

**USEFUL  
MATRIX  
INFORMATION**



**OCTOBER, 1937**

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**INFORMATION**



OCTOBER, 1937

**MERGENTHALER LINOTYPE COMPANY**

29 Ryerson Street, Brooklyn, N. Y.

NEW YORK CITY · CHICAGO · SAN FRANCISCO · NEW ORLEANS

CANADIAN LINOTYPE LIMITED, TORONTO

Representatives in the Principal Cities of the World

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# Useful Matrix Information

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The Mergenthaler Linotype Company carries in stock a full supply of matrices to meet the exacting demands of printers throughout the world. Matrices can be supplied for composition in over seventy different languages. With the great number of different characters to be supplied, the importance of giving careful attention to accuracy of detail in preparing orders will be appreciated.

Every possible facility is provided for the proper selection and ordering of matrices according to the style of face and the characters desired. Orders should be typewritten, preferably, and the name of the face given. One copy should be retained for reference.

## **MATRIX ORDER FORMS**

Linotype matrix order forms are supplied in any quantity, free upon request. They should always be used in ordering matrices. This enables us to fill orders correctly and promptly.

Order forms can be supplied for regular characters, accents, fractions, logotypes and other special characters, border matrices and matrix slides, as well as for all foreign characters. Always use the correct type of order form. Use one sheet for each face and point size thereof.

It is important to know the Linotype model for which the matrices are intended, as well as the particular style of magazine used. This is necessary because various Linotype models differ in so far as milling of matrix lugs and magazine limitations are concerned.

## **FULL NAME OF FACE**

The full name of the face should always be entered at the top of each order, thus

10 point Excelsior with Italic and Small Caps; or

10 point Excelsior with Bold Face No. 2; or

10 point Excelsior with Memphis Bold

We frequently receive orders, for example, 10 point Excelsior. As shown above, this face is made in various combinations, and in such cases it is difficult to fill the order correctly without asking for further information.

#### (4) USEFUL MATRIX INFORMATION

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### TRIANGLE NUMBERS

The system of marking matrices is shown in the illustrations on page 6. The triangle is the trade-mark of the Mergenthaler Linotype Company. When uncertain of the correct name of face, matrices may be ordered according to the numerical marking on the side. The triangle number should always be entered on the matrix order form. Always copy the marking exactly, as, for instance, 10 $\Delta$ 386. Do not choose a matrix at random or take one from a pi tray to obtain the triangle marking. Select a lower case n from the face for which matrices are wanted; if figures are ordered select a figure 5. The reason for this is that reference characters, quads, leaders, special characters and fractions in some fonts bear markings different from the alphabet character.

### ACCENTED CHARACTERS

The standard accents shown on pages 81 and 82 will be supplied with any standard face at the regular sorts price. Characters not shown can be made to order at a special price which will be quoted on request.

There are two ways to accommodate accents on Linotype matrices—low cap accents and high cap accents. It is the usual practice to supply the low cap form of accented character so as to avoid the use of a special mold. The character is slightly reduced so that the diacritical mark and the character will not exceed the normal height of the cap character.

When low cap accents are considered undesirable, we can supply high cap accents. The extra space required by this style of accent on a cap character of full height makes it necessary to change the aligning point of the mold so that the accent will cast flush on the smooth edge of the slug without trimming off. This makes it necessary to cast a given size on a body two points larger than standard up to 14 point and approximately 4 points larger than standard on display faces. The high cap accent mold can be used on regular composition with or without accents and the extra space above mentioned will appear on the smooth edge instead of the ribbed edge of the slug.

High cap accents cannot be cast in display faces larger than 32 point, as full 36 point body is required for the cap character and its accent. Where caps only are used, high cap accents can be cast in display faces up to 36 point.

## **FRACTIONS**

In ordering fractions, always state whether they are to run in the regular channels of the magazine or as sorts. Unless otherwise specified, they will be furnished as sorts.

Also mention whether fractions are required on an em or en body. Unless otherwise ordered, they are all furnished on an em body.

## **SUPERIOR AND INFERIOR CHARACTERS**

When these characters are ordered, a sample character should accompany the order. This will enable us to fill the order accurately.

## **SPECIAL CHARACTERS**

Special characters are frequently ordered from our specimen books. These specimen books contain individual showings of Linotype faces, each bearing different publication dates. Since the advent of our Universal Classification in 1923, all character numbers as shown in the specimen books prior to the Universal Classification lists have been discontinued. Therefore, when ordering a special character by number the source from which the character number is taken should always be entered on the order under "Remarks."

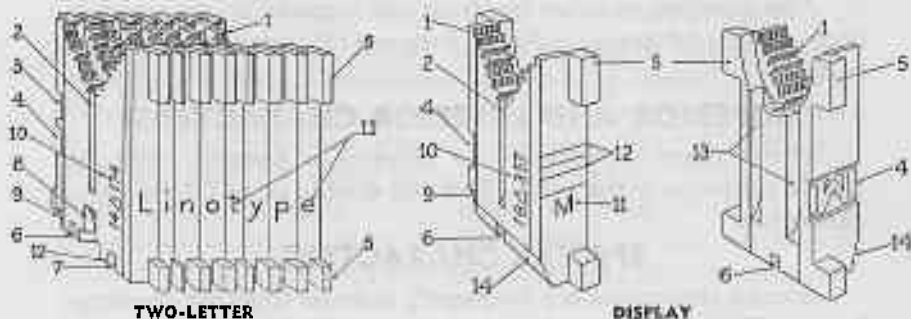
## **WHERE CHARACTERS WILL RUN**

In the latter part of this booklet a complete list of display faces is given, together with the magazines in which they can be run, providing the standard keyboard layout is used. When display characters are ordered, these charts should always be consulted to see if the face will run in the magazine desired.

When characters are ordered to run in a magazine other than according to the standard layout, information should always be given as to where the displaced characters are to run. Attention is called to the fact that when a character runs in a different channel than standard, the character which is displaced must naturally be run in another location or sorts.

## KEY TO MATRIX TERMS

In order that the terms and functions of various parts of a matrix may be readily understood, we present the diagrams shown below:



### 1. TEETH

Projections on the inside of the triangular opening at the top of the matrix. There are seven of these teeth on either side. The teeth which are left in are called the tooth combination. As the matrix travels along the distributor bar, it is supported by corresponding teeth on the bar. At a predetermined point, the teeth on the bar are cut away. The matrix, being no longer supported, drops through the channel entrance and to its proper place in the magazine. A matrix with all the teeth in is called a "pi" matrix, and passes all the combinations on the distributor bar, falling down the pi chute to the pi stacker.

### 2. BAR POINT SLOT

This is a slot projecting downward toward the bottom of the matrix. The object is to make all matrices of the same thickness at this one point. The slot registers with the projecting blade on the distributor box bar to prevent the lifting of two matrices at one time into the distributing screws.

### 3. REGULAR POSITION

This denotes the character in the regular or normal position of a two-letter matrix. Matrices from 4 to 24 point can be supplied with two characters. Above 24 point only one character can be used.

#### **4. AUXILIARY POSITION**

This denotes the character in the auxiliary or raised position. Characters on one-letter display matrices 16 to 60 point are also in the auxiliary position.

#### **5. LUGS**

These are sometimes called "ears." They are made to a certain thickness according to the magazine channel in which the matrix is to run. The lugs are the guiding points of the matrix throughout its travel. The lower lug (on the character side) determines the horizontal alignment of the character in the matrix, for this lug banks against the aligning groove in the mold body.

#### **6. FONT SLOT**

This is a small slot in the bottom of the matrix for use on single distributor machines. In conjunction with the automatic font distinguisher, it prevents wrong fonts from entering the magazine.

#### **7. BRIDGE NOTCH**

A slightly larger opening than the font slot. It is used in conjunction with the matrix bridge on multiple distributor Linotypes to permit the matrix to distribute to its proper magazine.

#### **8. BEVEL NOTCH**

A notch cut in matrices for Models such as 9, 16 and 17, and used to prevent two matrices from being lifted at one time into the distributor screws.

#### **9. CLEARANCE CUT**

This is a feature of Linotype matrices. It protects the side walls of matrices as they are assembled.

#### **10. TRIANGLE NUMBER**

The triangle is the trade-mark of the Mergenthaler Linotype Company. The number before the triangle indicates the point size of the matrix. The number after the

## **(8) USEFUL MATRIX INFORMATION**

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triangle indicates the name of the matrix face. The entire marking should always be given when ordering matrices.

### **11. REFERENCE MARKING**

These are characters punched in the reference side of the matrix to enable the operator to read the line of matrices as they are assembled.

### **12. FACE LINES**

These are lines cut in the bottom of two-letter matrices (and on the reference side of display matrices) to identify the font. When matrices of a two-letter font are stacked in a sorts tray, the various lines match up and tell at a glance whether a wrong font matrix is present. With display faces, wrong font matrices can be detected in the sorts tray or the assembling elevator, since the face lines are on the reference side of the matrix.

### **13. LIGHTENING GROOVES**

As the name implies, these grooves are cut in large matrices to lighten them. On extra large matrices a lightening hole is used instead of a slot.

### **14. BEVEL CUT**

An angle cut used on larger matrices to permit proper distribution.

## FIGURES

The largest figure which will run in regular figure channel of the standard 90-channel magazine is .1107 wide; in the 72-channel magazine, .2075; in the wide 72-channel magazine, .249; in the 28-channel auxiliary magazine, .218; in the 34-channel auxiliary magazine, .249 in left side and .221 in right side; in the wide 34-channel auxiliary magazine, .315 in left side and .311 in right side. The largest figure that will run in a 90-channel magazine according to the Advertising Figure Layout is .166. Size of figures in all faces is indicated in matrix data on all specimen sheets.

It is important to note the design of the three styles of figures available with old style faces: modern, old style, and modernized. The style desired should always be specified on supply orders and machine specifications.

### MODERN FIGURES

1 2 3 4 5 6 7 8 9 0

Modern figures have a common alignment, that is, are all of the same height, and have the characteristics of modern type faces—square serifs, contrasting thick and thin strokes, and, in most cases, larger body per point size. They are not ordinarily used with old style faces.

### OLD STYLE FIGURES

1 2 3 4 5 6 7 8 9 0

Old style figures have ascenders and descenders, and have the modeled serifs and tapering thick and thin strokes characteristic of old style type faces.

### MODERNIZED FIGURES

1 2 3 4 5 6 7 8 9 0

Modernized figures are old style figures brought to a common alignment, with the shapes of the 1, 2 and 0 changed accordingly.

## LEADERS

Leaders of various styles have been designed to meet the major requirements of the trade.

**Regular Leaders.**—Regular leaders match the weight of face with which they are used and cast type high. Furnished in round dot or hyphen style in two, four or six dots or strokes to the em.

**Universal Leaders.**—Universal leaders are for Book and Jobbing work. The weight of the dot or stroke is uniform in all point sizes regardless of the style of the face with which they are used. These leaders are .003 shallower than type high, so they will not punch through the paper in printing. Universal round dot leaders are furnished two, four and six dots to the em. Universal hyphen leaders are furnished in two and four strokes to the em.

**Thin Leaders.**—Thin leaders are used with either of the above styles for close justification when only one spaceband is used in the line. Available in quarter-em widths in round dot or hyphen style, 8, 10, 12 and 14 point sizes.

**Newspaper Leaders.**—The regular round dot or hyphen leader .005 shallower than type high to minimize punching through the paper. Furnished in two, four or six dots or strokes to the em.

**Newspaper Radial Leaders.**—Round dot style only, and are made with a rounded or radial printing surface to prevent perforating paper and damaging press blankets. .005 shallower than type high. Furnished in two dots to the em.

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**Leader Aligning Dashes.**—Cast a continuous unbroken line. Useful for jobbing work. Can be supplied in all standard alignments in uniform set-widths of 2, 3 and 12 points. Also available in en and em widths as substitutes for regular dot or hyphen leaders.

**Jobbing Leaders.**—Made in 6, 8, 10, 12 and 14 point alignments, two and four strokes, and on 6 and 12 point set-width only. The weight of the stroke and the set-width of the character is uniform in all point sizes.

### POINT SYSTEM

Sizes of Type		Decimal Measurements of Bodies From 1 to 72 Point			
Excelsior .....	3 point	1.....	.01383	18.....	.249
Brilliant .....	4 point	2.....	.0277	20.....	.2766
Diamond .....	4½ point	3.....	.0415	22.....	.3044
Pearl .....	5 point	4.....	.0553	24.....	.332
Agate .....	5½ point	4½.....	.0622	26.....	.3596
Nonpareil .....	6 point	5.....	.0692	28.....	.3874
Minion .....	7 point	5½.....	.0761	30.....	.415
Brevier .....	8 point	6.....	.083	32.....	.4428
Bourgeois .....	9 point	7.....	.0968	34.....	.4703
Long Primer .....	10 point	8.....	.1107	36.....	.498
Small Pica .....	11 point	9.....	.1245	40.....	.5532
Pica .....	12 point	10.....	.1383	42.....	.581
English .....	14 point	11.....	.1522	48.....	.664
		12.....	.166	54.....	.747
		13.....	.1798	60.....	.830
		14.....	.1937	66.....	.913
		15.....	.2075	72.....	.996
		16.....	.2214		
<b>Thickness of Leads and Slugs</b>					
12 to Pica..	.01383	6 to Pica..	.0277		
10 to Pica..	.0166	4 to Pica..	.0415		
8 to Pica..	.0207	2 to Pica..	.083		

**Point System.**—Prior to about 1886, each typefounder was a law unto himself in the matter of type standards. Brevier, for example, made by one foundry would not justify with brevier from another foundry. The pica "em" in use up to that time had been obtained by dividing an inch into six parts, equaling, decimally,  $.166\frac{2}{3}$ ". When the present point system of the American Type Founders' Association was decided upon in 1886, the fraction was eliminated and a standard "pica" em adopted, measuring  $.166$ ". This standard of measurement is used by the Mergenthaler Linotype Company, and one-twelfth of the pica,  $.166$ , equals one point,  $.01383$ . One-quarter of a point is the unit used in the manufacture of our matrices on the point-set system.

**Didot System.**—The Didot point measures  $.01483$  of an inch. The Didot unit is the Cicero, which equals 12 corps, or  $.178$  of an inch. The American (Linotype) unit is the pica em, measuring 12 point, or  $.166$  of an inch. The Didot system of measurement is used in France and in most of the countries of continental Europe, and is commonly known as the French system.

**Mediaan System.**—The Mediaan point measures  $.01374$  of an inch, and the Mediaan em or Cicero  $.1649$  of an inch. This point system is used in Belgium. Mediaan height to paper is  $.934$ .

## MATRIX BRIDGES FOR MODELS 25, 26 AND TWO-MAGAZINE MODELS 29 AND 30

The standard bridge-cutting of matrices for the above types of machines, unless otherwise specifically ordered, consists of three notches, comprising any between Nos. 2 and 7 inclusive, with the exception of the one carrying notches 5-6-7, which is not desirable. This cutting refers to the upper magazine only. Matrices for the lower main and auxiliary magazines will be unnotched unless otherwise ordered. Matrices for the upper auxiliary magazine will be cut with notches 2 to 7, inclusive, in order to drop on any bridge in use. A matrix with a combination which does not correspond with the bridge projections in use (also an unnotched matrix) will ride across the bridge, to the upper distributor box and into the lower magazine. The possible bridge combinations are listed below:

POINT SIZE OF MATRIX	BRIDGE NO.	BRIDGE NOTCHES	POINT SIZE OF MATRIX	BRIDGE NO.	BRIDGE NOTCHES	
5½, 9, 18, 36, 54	351	2-3-5	6, 6¾, 7, 10½, 11½, 12, 14, 21, 24, 28, 42, 48	365	4-5-6	
	358	2-5-7		366	2-5-6	
	361	3-5-7		368	2-4-6	
	363	2-4-5				
	364	3-5-6		4, 6½, 7½, 8, 10, 13, 16, 20, 27, 30, 32, 60	354	2-3-7
	365	4-5-6			355	2-4-7
	366	2-5-6			356	3-4-7
	369	4-5-7			357	3-6-7
	370	3-4-5			358	2-5-7
					359	2-6-7
		360	4-6-7			
		361	3-5-7			
		369	4-5-7			
			362		*2-3-4	
6, 6¾, 7, 10½, 11½, 12, 14, 21, 24, 28, 42, 48	352	2-3-6	5, 11, 22, 34			
	353	3-4-6				
	357	3-6-7				
	359	2-6-7				
	360	4-6-7				
	364	3-5-6				

\*In addition to bridge No. 362, any of the bridges specified for the various point sizes can be used, except those having a No. 7 notch.

Note:— Every combination selected must include bridge notch corresponding to respective font slot of matrices, as indicated below:

FONT SLOT	CORRESPONDING BRIDGE NOTCH	FONT SLOT	CORRESPONDING BRIDGE NOTCH
5½, 9, 18, 36, 54 Point	5	4, 6½, 7½, 8, 10, 13, 16, 20, 27, 30, 32, 60 Point	7
6, 6¾, 7, 10½, 11½, 12, 14, 21, 24, 28, 42, 48 Point	6	5, 11, 22, 34 Point	8

## MATRIX BRIDGE AND NOTCHES FOR FOUR-MAGAZINE MODELS 29 AND 30

The separation of matrices in the four-magazine mixer Models 29 and 30 is controlled by a single bridge projection which is positioned by an indicator dial. Since only two adjacent magazines can be in operating position at one time, it is merely necessary to position the single bridge projection to correspond to a notch in the matrices in the upper position, which notch does not appear in the matrices in the lower position. The matrices from the upper magazine will then drop on the bridge and pass to the upper magazine while the matrices from the lower magazine will ride across the bridge and pass to the lower magazine.

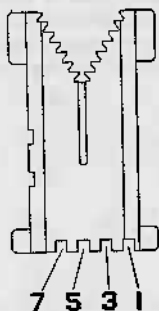
The location and size of the bridge notches for matrices to run in these models, is the same as for those used on Models 25 and 26. Only one notch is used for separation. The standard notching, unless otherwise specifically ordered, consists of three notches, comprising any between 2 and 7 inclusive.

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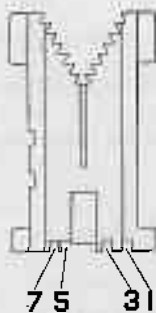
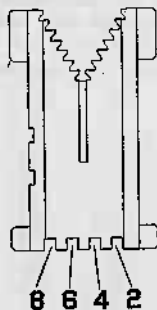
The font slot of Single Distributor matrices can also be used to separate matrices in these machines, by making use of a different portion of the indicator dial.

To use Model 9 matrices in these machines it is necessary to replace the indicator dial by one designed for use with Model 9 matrices.

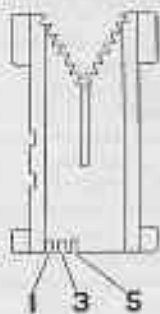
In order to identify the bridge notches and font slots cut in the bottom of matrices, full size reproductions of matrices are given below. These reproductions can be used as templates to determine the number of the notches or slots as an aid in positioning the single bridge projection.



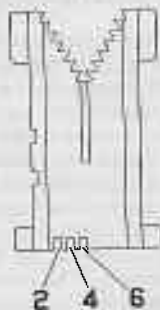
**BRIDGE NOTCHES**  
Models 25, 26, 29 and 30



**BRIDGE NOTCHES**  
Model 9



**FONT SLOT**  
Used on single distributor  
machine matrices



## MATRIX BRIDGE AND NOTCHES (13)

The font slot numbers for various point sizes of single distributor matrices are as follows:

FONT SLOT NO.	POINT SIZES
1	5, 11, 22, 34
2	6½, 10, 13, 20, 26, 30, 60
3	4, 7½, 7¾, 8, 16, 27, 32
4	4¾, 6¾, 7, 11½, 14, 21, 28, 42
5	6, 10½, 12, 24, 48
6	5½, 9, 18, 36, 54

### MATRIX BRIDGES FOR MODEL 9

Matrices on the Model 9 are separated in the primary distributor for the various magazines by means of small bridges having different combinations of projections.

All matrices used in the Model 9 must have the beveled notch, in addition to the bridge notches for separating fonts for the various magazines. All sorts matrices are supplied without bridge notches. These pass to the sorts stackers through the sorts tube.

The various bridge combinations are listed below:

BRIDGE		NOTCHES	BRIDGE		NOTCHES
OLD	NEW		OLD	NEW	
1	...	1-2-8	24	...	1-5-8
2	...	1-2-3	25	102	2-3-5
3	103	2-5-8	26	126	2-4-6
4	...	1-2-5	27	111	2-4-7
5	...	1-2-6	28	109	3-4-8
6	...	1-3-6	29	124	2-4-5
7	...	1-4-6	30	112	3-4-7
8	108	2-3-6	31	118	2-4-9
9	...	1-3-4	32	107	3-4-6
11	...	1-2-7	33	...	1-7-8
12	...	1-3-7	34	101	2-7-8
13	...	1-4-7	35	115	3-7-8
14	114	2-3-7	36	116	4-7-8
15	...	1-3-8	37	...	1-6-7
16	...	1-4-8	39	105	2-6-7
17	117	2-3-8	40	106	3-6-7
18	...	1-2-4	41	113	4-6-7
19	119	3-4-5	42	127	6-7-8
20	120	3-5-8	..	104	2-5-6
21	121	4-5-8	..	122	3-5-6
22	...	1-3-5	..	123	4-5-6
23	...	1-4-5	..	125	5-6-7

Note:—Every combination selected must include bridge notch corresponding to respective font slot of matrices, as indicated below:

FONT SLOT	CORRESPONDING BRIDGE NOTCH	FONT SLOT	CORRESPONDING BRIDGE NOTCH
5, 11, 22, 34 Point	8	4, 7½, 8, 16, 27, 32 Point	6
6, 6¾, 7, 10½, 11½, 12,		6½, 10, 13, 20, 30, 60 Point	7
14, 21, 24, 28, 42, 48 Point		5	5½, 9, 18, 36, 54 Point

## MATRIX TOOTH COMBINATIONS THEIR FUNCTION IN MATRIX DISTRIBUTION

The dictionary gives as one of the definitions of the word "matrix," "a mold in which printers' letters are cast." Immediately the matrix assumes a position of paramount importance to the printer, for he realizes, above all others, that the ultimate value of the printing process lies in the perfection of the type mold, or matrix. The printer, whatever his field of activity, restricted or general, has found a new joy in the beauty of the old designs and a new interest in the sparkle of the "moderns." All that is finest in typography has been made available to him in the form of the Linotype matrix, and with a distinct saving of his time and money. This saving has, in no small measure, been due to the elimination of the time-wasting methods of hand distribution.



Linotype matrix distribution is, in many ways, the most ingenious part of the whole machine. It has been achieved through the use of matrix tooth combinations, each character running in the magazine having its own particular combination. The term "tooth combination" refers to the teeth on the insides of the triangular opening at the top of the matrix. There are seven of these teeth on each side, and for convenience in referring to them, they are numbered from 1 to 7, as illustrated. The teeth on both sides are numbered alike, and, in cutting combinations, both of like number would be cut out or left in, as the case might be.

In conjunction with the tooth combinations there is a distributor bar, along which the matrices are carried by revolving screw action. When the combination of a given matrix arrives at and meshes with its complementary distributor bar segment, the matrix is released from the bar and falls by gravity into its respective magazine channel. That is the whole secret of Linotype distribution.

A matrix with all its teeth is called a "pi" matrix. It does not drop in any of the magazine channels, but is carried across the full length of the bar, and drops into a tube, through which it falls, by gravity, to the sorts stacker.

The primary function of the matrix teeth is, then, to direct the return of the matrix to the magazine channel assigned to it. A secondary function of the teeth is to provide the means for elevating the matrix to the distributing mechanism and guiding it on to the distributor bar.

In order to cause the matrices to drop into their respective channels, certain of the combination teeth must be removed. This is called "cutting the combination." By cutting away some of the teeth and leaving others in the matrix, it is possible to secure 126 different tooth combinations for controlling the distribution of a like number of different matrix characters to the channels of the main and auxiliary magazines. The standard Linotype magazine contains 91 channels, including an extra channel for lower case "e," and the wide auxiliary magazine 34 channels, to each of which is assigned a different combination of matrix teeth and a corresponding combination on the distributor bar.

In the charts the combinations are given for the channels of the various magazines. The figures given indicate the teeth that are left in the matrix, the others being cut out. The charts also give the number of each channel, from left to right, the lug channel size, and the character which usually runs in each channel.

## TO SAFEGUARD MATRIX TEETH

To enable the matrix to travel from one position or transfer point to another with a maximum of smoothness and with a minimum of friction and resultant wear, the teeth must be perfectly proportioned with relation to the functions they are designed to perform. The teeth of the matrix, the teeth of the second elevator and distributor box bars, and the segments of the distributor bar are necessarily interdependent and inseparable in maintaining a perfectly coordinated distributing mechanism.

The matrix combination is sufficient under ordinary conditions to last for years. It is possible, however, to ruin a set of matrices in a very short time by burring or wearing out the combinations. The cause of the combinations becoming injured is invariably due to bad alignment at one or possibly all of the various transfers.

There are three of these transfers; that is to say, the matrices are transferred at three distinct points where the teeth are involved.

The first transfer is from the first elevator jaw to the second elevator bar at the intermediate channel. A matrix, when in position in the first elevator jaw at this transfer point, should line up with the bar so that you will have a perfect transfer on to the bar, without binding. There is a set screw at the bottom of the first elevator slide, on the right hand side, for raising or lowering the slide. The alignment of the first elevator jaw rails and the intermediate channel rails should be perfect. This will take care of the vertical alignment. Then, to take care of lateral alignment at the point where the matrix is supported by the first elevator jaw rails and is just sliding on to the second elevator bar, there is an intermediate channel front plate extension which, by means of screw bushings, makes it possible to move the second elevator bar either toward the front or the rear, as may be desirable to secure a true aligning condition of matrix teeth and bar. This is one of the most important adjustments from the standpoint of the matrix teeth. The second elevator bar should, of course, be perfectly smooth and free from burrs, as should be the other two bars along which the matrix must travel.

The second transfer is from the second elevator bar to the distributor box bar. The second elevator, when in its normal position, should be so adjusted that the second elevator bar will line up with the distributor box bar. This is a doweled factory setting and ordinarily should give no concern.

The third transfer is from the distributor box rails to the distributor bar. These rails should be perfectly square with one another. Place a matrix on the distributor box rails and raise up the outside distributor screw; turn the distributor screws slowly by hand and see that the matrix when supported on the distributor box rails will transfer freely on to the distributor bar. This adjustment is likewise factory-set. It does not shift under ordinary working conditions.

Perfect alignment should be maintained at all the above mentioned points. It is to the advantage of the Linotype user, in the interest of the long life of his matrices, to occasionally check these adjustments and to make any slight corrections that may be found necessary.

(16) USEFUL MATRIX INFORMATION

**TOOTH COMBINATION CHART**  
**90-CHANNEL MAGAZINE**

CHAN. NO.	CHAN. SIZE	CHAR.	TEETH IN COMBINATION	CHAN. NO.	CHAN. SIZE	CHAR.	TEETH IN COMBINATION
0	.050	e 1st	2	46	.055	En Leader	5-6
1	.050	e	1-2	47	.040	Apostrophe	1-5-6
2	.050	t	3	48	.055	Asterisk	2-5-6
3	.060	a	1-3	49	.055	l	1-2-5-6
4	.050	o	2-3	50	.055	2	3-5-6
5	.040	i	1-2-3	51	.055	3	1-3-5-6
6	.060	n	4	52	.055	4	2-3-5-6
7	.050	s	1-4	53	.055	5	1-2-3-5-6
8	.060	h	2-4	54	.055	6	4-5-6
9	.050	r	1-2-4	55	.055	7	1-4-5-6
10	.060	d	3-4	56	.055	8	2-4-5-6
11	.040	l	1-3-4	57	.055	9	1-2-4-5-6
12	.070	u	2-3-4	58	.055	0	3-4-5-6
13	.060	c	1-2-3-4	59	.055	\$	1-3-4-5-6
14	.090	m	5	60	.100	Em Leader	2-3-4-5-6
15	.050	f	1-5	61	.090	E	1-2-3-4-5-6
16	.090	w	2-5	62	.080	T	7
17	.060	y	1-2-5	63	.090	A	1-7
18	.060	p	3-5	64	.080	O	2-7
19	.060	v	1-3-5	65	.060	I	1-2-7
20	.060	b	2-3-5	66	.090	N	3-7
21	.060	g	1-2-3-5	67	.070	S	1-3-7
22	.070	k	4-5	68	.100	H	2-3-7
23	.060	q	1-4-5	69	.090	R	1-2-3-7
24	.040	j	2-4-5	70	.090	D	4-7
25	.070	x	1-2-4-5	71	.080	L	1-4-7
26	.050	z	3-4-5	72	.090	U	2-4-7
27	.060	fi	1-3-4-5	73	.070	C	1-2-4-7
28	.060	fl	2-3-4-5	74	.100	M	3-4-7
29	.070	ff	1-2-3-4-5	75	.080	F	1-3-4-7
30	.090	ffi	6	76	.110	W	2-3-4-7
31	.090	ffi	1-6	77	.090	Y	1-2-3-4-7
32	.090	Em Space	2-6	78	.080	P	5-7
33	.040	Comma	1-2-6	79	.090	V	1-5-7
34	.040	Period	3-6	80	.080	B	2-5-7
35	.050	Colon	1-3-6	81	.080	G	1-2-5-7
36	.050	Semicolon	2-3-6	82	.090	K	3-5-7
37	.060	Interrogation	1-2-3-6	83	.080	Q	1-3-5-7
38	.055	Figure Space	4-6	84	.060	J	2-3-5-7
39	.040	l	1-4-6	85	.090	X	1-2-3-5-7
40	.040	Vertical Rule	2-4-6	86	.070	Z	4-5-7
41	.040	Front Quote	1-2-4-6	87	.090	œ or @	1-4-5-7
42	.050	Exclamation	3-4-6	88	.090	æ or lb	2-4-5-7
43	.040	Hyphen	1-3-4-6	89	.060	Ç	1-2-4-5-7
44	.040	Thin Space	2-3-4-6	90	.090	Em Dash	3-4-5-7
45	.040	)	1-2-3-4-6				

**TOOTH COMBINATION CHART**  
**72-CHANNEL AND WIDE 72-CHANNEL MAGAZINE**

CHAN. NO.	CHAN. SIZE	CHAR.	TEETH IN COMBINATION	CHAN. NO.	CHAN. SIZE	CHAR.	TEETH IN COMBINATION
0	.050	e 1st	2	10	.060	d	3-4
1	.050	e	1-2	11	.040	l	1-3-4
2	.050	t	3	12	.070	u	2-3-4
3	.060	a	1-3	13	.060	c	1-2-3-4
4	.050	o	2-3	14	.090	m	5
5	.040	i	1-2-3	15	.050	f	1-5
6	.060	n	4	16	.090	w	2-5
7	.050	s	1-4	17	.060	y	1-2-5
8	.060	h	2-4	18	.060	p	3-5
9	.050	r	1-2-4	19	.060	v	1-3-5

**TOOTH COMBINATION CHART**

**72-CHANNEL AND WIDE 72-CHANNEL MAGAZINE—Continued**

CHAN. NO.	CHAN. SIZE	CHAR.	TEETH IN COMBINATION	CHAN. NO.	CHAN. SIZE	CHAR.	TEETH IN COMBINATION
20	.060	b	2-3-5	47	.060	I	1-2-7
21	.060	g	1-2-3-5	48	.090	N	3-7
22	.070	k	4-5	49	.070	S	1-3-7
23	.060	q	1-4-5	50	.100	H	2-3-7
24	.040	j	2-4-5	51	.090	R	1-2-3-7
25	.070	x	1-2-4-5	52	.090	D	4-7
26	.050	z	3-4-5	53	.080	L	1-4-7
27	.040	Comma	1-2-6	54	.090	U	2-4-7
28	.040	Period	3-6	55	.070	C	1-2-4-7
29	.050	Semicolon	2-3-6	56	.100	M	3-4-7
30	.090	Em Space	1-3-4-5	57	.080	F	1-3-4-7
31	.055	1	1-2-5-6	58	.110	W	2-3-4-7
32	.055	2	3-5-6	59	.090	Y	1-2-3-4-7
33	.055	3	1-3-5-6	60	.080	P	5-7
34	.055	4	2-3-5-6	61	.090	V	1-5-7
35	.055	5	1-2-3-5-6	62	.080	B	2-5-7
36	.055	Figure Space	4-6	63	.080	G	1-2-5-7
37	.055	6	4-5-6	64	.090	K	3-5-7
38	.055	7	1-4-5-6	65	.080	Q	1-3-5-7
39	.055	8	2-4-5-6	66	.060	J	2-3-5-7
40	.055	9	1-2-4-5-6	67	.090	X	1-2-3-5-7
41	.055	0	3-4-5-6	68	.070	Z	4-5-7
42	.040	Thin Space	2-3-4-6	69	.040	Hyphen	1-4-5-7
43	.090	E	1-2-3-4-5-6	70	.040	Thin Space	2-4-5-7
44	.080	T	7	71	.040	Apostrophe	1-2-4-5-7
45	.090	A	1-7	72	.055	\$	3-4-5-7
46	.080	O	2-7				

**TOOTH COMBINATION CHART**

**55-CHANNEL ARRANGEMENT OF 72-CHANNEL MAGAZINE**

CHAN. NO.	CHAN. SIZE	72-CHAN. CHAR.	55-CHAN. CHAR.	TEETH IN COMBINATION
0	.050	e 1st	o	2
1	.050	e		1-2
2	.050	t	o	3
3	.060	a		1-3
4	.050	o	o	2-3
5	.040	i	f	1-2-3
6	.060	n	Figure Space	4
7	.050	s		1-4
8	.060	h	A	2-4
9	.050	r		1-2-4
10	.060	d	o	3-4
11	.040	l	Thin Space	1-3-4
12	.070	u	n	2-3-4
13	.060	c	i	1-2-3-4
14	.090	m	h	5
15	.050	f	d	1-5
16	.090	w		2-5
17	.060	y	B	1-2-5
18	.060	p	N	3-5
19	.060	v		1-3-5
20	.060	b	c	2-3-5
21	.060	g	w	1-2-3-5
22	.070	k		4-5
23	.060	q	b	1-4-5
24	.040	j	y	2-4-5
25	.070	x		1-2-4-5
26	.050	z	g	3-4-5
27	.040	Comma	Comma	1-2-6
28	.040	Period		3-6