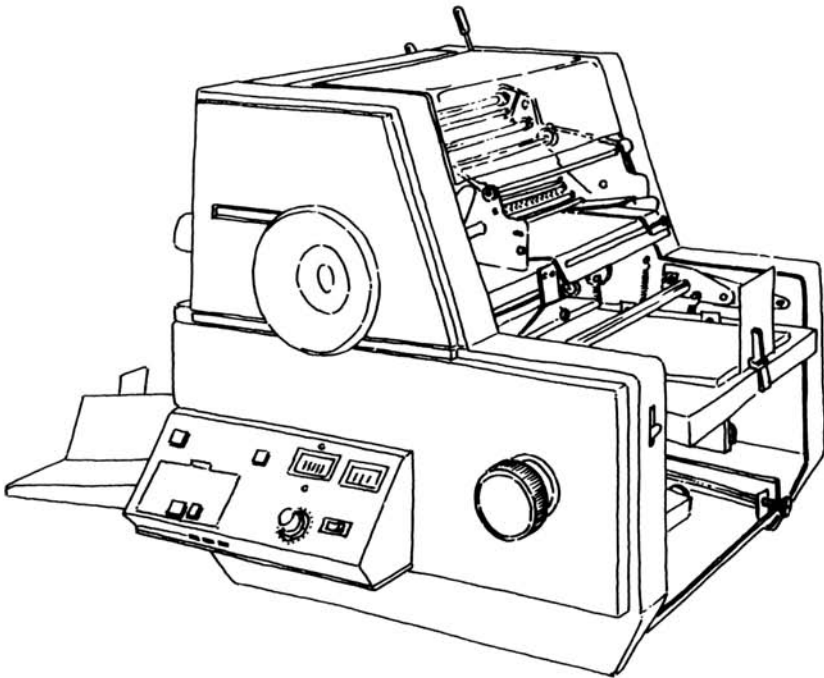


SECTION SIX  
OFFSET PRESSES

TABLE-TOP OFFSET LITHO MACHINE

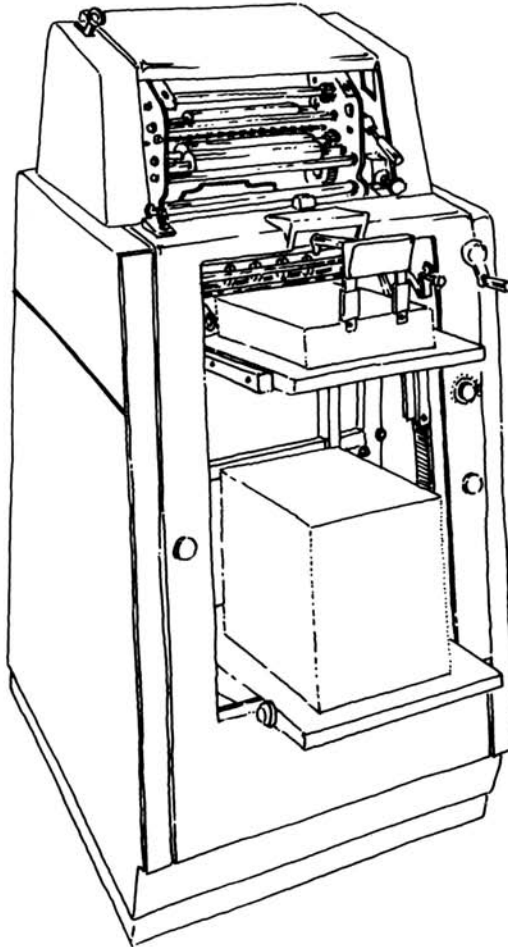
The cheapest machine is the A4 table-top press. It is not much different from a duplicator to look at. It is capable of producing reasonable-quality work from paper plates of



*Diagram 14: An A4 table-top machine (A. B. Dick)*

any of the following kinds: direct image, chemical, or electrostatic. The quality and length of run will depend on the type of plate that is used.

The term 'A4' applies to the largest size of paper that the machine can handle (i.e. about twice the size of one page of this book). These machines are incapable of handling very



*Diagram 15: An A4 freestanding offset litho machine*

small sheets of paper because of the difficulty of feeding them into the gripping rollers. With very few exceptions, table-top machines are friction fed: that is to say the paper is pushed into the printing cylinders by means of a rubber roller or similar mechanism. This control is adequate for most of the tasks that small printing units usually do, but it is not suitable for printing two or more colours close to each other. It also has problems with some kinds of paper.

#### **FREESTANDING A4 OFFSET LITHO MACHINE**

A4 presses are also made as free-standing models. They are built a little more robustly than table-top models but the same advantages and limitations apply. Most of these machines are simple to handle, having only one control. This is moved through various positions so that the printing process is carried out in the correct sequence (i.e. water applied to the plate before ink). The machines undertake each successive function (damping, inking, printing, and, in some cases, cleaning) with as little operator involvement as possible.

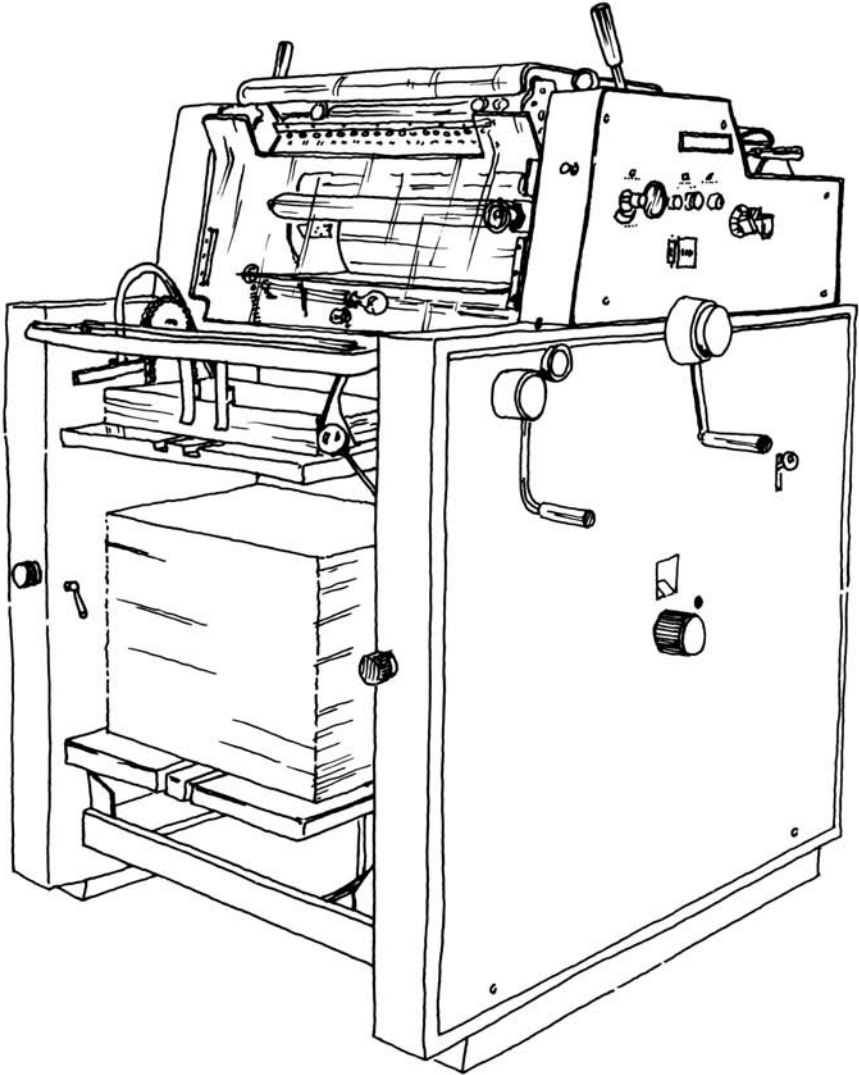
There are two basic types of A4 freestanding machines: one with suction feed, the other with friction feed. They are capable of producing 3,500 to 6,000 sheets per hour depending on the operator's skill and the size of the machine. They are capable of relatively fine registration and colour work.

#### **A3 OFFSET LITHO MACHINE**

A3 machines are more complex than the smaller A4 models. Their controls are not so simple, and an operator will need a course lasting for two to three weeks to become efficient in operating and servicing the machine. An even longer period will be needed after the initial training before the operator is able to master all the printing problems that may arise. Breakdowns will require the attention of a specialist 'offset' technician.

A3 machines are capable of feeding not only a larger sheet, but also a far wider range of papers than A4 models. They

are more economical than A4 machines for long runs. Pre-sensitized metal plates are needed for quality work. Paper plates can be used for short runs, but they tend to stretch over long runs and the quality of the print suffers.



*Diagram 16: An A3 machine (Rotaprint 30/90)*

## Some Refinements on Offset Litho Machines

Many of the large presses also have refinements not always found on smaller models:

1. Suction feed. The paper is picked up along its length by a number of rubber suckers and is moved directly into the grippers on the impression cylinder. (A4 machines generally have a friction feed in which the paper is pushed into the grippers and sometimes goes crooked.)
2. Micrometer side lays. Once the side lay has been positioned roughly, the micrometer adjustment allows the operator to do the finer movement without loosening the main setting screw.
3. Stroker side lays. This mechanism gently strokes each sheet of paper into the side lay and prevents it springing back. This is normally an extra on A3 machines and is not available for A4 models. It is only worth considering if complex colour work is to be printed.
4. Double sheet and missed sheet detector. This will either stop the machine when two sheets are fed at the same time, or lift the impression when the feeding mechanism fails to pick up a sheet.
5. Single-sheet feed control. This enables the operator to feed single sheets for proofing, without activating the main feed mechanism which will feed continuously until stopped.
6. Anti-setoff spray. This sprays a fine powder onto each printed sheet to prevent the next down from being marked. Very few A3 machines have this as a standard fitment. It can be fitted to all machines at extra cost. When large areas of ink are printed, it is essential. Not worth thinking about for an A4 machine.

Some of these refinements are standard and are included in the advertised price of the machine. Others are additions which can be left until more money is available. It is as well when purchasing a machine to judge it according to the number of extras that might have to be paid for later.

## HINTS ON THE USE OF OFFSET LITHO MACHINES

Machine speeds depend in part on the type and weight of paper being used. Thin papers and thick cards give the best results if fed through the machine at speeds slower than for middle-weight cartridges in the weight range between 80 grams per square metre and 135 grams per square metre. Speeds also depend on the kind of image being printed. The easiest images to print are those plates that contain only text. With the right paper and the best image, speeds in excess of 4,000 impressions per hour (iph) can be reached. Bank papers, under the same conditions, will probably run best at 1,000 iph and cards at 5,000 iph. If the image is composed of large solid areas that demand a lot of ink, the machine speed will have to be reduced accordingly. If the machine runs too fast it becomes difficult for the paper to separate from the offset cylinder; if art paper is used in these circumstances it becomes almost impossible to print at any speed. A good rule of thumb for the amount of solid that can be printed successfully is 50% of the paper area, wherever possible avoiding a solid band on the leading edge.

Whenever difficulty is experienced in the feeding or delivery of any paper, the first remedy to try is a slower running-speed. Problems on the printed page can often be carried out by the operator by varying the amounts of water and ink. The ability to control these problems quickly will come only with experience. Most machines develop individual characteristics of performance which a competent operator will soon discern.

With an A3 machine, two pages of A4 or four pages of A5 can be printed from one plate. If use is made of double-sided plates, the plate costs per page are not much higher than those for the smaller A4 machines.

## MAKING THE CHOICE

Until a few years ago most small printing units would have considered buying only an A4 offset press. Now, however, many have a press capable of printing A3. The A4 machine is still the real workhorse, with the A3 for special work or

for very long runs. With these two sizes of machine, a small unit would be very well equipped. Although financial constraints are likely to prevent the purchase of the two machines at the same time, the qualities of the larger press should be borne in mind for future expansion.