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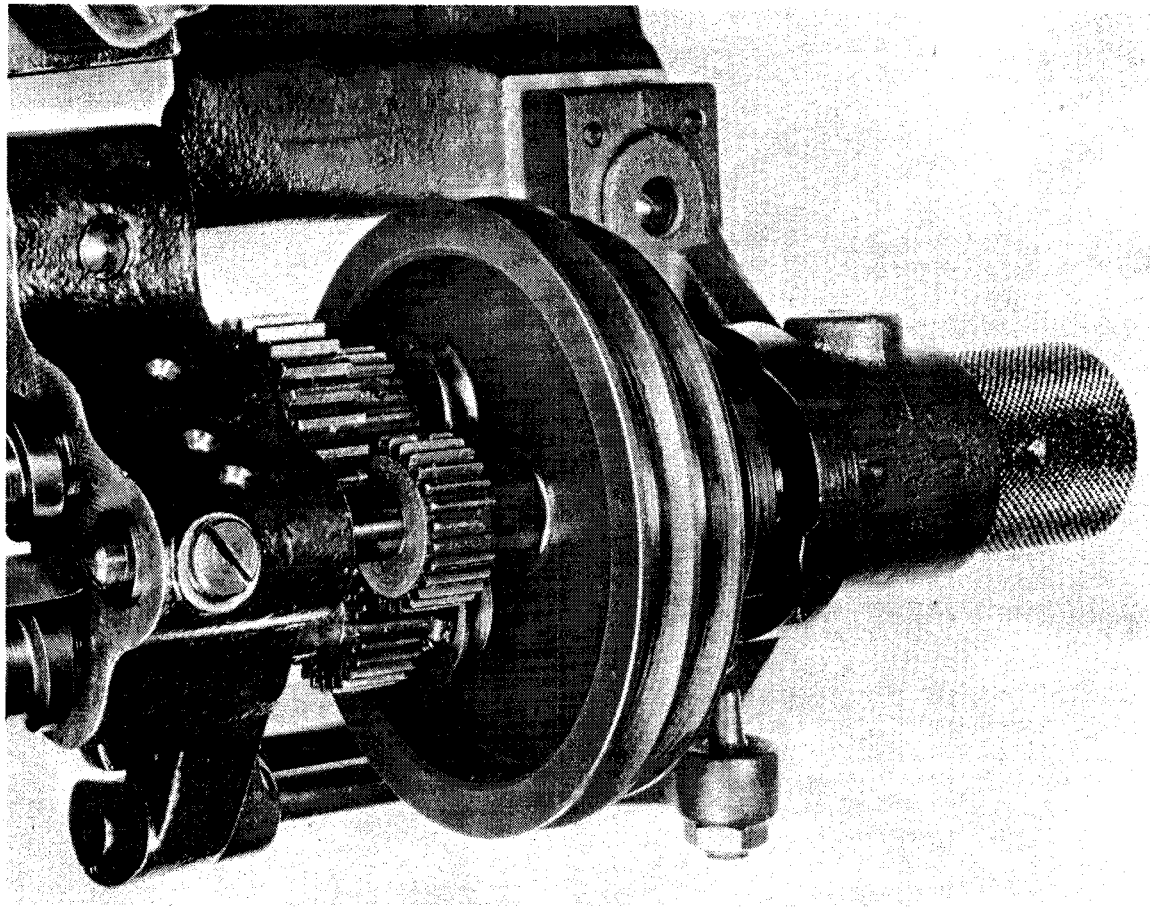
SHOP TALK

Published bi-monthly by Star Parts, Inc., South Hackensack, N. J. in the interest of those who maintain typesetting machines.



A WORD FROM YOUR EDITOR...

It was my pleasure and privilege to attend the Graphic Arts Exposition at the New York Coliseum Sept. 6-12, at which time I had the opportunity to meet many new friends and especially many readers of "SHOP TALK".

On behalf of Star Parts, Inc., we thank you for stopping at our exhibition booth and for the time you spent with us.

Living on the West Coast as I do, it is indeed gratifying to know that through the efforts of this little publication, a "friendship" is being established, not only with our friends in the entire United States, but with our good neighbors in Canada, as well.

We, at Star Parts, Inc., hope you feel you know us better. We believe that quality of product, and prompt shipment of parts is essential to any successful business, but we are sure this is not enough. We like to feel that we serve our customers on a "personal" basis, where they look to us for help, where they can place their confidence, and are given the answers in all sincerity.

To this idea we are dedicated. You will find us always ready to be of service—beyond the immediate sale of replacement parts.

Quido E. Herman

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SHOP TALK

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DISTRIBUTOR ADJUSTMENT .. some "DO'S and DON'TS"

Alignment, Timing and Adjusting

In the preceding issue of SHOP TALK Distributor Boxes were discussed. It is timely to follow the article with a further discussion of the Distributing Mechanism.

Actually a distributor is a relatively simple mechanism, depending upon the matrix combinations and corresponding milling of the distributor bar to carry matrices to a point on the bar where there is no longer support for the matrices, which then fall into their proper channel entrance for re-entry into the magazine. The function of the Distributor Box is to place the matrices upon the distributor bar. The Distributor Screws motivate the matrices from the box to their proper channel entrance, after which they are guided into the magazine by the channel entrance.

Proper adjustments which must be understood and precisely made are most important. It is with the idea of giving the basic fundamentals of distributor adjustments that we are including this in SHOP TALK. Remember, there is no fast way in which to adjust a distributor, and unless it is done correctly, the job will never be satisfactory.

Where To Start

The basic adjustment or point from which to start, is the location of the magazine itself, as all adjustments are made from this location. Intertype magazines are fixed in their location, while Linotype magazines can be shifted both sideways and vertically on many models. It is important, therefore, to be sure all magazines seat in exactly the same position. This is elementary, and by using the magazine locating gauge or sighting a given alignment position on each magazine, the job can be accomplished. Because of the different methods of achieving this adjustment, it is recommended you follow your manual for this adjustment, or any other method you may wish to use to achieve the same end result.

Care must be exercised to see that the escapement levers are engaged with the escapements during the full stroke of the escapement levers, and that the assembler front is located so all matrices will pass the partitions, as they are released from the magazine.

The Channel Entrance

Bearing in mind that distributor adjustments start with the magazine positioning, it follows that the channel entrance must then be aligned with the magazine. A casual glance at a channel entrance may indicate it is in good condition, but close investigation many times shows that while all the partitions are parallel, they are not at right angles to the distributor bar. In other words, the entire set of partitions can be at an angle, giving the illusion of being straight.

A simple test for this is to place a piece of 30 by 8-em furniture on top of the channel entrance and sight each partion along the 8-em section of the furniture. Align the 30-em side with the channel entrance, and in this manner, any partition which is not perfectly straight, will be noticeable. At the time this is done, it is well to check for broken or cracked partitions by attempting to bend each one to the left (from the back of the machine). A cracked partition should be replaced. If there has been any time in which the distribtuor clutch was out of adjustment, it is likely some partitions will be defective.

If it is found necessary to replace partitions, the removal of the partitions is not a difficult job, if you will follow this method to remove and replace the locking rods. Use a punch to drive the rods about ½" or sufficient to place the end of the rods in the chuck of an electric

drill. Use a solvent on the rods to help loosen them before attempting to drive them out. After the end of the locking rod has been placed in a chuck, turn the drill by hand until it is possible to turn the entire locking rod.

At this point you can turn on the drill and pull—the rod will come out quite easily. Inserting the rod can be done in the same manner, and if you will score the end of the rod with several chisel marks, it will practically thread itself into the partitions. Care should be taken to prevent any "whip" in the rod when inserting it, or the rod will be bent.

Kleenwell (Z-5) does a very fine job of cleaning partitions and the plate. While the channel entrance is off the machine, it is advisable to do a good cleaning job. A clean channel entrance will save a lot of magazine and matrix cleaning.

When replacing a partition on an Intertype, it is well to check the curvature of the plate, to be sure the plate is not bent. This can be checked by placing a partition at several different spots on the plate, to verify that the curve of the plate corresponds with the curve of the partition. In most cases any warpage can be removed by bending the plate in a vise. Be careful when doing this, as an excessive bend will cause the partition to bind and it will interfere with the stopping mechanism. If the plate is sprung, the lugs of the partitions will not engage the stopping bar.

Adjusting The Channel Entrance

The channel entrance should be adjusted to have approximately 1/32" between the bottom plate of the channel entrance and the magazine. The use of the Eccentric Hinge Pin (I-2049) is a help in adjusting the vertical position of the channel entrance on Linotype machines. The channel entrance is aligned to the magazine—not to the dropping of the matrix from the bar.

To check the alignment of the channel entrance and magazine, it is necessary to have the channel entrance in closed position. Raise the hinged matrix guard, place a light so the alignment of the partitions in the channel entrance and the magazine can be seen. By checking from the rear of the machine, over the distributor, the partitions must align so each partition guides the matrix in such a manner that it cannot strike the magazine. The smooth side of the partition is to align flush with the straight portion of the milling in the magazine entrance. To obtain this condition on an Intertype, the channel entrance can be shifted; on a Linotype it may sometimes be necessary to bend the bottom of the partitions to achieve this result.

On either machine there is little or no reason for wear to the tops of magazines, if these adjustments are correct. Any time there is evidence of wear on the end of a magazine, it is an indication there is something wrong with the channel entrance location.

Adjusting Tops of Partitions

Adjust by bending the tops of the channel entrance partitions, which, as mentioned before, should be at right angles to the plate. Spacing on Linotypes is uniform, while the Intertype partitions are spaced at various distances. On flexible partitions, use the slots in the plate and the stopping bar as points of alignment. Bear in mind that any motion of a partition should be transferred to the stopping bar to effect an immediate stopping of the distributor.

One of the most common errors of adjustments on Intertype channel entrances is the attempt to adjust height of the channel entrance unit by the use of the two screws on the channel entrance frame. Many times these screws are turned in to raise the channel entrance, with the result that the partitions strike the bottom of matrices on the bar, when the entrance is opened. These screws should be adjusted to have about ⅛" clearance when the entrance is closed, to permit the channel entrance to open without striking matrices.

The alignment for height of the Intertype channel entrance to the magazines is accomplished by the locating fingers. These fingers are hardened and no attempt should be made to bend them. The channel entrance is aligned to each magazine on an Intertype and if it is not correct, it may be necessary to shim or replace the locating fingers to secure proper vertical alignment of the channel entrance.

Distributor Beam Adjustment

Only after the preceding adjustments have been carefully checked, should any adjustment of the distributor beam be made. The distributor bar, distributor box, and distributor screws comprise the parts referred to as the beam. There is actually no connection between the beam and the balance of the distributing mechanism mentioned before, as it is between the beam and the channel entrance that the actual distributing or dropping of the matrices occurs. This is the time in which matrices are in "free flight" and all factors must be correct in order to achieve efficient distribution. The control of the matrices during this interval, therefore, is most important.

The first adjustment to be made on the beam is the height or clearance between

the bottom of the matrix and the top of the channel entrance partitions. Run in about six pi matrices until they are within six inches of the pi chute, then run in another six pi matrices and remove the distributor belt. In this way, there will be matrices on either end of the distributor bar. Clearance between these points on Linotype machines should be approximately 3 points, on Intertypes approximately 4 points.

The simple way to make this adjustment is to back up the machine (which relieves all strain from the beam) place a 3 point or 4 point lead or rule on the top of the channel entrance and slide it under the matrices. Loosen the large bolts on the front of the beam and adjust the height to the required distance by the two screws for this purpose on top of the beam. For extreme accuracy we recommend lowering the beam until the matrices rest on the gauge, turn the distributor screws slightly, and then raise the beam until the matrices straighten themselves, clearing the gauge.

In some cases, there is not sufficient clearance in the bolts holding the beam, to get clearance in which to work. In this situation use the STAR Distributor Beam Screw with Narrow Shank (G-227-B or W-476-B) page 142 of the STAR catalog. After the beam has been tightened, check the adjustment again, as there may have been some "rock" in the beam, especially if the screws were loosened more than necessary.

With this adjustment made, the remaining adjustment is the side-wise location of the beam, which adjusts the timing of the dropping point of the matrix in relation to the position of the channel entrance partitions.

The side-wise adjustment of the beam is one of the most critical points in a distributor, as this controls the position at which the matrix is released from the bar as it falls by gravity into the channel entrance. The speed of the distributor is important because the matrix will continue to travel side-wise after it is released and while it is on its downward path. Matrices do not drop straight down, but rather have a curving motion as they drop. It reasons, therefore, that the faster a distributor runs, the less the amount of arc will be. Heavy matrices and light matrices will vary depending upon any variation in speed or any small nicks or burrs on either the matrix or distributor bar. It is with the idea of unmatched smoothness in distribution of matrices that STAR Distributor Bars are ground to a perfectly smooth surface, rather than using a milling or scraping operation when finishing the manufacture of a new distributor bar.

Distributor Speed

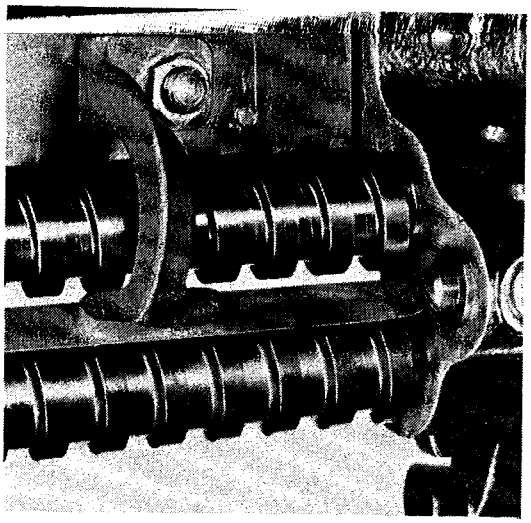
Many machines have double pulleys for the drive of the distributor. Use this rule to select the slow or fast speed in driving the distributor. If matrices from 14-point up are used, use the slow speed; if a machine is running 7½ lines per minute or more, use the slow speed. Most machines can use the slow speed, because the distributor will usually be found to keep up with the assembly of matrices. If the high speed is required to get faster distribution, it will be necessary in some instances, to shift the beam further to the right (from the rear of the machine).

Adjust the beam side-wise so that when the screws are turned very slowly by hand, the matrix will just make a very slight contact with the top of the right hand partition, not sufficient to cause it to be held by the partition. With this adjustment, the speed of the matrices as they are released and form their arc in dropping, will cause them to fall almost in the center of the channel entrance partitions.

The Screw Guard

The distributor screw guard should be adjusted so it clears the matrices and also does not contact the distributor screws. The purpose of the guard is two-fold—it prevents the upper lug of the matrix from striking the lower screw, and as the matrix falls, it is deflected in such a manner it starts its curve as the matrix enters the magazine. Many times a distributor will give a "ghost stop" meaning the distributor will stop, but there is no matrix to show an obstruction. This is generally caused by the screw guard being set too close to the matrix, and the channel entrance being set too close to the magazine. The result is the matrix bounces off the screw guard, strikes the channel entrance and again is deflected back so the upper lug strikes the lower screw, stopping the distributor through the spiral automatic. When the distributor stops, the matrix then drops into the channel entrance and cannot be seen. That's why it is termed a "ghost stop".

With the foregoing adjustments properly made, it is time to check out the distributor, watching to see that the matrices do not hesitate as they drop, and that all matrices travel smoothly across the bar. Sometimes, a very small nick on the distributor screws will cause matrices to jump at a given point —or there could be a bad spot on the bar



The distributor screw guard should be adjusted so it clears the matrices and also does not contact the distributor screws.

causing a jump as the matrices travel and are being transferred from one combination to another.

If you want to have a little fun, or show someone how a distributor works, start with the lower case "e" and set a line using every other character, e, a, i, s, r, l, etc. When this line is run in, all mats will drop at the same time. It's a good way to check all the characters, too.

Matrix Combinations

There are a lot of misconceptions about matrix combinations. Many people believe it is possible to re-cut the combinations so matrices will run in different places. For instance, suppose you would want to run some em dashes in the "ffi" channel. It doesn't necessarily mean that because the em dash travels past the "ffi" channel, it can be cut to drop at that spot.

The arrangement of the teeth in matrix combinations was no accident. Here is the code you can use to look at the combination of any matrix running in a 90-channel magazine and tell in which channel it will run. This is very useful when special characters have been cut to run in special channels. Sometimes they are in different channels on various magazines, and when they are run into the magazine they become "lost."

Matrix combinations are numbered from the top of a matrix, the top one being No. 1 and continuing to the bottom, or No. 7 combination, the only combination in a Cap "T".

Count the combinations remaining in the matrix and use the code numbers shown below, then add the total of the numbers in the right hand column, and deduct 2—the answer will be the channel in which the matrix runs.

Combination No.	Code No.
1	1
2	2
3	4
4	8
5	16
6	32
7	64

Suppose a matrix has a combination of 1, 3, 4 and 5. Add 1, 4, 8 and 16, making a total of 29. Now deduct 2 and the answer is 27. This is the channel in which it runs, and channel 27 is the "fi" channel. If you are curious as to why we deduct 2, the reason is the first two combinations on a distributor bar are a pi combination, and the "ee", therefore, there are two combinations which are not counted. (To be continued next issue)

MOLDS...the Heart of a Machine

One of the most vital parts of a typesetting machine is a mold. It is often times the most abused, yet with reasonable care and maintenance it will last for many years. We term it "the heart of a machine" because the only product of a typesetting machine is a slug, and whether it will trim true, and have solidity, depends largely on the condition and type of mold used for a particular job.

When we consider the tremendous amount of stress and strain to which a mold is put, and the required precision of its measurements it becomes apparent that it is a great example of engineering and metallurgical skill. Molten metal is pumped through the mold many hundreds of times a day; it is very often subjected to additional stress by being pressed at one end more than the other, or subjected to twisting motion by a bad lock-up. This we will deal with in greater detail later.

Heat is the determining factor in mold warpage. It is therefore desirable to keep the mold at as low a temperature as possible at all times. The direct cooling effect of the mold cooling blower is of special value in this respect, especially if long runs of type are to be set. This cooling becomes even more important, when a considerable amount of recasting is done, or when casting slugs at speeds of 8 lines per minute or more. In such cases it is even advisable to have two molds working on the one size of slug, alternating them through the use of quarter-turn segments. This will give one mold a chance to cool while the other is in casting position.

Let's discuss the types of molds and their uses. It is always an advantage to use the smallest body size possible when casting large slugs. For instance, with molds on Intertype machines, if you are casting 24 pt., you have molds with two different point ranges to choose from, both of which will cast 24 pt. There is the mold with a range from 18 to 24 pt., and another with the range of from 24 to 30 pt. The body size on the 24-30 pt. mold will be only 6 pts. for the 24 pt. slug. The body thickness of the 18-24 pt. range mold, on the other hand, will be 12 pts. in thickness. It is obvious, therefore, that if you can use the 24 to 30 pt. range, it will be most advantageous on this particular size, because there will be less metal used in that slug. The reason for this is that the greater the mass of type metal in the mold, the more heat it transfers. Thus it takes longer for the mold to dissipate this heat. Think of it this way: metal enters a mold cavity at casting temperature of about 490 degrees. Casting eight lines per minute, the time a slug is in a mold is approximately four seconds from the time it is molten metal, until it has cooled and is being ejected. This means, in this short time, the mold must absorb most of this drop in metal temperature and constantly dissipate this heat.

It is therefore apparent that the less metal used in a slug, the less heat will have to be dissipated, resulting in better slug quality, greater solidity, and longer mold life. This holds true of the smaller point sizes, also. A 10 pt. recessed mold will run a lot coller than a 10 pt. solid mold, so it is well to bear in mind the problem of getting this heat away from the molds, when recasting, operating at high speeds or using large point-size slugs.

When installing a mold, it should always be pushed to the right in the mold disk pocket, as this is the basic sidewise location for alignment. Be careful to clean the seat and disk surface of the mold pocket against which the mold will bank, to insure the square seating of the mold in relationship to the mouthpiece. The four fastening screws should be drawn up lightly, just enough to hold the mold against the disk. Next, the mold cap screws should be drawn against the cap, end screws first, but not tightened to their final position. Then go back and tighten the mold fastening screws, starting with the two center screws, then the outside screws, so the mold body can seat squarely against the disk, without distortion. Again the cap screws are to be tightened, the center screw being the last screw to be drawn up. Using screws with good slots and a good screwdriver, with the proper size bit to fit the slot, it is not necessary to tighten these cap screws excessively. Remember that the mold and disk expand from the heat of constant casting. The tremendous back pressure set up by this expansion is the cause of cracking at the screw holes on the disk. Excessive tightening by a person who has a naturally heavy hand, will add to the pressure unnecessarily. Know your own strength and draw up the screws only enough to hold the cap down firmly.

If you are troubled with screws working loose, try re-tapping the holes with a ¼x24 tap, .020" oversize, and replacing the old screws with .020" oversize screws

to match (these are available at any Star Agency or, of course, at the factory). Incidentally, these screws are also available in .005" oversize.

(To be continued next issue)

A handy binder has been specially designed to help you keep SHOP TALK as a permanent reference. It is available from Star Parts, Inc., South Hackensack, New Jersey, at 20 cents.

GRANDPA SAYS...

Last Tuesday Grandpa came by the shop just as we were about to close for the day, had a sort of twinkle in his eyes, pulled a package from the front seat and came bounding in. "What you got there?", I asked Grandpa. "Son, I got one of them new little transistor radios. Ma got it for me and I'd like to show it to ya, if you got a couple a minutes." It was really a nice little job, and Grandpa was as happy as a kid with a new toy.

"So what's the occasion for the present, Grandpa?", I inquired. "Tain't no occasion, son, guess Ma jest got sick 'n tired of the old set hummin' all the time, and I reckon she figgered if she'd get me a new one for a present, that'd be one way a gittin' a new radio around the house."

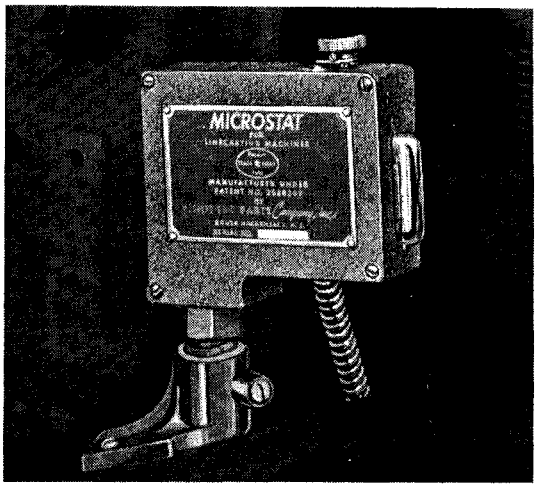
"You know, I really didn't mind that old set, even if it did have a hum in it, at least it was a steady noise, not like that old machine I used to run that would scare the wits outa you when the electric pot went on", Grandpa added.

We had just finished rebuilding an electric pot in the shop, and Grandpa spied it. "There—that's what I mean . . . that Microstat on the pot there, right on top. That's what we finally put on the machine and threw out all that old clapper switch, and all that bunch of wires that was all taped up down there in the box. Why them kind of controls don't make no noise a-tall."

Grandpa sure is right, they don't hum, and you don't need a clapper switch and points that burn, etc. . . . but they sure do one thing. They keep that metal temperature "right on the button". They come with an indicator light so you can tell whether the pot is on or off.

"You know what I like best about them there Microstats", asked Grandpa. "Well, I'd guess it is because they're not so expensive", I answered. "That's only part of it, son, they ain't got no bulb and bellows and all them complicated things in 'em to give trouble later on. The one we had, seems like we put it on and forgot about it. Never did have no trouble with it."

"See you later, son, gotta be gittin' back or Ma will be waitin' supper . . . and you know what that means . . ."



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