TELETYPESETTER
PERFORATOR OPERATOR'S
TRAINING REFERENCE
MANUAL

TELETYPESETTER Corporation

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CHICAGO 14, ILLINOIS

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THIS MANUAL . . .

was prepared to assist in the training of personnel for operation of the TELETYPESETTER PERFORATOR.

TELETYPESETTER
REG. U. S. PAT. OFFICE

PREFACE

Presumably most of our readers already are acquainted with Teletypesetter and the increasingly important role it is assuming in the graphic arts industry. For those who are not, as well as for the many already in the industry who are currently seeking to expand their capabilities, we offer the following by way of introduction.

The Teletypesetter method of producing type is a semi-automatic procedure for obtaining maximum results from linecasting machine operation. It begins with the preparation of tape on a typewriter-like machine known as the TELETYPESETTER PERFORATOR and ends with the utilization of this tape in a TELETYPESETTER OPERATING UNIT installed on an Intertype or Linotype linecasting machine – where it operates the linecasting machine automatically at its geared output level, turning out lines of type ready for use.

This modern composing room procedure has opened up a new and rapidly expanding field for qualified touch system operators. In the publishing plant the Perforator Operator has the "key" assignment of translating copy into the tape which will control the entire sequence of operations performed by the linecasting machine in turning out the finished lines of type. It is a challenging task which demands both speed and "know-how" – the ability to produce tape that does not require "reruns" or manual corrections on the linecasting machine.

In order to become a good Teletypesetter Perforator Operator, it is desirable that you acquire some knowledge of linecasting machine functions as described in Part I of this manual. Next you must become acquainted with the Teletypesetter Operating Unit and Perforator and the various functions they must perform when type is to be set automatically. Then comes the job of mastering the prescribed Teletypesetter operating procedures and techniques, and of developing speed and efficiency on the Perforator keyboard.

To guide you in these important steps, we have prepared this training and reference manual. It contains all the information and instructions necessary to make you an expert Teletypesetter Operator. It will take time . . . study . . . practice and self-determination on your part – but as you acquire skill and proficiency in this new and interesting art, we predict you will find it well worth the effort!

TELETYPESETTER CORPORATION

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Operator Qualifications

THE PERFORATOR KEYBOARD must be operated by the touch system. This enables the Perforator Operator to prepare accurate tape at a rapid rate of speed with the least effort. It is therefore recommended that the candidate for Perforator Operator training be capable of a touch typing speed of at least 60 words per minute. Operator candidates should also have a good working knowledge of basic English and syllabication.

A Message to Teletypesetter Perforator Operators

THOSE WHO ARE PLANNING to make Teletypesetter operation a career, will find this kind of work both pleasant and profitable.

The candidate will recognize that much of the detail in this manual is material which is familiar to any competent typist and that operation of the Teletypesetter Perforator can be mastered in a very short time. By actual experience, in hundreds of cases, qualified operators have produced useable tape within a day or two after starting instructions and have progressed to a substantial output level within a matter of weeks. Most operators have been able to produce over 400 lines per hour after six months experience.

TELETYPESETTER CORPORATION

PART ONE

Introduction to the Teletypesetter Process

How a Linecasting Machine Operates

FOR MANY YEARS, the linecasting machine (Linotype or Intertype) has been a standard fixture in composing rooms, aiding immeasurably in speeding up the composition of type. Most readers are somewhat familiar with its manual operation—how the operator sitting at the keyboard depresses various keys to assemble matrices and spacebands, and thus forms the mold from which a finished line of type is cast.

In the Teletypesetter process, none of the functions of the linecasting machine are omitted, and no new functions are added. The improvement in machine output is obtained solely by eliminating the peaks and valleys of stop-and-go manual operation and substituting the steady, continuous, top-level production obtainable through automatic operation. Thus it is essential that we begin our training with a description of how a linecasting machine operates:

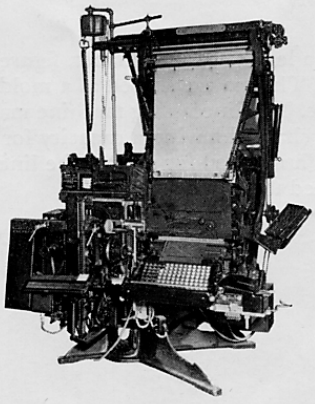


FIGURE 1. The Linotype

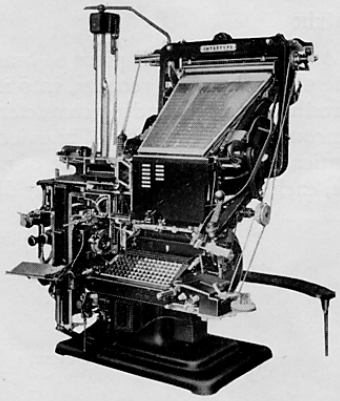


FIGURE 2. The Intertype

PART ONE

Introduction to the Teletypesetter Process

Linecasting Machine Keyboard

A LINECASTING MACHINE KEYBOARD contains 90 keys, arranged in six rows of 15 keys each, plus a spaceband lever. Figure 3 illustrates a standard fraction linecasting machine keyboard arrangement. Keybuttons are generally arranged in three colors: Lower case characters, black; punctuation marks, figures, and special characters, blue; and the capitals, white. The release of a matrix from the linecasting machine magazine is the final result of a sequence of operations begun with the touch of a keybutton.

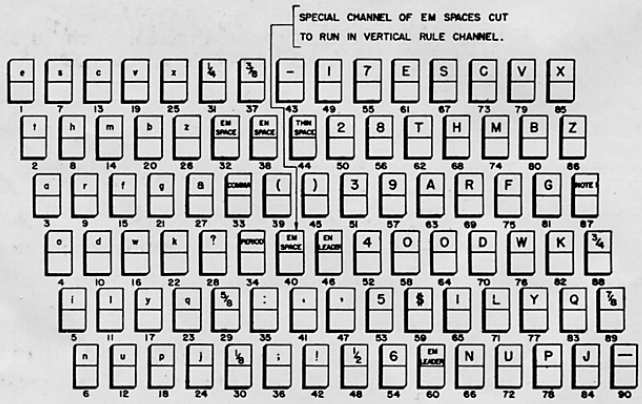


FIGURE 3. Standard layout supplied for Teletypesetter operation where fractions are required.

NOTE 1: Channel 87 will contain press service logotype, (AP), (INS), (UP).

Matrix

A MATRIX is a small piece of brass with a letter of the alphabet, figure or some other character recessed into its edge. The matrix is used as a mold to reproduce a corresponding character in type. The linecasting machine magazine contains 90 channels of matrices, each channel having a capacity for 21 identical matrices. When a line of matrices has served for casting the line of type, each matrix is automatically distributed to its proper channel.

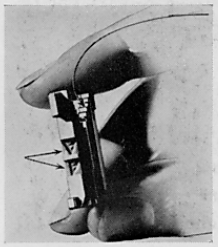


FIGURE 4. Matrix (Front View)

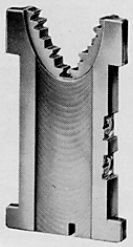


FIGURE 5. Matrix (Side View)

Spaceband

THE SPACEBAND consists of a unit of two thin wedge-shaped pieces of metal used as spacers between words of a line. Upon completion of the line, the spacebands are automatically separated from the matrices and returned to the spaceband box. Each line of type must contain at least one spaceband when line justification is required.

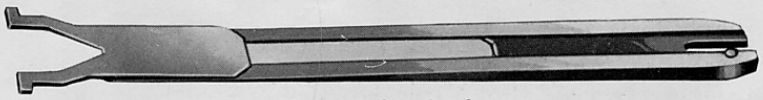


FIGURE 6. Spaceband.

Assembling a Line of Type (Manual Operation)

AS THE MANUAL operator "keyboards" copy, matrices are released from the magazine. The matrices fall by gravity to a rapidly moving conveyor belt, which carries them into an assembling elevator, assembling the matrices into words.

In response to the operators touch of the spaceband lever at the right time, spacebands drop between words. Visual judgement of justification is accomplished by the operators knowledge of total expansion of the spacebands in the line compared to the amount of space left to fill the line. If the line fails to meet justification, the operator must add the required extra spacing to the line.

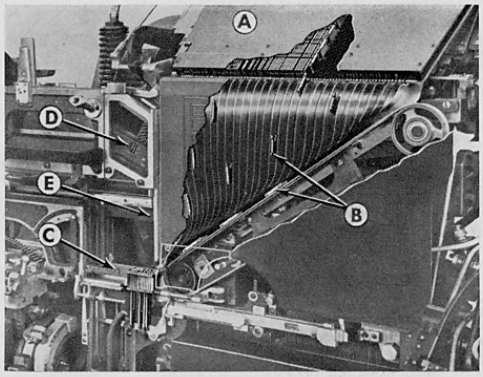


FIGURE 7.
ASSEMBLY OPERATION.
A—Magazine of matrices.
B—Matrices dropping for assembly.
C—Assembling elevator.
D—Spacebands.
E—Spaceband chute.

Casting a Line of Type

THE MATRICES AND SPACEBANDS which have been selected to form the line of type are elevated and transferred automatically to the casting mechanism where they are locked in place against the mold. Just before the casting of the line, the wedge-shaped spacebands are forced upward to spread the line to the exact column width. This is known as justification.

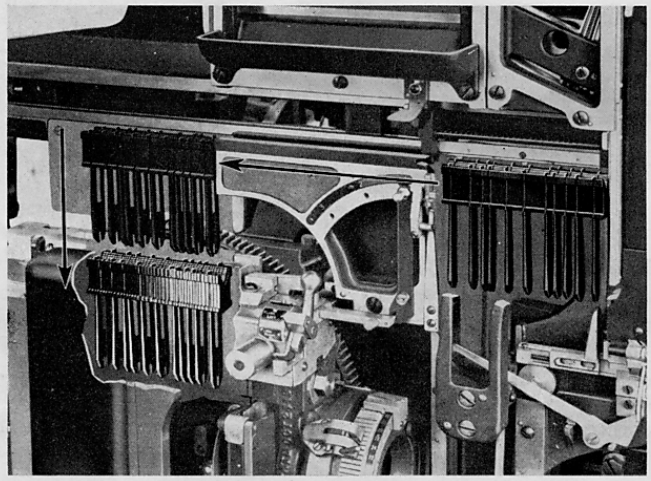


FIGURE 8. Casting Operation.

A slug (line of type) is formed by forcing molten lead into the mold, thereby filling the depressions of the letters in the matrices and at the same time forming the body of the slug.

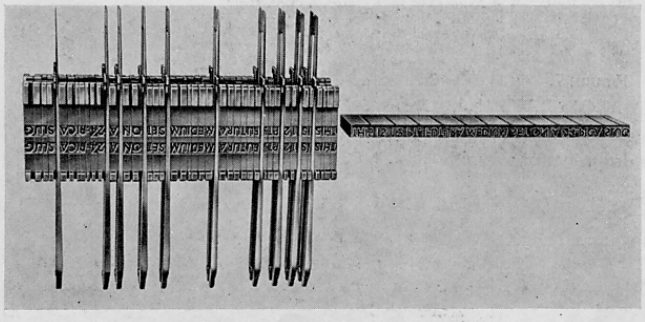


FIGURE 9. Assembled Line Ready for Casting and the Cast Slug.

The metal in the mold cools and hardens almost instantaneously. The slug is then ejected, trimmed, and delivered to the galley, and the matrices and spacebands are redistributed to their storage channels.

Until recent years linecasting machines were operated manually by an operator sitting at the keyboard. Today they are operated automatically — at a speed and cadence impossible to match by manual operation — by a tape-controlled device known as the Teletypesetter Operating Unit, which attaches directly to the linecasting machine keyboard.

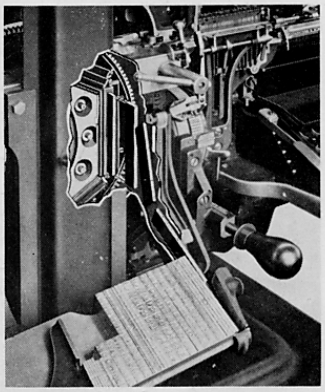


FIGURE 10.
Delivery of Completed Line.

Teletypesetter Operating Unit

THE TELETYPESETTER OPERATING UNIT is a self-contained portable unit that can be attached to all varieties of modern ninety-channel linecasting machines. Once a linecasting machine is so equipped, it may be converted instantly from automatic to manual operation—or vice versa—merely by turning the tape feed control lever on the Operating Unit.

FIGURE 11. Teletypesetter Operating Unit Attached to Linecasting Machine.

Figure 11 shows the Teletypesetter Operating Unit attached to a linecasting machine. Figure 12 shows a section of Teletypesetter tape. It is the function of the Operating Unit to "sense" the code combinations in the prepared tape and translate them into mechanical actions for automatic operation of the linecasting machine.

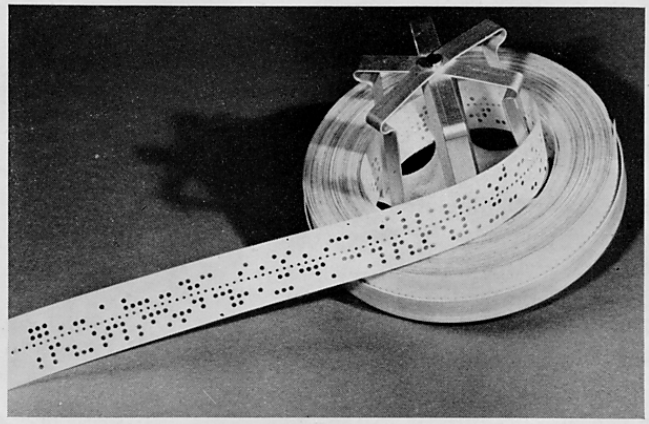


FIGURE 12. Teletypesetter Perforated Tape.

In general practice, the tape is placed on an unwind reel at the right of the Operating Unit (Figure 13). The inner end of the tape is placed under the tape lid with the feed holes meshed with the pins of the feed wheel. The tape is automatically advanced a step at a time.

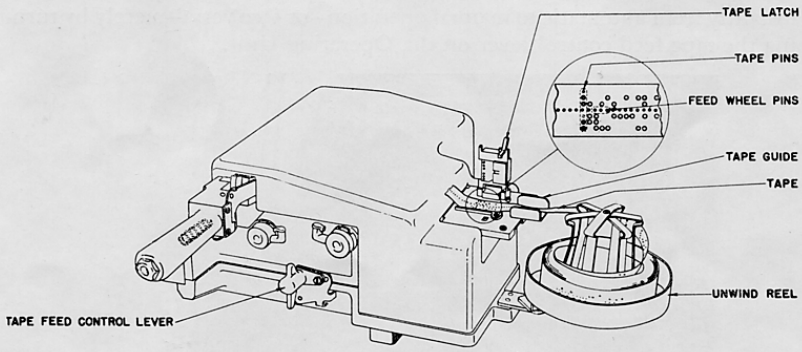


FIGURE 13. Diagram of Operating Unit (Partial View).

Each time the tape advances, six pins rise against the tape. Depending on the code combination, pins will pass through the holes in the tape while others will be blocked. The pattern of the pins sets up a mechanical code combination, actuating levers for automatic operation of the linecasting machine.

Since the Operating Unit can neither think nor act for itself but is actuated solely by the perforations appearing in the tape, it is obvious that the tape must incorporate provisions for all intermediate linecasting machine "functions," as well as select the characters and figures desired in the finished line of type. How all this is handled by the Perforator Operator is outlined in detail in Section II and Section III. Meanwhile, let's take a brief look at another important unit in the Teletypesetter process—The Teletypesetter Perforator.

Teletypesetter Perforator

THE TELETYPESETTER PERFORATOR is the machine on which the Operator prepares tape to be used in the automatic production of type. It has a touch system layout with the fastest keyboard ever designed for linecasting machine purposes. In addition to the keys, the Perforator contains a counting pointer and spaceband justification pointers which automatically indicate the width of each character and the minimum and maximum expansion limits of the spacebands, so that the Operator may readily determine the proper length of each line.

From the above it will be noted that the Operator—even though remotely located from the linecasting machine—has at his or her fingertips all the facilities essential to the preparation of "justified line" tape copy. Since it is the primary responsibility of the Operator to employ this Perforator to turn out usable tape from the copy submitted, it is of the utmost importance that the Operator be thoroughly familiar with all phases of the Teletypesetter process.

For this reason we shall devote the balance of this manual to a description of this all-important Perforator and to discussion of the various operating procedures and techniques employed in the Teletypesetter process.

PART TWO

Description of Teletypesetter Perforators

General

Two MODELS of Teletypesetter Perforators are in general use today. They are the Standard Perforator and the Multiface Perforator. Each has its own distinguishing characteristics and individual application in the publishing field.

Standard Perforator

THE STANDARD KEYBOARD PERFORATOR is designed for use with matrices cut on the unit system and is recommended for newspaper use. This Perforator contains a fixed counting mechanism.

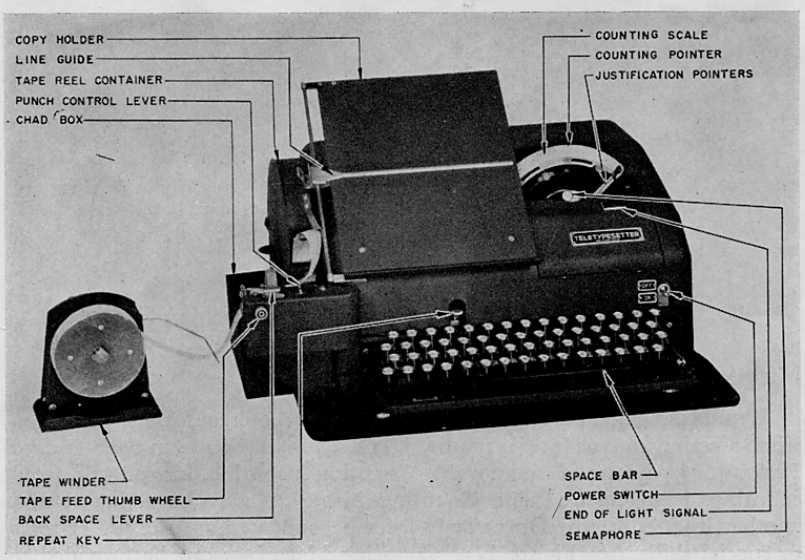


FIGURE 14. Standard Perforator.

PART TWO

Description of Teletypesetter Perforators

Keyboard Arrangement (Standard Perforator)

THE STANDARD PERFORATOR keyboard has a compact touch system layout similar to that of a typewriter, plus additional keys to control the fixed spacing and various functions of the linecasting machine.

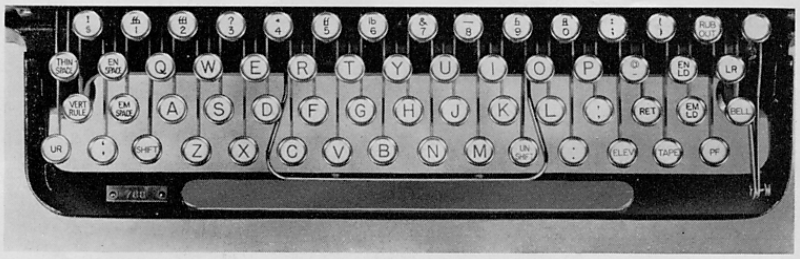


FIGURE 15. Teletypesetter Standard Perforator keyboard layout when fractions are not required.

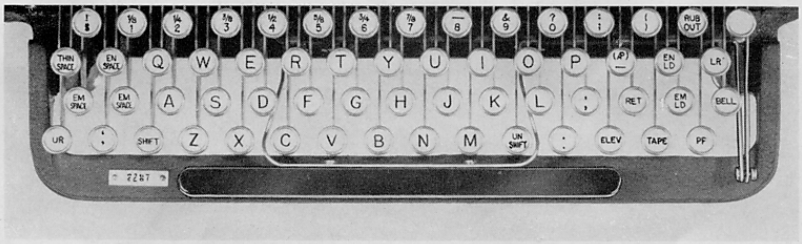


FIGURE 16. Teletypesetter Standard Perforator keyboard layout when fractions are required.

Multiface Perforator

THE MULTIFACE PERFORATOR is employed for book and job composition when a variety of type faces is required. It is distinguished from the Standard Perforator by its use of a removable Counting Magazine, instead of a fixed counting arrangement. The Counting Magazine may be removed and another inserted by the Operator in a few seconds without the use of tools or special skills (see Figure 17). Counting Magazines can be provided to count any font of matrices from 5½ to 14 points.

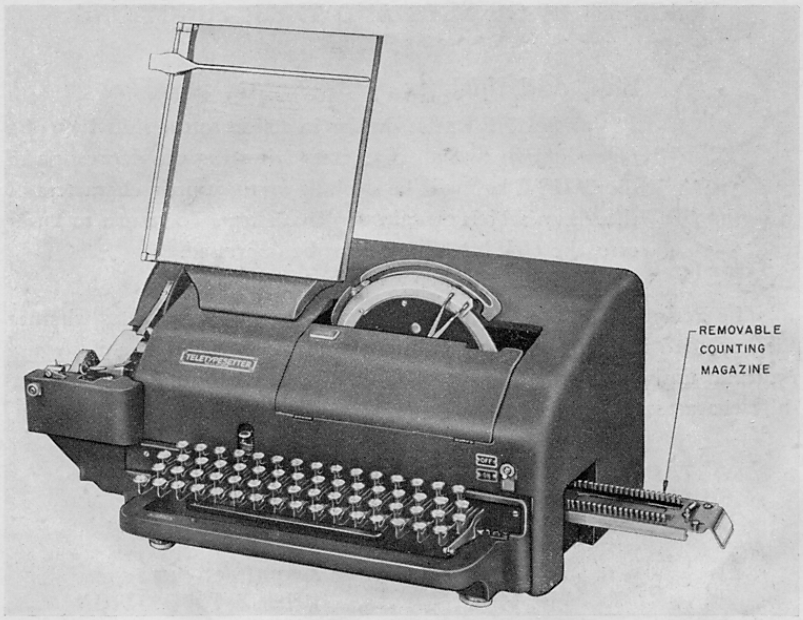


FIGURE 17. Multiface Perforator.

Keyboard Arrangement (Multiface Perforator)

THE MULTIFACE PERFORATOR keyboard has a compact touch system layout similar to that of a typewriter, plus additional keys to control the fixed spacing and various functions of the linecasting machine.

FIGURE 18. Teletypesetter Multiface Perforator keyboard layout when small caps are required.

DESCRIPTION OF KEYS AND THEIR FUNCTIONS

FIGURE 19.

Shift and Unshift

THE SHIFT KEY is similar in action to the shift lock of a typewriter in that all characters following the depression of the SHIFT key will be capitals or the upper characters of those keys which contain two characters. To return to lower case, the UNSHIFT key must be depressed.

The Perforator is equipped with a semaphore which indicates whether the keyboard is in the shift or unshift position; red indicates shift, white indicates unshift. Figure 20 shows the method of obtaining shift and unshift characters.

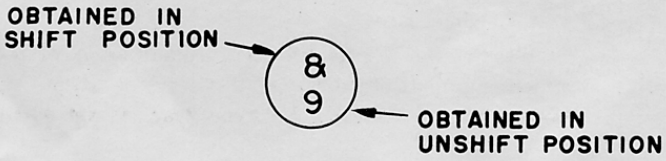


FIGURE 20.

FIGURE 21.

Alphabet Keys

THE PERFORATOR KEYBOARD shows the 26 alphabet characters as capitals. Lower case characters are obtained in the unshift position, and capitals in the shift position.

Space Bar

THE SPACE BAR on the Perforator keyboard is similar to a space bar on the typewriter except that it selects an expandable space as required in printing.

FIGURE 22.

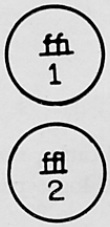


FIGURE 23.

Figures

THE PERFORATOR KEYBOARD contains the figures 1 through 0. (Note that the lower case "L" is not used to obtain the figure 1; a separate key is provided for this figure.)

FIGURE 24.

Return and Elevate

THE RETURN KEY serves to return the counting pointer and spaceband justification pointers to their respective start positions and to return the carriage on a Teletype Page Printer when used.

The ELEV Key perforates a combination in the tape which automatically delivers the line for casting, and to line-feed the paper on a Teletype Page Printer when used.

FIGURE 25.

THIN, EN, and EM Space

ON THE TYPEWRITER, the only method of spacing is through the use of the space bar. On the Perforator keyboard however, THIN, EN, and EM space keys provide different fixed widths of spacing required in printing. Thin space is the narrowest of the fixed spaces, followed by EN space and EM space, in that order. A full discussion of this subject will be found on Page 32 under "Computing the Counting Pointer Setting."

FIGURE 26.

Extra EM Space

AN ADDITIONAL EM space key is sometimes used on the Perforator keyboard in place of the Verticle Rule when the latter is not required.

FIGURE 27.

(AP) - (INS) - (UP)

THESE KEYS are used to select the logotype indicating the press association supplying the news item. These logotypes are obtained in the shift position.

FIGURE 28.

Rubout

THE RUBOUT KEY is the "eraser" on the Teletypesetter Perforator. This key perforates all holes in the tape, thus deleting any combination that may have been punched in error. For the procedure on correcting errors, See page 49, "Correcting the Tape."

FIGURE 29.

Tape Key

THE TAPE KEY is used for the purpose of advancing tape without perforating a code combination in the tape.

FIGURE 30.

"UR" and "LR"

THE "UR" AND "LR" (upper rail and lower rail) keys are used for controlling the position of the lateral (duplex) rail on the linecasting machine. In the upper rail position, bold face or italic characters may be set, and in the lower rail position roman characters are set. For operating procedure, see Page 55, "Bold Face and Italic Composition."

FIGURE 31.

EN and EM Leaders

THE EN AND EM leader keys select dots or dashes which are generally used in tabular matter. For operating procedure, see Page 47, "Leaders."

FIGURE 32.

Quotation and Apostrophe

THIS KEY, in the shift position, is used for single or double opening quotation marks. In the unshift position, it is used for selecting single or double closing quotation marks or an apostrophe.

FIGURE 33.

EM Dash

THIS IS A DASH which is equal in length to the width of an EM space. It is obtained in the shift position.

FIGURE 34.

1/8, 1/4, 3/8, 1/2, 5/8, 3/4, and 7/8

THESE KEYS are used for selecting the above fractions, and are obtained in the shift position.

FIGURE 35.

fi, fl, ff, ffi, and ffl

THESE KEYS are used for selecting the above ligatures, and are obtained in the shift position.

FIGURE 36.

Vertical Rule

THIS KEY selects a vertical line sometimes used for dividing columns of figures in printed copy.

Quad Left, Quad Center, and Quad Right

THESE KEYS control the above functions on linecasting machines equipped for quadder control from tape. For operating procedure, see Page 47, "Quadder Control."

FIGURE 37.

FIGURE 38.

"Bell" and "PF" Keys

IN WIRE TRANSMISSION the BELL key is used for ringing the bell and the PF (Paper Feed) key is used to feed the paper on a Teletype Page Printer.

Small Caps

THE MULTIFACE PERFORATOR keyboard when used for book and job Composition contain 24 small capitals, referred to as "Small Caps." Figure 39 shows the method used to obtain Small Caps when four characters appear on one Keytop.

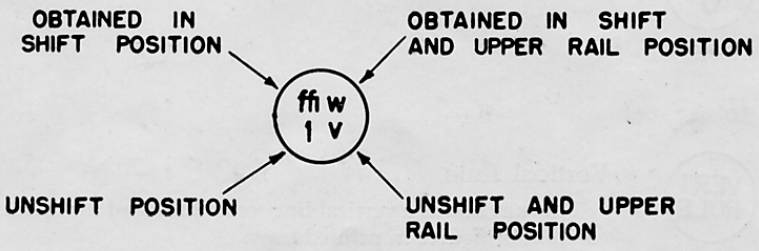


FIGURE 39.

Repeat Key

THE REPEAT KEY is used in connection with the Rubout key or the Tape Feed key in order to advance tape at top speed.

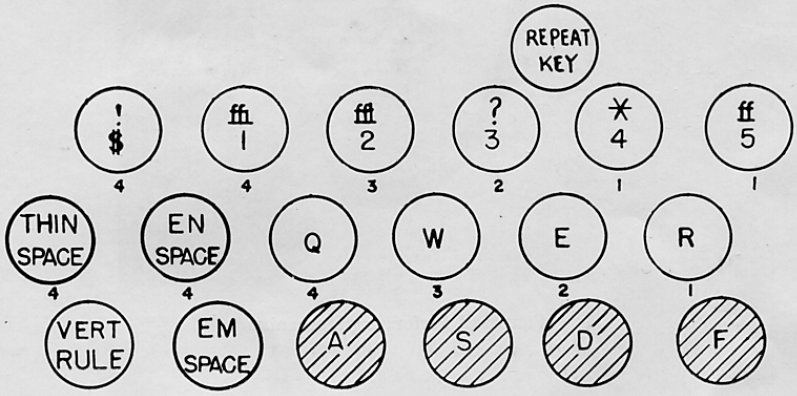


FIGURE 40. Repeat Key.

Identical Selection

THE KEYS illustrated in Figure 41 are selected in either the shift or unshift position.

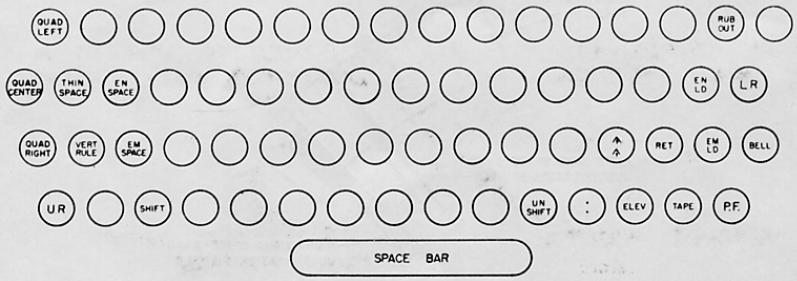


FIGURE 41. Identical Selection Keys.

PART TWO

Description of Teletypesetter Perforators

Perforating Mechanism

THE PERFORATOR is equipped with a mechanism that perforates code combinations containing one to six holes (plus a tape feed hole) in the tape each time a key is depressed. Figure 42 shows the perforating mechanism.

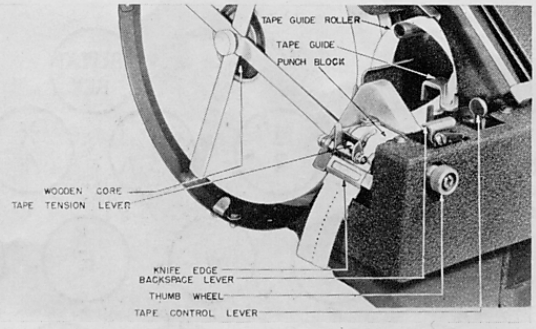


FIGURE 42. Perforating Mechanism.

Counting Mechanism

THE PERFORATOR has, in addition to a perforating mechanism, a counting mechanism for indicating the cumulative width of the matrices and the expansion limits of the spacebands.

When unit system matrices are used in the linecasting machine, the width of the EM space is divided into 18 equal units and when non-unit system matrices are used, the width of the EM space is divided into 32 equal units for counting purposes. Figure 43 shows the counting scale and its associated pointers.

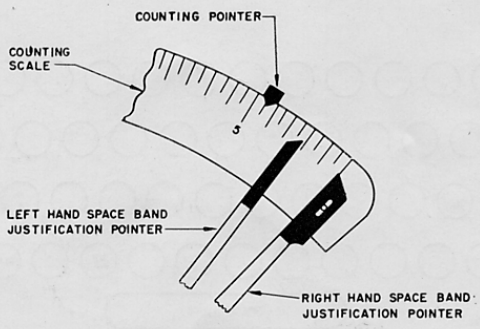


FIGURE 43. Counting Scale.

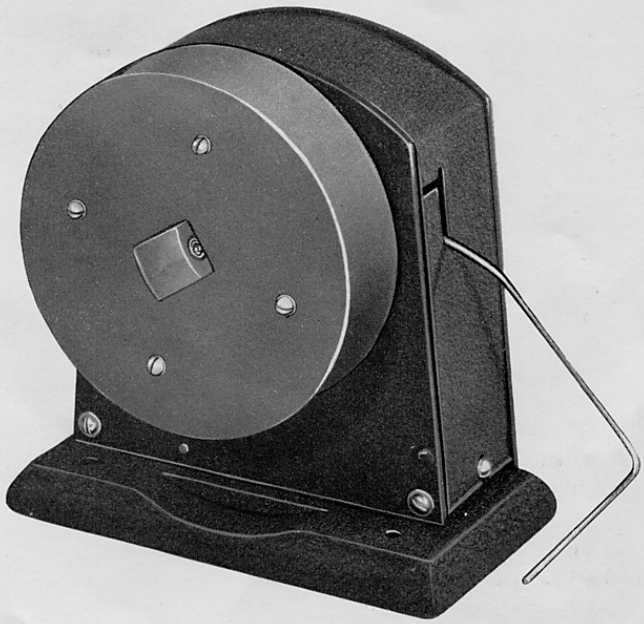


FIGURE 44. Tape Winder.

Tape Winder

THE TELETYPESETTER TAPE WINDER (Figure 44) may be used to wind up tape in suitable rolls for use on the unwind reel of the Teletypesetter Operating Unit. The Tape Winder mostly used for Teletypesetter operation (Figure 44) has a capacity of 90 feet or 320 lines of 12 pica type. Tape Winders for larger capacities are also available.

PART THREE

General Instructions for Perforator Operators

Inserting a Roll of Tape in the Perforator—See Figure 45

- Remove the chad box.
- Remove the tape reel container cover.
- Remove the tape reel retainer.
- Remove the cardboard center of the previous roll of tape from the wooden core of the tape reel.

Now place the new roll of tape on the wooden core with the tape unwinding in a counter-clockwise direction, as indicated by arrow. Place the end of the tape over the tape guide roller, through the slot in the tape guide, inserting the end of the tape through the punch block. Cutting or sharply tearing the end of the tape diagonally will facilitate insertion of the tape in the punch block.

Hold the tape tension lever away from the tape feed roll and feed the tape to the left until the end of the tape is in position between the tape feed roll and the tape tension lever. Replace the tape reel retainer, tape reel container cover, and chad box. Holding the tape tension lever against the tape feed roll so that the pins in the tape feed roll grip the tape, depress the TAPE key a number of times until the tape feeds far enough to insure that the feed holes mesh properly with the feed pins in the feed roll. Now depress the TAPE key and the REPEAT key simultaneously until sufficient tape is advanced to insure uniform spacing between feed holes in the tape.

A full roll of tape when perforated will set approximately 3000 12 pica justified lines. An experienced Operator will use approximately one roll per day.

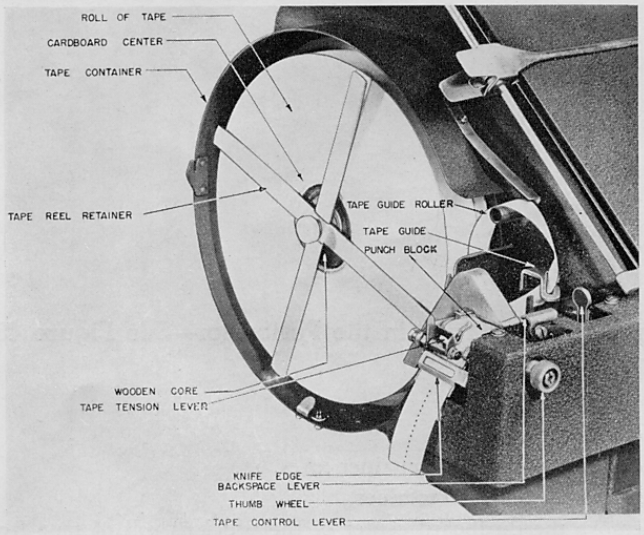


FIGURE 45. Tape Container with Roll of Tape.

Starting to Perforate Tape

WITH TAPE INSERTED in the punching unit and the tape control lever and the power switch both in the "on" position, the Perforator is ready for operation.

Before starting to perforate tape, the Operator should "condition" the Perforator as follows:

With the punch control lever in the left or "on" position, depress the RETURN, ELEV, and UNSHIFT keys. This assures the Operator that the pointers are at the starting position and the Perforator is in the unshift position.

Depress the TAPE key and REPEAT key simultaneously until all code perforations in the tape are advanced past the knife edge, then tear off this piece of tape by lifting and twisting. Feed out enough blank tape ("tape" combinations) to provide space for writing the name of the item, the size of type, or any other information desired.

Operation of The Tape Winder

THE TAPE WINDER is operated by a spring motor that is wound by a key located on the rear of the winder. The plunger knob is used for manually starting and stopping the winder. The stop lever is raised when the tape becomes taut, automatically stopping the winder. The tape winder

should be positioned to the left of the Perforator so that the tape from the Perforator lines up with the tape winder reel.

Before attaching the tape to the Tape Winder, a few feet of the tape should be perforated. With the front plate removed from the reel, the tape should pass under the tape winder stop lever and through one of the slotted posts on the reel. Replace the front plate and pull out the plunger knob at the rear of the Tape Winder. The tape will then be automatically wound on the reel. To remove a roll of tape from the winder, remove the front plate of the reel and then slip the roll from the four mounting posts. (See Figure 46.)

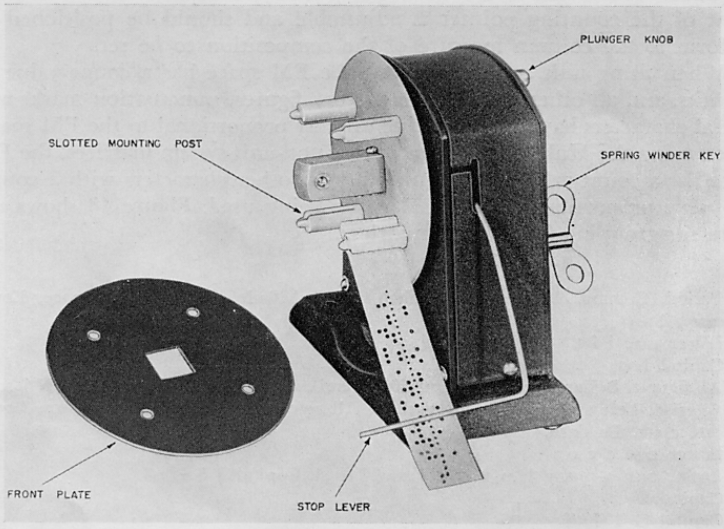


FIGURE 46. Tape Winder.

Methods of Handling Perforated Tape and Copy

IN ORDER TO save handling and increase production, it is advisable to perforate as many stories on one continuous tape as possible, not to exceed the limits of the tape winder reel. The Tape Winder will hold about 320 lines of 12 pica perforated tape. Near "press time" this practice is not observed; in fact, long stories are frequently split up among several Operators as the deadline approaches.

When tape is removed from the Tape Winder, it may be attached to the written copy by means of a clipping clothespin. Different color clothespins can be used to designate various types of copy or sizes of type. Some plants do not require that the written copy follow the tape. In such cases, tapes may be secured by wrapping a strip of paper over the end and through the center of the roll and sealing it with a sticker.

PART THREE

General Instructions for Perforator Operators

Computing the Counting Pointer Setting

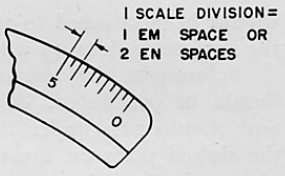


FIGURE 47.

EACH FULL SCALE division on the counting scale represents a thickness equivalent to the EM space for that particular font of type. One-half of a scale division represents an EN space which is one-half the width of the EM space (see Figure 47).

The counting pointer is arranged to move from left to right along the counting scale in varying amounts proportional to the width of the characters added to the line as the various keylevers are depressed. The starting point of the counting pointer is adjustable and should be positioned to conform to the column measure of the composition to be set.

When using unit system matrices, the EM space has a count value of 18 units, and all other alphabet characters, figures, punctuation marks and special characters have a count value directly proportional to the EM space. When using the Multiface Perforator and non-unit system matrices, the EM space has a count value of 32 units, and the other characters with a counting value proportional to the EM space being used. Figure 48 shows the character grouping for 18 unit matrices.

Unit Size	
6	Period, Comma, Apostrophe, Hyphen, Vertical Rule, Quote, Thin Space, Lower case i l
7	Lower case j f t
8	Capital I
9	All figures, Dollar mark, Pound sterling, Semi-colon, Colon, Exclamation, EN leader, Asterisk, Left and right hand brackets, All reference marks, Figure spaces, Lower case r s z, En dash, ( )
10	Lower case c e o
11	Lower case a b d g h n p q u v x y k fi fl, Capital J S ?
12	Capital Z
13	Capital C T L ff
14	Lower case ae, Capital A B F O P Q V &
15	Lower case w oe, Capital D E G R U X Y H K N
18	EM space, EM leader, EM dash, EM fractions, % lb Capital M W OE AE, Lower case m, ffi, ffl, @

FIGURE 48. Character Grouping of Unit System Matrices.

The counting pointer moves one full scale division on the counting scale for each 18 unit value (unit system matrices) or 32 unit value (non-unit system matrices). Accordingly, when the Perforator is used to count matrices with an EM space value of .1107″, the counting pointer moves a full scale division for each .1107″ of type. The theoretical counting pointer setting for any column measure is therefore determined by dividing the column width (measured in inches) by the EM space value (.1107″). Likewise, when the Perforator is used to count matrices with an EM space value of .100″, the counting pointer setting can be calculated by dividing the column width (measured in inches) by .100″.

Sample Calculation for Counting Pointer Setting for Matrices With EM Space Value of .1107" (See Figure 49)

Column measure (average newspaper column)	12 picas
Column measure in inches	12 x .166" = 1.992"
Value of EM space	.1107"
Theoretical setting	1.992" ÷ .1107" = 18 div.
Allowance to provide margins against the possibility of sending tight lines into the vise	.2 div.
Counting pointer setting	17.8 div.

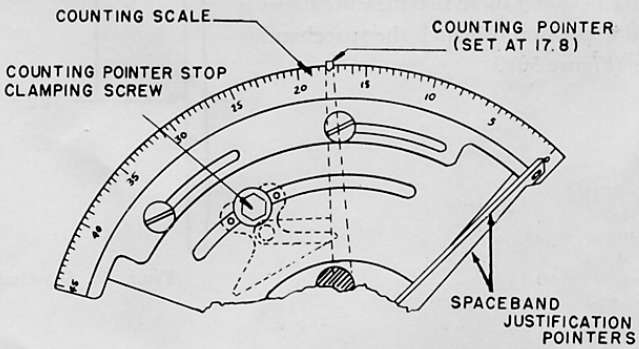


FIGURE 49. Counting Pointer Setting.

Counting Pointer Setting

The counting pointer stop should be positioned by loosening its clamping screw and moving the stop to a position so that the counting pointer returns to the calculated point of the counting scale when the "RET" key is depressed. After the clamping screw has been tightened, recheck the setting and refine if necessary.

The counting pointer stop arm is arranged so that in its right position it is used for narrow column widths, and in its left position it is used for wide column widths. See Figure 49.

Computing the Spaceband Justification Pointer Settings

THE MOTION of the spaceband justification pointers must be adjusted to agree with the font of type and also with the kind of spacebands being used. The minimum thickness of the spaceband most commonly used is .037" and the maximum thickness is .122". The difference between these two measurements is the total expansion of which the spaceband is capable (Figure 50).

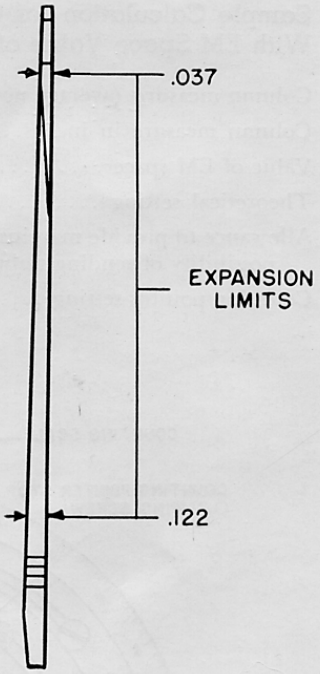


FIGURE 50. Spaceband.

Right-Hand Spaceband Justification Pointer Setting

WHEN PROPERLY SET, the right-hand spaceband justification pointers moves the indicator scale to the left, a distance proportional to the minimum thickness of the spacebands in the line.

The motion of this pointer is adjustable and must be set so that it indicates the proper relation to the brass size value of the type face being set. Therefore, the right-hand spaceband justification pointer must be reset each time the Perforator is to be used to perforate tape for a font of type in which the EM space value changes from that of the font previously used, or when spacebands of a different size are to be used.

Setting of Right-Hand Spaceband Justification Pointer for Spacebands With a Minimum Thickness of .037" and a Font of Type Having an EM Space Value of .1107"

1. Move the counting pointer by hand to a convenient even scale graduation, such as 15. (See Figure 51.)

2. Depress the space bar 10 times.

3. Open the hinged door in front of the adjustable spaceband mechanism. Position the right-hand spaceband justification pointer by means of the right-hand thumb screw so that its total motion is 3.4 scale divisions (Figure 51). This is indicated by the change in counting pointer location from 15 to 11.6 on the indicator scale. Return the pointers to their start position by depressing the RET (Return) key. Recheck the setting, and refine if necessary.

4. The value of 3.4 scale divisions is calculated as follows:

Minimum thickness of spaceband ..... .037"
Total minimum thickness of 10 spacebands ..... .370"
Brass size value of one scale division ..... .1107"
Number of divisions motion for 10 spacebands ..... .370"÷.1107"= 3.4*

* (3.35 actual—use next 1/10 above or 3.4)

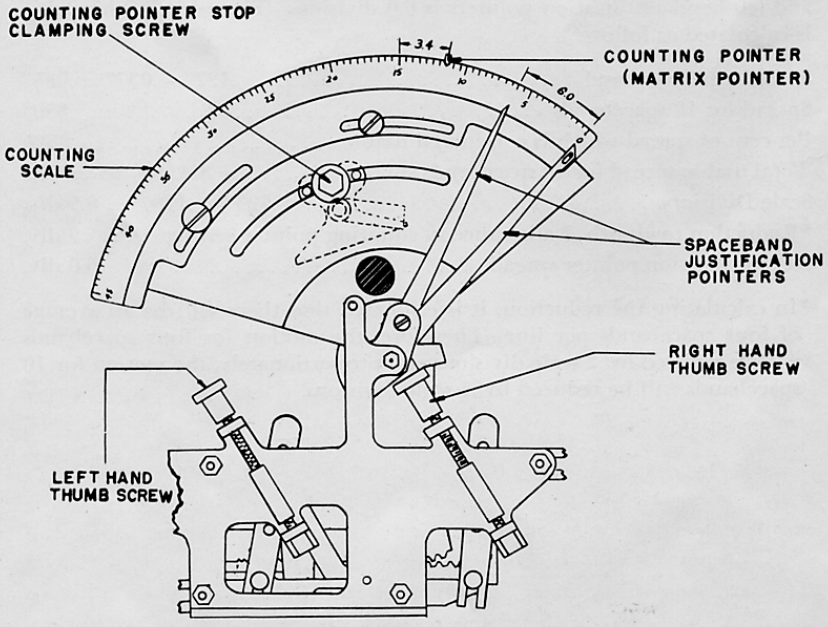


FIGURE 51. Counting Pointer Scale and Mechanism.

Left-Hand Spaceband Justification Pointer Setting

THE DISTANCE between the left and right-hand spaceband justification pointers is proportional to the cumulative usable expansion of the spacebands in the line. This distance must be set to bear proper relation to the brass size value of the type face being set. Therefore, the left-hand spaceband justification pointer must be reset each time the Perforator is to be used in order to perforate tape for a font of type in which the EM space count value changes from that of the font previously used, or when spacebands of a different size are to be used.

Setting of Left-Hand Spaceband Justification Pointer for Spacebands With a Maximum Thickness of .122" and a Font of Type Having an EM Space Value of .1107"

AFTER THE RIGHT-HAND spaceband justification pointer has been set and checked and the pointers have been spread by depressing the space bar 10 times, adjust the position of the left-hand spaceband justification pointer by means of the left-hand thumb screw, so that the spread between the right and left-hand justification pointers is 6.0 divisions (Figure 51). This value is calculated as follows:

Spread per spaceband	.122" − .037" = .085"
Spread for 10 spacebands	.850"
Per-cent of spread which is considered usable	85%
Total usable spread for 10 spacebands	85% of .85 = .723
Scale Divisions	.723" ÷ .1107" = 6.5 div.
*Reduction to absorb .2 allowance in counting pointer setting	.5 div.
Net justification pointer spread	6.0 div.

*In calculating the reduction, it is estimated that there will be an average of four spacebands per line. Therefore, the motion for four spacebands will be reduced by .2 scale divisions and proportionately, the motion for 10 spacebands will be reduced by .5 scale divisions.

PART FOUR

Operating Procedures

Reading the Perforated Tape

FOR EFFICIENT OPERATION of the Teletypesetter Perforator, it is necessary for the Operator to be able to read the tape.

Before an Operator is permitted to set "live copy," the alphabet, shift, unshift, return, and elevate combinations should be memorized. Referring to Figure 52, it should be noted that the uppermost or zero perforation is only used for figures, special characters, and functions.

In Figure 52 the code combinations are arranged in six groups to assist the operator in locating the code combinations for identification purposes.

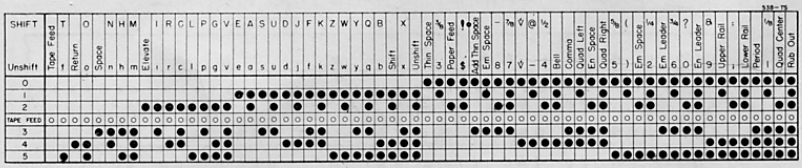


FIGURE 52. Tape Code Chart. (538 TS.)

After operating the keyboard for a short time, the Operator will soon become familiar with the group of combinations that start with the zero perforation. They are easily learned by associating them with corresponding letter combinations. For instance, the "W" and "2" when perforated, are alike except that the "2" has the zero perforation added. Perforations of characters E, R, T, Y, U, I, O, and P are similar to the perforations of the figures located above these characters on the keyboard, except that the figures have the zero perforation added. Other character combinations have equal similarity and may be memorized in the same manner.

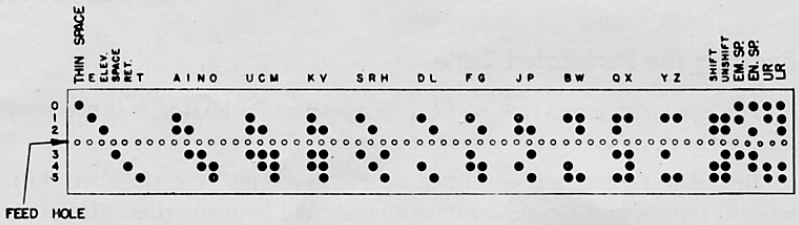


FIGURE 53. Character Grouping for Memorizing Code.

Figure 53 is a code chart in which the code combinations are arranged in groups to facilitate memorizing the code. The thin space, E, ELEV, SPACE, RET, and T are all single perforations and differ only in location in the tape, each perforation located one code interval below the preceding perforation. The code combinations for the remaining letters of the alphabet are conveniently grouped in a similar manner.

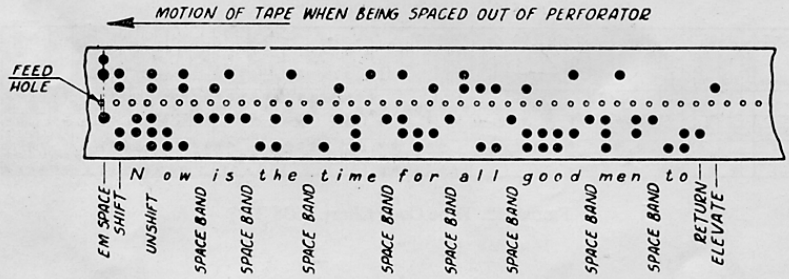


FIGURE 54. Tape Position for Reading.

Figure 54 shows the position in which tape should be held when reading. The tape should be read from left to right, holding the tape in the same position as fed from the perforator. When tape is held in the proper position, tape feed holes are located in line with the left edge of the code perforations. Having determined the right and left ends of the tape in this manner, the top surface of tape may be identified by a greater number of perforations in the fifth position than in the zero position.

After the combinations have been memorized, the next step is to secure some perforated tape and practice tape reading. For practice purposes, the character represented by each combination may be written above the combinations in the tape.

Character Widths and Line Justification

FIGURE 55 SHOWS VARIATIONS that may occur in printed copy as compared with typewritten matter. This example should be studied carefully and the following characteristics noted:

Variations in width of characters (for example, "m" compared with "i" in the word "medium").

Variations in width of spacing between words in a given line and in different lines.

Even margins, both right and left hand.

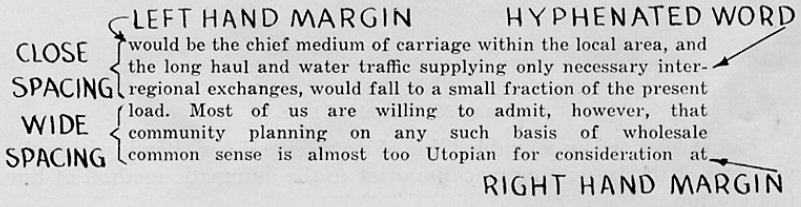


FIGURE 55. Character Widths and Line Justification Illustrated.

The spacing between words in typewritten copy is uniform, whereas the spacing between words of printed copy, although uniform throughout a given line, is not the same for all lines. It will be noted that the amount of space between the words in the first three lines of Figure 55 is less than that in the last three lines.

This variable width of spacing between words in printed copy is accomplished by the spacebands on the linecasting machine which are *wedge-shaped* and automatically expand the spacing between words to fill out the line. Thus even margins are achieved at both the right and left-hand sides of the copy—a process known as "line justification."

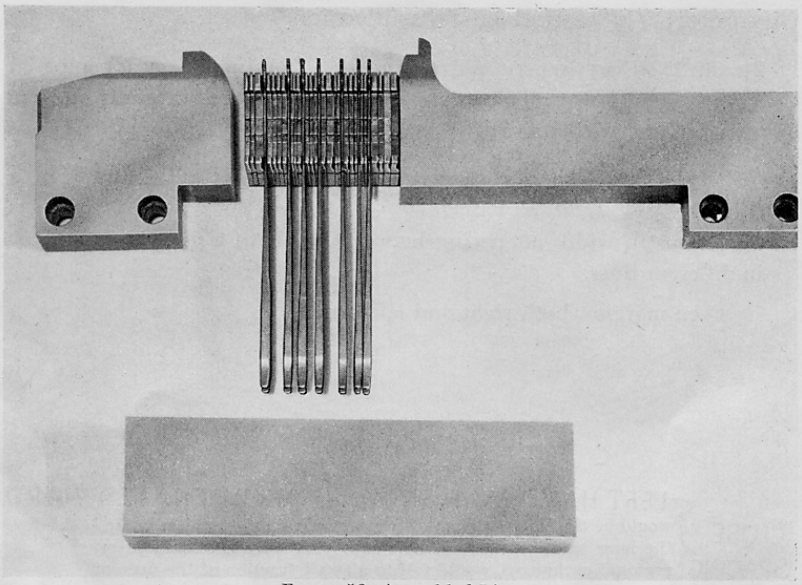


FIGURE 56. Assembled Line.

Figure 56 shows an assembled line of matrices and spacebands within the vise jaws of the linecasting machine prior to the automatic method of line justification.

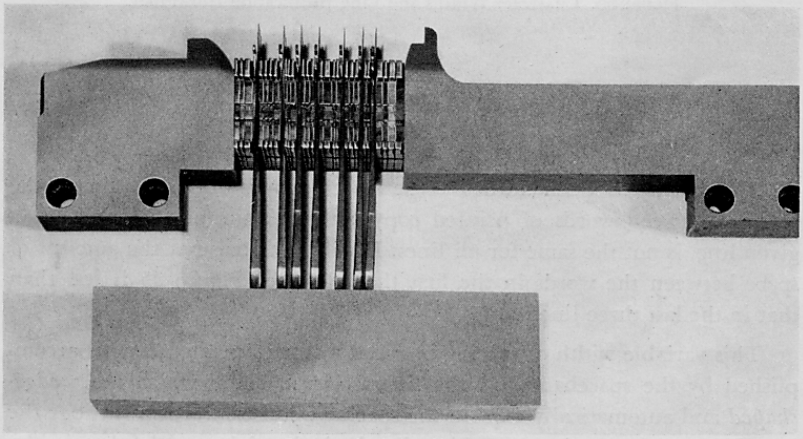


FIGURE 57. A Justified Line.

Figure 57 shows the assembled line after justification.

On the Teletypesetter Perforator, line justification is achieved by means of the Counting Scale with its three pointers — the Counting Pointer, the Left-Hand Spaceband Justification Pointer, and the Right-Hand Spaceband Justification Pointer (See Figure 51).

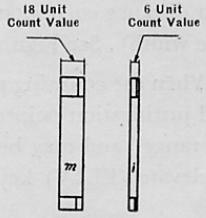


FIGURE 58.

The counting pointer moves along the counting scale from left to right as the keys are depressed for the various characters. The distance that the counting pointer moves for each keystroke depends on the matrix width of the character selected. For example, when using unit system matrices, the counting pointer moves one full scale division for the letter "m" and only one-third of a scale division for the letter "i" (See Figure 58); for other character widths, the counting pointer moves a proportional distance. Thus, as the counting pointer moves along the counting scale, it registers the cumulative widths of the characters used in the line. Figure 59 visualizes the counting system of unit system matrices for the Operator.

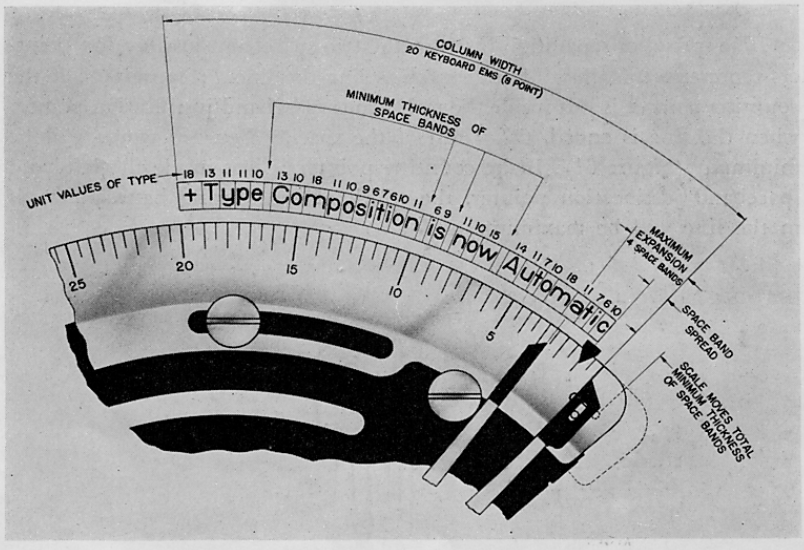


FIGURE 59. Indicator Scale.

When the space bar is depressed, the counting pointer remains stationary —but the counting scale itself, actuated by the right-hand spaceband justification pointer, moves from right to left. This movement of the scale measures the thin part of the spaceband (the minimum width of the space). At the same time, the left-hand spaceband justification pointer moves to the left a distance corresponding to the thick part of the spaceband (maximum space width). See Figure 60.

When the counting pointer moves into a position between the two spaceband justification pointers, the line is considered to be within the "justification range" and may be ended by depressing the return (RET) and then the elevate (ELEV) keys.

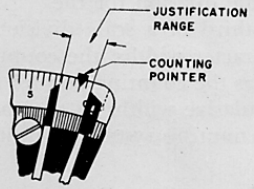


FIGURE 60. Counting Pointer within Justification Range.

The spread or separation between the two spaceband justification pointers represents the allowable range for ending the line ((Figure 60). If the counting pointer is just inside the right-hand spaceband justification pointer when the line is ended, the width of the spacing between words will be minimum (Figure 61). If the counting pointer is just inside the left-hand spaceband justification pointer, the width of the spacing between words in the line will be maximum.

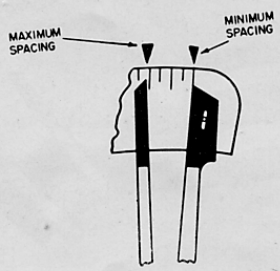


FIGURE 61. Maximum and Minimum Spacing.

If the line is ended *before* the counting pointer has passed the left-hand spaceband justification pointer, the result will be a loose line which will not cast a "slug" on the linecasting machine. If the counting pointer is *beyond* the right-hand spaceband justification pointer, a tight line will result (Figure 62). Either condition may cause damage to equipment.

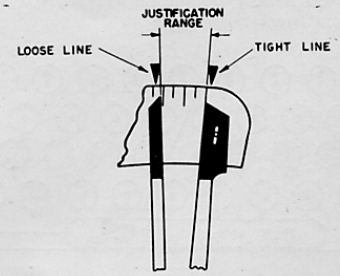


FIGURE 62.

In addition to the spacebands selected by the space bar, it is sometimes necessary to make use of spaces of a constant width in the composition of printed copy. There are three kinds of so-called "fixed spaces"— THIN spaces, EN spaces, and EM spaces. These spaces (or blank matrices) introduce fixed widths of spacing in the line and are computed by the counting pointer the same as characters.

Sometimes the last word of the line is such that it cannot be either completed or hyphenated within the range of justification. In such cases it is necessary for the operator to use fixed spaces in addition to spacebands between the words in the line. (For operating procedure, see "Lines Requiring Extra Spacing," on Page 50). Avoid a spaceband at the beginning or end of lines. Many typists unconsciously depress the space bar at the end of a line. This not only causes ragged right-hand margins but damages the spacebands.

THE SPACE BAR SHOULD NEVER BE STRUCK TWICE IN SUCCESSION. FAILURE TO OBSERVE THIS RULE WILL RESULT IN MECHANICAL DIFFICULTIES ON THE LINECASTING MACHINE.

PART FOUR

Operating Procedures

KEYBOARD TECHNIQUES

Keyboard Fingering

THE TELETYPESETTER PERFORATOR keyboard must be operated by the touch system. A set of finger exercises for practice in mastering the touch system is not included in this manual because the operation of the Teletypesetter Perforator keyboard is similar to that of the typewriter keyboard. Recommended finger positions are shown in Figures 63 and 64.

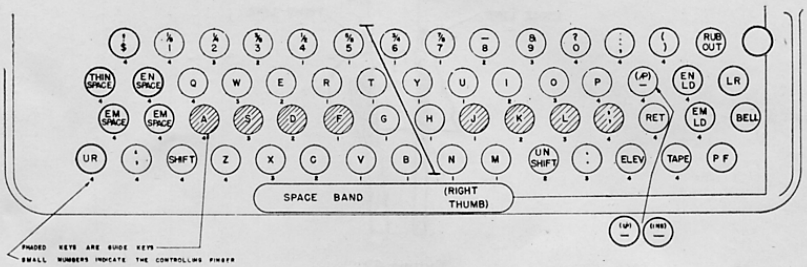


FIGURE 63.

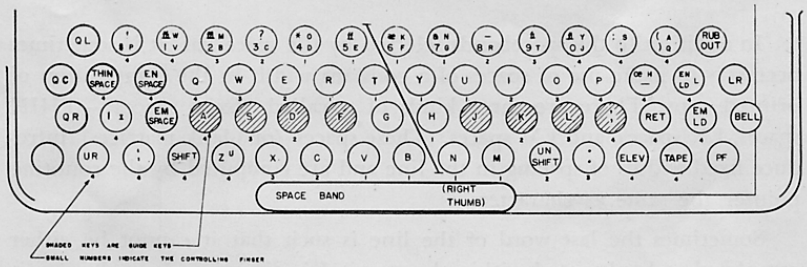


FIGURE 64.

Shift and Unshift

WHEN COPY designates a capital letter or some character on the upper part of a keytop, it is obtained by successively depressing and releasing the SHIFT key and then the desired character key. If the next letter or other character is lower case, the UNSHIFT key must be depressed and released before depressing the desired character key. A shift or unshift perforation in the tape determines whether the succeeding characters will be upper or lower case. When the semaphore signal is red, the keyboard is in the shift position; when white, in the unshift position.

To assure proper positioning of the shift bar in the Operating Unit on the linecasting machine, it is imperative that the required shift or unshift combination be the *first* code combination on each new piece of perforated tape regardless of the semaphore signal indication.

To perforate the word "Teletypesetter," the sequence of key strokes is as follows: Shift, T, unshift, e, l, e, t, y, p, e, s, e, t, t, e, r. See Figure 65.

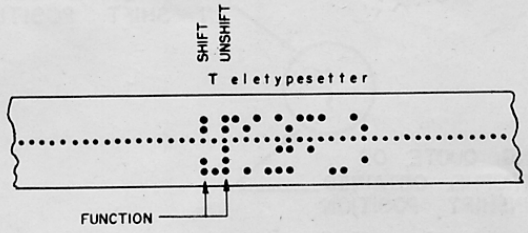


FIGURE 65.

To perforate the word "TELETYPESETTER" — in all caps — the sequence of keystrokes is: Shift, T, E, L, E, T, Y, P, E, S, E, T, T, E, R. See Figure 66.

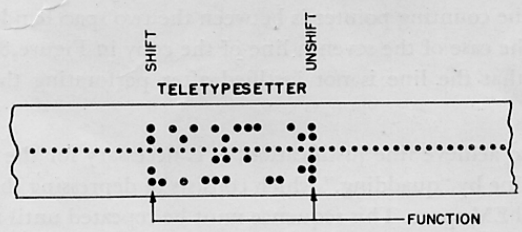


FIGURE 66.

Quotation and Apostrophe

ON THE TYPEWRITER, opening and closing quotation marks are identical (") . In printed matter, the opening quotation mark is different in shape from the closing quotation mark. Also, on the typewriter, double quotation marks are obtained by depressing just one key (") . On the linecasting machine however, the matrix contains but a *single* quotation mark; consequently, when double quotation marks are called for by the copy, the appropriate key must be depressed *twice*. The closing quotation mark is also used for an apostrophe.

On the Perforator keyboard, the open quotation mark is obtained in the shift position; the closing quotation mark (or apostrophe) is obtained in the lower case or unshift position. See Figure 67.

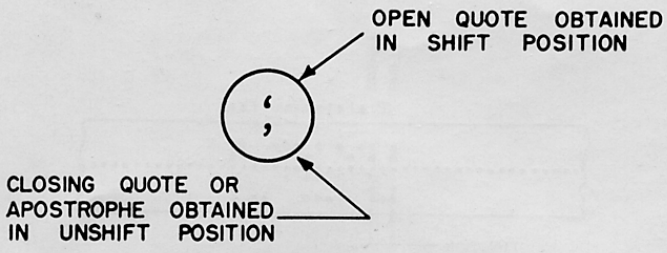


FIGURE 67. Quotation and Apostrophe.

Quadded Lines

IT HAS BEEN STATED previously that a line will not justify unless it is ended when the counting pointer is between the two spaceband justification pointers. In the case of the seventh line of the copy in Figure 87, it may be readily seen that the line is not justified after perforating the words "of leaders."

In order to achieve line justification, it is necessary for the Operator to fill in such a line by "quadding," which consists of depressing the spaceband, EN space, and EM space. This sequence must be repeated until the counting pointer is within the two spaceband justification pointers. However, the last perforation before the return (RET) and elevate (ELEV) Perforation must NOT be the spaceband perforation.

When the Perforator keyboard is equipped with two EM SPACE keys, it is desirable to alternate these two keys for quadding a line. Ordinarily, the keys for the EN and EM spaces are actuated by the little finger of the left hand, as shown in Figure 63, Page 44. However, when these keys are used for "quadding," it is good practice to use the second and first fingers of the left hand for controlling the keys for EN and EM spaces, respectively, the spaceband bar being controlled as usual by the right thumb.

Automatic Quadder Control From Tape

WHEN PERFORATING TAPE for linecasting machines equipped with automatic quadder control from tape, the Operator simply depresses the quad signal desired either before or after the text to be quadded. The code combination for the QUAD key sets up a mechanical action in the linecasting machine that automatically quads the line. The first line of Figure 68 is referred to as "quad left," the second line as "quad center," and the third line as "quad right."

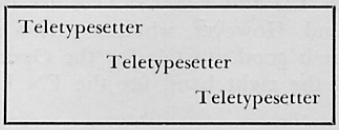


FIGURE 68.

Setting EN and EM Spaces and Leaders in the Bold Face or Italic Position

WHEN AN EN or EM space is set on the upper rail, it appears in the printed copy as an EN or EM *leader*. Similarly, when an EN or *EM leader* is set on the upper rail, it appears in the printed copy as an EN or EM *space*. However, due to special shop requirements some matrices contain EN and EM *spaces* and EN and EM *leaders* in both upper and lower rail positions. (See Figure 69).

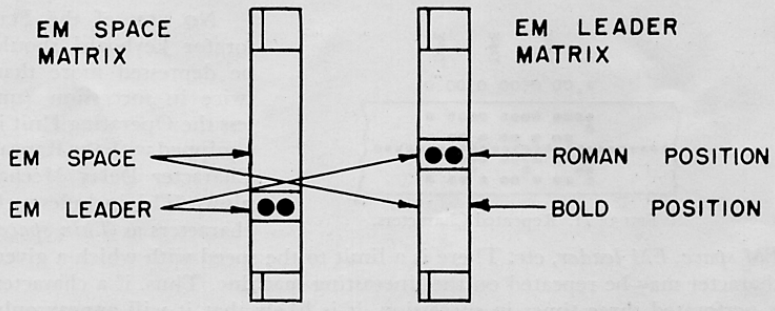


FIGURE 69. Space and Leader Matrix.

Leaders

IN THE TABULAR copy shown in Figure 70 a series of dots are used to lead the eye across a space to the right hand word or number in the line. These dots are known as "leaders," and are set by means of the EN LD (EN Leaders) and EM LD (EM Leaders) keys on the Perforator keyboard.

An EN leader consists of one dot or one dash, and is the same thickness as the EN space. The EM leader consists of two dots or two dashes and is the same thickness as the EM space. The spacing of the dots on these leaders is such that EN and EM leaders may be used alternately in a line to produce a series of evenly spaced dots or dashes. When setting a series of leaders, the EN LD and EM LD keys should be alternated; this is similar to "quadding" except that no spacebands are used in setting leaders.

Ordinarily, the EN LD and EM LD keys are depressed by the little finger of the right hand. However, when setting a series of "leaders" as shown in Figure 70, it is good practice for the Operator to use the third and second fingers of the right hand for the EN LD and EM LD keys respectively.

Chicago 220
New York 116
Pittsburgh 112
Philadelphia 98
Rochester 87

FIGURE 70. Lines Containing Leaders.

Repeated Characters

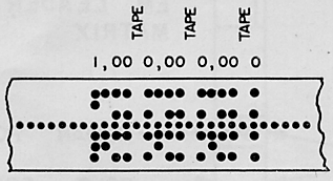


FIGURE 71. Repeated Characters.

NO KEY of the Perforator keyboard should be depressed more than twice in succession (unless the Operating Unit is equipped with the Repeat Character Delay Mechanism). This includes such characters as *Thin space, EM space, EM leader,* etc. There is a limit to the speed with which a given character may be repeated on the linecasting machine. Thus, if a character is perforated three times in succession, it is likely that it will appear only twice in the printed copy. This condition may be avoided by providing a time interval (depression of TAPE key) after the second identical character, so that not more than two identical characters will be perforated in succession. For example, the number 1,000,000,000 may be perforated as follows: one, comma, cipher, cipher, tape (TAPE key), cipher, comma, cipher, cipher, tape, cipher, comma, cipher, cipher, tape, cipher. Figure 71 illustrates the code perforations as they appear in the tape.

Repeat Function

When it is necessary for the Operator to feed blank tape (tape key perforation only), or when deleting a full line, it is a preferred practice to depress the Repeat Key and the desired key simultaneously. This advances the tape rapidly and eliminates the need for a series of single key depressions. The Repeat Key is used only in conjunction with the Tape Feed Key and the Rubout Key.

Correcting the Tape

If an error is made when perforating, the tape must be backspaced to the incorrect code perforation. This is accomplished by depressing the backspace lever until the incorrect code is immediately to the left of the chad chute. Then backspace once more and the incorrect code perforation will be directly above the tape punches. The incorrect code perforation and any succeeding perforations, if required, may now be deleted by depressing the RUBOUT key once for each code perforation to be eliminated. The RUBOUT key perforates all six holes in the tape, which is a "dead" combination, causing no function on the linecasting machine.

It should be kept in mind that a rubout removes the code perforation from the tape but does not remove the count value of that code perforation from the counting scale. Therefore if there is any doubt as to whether the line is within the justification range, the punch control lever should be moved to the right or "off" position and the line remeasured. Loose lines often result from rubouts of one or more code perforations. If it is necessary to rubout more than one code perforation, the first portion of the line (up to the point where the error occurred) should be recounted immediately. To do this, proceed as follows:

1. Backspace and rubout the error.
2. Move the punch control lever to the right or "off" position.
3. Depress return key to reset the counting scale.
4. "Keyboard" the usable portion of the line to remeasure.
5. Move punch control lever to the left or perforating position.
6. Continue line from where original error occurred.

If it is necessary to delete an entire line, rapid backspacing may be done by holding the backspace lever depressed and turning the tape feed thumb wheel clockwise. The perforations may then be deleted by depressing the RUBOUT and REPEAT keys simultaneously. Rubouts in the tape idle the linecasting machine. Therefore, as the Operator gains in proficiency, every effort should be made to keep rubouts to a minimum.

Figure 72 shows a partial line with an incorrect code perforation (character "o"). Figure 73 shows the incorrect code perforation deleted and the correct code perforation inserted.

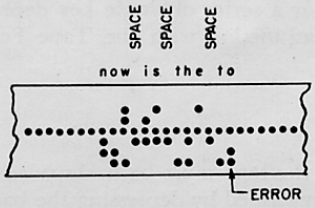


FIGURE 72.

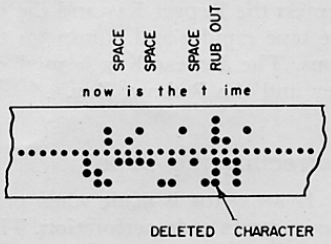


FIGURE 73.

Method of Correcting Error in Tape.

Lines Requiring Extra Spacing

IN THE composition of printed matter, it is not uncommon for a line to end so that the last word or division of a word will make the line too long (counting pointer beyond right-hand spaceband justification pointer), while the line without this word or division of a word would be too short to justify (counting pointer to the left of the spaceband justification pointer).

When this condition is encountered, it becomes necessary to add fixed spaces between words, or even between the letters of one word in the line. The number and kind of fixed spaces necessary to justify a line can be determined by means of the following test questions:

1. How many spacebands in the line?
2. Will this number of Thin spaces bring the counting pointer within justification range?
3. If not, will the same number of EN spaces justify the line?
4. If the addition of Thin or EN spaces between words will not justify the line, will placing Thin spaces between the letters of a word bring the counting pointer within justification range?

The methods of justifying lines requiring extra spacing are as follows:

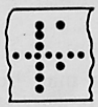


FIGURE 74.
Thin Space Perforation
inserted over
Spaceband Perforation

A. *Thin spaces may be inserted OVER each spaceband within the line* (see Figure 74).

On Perforators equipped with the add-thin space mechanism, it is not necessary for the Operator to rubout a line in order to insert Thin spaces.

The Thin space perforation (0) is perforated over the spaceband perforation (3). This changes the (3) perforation to (0-3). When the (0-3) combination is selected in the Operating Unit, both spaceband and Thin space are selected. (Note: The Thin space is the only space that may be perforated over the spaceband perforation, and this holds true only on Perforators equipped with the add-thin space mechanism.)

Figure 75 indicates that when using unit system matrices, four Thin spaces plus the expansion of the spacebands would justify the line.

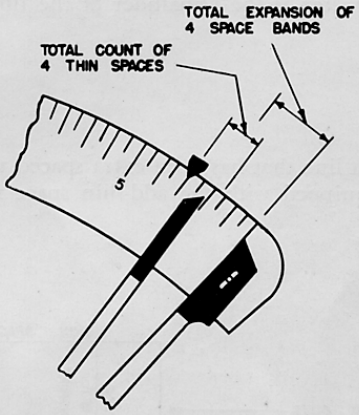


FIGURE 75.

Figure 76 shows a line that has been extra spaced with add-thin spaces.

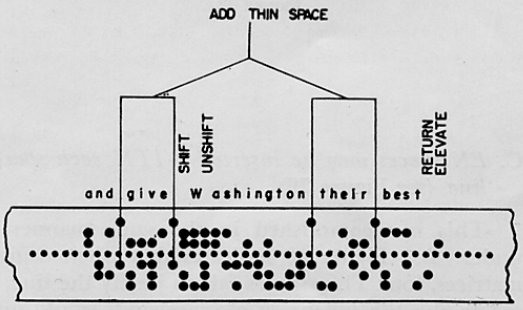


FIGURE 76.

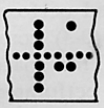


FIGURE 77. Thin Space inserted with Spaceband

B. *Thin spaces may be inserted WITH each spaceband within the line.*

On Perforators not equipped with the add-thin space mechanism, Thin spaces may be added to a line as follows:

1. Rubout all of the line except the first word and space.

2. Add a Thin space after the first spaceband (see Figure 77) and after each spaceband thereafter as the remainder of the line is repunched.

Figure 78 shows a line that has been extra spaced with Thin spaces for Perforators NOT equipped with the add-thin space mechanism.

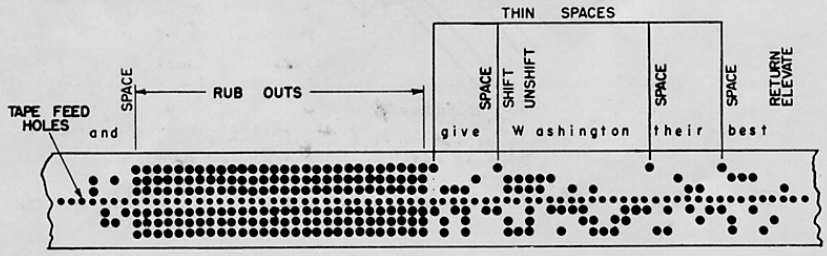


FIGURE 78.

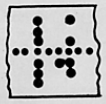


FIGURE 79. EN Space inserted with Spaceband

C. *EN spaces may be inserted WITH each spaceband in the line* (see Figure 79).

This is accomplished in the same manner as described under "B." Figure 80 indicates that when using unit system matrices, four Thin spaces fail to justify the line, but four EN spaces plus the expansion of spacebands would justify the line.

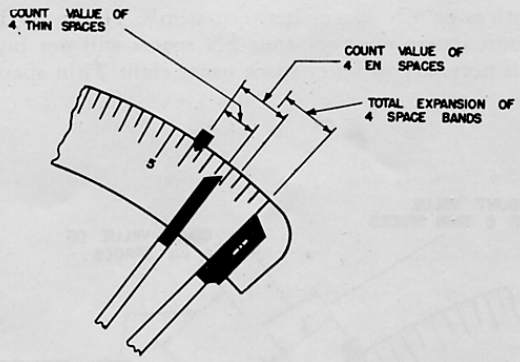


FIGURE 80.

Figure 81 shows a line that has been extra spaced with EN spaces.

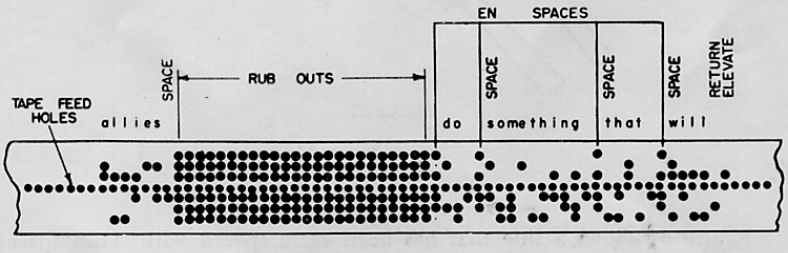


FIGURE 81.

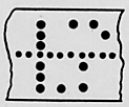


FIGURE 82.
Letter Spacing.

D. *Thin spaces may be inserted between the letters of a word ("letter spacing"*—see Figure 82).

1. Backspace the tape to the beginning of the word selected for letter spacing (preferably a five or more letter word in the center of the line).

2. Repunch remainder of line, inserting Thin spaces between the letters of the selected word (see 7th line of last paragraph of Figure 87).

Letter spacing may be employed alone or may be used in combination

with Thin spaces or EN spaces between words. Figure 83 indicates that when using unit system matrices, four EN spaces will not justify the line; therefore, it is necessary to letter space using eight Thin spaces.

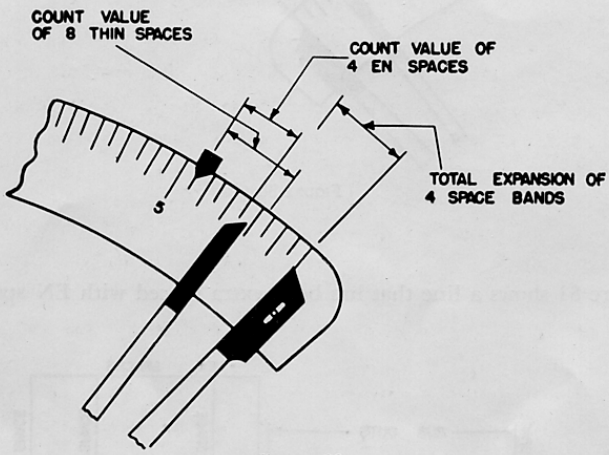


FIGURE 83.

Figure 84 shows a line that has been extra spaced with Thin spaces between the letters of a word.

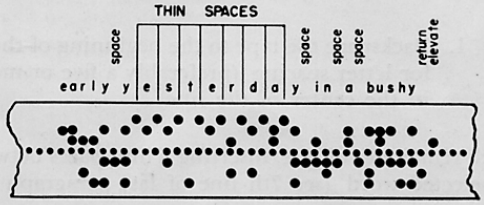


FIGURE 84.

Bold Face or Italic Composition

THE "UR" and "LR" (upper rail and lower rail) keys are used for controlling the position of the lateral (duplex) rail on the linecasting machine. In the upper rail position, *bold face* or *italic* characters may be set, and in the lower rail position, *roman* characters are set. Figures 85 and 86 illustrate the use of bold face and italic type.

To set type in bold face or italic, depress the "UR" key. All subsequent characters will then be set in the upper rail position for the remainder of the line. The lateral rail is constructed so that it automatically returns to the lower rail or roman position upon completion of the line. If it is desired to return to lower rail position before the completion of the line, this may be accomplished by depressing the "LR" key. Having once positioned the lateral rail in either the upper rail or lower rail position, the Operator may proceed to select both shift and unshift characters as required in the line to be set, without affecting the position of the lateral rail.

Note: When the tape is to be used on an Operating Unit not equipped with lateral rail delay mechanism, it is necessary to precede each "UR" or "LR" tape perforation with a time interval consisting of three TAPE (Blank) perforations. However, this time interval is not required at the beginning of a line.

Figure 85 illustrates a paragraph of roman characters, and a paragraph of bold face characters. Figure 86 contains roman and italic characters mixed within a paragraph.

In the composition of printed matter, special emphasis is sometimes placed on certain words or phrases by means of bold face type, which presents a noticeable contrast in the copy as compared to the ordinary "roman" characters. If a line contains both roman and bold face characters it is commonly referred to as a mixed line.

It is a common practice in newspaper composition to set complete lines or paragraphs in bold face in order to direct the attention of the reader to certain parts of an article. Bold face type may be used for either UPPER CASE or LOWER CASE characters.

FIGURE 85.

In book and magazine composition it is the usual practice to make use of *italics* in order to gain a similar degree of emphasis. *Italics* are often used when setting *proper names, foreign expressions, etc.*, although the actual rules governing the use of *italics* are determined by the *style* of any particular kind of copy, which is in turn defined in the *Rules for Composition* followed by various printing plants.

The term *mixed line* is also applied to lines of copy which contain both roman and *italicized* characters.

FIGURE 86.

Indentions

IN MAKING INDENTIONS, it is necessary to use "fixed" spaces to obtain proper alignment. The first line of the copy in Figure 87 is indented one EM space. The tabular matter in this Figure is indented one and one-half EMs — that is, each line is started by perforating one EM space and one EN space.

A paragraph is indented in proportion to the length of the line to be set. Single column (12 pica) copy is indented one EM space; column and a half (18 pica), one EM plus one EN space; double column (24 pica), two EM spaces.

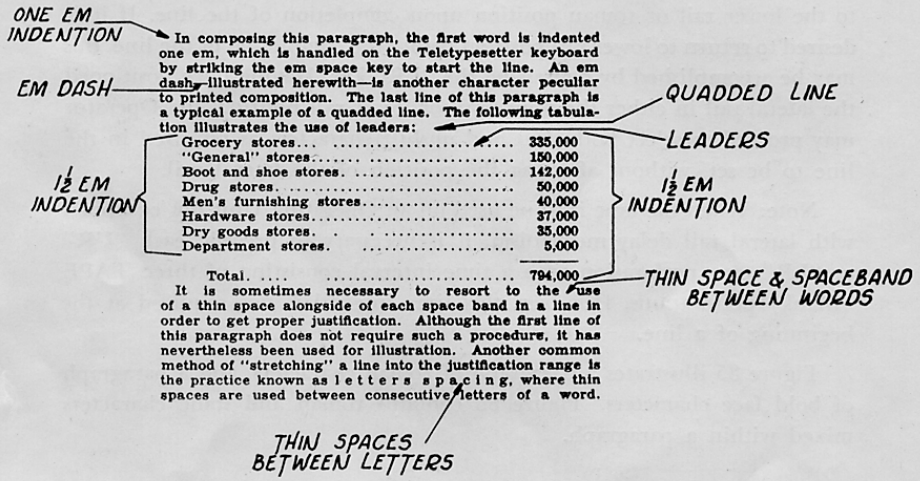


FIGURE 87. Indentions.

"Hanging" Indention

THE TERM "hanging" indention means to begin a paragraph flush left, and indent the succeeding lines of the paragraph one or more EM spaces. The first line of Figure 88 is flush left and the remaining lines indented an EN and EM space.

Good justification means that lines are neither too long or too short to fit within the limits of the column width used. The scale arrangement on the Perforator is used to indicate the length of lines.

FIGURE 88. Hanging Indention.

Centering

WHEN A WORD or phrase is to be centered, the procedure is as follows:

1. Turn punch control to the right or "off" position.
2. "Keyboard" word or words that are to be centered.
3. Quad out until the line reaches justification range, counting each EN space, EM space, and spaceband as you go along.

The total of each kind of space must be divisible by two, so that half of the spacing will be on the left of the centered matter and half on the right.

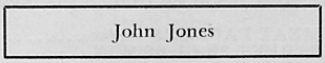


FIGURE 89.

Figure 89 shows "John Jones" centered. Four EN spaces, four EM spaces, and four spacebands were required to justify the line. Half of this spacing would be two EN spaces, two EM spaces, and two spacebands; this spacing on each side of "John Jones" will center the words.

Sequence of keystrokes:

EN space, EM space, spaceband
EN space, EM space, spaceband
Shift, J, Unshift, o, h, n, spaceband
Shift, J, Unshift, o, n, e, s
Spaceband, EN space, EM space
Spaceband, EN space, EM space

NEVER USE A SPACEBAND AT THE BEGINNING OR THE END OF A LINE.

Centering on Machines Equipped for Automatic Quadder Control from Tape

WHEN TAPE is being prepared for operation of linecasting machines equipped for automatic quadder control from tape, centering can automatically be obtained by depressing the QUAD CENTER key.

Quadding to the Right (See Figure 68)

WHEN A WORD OR PHRASE is to be quadded to the right, the procedure is as follows:

1. Turn Punch Control to the right or "off" position.
2. "Keyboard" word or words that are to be quadded right.
3. Turn Punch Control to the left or "on" position.
4. Quad out till pointers show justification.
5. "Keyboard" the word or words again so that they are perforated into the tape disregarding the position of the counting pointer.

SPECIAL SET LINES

Guide Lines

GUIDE LINES are written and also perforated at the beginning of each tape to enable the composing room to identify a galley of type. These lines identify the edition, kind of head, key words of the head, and in some cases the Operator's initials. They should be confined to one line when possible. All guide lines should be "leadered" out (EN and EM leaders) instead of being "quadded" out with EN and EM spaces. Figure 91 shows various types of guide lines used in newspaper composition.

MEAT PACKERS btw .....
STREET 3B CUBS WIN .....
CONGRESS CLAIMS Page 1....

FIGURE 91.

Sub Heads

SUB HEADS are used to divide an article into sections. Figure 92 shows various methods of style used for sub heads.

Jobs Still Open
All Doubt Erased
Games Played Today

FIGURE 92.

Date Lines

THE DATE LINE is the text preceding the first sentence of a story or news item. Date lines normally contain the city and state where the news item originated, the date of its occurrence and the press service supplying the item. Figure 93 shows a variety of date lines commonly used:

Washington, Jan. 12,—(AP)—The
MUNSAN, Korea, Jan. 12—(INS)
WASHINGTON,—(UP)—The late
Concord, N.H., Jan. 12 (AP)—It

FIGURE 93.

By-Lines

BY-LINES designate the author or writer of the story. Procedure for perforating by-lines depends on the local newspaper style. Figure 94 shows different styles of by-lines.

By John Miller
By John Miller
By John Miller
By John Miller

FIGURE 94.

Picture Cuts

PICTURE CUTS or "run arounds" are easily set on the Perforator. When copy designates that a picture cut is to be inserted within the column, the Operator must allow fixed spacing (EN and EM spaces) or capital alphabet characters for the width of the "cut" before typing the body text. Alphabet characters may be used in place of fixed spaces to avoid the possibility of loose lines resulting from shortage of EN and EM spaces. This portion of the "slug" will be sawed off to allow space for the cut. The quantity of spaces or characters used for the indention will depend on the width of the picture cut. This information is usually supplied by the composing room.

Spacebands are never used for the indented portion of the line because they are variable spaces.

Copy is usually marked for the number of lines to be indented, which depend on the length of the picture cut. Figures 95 and 96 show two methods of indention for a picture cut. Figure 95 has been indented with EN and EM spaces, whereas Figure 96 contains alphabet characters.

Due to the possibility that spaces and leaders may not have been distributed into the magazine of the linecasting machine, many times an indented line may cast with too short an indention or may not cast at all.

To overcome this possibility a more expedient method is provided here.

The operator can readily see that the number

Nameline

of times any one particular character is used is limited to once per line. When using spaces and leaders as many as eight or more characters from the same magazine channel are necessary in a single line.

This method may be used successfully on any length of line.

FIGURE 95.

Due to the possibility that spaces and leaders may not have been distributed into the magazine of the linecasting machine, many
ABCDEFGHIJK times an indented line may cast
ABCDEFGHIJK with too short an
ABCDEFGHIJK indention or may
ABCDEFGHIJK not cast at all.
ABCDEFGHIJK To overcome
ABCDEFGHIJK this possibility
ABCDEFGHIJK a more expedient
ABCDEFGHIJK method is pro-
ABCDEFGHIJK vided here.
ABCDEFGHIJK The operator
ABCDEFGHIJK can readily see
ABCDEFGHIJK that the number

Nameline

of times any one particular character is used is limited to once per line. When using spaces and leaders as many as eight or more characters from the same magazine channel are necessary in a single line.

This method may be used successfully on any length of line.

FIGURE 96.

PART FOUR

Operating Procedures

Tabular Composition

To PERFORATE tape for tabular composition the procedure is briefly as follows:

1. Compute tabulated matter in EN or EM spaces (using longest line of material to be tabulated).
2. Mark scale (with pencil) for the computed figure in scale divisions.
3. Perforate first part of tabulated line.
4. "Leader" or "quad" to the computed mark on the counting scale.
5. Perforate tabulated matter.

Computing Tabulated Matter

THE COUNTING arrangement of the Perforator is such that fractions count an EM space or full scale division. Figures, dollar sign, and parenthesis count an EN space or half scale division. Period, comma, apostrophe, hyphen, and vertical rule count a Thin space or one-third scale division for unit system matrices.

See Figure 97. The number of scale divisions required may be computed as follows:

The four figures require four one-half scale divisions or two scale divisions.

The space between the figures require three scale divisions.

The space between the leaders and the first figure is one-half scale division.

The total of the tabulated portion of the line is 5½ scale divisions or 11 EN spaces. Thus, the counting scale would be marked with pencil as shown in Figure 99, Page 61.

Keyboarding the Tabulated Lines

The sequence for keyboarding the first line in Figure 97 is as follows:

Perforate Miksis, comma, space, 2b, space, tape key; then EN and EM leaders alternately until counting pointer is slightly to the left of the pencil mark on the scale (5½). Continue with EN space, 5, EM space, 3 EM space, 0, EM space, 2. The counting pointer should now indicate that the line is justified. If the line is short of justification, a Thin space may be added over the TAPE key perforation. If it is apparent that a Thin space would not be sufficient to justify the line an EN leader should be used.

Figure 98 shows tabular matter in which EN and EM spaces and spacebands are used in place of leaders. The sequence of operation in Figure 98 is the same as in Figure 97 except that EN space, EM space, and spaceband are used, in the sequence given, instead of leaders.

It is imperative that the Operator bring the counting pointer as close to 51/2 (not beyond) as possible by the alternate use of the EN and EM leaders (Figure 97), the EN and EM spaces and spacebands (Figure 98).

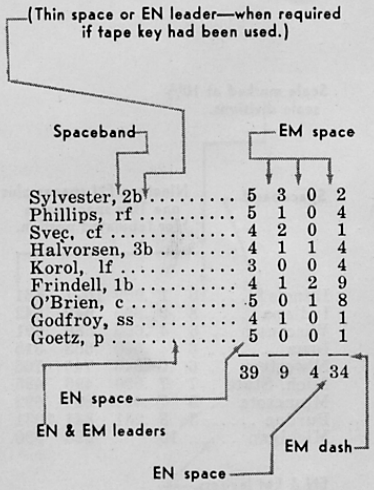


FIGURE 97.

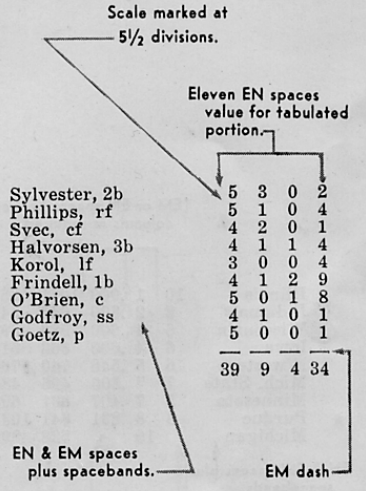


FIGURE 98.

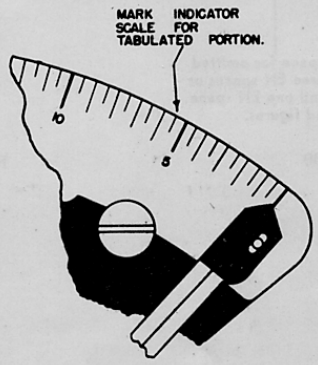
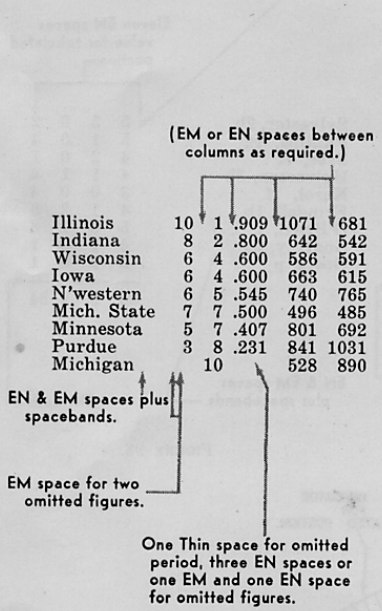


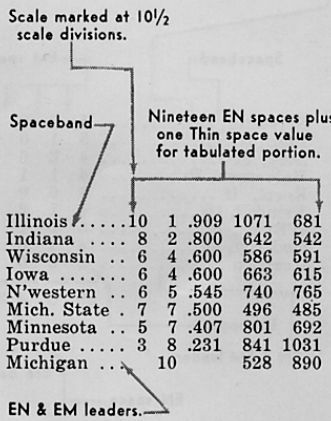
FIGURE 99.

Figures or characters not required in a particular line of the tabular matter must be replaced by fixed spaces of equivalent width. The last line of Figure 100 has no figure in the first column. These are replaced by two EN spaces or one EM space. Failure to insert the required fixed spacing will throw the columns out of alignment. Figure 101 shows a method of calculating the space required for the tabulated portion of the copy and also the use of EN and EM leaders.



Illinois	10	1	.909	1071	681
Indiana	8	2	.800	642	542
Wisconsin	6	4	.600	586	591
Iowa	6	4	.600	663	615
N'western	6	5	.545	740	765
Mich. State	7	7	.500	496	485
Minnesota	5	7	.407	801	692
Purdue	3	8	.231	841	1031
Michigan		10		528	890

FIGURE 100



Illinois	10	1	.909	1071	681
Indiana	8	2	.800	642	542
Wisconsin ..	6	4	.600	586	591
Iowa	6	4	.600	663	615
N'western ..	6	5	.545	740	765
Mich. State .	7	7	.500	496	485
Minnesota ..	5	7	.407	801	692
Purdue	3	8	.231	841	1031
Michigan ..		10		528	890

FIGURE 101

Summary of Operating Rules and Precautions

It is essential that the Operator be able to read the tape.

Concentrate on developing a smooth, even keyboard touch.

Always depress the same key with the same finger (except in lines requiring quadding or a series of leaders, where special fingering is used).

When copy is not marked legibly, or is marked in a manner you do not understand, ask the person in charge for an explanation.

When in doubt regarding spelling, punctuation, syllabication, etc., refer to the dictionary. Don't guess!

Before starting to perforate tape, the Operator should "condition" the Perforator.

No key of the Perforator should be depressed more than twice in succession (unless tape is to be used on machines equipped with repeat character delay mechanism).

Functions such as "shift," "unshift," etc., do not register a count value on the counting scale.

Any keylever depressed on the Perforator when the power switch is in the "off" position will register on the counting scale and also perforate in the tape when the power switch is turned "on."

Never begin or end a line with a spaceband or depress the space bar twice in succession.

Never end a line unless the pointers indicate that the line is justified.

End each line by depressing first the RETURN and then the ELEVATE keys.

Use fixed spaces whenever a *definite* amount of space is required, as in indentions, tabulations, etc.

Not more than 12 spacebands should be used in one line of copy. When more than twelve spaces are required between the words of a line, the Operator should resort to the use of fixed spaces (preferably EN spaces) to meet the requirement.

On Perforators equipped with the "add-thin" space mechanism, the Thin space is the only extra spacing that can be perforated over the spaceband combination.

When setting composition on the upper rail, remember that the Operating Unit automatically returns to the lower rail position at the end of each line.

When the Operating Unit does not provide delay for lateral rail operation, it is necessary to precede each "UR" or "LR" tape perforation with a time interval consisting of three TAPE (blank) perforations. This time interval is not required at the beginning of a line.

When in the upper rail position, use the EN and EM leader keys for quadding and the EN and EM space keys for setting leaders. However, this does not hold true in all cases since some shops use matrices containing EN and EM spaces in both positions, and EN and EM leaders in both positions.

The semaphore is provided to indicate whether the Perforator is in the shift or unshift position; red indicates shift position and white indicates unshift position.

Each time a perforated tape is removed from the Perforator, the shift or unshift code should be perforated in the succeeding tape regardless of what the semaphore indicates, in order to assure proper positioning of the Operating Unit on the linecasting machine.

Bear in mind that when the shift combination has been perforated in the tape, all subsequent characters continue to be selected in the shift position until the unshift combination is perforated. The same condition applies to the unshift combination.

In making corrections, care must be exercised so that the necessary shift, unshift, rail, return, and elevate signals are not deleted from the tape.

If in doubt, make certain that the corrected lines will justify by counting the line with the punch control lever turned to the right or "off" position.

When the tape is backspaced, the Tape Winder should be turned off and backed up sufficiently to release the tention of the tape; otherwise the feed holes may be torn.

Remember that the pointers are not backspaced when a perforation is deleted.

PART FIVE

Useful Data

The aim of this section is to provide the operator with additional "tools." Some of the items have a direct bearing on the operation of the perforator; others are in the nature of helpful background information.

Printing Terminology

AGATE TYPE—A size of type (5½ point type).

BANNER LINE—A page-wide head in large type.

BODY TYPE—The type commonly used for reading matter, usually 8 point in size or smaller. It is distinguished from "display type" which is used for headlines and larger type in advertisements.

BOLD FACE TYPE—A face with heavier strokes than a "medium" or "light" face. It is often used for emphasis as it stands out prominently in a copy block.

BULL DOG—Early edition of the newspaper.

CAPS AND LOWER CASE—If a word is set "c & lc," the first letter of the word is a capital letter, the remaining letters of the word are in lower case of the same font or kind of type.

CAPTION—The heading of a chapter, section, page, or article.

PART FIVE

Useful Data

COMPOSING ROOM—A place where type is set and assembled.

COPY—Material for publication.

CREDIT LINE—An acknowledgment of the source of material.

CUT—An engraving.

CUTLINES—The copy, usually only a few lines, which accompanies and gives necessary information about a picture.

DEADLINE—The latest minute at which work must be finished and ready for the next department to take over.

DELETE—A proofreader's term meaning take out or kill.

DUMMY—Diagram showing the layout of a page.

FLAG OR MAST HEAD—The box in the upper left-hand corner of the editorial page containing name of paper, address of publication, officers, etc.

FILLER—Copy that can be used at any time to fill space.

FONT—Complete assortment of any particular size and style of type.

FORM—A page of type locked into place in a rectangular metal frame or chase. This is the last step before pages are matted and stereotyped.

GALLEY—A metal tray in various column widths for holding type after it has been set and before it is placed in page form.

GALLEY PROOF—An imprint of type on a sheet of paper made while the type is in the galley.

HEAD, HEADLINES—The lines that caption a newspaper story. Heads are usually set in 12 point type or larger and should briefly summarize highlights of story.

HTK—Head to come, meaning the headline will be written and sent to composing room later.

KEEP STANDING—Instructions to printer to hold type for further use.

KILL—To discard type or copy.

L.C.—Lower case letters as opposed to capital letters.

LAYOUT—Plan or arrangement of a page.

LOCKUP—Tightening the type matter in the chase so that page is ready for stereotyping.

MAKE OVER—To rearrange a page of type or pages to accommodate new stories or to better the appearance.

MAKE UP—The general appearance of a page, its style and arrangement. Also the arrangement of type into columns and pages preparatory to printing.

PAGE PROOF—Printed proof of a whole page.

PICA—The unit for measuring width in printing; there being six picas to the inch.

PIED TYPE—Type which is jumbled, spilled or otherwise disarranged and no longer usable without resetting.

POINT—The unit for measurement of type, one seventy-second inch in depth or .01383. Type is specified by its point size, as 8 point, 12 point, etc.

PROOFREADER—One who checks proof against the copy.

QUADS—Blank matrices (EN and EM spaces) used to fill out lines where the amount of type does not do so.

RUN IN—To make (matter) continuous without a paragraph or break.

STYLE MANUAL—A compilation of typographical rules to be followed in a publication, codifying the method of treating spelling, abbreviations and other matters of uniformity in editing.

SUBHEAD—Used as text breaks to promote ease of reading.

TYPE FACE—A style of type as designed by an artist. Many type faces are named after men who designed them.

PART FIVE

Useful Data

WIDOW—A short line ending a paragraph.

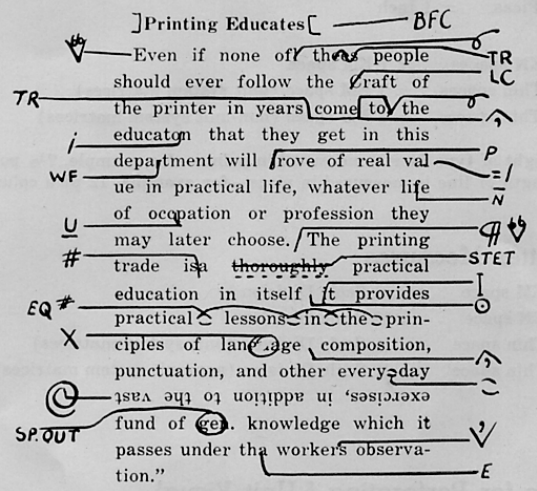
WRONG FONT—A character from one font of type mixed with those from another font.

"30"—End of copy.

Proof and Copyreader's Marks

⊙ or x	Insert period
^	Insert comma
:/	Insert colon
;/	Insert semi-colon
-/	Insert hyphen
/em/	Insert one EM dash
"/ or "/	Insert quotation marks
'/	Insert apostrophe
# or now isthe	Insert space
priter	Insert letter indicated
¶ or to the pica. Now	Paragraph
no ¶	No paragraph—run in
out, sc	Out, see copy
⁀	Close up
to day	Omit and close up
eq #	Equalize spacing
when you young were	Transpose the words
tr	Transpose the letters
e	Delete
stet	Restore words crossed out
bf or bold face	Set in bold face
bfc	Set in bold face capitals
ital or italic words	Set in italic
FOREVER AMBER	Use small capitals
wf	Wrong font
Senate	Set in lower case
chicago	Capital
Chicago	All capitals
10	Spell out (ten)
ten	Use figures (10)
General	Abbreviate (Gen.)
Gen.	Spell out (General)
@	Upside down, turn over
□ or □□	Indent one or two ems
⊏	Flush to left
⊐	Flush to right
][or //	Center
⌈	Move up
⌋	Move down
|||	Line up vertically

Examples of Marked and Corrected Proofs



PRINTING EDUCATES

"Even if none of these people should ever follow the craft of the printer in years to come, the education that they get in this department will prove of real value in practical life, whatever line of occupation or profession they may later choose.

"The printing trade is a thoroughly practical education in itself. It provides practical lessons in the principles of language, composition, punctuation, and other everyday exercises in addition to the vast fund of general knowledge which it passes under the worker's observation."

—An excerpt from an editorial in the Portland Press Herald

PART FIVE

Useful Data

Measures Used in Printing

1 Point	= .01383″
12 Points	= 1 Pica
72 Points	= 1 Inch
6 Picas	= 1 Inch

2 EN spaces	= 1 EM space
3 Thin spaces	= 1 EM space (unit system matrices)
4 Thin spaces	= 1 EM space (non-unit system matrices)

Height of type face is measured in points—for example, 7½ point Excelsior.
Length of line is measured in picas—for example, 12 pica column.

Teletypesetter Measures

1 EM space	= 1 Scale Division
1 EN space	= ½ Scale Division
1 Thin space	= ⅓ Scale Division (unit system matrices)
1 Thin space	= ¼ Scale Division (non-unit system matrices)

Instructions for Perforating 5-Unit Visual Characters and Figures in the Tape

DEPRESS THE KEYS following the dash in the order in which they are listed. Depress the tape key at least twice after each completed character. "Quad out" the line to meet justification.

A — V S V
B — Unshift Y R
C — C Z Z
D — Unshift Z C
E — Unshift Y Z
F — Unshift S E
G — C Z X
H — Unshift Space Unshift
I — Unshift
J — N T K
K — Unshift R Z
L — Unshift T T
M — Unshift E C E Unshift
N — Unshift A N Unshift
O — C Z C
P — Unshift S U
Q — C Y C T
R — Unshift S G
S — L Y D
T — E Unshift E
U — K T K
V — U T U
W — K T C T K
X — Z C Z
Y — A M A
Z — B Y W

1 — Unshift
2 — B Y L
3 — Z Y R
4 — U Space V
5 — W Y D
6 — C Y N
7 — Z S A
8 — R Y R
9 — I Y C
0 — C Z C

COUNTING POINTER SETTINGS

Column Width in Picas	EM QUAD SIZES .083	.0864	.0882	.090	.092	.094	.097	.100	.1038	.1060	.1084	.1107	.112	.115	.1176	.118	.120	.1245	.126	.128	.1314	.133	.1383	.140	.148	EM QUAD SIZES .1522	.154	.166	.1798	.182	.1937	.2213
4	7.8	7.5	7.3	7.2	7.0	6.8	6.6	6.4	6.2	6.0	5.9	5.8	5.7	5.6	5.4	5.4	5.3	5.1	5.1	5.0	4.9	4.8										
5	9.8	9.4	9.2	9.0	8.8	8.6	8.4	8.1	7.8	7.6	7.4	7.3	7.2	7.0	6.9	6.9	6.7	6.5	6.4	6.3	6.1	6.0	5.8	5.7	5.4							
6	11.8	11.3	11.1	10.9	10.6	10.4	10.1	9.8	9.4	9.2	9.0	8.8	8.7	8.5	8.3	8.3	8.1	8.8	7.7	7.6	7.4	7.3	7.0	6.9	6.5	6.3	6.3	5.8	5.3	5.3	4.9	4.3
7	13.8	13.2	13.0	12.7	12.4	12.2	11.8	11.4	11.0	10.8	10.5	10.3	10.2	9.9	9.7	9.7	9.5	9.1	9.0	8.9	8.6	8.5	8.2	8.1	7.7	7.4	7.3	6.8	6.3	6.2	5.8	5.1
8	15.8	15.2	14.9	14.6	14.2	13.9	13.5	13.1	12.6	12.3	12.1	11.8	11.7	11.3	11.1	11.1	10.9	10.4	10.3	10.1	9.9	9.8	9.4	9.3	8.8	8.5	8.4	7.8	7.2	7.1	6.7	5.8
9	17.8	17.1	16.7	16.4	16.0	15.7	15.2	14.7	14.2	13.9	13.6	13.3	13.1	12.8	12.5	12.5	12.3	11.8	11.7	11.5	11.1	11.0	10.6	10.5	9.9	9.6	9.5	8.8	8.1	8.0	7.5	6.6
10	19.8	19.0	18.6	18.2	17.8	17.5	16.9	16.4	15.8	15.5	15.1	14.8	14.6	14.2	13.9	13.9	13.6	13.1	13.0	12.8	12.4	12.3	11.8	11.6	11.0	10.7	10.6	9.8	9.0	8.9	8.4	7.3
10½	20.8	20.0	19.5	19.1	18.7	18.3	17.7	17.2	16.6	16.2	15.9	15.5	15.3	14.9	14.6	14.6	14.3	13.8	13.6	13.4	13.0	12.9	12.4	12.2	11.6	11.2	11.1	10.3	9.5	9.4	8.8	7.7
11	21.8	20.9	20.5	20.0	19.6	19.2	18.6	18.1	17.4	17.0	16.6	16.3	16.1	15.7	15.3	15.3	15.0	14.5	14.3	14.0	13.7	13.5	13.0	12.8	12.1	11.8	11.7	10.8	10.0	9.8	9.2	8.1
11½	22.8	21.9	21.4	21.0	20.6	20.1	19.5	18.9	18.2	17.8	17.4	17.0	16.8	16.4	16.0	16.0	15.7	15.1	15.0	14.7	14.3	14.2	13.6	13.4	12.7	12.3	12.2	11.3	10.4	10.3	9.5	8.4
11-9 Pts.	23.3	22.4	21.9	21.4	21.0	20.6	19.9	19.3	18.6	18.2	17.8	17.4	17.2	16.8	16.4	16.3	16.1	15.5	15.3	15.0	14.6	14.5	13.9	13.7	13.0	12.6	12.5	11.6	10.7	10.5	9.8	8.6
12	23.8	22.8	22.4	21.9	21.4	21.0	20.3	19.7	19.0	18.6	18.2	17.8	17.6	17.1	16.7	16.7	16.4	15.8	15.6	15.3	14.9	14.8	14.2	14.0	13.3	12.9	12.7	11.8	10.8	10.8	10.1	8.8
13	25.8	24.8	24.3	23.8	23.2	22.8	22.0	21.4	20.6	20.2	19.7	19.3	19.0	18.5	18.2	18.1	17.8	17.1	16.9	16.6	16.2	16.0	15.4	15.2	14.4	14.0	13.8	12.8	11.8	11.7	10.9	9.6
14	27.8	26.7	26.2	25.6	25.0	24.5	23.8	23.0	22.2	21.7	21.2	20.8	20.5	20.0	19.6	19.5	19.2	18.5	18.2	17.9	17.5	17.3	16.6	16.4	15.5	15.1	14.9	13.8	12.7	12.6	11.8	10.3
15	29.8	28.6	28.0	27.4	26.8	26.3	25.5	24.7	23.8	23.2	22.8	22.3	22.0	21.4	21.0	21.0	20.5	19.8	19.5	19.2	18.7	18.5	17.8	17.6	16.6	16.2	16.0	14.8	13.6	13.5	12.7	11.0
15½	30.8	29.6	28.9	28.4	27.7	27.2	26.3	25.5	24.6	24.1	23.5	23.0	22.8	22.2	21.7	21.6	21.2	20.5	20.2	19.9	19.4	19.1	18.4	18.2	17.2	16.7	16.5	15.3	14.1	13.9	13.1	11.4
16	31.8	30.5	29.9	29.3	28.6	28.1	27.2	26.4	25.4	24.8	24.3	23.8	23.5	22.9	22.4	22.4	21.9	21.1	20.9	20.5	20.0	19.8	19.0	18.8	17.7	17.3	17.0	15.8	14.6	14.4	13.5	11.8
17	33.8	32.4	31.8	31.1	30.4	29.8	28.9	28.0	27.0	26.4	25.8	25.3	25.0	24.3	23.8	23.8	23.3	22.4	22.2	21.8	21.3	21.0	20.2	19.9	18.9	18.4	18.1	16.8	15.5	15.3	14.3	12.6
17½	34.8	33.4	32.7	32.0	31.3	30.7	29.7	28.8	27.8	27.2	26.6	26.0	25.7	25.0	24.5	24.4	24.0	23.1	22.8	22.5	21.9	21.6	20.8	20.5	19.4	18.9	18.7	17.3	16.0	15.8	14.8	12.9
18	35.8	34.4	33.7	33.0	32.2	31.6	30.6	29.7	28.6	28.0	27.4	26.8	26.5	25.8	25.2	25.2	24.7	23.8	23.5	23.1	22.5	22.3	21.4	21.1	20.0	19.5	19.2	17.8	16.4	16.2	15.2	13.3
18½	36.8	35.3	34.6	33.9	33.2	32.5	31.4	30.5	29.4	28.8	28.1	27.5	27.2	26.5	25.9	25.8	25.4	24.4	24.2	23.8	23.2	22.9	22.0	21.7	20.6	20.0	19.7	18.3	16.9	16.7	15.7	13.7
19	37.8	36.3	35.5	34.8	34.1	33.3	32.3	31.3	30.2	29.3	28.9	28.3	27.9	27.2	26.6	26.6	26.1	25.1	24.8	24.4	23.8	23.5	22.6	22.3	21.1	20.6	20.3	18.8	17.3	17.1	16.1	14.1
20	39.8	38.2	37.4	36.7	35.8	35.1	34.0	33.0	31.8	31.2	30.4	29.8	29.4	28.7	28.0	28.0	27.5	26.4	26.2	25.7	25.1	24.8	23.8	23.5	22.2	21.6	21.4	19.8	18.3	18.0	16.9	14.8
21	41.8	40.2	39.3	38.5	37.7	26.9	35.7	34.7	33.4	32.7	32.0	31.3	30.9	30.1	29.4	29.4	28.8	27.8	27.5	27.0	26.3	26.0	25.0	24.7	23.4	22.7	22.4	20.8	19.2	19.0	17.8	15.6
22	43.8	42.0	41.2	40.4	39.5	38.6	37.5	36.3	35.0	34.2	33.5	32.8	32.4	31.5	30.8	30.8	30.2	29.1	28.8	28.3	27.6	27.3	26.0	25.9	24.5	23.8	23.5	21.8	20.1	19.9	18.6	16.3
23		44.0	43.1	42.2	41.3	40.2	39.2	38.0	36.6	35.8	35.0	34.3	33.8	33.0	32.2	32.2	31.6	30.5	30.1	29.6	28.8	28.5	27.4	27.1	25.6	24.9	24.6	22.8	21.0	20.8	19.5	17.1
23½				43.1	42.2	41.3	40.0	38.8	37.4	36.6	35.8	35.0	34.6	33.7	33.0	32.9	32.3	31.1	30.8	30.2	29.5	29.1	28.0	27.7	26.2	25.4	25.1	23.3	21.5	21.2	19.9	17.4
24				44.0	43.1	42.2	40.8	39.6	38.2	37.4	36.6	35.8	35.4	34.4	33.7	33.6	33.0	31.8	31.4	30.9	30.1	29.8	28.6	28.2	26.7	26.0	25.7	23.8	21.9	21.7	20.4	17.8
24½					44.0	43.0	41.7	40.5	39.0	38.2	37.3	36.5	36.1	35.2	34.4	34.3	37.7	32.4	32.1	31.6	30.7	30.3	29.2	28.8	27.3	26.5	26.2	24.3	22.4	22.1	20.9	18.2
25						43.9	42.6	41.3	39.8	39.0	38.1	37.3	36.9	35.9	35.1	35.1	34.4	33.1	32.8	32.2	31.4	31.0	29.8	29.4	27.9	27.1	26.8	24.8	22.9	22.6	21.2	18.6
26							44.3	43.0	41.4	40.5	39.6	38.8	38.3	37.3	36.5	36.5	35.8	34.4	34.1	33.5	32.6	32.3	31.0	30.6	28.9	28.2	27.8	25.8	23.8	23.5	22.1	19.3
27	NOTE: Allowance of .2 divisions has been made in the above settings.							44.6	43.0	42.1	41.1	40.3	39.8	38.8	37.9	37.8	37.1	35.8	35.4	34.8	33.9	33.5	32.2	31.8	30.1	29.3	28.9	26.8	24.7	24.4	22.9	20.0
28									44.6	43.6	42.6	41.8	41.3	40.2	39.3	39.2	38.5	37.1	36.7	36.1	35.2	34.7	33.4	33.0	31.2	30.4	29.9	27.8	25.6	25.3	23.8	20.8
29										45.2	44.2	43.3	42.8	41.6	40.7	40.6	39.9	38.4	38.0	37.4	36.4	36.0	34.6	34.2	32.3	31.5	31.1	28.8	26.6	26.3	24.7	21.6
30												44.8	44.2	43.1	42.1	42.0	41.3	39.8	39.3	38.7	37.7	37.2	35.8	35.4	33.4	32.6	32.3	29.8	27.5	27.2	25.5	22.3

FORMULA: Length of line multiplied by .166, divided by quad size, minus .2, equals scale settings.

TELETYPESETTER SPACEBAND POINTER SETTINGS

SPACEBANDS USED			LEFT OR RIGHT HAND POINTER	EM QUAD SIZES .083	.0864	.0882	.090	.092	.094	.097	.100	.1038	.1060	.1084	.1107	.112	.115	.1176	.118	.120	.1245	.126	.128	.1314	.133	.1383	.140	.148	EM QUAD SIZES .1522	.154	.166	.1798	.182	.1937	.2213
Name	Minimum & Maximum of SPACEBAND																																
Special Taper	.0369	.1219	R.H.	4.5	4.3	4.2	4.1	4.1	4.0	3.9	3.7	3.6	3.5	3.4	3.4	3.3	3.2	3.1	3.1	3.1	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.5	2.4	2.4	2.2	2.1	2.1	1.9	1.7
			L.H.	8.2	7.8	7.7	7.5	7.4	7.2	7.0	6.8	6.5	6.3	6.2	6.0	6.0	5.8	5.6	5.6	5.5	5.3	5.3	5.2	5.0	4.9	4.7	4.7	4.4	4.3	4.2	3.9	3.5	3.5	3.2	2.8
Thick	.0375	.100	R.H.	4.5	4.4	4.3	4.2	4.1	4.1	3.9	3.8	3.7	3.6	3.5	3.4	3.4	3.3	3.2	3.2	3.1	3.0	3.0	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.4	2.3	2.1	2.1	1.9	1.7
			L.H.	5.9	5.6	5.5	5.4	5.2	5.1	5.0	4.9	4.6	4.5	4.4	4.3	4.2	4.1	4.0	4.0	3.9	3.8	3.7	3.6	3.5	3.5	3.3	3.3	3.1	3.0	3.0	2.7	2.4	2.4	2.1	1.9
Extra Thick	.047	.147	R.H.	5.7	5.5	5.3	5.2	5.1	5.2	4.9	4.7	4.6	4.5	4.4	4.2	4.2	4.1	4.0	4.0	3.9	3.8	3.7	3.7	3.6	3.6	3.4	2.6	3.2	3.1	3.1	2.8	2.6	2.6	2.4	2.1
			L.H.	9.7	9.3	9.1	8.9	8.7	8.5	8.3	8.0	7.7	7.5	7.3	7.1	7.1	6.9	6.7	6.7	6.6	6.2	6.2	6.1	6.0	5.9	5.7	5.6	5.2	5.1	5.0	4.6	4.2	4.2	3.9	3.3
Extra Thin	.028	.091	R.H.	3.4	3.4	3.2	3.1	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.6	1.6	1.4	1.3
			L.H.	5.9	5.7	5.6	5.5	5.3	5.2	5.0	4.9	4.7	4.6	4.5	4.3	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.7	3.6	3.5	3.3	3.3	3.1	3.0	3.0	2.7	2.5	2.5	2.3	1.9
Wide Range	.032	.1169	R.H.	3.9	3.8	3.6	3.6	3.5	3.4	3.3	3.2	3.1	3.0	3.0	2.9	2.9	2.8	2.7	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.1	2.1	1.9	1.8	1.8	1.7	1.5
			L.H.	8.2	7.8	7.7	7.5	7.3	7.2	7.0	6.8	6.5	6.3	6.2	6.0	5.9	5.8	5.6	5.6	5.5	5.3	5.3	5.1	5.0	4.9	4.7	4.7	4.4	4.3	4.2	3.9	3.5	3.5	3.2	2.8

FORMULA FOR COMPUTING RIGHT HAND JUSTIFICATION POINTER

Special Taper	Min. .0369 x 10 = .370 ÷ Quad Size
Thick	Min. .0375 x 10 = .375 ÷ Quad Size
Extra Thick	Min. .047 x 10 = .470 ÷ Quad Size
Extra Thin	Min. .028 x 10 = .280 ÷ Quad Size
Wide Range	Min. .032 x 10 = .320 ÷ Quad Size

FORMULA FOR COMPUTING LEFT HAND JUSTIFICATION POINTER

Special Taper	.1219 - .0369 = .850 x 10 = .850 x 85% = .723 ÷ Quad Minus .5
Thick	.100 - .0375 = .0625 x 10 = .625 x 85% = .531 ÷ Quad Minus .5
Extra Thick	.147 - .047 = .100 x 10 = 1.000 x 85% = .850 ÷ Quad Minus .5
Extra Thin	.091 - .028 = .063 x 10 = .630 x 85% = .536 ÷ Quad Minus .5
Wide Range	.1169 - .032 = .0849 x 10 = .849 x 85% = .722 ÷ Quad Minus .5

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NOTES

Learn code as soon as possible.

To Justify a line —

1. Use "ADD THIN" as one means — this is turning back to space band code & hitting "thin space"

2. "Letter space" a word — rub out last word in line & put in thin spaces between letters

3. Hyphenation — word too long hyphenate

4. Anticipation of trouble — In setting Social News or any copy involving proper names or words that are hard to hyphenate, — hit "tape" after a space band — then if necessary, one can turn back & put an "en" space. ~~in if~~

Use a combination of any of the
above methods.

Page 22

Upper Rail – Bold Face – Italic

Lower Rail – Roman

Quotation marks - 23

Appostraphic - 23

How to end copy bars at end -

fi fl ff ffi ffl

Quadding?

H arrison 39224

TELETYPESETTER

Corporation