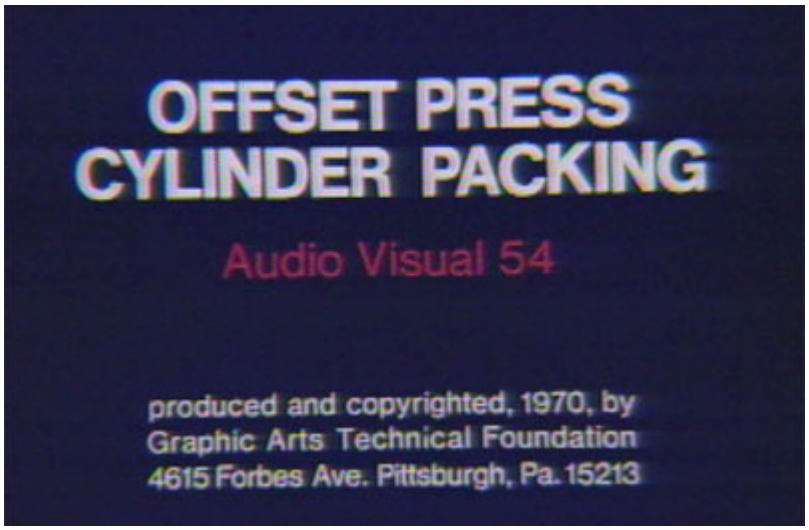
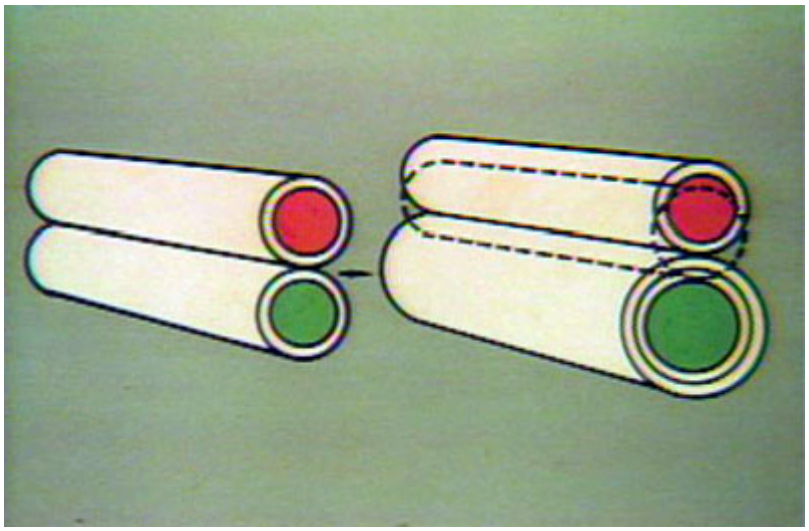
Graphic Communications Technology

Audio Visual 54

OFFSET PRESS CYLINDER PACKING

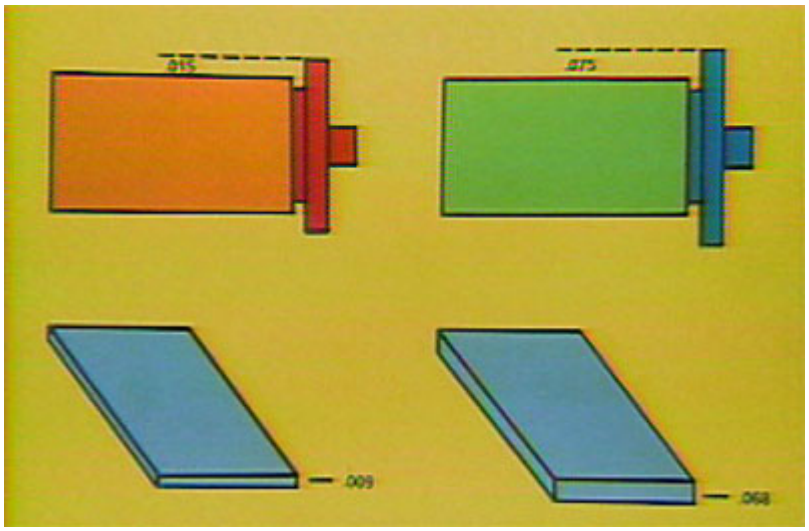


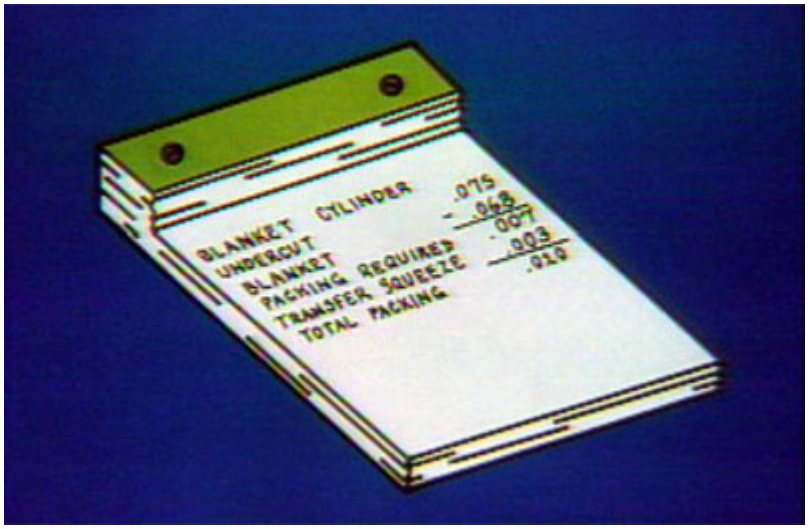
This audiovisual presentation by the Graphic Arts Technical Foundation on *Offset Press Cylinder Packing* covers one of the most exacting operations required of the press operator.



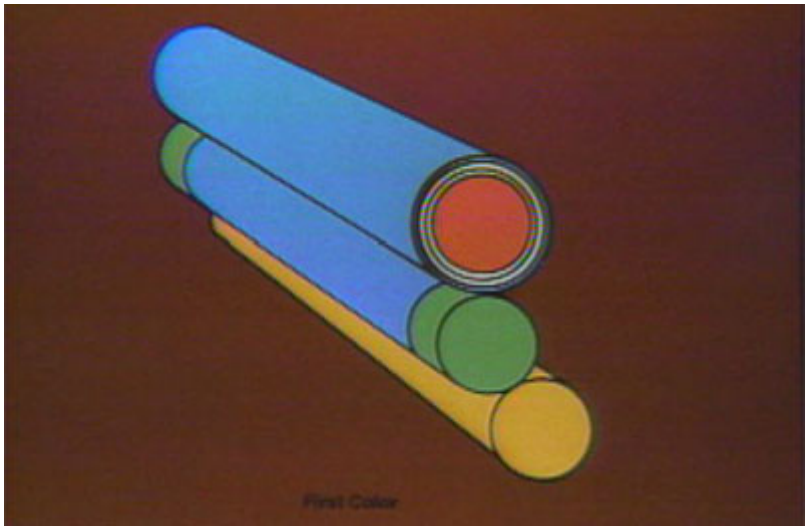
Cylinder packing is a means of easily changing the diameters of the plate and blanket cylinders by adding or removing packing sheets from under the plate or blanket.

Cylinder diameters are changed for several reasons: first, to allow for varying thicknesses of plates and blankets;



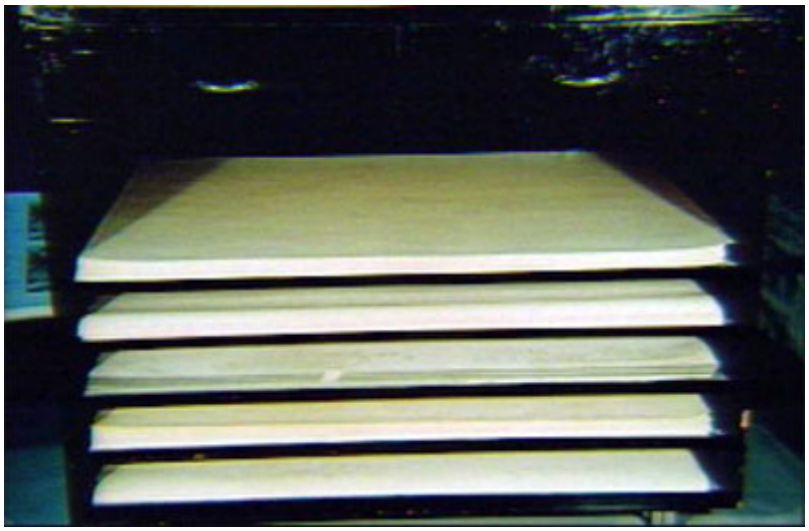


...second, to accurately adjust the plate-to-blanket pressure necessary for ink transfer;

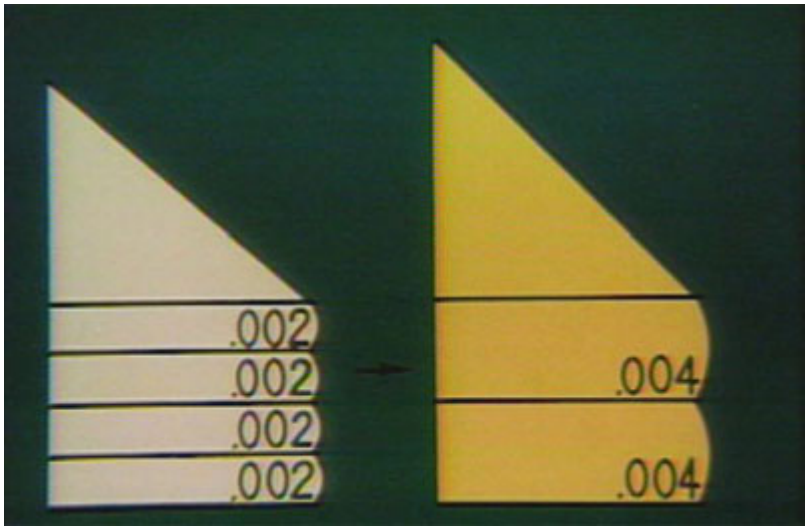


...and third, to change the relationship between the diameters of the cylinders.

Offset press packing sheets with thicknesses of .002" to .010" are used for packing the plate and blanket cylinders. Used singly or in combination, packing thickness differences of .001" may be obtained.

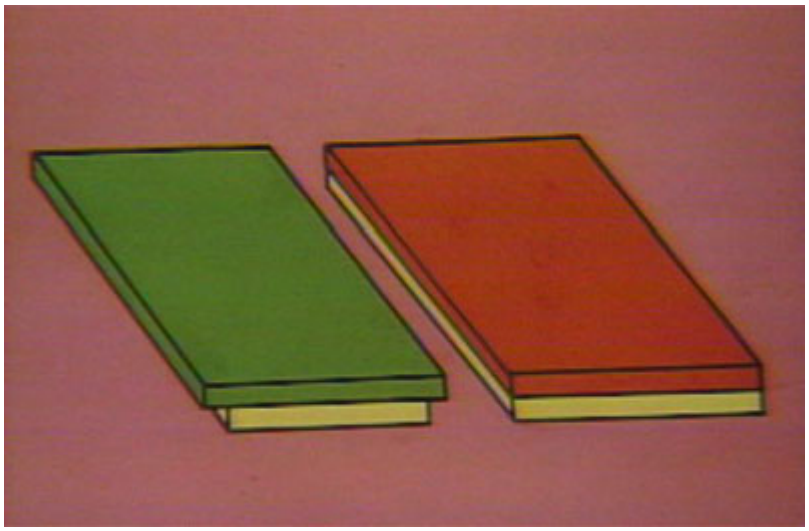


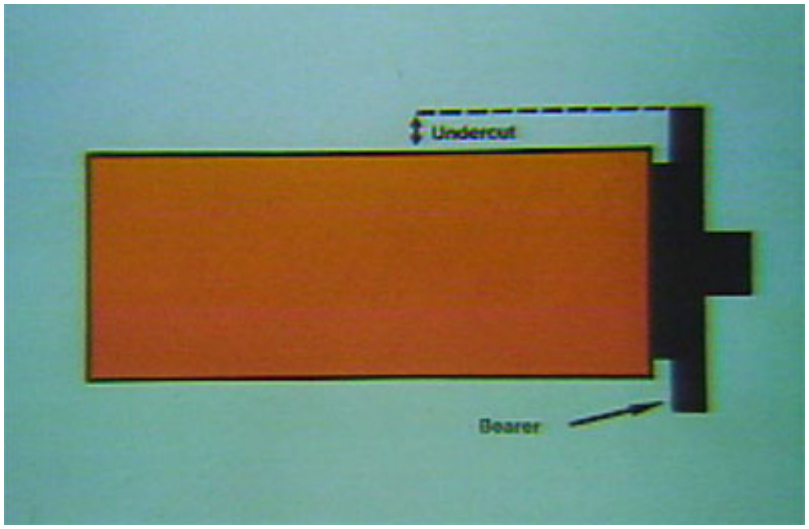
For convenience, pre-cut packing sheets, identified by distinctive colors for each thickness, should be stored near each press. The color coding helps in selecting packing sheets when a press is to be made ready.



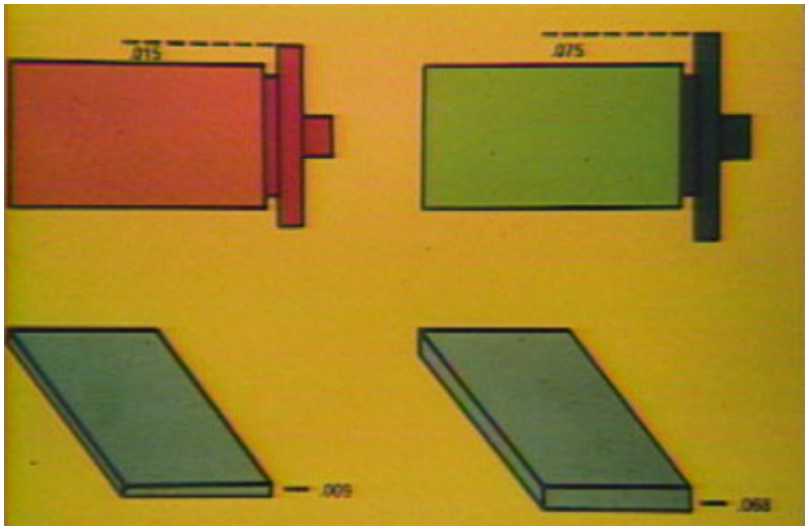
When determining the amount of sheets required for packing, a press operator should keep the number of packing sheets used under the plate and blanket to a minimum.

Packing sheets for the blanket cylinder should be cut slightly narrower than the blanket. The packing sheets for the plate cylinder are cut the same width as the plate.



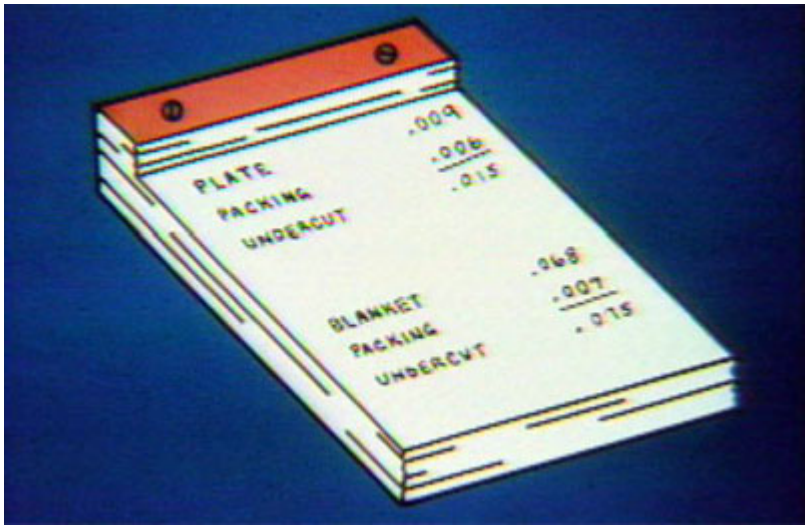


Presses that "run on bearers" have plate and blanket cylinder bodies that are cut below the bearer surface. The difference between the surface of the bearers and the surface of the cylinder body is called the **undercut.**

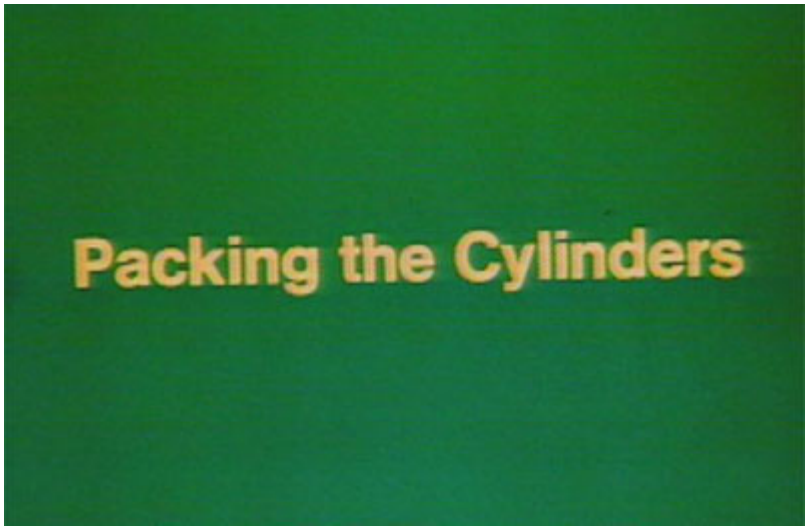


The amount of undercut must be known in order to calculate the amount of packing required to bring the plate of blanket up to bearer height.

For example, if the undercut for the blanket cylinder is .075" and the blanket is .068", the packing required to bring the blanket to bearer height would be .007".

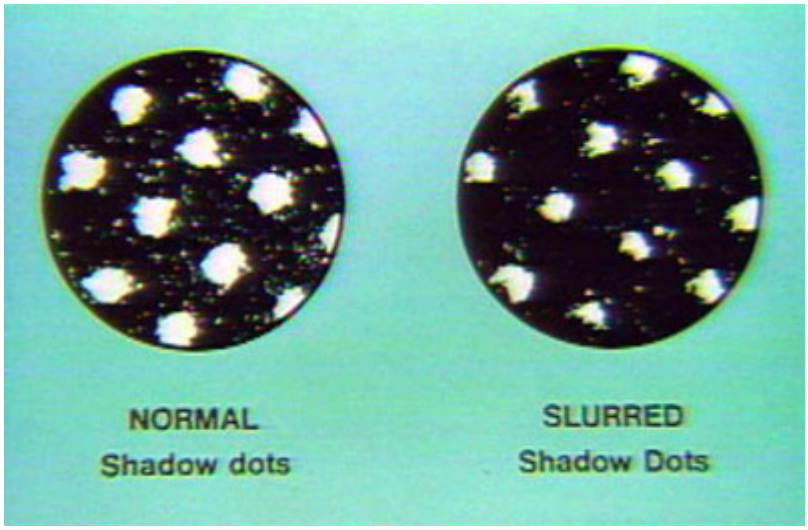


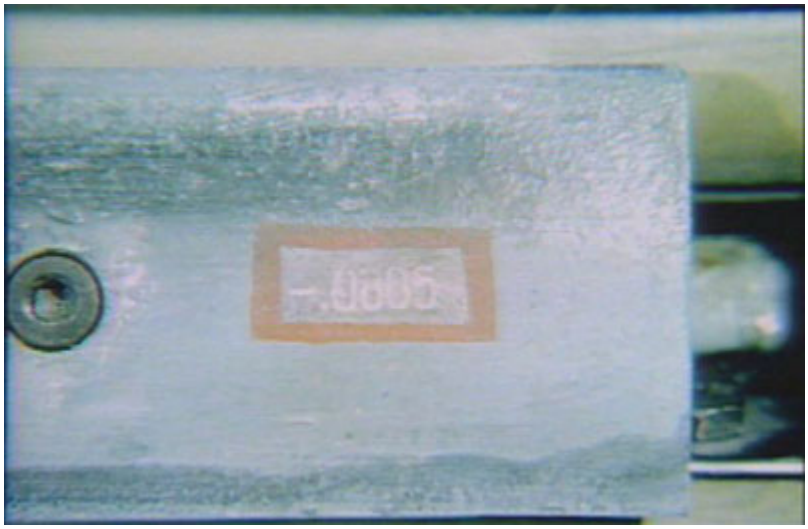
Calculations for the plate cylinder packing is done in the same manner. The undercut for the plate cylinder is less than the undercut of the blanket cylinder because plates are thinner than blankets.



Accurate packing of plate and blanket cylinders is essential for good presswork, especially with the popular use of fine-grained or grainless plates, A difference of .001" may seriously affect the quality of printing or reduce the life of plates.

Overpacking of the plate and blanket cylinders may result in dot slur. Underpacking may result in mealy-looking printing. Careful and accurate packing prevents either of these from occurring. Shown are photomicrographs of normal shadow dots and slurred shadow dots.

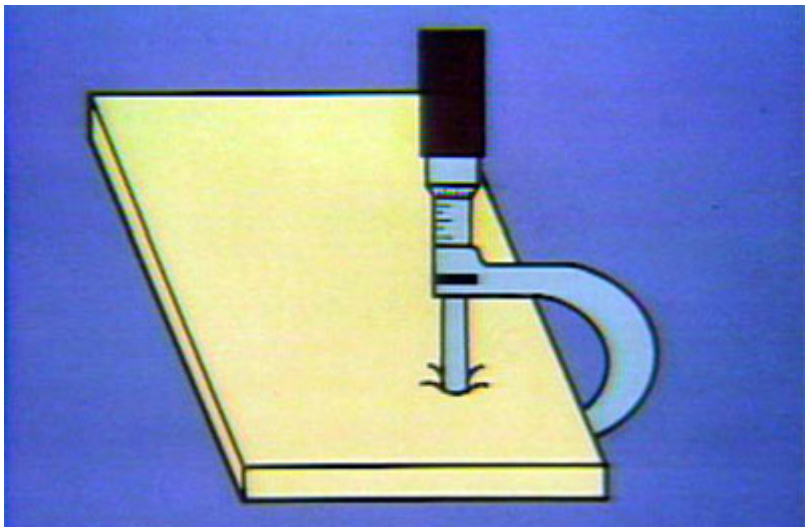


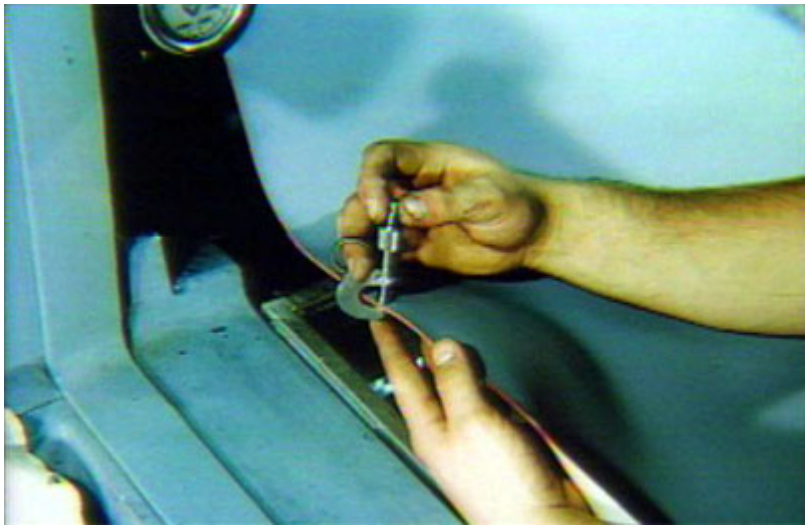


To properly pack a plate, the press operator should first determine the undercut of both cylinders. This is generally stamped on the cylinder or listed in the operator's manual.

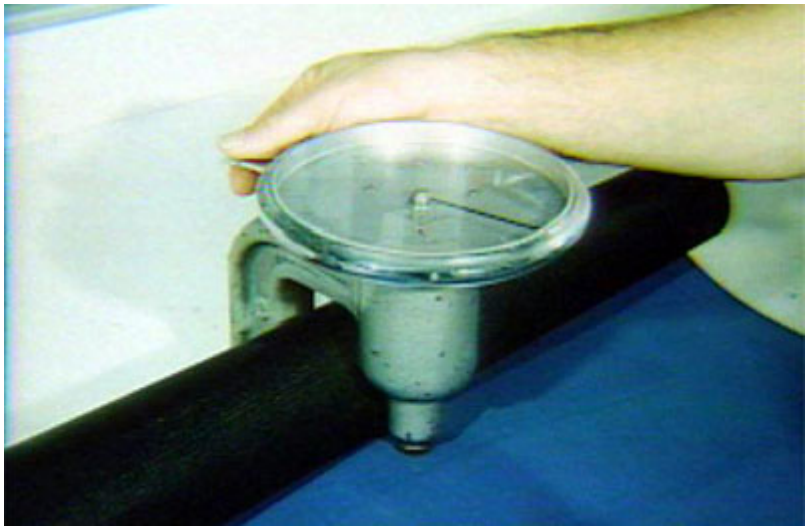
Then, plate and blanket are carefully "miked." A machinist's micrometer can be used to mike the thickness of the plate and packing sheets. Although relatively easy to use, care must be taken to get an accurate reading.

Machinist's micrometers are not suitable for measuring blanket thickness because the small anvil and spindle surfaces will compress the soft blanket.





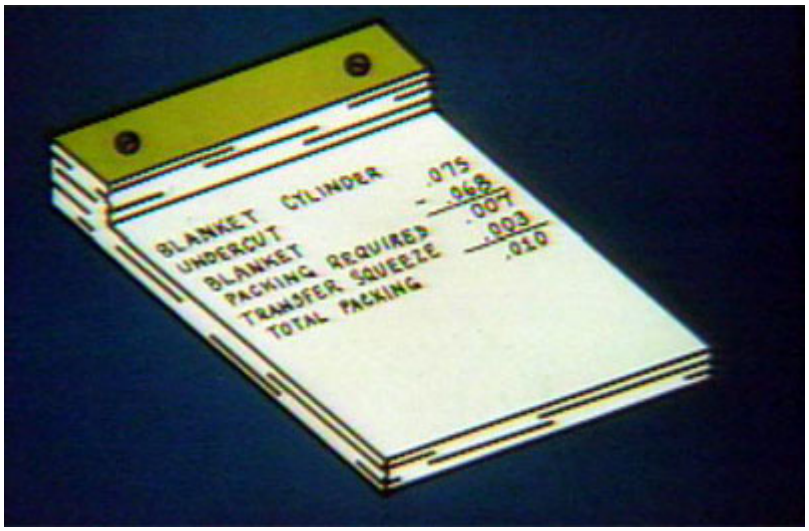
Micrometers with larger anvil and spindle surfaces--such as paper micrometers--are more accurate, but their small throats limit measurement only to the blanket edges.



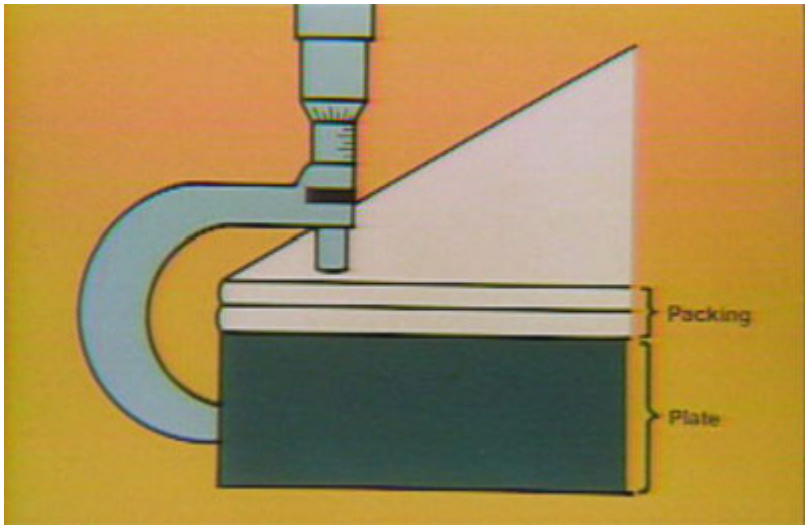
The *Blanket Thickness Gauge*, developed by GATF, is a specially designed bench micrometer with a large throat that allows for easy measurement at any point on the blanket surface.

The third step is to calculate the amount of packing necessary to bring the plate and blanket to bearer height plus what is required for transfer-squeeze pressure. In order to print, the two surfaces must be in contact with **extra** pressure. The amount of excess packing depends on the size of press and

type of blanket being used. This may range from .002" to .005".



It is essential that you check with the manufacturer's instructions as to how the plate and blanket cylinders should be packed for a particular press. Mike the plates and blankets *with their packing* to determine the actual thickness.



Fourth, install the blanket and then the plate. Plates with positioning marks must be carefully lined up with the corresponding plate cylinder marks.

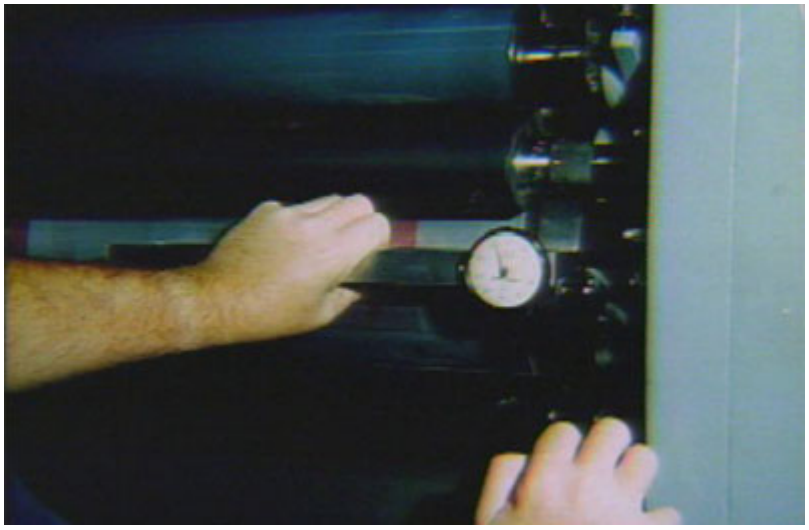
The blanket must be carefully and securely fastened onto the blanket bars before being mounted onto the cylinder where it has to be held perfectly square and parallel to the cylinder.

Square the packing sheets with the plate or blanket and place them to overlap the leading edge of the cylinders so that they will not slip while running.

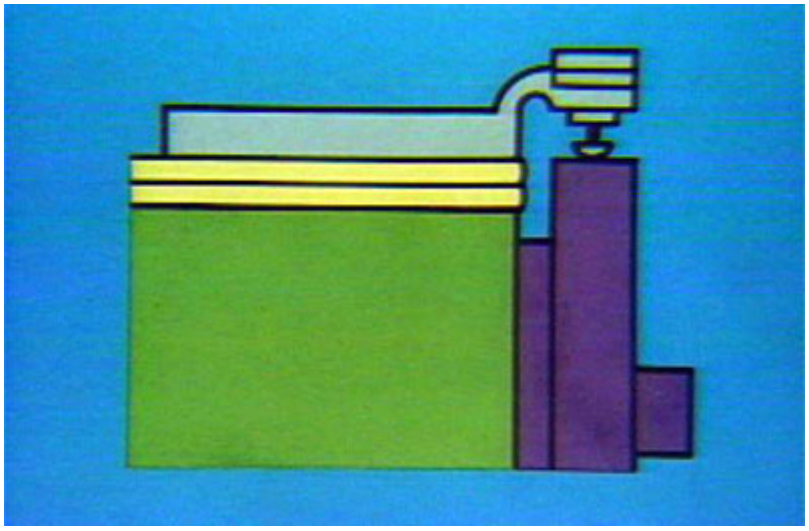
When tightening the blanket on the cylinder, use only the wrench supplied by the manufacturer. Do not add to the length for extra leverage. The actual blanket thickness can be changed as much as several thousandths by excessive tightening. Retighten new blankets after running several thousand impressions to compensate for the stretch inherent in a new blanket.

Special care must be taken when tightening the plate firmly around the plate cylinder. Excessive tension on the plate may crack the plate at the clamps. Only tighten the plate until it is firmly held against the cylinder body and packing. Check this by tapping

lightly along the lead and tail edge of the plate with your knuckle.



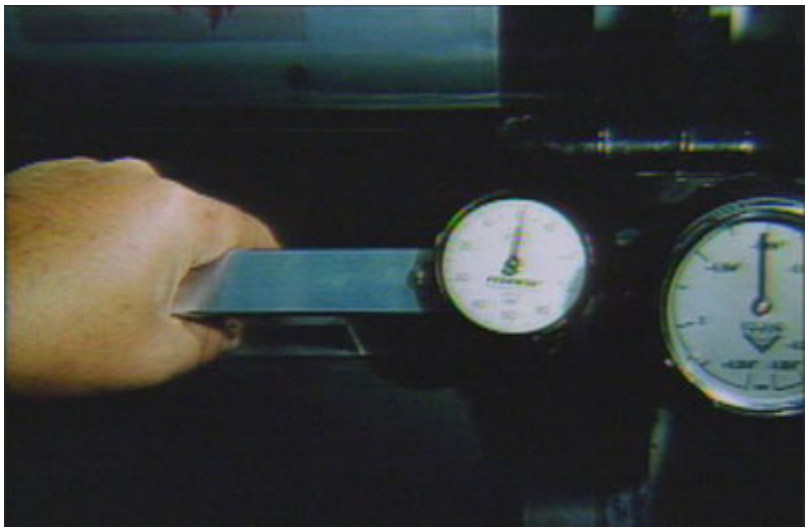
Finally, after the cylinders are packed and the blanket and plate are tight, the height of the packed cylinders is checked with a packing gauge.



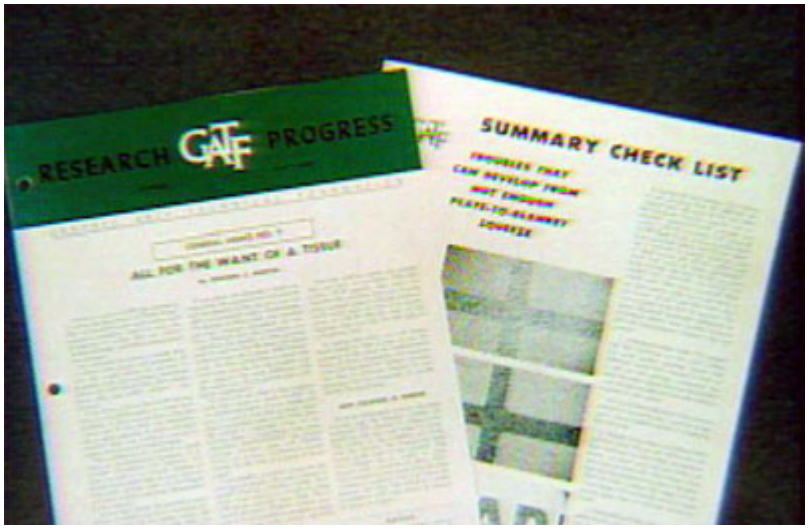
The packing gauge is an instrument designed to measure the height of the plate or blanket in relation to the bearer height after they have been mounted on the cylinders with proper packing.

The surface height of a newly installed blanket should be rechecked occasionally with the packing gauge until the blanket and packing have settled. Although the cylinders may have originally packed properly, packing sheets may compress under the transfer-squeeze pressure. After a short

amount of running, this compression results in an underpacked condition.



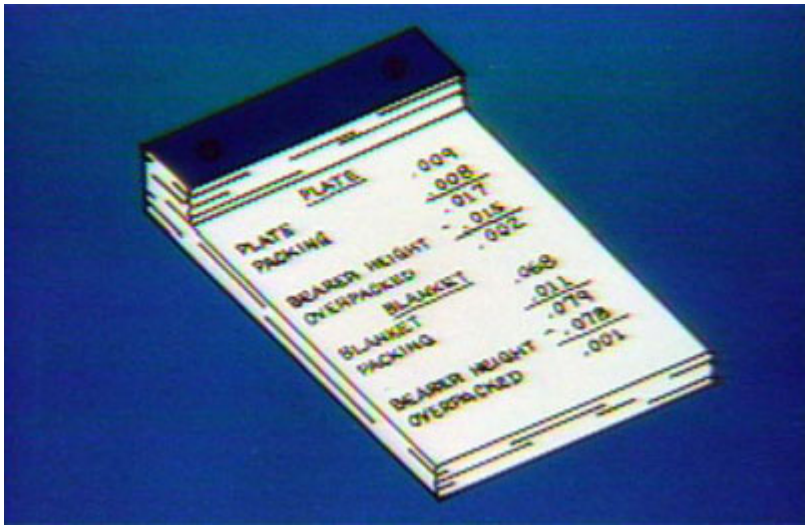
To emphasize the serious need and value of rechecking the cylinder packing with a packing gauge, GATF has conducted numerous research projects. Shown is GATF Research Progress No. 61, *All for the Want of a Tissue*.



The steps then in packing press cylinders are: (1) Knowing or determining the cylinder undercuts;

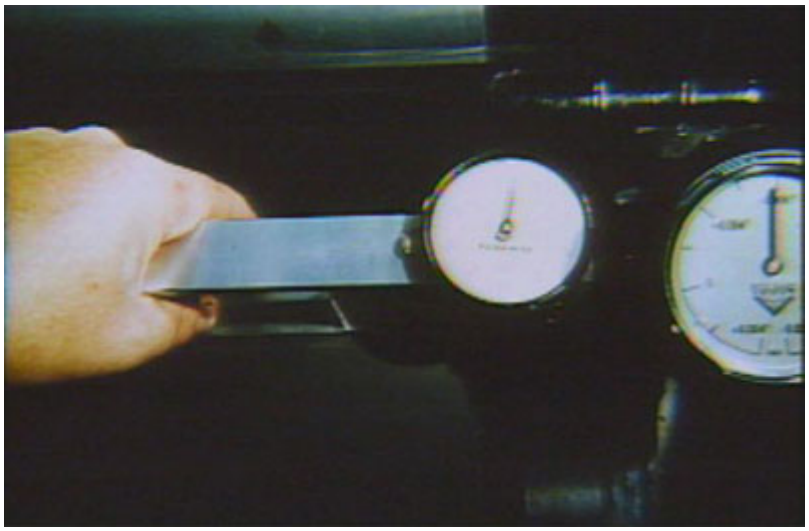
(2) Carefully miking the plate and blanket;

(3) Calculating the amount of packing necessary to bring plate and blanket to proper height;



(4) Installing plate and blanket with packing sheets;

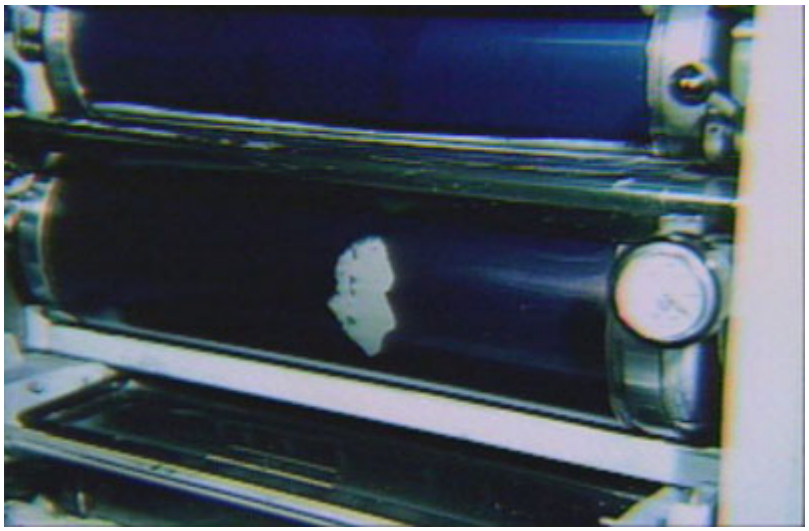
(5) Checking accuracy of measurements and calculations with the packing gauge; and (6) Rechecking after running a short time.

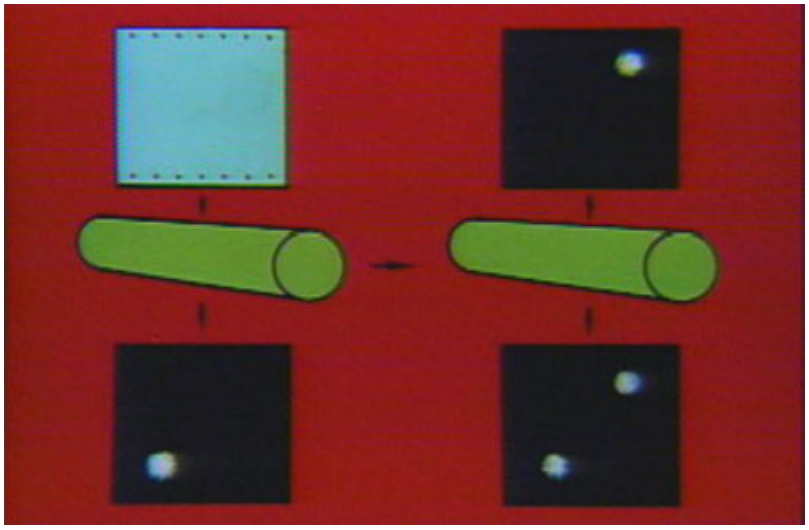


The "local" type of packing is termed *patching*. This is done with tissue to make up for local depressions in the blanket or the cylinders.

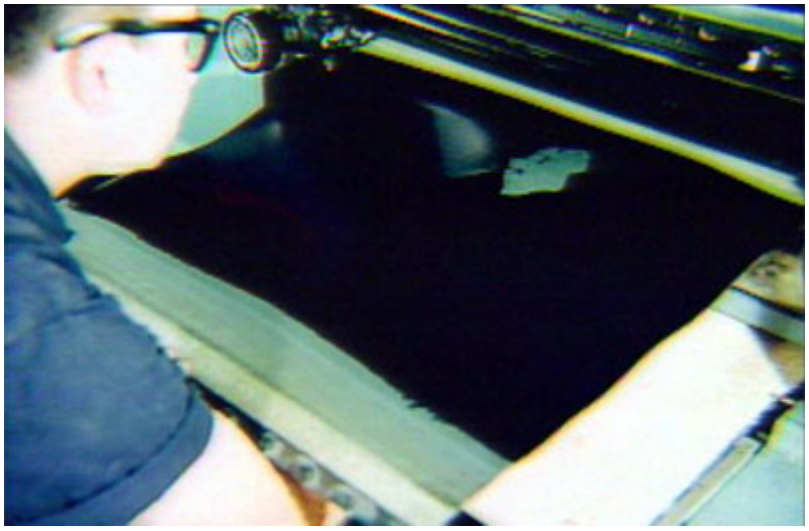
When the packing gauge indicates that the cylinders are packed correctly and there are still areas of an image that print light due to depression in the blanket surface, resort to local patching. Do not, at any time, put a whole packing sheet under a blanket or increase the blanket-to-impression-cylinder pressure to remove low areas.

Low spots can be easily located by completely inking a gummed plate and running the press on impression. Low areas will appear as clear or slightly inked in the solid print on the blanket.



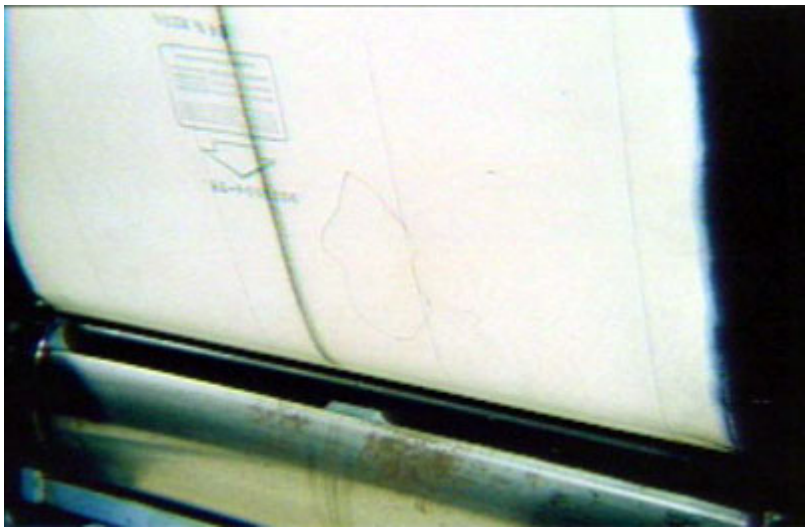


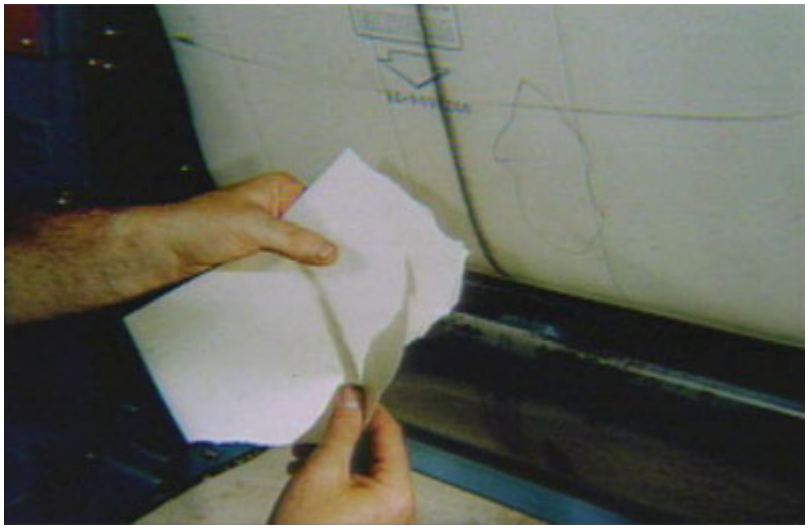
To determine whether the low spot is in the blanket or the cylinder body, clean and remove the blanket; then turn it so that the trailing edge will now become the lead edge. If the low spot is in the blanket, it will appear again in the same area of the blanket surface when the press is put on impression again. If it remains in the same area in relation to the cylinder body, then the low spot may be in the body of either the plate or blanket cylinder.



Locate the area to be patched on the back of the blanket by holding the pointed end of a pencil against the back of the blanket with enough pressure to cause a bulge in the blanket surface.

Using the bulge as a guide, outline the low area by drawing on the back of the blanket. This will give the exact size and location for the patch which will be applied to the back of the blanket.



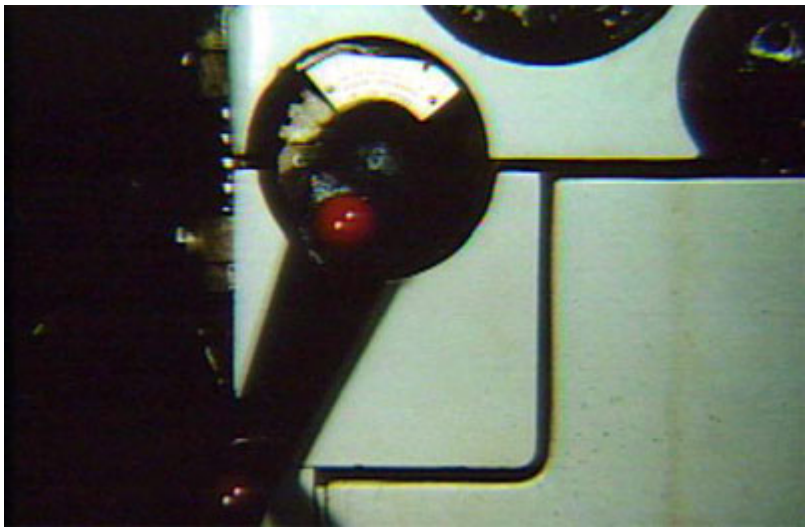


To keep the edges of the patches from showing in the print, use several tissues, each slightly smaller. Instead of cutting the tissue, tear it to give a feathered edge.

Alternatively, a number of firms offer blanket patch solutions that swell the blanket material. Using the pencil line as a guide, apply the solution according to the manufacturer's directions.

It is worth repeating that a careful packing of the plate and blanket cylinders is important for quality printing. A single thousandth error in packing will mean the difference between a high quality and a poor job.

Never add more packing or impression cylinder pressure to eliminate a low spot in a blanket or cylinder body; use only "local" patching.



The End.