Master Four Color Process & Simulated Process Screen Printing
Define the process for art.

Type Of Art:
Light Shirts = CMYK Process

Type Of Process:
Dark Shirts = Spot Process
Preparing your image.

**OPTIMIZING BEFORE TRANSFORMING TO CYMK**

- **THERE ARE 5 STEPS TO OPTIMIZING THE ART IN PHOTOSHOP. THIS IS DONE IN THE “ADJUSTMENTS” TAB. TO DO THIS: GO TO IMAGE-ADJUSTMENTS**

- **SELECTIVE COLOR** - CHANGE TO NEUTRALS, IN THE SLIDER MOVE EITHER LEFT TO RIGHT.
  - TYPICALLY IT WILL BE TO THE RIGHT 3 + 8

- **HUE & SATURATION** - ONLY THE SATURATION NEEDS TO BE INCREASED 1 + 23

- **BRIGHTNESS & CONTRAST** - LEAVE THE BRIGHTNESS ALONE. MOVE THE CONTRAST TO THE RIGHT 1+5 T-SHIRTS NEED TO HAVE MORE CONTRAST.

- **WE NEED TO ADJUST THE BLACK POINT AND THE LIGHT POINT. GO TO “ADJUSTMENT”**
  - LEVELS USE THE EYE DROP TOOL TO SELECT THE DARKEST POINT HOLD DOWN THE ALT AND SELECT BUTTON – THE DARKEST AREAS SHOULD SHOW UP (MOVE THE SLIDER ONE WAY OR THE OTHER TO MEET YOUR NEEDS. REPEAT FOR THE WHITE.

- **WHITE LEVELS** - TO ADJUST THE WHITE LEVELS. GO TO IMAGE, MODE, LAB COLOR, WHEN THE IMAGES CHANGES SHUT OFF ALL THE EYEBALLS LOCATED IN THE CHANNELS. LIGHTNESS SHOULD BE OPEN. NOW GO TO THE FILTER TAB –SHARPEN- UNSHARPEN. NOW ADJUST THE AMOUNT OF WHITE NEEDED ONE WAY OR THE OTHER, THIS SHOULD REALLY DEFINE THE IMAGE.

- **REMEMBER TO CONVERT BACK TO RGB BEFORE MOVING TO THE NEXT STEP.**
The 4 Color Process Graphic Programs

Program Capabilities

- Color Correct Image: X
- Handle Color Profiles: X
- View Individual Channels: X
- Make Channel Adjustments: X
- Add Highlight Channels: X
- Add Vector Text: X

Adobe Photoshop CS6: X
CorelDRAW Graphics Suite X6: X
Adobe Illustrator CS6: X
4 Color Process Profiles

Pro Tip: Google “four color process color profiles”
Film Output. Rosette vs. Flemenco

Rosette

Typically, halftones are explained for four color process by shaping a rosette pattern made by the halftone dots being offset differing degrees from each other by using different angles. While theoretically this should work in screen printing the way it works in offset printing, it is much more difficult to replicate due to the variances in the screen printing process (mesh count and tension, stencil quality, print registration, garment construction). When working with the Rosette Halftone Theory, printers often experience shifting in their image called moiré which is frustrating and difficult to overcome.

4-Color Process (A brief explanation)

Different combinations of cyan, magenta, yellow and black can create millions of different colors, but only a fraction of colors are recognizable to the human eye. Take green as an example: if we add 25 percent magenta to it, it will become forest green. If we take out half the cyan, it will become lime green. If we take out half the yellow, it will become turquoise. Even adding or subtracting as little as one or two percent of an ink color can change the entire color dramatically.

Screening Inks to Create Lighter and Darker Shades

When colors are screened, as in the 50 percent screen of cyan in BROWN, the same ink is used as 100 percent cyan. To make it appear lighter, it is reduced to a pattern of dots. Smaller dots make the ink appear lighter and larger dots make it appear darker. Process screen printing is typically done in a few different ways. Offset half tone angles and single line halftone angle known as the flamenco method. Do to the variables involved with the screen and shirt fabric, we recommend using a single line half tone angle (61° or 22.5° F). Using the flamenco method is much easier to accomplish and it looks just as good on t-shirts! All professional graphic applications will separate a color document at the click of a button. For example, let’s look at a photo of a model on a boat—shown in individual separated states and finally as the image would be composed (or combined) on the press:

Process Separations

Each of the four colors you see below will be output to a separate positive, burned onto separate screens and inked on the press (wet on wet) so the colors can print on top of each other. After the substrate has been impressed with each inked screen, the composed image will appear in full color. Four color process inks are transparent so they only work on light garments. Since they have to mix wet on wet, it is difficult to achieve a quality four color image.
Production Flow

1. Print Order, YMCK (light to dark)
2. Press Proof, get the ink flowing
3. Consistent angle and pressure!
4. Run production
Example of Process on Black w/ Discharge Underbase
Four Color Process Checklist

- Qualified and quality artwork
- Prepare artwork for separation
- Load proper color profiles
- Flemenco Halftones, 22.5° or 61° angle
- 55-65 LPI
- 305 Screen Mesh
- Retain halftone detail during exposure, use an exposure calculator to tell
- Print with color profiled CMYK Inks
- Print Order, YMCK or light to dark
- Run consistent print product
- Keep job notes and press proof
Spot Process

- Process image selection
- Image preparation
  - Graphic program options
  - Color management
  - Running separations
  - Adding channels and making adjustments
  - Output settings and film output
  - Screen exposure
  - Press proof
  - Production
The Spot Process Graphic Programs

Program Capabilities

- Channel Separation  X
- Automatic Separation X
- Handles Press Color  X
- Make Channel Adjustments X
- Positive Press Proof  X
- Handles Output       X

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X (With Plugin)
Color Handling Comparison

* ALL SCREEN SHOTS TAKEN FROM THE SAME ART FILE
Vector Text Example
# Ink Selection

<table>
<thead>
<tr>
<th>Print Order and Color</th>
<th>PMS (Pantone) Match</th>
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| #1 White Base         | White (a Flash quality white)  
(to warm an under-base for flesh tones and nature use PMS 714 or PMS 470 matches) |
| #1.5 Black            | Black (opaque or “process black”) |
| #2 Red                | PMS 032              |
| #3 Blue               | PMS 300              |
| #4 Gold               | PMS 123 (or 122 if a bright, more yellow gold is needed for an image) |
| #5 Purple             | Pantone Purple       |
| #6 Green              | PMS 354              |
| #7 Turquoise          | PMS 312              |
| #8 Cool Gray          | PMS Cool Gray 8      |
| #9 White              | White (not a thick white or it will over power the other colors) |
Spot Process Checklist

✓ Qualified and quality artwork
✓ Prepare artwork for separation
✓ Use best available separation program
✓ Delete, merge, and adjust channels
✓ Add vector text in Illustrator or CorelDraw.
✓ Output films, 22.5 Degree Angle: **45-55** LPI is recommend
✓ Choose Screen Mesh: **230-275** is recommend
✓ Retain halftone detail during exposure, use an exposure calculator to tell
✓ Print with proper pantone inks
✓ Press proof print order and run test prints to get ink flowing.
✓ Run consistent print product
✓ Keep job notes and press proof
More information available!

• Come visit us at the Ryonet Booth for a free demonstration and more information about our Separation Studio Software and Four Color Process Products.