oXYgen Smart Tips

English

Digital Archiving with Creo Scanners

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www.creo.com/scanners

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oXYgen Smart Tips

oXYgen Smart Tips are designed to help you produce the highest quality results with your Creo scanner and oXYgen Scan software. Whether you're working on a Windows® or a Macintosh® platform, oXYgen Smart Tips address specific tasks in your workflow.

creo™

Contents

Introduction to Digital Archiving

Accurate and efficient methods of image archival are essential for the repurposing of your image collection into suitable, high-quality formats. This oXYgen Smart Tip contains best practices and recommended workflows for digitally archiving images with a Creo scanner and oXYgen software.

Problem: Analog Decay

Analog images (negatives, slides, and prints) are not permanent. Even the best storage methods cannot prevent eventual fading and color shifts. Any exposure to ultraviolet (UV) light contributes to analog-image decay.

Solution: Digital Archiving with Creo Scanners

Digital archiving is the state-of-the-art method for preserving a photographic image. A Creo scanner digitally records an analog image from film, photographic paper, photographic glass plate, or any other two-dimensional medium, and then preserves it as a digital file. With a correctly produced digital master, there are diverse output possibilities, and the potential value of each image increases. In comparison, with a traditional workflow, if you need an image for more than one output, you must scan it separately for every different output—a time consuming and costly endeavour.

Studies of digital archiving methods and results indicate that the higher the quality of a digital file, especially in terms of image resolution and color depth, the higher the potential for its successful use with future technologies. It is also recommended that you use a consistent workflow (particularly in terms of process and file format) for the digitalization of your image collection.

Determining Factors for Best Digital Archiving

Important: Archiving is an important and time consuming process which you may not have the opportunity to repeat for each image. It is recommended that you review the information in this section, consult with professional peers or contact a Creo representative, and conduct archiving tests on a varied selection of images using the workflows outlined in *Recommended Workflows* on page 3.

There are several approaches you can take to digitally archiving an image. Consider the following factors before deciding on the method that best suits your needs:

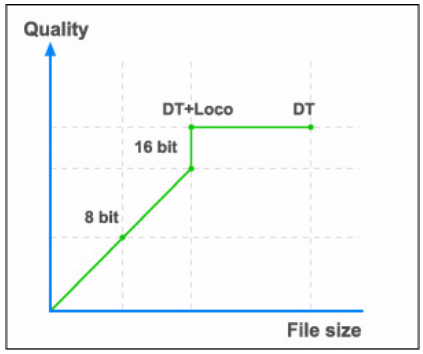
- File size and resolution:

Image Size	16-bit File Size (MB)	8-bit File Size (MB)
A5	25	12.5
Letter/A4	50	25
A3	100	50

  Use the information in the table to estimate total storage capacity required.

  For most usages, A4 at 300 dpi is a sufficient image size. However, some projects may require a larger image size such A3 or A2. File size also depends on the type of original you scan. For example, a grainy 35mm original may require a smaller file size than a 8 x 10 in. high-quality transparency or reflective fine-art print.

- File format: TIFF is recommended.
- Compression: The type of compression you use directly affects file quality.
- Standard workflows: DT (SOOM workflow), RGB 16-bit, RGB 8-bit, or CMYK. The workflow you choose may impact optimal productivity and file quality. For more information about workflows, see *Recommended Workflows* on page 3.
- Image quantity: Impacts storage capacity required and is a factor in determining the most suitable workflow.
- Future output: In light of rapid technological changes, large digital files are recommended to increase the probability of a file's potential use with future output types.
- Image quality and file size: Influenced by the workflow you use. The following illustration shows the general relationship between the two.



Recommended Workflows

Each of the following workflows produces a high-quality image file that meets standard graphic arts industry requirements. This section describes each of the following workflows and its advantages:

- Raw DT (16-bit RGB) workflow: includes creating and opening a DT file
- RGB 16-bit TIFF workflow
- RGB 8-bit workflow
- B/W 16-bit workflow: for black-and-white and grayscale originals

Raw DT Workflow (16-bit RGB)

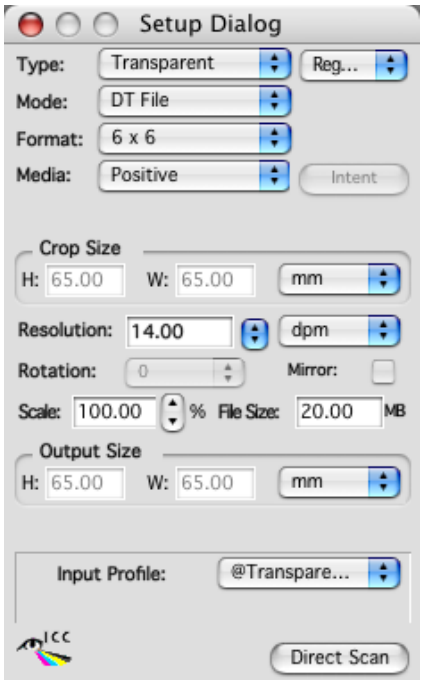
Creo offers a unique DT (digital transparency) workflow that takes into consideration future repurposing for high-quality output. A Creo scanner captures an analog image and then saves the raw, unmodified, digital data in a standard TIFF file that includes the scanner profile. This DT digital master (that does not include sharpening) serves as a substitute for the original, analog image.

You can open a DT file with oXYgen Open software and retouch it with Adobe® Photoshop® software (a plug-in is supplied with oXYgen software). For more information, see *oXYgen Smart Tips: Viewing and Retouching DT Files* at http://www.creo.com/global/products/scanning_systems/smart_tip_DT.htm.

The advantage of using the Raw DT workflow is the ease-of-use at the scanning stage since no image manipulation, namely toning and sharpening, is required. A scanner operator of any level of expertise can use this workflow.

Creating a DT File

1. Mount the original(s), ideally in the Creo mask provided with the scanner or in a user-defined mask. For more information about using masks, see the *oXYgen Scanning Application User Guide* and the *oXYgen Scanning Application User Guide Addendum*.
2. In oXYgen software, in the Setup dialog box, select the following parameters:



- From the **Type** list, select **Transparent** or **Reflective.** The available options are related to the **Media** type (**Positive** or **Negative**).
- From the **Mode** list, select **DT** File.
- From the **Input Profile** list, select a profile for the scanner you are using that suits the specific characteristics of the image collection. This input profile is embedded in the DT file.

3. In the Layout Display window, select the image you want to scan.
4. To scan the image, in the Setup dialog box, click **Direct Scan**. If you are scanning more than one image, use **Productive Group Scan**.
5. Save the images as DT files with LOCO compression for minimum file size without loss of quality.

Note: LOCO is an ISO standard for lossless compression of a continuous-tone image (ISO-14495-1/ITU-T.87).

Opening a DT File for Toning

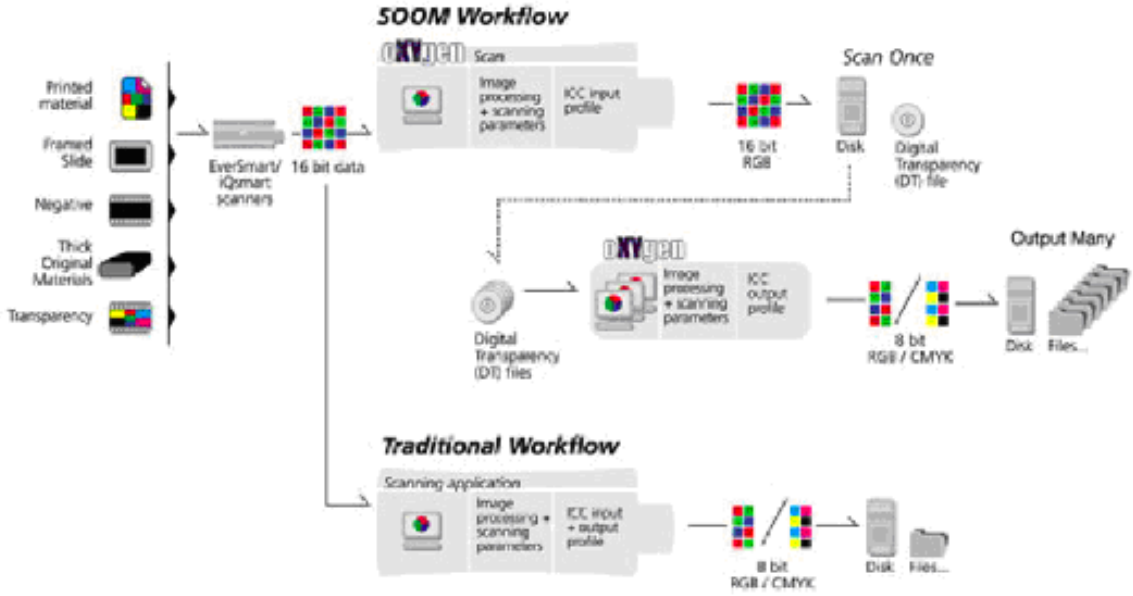
The DT file which contains the raw image data in RGB 16-bit digital format can be adapted for additional uses such as printing or web publishing using toning and color conversion.

To work on the DT file, use one of the following methods:

- Open the file in oXYgen Open software. In oXYgen Open, you work on the low resolution image and then can apply the changes to a batch of high-resolution image files. This is ideal for large collections. For further details, refer to the *oXYgen Scanning Application User Guide* and the *oXYgen Scanning Application User Guide Addendum*.
- Open the file with Adobe Photoshop using the Creo DT tone plug-in. You can use Photoshop tools on the image. For further details on using the Creo DT plug-ins, refer to *Using Creo DT Plug-ins* on page 14.

Using a DT File in the SOOM Workflow

The DT file is the key to the SOOM (Scan Once Output Many) workflow.

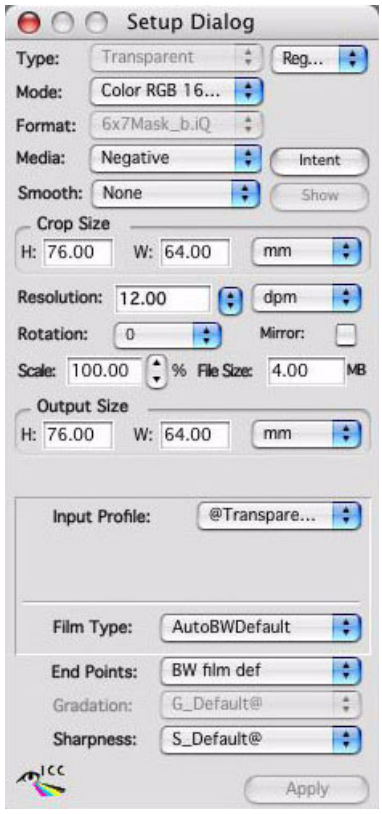


SOOM workflow compared to a traditional workflow

RGB Workflow (16-bit TIFF)

The RGB 16-bit TIFF workflow allows you to perform toning and image manipulation at the scanning stage, including sharpness and color corrections. The most common usage recently has been to archive the scanned images in RGB 16-bit, after performing required tone and color corrections manipulations. Sharpness is usually set to a minimum value or to none.

The advantage of this workflow is that you can use the data to convert your image to any required working space or printing space without further adjustment. Only minimal sharpness may be required.



1. In the Setup dialog box, from the **Mode** list, select **Color RGB 16-bit.**
2. From the **Input Profile** list, select an input profile for the scanner that you are using.
3. In the Setup dialog box, select other parameters as required.
4. **Preview** the images.

5. Use the software tools according to your requirements. The following tools that are available in RGB 16-bit scanning mode are:
   - **End Points:** Allows you to use the same tables for both 16-bit and 8-bit files.
   - **Sharpness**: Allows you to use the same tables for both 16-bit and 8-bit files.
   - **Color Correction**: You must save changes for them to be implemented in the image. A new input profile is created that includes the changes.
   - **LS Curves:** You must save changes for them to be implemented in the image. A new input profile is created that includes the changes.
   - **Input Gray Levels**: This tool enables you to control the gray levels of your image.
6. Click **Scan** to save the image.

   A 16-bit file is created.
7. In Adobe Photoshop software, open the image, and then adjust it according to your requirements.
8. If you want to convert the file to CMYK, in Adobe Photoshop software, select **Image>Mode>CYMK Color** or **Image>Mode>Convert to Profile**.
9. If you want to convert the file to 8-bit, in Adobe Photoshop software, select **Image>Mode>8 Bit/Channel**.
10. Save the file.

RGB Workflow (8-bit TIFF)

The RGB 8-bit TIFF workflow is similar to the RGB 16-bit TIFF workflow but with some significant differences:

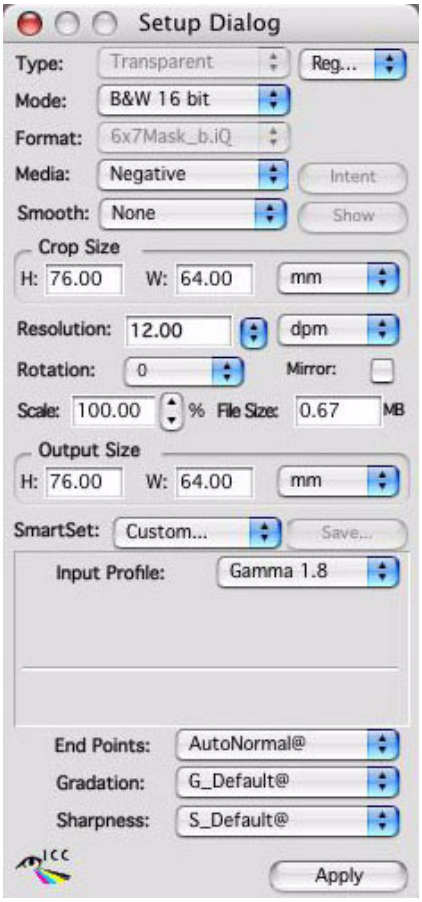
- It is best suited to users who are aware of future needs and who know the results of the workflow will suit those needs.
- Preferred workflow if you have limited storage capacity.
- Flexibility of color space: You can convert from the scanner color space to any RGB color space, such as Adobe 1998, or Pro Photo.

You can use a standard RGB workflow to create an 8-bit file. Make sure that it conforms with current industry standards and produces a small file. See the table about file size and resolution in *Determining Factors for Best Digital Archiving* on page 2.

B/W Workflow (16-bit TIFF)

It is recommended that you scan grayscale originals, such as black-and-white prints, and positive and negative transparencies, in B/W 16-bit mode.

In oXYgen software, in the Setup dialog box, select the following parameters:



- From the **Type** list, select **Transparent** or **Reflective.** The available options are related to the **Media** type (**Positive or Negative**).
- From the **Mode** list, select **B/W 16 bit**.
- From the **Input Profile** list, select the gamma input profile that best suits your needs. This profile is attached to the scanned image and affects image display on a monitor but not the image data in the file. When you open a scanned image in Adobe Photoshop software, it should appear the same as it does in Preview in oXYgen software.
  - **Gamma 1.8:** Enables viewing on a Macintosh system.
  - **Gamma 2.2:** Enables viewing on a Windows system.

Using a Naming Convention

Use the **Automatic Naming Setup** option in oXygen software to assign a prefix, suffix, and indexed numbering to the image files in a collection.

1. From the oXYgen menu, select **Setup>Automatic Naming Setup**.
2. To include a prefix:
   a. In the Automatic Naming Setup dialog box, click the top button.
   b. Click the **Prefix** check box.
   c. Enter a prefix.

Note: If you select **Default**, SCAN is automatically used as the prefix and 1 as the first number for indexing.

3. To include a suffix:
   a. Click the top button in the dialog box.
   b. Click the **Suffix** check box.
   c. Enter a suffix. The suffix appears after the indexing numbers in the filename (for example, if red is the suffix, then the filename might be house_1_red).
4. To set the first index number for a series of image, select the **Automatic Image Indexing** check box and then enter a number. Other images in the series are automatically numbered sequentially according to this first number (for example, SCAN_1, SCAN_2, and so on).

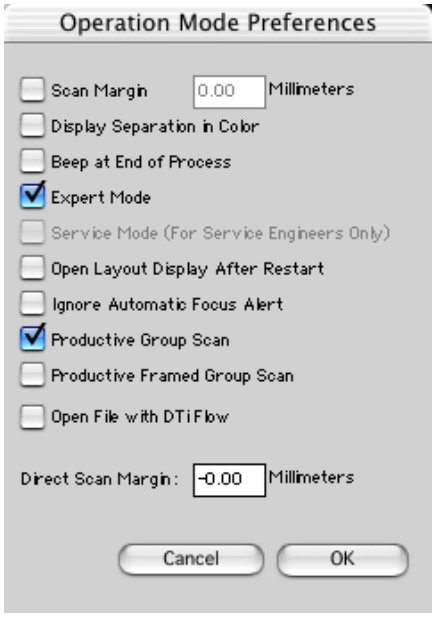
5. If you want the file format suffix (such as JPEG or TIFF) to appear as part of the filename, click the **File Format Suffix** check box. This is useful if you are intending to use the files on a Windows system.

Using the Productive Group Scan Option

In order to optimize scanning productivity, use the **Productive Group Scan** option to shorten the procedure for scanning multiple files.

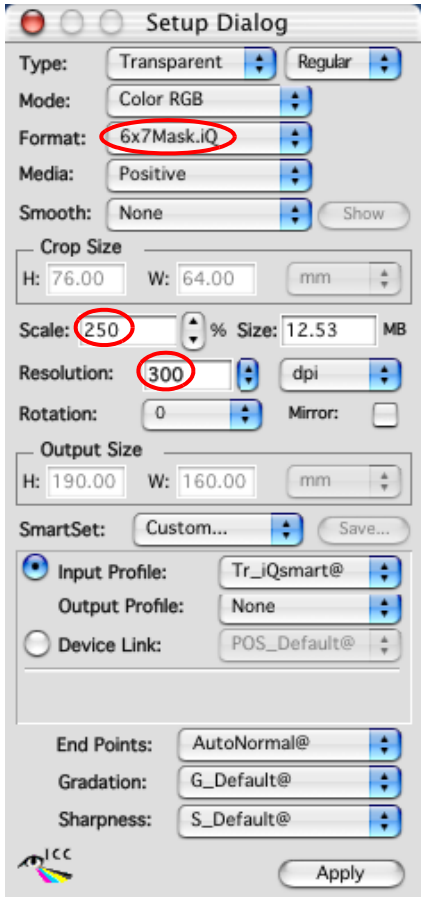
Attention: Using the **Productive Group Scan** option may affect the color quality of the images in a group scan.

1. From the **Setup** menu, select **General Preferences>Operation Mode**.



2. In the Operation Mode Preferences dialog box, click the **Product Group Scan** check box.
3. Mount the slides in the default 6 x 7 cm mask.

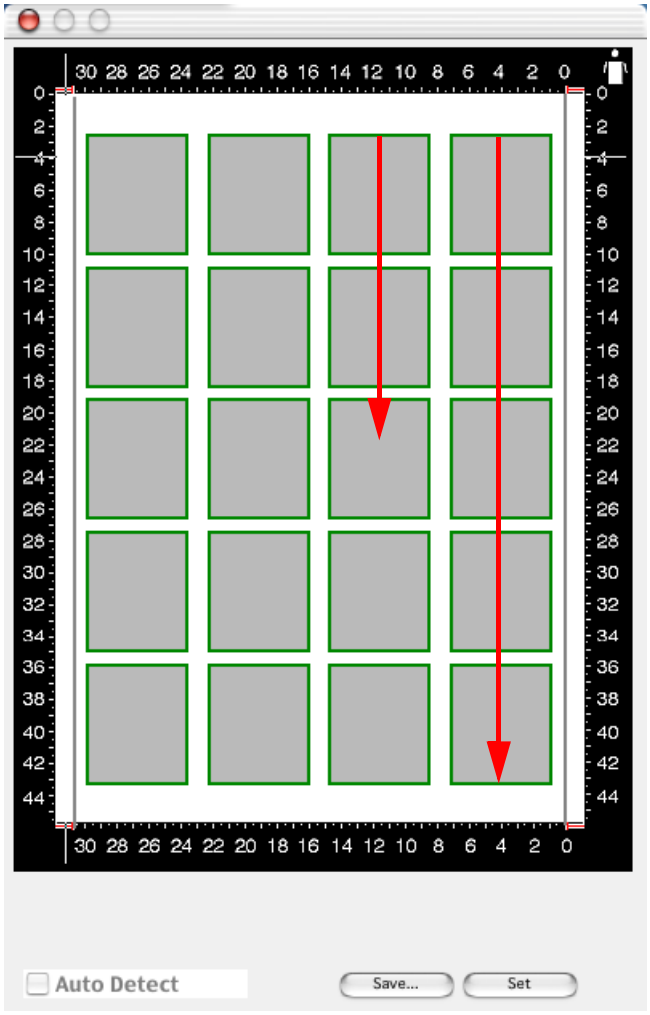
4. In the Setup dialog box, select the settings you require. Use benchmark settings for optimal results.



Benchmark settings circled

Note: If you are using an EverSmart® Select or EverSmart Supreme scanner, in the **Format** box, select **6x7Mask_Productive**.

The selected mask appears in the Layout Display window.



Mask in Layout Display window (with scanning order indicated)

5. Click the **Preview** icon. The preview thumbnails appear in the **Queue** window. The first image opens automatically.

Note: The Preview scan begins at the top of the right column, from top to bottom, and then continues at the top of the next column to the left.

6. Edit the image according to your requirements (for example, color and sharpness settings).
7. On the **Scan** palette, click the **Scan** icon.
8. In the Save Scan As dialog box, type a file name, select a location in which you want the file to be saved, and then click the **Scan** button. The image is scanned.
9. In the Preview Browser, click the next preview thumbnail.

10. Repeat steps 6 and 7 for each image.

Notes:

You can proceed with editing and scanning the next preview image without having to wait for the completion of the current scan.

Final scans are performed in the same order as preview scans. For more information, see the note in step 5 of this procedure.

Using Creo DT Plug-ins

The Creo DT and the Creo DT Tone plug-ins together provide a complete solution for working with DT files:

- Creo DT plug-in: With this plug-in, you can manipulate DT (raw, 16-bit raw, digital transparency) files in Adobe Photoshop software and then proceed directly to output.
- Creo DT Tone plug-in: With this plug-in, you can retouch a DT file in Adobe Photoshop software and then reopen the file in oXYgen Open software.

Creo DT Plug-in Workflow

1. Make sure the Creo DT plug-in is installed in **File Format** folder, located in the Adobe Photoshop **Plug-Ins** folder.
2. In Adobe Photoshop software, select **File>Open**.
3. In the Open dialog box, from the **Format** list, select **Creo DT**.
4. Retouch the file.
5. Save the file in **Creo DT** file format.
6. To continue working on the file, open it in oXYgen Open software.

For more information about DT files, see *oXYgen Smart Tip: Viewing and Retouching DT Files* at http://www.creo.com/global/products/scanning_systems/smart_tip_DT.htm.

Creo DT Tone Plug-in Workflow

1. Make sure the **Creo DT Tone** plug-in is installed in **File Format** folder located in the Adobe Photoshop **Plug-Ins** folder.
2. In Adobe Photoshop software, select **File>Open**.
3. In the Open dialog box, from the **Format** list, select **Creo DT Tone**. The file opens in 16-bit RGB color mode.

Note: Sharpness is not applied to the file.

4. Modify the file.
5. Convert the file to 8-bit RGB or CMYK, as you require.
6. Save the file.

WARNING: If you open a file using the **Creo DT Tone** plug-in, save the file as a Creo DT file, and then open it with oXYgen Open software, the file may become corrupted.

Special Considerations for Photographic Glass Plates

Overview of the Photographic Glass Plate

The use of photographic glass plate negatives began around 1851. The first type of photographic glass plate negative, called the *wet plate* negative, was in use from 1851 until approximately 1880. This type of negative can be identified by looking at the edge of the emulsion where its coating is often uneven. The wet plate negative was replaced in approximately 1880 by the *dry plate* negative which was characterized by a silver-gelatin emulsion applied by the manufacturer. This processed emulsion on a dry plate negative is black, even, and smooth.

A photographic glass plate negative often contains a significant amount of detail and tone values due to the quality of the emulsion. The size of a photographic glass plate negative was typically 4 x 5 in., 5 x 8 in. or 8 x 10 in., although larger sizes were not uncommon.

Images on photographic glass plates are of historical importance and yet suffer from decay as do other analog images. Even the best storage methods cannot prevent them from fading and shifting in hue. Improper storage and exposure to ultra-violet light expedites this degradation process. Since any handling of an analog collection can do damage to the originals, digital archiving of analog content is a crucial role for museums, libraries, and others concerned with historical image preservation.

Benefits of a Creo Scanner for Archiving Photographic Glass Plates

Since photographic glass plates are often larger than 4 x 5 in., collections are often archived using a Creo high-resolution scanner that uses XY stitching technology. With XY stitching technology, originals are scanned at with superior image depth of 16-bits per color, at high-resolution regardless of their size. With consistently high optical resolution of up to 5,600 dpi, a Creo high-resolution scanner is ideal for digitally archiving originals on film, print or photographic glass plates. The Creo DT (digital transparency) workflow provides a premium solution for digitizing image archives with future repurposing in mind.

Recognizing Types of Photographic Glass Plates

There are three types of photographic glass plates:

- Single-glass: Emulsion is on one side only. Most photographic glass plates are of this type.
- Double-glass: Emulsion is between two glass plates. In this case, it is not important which side you scan. This is a rarer form of photographic glass plate.
- Mounted: The photographic glass plate is mounted in a metal or cardboard frame, similar to how a 35 mm transparency is mounted.

Digital Archiving Procedures

This document provides you with some basic procedures that will assist you in optimizing the digital capture of your photographic glass plate originals.

Locating the Emulsion Side

For quality scanning, it is essential that you locate the side of the photographic glass plate that is coated with emulsion that contains the actual image.

With a single-glass photographic glass plate, as with today's transparencies and negatives, you can detect the emulsion by holding the original on a slight angle under direct light. The emulsion side is dull with a slightly posterized appearance. The emulsion side must be placed face-down on the scanner's base glass.

In the case of a double-glass photographic glass plate, it does not matter which side is placed face-down on the scanner bed. However, in the oXYgen software, you may need to select Mirror to ensure that the image is not inverted. For more information, see the *oXYgen Scanning Application User Guide* and *oXYgen Scanning Application User Guide Addendum*.

Cleaning a Photographic Glass Plate

WARNING: Do not use a glass cleanser that contains ammonia. With repeated use, such a cleanser can affect the scanner's anti-Newton ring coating. Alcohol is acceptable in the glass cleanser. Always check the contents of the glass cleanser before using it on the photographic glass plate or on the scanner glass.

1. Make sure you have the proper supplies and materials available for cleaning.
2. Locate the emulsion side in the case of a single-glass original.
3. Using a cloth dampened with glass cleaner, gently wipe the non-emulsion or non-coated side of the glass.

WARNING: Do not wipe the emulsion side or you could damage the original. Lint and dust can be gently removed from the emulsion side using a soft brush.

Only blow air on the emulsion side if you have determined that the emulsion is stable. If you use compressed air, make sure that you release some air from the dispenser before you use the dispenser on the original.

Do not use compressed air directly on the scanner base glass. It could push dust and lint particles into the scanner body and onto the optics.

Tip: To turn over a photographic glass plate, use two lint-free wipes.

Mounting a Photographic Glass Plate

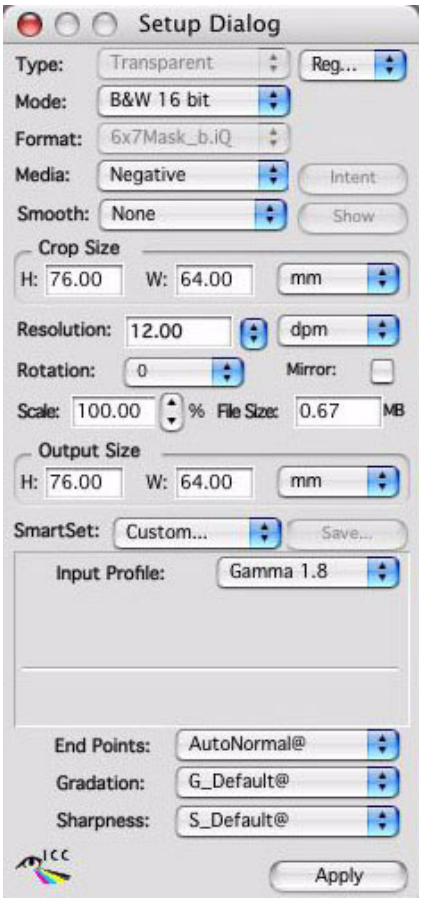
Important: Follow the guidelines in this section to prevent damage to the original and ensure a quality scan.

- For scanning on a Creo scanner, the maximum thickness of a photographic glass plate is 5 mm (slightly less than a quarter of an inch).
- To protect a delicate original from scratches, place a sheet of oil-mounting mylar between the scanner base glass and the original, making sure you do not cover the butting target-area.
- Wear lint-free cloth gloves to prevent fingerprints and other residue from contaminating the originals.
- Always use spacers before closing the top cover of the scanner. Spacers prevent the tension glass in the top cover from compressing and possibly damaging the original.

Tip: For easy-to-use spacers, cut open the scanning area of a user-defined mask, leaving only the borders. Place an adhesive bumper on each corner of the mask. You can use a standard rubber footing from an electronics store for this purpose.

Setting Scanning Parameters

Before you begin to scan using the oXYgen software, set parameters in the Setup dialog box that are best suited to the photographic glass plate original.



Mode

There are three scanning mode options:

- **DT**: For advantages of using DT mode, see *Raw DT Workflow (16-bit RGB)* on page 3.
- **B/W 16-bit**: Recommended for scanning black-and-white, negative photographic glass plates. For details, see *B/W Workflow (16-bit TIFF)* on page 8.
- **RGB 16-bit**: Recommended if you prefer to scan a black-and-white original as an RGB 16-bit file. If you select this mode, make sure the default B/W film type is selected.

Regular / Frame

- For a single-glass original, in the upper right section of the Setup dialog box, select **Regular**.
- For a double-glass or mounted original, in the Setup dialog box, change **Regular** to **Frame**. Frame performs auto focusing on the original to achieve maximum optical sharpness.

Optical Resolution and File Size

Maximum optical resolution with the EverSmart Supreme scanner is 5600 dpi which captures all the image quality and details of the original. In fact, in most cases, there is no need to use an optical resolution greater than 2000 dpi. Optical resolution and file size are directly related. Consider the storage capacity available to you as well as your future reproduction needs before deciding on which optical resolution to use.

Sharpness

Do not apply sharpness. In most cases, there is not need to use a sharpness table when scanning a photographic glass plate.

Input Profile

See *B/W Workflow (16-bit TIFF)* on page 8 for details about the input profiles you can use when scanning a photographic glass plate.

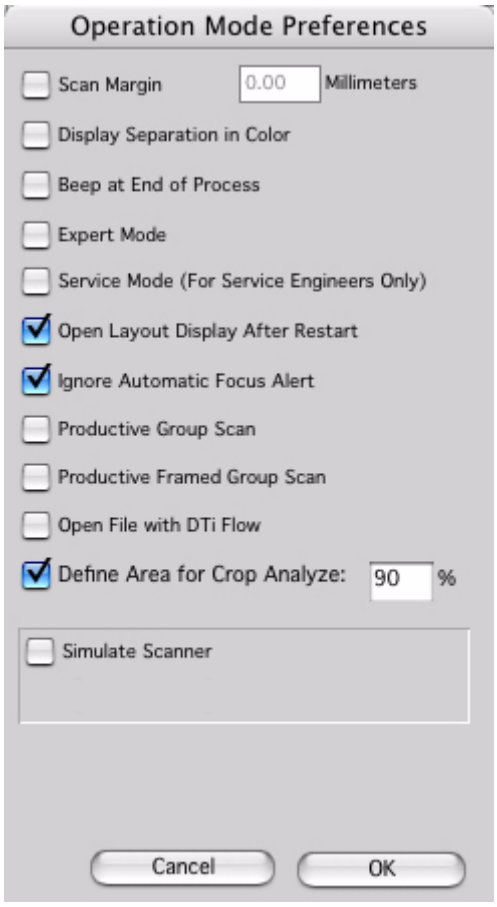
Using a Naming Convention

For information about automatically naming scanned files, see *Using a Naming Convention* on page 9.

Crop and Image Analysis

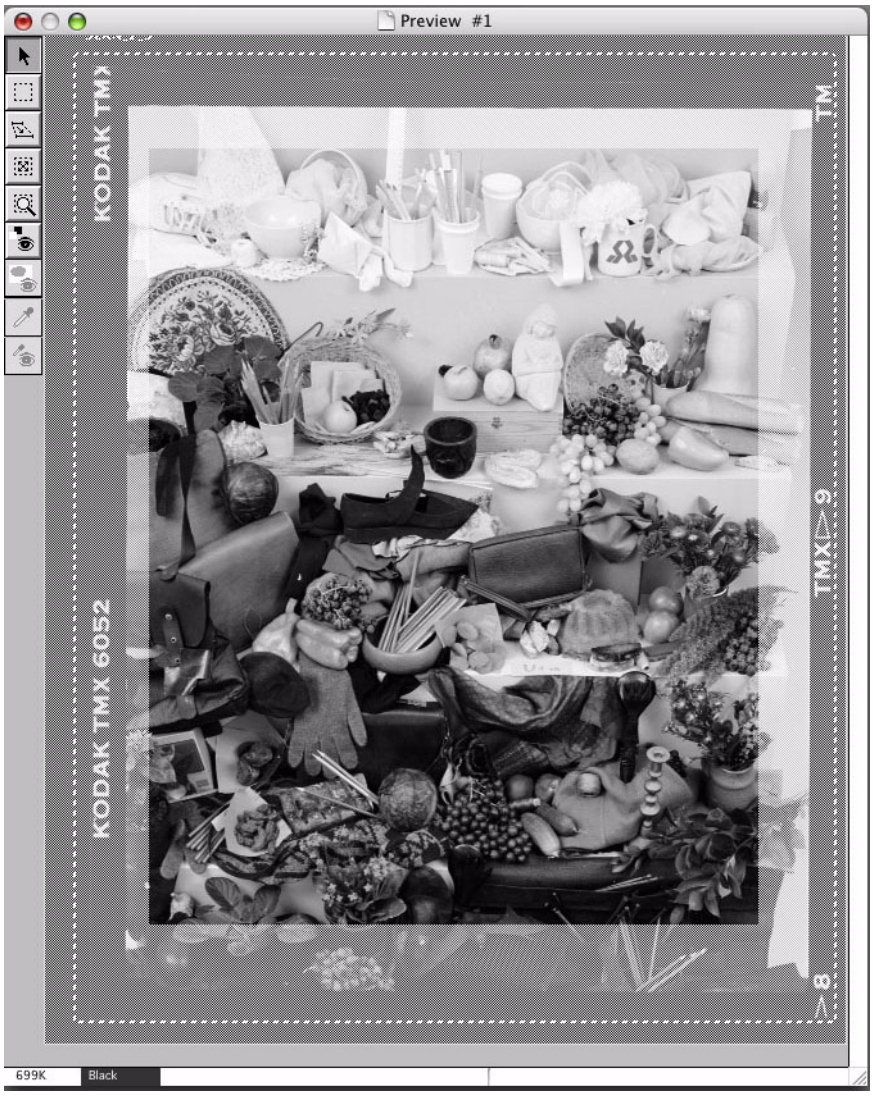
As an archivist, it is will want to capture the entire image as it is displayed in the Preview as well as its crop. However, since the original may not have square edges or regular sides, the tonal range of the entire image and the crop may be analyzed differently. To prevent inaccurate analysis of the image and inconsistent tonal range in the scanned files, use the following procedure:

1. From the oXYgen menu, select **Setup>Operations Modes**.



2. In the Operation Mode Preferences dialog box that opens, select **Define Area for Crop Analyze** check box and then enter a value within the range 40-100%. This value represents the crop area used for image analysis as a percentage of the entire crop. You can specify that only part of the crop is used for the crop analysis. If you do not use this option to define a crop area, the default for the crop analysis is 90%.

In Preview, you can view the area that is included in the image analysis.



To redefine the crop analysis area in Preview:

1. On the keyboard, press SHIFT to view the area included in the image analysis.
2. If required, use the arrow keys to manually adjust the area.

Scanning

After you have set all relevant parameters and you are satisfied with the results in Preview, you are ready to scan the original.

➢ On the **Scan** palette, click the **Scan** icon to open the Scan dialog box.