

Screen Printing

on Garment Dyed Shirts

Garment dyeing is a process where the shirts are dyed after the entire shirt has been manufactured, rather than dyeing the fabric before cutting and sewing the garments. There are two types of garment dyes: Pigment and Reactive dyes. The properties of garment dyed shirts are colors that are easy on the eye and soft to the touch, but there are a few things to consider when printing.

SCREEN PRINTING (Silk Screening) A technique that uses stencils and ink to create designs on garments. While it is the most economical method for producing large quantities that involve cotton or cotton-blend garments, it has a steep learning curve that requires knowledge and skill. For successful screen printing on garment dyed fabric, follow these recommendations.

IMAGE DESIGN:

Create a customized graphic using professional graphics software. The graphic must be separated by color, with each color printed on its own clear film positive. Fewer colors mean a simpler set-up, resulting in lower costs. To enhance the softness of the shirt and to avoid printing problems as well, tone on tone artwork and utilizing the shirt color as a background color in the design are good artwork tips.

SCREEN MAKING:

Following a process that requires the use of a darkroom and photographic chemicals, a stencil, known as a screen, is made for each color in the graphic image.

PRINTING:

When printing garment dyed shirts, it is recommended to use inks and methods that avoid dye migration. Dye migration occurs when the dyes applied to the fabric move off the surface of the fabric into the inks applied. Testing for dye migration is always recommended. Most manufacturers have inks that prevent dye migration. We advise that you use them as necessary. Since there are many colors, many weather conditions, a variety of types of dryers and flashes, and artwork changes, there is no one "right" way to print these garments. In some cases a "low bleed" formulation will be effective, if problems still persist you need to use a dye blocking grey ink. In general use as little heat as possible while still curing the ink, that is both in terms of flashing and in your oven. In certain cases a longer flashing or drying time and lower heat levels are recommended. Additionally, the soft fibers of the shirts shorten the adhesion time to your platens. In order to maintain registration, reapplication of adhesive may have to be done more often.

DRYING:

Most inks fully cure when the entire ink reaches 320°F. We advise that you follow the specific guidelines provided by the ink manufacturers which usually define the optimal curing/ drying temperature and dwell time. Temperatures higher and 320°F and dwell times beyond the recommended settings can cause damage to the garments and/or inks. This time and temperature can change dramatically depending on the ambient temperature and the humidity of the shirts and based on the type of equipment. Ghosting is a possible problem at this stage, (not only on garment dyed shirts) that can happen when curing the ink, and again depends on ink, conditions and equipment. Typical solutions are use of non-ghosting whites (consult your ink rep), longer outfeed or fans on your dryer, or laying the shirts in multiple stacks when taking them off the dryer.

SAFE WORK ENVIRONMENT:

It is strongly recommended not to overheat the garments at any stage of the screen printing process. Please ensure adequate ventilation in your screen printing facility and make sure to clean and maintain your equipment regularly.

CARE INSTRUCTIONS :

- Due to the nature of the dyeing process employed with Comfort Colors pigment dyed shades, loose pigments may remain on the surface of the garments. We therefore strongly recommend washing these garments only with like-colored garments, as some of the pigment dyes may stain light or white colored garments in the wash cycle.
- Washing the garments in cold water will reduce the possibility of staining.

CONSIDERATIONS:

- Dye migration occurs when the dye color in the garment absorbs into the screen printed ink.
- Ghosting is when printed shirts are stacked too soon during the drying process before being adequately cooled. This causes a chemical reaction which creates a ghosted image of a white screen print on the back of the shirt stacked on top.

Direct To Garment

This form of printing utilizes specialized ink jet technologies to print in full color directly on garments using a water-based CMYK system for white shirts and an added white-ink for colored garments. Ideal for full color prints and for reproducing fine detail. This is a great option for projects with short turnaround times or short runs and can work on both light and dark garments. Note though, exact Pantone® color matching is not always possible.

PROCESS:

STEP 1: PREPARING THE GARMENT

DTG usually requires a pre-treatment solution to be applied to the garment before the ink can be printed on it. This solution is a “primer” that is designed to create a bond between the ink and the garment. All dark colored garments require this process but it is optional on light colored garments. Depending on the equipment, the pre-treatment may be applied by the DTG printer or it may have to be applied beforehand in a separate process.

STEP 2: PRINTING

The shirt is placed on a platen that keeps it flat and smooth during printing. It is essential that the shirt is as flat as possible or the print heads will move away from the substrate and the printing can become blurry. The artwork is loaded into specialized RIP software which converts it into a CMYK file that is ripped to a uni-directional 1,200 x 600 dpi file. This file is then sent to the printer. For light garments the machine makes a pass over the garment surface, while applying a highly controlled spray of each of the CMYK process inks. This may be one or multiple passes. For dark garments it first lays down a white underbase and then returns to print the process inks.

STEP 3: CURING

Once the image is printed on the shirt, the ink needs to be cured in order to make the image permanent. This requires heat which may be applied in a conveyor oven (dryer), a special drawer-based cabinet oven (dryer), or using a heat press with parchment paper to protect the image. The length of time and amount of heat are dependent on the type of DTG machine and the type of garment. As with all types of inks on all garments/fabrics the atmospheric conditions such as the temperature or humidity in the garment may also affect the cure.

TIPS

1. DTG is less complicated than traditional screen printing. Compared to screenprinting, DTG requires less experience and specialised knowledge, it is simpler with less steps, uses fewer chemicals, and takes up less floor space.
2. 100% Ring Spun cotton fabric garments are the easiest substrate for good results with DTG since they have a smooth print surface. Many blended fabrics also work but they can be more difficult.
3. A high resolution is best for artwork. 300 dpi at full size is the minimum resolution for the best results. Artwork with an inferior resolution will not give ideal results but with DTG you may get passable results that are superior to screenprinting from such files.
4. For the highest level of quality always pre-test the exact garment you are going to print. Different garments in terms of color, fabric, and means of manufacture require different DTG printing parameters.
5. Heat pressing the garment before printing can give superior results as a nice flat surface is the best printing surface.

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- Washing the garments in cold water will reduce the possibility of staining.

CONSIDERATIONS:

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Discharge Printing

This form of screen printing uses a special water-based catalyzed (activator) ink that has a “discharge agent” additive. When printed and then put through an oven (dryer) the discharge agent essentially neutralizes or bleaches out the dye in the garment while also adding the new color unlike other types of printing that cover up the color of the garment. Discharge base (without colorant) will discharge many garments to a soft natural color which makes this method ideal when trying to accomplish soft prints. With care it also sometimes can be used as an underprint for traditional inks. The prints then also get even softer after washing.

DISCHARGE PRINTING PROCESS For successful discharge printing on garment dyed fabric, follow these recommendations.

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PRINTING:

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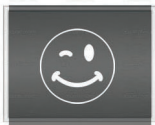
Foil Application

A premium method that combines heat and pressure to transfer foil to a garment giving some decorated items an attention-getting metallic shimmer. However, it should be noted that foil is available in a variety of colors and patterns and can be used to add dramatic accents to traditional screen printing. Alternatively, it can be applied to large areas or overall designs on all colors and weights of fabrics. Foil printing involves screen printing a layer of adhesive onto the garment, curing the adhesive, and then using heat and pressure to apply the foil. It requires skill, attention and the right materials, but achieves a special look with a higher perceived value. This technique works better with direct/ reactive dyed garments.



IMAGE DESIGN:

As with screen printing, create a customized graphic using professional graphics software. The graphic must be separated by color, with each color – including the foil portion of the design – printed on its own clear positive film. Foil must be the top-most layer of the design, applied after all other ink has been applied and cured.



SCREEN MAKING:

Using a darkroom and photographic chemicals, make a stencil – known as a screen – made for each ink color and for the foil. For the foil screen, use a mesh with fine thread and high tension.



ADHESIVE APPLICATION:

Place the foil screen in the screen printer. Use a soft squeegee and slow stroke to make a smooth even thick film of adhesive on the shirt. A sequence of print, flash, print may be necessary to both have the adhesive engage the fibers of the shirt and be above the shirt enough to adhere the foil. Too little glue causes poor adhesion; too much will cause the glue to melt from under the foil, resulting in uneven edges. The printed glue should have a smooth, glass-like finish. Foil will adhere to both plastisol inks as well as foil adhesives so you must either combine foil with water-based inks or else use a “foil resist” additive in the plastisol inks in the non-foil portions of your print. You may print a grey layer of ink under a silver foil and a gold/yellow layer of ink under a golden foil, etc., or dye the glue grey or gold. Doing this means someone will not see that the foil is peeling or falling off of some pin spots after the first washes, and the image will look fresh for longer.



FOIL APPLICATION:

Set your heat transfer press to the foil and ink manufacturers’ recommended time, temperature and pressure. Make certain that the hot plate is clean, the rubber pad is in good condition, and that the press applies consistent pressure across the entire surface. Position the item in the heat transfer press, place the foil sheet over the adhesive-printed area and apply heat and pressure. Make several test prints to ensure that the foil is adhering smoothly and completely, and that your design has sharp, even edges.

LONGEVITY AND CARE:

Foil printing is one of the least permanent decorating processes, with a tendency to tarnish or flake after numerous washes. A quality printing job produces in a more durable result, and proper care can substantially increase the life of foil prints. Encourage your customers to turn foil printed items inside out before washing; launder using their washing machine’s delicate cycle or hand wash; hang to dry. Also let them know that they should never use an iron on a foil print.





DISTRESSED PRINTING

Distressed printing achieves the vintage look that is always in demand. It is relatively easy to master this technique if you follow these steps:

Step 1



Find or create a distressed texture pattern. There are hundreds of copyright free images on the web. Alternatively, you can make your own distressed texture by taking a picture of a rough surface and turning it into a high contrast, black and white image.

Once you've chosen a texture you like, create an alpha channel of the image and subtract it from the separation channels of your artwork.

Step 2



Ensure you base back your inks to make them more transparent.

Check with your preferred ink vendor for products like soft hand additives and extender bases. This will allow the color of the shirt to show through more, achieving a heavily worn and laundered look.

Final Step



Play around with different textures and build a library of distressed ones, ranging from slightly worn to heavily distressed, like a favorite t-shirt.

Try adding more extenders to your ink to get an even more vintage look. It is important to experiment and record your results.

Have fun with this technique!



Embroidery is the art of working raised and ornamental designs in threads of silk, cotton, or other material, upon any jersey, fleece, piqué or other types of fabric, with a needle or an embroidery machine.

EMBROIDERY PROCESS:

Today's custom embroider is a primarily automated process. A sewing program translates the digital artwork into data. This process, known as that digitizing, guides the machine to sew the artwork on to the garment.



DESIGN AND DIGITIZE IMAGE:

Create or adapt a design for embroidery, bearing in mind that simpler designs with open areas translate best into stitches. Designs with open areas will allow fabric to drape more naturally. Once complete, the design must be digitized to translate it into stitch data for the sewing machine. This may be done in-house using software compatible with your embroidery machine, or outsourced to a reputable digitizing firm. If outsourced, please ensure that the digitizer knows the type of garment so that the digitizing (embroidery) program takes that into consideration. Other important considerations include the type of backing being used inside the garment and materials which maybe placed on top of the garment since these can impact the end result. Send the digitized image to your embroidery machine.



STABILIZE AND HOOP:

Select the appropriate stabilizer for your item's fabric, apply temporary spray adhesive, and smooth the stabilizer onto the item. Next, place all layers firmly in your embroidered machine's hoop, which holds the fabric securely and moves as the item is sewn. The fabric should be smooth and flat, but not stretched out of its original shape. Insert the hoop into your embroidery machine.



STITCH THE DESIGN:

Once you insert the hooped item and send your digitized file, the embroidering machine does most of the work. It will stop when it's time to change thread or if other action is needed. When the machine finishes sewing, remove the hoop, unhoop the fabric, and trim any excess thread from the stabilizer. Some items may need a light steam pressing to smooth any creases caused by the hoop.

EMBROIDERY EQUIPMENT AND SUPPLIES

- **COMPUTER:** A computer with specialized software that translates digital imagery, e.g., a GIF or JPEG, into stitch data to guide the embroidery machine, or the services of a digitizing company that will translate the image into stitch data for a fee.
- **EMBROIDERY MACHINE:** A wide range of machines are capable of doing embroidery, ranging from low-cost, consumer-grade sewing machines to automated, multi-need industrial machines capable of producing complex, highly detailed stitched graphics.
- **SUBSTRATE:** Many fabric items are suitable for embroidery, from T-shirts and fleece to totes and hats. Very lightweight or highly elastic fabrics can be challenging to embroider, with a greater tendency to pucker or wrinkle. Plush fabric such as fleece require densely stitched embroidery to prevent the fabric from showing between stitches.
- **STABILIZER:** Even low-end home embroidery machines can make several hundred stitches per minute, putting tremendous strain on most fabrics. A stabilizer supports the fabric during stitching to prevent shifting, stretching or distortion.