CHAPTER 5

LETTERING

Overview

Introduction

As an Illustrator Draftsman, you letter official publications, posters, lecture pads, and displays. You must know what makes one alphabet easier to read than another and what gives one alphabet more beauty and character than another. Lettering has often been called an art form in itself. This chapter will examine the geometry and presentation of lettering and calligraphy.

Objectives

The material in this chapter enables you to do the following:

- Differentiate between lettering, typography, and calligraphy.
- Define typefaces.
- Distinguish between typefaces and type fonts.
- Duplicate the six basic strokes of freehand and calligraphic lettering.
- Distinguish between lettering used for text and lettering used for headlines.
- Recognize the importance of thumbnail sketches, roughs, and comprehensives in layouts with extensive lettering.
- Identify the uses of different type sizes.
- Evaluate the use of dry transfer lettering.

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Acronyms

The following table contains a list of acronyms you must know to understand the material in this chapter:

Acronym	Meaning
CAPS	Capital Letters
CL	Center Line
LC	Lower Case Letters
Pixel	Picture Element
UC	Upper Case Letters

In this chapter

This chapter covers the following topics:

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Lettering

Introduction

Alphabets derived from the hieroglyphics of ancient Egypt. Through the ages, letterers or scribes modified and decorated letters and their designs according to the preferences and fashions of the day. As printing replaced lettering, people lost the knowledge and understanding needed to make good letter forms.

Lettering versus printing

Lettering, not printing, is the correct term for making letters by hand. Lettering may be drawn freehand or by mechanical methods. Printing means the production of printed material on a printing press. Printed matter done with type is known as typography. Typography also involves the style, the arrangement, and the appearance of typeset material.

Lettering

Lettering is any letter created for display, headlines, flyers, name tags, banners, and signage, executed by hand or with lettering aids. Lettering may be plain or ornate. When selecting lettering, consider the image you want the job to convey and select a letter style consistent with the attitude of the material. Legibility should also be a primary concern.

Figure 5-1 shows legible and illegible letter selections.

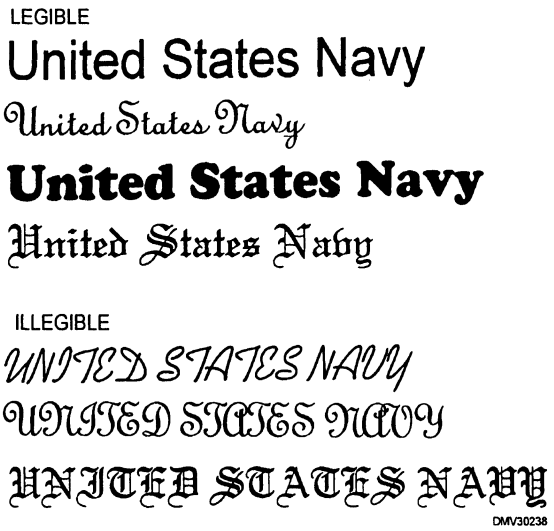

Figure 5-1.—Legible and illegible letter selections.

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Lettering on technical drawings

Lettering on technical drawings is a simple form of hand lettering that does not contain flourishes. Generally, the letter style on technical drawings is single-stroke gothic executed by hand with conically sharpened pencils. Sharpen pencils regularly to maintain an even width in the pencil stroke. The single-stroke gothic letter style is plain and geometrically unremarkable. You may use lettering aids to letter on technical drawings; however, lettering aids are cumbersome when speed is required.

Figure 5-2 is an example of single-stroke lettering.

SINGLE-STROKE GOTHIC

AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
0123456789 !@#$%^&*()_-+={}[]|\'":;?/><,.

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Figure 5-2.—Single-stroke gothic letters used on technical drawings.

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Calligraphy

Calligraphy is hand lettering in its most sophisticated form. The principles of geometric proportion, nomenclature, composition, and visual impact apply to calligraphy as they do to lettering. Calligraphy, however, allows more freedom and creativity than established, uniform typefaces. A portion later in this chapter covers calligraphy specifically and in more detail.

Figure 5-3 is an example of calligraphic letters.

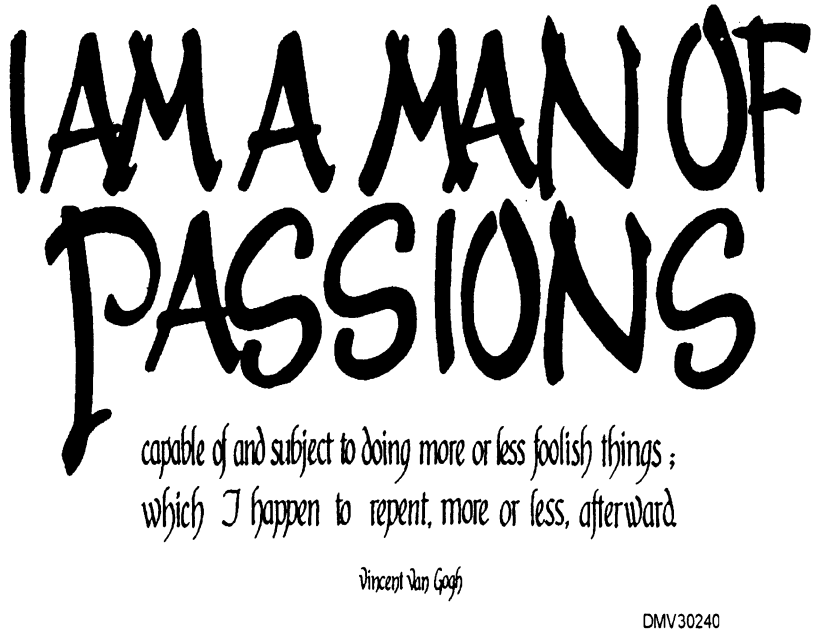

Figure 5-3.—Calligraphic lettering.

Letter Nomenclature

Introduction

Knowledge of the nomenclature or terminology associated with lettering and typography is important. Understanding industry standard terms greatly increases your ability to effectively communicate lettering requirements to subordinates and any commercial shops.

Typefaces or type styles

Typeface or type style refers to the design of letters. Decorative and plain letters are named for their appearance or for the designer who created them.

Figure 5-4 shows two typefaces, one named for appearance and one named for the designer.

VIEW A	VIEW B
Frankenstein	Fujiyama
Monospaced	Cupertino

DMV30241

Figure 5-4.—Typefaces; A. Named for appearence, B. Named after the designer.

Type fonts

Type fonts are the collected alphabet, numbers 0 through 9, and selected punctuation marks in a particular typeface. Fonts are complete sets of characters in the same typeface and size.

Figure 5-5 shows that all the characters in a particular typeface are called a font.

AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
0123456789 !$%&*()_-{}[]:;'?/.,

DMV30242

Figure 5-5.—A font or collection of the complete alphabet, numerals, and punctuation for a typeface.

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Type series

Type series are different sizes of the same typeface.

Figure 5-6 is an example of a type series.

Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
Casablanca
DMV30243

Figure 5-6.—A type series.

Type families

Type families are typefaces that share similar features and appear visually related. Differences in size are immaterial. Only similar features identify typefaces to a family.

Figure 5-7 shows that visually related typefaces create families.

BINNEY Old Style
BODONI Bold
BODONI Book
BODONI Bodoni
CASLON, True-Cut
CASLON Old Style
CASLON Bold
CASLON Old Style
CASLON No. 113, Condensed
CASLON Bold Condensed
CASLON Caslon
CENTURY Expanded
CENTURY Expanded Bold
CENTURY Schoolbook
CENTURY Schoolbook
CHELTENHAM Cheltenham
CHELTENHAM Bold Extra Condensed
CHELTENHAM Bold
CHELTENHAM Old Style
CHELTENHAM Wide
CLOISTER Bold Condensed
CLOISTER Oldstyle
CLOISTER Bold
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Figure 5-7.—A family of visually related typefaces.

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Type size - height

In type size, height is expressed in points. A point is a unit of measurement that approximates one seventy-second of an inch (1/72). There are approximately 72 points to an inch. Typeface size is measured by its height from capline to baseline.

Figure 5-8 shows how point size affects letter height.

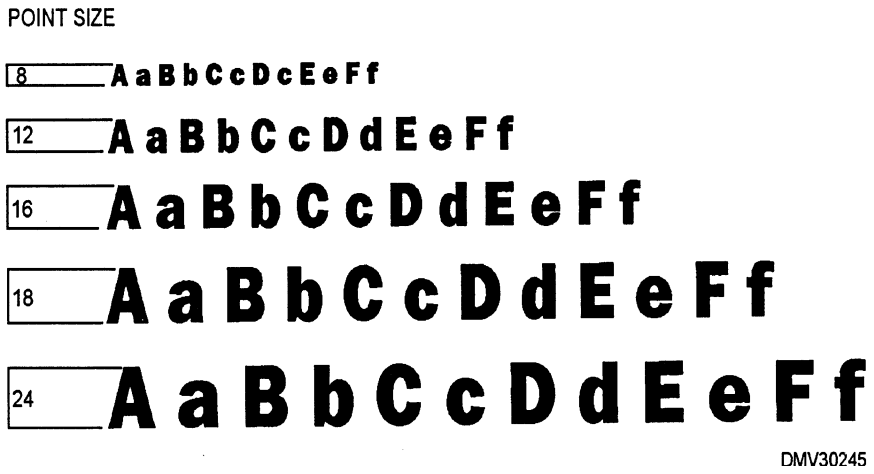

Figure 5-8.—Point size is letter height.

Type size (height) on electronic or mechanical devices

In electronic or mechanical lettering devices, the type size of typeface fonts may be fixed or scalable. Fixed fonts are one size and cannot change. Scalable fonts allow you to electronically or mechanically alter the size of a font. These fonts may appear in points that equate to the printing industry standard of approximately 1/72 of an inch, pixels that represent one picture element on a computer monitor, or points on a computer monitor that closely resemble pixels in size. The choice of points or pixels is part of the software package installed in the computer. Be aware of the differences in electronic and mechanical lettering devices. Know the point size (industry standard of 1/72") equivalent in your software program.

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Typeface x-rating

A typeface x-rating refers to the height of the typeface as measured by the vertical space occupied by the lowercase letter x. This proportion varies for each typeface making some typefaces easier to read than others in the same point size.

Figure 5-9 shows how greater x-ratings in the same point size and same typeface may increase legibility.

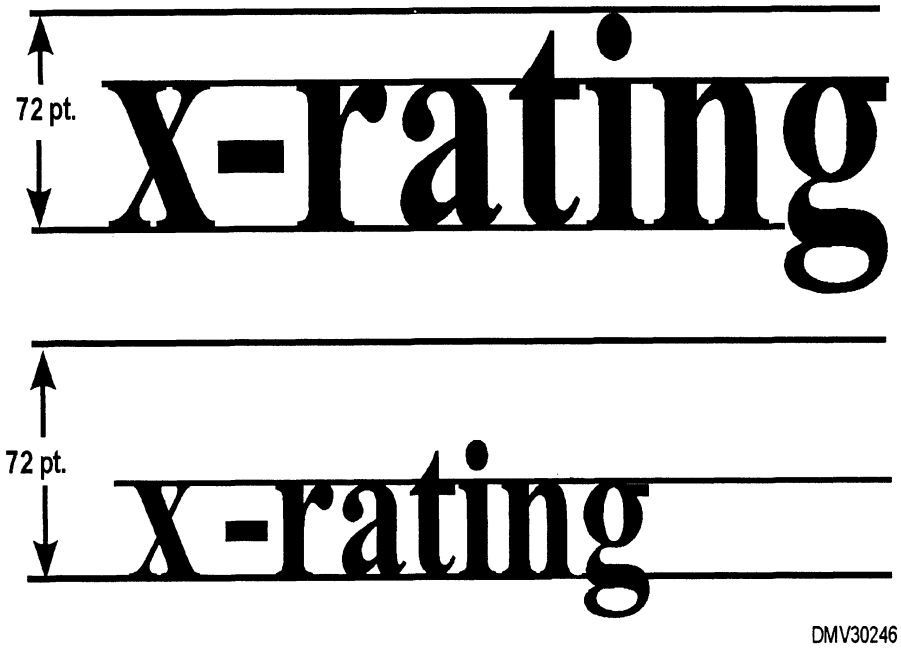

Figure 5-9.—How greater x-ratings result in increased legibility without changing point size.

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Font metrics

Font metrics refer to the placement of characters on a line to eliminate unwanted white space between the letters by increasing (letterspacing) or decreasing (kerning) the space between letters to visually improve legibility. Most letters are surrounded by some amount of space. The standard unit of measure for space around letters is the em-square, the space occupied by the uppercase M. Most letters are surrounded by space equal to one em-square. Some letters require less space. Other letters, when placed side-by-side, require more space.

Figure 5-10 shows combinations of letters that may require space alterations.

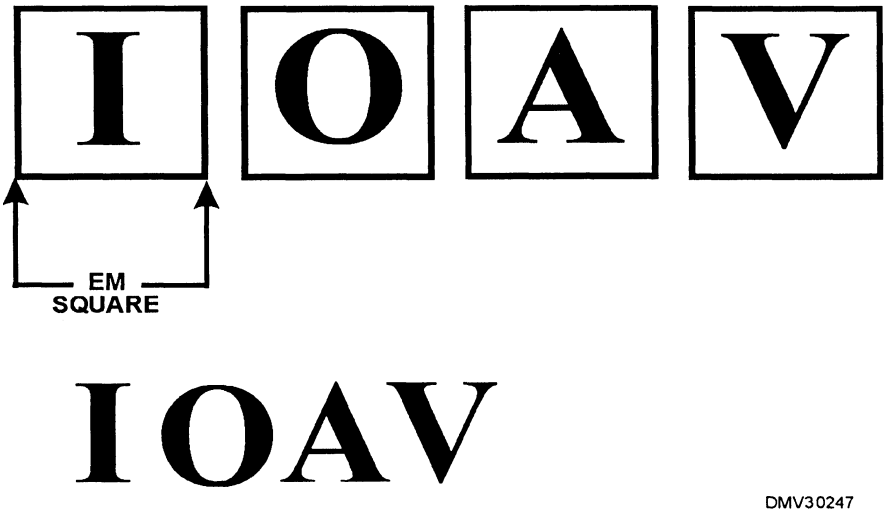

Figure 5-10.—Combinations of letters that may require space alterations.

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Component parts

Each component part of typefaces or letters has a name. The combination of component parts determine letter characteristics and decoration.

Part	Description
Arm	A horizontal stroke extending from the stem
Ascender	The stem of a lower case letter that extends above the waistline
Bowl or Loop	An enclosed round or oval stroke
Counter	Fully or partially enclosed white (negative) space
Crossbar	A horizontal stroke connecting two stems
Descender	The stem of a lower case letter that drops below the baseline
Kern	A cursive connecting stroke
Ear	Small strokes attached to the counter of a lowercase letter or stem
Serif	An ornamental stroke terminating letter forms
Stem	The main vertical stroke
Tail	A cross stroke

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Component parts (Continued)

Figure 5-11 locates component parts and features of letters.

Figure 5-11.—Letter component parts.

Letter Geometry

Introduction

The appearance of letters depends upon geometry. Altering the ratio of one dimension to another of any component part of a letter will change style, attitude, and legibility. Understanding the effects of the changes you make is the foundation to creative and distinctive lettering.

Guidelines

There are six basic guidelines to layout before lettering. Draw guidelines lightly in pencil for easy erasure later. Before any lettering begins, set the guidelines that define the parameters of the letter.

BASELINE: The baseline is a guideline that aligns the bottom of each letter. With the exception of rounded letters (C, G, O, S, and Q), each letter terminates on the baseline. Rounded letters appear smaller than letters with linear dimensions therefore, extend them slightly below the baseline.

CAPLINE: The upper limit of capital letters (CL) is set by a capline. With the exception of rounded letters, each capital letter terminates at the capline. Extend rounded letters slightly above the capline to give them the appearance of being equal in size to other letters. The distance between the baseline and the capline is the point size of the letter.

WAISTLINE: A guideline called a waistline sets the upper limit of lower case (LC) letters. The waistline is also known as an x-rating. Place the waistline between the capline and baseline. Normally, the waistline is drawn two thirds the height between the capline and the baseline. In decorative letters, altering the waistline or x-rating of letters, increases or decreases legibility without changing the overall point size of the letter.

Figure 5-12 shows the placement of the baseline, capline, and waistline.

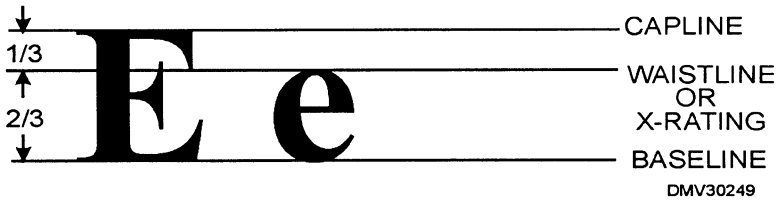

Figure 5-12.—Positioning the capline, waistline, and baseline.

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Guidelines (Continued)

LINE OF ASCENT: The line of ascent is drawn above the capline to set the height of lower case letters whose stems extend above the waistline such as letters like d, f, h, k, l, and b. The letter t often falls short of both the capline and the line of ascent. The line of ascent is drawn above or on the capline and equals approximately one third the distance between the capline and baseline. In some cases, the capline and the line of ascent are the same line. Ascender is the name given to the tall stems of lower case letters.

LINE OF DESCENT or DROP LINE: The line of descent or drop line is the line that terminates stems of letters that drop below the baseline such as q, y, p, g, and j. Draw the line of descent below the baseline at a position equal to one third the distance from capline to baseline. The portion of the stem that falls below the baseline is called the descender.

Figure 5-13 shows the placement of the lines of ascent and descent.

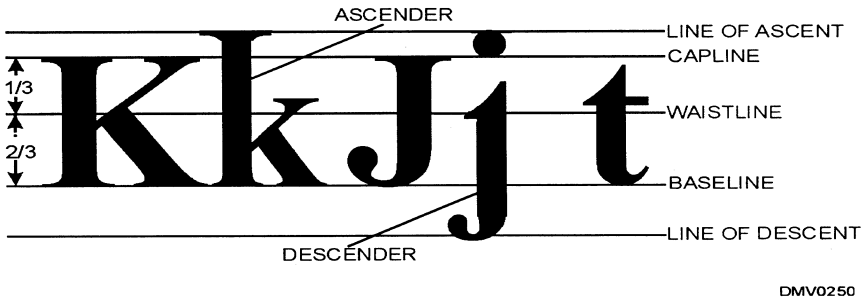

Figure 5-13.—Lines of ascent and descent.

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Guidelines (Continued)

DIRECTION LINES: Direction lines are randomly spaced vertically drawn guidelines or guidelines drawn at an incline that help maintain uniformity. Straight vertical lines assist even spacing and in keeping the strokes of the letters parallel. Inclined lines assist in spacing and in maintaining uniformity in the slant of the letter. Inclined lines may be drawn at any angle but normally do not exceed a maximum angle of 68 degrees. Letters drawn excessively inclined appear to be falling over and disorient viewers.

Figure 5-14 shows how vertical and inclined directional lines assist in maintaining uniformity.

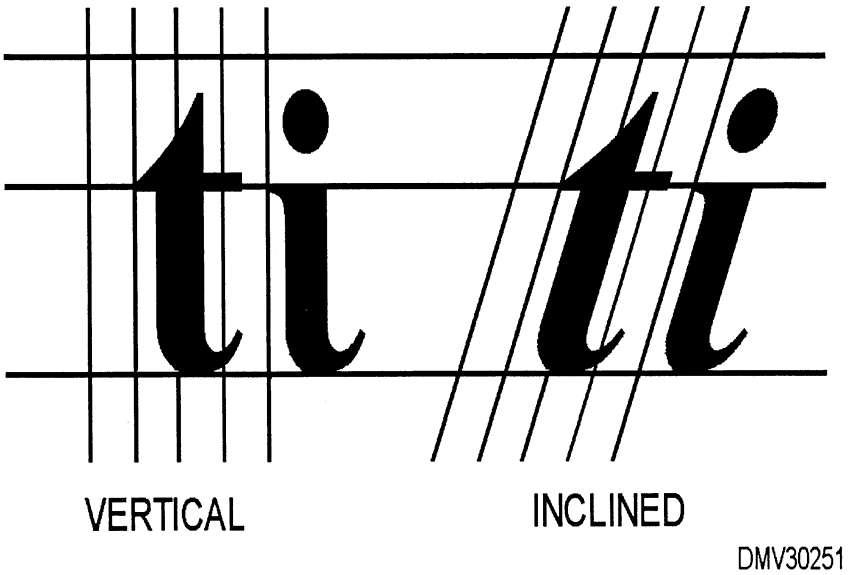

Figure 5-14.—Vertical and inclined lines assist in maintaining uniformity.

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Letter weight

The weight of letters directly influences legibility and appearance. The weight of letters may be lightface, open-face, regular weight, or boldface. Additionally, letter dimensions may be condensed, expanded, geometrically symmetric, or italicized.

LIGHTFACE: Thin, hairline strokes that give a light, airy illusion to the letter style are characteristic of lightface letters.

OPEN-FACE: Open-faced letters appear as outlines of letters with center portions left open. Open-faced letters, when left open, appear lighter in weight than letters filled in. You may fill in an open-faced letter with a contrasting color or colors for creative effect.

REGULAR WEIGHT: Neither too thick or too thin, regular weight letters reproduce with optimum legibility.

BOLDFACE: Boldface letters appear heavy and dense. They add emphasis and seem to jump at the viewer.

Figure 5-15 shows letter weight.

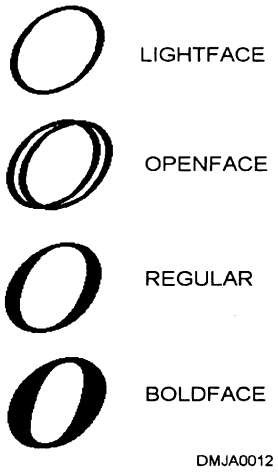

Figure 5-15.—Using the letter "O" to demonstrate letter weight.

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Letter weight (Continued)

CONDENSED: Letters that appear vertically squeezed or pinched are called condensed. Condensed letters give the appearance of being heavier than they really are.

EXPANDED: Horizontally stretched or flattened letters are called expanded. They appear lighter in weight than they really are.

GEOMETRICALLY SYMMETRIC: Geometrically symmetric letters have geometrically or mathematically correct dimensions and proportions. To determine if letters are geometrically proportioned, look at the letter "O" for perfect roundness and evaluate any distortions.

ITALICIZED: Italicized letters slant to the left or right of center. Before negatively affecting legibility, letters may lean a maximum of 68 degrees from center. Italicized letters add emphasis.

Figure 5-16 shows the letter "O" in various letter weights.

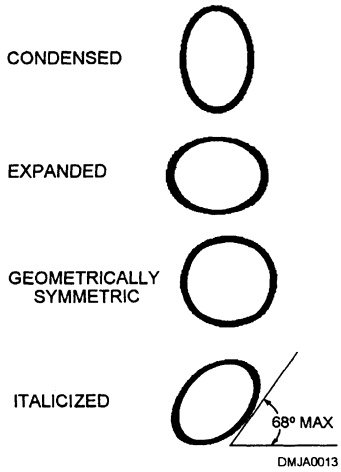

Figure 5-16.—Using the letter "O" to demonstrate geometric proportions of various typefaces.

Letter Classifications

Introduction

Alphabet styles reflect certain characteristics such as refinement, dignity, boldness, and strength. Properly used, letter styles convey the feeling or mode of messages. You should be able to recognize the different styles and know something of their general usage.

Capital letters

The first distinction between letters is between capital letters and lower case letters. Capital letters are referred to as caps or upper case (UC). Upper case letters fill the distance between the capline and baseline. Occasionally, letters between the waistline and baseline may appear as capital letters. Caps that extend only from the baseline to waistline are called small caps.

Figure 5-17 illustrates the differences in caps and small caps.

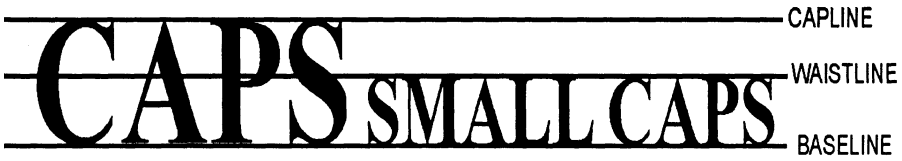

Figure 5-17.—Caps and small caps.

Letter Classifications

Lower case letters

Lower case letters (LC) are letters that appear as small letters whose main body lies between the baseline and waistline. The form of lower case letters is often altered from that of the cap. LC letters may extend from the line of ascent to the line of descent as in letters like i, j, k, l, and etc.

Figure 5-18 shows how lower case letters may reach the line of ascent or the line of descent.

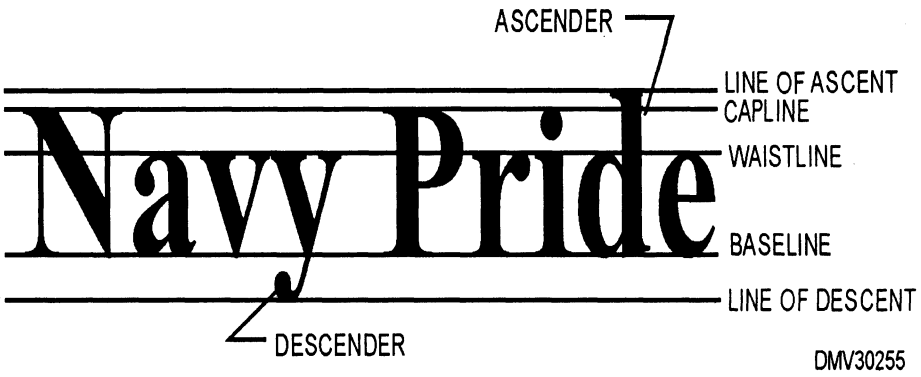

Figure 5-18.—Lower case letters reaching the lines of ascent and descent.

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Major groupings

Most letter styles fall into one of six major groupings. Each grouping further subdivides into series, families, sizes, and weights. The six major groupings of letter styles are roman, gothic, script, text, italic, and contemporary.

Figure 5-19 shows the six major groupings of letters.

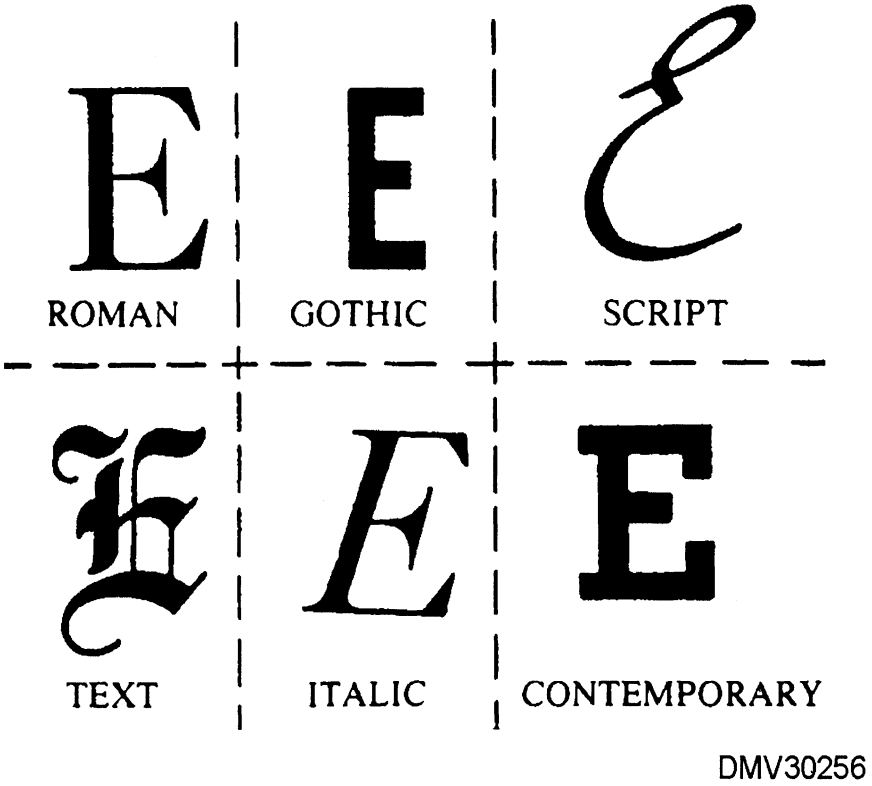

Figure 5-19.—Major letter groups.

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Roman letter group

Roman letters are composed of thick and thin lines terminated with small crosstrokes called serifs. The serifs lend unity to letters and blend the letters into easily read words. Roman typefaces are divided into two styles: old style and modern. The chief difference between old style and modern roman letters is the serifs. Old style roman letters have soft-rounded serifs, while the serifs on modern roman letters are heavier with clean-cut hairlines. Roman typefaces are used in the text of magazines, newspapers, and books. Roman letters suggest dignity, refinement, or stateliness.

Figure 5-20 is an example of letters in the roman style.

Figure 5-20.—The roman letter group.

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Gothic letter group

The gothic letter, sometimes called block letters, are constructed of strokes relatively even in weight. Slightly thinner strokes join main stems and curves to avoid giving the letter a dense look. There are no serifs on gothic letters. A letter without serifs is referred to as sans serif. Sans serif letters of even weight also belong to the contemporary letter grouping. Gothic style letters are used for letterheads, envelopes, cards, announcements, and many kinds of office forms.

Figure 5-21 is an example of the gothic letter grouping.

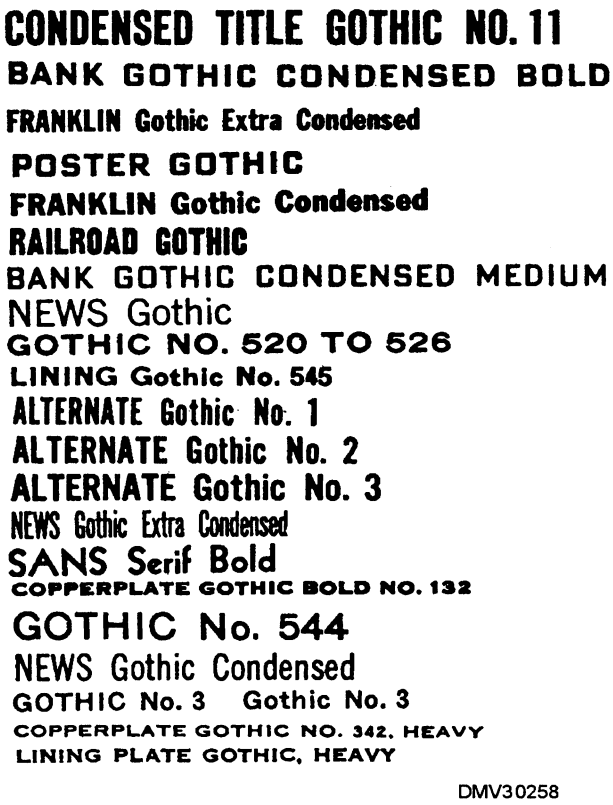

Figure 5-21.—The gothic letter group.

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Script letter group

The script letter group includes script letters, cursive letters, and swash letters. Each letter style has its foundation in handwriting. Letters in the script letter grouping should not be used as all caps. Straight cap letters in this group are illegible.

SCRIPT LETTERS: Script letters, composed of thick and thin strokes, have hairlines connecting one letter to another. These hairlines are called kerns. Kerns connect letters allowing the letters to flow into words. Script letters may be basic or formal. Basic script retains the curvilinear letter form without thick and thin variations of stroke. The strokes of formal script letters have thick main stems and thin connectors. Script letters give the impression of elegance, dignity, and refinement suitable for announcements or invitations.

Figure 5-22 is an example of basic and formal script.

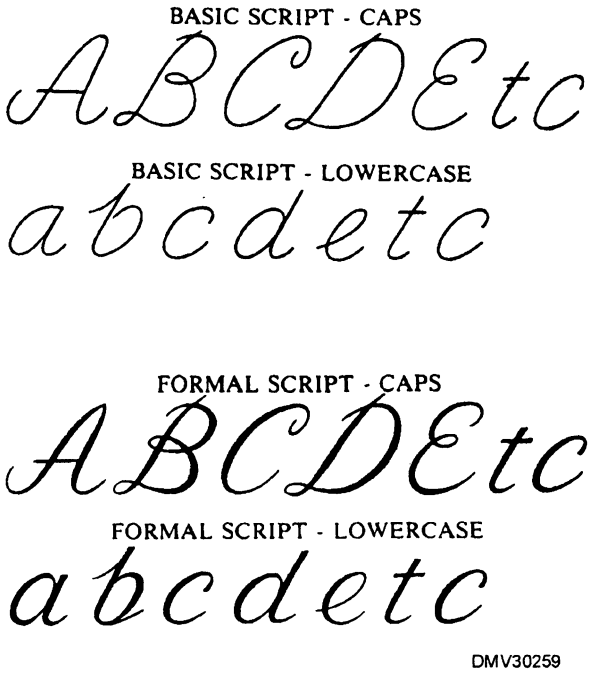

Figure 5-22.—Basic and formal script.

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Script letter group (Continued)

CURSIVES: Cursive letters are similar to script letters except that cursive letters do not have kerns. Cursive letters add elegance and charm to advertisements, and showcard lettering.

Figure 5-23 is an example of cursive lettering.

Figure 5-23.—Cursive letters.

SWASH: Swash letters are script and cursive letters with additional flourishes or embellishments. Swash letters have vitality and boldness. Use swash letters with italics to dress up layouts that otherwise might be bare or unattractive.

Figure 5-24 is an example of swash lettering.

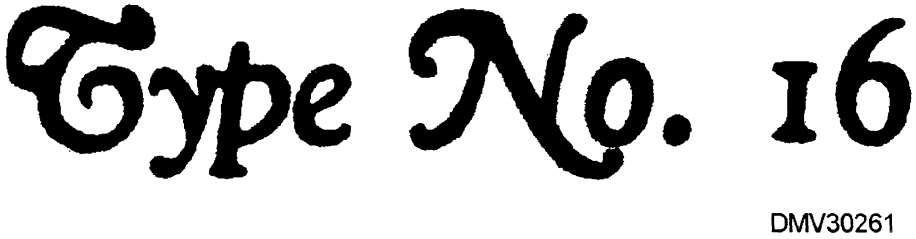

Figure 5-24.—Swash lettering.

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Text letter group

Text style letters are synonymous with Old English letters. Text lettering is one of the oldest letters styles in use. Text letters consist of solid main stems with solid block serifs. Text letters have strong vertical lines. Do not use text letters in all caps or words will be illegible. Limit the use of text letters to layouts that require religious or formal presentations. Use text lettering for prayer books, programs, and invitations.

Figure 5-25 shows examples of the text letter group.

Engravers Old English Bold
Engravers Old English Open
Engravers Old English
Engravers Text
Wedding Text Shaded
Wedding Text
Inland Copperplate
Tudor Black No. 2
Typo Text
Cloister Black
Modern Text
Shaw Text
American Text

WEDDING TEXT *

* WORDS SET IN TEXT CAPS ARE ILLEGIBLE.

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Figure 5-25.—The text letter group.

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Italic letter group

Letters in the italic letter group represent letters that incline left or right of center. Letters in this group may come from any family. Use italic letters to add emphasis to information or the impression of speed. Italics work well in any layout.

Contemporary letter group

The contemporary letter group includes hundreds of modern letters. These modern faces represent stylish alterations to traditional letters influenced by fashion and taste. Contemporary letters are used chiefly in display composition. Two letter styles in the contemporary letter group are the sans serif letter and the square or slab serif letter.

SAN SERIF: Sans serif letters are similar to the gothic letter style but are even in weight. Sans serif letters have perfect geometric proportions and have no flourishes.

Figure 5-26 is example of sans serif letters in the contemporary letter group.

FUJIYAMA Extra Bold

DMV30263

Figure 5-26.—A contemporary san serif letter style.

SQUARE or SLAB SERIFS: Square or slab serif letters may have the same even strokes as the sans serif letter or have thick and thin main stems with serifs terminating the letter. The serifs resemble a square or block.

Figure 5-27 is examples of square or slab serif contemporary letters.

MEMORANDUM

DMV30264

Figure 5-27.—A contemporary square- or slab-serif letter style.

Letter Strokes

Introduction

Lettering is not like handwriting. With practice, you can learn to letter well and legibly even if your handwriting is not particularly good. The order in which you draw the strokes that form letters are as important as the individual letters themselves. How you execute the strokes and in what order will affect the ease and rapidity of your lettering.

Strokes

Strokes are the vertical, horizontal, and curvilinear movements made by your hand as you draw letters. Strokes are made with a coordinated arm, wrist, and finger action. Vertical and slanted strokes are made by drawing the stroke toward you. Horizontal strokes are made from left to right. Curved strokes are made by rolling the drawing implement with the fingers in the direction of the stroke. All letters follow the same basic sequence of execution. Some letters require a combination of all strokes.

Step	Action
1	Draw the vertical strokes.
2	Turn the drawing tool sideways and draw the horizontal strokes.
3	Make the left half of any curved letter first. Hold the drawing tool between the thumb and forefinger and twirl the drawing tool in the direction of the stroke as indicated in figure 5-28.
4	Connect any curves as required to finish the letter.

Figure 5-28 illustrates the sequence for making basic lettering strokes.

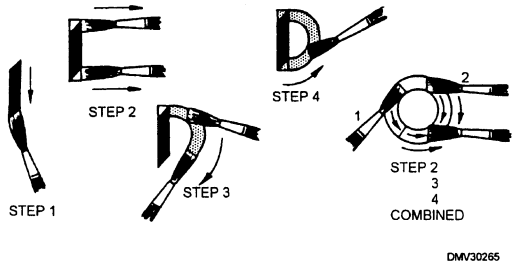

Figure 5-28.—The sequence for making basic lettering strokes.

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Practice lettering strokes

The carpenter's pencil is the ideal tool to practice the solid stroke of the gothic alphabet, the thick-and-thin strokes of the roman-style alphabet, and script letters. Sharpen the carpenter's pencil to a square chisel point. Sit comfortably with your work directly in front of you. Do not twist or turn your hand as the strokes turn. There are six basic lettering strokes that combine to form all letters. Practice these strokes individually, then combine strokes to form letters.

Figure 5-29 shows the six basic lettering strokes.

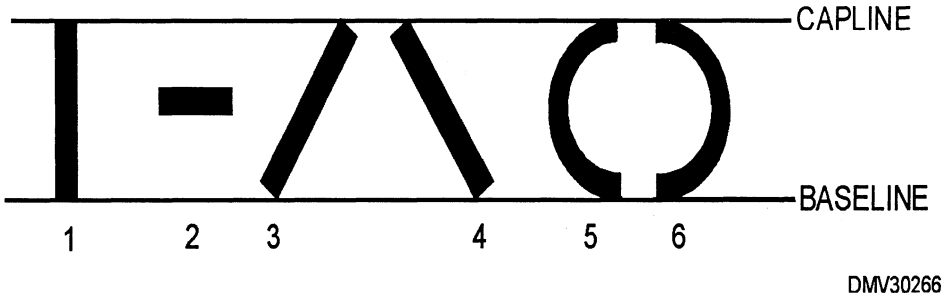

Figure 5-29.—Six basic lettering strokes.

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Basic strokes of gothic letters

The letter style created by solid strokes with little variation in letter width is the gothic style.

Figure 5-30 shows the six basic strokes and how they combine to form letters in the solid stroke of the gothic style.

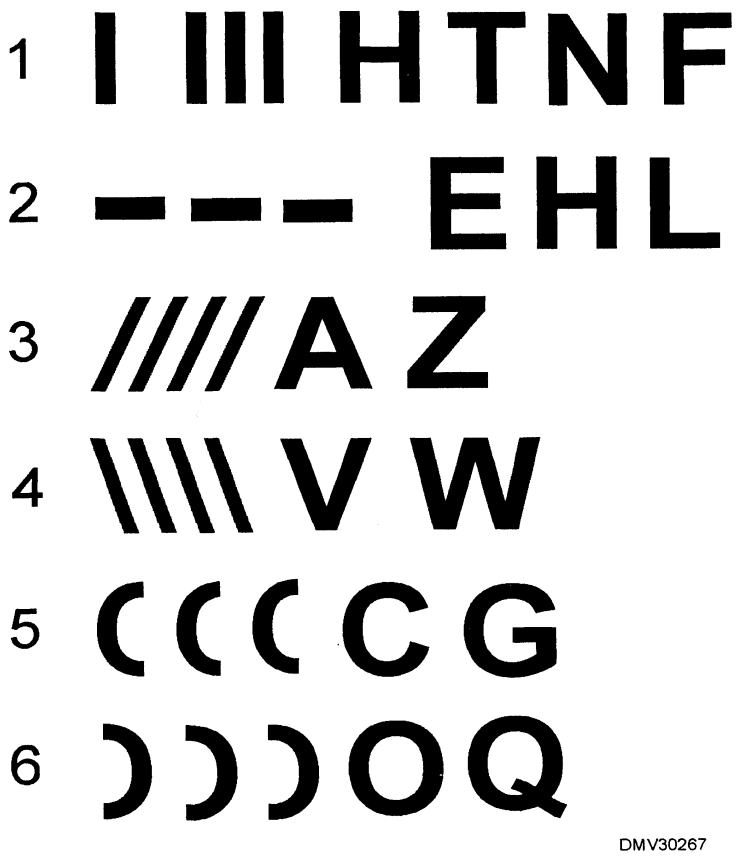

Figure 5-30.—Six basic strokes of letter gothic.

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Basic strokes of roman-style letters

Roman-style letters are thick-and-thin letters without extensive ornamentation; therefore, it is a good alphabet to begin hand lettering. Hold the carpenter's pencil so that the square-chiseled point makes an approximate 30-degree angle to the lettering guidelines. Practice the six basic strokes of hand lettering. Notice that the pencil lead automatically makes the strokes thick or thin based on the direction of stroke. Once comfortable with the basic strokes, begin combining strokes to form letters.

Figure 5-31 shows the six basic strokes, the sequence, and the direction each stroke is made to form the roman-style alphabet.

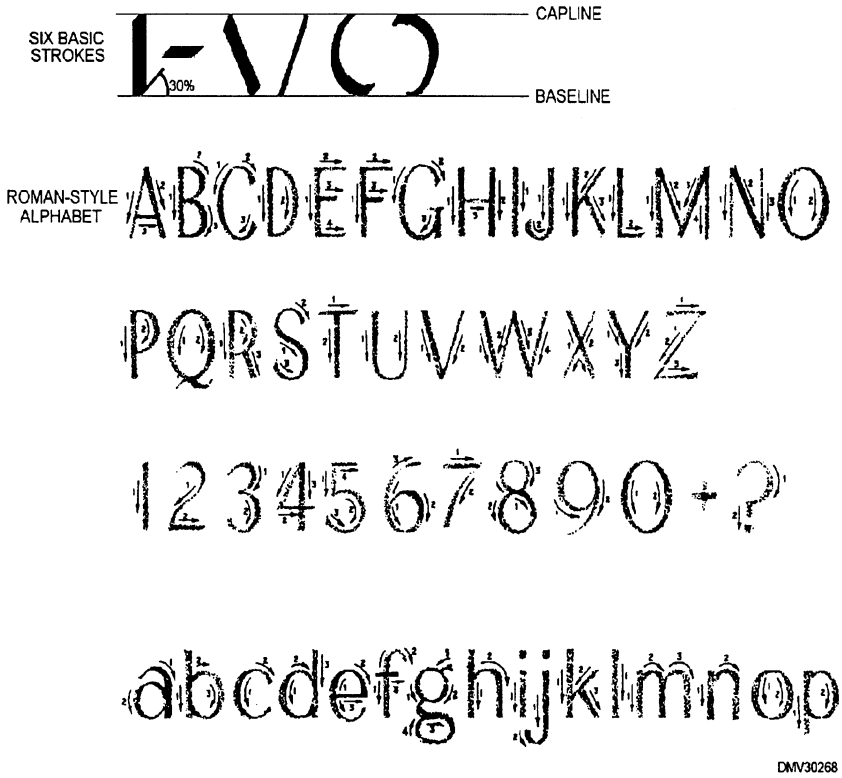

Figure 5-31.—The six basic strokes in the formation of the roman-style alphabet.

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Basic strokes of script

Script letters are based on handwriting. The letter forms made by the six basic strokes are rounded and flowing. One letter leads into another with hairlines that sweep up to join main stems. These hairlines are called kerns. Kerns should join the main stems at exactly the same height on every stem. The angle kerns form at letter stem bases should be uniform. To make kerns, allow your stroke to suddenly and decisively sweep up toward the position of the next letter stem. This upward sweep forms the curve at the bottom of the stem. Do not expect to complete the kern in one action. Draw the main stem of the next letter. Return to the stem of that letter and with one downward stroke, draw a hairline to meet the kern extending up from the base of the previous letters stem.

Figure 5-32 illustrates the steps for drawing kerns in script lettering.

Figure 5-32.—Steps for drawing kerns in script letters.

Letter Compositions

Introduction

The overall effectiveness of your work depends upon its composition. To determine the proper arrangement of lettering, use standard rules of design. Lettering compositions may be formal or informal.

Compositions

How you compose lettering on layouts directly contributes to or detracts from the intended message. Lettering should be an integral part of the composition, not added after the main art is done. Once you have all the information for the layout, begin brainstorming ideas that fit the attitude of the message. Sketch several possible layouts. These sketches may be comprehensive or rough so long as you can evaluate the effectiveness of the composition. These preliminary layouts are called thumbnail sketches. Thumbnail sketches prevent having to redo work because the lettering will not fit or appears awkward.

Figure 5-33 shows how even rough thumbnail sketches are invaluable for assessing an effective composition.

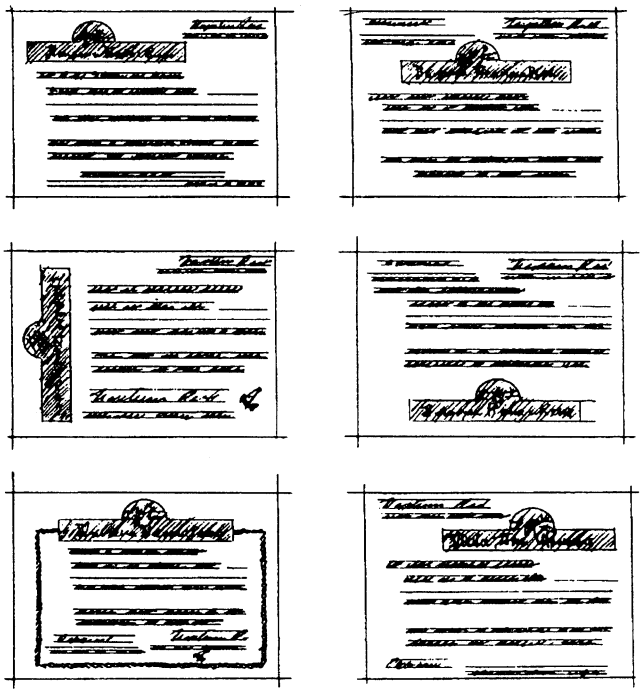

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Figure 5-33.—Thumbnail sketches.

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Formal lettering composition

Formal lettering compositions are compositions that follow rigid rules of design. Intended primarily for serious or dignified layouts, formal lettering compositions present letters in centered, flush left, or flush right positions. Lettered information often appears as pyramids or inverted pyramids placed one-tenth page length above the exact center of a page. This elevated position is referred to as optical center. Any element placed at the optical center of a page will receive maximum attention, while letters placed at the exact center appear as if they were below the center of the page.

Figure 5-34 shows examples of formal lettering layouts.

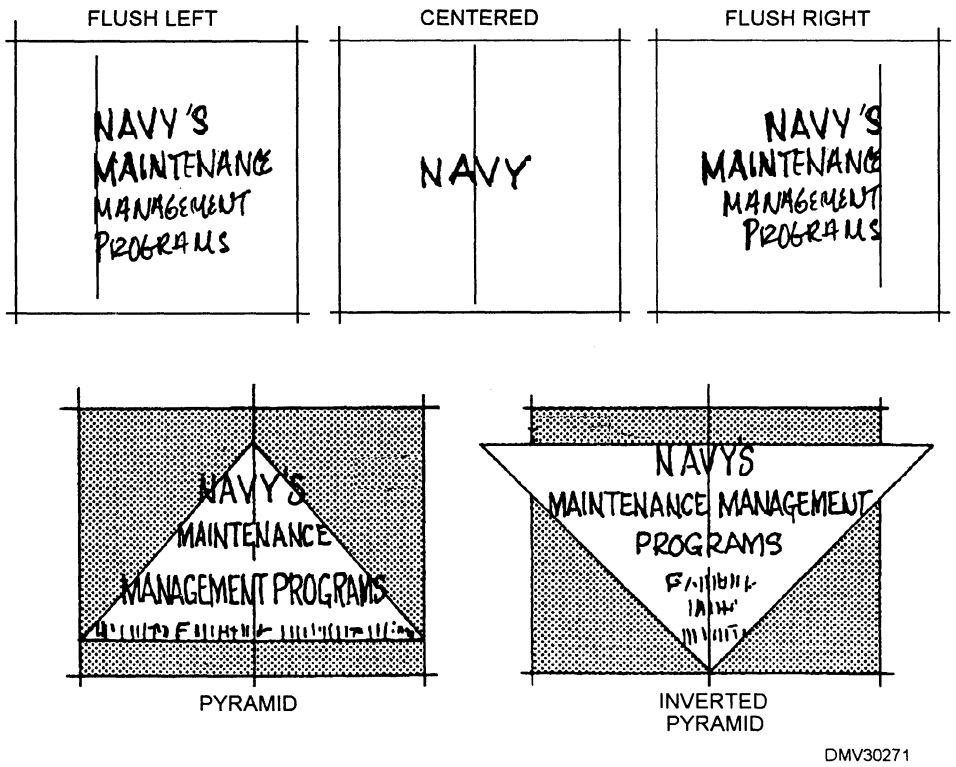

Figure 5-34.—Formal lettering layouts.

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Informal lettering composition

Informal lettering compositions make use of off-center arrangements to add interest, freshness, and motion to copy. Elements are arranged so that the eye is naturally led from one element to another. Eye-leading arrangements are particularly important in display work. In spite of their casual appearance, the elements of the layout are arranged in an visually balanced order.

Figure 5-35 shows examples of informal lettering layouts.

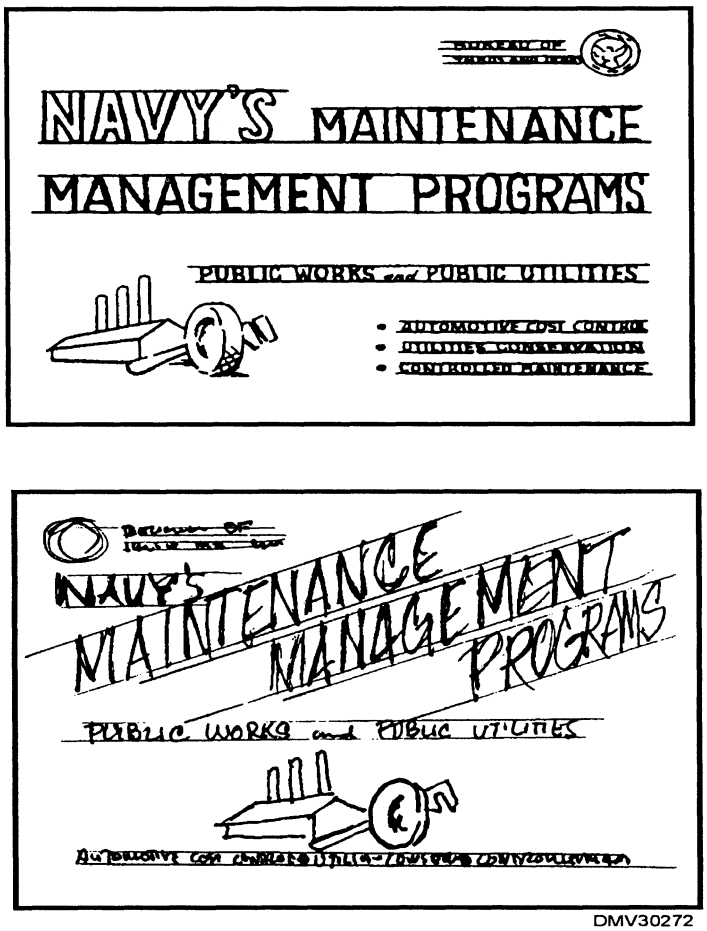

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Figure 5-35.—Informal lettering layouts.

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Legibility

Legibility is a primary concern in the selection of letter style and the layout of lettering on a page. Factors having the greatest bearing on legibility are the style and size of the letter and the space between letters, words, and lines of lettering.

STYLE: Open, clean-cut letters, simply designed, provide maximum legibility. On projects that do not require specific letter styles, style selection is left to the DM. When composing layouts with extensive amounts of lettering, limit the selection of letters to no more than three different styles to avoid a haphazard appearance or visual overload. Use different letter sizes to subordinate some information to other information when you have a great amount of lettering.

Figure 5-36 shows how to subordinate letters of the same style to primary text.

Figure 5-36.—Subordinating secondary information to primary information using type size.

Continued on next page

Legibility (Continued)

SIZE: Letter size affects how easily text is read. Inappropriately small letters strain the viewer's eyes and patience and will likely not be read. Limit lettering to essential information. Limit lettering on art intended for viewgraphs or slides to approximately 8-10 words per frame. If letter size is set, change the x-rating of the letter to improve legibility without changing letter size or style.

SPACING BETWEEN LETTERS: To give words the appearance of having uniformly spaced letters, make the areas between letters nearly equal. Equal spacing between letters is called *mechanical spacing.* Sometimes equal amounts of space between letters create too much white space and breaks up the appearance of the word. If this occurs, reexamine the areas between adjacent letters and increase or decrease them accordingly. Arbitrarily adjusting space between letters based on overall appearance is referred to as *optical spacing. Letterspacing* refers to the addition of space between letters. Letterspacing makes short words or titles appear longer. Decreasing space between letters is called *kerning.*

Figure 5-37 illustrates the difference between mechanical spacing and optical spacing.

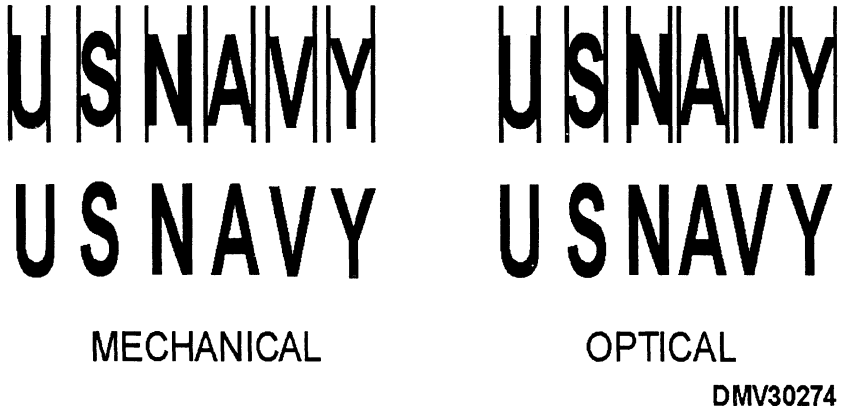

Figure 5-37.—Mechanical and optical spacing.

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Legibility (Continued)

Areas between adjacent letters vary according to the shape of the letter and of the previous letter. Draw adjacent straight-sided letters (such as H, I, M, N) farther apart. Draw adjacent rounded letters (O, Q, C, G) and slanted letters (A, V, W) closer together. Where open letters (L, T, J) are beside slanted letters, the top of one may be drawn above the bottom of the other to avoid spaces that appear like breaks in the word. Refer to the following chart for general corrections to common letterspacing problems.

Problem	Correction	Reason
Round beside round (OOOOOOOOOO)	Decrease space	Spacing appears greater where letters curve away from each other
Round beside slant (OVOVOVOVOV)	Decrease space	Spacing appears greater where letters move away from each other
Round beside vertical (OIOIOIOIOIOIOI)	Decrease space	Spacing appears greater where round letters curve away
Vertical beside vertical (HIHIHIHIHIHIHI)	Increase space	Spacing appears less at the top and bottom, particularly if serifs are present
Vertical beside slant (HVHVHVHVHV)	Decrease space	Spacing appears greater at the top and bottom where letter slant away from the other
Slant beside slant (AVAVAVAVAV)	Decrease space	Spacing appears greater at the top and bottom particularly if the letters slant away from each other

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Legibility (Continued)

Figure 5-38 illustrates common spacing problems.

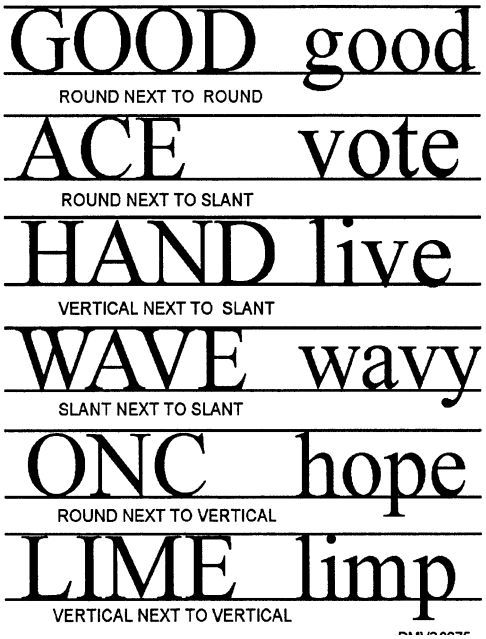

Figure 5-38.—Common spacing problems.

WORD SPACING: Word spacing is the spacing between words. Allow enough space between words and sentences to keep them from running together. A good practice to follow is making the space between words equal to the space the letter "O" occupies.

Figure 5-39 illustrates word spacing using the letter "O."

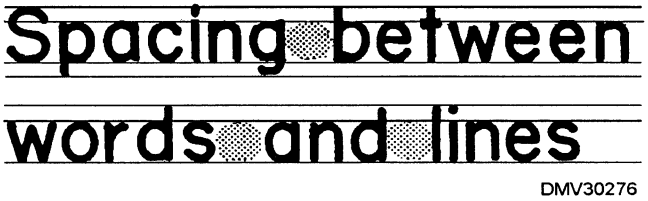

Figure 5-39.—Using the letter "O" to space between words.

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Legibility (Continued)

LINE SPACING: Line spacing is the space between lines of lettering. Line spacing may also be called leading. The distance between lines of lettering should not be exactly the same dimension as letter height, but there should be enough air space between lines of lettering to make it easy to read. The space between lines may vary from ½ to 1 ½ times the height of the letter. Generally, a good distance for space between lines of lettering is two-thirds letter height. This leaves sufficient space for ascenders and descenders.

Figure 5-40 shows different line spacing.

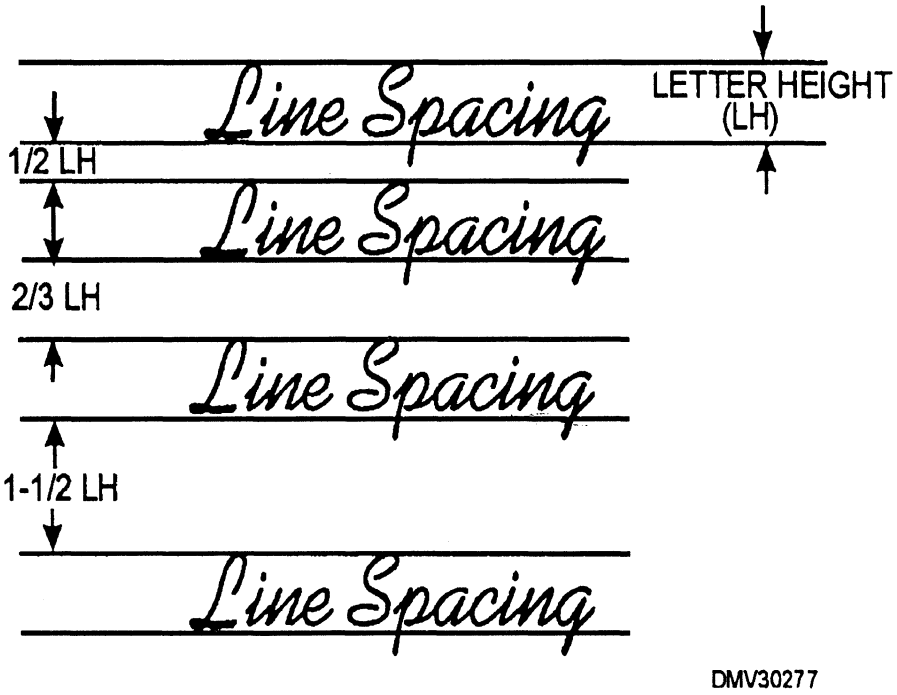

Figure 5-40.—Letter spacing or leading.

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Centering

Centering letters, in both formal and informal page layouts, presents a pleasing and easily understood hierarchy of information. Since the letters of an alphabet vary in width, the location of the first and last letters of words you want to center is difficult to project. There is more than one method for centering letters on a page. One method of centering letters on a page is to letter a piece of scratch paper, fold the paper in half to find the centerline (CL), and transfer the letters to the original.

Figure 5-41 illustrates how to find the center of a lettered piece of scratch paper.

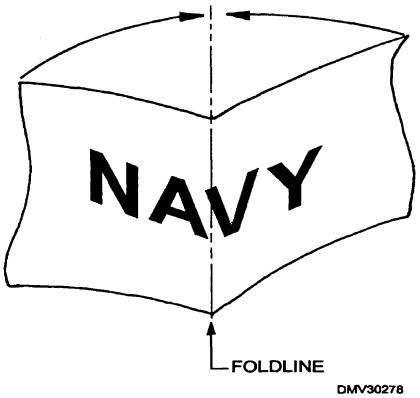

Figure 5-41.—Folded scrap paper locates centerline.

Another method of centering letters on a page involves counting the number of characters on a line and dividing them in half. Punctuation, lower case "l," and the letter "i," in both upper and lower case, count only as ½ a letter because they take up less space.

Figure 5-42 illustrates the counting method of centering words.

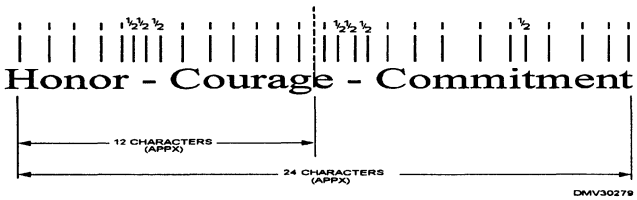

Figure 5-42.—Counting characters to center words.

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Justification

Justification is an adjustment in spacing that makes lines of lettering equal in length regardless of the number of characters per line. Each line starts and stops on the same margin line as every other line. Although symmetrical in appearance, overuse of this technique becomes monotonous.

Figure 5-43 shows three lines of type justified.

Tradition, valor, and victory are the Navy's heritage from the past. To these may be added dedication, discipline, and vigilance as the watchwords of the present and the future. Never have our opportunitites and responsibilites been greater. Service to God and Country is our special privilege. We serve with honor.

DMV30280

Figure 5-43.—Justification.

Flush left or right

Lettering set flush left or right have a common beginning (flush left) or end (flush right). Flush set lettering is very effective and offers an asymmetrical balance more typical of informal lettering layouts.

Figure 5-44 shows how lettering set flush left or right enhance informal lettering layouts.

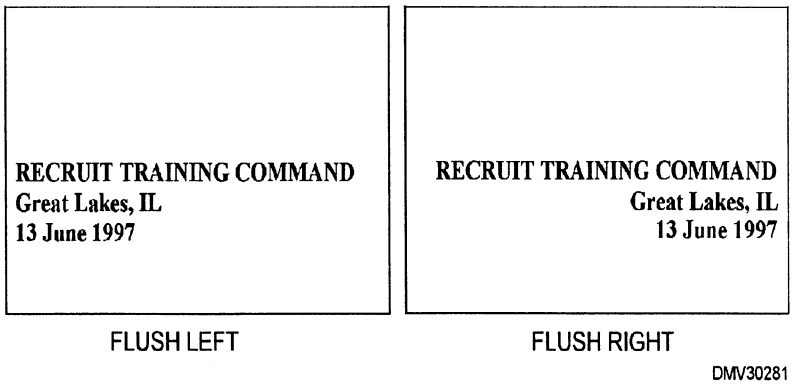

Figure 5-44.—Flush set lettering.

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Overlapping letters

Overlapping letters is a valid design concept particularly with informal lettering layouts. When overlapping letters, take care not to overly deform the integrity of the letters and render them illegible. Allow enough letter form to remain so that the eye can fill in the remaining parts and identify the letter.

Figure 5-45 is an example of properly overlapped letters.

DMV30282

Figure 5-45.—Properly overlapped letters.

Negative letters

Letters rendered in negative format are simply letters where the space around them is filled in and the letters themselves appear empty. Negative letters are more appropriately suited to informal lettering layouts.

Figure 5-46 shows a negative letter format.

DMV30283

Figure 5-46.—Negative letters.

Lettering Mediums

Introduction

The style of lettering is directly influenced by the tools used to produce it. The type of tool you use determines the type of paper you select to letter on. Selecting a tool compatible with the paper surface makes the job of lettering much easier.

Lettering surfaces

Lettering surfaces include a great variety of papers and surfaces such as posterboard, masonite, and plywood. When selecting paper for pen and ink lettering, choose a smooth-surfaced bristol board. Medium and rough surfaced bristol or paper is more suited to paints and brushes, pencils, pastels, charcoal, crayon, and felt-tipped pens. When selecting more rigid substrates like metals and woods, prepare the surface with multiple base coats of paint and lightly sand surfaces smooth in between coats. A smooth surface allows the brush to deposit paint without drag, which causes ragged letters.

Media

The purpose of the finished product dictates the media and tool you letter with. Finished letters should be sharp, clean, and opaque. Pencils, pen and ink, paints and brushes, and chalks, crayons, pastels, and felt-tipped pens are all common tools capable of producing a finished letter.

Figure 5-47 are common lettering tools.

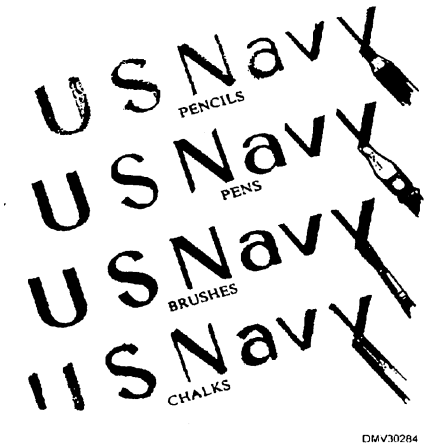

Figure 5-47.—Common lettering tools.

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Pencil letters

Lettering pencils should produce dense black strokes. Select hard lead pencils for papers with tooth. Soft lead pencils are better suited to smooth surface papers, but lead should not be so soft that it requires continued sharpening. For large letters, use carpenter's pencils sharpened to a square chiseled point. Hold the pencil with the thumb, forefinger, and second finger of the hand in a normal writing position. Place the lead of the pencil at a 30-degree angle to the letter guidelines. Experiment with a number of different pencil grades to find a pencil you can use comfortably.

Figure 5-48 shows how to hold a carpenter's pencil when you letter.

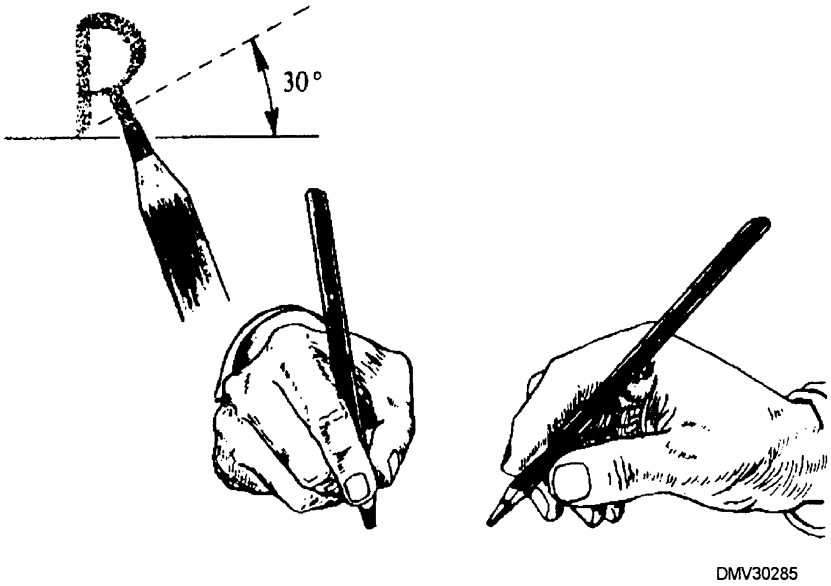

Figure 5-48.—Holding a carpenter's pencil to letter.

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Pens and ink letters

Pens and ink produce dense black, opaque strokes. Pens have differently shaped nibs that determine how easily serifs will execute. Standard lettering nibs are used for letters up to 72 points in height. Larger letters require especially large nibs. Left-handed DMs will want to purchase pen nibs particularly suited to left-handed letterers. These nibs have angled tips cut opposite to standard lettering pens. Hold lettering pens as you would pencils. Do not grip the handle too tightly or you lose the sense of feel necessary to execute proper letter forms. Wipe nibs often with soft tissue to remove paper fibers that cause ragged edges. Always follow manufacturer's instructions for cleaning before putting pens away.

Figure 5-49 shows different types of lettering nibs.

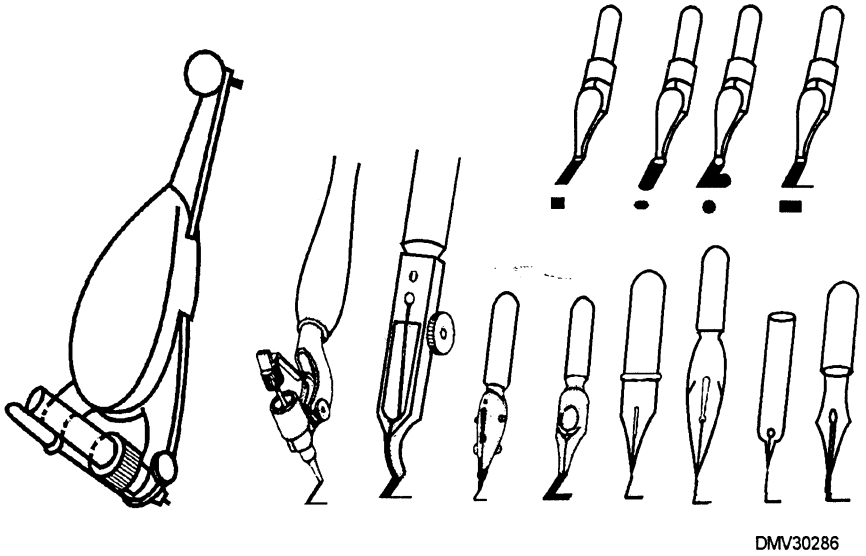

Figure 5-49.—Lettering nibs.

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Brush letters

Lettering with brushes requires more skill and patience than lettering with pens. Two types of brushes are common to lettering. One type brush is red sable brushes with round ferrules and square tips ranging in size from very small (No. 1) to very large (No. 24). This brush is called a rigger. The second type of preferred brush is red sable brushes with flat ferrules ranging in size from small (1/8 inch) to large (1 inch). Choose a brush size equal to the desired width of the stroke. You may hold brushes in the same way you hold pencils or you may use a two-finger grip on the middle of the ferrule. The brush bristles should form approximately a 90-degree angle to the lettering surface.

Figure 5-50 shows a brush held 90 degrees from the lettering surface with a two-finger grip.

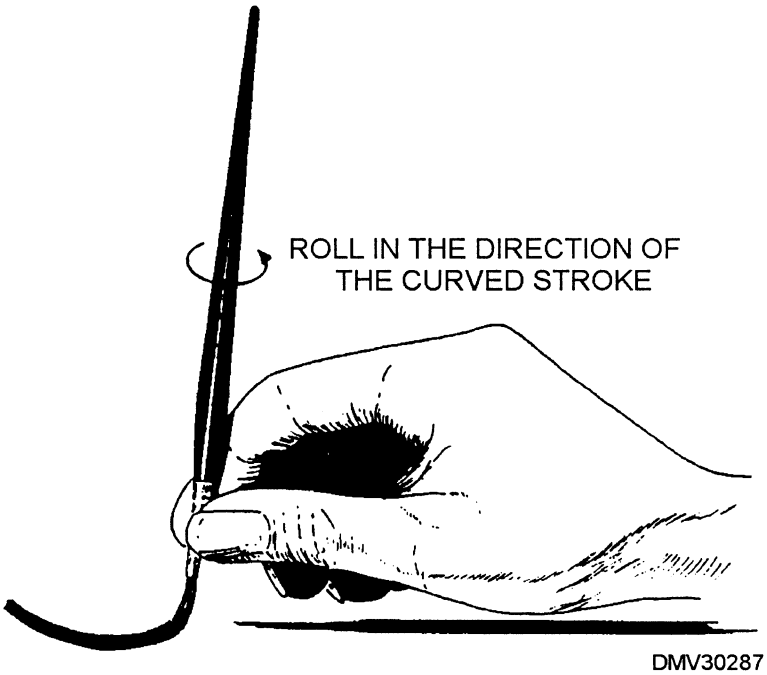

Figure 5-50.—A rigger brush held with a two-finger grip.

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Brush lettering (Continued)

For more stability when hand lettering, use a sign painter's mahlstick to brace the lettering hand over the surface. A mahlstick is a long stick with a rubber tip to prevent sliding that supports a sign painter's wrist above the lettering surface.

Figure 5-51 illustrates how to use mahlsticks.

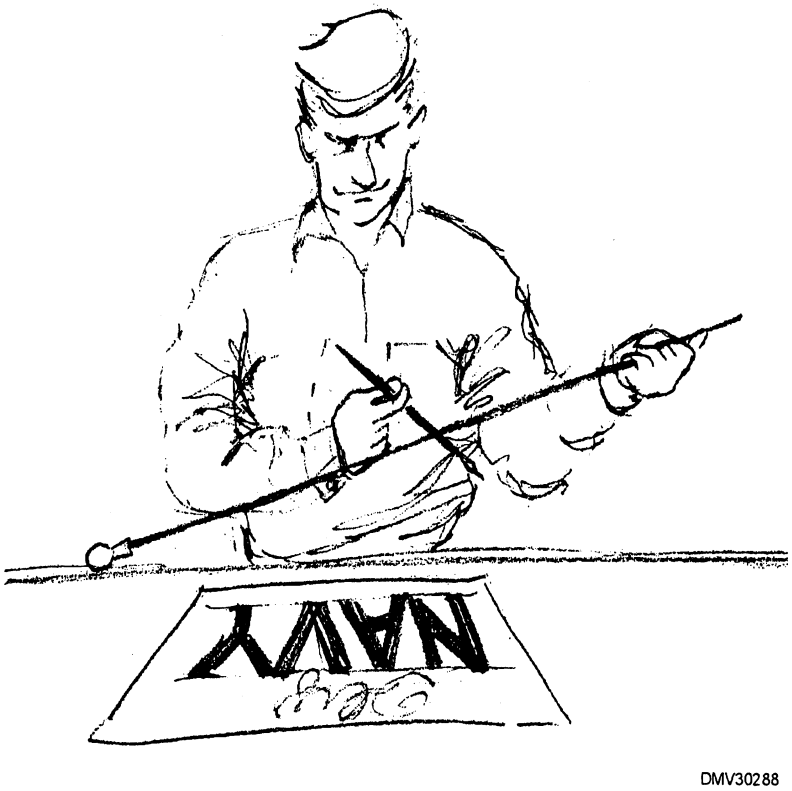

Figure 5-51.—Using a mahlstick.

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Brush letters (Continued)

To prepare brushes for lettering, load the brush with pigment and palette the brush back and forth across a piece of scrap paper. Form each stroke with the tip of the brush. Make sure the brush has a sufficient amount of pigment and that the pigment is properly positioned near the flags or tip of the brush.

Figure 5-52 illustrates how to palette brushes to position the load of pigment near the flags.

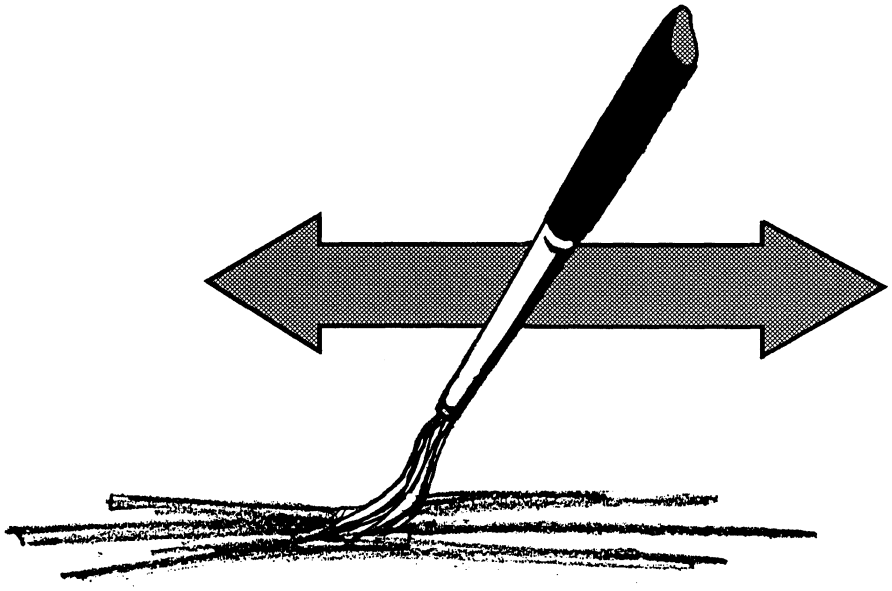

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Figure 5-52.—Palette brushes to position paint.

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Chalk, charcoal, pastel, and felt-tipped pen letters

Letters made with chalk, charcoal, pastel, and felt-tipped pens are similar in execution to letters created with pencils. A wide variety of colors are available. When you use the sides of the chalk, charcoal, and pastels, it creates wide strokes. When you use chalk, charcoal, and pastels, spray fixative over the finished letters to prevent smudging and smearing. Felt-tipped pens come with small, medium, and large tips. Some markers specifically designed for lettering already have angled tips or split tips. Paint markers that imitate brush strokes are also on the market. Check to make sure whether the marker you choose is opaque or transparent, waterproof or water soluble.

Figure 5-53 shows different tips on felt-tipped markers intended specifically for lettering.

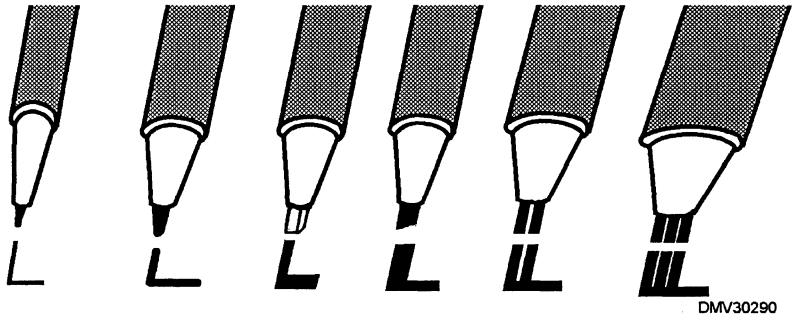

Figure 5-53.—Different lettering nibs on felt-tipped markers.

Lettering Aids

Introduction

Several mechanical devices assist the DM in creating finished lettering suitable for display or reproduction. These devices include lettering guides, photolettering machines, and mechanical lettering devices.

Letterguides

Letterguides are clear plastic templates pierced with holes that automatically lay out lettering guidelines. One of the most basic lettering aids available, letterguides eliminate the constant measurement of guidelines.

Lettering templates

Lettering templates ensure that letters and figures made by them are absolutely uniform. There are two main styles of lettering templates. Letterspacing is accomplished optically. One style of templates is packaged as lettering sets consisting of a series of engraved templates with a groove along the bottom. Scribes, sometimes called bugs, fit a tailpin into the template groove and trace letters on the template with a tracer pin to the paper surface. Only technical pens with conical tips fit the scriber pen holder. Do not apply an excessive amount of hand pressure when you are lettering. This causes the pen to dig into the paper surface.

Figure 5-54 shows a template and scriber.

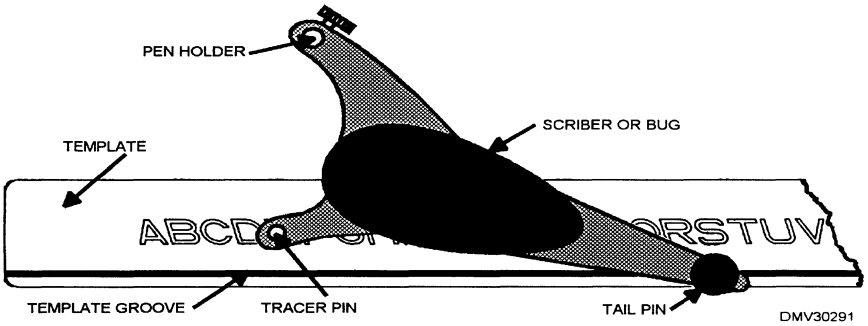

Figure 5-54.—A template and scriber.

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Lettering templates (Continued)

The second set of lettering templates have letter forms cut directly out of the template. The DM traces the letter form in the template onto the paper surface. Technical pens with either conical or tubular tips may be used in the template.

Figure 5-55 shows a lettering template with letter forms cut out.

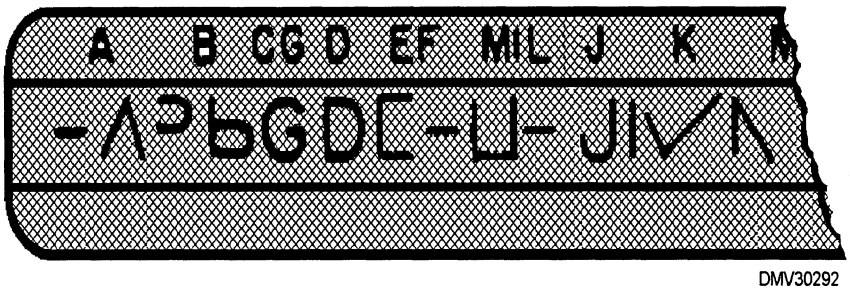

Figure 5-55.—A lettering template with forms cut out.

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Photolettering devices

Photomechanical lettering devices use the principles of photography to produce uniform letters. Most photolettering machines control font selection, letter size, line length, letter density, word, line, and letter spacing, type position, and leading. Some devices produce display as well as body type. The output of photolettering devices is strips or pages of black letters on white paper or film.

Computer-generated letters

Letters produced by computers are uniform and dense when printed with laserjet printers. Letters produced on dot matrix printers are not suitable as finished lettering. You may compose the layout of the finished product on the computer screen, or you may cut and paste the letters together later. Difficulty arises when your requirements exceed the capability of the software in the computer. Remember, the definition of point size in the printing industry is very different from the definition of point size in the computer arena. Computers may also refer to letter size in pixels. Both points and pixels in the computer language are much smaller and do not equate to the printing industry definition.

Figure 5-56 illustrates the great difference between a 72-point letter and a computer version of a 72-pixel/point letter.

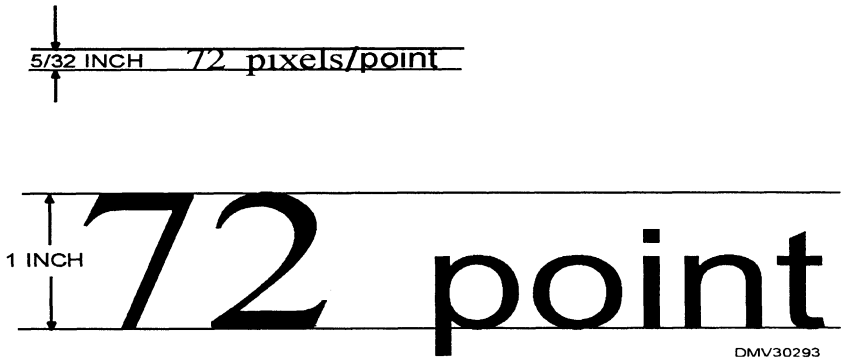

Figure 5-56.—The difference between a 72 pixel/point letter and a 72 point letter.

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Pressure process lettering devices

Pressure process lettering devices create letters you can cut and paste into place on layouts. Pressure process lettering machines may be automatic or manually operated. Automated pressure process lettering machines have a keyboard, limited memory storage, and a monitor. These lettering devices produce letters on strips of paper and film. Some papers and films are adhesive backed.

Transfer letters

Transfer letters are preprinted letters on adhesive-backed acetates sheets. The adhesive is a repositionable, wax-based adhesive that allows some latitude in positioning letters until burnished over the acetate surface with a burnisher. Some transfer letters require cutting the acetate around the letter and burnishing the patch onto the layout. Transfer lettering that requires cutting is similar to paste up lettering. The major disadvantage to transfer letters is the tendency to run out of frequently used letters.

Figure 5-57 shows examples of transfer letters.

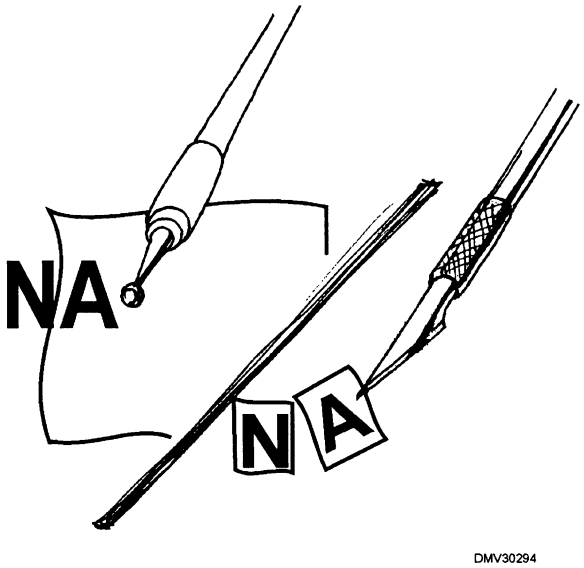

Figure 5-57.—Transfer letters.

Calligraphy

Introduction

Calligraphy is a special artform. International organizations exist to promote calligraphic skills. Calligraphy is having a resurgence in popularity. Even with poor handwriting skills, you can develop a serviceable calligraphic hand that will prove valuable in your career as an Illustrator Draftsman.

Calligraphy

Calligraphy is the art of beautiful hand lettering. Although letter styles have geometric standards, an individual's personal taste, style, and creativity alter static letter forms to impart life and vitality into letters. For further study of calligraphy, study the work of world renown calligraphers such as Sister Jeannine Klemm, OP, Margaret Shephard, and Scott Kim.

Calligraphic terms

In addition to referring to capital letters as uppercase, UC, or caps, calligraphic capitals are called majuscule letters. Majuscule letters decorated more ornately than letters in the body of text are called illuminated letters. Lower case or LC letters are called minuscule letters.

Figure 5-58 is an example of an illuminated letter.

Figure 5-58.—An illuminated letter.

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Left-handed calligraphy

Left-handed DMs have slightly more difficulty in lettering. Left-handed DMs have three options that will make lettering easier to execute. The first option is lettering with the hand above the top of the paper. The second option is to purchase special pens with left oblique nibs and turn the sheet of paper slightly to the left. Lastly, left-handed DMs may use the same nib right-handers use but may need to turn the sheet of paper 90-degrees clockwise. Write from top to bottom taking care not to smear previously executed letters.

Figure 5-59 illustrates the different lettering options open to left-handed letterers.

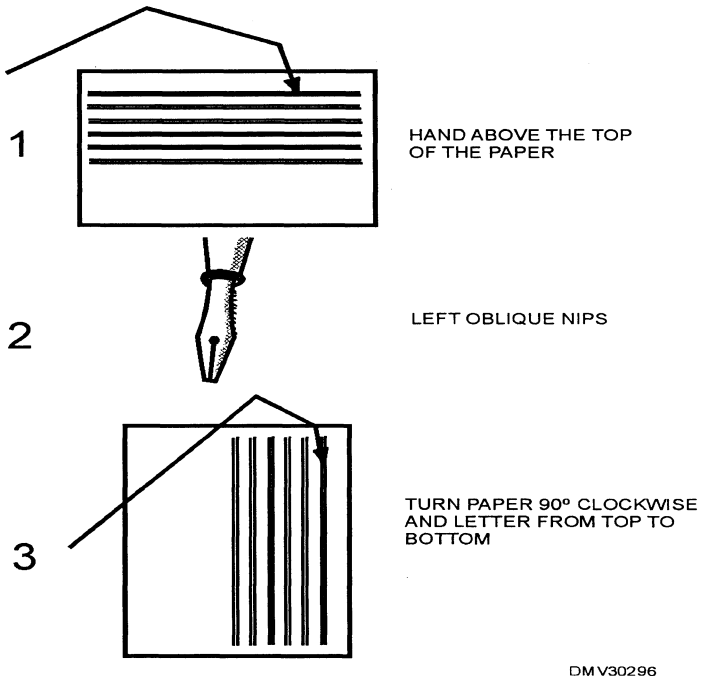

Figure 5-59.—Lettering options for left-handed letterers.

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Holding the pen Let the pen rest on the knuckle of your middle finger and hold the pen with your thumb and forefinger. Your forefinger should remain arched. If your forefinger straightens, you are pressing too hard. There should be very little pressure of your fingers on the penholder, between the pen nib and the paper, and your hand on the tabletop.

Figure 5-60 shows how to correctly hold a lettering pen.

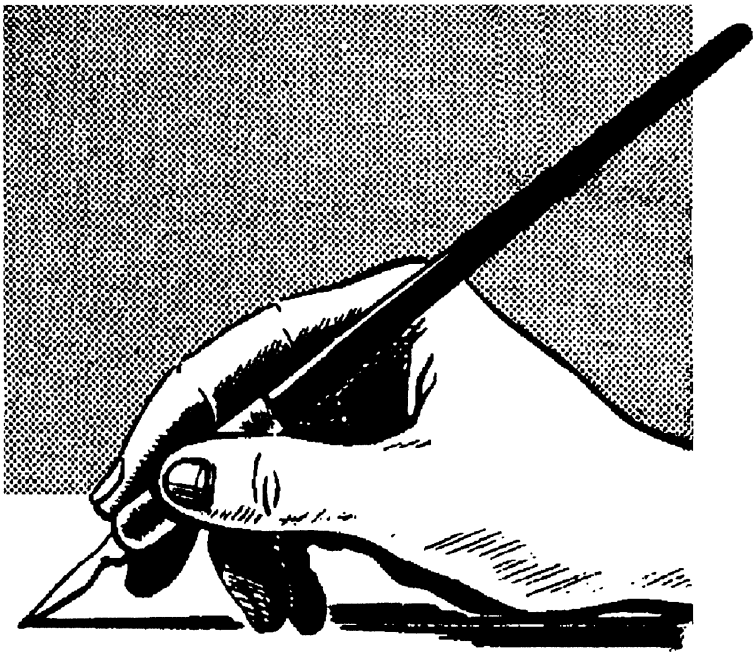

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Figure 5-60.—Holding a lettering pen correctly.

Practice There is no substitute for practice in calligraphy. It takes time to develop the forearm, wrist, hand, and eye coordination required to letter beautifully. Practice regularly. When tired or tense, stop practicing until more rested. Plan to practice uninterrupted.

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Guidelines

Guidelines for calligraphy are the same as the guidelines for general lettering. There is a capline, baseline, waistline, line of ascent, and line of descent. Vertical guidelines or lines of inclination indicate the vertical orientation of letters. If you are lettering letters with kerns, you may want to add a branch line. A branch line uniformly indicates where kerns are to meet letter stems. Draw a branch line at an arbitrary distance between the waistline and baseline.

Figure 5-61 shows the placement and purpose of branch lines.

Figure 5-61.—The placement of branch lines.

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Distance between guidelines

The distance between guidelines is determined by the width of the pen nib you intend to use to execute the letters. Penwidth is shown by lining up pen widths in a stack at the left side of the guidelines. The penwidth ratio for most letter styles is shown in figure 5-62.

Figure 5-62 illustrates penwidth distance for letter guidelines.

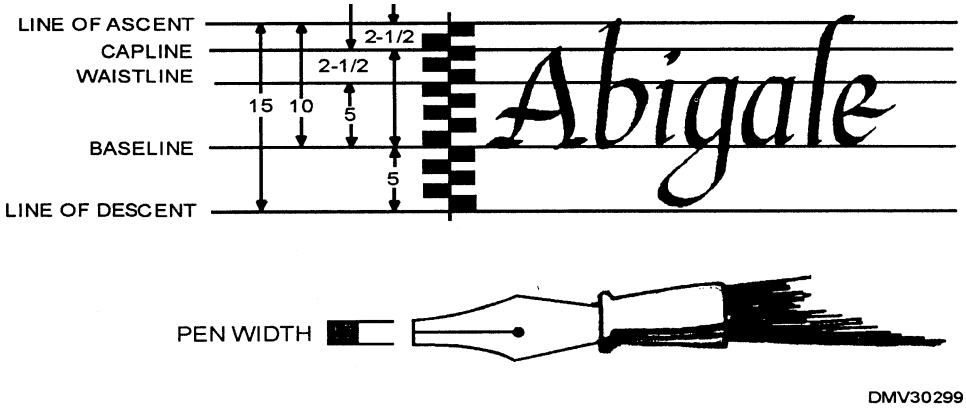

Figure 5-62.—Penwidth distance sets letter guidelines.

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Basic strokes

Practice the six basic lettering strokes. All letters are some variation of these basic strokes. Get comfortable using the six basic strokes before attempting letters and words. Listening to music makes the task of repetitiously practicing the basic strokes less monotonous. As you practice, select the strokes in a sequence that reflects the rhythm of the music. You will soon realize that calligraphic lettering has a pattern and a rhythm of its own.

Figure 5-63 illustrates the practice of rhythmically practicing basic lettering strokes.

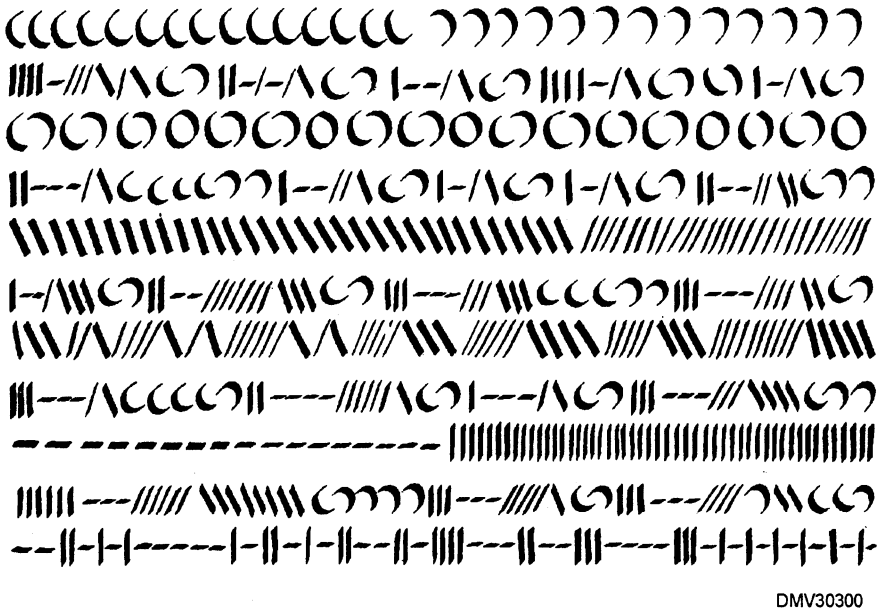

Figure 5-63.—A practice sheet of basic lettering strokes.

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M-chain method

Practicing letter forms with a lower case “m” between each letter is called the m-chain method. When you are ready to begin creating letters, start by lettering lower case letters. In between each minuscule, place the lower case letter “m.” The letter “m” will accustom you to a sense of space around each form. Once comfortable with lower case letters, begin lettering the uppercase letters. Again, place a lower case “m” between each majuscule.

Figure 5-64 is an example of how practice sheets of the m-chain method should appear.

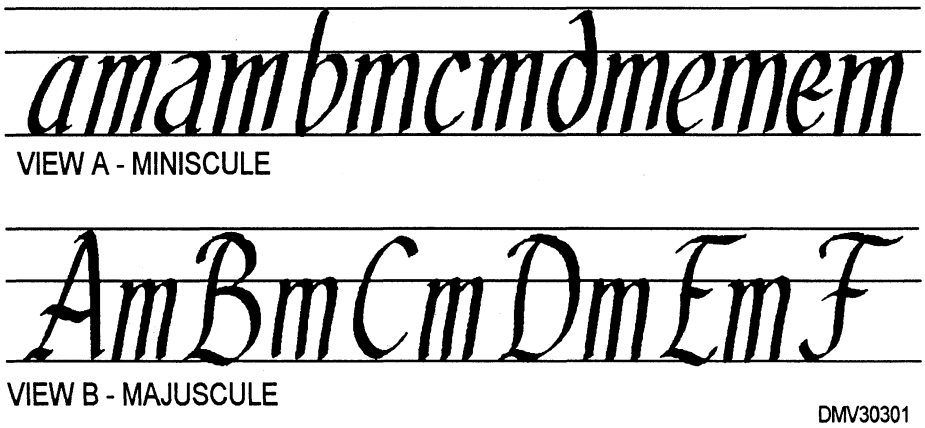

Figure 5-64.—M-chain practice sheets: A. Minuscule letters, B. Majuscule letters.

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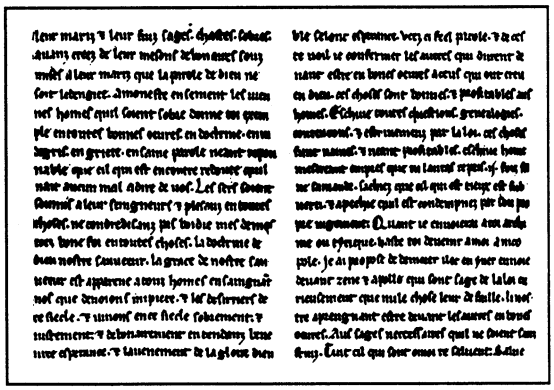
Progressing from the m-chain

Once you understand letter forms and the space they require, stop placing the letter “m” between the letters. As you draw each letter form, attempt to optically space individual letters beside each other. Starting with the letter “a,” repeat the letter until you have executed a correct form. Move to the next letter of the alphabet only after execution of a correct letter “a.” Progress through the entire alphabet and include the numbers 0 through 9. A good way of practicing without the m-chain is to copy manuscripts.

Figure 5-65 shows a practice sheet without the m-chain and a manuscript of lower case letters.

VIEW A



VIEW B

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Figure 5-65.—A practice sheet: A. Without an m-chain, B. Manuscript copy.

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Forming words in sequence - returning to the m-chain

Forming words after extensive practice lettering lower case letters is a relatively easy progression. It is the spacing between words you have yet to understand and develop. Return to the m-chain, inserting the lower case letter “m” between each word. Once comfortable with the space that the letter “m” creates, stop using the m-chain for words.

Figure 5-66 shows practice sheets with and without the m-chain between words.

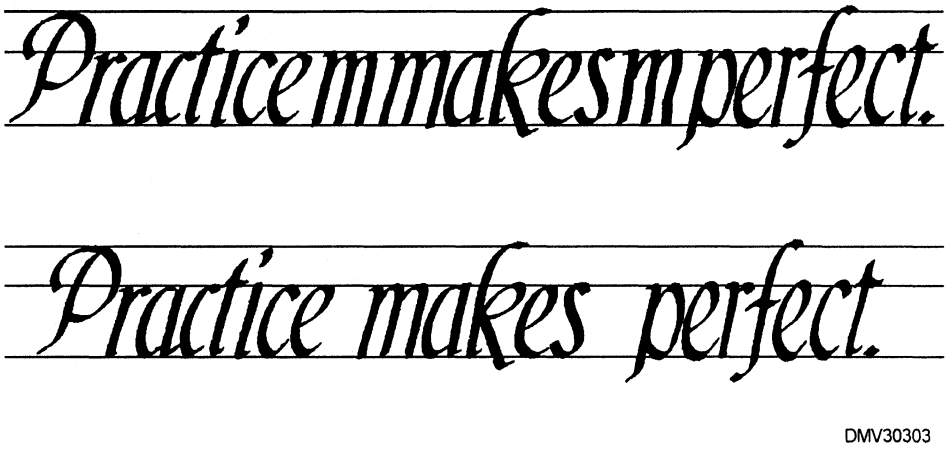

Figure 5-66.—Word practice sheets with and without the m-chain.

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In-the-round lettering

Lettering in-the-round is letter forms in a circular format. Lettering in-the-round creates a whole new set of spacing challenges. Letters composed in a round format have spaces expanded at the top and condensed at the bottom of the letter. Begin by establishing a center point and drawing the basic guidelines as concentric circles. Draw the vertical guidelines as radii projecting from the center point of the circles the basic guidelines form. As you letter, rotate the paper so that the letter form you are currently creating is oriented to you as it would normally be.

Figure 5-67 illustrates the format for lettering in-the-round.

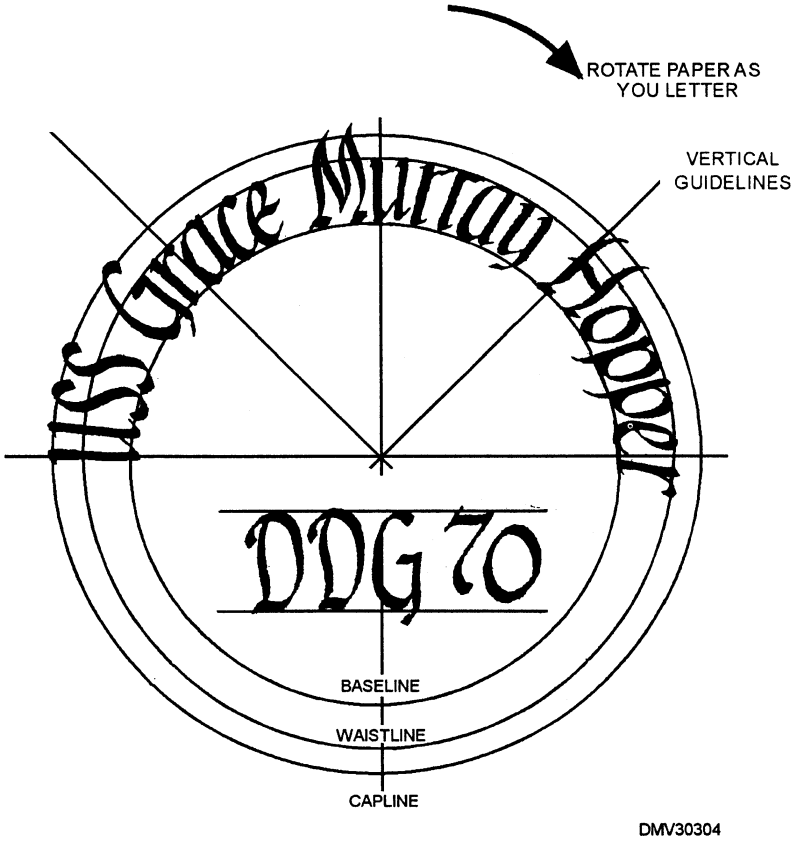

Figure 5-67.—Lettering in-the-round.

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Variations

Once you learn the basic strokes, are able to create well-formed letters, and compose letters into words and phrases, you may begin the alteration of letter forms based on personal taste. Extend the serifs, change the geometric proportion of the serif to letter, or add extensive flourishes to letters to create a letter style of your own. Once you develop a personal letter style, create an entire alphabet, the numerals 0 through 9, and punctuation and record it as a style sheet for later reference.

Figure 5-68 is a style sheet for a letter form created with a felt-tipped pen.

Figure 5-68.—A style sheet for a letter created with a felt-tipped pen.

Summary

Review

This chapter covers lettering and calligraphy. Lettering terms are clearly defined. Lettering procedures are divided into manageable tasks such as drawing guidelines and practicing the six basic strokes. There is a brief discussion on letter classifications and their purposes. Lettering should be an integral part of the composition. Compositions containing letters in the layout deserve careful planning with an understanding toward formal and informal presentations. Lastly, there is a overview of calligraphy and its associated procedures and terminology from which the student should examine and develop lettering skills.

Comments

Throughout your career, one question that surfaces once someone finds out that you are a DM is, can you do those fancy letters? Everyone needs something lettered, be it a boat, car, or nameplate. One retired DM has a commercial business grossing more than $300,000 a year by lettering. Sister Jeannine Klemm, OP, financed and maintained an art studio, print shop, and entire art-oriented wing of a private college through her work as a calligrapher. Local sign painters possess great hand lettering skills. Hang around and watch how the sign painter plies his craft. Learn from the experience. You can develop your lettering skills and enjoy the art form of calligraphy even if you do not have the benefit of learning from a world class master calligrapher.