

Calibration & Screening section of the Final Output process template

This process template section provides calibration and screening file information during final output.

These options are available when you select **1** in the **Shades** option, in the **Render** section of the process template.

Calibration

Curve Source

- If ColorFlow CRM is not enabled in the process template, select one of the following options:
 - **ColorFlow Approved Snapshot**—allows you to select any curve from the **Print Curve** or **Plate Curve** lists that are contained in the ColorFlow Approved Snapshot.
 - **ColorFlow Current State**—allows you to select any curve from the **Print Curve** or **Plate Curve** lists that are contained in the Current State of the ColorFlow database. When either of the ColorFlow options is selected, the **HarmonyMedium** option has no effect. The **Minimum Dot Size** option is not generally necessary for ColorFlow curves, as ColorFlow allows explicit definition of bump or cutoff curves for flexographic printing; however, this option still takes effect for ColorFlow curves if its value is greater than zero.
 - **Harmony**—allows you to select any curve from the **Print Curve** or **Plate Curve** lists that are contained in the Harmony database.
- If ColorFlow CRM is enabled in the process template, then all **Calibration** options are unavailable, and curves are selected according to settings in the ColorFlow CRM panel.

The disabled **Curve Source** control indicates the curve source selected by CRM as follows:

- If the **ColorFlow Approved Snapshot** or **ColorFlow Current State** option is selected, curves are provided from the corresponding snapshot.
- If none of the options are selected, curves are provided from a numbered snapshot selected in the ColorFlow CRM panel.

Detect pages Refined with ColorFlow

This option allows you to set a warning alert or fail output if a Job/Page has a Color Setup assigned but **ColorFlow Color Relationship Management** is not selected in the output process template. You can select to ignore, warn or fail. Whichever setting is selected here will also be automatically selected under **Detect pages Refined with ColorFlow** in the **ColorConvert>Match Colors** section of the output process template.

Print Curve

Select **None** if you do not want to apply print dot gain compensation curves to your output.

To apply a print calibration curve to your output, select the curve in the list.

If ColorFlow CRM is enabled in the process template, the disabled **Print Curve** control displays the name of the print curve selected by ColorFlow CRM.

If you select **Harmony** in the **Curve Source** setting, you can select **Auto** to automatically select the most appropriate curve. Depending on the **Screening Method** selected, the Harmony software determines the curve to use, based on dot shape and screen frequency data from your job or the process template. Harmony looks in the following locations in the process template:

- **Dot Shape** and **Screen Ruling** boxes
- **Screen Frequency** box
- **Harmony Medium** box
- In the **Render** section, the **Device Resolutions** box (or **Resolution X** and **Resolution Y** boxes)

If you assign a calibration curve in the Prinergy DotShop software for use on a mark, you must select the **Keep DotShop Settings** or **Use Document's Screening, if Present** screening mode.

Note: To control the application of the selected print curve for an individual page, sheet, or imposition mark, select the **Calibrate** check box in the **Marks** section of the process template. This enables you to apply print curves to imposition content without applying print curves to marks.

Plate Curve

Select **None** if you do not want to apply plate linearization curves to your output. This option is set to **None** by default.

To apply a plate curve to your output, select the curve in the list.

If ColorFlow CRM is enabled in the process template, the disabled **Plate Curve** control displays the name of the plate curve selected by ColorFlow CRM.

When **Harmony** is selected in the **Curve Source** setting, you must select a plate curve in the Prinergy process template, even when **Print Curve** is set to **Auto**.

Note: Plate curves are always applied to page, sheet, and imposition marks. Select **None** if you do not want curves applied to marks.

Harmony Medium

Available only if you select **Harmony** in the **Curve Source** setting and **Auto** in the **Print Curve** list, this option lists the Harmony media that are defined in your Harmony curve database. If the **Harmony Medium** list is available but the list is empty, no Harmony media are defined. The selected Harmony media is used to identify an appropriate calibration curve.

Select a Harmony media in the list.

Note: This option is not available when you select **ColorFlow Approved Snapshot** or **ColorFlow Current State** in the **Curve Source** setting.

Minimum Dot Size

This feature can be used to avoid scum dots on flexo plates.

For all screening beside Maxtone SX, the Minimum Dot Size specifies a **Clipping value**, which means that all tones below the specified minimum dot will be removed.

With Maxtone SX, the user has the option of choosing **Clip** or **Bump**. Clip will remove all tones below the specified minimum dot, whereas Bump will elevate the minimum gray value in the file to the specified minimum dot value. The default setting for Maxtone SX Minimum Dot Size is Bump.

Type the lowest tint percentage (the print condition's minimum dot percentage), with up to one decimal place, at which you want to image dots—for example, 3% or 3.5%. This feature is only available if you have specified a Tonal Calibration curve.

The value can be up to 3.000 (default is 0.000). Up to three decimal points are accepted.

Originally implemented for use with Harmony, the **Minimum Dot Size** option is not generally necessary for curves created in ColorFlow, as ColorFlow allows precise definition of bump or cutoff curves for flexographic printing. The effect of this control is maintained, however, when ColorFlow curves are selected, to main correct output behavior when a Harmony curve is migrated to ColorFlow and selected for output in the process template.

Notes:

- For Maxtone FX and Maxtone SX, a 0.20 Minimum Dot Size is recommended.
- For Maxtone FX and Staccato NX, dots smaller than the specified Minimum Dot Size are printed as 0%.
- For Maxtone SX, dots smaller than the specified Minimum Dot Size are printed at the specified value.

Screening Mode

(See also the topic about document screening in this guide.)

Note: The XMP options are available only if you have a license for the XMP feature.

- Select **Override all document screening** to use the screening specified in the process template. This option ignores any screening specified in the source PDF file or the Prinergy DotShop software.
- Select **Honor DotShop Setting from document** to use the screening specified in the DotShop software, when available. For pages that are not modified in DotShop, the screening specified in the process template is used.
- Select **Honor DotShop and XMP settings from document** when you want DotShop and XMP settings to override the settings in the process template.
Note: DotShop settings override XMP settings since they are object-related settings while XMP are separation-related settings.
- Select **Honor DotShop, XMP and the following settings from the document** and any DotShop, XMP or PostScript Document Screening (SetHalftoneOperator) settings override the settings in the process template. DotShop settings override XMP and PostScript Document Screening settings, since DotShop settings are object-related settings, while XMP and PostScript Document Screening are separation-related settings. If the file contains PostScript Document Screening settings, you can selectively honor angle, frequencies and/or dot shape settings by selecting any of the **Angles**, **Frequencies**, and/or **Dot Shapes** check boxes. However, you cannot disable any angle, frequency or dot shape settings specified by DotShop or XMP tags.

Notes:

- If Prinergy does not support the screen angles in the source PDF file, the nearest supported angle is used.
- This option offers the greatest risk of poor results, because screen angles identified in the source PDF file may not be suitable for the output device.

Screen Type and Screen System

Select a screen system for the format selected in the **Output To** list.

- The **Maxtone** family of screen types are based on the Prinergy AM (conventional or rational tangent) screening technology. For more information about the following screen types and configurable options, see the applicable topics such as [Screen types](#) and [About screen systems](#).
 - **Maxtone**—standard AM screen can be configured with a wide choice of rulings, angles, and dot shapes.
 - **Maxtone CX**—highlights and shadow dot size can be configured in the **Dot Width Highlights** and **Shadows** boxes.
 - **Maxtone FX**—highlights and shadow dot sizes can be configured in the **Dot Size Highlights** and **Shadows** lists.
Note: Maxtone FX works on the entire page, so all objects defined with Maxtone FX must have dots of the same size. If multiple dot sizes are selected, the output process will fail.
 - **Maxtone SX**—highlights and shadow dot sizes can be configured in the **Dot Size Highlights** and **Shadows** lists.
 - **Maxtone IS**—screen set resolution must be identical to the resolution set in the **Render** section of the process template.
Note: Most IS screen parameters are predefined in the IS screen set and cannot be

modified in the process template. For information about defining IS screen sets, see the *Prinerger System Administration Guide*.

- **Maxtone IS CX**—screen set resolution must be identical to the resolution set in the **Render** section of the process template.
- The Kodak Staccato family of screen types are Prinerger stochastic screening technologies.
 - **Staccato**—highlight size and angle can be configured by selecting one of eight unique screen patterns.
 - **Staccato NX**—highlights and shadow dot size can be configured in the **Dot Size Highlights** and **Shadows** box.

About Maxtone FX or Maxtone SX Screen System (Angle sets):

Each system consists of either a 15 degree angle set or a 7.5 degree angle set—for example, the default (**CMYK 82.5 22.5 7.5 52.5**) is a 7.5 degree set. The following angle sets are available:

Cyan	Magenta	Yellow	Black
15.0	75.0	0.0	45.0
75.0	15.0	0.0	45.0
15.0	45.0	0.0	75.0
45.0	15.0	0.0	75.0
75.0	45.0	0.0	15.0
45.0	75.0	0.0	15.0
15.0	75.0	30.0	45.0
15.0	75.0	60.0	45.0
22.5	82.5	07.5	52.5
82.5	22.5	07.5	52.5
22.5	52.5	07.5	82.5
52.5	22.5	07.5	82.5
82.5	52.5	07.5	22.5
52.5	82.5	07.5	22.5
22.5	82.5	37.5	52.5
22.5	82.5	67.5	52.5

Note: The ability to set custom screen angles using the SCDV function (see answer 30177 on Partner Place) is not available for Maxtone FX /Maxtone SX.

Dot Shape

(See also the topic about dot shapes.)

Select a dot shape in the list.

The list of available dot shapes varies, depending on the screen system selected in the **Screen System** list.

For Maxtone FX, select **Euclidean** (default), **Round**, or **Light Elliptical**.

For Maxtone SX, select **Round1** or **Euclidean**.

Note: The **Round1** dot (Maxtone SX only) behaves somewhat differently from the conventional **Round** dot. When the dots start to touch (at about the 78% tone value), the shape rapidly transitions to a round shape instead of retaining the diamond shape of a conventional Round dot function.

Device Resolutions

Displays the values set in the **Resolution X** and **Resolution Y** boxes in the **Render** section of the process template.

Screen Ruling

Select or type the desired lines per inch.

Available when **Maxtone**, **Maxtone CX**, **Maxtone FX**, or **Maxtone SX** is selected in the **Screen System** list.

The list of available screen rulings varies, depending on the setting in the **Screen System**, **Device Resolutions**, and **Output To** lists.

If you select an **IS** screen set, you cannot change the **Screen Ruling** value.

For Maxtone FX, valid values range from 80 lpi to 200 lpi.

For Maxtone SX, valid values range from 80 lpi to 300 lpi.

Preset screen rulings may include 80, 90, 95, 100, 110, 120, 133, 141, 150, 175, 190, 200, 240, and 300 lpi, or you can specify a custom value, such as 160 lpi.

Feature Size (Highlights, Shadows)

Available when **Staccato** or **Staccato NX** is selected in the **Screen System** list.

Select the most appropriate feature size (in microns or pixels) for the print condition. A smaller number produces finer-grained output.

The list of available feature sizes varies, depending on the setting in the **Screen System**, **Screen Ruling** (Staccato NX), **Device Resolutions**, and **Output To** lists.

Note: The **Staccato** feature sizes normally denote a dot size somewhere between the actual highlight and the midtone dot size. However, **Staccato** feature sizes listed as <##>.1 indicate a first-order screen, where <##> is the exact dot size of the highlight and quarter tone dots.

Note: The **Staccato NX** feature size denotes the exact dot size of the highlight dots in pixels.

Note: It is also possible to select the dot size for the highlights and shadows using DotShop Composer. Maxtone FX works on the entire page, so all objects defined with Maxtone FX must have dots of the same size. If there are multiple dot sizes selected, the output process will fail.

Midtone Frequency

Available when **Staccato NX** is selected in the **Screen Type** and **Screen System** lists. Select a Staccato NX midtone frequency in the list. A larger number indicates a finer dot structure.

Midtones are specified as a frequency, even though the dot structures are randomized. Frequency is expressed in lines per inch (lpi) and is a useful metric with AM and FM screens when assessing qualitative, lithographic, and imaging behavior. The specified Staccato NX midtone frequencies indicate the midtone dot gain and press performance that you would expect from equivalent Maxtone and Maxtone FX screen rulings.

Screen Color

In the **Screen Color** and **at Angle** boxes, perform the following tasks:

- Set screening for colors other than the four process colors
- Swap the process color screens within screen systems
- Assign a screen to the "Default" color. This screen will be used for any color that doesn't have its own screening value in the output process template or color database.

The screen angles associated with each process color in the **at Angle** box vary, depending on the setting in the **Screen System** and **Dot Shape** lists.

To assign a screen to a color in the **Screen Color** box, type the name of a spot color, or type Default to select the default screen angle. Use the correct capitalization and spacing in color names.

Note: To swap two screens (for example, magenta for black), modify the entries for both colors. In this example, modify the setting in the **at Angle** box for magenta to use the black screen, and modify the setting in the **at Angle** box for black to use the magenta screen.

Default Spot Color Handling

Determines how Prinergy assigns screen angles to spot colors that do not have screen angles assigned in the **Screen Color** and **at Angle** boxes or in the Color Editor.

To choose C, M, Y, or K as the default color screen angle, select **Screen as**. To cycle through the available color screen angles, select **Cycle Through Screen Angles**.

Screen as

To assign a different default spot color screen angle, select a color in the list. For IS screening, Prinergy cannot assign the **Others** angle as the default spot color angle.

Cycle Through Screen Angles

Select this option to assign default spot color screen angles cyclically to the available process colors, in CMYK order. Prinergy does not assign process colors that have already been used to screen a spot color.

If **Staccato Extended** is selected in the **Screen System** list, the list of screens cycles from **Screen #1** through to **Screen #10**.

For IS screening, Prinergy cannot cycle through angles other than CMYK.

Do not increase yellow ruling

To reduce moiré, the AM screening algorithm provides yellow screen frequencies (lpi) that are up to 14% higher than the cyan, magenta, and black screens. If you want a Y screen that is more similar to the Y screen in Prinergy 2.2 and earlier, select this check box. It limits yellow screen frequencies to between -4% and 4% of the ruling of the C, M, and K screens. For example, if the C, M, and K screens are at 150 lpi, this check box limits the screening algorithm to providing a Y screen between 144 lpi and 156 lpi.

This setting does not affect the yellow frequency of an IS screen set. To change the yellow frequency of an IS screen set, use the IS Screen Set Editor.

Maxtone SX Highlight Smoothing

For the smoothest tonal transitions to and within highlight areas, select this check box to apply the smoothing algorithm that is available only via Maxtone SX screening.

This algorithm provides a smoother transition from FM to AM by compensating for different physical and optical dot gain occurring at the point where dots transition from primarily being added to primarily being grown. (The actual inflection point varies, depending on pixel size and frequency.)

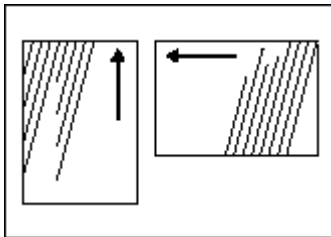
Rotate Screens With Pages

Select to rotate screens with reader orientation for each page in an imposition.

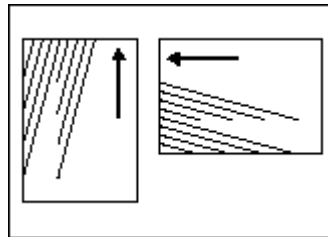
When some pages are rotated 90°, rotating screens with the pages allows all pages to be screened at the same angle.

Screens are only rotated at 90° so pages that are oriented at other angles are not affected.

The result of rotating screens is apparent when you screen with dot shapes that are not rotationally symmetric, such as Elliptical and Line.



Rotate Screens With Pages is cleared



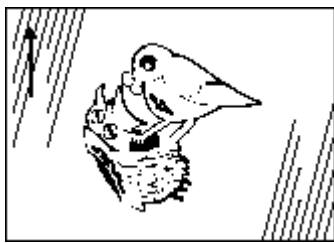
Rotate Screens With Pages is selected

Mirror Screens with Output

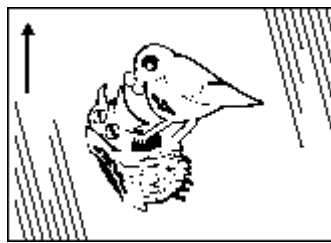
Select to mirror screens so they are consistent across all devices (for output devices that have intrinsically mirrored output).

Note: This will affect the screen angle rotation on the printed page and should be used only for compatibility with legacy printing.

When the **Mirror Screens with Output** check box is selected, selecting the **Mirror Print** check box in the **Device** section of the process template causes screen angles to become mirrored with the output. This is useful for some printing processes that require mirrored film or plates, to ensure consistency of screen angles with digital dot proofs.



Mirror Print is selected
Mirror Screens with Output is cleared



Mirror Print is selected
Mirror Screens with Output is selected

Note: If **Round** is selected in the **Dot Shape** list, the **Rotate Screens With Pages** and **Mirror Screens With Output** selections don't affect output.

Set Halftone Phase for each Page

Select to have the renderer reset the origin of the halftone screen for each page on an imposition.

When selected, this option ensures that each page on an imposition has the same bitmap pattern.

This is useful for a label printer who wants each label on the imposition to be identical. A difference in the halftone screen origin for each label can sometimes show up as a visible difference at the edges of the labels.

Screen Solids

Applies a screening pattern to solid areas in order to better absorb excess ink. This screening feature results in cleaner printing of solid areas.

Screen solids can also be effective in reducing ink consumption during proofing.

In the **as** box, type a value between 0% and 99.8% to indicate the percentage at which you want to screen all objects with solid (100%) tint.

Maxtone CX

Dot Width

Note: This option is not available when **Maxtone** or **Staccato** is selected in the **Screen Types** list.

Highlights

Type the size (in microns) of the Maxtone dot for highlights.

Shadows

Type the size (in microns) of the Maxtone reverse dot for shadows.

Maxtone FX / Maxtone SX

Dot Size

In the **Dot Size** box, select the dot dimensions (in pixels) from the **Highlights** and **Shadows** lists.

Available feature sizes depend on whether you have selected **Maxtone FX** or **Maxtone SX** in the **Screen Types** list.

- For **Maxtone FX**, feature sizes are **1x1, 1x2, 2x2, 2x3, 3x3, 3x4, 4x4**, with **2x2** as the default for **Highlights**, and **None** as the default for **Shadows**.
- For **Maxtone SX**, feature sizes depend on the output resolution selected:
 - For resolutions < 3600 dpi, feature sizes are **None, 1x2, 2x2, 2x3, 3x3, 3x4, 4x4, 5x5, 6x6**, with **2x2** as the default for **Highlights** and **None** as the default for **Shadows**.
 - For resolutions > 3600 dpi, feature sizes are **None, 4x4, 5x5, 6x6, 7x7, 8x8, 9x9, 10x10, 11x11, 12x12**, with **4x4** as the default for **Highlights** and **None** as the default for **Shadows**.

HyperFlex

Screening technology that allows for smaller dots and/or graphic elements to be held on flexo plates during UV exposure of a plate.

For more information about HyperFlex, see the *Prinergy Advanced Flexo User Guide*.

HyperFlex Classic

When imaging on flexo plates, select to enhance Maxtone dots with Kodak HyperFlex Classic technology.

Note: Hyperflex Classic is not intended for offset use.

In the extreme highlight areas, Maxtone simulates FM screening by randomly removing dots from the AM grid. HyperFlex Classic helps to support and strengthen Maxtone by placing light valves where dots have been removed.

Pixels

Type the HyperFlex dot size in pixels.

To determine the proper HyperFlex dot size, you must perform a series of flexo exposure tests. For more information, see the *Prinergy Advanced Flexo Implementation User Guide*.

HyperFlex Advanced

In flexo applications, select to use HyperFlex Advanced with Maxtone, Maxtone CX, Maxtone FX, Maxtone IS, Maxtone IS CX, and Staccato NX screen types.

Note: Hyperflex Advanced is not intended for offset use.

HyperFlex Advanced places light valves around halftone dots to strengthen and support individual dots.

Size

Type the size of the light valve in pixels. The minimum value is 1 and the maximum value is 16.

As feathering (a reduction in HyperFlex size as tone value increases) is being applied, this value specifies the starting size of the light valve. The light valve size is scaled back, in a linear fashion, to zero (at the tint percentage specified in the **Limit** box).

Distance: Start/End

Type the distance between the center of the light valve and the center of the dot. Suggested settings—Type the same values in the **Start** and **End** boxes, and use a larger value than you enter in the **Merge Distance** box. For example, type 2 in both the **Start** and **End** boxes, and type 1 in the **Merge Distance** box. This positions the light valves equidistant between adjacent halftone dots.

If you are not using the suggested settings, in the **Start** box, type the distance from the light valve to the center of the smallest halftone dot. In the **End** box, type the distance (in pixels) from the light valve to the center of the largest dot, as specified in the **Limit** box.

Merge Distance

Type a value that determines where the light valves will be positioned in relation to the halftone dots.

Suggested settings—Type the same values in the **Start** and **End** boxes. Type a smaller value in the **Merge Distance** box than you entered in the **Start** and **End** boxes. For example, type 2 in both the **Start** and **End** boxes, and type 1 in the **Merge Distance** box. This positions the light valves equidistant between adjacent halftone dots.

Limit

Type the tint percentage above which HyperFlex Advanced will no longer be applied. The general recommendation is to set the **Limit** between 20% and 50%.

DigiCap

Kodak DigiCap is screening software for digital photopolymer (flexo) media that improves the transfer of ink in solid areas, using small reverse dots (a tint).

Set the DigiCap texture by specifying the size of the reverse dots and the tint percentage. In the **Texture with** boxes, type the length and width of the reverse dots. The maximum size is 10 pixels by 10 pixels.

In the **as** box, type the tint percentage. For example, a 92% tint creates an area with 8% coverage of reverse dots.

To determine the proper DigiCap feature size and percentage, you must perform a print test containing multiple combinations of coarseness levels and tint percentages. You cannot determine the feature size or percentage without comprehensive press tests. For more information, see the *Prinerger Advanced Flexo Implementation User Guide*.

In the **Keepaway** box, type the distance (in pixels) between the edge of elements to which DigiCap texturizing should not be applied and the start of DigiCap texturizing.

Custom Pattern

Select this check box to use the DigiCap pattern settings from a Custom Pattern file instead of setting the size of the reverse dots and the tint percentage in the process template. After you select the **Custom Pattern** check box, type the name of the Custom Pattern file in the **Custom Pattern** box (`filename.raw` or `foldername\filename.raw`) or click the arrow, browse to the file and select it.

Requirements for using this option:

- The Custom Pattern file must reside on the Prinerger server in the `\\<ServerName>\AraxiHome\CreoAraxi\data\Screening\DigiCap` folder. You may create subfolders in this location but if you place the Custom Pattern file in such a subfolder, you must specify the name of the folder in the **Custom Pattern** box, for example: `foldername\filename.raw`.
- Before you can use this option, you must first create an Output JTP of a **Proofing Device Extended** type in Prinerger Administrator and then select this JTP in the **Render** section of the output process template.

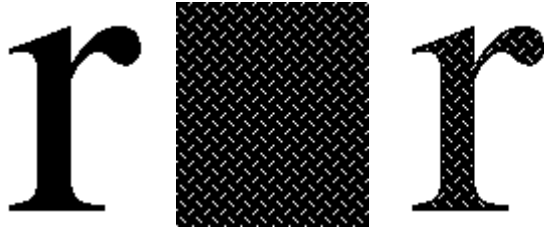
The Custom Pattern file must have the following properties to be processed by the Printer JTP:

- 8-bit Grayscale image file
- Black or white pixels only
- Identical image width and height
- Saved in Photoshop RAW format (Note 1)

How the Printer JTP applies a Custom Pattern

Each pixel in the Custom Pattern file affects one pixel in the output raster, regardless of the file and output resolutions. The JTP steps and repeats the Custom Pattern image, horizontally and vertically, to cover the entire output image area. If a pixel in the stepped pattern image is white, then it makes the corresponding output pixel white, unless **Keepaway** applies, as follows: if **Keepaway** = 1, then black pixels within 1 pixel of a white region will not be changed to white.

The following illustrations show the effect of the provided `Sample64x64.raw` Custom Pattern file, selected in the **Custom Pattern** box, with **Keepaway** = 1. The left graphic is a 6-point Times "r" character, rendered at 2400 dpi. The center graphic is the `Sample64x64.raw` pattern, tiled to the same size as the other graphics. The right graphic shows output with DigiCap applied.



Creating a Custom Pattern

- The custom pattern can be any pattern that looks smooth and uniform when viewed from a distance equivalent to viewing a plate or printed sheet with the naked eye.
- The custom pattern is stepped by the Printer JTP, so the pattern edges must align without creating a visible artifact. To check this in Photoshop, apply **Filter > Other > Offset...** Enter **Horizontal** and **Vertical** shift values that are about half the pattern size, and select **Undefined Areas: Wrap Around**.
- The size and density of pixel clusters in the pattern should be adjusted, through experimentation, to provide consistent ink density across the solid areas of the printed sample.