

DFE THE TENSION CONTROL SPECIALISTS
DOVER FLEXPONICS, INC.
(603) 332-6150 • www.dfe.com • ISO 9001 Certified

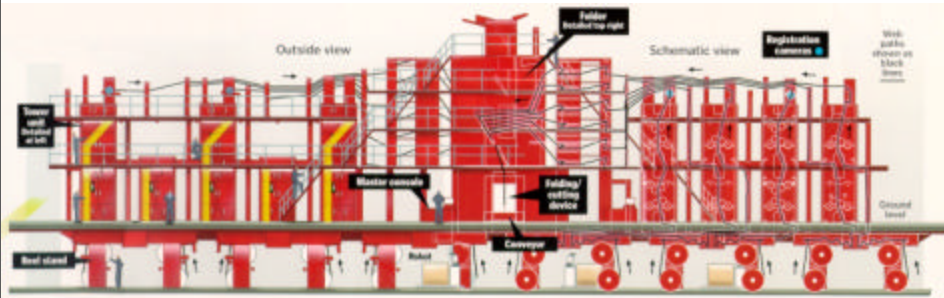
DFE DOVER FLEXO ELECTRONICS, INC.



Presents

Meet the Presses

INTRODUCTION



- Large Press – 5 stories x ½ football field
- 60K to 80K copies/hour
- Full page color advertisements

Newspaper presses are among the largest and most technologically advanced presses in the world. Each machine can stand as high as five stories tall and can be more than half a football field in length. These presses weigh more than 750 tons and can print 65,000 copies of a 96 page newspaper every hour. That's about 18 fully printed, completely folded newspapers every second, containing as many as 28 pages printed in full color.

Color presses have been around since the 1940's but it took a full day to make the plates from which the pictures were printed. That meant no photos of breaking news events. Today's presses can provide same day color photos in better detail and more accurate registration

1. PRE-PRESS - LAYOUT

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- Computer layout for each page
- Print @ 600 DPI

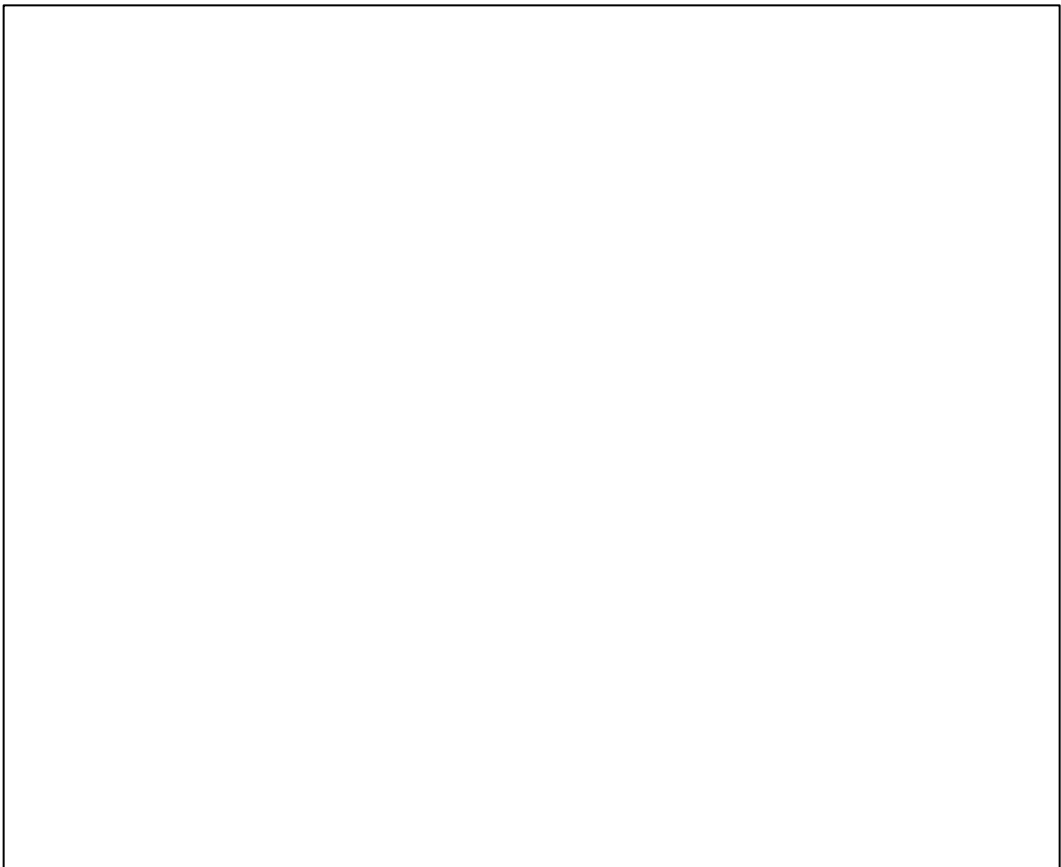
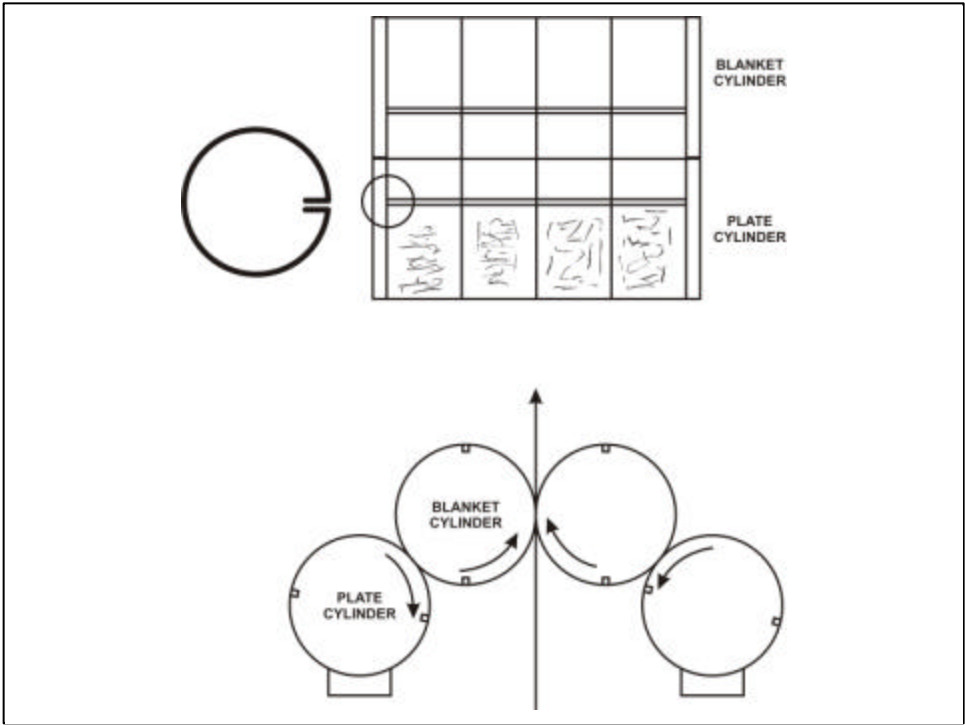
A newspaper begins on computer as the editor and graphic design staff “lay out” the paper with the stories and photos plus advertisements and notices. Each page is set up and turned into a “flat”, a single full size image of the page. Newspaper images have a resolution of 600 dots per inch (dpi). Each image will be turned into a negative.

1. PRE-PRESS - LAYOUT



- The four color negatives of Cyan, Magenta, Yellow & Black

If it is a color image, a negative will be made for each of the four colors needed to print. They are Cyan, Magenta, Yellow, and Black (CMYK).



2. PRE-PRESS - PLATE

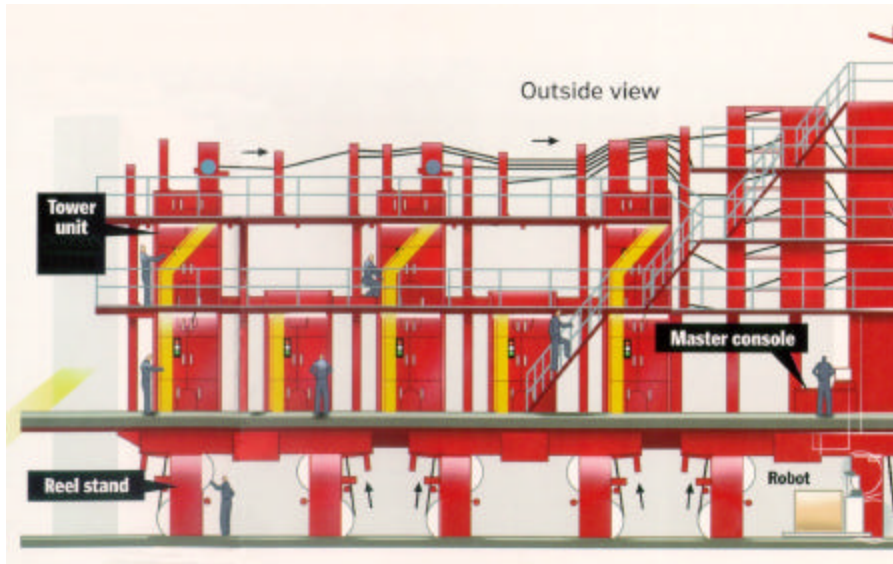
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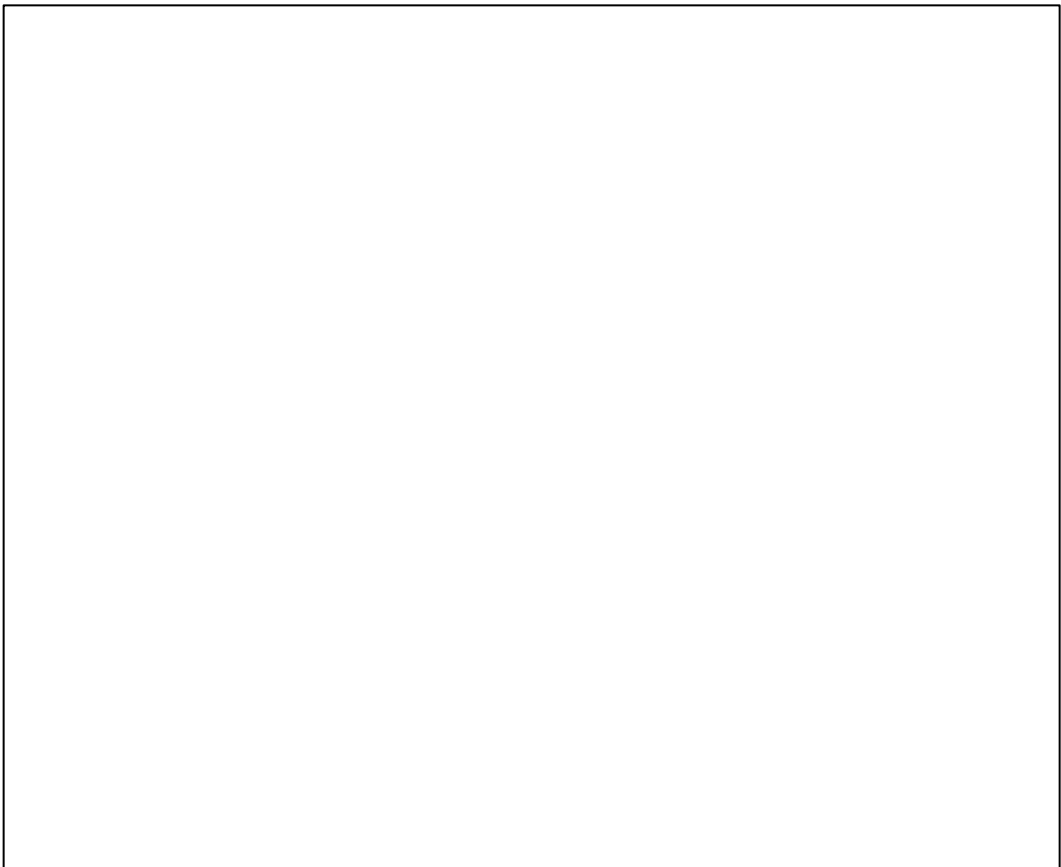
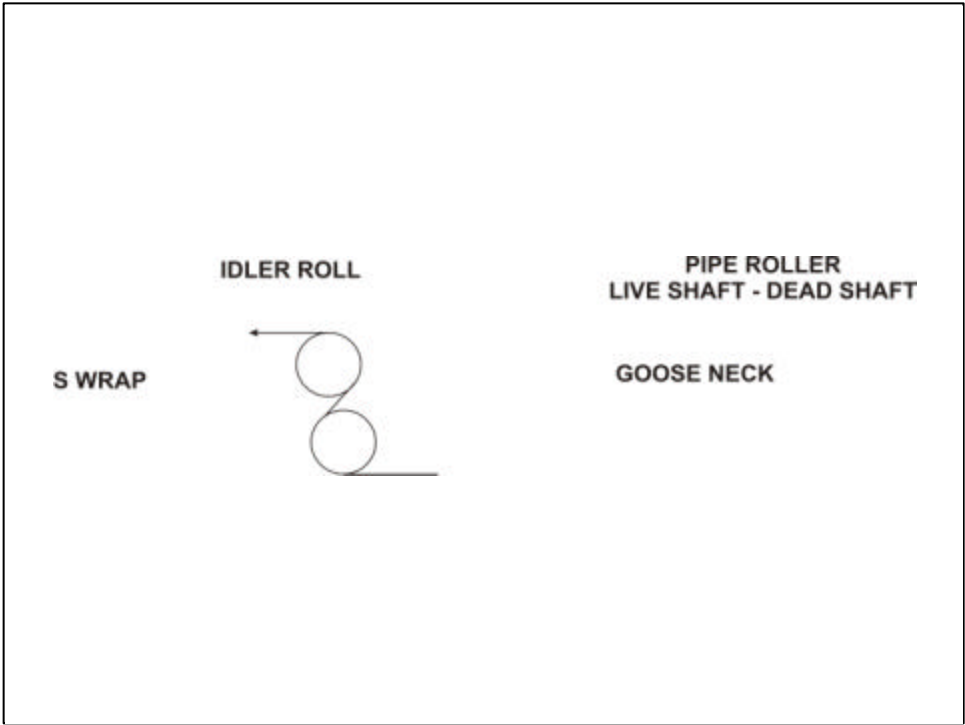


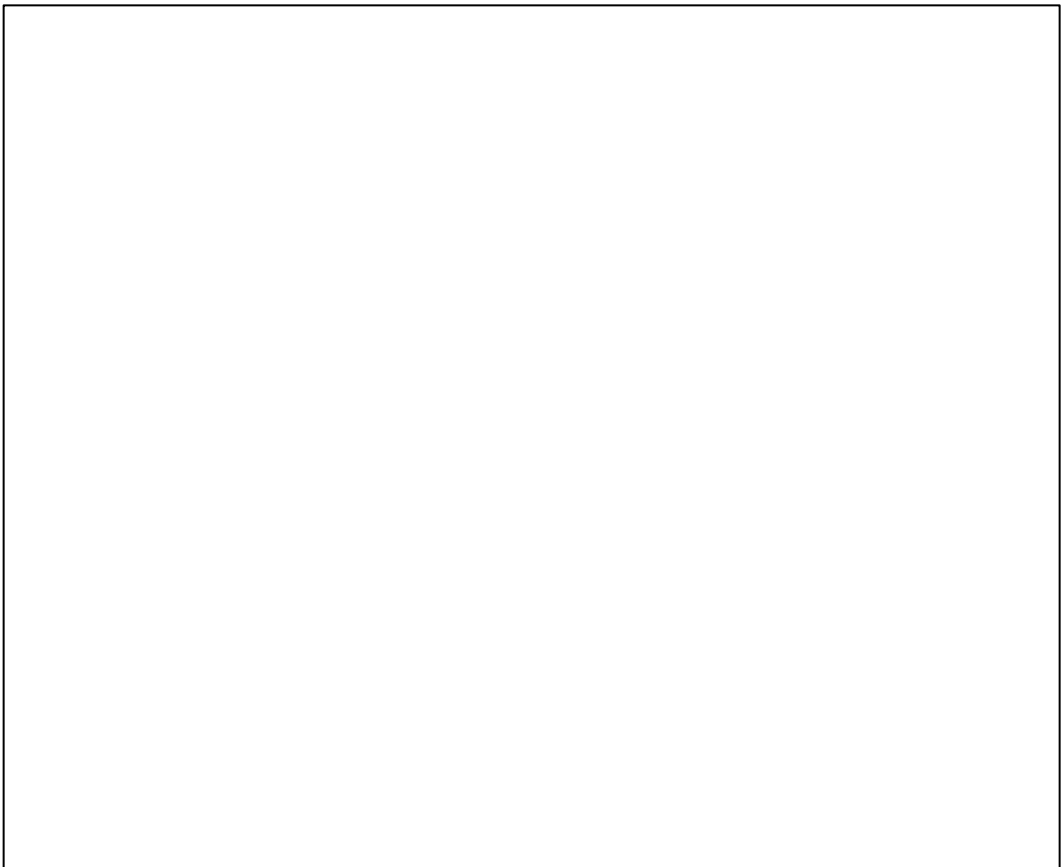
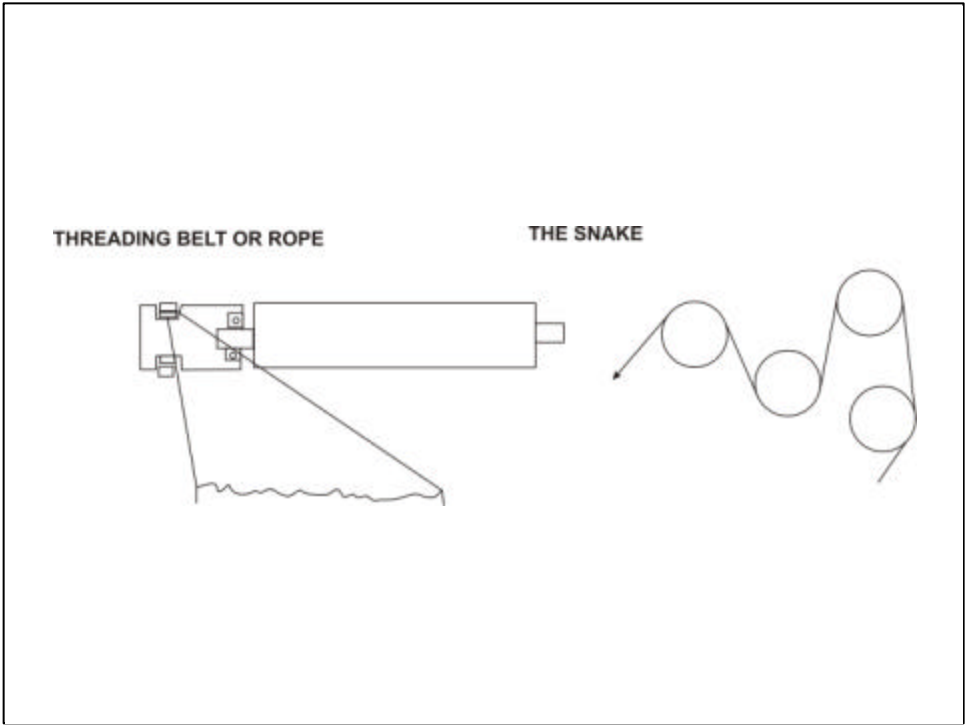
- Layout Negatives to Plate
- Aluminum ends bent for mounting

This negative is then transferred to the printer to be made into a “plate”. The plate maker will use the negative to make a photographic print on a thin sheet of aluminum coated with a light sensitive material. The negative is placed on top of the aluminum and a bright light is shined through it to the metal. Where light strikes the plate, it changes the coating so that the exposed areas become receptive to ink. The ink will not stick to the rest of the plate surface. The plate is then bent to a precise angle along its top and bottom edges.

3. THE PRESS – Start of Process

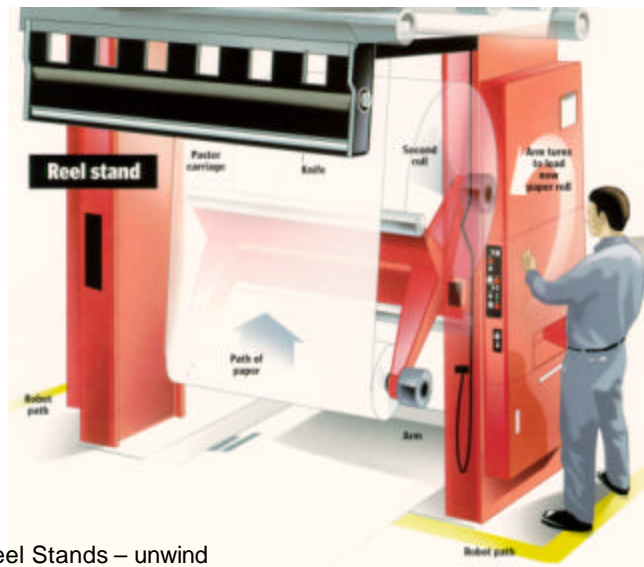






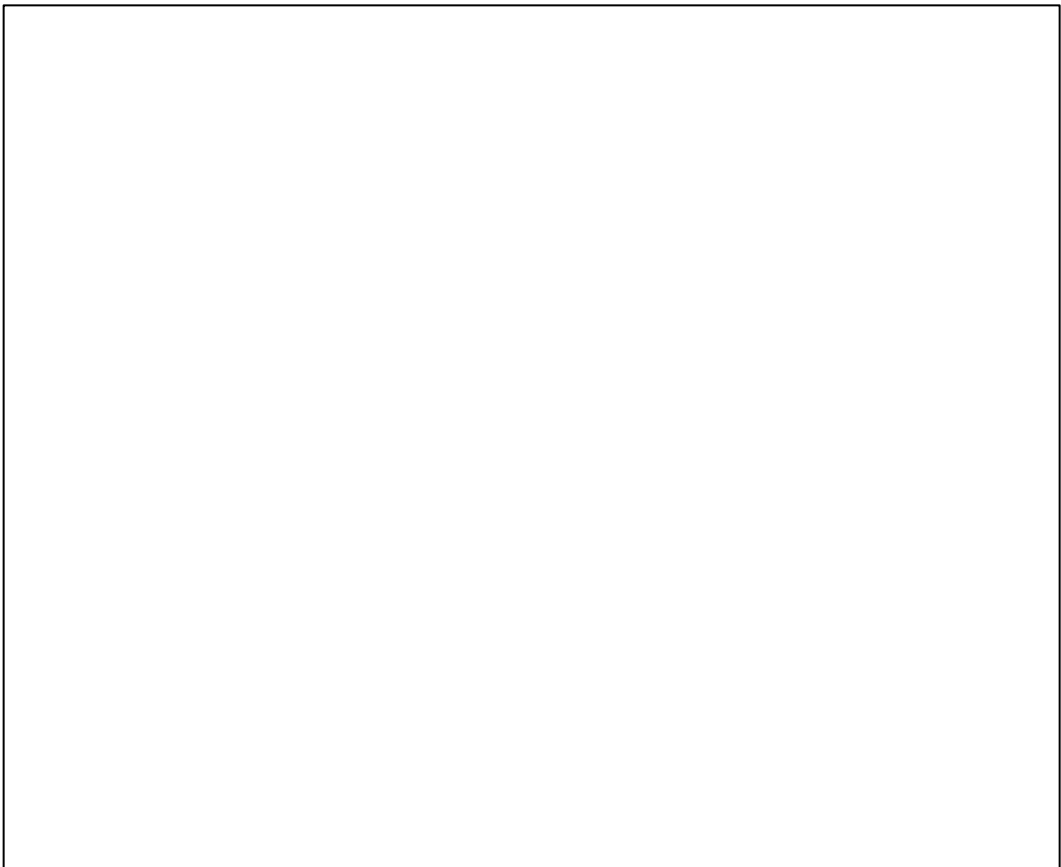
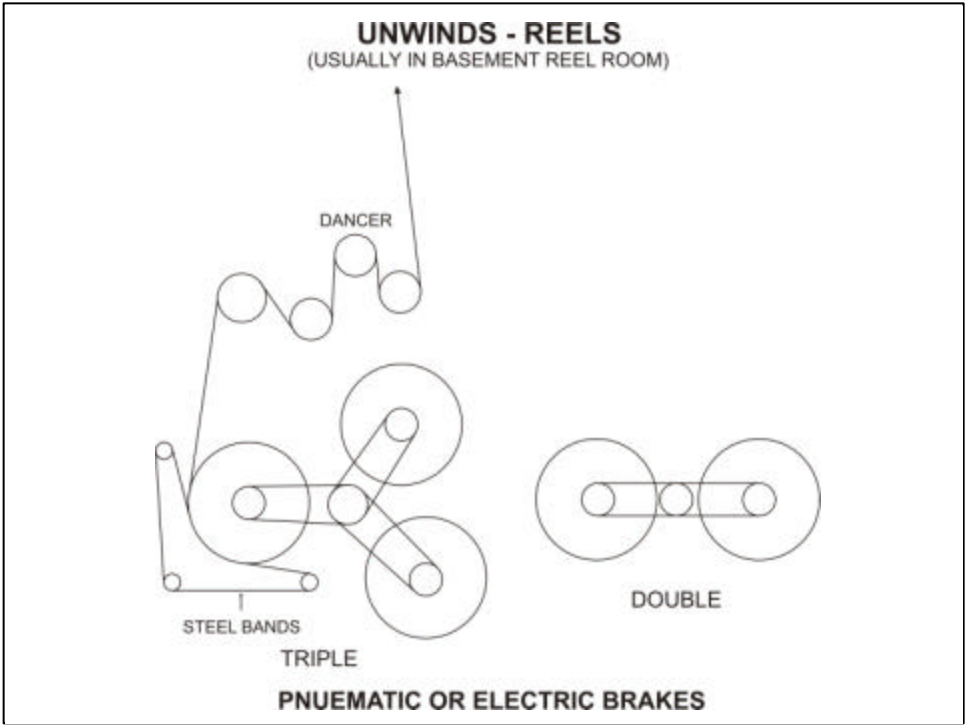
3.1 THE PRESS – Reel Stand

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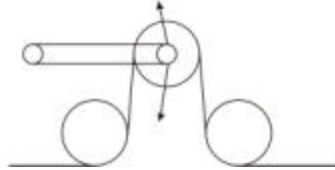
- Reel Stands – unwind
- Auto splicing

Newspapers start with paper. Underneath each tower unit is a reel stand which hold 2 rolls of paper. When one is almost gone, the press automatically turns the arms, bringing the second roll into position. A press operator applies double sided tape to the end of the new roll. A motor spins the new roll so it can supply paper at the same rate at which the other roll is turning. When the old roll is almost finished, the press automatically slaps the taped end of the new roll against the end of the old roll and cuts the old roll without slowing the press.



UNWIND CONTROL

TENSION DANCER TO CONTROL

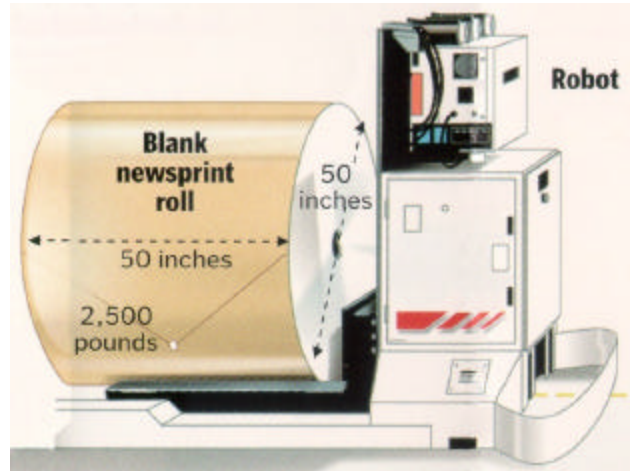


STEEL BANDS

PNEUMATIC BRAKES

ELECTRIC BRAKES

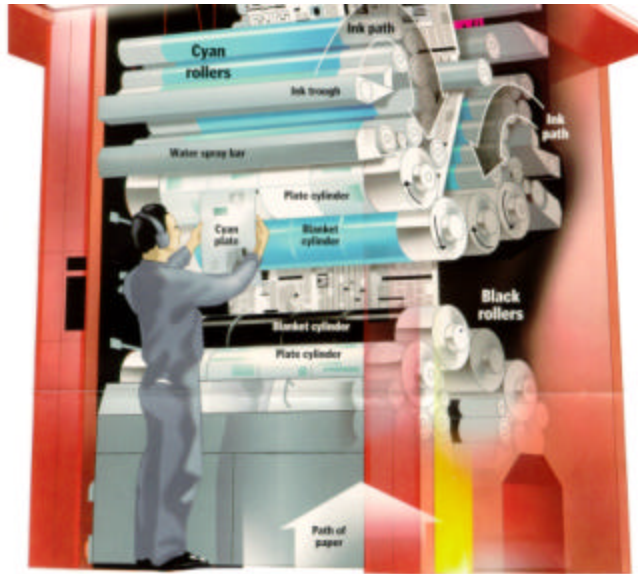
3.1 THE PRESS – Reel Stand Robot



- AGV to deliver new paper rolls to reel stand

When a press runs low on paper, it signals an automatically guided vehicle (AGV) to fetch a new roll. The battery powered AGV follows low powered radio signals in the floor to the storage area, lifts a fresh roll of newsprint, and returns to the press to slide it on an empty reel arm.

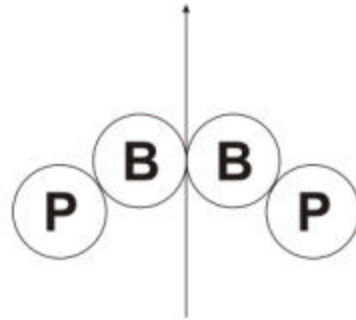
3.1 THE PRESS – Tower Unit (bottom)



- Tower unit – I.e. Print Station
- Plates attach to plate cylinder
- Ink rolls apply ink to plate
- Plate transfers ink to blanket
- Blanket transfers ink to paper

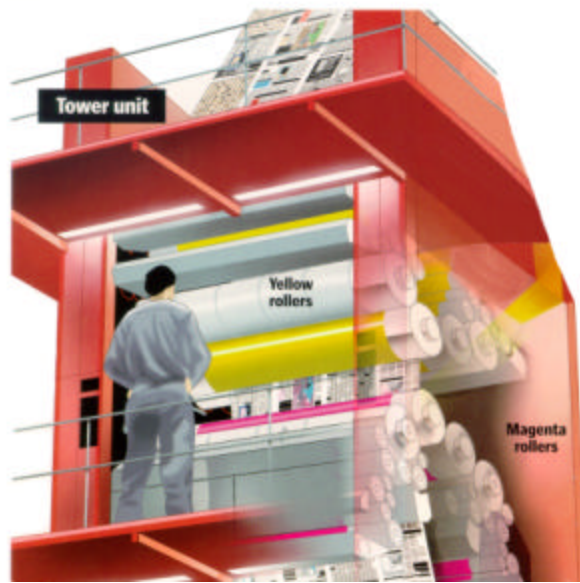
The tower unit is where the actual printing takes place. A press operator attaches the plate to a press cylinder, sliding the bent edges into a slot. The plate now is wrapped halfway around the cylinder with another plate on the other half. The cylinders span 50” and can hold 4 plates. If it’s a color page, plates for each of the 3 colored inks must be mounted directly above the black plate. Once this is done press operators start the press. Ink is pumped to a trough where it flows onto several rollers, two of which slide back and forth to evenly spread the ink on the roller that meets the plate cylinder.

2, 3, 4 SETS OF PRINT ROLLS



1 SET

3.2 THE PRESS – Tower Unit (top)



- Offset printing = ink is transferred from plate cylinder to blanket cylinder then to paper.

Before the plate cylinder comes in contact with the ink, it is passed through a fine spray of water. The water adheres to the parts of the plate that do not need ink but is repelled by the parts previously burned by the bright light. After inking the plate cylinder does not contact the paper but instead is “offset” to a blanket cylinder. Paper is pulled upward between pairs of blanket cylinders and printed on both sides.

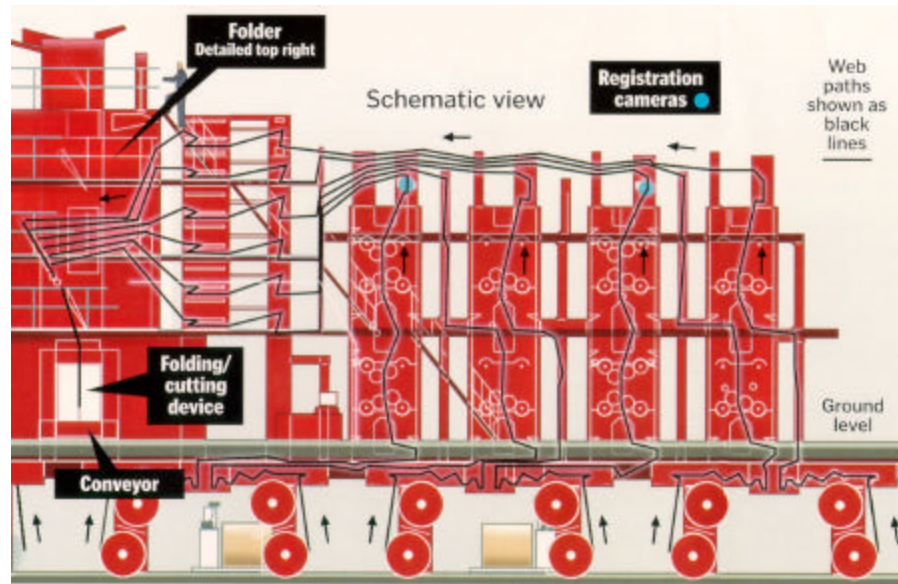
3.3 THE PRESS – Master Console & Registration Camera



- Video camera for registration

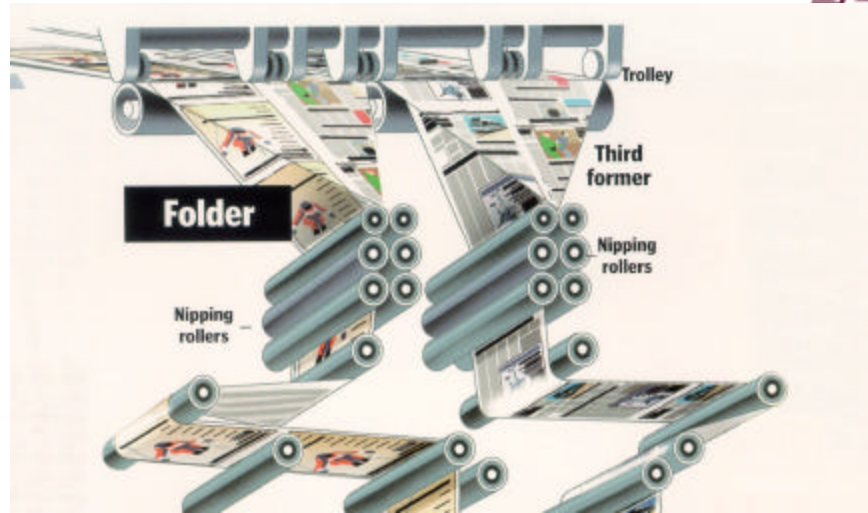
To ensure that ink colors are placed in the correct positions, a video camera takes a strobe lighted picture of the bottom of each page to view four colored dots. A computer analyzes the image, and if one dot is too high or too low, it automatically adjusts the cylinder. Correct registration is extremely important in color pages. If registration is off, you will notice one color border on one side with another color border on the opposite side and a blurry picture.

3. THE PRESS – End of Process



3.4 THE PRESS – the Folder

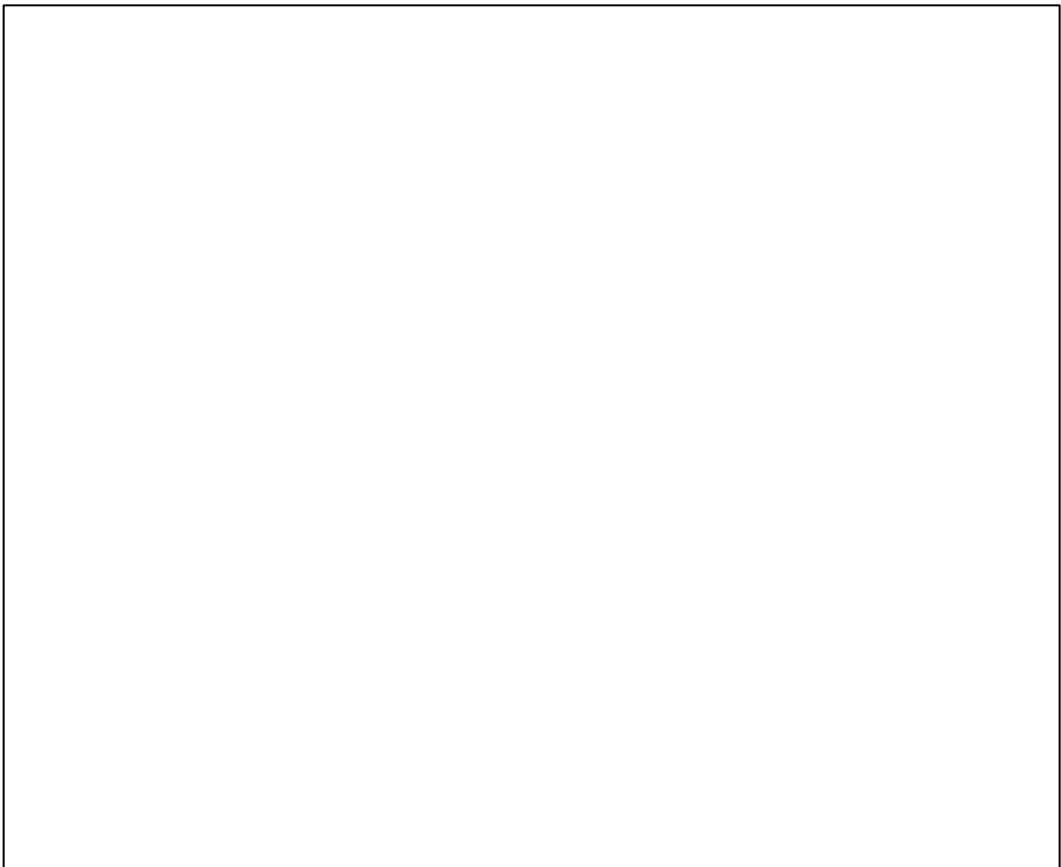
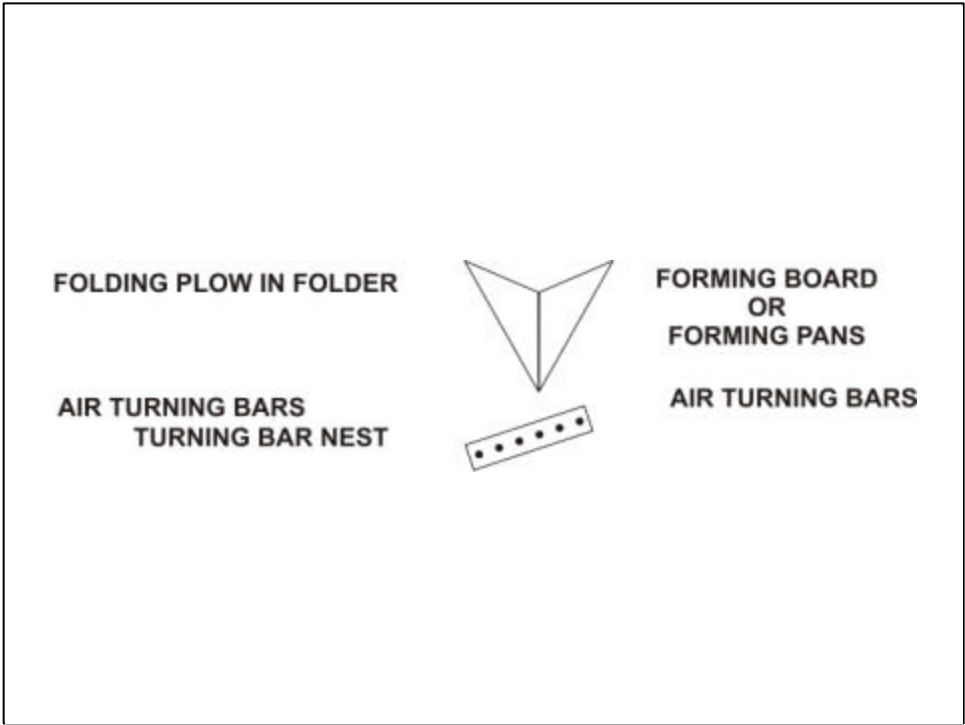
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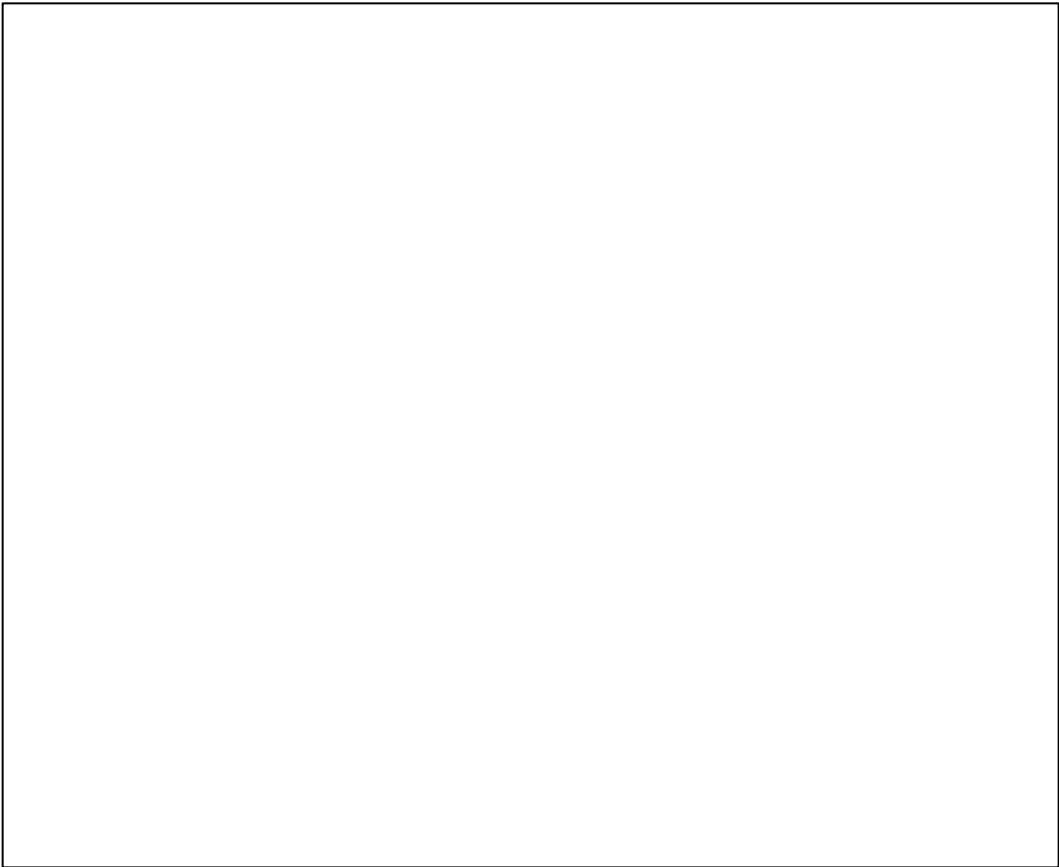
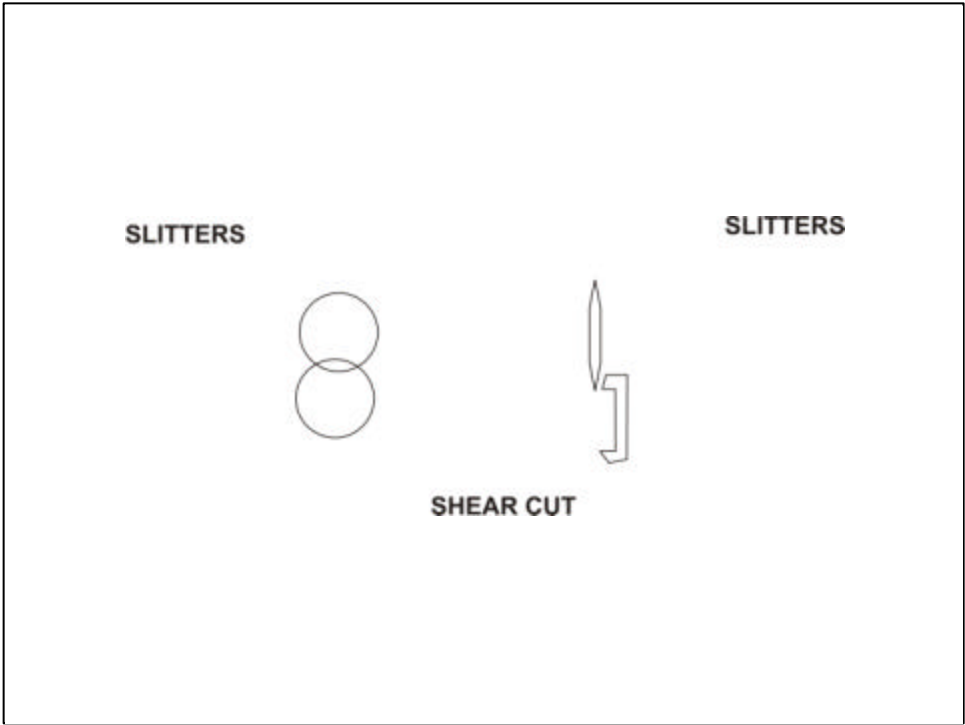


- Web = 4 pages wide, both sides
- Slitter – center cut, 2 pages
- 90° turns using air bars

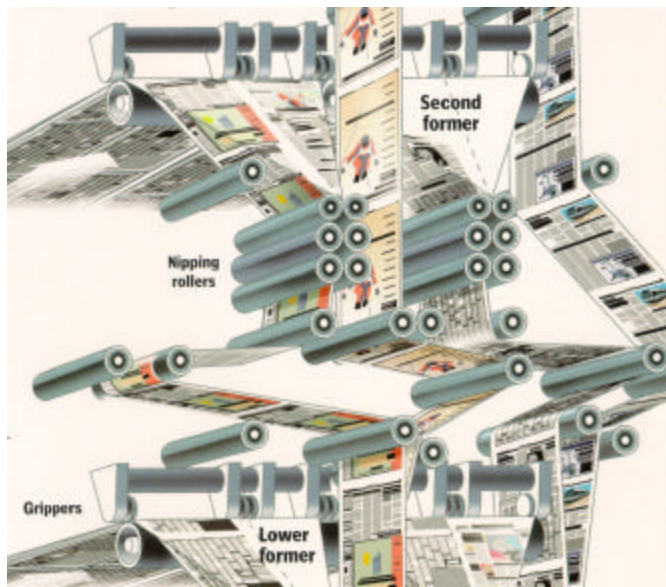
When the paper “web” emerges from the tower unit, it is pulled towards the center of the press to be cut and folded. The web is four pages wide, equal to two spread open sheets of newspaper side by side. The pages are arranged booklet style as they will appear when folded together so consecutive pages may not be on the same sheet.

The folder is located near the middle of the press in a taller tower. A rolling knife cuts the web into two-page webs. These travel over a series of rollers so all pages of one section are moving as if stacked. This requires some webs to turn corners, wrapping half way around one angled bar to make a 90 degree turn sideways. It moves a few feet until it's above another web where a second bar will turn the web again. Because these bars can not roll with the paper, air currents blow out of holes in the bar, forcing the paper a fraction of an inch away. The paper never touches the bar.





3.4 THE PRESS – the Folder



- Formers – triangular plate with air holes
- Fold to single page

Once all of the webs of a section are moving together, one above another, they enter the folder. The pages move triangular “formers”, which fold them between the right and left pages. The paper is pulled between rollers with rough surfaces called grippers along the right and left sides, crimping the folds. This is what leaves the pebbly-looking surface along the edges. Folded webs from each former come together, stacking the sections in order.

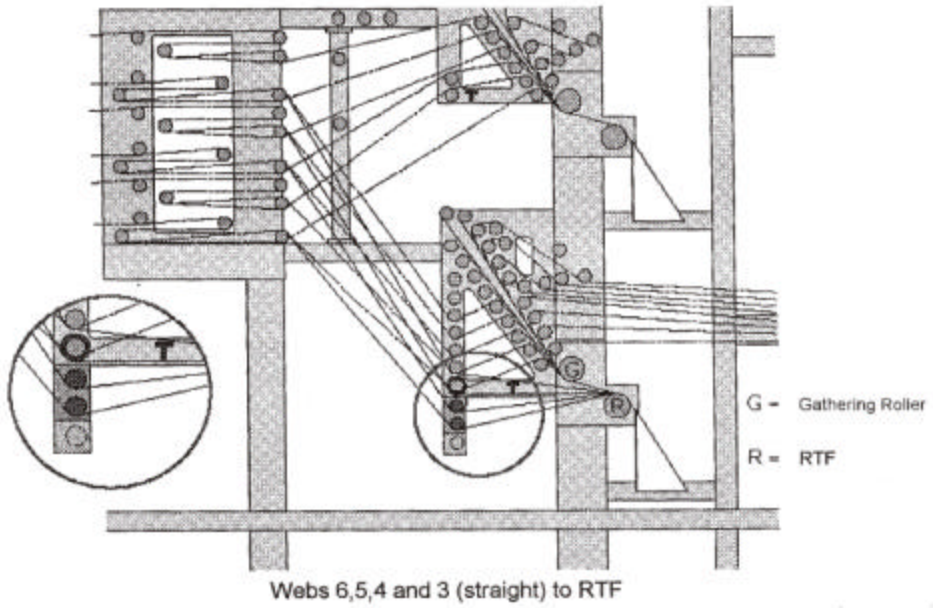
COMPENSATOR ROLLS

FOLD AND CUT LOCATION

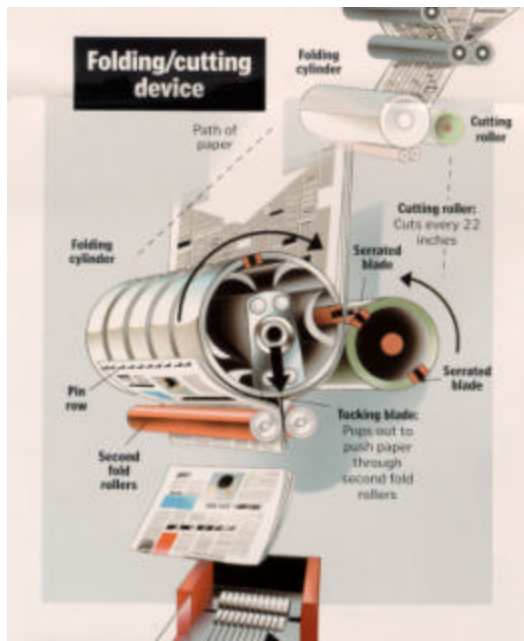


TO TAKE UP PAPER LENGTH SO FOLD AND CUT ARE IN REGISTER

Illustration II Modified Web Paths



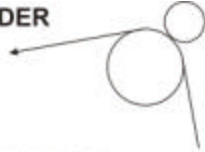
3.5 THE PRESS – the Folder & Cutter



- Folding cylinder and cutting roller with serrated blade for cut to length.

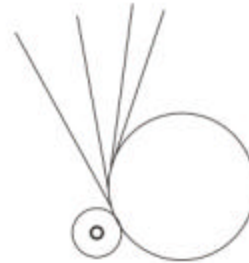
The newspapers, still joined at the top and bottom, move to the cutting roller. A row of pins on a roller punches through the bottom of each page. You will find these holes on newspapers when you purchase them. The pin roller pulls the newspaper past another roller with a serrated blade that cuts through the paper

INFEED NIP TO FOLDER



**DRAG ROLLER WITH DOLLEYS
(A.K.A. GATHERING ROLL)**

ONE FOR EACH WEB

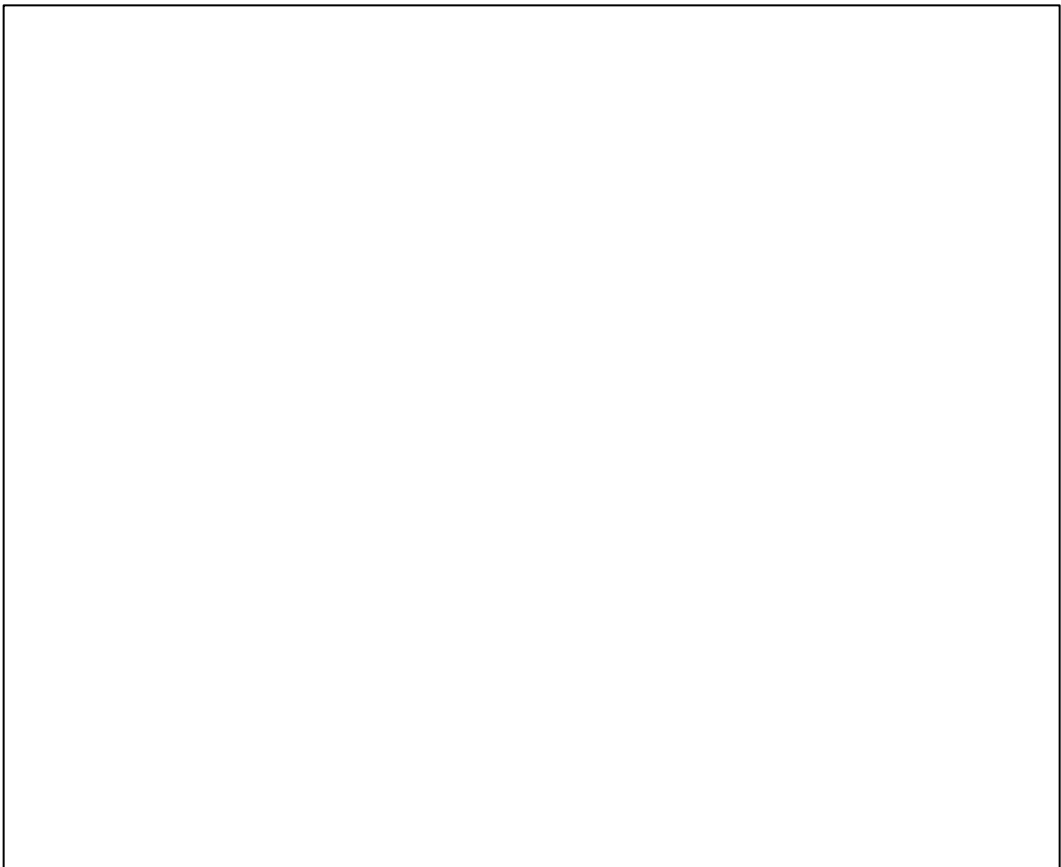
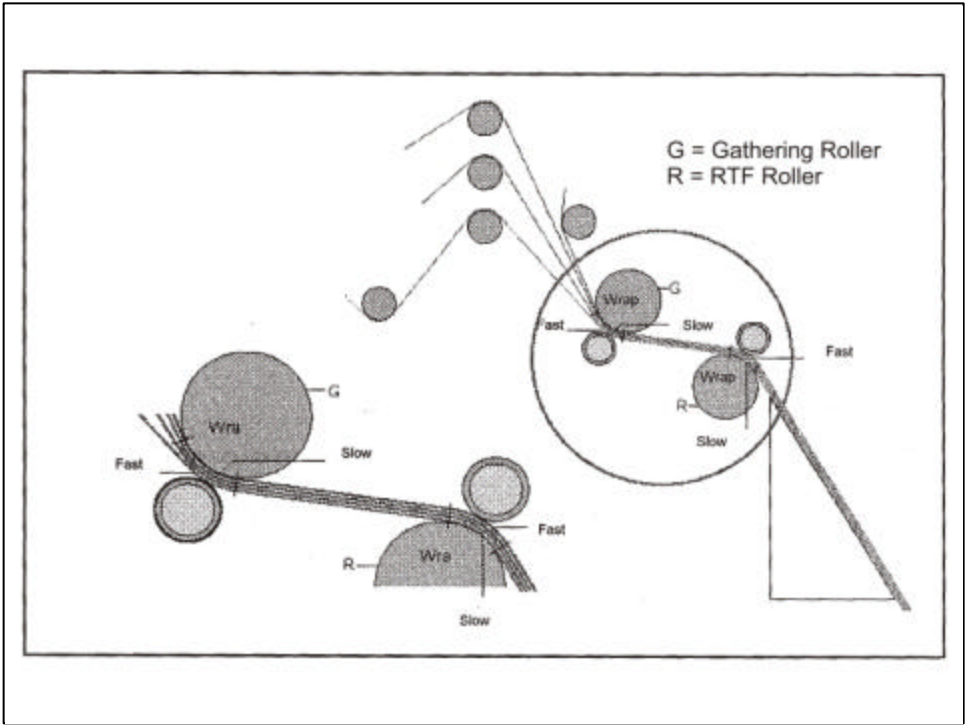


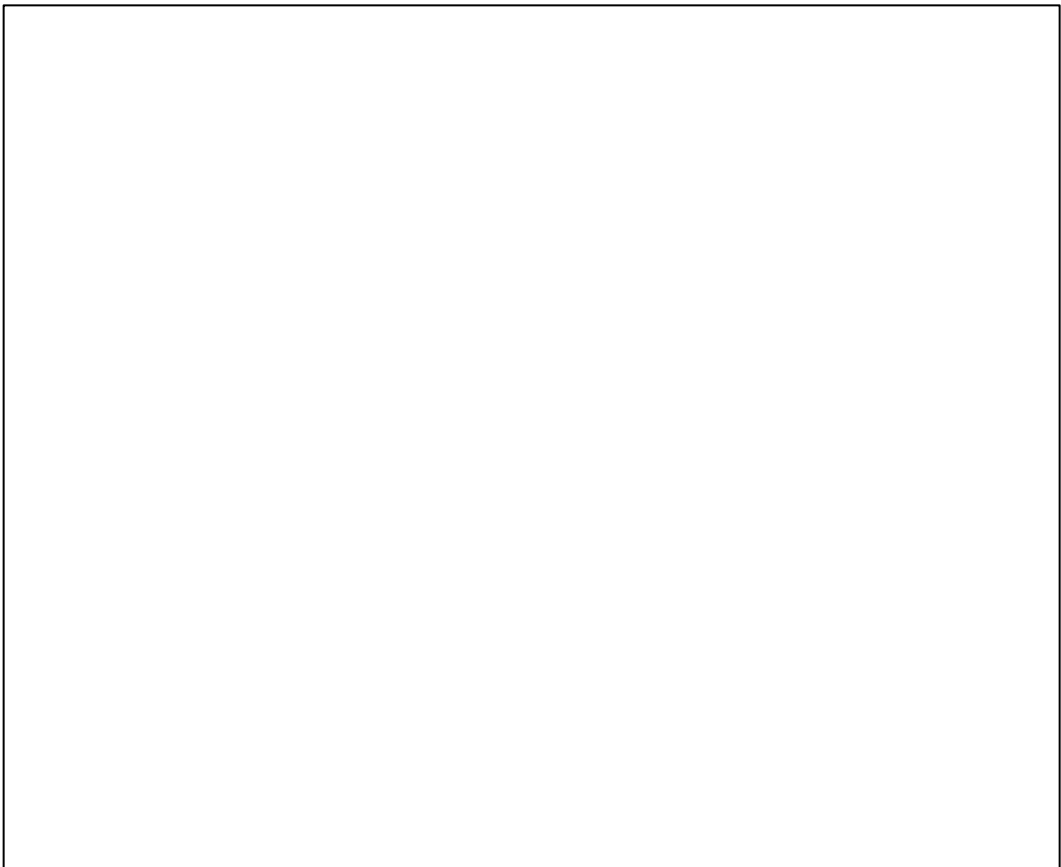
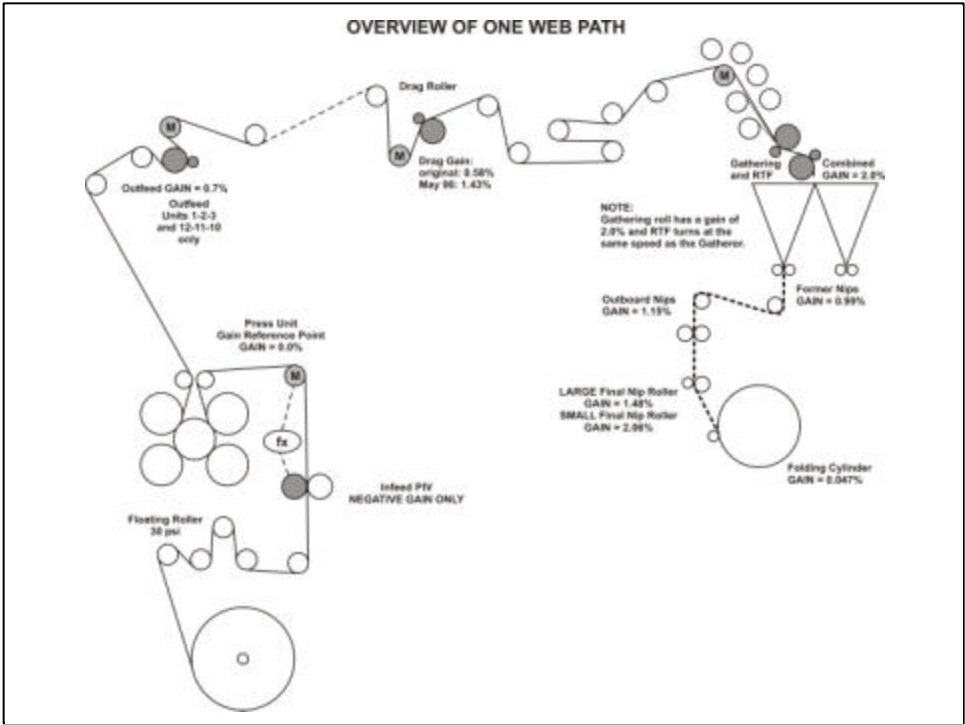
RTF - WEB GATHERING ROLL

RTF - TROLLEY ROLLERS

BRASS TROLLEYS AND KNURLED







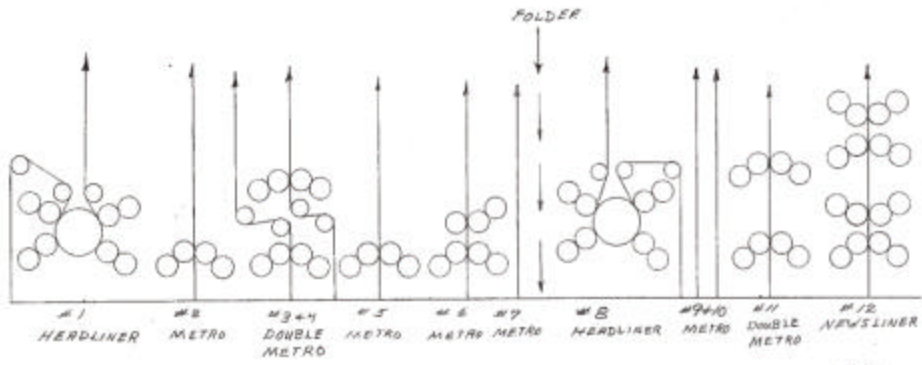
3.6 THE PRESS – the Finished Paper



- Crosswise nips and final fold
- Drop to gripper – conveyor to mail room

Once the newspapers are cut, another set of rollers folds the paper crosswise and drops them on a conveyor belt. From there they are carried to another conveyor belt with grippers, each one grabbing a paper by it's fold. The gripper-conveyor carries the finished newspapers to the mailroom where they are stacked, bundled, and fed to a loading dock for waiting trucks.

Dow Jones & Co.
12 WEB PRESSES
Goss Double Wide Offset



6/1/52

L.A. TIMES - 4 GOSS PRESSES

12 WEBS EACH

