

**Bulletin No. 1**  
**Issue 1**  
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# **TELETYPESETTER**

**MANUAL OF INSTRUCTION**  
**FOR SUPERVISORS OF**  
**STANDARD TELETYPESETTER EQUIPMENT**

**TELETYPESETTER**

**CORPORATION**

**1400 WRIGHTWOOD AVE.,**  
**CHICAGO, U. S. A.**

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CORPORATION

AND MANUFACTURER OF

EQUIPMENT

# C O N T E N T S

	<u>Page</u>
Counting Pointer (Matrix Pointer) and Spaceband (Justification) Pointer Settings For Unit Fonts With Standard Newspaper Grouping . . . . .	6
Counting Pointer Setting For Unit Font With An Eighteen Unit Value Of .1107" . . . . .	6
Counting Pointer Stop Adjustment. . . . .	7
Left Spaceband Pointer Adjustment . . . . .	9
Perforator Counting Scale and Counting Pointer. . . . .	6
Right Spaceband Pointer Adjustment. . . . .	8
Routine For Adjusting Left Spaceband Pointer For Special Taper Spacebands Used With a Unit Font In Which The 18 Unit Count Has a Value Of .1107" . . . . .	10
Routine For Adjusting Right Spaceband Pointer For Special Taper Spacebands Used With a Unit Font In Which The 18 Unit Count Has a Value of .1107" . . . . .	8
Sample Calculation For Counting Pointer Setting . . . . .	6
Spaceband Pointer Settings . . . . .	8
Special Taper Spaceband (Recommended) . . . . .	8
General . . . . .	1
Maintenance Instructions . . . . .	3
Care And Adjustments. . . . .	4
Lubrication . . . . .	4
Parts Bulletins . . . . .	4
Theory Of Operation . . . . .	3
Modified Casting Machine Keyboard Installation Instructions. . . . .	3
Perforator Installation Instructions . . . . .	2
Electric Power For Perforator Motor And Operator's Lamp . . . . .	2
End-Of-Line Indicator Lamp . . . . .	2
Installing Copyholder On Perforator Cover . . . . .	2
Installing Tape Reel Container On Perforator. . . . .	2
Placing The Perforator Cover Over The Perforator. . . . .	2
Positioning Perforator On Table . . . . .	2
Table For Perforator . . . . .	2
Tape Winder . . . . .	3
Routine For Handling Perforated Tape . . . . .	11
Marking Rolls Of Perforated Tape. . . . .	11

	<u>Page</u>
Size Of Rolls Of Tape . . . . .	11
Starting To Perforate A Roll Of Tape. . . . .	11
Tape Operation Of The Linecasting Machine. . . . .	11
Feeding Perforated Tape Into The Operating Unit . . . . .	11
How To Obtain Maximum Output Of The Tape Operated Linecasting Machine . . . . .	12
Teletypesetter Operator Supervision. . . . .	5
Operator Training . . . . .	5
Selection Of Teletypesetter Operators . . . . .	5
Unpacking The Equipment. . . . .	1

MANUAL OF INSTRUCTION FOR SUPERVISORS OF  
STANDARD TELETYPESETTER EQUIPMENT

This manual is intended to serve as a guide for installing, maintaining, and supervising the operation of standard Teletypesetter equipment.

GENERAL

When a linecasting machine is equipped for automatic Teletypesetter operation, it can be manually operated when the tape feed control lever is in the "OFF" position.

To convert a linecasting machine for Teletypesetter operation, the regular keyboard must be replaced by a modified keyboard and other accessories which are arranged to accommodate the Teletypesetter operating unit.

The three principal units which comprise one complete Teletypesetter installation are as follows:

- (1) The perforator, which is a self contained portable unit, with a keyboard that is arranged similarly to that of an ordinary typewriter. The perforator is used by the operator to perforate code combinations in a paper tape.
- (2) The operating unit, which uses this perforated tape for automatic operation of a linecasting machine. The operating unit is readily removable for maintenance purposes, and may be conveniently interchanged between linecasting machines equipped with Teletypesetter accessories, using the procedure outlined in Bulletin 6.
- (3) The accessories, which consist of the modified linecasting machine keyboard, assembling elevator and linkages for adapting the linecasting machine to automatic control by the operating unit.

UNPACKING THE EQUIPMENT

Teletypesetter units are packed in boxes which are floated in excelsior inside of larger boxes. When these outer boxes are opened, the inner boxes and other accessories which are wrapped in paper should be carefully removed. Because of the fire hazard, the excelsior should then be replaced in the outer boxes and the covers nailed down. After all the equipment is accounted for, the outer boxes with excelsior should be discarded.

Before opening the long narrow wooden box containing the operating unit or the other wooden boxes containing the perforator and the modified casting machine keyboard, the boxes should be placed on their ends. Then the nails at the ends of the boxes which hold the cross piece braces inside the box should be pulled out about one-half inch with a nail puller. Then place the boxes right side up and remove the tops and the nails holding the cross piece braces.

Finally the cross piece braces should be removed and the equipment lifted carefully from the boxes.

## PERFORATOR INSTALLATION INSTRUCTIONS

### Table For Perforator

A table which has been found satisfactory for supporting the perforator in such position relative to that of a seated operator as to minimize fatigue is one which has the surface of its top approximately 25 inches above the floor. There should be no front cross braces and the clearance below the table top should be sufficient to avoid interference with the knees of the operator. The length of the table top should not be less than 33 inches, and its width should be approximately 20 inches, which will afford adequate space for the perforator and a tape winder, and for the servicing or adjustment of the perforator.

A chair should be provided which aids the operator to maintain the proper posture.

### Electric Power for Perforator Motor and Operator's Lamp

There should be a suitable power supply outlet near the location of the operator's table so that the perforator attachment plug may be connected.

Adequate illumination is essential. A drop light with shade located immediately above the perforator copyholder has been found to be satisfactory.

### Positioning Perforator on Table

The large felt pad supplied should be positioned on the perforator table about 14 inches from the left side and 1/2 inch from the front of the table. Then place the perforator centrally on the pad with the keyboard toward the front of the table.

**CAUTION:** Before connecting the perforator to the power supply, turn the motor flywheel in a counterclockwise direction to make certain that the shafts and gears are free.

### Installing Tape Reel Container on Perforator

Remove the cover from the tape reel container and remove the tape reel retainer and the roll of tape. Fasten the tape reel container to the left side of the keyboard casting by means of the three mounting screws which are located in the tape reel container mounting holes in the keyboard casting.

Start the tape through the perforator as outlined in Bulletin No. 7 under "Inserting a Roll of Tape in the Perforator."

### Installing Copyholder on Perforator Cover

Mount the copyholder (with line guide) on the cover by means of the two screws which are located in the copyholder mounting posts on the cover.

### End-of-Line Indicator Lamp

The end-of-line indicator lamp is packed in a small cardboard box usually tied to the perforator. This lamp fits in the socket which is located to the right of the counting scale.

### Placing the Perforator Cover Over the Perforator

Place the perforator cover over the perforator carefully, making sure that the cover clears the counting scale and power cord and fits evenly around the perforator base casting. The lower edges of the cover should rest on the felt pad.

Tape Winder (Figure 1)

The tape winder is operated by a spring motor that can be wound with the key located on the rear of the winder. The small knob is attached to a plunger for manually starting and stopping the winder. The stop lever automatically stops the winder before the tape can be pulled tightly enough to mutilate the feed holes.

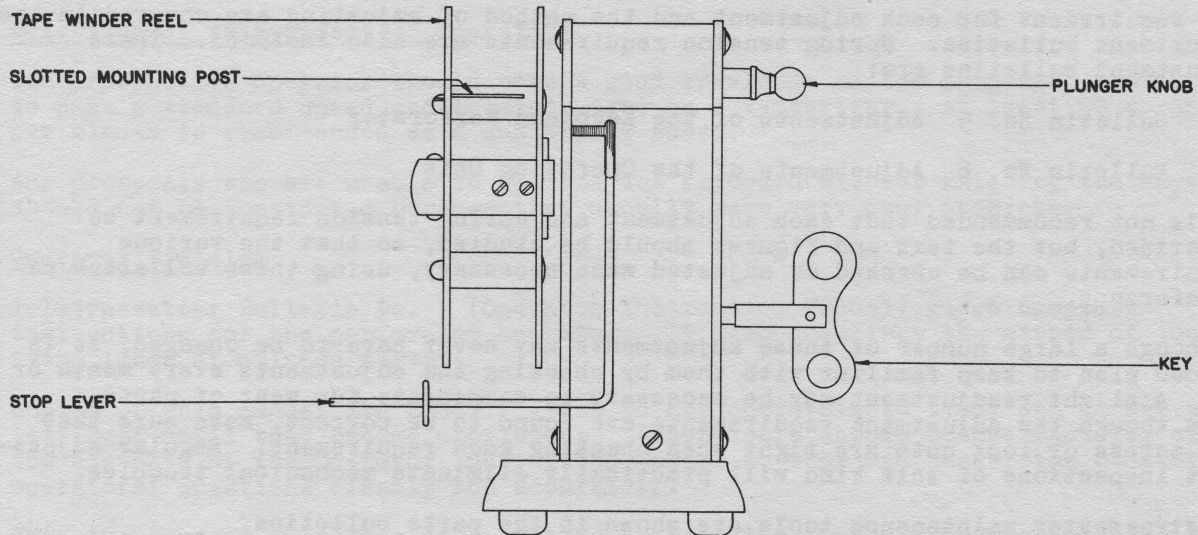


FIGURE 1

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 tape should be perforated. With the front plate removed from the reel, the tape should pass under the tape winder stop lever and through the slotted post 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.

MODIFIED CASTING MACHINE KEYBOARD  
INSTALLATION INSTRUCTIONS

Detailed instructions for attaching the modified linecasting machine keyboard are furnished at the time of the installation.

MAINTENANCE INSTRUCTIONS

Theory of Operation

In order to properly maintain Teletypesetter equipment, it is essential that the supervisor become thoroughly familiar with the operations performed by the various mechanisms.

The following bulletins describe and illustrate in detail the mechanical operations of the Teletypesetter Apparatus.

Bulletin No. 3 Description of the Keyboard Perforator

Bulletin No. 4 Description of the Operating Unit

All the operations of both the perforator and operating unit may be performed by manually turning the motor flywheel (counterclockwise) on the perforator or the pulley (clockwise) on the operating unit. This is helpful in studying the operation or locating a case of trouble.

#### Care and Adjustments

The requirement for each adjustment and the method of adjusting are covered in the adjustment bulletins. Spring tension requirements are also included. These adjustment bulletins are:

Bulletin No. 5 Adjustments of the Keyboard Perforator

Bulletin No. 6 Adjustments of the Operating Unit

It is not recommended that each adjustment and spring tension requirement be memorized, but the text and figures should be studied, so that the various requirements can be checked or adjusted when necessary, using these bulletins as a reference.

Although a large number of these adjustments may never have to be changed, it is a good plan to keep familiar with them by checking the adjustments every month or so. A slight readjustment may be necessary to compensate for wear of parts. Even though the adjustment requirements are found to be correct, make sure that the screws or lock nuts are tight when checking each requirement. Regular adjustment inspections of this kind will practically eliminate mechanical troubles.

Teletypesetter maintenance tools are shown in the parts bulletins.

#### Lubrication

The frequency of lubrication depends upon the class of service and the climatic conditions at the place of the installation. Under normal conditions, once every two weeks for 8 hours per day service and once every week for 16 hours per day service is sufficient. Installations near salt water or dusty areas may require more frequent oiling.

All Teletypesetter equipment is thoroughly lubricated before shipment from the factory. However, if it is not installed in a short time or if any lack of lubrication is noted, it is advisable to relubricate the machines thoroughly according to lubricating information specified in the adjustment bulletins.

After installing a new machine, it is suggested that the machine be lubricated after it has been in service approximately half the time normally allowed between lubrications.

The use of solvents, such as carbon tetrachloride or gasoline, as cleaning agents are not recommended. If it becomes necessary to use a solvent, the parts cleaned should be carefully relubricated to prevent any tendency to rust.

#### Parts Bulletins

Spare parts for Teletypesetter equipment may be ordered by referring to the following parts bulletins:

Bulletin No. 50 Parts - Keyboard Tape Perforator

Bulletin No. 51 Parts - Operating Unit

Bulletin No. 52 Parts - Standard Teletypesetter Accessories For Permanent Attachment to Modern Linecasting Machines of American Manufacture (For Automatic 90 Channel Operation.)

In placing an order, THE NUMBER AND THE NAME OF THE PART SHOULD BE GIVEN AS SHOWN IN THE PARTS BULLETIN.

### TELETYPESETTER OPERATOR SUPERVISION

#### Selection of Teletypesetter Operators

The prospective operator should have a good knowledge of the language, and be able to pass a standard speed and accuracy test on a typewriter. At least 50 words per minute is recommended as a qualifying speed.

Any prospects who are unable to operate the keyboard without watching the keys should not be considered because they usually make very poor progress.

#### Operator Training

Teletypesetter Bulletin No. 7 (Operator Instruction Manual) gives complete instructions for the perforator operator. It also describes the method of justifying lines of printed matter.

Copies of this manual are usually given to new operators to study and to use as a text book until they become proficient. Supervisors should become familiar with the contents of the Operator Instruction Manual so they can answer the student operators' questions clearly and accurately.

When the student operators have learned to read the tape and understand how to operate the keyboard, they should be permitted to set some "live" copy.

If the proof indicates that the type is good enough to use, the operator should be permitted to continue to set "live" copy because there is usually a tendency to be less careful in setting "dummy" copy.

The Teletypesetter keyboard perforator is constructed so that an operator can produce perfect tape. The length of doubtful lines can be rechecked and any operators' errors can be corrected in the tape before it is used to operate the linecasting machine.

The new operator should be impressed with the fact that speed without accuracy is of no value. This point is very important, because if a new operator makes numerous errors due to excessive speed, it will be found very difficult to correct this fault later.

Simple and easily read straight matter copy is recommended for the beginners until they become familiar with the operation of the perforator.

When cautioning operators regarding their mistakes, it is a good plan to call their attention to one type of a mistake at a time, and thoroughly explain the remedy. By using this method, it has been found that an operator will not become confused and will, therefore, learn the proper procedure in a shorter time. Make certain that errors which may be due to mechanical troubles are not charged against the operator.

New operators usually waste a considerable amount of time in deciding what to do when a line does not justify. The proper justification of lines requires a considerable amount of attention at first. Therefore, the various methods to extra space lines should be carefully explained so that this problem will be a routine matter after a short time.

It is recommended that the supervisor calculate and check the pointer settings on the perforator until the operators prove they are capable of assuming this responsibility.

After all the settings for the various sizes of type and column widths that are to be used are calculated, they should be recorded and left with the perforator operator for future reference. Operators should be able to make their own pointer settings from these records after they have been instructed and checked a few times.

The method of calculating the pointer settings is covered in the following test.

COUNTING POINTER (MATRIX POINTER) AND SPACEBAND  
(JUSTIFICATION) POINTER SETTINGS FOR UNIT FONTS  
WITH STANDARD NEWSPAPER GROUPING

Perforator Counting Scale and Counting Pointer

Each full division on the counting scale represents a thickness which is equivalent to the "EM" quad for that particular 18 unit font of type. A half of a scale division represents an "EN" quad which is one-half of the "EM" quad size. The counting pointer is arranged to move from left to right over the counting scale in varying amounts proportional to the width of the characters added to the lines as the various key levers are operated. The starting point of the counting pointer is adjustable and should be positioned to conform to the column measure of the composition being set. The "EM" quad has a value of 18 units, and all other characters and quads are directly proportional to the "EM" quad. For example, the "i" has a value of 6 units and the value of all numerals is 9 units. (See character grouping chart under Counting Mechanism in Bulletin No. 3.)

The counting pointer moves one full scale division on the counting scale for each 18 unit count. Accordingly, when the perforator is used to count a font of type with an 18 unit value of .1107", the counting pointer moves a full scale division for each .1107" of type and the theoretical pointer setting for any column measure is therefore, determined as a number of divisions equal to the number of times the column width (measured in inches) can be divided by .1107". Likewise, when the perforator is used to count a unit font with an 18 unit character brass size 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

In order to illustrate the method of calculating the counting pointer setting, a sample calculation is herewith outlined:

Counting Pointer Setting for Unit Font with an Eighteen  
Unit Value of .1107" (See Figure 2)

Column measure (average newspaper measure).....	12 picas
Column measure in inches .....	12 x .166" = 1.992"
Value of 18 units in inches.....	.1107"
Theoretical setting .....	1.992" ÷ .1107" = 18 Divisions
Allowance to provide margin against the possibility of sending tight lines into the vise .....	.2 Divisions
Counting Pointer setting .....	17.8

**CAUTION:** The vise jaw settings of all tape operated linecasting machines should be accurately adjusted according to the measure being set. This is important because the pointer settings on the perforator are based on the linecasting machine settings.

Lines near the ends of the justification ranges of the spacebands which indicate they are of proper length on the perforator scale might not fit on the linecasting machine if there is any variation between these two settings.

SAMPLE COUNTING POINTER STOP SETTINGS CHART FOR 18 UNIT FONTS

<u>Column Width in Picas</u>	<u>Quad Size .0882"</u>	<u>Quad Size .100"</u>	<u>Quad Size .1038"</u>	<u>Quad Size .1107"</u>	<u>Quad Size .1199"</u>	<u>Quad Size .1314"</u>
10	18.6	16.4	15.8	14.8	13.6	12.4
11	20.5	18.1	17.4	16.3	15.0	13.7
12	22.4	19.7	19.0	17.8	16.4	15.0
13	24.3	21.4	20.6	19.3	17.8	16.2
14	26.2	23.0	22.2	20.8	19.2	17.5
15	28.0	24.7	23.8	22.3	20.6	18.7
16	29.9	26.4	25.4	23.8	22.0	20.0
17	31.8	28.0	27.0	25.3	23.4	21.3
18	33.7	29.7	28.6	26.8	24.8	22.5
19	35.6	31.4	30.2	28.3	26.2	23.8
20	37.5	33.0	31.8	29.8	27.6	25.1
21	39.4	34.7	33.4	31.3	29.0	26.4
22	41.3	35.3	35.0	32.8	30.4	27.6
23	43.2	38.0	36.6	34.3	31.8	28.9
24	45.1	39.7	38.2	35.8	33.2	30.1
25	46.0	41.4	39.8	37.3	34.6	31.4

Based on 1 Pica = .166"

**NOTE:** Allowance of .2 divisions has been made in the above pointer settings.

FIGURE 2

Counting Pointer Stop Adjustment (Figure 3)

The counting pointer stop should be positioned by means of its clamping screw so that the counting pointer returns to the calculated point on the scale when the "RET" key is struck. After the clamping screw has been tightened, recheck the adjustment and refine if necessary.

The pointer stop arm is arranged so that it may be turned to its right or left position. In its right position it is used for narrow column widths and in its left position it is used for wide column widths.

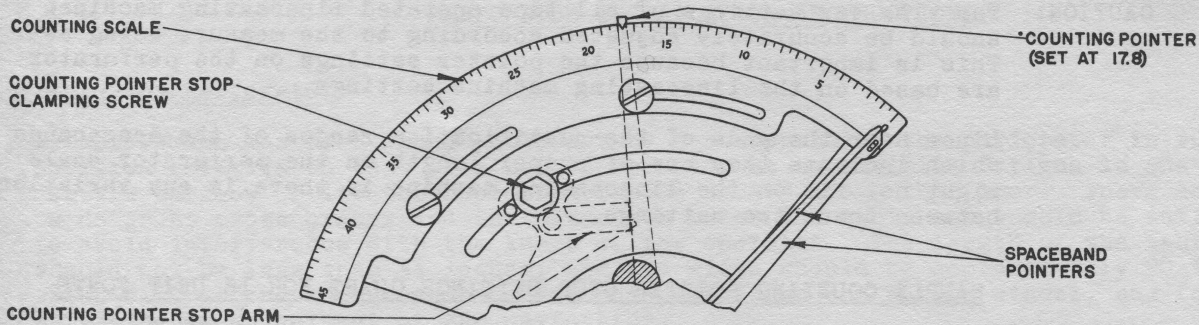


FIGURE 3

### Spaceband Pointer Settings

The mechanism for moving the spaceband pointers is arranged to permit adjustment of the pointer deflections, and must be adjusted so that the pointer deflections will bear the same relation to the graduations on the counting scale as the actual spaceband dimensions bear to the matrix dimensions of the unit font being composed.

The spaceband pointers motion is adjusted not only to agree with the font being used but also to agree with the particular size of spacebands being used.

### Special Taper Spaceband (Recommended)

The minimum thickness of the special taper spaceband is .037" and the maximum thickness of .122". The minimum thickness is measured when the slide is at the extreme top of the wedge, and the maximum thickness is measured when the slide is at the extreme bottom of the wedge. The difference between these two measurements is the expansion of which the spaceband is capable when the wedge is moved through its entire travel.

### Right Spaceband Pointer Adjustment

When properly adjusted the right spaceband pointer moves a distance representing the minimum thickness of the spacebands in the line. The indicator scale is slidably arranged and is carried to the left by the right pointer. The motion of this pointer reduces the reading of the counting pointer on the indicator scale by an amount representing the total thickness of the unexpanded spacebands in the line. The motion of this pointer is adjustable and must be set so that the spaceband indication bears the proper relation to the brass size value of the scale graduations. Therefore, the right spaceband pointer must be reset each time the perforator is to be used to set type from another font in which the 18 unit value changes from that of the previously used unit font or when different size spacebands are used.

### Routine for Adjusting Right Spaceband Pointer for Special Taper Spacebands Used With a Unit Font in Which the 18 Unit Count Has a Value of .1107".

- a. Move the counting pointer by hand to a convenient even scale graduation, such as 15 (See Figure 4).

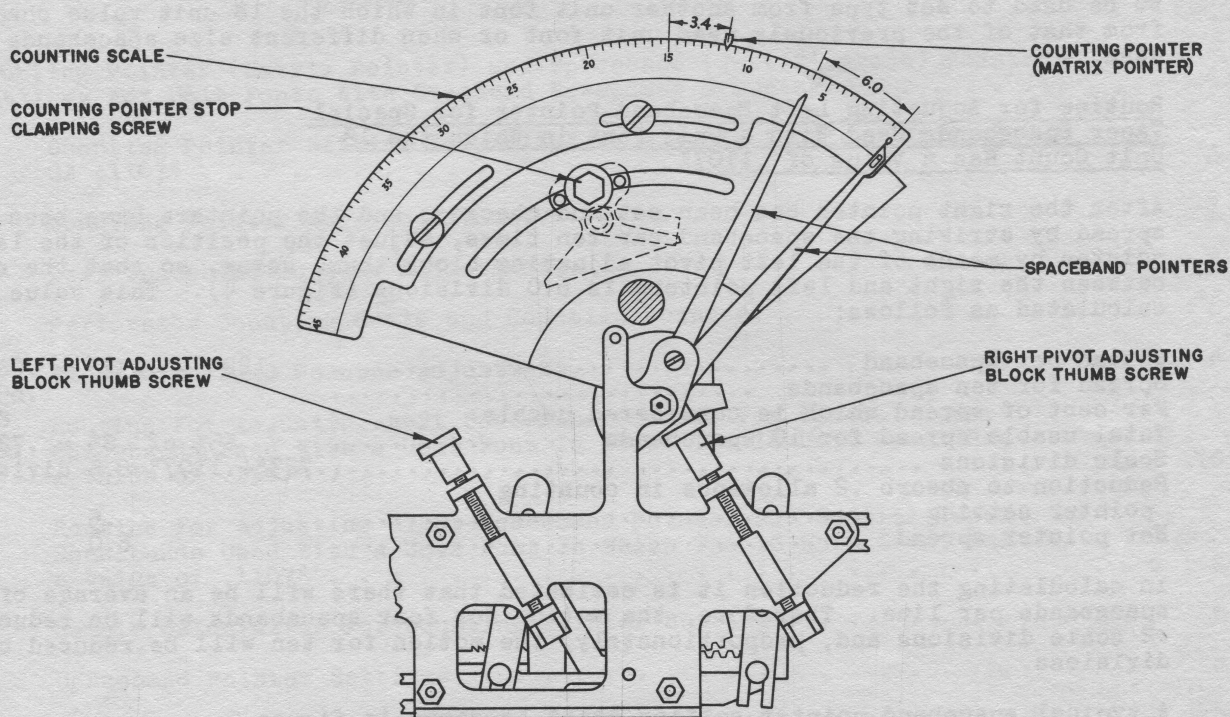


FIGURE 4

- b. Strike the spaceband bar ten times so that the spaceband pointers are advanced to the left from their zero position a total of 10 steps.
- c. Adjust the motion of the right spaceband pointer by means of the right pivot adjusting block thumb screw, so that its total motion is 3.4 (three and four-tenths) scale divisions. (The perforator cover is equipped with a hinged door in front of the adjustable spaceband mechanism to facilitate adjustment of the spaceband pointers.) It should be noted that with an initial setting of the counting pointer at 15, the scale should have moved until the counting pointer indicated 11.6. Return the pointers to their zero position by striking the "RET" key. Recheck the adjustment and refine if necessary.
- d. 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 ...	$.370" \div .1107" = 3.4^*$

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

Left Spaceband Pointer Adjustment

The distance between the left and right spaceband pointers is proportional to the total usable expansion of the spacebands in the line. As in the case of the right spaceband pointer, this distance must be adjusted to bear the proper relation to the brass size value of the scale division.

Accordingly, the left spaceband pointer must be reset each time the perforator is to be used to set type from another unit font in which the 18 unit value changes from that of the previously used unit font or when different size spacebands are used.

Routine for Adjusting Left Spaceband Pointer for Special Taper Spacebands Used With a Unit Font in Which the 18 Unit Count Has a Value of .1107"

After the right pointer has been set and checked, and the pointers have been spread by striking the spaceband bar ten times, adjust the position of the left pointer by means of the left pivot adjusting block thumb screw, so that the spread between the right and left pointers is 6.0 divisions (Figure 4). This value is calculated as follows:

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

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 ten will be reduced by .5 divisions.

A typical spaceband pointer setting chart is shown in figure 5.

SAMPLE SPACEBAND POINTERS SETTING CHART FOR 18 UNIT FONTS

Spaceband Used			18 Unit Value	18 Unit Value	18 Unit Value	18 Unit Value	18 Unit Value	18 Unit Value
Name	Min.	Max.	.0882"	.100"	.1038"	.1107"	.1199"	.1314"
Special Taper	.0369"	.1219"	4.2	3.7	3.6	3.4	3.1	2.9
			7.7	6.7	6.5	6.0	5.6	5.0
Thick	.0375"	.100"	4.3	3.8	3.7	3.4	3.2	2.9
			5.5	4.8	4.6	4.3	4.0	3.5
Extra Thick	.047"	.147"	5.4	4.8	4.6	4.3	4.0	3.6
			9.1	8.0	7.7	7.2	6.6	6.0
Extra Thin	.028"	.091"	3.2	2.9	2.8	2.6	2.4	2.2
			5.6	4.9	4.6	4.3	3.9	3.5
Wide Range	.032"	.1169"	3.7	3.3	3.1	3.0	2.7	2.5
			7.7	6.7	6.5	6.0	5.6	5.0

Note: The above figures have been reduced by the allowance in the setting of the counting pointer. No other deductions should be made.

Top Number = In each case the top number indicates the right-hand spaceband pointer motion (keyboard Scale Division for 10 Bands).

Bottom Number = In each case the bottom number indicates the spread between the pointers. (Keyboard Scale Divisions for 10 Bands).

18 Unit Value = EM Quad Size

FIGURE 5

## ROUTINE FOR HANDLING PERFORATED TAPE

### Starting to Perforate A Roll of Tape

Before starting to perforate tape for a particular item, the operator should space out enough blank tape ("tape" combinations) to provide space on the tape to write the name of the item, the size of type, the column width or any other information desired. Guide lines to identify matter may be perforated in the tape for the beginning of each take.

### Size of Rolls of Tape

In order to save time in handling, the tape should be long enough to nearly fill the tape winder reel. The tape for approximately two columns of 7 point type 12 picas wide can be wound on a reel. When short tapes are used, time is lost by the operator and the casting machine attendant.

### Marking Rolls of Perforated Tape

When the tapes are removed from the winder reel, the end of the tape can be made secure by wrapping a strip of paper over the end and through the center of the roll and sealing it with a sticker. Different color stickers can be used to signify the importance of the items in the tape, such as red for front page, blue for today's paper and black for time copy or fill-ins.

Some plants require that the written matter accompany the tape. If this method is used a suitable clip, such as spring clothespin may be used to fasten the written matter to the perforated tape.

## TAPE OPERATION OF THE LINECASTING MACHINE

### Feeding Perforated Tape Into the Operating Unit

Place the roll of perforated tape on the unwind reel of the operating unit so that the inside end of the tape unwinds counterclockwise from the center of the roll. The unwind reel bracket should be positioned so that the tape feeds around the reel guides and directly into the tape guide of the operating unit (Figure 6).

To start the tape feeding through the operating unit, turn the tape feed control lever off (lever in vertical position). Lift the tape latch. Give the tape one-quarter twist so that the top edge of the tape (as it comes from the unwind reel) will be toward the front of the operating unit. Place the tape over the tape pins so that the first combination in the line will be directly over the tape pins and so that the feed holes in the tape engage the feed wheel pins. Holding the tape in this position, close the latch. The tape is now ready for automatic operation.

Each line in the tape is ended by the "RET" and "ELEV" combinations. Therefore, these combinations should be memorized so that the beginning of a line can be quickly found. To start a line over again, the first combination after the "ELEV" should be placed directly over the tape pins.

To start the tape feeding, the elevator should be in its lower position ready to receive matrices and the selector trip arm positioned in its lowest detent hole. Then turn the tape feed control lever clockwise to its horizontal position and the tape will start feeding.

If a "squabble" occurs or it is desired to stop the linecasting machine quickly, turn the tape feed control lever to the vertical position and hold the elevator handle up. If the "ELEV" signal has been stored up, the elevator will start to rise when the delivery slide returns to its right-hand position. However, if the handle is held, the elevator safety spring will yield, and the selector trip arm will be moved to its upper detent hole. The elevator will then remain in its lower position until sent up by hand. To start the tape again, it will be necessary to move the selector trip arm to the lowest detent hole, and turn the tape feed control lever on.

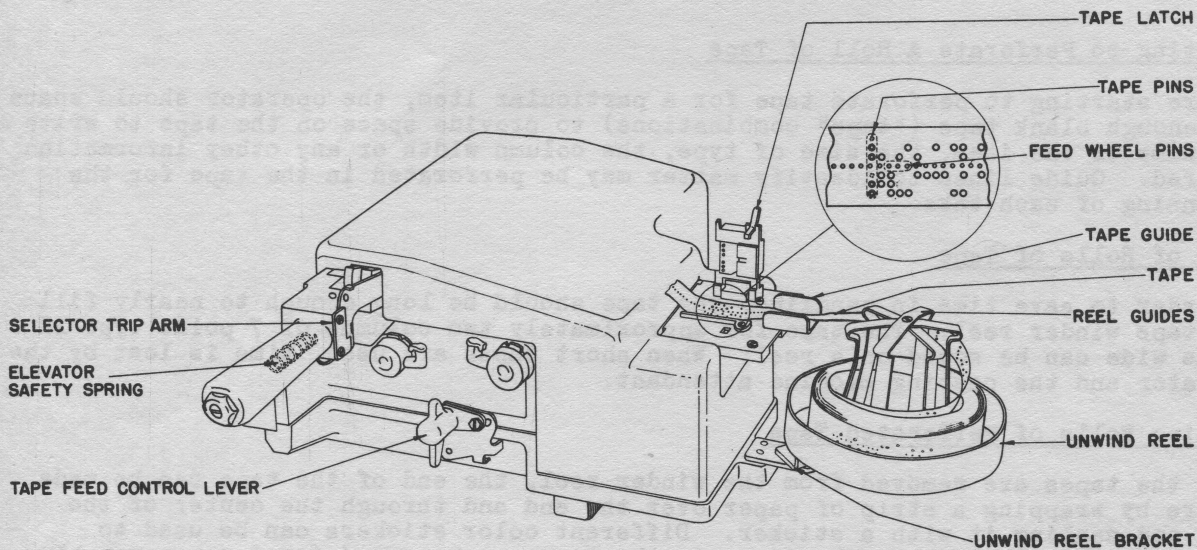


FIGURE 6

#### How to Obtain Maximum Output of the Tape Operated Linecasting Machine

In order to utilize the maximum benefits of Teletypesetter operation, the tape feed control lever should not be turned off unless there is no more tape available or if mechanical troubles occur. Each stop reduces the output of the apparatus and unless unnecessary stops are avoided, the accumulated loss during the course of a day may be considerable.

A few suggestions on how to eliminate lost time and unnecessary stops follow:

The linecasting machine should not be turned off to take the stick over to the bank to empty it. Instead, the stick should be emptied onto a galley tray at the machine.

If the attendant leaves the room for a short time, it is not necessary to turn the machine off, because of the safety features that will stop the machine automatically, preventing damage to the equipment in case trouble occurs.

The metal feeder should be checked regularly to eliminate stops due to lack of metal or trouble in the feeder.

The slugs should be checked at intervals to prevent a large quantity of cold or hot slugs being cast before trouble in the metal pot is found.

If several loose lines occur, the magazine channels should be checked for a matrix sticking.

If several tight lines occur, it may be due to a certain letter doubling. Check the slugs to determine what is causing trouble.

If a "squabble" occurs do not try to correct the line by hand. It is usually easier to rerun the tape for that line.