

Impressions are everything

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Frank Bourlon columnist

Maintaining a good impression is the only way to achieve the best print quality possible without sacrificing runability.

Good impression is established by first setting the correct distance of the plate and blanket cylinders and the blanket-to-blanket cylinders. These distances are specified by the press manufacturer and shouldn't be changed without a thorough understanding of print impression.

Early Goss Communities and Goss Urbanites use iron-to-iron gauges to set the proper distance from blanket to blanket and from plate to blanket.

The iron-to-iron gauges set the distances in reference to the pitch circle of their respective gears (see Figure 1).

The pitch circle of a gear is an imaginary point at which the two gears are in perfect mesh with each other. In fact, the outside diameter of the bearers on a press that has bearers is at pitch circle. In both cases, the manufacturer is trying to achieve a perfect mesh between the gears. Gear marks would appear in the printed product if the gear were set too loose. The gears would wear out too soon if the gear distances are too close.

Go and no-go

A standard Goss Community uses an iron-to-iron gauge to establish the distance between the plate and blanket cylinder of .091-inch (go) and .092-inch (no-go). The .091-inch measurement is the sum of the undercut of the blanket cylinder from the pitch circle of the blanket cylinder gear (.079-inch) plus the undercut of the plate cylinder from the pitch circle of the plate cylinder gear (.012-inch).

The gauge itself is just a piece of steel that has been very accurately ground down to .091-inch on one end and .092-inch on the other.

Figure 2 shows the gauge inserted between a plate cylinder and blanket cylinder.

When the distance between the blanket cylinder and the plate cylinder is properly set, the iron-to-iron gauge will pass using the go side but will not pass using the no-go side.

Blankets, plates

As previously mentioned, the undercut for a blanket cylinder on a Goss Community press is .079-inch; the distance between two blanket cylinders is .158-inch. A standard blanket is .002-

inch over pitch circle and a standard plate size, with packing, is .014-inch, which means the outside circumferences of both plate and blanket cylinders is equal, thus creating the necessary impression to print.

When compressible blankets were introduced the circumferences of the blanket cylinder, with blankets, changed slightly from .081-inch to .083-inch. Compressible blankets recovered from wraps better than conventional blankets; the blankets packed in closer to .081-inch after a break-in period.

Today, blankets can be as thick as .088-inch. Ink transfer is good but thicker blankets can cause excessive dot gain and can contribute to overfeed. Overfeed will cause the web tension to be higher and will cause web breaks or the tension brakes to smoke.

Additionally, since the circumference of the blanket is larger than the plate cylinders, the images distort slightly; the thicker blankets can also contribute to plate throwing.

The undercut of the plate cylinder is modified by some press remanufacturers so that thinner printing plates can be used on the press without using plate packing (plate packing can cause the cylinders to rust). Figure 3 illustrates a plate cylinder that was modified from the original .012-inch undercut to a .006-inch undercut.

Change gauges

It has been the practice of some installers to use the same iron-to-iron gauge to set distances in these instances, but that is a mistake.

Remember pitch circle. If the undercut is changed, then a new iron-to-iron gauge must be made to ensure that the gears' pitch circle is in the same relationship as they were before the modification. (In this case, .085-inch is go; .086-inch is no-go.)

What happens if an old blanket to plate gauge is used? First of all, the purpose was to use thinner plates, which means a pressure reduction of at least .006-inch to transfer the ink from the plate to the blanket.

If the old iron-to-iron gauge is used, the press will overfeed when blankets are first installed, which means increased tension and more web breaks.

This also means that as the blankets wear in there will be less overfeed because the blankets are getting thinner (a reduction in overall circumference). The thinner blankets reduce pressure between the plate and blanket. That causes a grainy appearance in images printed due to the fact printing pressure is reduced.

Remain the same

Keep in mind that, in this example, the plate cylinder was enlarged by a radius of .006-inch, but the distance between the plate cylinder and the blanket cylinder remained the same because the old gauge was used.

The total thickness of the printing plate would be reduced by .006-inch to .006-inch so that no plate packing has to be used, of course, but the distance between the two cylinders is still the same. The reduced plate thickness means an immediate reduction in printing pressure, equaling grainy images.

The only reason the machine can print at all under these conditions is because of the compressible blankets — and that, for only a limited time.

In this case the solution to the problem is to use the correct iron-to-iron gauge to restore the printing pressures and to re-establish pitch circle.

Maintaining a good impression consists of ensuring that the plate and blanket cylinders have the same circumferences or cylinder diameters so that images are not distorted when they are transferred from one cylinder to the other. It is also important to print with enough pressure to ensure a good transfer of ink.

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Figure 1

