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Direct Printing Basics



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In printing newspapers through the offset lithographic process, the image is transferred from the plate to a blanket then onto the newsprint. However under certain press configurations this is not always possible. In these cases, to achieve a four over one printing configuration, one of the printing units needs to be printed via direct lithography. In the direct lithographic process the image is directly transferred from the plate to the newsprint. This configuration can cause additional quality problems. We will discuss the variables involved and ways to maintain them, so that optimum print quality can be achieved.

As with any press maintenance schedule, the roller durometer needs to be checked and rollers should be replaced when out of specification. The rollers should be inspected with a Shore A durometer gauge and replaced as they get too hard.

The dampener feed roller is a very critical roller and sometimes is replaced with a very hard ink transfer roller because it is covered with a sock. The delicate settings necessary to transfer water up to the dampener form cannot be achieved if it is too hard. Therefore, it is not a good practice to utilize old, hard transfer rollers in this system.



Rollers should be maintained within the recommended durometer range		
▶ Ink Form Rollers New	=	26 to 28 Out at 40
▶ Ink Transfer Rollers	=	28 to 30 Out at 40
▶ Dampener Form Rollers	=	24 to 26 Out at 35
▶ Dampener Feed Rollers	=	22 to 24 Out at 35



The adjustment of the dampener feed roller, should be made using slip-sheets or a scale to measure the pressure. Example, chrome to the sock roller 2 lbs., sock to the chrome 3 lbs. The dampener form should be set in the same manner. The chrome to the dampener form at 4 lbs.,

dampener form to the plate at 5 lbs.

Impression settings need to be checked and adjusted as needed. The following settings are critical for proper reproduction quality in the direct lithographic process



EXAMPLE

Blanket-to-blanket cylinders

- ▶ Blanket-to-blanket cylinders should be checked and set if necessary using a gauge supplied by the manufacturer. GO .158 and NO GO of .159.

Plate-to-blanket setting

- ▶ Plate-to-blanket setting, if the plate and packing thickness are .014 should be set at GO of .091 and NO GO of .092.

Plate-to-blanket setting

- ▶ Plate-to-blanket setting, if the plate thickness is .012, should be set at .089 GO and .090 NO GO. **Reminder:** The plate thickness should be checked because a .012 plate is a little thinner than it should be, in many cases only .011

Note: Consult your Press Manufacturer's Manual for your particular press setting.

The Blanket type being used should also be considered. For example, conventional blankets with packing would equal a total of .081 and when printing direct .003 would be removed from the plate and packing to accommodate the thickness of newsprint. This type of blanket is rarely used today. It printed very well but would not take a smash and the Shore hardness was at 88 to 90 durometer.

A compressible 3 ply blanket plus packing should equal not less than .083 once it is run in, so depending on the drop off would equal .084 to .085 etc. This blanket, in most cases can be printed direct without removing any packing from under the plate. In some cases, depending on the manufacturing process, it might require the removal of packing or a thinner plate when printing direct.

NO pack blankets are ordered at a thickness that will maintain the drop off standard of .083. Below this thickness it does not print well and in many cases will require that a plate be packed in order to print direct.

In preparing the plates, the image will need to be flipped over. In conventional offset lithography, the image on the plate is in the same direction as that of the print (RRED right reading emulsion down). For direct lithography, the image area needs to be inverted to produce the correct direction on the print (WRED wrong reading emulsion down). The emulsion

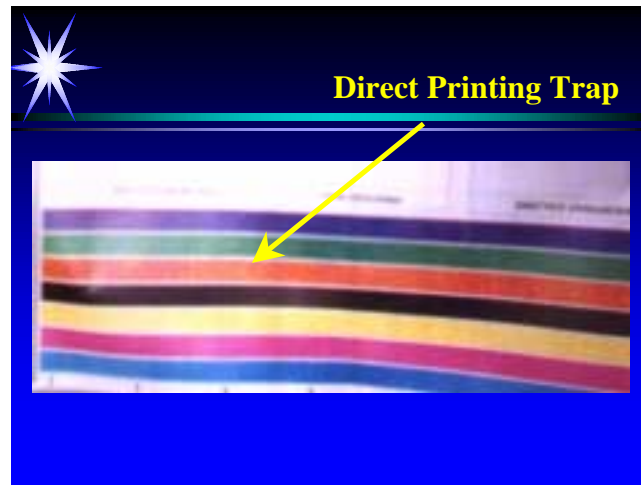


side should always be down or next to the plate when the burn is made. When using negative working subtractive plates, 2 to 4% increased dot gain can be expected under optimum conditions. However, if the plates are burned with the emulsion side of the negative up (not in contact with the plate surface) an increase in dot gain of approximately 8 to 10% can be expected.

The Color laydown sequence is also critical when printing direct. The standard printing sequence of Cyan-Magenta-Yellow-Black should be changed, if possible, to print the yellow direct for the best results. The yellow is less visible to the human eye, so that any printing deficiencies are less likely to be perceived. If the printing sequence is changed some of the

traps may also be affected. The traps or overprints are the most difficult to maintain under the direct printing conditions.

Differences in newsprint surfaces can dramatically affect the laydown of the ink. Various newsprints show greater print quality defects when printing direct than compared to conventional offset lithography. The printing blanket in conventional lithography typically contains a compressible layer. Without this compressible layer, the plate lacks this resiliency to conform to the surface of the newsprint.



As we have discussed the use of direct printing in the four color process can cause quality problems. All elements of the system need to be properly maintained to optimize the reproduction so that the inferior quality can be minimized.