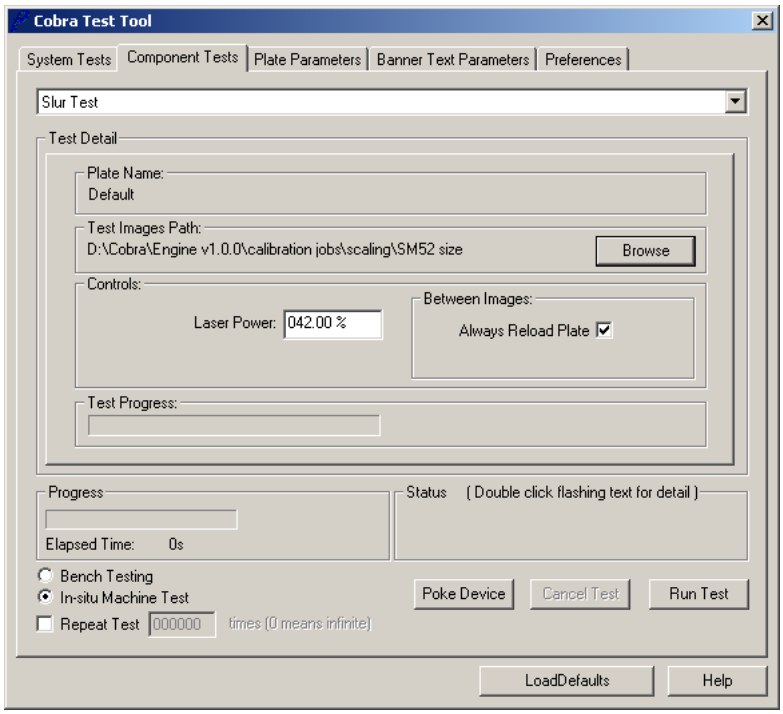
1. In the Cobra Test Tool, select the **Plate Parameters** tab:



2. Select the required plate from the **Name** menu and check that the plate settings (**Width**, **Height, Thickness**, etc.) are correct.

   Note: The plate names available on this dialog were created in the Cobra Layout Tool. If the required plate is not available you can either create it in the Cobra Layout Tool (this is covered in chapter 8) or you can alter the plate values on this dialog to suit your requirements. If you do this, the values you enter will remain even when you re-launch the Cobra Test Tool program. To restore the values to their initial values (i.e. those set in the Cobra Layout Tool), re-select the plate **Name** from the pull-down menu.

3. Select **Slur Test** from the pull-down menu to display the following window:



4. Check that the plate name is correct.

5. In the Test Images Path panel, click on the **Browse** button to open the Browse for Folder dialog:

   - For SM52 sized plates (459x525mm or smaller) locate the **D:\Cobra\ Engine vx.x.x\Calibration Jobs\scaling\SM52Size** folder then click on the **Open** button.
   - **For plates larger than SM52 size** locate the **D:\Cobra\Engine vx.x.x\ Calibration Jobs\scaling\FullSize** folder then click on the **Open** button.

6. In the Controls panel, type in the correct **Laser Power** setting for the plate (this is the value that was determined in the laser power test on page 47).

7. In the Between Images panel, check the **Always Reload Plate** box.

   Note: This will require that you are present at the machine to unload and reload the plate between each image output.

8. Click on the **Run Test** button.

9. When prompted to do so, load a plate into the Cobra drum and close the cover.

   During plate imaging, the 'Test Progress' and 'Progress bars' show how much of each individual job and the whole job has been imaged.

10. When the plate has been fully imaged with all jobs, you will see a message. You can now remove the plate from Cobra's drum and process it.
11. Now, re-output the job using the other side of the register bar (see section 7.2 on page 32 for details on changing the register bar).

    Note: Mark on this plate which register bar was used.

The next section describes the test to carry out on this plate.

Test 3a: Plate Registration Repeatability

Test Details	
Test name	Plate Registration Repeatability
Test purpose	The test plate has 8 separate jobs superimposed onto each other and it is used to check the accuracy and repeatability of the registration.
Test plate/job	Scaling with Slur
Notes	You must be able to read vernier scales for this test. This test should be carried out on plates output on both sides of the register bar.
Acceptable tolerance	**±0.05mm (50µm) in each axis**
If this test fails	Continue with the remaining tests but call a service engineer when you have finished all tests.

To carry out the Plate Registration Repeatability test:

1. Place the Scaling with Slur job in front of you with the grip edge at the bottom, as shown in ❶.

2. Locate one of the four black rectangles shown in ❶. In this rectangle you will see boxes of 50% tints made up from a 45 degree screen, fine horizontal lines and fine vertical lines. Next to these boxes you will see small vernier scales in the slow and fast-scan directions, as shown in ❷.

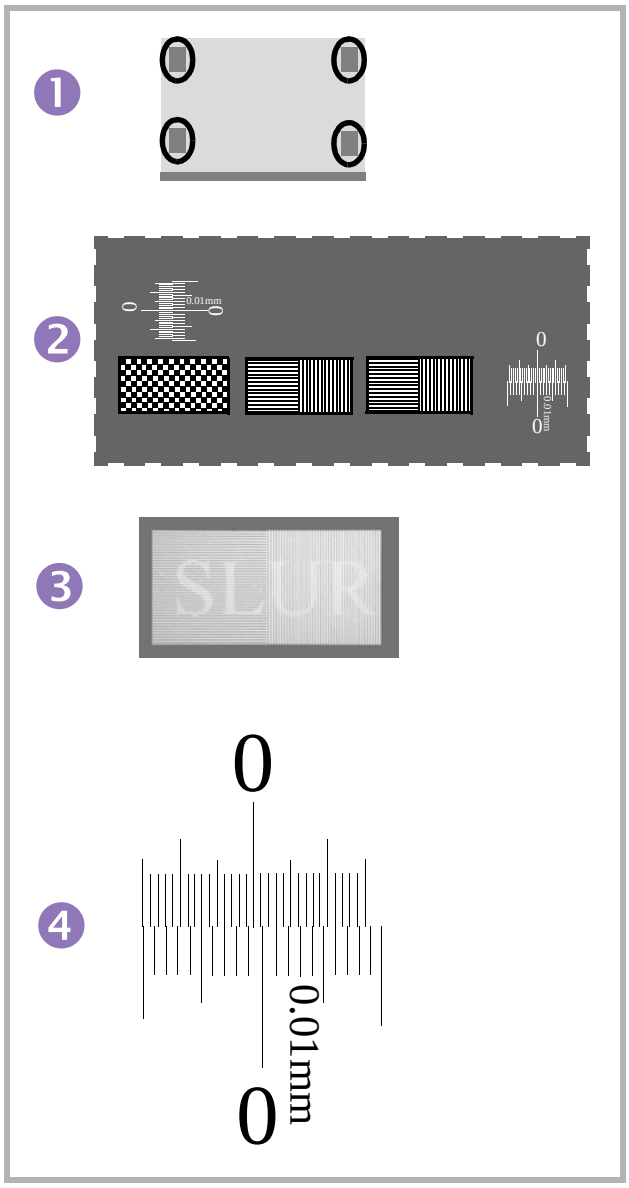
3. In the 50% tint boxes, any variation in repeatability will result in the word SLUR appearing in the tints, as shown in ❸.

   Note: Typically, you *will* see the word SLUR appear in the tints. However, this does not necessarily mean that there is a repeatability problem with the plate.

4. Next, look at the vernier scales, shown in ❹, to determine the repeatability error.

   The fine scale on the vernier is in 0.1mm (or 100µm) units, and the coarse scale is calibrated to show a difference of 0.01mm.

   In the example shown in ❹, the 0 on the coarse scale just passes the first tick right of the zero on the fine scale. So the measure is greater than 100µm. The first tick on the coarse scale, right



of its 0, lines up exactly with the tick on the fine scale, so you can add 10µm, to determine that the repeatability error is 110µm (which, for this test, would constitute a fail).

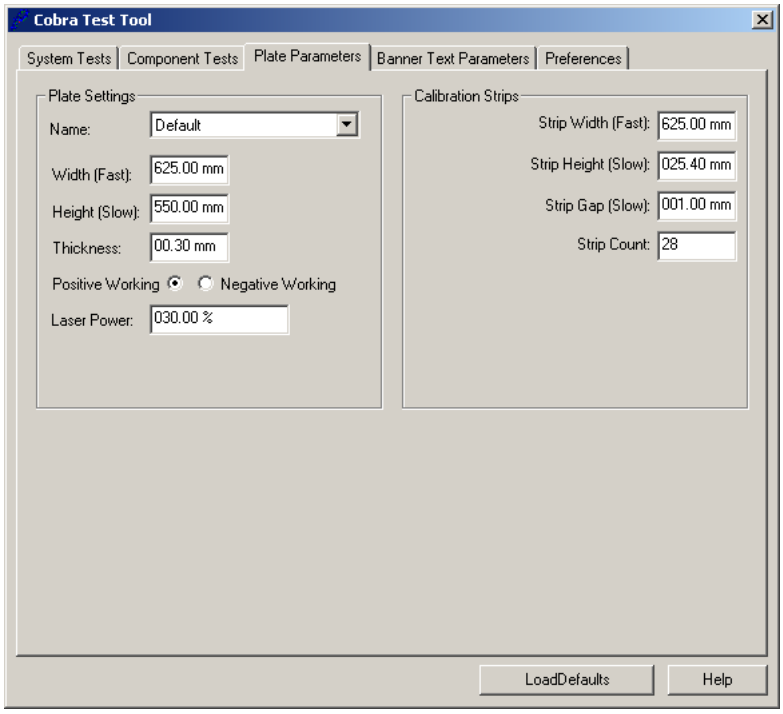
5. Find the repeatability error for both a vernier in the fast-scan and slow-scan direction.
6. Also, you should check one of the vernier scales in **each** of the four black rectangles shown in ❶. Widely differing measurements across the plate may indicate a repeatability or vacuum hold-down problem.
7. When you have finished, record the test results in section C.9 on page 98.

Plate 4: Full50

Plate Details	
Plate name	Full50
Use plate type	This job should be output on **every** plate size and thickness to be used by the customer. (The Flat Tint test carried out on this plate, described on page 74, can highlight problems with vacuum hold down of the plate, which may vary with different sized plates.)
Job location on disk	D:\Cobra\Engine vx.x.x\calibration jobs\Full50v2_590x550.tif
Used in test	Test 4a: Flat Tint (p74)
Notes	**Do not output this job until you have output the Calibration Strips job and determined the correct laser power setting for the plates (as described on page 45).**

To output the Full50 plate:

1. In the Cobra Test Tool, select the **Plate Parameters** tab:



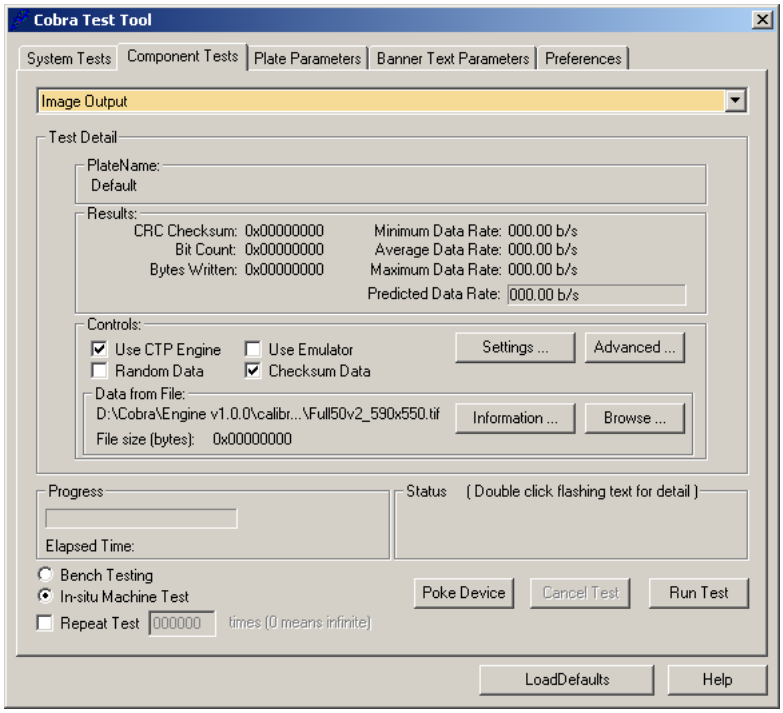
2. Select the required plate from the **Name** menu and check that the plate settings (**Width**, **Height, Thickness**, etc.) are correct.

   Note: The plate names available on this dialog were created in the Cobra Layout Tool. If the required plate is not available you can either create it in the Cobra Layout Tool (this is covered in chapter 8) or you can alter the plate values on this dialog to suit your

requirements. If you do this, the values you enter will remain even when you re-launch the Cobra Test Tool program. To restore the values to their initial values (i.e. those set in the Cobra Layout Tool), re-select the plate **Name** from the pull-down menu.

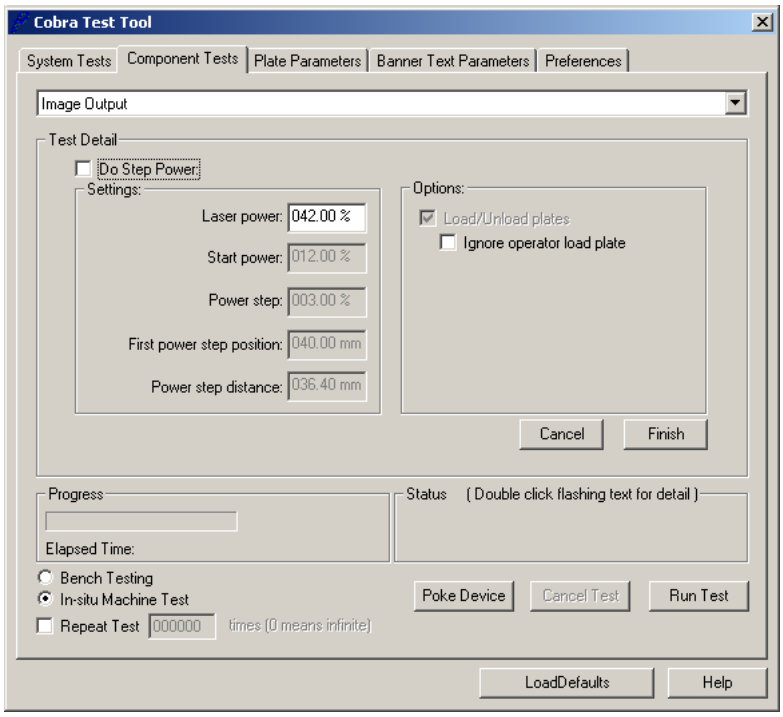
Any changes you make here to the plate details will not affect the plate details in the Cobra Layout Tool.

3. Next, select the **Component Tests** tab and, from the drop-down menu, select **Image output** to display the following:



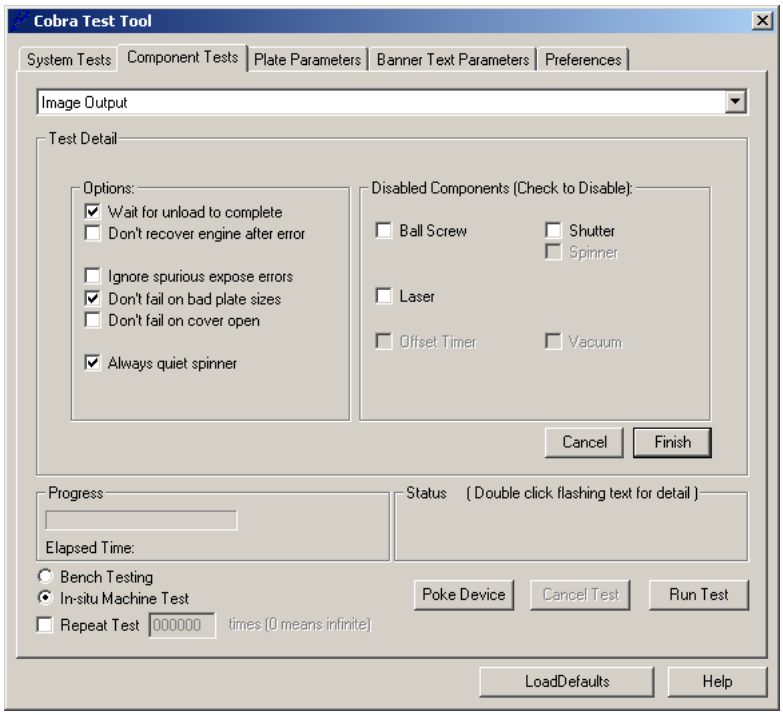
4. Make sure that the **Use CTP Engine** and **Checksum Data** options are checked.
5. Make sure that the **Random Data** option is unchecked.
6. Click on the **Browse...** button to display the Open dialog.
7. From the **D:\Cobra\Engine vx.x.x\calibration jobs** folder select the **Full50v2_590x550.tif** file then click on the **Open** button.

8. Click on the **Settings...** button to display the following:

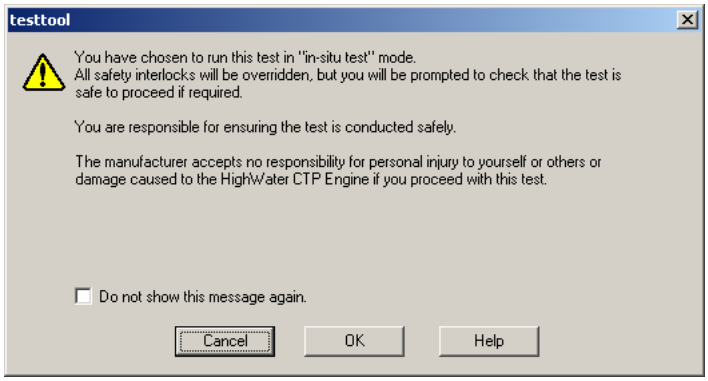


9. Uncheck the **Do Step Power** box.
10. In the Settings panel, set the required **Laser power**, as obtained from the Laser Power test on page 47.
11. Do not select any options in the Options panel.
12. Click on **Finish** to return to the previous dialog.

13. Click on the **Advanced** button to display the following dialog:



14. Click on the **Load Defaults** button.
15. Click on **Finish** to return to the previous dialog.
16. On the **Component Tests** tab, click on the **Run Test** button.
17. The following warning message will appear:



18. Click on **OK** to continue or on **Cancel** if you do not wish to proceed with the test.
19. Load a plate into the Cobra drum and, when it has been imaged, process it.

The following section details the test you need to carry out on this plate.

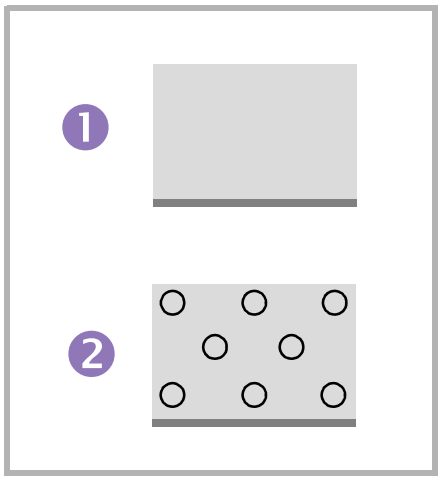
Test 4a: Flat Tint

Test Details	
Test name	Flat Tint
Test purpose	The flat tint test checks for any variation in the flat tint across the plate
Test plate/job	Full50
Notes	None
Acceptable tolerance	**No banding in the slow or fast axes** **±2% variation across the plate** **52% (or other) measurement across plate, depending on plate type**
If this test fails	Call a service engineer

To carry out the Flat Tint test:

1. Place the Full50 job in front of you with the grip edge at the bottom, as shown in ❶.
2. There are 3 checks you should make on this plate:
   i. Look for a noticeable 2mm banding in the slow or fast-scan direction. This occurs if the carriage is not traversing smoothly across the plate.
   ii. At various locations on the plate (typically, those shown in ❷) use the densitometer to take measurements. All values should be within 2% of each other. If they are not, this may indicate a problem with the vacuum hold-down.
   iii. The measurements taken in (ii) should measure 52% for a positive working Agfa LAP-V plate to a tolerance of ±2% (for correct readings for other types of plate please contact your dealer).

   If the measurements are not the required value (depending on plate type) then repeat the laser power check (on page 47) and output the Full50 job again using the revised laser power.
3. When you have finished, record the test results in section C.10 on page 99.



10. Setting up the Cobra software

Once the Cobra system has been installed and checked you need to set up the HighWater software applications that enable the user to output jobs to the Cobra platesetter.

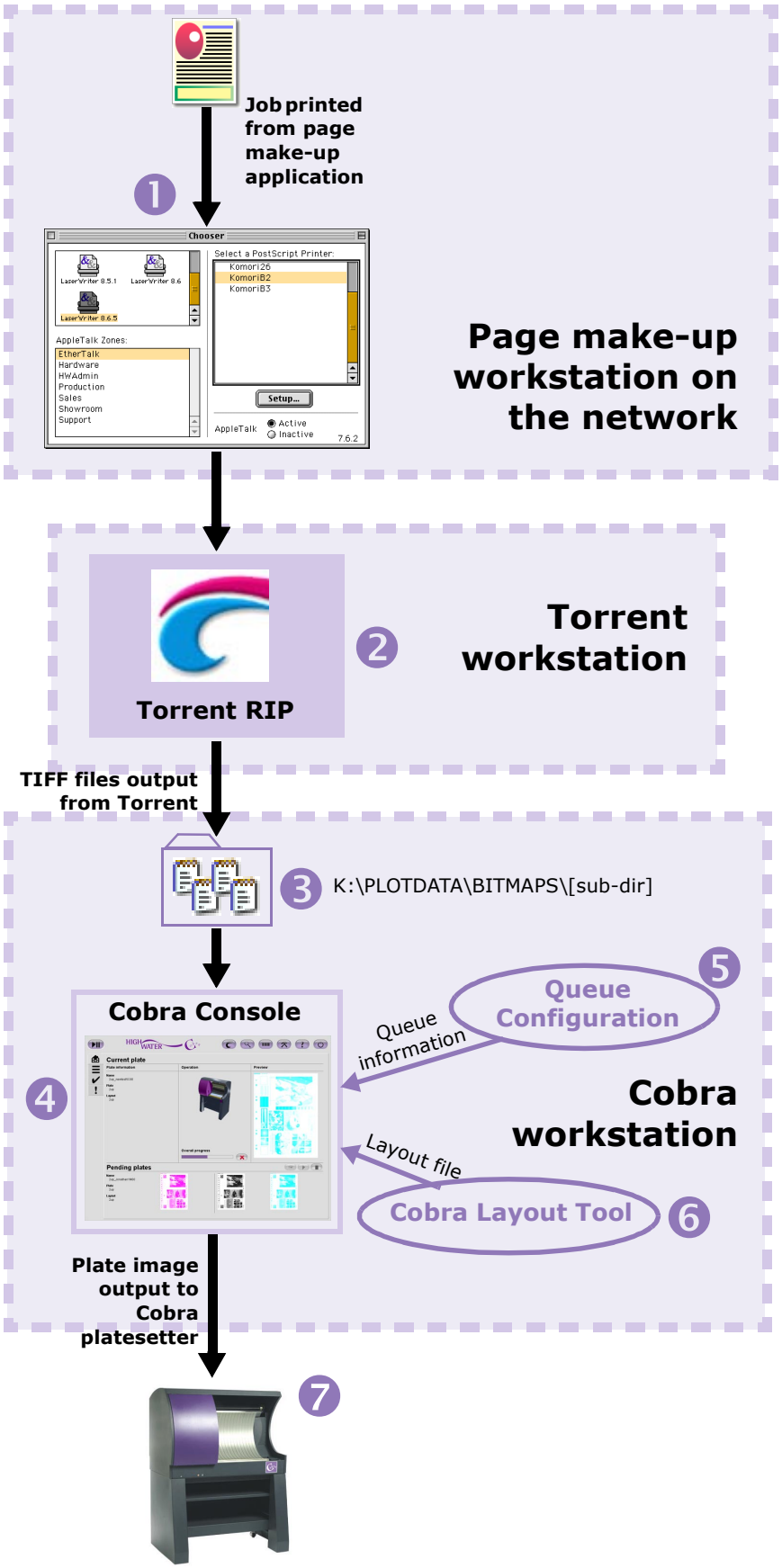
This chapter contains the following sections:

Note: This chapter is intended for engineers who are unfamiliar with the software that runs on the Cobra workstation. Please also consult the **Cobra User's Guide** for more details on the specific applications and for workflow information.

10.1 Job flow through the Cobra system

The diagram on the following page shows the typical job flow through the Cobra system.

Note: The diagram shows the Cobra system with the two-computer configuration (i.e. the Torrent RIP running on a separate workstation on the network). Some users may have a one-computer system configuration (that is, with Torrent running on the Cobra PC).



❶
Printing the job
You print a job to Torrent from a page make-up workstation (either Mac or PC) on the network, via a Cobra print queue.

❷❸
The Torrent RIP
Jobs are processed by the Torrent RIP and output as TIFF bitmap files to a sub-directory of K:\PLOTDATA\BITMAPS on the Cobra PC.

❹
Cobra Console
These bitmap TIFF files are moved into the appropriate queue in the Cobra Console, ready for processing.

Note: The Cobra Console gets the queue names and other processing details from the Queue Configuration (❺), and the plate and job information from the appropriate Layout file created in the Cobra Layout Tool (❻).

❼
Cobra platesetter
Finally, the plate image is output to the Cobra platesetter.

10.2 Setting up the software

Setting up the Cobra-related software applications for the user is described in the table below (the specific chapter/section to refer to in the **Cobra User's Guide** for instructions is also listed).

Note: The Cobra system ships with a set of pre-configured plate definitions/layout definitions/ICF files and queues. Therefore, it should only be necessary to delete from or add to these, as required, and task 1 specified below (creation of the Imager and Completed queues) should not be necessary unless the pre-configured settings do not exist.

	TASK	See Cobra User's Guide
1	**Note:** This step should not be required as the Imager and Completed queues should already exist on the new Cobra system. If not, then create these queues, as required. **Create the Imager and Completed queues (only do this once)** The Imager queue feeds jobs (coming from the TicketMaker queues) to the Cobra platesetter. Processed jobs are moved to the Completed queue where they can be re-output, if required.	**Appendix A** **Appendix B**
2	**Determine how many workflows are required** The path of each job through the system is known as a 'workflow'. A separate workflow is required for each different combination of settings: plate size; plate thickness; plate type (negative or positive); plate borders.	**Chapter 10**
FOR EACH REQUIRED WORKFLOW:		
3	**Choose a name for the workflow** Each workflow requires a unique name, usually based on the press model.	**Section 10.3**
4	**Create a page setup and input queue in the Torrent RIP** In the Torrent RIP, a page setup defines the settings (resolution, page size, etc.) to be applied to jobs sent to Torrent. The input queue lets you print jobs to Torrent from across the network.	**Chapter 11**
5	**Create a BITMAPS directory** TIFF files created by the Torrent RIP are saved here.	**Section 11.1**
6	**Create a Layout file in the Cobra Layout Tool** Layout files contain the plate and job position information that the Cobra Console needs for outputting jobs to the Cobra platesetter.	**Chapter 13**
7	**Create a queue using the Queue Configuration application** You create queue(s) for the Cobra Console. Each queue specifies details such as where to look for jobs to process and job settings.	**Chapter 14**
8	**Optionally set up the Barcode Plate Requeue option** This option puts a barcode onto imaged plates so that the user can quickly relocate jobs for re-making plates, if required.	**Appendix C**

9	**Create a print queue on the page-make up workstation(s)** You need to set up 'virtual' printers on each page make-up workstation that the customer will be printing from. These printers allow the customer to print jobs directly to the Torrent RIP.	**Chapter 19**
10	**Calibrate the Torrent page setup** Calibrating the Torrent page setup is necessary to ensure output quality.	**Chapter 12**
WHEN YOU HAVE FINISHED:		
11	**Save the Cobra system settings** When you have finished creating the new workflow(s) you should save all the settings you have made.	**Section 16.2**

11. Handover to the customer

By now, you should have finished installing, testing and setting up the Cobra system. Assuming that everything is in satisfactory working order, you need to check that the system is made safe before final handover to the customer.

This chapter includes the following section:

11.1 Checking the system before handover to the customer

When all the installation and plate tests have been satisfactorily completed and the software has been set up and tested, the Cobra platesetter must be checked before handover to the customer. Please carry out all the following checks:

Make the following checks:	✓
All the Cobra platesetter's covers are **securely** in place if they have been removed or loosened during the installation.	
The Cobra platesetter's drum is clean and free of any debris. (If necessary, follow the cleaning procedure in section 6.2 on page 30.)	
There are no loose connections and all cables are correctly routed.	
The user: • Can load/unload a plate. • Can successfully print jobs to the Cobra system from a page make-up workstation. • Can use the Cobra Console to output jobs to the Cobra platesetter.	
The user has been instructed on the health and safety aspects of using the Cobra system.	

Appendix A: Plate specifications

This appendix gives plate information for the Cobra system including:

A.1 Plate types

The plates used in the Cobra platesetter must be compatible with its laser expose system. Cobra has been tested with the following plate types:

Plate type	Pos/neg	Filter fitted	Plate type	Recommended expose energy µJ/cm²
Agfa Lithostar Plus LAP-V / Ultra-V	Positive	SilvND	Silver	1.9
Kodak VioletPrint	Negative	PolyND	Photopolymer	30
Agfa Lithostar N91V	Negative	PolyND	Photopolymer	40
Fuji Film LP-NV	Negative	ZeroND	Photopolymer	90
Lastra P-LV-2	Negative	ZeroND	Photopolymer	130

Notes: The laser expose power must be determined for each of these plate types (this is covered in "Test 1a: Laser Power" on page 47).

Section B.1 lists suitable lighting for each plate type.

Positive and negative working plates

Plates can be exposed on Cobra in two different ways:

Negative working plates. The laser exposes the image area which is to be printed on the plate. The remaining area is unexposed. When the plate is put through the processor, the unexposed area is etched away to leave bare plate.

Positive working plates. The laser exposes the area which is not to be printed on the plate. When the plate is put through the processor, the exposed area is etched away to leave bare plate. This means that all positive working plates must be exposed up to the edges, regardless of the size of the image on the plate.

In either case, the physical appearance of the plate to go on the press will be the same (positive image, right reading), apart from the unexposed grip area.

A.2 Plate sizes

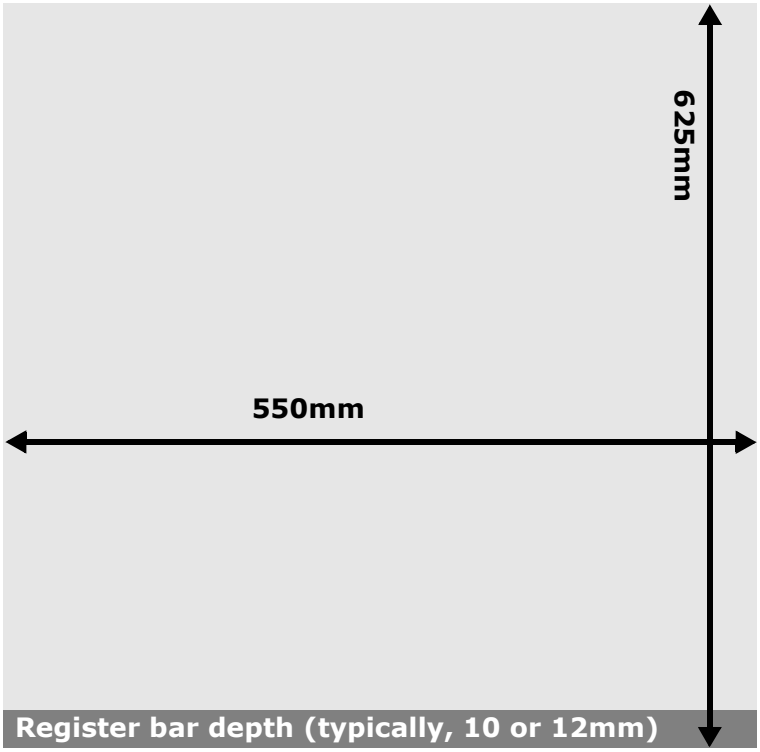
Cobra has been designed to support 2-up A4 layout. The maximum plate size is 550 x 625mm. The register bar depth (10mm for 3-pin edge registration systems and 12mm for notch register systems) is not imaged so, typically, the maximum image area is 550mm along the grip edge by 613–615mm.

The minimum plate size is 300mm along the grip edge by 380mm. This means that Cobra can image the QM46 (340 x 505mm) and GTO52 (510 x 400mm) plates.

Plates between 0.15 and 0.3mm thickness are supported. Correct configuration of the plate thickness (using the Cobra Test Tool application) is vital as this affects the exact spinner speed in order to ensure correct sizing around the drum.

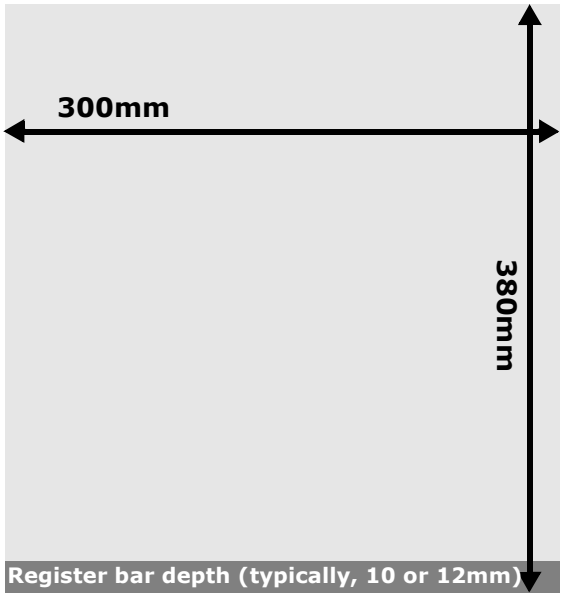
Maximum plate size

The maximum plate size is 550 x 625mm. The register bar depth (10mm for 3-pin edge registration systems and 12mm for notch register systems) is not imaged so, typically, the maximum image area is 550mm along the grip edge by 613–615mm.



Minimum plate size

The minimum plate size is 300mm along the grip edge by 380mm. This means that Cobra can image the QM46 (340 x 505mm) and GTO52 (510 x 400mm) plate. The register bar depth (10mm for 3-pin edge registration systems and 12mm for notch register systems) is not imaged so, typically, the maximum image area is 300mm along the grip edge by 368–370mm.



A.3 Plate exposure times

Cobra exposes at a fixed rate of 600 scan lines per second. The laser expose head traverses at 6mm per second for a 36,000rpm spinner with an imaging resolution of 2540dpi/100dpmm. The plate handling time is approximately 45-60 seconds, regardless of plate size.

The following table shows plate exposure times (not including plate load/unload time) for various plate sizes:

Plate size (mm)	Exposure Time
550 x 625 (maximum)	92 seconds
510 x 400 (GTO52)	85 seconds
340 x 505 (QM46)	57 seconds

A.4 Plate handling guidelines

Plates must be handled with care. Engineers need to be aware of the following guidelines:

- Plate edges are sharp, particularly the corners. Remove plates from packaging carefully and keep plate edges and corners away from your face.
- Handle plates at their edges.
- Contact with human skin can damage the plate's emulsion surface.
- Keep the interleave paper on the emulsion side of the plate during handling.
- Always put the plate into the drum emulsion side up (unless otherwise instructed to do so for carrying out Cobra installation tests).

Appendix B: Brightroom layout and environment

This appendix contains the following information:

B.1 Required operating conditions

Cobra should be operated in a clean (office-like) environment. The atmosphere must be clear of contaminants, particularly oil vapour, that could cause harmful deposits on optical surfaces.

Cobra operates at a temperature range of 15–25°C and a relative humidity of 10 to 80% non-condensing (however, to reduce and control optical contamination, HighWater Designs recommends a relative humidity of 10-50%).although HighWater Designs recommends 10–50%). Air conditioning is required for most installations.

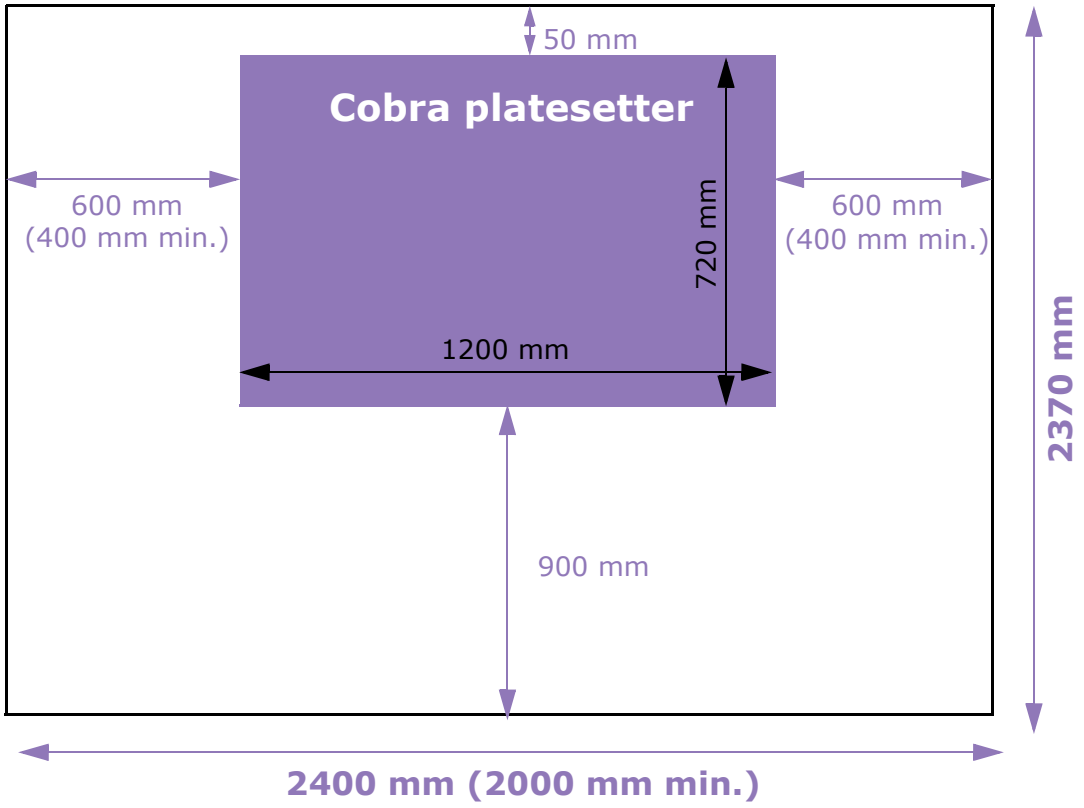
However, in order to reduce and control optical contamination, we should recommend that the operating environment is more closely controlled - say 10 to 50% RH.

For loading and unloading of plates, suitable lighting is required, for example:

Plate	Type	Lighting
Agfa Lithostar Plus ULTRA-V	Silver	V50 (yellow)
Lastra LVX/Agfa Lithostar N91V	photopolymer	Osram L36 W62 and EncapSulite V50
Kodak VioletPrint	photopolymer	G30
Fuji Film LP-NV	photopolymer	Encapsulite YG10

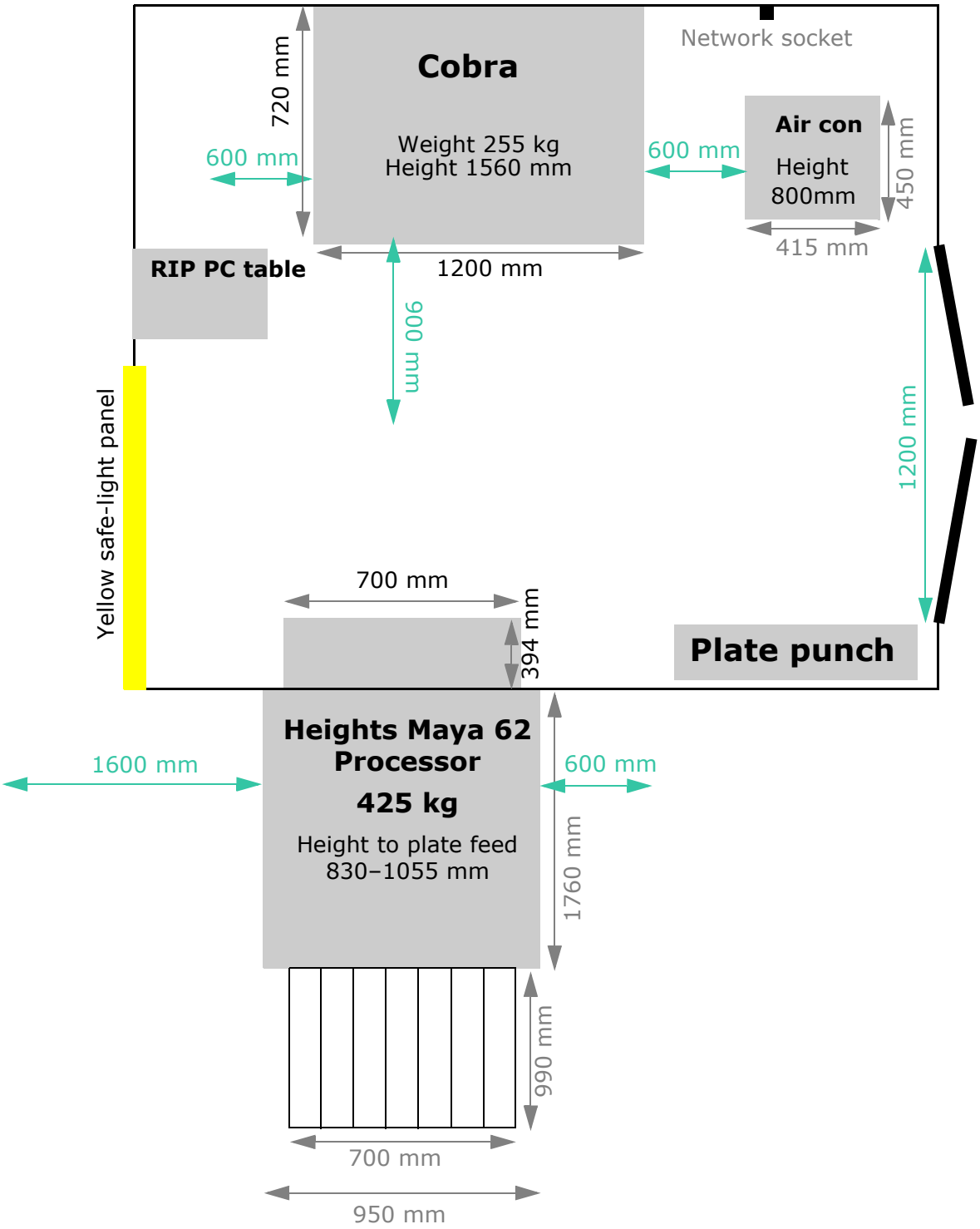
B.2 Access space around the Cobra platesetter

The following diagram shows the recommended and, where appropriate, minimum required access space around the Cobra platesetter in the brightroom:



B.3 Typical brightroom layout

The following diagram shows a typical brightroom layout for the Cobra platesetter:



Appendix C: Plate test results

Use the following pages to record the results of the plate tests carried out in chapter 10. Where appropriate, follow any advice given for test failures.

This chapter contains the following test results pages:

Note: Photocopy this chapter if more results pages are required for additional plates.

C.1 Laser Power

Test	1a. Laser Power (page 47)
Test Description	Determines the correct laser power for the plate
Uses plate	Calibration Strips
Test tolerance	± 10% on factory setting
If this test fails	Immediately call a support engineer for advice

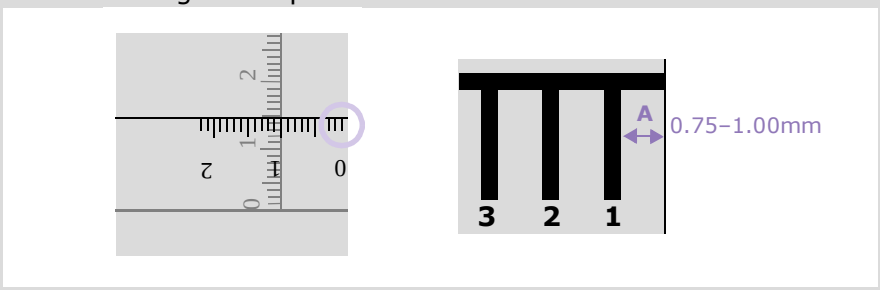
Test results

Plate name	Size (mm)	Thickness (mm)	+/– working	Factory set power	Power	Pass/Fail
Example plate	550 x 625 mm	0.3mm	+	30%	34.00%	Pass

Engineer's comments

Date	Comments

C.2 Carriage Reference Setup

Test	2a. Carriage Reference Setup (page 54)
Test Description	Check the image start position in the slow scan direction 
Uses plate	SM52 Scaling
Test tolerance	+0–0.25mm (a result between 0.75 and 1.00mm is a test pass)
If this test fails	Call a service engineer when you have finished all tests

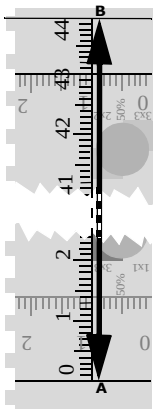
Test results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Register bar	3-pin edge						
Measurement A	0.8mm						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline

Engineer's comments

Date	Comments

C.3 Fast Axis Scaling

Test	2b. Fast Axis Scaling (page 56)
Test Description	Checks the accuracy of the image height 
Uses plate	SM52 Scaling
Test tolerance	±0.1mm
If this test fails	Call a service engineer when you have finished all tests

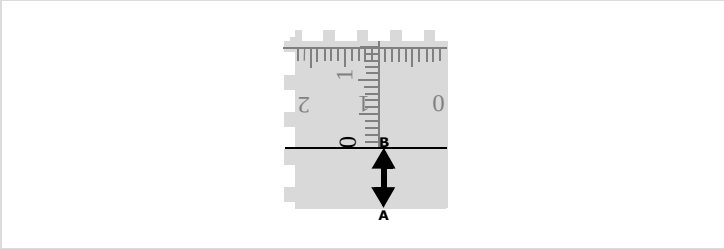
Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Measurement on plate	44cm						
Actual measurement	44.1cm						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline			

Engineer's comments

Date	Comments

C.4 Drum Reference

Test	2c. Drum Reference (page 57)
Test Description	Checks the 'Unimageable plate in clamp' value 
Uses plate	SM52 Scaling
Test tolerance	±0.1mm
If this test fails	Call a service engineer when you have finished all tests

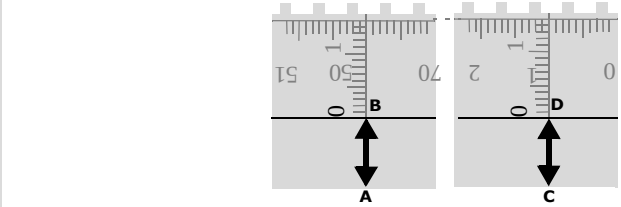
Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Drum reference	12mm						
Actual measurement AB	12.05cm						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline			

Engineer's comments

Date	Comments

C.5 Plate Registration Skew

Test	2d. Plate Registration Skew (page 59)
Test Description	Checks that the plate is sitting squarely in the clamp 
Uses plate	SM52 Scaling
Test tolerance	±0.1mm
If this test fails	Call a service engineer when you have finished all tests

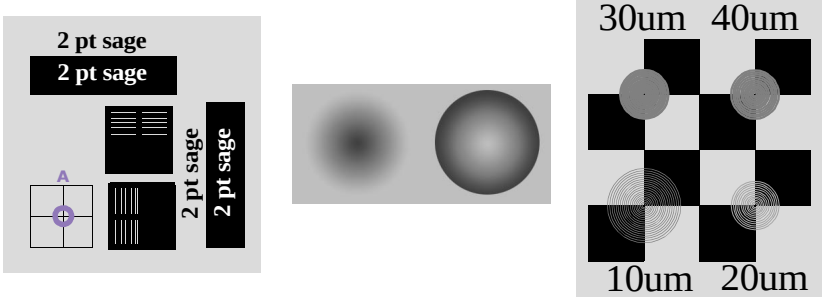
Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Register bar	3-pin edge						
Measurement AB	10.0mm						
Measurement CD	10.1+mm						
Difference in measurement	0.1+						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline			

Engineer's comments

Date	Comments

C.6 Focus and Spot Shape

Test	2e. Focus and Spot Shape (page 60)
Test Description	Checks the laser focus 
Uses plate	SM52 Scaling
Test tolerance	Check for sharp lines and text, a visible step at 50% point in vignettes, and lines of equal thickness in the concentric circles and 40um lines
If this test fails	Call a service engineer when you have finished all tests

Test Results

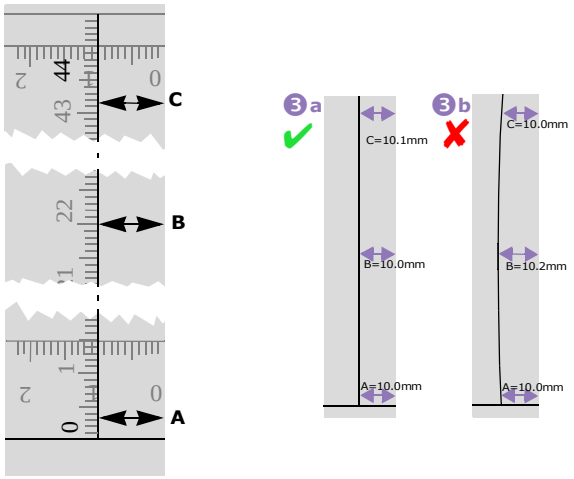
	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Laser Focus	Good OK Poor	Good OK Poor	Good OK Poor	Good OK Poor	Good OK Poor	Good OK Poor	Good OK Poor
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline

Engineer's comments

Date	Comments

C.7 Beam Bow

Test	2f. Beam Bow (page 62)
Test Description	Checks that the laser scans perpendicular to the drum's surface
Uses plate	SM52 Scaling
Test tolerance	±0.1mm
If this test fails	Call a service engineer when you have finished all tests



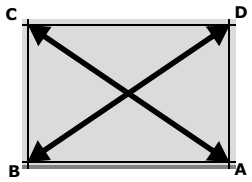
Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Difference in measurement ABC	0.2						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline			

Engineer's comments

Date	Comments

C.8 Orthogonality

Test	2f. Orthogonality (page 64)
Test Description	Checks that the laser scans perpendicularly to the grip edge of the plate 
Uses plate	SM52 Scaling
Test tolerance	±0.1mm
If this test fails	Call a service engineer when you have finished all tests

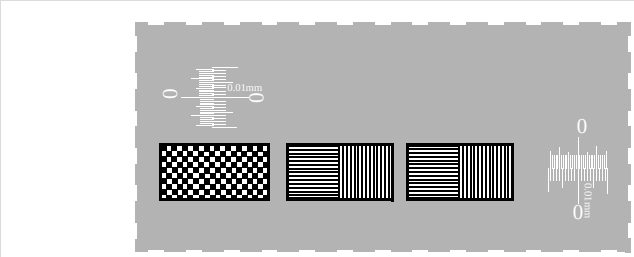
Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	459x525						
Register bar	3-pin edge						
Difference in measurement AC/BD	0.1						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline			

Engineer's comments

Date	Comments

C.9 Plate Registration Repeatability

Test	3a. Plate Registration Repeatability (page 68)
Test Description	Checks the accuracy and repeatability of the plate registration 
Uses plate	Scaling With Slur
Test tolerance	In 50% boxes: check 'severity' of the word slur On Vernier scale: ± 0.05mm (50µm) in each axis
If this test fails	Call a service engineer when you have finished all tests

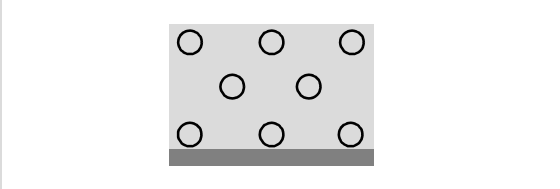
Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	550x625						
Slur severity	Mild Moderate Severe	Minor Moderate Severe	Minor Moderate Severe	Minor Moderate Severe	Minor Moderate Severe	Minor Moderate Severe	Minor Moderate Severe
Vernier measurement	0.05+mm						
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline

Engineer's comments

Date	Comments

C.10 Flat Tint

Test	4a. Flat Tint (page 74)
Test Description	Checks for variation in the flat tint across the plate 
Uses plate	Full50
Test tolerance	• No banding across plate • Continuity: All measurements taken are within ±2% of each other • Laser power: Measurements are 52% for Agfa LAP-V plates (or other measurement obtained from dealer)
If this test fails	Call a service engineer when you have finished all tests

Test Results

	Example	Plate 1	Plate 2	Plate 3	Plate 4	Plate 5	Plate 6
Plate name/size	550x625						
Banding	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes
All measurements within ±2% of each other?	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes
All measurements 52% (or other)	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes	No Yes
Pass/Fail	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline	Pass Fail Borderline

Engineer's comments

Date	Comments