# Register & Trapping

Perfect or Exact Register / Kiss Fit

Perfect register, exact register, sometimes called a kiss fit is the printing term used to describe color objects that precisely touch each other. The GATF Encyclopedia of Graphic Communications uses the term, hairline register and defines it, "In process color printing, abutting successive colors with no color overlap." (Graphic Arts Technical Foundation) While this is very easy to create with an illustration program like Illustrator, it isn't always as easy to reproduce when applying ink to paper. This is due to the potential for mechanical and human error. Paper stretches as it passes through a press. Humidity, as well as the age and speed of a press can also be factors that make perfect register or hairline register difficult. For short run jobs, metal plates may be necessary rather than paper printing plates thereby increasing the cost.
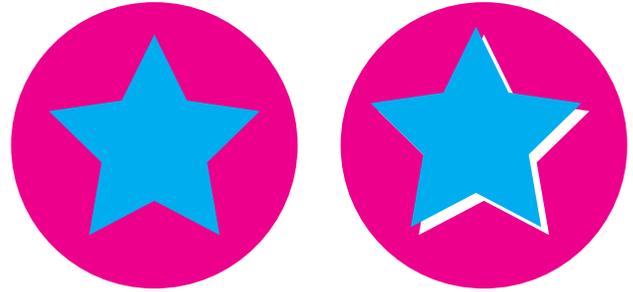
The magenta circle with the cyan star on the left, is exact or hairline register. The circle and star on the right is an exaggerated example of what can happen on press due to mechanical and human errors. In this example the blue resulting from the overprinting of cyan and magenta appears to be the most noticable, but in reality the paper showing through is the most noticable problem.

Trapping

To avoid the potential problem of misregistration, and the resulting gaps between colors that are designed to touch a variety of techniques are used. In prepress, these techniques fall under a general heading of trapping.

In general, trapping is the overlapping of colors to prevent misregistration and the resulting gaps of paper showing through.

Trapping is accomplished different ways, depending on the job. The most common way is using what are referred to as "spreads" and "chokes." Depending on the design this technique is used to "spread" the lighter color into the darker color or "choke" the lighter color into the darker color.

In same cases the design can be changed to overprint a black "trap line" over the two colors. If you are designing an illustration in Illustrator using trap line, keep in mind the trap amount set to the stroke needs to be twice the needed trap amount as ahalf the stroke amount is outside the path and half is inside. (see example on right)

A third trapping method is called common color trapping. Like trap lines, this technique also changes the design by adding 20-30% of one color to the other color.

The illustrations at right show the various types of trapping, but the the amount of trapping is greatly exaggerated for illustration purposes. For a sheetfed press printed at line screen of 150 lpi (lines per inch) a common amount of trapping is .003" or 0.216 pt. A glossy magazine printed on a web press at 150 lpi would use a .004" trap.

The most important thing for a designer to know about trapping is to be aware of the issue and ask us about it. Most trapping these days is done with specialized software. The reason to be aware of it is that your design may need to be changed to achieve good quality printed results. For example printing yellow type on a cyan background.

by Clint Funk
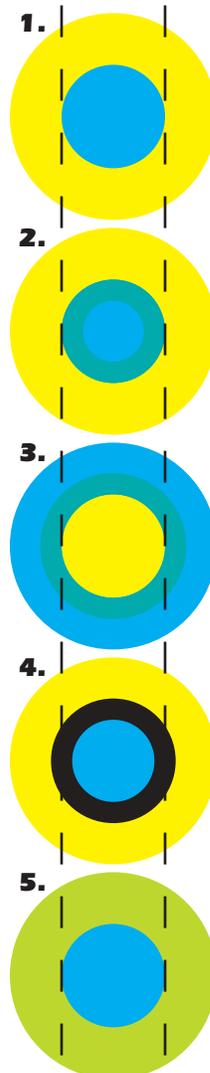
Trapping Examples
The examples at left illustrate various types of trapping. The two vertical dashed lines are added to show the original size of the cyan circle and indicate the results of trapping. The examples use a trap of 8 points, much larger than would be used, to make the effect of trapping apparent.

1. Original "hairline register"
2. "Choke," the yellow chokes into the cyan
3. "Spread" the yellow spreads into the cyan
4. Black Trap lines overprint the yellow and cyan
5. A common color of 30% cyan is added to the yellow

Now is the time for all good people to come to the aid of their party.

The example at the immediate left illustrates how some designs may not work well. Again the effect is exxagerated.
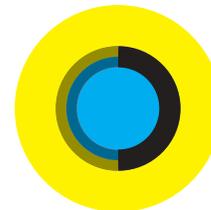
The example at the immediate left illustrates how the black trap lines overprint the yellow and cyan. In Illustrator the stroke is doubled as half go on each side of he path.