



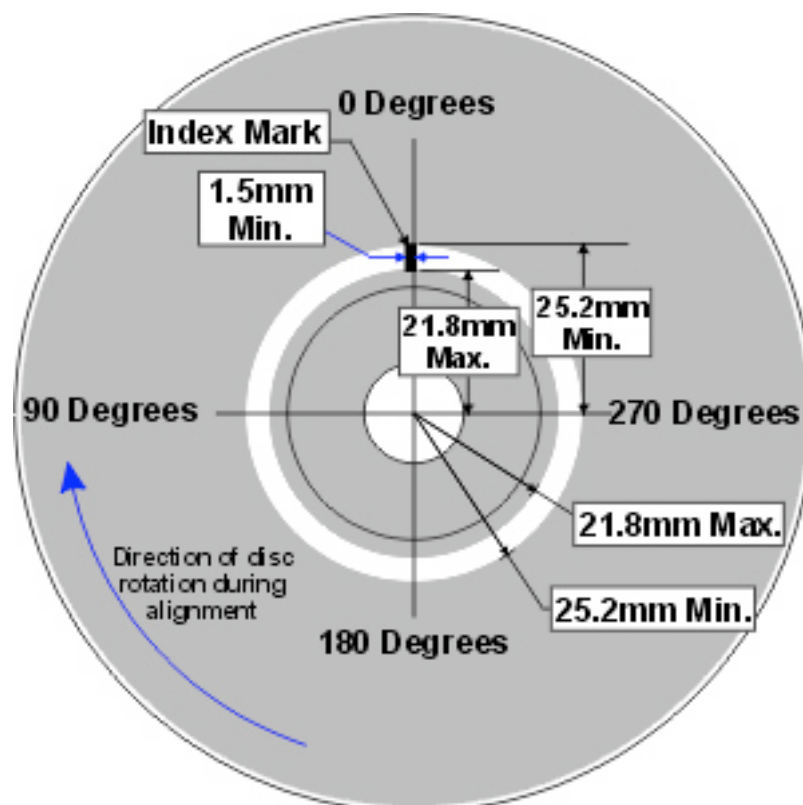
## How Perfect Print Works

*Combining the artistry of silk screen with the impact of on-demand print, Perfect Print enables you to align customized graphics and text to pre-silk screened CD-R's that reflect your color standards, logos, and graphics.*

An optical sensor in the Producer's transporter detects a small index mark that is silk-screened in the index ring along with your silk-screened design. Reading the light to dark reflectivity changes as the disk rotates, the disc automatically positions each silk-screened disc prior to printing so your customized print will always align itself with the original silk-screened artwork. In order to have successful aligned printing, there are a couple of critical elements to be discussed with your designer and your silk-screen technician. Please contact your Silver Trak representative for more information.

## Index Marking

A single black, or cyan colored index mark is to be silkscreened on the disc with a specified relation to the pre-printed image.



### Perfect Print Alignment

When Perfect Print is enabled in the Production Server software, the system will use the Index Mark Angle parameter to align the disc with the printer prior to printing. The screened and printed images will be aligned to within system tolerances. Perfect Print

adds about 6 seconds to the print time for each disc when using Producer II transporters.

The leading edge of the index mark may be placed at any angle (in steps of 0.25°) in the artwork. A user parameter (Index Mark Angle) in the Production Server software tells the system the angle of the index mark. Perfect Print process does not create absolute alignment from CD to CD. Silk screen printing systems typically can hold an image to disk registration accuracy of ±0.1mm (0.004"). Positioning Accuracy is as follows:

- Angular 1°
- Horizontal (X) ±0.75mm (0.03")
- Vertical (Y) ±0.25mm (0.01")

The index ring begins at a radius of 21.8mm (0.858") and extends to 25.2mm (0.992"). The index ring must have high reflectivity, either from silkscreening a white layer, or leaving the disk un-screened in the index ring area. No contrasting features other than a single index mark measuring at least 1.5mm by 3.4mm (0.059" by 0.134") may be present within the index ring. The leading edge of the index mark defines the angle. Notice in figure above, the index mark is to the left of the center, setting the index mark angle to a true zero degrees. An Index Mark Angle parameter in the Production Server software tells the system the angle of the index mark. For convenience, Rimage recommends that all index marks be placed at 0 degrees as shown. For further index mark options, select this downloadable file for the complete specification and options:

## Artwork Placement

During the silk screened process, each color is applied separately and the surface of the disc could have a ridge or step at the edge of a color. The surface of a disc will have steps at the object boundaries if:

- screened with spot color objects
- a spot color object is screened over another
- where spot color coating thickness is unequal

These steps can prevent the printhead from developing sufficient pressure over print areas on the underlying inks. Some disc surfaces are too rough for successful thermal printing. These surfaces include ink-jet printable, process colored, or textured silk screen disc surfaces. Disc surfaces that are inherently smooth enough for successful thermal printing are spin coated lacquer (blank discs); silk-screened single ink (major manufacturer's matte gold, white, or silver thermally printable discs); and offset printed discs. Placement of the artwork (silk-screen ink) is important so the thermal ink from the printer can be adhered to the disc. The type of screening may not allow the thermal from the printer to adhere to the disc.

**Area #1** - provides the easiest way to ensure sufficient print pressure by having an open horizontal band spanning the entire width of the disk without any silk-screened objects, as in Area #1, then print directly to the surface of the disc.

**Area #2** - is far enough away from the silk-screened ink so the printhead and ribbon contact the surface of the media. Adequate horizontal margin between screened objects and over-print is required. 3mm works in most cases.

**Area #3** - may have problems since the blue ink may lift the printhead away from direct contact of the disc. See the side illustration for a cross-sectional diagram.

**Area #4** - will print well if the blue ink allows the thermal based ink to adhere to it. Most silk-screened inks do not allow the thermal ink to adhere to it. The blue ink must also be a solid ink, not a dithered pattern where two colors are spot processed on the disc. You can call Rimage Sales for companies that have experience with Rimage silk-screen requirements that adheres thermally based ink from the Rimage printer.

**Area #5** - The blue ink adds some thickness and the black ink adds another layer of thickness. See the diagram to the left of Area #5. These steps of ink thickness can prevent the printhead from providing sufficient pressure over the print areas on the underlying surface.

