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DocuColor® 7002/8002
Decurler Adjustment

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Changes are periodically made to this document. Changes, technical inaccuracies, and typographic errors will be corrected in subsequent editions.

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1 Overview

Before you begin

Tip

Please read **all** the Decurler information before using the Decurler E Table Settings (E1 - E6) procedure.

When paper is exposed to heat, the paper loses moisture and curls toward the heat source. High toner coverage jobs tend to curl more than low toner coverage jobs. The system tries to reduce this by using mechanical devices within the paper path called Decurlers.

Paper curl is caused by many variables, including, but not in any particular order:

- The weight of the paper and whether it is coated or uncoated.
- The amount of dry ink/toner and the area being covered on a sheet: the heavier the coverage, the greater the tendency to curl.
- How the paper is loaded in the tray. Make sure you load the paper as instructed on the ream wrapper.
- The atmospheric conditions of the room where the paper is stored and where the printer is located, especially those related to humidity and temperature.
- The heat generated during the fusing processes.

Your system is designed with several automated settings to control curl. When using these settings the machine automatically sends paper through the proper Decurler:

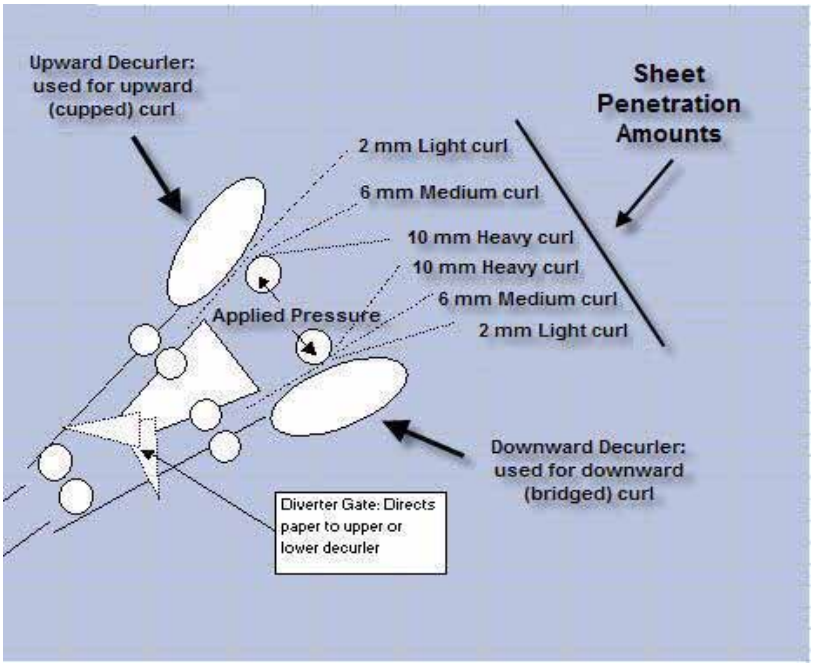
- System Default: Automatically determines the amount of pressure needed at the different decurlers in order to reduce the output curl of the paper.
- Paper Type A, B, C, and D settings: Preset Decurler settings, which are manually selected as an alternative to the System Default setting. See “Decurler Paper Type A-D Settings” on page 2-1.

Tips

- While paper curl is caused by many variables, it is important to understand that the preset and custom Decurler profile settings use lookup tables for curl control that are based on the job's percentage of toner area coverage and the printer's humidity values, only.
- With some print jobs, the output prints still may be curled more than you desire even after using the Decurler Paper Type A-D settings. In those cases, use the Decurler E Table Settings feature to compensate for paper curl in your prints. The Decurler E Table settings are based on job type and percentage of toner area coverage. These settings are manually entered. See "Decurler E Table Settings" on page 3-1.
- If a Decurler profile setting is changed, it remains at that setting until changed again manually. As an example, if you decide to use the Paper Type B Decurler setting, the setting will remain at Paper Type B until you change it to another setting.
- It is important to remember that a successful Decurler setting used today may not be the same setting that you would use on another day for the same file. This is especially relevant if the room in which printer is located experiences changes in temperature and humidity.

Decurler Paper Path

The Decurler has both upper and lower adjustment arms that apply pressure to the paper based on system defaults, selections made on the Decurler Setup screen (Paper Type A-D settings), or based on entries made on the Decurler E Table Settings screen. The degree of pressure is applied independently to the upward and downward Decurler arms.



2 Decurler Paper Type A-D Settings

Overview

If paper curl is a problem, using one of the preset Decurler Paper Type A-D Profile Settings usually eliminates the problem. However, due to the broad range of paper variables, image coverage, and environmental factors, these default settings may not result in satisfactory performance.

Tip

Visit the www.xerox.com web site and refer to the latest **Recommended Materials List** (RML) for your digital press:

- To determine if Xerox has tested your paper type and weight
- View the recommended Decurler Paper Type A - D settings for particular paper types.

The following table shows examples of the Decurler A - D Profile settings for particular stocks, which were taken directly from the Recommended Materials List for the DocuColor 7002/8002:

Decurler A - D Profile settings examples

Paper Type	Decurler Setting
Xerox Digital Color Supreme Gloss 8pt. Cover C1S	A
Xerox Color Xpressions +, 32 LB	B
Xerox Digital Color Parchment White, 24 LB.	A
Xerox Digital Color Elite Gloss 100# Text	A

Note

The settings recommended in the “Recommended Materials List for DocuColor 7002/8002” were developed from testing a wide range of paper samples, percentage of toner area coverage, and environments. The outcome of this testing is the preset parameters shown in the list, and these parameters refer to how particular papers interact with the digital press decurling system.

If the System Default setting is not correcting curl, then you can use one of the Decurler Paper Type A - D settings, See “Decurler Paper Type A-D procedure” on page 2-2. For example:

- If the System Default is not correcting curl, select Decurler Paper Type A.
- If Decurler Paper Type A is not correcting curl, select Decurler Paper Type B.
- If Decurler Paper Type B is not correcting curl, select Decurler Paper Type C.
- If Decurler Paper Type C is not correcting curl, select Decurler Paper Type D.
- If System Default and Decurler Paper Type A, B, C, and D do not correct curl, you can use the Decurler E Table Settings, See “Decurler E Table Settings” on page 3-1.

Decurler Paper Type A-D procedure

If after using the System Default setting paper curl is still unacceptable, select an alternate Decurler Paper Type A - D setting:

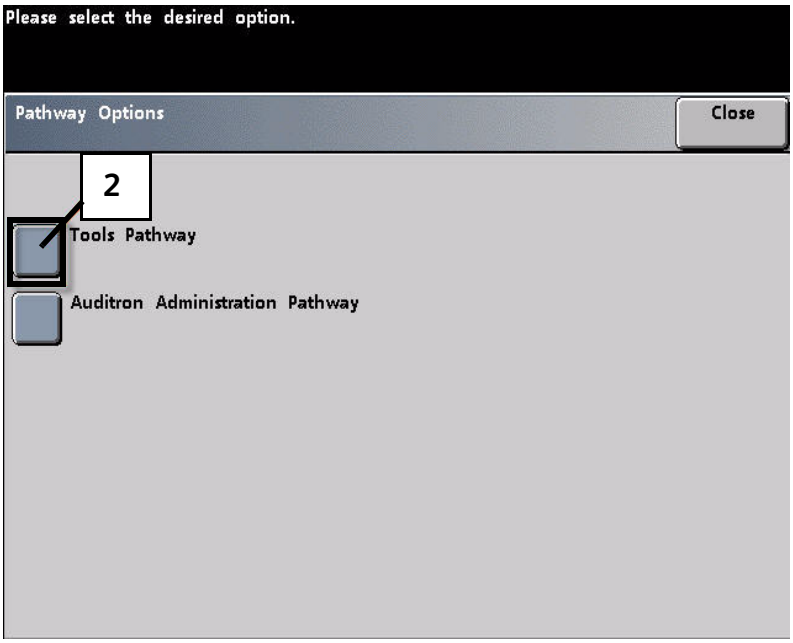
1. At the controller, logon to the Tools menu as Administrator.
   a. Press the **Access** button.
   b. Enter the Administrator password.

Note

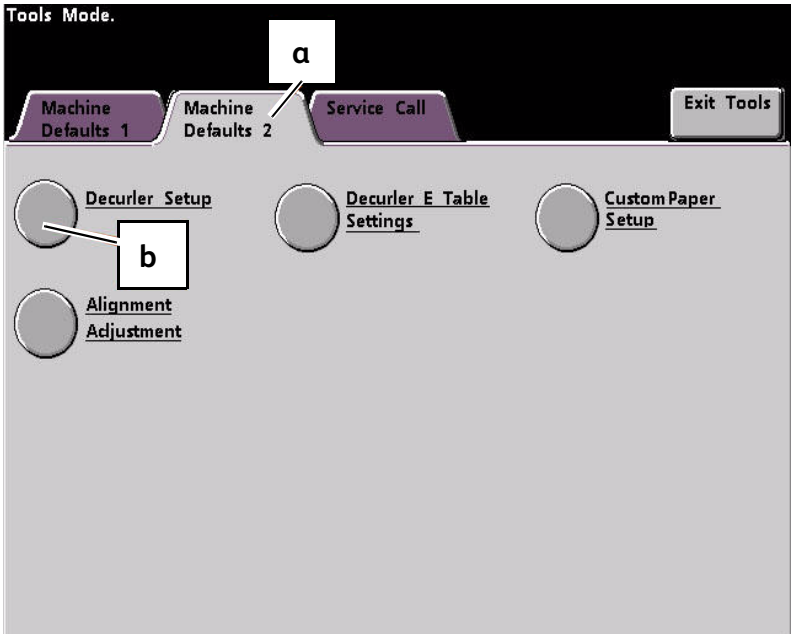
The default Administrator password is **11111**. This password may be changed to fit your needs.

   c. Press **Enter**.

2. The Pathway Option screen opens. Select the **Tools Pathway** button.



3. From the Tools Mode window, press:
   a. **Machine Defaults 2** tab.
   b. **Decurler Setup** button.



4. The Decurler Setup screen opens.
   a. From the Paper Tray menu, select the tray that contains the paper you are using on the job. The default selection is Tray 1.

   Note

   If you have an optional SFM attached, Trays 3 and 4 also appear on this screen.

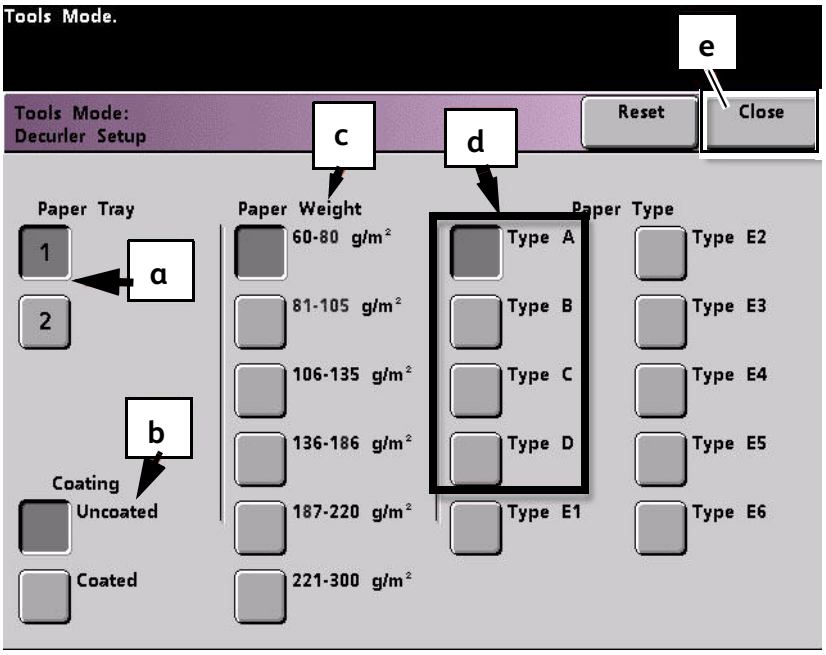
   b. Select the job's stock coating: **Uncoated** or **Coated**.
   c. Make a selection from the **Paper Weight** range menu.

d. The default Paper Type is automatically applied by the printer for the Paper Tray, Coating and Paper Weight values you entered. Select an alternate Paper Type from Paper Type A through Paper Type D to change the amount of decurling applied. As an example, if the system automatically selects Type B, select Type C.

Note

The Type E settings are custom entered values that are explained in Chapter 3. While the Type E settings can be selected, they need to be programmed prior to selection. See “Decurler E Table Settings” on page 3-1.

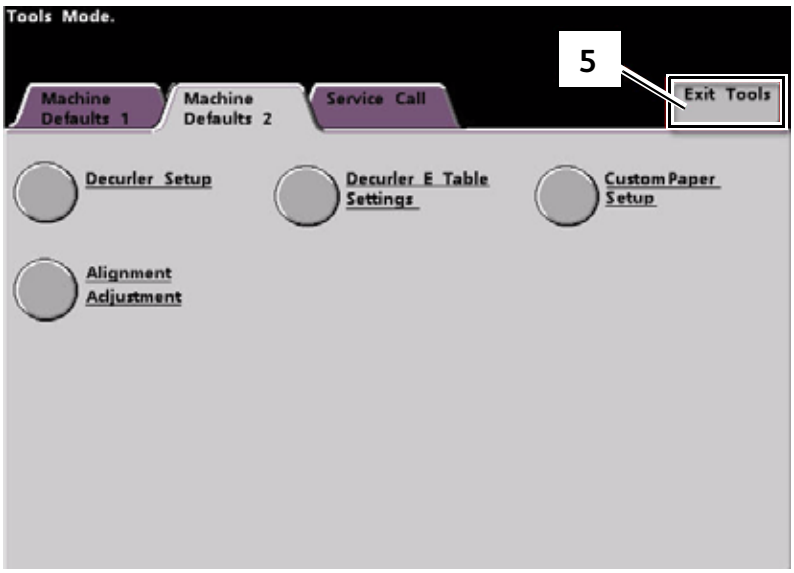
e. Touch the **Close** button to save your selections and return to the Machine Defaults 2 screen.



Note

Touch the **Reset** button on the *Decurler Setup* screen to return to the settings established when you first accessed the screen. As an example, if the system automatically selected Type B and you changed it to Type C, the system will return the setting to Type B.

5. Exit the Tools Mode.



6. Run a few test prints to determine if the curl was reduced to a satisfactory level.
   a. If the curl is eliminated, continue running your prints using the specific Decurler Paper Type A - D setting.
   b. If curl remains excessive, try another Decurler Paper Type A - D setting.
   c. If the curl continues after using **each** Decurler Paper Type A - D setting, continue to the Decurler E Table Settings profile procedure. See “Decurler E Table Settings” on page 3-1.

3 Decurler E Table Settings

Overview

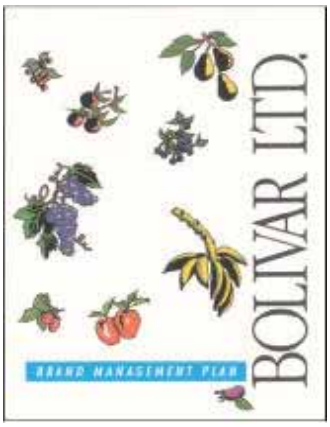
While the system is programmed to correct for curl under most conditions, there may be instances where the pre programmed settings (System Default and Paper Type A - D) may not meet your curl requirements. Using the Decurler E Table Settings allows you to enter a percentage of toner area coverage range to help eliminate curl.

Notes

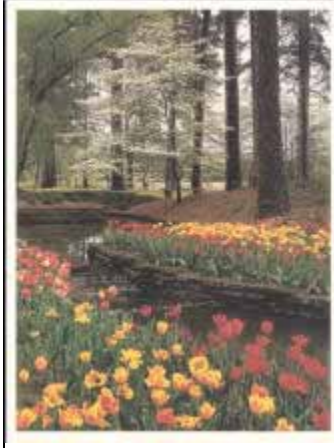
- The examples that follow are designed to give you an understanding of programming the Decurler E Table Settings option to obtain optimal results, but due to various job stock and environmental conditions the manner in which you achieve the best results may vary.
- The most important aspect for creating Decurler E Table Settings is determining the percentage of toner area coverage on the curled paper. A sampling of percentage of toner area coverage on some typical customer documents follows.
- The following percentage of toner area coverage examples have been measured using the particular application's tools which created them. If you do not have access to an application's tools, which measure percentage of toner area coverage, make your estimate using the following examples as a guide. Your estimates will be used when entering Decurler E Table Settings values, which is explained later in this section.

Toner area coverage example 1

Percentage of Toner Area Coverage examples

Carousel Horses		Bolivar Ltd.		Dunn Report	
					
Percentage of Toner Area Coverage per Color		**Percentage of Toner Area Coverage per Color**		**Percentage of Toner Area Coverage per Color**	
Black	30.5 %	Black	5.4 %	Black	10.8 %
Magenta	28.1 %	Magenta	4.3 %	Magenta	8.5 %
Cyan	23.8 %	Cyan	6.0 %	Cyan	8.5 %
Yellow	29.5 %	Yellow	6.7 %	Yellow	7.2 %

Toner area coverage example 2

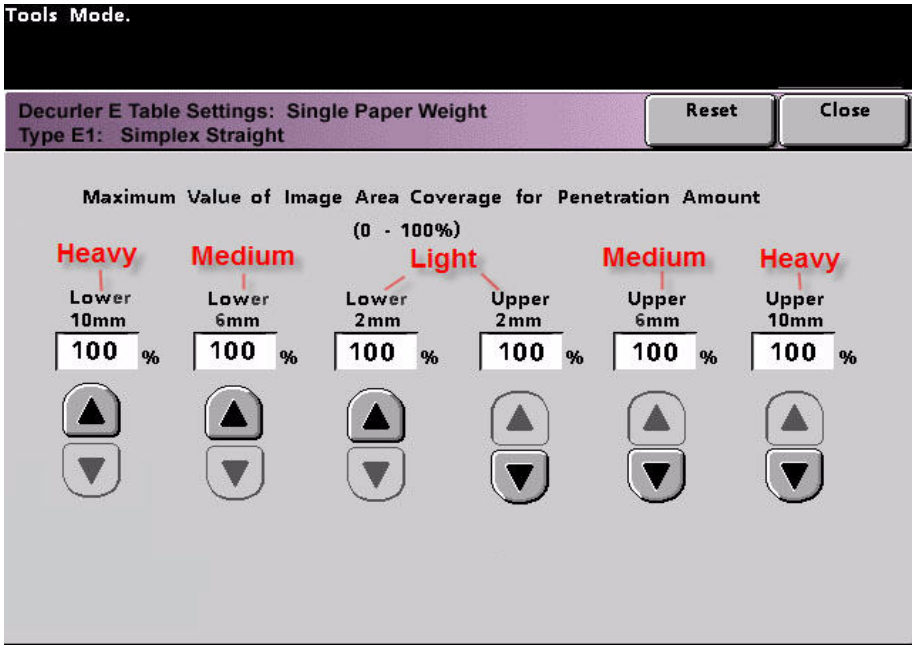
Percentage of Toner Area Coverage examples (continued)					
Upholstery by Morris		**Alpine Nursery**		**Tulips**	
					
Percentage of Toner Area Coverage per Color		**Percentage of Toner Area Coverage per Color**		**Percentage of Toner Area Coverage per Color**	
Black	11.6 %	Black	4.5 %	Black	27.8 %
Magenta	11.9 %	Magenta	5.1 %	Magenta	24.7 %
Cyan	11.1 %	Cyan	4.3 %	Cyan	23.8 %
Yellow	11.4 %	Yellow	6.0 %	Yellow	28.8 %

Examples of upward/downward paper curl

Determine if curl is upward (“cupped”) or downward (“bridged”).

Light, Medium, and Heavy Curl

Light, Medium and Heavy curl refer to the 2 mm (Light), 6 mm (Medium) and 10 mm (Heavy) curl selections in the **Lower** and **Upper** fields of the Decurler E Table Settings Type E window.

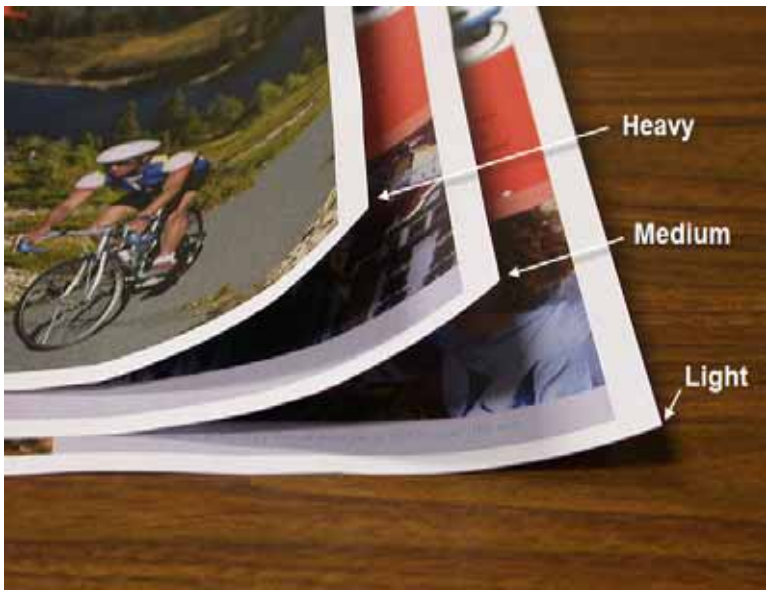


Tip

Paper that is curled *upwards* is adjusted using the **Upper** values. Paper that is curled *downwards* is adjusted using the **Lower** values.

Light, medium, and heavy curl examples

Use the following example as a guide when determining if your curl is Light, Medium, or Heavy.



Entering values in the Decurler E Table fields

Determining what values to enter

When determining what values to enter, do not total all CMYK percentage of toner area coverage, but instead determine the largest CMYK percentage of toner area coverage value. Take a look at the following examples for further explanation:

- If your job contains percentage of toner area coverage of 100 % cyan, 100 % magenta, 100 % yellow, and 100 % black, the maximum percentage of toner area coverage value is 100 % . If your job contains 100 % cyan, 20 % magenta, 20 % yellow, and 20 % black, the maximum value is still 100 % .
- If your job contains percentage of toner area coverage of 50 % cyan, 50 % magenta, 50 % yellow, and 50 % black, the maximum percentage of toner area coverage value is 50 % . If your job contains 50 % cyan, 10 % magenta, 10 % yellow, and 10 % black, the maximum value is still 50 % .
- Consider the Carousel Horses percentage of toner area coverage image shown below. When entering percentage of toner area coverage values to control curl, you will use the black 30.5 % value, not the combined total of all CMYK values.

Percentage of Toner Area Coverage

Carousel Horses	
Percentage of Toner Area Coverage per Color	
Black	30.5 %
Magenta	28.1 %
Cyan	23.8 %
Yellow	29.5 %

How to enter values in the Decurler E Table Settings Type E window

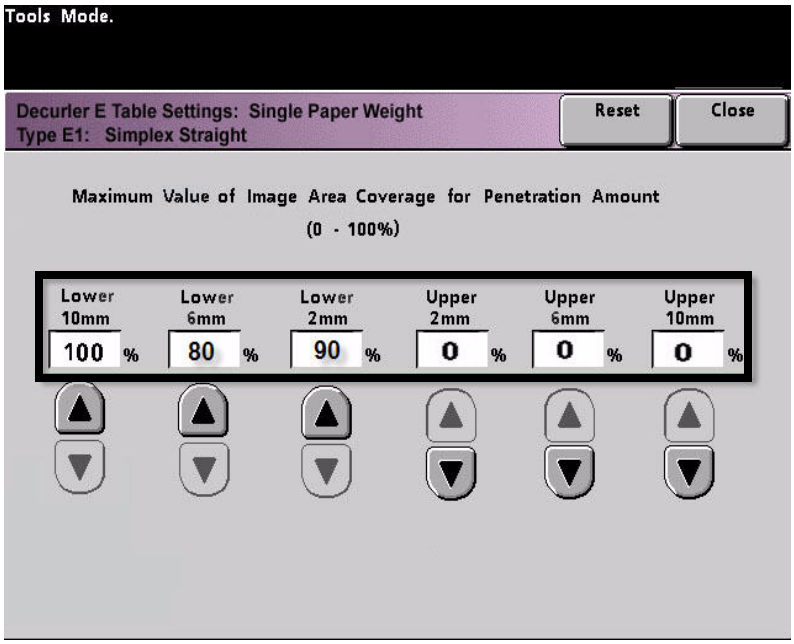
Within the Decurler E Table Settings Type E window, you must enter Decurler values in ascending or descending order. In the following example, 100 % was followed by 80 % and 90 %, respectively. The correct sequence would need to be 100 %, followed by 90 % and then 80 %.

Tip

It is important to understand that if you enter values incorrectly (not entered in ascending or descending order) your print job will run, but the system may not respond to curl correction as expected.

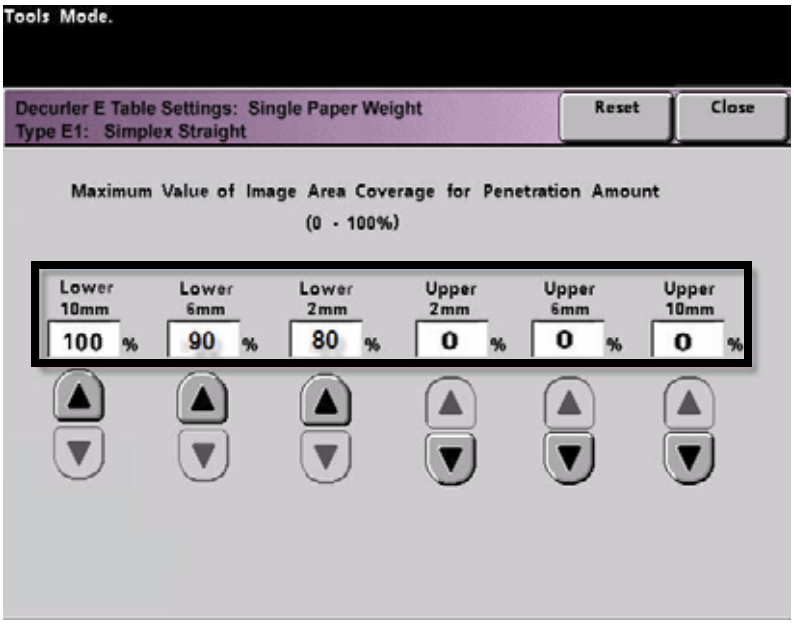
Example of entering values incorrectly

Values entered incorrectly: 100 %, 80 %, 90 %, 0 %, 0 %, 0 %.



Example of entering values correctly

Values entered correctly: 100 %, 90 %, 80 %, 0 %, 0 %, 0 %.

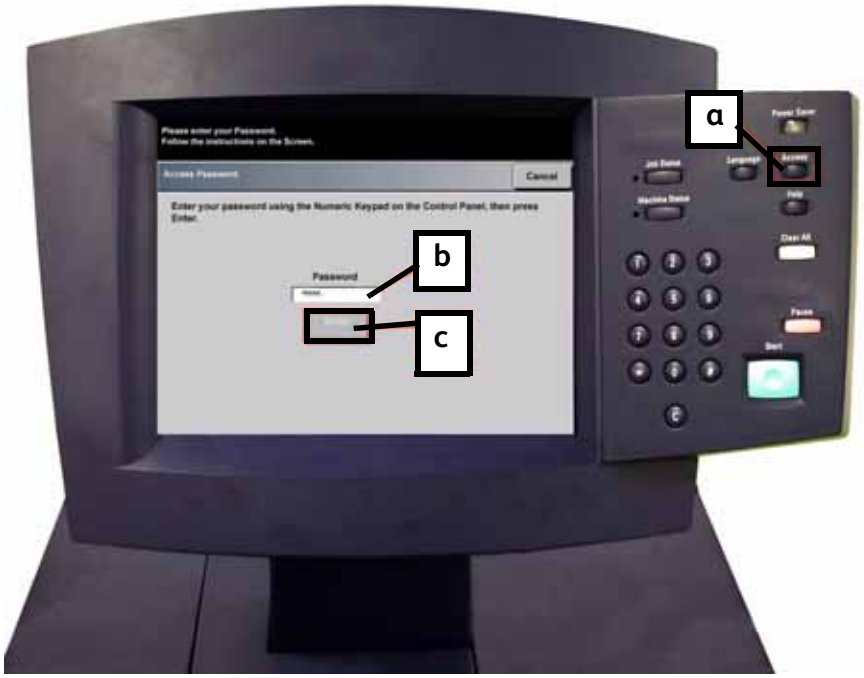


4 Downward Curl

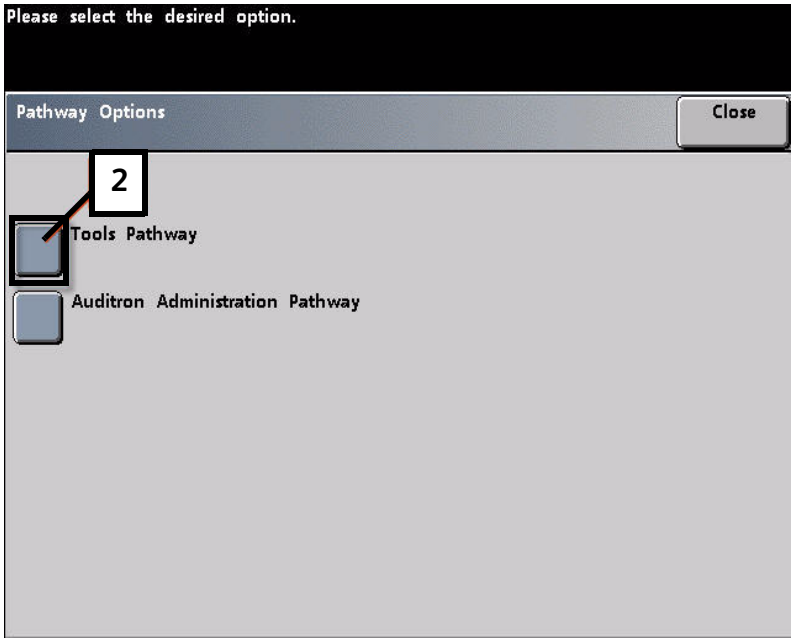
Creating a Decurler E Table Setting

To program a Decurler E Table Setting, perform the following:

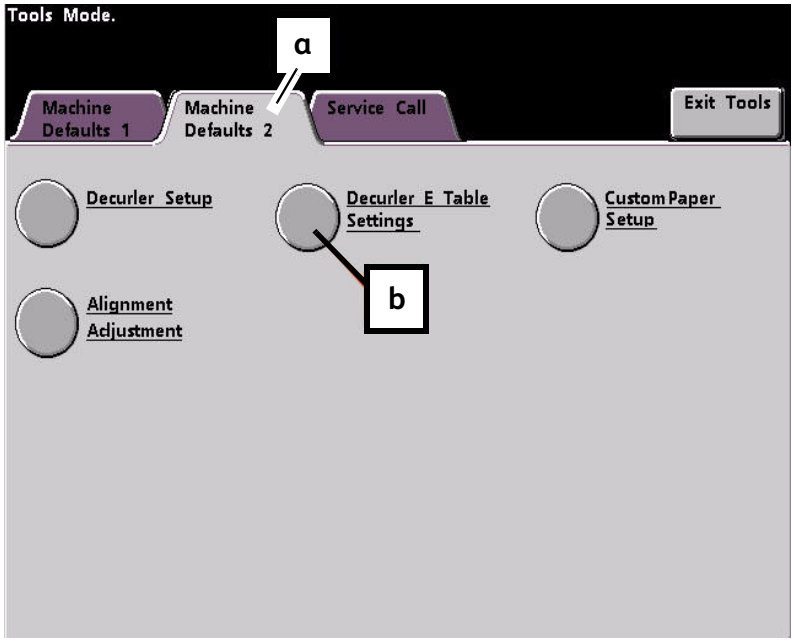
1. At the controller, logon to the Tools menu as Administrator.
   a. Press the **Access** button.
   b. Enter the Administrator password.
   c. Press **Enter**.



2. The Pathway Option screen opens. Select the **Tools Pathway** button.

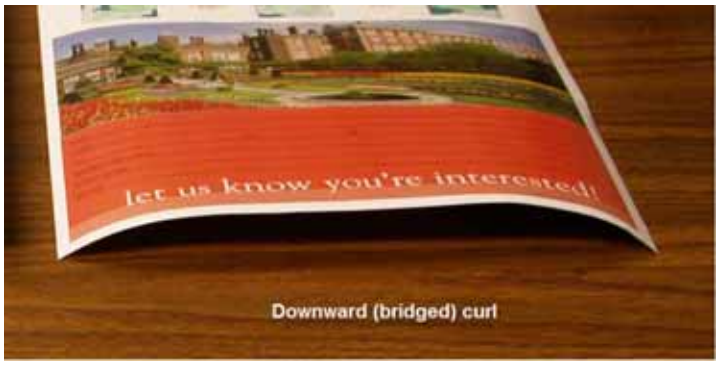


3. From the Tools Mode window, press:
   a. **Machine Defaults 2** tab.
   b. **Decurler E Table Settings** button.



Example of Downward Curl

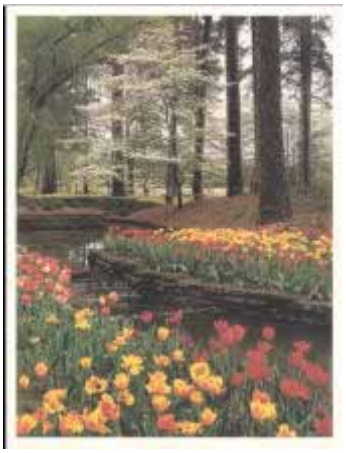
4. Curl remains after you have tried the System Default and the Decurler Paper Type A-D Settings. See “Decurler Paper Type A-D Settings” on page 2-1. As a result, you need to program the Decurler to use the downward Decurler path to remove the downward (bridged) curl.



In this example, you are running a 10-page, 1 Sided: Face Up job, which shows downward (bridged) curl. The job contains:

- Six pages with maximum percentage of toner area coverage of 10.8 % (Dunn Report) show light downward curl.
- Four pages with maximum percentage of toner area coverage of 28.8 % (Tulips) show medium downward curl.

Percentage of Toner Area Coverage

Dunn Report		Tulips	
			
Percentage of Toner Area Coverage per Color		Percentage of Toner Area Coverage per Color	
Black	10.8 %	Black	27.8 %
Magenta	8.5 %	Magenta	24.7 %
Cyan	8.5 %	Cyan	23.8 %
Yellow	7.2 %	Yellow	28.8 %

Selecting the Decurler E Table Settings option

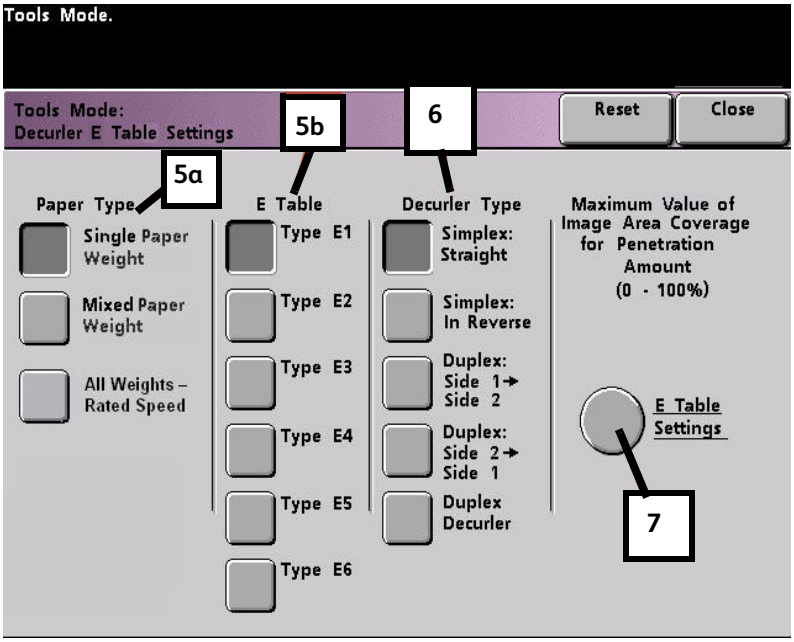
5. Within the Decurler E Table Settings screen, select the following options for the job:
   a. The job's **Paper Type**. For this exercise we are using **Single Paper Weight**.
   b. Select the **E Table** that you will use to enter Decurler values. You can edit an E Table or create a new one. For this exercise we will create a new E Table using **Type E1**.

Selecting a Decurler Type

6. Select a **Decurler Type**:
   a. **Simplex: Straight**: Select this setting if your output is 1-sided, face-up. We will use this setting for this exercise.
   b. **Simplex: In Reverse**: Select this setting if your output is 1-sided, face-down
   c. **Duplex: Side 1 to Side 2**: Select this setting if your output is 2-Sided, face-down (1-N)
   d. **Duplex: Side 2 to Side 1**: Select this setting if your output is 2-Sided, face-up (N-1)
   e. **Duplex Decurler**: Select this setting if your 2-Sided jobs frequently jam in Areas 5, 6, 7a, and 7b of the digital press, or if curl is apparent on your 2-Sided job.

Selecting the E Table Settings button

7. Select the **E Table Settings** button to enter Decurler E Table Settings values.

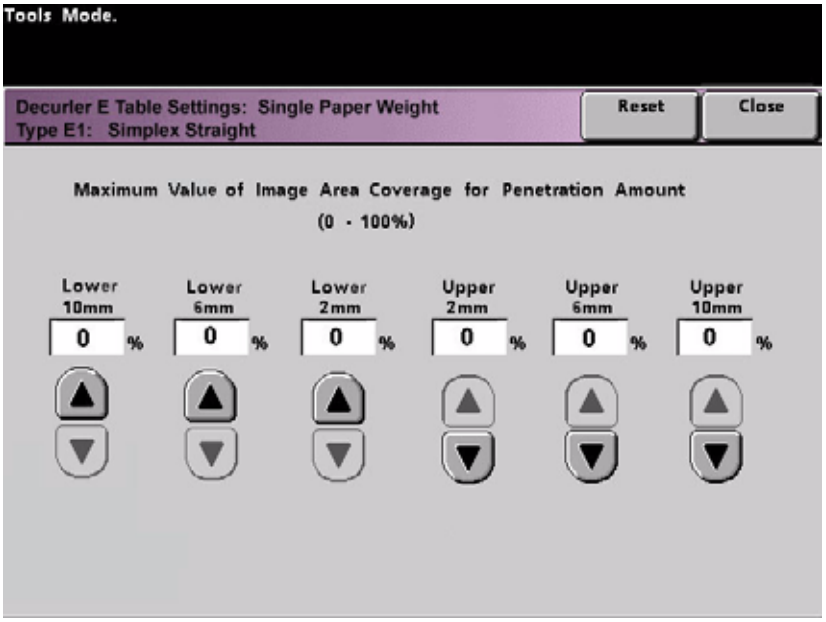


Entering values in the E Table Settings window

8. In the Decurler E Table Settings Type E window:
   a. Enter the following values in the fields by pressing the arrow buttons:

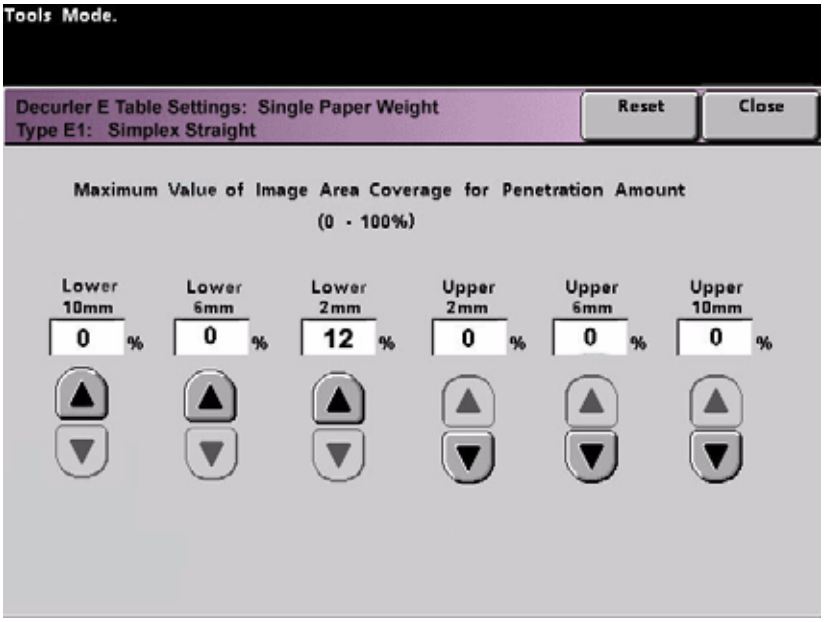
Entering the values to correct downward curl

- Since your job shows downward curl, you do not want to use the Upward Decurler. As a result, in the **Upper** fields you must enter values in descending order, or in equal values less than 12 % (the next value you will enter). For this exercise we will use 0 % , 0 % and 0 % .



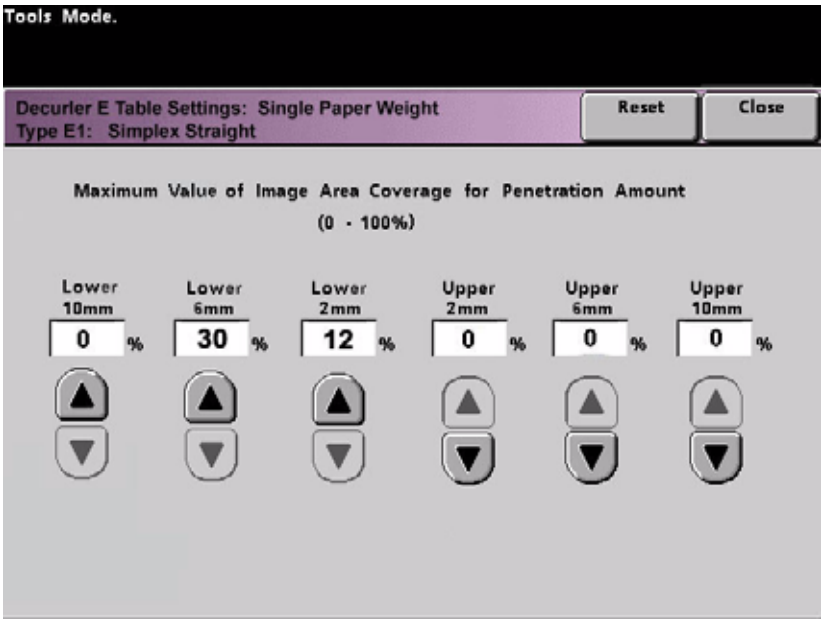
Enter the value for the Lower 2 mm field

- In the **Lower** 2 mm (Light curl) field enter 12 % . This means that all pages with a 0 % through 12 % toner area coverage, which includes the Dunn Report maximum of 10.8 % , are sent to the 2 mm downward Decurler path.



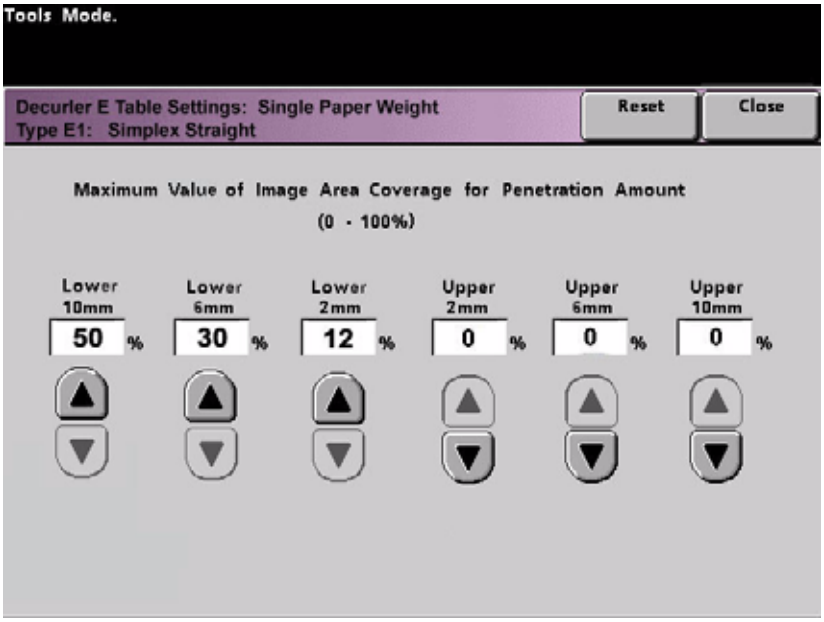
Enter the value for the Lower 6 mm field

- In the **Lower** 6 mm (Medium curl) field, enter 30 % . This means that all pages with 13 % to 30 % toner area coverage, which includes the Tulips 28.8 % , will be sent to the 6 mm downward Decurler path.



Enter the value for the Lower 10 mm field

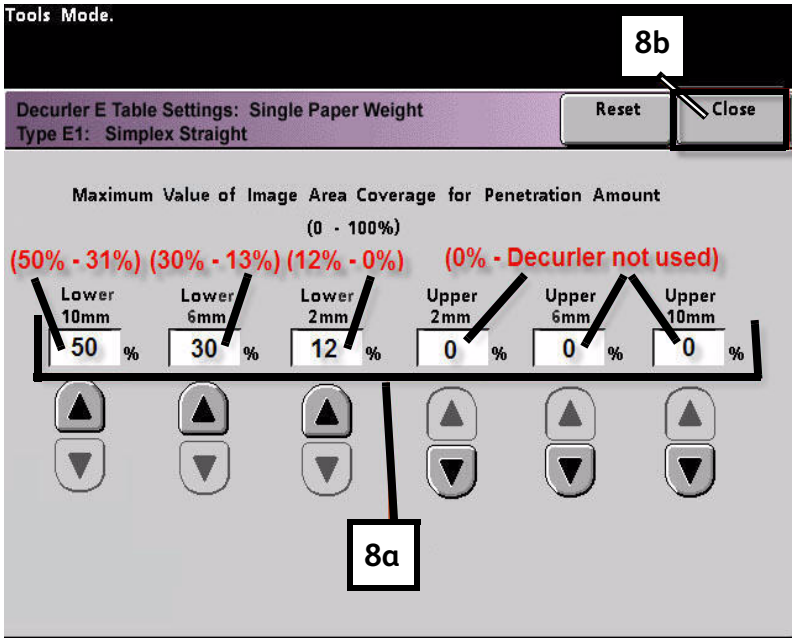
- In the **Lower** 10 mm (Heavy curl) field, enter 50 % . Since none of your job pages have 31 % through 50 % toner area coverage, this Decurler setting will not be used.



Notes

- Entering 50 % in the **Lower** 10 mm (Heavy curl) field simply illustrates that entering any value at or above 30 % (maximum of 100 %) results in the same outcome. Since none of your job pages have an image density ratio above 30 % the **Lower** 10 mm Decurler setting will not be used.
- Remember, all fields have to be considered (**Lower** and **Upper**) when entering Decurler E Table Settings values.

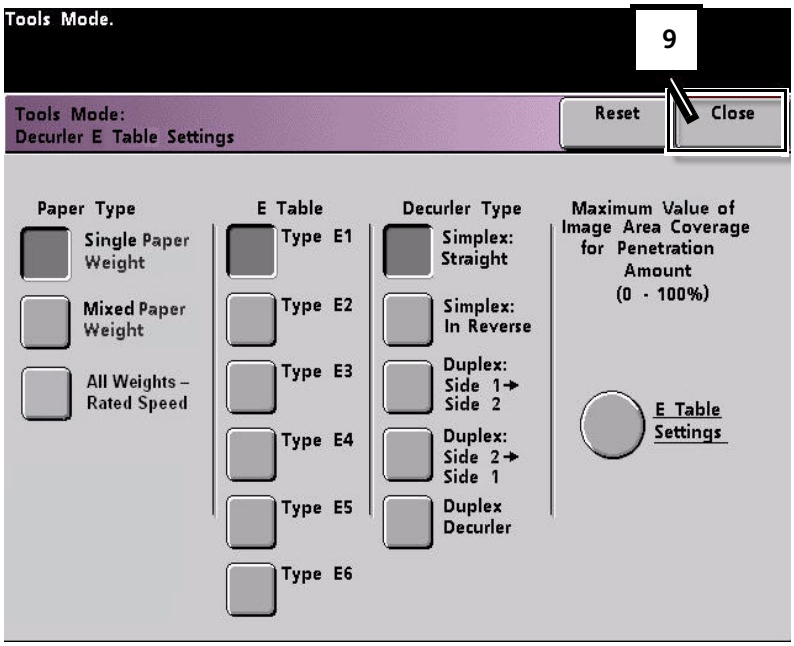
The following screen shows how the values would be entered:



b. To save your Decurler E Table Setting, press **Close**. The Decurler E Table Setting Type E window closes and the Decurler E Table Setting window opens.

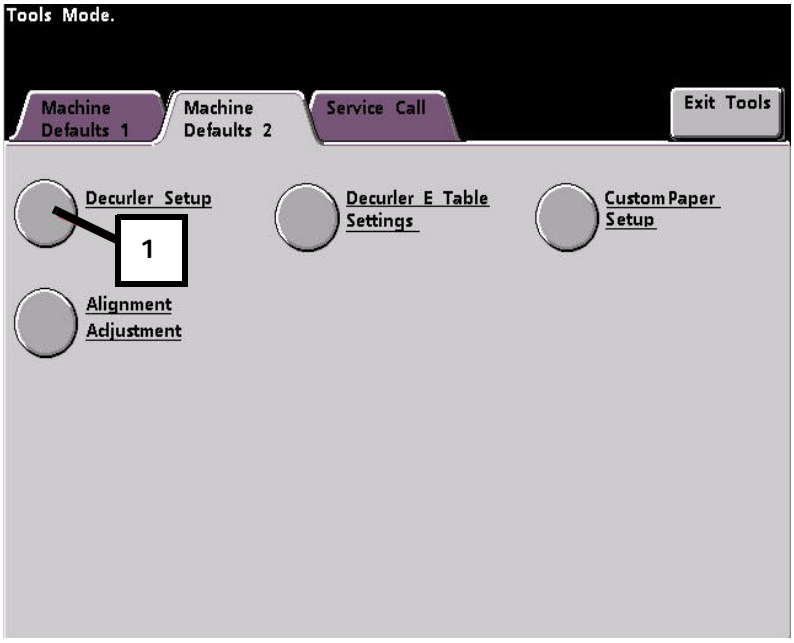
Saving your settings and returning to the Machine Defaults 2 screen

9. Press the **Close** button to exit the Decurler E Table Setting window and return to the Machine Defaults 2 screen.



Activating the newly created Decurler E Table Setting

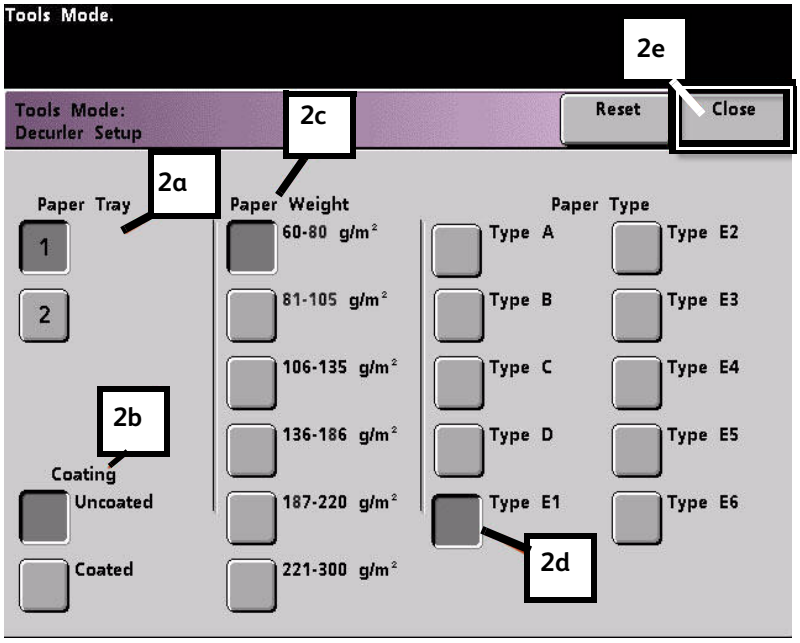
1. To use the newly created Decurler E Table Setting, you need to activate it. From the Machine Defaults 2 screen, press the **Decurler Setup** button.



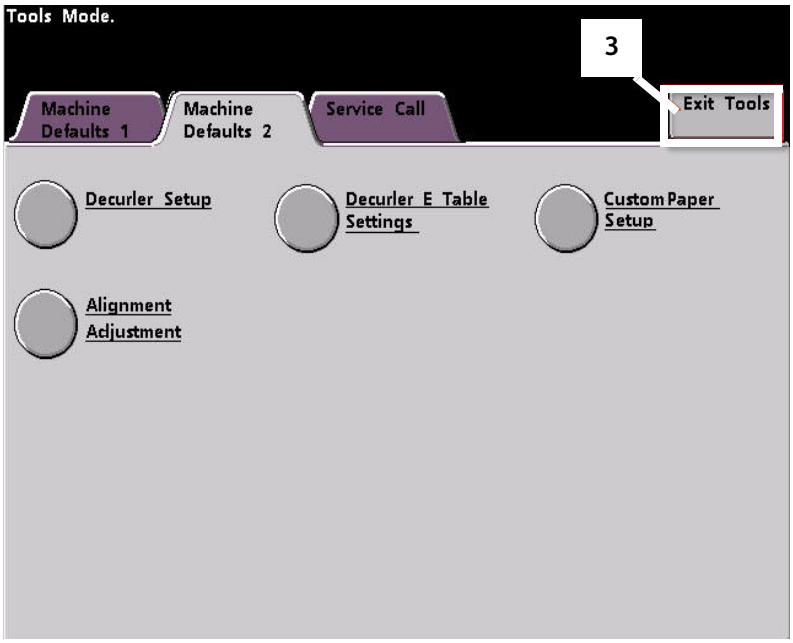
Entering the correct job information for the programmed setting

2. From the Decurler Setup window you need to enter job information for the Decurler E Table Setting you just programmed. Press the following buttons:
   a. Select the job's **Paper Tray**.
   b. Select the job's stock coating: **Uncoated** or **Coated**.
   c. Select the job's **Paper Weight**.
   d. Select the **Paper Type** that you just created, which in this case is **Type E1**.

e. Select **Close** to save the settings and return to the Machine Defaults 2 screen.



3. Exit Tools Mode and run you job.



Print your job to determine if the paper curl is eliminated

Print your job and determine if the curl has been eliminated.

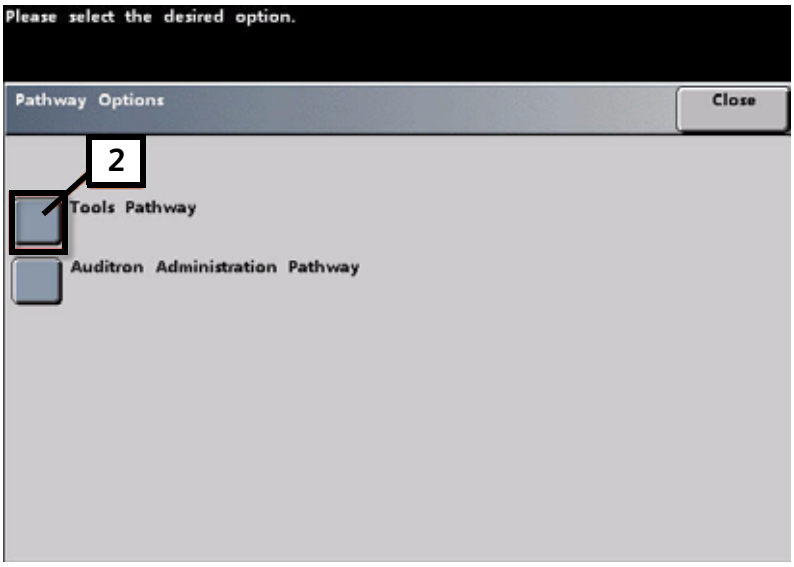
1. If the curl is eliminated, continue running your prints using that specific Decurler setting.
2. If the curl remains, you may have to repeat this procedure and adjust the percentage of toner area coverage values entered in the Decurler E Table Setting Type E window until you achieve acceptable output prints.
3. If curl remains after trying various value entries in the Decurler E Table Setting window, call your Xerox service representative.

5 Upward Curl

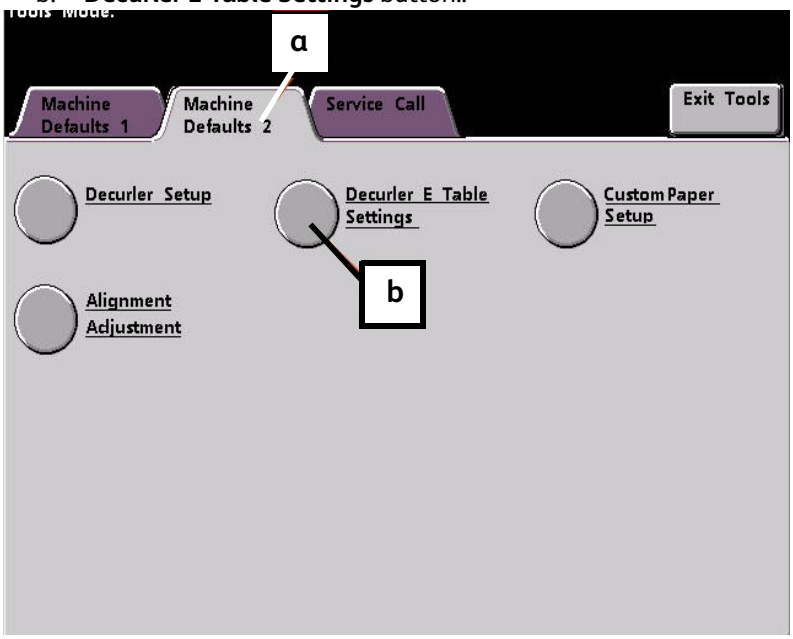
Creating a Decurler E Table Setting

1. At the controller, logon to the Tools menu as Administrator.
   a. Press the **Access** button.
   b. Enter the Administrator password.
   c. Press **Enter**.

2. The Pathway Option screen opens. Select the **Tools Pathway** button.

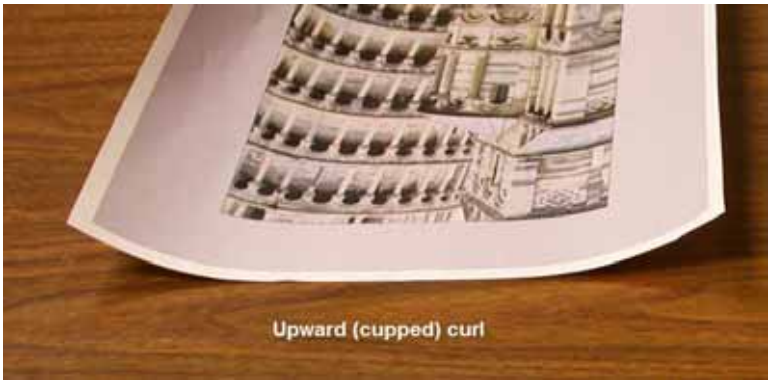


3. From the Tools Mode window, press:
   a. **Machine Defaults 2** tab.
   b. **Decurler E Table Settings** button..



Example of Upward Curl

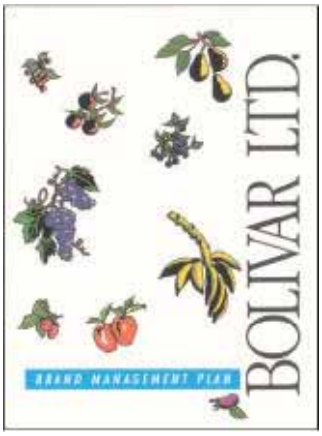
4. Curl remains after you have tried the System Default and the Decurler Paper Type A-D Settings. See “Decurler Paper Type A-D Settings” on page 2-1. As a result, you need to program the Decurler to use upward pressure (or the upper roller) to remove the upward (cupped) curl.



In this example you are running a 10-page, 1 Sided: Face Up job, which uses Mixed Paper Weights, shows upward curl:

- Six pages with toner area coverage between 4.3 % and 6.7 % (Bolivar Ltd.) show light upward curl.
- Four pages with toner area coverage between 23.8 % and 30.5 % (Carousel Horses) show heavy upward curl.

Percentage of Toner Area Coverage

Carousel Horses		Bolivar Ltd.	
			
Percentage of Toner Area Coverage per Color		**Percentage of Toner Area Coverage per Color**	
Black	30.5 %	Black	5.4 %
Magenta	28.1 %	Magenta	4.3 %
Cyan	23.8 %	Cyan	6.0 %
Yellow	25.9 %	Yellow	6.7 %

Selecting the Decurler E Table Settings option

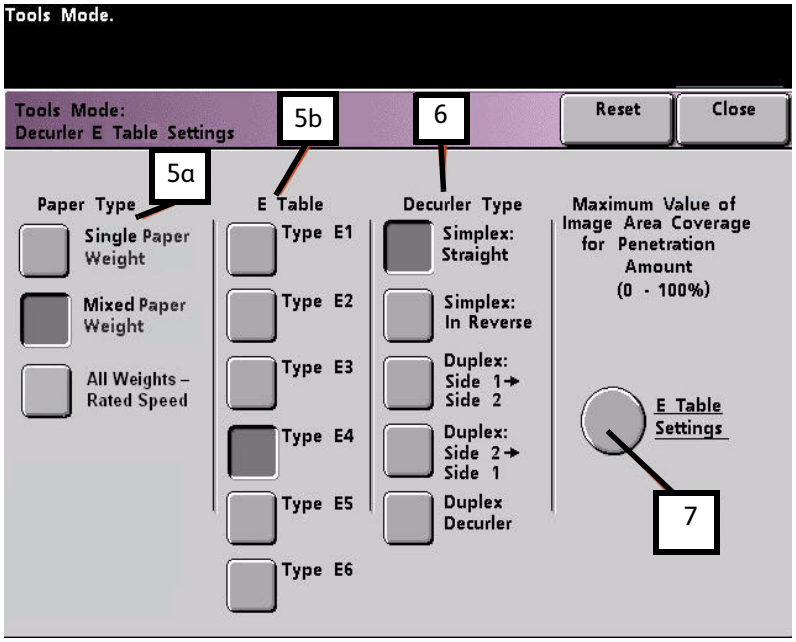
5. Within the Decurler E Table Settings screen, select the following options for the job:
   a. The job's **Paper Type**. For this exercise we are using **Mixed Paper Weight**.
   b. Select the **E Table** that you will use to enter Decurler values. You can edit an E Table or create a new one. For this exercise we will create a new E Table using **Type E4**.

Selecting a Decurler Type

6. Select a **Decurler Type**:
   a. **Simplex: Straight**: Select this setting if your output is 1-sided, face-up. We will use this setting for this exercise.
   b. **Simplex: In Reverse**: Select this setting if your output is 1-sided, face-down
   c. **Duplex: Side 1 to Side 2**: Select this setting if your output is 2-Sided, face-down (1-N)
   d. **Duplex: Side 2 to Side 1**: Select this setting if your output is 2-Sided, face-up (N-1)
   e. **Duplex Decurler**: Select this setting if your 2-Sided jobs frequently jam in Areas 5, 6, 7a, and 7b of the digital press, or if curl is apparent on your 2-Sided job.

Selecting the E Table Settings button

7. Select the **E Table Settings** button to enter Decurler E Table Settings values.



Entering values in the E Table Settings window

8. In the Decurler E Table Settings Type E window:
   a. Enter the following values in the fields by pressing the arrow buttons:

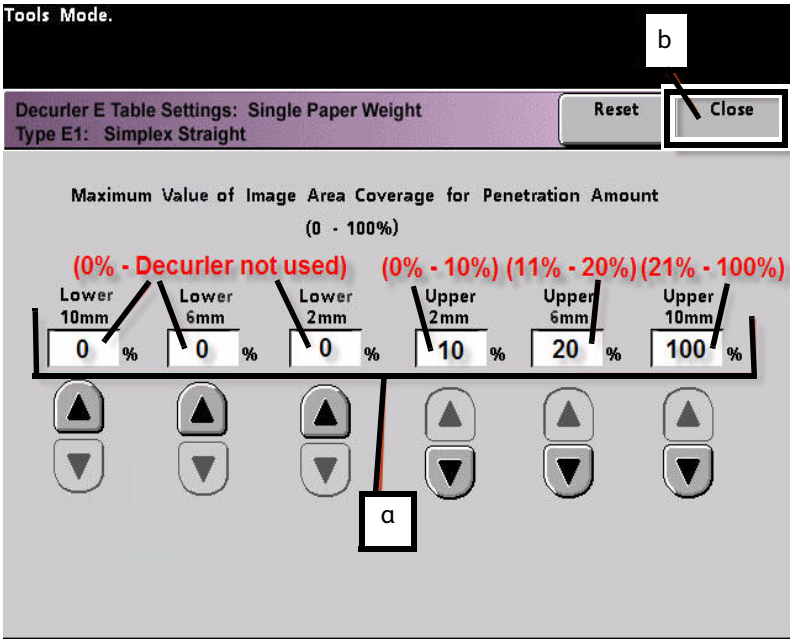
Entering the values to correct upward curl

- Since your job does not require the Downward Decurler, enter 0 % in each of the **Lower** fields.
- In the **Upper** 2 mm (Light curl) field, enter 10 % . As a result, pages with toner area coverage from 0 % to 10 % , which includes the Bolivar Ltd. Page, will be sent to through this Decurler.
- In the **Upper** 6 mm (Medium curl) field, enter 20 % . Since none of your job pages have toner area coverage from 11 % to 20 % , this Decurler setting will not be used.
- In the **Upward** 10 mm (Heavy curl) field, enter 100 % . This means that all pages with toner area coverage of 21 % or greater, which includes the Carousel Horses, will be sent to the 10 mm downward pressure Decurler.

Note

Remember, all fields have to be considered (**Lower** and **Upper**) when entering Decurler values.

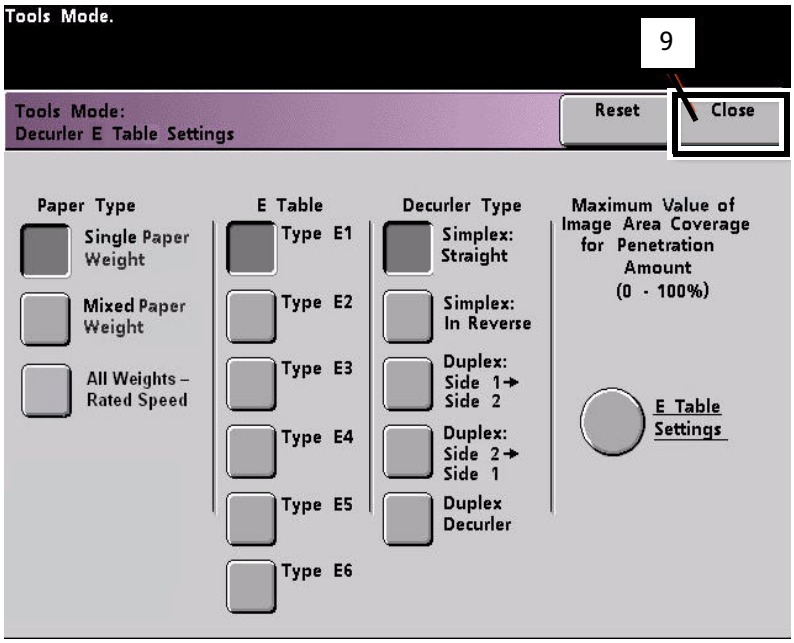
The following screen shows how the values would be entered:



b. To save your Decurler E Table Setting, press **Close**. The Decurler E Table Setting Type E window closes and the Decurler E Table Setting window opens.

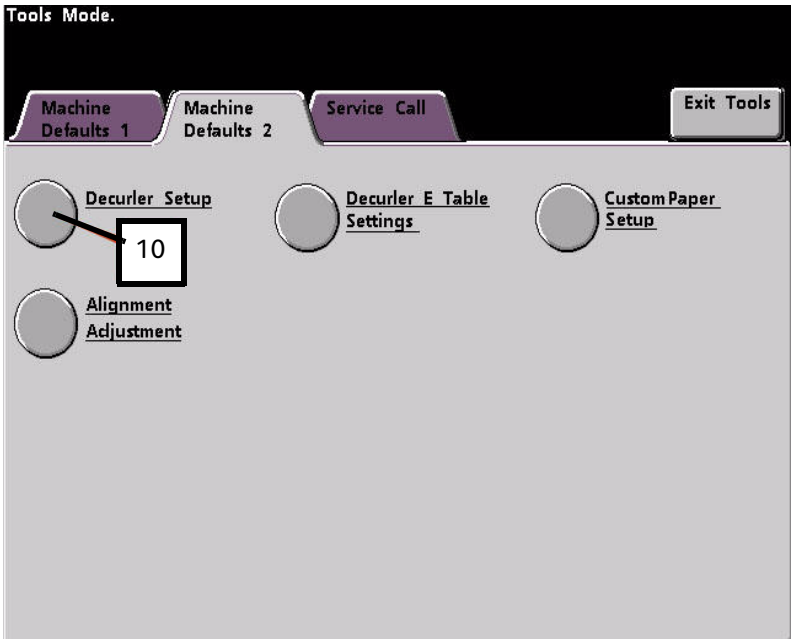
Saving your settings and returning to the Machine Defaults 2 screen

9. Press the **Close** button to exit the Decurler E Table Setting window and return to the Machine Defaults 2 screen.



Activating the newly created Decurler E Table Setting

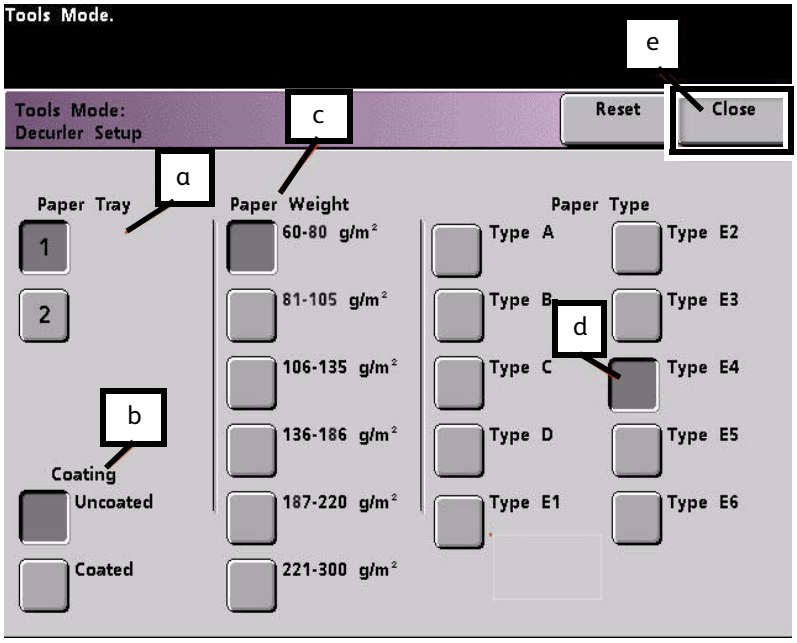
10. To use the newly created Decurler E Table Setting, you need to activate it. From the Machine Defaults 2 screen, press the **Decurler Setup** button.



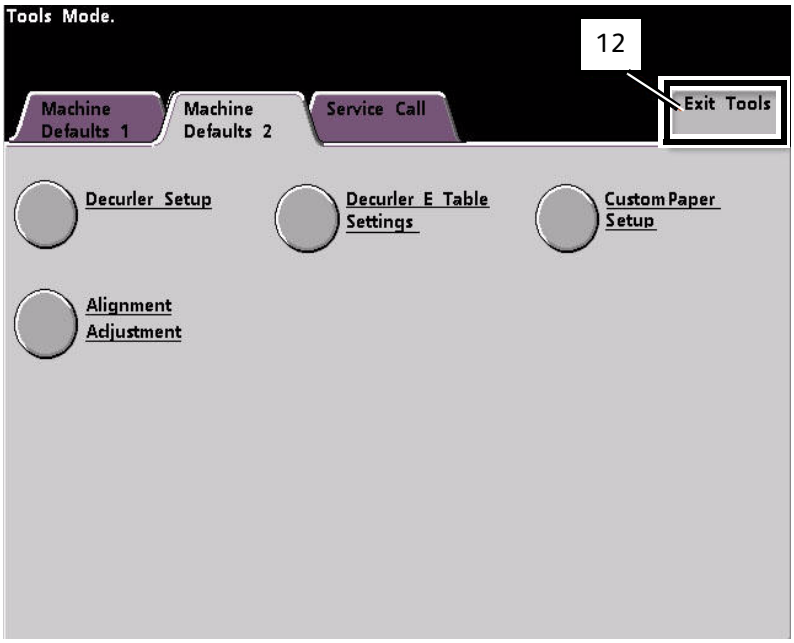
Entering the correct job information for the programmed setting

11. From the Decurler Setup window you need to enter job information for the Decurler E Table Setting you just programmed. Press the following buttons:
    a. Select the job's **Paper Tray**.
    b. Select the job's stock coating: **Uncoated** or **Coated**.
    c. Select the job's **Paper Weight**.
    d. Select the **Paper Type** that you just created, which in this case is **Type E4**.

e. Select **Close** to save the settings and return to the Machine Defaults 2 screen.



12. Exit Tools Mode and run your job.



Print your job to determine if the paper curl is eliminated

13. Print your job and determine if the curl has been eliminated.
    a. If the curl is eliminated, continue running your prints using that specific Decurler setting.
    b. If the curl remains, you may have to repeat this procedure and adjust the percentage of toner area coverage values entered in the Decurler E Table Setting Type E window until you achieve acceptable output prints.
    c. If curl remains after trying various value entries in the Decurler E Table Setting window, call your Xerox service representative.