Print Control Wizard 20

User Guide

06 - 2020

Contents

1. Copyright Notice....4

2. What is the Print Control Wizard?....6
2.1. How to install Print Control Wizard....6
2.2. How Does it Work?....6

3. What is a Printing Condition?....8
3.1. Curves for Controlling Dot Gain....8
3.1.1. What is Dot Gain?....8
3.1.2. What is Dot Gain Compensation?....9
3.1.3. Dot Gain Compensation Curves....10
3.1.4. PressSync Curves....10
3.1.5. Curve Strategies....12
3.2. Screens for Controlling Ink Lay Down....13
3.2.1. What is Screening?....13
3.2.2. Types of Screens....14
3.3. Using a Printing Condition in Your Workflow....17

4. Print Control Wizard User Interface....19
4.1. General Configuration....19
4.1.1. Connect to Esko server....19
4.1.2. Preferred Units....20
4.2. Screens Explorer....20
4.3. Curves Explorer....21
4.4. Printing Conditions Explorer....22
4.4.1. Details pane....23

5. Creating a new Printing Condition....25
5.1. Printing Condition configuration steps....25
5.1.1. General....27
5.1.2. Plate and Press Calibration....27
5.1.3. White....38
5.1.4. Substrate....41
5.1.5. Ink Set and Printing Standard....42
5.1.6. Plate Making....43
5.1.7. Press Settings....45
5.1.8. Screens and Curves....46
5.2. Evaluate and Close....68

6. Save a report....69

7. Edit Printing Conditions....71

7.1. Add Ruling....71
7.2. Update Curves....81
7.3. Edit White....82
7.4. Change Plate Making and Press Calibration settings....82
7.5. Change screens and curves....83

8. Using Your Printing Condition in Imaging Engine....84

9. Import and Export....86
9.1. Export the complete Library....86
9.2. Export single items....87
9.3. Import single items or a complete Library....87

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2. What is the Print Control Wizard?

The Print Control Wizard is a set of tools in the Color Pilot application, designed to help you optimize your print quality.

Based on your **exact production workflow**, your current print quality and the **standard** you want to print towards, the Print Control Wizard will calculate the **best possible screens and curves** that you can use to achieve great results on press.

This will help you avoid common problems, for example a lack of smoothness in the transition from highlights to paper, or from shadows to solids, and will make getting good printing quality time after time **easier**.

2.1. How to install Print Control Wizard

The Print Control Wizard is completely integrated in the Color Pilot Application, our default application for creation of color data (inks, proofer profiles, press profiles, ...).

To be able to use all functionality within the Print Control Wizard, it is necessary to also install Curve Pilot on the same workstation.

For more information about the installation of Color Pilot, we refer to the chapter **Installing Color Pilot** in the Color Pilot User Guide: see *https://www.esko.com/en/support/product?id=Color%20Pilot*

For more information about the installation of Curve Pilot, we refer to the chapter **Installation** in the Curve Pilot User Guide: see *https://www.esko.com/en/support/product?id=Curve%20Pilot*

Note: Until version 18.1.1, Print Control Wizard was a separate application, with its own installation procedure. If you are using version 18.1.1 or older, please use the 18 or 18.1 User Guide: *https://www.esko.com/en/support/product?id=Print%20Control%20Wizard*

2.2. How Does it Work?

The Print Control Wizard will help you achieve the best possible printing quality in the following way:

1. Record all the production settings you are using.

   During the setup, you enter all of the settings you use in your production workflow (anilox, plate type, consumables... including the standard you want to print towards). See *Printing Condition configuration steps* on page 25

2. Fingerprint your press using the Print Control Wizard.

   In several steps, the Print Control Wizard will guide you in making and interpreting a print sample for your Ink Set. Based on your input and the results of the print sample, it gives you the best curve and screen to use for your inks.

See *Plate and Press Calibration* on page 27, *White* on page 38 and *Screens and Curves* on page 46

3. The Print Control Wizard generates a **printing condition** containing curve(s) and screen(s) tailored to your production workflow.

   See *What is a Printing Condition?* on page 8.

4. You use that printing condition when RIP'ing your jobs with Imaging Engine to get great results on press.

   See *Using a Printing Condition in Your Workflow* on page 17.

3. What is a Printing Condition?

The Print Control Wizard will guide you in creating a **printing condition**. This printing condition will:

- describe your exact production workflow (plate-making workflow and printing setup) and the way it prints,
- include the standard you want to print towards (an ISO standard, linear printing...),
- result in the best possible *curves* and *screens* to achieve the quality of that standard with your production workflow.

Important:

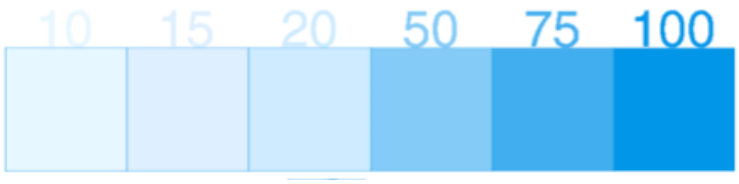
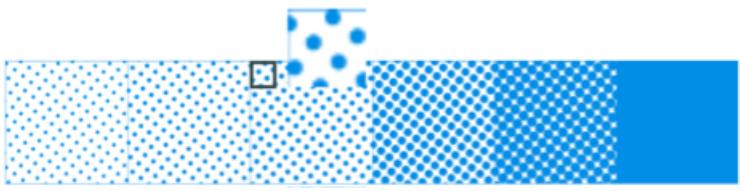
After making a printing condition, you should use it every time you print with that production workflow.

If you make changes to your production workflow (for example you print on a different substrate, or you switch to a different ink vendor), we recommend you edit your printing condition or make a new printing condition and use that instead.

3.1. Curves for Controlling Dot Gain

3.1.1. What is Dot Gain?

When printing a job, the dots tend to print larger on the press than on the plate, which makes the output darker than the original file.

Original job	
Plate	
Print	

This is due to different factors:

- the type of ink: the more fluid the ink is, the more it will spread under pressure of the press.
- the type of substrate: paper with a rougher and more porous surface (like uncoated paper) reflects less light, making the printed area look darker.
- the type of press: flexo presses have a high dot gain as they put significant pressure on the substrate.

3.1.2. What is Dot Gain Compensation?

To compensate for dot gain and have the printed output look like the original file, you use **dot gain compensation (DGC)**. This consists in making the dots on the plate smaller, so that with dot gain they print to the correct density.

	Dot on plate	Dot on press
Without DGC		
With DGC		

You apply dot gain compensation by using a curve, which can be:

- a classic dot gain compensation curve (also called **DGC curve**), which defines which percentage to use on plate for each desired percentage on press.

  See *Dot Gain Compensation Curves* on page 10.
- a **PressSync curve**: PressSync curves are predefined compensation curves that can cover the dot gain compensation needs of most presses, while significantly reducing the complexity of dot gain compensation in workflows.

  See *PressSync Curves* on page 10.

  The Print Control Wizard generates **flexible PressSync curves**, that contain additional parameters to address specific flexo printing challenges in the highlights and shadows.

  See *Flexible PressSync Curves* on page 11.

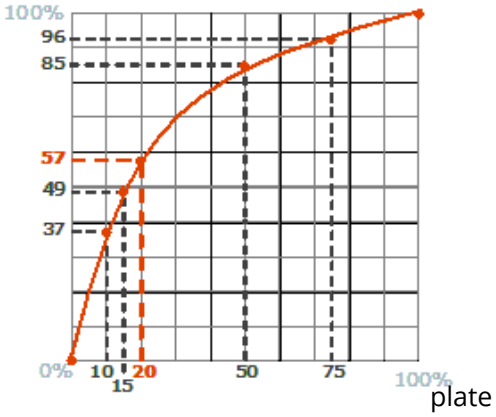
3.1.3. Dot Gain Compensation Curves

Traditionally, you apply dot gain compensation by using a dot gain compensation curve, which defines which percentage to use on plate for each desired percentage on press.

In the example below, you see how a press prints without any dot gain compensation in the **dot gain curve** at left: a 20% on the plate prints to 57% on press. 57% on the plate would print to almost 90% on press.

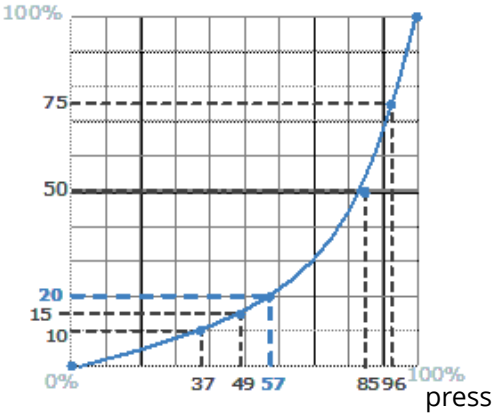
At right, you see the **dot gain compensation curve** used to make the press print to the expected value in the job: to print a 57% on press, a 20% will be used on the plate. To print a 20% on press, you would need about 5% on the plate.

press



Dot gain curve

plate



Dot gain compensation curve

Creating a Dot Gain Compensation Curve

You can create dot gain compensation curves in Curve Pilot (for more information, see the Curve Pilot User Guide: *https://www.esko.com/en/support/product?id=Curve%20Pilot*).

Dot gain compensation curve files have the `.dgc` extension.

3.1.4. PressSync Curves

Another type of compensation curve is the PressSync curve.

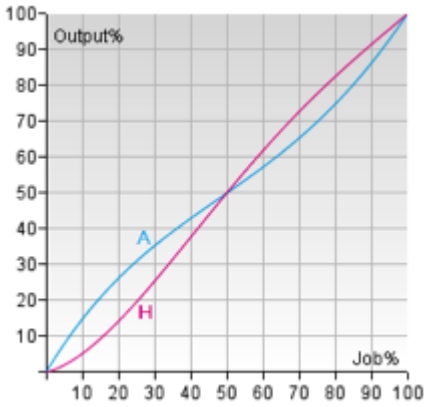
PressSync curves are predefined compensation curves that can cover the dot gain compensation needs of most presses, while significantly reducing the complexity of dot gain compensation in workflows.

Slope and Mid-tone Compensation

Curves are defined by a letter and a number.

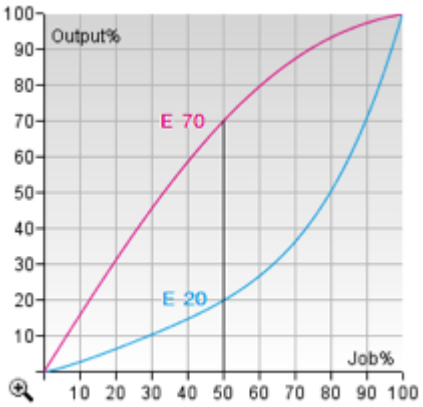
- The letter (A to H) describes how the press behaves in the highlights and shadows (the slope): an A curve makes the press print darker in the highlights and lighter in the shadows

(for presses who have the opposite problem), while an H curve, on the contrary, makes the press print lighter in the highlights and darker in the shadows.



An E curve is halfway in between and has a straight slope: it corrects the output the same way throughout the range. Use it for presses whose output is consistent in the highlights, mid-tones and shadows.

- The number indicates how much the 50% dot (mid-tone) prints to: an E20 curve compensates the 50% dot to 20%, while an E70 curve compensates 50% to 70%.



Creating a PressSync Curve

You cannot create PressSync curves, they are predefined. There are 400 different PressSync curves, to match most dot gain compensation needs.

If you wish, you can see each PressSync curve on a graph in PressSync Pilot (for more information, see the Curve Pilot User Guide: *https://www.esko.com/en/support/product?id=Curve%20Pilot*).

Flexible PressSync Curves

A flexible PressSync curve is a specific type of *PressSync curve* made for managing the tone reproduction of flexo printing environments.

On top of the *letter and number* defining the standard PressSync curves, a flexible PressSync curve contains options to address specific flexo printing challenges.

Reproducing Highlights

Flexo highlights are often too sharp against the substrate and/or unstable, which can be difficult to adjust using standard PressSync curves:

- For some ink/substrate combinations, the contrast between the substrate and the lightest printed tone is high: even a very small halftone dot leaves a strong ink impression.
- On top of that, very small dots often don't print in a stable way on flexible substrates, so the minimum dot size is increased to get stable highlights.

Flexible PressSync curves contain parameters to address those highlight issues.

Reproducing Shadows

The most common issue with shadows in flexo is tone reversal, where a high percentage (for example 95%) prints darker than the solid (100%).

Flexible PressSync curves also contain parameters to address tone reversal issues in the shadows.

You can find more information about flexible PressSync curves parameters in the **Curve Pilot documentation**. See *https://www.esko.com/en/support/product?id=Curve%20Pilot*.

Note: Adjustment curves generated by the Print Control Wizard are flexible PressSync curves. They are embedded in a Curve Strategy (.icpro) to allow the use of multiple curves in a Print Condition.

Note: The flexible options for highlights and shadows are displayed between brackets in the Print Control Wizard, e.g. F35 **(Min3.38%,h4,s6)**

3.1.5. Curve Strategies

Dot gain within the same print job can vary depending on the screening parameters, inks, and other factors.

A curve strategy allows you to combine different DGC curves and/or PressSync curves in 1 file (.icpro). A complete curve strategy contains a compensation curve for every practical combination of inks, ruling, screens, and/or any other operating parameters affecting dot gain used on your press.

You do not need a separate curve strategy for each new print job. Well-designed strategies are applicable to many jobs as long as the printing conditions are similar.

Note:

Curve strategies (.icpro) generated by the Print Control Wizard contain a PressSync curve per ruling that is added to your printing condition.

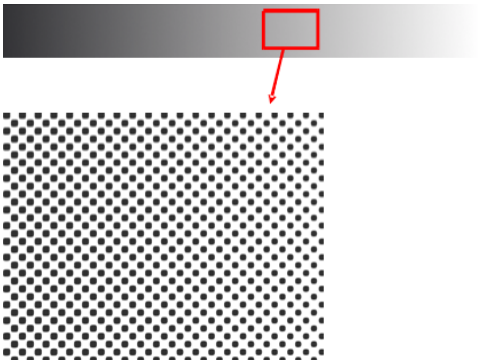
The PressSync curve contains a curve per ink present in the printing condition.

3.2. Screens for Controlling Ink Lay Down

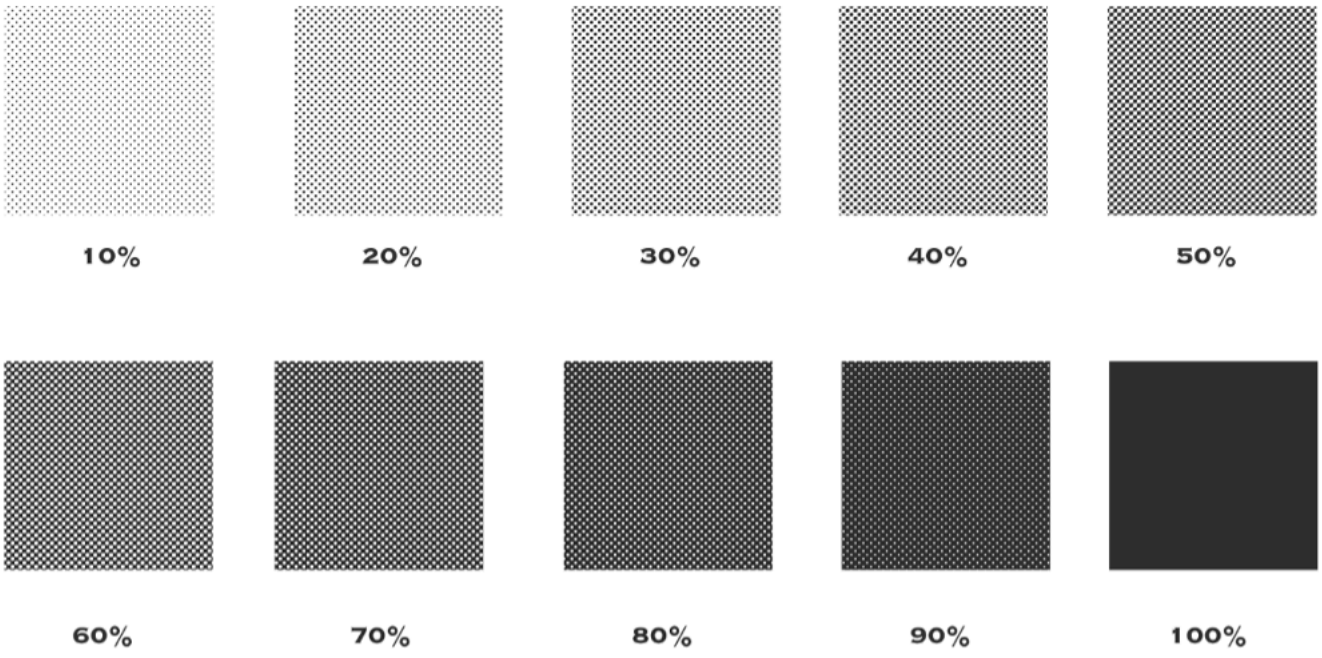
3.2.1. What is Screening?

When printing an image on press, each ink (Cyan, Magenta, Yellow, Black and any additional ink) is laid out separately on the substrate, and the super-imposition gives the final colors.

At a high detail level, the press can either print ink or not print ink, so to create differences of color intensity within one ink, you use a small scale pattern of dots of varying size, called a screen.

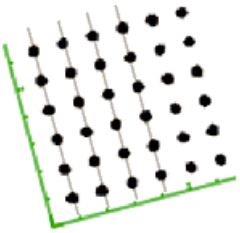


When viewed from a regular distance, this pattern looks like a lighter or darker shade of that color, depending on how big the dots are (what percentage of the area they cover).

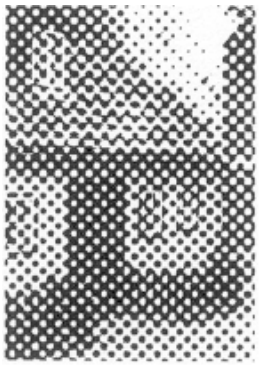


Screen Ruling

The screen can also be coarser or finer, so that you have to be more or less far away to see it as shades of a color. This depends on how many lines of dots can fit in a certain measurement. This is expressed in lines per inch (**lpi**), lines per centimeter (**lpcm**) or lines per millimeter (**lpmm**), and is called the **screen ruling**.



A low screen ruling as below left looks very coarse, and the quality improves as the screen ruling gets higher.



25 Lpi

45 Lpi

85 Lpi

3.2.2. Types of Screens

The Print Control Wizard will generate custom screens for your production workflow, so that you get the best possible printed results.

All screens generated by the Print Control Wizard use 1 or more Esko screening technologies:

- Pixel+ for surface screening in solids
- Pixel+ for Crystal dot shape:
- FM in the highlights
- support dots

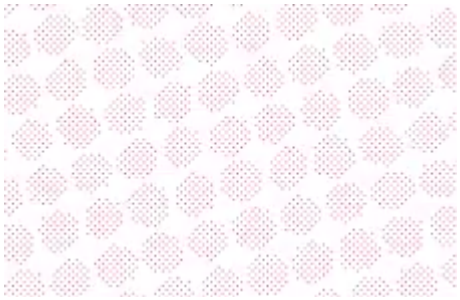
Depending what Esko screening technologies are combined, you get 3 types of screens: Crystal, Crystal C or Crystal NP.

Crystal and Crystal C Screens

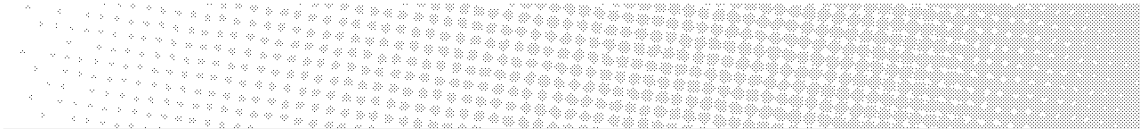
The Crystal and Crystal C screens are part of Esko's latest screening family, were the pixel+ technology is used throughout the tonal range.

Each dot is made of individual pixels, that are "boosted" on the CDI to make printable dots.

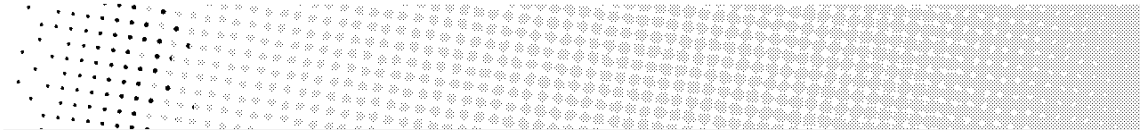
Surface screening in solids, FM in the highlights and support dots are optional, but could be added to further improve quality.



Crystal screens use the Pixel+ technology throughout the tonal range.



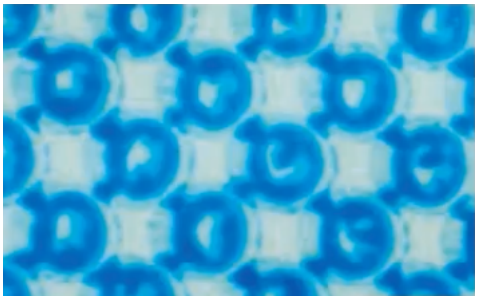
Crystal C screens use solid dots in the highlights, and transition to Pixel+ dots for the rest of the tonal range.



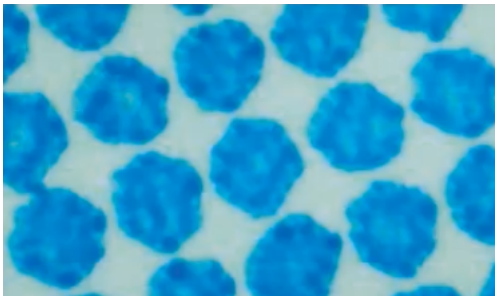
Crystal C screens can produce finer highlights, but Crystal screens can be more stable. The optimal screen to use depends of your particular production workflow.

When using Crystal/Crystal C screens, you don't need to use object-based screening (different screens for individual objects in your file), as they give good results in all areas:

- They provide a smooth transition from the solids into the shadows and mid-tones, with reduced dot bridging.



dot bridging with a circular dot



no dot bridging with a crystal screen

- They produce stable highlights that fade out to zero more smoothly than with other screening technologies.

Crystal NP screens

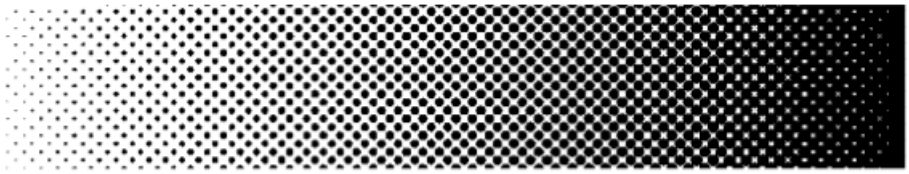
The Crystal NP screens are using classic dot shapes in the tonal range.

To further improve quality, Surface screening in solids, FM in the highlights and support dots could be optionally added.

You can choose between:

Circular (short name: C)

Circular dots grow continuously circular until 100%. They are commonly used in flexography.



This dot shape is also called **Circular (Euclidean)**, and Print Control Wizard screens using this dot shape are called **Crystal NP C (Circular)**.

This dot gives good results in many situations. However in some printing conditions the holes in the shadows can fill in, which can result in unstable or high dot gain, and cause a loss in tonal range.

If you experience this, you should choose the *Round Fogra* dot instead.

Elliptical (short name: E)

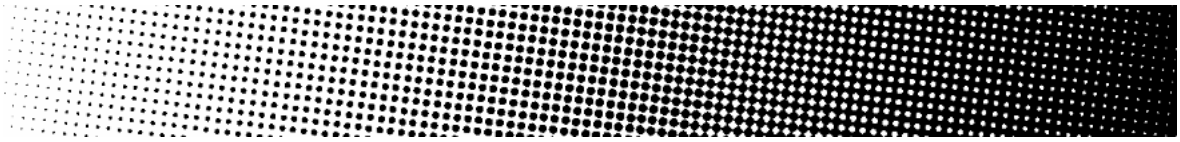
This dot shape is a more elliptical version of the *Round Fogra* dot.

For these dots, the first touching point is around 35%. Between 35% and 65%, a chain is formed with the same orientations as for the Round Fogra dots.

Print Control Wizard screens using this dot shape are called **Crystal NP E (Elliptical)**.

Double Circular (short name: F)

Screens using the Double Circular dot have circular dots in the highlights and mid-tones, and circular holes in the shadows.



Print Control Wizard screens using this dot shape are called **Crystal NP F (Double Circular)**.

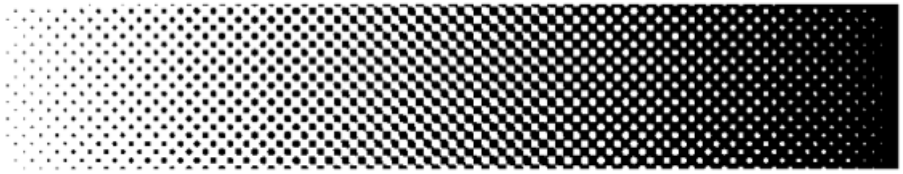
Note that this screen can cause irregular ink bridging ("bridges" between dots) around the mid-tones, which can give unstable dot gain in that tonal range.

If you experience this, you should choose the *Round Fogra* dot instead.

Round Fogra (short name: R)

The Round Fogra dot closely resembles the *Elliptical* and *Circular* dots, and can be used the same way.

It goes from a round dot to a round hole, with a square/diamond shape in the mid-tones.

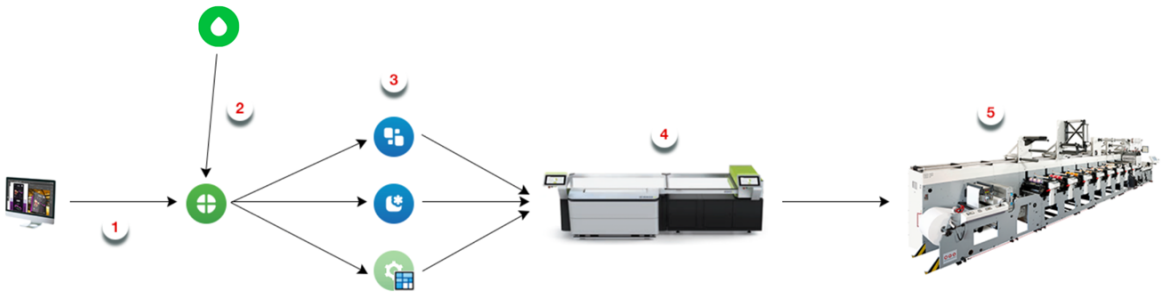


As with elliptical dots, the touching of the dots at the four corners at 50% (leading to a 50% intensity jump) is avoided by using a more elongated dot shape so that the dots first touch around 45% forming a chain and touching for the second time around 55%. This causes less artefacts and less dot gain when printing.

The Round Fogra dot can be used for virtually all printing processes.

Print Control Wizard screens using this dot shape are called **Crystal NP R (Round Fogra)**.

3.3. Using a Printing Condition in Your Workflow



1. After prepress, you send your ready-to-RIP files to Imaging Engine.
2. In Imaging Engine, you select the *printing condition* you made with the Print Control Wizard.

See *Using Your Printing Condition in Imaging Engine* on page 84 for details.

3. After RIP'ing your files, it's time for Flexo Plate Making, using either:
   - automated plate making in Automation Engine,
   - manual plate making using Grapholas or the Digital Flexo Suite.

   Note: When working with version 18.0.1 or later of Imaging Engine and the Print Control Wizard and preparing your plates manually, you need version 18.1 or later of Grapholas or the Digital Flexo Suite software.

   For more information, see the "CDI Workflow" chapter of your Automation Engine manual, or your Grapholas/Digital Flexo Suite documentation.
4. You image and expose your flexo plate using the devices and settings you entered in the Print Control Wizard.

   See *Plate and Press Calibration* on page 27 and *Plate Making* on page 43
5. You print your files on your press using the hardware and consumables you entered in the Print Control Wizard.

   See *Substrate* on page 41, *Ink Set and Printing Standard* on page 42, *Press Settings* on page 45 and *Screens and Curves* on page 46

4. Print Control Wizard User Interface

The **Print Control Wizard** is completely integrated in the **Color Pilot** application, our default application for creation of color data (inks, proofer profiles, press profiles, ...).

In this User Guide we only discuss the items related to the Print Control Wizard.

Please consult the Color Pilot User Guide for more details on the full interface and features: *https://www.esko.com/en/support/product?id=Color%20Pilot*

Note: Until version 18.1.1, Print Control Wizard was a separate application, with it's own installation procedure. If you are using version 18.1.1 or older, please use the 18 or 18.1 User Guide: *https://www.esko.com/en/support/product?id=Print%20Control%20Wizard*

When you have the correct licenses, you will see in the navigation pane (right side of the User Interface) a view called Screens and Curves, containing 3 categories:

- Screens. See *Screens Explorer* on page 20
- Curves. See *Curves Explorer* on page 21
- Printing Conditions. See *Printing Conditions Explorer* on page 22

4.1. General Configuration

4.1.1. Connect to Esko server

All data generated by Print Control Wizard should be stored on the Automation Engine Server, or the Imaging Engine server if no Automation Engine is present.

Why?

- To be able to use the Curves, Screens and Printing Conditions in Imaging Engine
- Centralized data to be used by other Esko applications, e.g. editors (ArtPro+, Plato, ...) and Pilots
- All data is part of the Automation Engine Full BackUp

To connect to an Esko server:

1. Go to **Edit** > **Preferences**
2. Select the **Servers** tab
3. In **Server Name**, enter the name of your Automation Engine Server
4. Enter your **User Name** and **Password**
5. Click the **Check Connection** button

   If the connection is successful, you will see a green dot with the text **Connected**
6. Select the **Database** tab

7. Select **Obtain from Esko Server** and verify if the correct name of your Automation Engine is mentioned

   In **Path Details**, you should see that the **Color**, **Curves** and **Screens** databases are now located on the chosen server.
8. Close the Preferences and restart Color Pilot

4.1.2. Preferred Units

1. Go to **Edit** > **Preferences** > **Test Charts**
2. Choose it the **Units** shown in the User Interface should be **Decimal** or **Imperial**

4.2. Screens Explorer

When you select Screens in the navigation pane, you will see a list of all screens available on your server.

For each screen, you can see:

- the **Screen Name**,
- a unique **Code** (short name)
- the **Kind** of screen it is (Crystal, Static, Custom or HD Flexo),
- any **Keywords** you assigned to the screen

The library can contain 4 kinds of screens, each with his own specific icon:

- Green icon: Static Screens, from Automation Engine/Imaging Engine installation
- Blue icon: HD Flexo Screens generated by the Esko application HDFlexo Screens
- Violet icon: Custom Screens generated by the Esko application ScreenManager
- Orange icon: Crystal Screens generated by Print Control Wizard

Note: The Screens explorer doesn't have an icons view, only a list view and grouped list view. For more information, see the chapter **Views** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

From the Screens Library, you can:

- delete a screen: Right-click it and select **Delete** (or select it and press the **Delete** key) then click **Yes** to confirm.
- Rename a screen: Right-click it and select **Rename** (or select it then click its name), then enter a new name and click **Enter**.
- Export a screen (to share with another Color Pilot): see *Export single items* on page 87
- Import a screen that was previously exported: see *Import single items or a complete Library* on page 87
- See if the screen is used in another object: Right-click it and select **Show Links**
- see where a screen is used: Right-click it and select **Show Links** to see which Printing Condition use it
- add/remove keywords to find your screen more easily: see the chapter **Keywords** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

Note:

- Static (green) and Crystal (orange) Screens are always locked (🔒), you cannot delete, rename, export or import them. See also *Import and Export* on page 86.
- You cannot rename HD Flexo Screens (blue), as they are predefined in the HD Flexo database.
- If the screen has a link to another object (for example, it is used by a printing condition), you will see a warning showing where it is being used, and you will not be able to delete or rename it.

4.3. Curves Explorer

When you select Curves in the navigation pane, you will see a list of all curves available on your server.

For each curve, you can see:

- the **Curve Name**,
- the **Kind** of curve it is (Curve, Curve Strategy, PressSync Curve Set),
- any **Keywords** you assigned to the curve

The library can contain 3 kinds of curves, each with his own specific icon:

- **Curve** : a single curve for dot gain compensation, see *Dot Gain Compensation Curves* on page 10
- **PressSync Curve set** : set of predefined compensation curves, see *PressSync Curves* on page 10
- **Curve Strategy** : a group of curves and rules for automatic curve selection, see *Curve Strategies* on page 12

Note: The Curves explorer doesn't have an icons view, only a list view and grouped list view.For more information, see the chapter **Views** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

From the Curves library you can:

- Open a curve in the Curve Pilot application: Right-click it and select **Open in Curve Pilot**.

  To know how to view and edit, see the Curve Pilot User Guide: *https://www.esko.com/en/support/product?id=Curve%20Pilot*

  Note:

  We **strongly advise against** editing curves and Curve Strategies created via the Print Control Wizard in Curve Pilot.

  Curve Pilot is an expert tool with a lot of functionality that is not needed and therefore not supported by the Print Control Wizard.

  Wrong usage of the tools could generate issues in your Printing Condition.

  Use **Update Curves** in your Printing Condition instead. See *Update Curves* on page 81

- delete a curve: Right-click it and select **Delete** (or select it and press the **Delete** key) then click **Yes** to confirm.
- Rename a curve: Right-click it and select **Rename** (or select it then click its name), then enter a new name and click **Enter**.
- Export a curve (to share with another Color Pilot): see *Export single items* on page 87
- Import a curve that was previously exported: see *Import single items or a complete Library* on page 87
- See if the curve is used in another object: Right-click it and select **Show Links**
- add/remove keywords to find your curve more easily: see the chapter **Keywords** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

Note: If a curve has a link to another object (for example, it is used in a Curve Strategy), you will see a warning showing where it is being used, and you will not be able to delete or rename it.

4.4. Printing Conditions Explorer

When you select Printing Conditions in the navigation pane, you will see a list of all Printing Conditions available on your server. The library can contain:

- Printing Conditions from older versions (18.1.1 or lower): greyed out + locked (), cannot be edited
- Unfinished Printing Conditions ( ): cannot be used in production, can be edited
- Finished Printing Conditions: ready to use in production, can be edited

Note: When you see this icon , the printing condition has an unfinished task, see *Update Curves* on page 81 or *Add Ruling* on page 71.

The library also shows the essential parameters per printing condition, if already provided:

- Ink set: see *Ink Set and Printing Standard* on page 42
- Application: see *General* on page 27
- **Substrate**: see *Substrate* on page 41
- **Plate type**: see *Plate Making* on page 43
- **Date Modified**: automatically generated when modifications are saved
- **Keywords**: see the chapter **Keywords** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

Note: You can sort the Printing Conditions according to a parameter: click on the header of that column.

Note: The Printing Conditions explorer doesn't have an icons view and grouped list view, only a list view.For more information, see the chapter **Views** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

From the library you can:

- Open a Printing Condition: Right-click and select **Open**, or double-click on a printing condition
- delete a Printing Condition: Right-click it and select **Delete** (or select it and press the **Delete** key) then click **Yes** to confirm.
- Rename a Printing Condition: Right-click it and select **Rename** (or select it then click its name), then enter a new name and click **Enter**.
- Duplicate a Printing Condition: Right-click it and select **Duplicate** then enter a new name and click **Enter**.
- Export a Printing Condition (to share with another Color Pilot): see *Export single items* on page 87
- Import a Printing Condition that was previously exported: see *Import single items or a complete Library* on page 87
- Show more details about the Printing Condition. See *Details pane* on page 23
- Save a report of that Printing Condition. See *Save a report* on page 69
- Update curves of that Printing Condition. See *Update Curves* on page 81
- Remove unfinished task: see *Update Curves* on page 81 or *Add Ruling* on page 71
- add/remove keywords to find your Printing Condition more easily: see the chapter **Keywords** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

Note: Printing Conditions from older versions (18.1.1 or lower) are view only, you can only show details and add/remove keywords.

4.4.1. Details pane

To quickly get more information about a printing condition, you can open the details pane: Right click a printing condition and select **Show Details**.

On the right-hand side the details will be shown:

- **Name**: name of the Printing Condition
- **Status**: ready or not ready for production
- **Press brand**: see *Press Settings* on page 45
- **Substrate**: see *Substrate* on page 41
- **Printing Standard**: see *Ink Set and Printing Standard* on page 42
- **Imager type**: see *Plate Making* on page 43
- **Exposure type**: see
- **Plate type**: see *Plate Making* on page 43

  Also possible to access plate settings from here: click **Open Plate Making**
- Screens and Adjustments Curves: see *Screens and Curves* on page 46

A table that shows for every ink in the printing conditions ink set:

- Ink and Ink Book name
- Screen code (crs01, crs02, ...)
- Short curve name (excluding the advanced parameters) for each ruling that is defined

- Also possible to access plate settings from here: click **Open Screens and Curves**

Note:

- Unfinished Printing Conditions ( ) will only show details from the parts that already have been completed.
- You can leave the details pane open when you navigate through the printing conditions. The details pane can be closed by clicking the **x** icon in the top right corner.

5. Creating a new Printing Condition

1. In the Printing Conditions library, click the **New Printing Condition** button in the bottom toolbar.
2. In the **New Printing Condition** dialog:
   a) Enter the **Printing Condition Name** you want to use.
   We recommend you use a descriptive name, that includes some of your workflow's key settings, for example `Press Type - Plate Type - Substrate`.
   b) Select the **Application** of your flexo printing workflow (the type of jobs and substrates that you usually work on).

   Note: Depending on your license, you may see one or more options here.

   - Select **Flexibles** if you are printing on flexible packaging.
   - Select **Labels** if you are printing labels (on a narrow web substrate).

   Note: The selection of the **Application** is not just informative, it influences some of the steps during calibration: different choices in drop down menu's, charts will be adapted in size and design, ...

   c) Select the **Substrate**. See *Substrate* on page 41
   d) Select the **Ink Set**. See *Ink Set and Printing Standard* on page 42

   Note: It is still possible to change the Substrate and Ink Set after this dialog is closed.

   e) Click **OK**. A new Printing Condition is created, and the configuration steps are shown.

   Note: The Printing Condition is immediately saved into the database.
3. Complete all configuration steps: see *Printing Condition configuration steps* on page 25
4. After finishing the last configuration step **Screens and Curves**, you can:
   - Have a final look at the results and parameters of the printing condition: see *Evaluate and Close* on page 68
   - Modify parts of the printing condition: see *Edit Printing Conditions* on page 71
   - Create a detailed report of the printing condition: see *Save a report* on page 69

5.1. Printing Condition configuration steps

At the top, a banner displays the status of the printing condition and a brief description of the selected configuration step.

Below the banner you see an overview of all configuration steps:

- *General* on page 27

- *Plate and Press Calibration* on page 27
- *White* on page 38
- *Substrate* on page 41
- *Ink Set and Printing Standard* on page 42
- *Plate Making* on page 43
- *Press Settings* on page 45
- *Screens and Curves* on page 46

To navigate between the configuration steps, you have 2 options:

- Select a **configuration step**
- Click the **navigation arrows** on the left and right of the pane:

Unfinished Printing Conditions have an indicator next to each step:

- : all mandatory parameters are completed
- : still need to complete some or all mandatory parameters
- : configuration step is not available until some mandatory parameters in previous steps are completed

Note:

- Mandatory parameters in the configuration steps are marked with a grey check mark . All need to be green before the configuration step is marked completed.
- The progress of some steps (selection options, charts, ...) depend on the mandatory parameters from previous steps. Changing a parameter will require to redo the step.

Note:

It is not possible to edit any of the selection lists in the Printing Condition (substrate type, plate type, ...). Only parameters that have been tested and approved, can be selected.

The selection in step x, can limit the selection possibilities in 1 of the next steps.

The activated licenses can also influence the selection possibilities.

At any point in the process you can stop working on your printing condition and continue later. Use the buttons **Close** and **Quit Now and Continue Later**. Don't forget to **Save** when asked.

When you are ready to continue, open the Printing Condition by right-clicking it and selecting **Open**, or by double-click on it. The first step that is incomplete will automatically be selected, to remind you were to continue.

Note: When you open a finished Printing Condition, the interface will be a little different. See *Evaluate and Close* on page 68

If you want to remove your latest modifications in the Printing Condition, click the **Revert** button in the bottom tool bar. Be aware that **ALL** modifications until the latest save action will be removed.

We recommend to regularly save changes (e.g. after every step) to make better use of **Revert** and avoid unnecessary loss of time and data.

5.1.1. General

The first configuration step in the list shows the **Application** that has been chosen in the **New Printing Condition** dialog. It can no longer be changed. See *Creating a new Printing Condition* on page 25

You have the opportunity to enter a **Description** and add/remove **Keywords**, but this is not mandatory.

Note:

Keywords added via the Printing Conditions Explorer, will also be visible here.

See the chapter **Keywords** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

5.1.2. Plate and Press Calibration

In this configuration step you will verify the quality of your plate making and determine the best possible screening dot (dot shape) and surface screening (solids) for your printing condition.

Note:

Note: Screen setup for the highlights will be determined in the last configuration step **Screens and Curves**.

To complete this configuration step, you have 3 options:

1. *Start a new calibration* on page 27

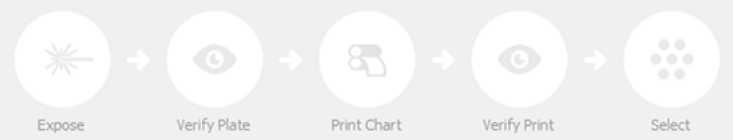
   Select this option if you want to be guided step by step through the calibration.
2. *Copy the calibration from another Printing Condition* on page 37

   Select this option if you know that the same settings from an existing printing condition can be used for your new printing condition .
3. *Define the plate screening settings manually* on page 37

   Select this option if you know what settings to select, without using the wizard, e.g. based on knowledge and tests from outside the Print Control Wizard, settings received from an external partner, etc.

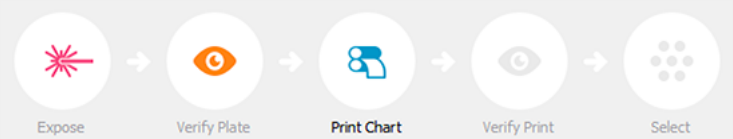
Start a new calibration

The plate and press calibration wizard consist of 5 steps, displayed in this way:



Note:

When you **Quit to Continue Later**, the completed steps will be colored. The step where you will continue from, is also colored and the text is darkened:



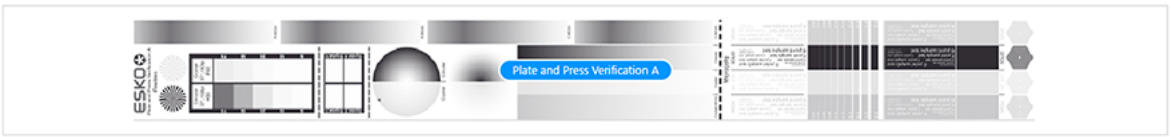
To continue the configuration, click **Click here to continue calibrating your plate making and press**.

1. To start the wizard, click **Click here to start calibrating your plate making and press**.
2. Select **Start a new calibration**
3. Click **Next** in the lower right corner
4. **Create** two test charts:
   a) Click **Save Charts...**
   b) Specify the folder where you want to save and click **Select Folder**

   Two files are created in the selected folder: `PlateAndPressCalibrationA.LEN` and `PlateAndPressCalibrationB.LEN`

   Example of chart A:

   Will be used to determine the dot shape, surface screening and pixel boost factor



   Example of chart B:

   Will be used to verify the plate quality and to determine the dot shape

Note:

- This wizard creates different charts for Labels and Flexibles. It is possible to re-use the same files for other Plate and Press calibrations, but make absolutely sure that you use the correct chart for Labels and Flexibles!
- The Chart will always be saved as a LEN file, no other formats possible.

5. Click **Next** in the lower right corner
6. **Image the plate** on CDI according to your company's Standard Operating Procedures, using the 2 LEN test charts:
   - **Chart A**:

     Image several times using a different boost factor.

     To automatically create a series, use the step test option in the Grapholas Exposer software from the CDI.

     Note:

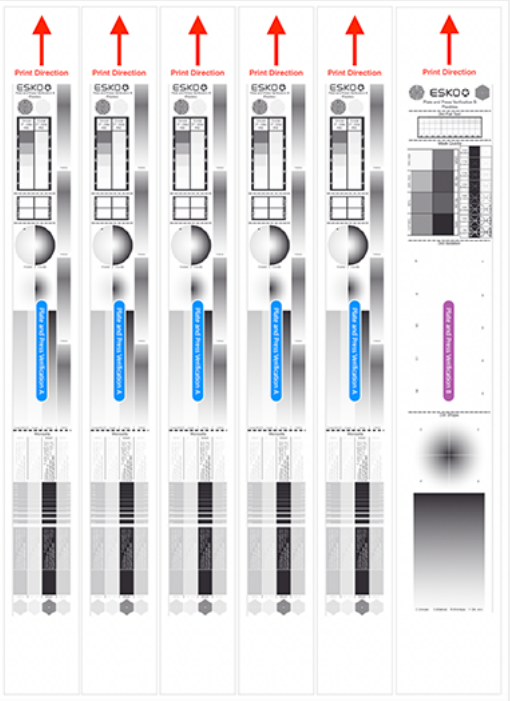
     - For more information about setting up step test on a CDI Crystal , click *Learn more about setting up a Step Test*. For more information about setup on a CDI Spark, contact Esko Support.
     - Create as many copies as your plate size can contain.

   - **Chart B**:

     Image the chart once.

Note:

- Make sure that charts A and B are on the same plate, so they will be printed together.
- Position the charts in the print direction on the plate (Esko logo printed first)



7. Check the **Mask quality** on chart B

a) Check your plate

- use a mask densitometer (such as the Techkon DENS or the Techkon T120)
- put the unexposed plate on a light table
- click *Learn more about evaluating this area*.

- compare your result to the value that was found as good quality during installation of the CDI

b) Select the **Check Plate Relief and Masked Image** area in the preview image of the chart.

c) **Accept** if the result matches the reference, or **Reject** if the result doesn't match.

Note: As the acceptance of this area also includes the Plate Relief, you can wait to click **Accept** until you finished the Plate Relief test after exposing the plate.

8. **Expose and process the Plate** according to your company's Standard Operating Procedures
9. Check the **Dot Fail Test** on chart B

a) check your plate

- use a simple magnifying glass
- check the center and lower row
- the smallest number where all dots are in position gives the resulting value. For more information, click *Learn more about evaluating this area*
- compare to the value that was found as good quality during installation of the CDI (for newer Software-versions this is being recorded within the software)

b) Select the **Dot Fail** area in the preview image of the chart

c) **Accept** if the result matches the reference, or **Reject** if the result doesn't match.

10. Check the **Plate Relief** on chart B

a) check your plate

- use a micrometer
- measure the plate height on an area that was intensively exposed (solid, MC16p, MG25, 50%)
- measure the floor height in the area marked 'Relief'
- calculate the relief = plate height – floor height. For more information, click *Learn more about evaluating this area*
- compare to the value that was found as good quality for your production

Note:

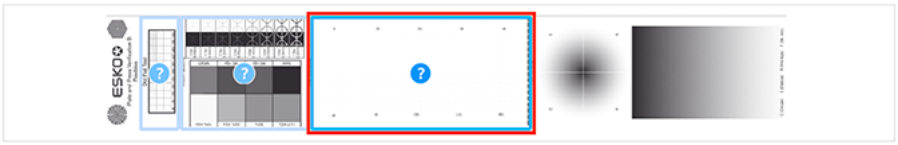
- If the relief is too high (low floor), the highlight dots will print unstable.
- If the relief is too low (high floor), the floor will start to print in some areas (dirty print).

b) Select the **Check Plate Relief and Masked Image** area in the preview image of the chart

c) **Accept** if the relief is not too low or too high, or **Reject** if the result doesn't match.

> **Note:** This area can only be accepted if the Plate Relief and Mask quality tests are positive

11. Check the **Dot Isolation** (single dot test) on Chart B



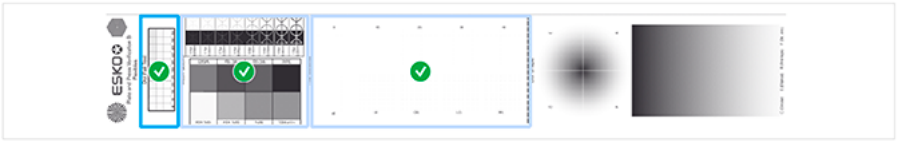
a) check your plate

- use a magnifying glass
- verify the 10 squares, each square contains 100 dots of a certain size and is marked by a number (the number indicates the size of the dots in the square: 16 = 4x4 pixels)
- the smallest number where all dots of 1 square are equal in shape and size, gives the resulting value For more information, click *Learn more about evaluating this area*
- compare to the value that was found as good quality during installation of the CDI (for newer Software-versions this is being recorded within the software)

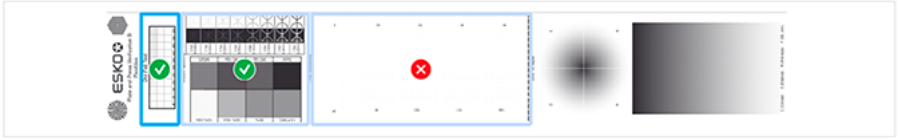
b) Select the **Check Dot Isolation** area in the preview image of the chart

c) **Accept** if the result matches the reference, or **Reject** if the result doesn't match.

When your plate quality is ok, you accepted all 3 areas and it is possible to continue with the next step.



If you rejected one or more checks, you cannot continue to the next step



Troubleshoot your plate making process and repeat the test. When the new test is positive, you can change the state from Reject to Accept for that area.

12. Click **Next** in the lower right corner

13. **Make a Print** using this plate, according to the Printing Condition and your company's Standard Operating Procedures.

> **Note:** We recommend to print with cyan or magenta ink.

> **Note:**
>
> When you will evaluate and select the best screen for your printing condition, it is important to know if the screens changed during printing (act unstable).
>
> We therefore recommend:
>
> - after reaching printing conditions (= first ok sheet), print 50 to 100 meters
> - starting from the first ok sheet, select min 3 copies (advise = 5) that represent the complete printrun: begin – middle – end

14. Click **Next** in the lower right corner
15. **Verify** the print
    a) Check the Slur and Impression (pressure) marks on the print
       - use a magnifying glass
       - **ALL** marks on the print should be ok, to avoid left-right; top-bottom differences
       - To know how to evaluate the marks, click *Learn more about evaluating and verifying print quality*

    > **Note:** Also verify the other copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.

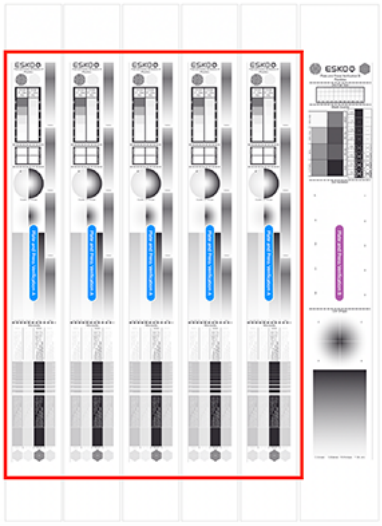
    b) **Accept** or **Reject**

    When your print quality is ok, it is possible to continue to the next step.

16. Click **Next** in the lower right corner
17. Choose the **best solid (surface screening)**

    The best solid is achieved by a combination of a surface screening type and the correct pixelboost factor.

    a) Evaluate, by using the pixelboost step test with chart A



b) Compare all solid patches of the charts A (see note) and select the best printed solid based on 3 criteria:

- Trailing edge
- Smooth ink laydown
- SID (Solid Ink Density)

1. First eliminate all solids that show Trailing edge and Smooth ink laydown issues, generated by a wrong pixelboost value. Use a magnifying glass.
2. Measure the density of the remaining solids. Use a classic densitometer or spectrophotometer (e.g. XRite eXact)
3. Select the solid with the highest value + see what pixelboost value and surface screening that was used.

Note:

Several copies of chart A were placed on the plate, each having its own pixelboost factor. Each chart A contains 4 solids. 3 solids contain a surface screening and should show a different printing result.

The classic solid will be identical on every chart, as the pixelboost has no effect on it (no surface screening).

e.g. 5x chart A on plate x 3 solids with surface screening per chart + 1 classic solid = 16 different results

Note: For more information, click *Learn more about selecting the boost factor and screen technology*

c) Check if your selection is also not causing any issues in:

1. Text, negative text and negative lines

2. Smoothness of the transition into the Solid (no tonal jumps)

Note:

- MG34 and MG45 have several gradients in chart A. It is not necessary that all gradients have a smooth transition.
- The gradient named 'Crystal' is using MCWSI.

d) Check on the other copies you selected from your print run, if your selection shows similar results, without issues!

e) Select the **Surface Screening** from the pull-down menu in step 1: MCWSI, MG34, Solid or MG45

f) Enter the **Solid Density** and select the Density standard you use on your measurement device (ANSI A, DIN, ...), not mandatory.

g) Enter the **Boost Factor** (Pixel Boost value) in step 3

Note: When you select the Surface Screening, 'Use pixel boost' will automatically be activated, if necessary. The box to enter the Boost factor will become available.

h) You also have the opportunity to enter a **Description**, not mandatory

i) Don't forget to enter the results in the CDI

Note: For more information about setting up on a CDI Crystal , click *Learn more about selecting the boost factor and screen technology*. For more information about setup on a CDI Spark, contact Esko Support.

18. Choose the best **Screening Dot** (dot shape), based on what screening dot is printing the smoothest gradients, improves overall printing quality and is showing the best stability throughout the print run.

Check for:

- tonal jumps
- dot stability: random missing dots, deformed dots, ...
- dot gain: what screen produces a dot gain closest to the printing standard (= less compensation needed)
- color saturation of tints and solids
- ...

Note:

Depending the selected surface screening, not all screens will be available:

- MCWSI = only Crystal
- MG34 = Crystal, Circular, Round (Fogra), Elleptical, Double Circular
- Solid = Crystal, Circular, Round (Fogra), Elleptical, Double Circular
- MG45 = Circular, Round (Fogra), Elleptical, Double Circular

a) Compare the Crystal and Circular (classic) screen, on chart A

Note: If you don't see a big difference between both screens (= no clear advantage for Crystal screen), we advise to select Circular or another classic screen. Classic screens are more tolerant for changes in plate making and printing.

b) If you choose to use the Crystal screen, skip to the next step. If you did not select Crystal Screen:

1. If your surface screening is MG34 or MG35, compare the Circular (C), Round Fogra (R), Elleptical (E), Double Circular (F), on chart B

2. If your surface screening is solid, compare Circular (C), Round Fogra (R), Elleptical (E), Double Circular (F), on chart B

c) Check on the other copies you selected from your print run, if your selection shows similar results, without issues!

d) Select the **Screening Dot** from the pull-down menu in step 2: Crystal, Circular, Round (Fogra), Elleptical, Double Circular

19. Click **Next** in the lower right corner

20. Click **Finish** in the lower right corner

The selected Pixel Boost, Surface Screening, Solid Density, Screening Dot and description are now shown on the Plate and Press Calibration page.

Note: It is possible to edit the Plate and Press Calibration setup: see *Change Plate Making and Press Calibration settings* on page 82

Copy the calibration from another Printing Condition

1. To start the wizard, click **Click here to start calibrating your plate making and press**.
2. Select **Copy the calibration from another printing condition**
3. Click **Next**, in the lower right corner.
4. **Select** from which Printing Condition you wish to copy the parameters from.
   a) click **Select**
   b) **Select a Printing Condition** from the list

   Note:

   - By default, you can only select Printing Conditions using the same application (labels, flexibles, ...). To be able to select any printing condition from the list, Click **Allow printing conditions with a different application.**
   - It is also possible to select an unfinished printing condition ( ), but only if the configuration step **Plate and Press Calibration** is completed.

   c) Click **Select**
5. A preview of the selected Printing Condition parameters are shown: Pixel Boost, Surface Screening, Solid Density, Screening Dot and description are shown.
6. You have the opportunity to enter a **Description**, not mandatory.
7. Set the toggle **Copy all hardware settings**

   If checked (default), not only the plate and press calibration settings will be copied from the selected printing condition, but also all other available settings (plate making, press, printing standard, ...), except:

   - the settings specified when creating the printing condition: inkset, substrate and application
   - the settings from the configuration step **Screens and Curves**
8. Click **Finish** in the lower right corner

The selected Pixel Boost, Surface Screening, Solid Density, Screening Dot and description are now shown on the Plate and Press Calibration page.

Note: It is possible to edit the Plate and Press Calibration setup: see *Change Plate Making and Press Calibration settings* on page 82

Define the plate screening settings manually

1. To start the wizard, click **Click here to start calibrating your plate making and press.**
2. Select **Define the plate screening settings manually**
3. Click **Next** in the lower right corner.

4. Select the **Surface Screening** from the pull-down menu in step 1: MCWSI, MG34, Solid or MG45
5. Enter the **Solid Density** and select the Density standard you use on your measurement device (ANSI A, DIN, ...), not mandatory.
6. Select the **Screening Dot** from the pull-down menu in step 2: Crystal, Circular, Round (Fogra), Elleptical, Double Circular

   Note:

   Depending the selected surface screening, not all screens will be available:

   - MCWSI = only Crystal
   - MG34 = Crystal, Circular, Round (Fogra), Elleptical, Double Circular
   - Solid = Crystal, Circular, Round (Fogra), Elleptical, Double Circular
   - MG45 = Circular, Round (Fogra), Elleptical, Double Circular

7. Enter the **Boost Factor** (Pixel Boost value) in step 3

   Note: When you select the Surface Screening, 'Use pixel boost' will automatically be activated, if necessary. The box to enter the Boost factor will become available.

8. You also have the opportunity to enter a **Description,** not mandatory.
9. Don't forget to enter the results in the CDI

   Note:

   For more information about setting up on a CDI Crystal , click *Learn more about selecting the boost factor and screen technology*.

   For more information about setup on a CDI Spark, contact Esko Support.

10. Click **Finish** in the lower right corner

The selected Pixel Boost, Surface Screening, Solid Density, Screening Dot and description are now shown on the Plate and Press Calibration page.

Note: It is possible to edit the Plate and Press Calibration setup: see *Change Plate Making and Press Calibration settings* on page 82

5.1.3. White

The goal of this configuration step is to improve the evenness of the ink film and the opacity for solid white, by applying a surface screening.

There are different types of surface screening and depending the printing conditions, some will give better results then other. By printing a test chart on press, you will be able to select the most optimal surface screening for your printing condition.

This step is not mandatory and becomes available when the step **Plate and Press Calibration** is completed.

Note:

- As this configuration step is optional, the indicator will always be green , With or without performing the White calibration.
- The White calibration is only available when you have license for an XPS exposer. The screen technology for white ink (very fine surface screening pattern) requires the very consistent exposing of a LED UV system (= XPS).
- We recommend to only use the White calibration for Solvent inks, as other inks are not tested yet.

1. To start the wizard, click **Click here to choose the screen for white**.
2. **Create** the white chart
   a) click **Save Chart...**
   b) specify the folder where you want to save, click **Select Folder**

   A file named `PCW_White.LEN` is created in the selected folder

   Example of the white chart:

   - This wizard always creates the same chart, independent of the parameters in the previous steps. It is possible to re-use the same **PCW_White.LEN** file for other White calibrations.
   - The Chart will always be saved as a LEN file, no other formats possible.
   - You can edit the LEN file in an Esko editor, to adapt for your production (plate size, bearer bars, ...). However, it is important that **you don't change** any of the technical elements related to the white screening.
3. **Make a plate** according to your company's Standard Operating Procedures using this LEN test chart.

Note: It is not necessary to adjust the Pixelboost for the white, use the value from the Process Colors.

4. **Make a Print** using this plate, according to the Printing Condition and your company's Standard Operating Procedures.
5. Click **Next** in the lower right corner.
6. **Select the ink** that you will use for white in your production files.
   a) In step 1, click **Select**
   b) In the top part of the dialog, **select the ink book** that contains your white
   c) **Select the ink** in the list below
   d) Click **Select**

   Note: Tipically, **White** from the Ink Book **ClassicColors** is used

   It is possible to use any ink (the name does not need to contain white) from any ink book, as long as the production files contain an ink using the exact same name and ink book as you select here.

   You can also use the remapping functionality in Automation Engine for this.

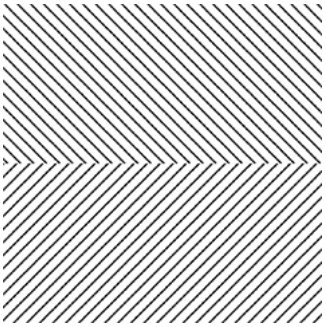
   To create a new ink, see the chapter **Adding an Ink to in Ink Book** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

   Note: Click to remove the ink, or repeat the selection procedure
7. **Evaluate** the printed chart

   a) Check if the overall quality of the printed result matches your current daily production.
   b) The patch in the center (A) is a pure solid, without surface screening. The printed result of this patch should be very similar to your current daily production.
   c) The pure solid patch (A) is surrounded by 8 patches, each with a different surface screening and labeled from B to I. Each patch is also horizontally divided in two sections

with different orientation of the MicroCells. In order to verify if the orientation will influence the quality of the white.

Zoom on center of a patch:



Choose the patch that shows the best printed result, by considering:

- What patch has the best opacity and evenness of the ink film?
- What patch doesn't show a difference between the upper and lower part?

Note: It is possible that the pure solid (A) is showing the best result.

Note: For more information, click *Learn more about choosing surface screening for white.*

8. In Step 2, **select the patch** from the pull-down menu: A (Solid) to I
9. You also have the opportunity to enter a **Description**, not mandatory.
10. Click **Finish** in the lower right corner

- In case you selected B to I, a screen will be created with the name CRYSTAL WHITE X (where X stands for the letter you selected: B to I).
- In case you selected A (Solid), no screen will be generated.

The selected ink, the calculated screen (or A (Solid)) and description are now shown on the White page.

Note: It is possible to edit the White setup: see *Edit White* on page 82

5.1.4. Substrate

Define the substrate you are using for your Printing Condition.

1. Select your **Substrate Type**:
   - **Acrylic**: a substrate made of acrylate, polyacrylate or methyl methacrylate components, sold for example under the Perspex, Plexiglas, Lucite or Acrylite trade names
   - **PE**: a polyethylene, polyester, PET, PETG or HPDE substrate, sold for example under the Mylar, Melinex, Hostaphan or BoPET trade names
   - **Spun PE**: spun and bonded polyethylene, sold for example under the Tyvek trade name
   - **PP**: a polypropylene, PVC or vinyl substrate
   - **PS**: polystyrene
   - **Paper**,

Note: Substrate type is already filled in from the **New Printing Condition** dialog, but can still be changed. See *Creating a new Printing Condition* on page 25

2. Select your substrate's **Opacity**:
   - **Transparent**
   - **White Underprint**: where a white ink is printed under the other inks
   - **White Overprint**: where a white ink is printed on top of the other inks, for example for reverse printing
   - **Opaque**
3. Enter your substrate's **Thickness** in microns or mil, not mandatory.

Note: To change the units, see *Preferred Units* on page 20

4. Add a more detailed **Description** of your substrate. Not mandatory, but highly recommended to add all data that identifies the substrate.

5.1.5. Ink Set and Printing Standard

Define what standard inks you are using on press and what targets you want to match the printing result.

1. Select the **ink set** you are printing with.

   This can be **CMYK** or an expanded gamut printing ink set (for example **CMYK Orange Green Violet**), where the expanded gamut inks are part of the **ClassicColors** ink book.

   For more information about expanded gamut printing, please see *Equinox and Expanded Gamut Printing* in the Color Pilot documentation.

Note:

- Ink Set type is already filled in from the **New Printing Condition** dialog, but can still be changed. See *Creating a new Printing Condition* on page 25
- Compared to the previous versions of the Print Control Wizard software, it is not possible anymore to only use 1 ink. The minimum is CMYK.

2. Select the **Printing Standard** you want to match.

   The Printing Standard contains the target data that will be used in the configuration step *Screens and Curves* on page 46.

   To know what standard to select, click *What is a Printing Standard*.
3. In **Details** you see an overview of the inks from the selected Ink Set.

   Per ink you get more information about the target data of the standard you selected:
   - The desired curve
   - The desired density or tone of a 50%

- Target LabCh values for the solid inks

5.1.6. Plate Making

Specify in this configuration step what Flexo plates will be used and the way the plates are made (image, expose, develop).

1. Select your **Imager Type**:
   - **CDI Crystal**: the new generation of Esko imager, using the Crystal technology
   - **CDI Spark**: an older generation of Esko imager

   For more information about Esko's different CDI models: *https://www.esko.com/en/products/digital-flexo-platemaking/cdi-spark/models*
2. Select your **Optics**:
   - For CDI Spark: **Optics15**, **Optics25**, **Optics40**, **Optics80** or **Optics80 V2**
   - For CDI Crystal: **Optics40 V2** or **Optics80 V2**

   Tip: If you don't know your CDI's optics technology, you can find it in the tables below (it is linked to its maximum imaging speed).

   Table: CDI Spark (Models 2530, 4835, 4260 and 5080)

Maximum Imaging Speed	Optics Technology
1.5 m²/hr	**Optics 15**
2.5 m²/hr	**Optics 25**
4 m²/hr	**Optics 40**
8 m²/hr	**Optics 80** or **Optics 80 v2** (depending on the model)

   Table: CDI Crystal (Models 4835 and 5080)

Maximum Imaging Speed	Optics Technology
4 m²/hr	**Optics 40 v2**
8 m²/hr	**Optics 80 v2**

3. **Resolution**:

   The resolution that is used to image the plates on CDI, is fixed at 4000ppi. The screen technologies in the Print Control Wizard (Pixel+, FM in highlights, ...) require this resolution.
4. Select your **Exposure Type**:
   - **Inline-UV**: Esko devise that exposes inline the front of the plate directly after imaging

- **XPS** Crystal: Esko device that simultaneously exposes the front and back of the plate, using UV LEDs.
- **External**: non-Esko exposure device, can be an analog or digital device

Note: To be able to guarantee a minimum quality, you can only select **XPS** for labels.

5. **Description** is intended to add data about your exposure devices, e.g. exposing times, what device (if you own several exposure devices of the same type), ...

   But you can also add all other data that could not be specified in the default fields. Data that is important to identify how the plates are created.

6. Select your **Plate Type**.

   A wide range of plate types from different manufacturers are available. All plates in the list are tested and approved by Esko, to be able to guarantee a minimum quality.

   In the future more plate types could be added. Contact Esko support if your plate type is not in the list.

   Some plate types are listed twice, each with a different developer. Make the selection of your developer type from this list.

7. Select your plate's **Thickness**, not mandatory

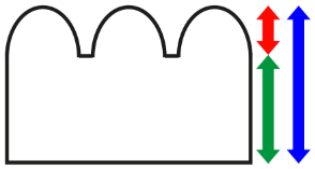
   Depending the plate type you selected, you will have a fixed list of plate thicknesses. Only plate thicknesses that are tested and approved by Esko will be available.

   In the future more thicknesses could be added. Contact Esko support if your thickness is not in the list.

8. Enter your **Relief Depth**, not mandatory

   This is the depth of the dots on your plate (or the difference in height between the printing surface and the floor of the plate).

   You can calculate your plate relief depth (in red below) by measuring your plate's thickness (in blue) and subtracting the plate floor's thickness (in green).



Note: To change the units, see *Preferred Units* on page 20

9. **Developer**: The type of developer is automatically defined when you select the plate type. It can be:

   - **Solvent**
   - **Thermal**
   - **Water**

   For some plate types we support more than 1 developer type.

Select your developer type in **Plate Type**.

5.1.7. Press Settings

Adding information about your press setup is not mandatory, but highly advised.

For every setup it is important to gather as much information as possible, to better understand at a later time the conditions of the setup.

Note: As this configuration step is optional, the indicator will always be green ✔

1. Enter the manufacturer name of your press (**Press Brand**).
2. Select your **Press Type**. It can be either:
   - **Central Impression** press: containing a single large-diameter common impression cylinder that supports the substrate as it enters in contact with a series of adjacent plate cylinders.
   - **Stack Press**: in which the substrate passes through multiple color stations which are aligned in one or two vertical stacks).
   - **In-line Press**: in which the substrate passes through multiple color stations which are aligned in a straight horizontal line).
3. Select your **Press Size**

   It is not possible to select a Cylinder Width, just the category **Wide Web** or **Narrow Web**.
4. Enter your press' **Printing Speed** in meters or feet per minute

   Note: To change the units, see *Preferred Units* on page 20
5. In **Press Inks** you see an overview of the inks in your Printing Condition, setup in *Ink Set and Printing Standard* and *White*.

   Note: For white, the name of the ink you selected as white will be shown in the list.

   Per ink you can add extra information about the ink, anilox and tape you will use on press:

   a) Select the ink and click the **Modify** button, or double-click the ink
   b) Specify the **Ink Properties**:

      1. Enter the manufacturer of the ink (**Brand**)
      2. Select the **Type**: **Solvent**, **Water-based** or **UV curable**
      3. Enter the **Viscosity** in seconds

      You can measure an ink's viscosity using an efflux cup. The viscosity is the number of seconds it needs to flow through the hole at the bottom of the cup until the cup is completely empty (very viscous inks need longer). Some newer press models can measure this automatically (electronically).

      Note: The ink's viscosity affects how well it transfers onto your substrate, and can change depending on ambient temperature and time (for example when the solvent in a solvent based ink starts evaporating).

   c) Specify the **Anilox Properties**

1. Enter the manufacturer of the anilox (**Brand**)
2. Enter the **Type**
3. Enter the anilox' **Line Screen** in lines per inch (this is the number of cells per linear inch).

   A higher line screen is used for finer detail, while a lower one will transfer a heavier layer of ink.
4. Enter the **Angle** of engraving (relative to the anilox axis) in degrees. This is typically 30°, 45° or 60°.
5. Enter the anilox' **Cell Volume** (the ink capacity of each engraved cell) in billion cubic microns (BCM).

   Note:

   The cell volume of an anilox roll can change over time, due to wear, damage and "plugging" (dried ink residues at the bottom of the cells). Plugging can happen when Solvent or Water-based ink is not cleaned immediately after using the anilox and dries in (UV curable ink will not dry on its own).

d) Specify the **Tape Properties** by entering the manufacturer of the tape (**Brand**)

Note: We recommend to also add the tape hardness in the same field.

e) If all your inks have the same properties, you can select **Apply properties to all inks**. This option is enabled when no parameters have been set for any inks.

f) Click **OK**

All parameters per ink, are visible in the overview table.

Note: At any time, you can add, remove or edit data per ink.

Tip: First, add all data that most inks have in common, by using **Apply properties to all inks**. Then edit the inks individually.

5.1.8. Screens and Curves

The final configuration step will generate the dotgain compensation curves and finish the setup of your custom screen, by choosing the highlights (mindot) that are best for your production.

To complete this configuration step, you have 2 options:

1. *Measure charts to determine screens and adjustment curves* on page 47 (recommended)

   Select this option if you will print and measure charts. The wizard will guide you step by step.

Note:

Dot gain and highlights are very specific for a certain press-ink-substrate combination. Even if your printing condition is very similar (e.g. same inks and substrate, but different press), we highly recommend to print and measure the charts.

If the results are very similar to another printing condition, you can still decide to use the same settings for both printing conditions.

2. *Manually select screens and use default adjustment curves* on page 66

   Select this option if you know what settings to select for the highlights in your screen.

   The software will select default dot gain compensation curves for all inks.

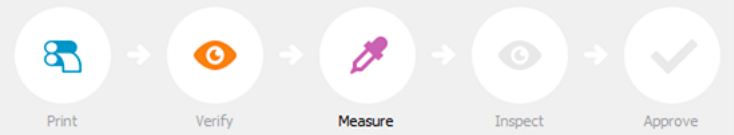
Note: It is possible to edit the curves later: see *Update Curves* on page 81

Measure charts to determine screens and adjustment curves

The screens and curves wizard consist of 5 steps, displayed in this way:

Note:

When you **Quit to Continue Later**, the completed steps will be colored. The step where you will continue from, is also colored and the text is darkened (**Measure** in the example below):



To continue the configuration, click **Click here to continue making your screens and curves**.

1. To start the wizard, click **Click here to start making your screens and curves**.
2. Select the **Screen Ruling** used in your production.

   A fixed list of rulings is available from 100lpi to 250lpi. If your ruling is not in the list, choose the closest available ruling.

   If you are using several rulings, you can add additional rulings after you finished the Printing Condition. See *Add Ruling* on page 71
3. Select the **Angle Set** used in your production.

   From the pull-down menu, you have the same 3 options that are available in the Imaging Engine tickets: Offset, Flexo-7.5, Flexo+7.5

Below the Angle Set selection, you find a list of all inks used in your Printing condition. You defined this in *Ink Set and Printing Standard* on page 42

Note: When you have completed the setup for White, the ink you selected as white will also be visible in the list. See *White* on page 38

The angles, defined by the Angle Set, are shown next to each ink.

It is possible to change the angle of an ink:

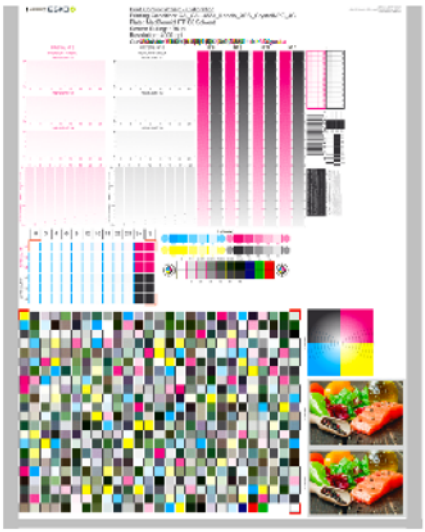
a) Click the angle
b) Select another angle from the list
c) The Angle Set will be set to <Custom>

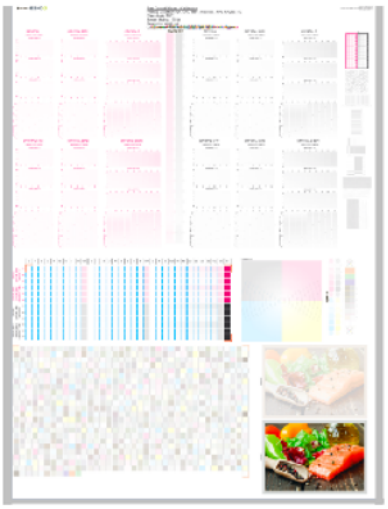
Note: Some angles are bigger then 90°, this is due to the screening technology used in the Print Control Wizard. The corresponding value in 'the 90° zone' is mentioned between brackets, make your selection based on this value.

4. Select **Measure charts to determine screens and adjustment curves (recommended)**
5. Click **Next** in the lower right corner to continue to creating and printing the test chart. See *Creating and printing the test chart* on page 48

Creating and printing the test chart

1. **Create** the test chart:
   a) A preview of the default layout is shown for labels (left) and for flexibles (right)





Note: The illustrations of the charts in this manual are just 1 example of the many possible versions. Your chart could look slightly different from the sample in this user guide !

   b) Add **chart options** to customize the layout

Note: All changes will be visualized in the preview.

- **Mirror Image**: to be used for reverse printing

  This option is on by default when using **White Overprint** in *Substrate* on page 41.

- **Add default bearer bars, slur marks and registration marks**:

  This option is always on by default.

- **Add a custom element**:

  If you want to add an image or technical element to the chart, to quality control the print.

  1. Click **Browse**
  2. Browse to the location of the file
  3. Click **Open**

  Note:

  - The element needs to be a .ct file (Esko native image file format). Use an Esko editor to create .ct files from your element.
  - You can only add 1 element. If you want to add several elements, first group them in an Esko editor.

  Note:

  A fixed area of 10cm x 49,6cm for flexibles and 10cm x 32,6cm for labels will be added at the bottom of the layout. If the element is smaller, the remaining space will be kept on the layout (and will be on the plate).

  To avoid this unused space, it is advised that the dimensions of the file are close to the dimensions of the fixed area.

  It is also possible to scale the element, by using the option below.

- **Proportionally enlarge the custom element to fit the chart width or height**

  The custom element will be scaled proportionally, until either the width or the height fits the fixed area (10cm x 49,6cm for flexibles and 10cm x 32,6cm for labels)

- **Split into multiple charts**

  If the layout is too big for your press, you can use this option.

  The layout will automatically be split in several smaller parts. All elements that need to be printed together will be placed on the same layout.

  Note: You can see the dimensions of the layout, on top left of the preview.

c) Click **Save Chart**
d) Specify the folder where you want to save, click **Select Folder**
e) Specify a **File name**
f) Select the **File Type** you want to save: LEN or Tiff

Note: Save as Tiff files if the **chart options** are not sufficient to adapt for your production (bearer bars, ...), because Tiff files are more easy to edit. However, it is important that **you don't change** any of the technical elements! In all other cases, save as LEN files and use them directly on the CDI.

g) Click **Save**

For each ink in your printing condition, a file will be created in the selected folder. e.g. if your inkset is CMYK and you completed the White setup, you will get 5 files: **File name_C**, **File name_M**, **File name_Y**, **File name_K**, **File name_White**

Note: It could take several minutes to create the file.

Note: The created chart is based on numerous parameters from the previous steps (application, dot shape, surface screening, ...). **Always** create a new chart, to assure that you have the correct elements in your chart for your printing condition.

2. **Image the plates** on CDI according to your company's Standard Operating Procedures, AND using the settings specified in the previous steps.
3. **Make a Print** using these plates, according to the settings you entered in the Printing Condition and your company's Standard Operating Procedures.

Note:

To have an accurate and reliable screens and curves creation, it is important that the measurements are an average of a complete print run.

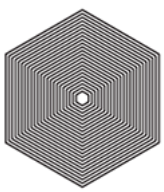
We therefore recommend:

- after reaching printing conditions (= first ok sheet), print 50 to 100 meters (or more if this better reflects your production)
- starting from the first ok sheet, select min 3 copies (advise = 5) that represent the complete printrun: begin – middle – end

4. Click **Next** in the lower right corner to continue to checking the printed chart. See *Checking the printed chart* on page 50

Checking the printed chart

1. Check **Slur and Impression marks** on the print



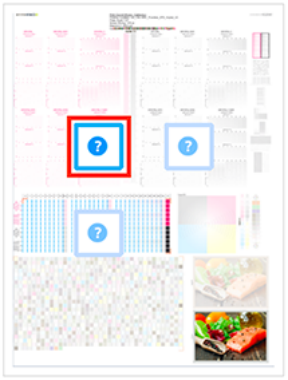
a) Check your prints

- use a magnifying glass
- **ALL** marks (= all inks) on the print should be ok

- verify all copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.

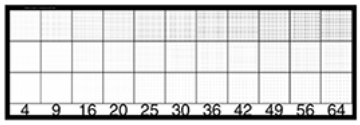
To know how to evaluate the marks, click *Learn more about evaluating this area*

b) Select the **Check Slur Marks** area in the preview image of the chart



c) **Accept** or **Reject**

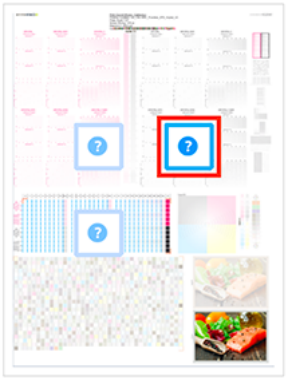
2. Check **Dot Fail** on the print.



a) Check your prints

- use a magnifying glass
- check the center and lower row
- the smallest number where all dots are in position gives the resulting value.
- verify all copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.
- compare to the value that was found as good quality during installation of the CDI, same value as used during *Plate and Press Calibration* on page 27

b) Select the **Check Dot Fail** area in the preview image of the chart



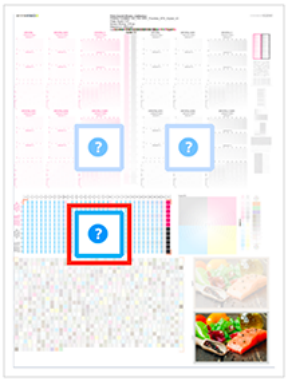
c) **Accept** if the result matches the reference, or **Reject** if the result doesn't match.

3. Check **Registration marks** on the print

a) Check your prints

- use a magnifying glass
- **ALL** marks on the print should be ok
- verify all copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.
- To know how to evaluate the marks, click *Learn more about evaluating this area*

b) Select the **Check Registration Marks** area in the preview image of the chart.



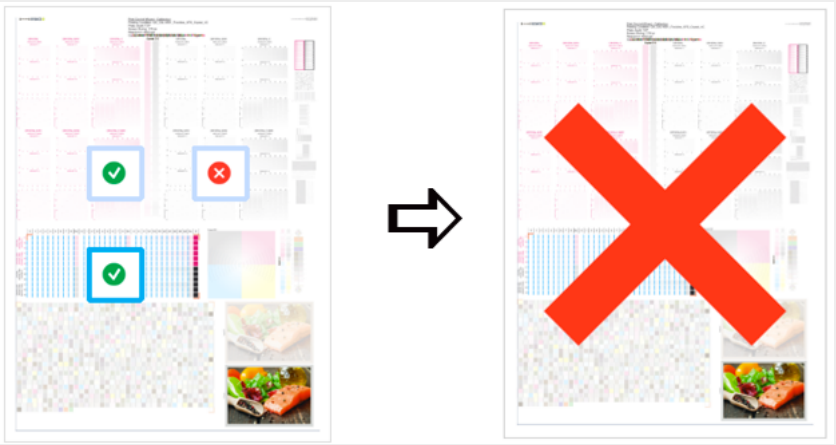
c) **Accept** or **Reject**

4. Click **Next** in the lower right corner

When your print quality is ok, you accepted all 3 areas, and you will get an approval on this page. It is possible to continue to the next step.

Note:

If you rejected 1 or more checks, you cannot continue to the next step. When you click **Next** in the lower right corner, you will be re-directed to the previous page.



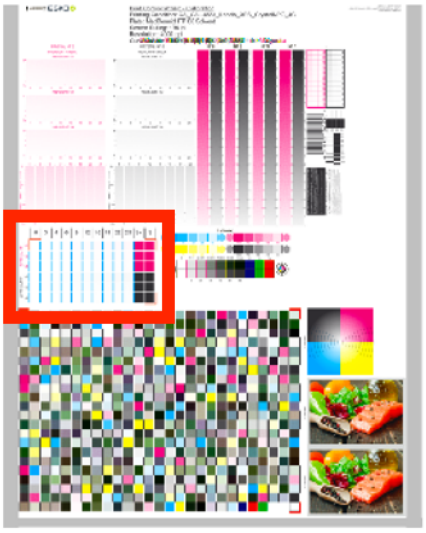
Troubleshoot with the press operator and reprint if necessary. When the new tests are positive, you can change the state from **Reject** to **Accept** for that area.

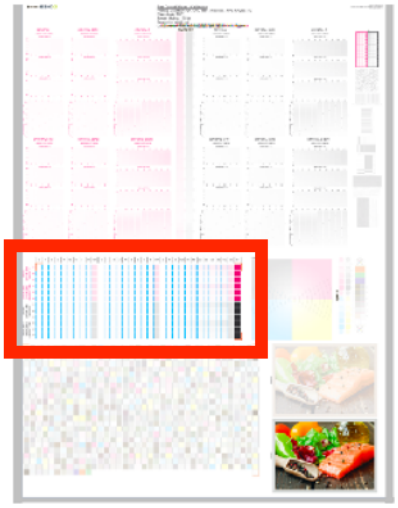
5. Click **Next** in the lower right corner to continue to measuring the charts. See *Measuring the chart* on page 53

Measuring the chart

1. **Measure** the **Mindot Chart**

   The Mindot Chart **for Labels** (left) and for Flexibles (right)





This will be used to determine the screen for the highlights.

The magenta printed part will be used for CMY, the black printed part for K. If your selected ink set contains 1 or more extra inks (OGV), the first ink will be added to the chart, to be used for OGV.

E.g. ink set is CMYKOG: orange will be added to the chart

a) Cut out the chart from your first copy
b) The chart can be read in patch or scan mode by an X-Rite i1 Pro or X-Rite i1iO. No other measurement devices are supported.

   To measure with the i1 Pro, it is advised to cut off the text before each row.
c) With the cogwheel ( ) on the bottom right, you can stop, calibrate and reconnect your measurement device, change the measurement mode and the measurement condition.

   See the chapter **Using a Spectrophotometer** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*
d) To know how to measure the chart with your measurement device, follow the instructions on the bottom left above the icons

   The preview will visualize the instructions and the measurement progress.

2. Click **Next** in the lower right corner
3. Check the **Measurement results**
   a) Check the preview: the upper and lower part of the patches should approximately have the same color.

Note:

The comparisaon of measurements (upper part) and the standard (lower part) is a rough approximation. Only look for clear differences:

- completely different color: e.g. wrong row measured, chart upside down
- the same color, but a a very big difference in lightness: e.g. not printed correct, issue with the measurement device

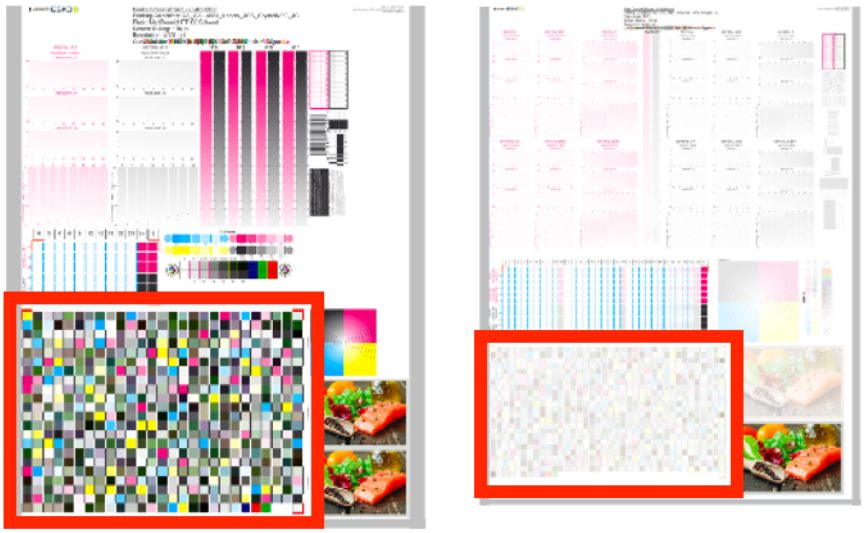
b) **Accept** or **Reject**

When your measurement is ok, it is possible to continue to the next step.

If you rejected the measurement result, you will be guided to measure again, following this same procedure.

This could be the same chart (wrong row, chart upside down) or a different chart from the print run.

4. Click **Next** in the lower right corner.
5. Measure the **Tone Value Chart** for Labels (left) or Flexibles (right)



- This will be used to create the dot gain compensation curves
- The chart will contain all inks from your selected ink set.

  E.g. ink set is CMYKOGV: chart will contain CMYKOGV patches
- Cut out the chart from the same copy as your mindot chart in the previous steps.
- The chart can be read in patch or scan mode by an X-Rite i1 Pro or X-Rite i1iO. No other measurement devices are supported.
- With the cogwheel ( ) on the bottom right, you can stop, calibrate and reconnect your measurement device, change the measurement mode and the measurement condition.

See the chapter **Using a Spectrophotometer** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

- To know how to measure the chart with your measurement device, follow the instructions on the bottom left, above the icons

  The preview will visualize the instructions and the measurement progress.

6. Click **Next** in the lower right corner.
7. **Check** the **measurements results**
   a) Check the preview, the upper and lower part of the patches should approximately have the same color.

      After the first measurement you can compare your measurement to the standard. After the measurement of your 2nd, 3th, ... copy, you can also compare to the average and to the other measurements.

      Select what you want to compare with, from the pull-down menu, on top of the preview.

      Note:

      - In this step we mainly want to detect if the charts were measured correct (not upside down, mirrored, ...)

        If the color in the patch is the same, but there is a big difference in lightness, this is probably not an issue. The dot gain compensation curve created from these measurements will correct for this.

      - Comparing charts among each other could be usefull, to detect if some charts are printed very different. That chart could be an exception and we don't want to include this in our average.

   b) Check the **solid info**, to the right of the preview

      1. Density: for each ink, the measured density should be within tolerance of the desired density

         Use the same tolerance as your company uses on press (typically + or - 0,05)

         Select the Density standard you use on your measurement device (ANSI A, DIN, ...), from the pull-down menu below the Solid Info.

         Note:

         The desired density is derived from the printing standard you selected in Ink Set and Printing Standard

         We don't show desired density for CMYK inks for standards that use an ICC profile as a standard profile. This is because density calculation requires spectral data, which is not available in ICC profiles.

      2. Color difference (ΔE): for each ink, the ΔE should be within tolerance of the printing standard you selected in Ink Set and Printing Standard. See *Ink Set and Printing Standard* on page 42

Select the ΔE Formula that is requested by the printing standard, from the pull-down menu below the Solid Info

Note: Select an ink if you want to see the LabCh details, below the **Solid Info** window.

Note: We don't show desired density, Lab and ΔE for the OGV inks. There are no standards for these inks, so there's nothing to match.

c) **Accept** or **Reject**

When your measurement is ok, it is possible to continue to the next step.

Note:

If you rejected the measurement result, you will be guided to measure again.

You will also have to measure and check the results of the mindot chart again. As both charts are linked to each other.

Reason:

- if you detect a printing issue on the Tonal Value chart, then the complete copy will most likely not be representative. Your Mindot measurement will be less reliable.
- To avoid mixing charts of different copies.

8. Click **Next** in the lower right corner.
9. Select **Measure another sample** if needed.

   To have an accurate and reliable screens and curves creation, it is important that the measurements are an average of a complete print run. Measure minimum 3 charts of good print quality (advise = 5)

   a) Click **Next** in the lower right corner
   b) You will be guided to measure again. Following this same procedure from the top.

   Note: The wizard will indicate how many charts you already measured: sample 1, sample 2, ...

10. If you measured enough charts of good quality, you can select **Stop measuring and inspect the resulting screens**
11. Click **Next** in the lower right corner to continue. See *Overview of the selected screen and highlights* on page 57.

Overview of the selected screen and highlights

View at the top, an overview of the screen technology and highlights selected from the measurements.

One selection is made for CMY (based on magenta part in mindot chart), another for K and another for OGV (if present, based on the part in mindot chart printed in the fifth separation).

You see per ink group (CMY, K and OGV) what is the selected:

Screen Technology:

1. The first part of the screen name is the screening dot (dot shape) you selected in Plate and Press Calibration: Crystal, Crystal C or Crystal NP. See *Plate and Press Calibration* on page 27
2. The surface screening selected in Plate and Press Calibration will be mentioned after the screening dot: MG34, MG45 or SOL (=solid). See *Plate and Press Calibration* on page 27

   Exceptions for Crystal NP:

   - the dotshape (R, C, F or E) will be mentioned after the surface screening, e.g. Crystal NP MG34 R9
   - SOL will not be mentioned if surface screening Solid is used, e.g. Crystal NP R6

   Exceptions for Crystal and Crystal C:

   - when MCWSI is selected, nothing will be mentioned in the name, e.g. Crystal 6 or Crystal C12
   - for Crystal C, the 'C' will be mentioned after the surface screening, e.g. Crystal MG34 C3
3. The number at the end indicates the size (in pixels) of the minimum dot, used in the screen.

   Note:

   - For Crystal C and Crystal NP: it indicates the number of pixels that will form the printing dot
   - For Crystal: it indicates the number of boosted pixels. As each pixel will be boosted (pixel +) on the CDI, the size of the printing dot will be bigger than the amount of pixels.
4. If a support dot is selected, the support dot characteristics will be mentioned at the end of the screen name, e.g. Crystal 4 **S4R1**

   - The size of the support dot: **S3** = 3 pixels
   - The type of ruling used: **R1** = single ruling, **R2** = double ruling)
5. For more information, see:

   - *Types of Screens* on page 14
   - *Learn more about inspecting highlights*

Code

When the screen is created, a code needs be assigned to the screen. So the screen can be easily used, communicated and traced back by Esko software and operators. Comparable to other Esko screens: Circular dot = C; an HD screen = HDxx; ...

This code is unique and will automatically be selected, based on 'next available in the list'.

It is possible to change the code BEFORE creation:

1. Click **Select**, next to the code
2. Select a screen code from the list
3. Click **OK**

Note: If the screen already exists, because it was already created in another Printing Condition, the code will be greyed out and labeled **(already exists)**. It is not possible to change the code.

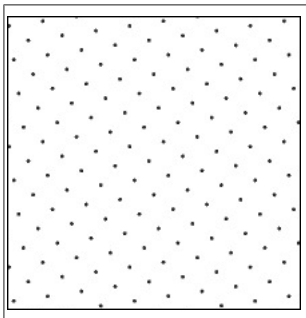
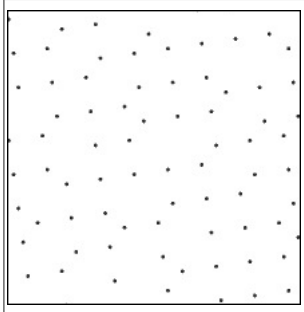
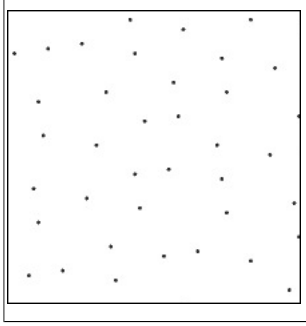
Minimum Dot on Plate

The size (diameter) of the selected minimum dot is mentioned in microns (µm).

Note: As boosted pixels on CDI gets bigger then 'regular' pixels, the diameter of 4 boosted pixels (Crystal 4) will be bigger than the diameter of 12 regular pixels (Crystal C12 or Crystal NP C12).

FM dot population

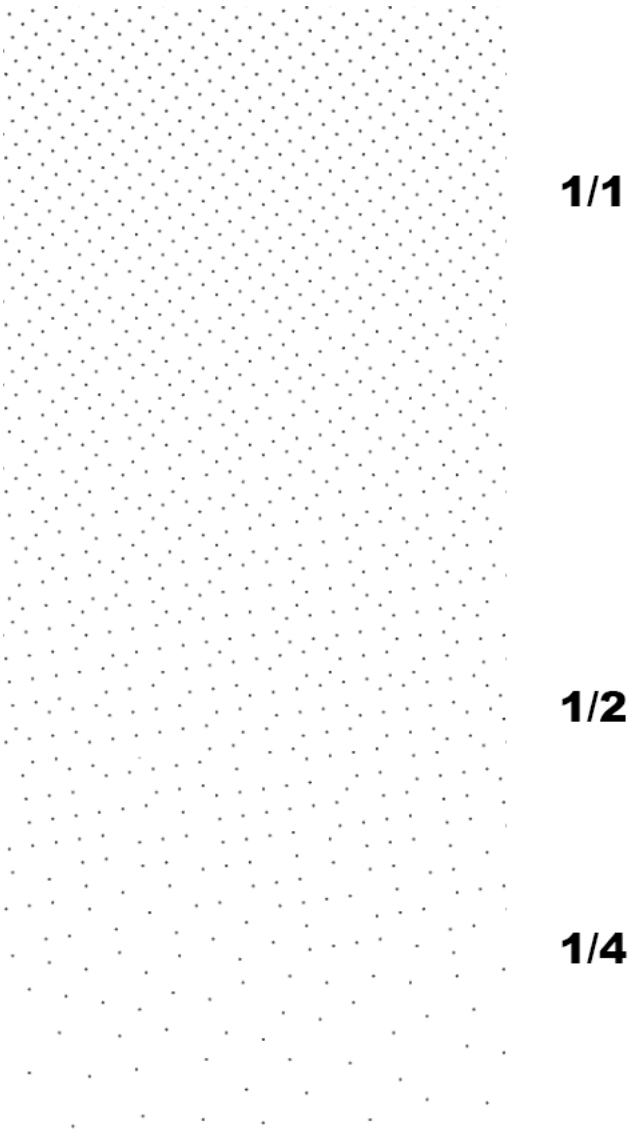
The FM dot population indicates the amount of dots used to print the highlights.

	**1/1** means that all the dots are kept (the screen doesn't use FM screening)
	**1/2** means that half of the dots are kept (resulting in FM screening)
	**1/4** means that a quarter of the dots are kept (resulting in FM screening) A lower FM dot population gives lighter highlights, but may increase graininess.

Transition point:

- If 1/1 (no FM): there is no transition point, the minimum dot will be the bump.
- If 1/2 or 1/4 (FM): the transition point, where the AM screen starts changing into an FM screen, will be determined by the minimum dot.

If you see **1/4**, it means that the screen gradually transitions from 1/1 (no FM) to 1/2, then to 1/4 in the highlights, as you can see below.



Lightest Tone Value

The lightest tone that can be printed, will be displayed.

The value is the result of the selected **minimum dot** and **FM dot population**. The combination that gives in print a stable dot and the lightest highlight, will be automatically selected from the measurements

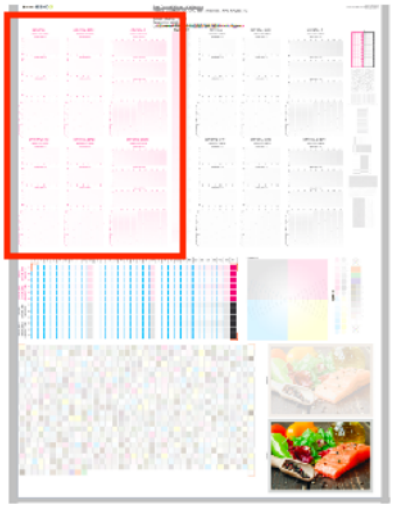
Continue to inspect the screen results

See *Inspect the screen results* on page 60

Inspect the screen results

1. **Locate** on your print sample, the **highlight check** areas.

   In the example below, the CMY area is marked, for Labels (left) and for Flexibles (right)



- Per available Ink Group (CMY, K and OGV) you will have a set of HIGHLIGHT CHECK's. The set is the same for each ink group.
- The number of HIGHLIGHT CHECK's depends on the **Screening Dot** you selected in *Plate and Press Calibration* (could be different number than the examples above).

- For every available screen technology there will be a HIGHLIGHT CHECK.

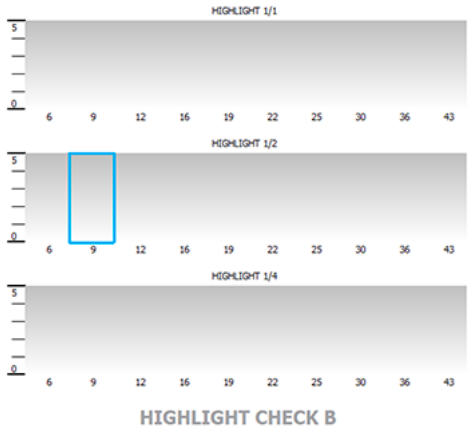
It shows the screens highlights (from 0 to 5%) for:

- different **FM Dot Population**: 1/1, 1/2 and 1/4

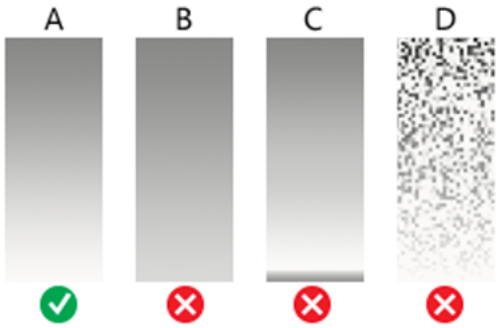
- different **Minimum Dot** (in pixels)

2. In the overview, select the **Ink Group** you want to inspect: CMY, Black or OGV

You will see your selected highlight in the preview, the area will be marked with a blue rectangle.



3. Locate the same area on your print sample, and inspect it on a light booth using a magnifier



a) **Skip the next step** and continue with the inspection of the other ink groups, if the highlights gradient fade smoothly (as in the gradient A)
b) **Continue to the next step**, if the highlights quality is not good enough and you encounter any of the issues below:

- B: the screen prints too dark, giving a hard edge in the highlights
- C: there is tone reversal in the highlights
- D: the print is too grainy

Note:

Inspect the screen results on ALL print samples were you measured the charts! The selected highlight should fade smoothly on all samples. If not, try to find a better highlight. To avoid that you will see the same unstable print behavior in your daily production.

For more information, click *Learn more about inspecting highlights*.

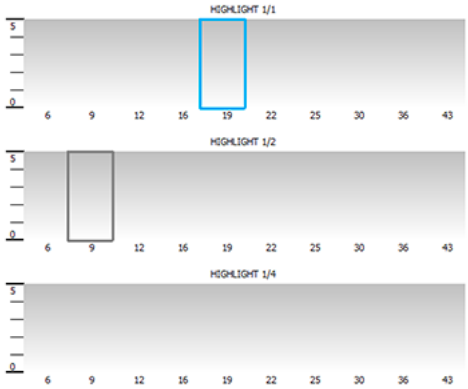
4. Select a highlight that you consider better

a) Inspect the neighboring highlight gradients (within the same or another FM Dot Population) to try and find better quality highlights.

   If you don't find any satisfactory highlights for your selected screen technology, inspect the highlights of another screen technology (for example Crystal C instead of Crystal).

b) To select the better highlight, click the area in the preview.

   - The blue rectangle will be placed in the new selected area.
   - The selection from the measurements will be marked with a grey rectangle.
   - The Ink Group will be marked with and the new settings will be applied.



HIGHLIGHT CHECK B

Note:

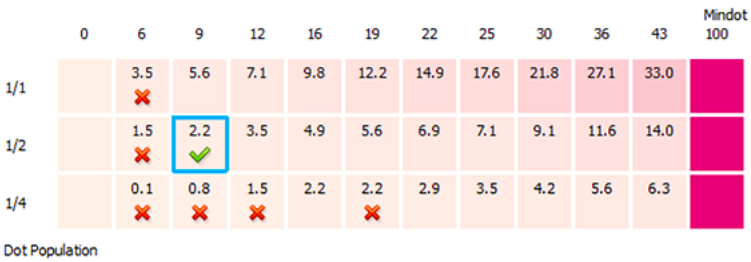
If you found the better highlight in another screen technology, first select the **screen technology** from the pull-down menu (on top of the preview).

Only screens that are related to the screening dot you selected in *Plate and Press Calibration* will be available.

Note: Click **Reset** (top right of the preview), to remove your change.

c) Enable **Show mindot strip with densities** (on top of the preview), if you need additional information to help you make your choice.

   Next to the highlight check preview, the mindot strip of the selected Ink Group is displayed, with the detailed result of your measurements.



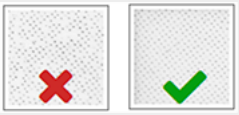
The patches on screen are arranged as in your print sample, by **minimum dot** size (horizontally) and **FM dot population** (vertically).

For each patch, you can see the tone value produced by the screen in this patch, and the wizards' evaluation:

- The patch with a green check is the one the wizard considers optimal: it prints in a stable way and produces the lightest highlights of all the stable patches
- Patches with no specific markings also print in a stable way
- Patches with a red cross do not guarantee a stable print
- Hover on a specific patch, to see more information below the strip

Tip:

A stable print gives a smooth result without any clumping or missing dots.



Note: In the mindot preview, you can also select the better highlight. The Highlight preview will be automatically adapted.

5. Inspect the screen result of another ink group, using the same procedure as the previous steps.

   When all ink groups are inspected and the correct settings are applied, continue to the next step.
6. Click **Next** in the lower right corner
7. Select which separation from your printing condition will be used to set the default screen and curve for your **spot colors** (= all separations that are not in the ink set).

   The default is Black, but you can select any of the inks from the Printing Condition. Or <none>, if your spot colors don't need to use the screen and curve from your Printing Condition.
8. Click **Finish**

   The screens and curves will be created (this could take some time) and the wizard will be closed.

Note:

To better understand how the Print Control Wizard calculates the minimum gray value (H38 (**min2.7%**,h100000,s79)) of the curve, see the example below:

For Crystal C screen at a specific tone in the highlights, P+ dots are mixed with solid dots. Because solid dots print larger, these solid dots need to be reduced. This is done with a reducing factor, internally called as 'AM2WSI' parameter. This factor is around 5/8 = 0.625, so when the 'minimum' in the PressSync curve is set to 2.7%, the real gray level in the LEN file will be: 2.7% x 0.625 = 1.69%.

When 1/1 population is selected in PCW, the required bump to have no FM is setting the 'minimum' PressSync parameter equal to the transition point (point where AM goes to FM). Also here the AM2WSI parameter is used.

Note also that in 20.0 a 'keep0%' is added to the curve and set to 0.39% Result is that the 1st 8-bit CT tint (=0.39%) will have a gray value of : 'minimum' * 'AM2WS'I

In previous version of Print Control Wizard (18.1.1), 'keep0%' was set to 0%, so the gray value of the 1st 8-bit tint was about 0.3% higher than 'minimum' * 'AM2WSI'

All information about the selected screens, curves and measurement results are now shown on the **Screens and Curves** page. See *The Screen and Curves page* on page 65

The Screen and Curves page

The Screens and Curves page shows all information about the selected screens, curves and measurement results.

On top of the page, an overview of all inks in the Printing Condition are displayed.

Note:

Other is not shown when you didn't select a separation for your spot colors in the last step before finishing Screens and Curves.

For each ink, the following info is shown:

- **Ink Book**
- **Printing Angle**
- **Screen name**: screen code + screen technology
- **Adjustement curve**: the dotgain compensation curve for each ruling (see *PressSync Curves* on page 10)

At the bottom of the page, detailed information about the Tone Value measurements and the curves are displayed.

- **Curves**, view of the measured and compensation curves

  1. Select the tab Curves
  2. Select the ruling from the pull-down menu

     Note: If only 1 ruling is present in the printing condition, the ruling will be grayed out

  3. Disable **Show printing standard**, if you don't want to see the reference curve of the standard in the Measured Curves graph (full line)
  4. Select 1 or more inks from the overview, on top of the page.

Note:

- If you didn't select an ink, all inks will be displayed.
- Hold the shift key to select an extra ink

5. You will see the measured curve as a dotted line in the Measured Curves graph
6. You will see the dot gain compensation curve in the Adjustment curves graph

- **Gamut**, basic view of your color gamut (only ab at 50%)
  1. Select the tab Gamut
  2. Select the ruling from the pull-down menu

  Note: If only 1 ruling is present in the printing condition, the ruling will be grayed out

  3. Disable **Show printing standard**, if you don't want to see the gamut of the standard in the graph (white line)
  4. Select an ink from the overview, on top of the page, to highlight the ink in the graph
- **Gray Balance**, view of the measured gray balance
  1. Select the tab Gray Balance
  2. Select the ruling from the pull-down menu

  Note: If only 1 ruling is present in the printing condition, the ruling will be grayed out

  3. Uncheck the thick box CMY a or CMY b, if you only want to see 1 curve in the graph
- **Solid densities**, spectral and density data of the solids, compared to the selected standard of the Printing condition
  1. Select the tab Solid densities
  2. Select the ΔE formula, used for the ΔE calculation between your measurement and the standard

From this page you can also:

- Define new screens and curves: see *Change screens and curves* on page 83
- Update the current curves: see *Update Curves* on page 81
- Add an extra ruling: see *Add Ruling* on page 71
- Open the Curve strategy (Curve set) in Curve Pilot: click **xxxxxx.icpro,** on the right of the page (see *Curve Strategies* on page 12)
- View the measurements of the mindot and tone value charts:
  a) Click **View Measurements**
  b) Select the chart you want to view, from the pull-down menu top left: **Mindot** or **Tone Value**
  c) Select 1 of the samples you measured, from the pull-down menu top left: Sample0, sample1, ...
  d) In the preview, hoover over a patch or click on a patch
  e) Check the CMYK and LabCh values of the patch, below the preview
  f) Click **Done**, to leave the measurement view

Manually select screens and use default adjustment curves

1. Click **Click here to start making your screens and curves**
2. 2. Select the **Screen Ruling** used in your production

A fixed list of rulings is available from 100lpi to 250lpi. If your ruling is not in the list, choose the closest available ruling.

If you are using several rulings, you can add additional rulings after you finished the Printing Condition. See *Add Ruling* on page 71.

3. Select the **Angle Set** used in your production

   From the pull-down menu, you have the same 3 options that are available in the Imaging Engine tickets: Offset, Flexo-7.5, Flexo+7.5

   Below the Angle Set selection, you find a list of all inks used in your Printing condition. You defined this in Ink Set and Printing Standard.

   Note: When you have completed the setup for White, the ink you selected as white will also be visible in the list. The angles, defined by the Angle Set, are shown next to each ink.

   It is possible to change the angle of an ink:

   a) click the angle
   b) select another angle from the list

   the Angle Set will be set to <Custom>

   Note: Some angles are bigger then 90°, this is due to the screening technology used in the Print Control Wizard. The corresponding value in 'the 90° zone' is mentioned between brackets, make your selection based on this value.

4. Select **Manually select screens and use default adjustment curves**
5. Click **Next** in the lower right corner

   At the top, an overview of the selected screen technology and highlights is displayed. For more information, see *Overview of the selected screen and highlights* on page 57

6. Select the **Screen parameters**
   a) In the overview, select the **Ink Group**: CMY, Black or OGV
   b) Select the **Screen Technology**

      Only screens that are related to the screening dot you selected in Plate and Press Calibration, will be available. See *Plate and Press Calibration* on page 27

   c) Select the **Mindot**

      The available mindots in the list are related to the selected screen technology

   d) Select the **FM Dot Population**: 1/1, 1/2 or 1/4
   e) Repeat the steps for the other ink groups

      When all ink groups are inspected and the correct settings are applied, continue to the next step.

7. Click **Next** in the lower right corner
8. Select which separation from your printing condition will be used, to set the default screen and curve for your spot colors (= all separations that are not in the ink set).

   The default is Black, but you can select any of the inks from the Printing Condition. Or <none>, if your spot colors don't need to use the screen and curve from your Printing Condition.

9. Click **Finish**

The screens and curves will be created (this could take some time) and the wizard will be closed.

Note:

When you manually setup Screens and Curves, the selected curves will always be F40 for Flexibles and E50 for Labels. Only the flexible curve options (value shown between brackets) will be calculated, based on the selected screening parameters. See *PressSync Curves* on page 10

All information about the selected screens, curves and measurement results are now shown on the **Screens and Curves** page. See *The Screen and Curves page* on page 65

5.2. Evaluate and Close

After finishing the last configuration step **Screens and Curves**, the **Printing Condition is ready to be used**. This is indicated in the banner on top, and by a green check mark on the right.

The Configuration steps have no longer an indicator (, ,) next to their name.

1. Navigate between the configuration steps and view the selected parameters.
2. Check if all parameters are correct. See *Edit Printing Conditions* on page 71 if you want to correct some settings.

   Note: Be careful if you want to edit mandatory parameters ( ), some configuration steps will be reset and you will have to repeat these steps. A warning will be shown.
3. Save a report, if needed. See *Save a report* on page 69
4. Click **Close** to return to the **Printing Conditions Explorer**. See *Printing Conditions Explorer* on page 22

6. Save a report

It is possible to save a report (PDF) for a finished printing condition.

You can customize the report, so it only contains the data that you want to share and it holds your logo.

1. Open the **Save Report** dialog
   - In the Printing Conditions library, select the Printing Condition and click the **Save Report** button

 in the bottom toolbar
   - In the Printing Conditions library, right-click the Printing Condition and select **Save Report...**
   - Open the Printing Condition and click the **Save Report...** button in the lower right corner.
2. Specify the folder where you want to save
   a) Click **Browse**
   b) select the folder
   c) click **Save**
3. Specify a **File name**. The default name will be: `name of printing condition_Report.pdf`
4. Select a different **Banner**, e.g. if you want to add your logo on the report.
   a) Click **Browse**
   b) Browse to the location and select the file
   c) click **Open**

   Your banner will be previewed. Supported file formats are .jpeg, .png, .gif and .bmp. The size of the banner area is 20cm by 2,7cm. Larger or smaller images will be resized.

   Click **Reset** if you want to return to the default Esko banner.
5. Enter a **Description** if you want to add extra information to the report
6. Select what information you want to include, by enabling the corresponding options.

   Hardware settings

   Parameters from Plate and Press calibration, Substrate, Ink Set and Printing Standard, Plate Making and Press will be added to the report.

   Note: Parameters that are not filled in, will not be visible on the report.

   Screens and adjustments curves

   A table showing an overview of all inks in the printing condition.

   For each ink, the Name, Ink Book, Angle, Screen Name and Adjustment curve is specified.

   Note: If there are multiple rulings for the selected printing condition, a separate table is added for each ruling.

Curves and gray balance preview:

For each ink and ruling in the printing condition (except Other and White), 2 graphs are added: **Measured Curve** and **Adjustment Curve**.

The Graphs are grouped by ruling.

An extra Graph per ruling is added for the Gray Balance measurements.

Gamut outline:

Basicview of the color gamut (only ab at 50%) per ruling

Comparison of gamut outline with printing standard:

Will add the reference gamut of the selected printing standard (white outline) to the Gamut outline view.

Note: This check box is only available when the **Gamut Online** checkbox is selected.

Solid densities:

A table showing per ink, the spectral and density measurement data of the solids.

Note: If there are multiple rulings for the selected printing condition, a separate table is added for each ruling.

Comparison of solid densities with printing standard:

The reference data of the selected printing standard will be added to the **Solid densities** table and compared to the measured data.

Note:

This check box is only available when the **Solid densities** checkbox is selected.

Note:

- Most of the information is shown as on the page of the printing condition step.
- Some check boxes will not be available, if the information is not present in the Printing condition. E.g. if Screens and Curves were manually added (no measurements): Gamut outline, Solid Densities and both Comparison check boxes will be greyed out.

7. Click **Save**

The report (.pdf) will be saved in the selected folder and will open automatically in the default application of the Windows Operating System.

7. Edit Printing Conditions

7.1. Add Ruling

When you created your printing condition, you typically selected the main ruling used in your production. If you are also using other rulings for this printing condition, you can add them 1 by 1.

All rulings will use the same screening setting, only the curves will be different. A wizard will guide you through the steps to print and measure a test chart.

Important: The chart is **different** than to the chart used in Screens and Curves, it only contains the tone value part. **Don't** re-use the plates made for Screens and Curves!

Note:

When adding extra rulings, the user is restricted to the 2 rulings closest (1 lower, 1 higher) to the ruling that was used during setup of the printing condition. This is because when deviating too much from the original ruling, the screening parameters are no longer valid. When all available rulings have already been added to the printing condition, an error message is shown.

At any point in the process you can stop working on your printing condition and continue later. Use the buttons **Close** and **Quit Now and Continue Later**. Don't forget to **Save** when asked.

In the Printing Conditions library, the Printing Condition will get the mark in front of the name.

When you are ready to continue, start the wizard. You will be asked to **Resume** or to **Start a new session**. Click **Resume** to continue editing your Printing Condition.

Note:

- You can continue to use the printing condition, when you didn't finish editing.
- Only one unfinished session can be available per printing condition. You need to finish first the current session if you want to add a new ruling or Update curves. The new session will overwrite the unfinished session.
- It is possible to remove an unfinished task, right-click on your printing condition and select remove unfinished task.

1. Start adding a new ruling:
   - In the Printing Conditions library, select the Printing Condition and click the **Add Ruling** button

 in the bottom toolbar
   - In the Printing Conditions library, right-click the Printing Condition and select **Add Ruling...**

- Open the Printing Condition and click **Add Ruling...** in the center of the Screens and Curves overview..

2. Select the **Screen Ruling**

Note: On top, you see an overview of the already selected screens and curves for every ink and ruling.

3. Click **Next** in the lower right corner
4. **Create** the test chart:

a) A preview of the layout is shown

b) Add **chart options** to customize the layout

Note: All changes will be visualized in the preview.

- **Mirror Image**: to be used for reverse printing

  This option is on by default when using **White Overprint** in *Substrate* on page 41.

- **Add default bearer bars, slur marks and registration marks**:

  This option is always on by default.

- **Add a custom element**:

  If you want to add an image or technical element to the chart, to quality control the print.

  1. Click **Browse**
  2. Browse to the location of the file
  3. Click **Open**

Note:

- The element needs to be a .ct file (Esko native image file format). Use an Esko editor to create .ct files from your element.
- You can only add 1 element. If you want to add several elements, first group them in an Esko editor.

Note:

A fixed area of 10cm x 49,6cm for flexibles and 10cm x 32,6cm for labels will be added at the bottom of the layout. If the element is smaller, the remaining space will be kept on the layout (and will be on the plate).

To avoid this unused space, it is advised that the dimensions of the file are close to the dimensions of the fixed area.

It is also possible to scale the element, by using the option below.

- **Proportionally enlarge the custom element to fit the chart width or height**

  The custom element will be scaled proportionally, until either the width or the height fits the fixed area (10cm x 49,6cm for flexibles and 10cm x 32,6cm for labels)

- **Split into multiple charts**

  If the layout is too big for your press, you can use this option.

  The layout will automatically be split in several smaller parts. All elements that need to be printed together will be placed on the same layout.

  Note: You can see the dimensions of the layout, on top left of the preview.

c) Click **Save Chart**
d) Specify the folder where you want to save, click **Select Folder**
e) Specify a **File name**
f) Select the **File Type** you want to save: LEN or Tiff

Note: Save as Tiff files if the **chart options** are not sufficient to adapt for your production (bearer bars, ...), because Tiff files are more easy to edit. However, it is important that **you don't change** any of the technical elements! In all other cases, save as LEN files and use them directly on the CDI.

g) Click **Save**

For each ink in your printing condition, a file will be created in the selected folder. e.g. if your inkset is CMYK and you completed the White setup, you will get 5 files: **File name_C**, **File name_M**, **File name_Y**, **File name_K**, **File name_White**

Note: It could take several minutes to create the file.

Note: The created chart is based on numerous parameters from the previous steps (application, dot shape, surface screening, ...). **Always** create a new chart, to assure that you have the correct elements in your chart for your printing condition.

5. **Image the plates** on CDI according to your company's Standard Operating Procedures, AND using the settings specified in the previous steps.
6. **Make a Print** using these plates, according to the settings you entered in the Printing Condition and your company's Standard Operating Procedures.

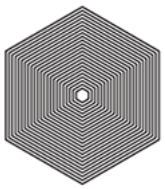
   Note:

   To have an accurate and reliable curves creation, it is important that the measurements are an average of a complete print run.

   We therefore recommend:

   - after reaching printing conditions (= first ok sheet), print 50 to 100 meters (or more if this better reflects your production)
   - starting from the first ok sheet, select min 3 copies (advise = 5) that represent the complete printrun: begin – middle – end

7. Click **Next** in the lower right corner
8. Check **Slur and Impression marks** on the print



   a) Check your prints

      - use a magnifying glass
      - **ALL** marks (= all inks) on the print should be ok

      - verify all copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.

      To know how to evaluate the marks, click *Learn more about evaluating this area*

   b) Select the **Check Slur Marks** area in the preview image of the chart

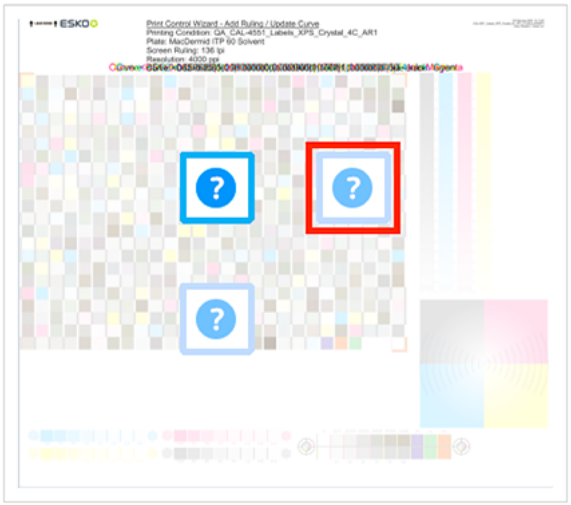
c) **Accept** or **Reject**

9. Check **Gradient** on the print

a) Check your prints

- The gradient for every ink on the print should be ok: Smoothness, highlights, solid, ... You could compare to your print, used during setup of screens and curves. This can be used to decide between making a new printing condition or adding the ruling to the existing printing condition.
- verify all copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.

b) Select the **Check Gradient** area in the preview image of the chart



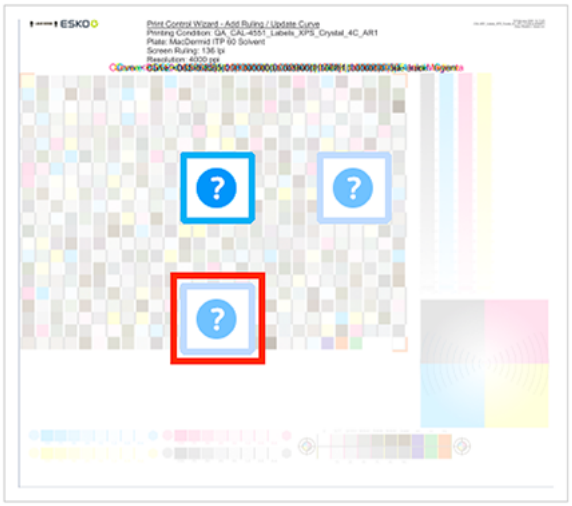
c) **Accept** or **Reject**

10. Check **Registration marks** on the print

a) Check your prints

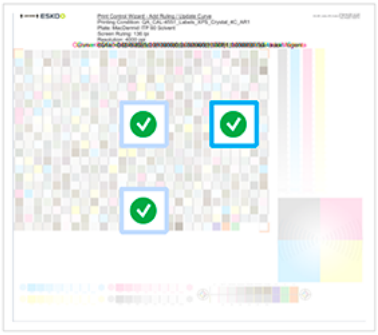
- use a magnifying glass
- **ALL** marks on the print should be ok
- verify all copies. If 1 or more copies are not ok, they should be replaced by a copy from that same strip (e.g. from around 30m). If only 1 copy is ok, troubleshoot with the press operator and reprint.
- To know how to evaluate the marks, click *Learn more about evaluating this area*

b) Select the **Check Registration Marks** area in the preview image of the chart.



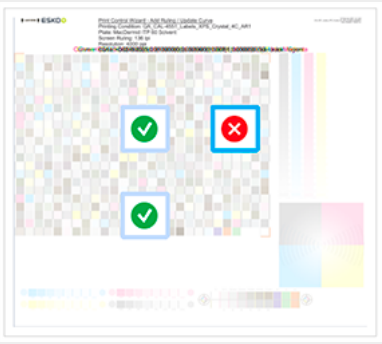
c) **Accept** or **Reject**

When your print quality is ok, you accepted all 3 areas, and it is possible to continue to the next step.



Note:

If you rejected 1 or more checks, you cannot continue to the next step.



Troubleshoot with the press operator and reprint if necessary. When the new tests are positive, you can change the state from **Reject** to **Accept** for that area.

11. Click **Next** in the lower right corner
12. Measure the **Tone Value Chart**

- The chart will contain all inks from your selected ink set.

  E.g. ink set is CMYKOGV: chart will contain CMYKOGV patches

- The chart can be read in patch or scan mode by an X-Rite i1 Pro or X-Rite i1iO. No other measurement devices are supported.

- With the cogwheel ( ) on the bottom right, you can stop, calibrate and reconnect your measurement device, change the measurement mode and the measurement condition.

  See the chapter **Using a Spectrophotometer** in the Color Pilot User Guide: *https://www.esko.com/en/support/product?id=Color%20Pilot*

- To know how to measure the chart with your measurement device, follow the instructions on the bottom left, above the icons

  The preview will visualize the instructions and the measurement progress.

13. Click **Next** in the lower right corner.

14. **Check** the **measurements results**

a) Check the preview, the upper and lower part of the patches should approximately have the same color.

After the first measurement you can compare your measurement to the standard. After the measurement of your 2nd, 3th, ... copy, you can also compare to the average and to the other measurements.

Select what you want to compare with, from the pull-down menu, on top of the preview.

Note:

- In this step we mainly want to detect if the charts were measured correct (not upside down, mirrored, ...)

  If the color in the patch is the same, but there is a big difference in lightness, this is probably not an issue. The dot gain compensation curve created from these measurements will correct for this.

- Comparing charts among each other could be usefull, to detect if some charts are printed very different. That chart could be an exception and we don't want to include this in our average.

b) Check the **solid info**, to the right of the preview

1. Density: for each ink, the measured density should be within tolerance of the desired density

Use the same tolerance as your company uses on press (typically + or - 0,05)

Select the Density standard you use on your measurement device (ANSI A, DIN, ...), from the pull-down menu below the Solid Info.

Note:

The desired density is derived from the printing standard you selected in Ink Set and Printing Standard

We don't show desired density for CMYK inks for standards that use an ICC profile as a standard profile. This is because density calculation requires spectral data, which is not available in ICC profiles.

2. Color difference (ΔE): for each ink, the ΔE should be within tolerance of the printing standard you selected in Ink Set and Printing Standard. See *Ink Set and Printing Standard* on page 42

Select the ΔE Formula that is requested by the printing standard, from the pull-down menu below the Solid Info

Note: Select an ink if you want to see the LabCh details, below the **Solid Info** window.

Note: We don't show desired density, Lab and dE for the OGV inks. There are no standards for these inks, so there's nothing to match.

c) **Accept** or **Reject**

When your measurement is ok, it is possible to continue to the next step.

Note:

If you rejected the measurement result, you will be guided to measure again.

15. Select **Measure another sample** if needed.

To have an accurate and reliable curves creation, it is important that the measurements are an average of a complete print run. Measure minimum 3 charts of good print quality (advise = 5)

a) Click **Next** in the lower right corner
b) You will be guided to measure again, following the same procedure (steps 12 to 14).

Note: The wizard will indicate how many charts you already measured: sample 1, sample 2, ...

16. If you measured enough charts of good quality, you can select **Stop measuring and inspect the resulting screens**

17. Click **Next** in the lower right corner.

18. **Inspect** the curve results

a) View at the top left an overview per ink of the original and the new curve created from the measurements.
b) View on the right a graph of the curves.
   - Colored curve: new curve created form the measurements
   - Grey curve: curve from the ruling created during first setup of the printing condition
c) Select **Use new adjustment curves** if the new curves deviate too much from the original curves.
d) Select **Use adjustment curves for xxx lpi** if there is little to no difference between the new and original curves

Note: Below the selection, a recommendation is shown made by analyzing the difference between the curves.

19. Click **Finish**

Information about the new curves are added to the **Screens and Curves** Page of the Printing Condition.

7.2. Update Curves

As small changes, aging of printing equipment and/or fluctuations in production over time are perfectly normal. Some curves will need to be slightly modified (updated) at certain times.

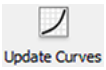
At any point in the process you can stop working on your printing condition and continue later. Use the buttons **Close** and **Quit Now and Continue Later**. Don't forget to **Save** when asked.

In the Printing Conditions library, the Printing Condition will get the mark in front of the name.

When you are ready to continue, start the wizard. You will be asked to **Resume** or to **Start a new session**. Click **Resume** to continue editing your Printing Condition.

Note:

- You can continue to use the printing condition, when you didn't finish editing.
- Only one unfinished session can be available per printing condition. You need to finish first the current session if you want to add a new ruling or Update curves. The new session will overwrite the unfinished session.
- It is possible to remove an unfinished task, right-click on your printing condition and select remove unfinished task.

1. Start updating the curves:
   - In the Printing Conditions library, select the Printing Condition and click the **Update Curves** button 

 in the bottom toolbar
   - In the Printing Conditions library, right-click the Printing Condition and select **Update Curves...**
   - Open the Printing Condition and click the **Update Curves...** link in the center of the Screens and Curves overview.
2. Select the **Screen Ruling** you want to update the curves for.

   Note: You can only select a ruling that was already added to the Printing Condition. On top, you see an overview of the curves for every ink and ruling.
3. Click **Next** in the lower right corner
4. From this point on, the wizard is identical to *Add Ruling* on page 71. Follow steps 4 to 19 of this procedure.

Note:

We **strongly advise against** editing curves and Curve Strategies created via the Print Control Wizard in Curve Pilot.

Curve Pilot is an expert tool with a lot of functionality that is not needed and therefore not supported by the Print Control Wizard.

Wrong usage of the tools could generate issues in your Printing Condition.

We only recommend to open the Curve strategy and PressSync curves in Curve Pilot to have a more detailed view of the curves and to see the Curve history (e.g. how many times were the curves updated + what were the previous settings).

For more information, see the Curve Pilot User Guide: *https://www.esko.com/en/support/product?id=Curve%20Pilot*

7.3. Edit White

To edit the White settings:

1. Open a Printing Condition: Right-click it and select **Open**, or double-click on a printing condition.
2. Select **White**
3. Click **Change White setting...**

   Note:

   When you already completed the configuration step **Screens and Curves**, a warning will appear that changing the White settings will reset the Screens and Curves and the Printing Condition becomes unavailable for production.

   - If you click Yes, you will need to create new screens and curves by going through all the steps again.
   - If you click No, you cannot edit your white
4. Complete all steps as described in *White* on page 38

7.4. Change Plate Making and Press Calibration settings

If the current screening dot and surface screening are not delivering the same quality anymore, it could be necessary to review the settings.

We recommend to only redo this step if all other possibilities failed to maintain the quality (adapt machine settings for CDI and Press, check printing tools, ...).

1. Open a Printing Condition: Right-click it and select **Open**, or double-click on a printing condition.
2. Select **Plate and Press Calibration**

3. Click **Change plate making and press calibration settings...**

   Note:

   When you already completed the configuration step **Screens and Curves**, a warning will appear that changing the plate and press calibration settings will reset the Screens and Curves and the Printing Condition becomes unavailable for production.

   - If you click Yes, you will need to create new screens and curves by going through all the steps again.
   - If you click No, you cannot edit your white

4. Complete all steps as described in *Plate and Press Calibration* on page 27

7.5. Change screens and curves

If the current settings are not delivering the same quality anymore, it could be necessary to reset the settings and test on press what parameters are optimal for the new circumstances.

Note: It is not possible to adapt individual settings, you need to complete all steps. If only the curves need to be adapted, use Update Curves. See *Update Curves* on page 81

We recommend to only redo this step if all other possibilities failed to maintain the quality (adapt machine settings for CDI and Press, check printing tools, ...).

1. Open a Printing Condition: Right-click it and select **Open**, or double-click on a printing condition.
2. Select **Screens and Curves**
3. Click **Set screens and curves...**

   Note:

   A warning will appear that changing the screens and curves settings will reset the Screens and Curves and the Printing Condition becomes unavailable for production.

   - If you click Yes, you will need to create new screens and curves by going through all the steps again.
   - If you click No, you cannot edit your white

4. Complete all steps as described in *Screens and Curves* on page 46

At the end, when clicking **Finish**, you will get a warning that the previous Curve Strategy and curves will be deleted from the Esko resources. This includes curves for all rulings.

8. Using Your Printing Condition in Imaging Engine

Once you created a printing condition containing the optimal screens and curves to use for your production workflow, you can use this printing condition when RIP'ing your files with Imaging Engine.

To do this:

1. In Automation Engine, open the **Image to Screened Separations** ticket
2. Select your printing condition in the **Printing Condition** field (above the other settings).

For more information, see the chapter **Image to Screened Separations** in the **Imaging Engine – powered by Adobe** User Guide: *https://www.esko.com/en/support/product?id=Imaging%20Engine%20-%20powered%20by%20Adobe*

Note:

- You can only use a printing condition that you have **completed** (you can see a green check ✓ when you open the Printing Condition in the Print Control Wizard).

  If you are still working on your printing condition in the Print Control Wizard, you will not be able to select it in Imaging Engine.

- After making a printing condition for your production workflow, you should always use it in Imaging Engine when printing with that production workflow.

  If you make changes to your workflow (for example you print on a different substrate, or you switch to a different ink vendor), we recommend you make a new printing condition in the Print Control Wizard.

Selecting a printing condition automatically fills in some of the Image to Screened Separations settings, but not all of them! Settings that are set by the Printing Condition, get the indication **<set by Printing Condition>**.

It is still possible to overrule an individual setting manually and ignore the value from the Printing Condition.

If all settings of the Printing Condition are used, the task uses the angles, ruling, screens and curves from the Printing Condition.

Note:

If you didn't specify settings for spot colors in your printing condition (selected <none> at the end of the **Screens and Curves** setup - see *Screens and Curves* on page 46), the ticket settings will be automatically applied for spot colors in the job.

If you change a ticket setting (Dot, Angle Set or Ruling), only the spot colors will get the new parameter. The inks that are defined in the Priniting Condition, will continue using the settings from the printing condition.

Note: Legacy Printing Conditions, created by earlier versions of the Print Control Wizard (18.1.1 or lower) can still be used, but you will notice some different behavior in the **Image to Screened Separations** ticket. E.g. as angles are not defined in legacy printing conditions, they will not set in the ticket. You have to use the angles from file or set them with the ticket functionality.

9. Import and Export

Printing Conditions can be imported and exported from the explorer. All data including screens, curves, measurements, Quit Now and Continue Later records, etc. are part of the exported file.

Screens and curves that are not part of a Printing Condition, can also be imported and exported.

Exceptions:

- Legacy Printing Conditions, created by previous versions of the Print Control Wizard (18.1.1 or lower) cannot be imported or exported via Color Pilot, as they are stored in a different database (SQL server of Automation Engine). To Export or Import, you can use the previous Print Control Wizard software. See the chapter **Importing and Exporting Printing Conditions** in the Print Control Wizard 18.1 User Guide: *https://docs.esko.com/docs/en-us/printcontrolwizard/18.1/userguide/home.html#en-us/common/pcw/task/ta_pcw_ImportExportPC.html*
- Only custom screens (SCRxx) and HD Flexo (HDxx) screens can be imported/exported. Crystal screens can only be exported via the Printing Condition. Static screens are installed by the Automation Engine installer.

By default, most data is exported as File Packer (.fp) files.

File Packer files are archives that you can use to exchange different types of color management settings (profiles, color strategies, ink books...) between different versions of Color Pilot/Color Engine Pilot.

9.1. Export the complete Library

When exporting all data from Color Pilot, you have an option to include all screens, curves and printing conditions.

Only use this option, if the data will be imported in a Color Pilot that is supporting Printing Conditions (Color Pilot 20 or later, correct licenses, ...).

1. Select **Export Library** from the **File** menu
2. Specify the folder where you want to save
   a) Click **Browse**
   b) Select the folder
   c) Click **Save**
3. Enable the option **Include screens, curves and printing conditions**
4. Enable **Export as one single archive** (recommended)

   When disabled, all items will be exported as individual single files, which can easily be hundreds of files.
5. It is possible to remove individual items from the export, by selecting 1 or more items and clicking the **Remove** button.

   A warning will be shown that the removed item could be linked to another item, and this item will not work properly after import in another Color Pilot database.

6. By default, all data (except for icc profiles) is exported as .fp files, which is only compatible with Esko software. Color Profiles and Ink Books can also be exported in another open format, CxF/X-4 and CGATS respectively. Click the triangle (▾) next to the item to change the format.
7. Specify a **File Name**
8. Click **Export**

A .fp file will be created in the selected folder. This could take some time.

At the end of the export, a warning could be prompted to inform you that some items failed to export (shown in a list). The export is still created, but the items from the list will not be part of the exported file.

9.2. Export single items

Curves, screens and Printing Conditions can individually be exported from their explorer.

1. Select the **Screens**, **Curves** or **Printing Conditions** explorer
2. Select the screen, Curve or Printing Condition you want to export
3. Right-click and select **Export** or select **Export** from the **File** menu
4. Specify the **folder** where you want to save
5. Specify a **File Name**

   By default the name of the item you want to export will be selected.
6. Click **Save**

All linked items (profiles, curves, ...) will also will be exported.

9.3. Import single items or a complete Library

Importing a complete library is typically done when you want to restore a backup of your Color data or share with another Esko configuration.

Importing single items is typically done when you want to share a specific setup.

1. Select **Import** from the **File** menu
2. Navigate to and select the .fp file.

   Note: You can also just drag the file onto the Color Pilot shortcut on the desktop or onto the Color Pilot application window to import it.
3. Click **Open**

   A list of all items in the .fp file are shown in the import dialog.

   In the last column **State** you can see if the item will be imported, merged, ...

   Select an item in the list to see more details about the item below, and what will happen during import (imported or not, name that will be changed, ...)

If you import a single item, details will also show what the linked items are (profiles, curves, ...) that also will be imported.

4. To add extra .fp files, click the + button , navigate to the .fp file and open it.
5. To remove items from the import, select one or more items and click the − button
6. Click **Import Selection** if you only want to import 1 or more items, or click **Import All** if you want to import the complete library.
7. Check if all items were imported successfully, by verifying the **State** of every item.
8. If all is ok, click **Close**

All items that already existed (name based) in the database will be overwritten! Make sure that the data in the .fp file is more recent than the current data in your Color Pilot.

Ink Books using the same name (e.g. Designer) will merge the data. Inks using the same name will be replaced by the copy in the .fp file.