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SPEED-O-PRINT

Stencil

MANUAL

Duplicating Process

NO. 752

SPEED-O-PRINT CORPORATION
CHICAGO 13, ILLINOIS

CREATED BY SPEED-O-PRINT CORPORATION

World's Finest Duplicators

AT WORLD'S LOWEST PRICES

It's Easy When You Know How

There is nothing difficult about any phase of the stencil duplicating process, but as with any type of office equipment, a thorough knowledge and understanding of the various steps involved not only simplifies the job and improves the quality of the work, but actually expands the usefulness of the equipment.

It is not the purpose of this manual to replace the instruction book which accompanied the duplicator you now own, nor is it intended to supplant the specific instructions for the brand of stencils, ink and other supplies you are using. Rather, this book is offered to supplement the information supplied by the manufacturers of equipment and supplies . . . to help you to get greater satisfaction and better results from your stencil duplicating.

In the pages that follow, you will find a wealth of sound, practical, time-tested ideas, suggestions and hints developed through years of professional study and observation. The single aim in the preparation of this book has been to bring together, in a single manual, all of the remarkably simple steps in the complete stencil duplicating process, and to present them in an informative, easily understood manner.

By referring to these pages for any individual operation, from preparing the stencil and duplicator for use, to the final running of copy, you will discover many ways in which to save time and effort, and to make your copy as attractive, clear and clean-cut as any professionally-prepared material you have seen. You will find it easy to turn out hundreds or thousands of consistently first-class copies, whether typewritten, hand-lettered, written, drawn or traced.

As you gain experience and confidence, you will readily agree with hundreds of thousands of stencil duplicator users: "It's easy when you know how."

CONTENTS

SECTION ONE

SECTION TWO

SECTION THREE

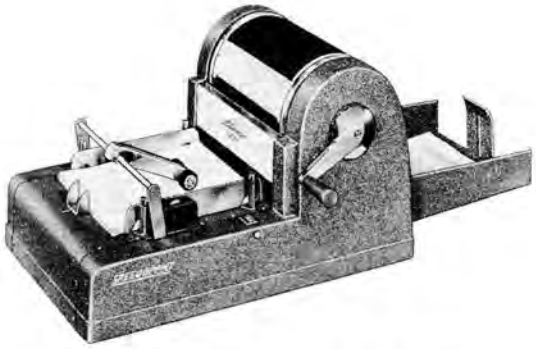
SECTION FOUR

SECTION FIVE

SECTION SIX

SECTION SEVEN

SECTION EIGHT



STENCIL DUPLICATOR

TRACING SCOPE

SECTION ONE

PREPARATION AND CLEANING OF TYPEWRITER BEFORE TYPING STENCIL

The importance of clean type

The finest duplicator in the world cannot produce clean, clear-cut copies from a poorly-prepared stencil. Hence, when preparing stencils on the typewriter, the first requirement is that the type be thoroughly clean. *(Fig. 1.)*

Fig. 1 STENCIL RESULTS PRODUCED WITH WELL CLEANED TYPE:

These lines were produced with well cleaned type. These lines were produced with well cleaned type. These

Closed characters, such as A, B, O, e, g, 4, 8, etc., quickly become clogged with lint and stencil coating. Unless cleaned frequently during the typing process, the type cannot make a clear impression, and duplicated copies will appear spotty, as in *Fig. 2*. Merely cleaning the surfaces of the type is not enough, as dirt becomes imbedded in the hollow areas. A stiff-bristle brush, especially made for the purpose, should be applied to the type, using a chopping stroke, so that all

Fig. 2

RESULTS WITH IMPROPERLY CLEANED TYPE:

These lines were produced with improperly cleaned type. These lines were produced with improperly clean-

Toothbrush style for Remington, Underwood and early-model Woodstock typewriters.

Style of type-cleaning brush for L. C. Smith, Royal and late-model Woodstock.

coating is removed. *(Fig. 3.)* If type is particularly dirty, type cleaning fluid should be used. However, care must be taken that all traces of the fluid are wiped dry before stencil is inserted in the typewriter.

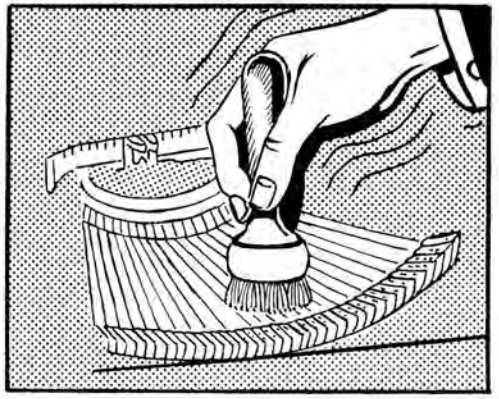


Fig. 3

How often to clean type

When typing stencils having a film overlay, typewriter type will remain clean for a long period, and need only be cleaned when changing from regular ribbon typing to stencil work.

When using non-film stencils, type should be cleaned thoroughly immediately after completing each stencil. With some makes of stencils, it may be necessary to clean type after every few paragraphs to obtain best results. In no case should type cleaning fluid be used when a stencil is in the typewriter.

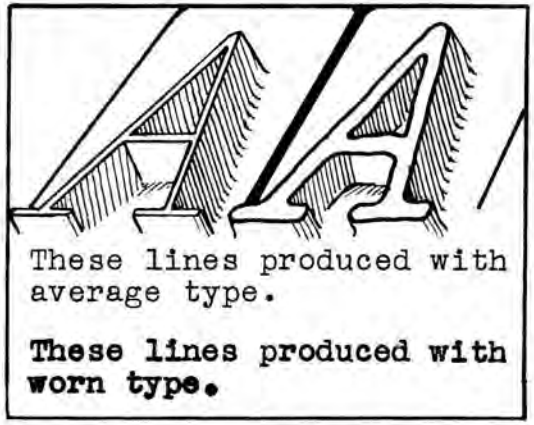
ADDITIONAL HINTS ON TYPEWRITER CARE

To assure clear impressions and professional-type results, it is essential that the typewriter used for typing stencils be in first-class condition at all times. Some of the factors which determine the difference between a good stencil and a poor one are described below.

Flat or worn type

After considerable use, type faces become flat and worn, resulting in thick, ragged characters. Added pressure is then needed for typing, causing copy to appear heavy and clumsy. The best remedy for this situation is to have the type replaced. However, if this is not feasible, the equalizer plate, supplied with many makes of stencils (see page 7). will help to improve the reproduction quality of worn, battered type.

Thick, worn characters cannot produce sharp, clear copy.



Extremely sharp type

On new typewriters, type faces are usually too sharp for cutting stencils. Even the minimum amount of pressure when typing will cut characters completely out of the stencil.

Where this occurs, a black blob will appear on the finished copy, instead of the character intended. Fairly good results can be produced with new type by using stencils with film overlay. It is best, however, to have the type honed with crocus cloth by an experienced typewriter service man.

Poor type alignment

Poor type alignment *(Fig. 4)* causes jagged, uneven lines of copy which are difficult to read, and unpleasing to the eye. To check for proper type alignment, type out all numerals and capital letters on paper. Capital letters reveal poor type alignment more readily than do lower case letters. Type characters which have been damaged or are out of line can be replaced by your typewriter repair man.

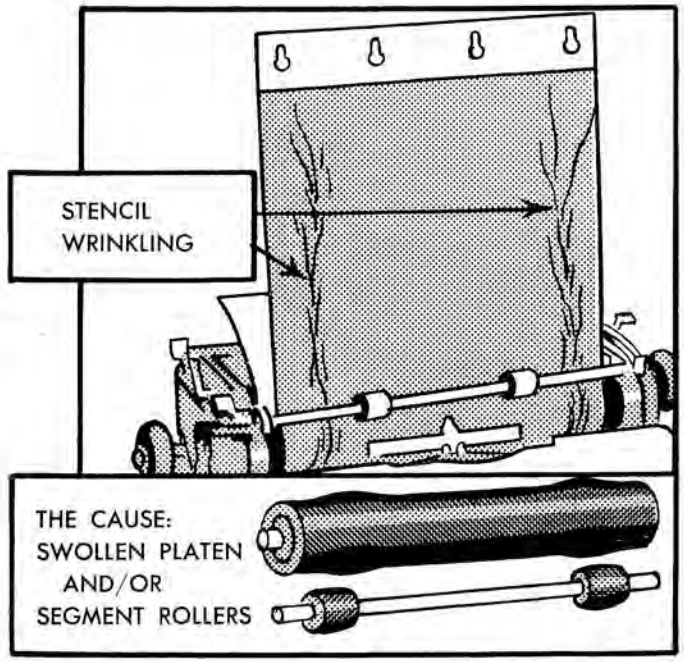
Fig. 4

Platen and segment roller creasing

Wrinkling or creasing of the stencil while in the typewriter is generally caused by faulty platen or segment rollers. When using non-film stencils, the stencil oils will cause the platen and segments to swell after prolonged use. This swelling causes the stencil to feed into the typewriter unevenly, causing the creasing as shown in *Fig. 5*. If non-film stencils are generally used, platen and segment rollers should be checked frequently for swelling. If this condition persists, it is advisable to equip the typewriter with cork platen and segment rollers which are not affected by stencil oils.

On new typewriters, the platen and segment rollers sometimes contact with too much tension. This will also cause creasing or stencil injury, and can be corrected with proper typewriter service help.

Fig. 5



Crooked platen feeding

In some instances, copy at the bottom of the stencil may be out of line, even though the stencil was properly aligned in the typewriter (see page 4). This condition is also caused by roller swelling, which can only be remedied by replacement of the malformed parts.

INSERTION AND ALIGNMENT OF STENCIL IN TYPEWRITER

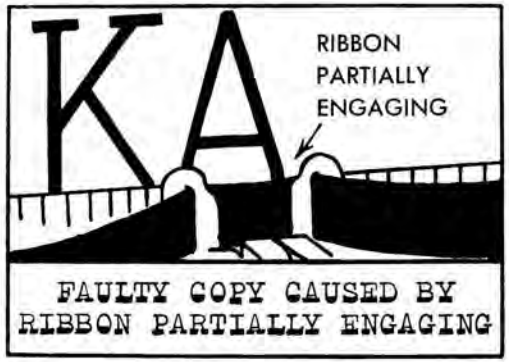
Insertion and alignment of stencil in typewriter

Before inserting stencil in typewriter, be sure the ribbon has been disengaged. This is done by moving the ribbon adjustment lever to the "stencil" position, usually indicated by a white dot. On some makes of typewriters, it is difficult to determine whether or not the typewriter ribbon has been

disengaged properly for stencil typing. For this reason, it is highly desirable to type a line or two on paper after the ribbon has been disengaged, and before the stencil is inserted in the typewriter.

If the ribbon is correctly disengaged, and type faces are clean, there will be no image on the paper. However, if the ribbon still rises high enough to contact the lower part of the type, the paper test will reveal this fault. If this condition exists, copy will be poor in quality and uniformity, as shown in *Fig. 6*. Your typewriter service man can correct this difficulty easily and quickly.

Fig. 6



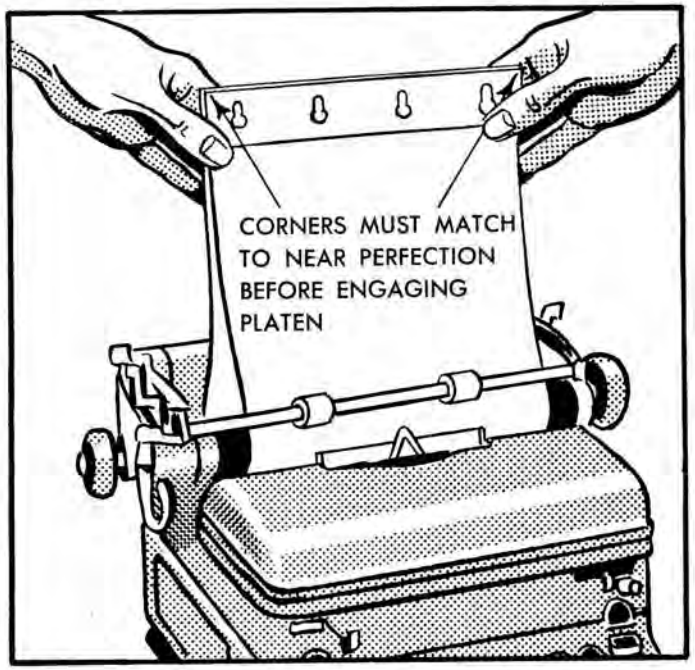
Importance of proper stencil alignment

Unless the stencil is inserted and aligned correctly, copy will not be exactly horizontal on the paper, resulting in an "uphill" effect. There is only one sure method of inserting and aligning the stencil in the typewriter so that the typing reproduces on a true level.

Insert the stencil in the typewriter until the end corners can be matched, as shown in *Fig. 7*. While making this adjustment, the platen should be released to permit easy movement of the stencil. When the corners match as closely as possible, re-engage the platen and turn the knob to bring the stencil into position for the first line of typing.

Some operators use the stencil scale to align the stencil. By this method, they slide the platen from side to side, and align

Fig. 7



the marginal scale numbers on both margins of the stencil evenly. This is not always dependable. Most popular brands of stencils are manufactured in great quantity, and the line scale is not always printed with absolute uniformity.

Typing the stencil — Manually

When using manual typewriters, keys should be struck with a slow, uniform, staccato touch. Broad-faced letters such as M and W will require more pressure in hitting the keys. When using all capital letters, as in headings, it is also important to strike the keys harder in order to obtain clear, uniform impressions.

USE MORE PRESSURE ON CAPITALS AND
BROAD-FACED LETTERS

WMwmgK$

Typing the stencil — Electrically

Practically no effort is required to produce uniform touch when using electric typewriters, as they are designed to hit with more tension on broad-faced letters, and with less tension on small-faced characters. The period tension is also controlled, eliminating the unsightly oversize dot which results from too much pressure.

It is necessary, however, to set the pressure gauge on electric typewriters for stencil typing. Too much pressure will cut the letters completely from the stencil, or loosen them. With insufficient pressure, the broad-faced letters and capitals will not cut deeply enough into the stencil for clear impressions.

Each electric typewriter has its own characteristics. Therefore, there is no set rule for positioning the pressure scale. A few tests, however, will enable the operator to find the pressure best suited for stencil typing.

HOW TO ASSURE PROPER POSITIONING OF TYPEWRITTEN COPY ON STENCIL

(Note: The following instructions apply to ordinary letters, bulletins or any single-page material. For special jobs, such as post-cards, church bulletins and the like, see page 12).

First type and position the letter or bulletin on paper of the same size that will be used for the duplicated copies. Place this typewritten original over the stencil. Align the top edge of the paper with the printed line at the head of the stencil reading "Top Edge Guide for Impression Paper" or "Paper Guide Line," as shown in *Fig. 8*.

The horizontal scales at the top and bottom of the stencil indicate letter spacings for Elite type (12 characters per inch) and Pica type (10 characters per inch). The marginal scales running vertically along the edges of the stencil indicate typewriter line spacings. (Both Elite and Pica type run six lines of typing per inch.)

When the original typed copy is placed over the stencil, the horizontal and vertical scales serve as a guide to determine exactly where typing on the stencil should start. Simply note the "readings" on the scale, and type the stencil accordingly.

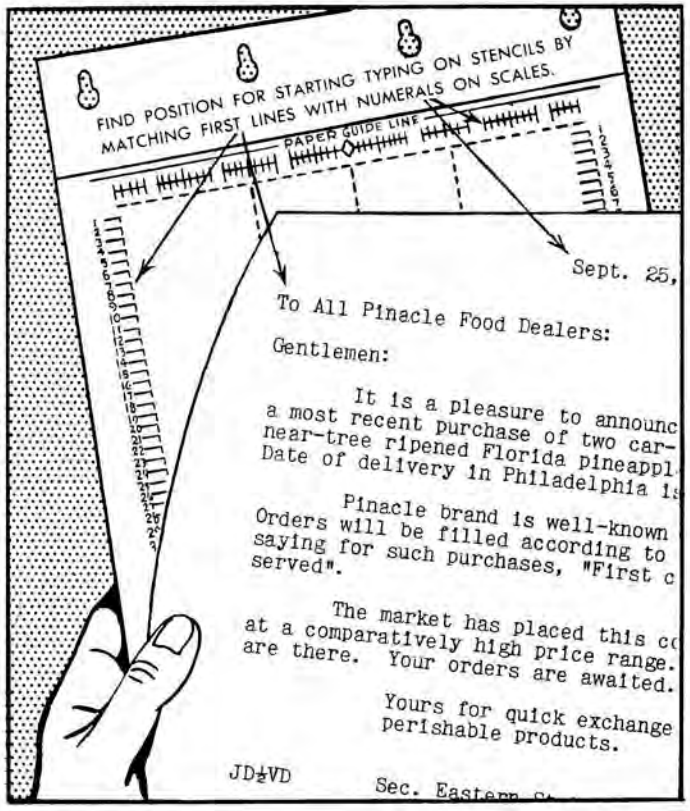


Fig. 8

Carbon cushion method of positioning typing on stencil

This method applies when using blue or green stencils with white carbon cushions or white tissue sheets.

Before inserting the white carbon cushion or tissue sheet under the stencil, place it over the typewritten original so that the top edges of both sheets match. With a soft pencil, make a small circle around the first letter in the date, salutation, body of the letter and complimentary closing lines.

This should be done on the coated or glossy side of the carbon cushion sheet, which is sufficiently transparent for this purpose. If white tissue is used, either side may be marked. *(Fig. 9.)*

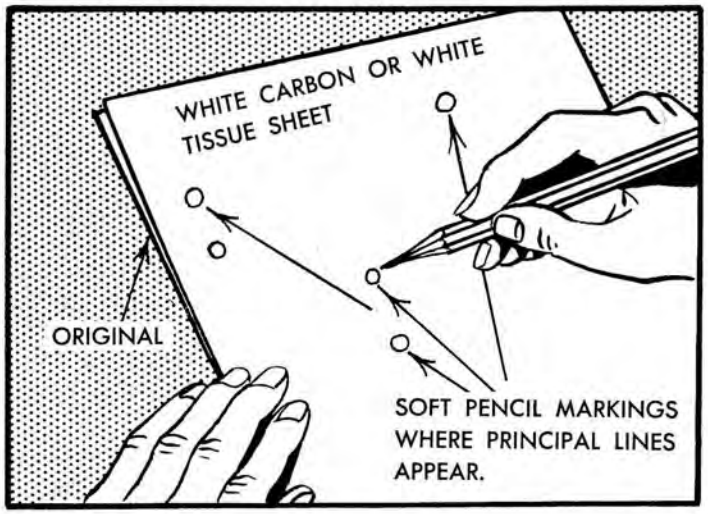


Fig. 9

Place the cushion under the stencil, being sure that it is inserted as high as possible. Be sure the cushion is centered. The pencilled circles will be visible through the stencil to indicate where principal lines of copy should begin.

Any typewritten layout, whether simple or complicated in structure, can be positioned by either of these methods.

SECTION TWO

METHODS OF TYPING STENCILS

METHODS OF TYPING STENCILS

Most brands of stencils are supplied in various colors—usually blue, green, yellow, ivory and white. Most commonly used are the blue stencils, in conjunction with white carbon sheets and/or the equalizer plate (see below). The choice between blue and green is merely one of color preference.

Ivory, yellow or white stencils are particularly adapted to "Pre-Printing" or "Top Printing".

Typing blue or green stencils with film overlay

Some stencils are provided with a film overlay, which is generally attached to the head of the stencil with a special adhesive. Many typists prefer film stencils for the following reasons:

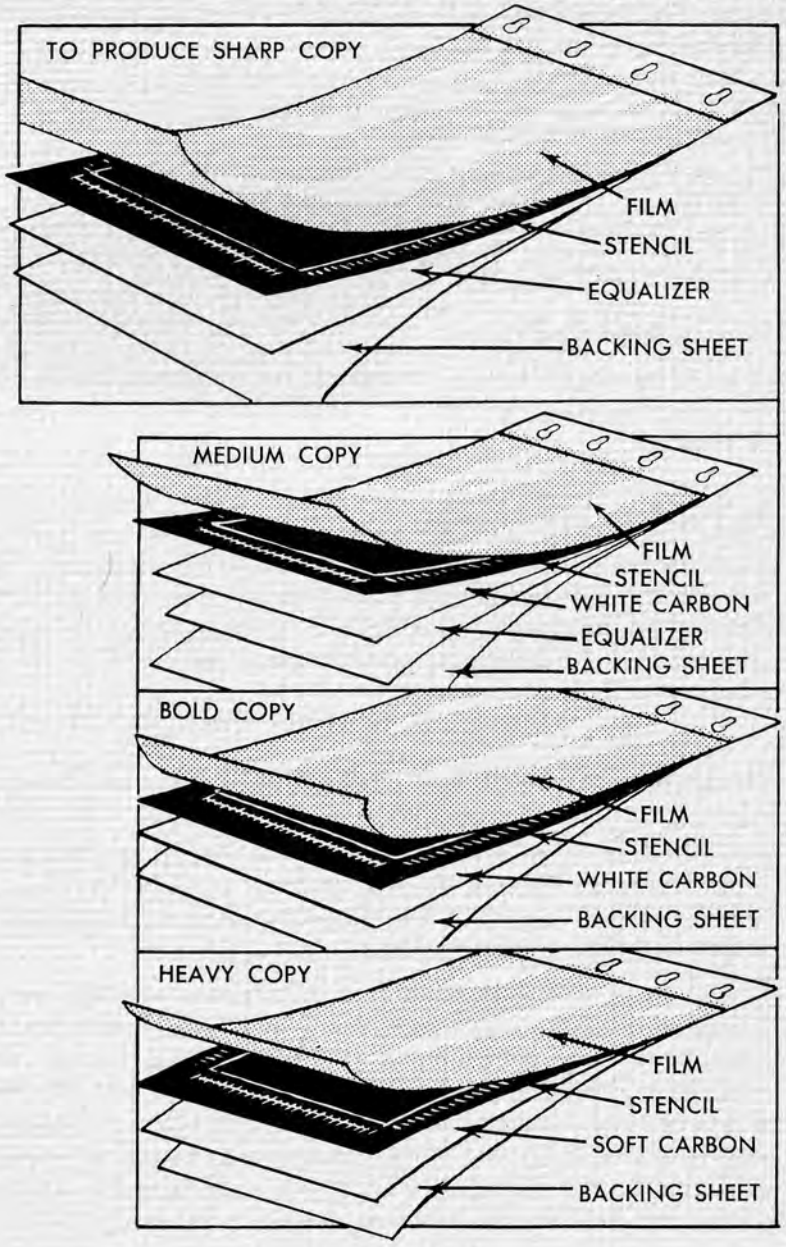
- There is less chance that type characters will be cut out of the stencil.
- Type-clogging is eliminated. The type strikes the film, and not the stencil itself, where it would ordinarily pick up surface coating.
- Typewriter parts made of rubber are protected from injurious stencil oils.

Film stencils are usually packaged with twelve white carbon cushion sheets and one equalizer plate per quire (24 stencils). Therefore, each carbon cushion sheet must be used twice. The equalizer plate can be used in typing the entire 24 stencils. By using various combinations of cushion sheets and equalizer plate, as illustrated on this page, a wide choice of intensity of copy is available.

To produce sharp copy

Most stencils are packaged with a parchment interleaver between the stencil and the stencil backing sheet for preser-

Combinations to obtain varying degrees of copy intensity (Film stencils).



vation purposes. Remove the interleaver, and in its place insert the equalizer plate. Typing is then done on the film overlay.

To produce medium copy

Remove the interleaver, insert the equalizer plate and over it place one of the white carbon cushion sheets. The coated or glossy side of the cushion sheet should face upward. Again the typing is done on the film overlay.

To produce bold copy

If even heavier copy is preferred, remove the interleaver, and insert only the white carbon cushion sheet, glossy side up.

To produce heavy copy

Both hard and soft carbon cushion sheets are available. The soft style produces darker copy than do the hard carbons. By using a soft carbon cushion sheet without the equalizer plate (and removing the interleaver), the boldest typing possible will be produced.

Other uses of hard and soft carbon cushion sheets

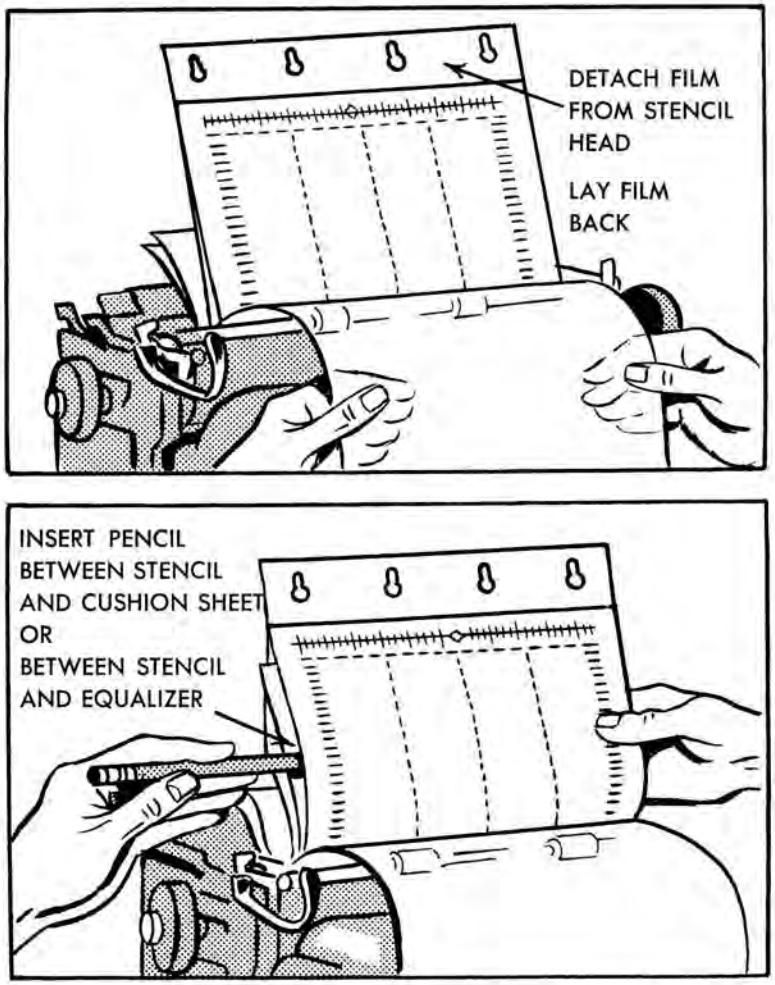
Carbon cushion sheets are available in two styles: hard and soft. In some instances only soft carbon should be used with certain combinations of stencils and ink in order to produce work of good quality. Other stencil and ink combinations will give best results when hard carbon is used.

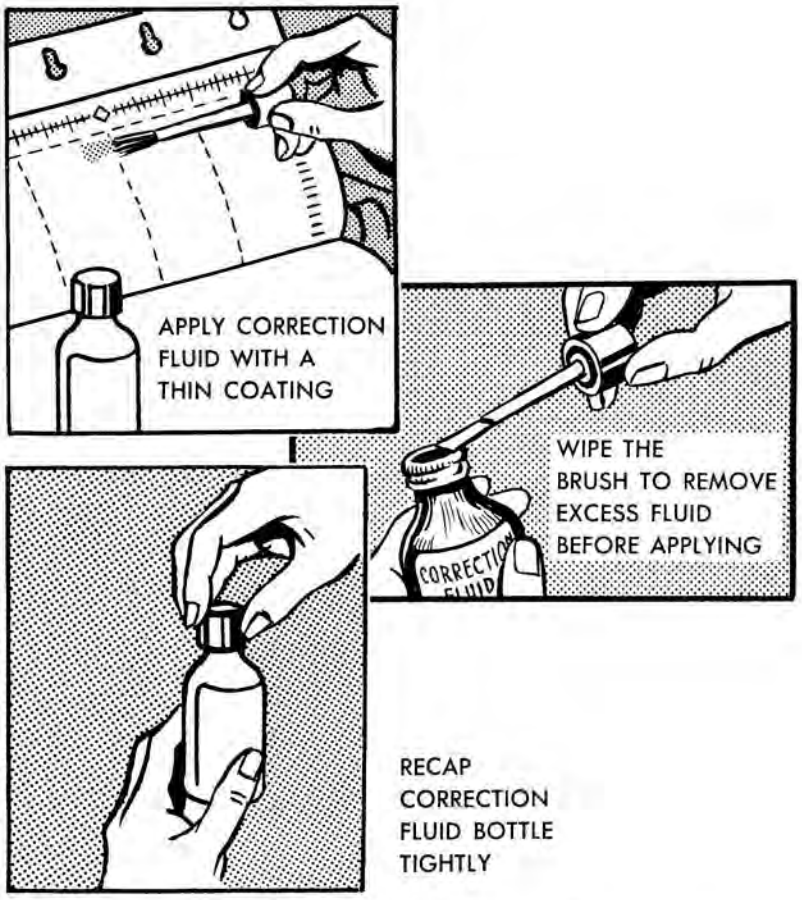
There are various types of duplicating inks: oil base, water base and emulsion. Similarly, various formulas are used in stencil coating. Selection of the proper ink, stencil and cushion combination sometimes calls for expert help. Modern duplicating equipment and supplies will give satisfaction under almost any conditions, but for best results, it may be well to consult the supplier from whom the stencils and ink are purchased, or the manufacturer of these items.

How to make corrections

When properly made, corrections can be made on typed stencils, and no trace of the error will appear on the reproductions. To make corrections on film stencils, roll the typewriter platen up about six spaces. Detach the film from head of the stencil, and bring it forward over the typewriter. Insert

How to correct errors.





a pencil between the stencil and cushion sheet, or between the stencil and equalizer plate, so that the correction fluid, when applied, cannot pass through the stencil and come in contact with the cushion or equalizer. Such contact would cause sticking, and a ragged correction.

Remove the brush from the correction fluid bottle, wiping it across the edge of the bottle neck to avoid an over-coating of fluid when it is applied to the stencil. Paint a thin coating of the correction fluid over the characters to be corrected, using only one stroke of the brush, as the thinnest possible coating is preferable. A heavy coating will produce a thicker correction which will not match the other copy.

The correction fluid bottle should be tightly capped when not in use, so the fluid will not thicken. If fluid becomes too thick, a special thinner is available from your office supply dealer.

Allow the correction to dry for approximately 15 to 20 seconds, and replace the film to head of stencil. Bring the platen downward to its original position, and type the correction over the coating just applied. Strike the keys normally when typing corrections. If touch is too hard, the corrected area will reproduce blacker than surrounding copy.

The buffing method of making corrections

Some typists prefer to buff over the correction with a glass buffing instrument supplied with the correction fluid, or with the rounded edge of a paper clip, before applying correction fluid. This method is not recommended because the stencil may be slightly damaged in buffing. If corrections are carefully made as described above, there is no need for buffing.

Typing procedure for non-film stencils

Non-film stencils are preferred by some typists for the following reasons:

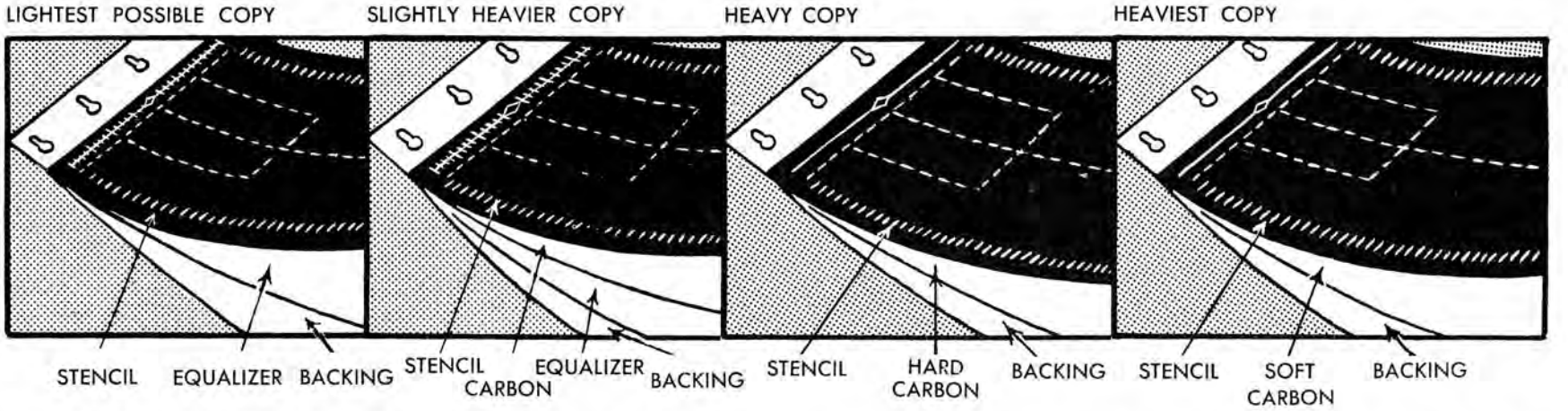
- There is no film overlay to be removed when making corrections.
- The office lighting may be such that it casts a reflection on the film, thus causing poor visibility when typing.
- Sharper copy than that obtainable with film stencils is desired.

To vary the degree of density on non-film stencils

The same principle applies to the use of the equalizer plate, as well as soft and hard carbon cushion sheets, as when using film stencils. (See illustrations on page 10). Each degree of density will be lighter in tone than the comparable degree

Section Two

How to obtain various degrees of copy intensity (Non-film stencils).



for film stencils. Non-film stencils and the equalizer plate produce the lightest possible results it is possible to obtain.

Making corrections on non-film stencils

Use the same method in making corrections as those employed when correcting errors on film stencils. Obviously, there is no film overlay to detach or attach.

Optional use of ivory, yellow or white stencils

These stencils are used with black carbon cushion sheets, or black tissue sheets. The equalizer plate may be used, but not without the black carbon or tissue sheets, which are needed to make the typing visible to the typist.

To produce sharp copy

Use the equalizer plate between the stencil and the stencil backing sheet. Place a piece of black tissue over the plate.

For medium copy

Use the black tissue without the equalizer plate.

For bold copy

Use the equalizer plate with the black carbon cushion sheet over it. Insert the black carbon cushion sheet with glossy side facing upward.

For heavy copy

Use the black carbon alone as a cushion.

Double-coated black carbon cushion sheets

Some brands of stencils are supplied with black carbon cushion sheets which are coated on both sides. Their primary

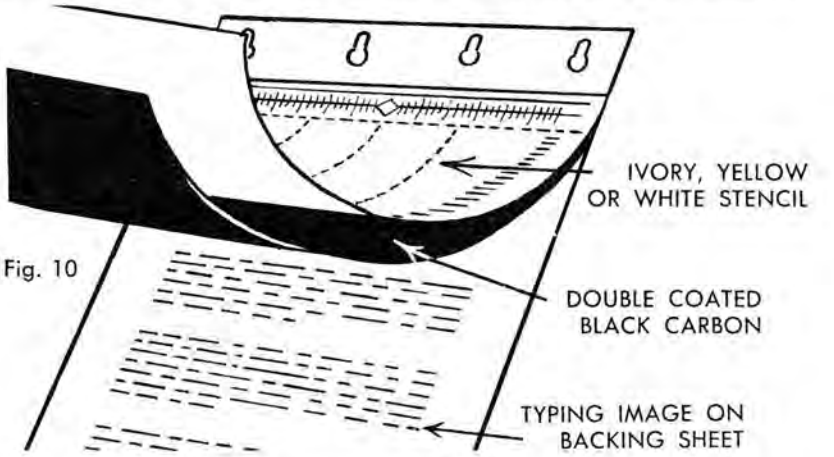


Fig. 10

use is for producing a typewritten image on the stencil backing sheet for easy proof reading. With this type of carbon, the equalizer is not used. (See *Fig. 10.*)

The double-coated black carbon will produce bolder copy than the single-faced carbon. The purchaser can request the type of black carbon cushions desired when ordering stencils.

Most manufacturers supply the ivory, yellow or white stencils with or without film overlay.

MAXIMUM COPY WIDTH AND DEPTH

Marginal limitation lines

At no time should copy be typed beyond the side marginal scales on the stencil, which allow for approximately 7″ or 7⅛″ printing width, because typing beyond these limits will not reproduce. It is best to keep typing at least one typewriter space within the side marginal scale. (See *Fig. 11.*)

Never place typing above the horizontal limitation line at the head of the stencil.

Limitation lines for legal and letter size paper

A broken line extends across the stencil at vertical typewriter spacing number 62 on the marginal scale. Do not place copy below this line when printing on letter size (8½″ x 11″) stock.

When printing on legal length paper, size 8½″ x 14″, do not type copy below line 80 on the side marginal scales. Both letter-size and legal-size paper limitation markings are shown in *Fig. 11.*

Some duplicators have greater printing range than others. Some will reproduce copy placed on the stencil as low as line 84. Information as to the overall printing range of any duplicator can be secured from the instruction book for that particular machine, or from the dealer from whom it was purchased.

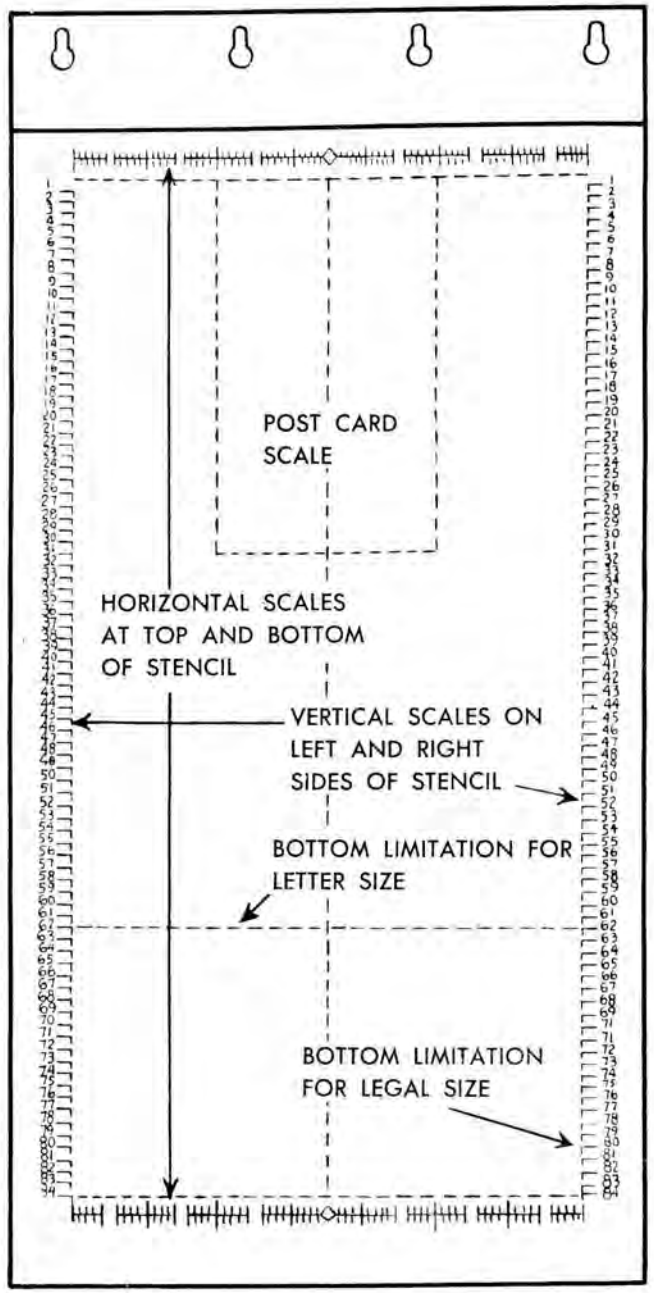


Fig. 11

Arranging typing position when printing narrow stock

Do not center the copy on the stencil when printing narrow-width paper. If the copy is centered, the paper will not eject or strip from the duplicator drum properly during the duplicating process.

If the paper to be used is narrower than 8½", proceed as follows when typing or illustrating the stencil: Prepare an original as a guide. Place the original on the stencil so that the left edge of the paper is aligned with the left edge of the stencil. See *Fig. 12*. Use the scale or cushion sheet method of positioning, as described on page 5., and type copy on the stencil to correspond with the original.

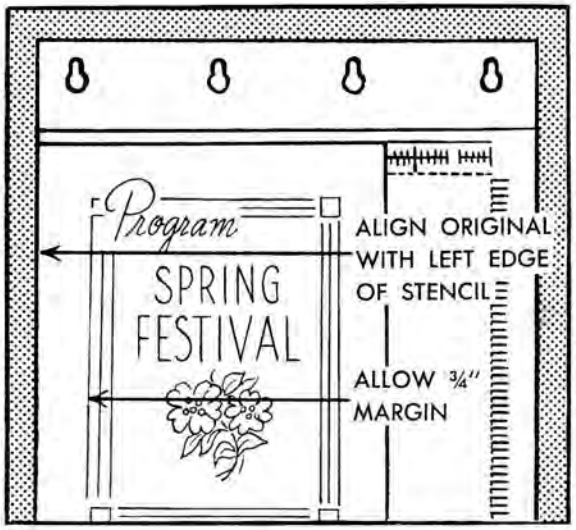


Fig. 12

PREPARATION OF CHURCH BULLETINS AND FOLDERS

A letter-size sheet folded to 5½" x 8½", or a legal-size sheet folded to 7" x 8½", is commonly used in stencil duplicating. (See *Fig. 13.*) So that copy will appear horizontally on the folded pages, it is necessary to insert the stencil into the typewriter lengthwise. This presents no problem when using a typewriter with an 18" carriage. However, if a standard-

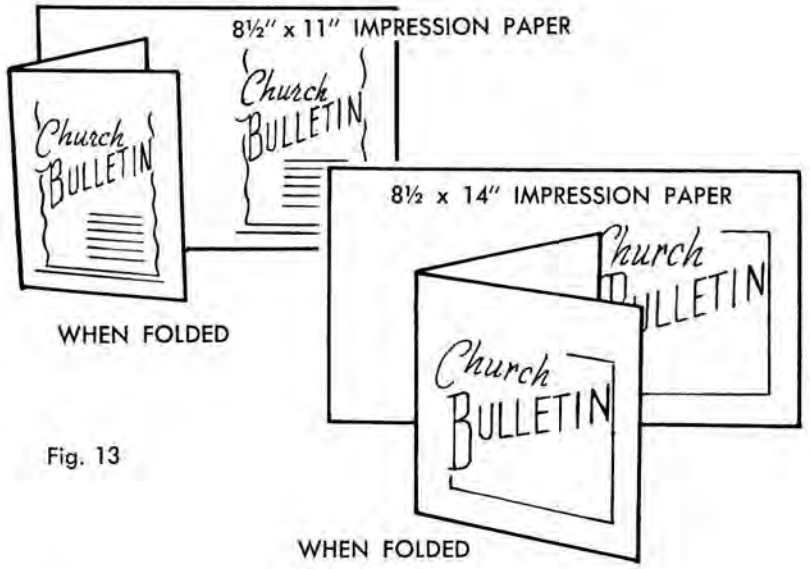


Fig. 13

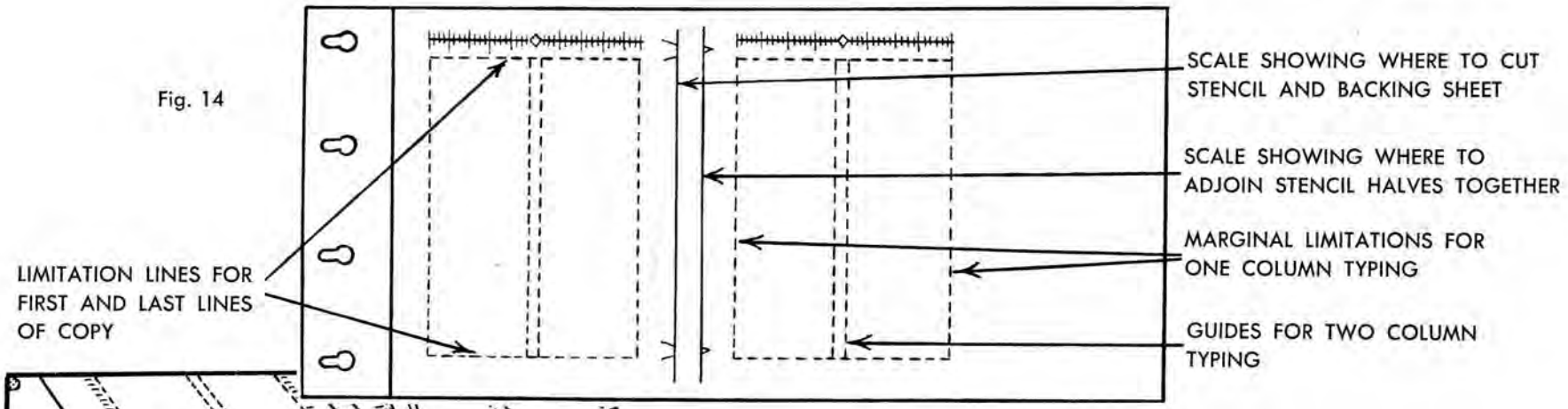
carriage (10") typewriter is used, the stencil and backing sheet must be cut in two. Each half of the stencil is then typed and rejoined. The following instructions will aid in determining exactly where the stencil should be cut for this purpose.

Most stencil manufacturers supply "Bulletin Stencils" or "Church Stencils." An example of this type of stencil is shown in *Fig. 14*. These stencils are imprinted with marginal scales for typing folders of either of two sizes: 5½" x 8½" or 7" x 8½". A guide line indicates where to cut the stencil and backing sheet, while a second guide line shows where to join the two parts of the stencil after typing.

In producing folder layouts, two pages are typed on each stencil. The front page is typed on one-half (actually the lower half of the stencil), and the back page on the other half. If two columns per page are desired, scale lines on the stencil provide a guide for this purpose.

Cut the stencil and backing sheet along the proper guide line imprinted on the stencil. Type each half in the usual

Fig. 14



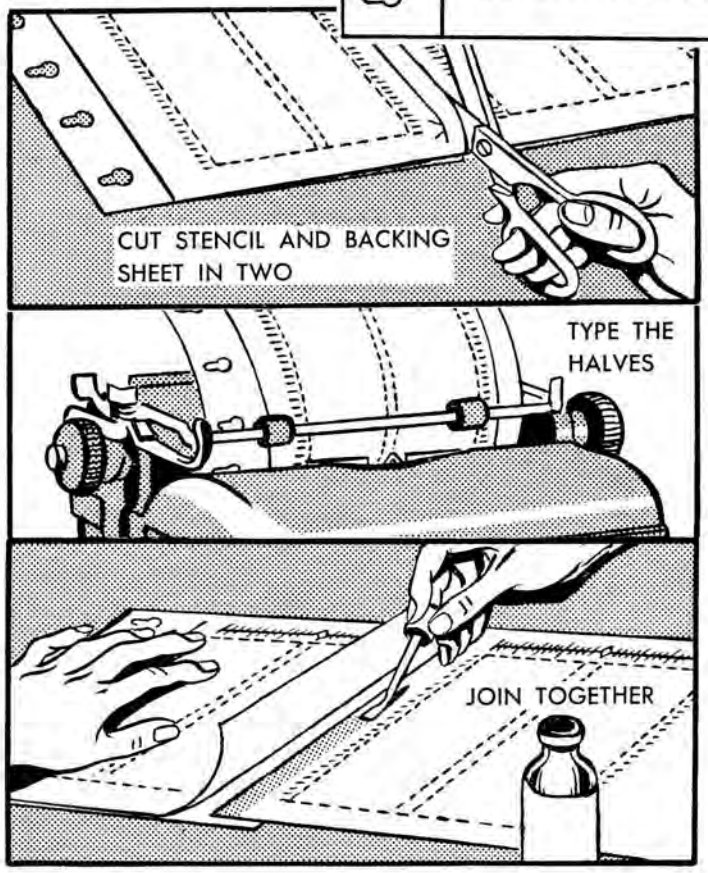


Fig. 15

manner, and then cement them together, using stencil cement. (*Fig. 15.*)

After cementing, allow the stencil to dry as long as possible before mounting on the machine. If the stencil is used too soon after cementing, ink will break through at the joining edge, or the paper will adhere to the stencil cement when printing.

Ordinary stencils can be used in place of bulletin stencils. However, it is more difficult to position typing for the pages and columns. There is also a certain amount of guesswork in deciding where to cut the stencil, and joining the parts so that the pages are balanced properly on the paper. Bulletin stencils usually cost no more than standard stencils, and if much of this type of work is done, it is well worth while to have a supply on hand.

PROPER POSITIONING OF POST CARD COPY ON STENCIL

Post cards are always fed through the duplicator lengthwise, as shown in *Fig. 16.* If copy is to run across the short dimension of the card, there is no problem. However, if the copy

is to run lengthwise on the post card, the stencil must be inserted in the typewriter lengthwise.

When using a short carriage typewriter, this requires that the stencil be cut in two. Cut the stencil and backing sheet at vertical typewriter spacing number 45 on the scale. (*Fig. 17.*) All stencils have a post card scale imprinted at the head of the stencil, and extending down to number 31 on the vertical scale. For preparing post card copy, use the top half of the stencil, which has the imprinted post card scale. Insert this half of the stencil into the typewriter (*Fig. 18*), being sure to keep within the indicated limitation lines. If possible, allow at least one additional character space within the lines.

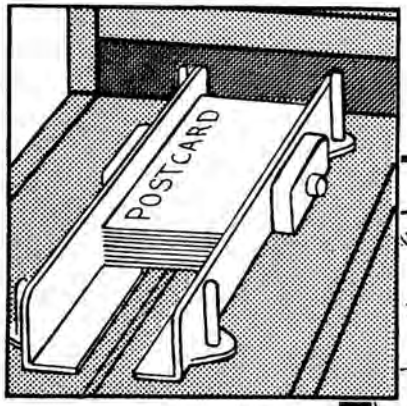


Fig. 16

Fig. 18

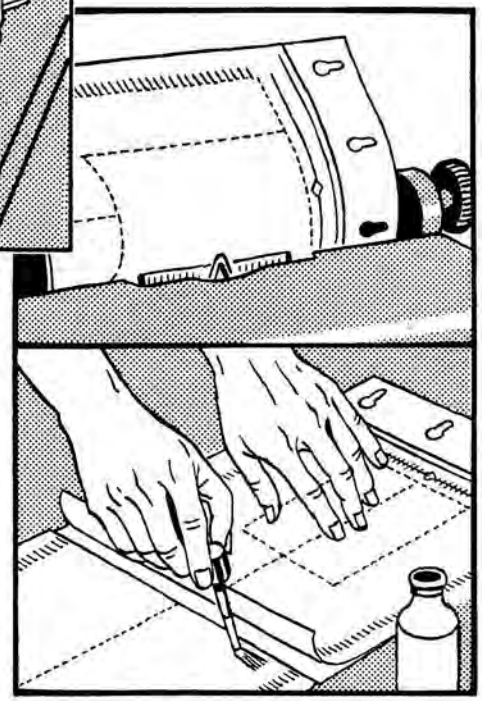


Fig. 19

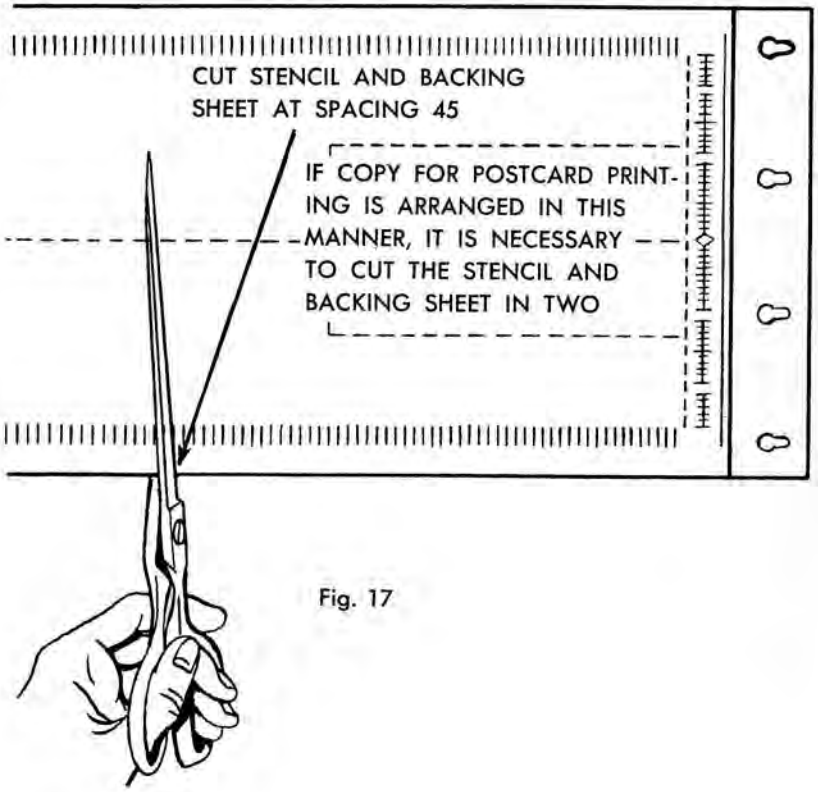


Fig. 17

Some stencil duplicators do not register copy on post cards with absolute uniformity. When using such duplicators, it is best to allow at least ⅜″ margin at the top and bottom of the card to compensate for poor registration.

When the copy has been typed on the stencil, join the two halves with stencil cement. (*Fig. 19.*) Allow at least one-half inch lap-over when joining. Stencil should be allowed to dry at least 25 minutes before mounting on the duplicator. When typing the stencil for a card layout as shown in *Fig. 20,* the stencil need not be cut, but may be placed in the typewriter in the usual manner. Postcard layouts, even though less than 8½″ in width, can be centered on the stencil. The card stock has sufficient weight to strip itself from the machine when printing.

Post cards should be slip-sheeted to eliminate offset on the reverse side of the cards. Instructions for slip-sheeting will be found on page 42.

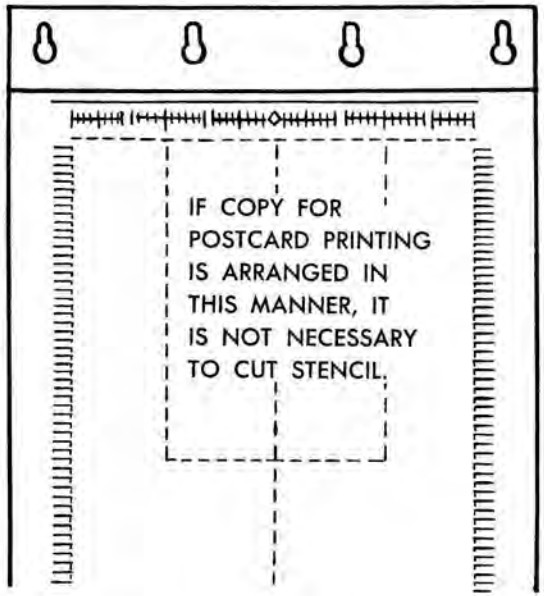


Fig. 20

HOW TO TYPE AN EVEN RIGHT MARGIN

Bulletins can be given the appearance of a newspaper or magazine page when the right-hand margin is even. Preparation of such copy is far more simple than many typists realize.

```
1. Bulletins or other typewritten
   layouts can be given the ap-
   pearance of a newspaper or maga-
   zine page when the right-hand
   margin is even.  Preparation of
   such copy is far more simple
   than many typists realize.
```

To give paragraph 1 an even margin, it is retyped, and a stroke mark (/) placed at the end of each sentence for each character space the line lacks. The longest line in the paragraph is used to determine the width. See paragraph 2.

```
2. Bulletins or other typewritten//
   layouts can be given the ap-////
   pearance of a newspaper or maga-
   zine page when the right-hand///
   margin is even.  Preparation of
   such copy is far more simple////
   than many typists realize.
```

When the copy is cut on the stencil, an extra space is used between words for each "stroke" in the test copy (Par. 2), resulting in an even right margin, as shown in Par. 3.

```
3. Bulletins or other typewritten
   layouts can be given the ap-
   pearance of a newspaper or maga-
   zine page when the right-hand
   margin is even.  Preparation of
   such copy is far more simple
   than many typists realize.
```

Reference stars, periods, dashes, etc., may be used in place of the "stroke" if desired. However, to facilitate typing, most typists prefer to use a character rarely used in ordinary typing, and on a lower case key. After a little practice, it will not be necessary to type the work three times as described above. Step No. 1 can be eliminated entirely.

AVAILABILITY OF UNUSUAL TYPE FACES

Most popular makes of American typewriters are available with special type. Those shown in *Fig. 21* are some of the more common "special order" type faces which can be obtained on new typewriters, or installed on older machines. Foreign type and special symbols used in chemistry, physics, mathematics, etc., are also available. Wherever individuality in appearance or specialized characters are desirable, consult your typewriter representative, who can show you

actual typed specimens of faces available for your particular make of typewriter.

EXAMPLES OF THE MANY VARIETIES OF TYPE AVAILABLE FOR STANDARD TYPEWRITERS:

This is a specimen of ITALIC Type

This is a specimen of CONDENSED MICROTYPE written on

This is a specimen of SMALL GOTHIC Type written on an

This is a specimen of ELITE VICTOR

This is a specimen of LIBRARY C

This is a specimen of VICTORIA

Fig. 21

The Vari-Typer or Coxhead D.S.J.

When using standard typewriters, one style of type is used permanently, and is not interchangeable with other type faces.

With the Vari-Typer or Coxhead D.S.J., a large variety of type styles can be quickly interchanged in the same typewriter. There are as many as 300 styles and sizes of type available for use in this equipment.

Two styles of type are placed in the machine at one time. The operator can switch quickly from one to the other, or replace both with other faces. The simplicity of this operation is shown in *Fig. 22*. The Vari-Typer or Coxhead D.S.J. machines are in reality composing machines, and offer type variation advantages such as those of linotype or monotype composing machines used in printing. *Fig. 23* shows some of the type styles available for Vari-Type and Coxhead machines.

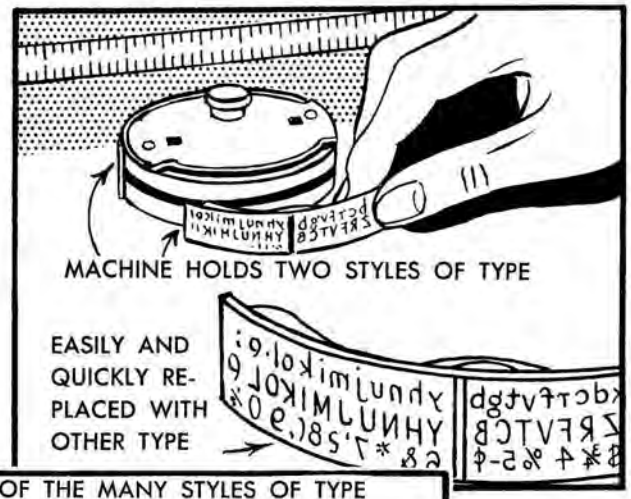


Fig. 22

A FEW OF THE MANY STYLES OF TYPE AVAILABLE FOR VARI-TYPERS:

A simple italic letter which harmonizes with all our faces of this

A small book face. Suitable as a substitute for type-set composition. 1234

For special effects, but should be used sparingly. Has extremely

A plain type that is good for forms, sub-titles, etc. 123

Fig. 23

When typing stencils on these machines, the procedure is the same as for standard typewriters, except that the stencil backing sheet is removed and replaced with a special Vari-Typer backing sheet.

Margin justifiers

Vari-Typer and Coxhead machines are available with margin justifiers, which automatically space the typewritten lines so that the right margins are aligned evenly. This eliminates the need for extra operations described on page 15. Justifiers are also available for use on most standard typewriters.

Fig. 24 shows examples of ruled forms and other copy produced by Vari-Typer and Coxhead machines.

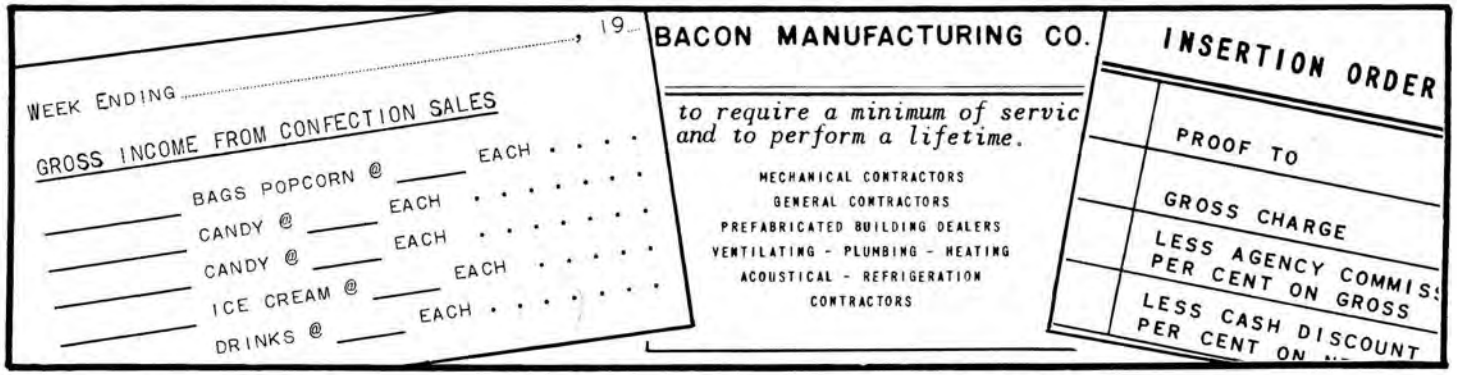


Fig. 24

EXAMPLES OF VARI-TYPED REPRODUCTIONS

Carbon ribbon attachments

Most typewriters can be equipped with a carbon ribbon attachment which is used to obtain sharp, black copy for printing reproduction. The quality of work produced with the carbon ribbon is actually difficult to distinguish from printed typography. The carbon ribbon is not used directly on the stencil. Copy is typed on paper, which is then used for photographic stencil reproduction. This process is particularly advantageous for "Pre-Printed" stencils used for low-cost office forms and the like.

SECTION THREE

HOW TO TRACE DRAWINGS, HAND LETTERING, RULED LINES, ETC.

Practically anything that can be written or drawn can be reproduced on a stencil duplicator. There are simple line drawings, cartoons, headings, etc., especially prepared for stencil tracing; these are supplied in looseleaf books or portfolios, and may be used over and over again. A large variety of ideas covering seasonal material, attention arresters, headings, etc., for school, church and general use is also available.

Pictures clipped from magazines, newspapers, or other printed matter may also be used for tracing. However, such material is usually printed on both sides of the page, and must first be traced on tissue or tracing paper before being applied to the stencil.

FUNCTIONS AND USES OF STENCIL TRACING SCOPES

When typing a stencil, the copy can be clearly seen, but to trace pictures and other subject matter on a stencil is a difficult matter without the aid of a tracing scope. This is an apparatus consisting of a frame which supports a sheet of translucent glass the size of the tracing surface of a stencil. The glass is illuminated from below. By placing the subject to be traced on the illuminated scope glass; a writing plate over the subject and a stencil over plate the copy is clearly visible to permit tracing.

Although different makes of tracing scopes have varying mechanical features, the fundamental working procedure is the same. The Speed-O-Print De Luxe model tracing scope is used in these instructions.

Importance of preparing a layout

For best results, a complete layout should be made on paper before tracing subject matter on the stencil. For the layout, tracing paper or tissue are preferable, though bond paper or yellow second sheets may be used. The paper selected should be the same size as that on which the finished copies will be printed. Whenever possible, use the standard sizes of paper used in stencil duplicating: 8½″ x 11″, 8½″ x 13″ or 8½″ x 14″.

Place the layout paper on the scope glass. Align the top edge of the paper with the top edge of the vertical scale mounted on the right-hand side of the scope. (*Fig. 25.*) Center the paper on the scope glass, and lock it in place with the stencil clamps.

Marginal limitations

With a No. 2 pencil, rule a ¾″ marginal line completely around the layout. The T-square may be used for both ver-

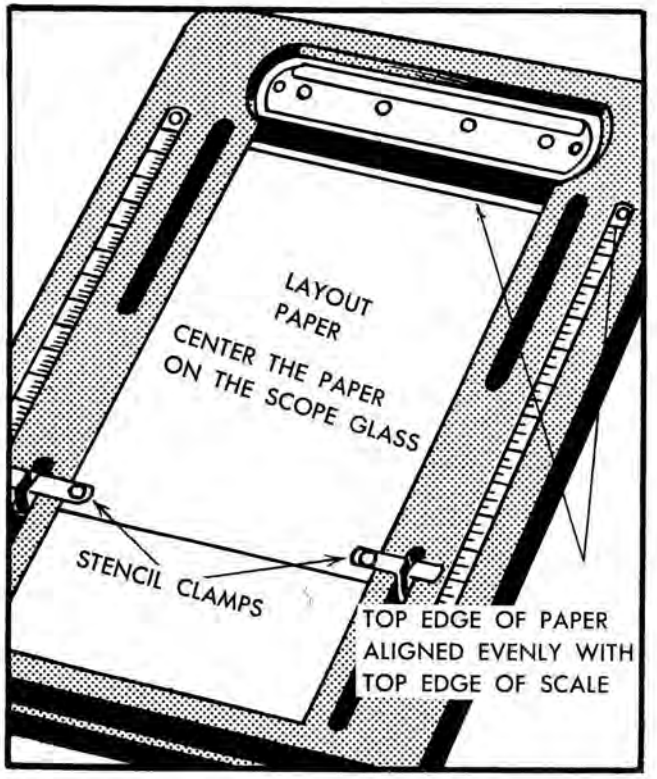


Fig. 25

tical and horizontal margin lines. Note: With some scopes, the T-square cannot be used for vertical lines, in which case

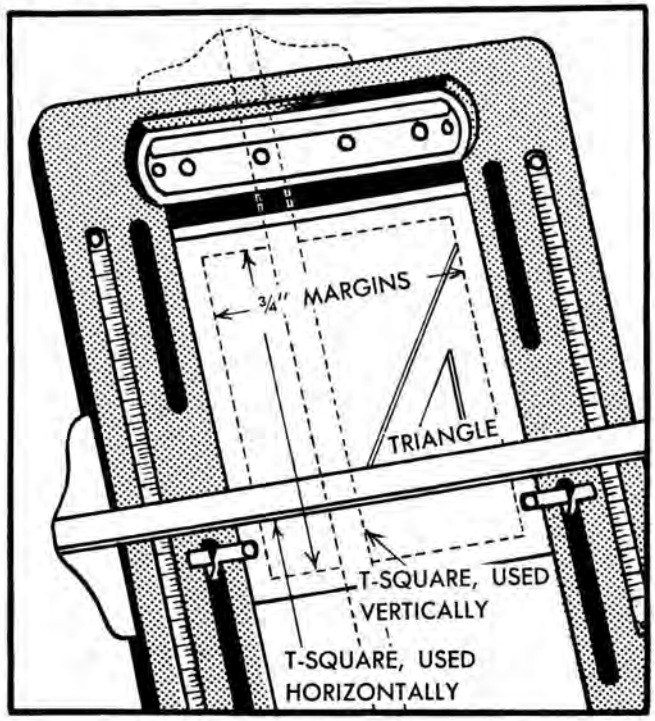


Fig. 26

a celluloid triangle can be used in conjunction with the T-square, as shown in *Fig. 26*. With the T-square, rule outlines for areas allotted to typing. Allow spaces for illustrations, headings, summary lines, etc. Place the cartoon, illustration or other tracing matter under the layout paper in the desired position, and outline it roughly with a No. 2 pencil. Now remove the tracing matter and layout lettering guide work, if any, on the paper. See *Fig. 27*.

Laying out lettering guide work

Complete instructions for use of lettering guides will be found on page 20. If the user is unfamiliar with lettering guides, it might be well to refer to those instructions before proceeding.

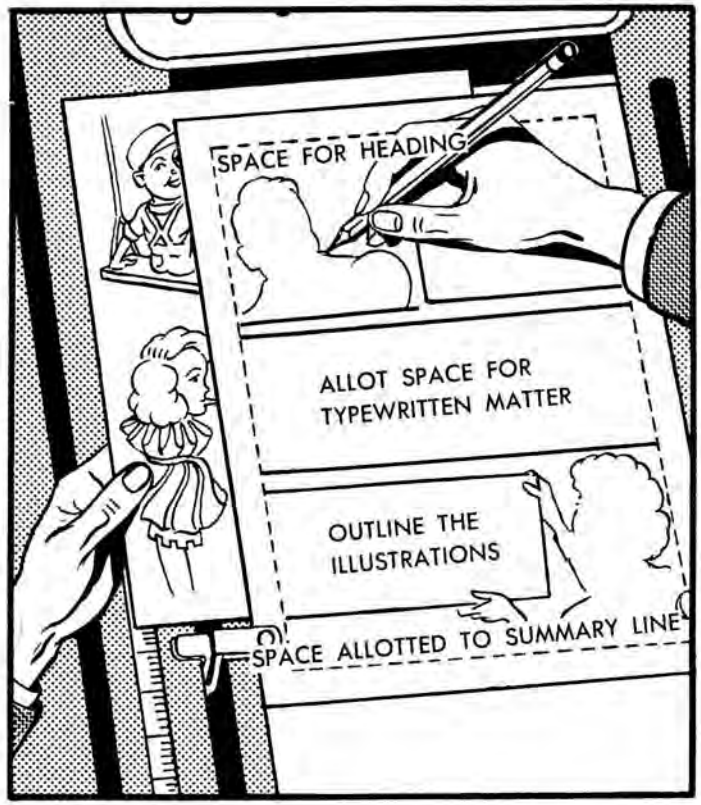


Fig. 27

Use a sharp No. 3 or No. 4 pencil when laying out lettering guide work on paper. Place the selected lettering guide on the layout paper at the desired level; then raise the T-square so that the guide rests upon it. Lock the T-square in place with the locking device provided for that purpose. Note: The T-squares on some scopes are not provided with locking devices. In such cases, masking tape or cellulose tape can be used to hold the T-square in place.

Sharpen the pencil so that it fits into the lettering guide openings without binding. Then trace the line of lettering, holding the pencil in a vertical position. See *Fig. 28*.

Fig. 28

Use of carbon paper for laying out lettering guide work

Another method of tracing lettering onto the layout paper is by means of carbon paper and a lettering guide stylus. A piece of typewriter carbon paper is placed under the tracing paper, with coated side up. If available, red carbon is best; however, black is entirely satisfactory. Then use the stylus to form the letters. When the carbon paper is removed, the letters will be clearly visible on the tracing paper. See *Fig. 29.*

The typewritten copy is then added to the layout sheet, and the layout is ready to apply to the stencil.

Typing or stylusing — which comes first?

If there is a limited amount of stylus work on the layout, it is advisable to do that first. If the typing is done before the stylusing, the typing may be damaged when doing the scope work. However, if there is a large amount of stylusing, it is best to do the typing first; if there are serious typing errors which cannot be corrected in the normal manner, the typing can be re-done more easily than can a large amount of stylusing. As the user gains proficiency, it will be found that serious mistakes can be corrected by means of patching, which requires only a duplication of the damaged work. However, the beginner will probably prefer to start all over rather than to risk further damage which might be caused by inexperienced patching.

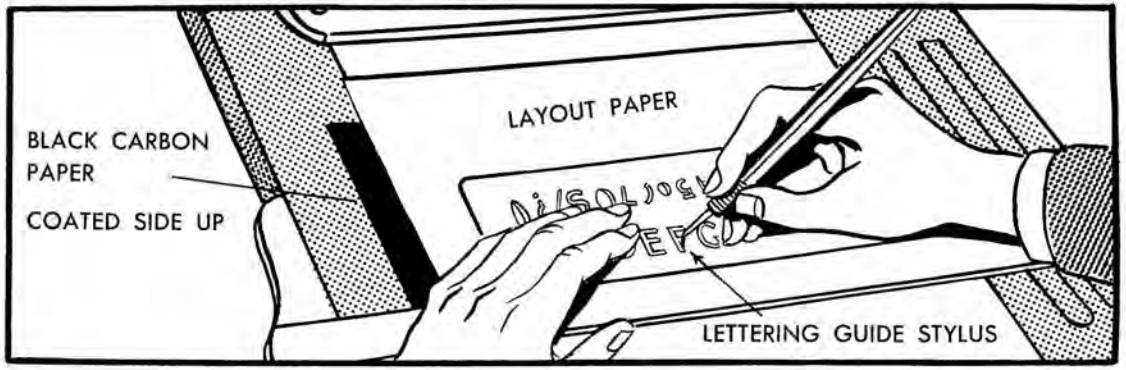


Fig. 29

HOW TO APPLY THE LAYOUT TO THE STENCIL

Mount the copy and stencil on the scope

Place the original layout on the scope glass. Place a celluloid writing plate over the layout, centering both on the scope glass. The top edges of the layout sheet and the writing plate should be aligned with the top edge of the scale mounted on the right side of the scope. Use masking tape or Scotch tape to fasten the layout and plate in place, as shown in *Fig. 30.*

When stylusing, use blue or green stencils, as the image would not be sufficiently visible on the light-colored stencils.

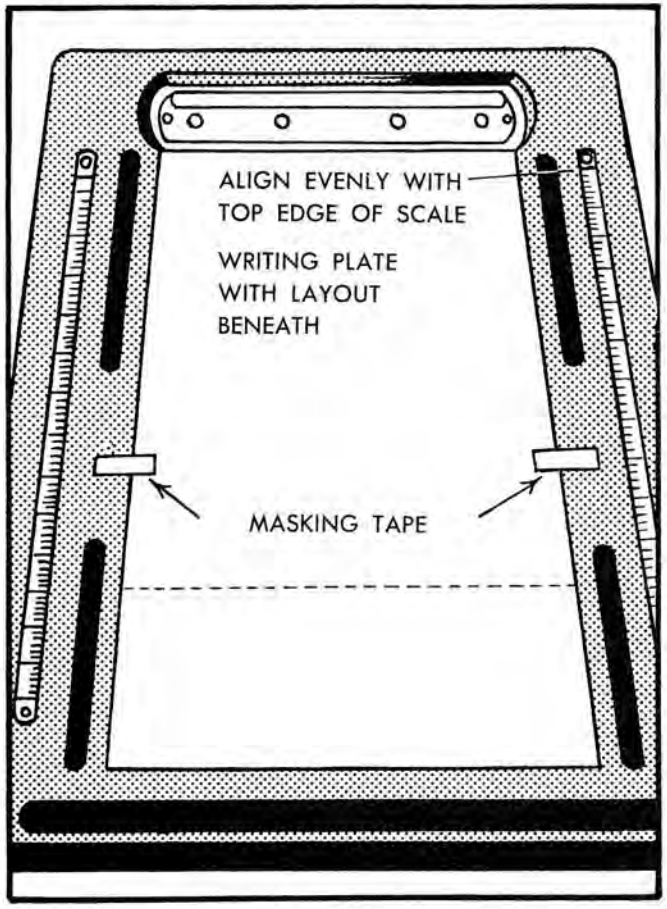


Fig. 30

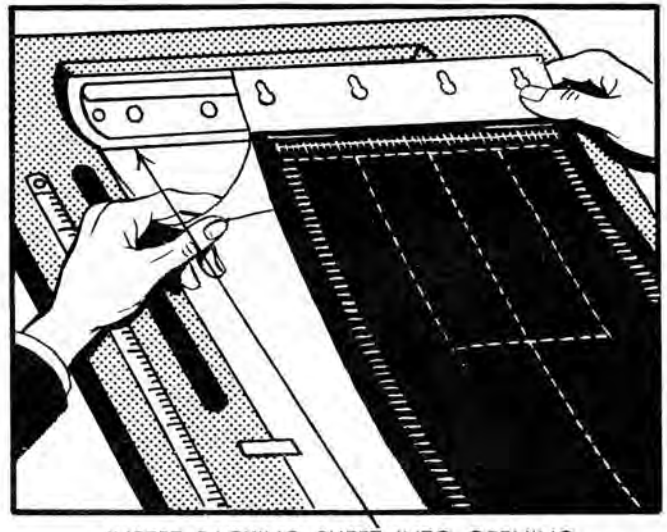


Fig. 31

INSERT BACKING SHEET INTO OPENING

If film stencils are used, the film overlay should be removed or laid back. Remove the parchment interleaver from between the stencil and the stencil backing sheet. Crease the backing sheet at the perforations at the head of the stencil, fold it back and insert it into the opening provided for it at the top of the scope glass. See *Fig. 31.* Pull the backing sheet through the opening until the stencil head punchings can be fastened to the stencil mounting pegs at the top of the scope.

Then pull the stencil taut over the scope glass, and fasten the lower ends with the stencil clamps. *(Fig. 32.)*

Use care in aligning the stencil on the scope glass. It is most important that the punchings at the head of the stencil are flush on the mounting pegs before the stencil is clamped in place.

Importance of writing plate

The writing plate must be used between the stencil and the copy being traced, in order to bring out the sharpness of lines. In addition, the use of the writing plate minimizes the chance of tearing the stencil where lines cross. While lines can be drawn on the stencil without using a writing plate,

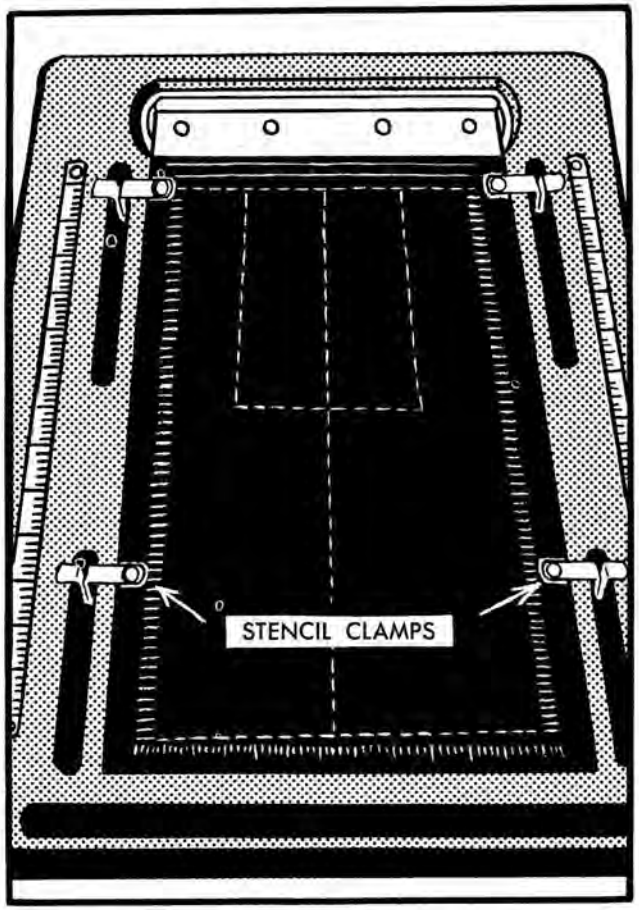


Fig. 32

they will reproduce broader than intended and will be ragged in appearance. When shading with plates, screens or wheel styli, as described later, the writing plate is not necessary, however.

Selecting proper styli for cartoons and illustrations

The ball-point styli are the easiest and most practical to use in tracing cartoons and illustrations. Most brands of ball-point styli are available in several sizes. Four of the most commonly used sizes are shown in *Fig. 33*, together with the thickness of lines produced by each.

If material to be traced calls for intricate detail, the smallest ball stylus should be used. When tracing, it is advisable to rest the hand on a sheet of paper, as heat and moisture from the hand may affect the stencil. Tracing should be done slowly and carefully, with the stylus held in the same position as a pencil. (*Fig. 34.*)

How much pressure to use

Boldness of line is controlled by the size of the ball-point stylus used, and not by the amount of pressure exerted. Pressure required varies, depending upon the size of the ball point. As a general rule, press hard enough so that the scope light shows through the stylused lines, but do not use so much pressure that the ball point cuts through the stencil. The larger the ball point, the more pressure required to displace the stencil coating properly.

Fig. 33

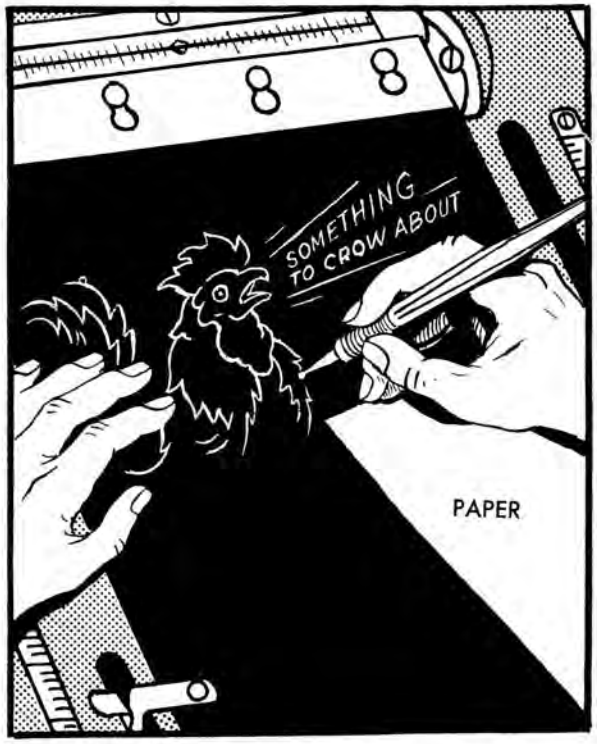


Fig. 34

Drawing accessories

A small celluloid triangle, and a T-square or ruler are necessities for tracing straight lines. To produce circles, ovals and squares, plastic guides—each offering a wide choice of sizes —are available. There are also special guides, such as the Design-O-Guide, which provide tracing patterns for stars, arrows, small curves and novel shapes which can be adapted to the subject matter.

Selecting proper styli for ruled lines

The wire-looped styli are the most practical for ruled lines. Three sizes of wire loop styli are shown in *Fig. 35*. The width of the line produced by each is also shown. When ruling on the stencil, hold the wire loop as shown in *Fig. 36*. The loop

Fig. 35

Fig. 36

must be held parallel with the T-square. If the loop is held at any other position, the resulting line will be broader than desired.

Dotted lines and broken lines

Ruled forms can be improved in appearance by using dotted lines or broken lines. Illustrated in *Fig. 37* are the dotted line, broken line and dash-dot styli which are used for this

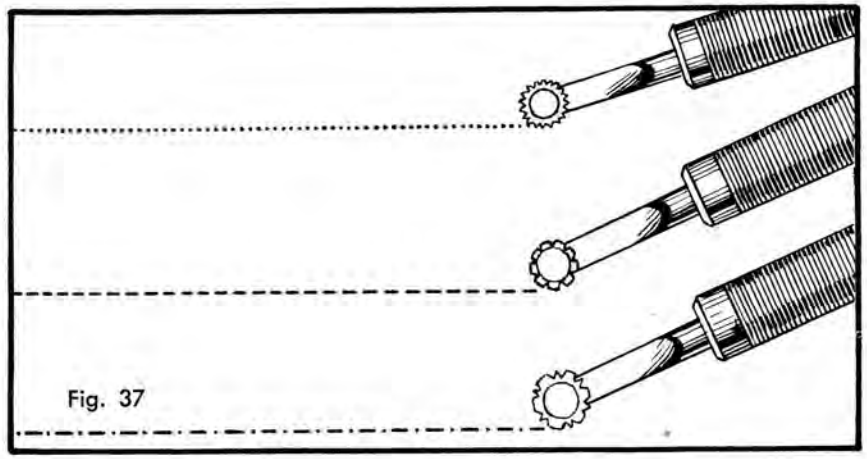


Fig. 37

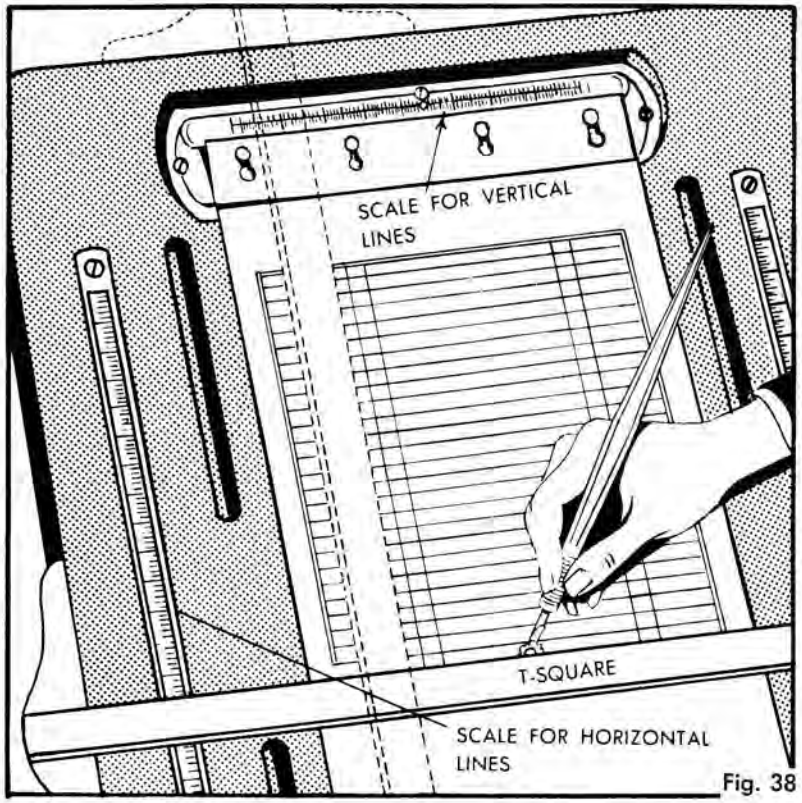


Fig. 38

purpose. These styli should be held as shown in *Fig. 38*, it being essential that they be held firmly, and parallel with the T-square.

Use of scope scales for producing ruled lines

Ruled forms are often filled in on a typewriter; hence, in producing this type of form, it is essential that the lines be spaced accordingly. To accomplish this, simply rule horizontal lines on the stencil to correspond with the typewriter line spacings mounted on the left side of the scope, as shown in *Fig. 38*. These vertical line spacings will accommodate both pica and elite typewriter type.

At the head of the scope, there is a scale for drawing vertical lines. These lines correspond with pica and elite typewriter spacings, so that forms may easily be planned to handle either or both of these type faces.

STENCIL SHADING METHODS

Tracings of cartoons, illustrations, maps, graphs, etc., can be greatly improved in appearance by adding shading effects, which are produced with transparent shading plates, brass wire screens or wheel styli.

Each of these will be discussed in turn, beginning with the transparent shading plates, which offer the most advantages. These plates, made of plastic, are embossed on one side with various patterns such as those shown in *Fig. 39*. Formerly all shading plates were of small size which necessitated a frequent change of position where large areas were to be

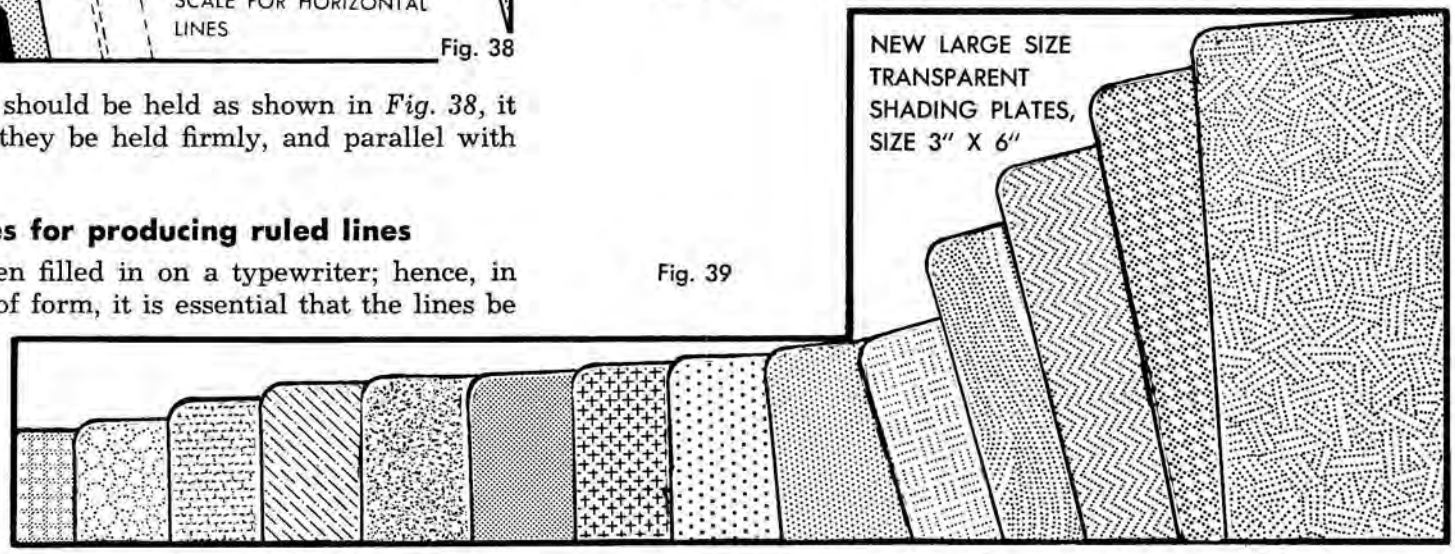


Fig. 39

shaded. There are now available large-size shading plates which are more convenient, and help to speed up the job.

How to use transparent shading plates

After the drawing is completely outlined on the stencil, remove the writing plate. Select the desired shading plate and place it beneath the stencil, and under the illustration so that it covers all, or as much as possible, of the area to be shaded. The embossed side of the shading plate must face upward.

Using one of the shading implements shown in *Fig. 40,* press and rub briskly over the stencil, being careful to stay within the outlines of the area to be shaded. The scope light should be turned on during this operation. *(Fig. 41.)*

For small areas, use a shading implement with a smaller surface, such as the spoon bill, extra large ball point, or the tip of the giant curved implement. For large areas, the flat edge of the giant curved implement, or the shading implement should be used.

The plate should be held firmly in place under the stencil; otherwise, the results will not be uniform and true to the plate pattern. If outlines of the drawing are accidently overlapped, the unwanted shading may be covered with correction fluid.

Obtaining various patterns with a single shading plate

Fig. 42 illustrates the results produced by using a shading plate twice over the same area to produce an entirely different pattern. The original pattern is first rubbed onto the stencil. Then the shading plate is turned slightly, and again rubbed with the shading implement. Many novel designs can thus be produced, and "re-shading" can be done as many as three times. It should be noted that each "re-shading" darkens the pattern considerably.

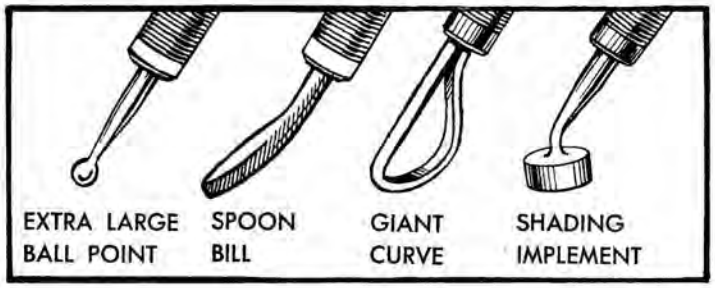


Fig. 40

Fig. 41

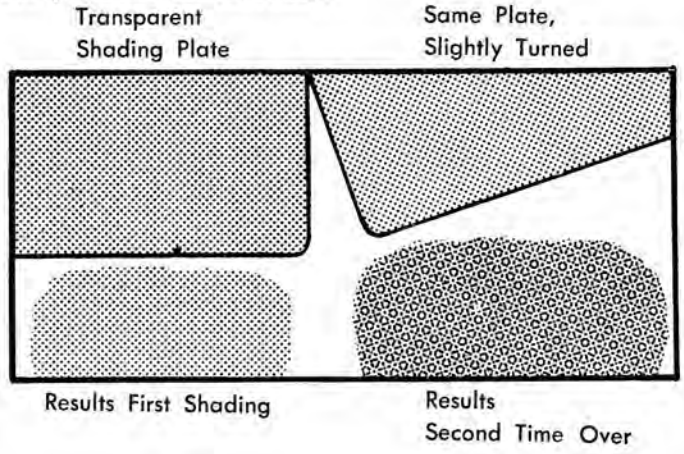


Fig. 42

Section Three

How to adapt the patterns to specific illustrations

Where large areas are to be shaded, it is best to use coarser patterns. The smaller the area, the smaller the design should be, in order to obtain a pleasing effect. A wide variety of patterns are available, but if only a limited purchase of shading plates is permissible, it is best to select plain dotted patterns which, as mentioned above, can be used to produce a variety of designs.

See page 29 for more examples of results produced with shading plates.

How to shade with wheel styli

Wheel styli can also be used for shading outline drawings. Three examples of wheel shading styli are shown in *Fig. 43*. To use the wheel styli for shading, remove the celluloid writing plate, allowing the original tracing copy to remain in place. Simply follow the shaded areas of the original copy, applying the wheel styli as shown in *Fig. 44*.

In this illustration, panel "A" shows results obtained by applying lines side-by-side. Cross-hatched lines are shown in panel "B", while the method of obtaining plaid effects is illustrated in panel "C".

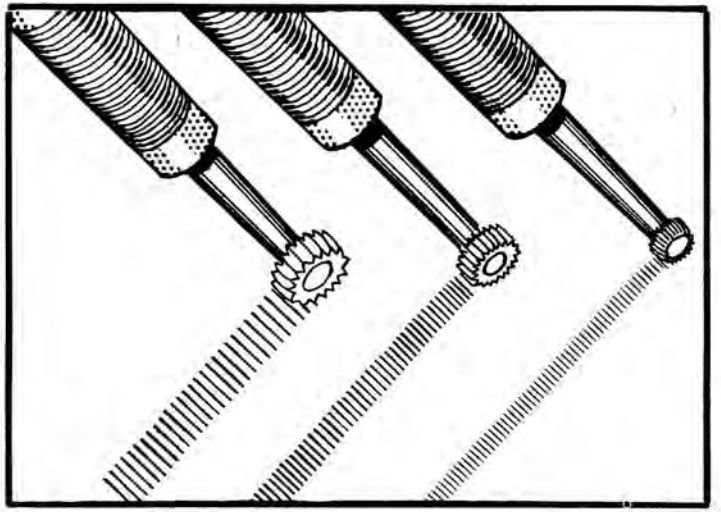


Fig. 43

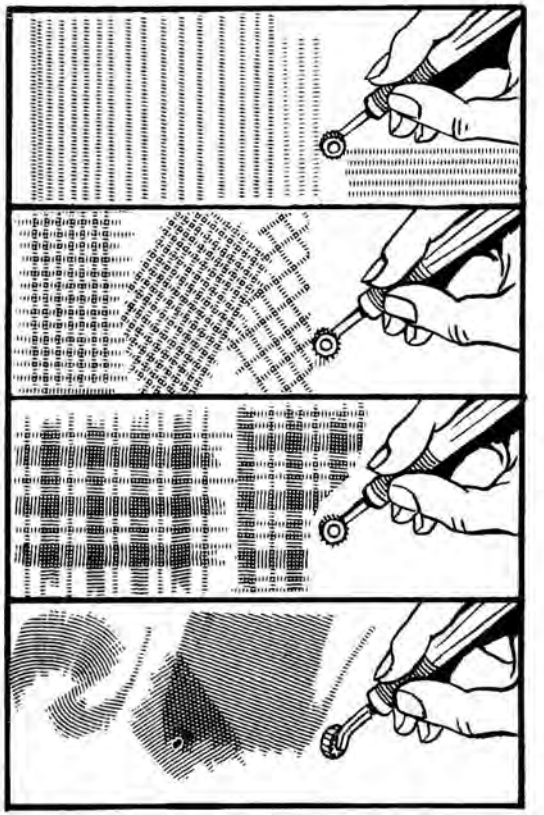


Fig. 44a

Fig. 44b

Fig. 44c

Fig. 44d

To produce the effect shown in panel "D", do not lift the wheel stylus from the stencil when making the strokes, but roll it upward and downward and, at the same time, keep drawing it to the right, as illustrated.

Wheel styli may also be used with the T-square to produce single ruled lines for borders or ruled forms.

Fig. 45 shows examples of work which can be produced with wheel styli. Other examples will be found on page 29.

Use of the silk sheet

When it is desired to produce solid black lettering, or to put solid black areas into illustrations, the silk sheet is used. Solid black areas serve to add strength and boldness to the

Fig. 45

message, and headings can be emphasized. Both of these factors are particularly desirable for poster work, or for messages on already-crowded bulletin boards.

Fig. 46 shows outline letters before and after shading with the silk sheet. A similar comparison is shown in the illustration (*Fig. 47*).

How to use the silk sheet

Trace the outlines of the illustration on the stencil. Place the silk sheet between the stencil and the writing plate. If desired, the tracing copy may be kept beneath the writing plate as a guide.

Select a ball point stylus about the size of the one illustrated in *Fig. 48*. Rub the stylus firmly over the areas to be blackened, using care to stay within the outlines of the drawing or lettering. When the required area has been rubbed with the stylus, slowly lift the stencil upward, and remove the silk sheet. The areas worked upon will appear white on a blue or green stencil, and will print solid black provided, of course, that the duplicator is properly inked.

OUTLINE LETTERS BEFORE AND AFTER SHADING WITH THE SILK SHEET

Fig. 46

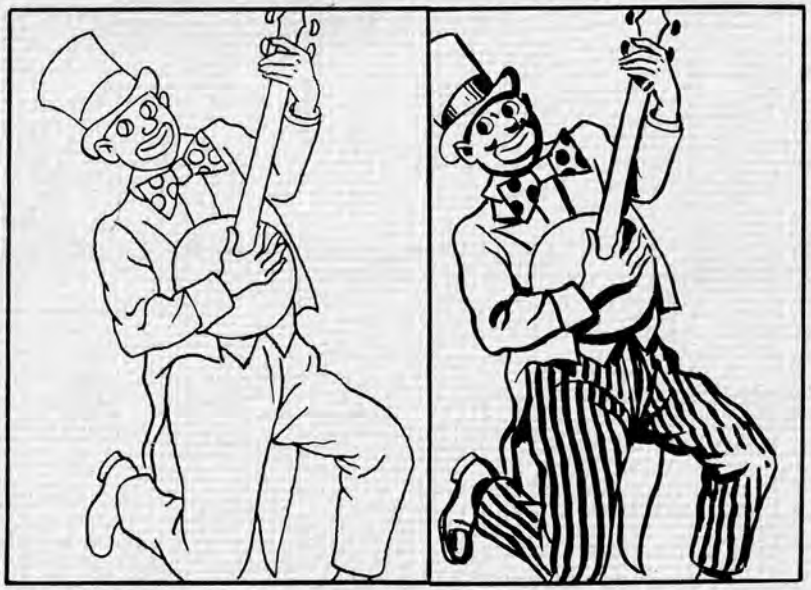


Fig. 47

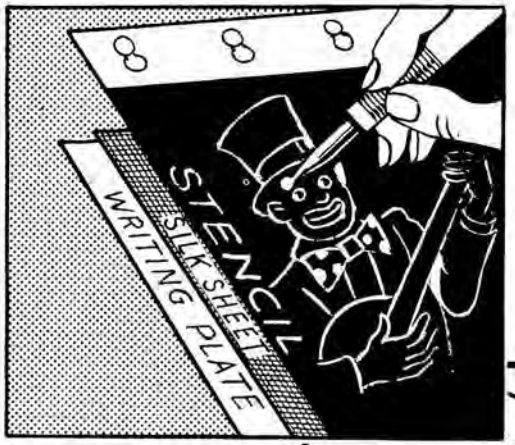
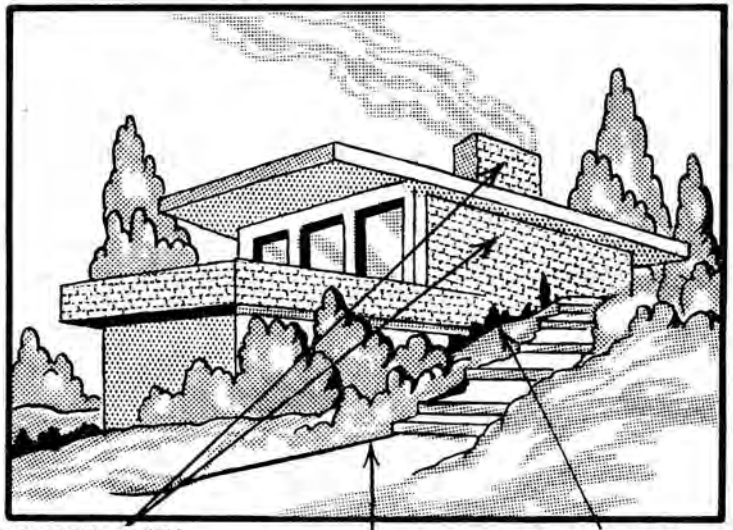


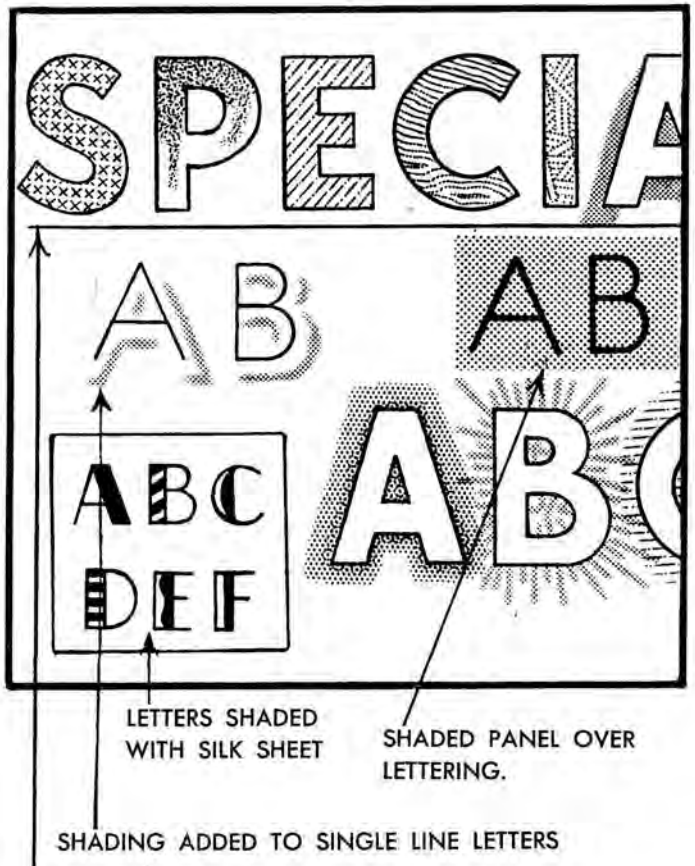
Fig. 48

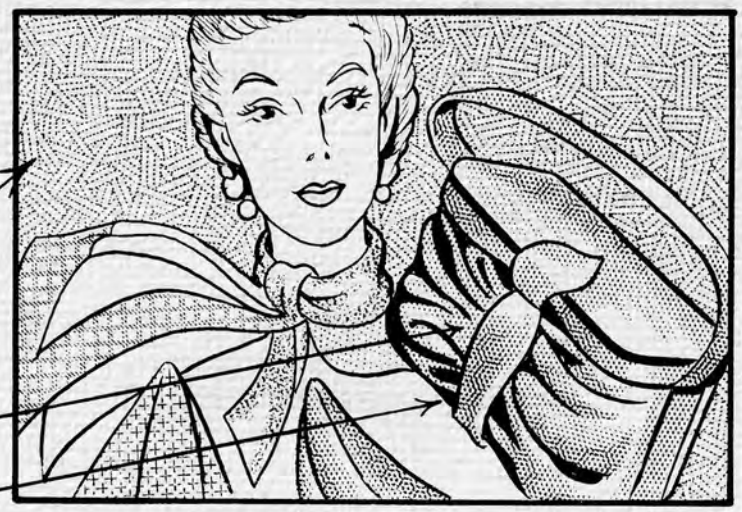
Fig. 49



Area limitations with silk sheet

It is best to limit the area shaded with the silk sheet to ⅛" in width. If too large an area is shaded in this manner, the stencil becomes weakened, and is likely to break down after a limited number of copies has been run. The example shown in *Fig. 49* indicates the maximum area which can be blackened without harm to the stencil. See page 29 for examples of how the silk sheet can be combined with other shading methods to produce attractive illustrative matter.

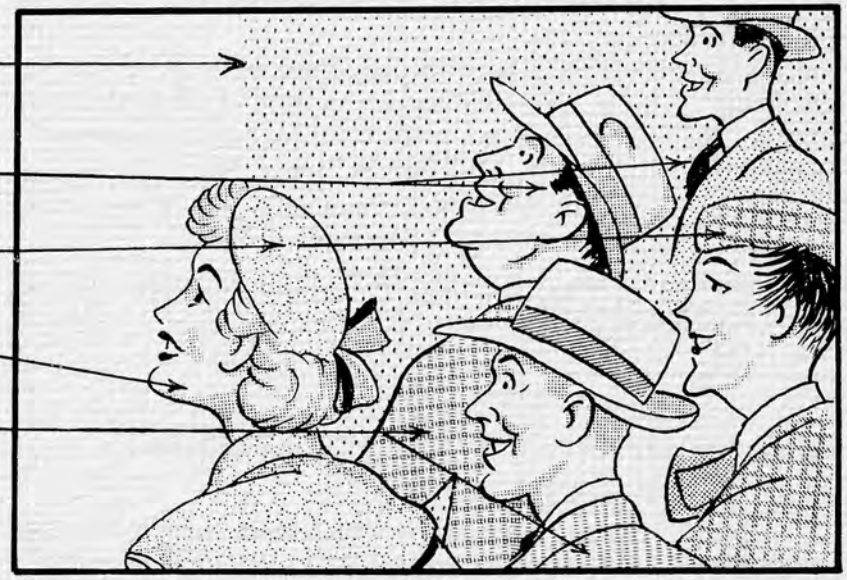




COARSE PATTERN SHADING PLATE FOR BACKGROUNDS

PLAIN DOT SHADING PLATE, USED ONCE AND TWICE OVER FOR CROSS-HATCHING RESULTS.

SOLID BLACK AREAS PRODUCED WITH SILK SHEET



COARSE PATTERNS OF SHADING PLATES— FOR BACKGROUNDS

SOLID AREAS ADDED WITH SILK SHEET.

CLOTHING PATTERNS ADDED WITH— SHADING PLATES

FINE DOT PATTERNS FOR FEATURES ADDED WITH SHADING PLATES

WHEEL SHADING STYLI EFFECTS

ALL THE OUTLINES WERE PRODUCED WITH VARIOUS SIZES OF BALL POINT STYLI.

Section Three

CARE AND CLEANING OF WRITING PLATES, SHADING PLATES AND SILK SHEETS

Writing plates

Place the writing plate on a flat surface, and wash both sides thoroughly with strong soap and warm water. Rub briskly with a stiff brush to remove the stencil coating. If this does not remove the stencil coating, use ordinary cleaners' benzine in the same manner as prescribed for soap and water. Do not use alcohol, as it will damage the writing plate.

Note: Do not allow correction fluid to spot the writing plate, as it cannot be removed without damaging the surface of the plate.

Shading plates

Use soap and warm water, as for writing plates (above). Do not use carbon tetrachloride, as this is harmful to the plastic plate.

Silk sheet

Allow the silk sheet to soak for a few minutes in ordinary cleaners' benzine in a shallow container. Remove the silk sheet and place it on a flat surface, on a sheet of absorbent paper. Then rub with a stiff bristle brush until dry.

Do not allow correction fluid to spot the silk sheet, as it cannot be removed without harming the sheet.

CAUTION: Do not use water to wash the silk sheet. Water will shrink and wrinkle it.

USES OF LETTERING GUIDES FOR HEADINGS AND SUB-HEADINGS

The use of lettering guides was mentioned earlier in connection with the preparation of paper layouts for stencil work. The instructions which follow cover the actual use of lettering guides and styli.

Place the celluloid writing plate on the scope glass, and mount the stencil over it. If a paper layout is used, it should be placed under the writing plate. When working with film stencils, the film overlay should be removed, or turned back so that the surface of the stencil is exposed.

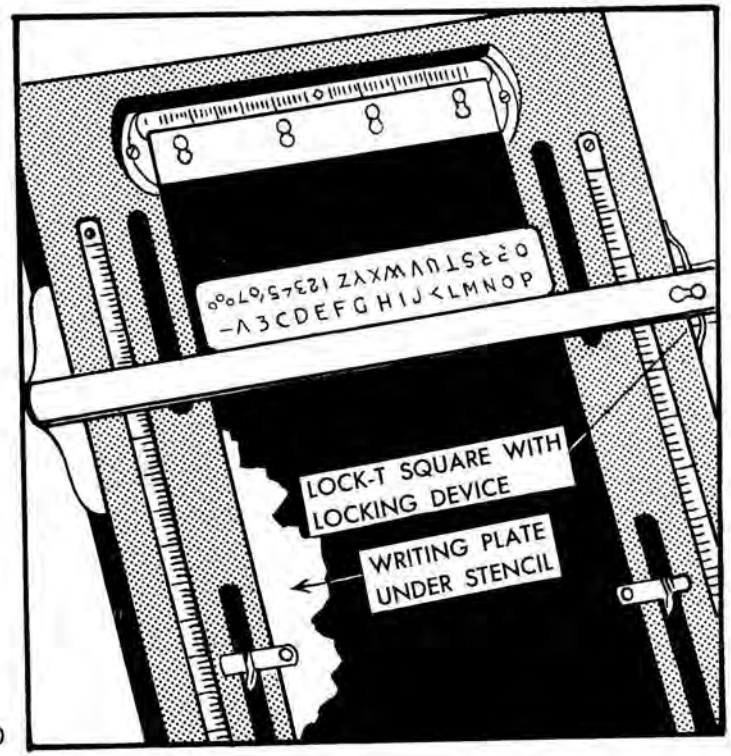


Fig. 50

Lay the selected lettering guide over the stencil, positioning it at the correct level for the first line of lettering. Bring the T-square upward until the lettering guide rests on it; then lock the T-square in place with the locking device. This procedure is illustrated in *Fig. 50.*

Choosing the proper lettering guide stylus

Two sizes of lettering guide styli, shown in *Fig. 51,* will handle almost all lettering work. The small size, No. 32, is used

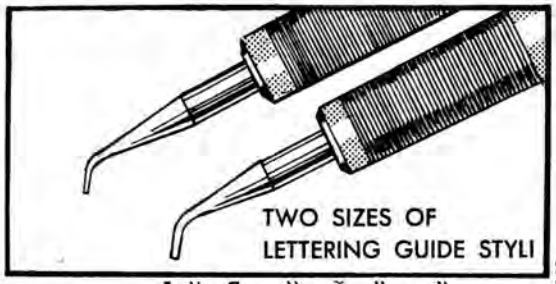


Fig. 51

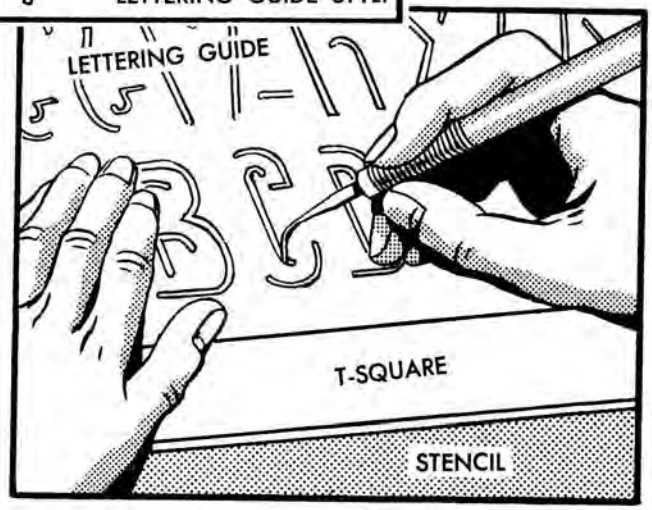


Fig. 52

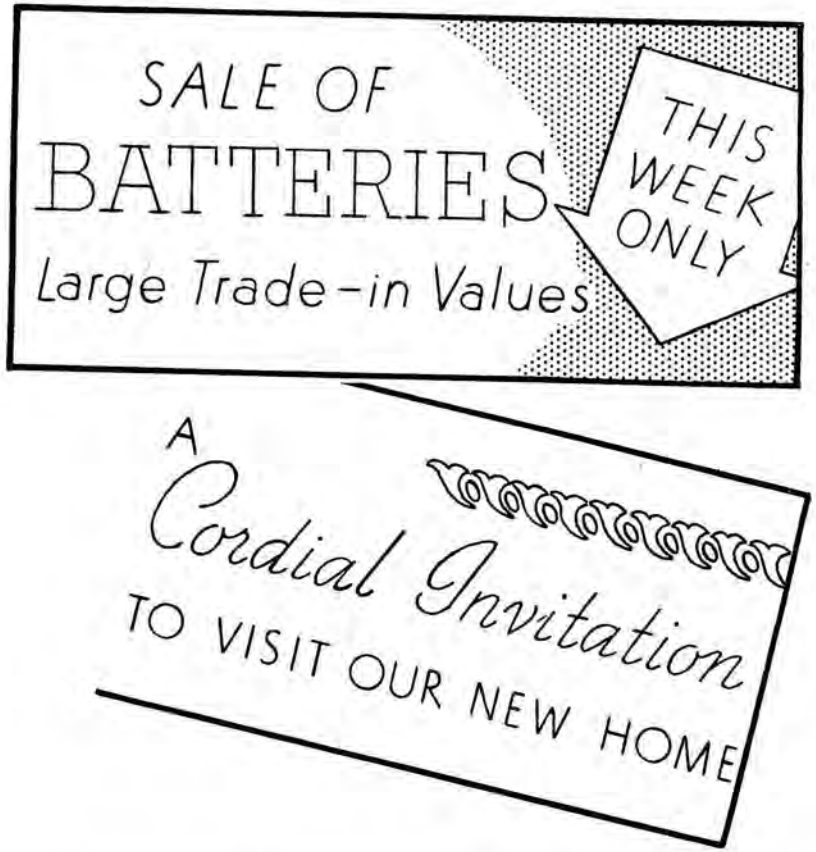
for letters up to, and including, ⅜" in height. For characters ½" or larger, the No. 33 stylus is used. When using Old English characters, the No. 32 stylus is used for sizes up to ½", and the No. 33 for Old English letters ⅝" and larger.

Tracing letters with the lettering guide

Turn on the scope light, and slide the lettering guide along the top edge of the T-square until the first letter to be traced is in its proper position. Insert the tip of the stylus into the letter opening, using light pressure and repeated strokes to trace the letter. Do not attempt to form the letter with a single heavy-pressure stroke, as this may tear the stencil. Use care in getting into the corners and serifs (the short, horizontal or vertical terminal lines on some type faces). See *Fig. 52*.

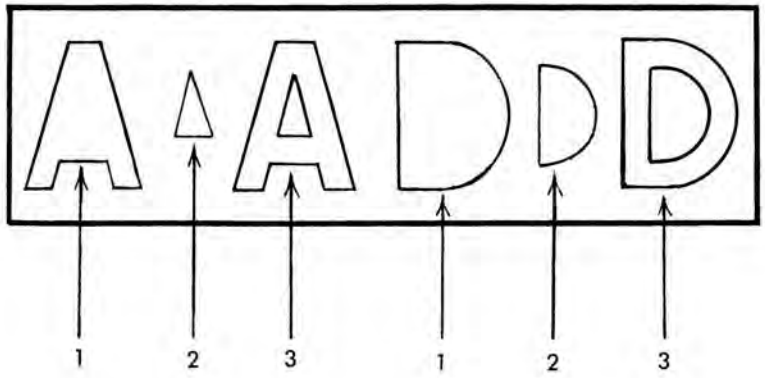
Move the lettering guide to bring the next letter into position, and repeat the process, continuing with the same procedure until the line of lettering is completed.

Below is an example of how upper case and italic letters can be combined to produce an attractive heading. Below, script lettering is used with small upper case letters. The border is produced with Design-O-Graph.



With some styles of lettering, it is necessary to move the guide twice in order to form a single letter

or numeral, as shown in the illustration below. The first part of the letter "A" (above arrow 1) is traced; then the center of the letter (above arrow 2) is moved into place and traced. The final result is shown above arrow 3. The same procedure is used for tracing the letter "D", shown in the example at the far right.

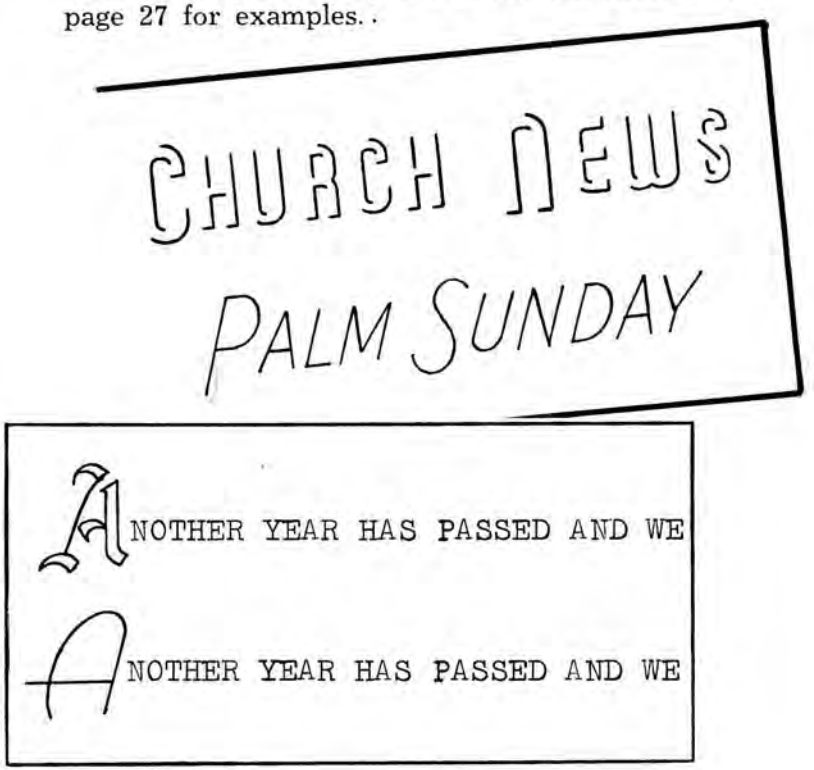


Lettering guides may be used without the T-square to form irregular lines of lettering, as shown below. The heading "SALE!!" was arranged on an angle, and a shaded background applied. The hand was produced with the Design-O-Graph.

Two sizes of the same style of lettering can be combined to produce headings, as in this example.

Large initial letters can be used with small upper case letters to start paragraphs or chapters.

Lettering guide work can be shaded or made bolder in appearance by use of the silk sheet. See page 27 for examples. .



USE OF GUIDES AND PLATES TO PRODUCE BORDERS AND OUTLINES

Plastic border plates are available for producing attractive borders of any length or shape. Some of these borders are illustrated in *Fig. 53*. Border plates are used in the same manner as the plastic shading plates. Place the border plate

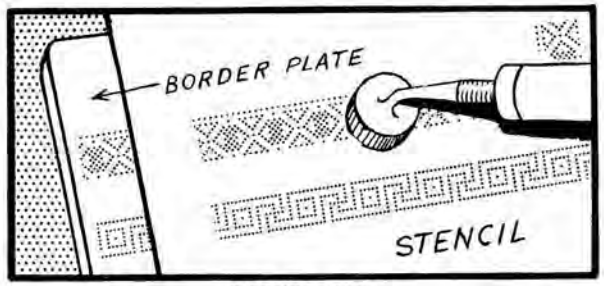


Fig. 53

ACTUAL SIZE

beneath the stencil, embossed side facing upward, and rub briskly over the design with a large-surface shading instrument. The guide or plate can be moved in any direction to extend the design.

Design-O-Guides for borders

The Design-O-Guide is used in the same manner as lettering guides to trace uniform, attractive borders on stencils, as indicated in *Fig. 54a*. A lettering guide stylus is used to trace the border openings in the guide, which can be moved in any direction to provide any length or shape border desired.

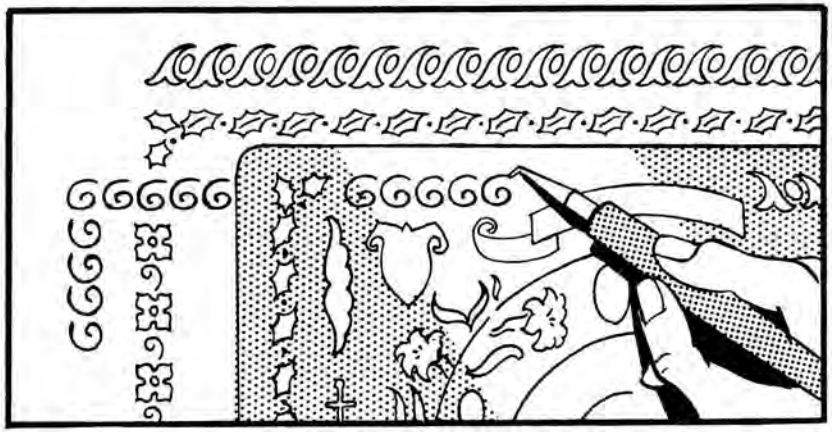


Fig. 54a

Wheel styli for borders

As illustrated in *Fig. 54b*, wheel styli can be used to produce any number of border effects. By experimenting with combinations of different types of wheel styli, many unusual designs can be developed.

Other uses for the Design-O-Guide

Many layouts call for decorative designs, such as stars, arrows and tail pieces which are difficult to apply free-hand to the stencil. These and many other novel effects can be produced with the Design-O-Guide, which is shown in its entirety in *Fig. 54c*. Examples of its use are also shown in this illustration.

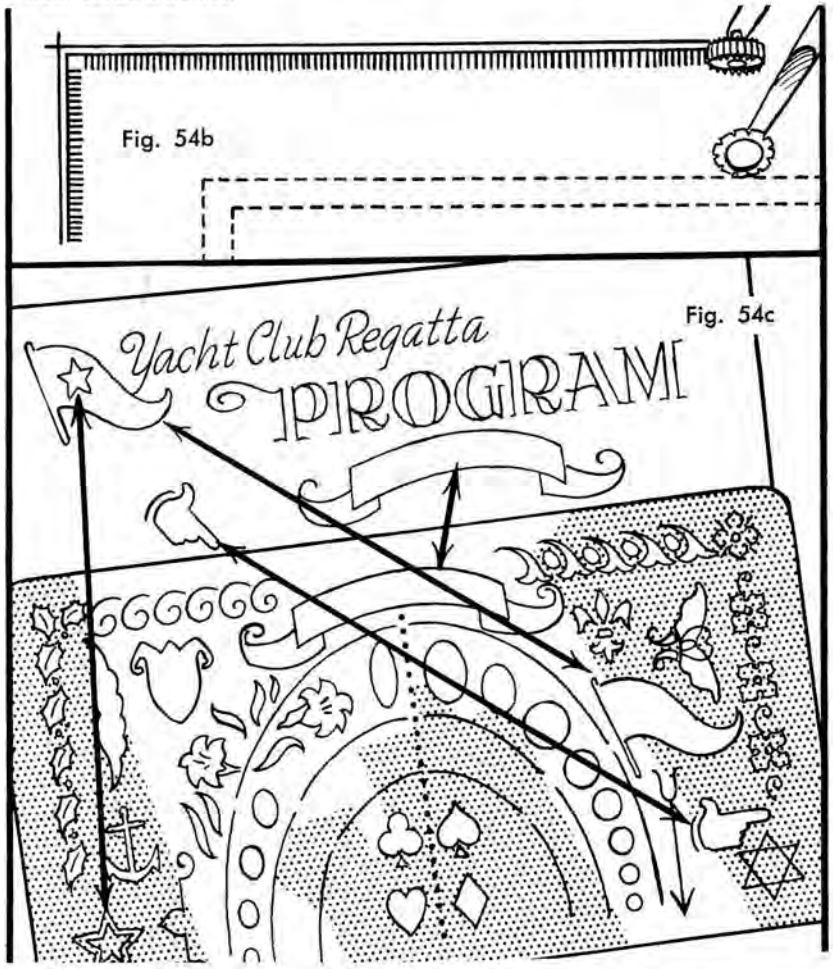


Fig. 54b

Fig. 54c

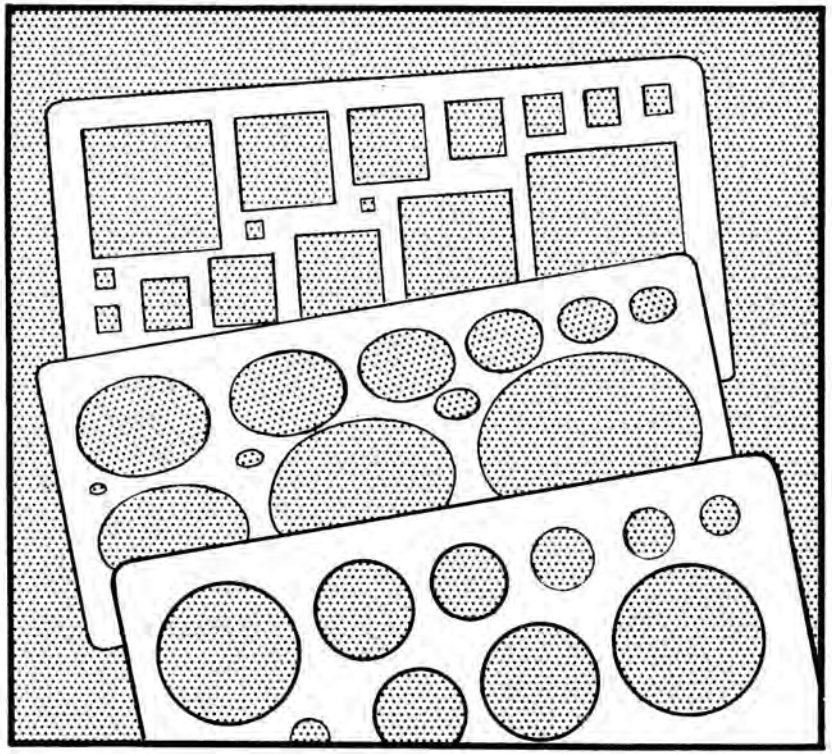
Patterns included on the Design-O-Graph include ovals of many sizes, and circles up to 7″ in diameter.

To produce squares, ovals and circles on stencils

One of the most difficult tasks in stylusing is to trace circles and ovals on the stencil free-hand. This task is made simple with special guides made for the purpose. With the use of the three guides illustrated in *Fig. 54d,* any of these forms may be drawn quickly and accurately.

With the exception of the border or shading plates, a writing plate is used beneath the stencil when tracing designs onto the stencil.

Fig. 54d



HOW TO AFFIX PHOTOGRAHIC INSETS TO STENCILS

A large variety of cartoons, illustrations and seasonal material is available in photographic stencil form, called "insets," "inserts," or "photo-insets." These require no stylus tracing, but are affixed to an opening which is cut out of the regular stencil as described below.

Insets are mechanically prepared on photographic stencils, direct from artists' drawings, and the results produced are of much higher quality than those of stylusing. They are available in pages of six to eight subjects, though some makers offer individual subjects. Insets are extremely durable on long runs, and will produce as many copies as any high-grade stencil. They can be filed indefinitely without deterioration, and may be re-affixed to other stencils when the same illustration is applicable to a change in copy.

How to affix insets to stencils

A layout should be made on paper, as described on page 18. On this layout, allow space for the desired inset or insets. (*Fig. 55.*)

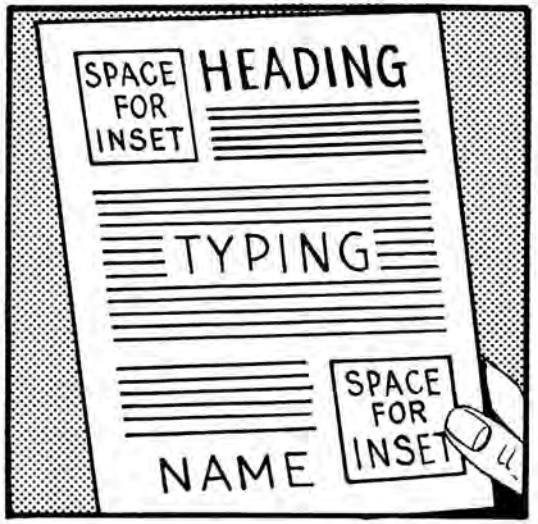


Fig. 55

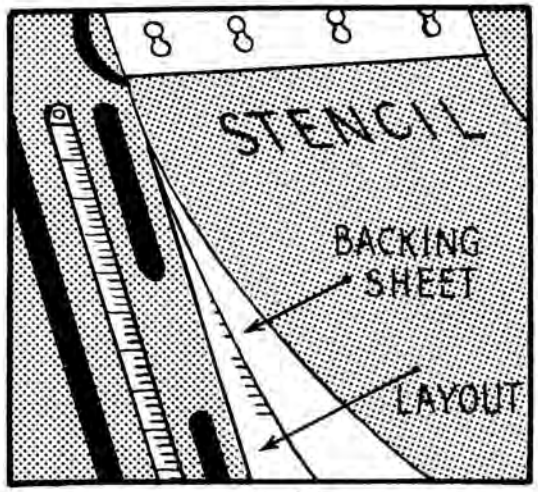


Fig. 56

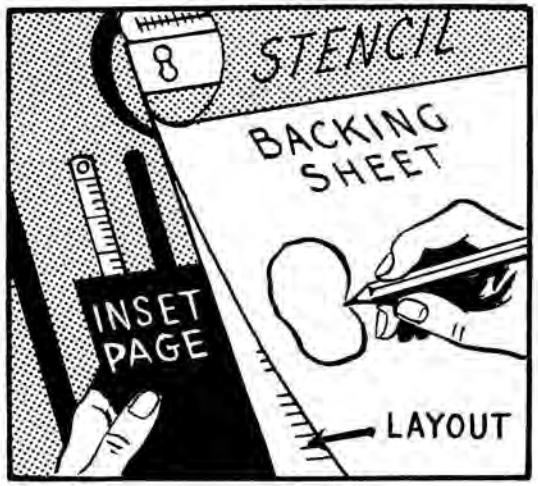


Fig. 57

Place the layout on the scope glass, and mount the stencil over it. Do not fold back the stencil backing sheet, but allow it to remain in place over the layout. See *Fig. 56*. If film stencils are used, remove the film overlay. Place the selected inset beneath the layout page in correct position as indicated by the layout. Lay the stencil back, and with a soft pencil draw an outline on the backing sheet around the inset illustration. This outline should be made ⅛″ to 3/16″ larger than the illustration. *Fig. 57* illustrates this operation.

Remove the inset and lay the stencil back in place. With a razor blade or other sharp instrument, cut an opening in the stencil to correspond with the pencil outline on the backing sheet. (*Fig. 58.*) Remove the portion cut from the stencil.

Next, cut the selected inset from the page, using a razor blade or scissors. Be sure the inset is cut at least ¼″ larger than the opening in the stencil, as it must overlap the opening all around. Now lay the cut-out inset over the stencil opening, and position it properly. Lift one-half of the inset and paint a ¼″-wide line around that part of the stencil opening with stencil cement. Then press the inset in place. Lift the other half of the inset and repeat the operation. Place that half of the inset in place, and allow to dry sufficiently. This procedure is shown in *Figs. 59 and 60*.

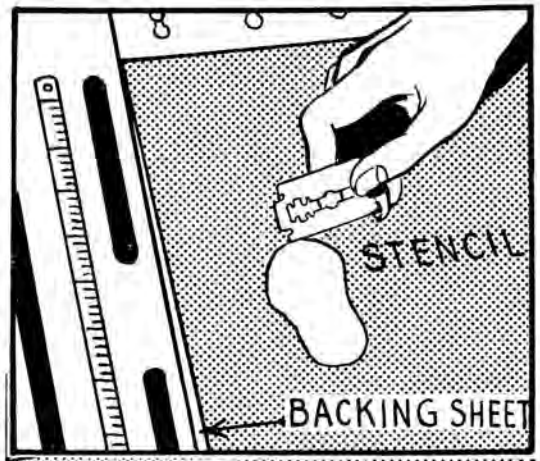


Fig. 58

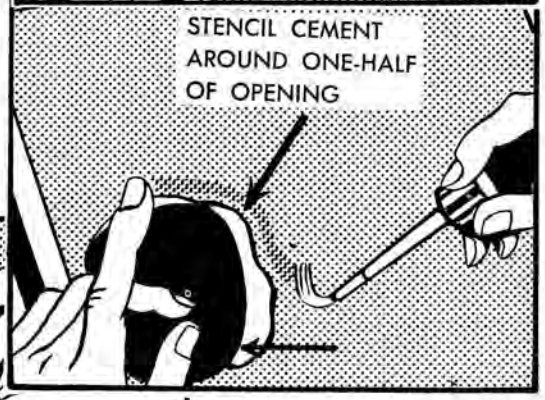


Fig. 59

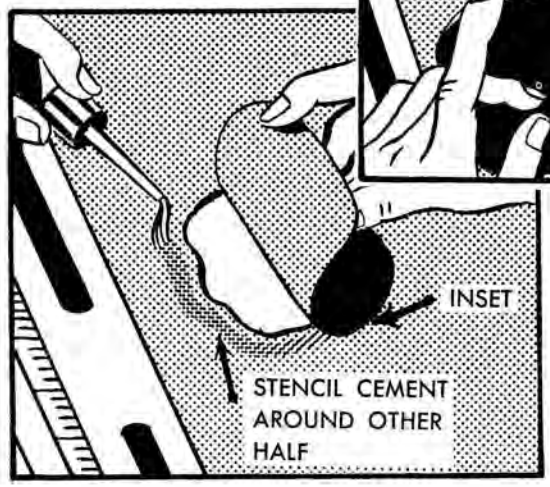


Fig. 60

Do not permit the stencil cement to touch the inset illustration or the typing on the stencil; copy or illustrations covered by the cement will not reproduce.

SECTION FOUR

THE DUPLICATING OPERATION

It is not the function of this Manual to describe the various features and functions of the duplicating machine, as these subjects are usually covered in the instruction book accompanying the equipment.

The instructions and hints which follow apply to any make of stencil duplicator, and are intended to assist the operator to get maximum service and satisfaction from the machine, and to produce clear, clean, professional-type work at all times.

INKING AND CARE OF THE INK PAD

The most common reasons for uneven, spotty stencil reproductions are lack of ink pad care, and infrequent ink pad changing.

All duplicator inks will dry out on the pad in time. If the machine is used infrequently, the ink will dry far more quickly than that on a duplicator which is in more or less constant use. When the ink dries, the pad becomes caked, and tends to clog the perforations on the drum, thus preventing a proper flow of ink. To assure best results at all times, ink pads should be replaced at least once a month. The method of replacing ink pads is shown in *Fig. 61*.

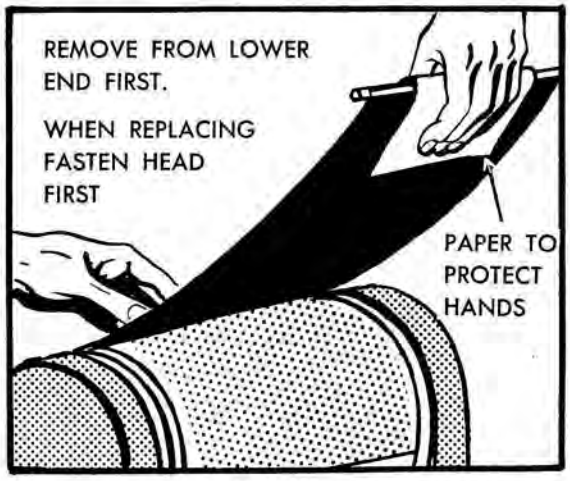


Fig. 61

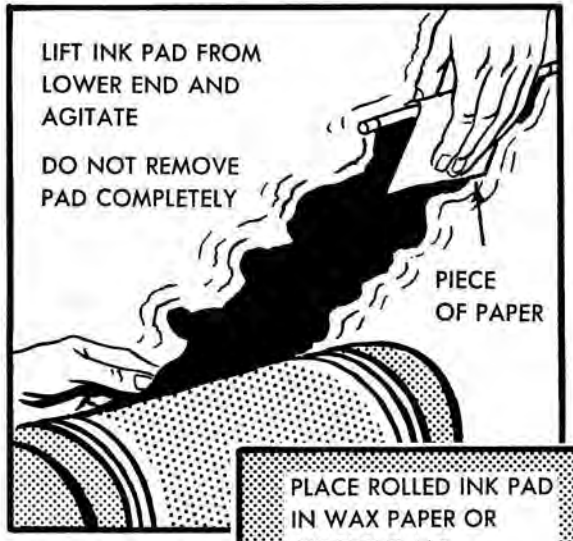


Fig. 62

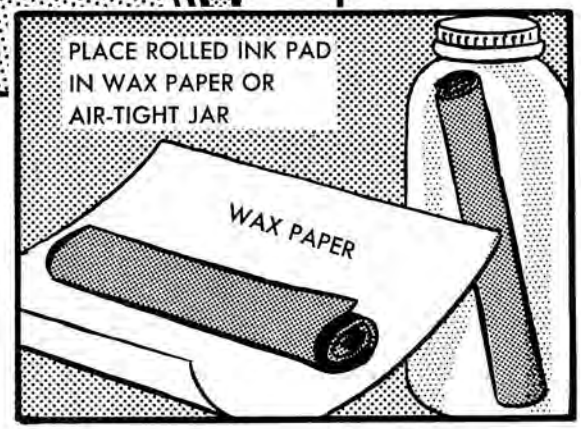


Fig. 63

Lift and agitate pad

If the machine is used only once or twice a week, the ink pad should be lifted from the cylinder, agitated and replaced on the machine before use. This can be done without soiling the hands by gripping the pad with a sheet of folded paper, as shown in *Fig. 62*. Agitating the pad in this manner keeps the perforations on the drum from becoming clogged so that the ink will flow freely and give best results.

Keep the ink pad free from oil

If the duplicator has been standing idle for several days,

there is a possibility that oil from the ink may settle on the surface of the pad. If this is not removed, the first 50 to 75 copies may not be completely sharp and clean in appearance. This condition is more pronounced when inferior grades of ink are used, but the remedy is simple. The accumulated oil can be removed from the surface of the ink pad by scraping the pad with a post card or similar piece of cardboard stock, as illustrated in *Fig. 64.*

Two or three strokes with the card, scraping the full length of the ink pad, will be sufficient to remove the surplus oil. After the stencil is placed on the drum, it might be found necessary to re-ink the pad after a few copies have been run.

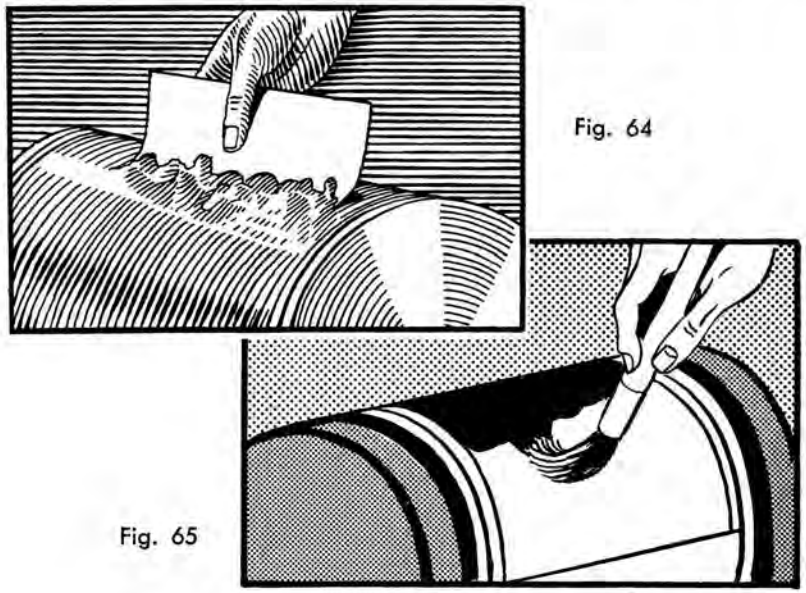


Fig. 64

Fig. 65

Inking new pads on hand brush open cylinders

On most open drum machines, the original inking of a new pad is done by applying the ink to the outside of the drum with a brush. The pad is then brushed with ink until a sufficient amount has been absorbed to give the pad a glossy appearance. (See *Fig. 65.*) The stencil is then mounted, and copies printed until re-inking is necessary. Subsequent inkings during a run do not require removal of stencil or pad.

Lock the drum in a stationary position, and fasten the punchings at the top of the stencil on the mounting hooks located on the drum. Hold the stencil and backing sheet by the two lower corners, and pull the stencil taut around the drum. (*Fig. 66.*) Tear off the backing sheet at the perforation near the top of the stencil. Examine the stencil carefully to see if any wrinkles or creases developed during the mounting operation. If so, these can be removed by pressing outward and downward with the thumbs. When all wrinkles and creases have been removed, fasten the stencil at the lower end of the drum. If the stencil is mounted correctly, the punchings at the top will be pulled flush against the mounting hooks on the drum. If this is not the case, "peel" the stencil from the drum and realign the head punchings.

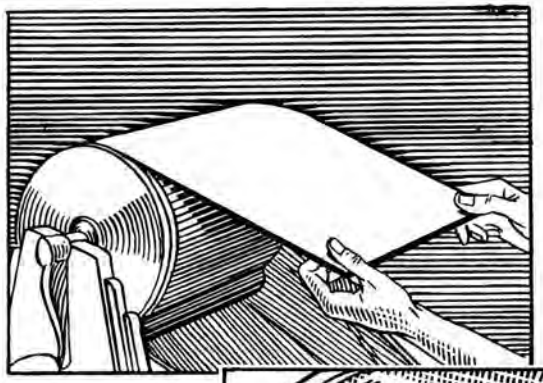


Fig. 66

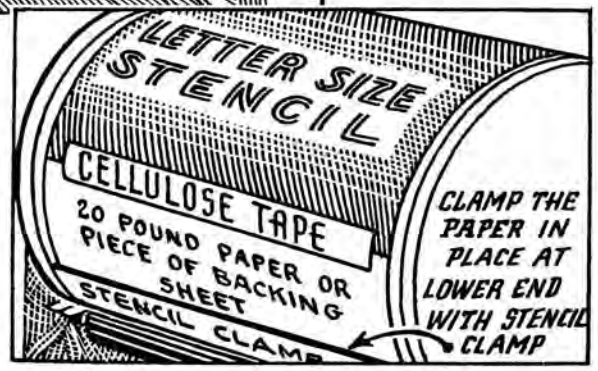


Fig. 67

Fastening letter-size stencil on legal-size cylinder

A letter-size stencil does not extend the full length of a legal-size ink pad, and unless the remaining portion of the pad is covered, it will contact the impression roller each time the cylinder revolves, and the roller will transfer a large area of ink from the pad to the impression paper.

To use a letter-size stencil on a legal-size cylinder, place a piece of 20-pound paper (the heaviest duplicator bond paper is usually 20-lb. stock.), or a piece of the interleaving sheet over the open part of the ink pad so that it extends about 3 inches under the free end of the stencil, as shown in *Fig. 67*. Clamp the piece of paper in place at the lower end, and draw the free end of the stencil down over the paper, fastening the two with cellulose tape. On long runs, it is advisable to examine the connection between the stencil and paper extension from time to time, to be sure the tape is holding properly.

TROUBLES CAUSED BY FAULTY IMPRESSION ROLLERS

The impression roller plays a highly important part in the duplicating process. No matter how perfectly the duplicator operates, or how much care has been taken with the preparation of the stencil, top-grade results cannot be obtained if the impression roller is not in first-class condition, and properly adjusted. Every impression roller will wear down in time, but a normal amount of care will help to prolong its life, and give better results.

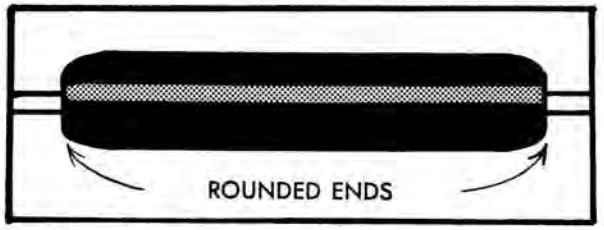


Fig. 68

Usually the ends of the impression roller will show the first signs of wear. They will become rounded, as shown in *Fig. 68*. When this occurs, the first and last characters on each line of copy typed near the marginal limitation lines, will not reproduce because of lack of contact by the impression roller at these points. If a roller in this condition is used for any length of time, the drum perforations along the margins will become clogged with ink because of the lack of contact and suction at these points. The only remedy is to replace the impression roller.

Dirty impression roller

If the impression roller is not washed occasionally, ink and paper dust will form and harden on it. For clarity, the appearance of a roller in this condition is somewhat exaggerated in *Fig. 69*. This accumulation of ink and dust will cause the copy to reproduce heavily in the center of the page, and gradually lighten toward the margins. In most cases, it will be found that the roller is not actually swollen, and can be restored to its normal shape by cleaning.

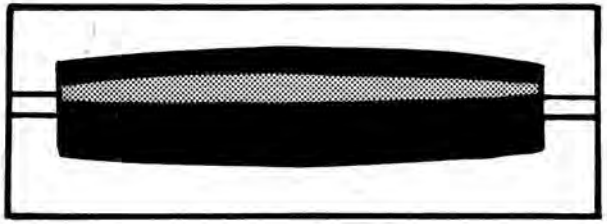


Fig. 69

How to clean the impression roller

Remove the roller from the duplicator, and wash it thoroughly with warm water and soap. If the roller is equipped with ball bearings, remove them before washing. The roller should then be dusted with powdered soapstone or talcum powder. NOTE: Never use gasoline or fluids containing oil on any rubber parts.

When impression roller is "out of round"

Impression rollers sometimes become lop-sided, or out of round, resulting in a slightly oval shape which cannot produce uniform results. Usually this condition is caused by ink which has dripped onto the roller; the oil in the ink

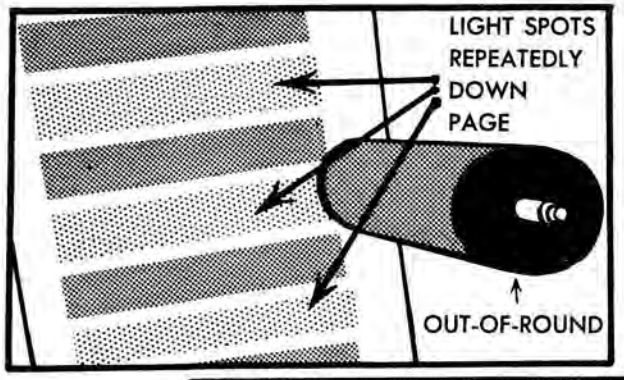


Fig. 70

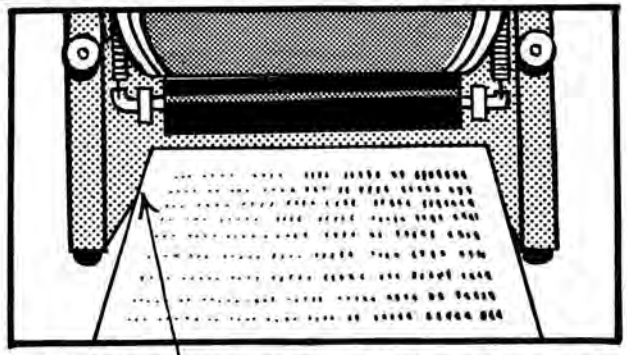


Fig. 71

can cause the roller to swell in only a few days. Copy produced with an out-of-round roller will appear as in *Fig. 70*, with repeated light and heavy copy alternating on the page. A roller in this condition must be replaced or re-ground.

Unbalanced impression roller

Too much or too little tension at either end of the impression roller will cause the copy to appear lighter on one edge of the paper than on the other. This condition is illustrated in *Fig. 71*. To adjust the impression roller properly, release the tension on both sides until the copy appears very faint throughout. Then tighten both sides, a few turns at a time, to keep tension as nearly even as possible. After each adjustment, run a few test sheets through the duplicator until the impression appears normal.

Stencil creeping as result of unbalanced impression roller

An unbalanced impression roller will cause the stencil to creep to one side of the drum, throwing the copy out of balance on the page, and causing cracks or other stencil damage. To correct this condition, release the tension of the impression roller on the side toward which the stencil is creeping. *(Fig. 72.)*

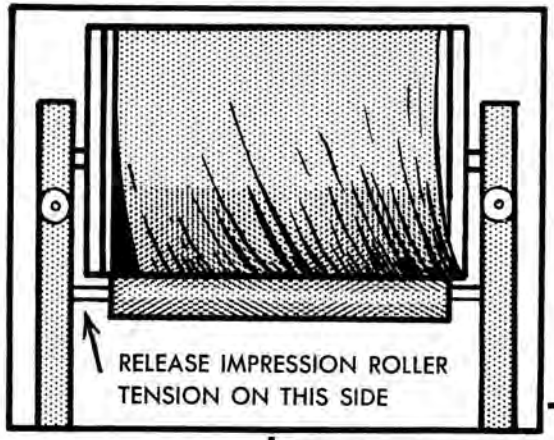


Fig. 72

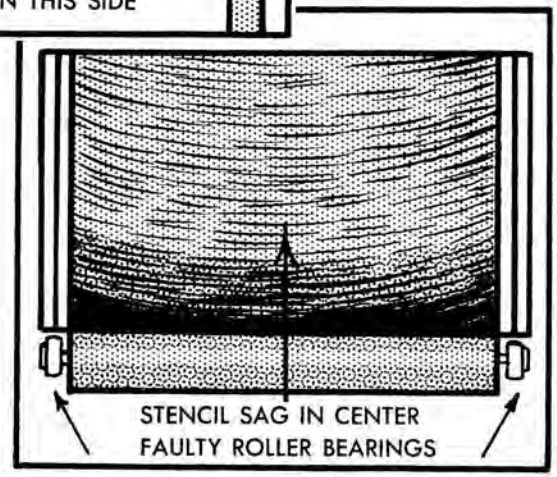


Fig. 73

Impression roller drag

If the impression roller bearings are not properly lubricated, the cylinder cannot be turned with ease, and there will be

pronounced wear on the stencil. "Dry" bearings wear down quickly, and can drag the impression roller to such an extent that the stencil will sag in the center, as illustrated in *Fig. 73.* This situation can be entirely avoided through periodic oiling or greasing of the impression roller bearings.

Avoid too much tension on impression roller

If the impression roller tension is too great, the ink pad will be forced into the perforations on the drum, and ink will not flow properly. When this occurs, abnormal wear is placed on the stencil and impression roller bearings.

Many difficulties can be avoided, and impression roller life can be prolonged if tension adjustments are held to a minimum after the proper tension has once been set.

Self-aligning impression rollers

Some stencil duplicators are equipped with self-aligning impression rollers. With such machines, only one adjustment automatically balances the tension on both sides.

INKING AND CARE OF THE DUPLICATING CYLINDER

Light areas in copy caused by depression in cylinder

Light copy areas are not always caused by faulty impression rollers (as explained previously.) A low spot or dent in the drum can also cause this condition. If examination of the impression roller reveals no irregularities, remove the ink pad and examine the drum carefully. If a depression is found, clean the affected portion thoroughly, using white gasoline or benzol. Do not use ethyl gasoline. Then, with a crochet hook or similar object, insert the hook into the perforations where the dent occurs. Carefully pull upward until the low section is even with the rest of the drum surface. *(Fig. 74.)* If this does not correct the fault, the drum should be returned to the manufacturer for repair or replacement. Note: Never use a lettering stylus for removing dents, as the stylus is not intended for such rugged duty.

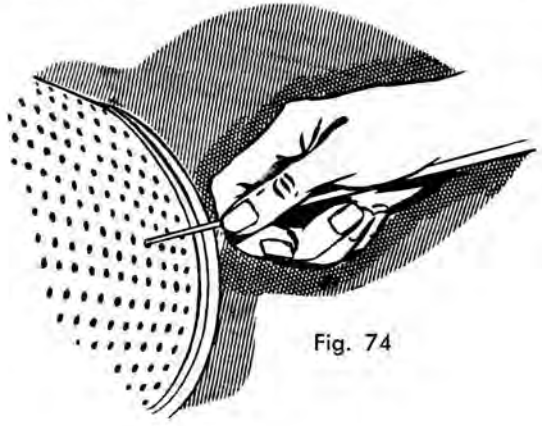


Fig. 74

Re-inking the drum

When re-inking, the ink is always applied to the inside of the drum, either directly from the can, or with a brush. As methods of inking vary somewhat among various makes of duplicators, the instruction book accompanying the machine should be consulted to determine the correct inking method, as recommended by the manufacturer. The important thing to look for when re-inking any stencil duplicator is that the entire perforated area of the cylinder receives a supply of ink.

With the brush, redistribute the ink already in the drum. Then run a test copy to determine whether or not more ink should be added. After some experience with the duplicator, the operator will be able to decide when additional ink is needed.

Over-inking will cause heavy, blurred copy, resulting in "show-through" on the paper, or pronounced offsetting of surplus ink on the back of the paper. On the other hand, under-inking will result in light and spotty copy, and the drum will require frequent re-inkings.

DUPLICATOR ADJUSTMENTS FOR POSITIONING COPY ON PAPER

Most stencil duplicators have devices for raising or lowering the copy position on the impression paper, and marginal ad-

justments to compensate for any minor mistakes in positioning the copy on the stencil. Wherever possible, of course, copy should be positioned correctly on the stencil in order to keep machine adjustments at a minimum.

If, however, copy definitely is placed off-center on the stencil, the impression paper in the duplicator feed tray must also be placed off-center so that the finished product will be properly positioned. Such placement is permissible, and is provided for on the duplicator, but there is always a possibility that the paper may jam when being ejected from the machine. Therefore it is usually best to operate the duplicator more slowly when it is necessary to feed the paper at an angle in order to correct mis-positioning of copy.

STATIC CONTROL

While in operation, all makes of stencil duplicators are affected by static electricity, which can cause the paper to adhere to the stencil, or to "float" upon ejection from the machine, and not settle in the receiving tray properly. Any of these occurrences may result in the jamming of the paper in the machine, or damage to the stencil.

Frequently, static will develop in an office or room where the humidity is low. Sometimes the trouble can be corrected merely by moving the machine to an adjoining room. Another remedy is to open a window to change the indoor atmospheric conditions.

Use of tinsel for static control

The most popular method of eliminating static is to equip the machine with a strip of metallic tinsel fastened to the machine at the impression roller, as pictured in *Fig. 75*. The tinsel should be placed so that it touches the under side of the paper as it is ejected from the machine.

Grounding of machine for static control

Another method of eliminating static is to ground the machine, as shown in *Fig. 76*. This is done by fastening one end of a wire to the back frame of the duplicator, and attaching

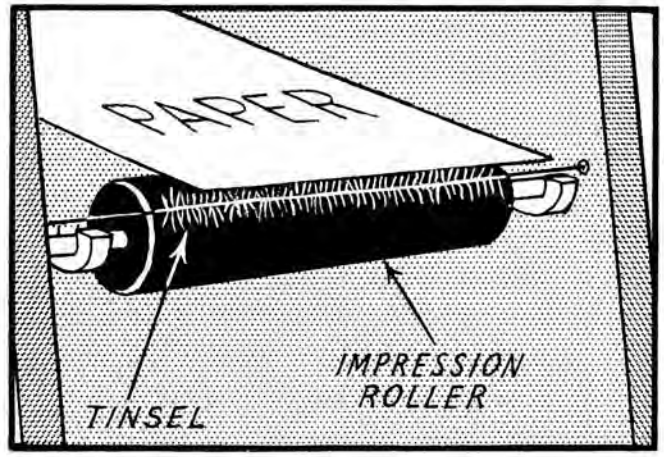


Fig. 75

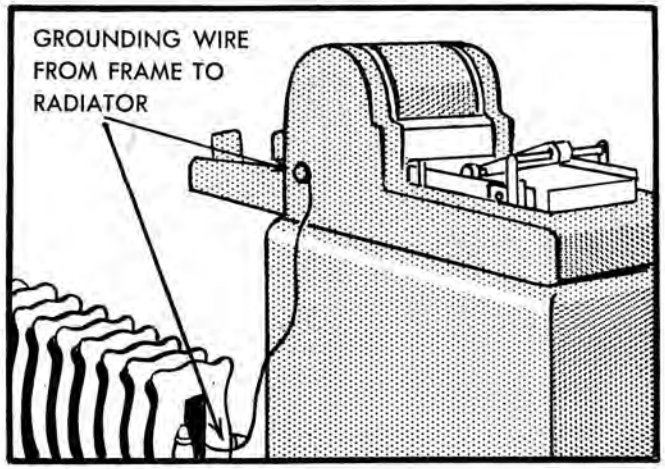


Fig. 76

the other end to a steam radiator or metal plumbing pipe.

Paper adherence and static trouble

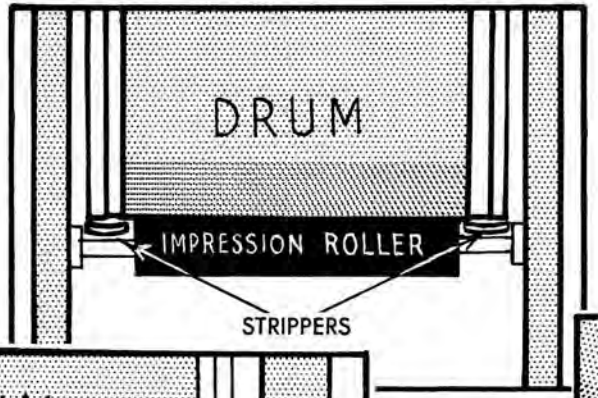
When paper adheres to the stencil, static electricity is not always to blame. Over-inking, or "tacky" stencils can cause paper adherence, as can improper positioning of strippers (next page). Feeding narrow stock from the center instead of from one side of the feed table is another cause of this difficulty.

CARE OF STRIPPERS

All drum-type rotary stencil duplicators are equipped with a paper stripper at each side of the impression roller. The normal location of these strippers is shown in *Fig. 77*. The function of the stripper is to disengage the paper from the drum and direct it into the receiving tray. Otherwise, the paper would adhere to the stencil, or tend to rise upon ejection, causing poor stacking in the receiving tray.

If paper strippers are not adjusted properly, they will obstruct the passage of paper through the machine, resulting in jamming which can damage the stencil. Usually, strippers are adjusted to a position one-quarter inch from the ends of the impression roller *(Fig. 78)*. However, this adjustment varies with each make of machine, and it is advisable to refer to the instruction book for operation and service of the specific duplicator being used.

Fig. 77



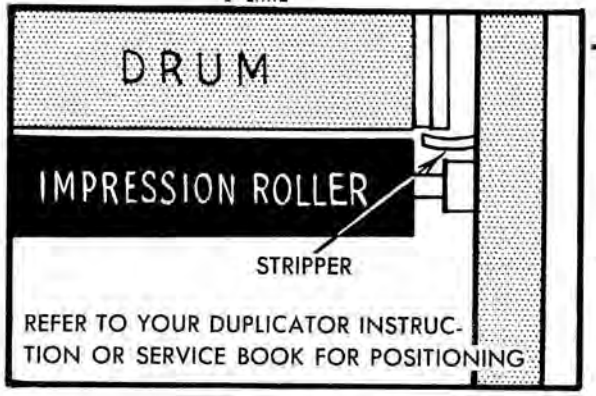


Fig. 78

Ink drippings on strippers

It is not unusual for ink drippings from the lower end of the ink pad to settle on the strippers, causing ink lines or marks to appear along the margins of the paper during printing. Should this occur, the strippers should be wiped with a cloth on both top and bottom. The impression roller should be removed before cleaning the strippers.

SLIP-SHEETING

The use of very smooth paper or card stock, or exceptionally bold typing of the stencil may cause off-setting on the reverse side of the printed sheets. Off-setting is simply the result of each sheet picking up the printed image from the preceding sheet as one lies upon the other in the receiving tray. The finished work will not be neat, and if the other side of the sheet is printed, the copy on the second run will be illegible where offset occurs.

To eliminate offset, it is necessary to place a slip-sheet or paper interleaver between the sheets of paper as they are ejected into the receiving tray. If the duplicator is not equipped with an automatic slip-sheeter, this operation may be performed by hand.

Figure 79 illustrates the method of hand slip-sheeting on manually-operated machines. The drum crank is turned

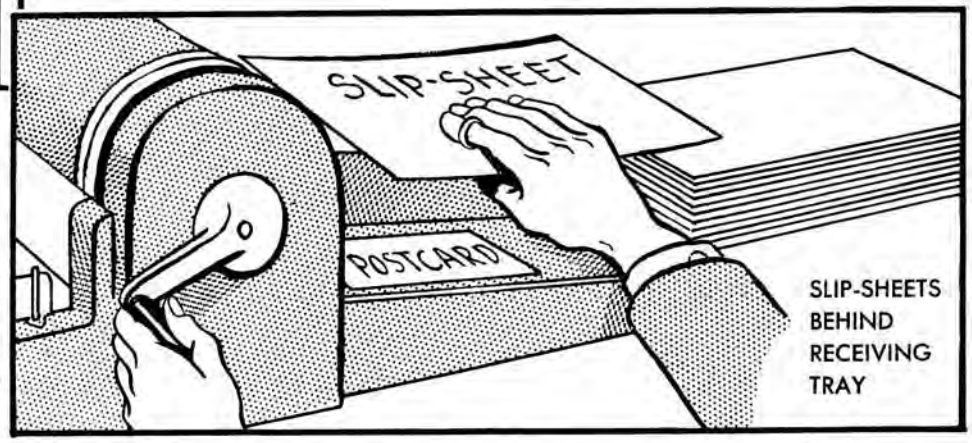


Fig. 79

with the left hand and, with the right hand, interleavers are placed on top of each sheet as it falls into the receiving tray. A rubber finger tip aids in picking up the interleavers, which should be placed directly behind the receiving tray for easy handling.

Hand slip-sheeting may be employed with electric stencil duplicators if the machine is operated at low speed.

Copies should be allowed to dry for 15 to 20 minutes before removing the interleavers. If "hard finish" stock, such as bond letterheads or postcards, are used, more time should be allowed for drying.

PRINTING ON BOTH SIDES OF THE PAPER

When printing on both sides of the paper, the stock must be sufficiently heavy and opaque to prevent copy from showing through, causing poor legibility and appearance. Standard weights of stencil duplicating paper are 16-pound and 20-pound. The 20-pound paper should be used for two-sided printing, but even with this stock the copy will show through unless the stencil is prepared with a light, sharp impression, such as that shown in *Fig. 80.*

Before preparing stencils for printing on both sides of the paper, refer to the instructions in this book for stylusing and typing the stencil, in order to produce sufficiently light copy for this purpose.

The proper selection of ink is also important when printing on both sides of the paper. Your dealer can help you to select the type of ink best qualified for this purpose.

Use of heavier paper

Special papers, suitable for stencil duplicating, and heavier than 20-pound, may be obtained through a paper distributor. It should be borne in mind that the heavier the paper, the less chance there is of show-through. If 32-pound paper or cover stock is used, stencil copy can be somewhat bolder, as indicated in *Fig. 81.*

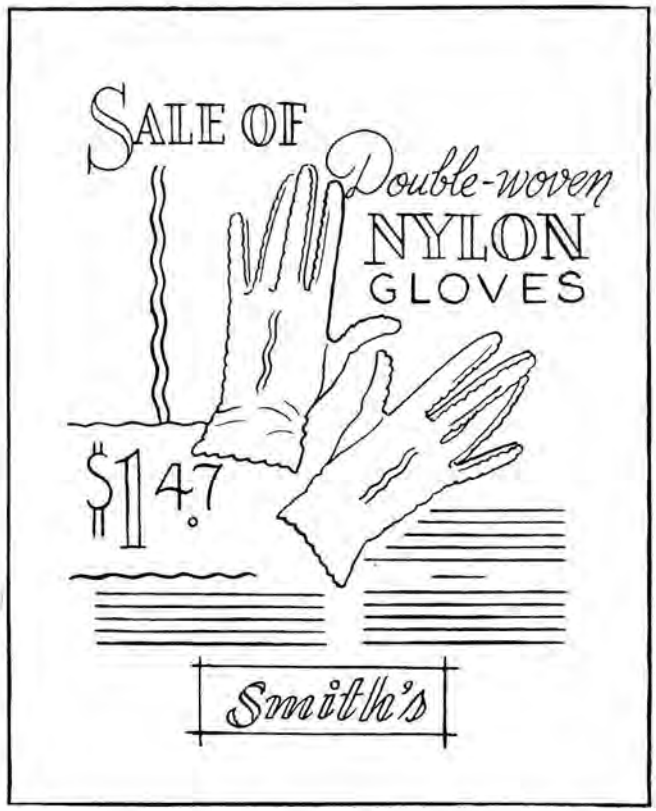


Fig. 80

ABOVE LAYOUT SHOWS LIGHT COPY FOR DUPLICATING ON 20 TO 24 LB. STOCK—BOTH SIDES OF PAPER

Slip-sheeting

Regardless of what weight paper is used, copies must be slip-sheeted to eliminate ink offset on the back of the paper.

OTHER OPERATING HINTS

To vary the density of printing

A stencil prepared for light copy can produce a heavier image if the duplicator cylinder is revolved below normal speed. However, if a poor grade of ink is used, copy will

Fig. 81

WHEN PRINTING ON BOTH SIDES OF THE PAPER, THE COPY MAY BE HEAVY, AS SHOWN ABOVE—PROVIDING EXCEPTIONALLY HEAVY OR OPAQUE STOCK IS USED

appear thick and smudgy when the cylinder is turned too slowly.

Revolving the cylinder rapidly will result in light and sharp copy, but if the stencil copy is very light reproductions may be too dim if the cylinder is turned at an abnormally high speed.

Cleaning the cylinder

No matter how often the ink pad is changed, the cylinder will accumulate considerable dust and lint from the air, and this foreign matter will eventually clog some of the perforations. This results in ink drippings which are injurious to the impression roller. To avoid this condition, the cylinders must be cleaned periodically.

On open drum machines, remove the impression roller, and then the ink pad. Using white gasoline or benzol, wipe both inside and outside of the cylinder until all perforations are free from ink *(Fig. 82)*. Note: Never use ethyl gasoline for this purpose.

Fig. 82

To clean a closed cylinder, remove it from the machine and dip the entire cylinder in white gasoline or benzol. If the machine is to be used immediately, or within a short time, replace the ink pad and re-ink; otherwise, wait until the machine is to be used.

Usually the company from which the machine was purchased can provide service by trained personnel if it is not convenient for the operator to clean the duplicator.

SECTION FIVE

COLOR APPLICATION

Color adds immeasurably to duplicator work, lending attention value, and permitting emphasis on certain portions of the message. Multiple-color work can be produced on any stencil duplicator, but different methods are required for preparing open and closed cylinders for color reproduction.

Preparing the open cylinder machine for color

Remove the black ink pad, and clean the drum thoroughly inside and out, as explained on page 44. Ink must be completely removed from the cylinder perforations *(Fig. 83)*. If any traces of the old ink remain, the new shade will be discolored.

When the cylinder is thoroughly clean, mount an unused ink pad on the drum, and ink it with the selected color. Ink the outside of the pad until it has absorbed its full capacity. The machine is then ready for use.

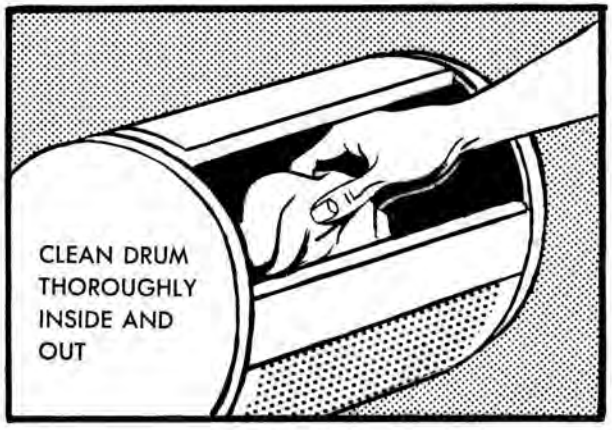


Fig. 83

Running more than one color in a single operation

It is possible to reproduce more than one color at a single run, if the stencil is carefully prepared in advance.

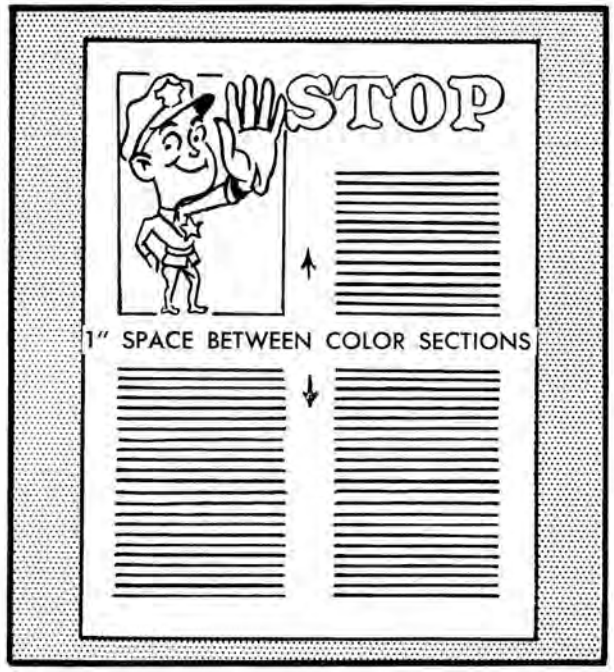


Fig. 84

A layout should be made, incorporating typing, headings and illustrations. In the layout, allow at least one inch of space between the sections allotted to different colors, as illustrated in *Fig. 84*. Each section may be outlined in colored pencils for reference, if desired.

When the stencil has been completed, lay it on a flat surface, face side upward. Using a separate brush for each color, paint the face of the stencil, being careful to stay within the space limitations indicated for each of the colors. *(Fig. 85.)*

Carefully mount the multi-color inked stencil on the unused ink pad on the cylinder of the duplicator. Do not remove the stencil backing sheet at this time; press the backing sheet onto the stencil with the open hands. Rub from the head of the stencil downward. Now remove the stencil and backing sheet. An image of the various colors will have been transferred to the ink pad, as pictured in *Fig. 86*. This image will now serve as a guide for completing the inking

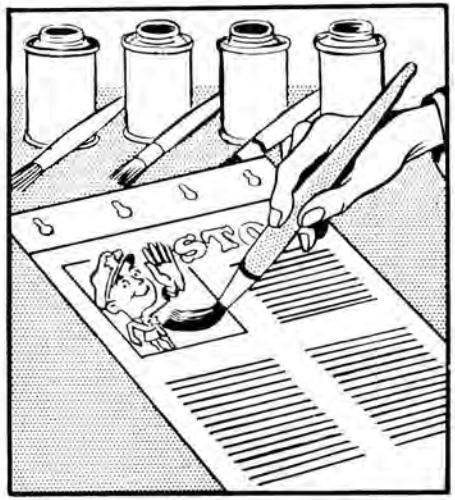


Fig. 85

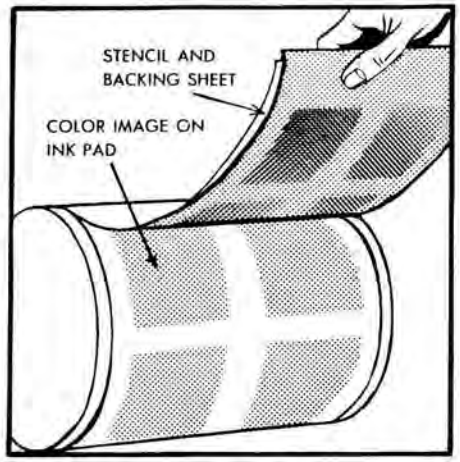


Fig. 86

of the pad. Each color should be applied with a brush to its respective section, using care so colors will not run together.

When the ink pad has been properly inked, remount the stencil, and remove the backing sheet. Be sure the stencil is mounted evenly, without wrinkles or air bubbles. Print a few copies to check for proper inking. If additional ink is required, re-ink from the inside of the drum. The color separations will be easily visible through the perforations in the drum, so that locating each color area will be no problem. Whenever re-inking is required during the run, apply the ink carefully so that colors will not "bleed" beyond their area limitations. Re-inking should always be done on the inside of the drum throughout the color run.

Because of the absorbent qualities of the ink pad, colors will eventually merge on the pad, particularly if the run is excessively long. This does not necessarily mean that the work must be halted, and a new ink pad prepared. Many times pleasing color combinations will result from this merging of colors. Red and green inks will produce a brown hue when they merge; blue and yellow will produce a purple tone, etc.

Short color runs in single operation

Follow the same procedure as described above. It is not necessary to clean cylinders. Remove ink pad and place a cylinder cover over the drum. Then place a new ink pad over cylinder cover and ink outer surface of pad. For re-inking lift stencil and apply ink to outside of pad.

Producing more than one color in separate operations (Open drum machines)

When it is desirable to place colors close together on a layout, it will be necessary to make separate printings for each color. This, of course, requires a separate stencil for each color used. No attempt should be made to place color sections closer than ¼ inch; otherwise, the slightest variance in positioning will cause the colors to overlap.

In order to position the copy on the stencils accurately, a layout must be prepared (see page 18). with each color clearly indicated. This layout should be firmly fastened to the scope glass with cellulose tape, and must not be moved until stencils for each color have been prepared. IMPORTANT: The layout paper should be positioned under the stencil with the top edge of the sheet aligned with the stencil heading reading: "Top Edge Guide for Impression Paper,"

or "Paper Guide Line." (See *Fig. 87.*) Carefully stylus the lettering or parts of the illustration to be printed in the first color. Remove the stencil, mount a new one on the scope, and repeat the process for each color being used.

If each stencil is mounted carefully on the scope, and stylusing is painstakingly done, color will register very closely on the finished copies.

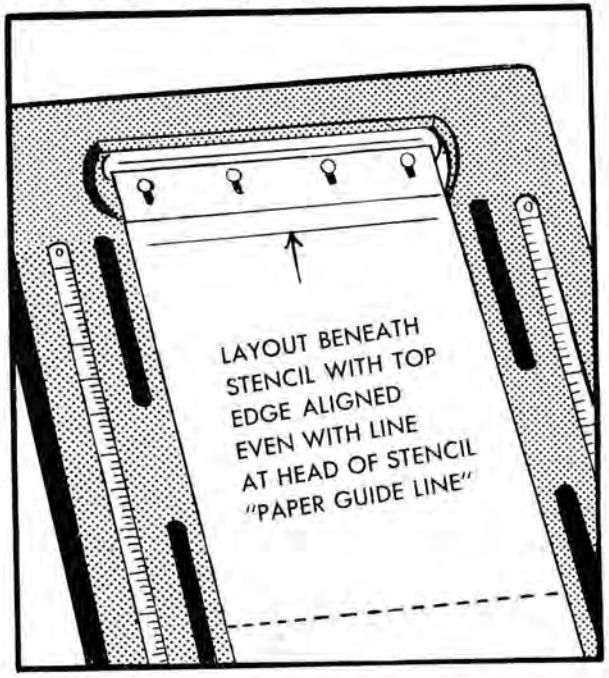


Fig. 87

Inking the drum for separate color runs

The drum must be cleaned thoroughly, and the ink pad changed, after each color run. Inking for the next color is then done on the usual manner for open drums: first, ink the outside of the pad, and then re-ink from the inside of the drum.

Registering the colors properly when printing

When printing the first color, the third or fourth copy should be matched with the original layout to check for proper positioning on the paper. Place the printed copy over the layout so that the top corners of both sheets exactly meet. Then hold the printed copy and layout to the light, as in *Fig. 88.* Follow this procedure with each color, after a few copies have run through the machine.

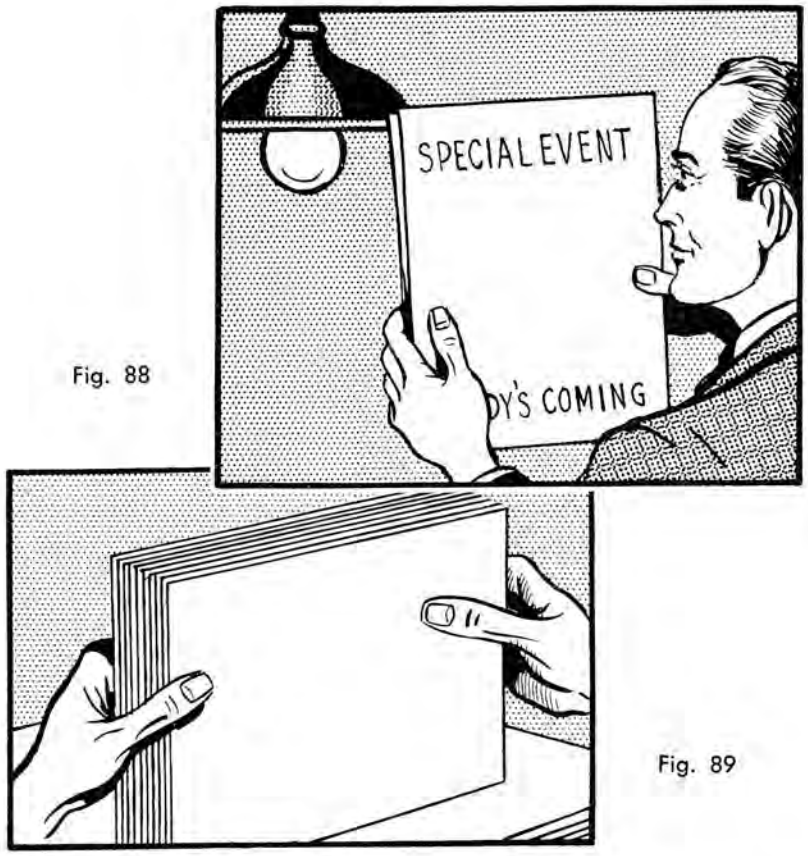


Fig. 88

Fig. 89

If the copy is found to be slightly out of position on the paper, adjust the machine by using the raising or lowering device on the feed table, or by moving the stack of paper slightly to one side on the feed table. In any multiple-color work, it is well to run several more copies than are actually needed, so that enough will be on hand for checking color register and making adjustments.

Most stencil duplicators are equipped with a mechanism for producing exact registration of the copy on the paper, sheet after sheet, without variance. With such machines, there is little difficulty in properly matching colors when printing. To enable the duplicator to deliver top performance in this respect, stack the printed copies for re-runs as carefully and evenly as possible, as shown in *Fig. 89*. If paper is not stacked in this manner, it cannot feed uniformly and color registration cannot be precise.

If the duplicator in use does not provide for exact registration, place the stacks of paper on the feed table in exactly the same position for each loading. *(Fig. 90.)* On electrically operated machines, maintain a medium speed throughout the entire run of all colors.

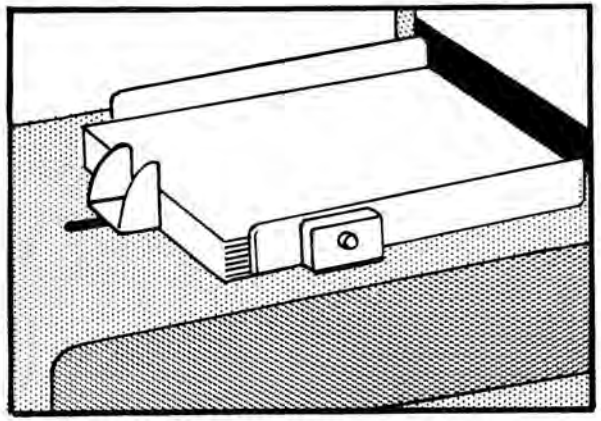


Fig. 90

How to make short color runs in separate operations

If only a limited number of copies is required, it is not necessary to clean the duplicator drum for each color. If the run is less than 200 copies, the drum may be prepared as follows:

Remove the black ink pad and mount a cylinder cover over the perforated drum. Cut off a strip at the top of the cylinder cover to remove the 4-hole punching. This permits an ink pad to be mounted over it. Now mount an unused ink pad over the cylinder cover, and ink the pad. When color changes are made, merely replace the ink pad and cylinder cover. *See Fig. 91.*

With this method, the ink is not applied from the inside of the drum, but from the outside. When re-inking is necessary, lift the stencil carefully, and apply the ink to the outside of the pad with a brush. *(Fig. 92.)* Re-inking should be done about every 50 to 100 copies, depending upon the boldness of the copy.

While this method requires inking more frequently, and the stencil must be lifted each time, it is entirely practical for short runs.

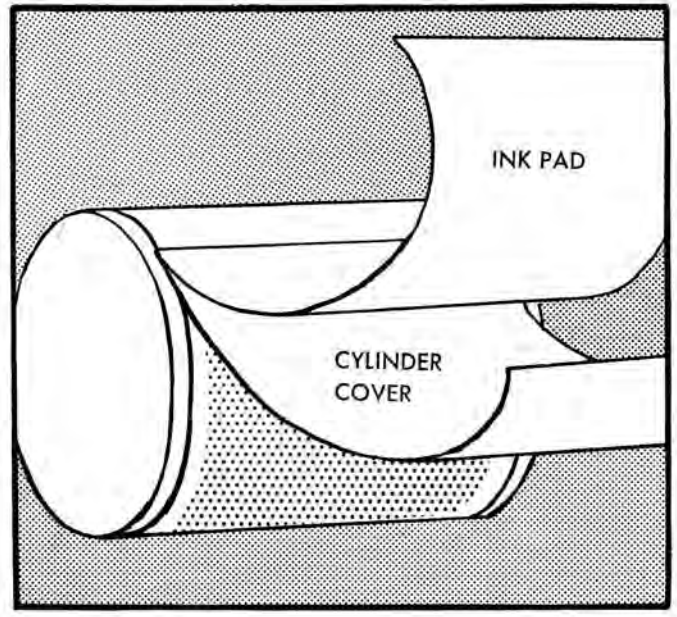


Fig. 91

Separate drums for color

Some users of open drum machines purchase extra drums, using a different one for each color. This makes it unnecessary to change ink pads or clean the drums between color runs, as the drum itself is changed when a different color is to be run. Where a great deal of color work is done, a drum for each color is by far the most efficient, clean and fast method. *See Fig. 93.*

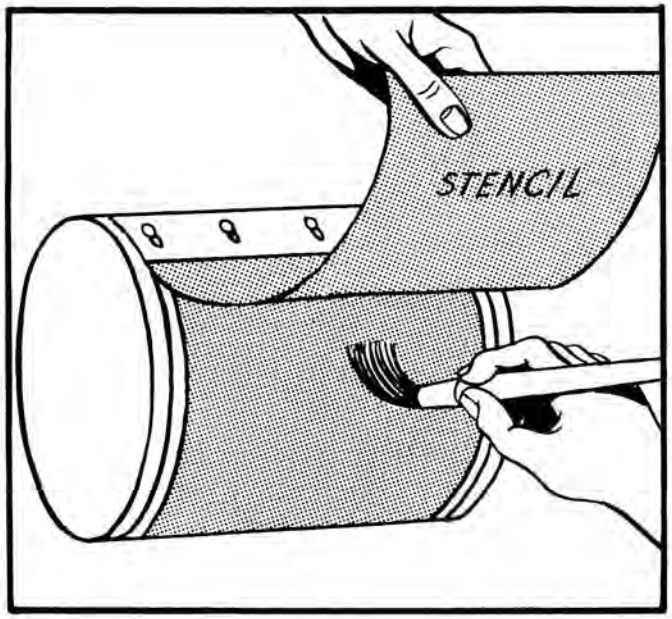


Fig. 92

Preparing closed drums for color

Closed drums cannot be cleaned as quickly and easily as the open type; therefore, on closed drum machines, it is best to use a separate drum for each color. This eliminates the need for drum cleaning or ink pad replacement and, on most duplicators, drums can be changed in a few moments. If separate drums are used, it is advisable to standardize on one or two colors. The cost of closed drums is a substantial portion of the complete price of the machine. Hence, for the sake of economy, it is best to limit the number of colors used.

How a single closed drum may be used for color

There are two methods by which a single closed drum may be used for multiple colors. While both methods are somewhat more complicated than the use of separate drums, they are entirely feasible for certain types of color work, and add little to the cost.

Method No. 1

Remove the ink pad and replace it with a cylinder cover. Then mount an unused ink pad over the cylinder cover, and ink the pad from the outside. To re-ink, carefully lift the stencil and ink from the outside. This method is similar to that for making short runs on an open drum machine, and is clearly illustrated in *Figs. 91 and 92.*

Method No. 2

This procedure applies only when small sections of the copy, such as signatures, small illustrations or a limited amount of lettering, are to be printed in color.

Mount a cylinder cover over the black ink pad in the same manner as a stencil is mounted. *See Fig. 94.* Next, cut a section from an unused ink pad, approximately an inch longer and wider than the area to be printed in color. Place this section of ink pad on paper or a file folder and paint it with the desired color of ink until it will absorb no more. *(Fig. 95.)* Then place the inked section on top of the cylinder cover in the correct position to correspond with the portion of the stencil to be reproduced in color, as in *Fig. 96.*

Mount the stencil carefully so that the inked section does not change position. Under normal operating conditions, the inked section will remain in place during the run. To re-ink, lift the stencil, and apply ink to the ink pad section with a brush. When the run is completed, remove the ink pad section, which may be filed in wax paper wrappings for future use, or discarded. To return to black inking, simply remove the cylinder cover.

It should be noted that the methods of producing more than one color in a single operation, or separate operations, are basically the same for closed drum duplicators as for open drum models. The only difference is that, when using a single drum, ink is applied to the outside of the closed drum at all times, rather than to the inside, as with some of the open drum methods.

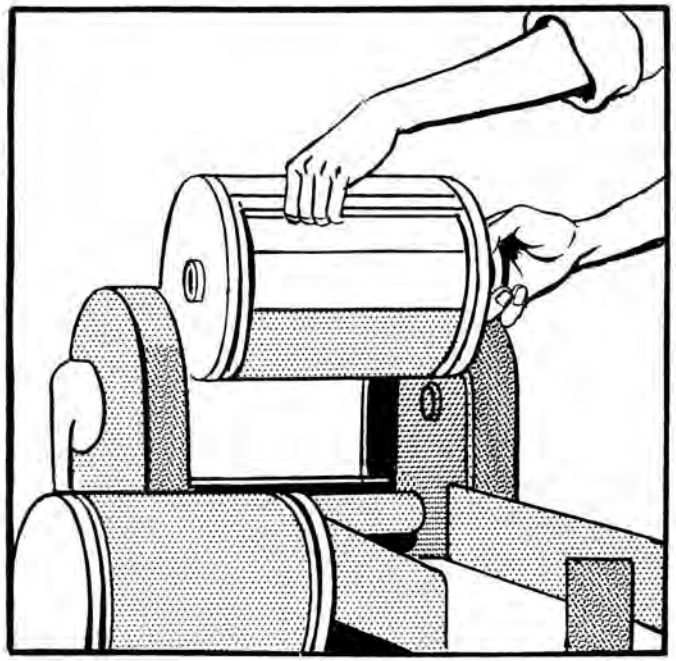


Fig. 93

Hints for selecting proper paper-and-ink color combinations

Pleasing effects can be produced by using color inks with duplicator paper of the same color, but a lighter shade. The results are a softness of color tone, and legibility is not reduced.

A few such color combinations are these: red ink on pink paper; blue on light blue paper; brown on buff or yellow paper; green on light green paper.

Other unusual effects can be obtained by using ink colors that contrast with the color of the paper. In most cases, however, inks are less brilliant when used in this manner, but because they change in hue, a variety of effects can be produced. Thus, red ink when used on blue paper becomes maroon; green ink on pink paper becomes more brown; blue on buff or yellow becomes green.

Yellow inks are availabe, but because of their light shade, should never be used except for backgrounds, borders or decorative pieces. Yellow ink does not have sufficient strength to give legibility to headings, typing, illustrations or other subject matter to be emphasized. It is best to use yellow ink only on white paper.

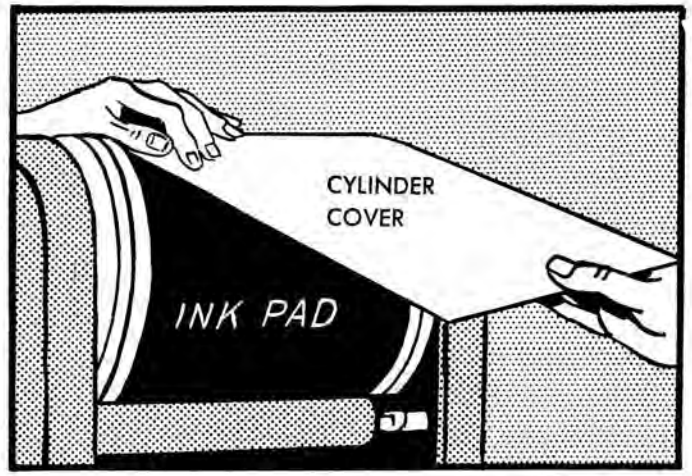


Fig. 94

Fig. 95

Use of white toner (White ink)

Stencil duplicator inks are available in several standard colors, but an unlimited range of shades is available through the use of white toner. Colored inks are made lighter in tone simply by adding and mixing white toner until the desired shade is obtained. Any shade of grey can be produced by adding white toner to black ink. Note: Do not attempt to darken colored inks with black ink. The resulting color will be dull and "dead" in appearance.

Inks lightened with white toner are particularly attractive as background effects when the foreground is printed in black or a dark color.

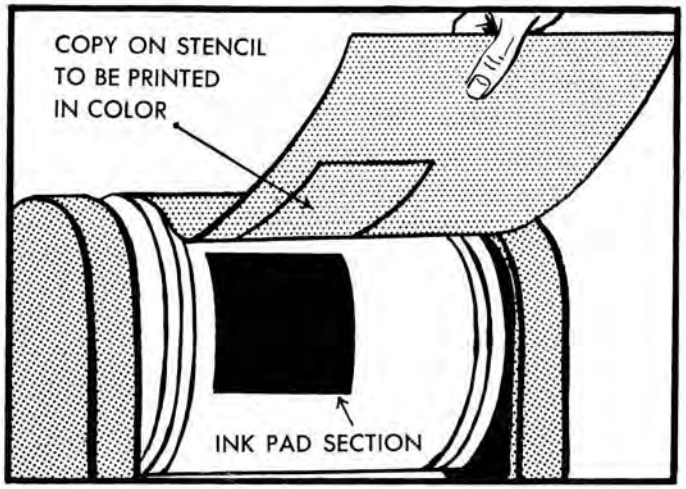


Fig. 96

White toner may be used alone for printing in white on black paper, or paper of extremely dark color. For this purpose, the stencil should be prepared with exceptionally heavy typing and stylusing, and the cylinder should be turned slowly during the duplicating process.

SECTION SIX

STENCIL CARE AND FILING METHODS

A good quality duplicating stencil will reproduce thousands of copies at a single run if given nominal care. Similarly, a stencil can be used for re-runs almost indefinitely if a few simple protective measures are taken. The hints given below will actually save money for the user by prolonging the life of the stencils and increasing their usefulness.

HOW TO ASSURE MAXIMUM STENCIL DURABILITY

Removing paper dust and lint to facilitate long runs

If several thousand copies are to be reproduced from a single stencil, it will be necessary to wash the stencil at intervals of 1500 to 2000 impressions. The nature of stencil duplicating paper is such that tiny bits of lint are freed from the paper and adhere to the face of the stencil. The quality of the paper determines the frequency with which this lint should be washed from the stencil. Many times stencils are discarded before the run is completed because poor reproduction gives the impression that the stencil has broken down, whereas the trouble can easily be corrected by washing.

Washing the stencil

To wash the stencil, it is not necessary to remove it from the machine. Saturate a piece of cotton with stencil cleaning fluid, and wipe the stencil carefully, starting at the head and wiping downward and outward, as in *Fig. 97*.

After washing, feed a few pieces of paper through the machine as slowly as possible to remove the liquid. It may be necessary to lead the first two or three sheets off the drum by hand. After feeding a few sheets in this manner, the normal machine speed can be resumed.

Mending cracks or other stencil damage

When paper jams in the duplicator, small cracks or other damage sometimes occur in the stencil. These can be corrected with stencil cement, which is applied to the damaged

Fig. 97

Fig. 98

portion of the stencil and allowed to dry thoroughly before resuming the run. Unless the stencil cement is completely dry, the paper will adhere to the stencil and might cause further damage. If the stencil is damaged in an area where copy appears, it usually cannot be corrected, as the stencil cement seals the openings in the stencil, thereby "erasing" the copy at that point.

Larger tears in the stencil can sometimes be patched with cellulose tape, or masking tape which adheres somewhat better. However, where tape is used, care must be taken that it is not placed too close to copy; otherwise, the copy will not reproduce at that point.

Correction fluid for pin-holes

Pin holes and small scratches on the stencil can be painted out with correction fluid. *(Fig. 98.)* This dries very rapidly, and the run can be resumed a moment or two after the correction has been made.

Preserving stencils for future use

It is of utmost importance that stencils be carefully washed before they are filed for future re-runs. If the ink is not completely removed from the stencil, it will dry and harden in the typewritten or stylus copy, thus effectively preventing the ink from passing through the image on re-runs. Furthermore, unless all ink has been removed from the stencil before it is filed away, the damp ink will adhere to the file holder or file book. When this dries, it is virtually impossible to remove the stencil without tearing.

If the stencil is not properly treated before filing, it loses its original moisture and becomes too dry to contact the ink pad sufficiently for sharp re-runs.

The few simple precautions given below will preserve stencils indefinitely, permitting any number of re-runs, each as sharp and clear as the original run.

Washing the stencil

Previous to filing the stencil, it is necessary to wash it with stencil cleaning fluid. Lay the stencil flat on newspaper or special blotter, ink side facing upward. Saturate a piece of cotton with stencil cleaning fluid, and wipe the inked side of the stencil from the center outward. *See Fig. 99.* Use care not to damage typing or stylusing. Blot the stencil with the file blotter to remove ink and fluid. Repeat the process on the reverse side of the stencil to remove ink and paper lint. In addition to serving as a cleansing agent, the cleaning fluid helps to retain the original moisture of the stencil.

Certain types of ink can be removed from the stencil merely by blotting repeatedly in file blotters, rather than by washing. This is not the safest method, however.

After washing, the stencil is ready for filing.

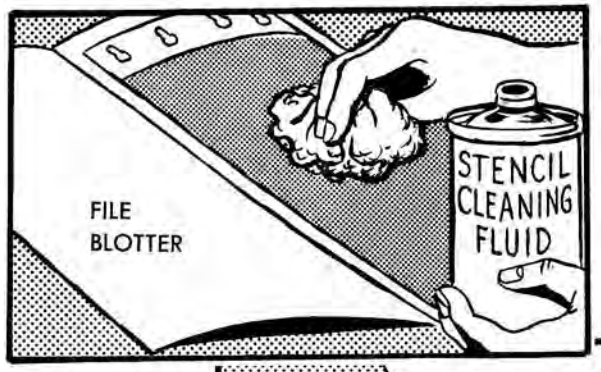


Fig. 99

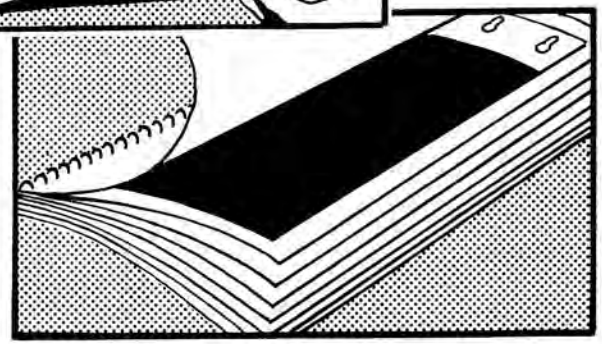


Fig. 100

Stencil file books

Stencil file books, accommodating 50 stencils, provide an inexpensive way to preserve stencils for future re-runs. The file pages are numbered, and an index at the front of the book provides easy selection of the desired stencil. The file books can be stored more conveniently than individual file folders, and provide more protection to the stencils. Before filing in the book, stencils should be washed or blotted thoroughly. A typical stencil file book is shown in *Fig. 100.*

Stencil file cabinets

By far the most convenient and safe method of filing stencils is a stencil file cabinet, as shown in *Fig. 101.* The stencils are placed on special hangers in the cabinet, which is kept closed when not in use to minimize evaporation. Neither file folders nor contacting paper are necessary when using the cabinet. Thus, there is no danger from paper adherence or stencil drying from paper contact. Stencils are indexed for easy reference.

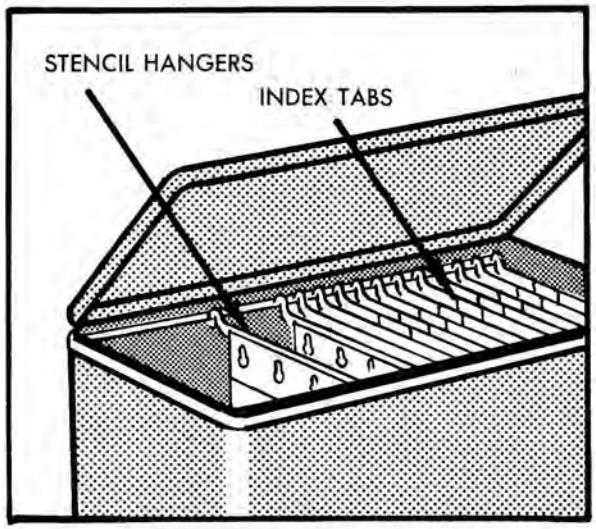


Fig. 101

As with other methods of storage, the stencils should be washed or blotted thoroughly before they are placed in the cabinet.

Stencil file cabinets have an average capacity of 200 stencils, and require little space. They are sturdily constructed, usually of steel, and are generally painted to harmonize with other office equipment.

Exceptions in filing

With some combinations of ink and stencils, the stencil will adhere to the file blotter or file book even though it has been thoroughly cleaned before filing. In order to avoid any difficulty from this source, the stencils should be examined every month or six weeks to determine whether or not additional precautions are necessary to preserve the stencils properly.

With some combinations of stencils and ink, the more absorbent file blotters are more satisfactory than the oil-treated stencil file folders or books, as a guard against the stencil adhering to the other surface.

SECTION SEVEN

THE IMPORTANCE OF USING HIGH-GRADE MATERIALS

STENCILS

There are many brands of stencils on the market, and as with any commodity, a "bargain" stencil may prove to be the most expensive. Poor grades of off-brands can cause the user much trouble and result in poor work and considerable waste. Only a top-quality stencil can produce top-quality results. Therefore, when purchasing stencils, these are the important factors to consider:

Can the supplier guarantee uniform quality, quire after quire? Will the stencils received be of the same quality as test samples submitted? Will the stencils supplied always be fresh stock? Will they deterioriate in storage if purchased in quantity? Is there adequate assurance of a constant source of supply of the brand chosen?

Before standardizing on a specific brand of stencils, certain tests should be made to determine whether or not the brand under consideration answers these requirements of a top-quality stencil:

Easy reading

When typing the test stencil, does the typing stand out clearly? Is it contrastingly white against the blue or green stencil coating? This is an important safeguard against eye strain.

Type-clogging

If it is a non-film stencil, does it fill the typewriter type with stencil coating? To test for type-clogging, type complete lines of the letter "e." A good quality non-film stencil should permit the typing of at least two complete lines of the letter "e" without filling the letter so much that the cross bar is obliterated. *Fig. 102* shows the result of the "e" test on a good quality stencil.

Cut-outs

Do the loop letters, "e," "o," "d," etc., cut out of the stencil, or do the letters rise and loosen? *(Fig. 103.)* If so, the stencil is old and dry, or not of good quality.

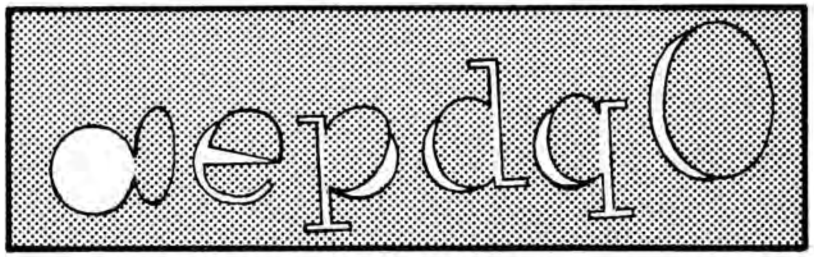


Fig. 103

Mounting on duplicator

Do the test stencils tear easily at lower ends when stretching over the duplicator cylinder in mounting? *(Fig. 104.)* Good quality stencils have sufficient body to mount smoothly over the drum without damage.

Filing

The filing qualities of stencils cannot be determined until after considerable time has elapsed. Hence, it is safer to use a well-known quality brand which has proved its filing qualities over many years of satisfactory use by others. A brand-name which has been known for quality for many years is always a safe choice.

The "e" Test for Type-Clogging

Examine cross-bar of letter "e" for type-clogging

eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeccc

Fig. 102

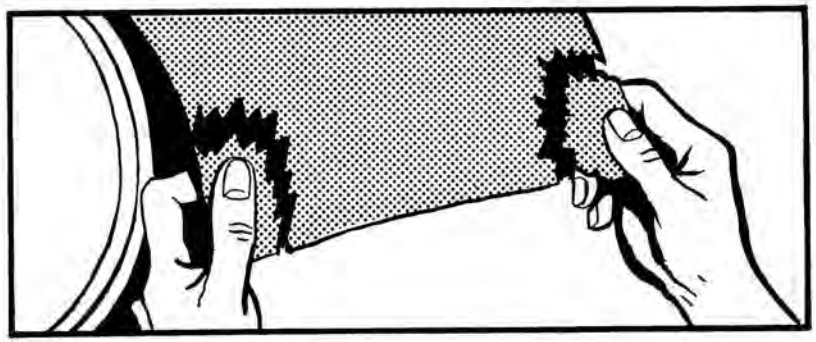


Fig. 104

Durability

The test stencil should be capable of producing many thousands of quality reproductions. If the stencil breaks apart where underscoring appears, it is an almost certain indication of inferior quality.

Washing

The stencil should be able to withstand washing on the duplicator cylinder without damage. A good quality stencil will not be damaged by ordinary washing.

Corrections

Test the stencil with correction fluid to determine whether inconspicuous corrections are possible.

Stylusing qualities

Trace an illustration or make a signature on the stencil, using a signature plate or writing plate in the usual manner. Check the impression by holding the stencil to the light. On a good quality stencil, the impression will be sharp and clean; if the stencil is of inferior quality, the lines will be rough and there may be fibers torn from stencil areas near the stylusing.

Stencil and ink combination

Make a test run to determine whether the ink now being used gives good results with the test stencil. If not, be sure the supplier can guarantee an ink which will work well with the new stencil.

Quality reproduction

This, of course, is the supreme test for any stencil. No stencil should be judged on the basis of a handful of printed copies. Results must be consistently excellent over a long run, or during repeated re-runs. Only stencils which can deliver this kind of performance are really dependable.

DUPLICATING INKS

The manufacturing of stencil duplicating inks is a specialized science, requiring years of testing and research to produce a top-quality, trouble-free product. The nation's principal ink manufacturers have expert ink chemists and facilities to carry on this research and development. Hence, the best value in duplicating inks, regardless of cost, are those manufactured and sold under nationally-known brand names.

It is difficult for the individual user to test a new brand of ink. To do so usually necessitates cleaning out the duplicator cylinder, as it is not advisable to mix two types of ink. Defects, such as ink seepage, separation and drum clogging do not occur immediately, but may come to light months after the new ink has been put into use. The list that follows will help the user determine whether the ink now being used meets with accepted standards. If any of these faults are apparent, it will be well worth while to consider switching to another brand—preferably one which is recognized as a leader in the industry.

How to recognize inferior ink

Ink pad and drum clogging

Ink of poor quality will dry out prematurely in the ink pad, and will also tend to clog the cylinder perforations. On the other hand, it may not dry quickly enough on the printed copies to prevent offset and smudging.

Oil separation

With inferior ink, the oil will separate from the pigment or dye when the ink is in the drum or on the ink pad. This will cause oil seepage onto the impression roller or machine mechanism. It will also cause weak, oily-appearing copy as shown in *Fig. 105*, or oil "rings" as pictured in *Fig. 106*.

Spreading

Sub-standard ink will spread the typewritten or stylused image on the paper, as shown in *Fig. 107*. This condition will result in offsetting, smudging and ragged-appearing reproductions.

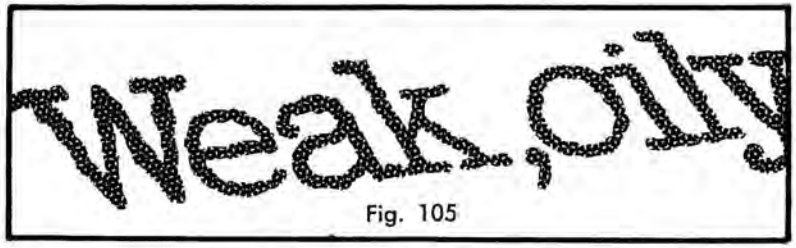


Fig. 105

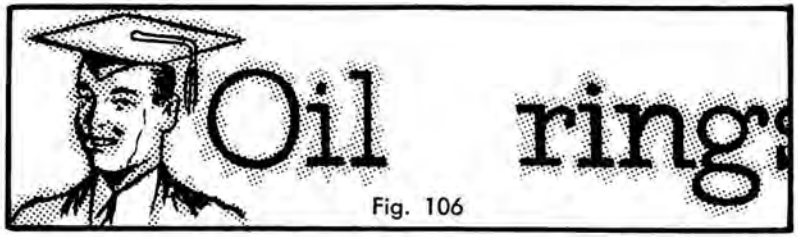


Fig. 106

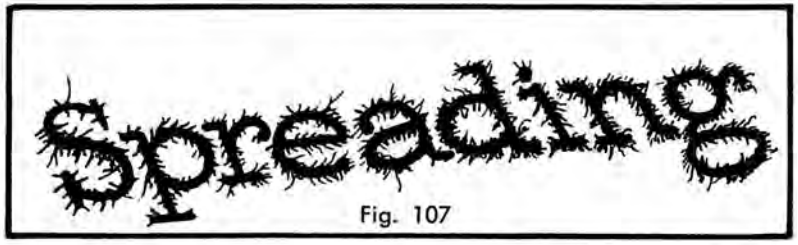


Fig. 107

ABOVE THREE FIGURES GREATLY MAGNIFIED

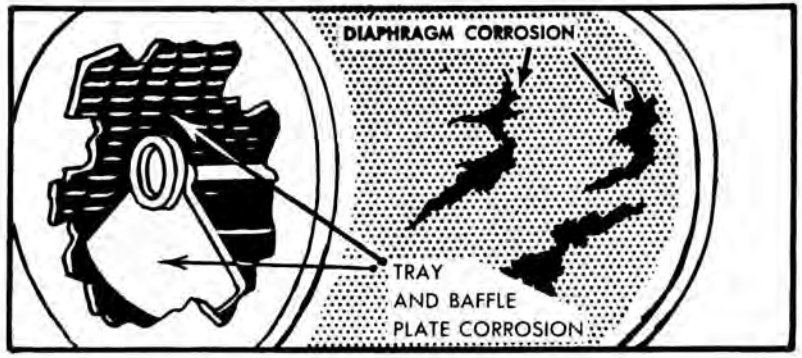


Fig. 108

Injury to duplicator drum

Some ink will corrode the perforated diaphragm, inside drum tray, baffle plates and other drum parts, as pictured in *Fig. 108*. Because the drum is one of the most expensive parts of the duplicator, "bargain" inks can be excessively costly when they cause damage of this nature.

Damage to stencil

Some inks are actually injurious to stencils, and may drastically limit the number of copies obtainable from a single stencil.

Poor filing

Some low-quality inks cannot be washed easily or satisfactorily from the stencil for filing purposes. If file blotters or file books are used, the stencil may adhere to the filing stock, and tear when being removed.

Penetration

Some ink penetrates too deeply into the duplicating paper, causing show-through on the reverse side. When this occurs, printing on both sides of the paper is impossible.

Insufficient drying qualities

Inferior ink will not dry completely on smooth paper or card stock, and will smear when handled, even long after it has been printed. With a properly-typed stencil, the ink should dry fast enough on fairly absorbent paper to cause little or no offset. Insufficient drying is easily detected by rubbing the finger over a post card which has been run through the duplicator a few hours earlier. *(Fig. 109.)*

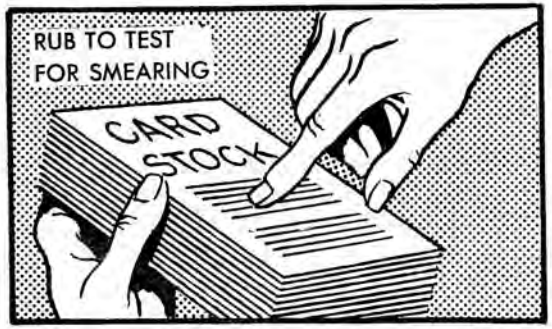


Fig. 109

Separation in the can

The oil in low quality inks will sometimes separate from the pigment or dye while the ink is in the can. Clear copy cannot be produced from ink in this condition.

Proper stencil-and-ink combinations

It is a good policy to use stencils and inks of the same brand. Years of research and field testing by manufacturers of the principal brands offer ample assurance of top performance when stencils and inks are specifically made for use with each other.

Duplicating paper

The three most important items in producing quality stencil work are top-grade stencils, inks and duplicating paper. It is as important to use a superior grade of paper at it is to use stencils and inks of superior quality. It is not always true economy to save a few pennies on stencils, ink and paper. The time wasted in servicing costs and the money wasted in poor quality reproductions—caused by inferior products—are far more costly in the end.

Paper dust and lint

Inferior paper contains a great amount of paper dust and lint which are detrimental to stencil duplicating, because they accumulate on the stencil and cause the copy to appear ragged. When this condition exists, more frequent washing of the stencil is required during the run.

Uniform cutting

Quality papers are cut uniformly to size, ream after ream. If paper is improperly cut, reams cut at different times may not be of the same width and cannot be clamped into the feed table properly. *(Fig. 110.)* More than one sheet will feed through at a time, and occasionally so many sheets will feed through at once that the paper will jam and may cause damage to the stencil.

"Green" or curled paper

Paper which has not been aged properly, or has not been manufactured especially for stencil duplicating may not lie perfectly flat in the machine for feeding, as in *Fig. 111.* Under such conditions, the paper may crease or wrinkle when passing through the machine.

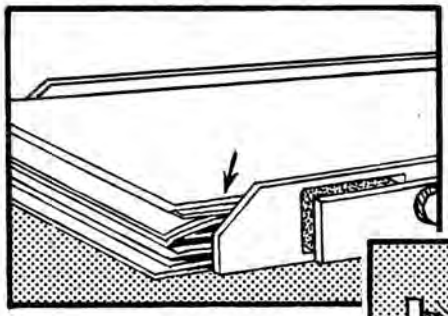


Fig. 110

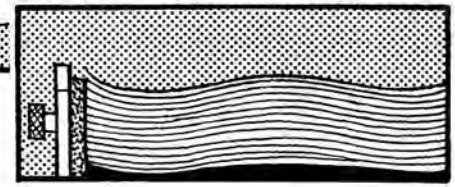


Fig. 111

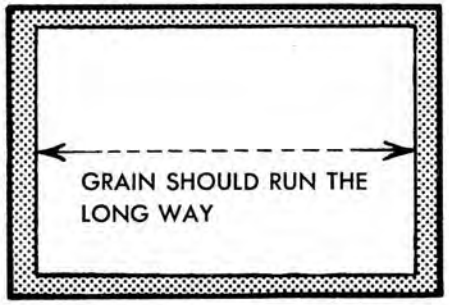


Fig. 112

Improper grain cut

Good brands of paper are supplied with the grain running with the length of the paper. *(Fig. 112)* If the grain runs the "short way," that is, across the paper, the stock will not feed into the machine properly, and will not stack evenly in the receiving tray. If the paper is light weight, the wrong grain direction will cause it to follow or adhere to the cylinder.

Absorbent qualities

Good quality stencil duplicating paper has the correct absorbency factor. Too much absorbency will result in ink wastage. Too little absorbency will cause offsetting, smudging or ink smearing.

Opacity

The best stencil duplicating papers are opaque, and minimize show-through of ink on the reverse side of the sheet. This is of particular importance when printing is done on both sides of the paper.

Color

The best brands of duplicating paper are "white-white." Low-grade papers have a definite yellow or blue cast which cheapens the appearance. Standard brands of stencil duplicating paper are also available in light pastel shades of comparable quality to the white stock.

SECTION EIGHT

FORMOGRAPH STENCIL AND ITS APPLICATION

Another method applicable when exact reproductions are required of ruled forms, letterheads, or type matter, that may include illustrations, is the Formograph stencil process. It is highly effective and economical where the same background form is required regularly or where the same heading is used continually. It saves the time and trouble of hand lettering or ruling new stencils over and over again and since a regular stencil is used in the process, typewritten or other fill-in can be added easily.

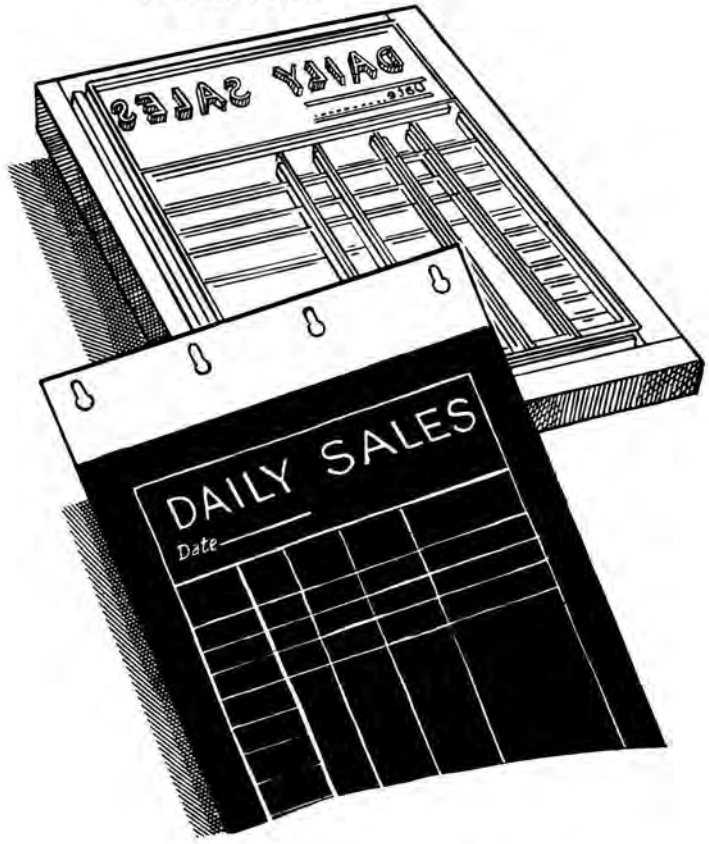
National manufacturers and chain store organizations find it efficient and profitable, for instance, to furnish their retail outlets with such stencils, ready for the addition of the individual fill-in.

Formographing is the term applied to the process of impressing the image of a plate form into a regular impression stencil. This is done on either a large press that affords sufficient pressure or on a special formograph machine. As many stencils as required can be reproduced from this form. Be sure that copy for the formograph stencil does not extend beyond the limitation lines on the stencil. A thin-line, open-letter type must be used. NOTE: If copy is submitted with type that will not reproduce, we reserve the privilege of substituting the closest style that will give perfect results.

There are three charges that determine the price of the complete formograph stencil.

1. The plate charge, which applies to the initial order only, since additional stencils can be made from the same plate at any time. The cost of the plate is determined by its size, and a set charge cannot be made until copy is submitted.
2. Charge for formographing. For legal or letter size:
3. The list price of the stencil.

TYPE-SET FORM



FORMOGRAPHED IMPRESSION STENCIL