HiMarx

Technical Manual

Chapter 7
Foiling

About Foil

The foil used in the EPI process consists of three parts: metal foil, adhesive, and a mylar transfer sheet. A very thin and long sheet of mylar is backed with a layer of metal foil which is treated with a special adhesive. When foil is heated as it passes through the Foil Transfer Unit (FTU), the adhesive fuses to the sticky toner and causes the foil layer to pull away from the mylar leaving a stencil of the text and/or graphic design.

To date EPI offers twenty-three colors of foil. All colors are available in 100' x 11" rolls. Selected colors come in 100' x 8" rolls. All colors fall into one of two categories, either metallic or specialty. Some metallic colors like gold and silver come in a choice of finishes: shiny gloss or satin. Specialty foils include rainbow and holographic designs. Specialty foils are typically more expensive. (See Appendices ? and ?.) As in fabrics and paints, foil is also produced in dye lots. The manufacturer attempts to keep the colors consistent, but they may vary in shade. The core is ½" in diameter and is designed to fit the FTU.

The EPI automated system of transferring foil using the FTU was designed for entrepreneurs who want a profitable business, not the person who is looking for a hobby of cutting and pasting and utilizing every inch of foil. A pass through the FTU, whether it's for a single dot or a full page border, is figured into the minimum suggested pricing of your product, therefore there is no waste factor, even when you realize considerable virgin foil between some stencils. Although EPI is in the business of selling foil, we want you to conserve "virgin" foil when possible so that you can realize even greater profits. In most cases you will want to feed the longer side of the paper first and overlap when possible. If overlapping, check the first two or three pages carefully for imperfections before continuing. When changing colors, unravel the used end about 10 inches or so, then cut it off. The next time you use the color you will have a 10 inch leader of used foil instead of virgin foil.

Foiling Media
The ONLY materials you can run through the FTU are the following: laser compatible paper, cardstock and label stock only. DO NOT USE plastic, vinyl glass, napkins, T-shirts, etc. (Reference the laminated instruction sheet that came with your unit). In addition, **DO NOT** use the FTU as a laminator. This will cause the laminate material to heat up and come off onto your

heat roller. When your heat roller cools down, this thin laminate coating will then become clear and hard, disabling the foiling process. Additionally, the amount of pressure required for proper lamination cannot be achieved by using the FTU, due to the design of the FTU.

FTU Controls

Take-up Roller

The take-up roller collects used foil. Load an empty cardboard core onto the rod centering it over the two metal tension strips. The take-up core should be tight on the rod with no freedom of movement. It is not necessary to change the take-up roller each time the color of foil is changed. Allow the take-up roll to grow with used foil, but don't let it get much larger than 2 new rolls of foil. *If it gets too large, it changes the gear ratio inside the driver unit and may pop the drive belt off the pulley.* It may also start to rub against the tension rod.

Feeder Roller

The feeder roller is identical in appearance to the take up roller. To facilitate the proper operation of the FTU, the feeder roll of foil should slide easily onto the feeder roller and have some freedom of movement. When loading or changing a roll of foil, tightly squeeze the roll of foil with one hand. *Using a twisting motion,* insert the feeder roller with the other hand centering it over the two metal tension strips. Squeezing and the twisting motion should avoid "*coning*", the condition that happens when the cardboard core is driven out the end of the roll. If the coning is not severe, the roll of foil may be used, but be aware that eventually the foil is going to be out of alignment. Keeping the foil in alignment will prevent wrinkles, waves or creases that result in black diagonal non-foiled lines on the printed product. If this happens on the first few sheets, you can run them a second time to fill in the lines. If the misalignment is severe and continues cut off the foil at the take up roller and realign the foil before proceeding.

When changing colors of foil, remove the roll from the feed roller with the same twisting motion used when loading it. To avoid loose foil or unraveling, simply use a piece of adhesive tape to secure it. For easy removal the next time that color is used, fold or twist the end of the tape to create a tab.

Adjustable Speed Control

The FTU has an adjustable speed dial. The size of the take-up roll increases with every inch of used foil that is wrapped around it, and it is the size of the take-up roll that determines the speed at which the feeder roll turns. The average speed is about 65%. The variable speed allows you to slow down or speed up depending on your job, the design and your dexterity.

Adjustable Thermostat

The FTU is thermostat controlled and does fluctuate by as much as 10° degrees during the foiling process. Preheat the FTU to 300° for all first pass jobs. If the temperature is too low, foil will not fuse to toner because the toner has not reached its melting point. If the temperature is too high, foil will be melted or burned onto the hot roller in the FTU.

Foiling Techniques

Explicit instructions for the FTU are condensed onto one page, heavily laminated for permanence and are packed with the FTU. They are also available on our Web-site, in case you happen to lose your copy. The FTU is tested before shipment. Please reference *Production Tips & Techniques, Chapter 10* for further FTU techniques.

FTU Techniques

Multiple Pass Techniques

During a second pass, lower the FTU temperature to 285 degrees. If the temperature is too hot, foil will melt onto the FTU hot roller and the second color will adhere to the first color.

Preheat the FTU to 300° for all first pass runs. For second passes of foil, lower the temperature on the FTU to 285°.

In multiple color jobs, gold and silver should be run first because of their chemical composition. Rainbow and holographic colors should be run second, due to their various melting points within the colors. (Be sure to lower the FTU temperature for second passes.)

In multiple color jobs containing black foil, black MUST be run last because of the possibility of it being covered by the first color. (Be sure to lower the FTU temperature for second passes.)

In two color jobs, the first color will lose some of its sheen, a condition called "blushing". This is a characteristic of foil when it is reheated. If you run a sheet through the FTU more than once, perhaps foiling a missed area from the first pass, the first foil will blush and the second will have a greater sheen. If it's cost effective, you may want to try a third pass to "blush" the second pass in an effort to camouflage the difference.

Screening

Many certificates are printed with a halftone or screen in the background with text on top of it. Be sure to follow instructions for multiple passes.   (what about banding & filling in probs- will need to test)

It is also possible to lay foil on foil under some circumstances but EPI recommends extreme caution and makes no guarantees. If the first pass contains large areas of foil, you may notice decreased print quality on the second pass.

Reverses

Some operators have attempted to do reverse designs where the foil is the background and the text is hollow on top. Reverse designs can be very attractive but if you attempt it, do take some precautions. When foil covers greater areas, inconsistent fusing is more apparent and as a result, you will encounter more waste. To minimize your waste, ensure that you have maximum toner coverage with absolutely no hollowing or flaking, clean the FTU hot roller frequently, reduce the speed, and possibly increase the pressure between the rollers by turning the clutch handle just a little bit more. With reduced speed and greater pressure, the toner and foil spend more time in the heat process and the results may be more satisfactory. To compensate for your added efforts and waste, *be sure to increase the price of the job when there is more foil than white space*!

NOTE: If you apply too much pressure, you may pull the first color of foil off inside the FTU as well as possibly curling the card stock, causing further problems.

Periodic Maintenance

Like any appliance that is used frequently, periodic maintenance will increase its performance. Historically the FTU will run without major problems if the hot roller is kept clean. The hot roller will eventually attract small patches of adhesive or foil. These patches will prevent future fusion of foil on paper, causing recurring black toner spots on your foiled product, so they need to be removed. The hot roller is easier to clean if it is heated. To clean the hot roller, lift the cover of the FTU to expose the black roller.

CAUTION!! The hot roller is HOT! Avoid touching it with bare fingers!

Using cotton swabs and a little alcohol if necessary, gently wipe any white spots on the hot roller. Turning the clutch, rotate the hot roller a little at a time until you have cleaned all the way around it. The outer margins of the hot roller are more difficult to clean but not impossible. This may appear as a thin line around the entire heat roller. The heat roller is simply getting dirty from the edges of foil after a long run (ex. an entire roll of foil).

For tougher spots, it is OK to use a Teflon™ safe scotch pad.

NOTE: Keep in mind that if you apply too much pressure or use a non-Teflon™ safe material, you may damage the heat roller, thereby voiding the warranty.

EPI cleans its hot rollers daily and checks it throughout the day especially during long run periods or after rainbow and holographic foils.

For troubleshooting procedures, please reference Chapter 11 Troubleshooting.