Iceni Forensic Ltd

Iceni Scan Tablet Kit

USER GUIDE

V1.5

Contents

Introduction

The Iceni Scan Tablet kit allows the operator to capture the surface detail from Black Gel Lifts using a flatbed scanner or digital capture equipment.

When a Gel Lift is placed on the Iceni Scan Tablet a vacuum is applied using the Vacuum Pump supplied in the Kit. This vacuum holds the Gel Lift flat and firm with a small tolerance between the gel surface and depth within the perimeter frame. When placed upside down on the glass of a flatbed scanner the gel surface will not come into contact with the scanner glass. This method allows the operator to use ICT equipment that may already be available to scan the surface using imaging software to capture gel surface detail. Furthermore, because the Gel Lift is held flat on the Iceni Scan Tablet the operator can consider using standard digital photography or Fingerprint Capture Systems to capture surface detail allowing greater control over the reflective properties of the gel surface. This gives the operator a variety of lighting techniques that may not have been previously possible. E.G, oblique lighting , polarization and cross polarization to render greater contrast over the entire surface area.

The Scan Tablet Kit also permits the opperator to scan ESLA foils by following the same process as the Gel Lift, keeping the dust mark safe from any contact during imaging.

You can consider Black Gel Lifts for the following processes:-

- Footwear (Powdered or Latent) with Black Gel Lifter & ESLA Foil
- Fingerprints (Powdered or Latent)
- Indented Writing (Page for inspection can remain attached)
- Un-Recordable Superglue marks (I.E Tight periphery/location or background fluorescence after dying)

Kit Contents

1. User Guide

2. Vacuum Pump
   - Adapted for use with the Iceni Scan Tablet Kit

3. 2 Metres of Nylon Hose
   - For connecting Vacuum Pump to Iceni Scan Tablets

4. Iceni Scan Tablets (Maxi, Midi and Mini)
   - Maxi for use with the 36x18cm Gel & ESLA Foils
   - Midi for use with the 18x13cm Gel
   - Mini for use with a 9x6.5cm sized Gel
     (Quartered 18x13cmm)

5. Chinagraph Pencil (White)
   - For Marking References and Exhibit Numbers prior to capture

6. Link Free Duster
   - For Tablet and Scanner glass cleaning

7. Rubber Spacer
   - For scanning 36x13 Gel Lifts on the Maxi Tablet

User Hardware/Software Requirements

1. Standard Desk Top or Laptop computer

2. Flatbed scanner
    - Up to A3 scanner required for use with "Maxi Scan Tablet"
    - A4 required for use with "Mini and Midi Scan Tablets"

3. Imaging software
    - Adobe Elements or equivalent, minimum requirement

4. Photographic equipment (Optional)
    - Digital camera on rostrum with lighting facilities
    - Fingerprint Capture System

Vacuum Pump and Scan Tablets

Exhuast Silencer
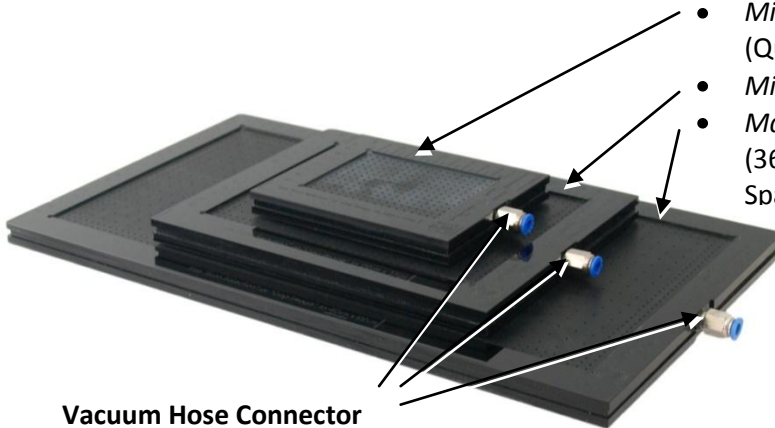
Vacuum Hose Connector
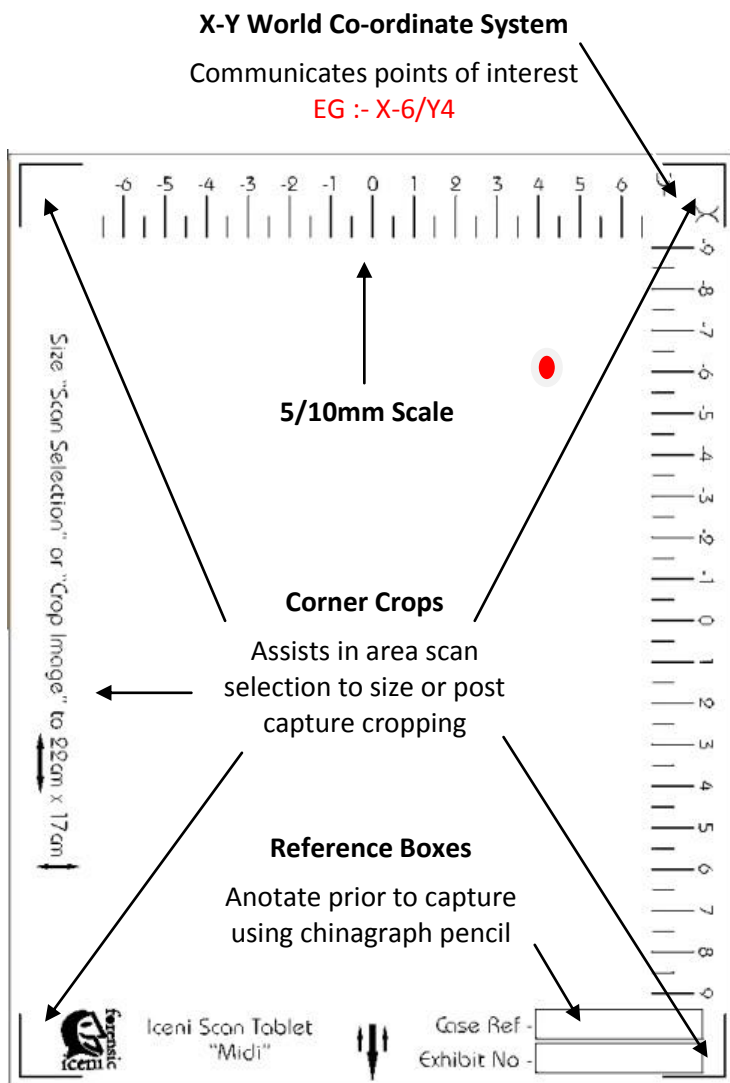
Power Switch

Scan Tablets

- *Mini* - 9x6.5 (Quartered 18x13)
- *Midi* - 18x13
- *Maxi* - 36x18 (36x13 with Rubber Spacer)

Vacuum Hose Connector

Scan Tablet Etch Detail

X-Y World Co-ordinate System

Communicates points of interest
EG :- X-6/Y4

5/10mm Scale

Corner Crops

Assists in area scan
selection to size or post
capture cropping

Reference Boxes

Anotate prior to capture
using chinagraph pencil

Size "Scan Selection" or "Crop Image" to 22cm x 17cm

-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6

X

-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9

Iceni Scan Tablet "Midi"

Case Ref -
Exhibit No -

forensic iceni

Operating

Preperation

- All Hoses attached properly using only the supplied hose
- Vacuum pump fan openings not blocked
- Mains power supply (can also be 12v Inverted)
- Pump exhuast silencer not constricted
- Do not run pump without the hose fitted

Connecting Pump and Scan Tablets

Insert the supplied hose in to the Pump connector, pushing firmly home

Note :- The hose has a Pump end labelled and must be used in this direction only

Insert the free hose end in to the Tablet connector, pushing firmly home

With power lead and hose connected switch the pump on at the green switch

After use - Disconnect the hose from the Pump and Tablet by pushing the connector collor down, then pull the hose to release

Using a Flatbed Scanner

Preperation

- Connect Pump and sellected Tablet as outlined in previouse section
- Locate suitable Computer and Flatbed Scanner - A3 if using the Maxi Tablet
- If you are using imaging software, such as Adobe, then open the program and start the scanner via the "Import" option, often found in the File drop down menu.

Scanning a Gel Lift

Lay the Gel Lift within the Scan Tablet rebate

With the Gel Lift sitting within the Tablet and hose connections fitted, switch the pump on at the green switch – Observe Pump tone as vacuum is acheived

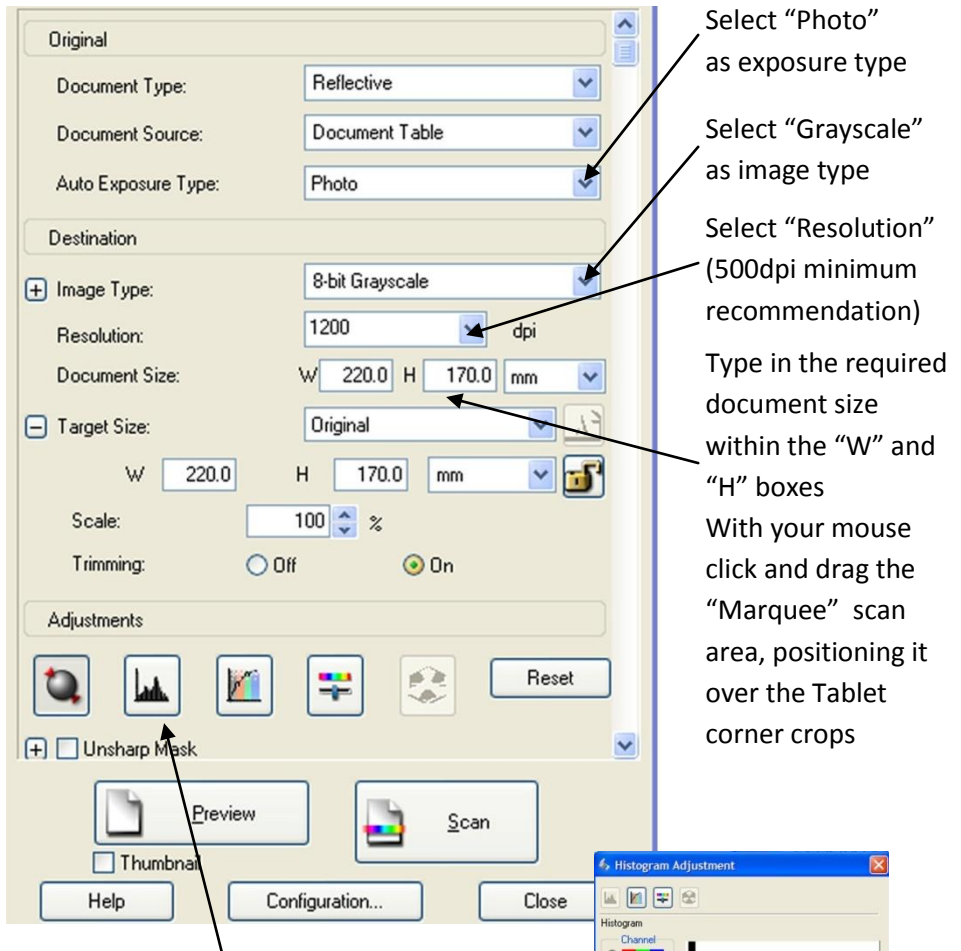Place the Scan Tablet face down upon the flatbed glass. Close the scanner lid over the Table

Note :- Cleaning the glass with supplied cloth prior to scanning is advised
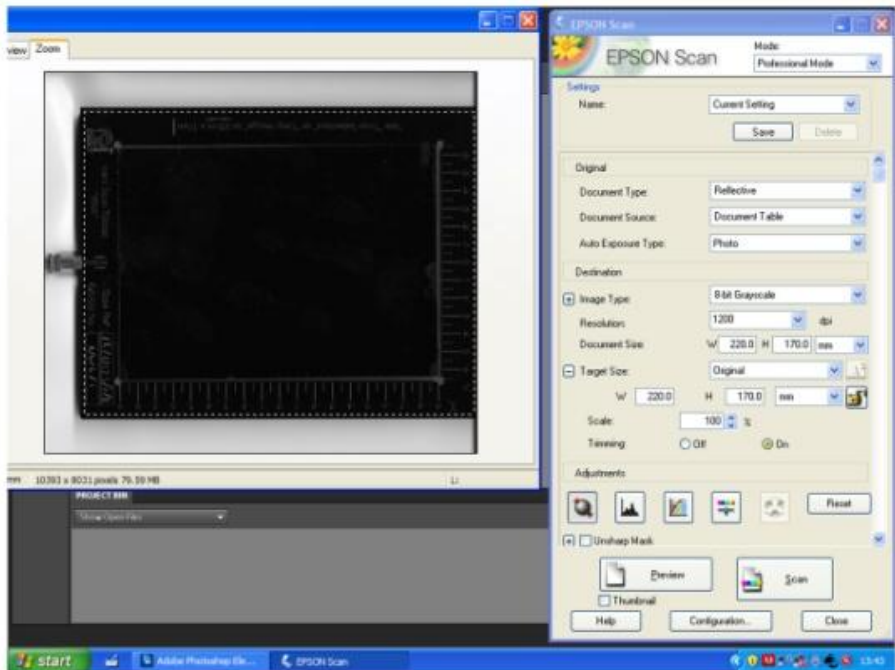
Select "Preview" on your scanner software (typical tool box shown above)

Now select the "Marquee" scan sellection dragging it area over the previewed Scan Tablet

Typical Scanner Tool Box in Detail

Select "Photo"
as exposure type

Select "Grayscale"
as image type

Select "Resolution"
(500dpi minimum
recommendation)

Type in the required
document size
within the "W" and
"H" boxes

With your mouse
click and drag the
"Marquee" scan
area, positioning it
over the Tablet
corner crops

In Adjustments, select the "Histogram"
tool - This will open a "Historgram
Adjustment" box

Click and drag the white pointer to the
foot of the histogram graph as shown
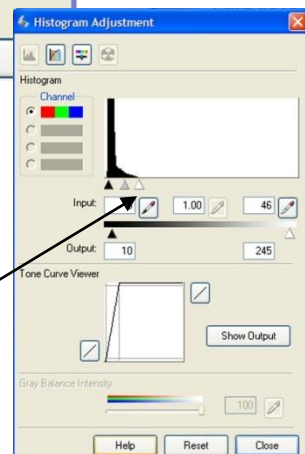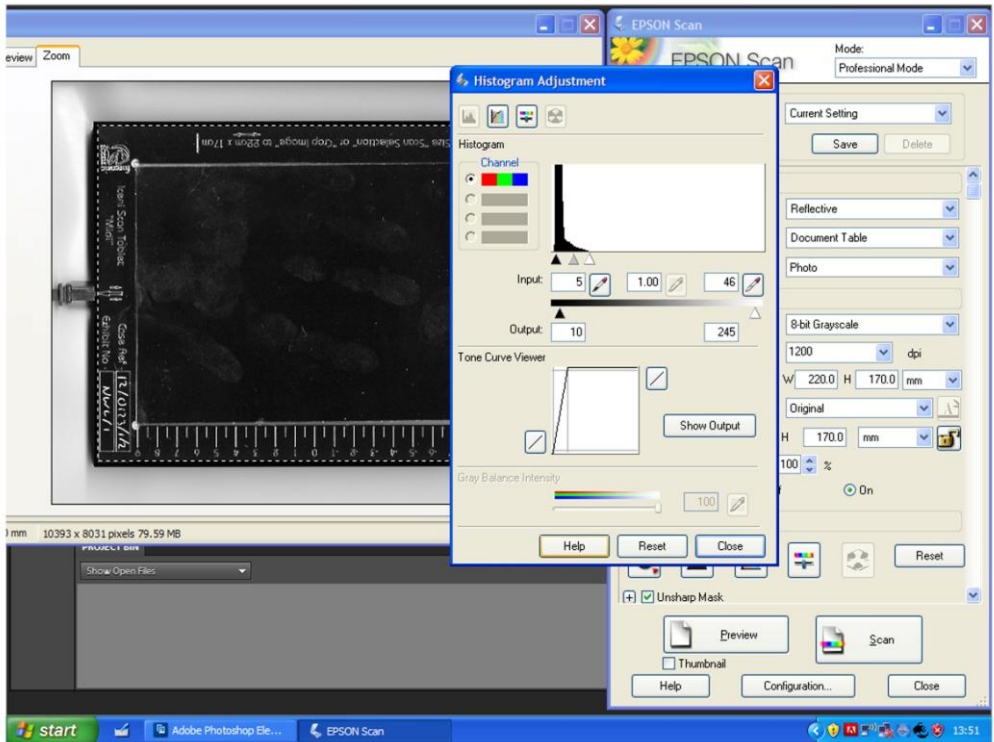
You may note that image detail on the gel surface has started to appear, click on "Scan" to image the gel surface

Note :- Some low end scanners do not provide much historgram detail. In this instance, click and drag the white pointer to between half and three quarters of the way to the black end of the scale

While you may not see surface detail on the preview with low end scanners it will be ready to scan after these exposure adjustments
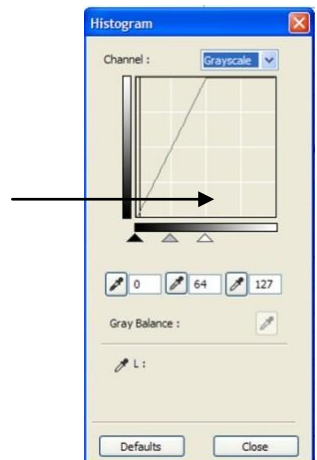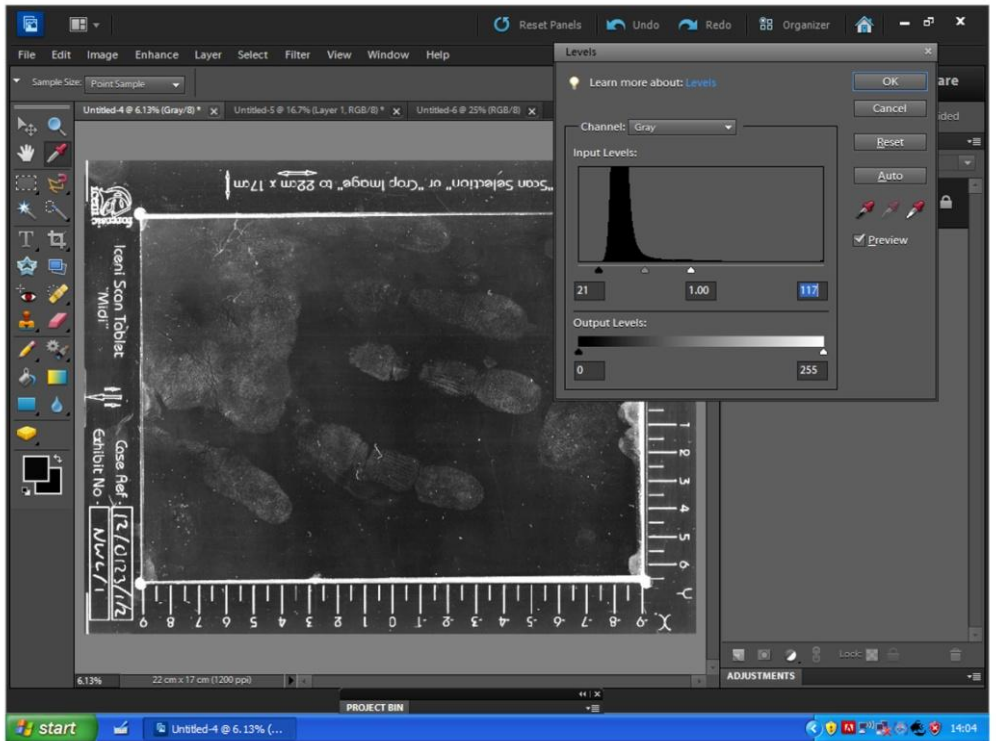
With your captured image now in imaging software (Adobe Elements shown) you can make further adjustments to the exposure if required - This is best done via the "Levels" tool

To access "Levels" in Adobe software press Ctrl+L - You may now click and drag the white and black pointer to the foot of the histogram graph, noting improvement in both contrast and exposure
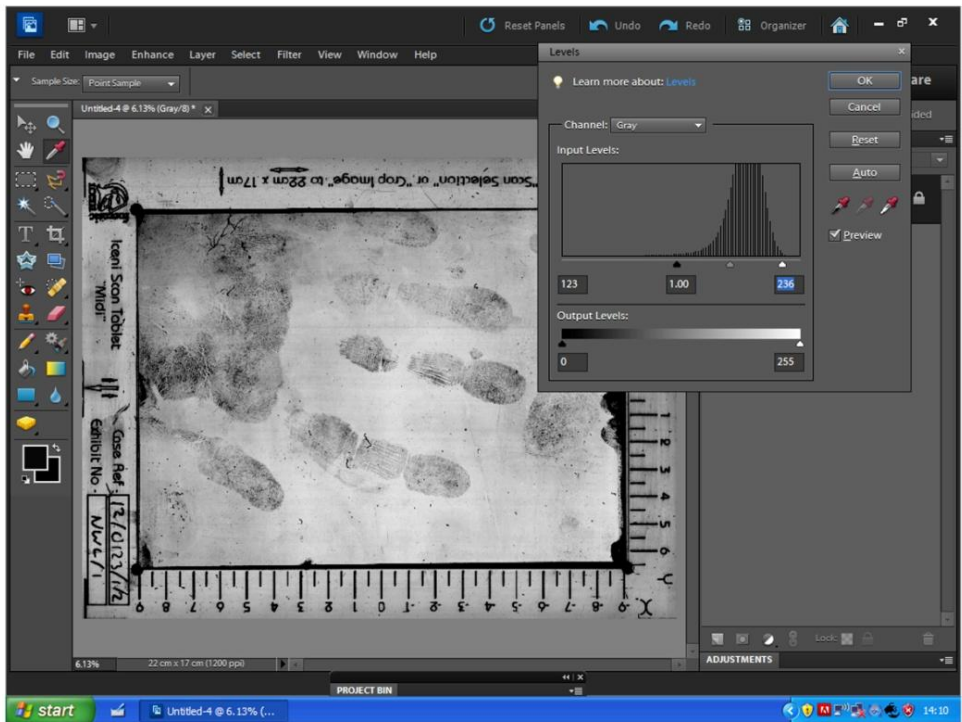
The image now needs to be "Inverted" so that the scanned gel surface detail appears black on a white background - In Adobe this can be done quickly by pressing Ctrl+I. Another adjustment post inverting with again the "Levels" tool will render the image ready for saving.
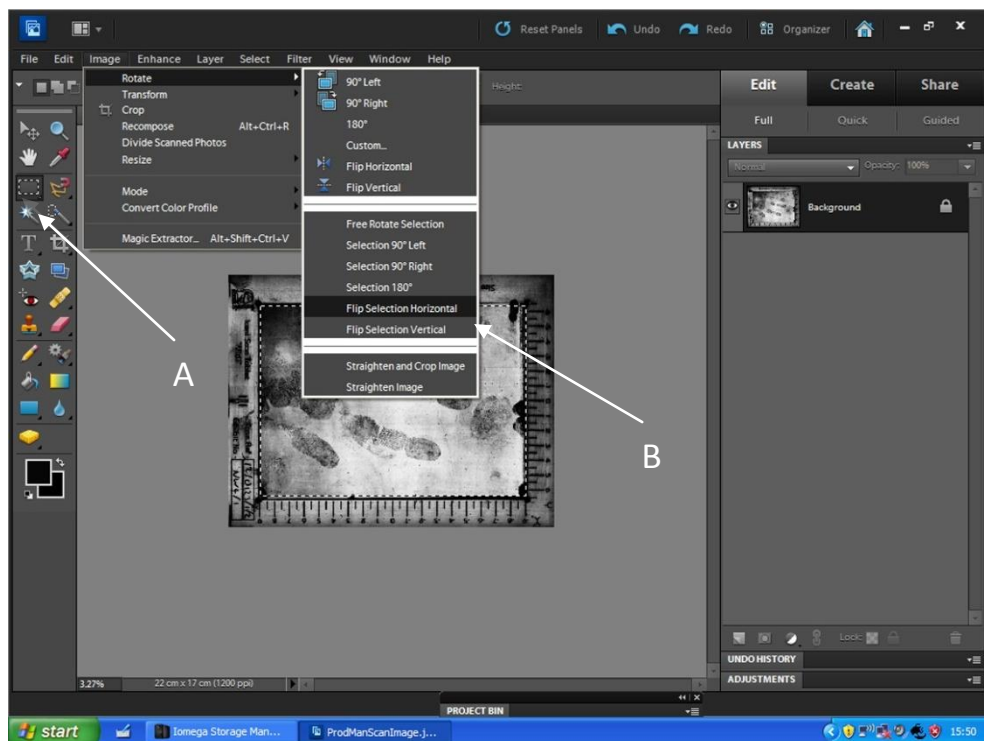
In most instances it will be neccessery to "Reverse" the image detail so that it appears right for direction. The best approach to do this is to create a selection over the image of the gel then flip that selection. In Adobe this can be done by clicking the "Selection" tool (A) then drag a box over the gel image only. Then, click "Image" - "Rotate" – "Flip Selection Horizontal or Vertical" (B). This method will only flip your selection, leaving the Scan Tablet image detail the right way round so that it can be refered to easily.

Final Image Scan

Using a Digital Camera

Preperation

- Connect Pump and selected Tablet as outlined in the Operating Section
- Locate suitable Camera with a high pixel count – If you are capturing using the "Mini Tablet" then 8 Mega Pixels will be suffiuciant though as a rule of thumb, higher the better
- Attach the camera to a rustrum/copy stand and have variouse lighting techniques available
- Alternatively, you may use a specialised Fingerprint Capture System

Photographing a Gel Lift

With the Gel Lift sitting within the Tablet and hose connections fitted, switch the pump on at the green switch – Observe Pump tone as vacuum is acheived
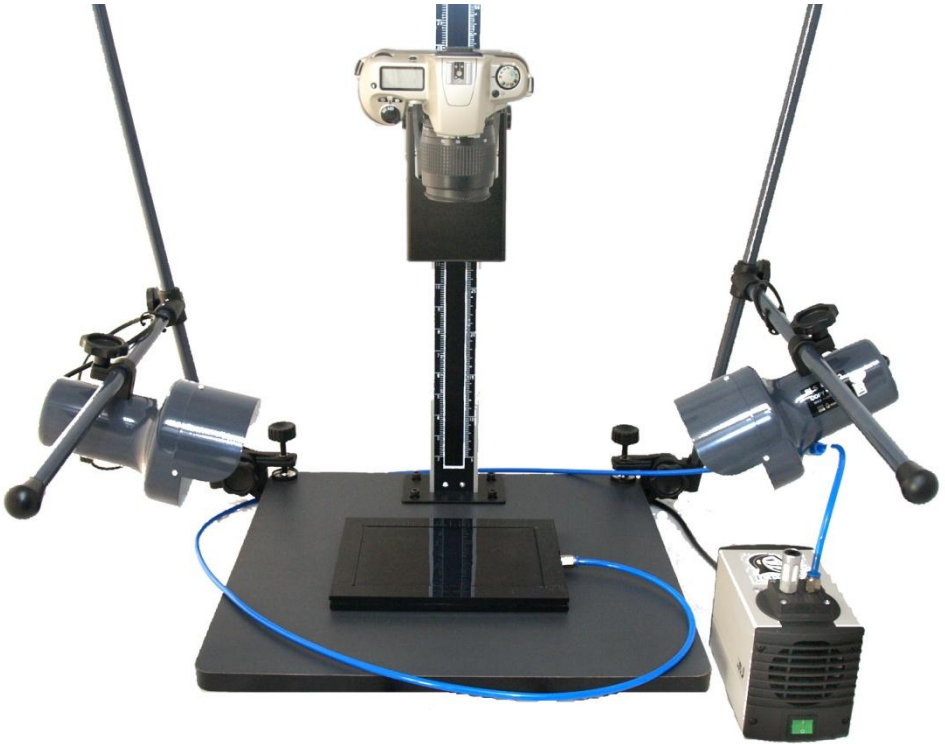
Demonstrated above is a camera secured to a copystand/rostrum with standard lighting.

With the gel lift secured on the Scan Tablet it can be placed on the copystand table. Frame the Scan Tablet within the viewfinder and adjust the lights so that they light the gel lift obliquely. I,E the light units are adjusted to a lower position than normal.

While the gel lift is held under vacuum the surface remains flat, allowing you to maximise your control over the gel's reflective nature, this can be further improved by using a polarising filter on the lens of the camera. You may wish to consider cross polarisation with a polarising filter on the lens and lights to maximise contrast. You will see the gel lift surface detail within the camera viewfinder – select a correct exposure and capture the image.
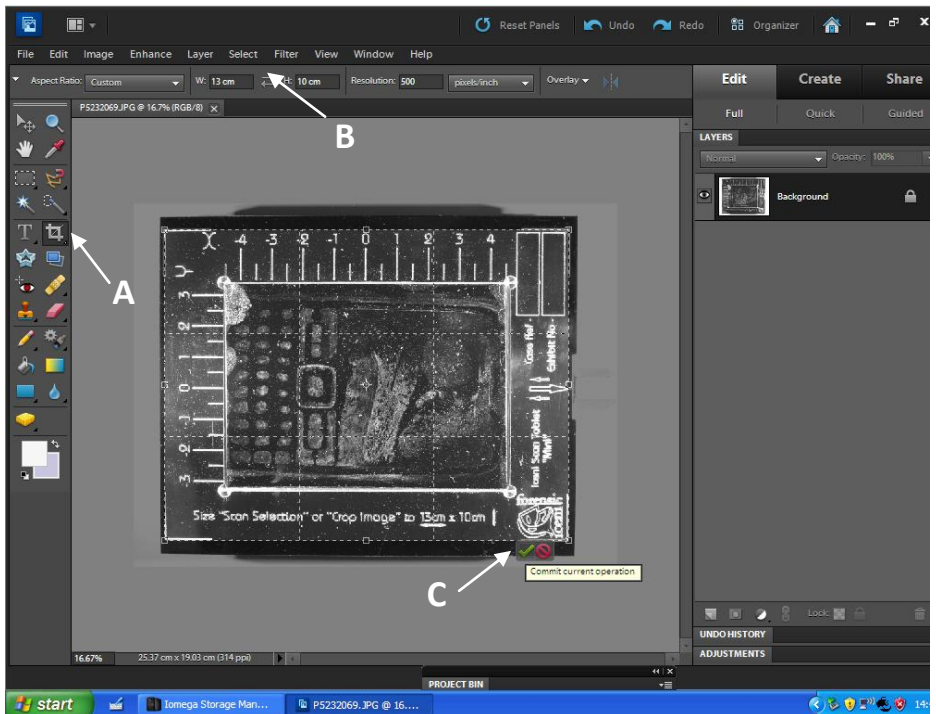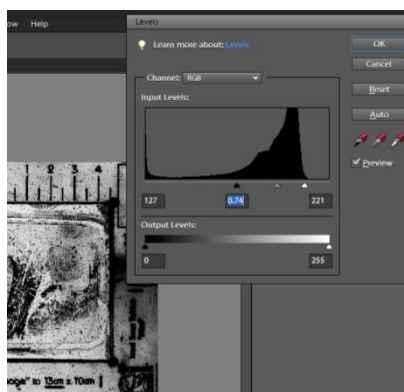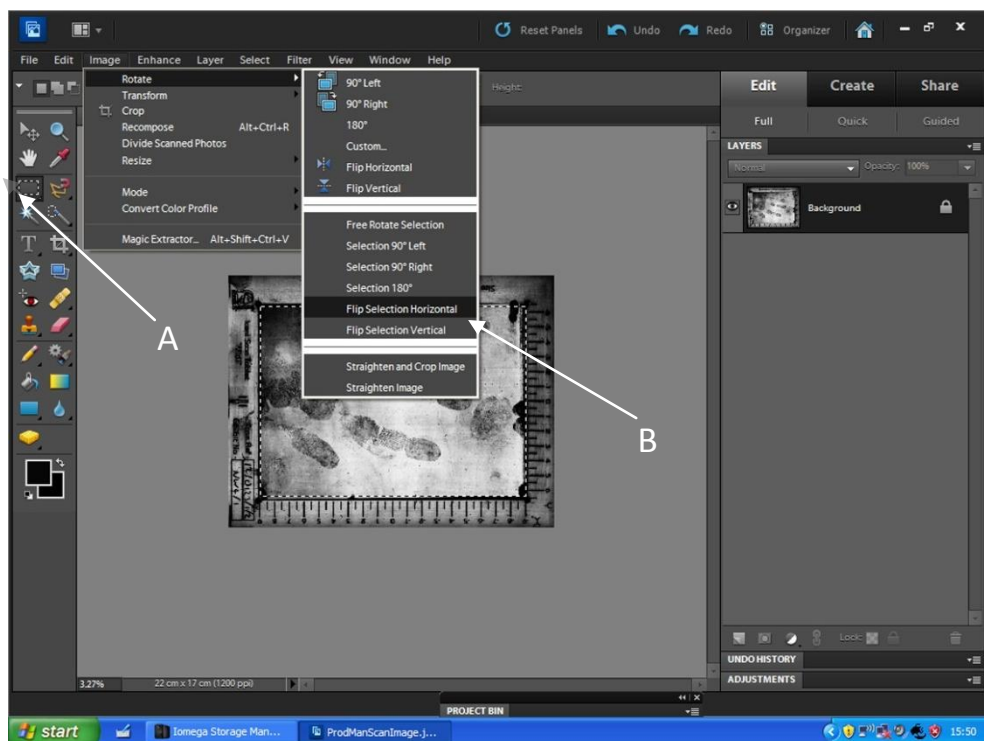
B

With your image imported into imaging software (Adobe shown above) you will now need to crop the image. In Adobe, click the "Crop Tool" (A). Once the crop tool has been selected you may now type in the dimensions displayed on the Scan Tablet choosing a DPI of you preference (B). This will creat an actual size image, making it easier for 1:1 reproduction. Crop the image so that the croping frame is positioned over the corner markers on the Scan Tablet then, confirm the crop by clicking the green tick(C).
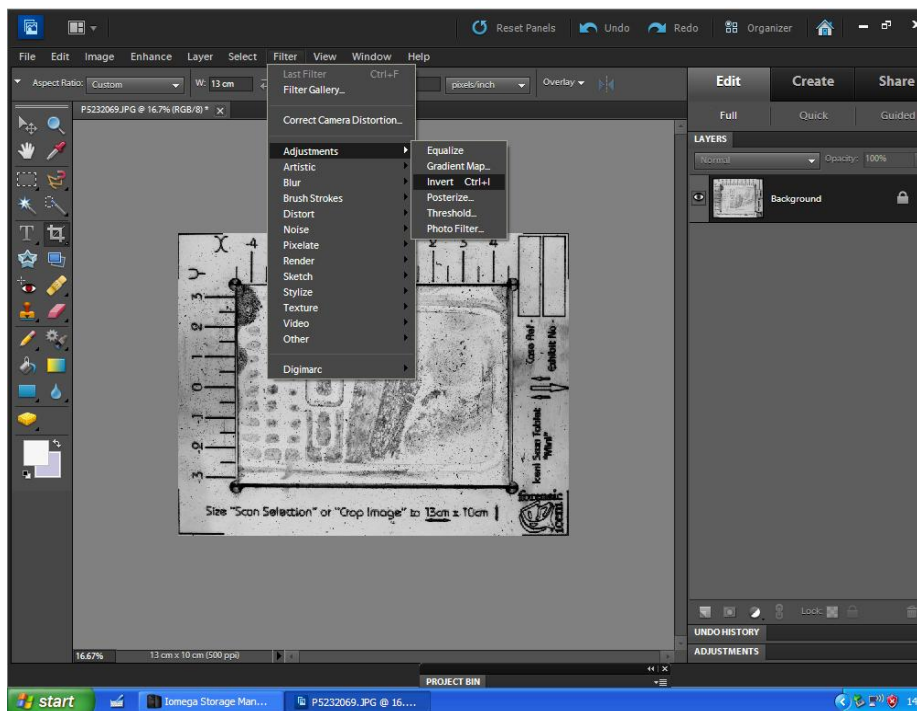
The image now needs to be "Inverted" so that the gel surface detail appears black on a white background - In Adobe this can be done quickly by pressing Ctrl+I

Once "inverted" you may now, if you wish, adjust the image exposure via the "Levels Tool" To access levels in Adobe software press Ctrl+L - You may now click and drag the white and black pointer to the foot of the histogram graph, noting improvement in both contrast and exposure.

In most instances it will be neccessery to "Reverse" the image detail so that it appears right for direction. The best approach to do this is to create a selection over the image of the gel then flip that selection. In Adobe this can be done by clicking the "Selection" tool (A) then drag a box over the gel image only. Then, click "Image" - "Rotate" – "Flip Selection Horizontal or Vertical" (B). This method will only flip your selection, leaving the Scan Tablet image detail the right way round so that it can be refered to easily.
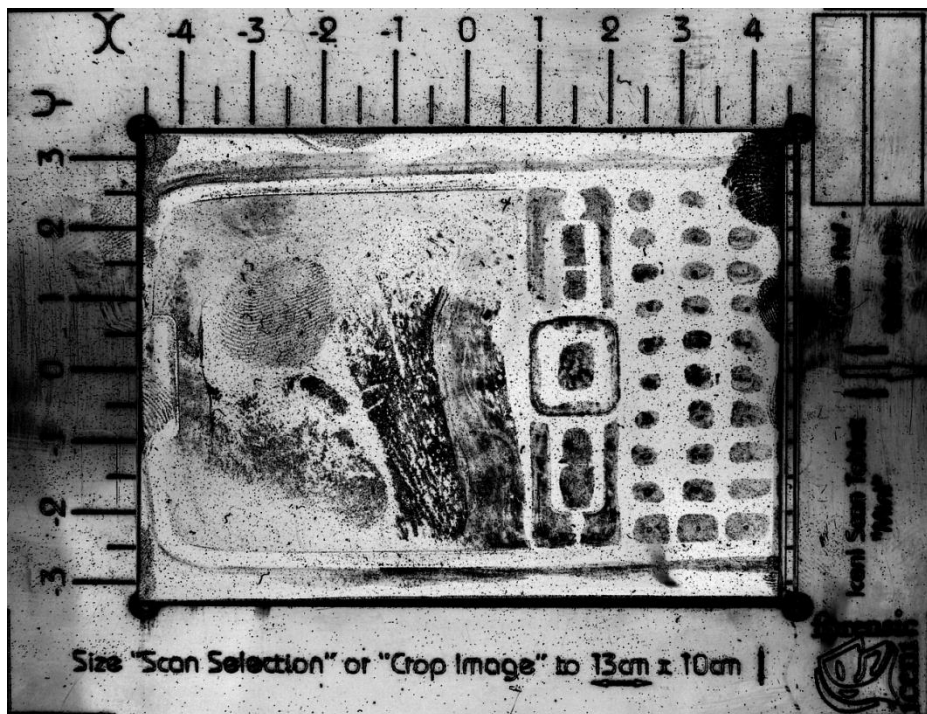
Final Image Scan

Frequently Asked Questions

1. **Q**   What type of scanner should I be using?

   A   It largely depends on your requirements – It is highly recommended that the user should be considering an A3 scanner of the highest specification, such as a graphic scanner in order to get the most out of the process. However, many standard scanners can give results suitable for anasysis.

2. **Q**   What DPI should I select when scanning?

   A   Regardless of the requirements of your final image, it would be recommended that you scan at between 800 to 1200 DPI to get the most detail. Once an image has been processed through you imaging software you may then "Resize" the image DPI for the given analytical or printing systems such as 500 or 400 DPI.

3. **Q**   What imaging software should I be using?

   A   There's no restriction on imaging software, as long as it performs the functions outlined in this user guide.

4. **Q**   Should I scan a Black Gel Lift without the acetate protective sheet?

   A   Yes – It would be highly recommended that the acetate sheet should not be re- applied post lifting until an image has been capture. Doing so may add unwanted surface detail and may also add addition fingerprints or contanminent to the gel surface.

5. Q Can I scan a White Gel Lift?

A Yes – Using White Gel Lifts implies that you may have used a powdering process or have lifted a contrasting latent mark. The acetate protective sheet can be replaced after lifting and removed before scanning. You may find however that it need not be neccessery to use the Scan Tablet Kit as the contrasting image can be captured conventionally.

6. Q How can I obtain 9cm x 6.5cm Gels?

A You will need to cut a 13cm x 18cm Gel into 4 separate pieces. Draw a centre line on both the long and short lengh using the Chinagraph pencil providing and cut along the lines as acurately as possible with a good pair or Tailor type scissors.

7. Q Can I used 13cm x 36cm Gels on the 18cm x 36cm Tablet?

A Yes – Included in the Kit is a rubber spacer that can be placed on the Scan Tablet alongside the 13cm x 36cm gel.

8. Q What type of digital camera should I be using?

A The best type of camera would be a Digital Single Lens Reflex (DSLR). These provide an optical "through the lens" (TTL) viewfinder giving the user better visibility of the gel surface proir to cature.

9. Q Why would I need the Iceni Scan Tablet Kit to capture with a digital camera?

A When Gel Lifts are left without the acetate protective sheet (See Q4) it will start to curl producing a curved surface. When the glossy surface is curved the possibilty of lighting the surface evenly is very much reduced. The Iceni Scan Tablet will hold the Gel back down flat allowing you to maximise the lighting possibilities evenly across the entire surface.

10. Q Can the Iceni Scan Tablet Kit be used as a vehicle based system?

A Yes – The vacuum pump will run on inverted power. The vacuum pump requires 60watts so the installation of the unit should also take into consideration the power that other systems running on the inverted circuit consumes. You will need a computer and flatbed scanner added to these considerations.

11. Q Can I use the Scan Tablet Kit to scan ESLA dustmark Lifts?

A Yes – The process works in very much the same way as imaging the black gel lifter. For best reasults, the ESLA foil should be precut to 18x36cm so that it fits the "Maxi" tablet. Any smaller than this then the foil may ripple under vacuum, adversly effecting the scanned image.

Trouble Shooting

Problem	Possible cause	Solution
Vacuum Pump is running but not restraining gel lift.	• Vacuum hose not connected. • Blocked hose filter. • Vacuum hose split. • Gel Lift not sitting flat enough. • Pump diaphrams worn.	• Connect hose to pump and Tablet as guided. • Check visually the vacuum hose filter for debree. It may be gently blown out in reverse direction with an air compressor. • Contact supplier for replacement hose. • Try to put pressure on the gel lift edges if the lift is badly deformed. • Contact the supplier for pump service or replacement
Vacuum Pump does not start.	• Mains plug is not plugged in. • Fuse has blown in either the plug or unit. • Overheat protection has activated.	• Insert the mains plug. • Check fuse on plug and unit, replace as required. • Allow the unit to cool for 30 minutes. (Make sure fan openings are not obstructed.

Problem	Possible cause	Solution
I cannot see any surface detail on a scanner preveiw.	• The scanner software is not powerful enough. • The scanner is not powerful enough. • Gel surface detail very faint.	• Adjust levels as described on page 12 and scan – Check for detail in imaging software. • Try a scanner with higher specification. A graphics grade scanner is most appropriate. • Try another method of capture such as outlined from page18.
I still get a lot of reflection on gel surface when capturing with a digital camera	• Poor envirnment or positioning of camera and copystand/ros-trum • Lights to close to gel surface	• Move the copystand/rostrum away from windows and turn of environmental lights. If reflection is still apparent then place black card just under the camera with a hole cut allowing the lens to protrude. • Move the copystand/rostrum lights further away from the gel surface keeping them as obleque to the gel as possible.
For all other questions or operational support please email support@iceniforensic.co.uk		