

Print Control Wizard

Standard Operating Procedure

**How do I Evaluate the Highlights for
my Selected Mindot?**

1 Highlight Settings Proposal

In the “Select Highlights” wizard step, the application selects the optimal screen technology, mindot size and dot population for your specific printing condition. This selection is based on your mindot strip’s measurements. Please see the [Print Control Wizard User Guide](#) for detailed information.

2 Evaluate Highlights

The application estimates the optimal screen parameters based on your density measurements. This has a limitation: visual artifacts like missing or mis-formed dots cannot be detected easily. Therefore, you must inspect the printed highlights visually. The calibration chart contains different types of objects that make visual inspection easier.

2.1 Inspection of the Mindot Strip Patches

On the mindot strip, the application measures the densities of the different mindot sizes and dot populations. To mimic a real printing behavior, the patches used in the mindot strip are not protected by solid outlines: if dots are too small for the printing pressure, they will easily bend or deform. This can result in irregular density readings that can be detected by the application.

You can also verify this behavior visually by examining the patches with a magnifying glass.

- **All dots in the patch should print at equal size.**

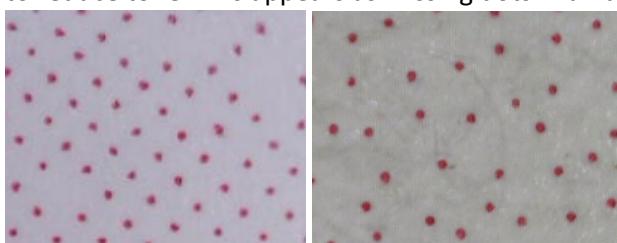
For example, the dots at the edges (top/bottom and left/right) should not print larger than the ones in the middle. Below is an example of dots printing heavier on the left side.



- **There should be no isolated areas with missing dots.**

Missing dots in isolated areas of the patch indicate that the top of the small dots on the flexo plate did not reach the printing surface of the plate, or that the small dots are washed away.

Missing dots are not always unwanted. Crystal highlights are screened stochastically, so dots are removed to reduce tone. This appears as missing dots in an uniform way and is on purpose.

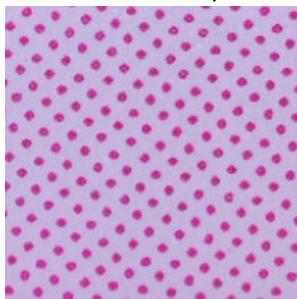


Left image: dots missing in isolated areas, this should be rejected

Right image: dots missing in an uniform way, this should be accepted

- If all printed dots are equal in size and uniformly shaped the ink laydown is good.

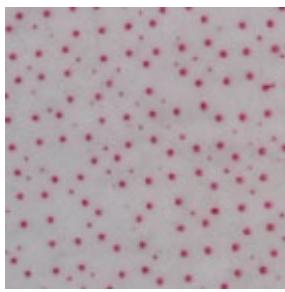
Below is an example of a good print:



- When a screen technology with support dots is selected, the support dots shouldn't print.

For some printing conditions, the optimal highlight screen can make use of supporting dots. Supporting dots are very small (non-printing) dots, placed in between larger (printing) dots, to make the large dots print more stably. These support dots are not intended to increase tone, so they should not print.

Below is an example where support dots start to print (notice the very tiny ink spots in between the larger dots). This should be rejected.



When using XPS, the print resolution in the highlights is much higher, and very small dots can also reach the printing surface of the plate. In this case you should avoid using support dots technology.

Some other examples of dots that do not print properly:

The dot centers are un-inked (donuts)	The dots are not equal in size	The dots show dripping ink

Combination of the effects mentioned above	
	

2.2 Inspecting the Highlight Wedges

Next to the mindot strip patches, the chart also contains highlight wedges using the same screen technologies and mindot sizes as the mindot strip. The wedges also use different bumps, to have the 1/1, ½ and ¼ dot populations at the start of the wedges.

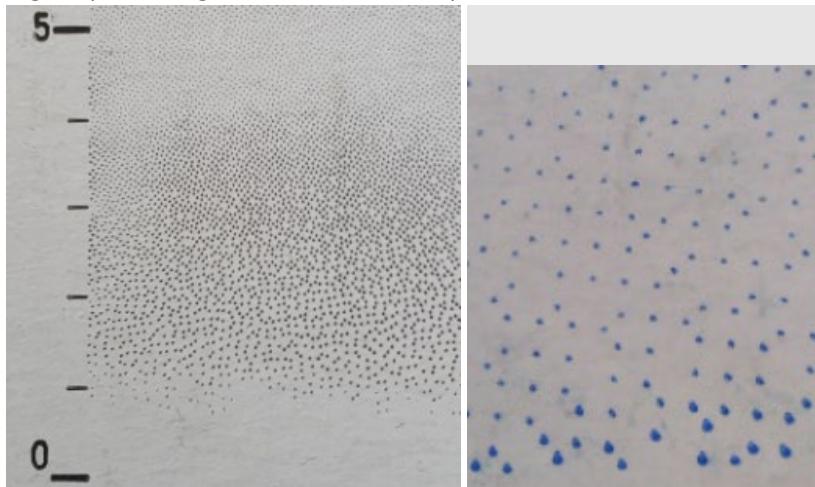
The wedges are not measured or analyzed automatically, as they are made to visually verify if the selected screen technology, mindot size and dot population give linear and smooth printing blends.

There are wedges with short range (from 0 to 5%), wedges with an extended range (from 0 to 15%) and wedges with special marks.

The small range wedges are good for verifying the printing behavior of the highlights at the start of a wedge.

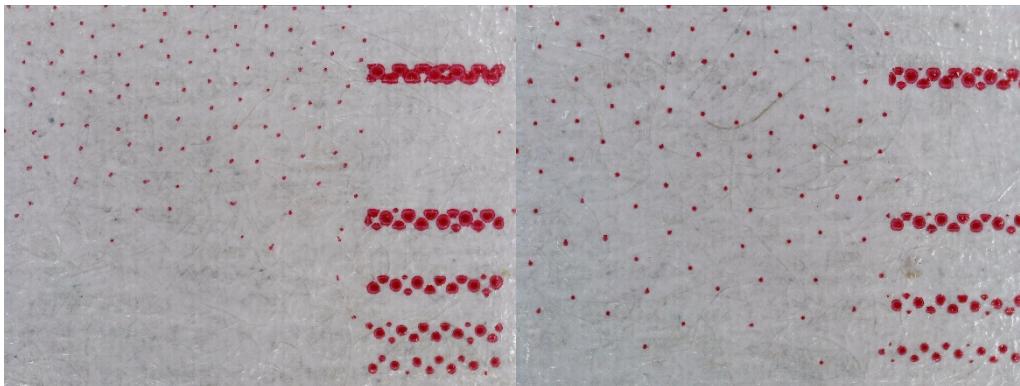
- **The wedges should not show ‘reversal’.**

(‘reversal’: the wedge prints darker for lighter tone values, the start of the wedge (0%) appears darker than higher percentages). Below are examples of tone reversal.



The wedge should print dots from 0% onwards.

If the first dots only appear at the 2nd or 3rd mark, this indicates that the mindot is too small (for 1/1 dot population) or that the bump is too low (for 1/2 or ¼ dot populations).



Left: the dots don't print at the start of the wedge => the mindot is too small for the dot population used.
Right: the dots print at the start of the wedge => the mindot and dot population are good.

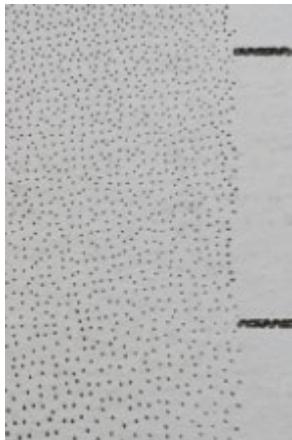
The wedges with extended range allow you to see if the highlights transition prints smoothly.

- If the highlights transition appears too grainy, select a smaller mindot and a higher dot population. You should also check again if the mindot prints ok at the start in the **low range wedges** (for example check for tone reversal). If none of the wedges shows a smooth transition, you can consider using the 1/1 population (no FM in the highlights) and selecting the mindot that is optimal for that population.

Grainy	Smooth
A grayscale wedge pattern showing a grainy, textured appearance, indicating a poor highlights transition.	A grayscale wedge pattern showing a smooth, uniform texture, indicating a good highlights transition.

Next to the short and long range wedges, there are also **wedges that have small marks**. These wedges start without a dot population limit, so they do not use a bump.

In these wedges, a small mark is placed at the tone where the dots reach a specific dot population ($\frac{1}{4}$, $\frac{1}{2}$ or $1/1$).



In case this type of wedge prints fine far below the $\frac{1}{4}$ dot population mark, you can consider allowing the screen to start at a lower dot population. To do this, use a lower bump than the bump proposed by the application (which corresponds to the $\frac{1}{4}$ dot population). This needs be done in Curve Pilot (not in the Print Control Wizard), by modifying the pressync curveset of the printing condition (see the [Curve Pilot documentation](#) for details).