THE "MONOTYPE"

SUPER CASTER

INSTRUCTION BOOK

PRICE TEN SHILLINGS

THE MONOTYPE CORPORATION LIMITED
43 Fetter Lane, London, E.C.4

The "Monotype" Super Caster Instruction Book

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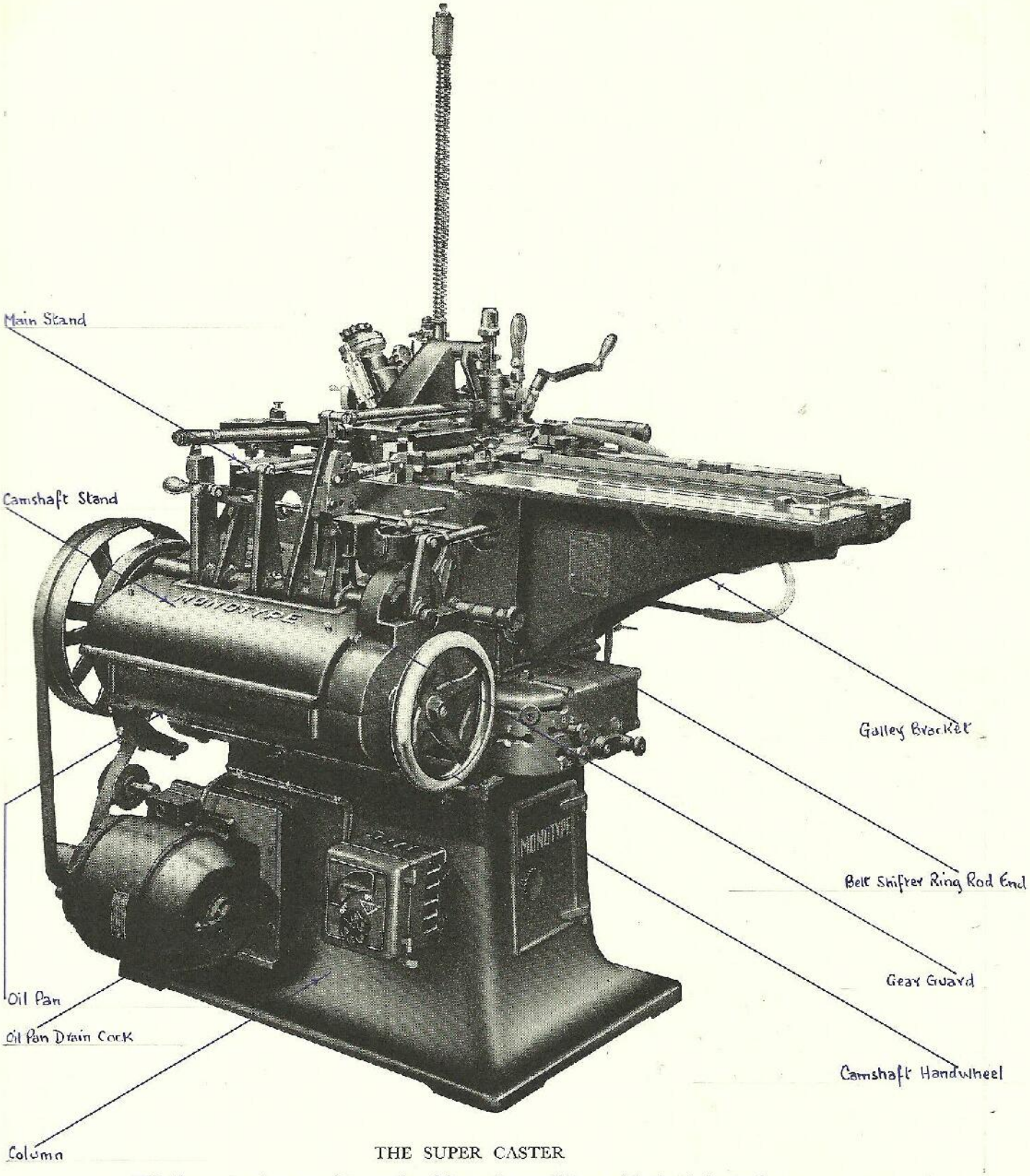
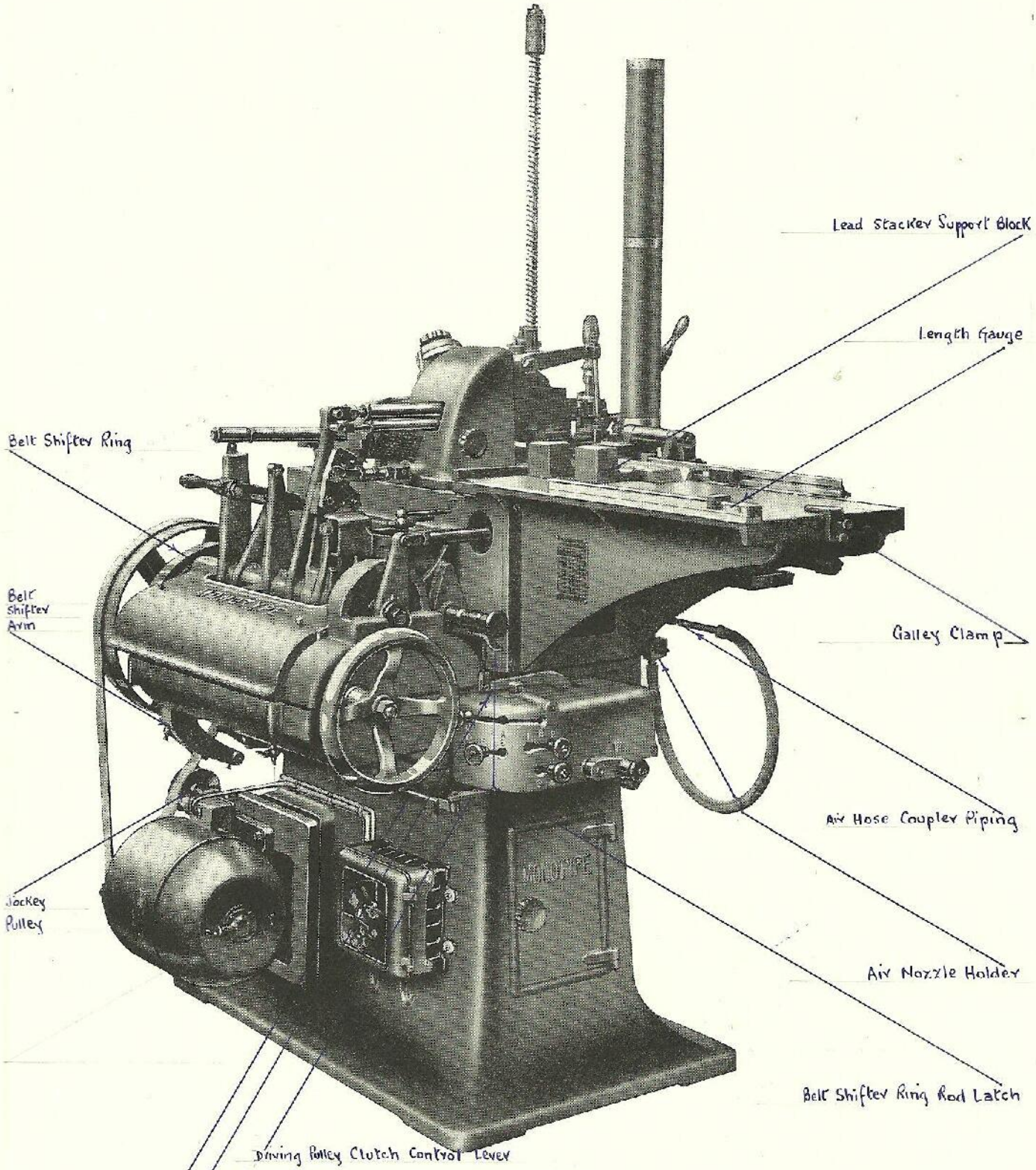


THE SUPER CASTER

This illustration shows machine equipped for casting small type, with electric heater in use
(Note absence of gas-fume stack)



THE SUPER CASTER

This illustration shows machine equipped for casting strip material, with gas heater in use

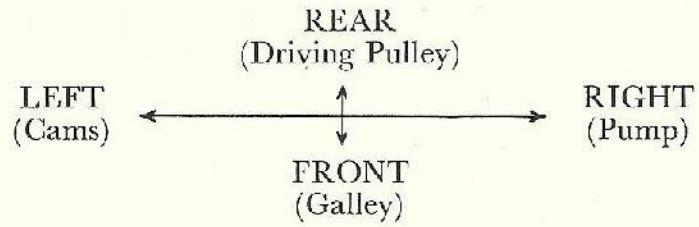
INSTRUCTIONS

ON THE

"Monotype" Super Caster

NOTE

In all the following instructions "right," "left," "front" and "rear" are understood to be taken when the attendant is stationed with the pump mechanism on his right, and the cams on his left. When referring to a part removed from the machine, right, left, front, or rear are assumed from the position such part occupies on the machine, with the attendant stationed as stated.



VARIETY OF PRODUCT

The machine is constructed to cast the following material:—

TYPE, SPACES, BORDERS and ORNAMENTS, in any size from 5 point to 72 point.

LEADS in any of the usual thicknesses from 1 point to 12 point, and RULES from $1\frac{1}{2}$ point to 12 point.

CONTINUOUS STRIP BORDERS in 3 point, 6 point or 12 point.

CLUMPS and DASHES in any length from 9 ems pica to 16 ems pica.

QUOTATIONS in the following sizes:

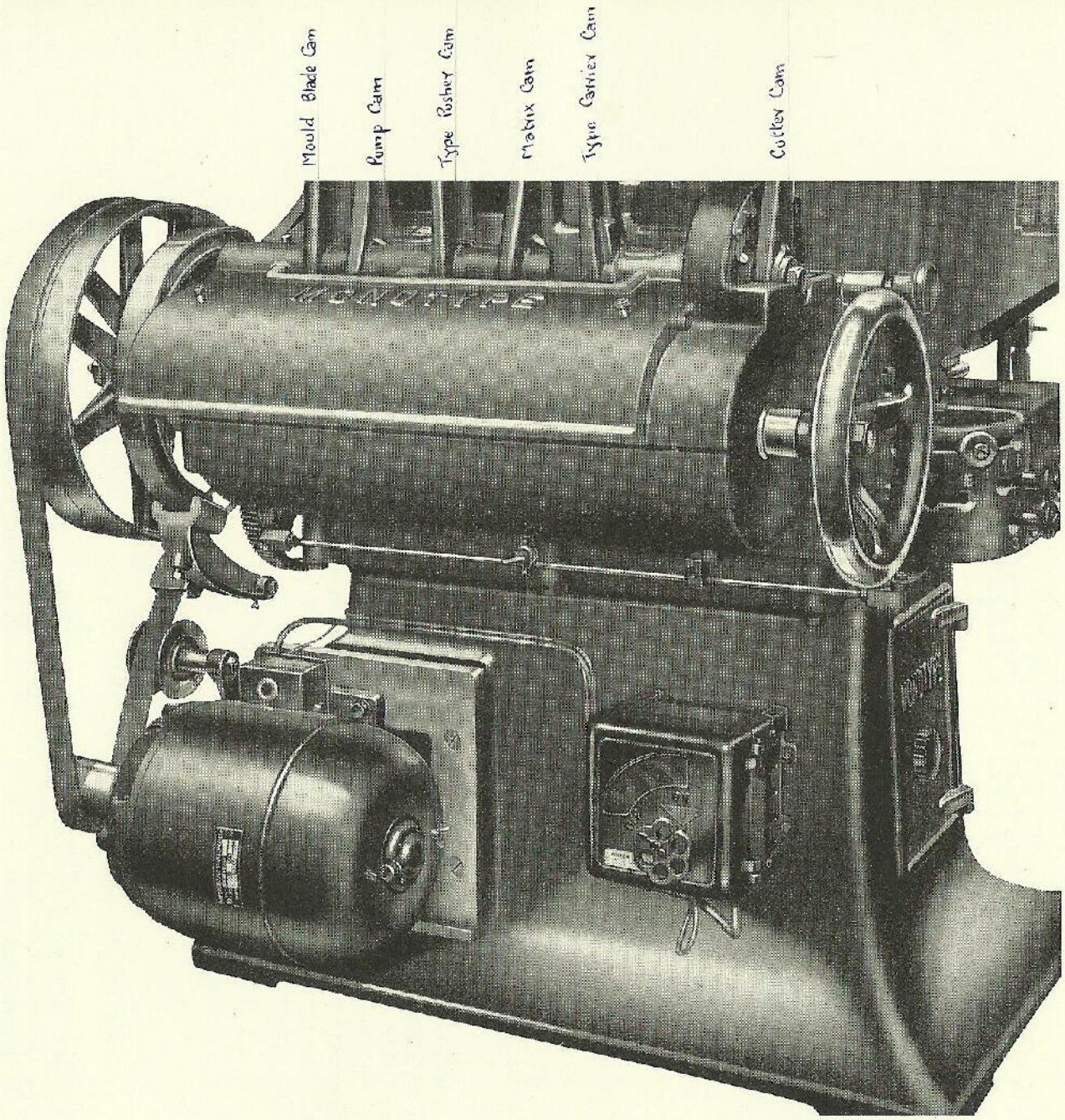
PICA EMS

6×6	6×5	6×4	6×3	6×2
	5×5	5×4	5×3	5×2
		4×4	4×3	4×2

MAIN SECTIONS OF THE MACHINE

The machine consists of the following main sections:—

1. Column and Main Stand
2. Speed Regulator
3. Camshaft Stand
4. Counter Mechanism
5. Matrix Heads
6. Mould Sizing and Operating
7. Lead Cutting and Stacking
8. Pump
9. Accessories
10. Tools



MOTOR AND STARTER

The Super Caster absorbs three-eighth horse power. A spring-controlled jockey pulley maintains an even belt tension upon the motor driving pulley

DRIVE

The machine may be driven by belt from shafting or direct by motor. It is started by pulling the starting rod to the front. This causes the belt to be drawn on to the fixed pulley, and the starting rod to become latched. Should any of the gear-positioning levers not be taken to their correct locating positions the starting rod will remain locked, and it will not be possible to start the machine. The machine is stopped by depressing the starting rod latch, which releases the starting rod, thus causing the belt to return to the loose pulley.

A maximum of $\frac{3}{8}$ horse-power is absorbed in driving.

The width of belt to be used is $1\frac{1}{4}$".

The machine is provided with a hand-wheel; this must always be moved anti-clockwise.

SPEED REGULATING MECHANISM

The gear box provides for 18 different speeds, in addition to the top speed obtained when the gears are placed out of action.

A speed table is provided, based upon a maximum direct pulley drive speed of 144 revolutions per minute.

HEATING

The metal may be heated by either gas or electricity.

If gas is used the average consumption to maintain a temperature of 650° Fahr. is 15 cubic feet per hour. This varies slightly according to the thermic quality of the gas supply.

The Super Caster may be equipped with either the "Monotype" or "Funditor" electric heater, according to order. The average consumption of electric current is approximately two units per hour, for both the "Monotype" and the "Funditor" heaters. The capacity of the pot with "Funditor" heater is approximately fifty-one pounds of metal, and with the "Monotype" heater approximately sixty-four pounds. Where the "Funditor" is fitted the machine may also be equipped with gas burners.

FAHRENHEIT AND CENTIGRADE

To convert Fahrenheit to Centigrade deduct 32, multiply by 5, divide by 9.

To convert Centigrade to Fahrenheit multiply by 9, divide by 5, add 32.

The following table shows a comparison of the two systems between 560 and 800 degrees Fahrenheit, in advances of ten degrees:

Fahr.	Cent	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.	Fahr.	Cent.
560	293	610	321	660	348	710	376	760	404
570	298	620	326	670	354	720	382	770	410
580	304	630	332	680	360	730	387	780	415
590	310	640	337	690	365	740	393	790	421
600	315	650	343	700	371	750	398	800	426

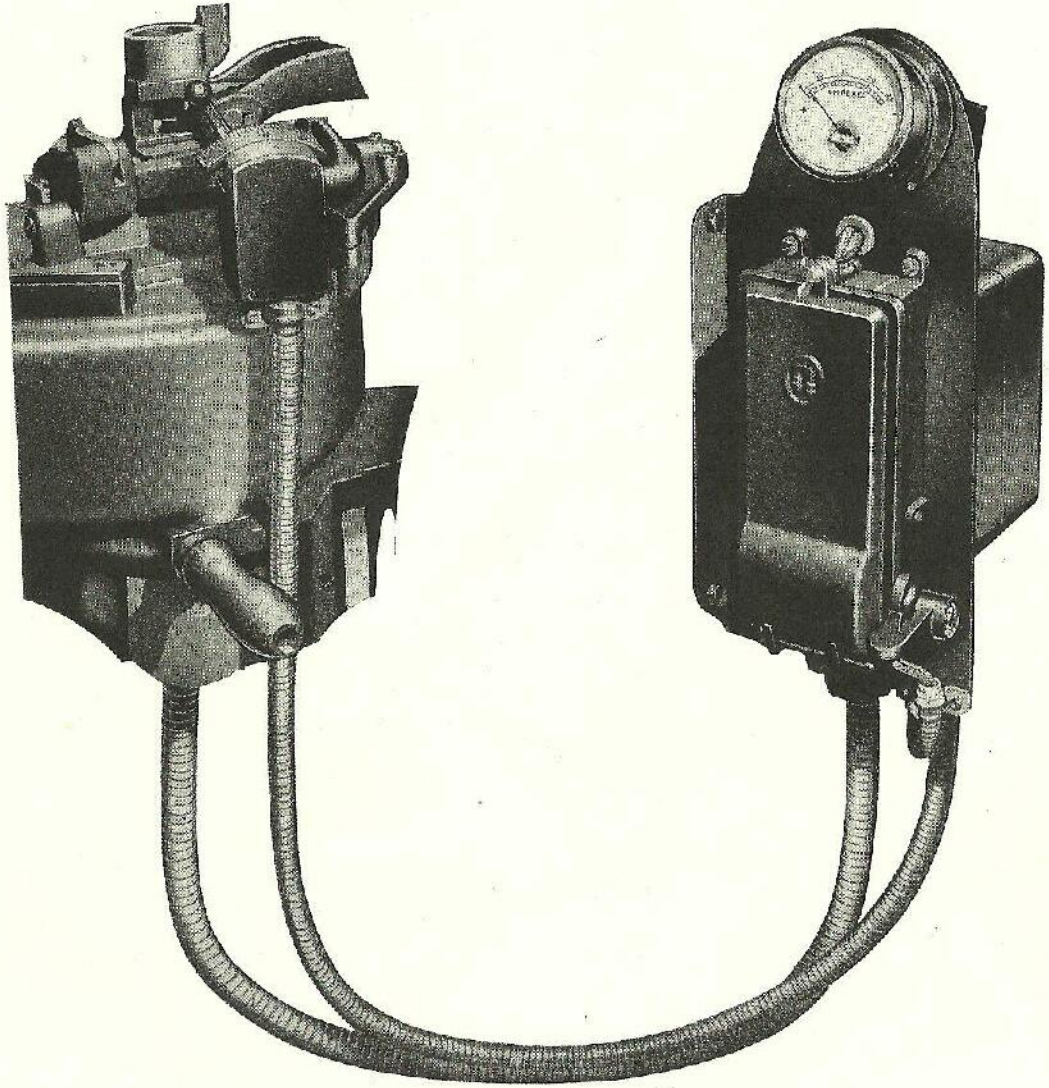
ELECTRICAL DEFINITIONS

The *circuit* is that part of the equipment which is intended to carry electric current, such as copper wires, resistance wires, switches, etc. They are all insulated from the machine.

The *current* is the electricity passing through the equipment.

The term *amperes* is the measure of volume of current flowing through. Amperes develop heat; therefore if your machine is using more amperes than marked on the fuses, the fuses may burn out.

The term *volts* is the measure of pressure of current. Serious damage will result to the heater if it is used with a voltage more than 5% higher than that for which it is designed; on the other



AUTOMATIC REGULATION OF TEMPERATURE OF METAL

The melting pot may be heated by gas or electric current. This illustration shows an electric heating equipment, which includes (as shown on the left) a regulator for maintaining the metal at the required temperature. The action of this regulator causes the electric current to be automatically put in or out of action by the control box shown on the right

hand a low voltage will not develop sufficient heat. It is therefore essential that a continuous voltage record be obtained, indicating not only the average voltage but the highest and lowest voltage likely to occur in the circuit at the point where the heater is connected.

A *watt* is the measure of power and is volts multiplied by the amperes.

A *kilowatt* is 1,000 watts.

A *kilowatt hour* is one kilowatt of power used for one hour. One horse power is represented by 746 watts.

An *earth* is a bare part of the electric circuit accidentally touching the machine.

A *short circuit* is one or more earths which allow the current to take a shorter path.

A *break* is an interruption in the electric current, such as a broken wire, etc.

Resistance is an obstruction in the electric circuit retarding the flow of current.

Series connection means that two or more units are connected in line with each other. Current enters one terminal, passes through the windings, out of the other terminal and directly into the next unit, through its windings and out into the opposite side of the line.

Parallel or *multiple* connections means that two or more units are wired in such a way that each makes a complete circuit of itself. Current enters a unit, passing through its windings and directly back to the line.

An electrical circuit carrying current can best be simply explained by considering an iron pipe through which compressed air is flowing.

The pipe represents the circuit and the compressed air passing through it represents the current.

The *volume* of the compressed air flowing represents the amperes and the *pressure* of the compressed air represents the volts.

A leak that allowed the compressed air to escape would represent a short circuit and a partially closed valve in the pipe would represent resistance.

PIPING

The machine must be provided with gas, water, water drain, and air pipe services, and built into the machine is the necessary piping equipment, to which these pipe services must be attached:—

GAS

Although electric heaters are recommended, gas piping connections are fitted for customers who are not provided with electric current supply.

The gas service pipe should be $\frac{3}{4}$" galvanised iron. The connection on the machine is $\frac{1}{2}$".

WATER SUPPLY

This pipe should be $\frac{1}{2}$" galvanised iron. The connection on the machine is $\frac{1}{2}$".

WATER DRAIN

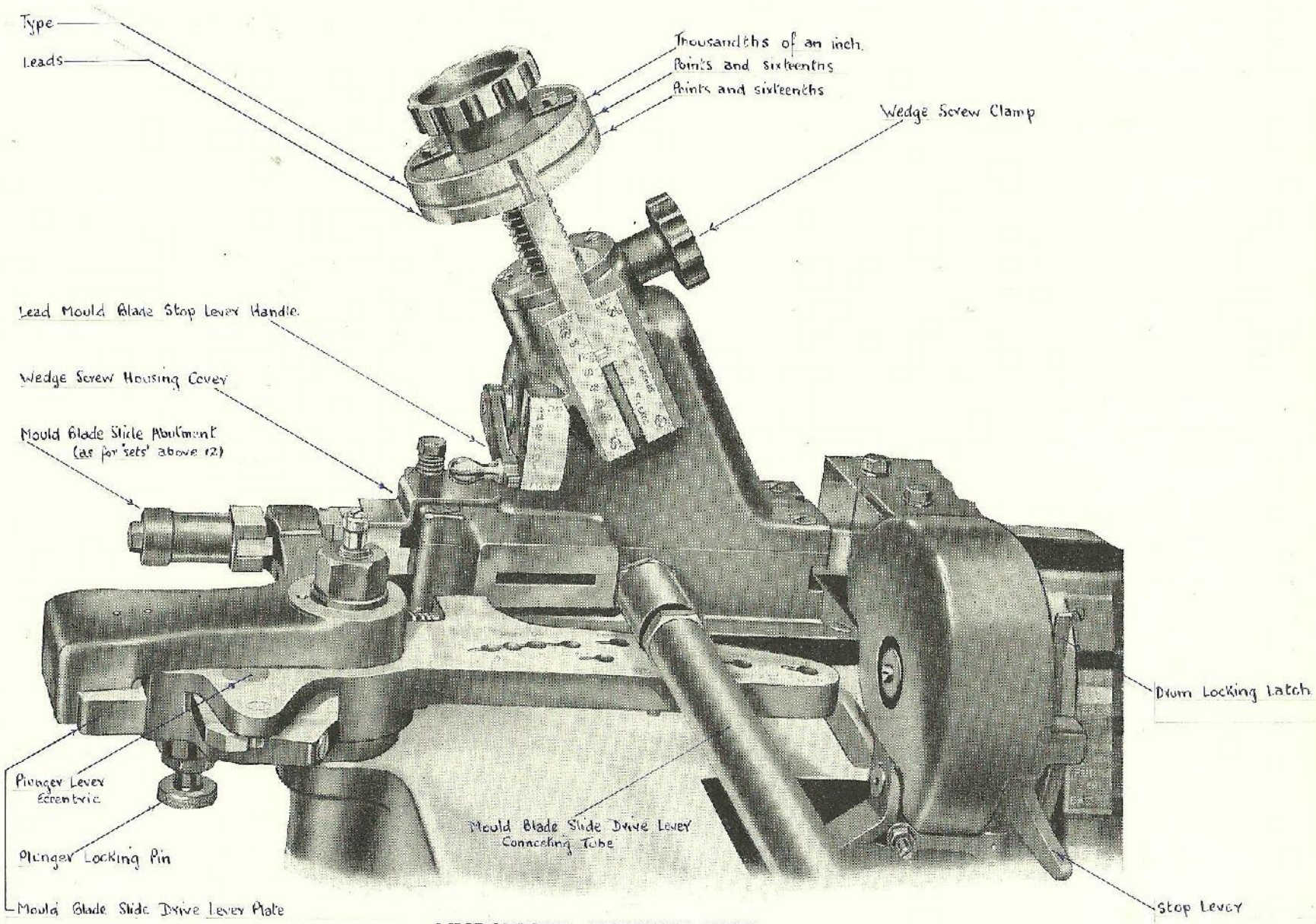
This pipe should be $\frac{3}{4}$" galvanised iron. The connection on the machine is $\frac{1}{2}$".

AIR

An air blast is very beneficial in keeping the matrices and quotation coring blocks cool during the casting process.

Where the Super Caster is placed near a "Monotype" composing machine equipment the compressed air pipe of the composing machine equipment should be carried to the Super Caster. This pipe should be $\frac{3}{4}$" galvanised iron. The connection on the machine is $\frac{1}{2}$".

In cases where no "Monotype" composing machine is installed, or no independent air supply is available, a special rotary blower is provided for use on the Super Caster. This is driven from a toothed wheel attached to the machine pulley. The necessary piping is supplied with each blower.



MICROMETER ADJUSTING HEAD

Shows the screw for adjusting the micrometer wedge, the scale wheels to indicate the amount of fractional adjustment given to the micrometer wedge, and scale plates to indicate the position of the micrometer wedge in points and ems

CAMS

The mechanism is controlled by the following cams, which run in an oil bath:—

Cutter cams (X11SC)
Type carrier cams (X25SC)
Matrix cams (X15SC)
Type pusher cams (X27SC)
Pump cams (X23SC)
Mould blade cams (X17SC)

MATRIX HEADS

For casting the various products different heads are provided. These have to be completely or partly changed when arranging to cast a different kind of product. The various heads are:

TYPE CASTING

1. Matrix heads base (X8SE), used when casting from either composition or display matrices. The type carrier (X22SE) and type pusher (X34SE) are included in this base.
2. Matrix Head (X6SE) for composition matrices.
3. Matrix Head (X7SE) for display matrices and for quotation core blocks.

STRIP CASTING

Counter mechanism bracket (X4SD). The various purposes of this bracket are:

1. To clamp the side plates of strip moulds prior to casting and to release same after casting.
2. To operate the jet block of strip moulds.
3. To raise and lower the matrices for casting continuous border strip.
4. To control the length of cutting of strip material.

MICROMETER ADJUSTMENT HEAD

Carries mechanism for determining (under the control of the counter mechanism) cut lengths of leads, rules, strip borders and clumps, and for sizing the mould blade when casting type.

MOULD BLADE SIZING MECHANISM

This mechanism determines the set size adjustment for mould blades when casting type; the length of dashes, clumps and (in conjunction with the counter mechanism) the cut lengths of leads, rules and strip borders. A screw-and-wedge combination allows for very fine adjustments.

CONSTRUCTION AND FUNCTION OF THE MICROMETER WEDGE (8 SFF)

The micrometer wedge screw has six threads of twelve points each to one inch, and the wedge (8SF, which abuts against the two pins 13SF2 and 13SF1) is so designed that a complete revolution of the screw makes a difference of 6 points (·083″) to the opening of the mould blade.

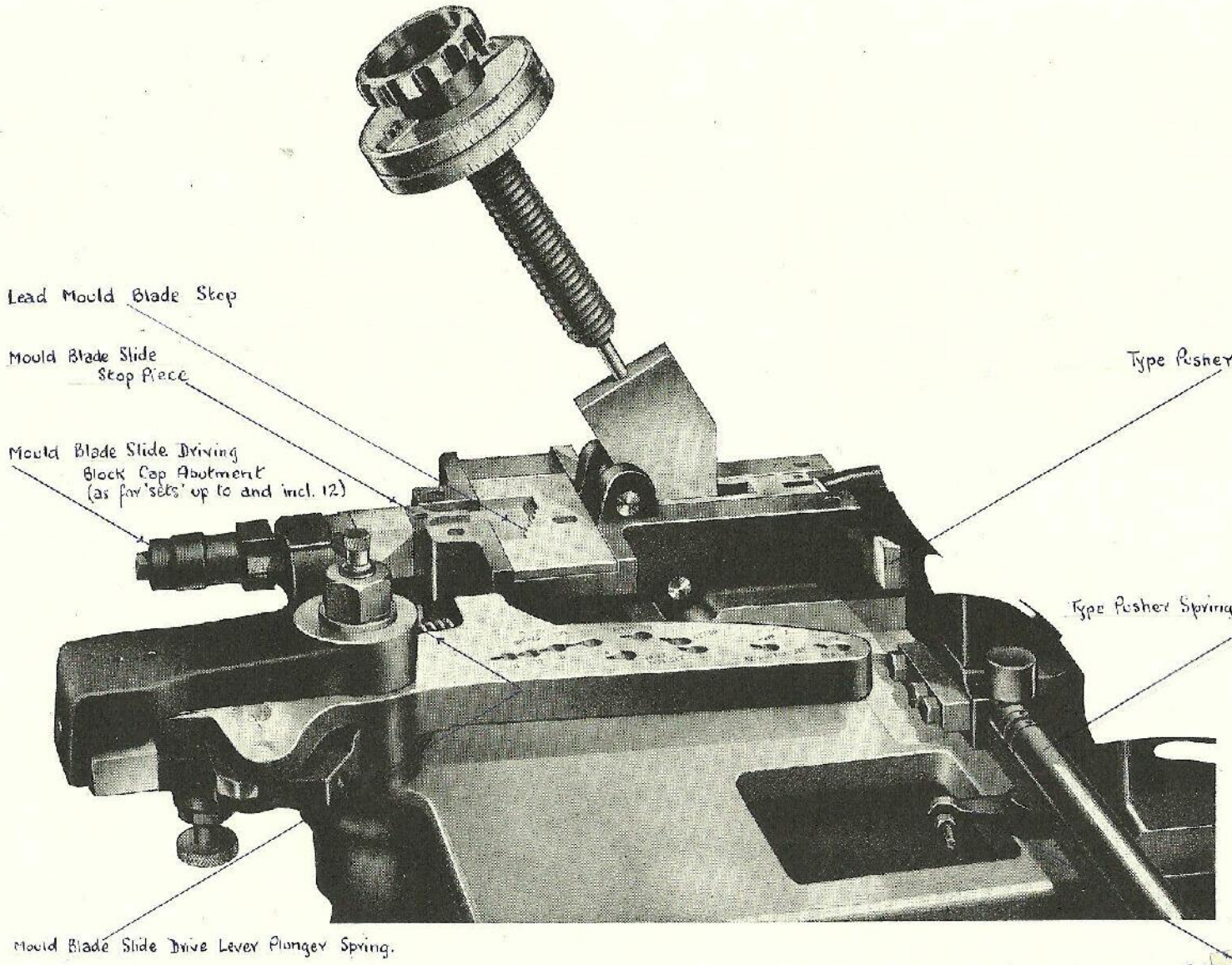
The screw is turned by the wedge screw handwheel (a10SF1) at its upper end, and just beneath the handwheel are two wedge screw handwheel scales (10SF10 and 10SF4).

The upper wedge screw handwheel scale (10SF10) is marked around the upper edge of its circumference with divisions, representing thousandths of an inch, and around the lower edge with divisions representing points and sixteenths of a point. This scale is locked by means of the screw (10SF12) and clamp (10SF11) at the side of handwheel marked "type."

The lower wedge screw handwheel scale (10SF4) is marked around the lower edge of its circumference with divisions representing points and sixteenths of a point. This scale is locked by means of nut (10SF6) and clamp (10SF7) at side of handwheel marked "leads."

Keyed between the two scales is a wedge indicator (a9SF) which moves up and down with the micrometer wedge screw (10SF) as the latter is turned. The upper edge of this wedge indicator is bevelled to a knife edge, so that the marks of the scales may be easily read.

The lower end of the wedge indicator runs in a slot in the micrometer head casting. One side of the slot has a scale plate (9SF4) positioned against it marked "points," and the other side has a scale plate (9SF5) positioned against it marked "ems." The plate (9SF5) has two scales marked upon it; the scale near the indicator representing "leads" and the outer scale representing "dashes." A wedge indicator pin (9SF1) attached to the wedge indicator (a9SF) serves to show the opening of the mould in ems or points, and the wedge screw handwheel scales indicate fine adjustments in thousandths of an inch or fractions of a point.



MICROMETER WEDGE, MOULD BLADE SLIDE, AND MOULD BLADE SLIDE DRIVE LEVER

Shows how the mould blade slide is drawn, by the action of the mould blade slide drive lever, against the micrometer wedge. This wedge decides the amount to which the mould blade must open. There is also shown the stepped distance piece which decides the distance to which the mould blade shall be pushed when ejecting leads, rules and dashes. Upon the mould blade slide drive lever is shown the different holes to which the connecting rod may be attached, so that different stroke-lengths may be applied to the lever

One revolution of the micrometer wedge screw handwheel moves the wedge indicator half of one em; this is 6 points, or .083". Therefore, when the micrometer wedge handwheel is at zero the wedge indicator should be in alignment with an "em" line or half-way between two em lines.

The micrometer head also carries a stepped mould blade stop (a1SF) against which abuts the mould blade slide stop (4SF4); this controls the distance to which the lead mould blade is pushed when ejecting the product. The stop is positioned by the handle (2SF5) on the scale on the wedge screw housing (12SF).

ADJUSTMENTS WHEN PREPARING TO CAST TYPE

At the rear end of the mould blade slide (4SF) a reversible abutment (4SF8) is provided. When type of 12 point set-size or less is to be cast the large diameter end of the driving block cap abutment (4SF8) should be positioned at the front; that is, with the spring in action. For all set-sizes above 12 point, this cap abutment should be reversed; that is, with the spring out of action. To reverse the cap abutment remove the screw (b4SF3).

With the type mould fixed to the machine, and with a blank matrix in the matrix holder, turn the machine to the ejecting position (150°). This will bring the mould blade close to the cross block. This is the starting position for sizing the mould blade opening.

Loosen the clamping nut (11SF2) and screw the micrometer wedge down to its lowest position. Loosen the two screws (9SF6) and set the "points" wedge scale indicator plate (9SF4) on the side of the micrometer head so that "zero" mark is in line with the mark on the wedge indicator pin (9SF1).

Loosen the scale locking screw (10SF12) marked "type" on the top of the wedge screw handwheel, and turn the upper handwheel till the zero mark is in line with the knife edge of the wedge indicator (a9SF); tighten the scale locking screw (10SF12).

As the mould blade is now completely closed one revolution of the wedge screw handwheel (bringing the "zero" mark on handwheel again in line with the knife edge on the indicator) will open the mould 6 points, and bring the mark on the wedge indicator pin (9SF1) in line with the 6-point mark on the wedge scale indicator plate (9SF4).

This plate has divisions representing a difference in mould blade opening of 6 points, and any smaller differences may be obtained by turning the wedge screw handwheel until the required additional number of points or fraction of a point is shown by the knife edge on wedge indicator (a9SF).

For example: If the set size required to be cast is 39 points, make six complete turns of the wedge screw handwheel; this will give a mould opening of 36 points. Continue to turn the handwheel until the line marked "3" on the upper handwheel scale coincides with the knife edge on the wedge screw indicator; this gives the extra 3 points required to make up the 39 points set size.

As the micrometer wedge will usually be screwed to its lowest point when the mould is comparatively cold, it will be found in practice that the wedge screw handwheel scales require a little extra adjustment when sizing the type. For instance, although the wedge indicator and wedge screw handwheel scales may have been adjusted to 6 points when the mould was cold, when types are cast and the mould becomes heated it may be necessary to move the wedge screw handwheel scale to correct the type size by a few thousandths of an inch. When the product has been sized correctly the scale locking screw (10SF12) should be loosened and the upper wedge screw handwheel scale finally adjusted to indicate the size obtained.

After this the micrometer screw may be moved clockwise or anti-clockwise according to the scale marks to produce any size required.

After having adjusted the micrometer wedge so as to cause correctly-sized type bodies to be cast, insert the required "star" matrix in matrix holder, bring the micrometer wedges and speed gear to positions indicated by the marking on the matrix, and make a cast. If the ends of all points of the "star" do not come exactly flush with the sides of the type body adjust the centring pin accordingly, and make another cast; repeat till correct.

ADJUSTMENTS WHEN STRIP MATERIAL IS TO BE CAST

1. With the strip mould fixed to the machine, turn the machine to position 150°.
2. Move the mould blade stop lever handle (2SF5) to position marked "leads."
3. Turn wedge screw handwheel until mark on indicator pin (9SF1) is just above the six ems line on wedge scale indicator plate (9SF5).
4. Turn machine to 220°.
5. Move wedge screw housing cover (14SF) clear of slot.
6. Place standard border length gauge (1ST1) between the mould blade slide stop (4SF4) and the step on the lead mould stop (a1SF), and screw down the micrometer wedge screw until the gauge fits accurately (without binding) between the two stops.
7. Tighten clamping nut (11SF2) and check to see that gauge is still a good fit.
8. Remove gauge and replace cover.
9. At the rear end of the mould blade slide (4SF) a reversible abutment (4SF8) is provided. When casting strip material the large diameter end of the driving block cap abutment (4DF8) should be positioned at the rear; that is, with the spring out of action. To reverse the cap abutment remove the screw (b4SF3).

ADJUSTMENTS WHEN DASHES OR CLUMPS ARE TO BE CAST

Turn machine to 180°.

Move the mould blade stop lever handle (2SF5) to the scale mark corresponding with the length in ems of clump or dash required to be cast.

Turn the micrometer wedge screw until the wedge indicator pin (9SF1) also indicates on scale (9SF5) the length in ems of dash or clump required to be cast.

ADJUSTMENTS WHEN STRIP BORDERS ARE TO BE CAST

Having gauged the mould blade stroke (as explained in paragraph 6 of "ADJUSTMENTS WHEN USING STRIP MOULD"), examine the border matrix which is to be used to see if it is marked "+" or "—". If it should have either of these marks stamped upon it (such as "+3" or "—2") turn the micrometer wedge screw the corresponding number of divisions "+" or "—" on the top scale of the upper wedge screw handwheel scale (10SF10). These divisions represent thousandths of an inch.

DISMANTLING THE MOULD BLADE SIZING MECHANISM

Remove the screw (b4SF3) and take off the block (b4SF2) cap (a4SF7) abutment (4SF8) and spring (4SF9).

Remove the stud (a14SF1) and wedge screw housing cover (14SF).

Remove three screws (12SF2) from micrometer wedge screw housing (12SF) and lift off housing lead mould blade stop (a1SF); knock out pins (13SF2) and (13SF1); the mould blade slide can then be removed and the pin (1SF1) in the slide can be knocked out.

Unscrew the nut (8SF2). Remove washer (8SF4) and spring (10SF3), and the wedge (8SFF) can then be taken out; the wedge screw (10SF) complete with the handwheel (a10SF1) and wedge indicator (a9SFF) can also be screwed out.

To dismantle the handwheel, loosen handwheel locking screw (a10SF2) and remove wedge screw (10SF).

Take off nut (10SF6) and remove washer (10SF7) and bolt (10SF5).

Remove screw (10SF12) and clamp (10SF11).

Remove screws (10SF9 and 10SF15) (6) when plates and scales will come apart.

To remove blade stop lever (2SF3) knock out the taper pin (2SF8).

To remove the wedge screw nut (15SF) take off the locking nut (11SF2) and take out bolt (11SF1) and wedge screw clamp (11SF).

Remove three screws (15SF1) and, using a piece of wood, drive out wedge screw nut (15SF), taking care not to damage the threads.

Remove scales (9SF4 and 9SF5) by taking out screws (9SF6).

HOW TO ASSEMBLE THE MOULD BLADE SIZING MECHANISM

Replace wedge screw nut (15SF); take care that it is in the right position, otherwise the screws cannot be assembled. Once the nut is driven home it is very difficult to turn.

Replace three screws (15SF1), bolt (11SF1), wedge screw clamp (11SF) and locknut (11SF2).

Replace blade stop lever (2SF3), making sure that the handle spring (2SF6) and handle spring plunger (2SF7) are in position; lock up by means of taper pin (2SF8).

To assemble handwheel, replace two scales, making sure that the type scale (10SF10) is on the top and that the figures read correctly.

Replace washer (10SF7), bolt (10SF5) and nut (10SF6), the cutaway portion of the washer facing outward.

Replace clamp (10SF11) and screw (10SF12).

Replace plates with the word "type" on plate (10SF13) against the clamp (10SF11) and secure with six screws.

Assemble wedge screw (10SF) to handwheel and lock with handwheel locking screw (a10SF2).

Screw wedge screw into nut and assemble wedge indicator (a9SF) and scale plates (9SF4 and 9SF5).

Replace wedge, spring, washers and nut, and lock tight in position.

Replace abutment (4SF1) in mould blade slide and pins (13SF2 and 13SF1) in wedge screw housing base (13SF).

Replace mould blade slide (4SF) and lead mould blade stop (a1SF), ensuring that the narrowed portion of the stop is to the right-hand side of machine.

Replace wedge screw housing (12SF), ensuring that the lead mould blade stop lever (2SF) is located correctly in the lead mould blade stop (a1SF); secure with three screws (12SF2).

Replace wedge screw housing cover (14SF) and stud (a14SF1) and lock in position.

Assemble abutment (4SF8) spring (4SF9) cap (a4SF7) and block (b4SF2) and screw to mould blade slide (4SF) by means of screw (b4SF3).

MOULD BLADE SLIDE DRIVE LEVER

This lever is for imparting the necessary traverse in either direction to the mould blade.

It is operated by mould blade cams (X17SC) through the mould blade cam lever (18SC) and the connection (X6SF). This connection may be attached to the lever in various positions to give the varying movements required when casting different classes of product.

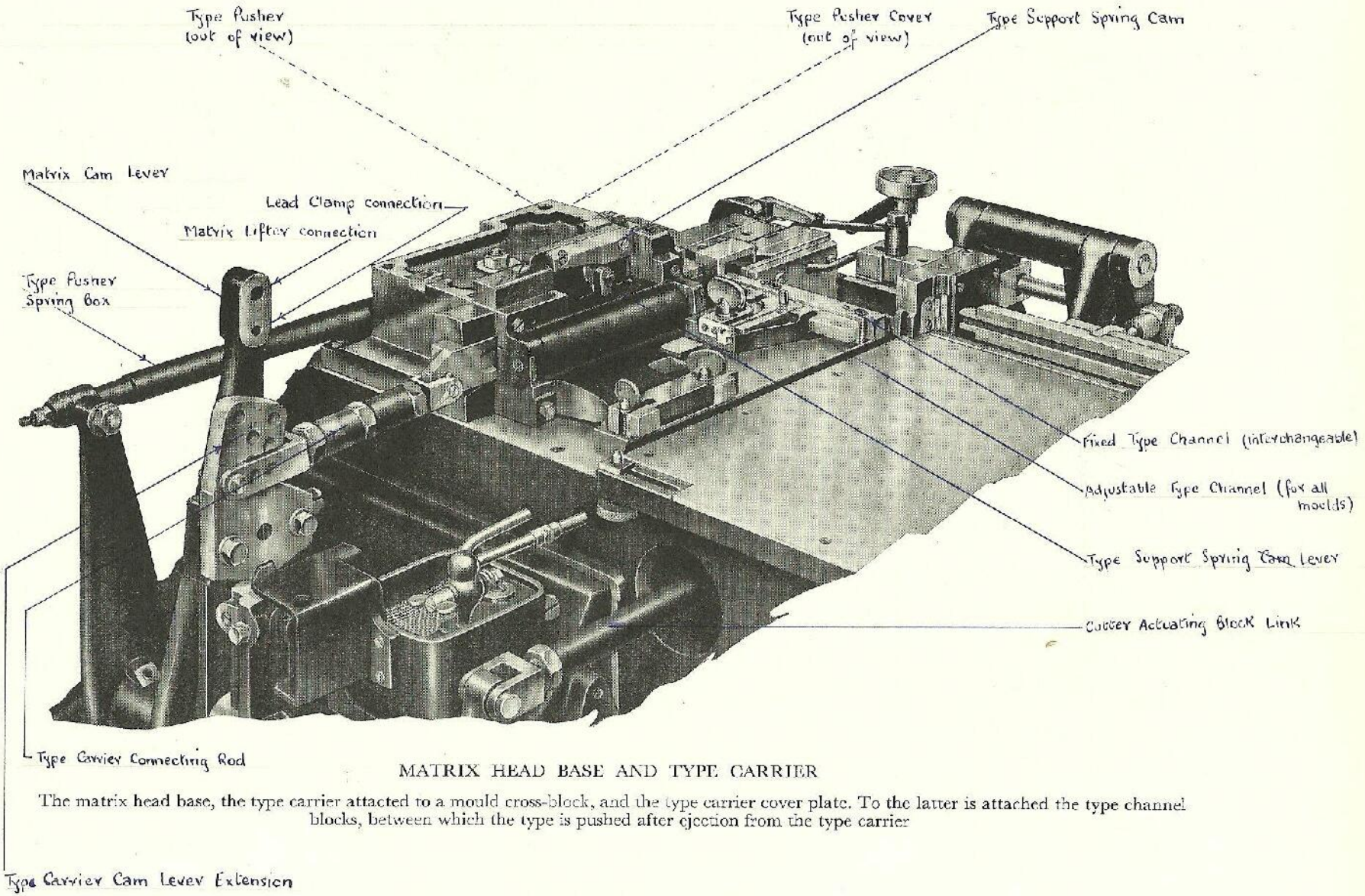
To provide against damage caused by any obstruction to the movement of the mould blade, this lever is constructed in two sections, each working upon the same axis. The two parts are held together by a clutch in the form of a friction plunger supported by a spring. Should any obstruction occur it overcomes the pressure of the spring, causing the plunger to recede and to become locked in an inoperative position. All pressure is thus released from the mould blade.

When the obstruction to the mould blade has been removed, the plunger is restored to its operative position by withdrawing the locking pin knob (5SF7). The locking pin should be withdrawn only when the machine is at rest, and when the plunger (b5SF4) is opposite its recess in the plate (5SF2).

When casting cored type, 42 point to 72 point, there is greater resistance to the mould blade when ejecting the type, and greater spring pressure is therefore necessary on the plunger. This extra spring pressure is obtained by turning the plunger lever fulcrum pin (eccentric) (5SF18) until the line marked "type 42/72pt" corresponds with the line on the intermediate lever (a5SF1).

HOW TO DISMANTLE THE MOULD BLADE SLIDE DRIVE LEVER

When wishing to separate the two levers (5SF and a5SF1) see that the eccentric (5SF18) is in the "small type" position, as this reduces the spring pressure on the plunger. Place the lever (5SF) in a vice, letting the vice jaws grip the plunger plate (5SF2) with the lever (5SF) to the left. Give the end of the lever (a5SF1) a sharp blow; this will cause the plunger to be depressed and the safety catch to lock it in its inoperative position. The two levers can now be separated.



MATRIX HEAD BASE AND TYPE CARRIER

The matrix head base, the type carrier attacted to a mould cross-block, and the type carrier cover plate. To the latter is attached the type channel blocks, between which the type is pushed after ejection from the type carrier

HOW TO REMOVE SPRING (a5SF11)

Hold the lever (a5SF1) firmly by hand, and press the plunger against the edge of a bench until the plunger spring is compressed; then release the locking pin (a5SF5) and remove the bush (a5SF6). The plunger can then be removed. Hold the lever in a vice with the spring (a5SF11) facing upward, tie a piece of string around the spring and lever (to prevent the spring flying forward when released, knock out pin (5SF14); then knock the plunger lever (5SF16) downward until it is removed.

HOW TO REMOVE ECCENTRIC (5SF18)

Remove the screw (5SF21) and spring (5SF20). The eccentric can then be removed.

HOW TO REPLACE SPRING (a5SF11)

Place the end of lever (a5SF1) in a vice with the spring abutment facing upward. Place the spring over its rod (5SF12) and have the plunger spring guide rod collar (5SF13) at the end of the spring. To prevent the spring flying upward when connecting it, loosely tie a piece of string around the spring and lever. See that the eccentric is in the "small type" position, and then partly insert the plunger lever (5SF16) from underneath with the semi-circular end recess facing the pin (5SF17). Press against the eye on end of rod (5SF12) so that the other end of the rod enters its bearing, and then press the plunger lever upward into the eye; insert the connecting pin (5SF14). Insert the plunger with groove facing downwards. Replace locking pin and bush complete and press plunger back so that locking pin engages the hole in the plunger. Place the lever (a5SF1) over the boss of lever (5SF) and release the locking pin (a5SF5) so that the plunger engages recess in the plunger plate (5SF2).

HOW TO ADJUST MOULD BLADE SLIDE DRIVE LEVER CONNECTING ROD (6SF)

With a type mould on machine turn machine to 150° and adjust the connecting rod so that the plunger (b5SF4) has moved $\frac{1}{64}$" away from its normal seating position.

MATRIX HEAD BASE

This is used when type is required to be cast, and is secured to the main stand by three screws (8SE14). This head carries permanently:—

1. Type Pusher. 2. Type Carrier. 3. Type Channel Blocks. 4. Galley Clamp.

It also carries a stop (b8SE11) for locating the position of the head base, according to whether a mould under or above 42-point is in use; and either the composition or sorts matrix head.

THE TYPE PUSHER

This is for pushing the type into the type channel, and functions during the period that the next type is being cast. It is operated by type pusher cams (X27SC) through the connecting rod (36SE) and type pusher lever (35SE). The latter engages a slot in the pusher (34SE).

HOW TO REMOVE TYPE PUSHER

Detach cover (34SE1) by taking out six screws (34SE2) and remove pusher from its slot.

HOW TO REMOVE TYPE PUSHER LEVER (35SE)

With the matrix head base removed from the machine, slacken the lock nut (36SE3), and unscrew the connecting rod from the ball socket (36SE1) until the socket can be removed from the lever ball stud (35SE1). Remove the nut (35SE3), knock out the pin (35SE2), and remove the lever from the under side of the matrix head base.

HOW TO ADJUST TYPE PUSHER

Turn machine to 310°.

Release type pusher connecting rod nut (36SE9) and lock nut (36SE10). Adjust type pusher connecting rod nut (36SE9) until end of type pusher (34SE) stands ·010" in front of the fixed type channel block latch (29SE4) and lock nut (36SE10). Press on end of pusher to take out play, and turn machine round again to see that the adjustment has been correctly made.

TYPE CARRIER LEVER (Xa26SC)

This is specially constructed so as not to cause any damage should the type not be completely ejected from the mould, or should any other obstruction prevent the carrier moving freely.

To assist in this object the type carrier connecting pin (24SE7) is made of cast iron, and two grooves are turned around it so as to permit the pin to shear should any undue obstruction occur in the path of the carrier.

As an additional safeguard against breakage the type carrier lever is made in two main sections, the lower section being rocked by the driving cams and the upper part being hinged to the lower portion.

The upper section is caused to be rocked by the engagement of a plunger clutch held by spring pressure in a slot in an adjustable plate fitted to the upper end of the upper portion of the carrier lever.

Should any obstruction be placed in the path of the carrier, the pressure on the carrier lever extension (a26SC3) overcomes the spring pressure on the lever plunger (26SC12), causing the latter to be pushed down, and to become locked in an inoperative position by means of a spring plunger locking pin (a26SC13) engaging a slot on the side of the lever plunger (26SC12). As the cams continue to revolve the lower portion of the cam lever will now reciprocate without moving the upper portion of the cam lever, and the carrier consequently remains stationary.

After the obstruction to the carrier has been removed the plunger locking pin knob (26SC16) must be pulled outward to permit the lever plunger (26SC12) to re-engage the slot in the carrier lever extension (a26SC3). The locking pin is easily released at a point just before the plunger reaches its slot in the type carrier lever extension (a26SC3). The locking pin should not be released whilst the machine is in motion.

HOW TO ADJUST STROKE OF TYPE CARRIER

Should the *length* of stroke of the type carrier need adjusting the carrier lever extension (a26SC3) must be raised or lowered. To do this first loosen the two bolts (26SC9) and then turn the lever extension eccentric (26SC11) in the desired direction; after this tighten the two bolts (26SC9).

The length of stroke of the type carrier between the type casting position (220°) and the type ejecting position (150°) should be $2\frac{11}{16}$" when the type carrier connecting pin (24SE7) is through the hole marked "72 pt."

After the length of stroke of the type carrier has been correctly adjusted the lever plunger locking pin (a26SC13) must be adjusted.

HOW TO ADJUST LEVER PLUNGER LOCKING PIN (a26SC13)

With a screwdriver prise down the lever plunger (26SC12) and carefully turn the machine so that the plunger gets beneath the lowest edge on the left hand side of the lever extension (a26SC3). Then loosen the plunger bush locking screw (26SC15) and turn the plunger bush (26SC14)—this is an eccentric—until the end of the plunger locking pin (a26SC13) meets the side of the slot in the lever plunger (26SC12).

TYPE CARRIER

This slides in the matrix head base and is driven by the type carrier cams (X25SC). The carrier connects to the crossblock of the type moulds. During the casting period of the machine the carrier is in its left-hand position; in this position the type pusher can pass through carrier for the purpose of taking the type to the type channel.

After the type has been cast and the matrix has been lifted from the mould, the carrier advances to the right. In doing this the jet cast on the lower end of the type becomes sheared, and the action of a cam in the mould base causes the jet to be ejected into the melting pot.

As the mould crossblock advances, a slide called the type clamp (32SE) is held back so that when the crossblock reaches the end of its movement to the right the type may be ejected from the mould into the carrier.

The type is prevented from being ejected too far, or from falling on its side, by the type support spring (37SE) being brought into the path of the type.

Immediately the type has been ejected into the carrier the carrier proceeds to return, and on its way to its extreme left-hand position the type is gripped by the type clamp, and the support spring is drawn away from the type, so that when the carrier is brought to rest the pusher may enter and eject the type into the type channel. The mould crossblock is now in position to permit the next type to be cast.

HOW TO REMOVE TYPE CARRIER

To remove type carrier, without taking off mould or matrix head, turn machine to 30° and take out the two screws (23SE2) and two screws (23SE3) and then remove the type carrier cover (a23SE). Remove type carrier connecting pin (24SE7) and mould crossblock connecting piece.

HOW TO ADJUST TYPE CARRIER PAUSING POSITIONS

After the correct length of stroke has been obtained the type carrier must be adjusted so that when a type is being cast the type previously cast can be pushed correctly into the type channel. If this adjustment is properly made, the carrier will be in correct position to receive the type as the latter is ejected from the mould. In testing this adjustment the type carrier connecting pin (24SE7) must be through the hole marked "12 pt" in type carrier lever extension.

In making this adjustment have the fixed type channel block (5 point to 13 point) in position, and remove the type support spring bracket complete (27SE1) by taking out the two screws (27SE2).

At the casting position (220°) the inside face of the type carrier (against which the type is pressed by the type clamp) should be perfectly level with the face of the fixed type channel block (5 point to 13 point). To adjust, loosen the locking nuts (24SE1 and 24SE2) and adjust the type carrier connecting rod (24SE) so that these two faces are in line. Always test this adjustment after having tightened the lock nuts (24SE1 and 24SE2).

When the carrier has been correctly adjusted the stroke and pausing positions of the carrier should be correct for the casting of all sizes of type up to 72 point, after changing the position of the type carrier connecting pin (24SE7) and using the fixed type channel block corresponding with the size of type cast.

TYPE SUPPORT SPRING

The type support spring (37SE) is operated by a small lever (22SE2) fitted to the type carrier body. This lever is operated by a cam (27SE) attached to a bracket (27SE1) upon the matrix head base.

TYPE SUPPORT SPRING CAM

No adjustments are necessary, but great care must be taken to ensure that the cam (27SE) and packing plate (27SE5) are used as under:—

Bracket without packing.—To be used for all type up to 36-point body size and not more than 12-point set size.

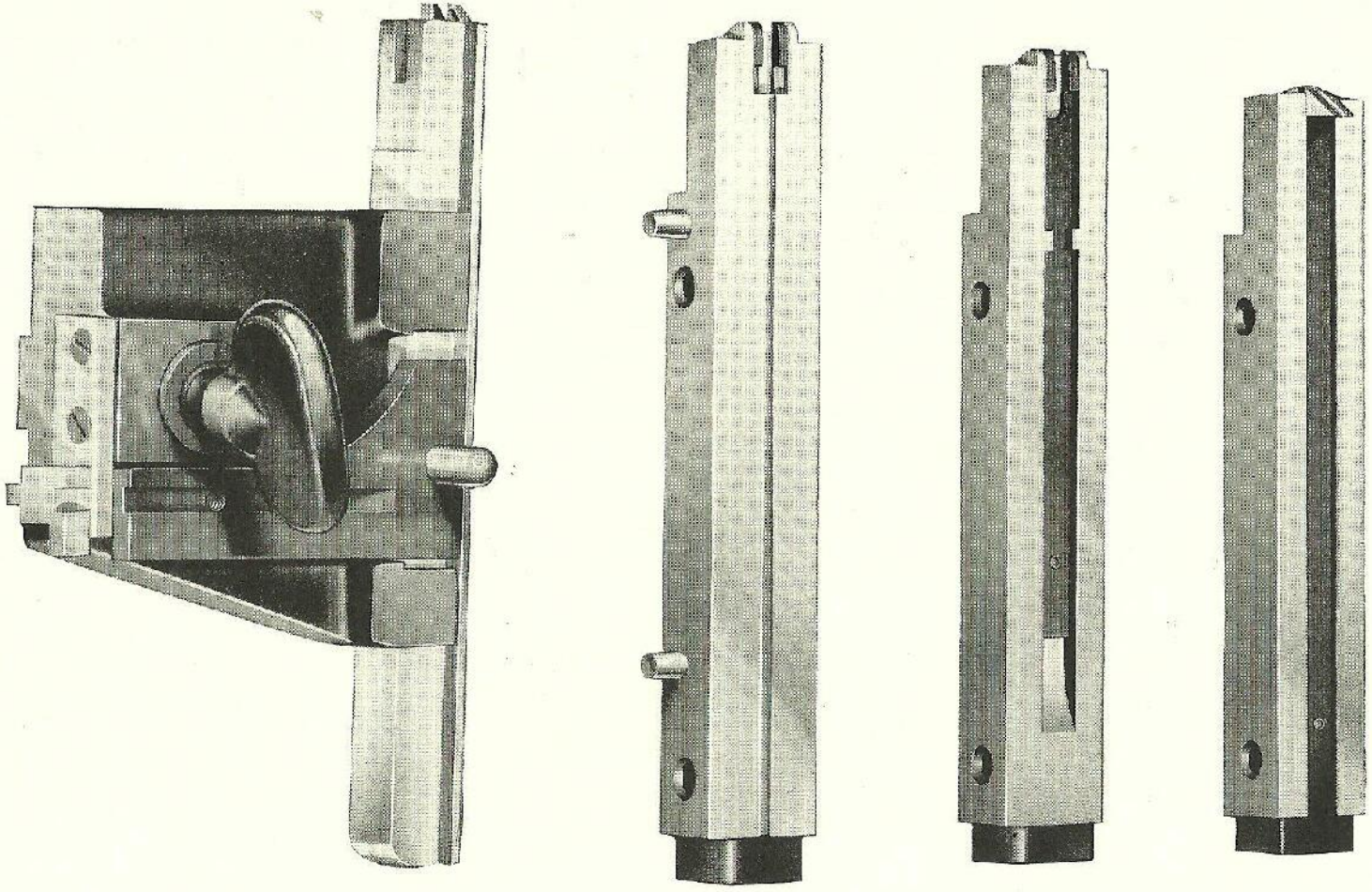
Bracket with packing.—To be used for all type over 36-point body size and not more than 12-point set size.

Bracket to be removed.—For all type over 12-point set size.

TYPE CHANNEL BLOCKS

These blocks support the type and guide it from the type carrier to the galley. One adjustable and three fixed blocks are supplied. The adjustable block (28SE) is used when casting all sizes of type, but the fixed blocks are used as follows:—

X29SE for 5-point to 13-point type.
X30SE for 14-point to 72-point type and quotations.
X31SE for 40-point to 72-point cored type.



TYPE CHANNEL BLOCKS

(1) Adjustable channel block for use with all moulds; (2) fixed channel block for use when casting small type; (3) fixed channel block for use when casting quotations and spaces; (4) fixed channel block for use when casting cored types

The position of the adjustable block is altered by loosening the wing bolt (28SE10), placing in the type channel some types of the point size about to be cast and pushing the adjustable block against this type, making sure that the channel is parallel before locking it in position with the wing bolt (28SE10).

The three fixed type channel blocks are secured to the matrix head base by the two screws (29SE7).

When casting thin spaces from the 42-point to 72-point type mould it is advisable to place in front of the spaces in the type channel a quad of the type size that is being cast. This prevents the spaces from falling over.

COMPOSITION MATRIX HEAD*

This head is for lowering and raising the composition matrix holder and the centring pin. The centring pin clamps the matrix to the mould, ensuring a metal-tight fit during casting.

The centring pin is operated by the matrix cams (X15SC) through the connecting rod (a18SE). The latter operates the lifter lever (a16SE), one end of which engages with the yoke (a2SE6), at the top of the centring pin (a2SE). As the lifter lever is operated the centring pin moves up and down, carrying with it the matrix lifter (c12SE). The centring pin is not pressed down by the lifter lever but by the action of the centring pin loading spring (4SE) at the upper end of the centring pin. As the lifter lever descends the spring (4SE) presses upon the yoke, and beneath this yoke is another spring (2SE2) terminating upon the matrix lifter. The centring pin, the yoke and the matrix lifter all move down as one piece, under the pressure of the upper spring, until the matrix holder guide is stopped by stop nut (12SE8). The matrix holder is depressed in this manner to within ·005″ of the mould surface. Although the matrix holder movement is arrested, as explained, the pressure of the spring (4SE) causes the centring pin to proceed, and to clamp the matrix firmly upon the mould. After casting has taken place the lifter lever is returned. In returning it presses upon the yoke bolted to the centring pin, and overcomes the pressure upon the spring (4SE), thus raising the centring pin until a shoulder on its lower end meets the matrix lifter. This causes the matrix lifter to lift the matrix clear of the type in the mould.

The matrix holder head is provided with two adjusting screws (15SE) positioned at right angles to each other; these are for adjusting the matrix holder relative to the mould blade opening, so that the matrix may be correctly aligned over the mould before casting.

HOW TO DISMANTLE THE COMPOSITION MATRIX HEAD

Take off bridge (4SE1) and spring (4SE) by removing nuts (4SE3) and washers (4SE4). Remove yoke screw (a2SE7), yoke washer (2SE8) and slide out the yoke (a2SE6). Slacken nut (12SE10), unscrew stop nut (12SE8) and remove matrix lifter (c12SE). The guide (a2SE1), spring (2SE2) and centring pin (a2SE) can then be removed.

To remove centring pin lifting lever (a16SE) take off nut (16SE2) and knock out fulcrum pin (16SE1). (This is a tight fit and care should be taken not to damage the threads.)

METHOD OF ATTACHING ABOVE PARTS

Remove the following: Matrix head, complete; matrix lifter lever (Xa16SE) complete; centring pin loading spring bridge (4SE1); centring pin yoke (a2SE6), and take out centring pin (a2SE); matrix lifter stop nut (12SE8); take out the old matrix lifter and transfer the matrix holder retaining plungers, springs, etc., at lower end of lifter to the new lifter.

See that differential screws (15SE1) are screwed right in.

Place plunger withdrawal sleeve (3SE7) and screw (3SE8) on end of sleeve at side of head; tighten screw to relieve spring pressure on matrix lifter guide (12SE1).

Unscrew the adjusting screws (15SE) to leave a gap of about $\frac{5}{8}$″ between head of screw and matrix head.

Remove matrix lifter guide; also matrix lifter locating bar from lifter guide, and attach new locating bar.

Reassemble matrix head with new lifter.

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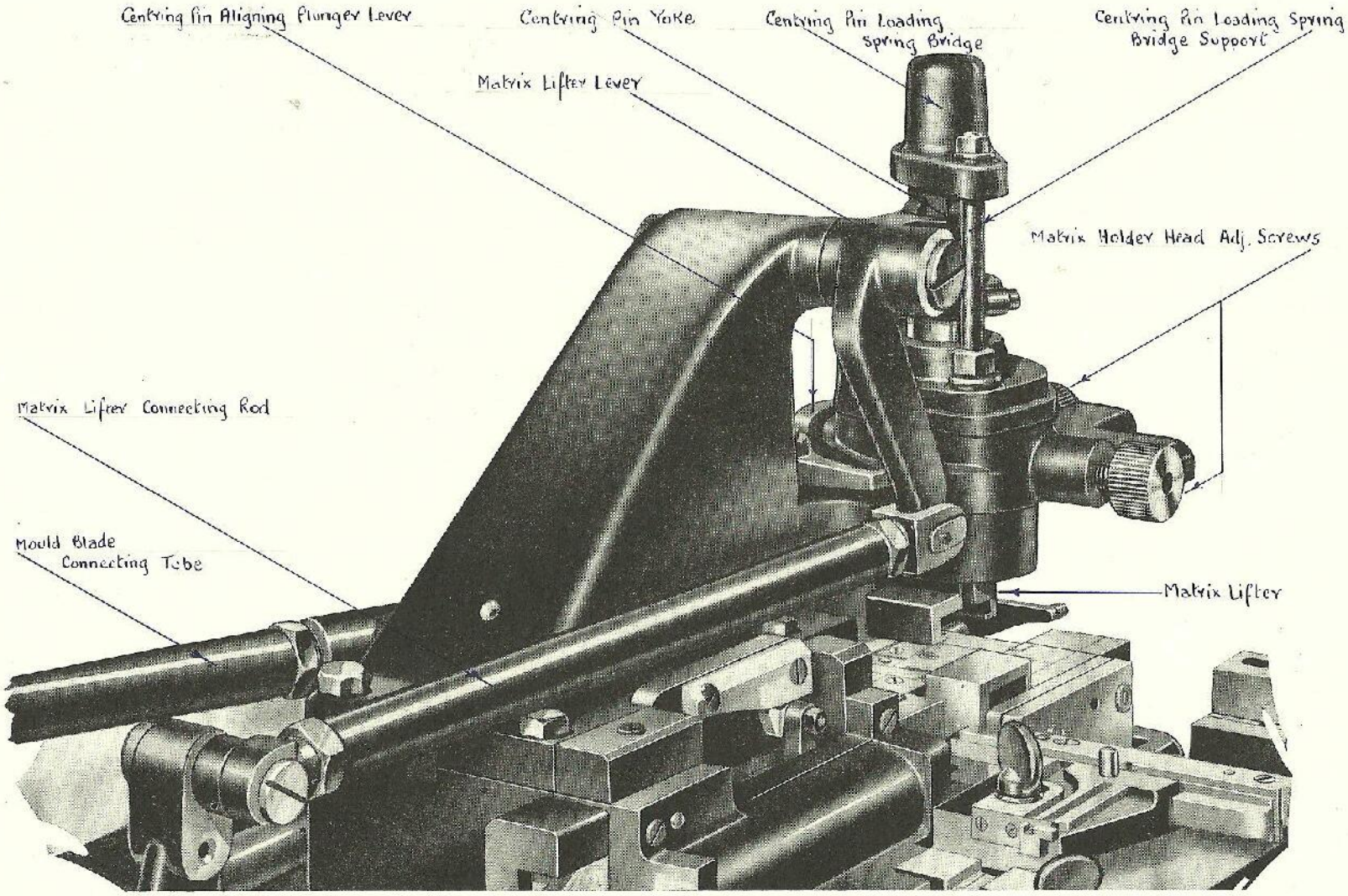
* The earlier patterns of composition matrix holder, matrix lifter and matrix lifter locating bar have been altered as follows: The bodies of the matrix holder (X3SL) and of the lower part of the matrix lifter (c12SE) have been extended one inch to provide a counter balance to the weight of the handle and to cause the matrix to rise and fall squarely to matrix seating on mould. The matrix lifter has also been strengthened (1) by adding $\frac{5}{32}$″ to its thickness beneath the matrix holder slot; (2) by sloping the keyway for the matrix lifter locating bar. This makes it necessary to fit the new locating bar (a12SE6).



HEAD FOR USING COMPOSITION MATRICES

To remove matrix lifter guide (12SE1) take out the two bridge supports (4SE2) and screw the two adjusting screws (15SE) right in. Place plunger withdrawal sleeve (3SE7) and screw (3SE8) on end of sleeve at side of head; tighten screw to relieve spring pressure on matrix lifter guide (12SE1), unscrew the adjusting screws (15SE) to leave a gap of about $\frac{5}{8}$" between head of screw and matrix head. The matrix lifter guide (12SE1) and guide slide plate (12SE3) can then be removed.

To remove equalising lever (3SE2), unscrew nut (3SE4) and withdraw fulcrum pin (3SE3). The plunger (short) (3SE1), sleeve (3SE5), spring (3SE6) and plunger (long) (3SE) can then be taken out.

Remove adjusting screws (15SE), locating plungers (15SE1), springs (15SE5) and plungers (15SE4).

HOW TO ASSEMBLE THE COMPOSITION MATRIX HEAD

Assemble adjusting screws (15SE) and locating plungers (15SE1). Note dimension "F" and see that the plungers (15SE4) and springs (15SE5) are in position before assembly.

Replace plunger (short) (3SE1), sleeve (3SE5), plunger (long) (3SE), spring (3SE6) and equalising lever (3SE2), and place bolt (3SE3) in position, securing with nut (3SE4).

Replace guide slide plate (12SE3) and matrix lifter guide (12SE1), and secure with the two bridge supports (4SE2). Remove plunger withdrawal sleeve and screw.

Replace the lifter lever (a16SE) and connection, and secure with fulcrum pin (16SE1) and nut (16SE2).

Assemble centring pin (a2SE), spring (2SE2) and centring pin guide (a2SE1) into the matrix lifter (c12SE) and slide this group into the lifter guide (12SE1), attaching the lifter stop nut (12SE8).

Assemble the centring pin yoke (a2SE6) and locating spring thrust washer (2SE8) and lock in position with screw (a2SE7).

Replace the centring pin loading spring (4SE) and the centring pin loading spring bridge (4SE1) and secure with washer (4SE4) and nut (4SE3).

HOW TO ADJUST COMPOSITION MATRIX HEAD

Attach mould to machine.

Place on matrix head and attach connecting rod to matrix cam lever.

Turn machine to 180°.

Place matrix in matrix holder and insert holder in lifter. IMPORTANT.—Mould must be on machine or else matrix holder will be damaged.

Turn machine to 220° taking care that lifter lever (a16SE) does not foul top of lifter (c12SE).

Release the nuts on matrix lifter lever connecting rod and adjust the rod so that the matrix lifting lever (a16SE) raises the centring pin yoke $\frac{1}{64}$".

Place two thicknesses of paper (that is a total of ·005") on the mould and turn machine to 214°.

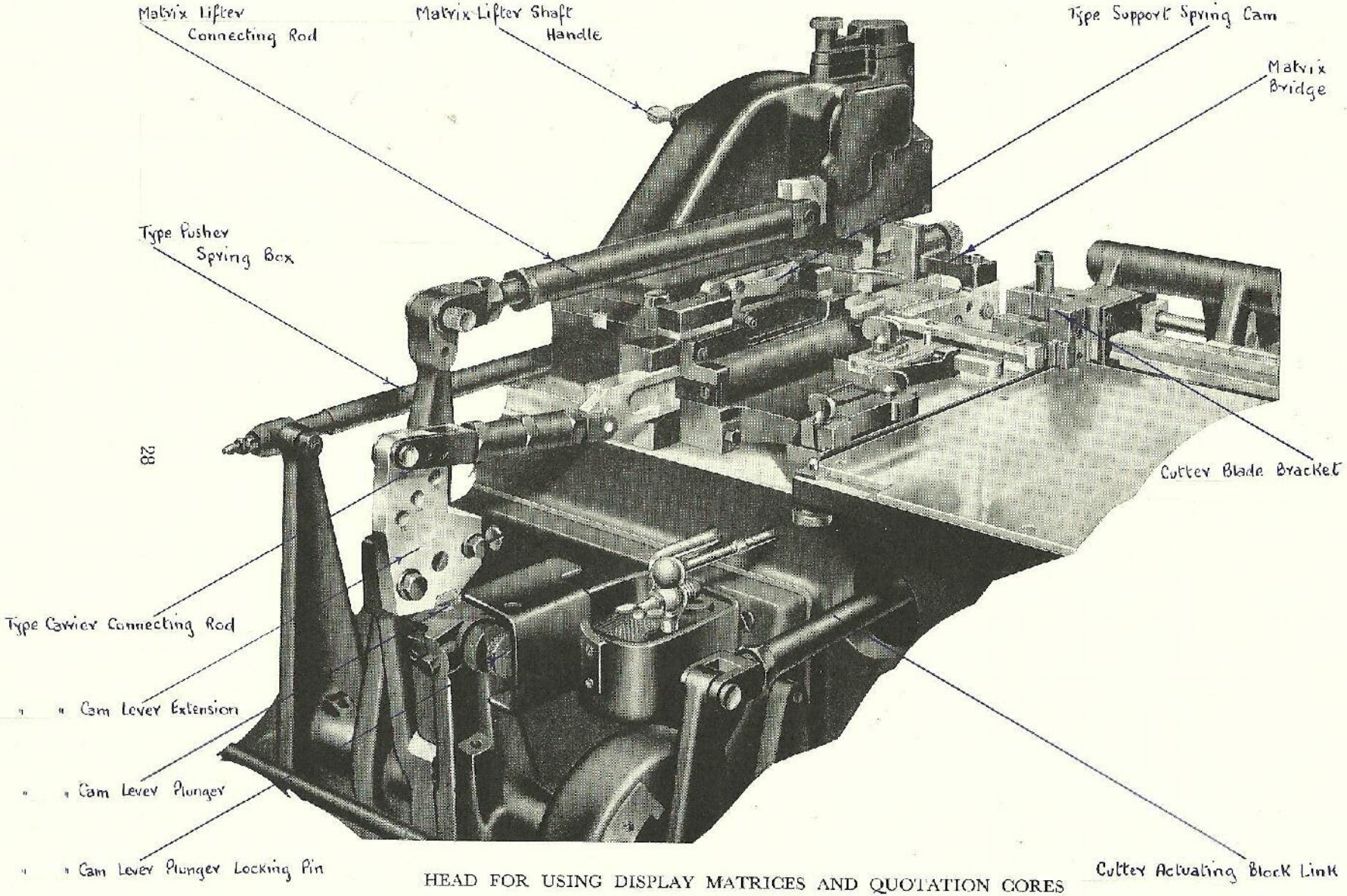
Release the matrix lifter stop nut and adjust so that the paper is just free between matrix holder and mould. Lock the stop nut and check setting.

Remove the paper and turn machine to 220°.

Adjust the connecting rod (a18SE) until one thickness of paper (that is ·0025") can just pass between top of the matrix lifter lever and centring pin yoke (a2SE6) on both sides. Lock the rod and check setting.

ADDITIONS TO COMPOSITION MATRIX HEAD FOR USING ·4" MATRICES

Take off the bridge (4SE1) by removing the nuts (4SE3) and washers (4SE4). Remove the loading spring (4SE). Remove the centring pin yoke screw (a2SE7) and replace by screw (2SE9). Replace the loading spring (4SE).



HEAD FOR USING DISPLAY MATRICES AND QUOTATION CORES

Shows matrix bridge fixed on mould

Assemble the bridge (4SE6) with auxiliary loading spring (4SE5), rod (4SE7), knurled nut (4SE9) and lock nut (4SE8). Attach this bridge complete, in place of the bridge (4SE1), and replace washers (4SE4) and nuts (4SE3).

To bring this auxiliary loading spring into operation, which is necessary when casting 14 to 24 point type, the knurled nut (4SE9) must be locked at the top of the cut-out rod (4SE7). Check to see that when the centring pin is seated in the matrix on the mould, there is a clearance between the under side of nut (4SE9) and the top of bridge (4SE6).

It is important to lock this auxiliary loading spring out of action when using ·2" matrices, otherwise the extra pressure will cause excessive wear on matrices and moulds. To do this, screw down the knurled nut (4SE9) until the spring (4SE5) is solid and locks up with nut (4SE8).

CHANGING THE CENTRING PIN FROM ENGLISH TO AMERICAN CELLULAR ·2" × ·2" MATRICES AND VICE VERSA

With the composition matrix head off the machine, remove centring pin loading spring bridge (4SE1), spring (4SE) and centring pin screw (a2SE7).

The centring pin can now be withdrawn and the other pin inserted in its place, holding it in position by replacing the screw (a2SE7).

Replace the spring and bridge.

Note.—When the cellular matrix centring pin is in use the washer (12SE5) must be placed above the spring.

DISPLAY MATRIX HEAD

For raising and lowering the matrix, and for clamping the matrix on the mould while the cast is taking place; also for raising, lowering and clamping the core when casting quotations.

FUNCTION OF THE DISPLAY MATRIX HEAD

This head is operated by the matrix cams (X15SC) through the matrix cam lever (16SC) and connection (X21SE). This connection is attached to the locking wedge (20SE) which in the forward stroke operates the sorts matrix lifter lever (17SE) and compresses the spring (13SE4). On the return stroke the pressure on the lever is released; this allows the spring to come into operation to take the matrix down to the mould, where it is finally clamped by the locking wedge (20SE) sliding over a projection on the matrix lifter (13SE).

When casting quotations the matrix lifter must be given an increased movement. This is obtained by lifting the knob (19SE1) and turning the handle (17SE2) to the left, where it is locked by releasing the knob; this causes the matrix lifter lever to be brought into operation earlier and imparts an increased motion to the matrix lifter.

DISMANTLING THE DISPLAY MATRIX HEAD

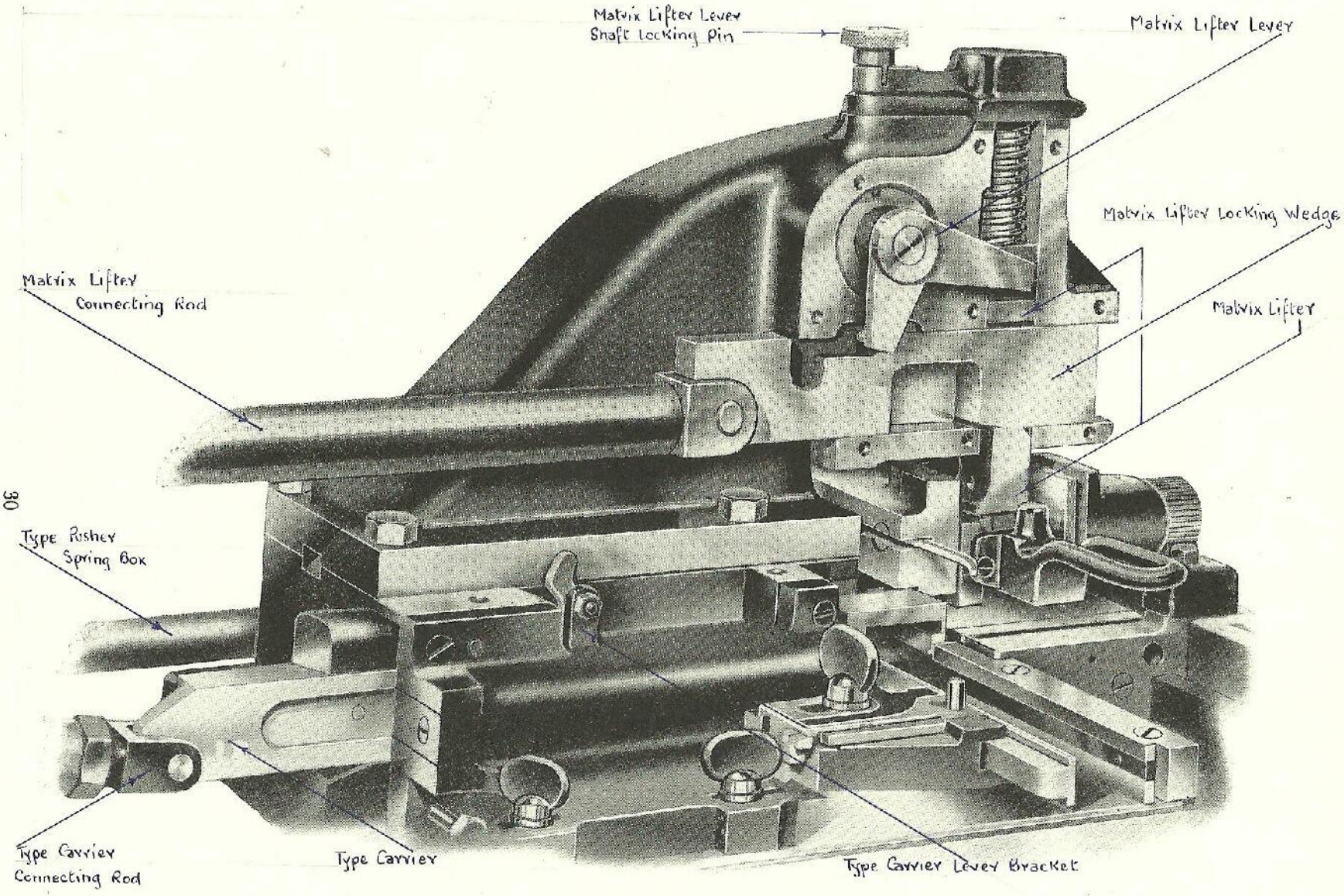
To remove matrix lifter (13SE) take off side cover (7SE1) by removing the nine screws, and remove lever (17SE); take out the locking wedge (20SE) and connection, taking care that the matrix lifter (13SE) and spring do not fly out.

To remove the matrix lifter lever shaft (17SE1) knock out taper pin (17SE5) and withdraw shaft.

To remove the matrix lifter top cover (7SE4) withdraw the four screws and remove cover complete with knob (19SE1), lock pin (19SE) and spring (19SE3); then knock out knob taper pin (19SE2).

HOW TO ASSEMBLE THE DISPLAY MATRIX HEAD

Replace lock pin (19SE) and knob (19SE1), spring (19SE3) and knob taper pin (19SE2) in top cover (7SE4) and secure to head by four screws. Replace matrix lifter lever shaft (17SE1) and handle (17SE2) and secure by means of the taper pin (17SE5). Insert matrix lifter (13SE), spring (13SE4) and locking wedge (20SE). Replace matrix lifter lever (17SE) and screw on the side cover (7SE1).



HEAD FOR DISPLAY MATRICES AND QUOTATION CORES

In this illustration a cover plate has been removed to show how the matrix during the casting operation is locked upon the mould by the action of a wedge. This prevents the pressure of the molten metal from lifting the matrix during casting

HOW TO ADJUST THE DISPLAY MATRIX HEAD

With the display matrix head fixed to machine, the mould in position, and the display matrix bridge (a1SE) fitted, turn machine to 10°.

Turn matrix lifter lever shaft handle (17SE2) to the right; *i.e.*, the position it occupies when casting type.

Insert matrix holder, with a matrix in position.

Turn machine to 240°.

Slacken spring box rod lock nut (21SE5) and then adjust the spring box rod to give $\frac{1}{8}$" to $\frac{3}{16}$" compression on spring, which can be measured by noting the distance between the lock nut (21SE5) and spring box cap (21SE1). (This amount of compression is for "Monotype" standard type height, ·918".)

Turn machine to 10°.

With the matrix lifter lever shaft handle (17SE2) positioned to the right the distance between the lower end of the matrix lifter (13SE) and the top of mould should be $1\frac{5}{64}$". To obtain this dimension (if found to be incorrect) remove matrix head side cover (7SE1), matrix lifter lever (17SE), locking wedge (20SE), matrix lifter (13SE) and spring (13SE4); then adjust matrix lifter lock nuts (13SE7) to give the required dimension. Replace parts and see that all screws and nuts are tight.

DISPLAY MATRIX BRIDGE (a1SE)

This bridge is secured to the mould (or adaptor base) and located in the correct position by means of the locating strip (1SE1). When attaching this bridge to the Super Caster type moulds, 14 point to 36 point and 40 point to 72 point, use three screws (1SE3); when securin g to the adaptor base use two screws (1SE3) and one screw (1SE6). The object of the bridge is correctly to position the matrix over the mould; this is done by pushing the matrix holder against the pad (a10SE) by means of the locating key (11SE). The position of this pad can be finely adjusted by turning the adjusting screw (a10SE1). The matrix holder is inserted in the bridge by pulling back the lever (11SE1) which withdraws the locating key and allows the holder to be placed in position. When the lever is released the locating key engages the slot in the holder and locates it in the correct position.

HOW TO DISMANTLE THE DISPLAY MATRIX BRIDGE

Remove the screw (a10SE1) and adjusting pad (a10SE), taking care that plunger (10SE2) and spring (10SE3) do not fly out. Knock out the pin (11SE2) from under side of bridge, and remove lever (11SE1), spring (11SE3) and locating key (11SE).

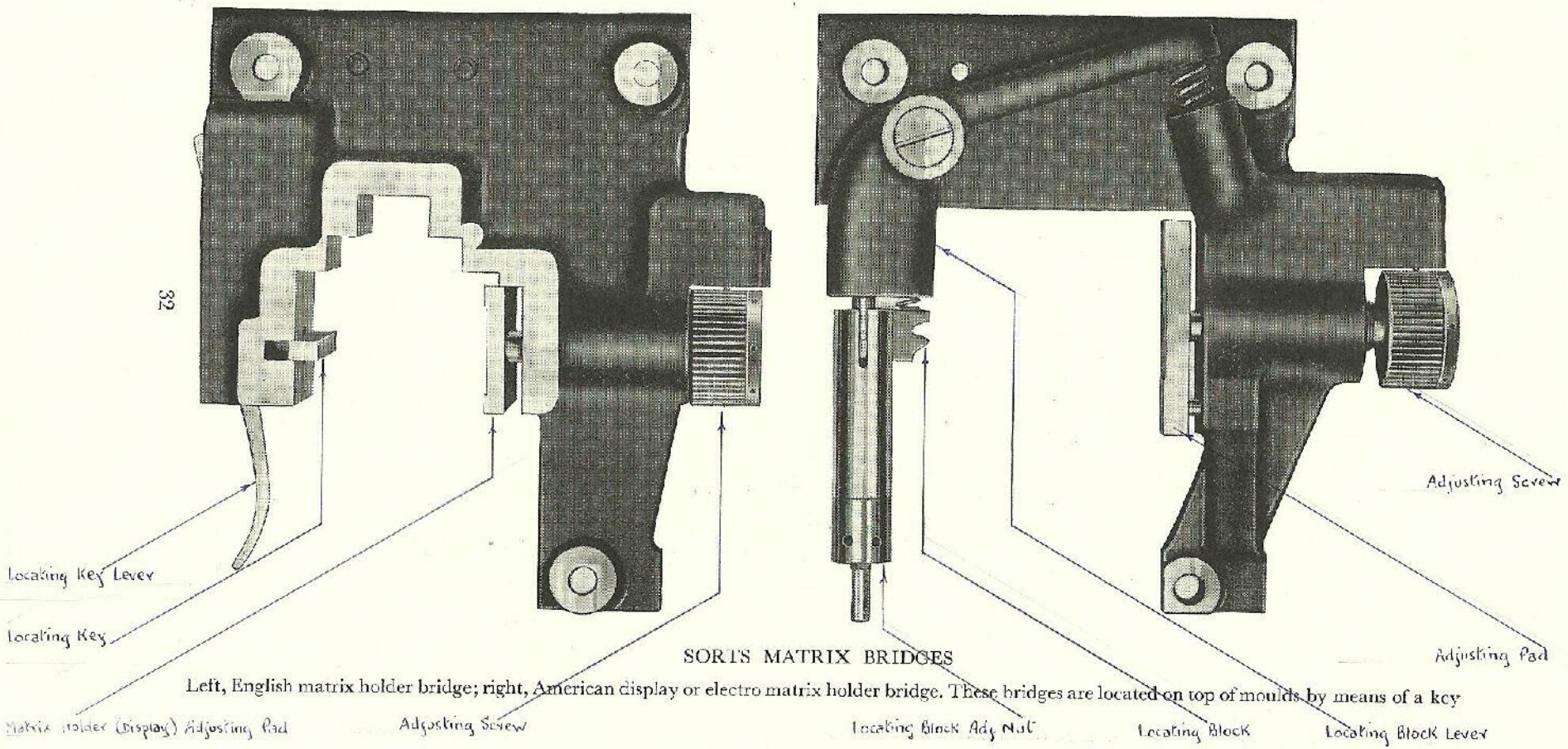
HOW TO ASSEMBLE THE DISPLAY MATRIX BRIDGE

Place locating key and spring in position, insert the lever under the pin (11SE4) through the locating key, taking care to locate the lever correctly before driving in the pin (11SE2). Replace the adjusting pad, keeping the relieved side to the rear; but before replacing the adjusting screw place a piece of 2-point lead between the head of adjusting pad and the face of bridge. Firmly pushing the head of pad against the 2-point lead, replace the plunger (10SE2) and spring (10SE3); then screw the adjusting screw into position.

AMERICAN DISPLAY (OR ELECTRO MATRIX) MATRIX BRIDGE (1SE7)

This bridge is used for locating American display matrices (or the electro matrices) on the 14-point to 36-point Super Caster mould and on the English "Monotype" sorts mould in adaptor base. It is used in conjunction with the American display matrix holder (33SLL).

To secure this bridge to the Super Caster mould use three screws (1SE3); to secure it to the adaptor base use two screws (1SE3) and one screw (1SE6).



SORTS MATRIX BRIDGES

Left, English matrix holder bridge; right, American display or electro matrix holder bridge. These bridges are located on top of moulds by means of a key

When this bridge is in use the type carrier guard (26SE2) must be secured to machine in place of guard (26SE).

The matrix holder is inserted in the bridge by pulling back the locating block lever (38SE3) until the tooth on the locating block (38SE) engages with the recess on the matrix holder. When this lever is released the matrix holder is located in one direction by the tooth on the locating block, and in the other direction by the adjusting pad (10SE4) against which it is pushed by the spring (38SE6).

To adjust the position of the matrix bodywise turn the screw (10SE1); to adjust it setwise turn the nut (38SE1), using the pin wrench (9ST1).

HOW TO DISMANTLE THE AMERICAN DISPLAY MATRIX BRIDGE

Remove the screw (38SE4) and take off the lever (38SE3) complete with locating block (38SE), nut (38SE1) and spring (38SE7); the spring (38SE6) can then also be removed.

To remove the adjusting pad (10SE4) take out the screw (10SE1), taking care that the plunger (10SE2) and spring (10SE3) do not spring out.

HOW TO ASSEMBLE THE AMERICAN DISPLAY MATRIX BRIDGE

Place the adjusting pad in position and insert a piece of 2-point lead between the back of the pad and the face of the bridge. Firmly push the pad against the lead, replace plunger (10SE2) and spring (10SE3); then screw adjusting screw into position. Replace spring (38SE6) and lever (complete with block, spring and nut), and secure with screw (38SE4).

COUNTER MECHANISM

The counter mechanism head carries:—

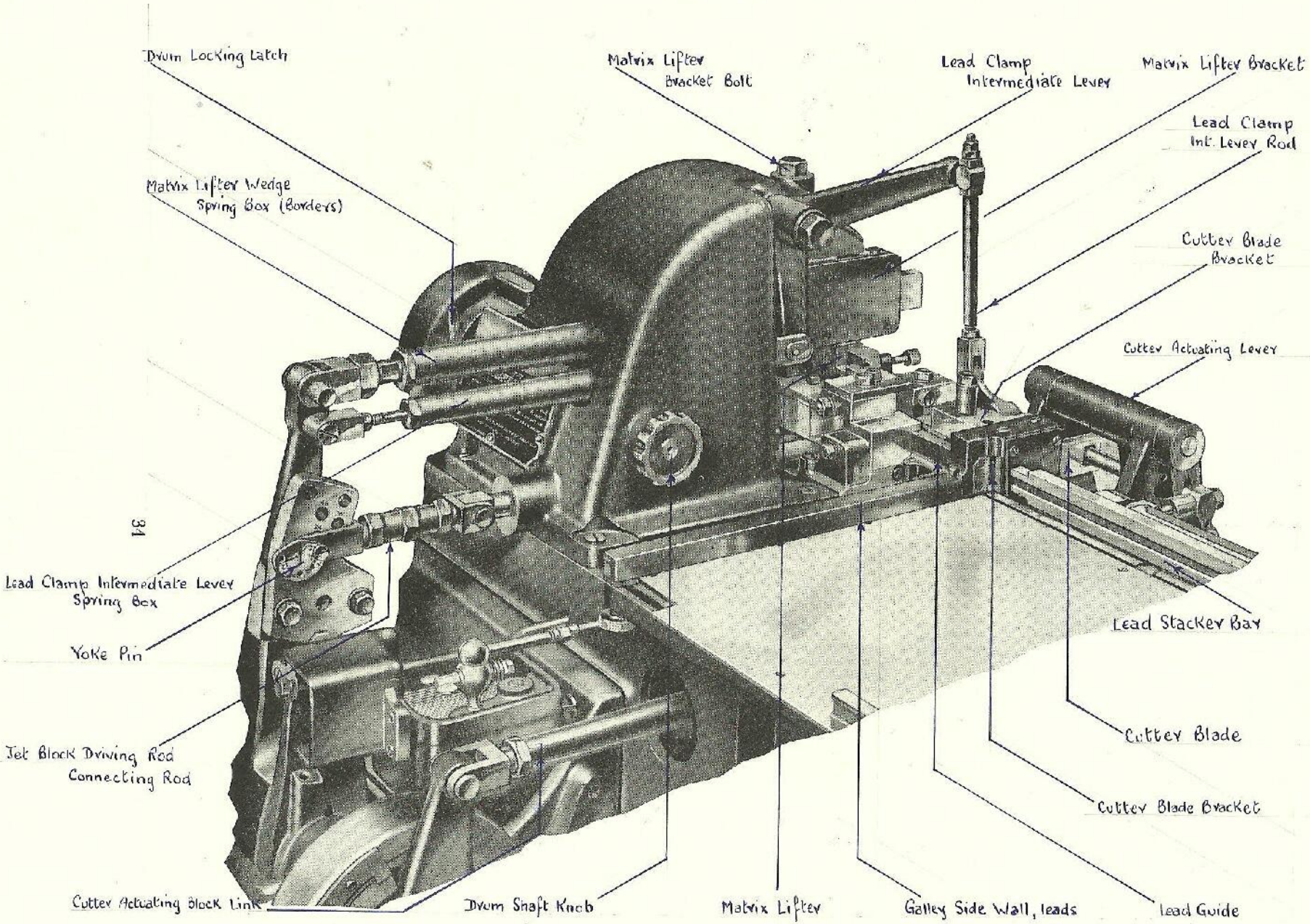
1. Two projections against which the strip moulds are positioned.
2. A slide for operating the strip mould jet blade.
3. A lever for clamping the cast strip in the mould whilst the next cast is taking place.
4. An attachment for raising and lowering strip border matrices.
5. A counter mechanism for deciding the length to which strips shall be cut.

HOW THE COUNTER MECHANISM FUNCTIONS

Fitted into the counter bracket is a drum (5SD) containing on its circumference 25 rows of figures running in fractions and whole numbers from $\frac{1}{4}$ to 25. This drum may be locked in any position to present any row of figures to the attendant.

Upon the end of the drum spindle is a disc to which is attached a ratchet wheel. The object of this ratchet wheel is to control the number of casts made before a trip mechanism is brought into action to operate the strip shear blade. On the end of the drum is a stop against which a projection on the ratchet disc is returned by the action of a weight each time a shear is made. Tooth by tooth the ratchet pawl winds the ratchet away from this stop until it is released. It will therefore be understood that the farther the drum stop is positioned from the ratchet release, the greater will be the number of casts made before the ratchet wheel is returned to its starting position and the next shear made.

The ratchet feed pawl is operated by a lever (1SD) connected to the pump connecting rod, so that as each cast is made the ratchet wheel is advanced one tooth, and in doing this it winds up a weight. This weight is released when casts have been made equivalent to the number shown on the drum above "A" on the remainder scale (5SD1). This action is repeated after each shearing of the strip. A stop lever (a22SD) limits the movement of the actuating lever (1SD). The projection on the ratchet stop disc (16SD) is also used for moving the stop lever (a22SD) out of the path of the actuating lever (1SD), so that a longer stroke may be given to the latter. When this lengthened stroke takes place the actuating lever (1SD) strikes against the lever (8SG8) which pulls the cutter setting block (7SG) into the path of the cutter actuating plunger (1SG), so that the cutter cams (X11SC) cause the strip to be sheared.



COUNTER MECHANISM HEAD

The extra motion given to the actuating lever, through stop lever (a22SD) being taken out of its path, causes the eccentric screw (2SD3) to disengage the pawl (2SD) from the ratchet, and allows the driving end of the pawl to release the detent (15SD1) and thus permits the weight to return the disc, and with it the ratchet wheel, to the position at which it had been set. The shear blade is thus caused to act at the end of a given number of casts decided by the setting of the drum. As the ratchet is returned by the weight to its original position, the stop lever (a22SD) also returns to its operative position and limits the stroke of the actuating lever until the requisite number of casts have again been made.

An extension of the stop lever enables the attendant to start the shearing mechanism by hand.

THE ACTION AND POSITIONING OF THE COUNTER DRUM

When Casting Plain Rules or Leads

Running the full length of the counter drum is a "remainder" scale (5SD1); this is marked "A" on the right and $5\frac{1}{2}$ on the left. Above this remainder scale any horizontal row of figures on the drum may be ranged.

The operator knows the length to which his strip material has to be cut; this we will assume to be 71 pica ems. If we divide 71 by 6 there will be a remainder; we will therefore divide by 5. The reason for first dividing by 6 is because the average length of each cast should be approximately 6 pica ems. Too great an addition to this length of 6 pica ems would make the length of cast excessive (the maximum length allowable being 6 pica ems +·015″), and a splash would occur when casting. As dividing 71 by 6 gives us 11 with a remainder of 5, this means that each of the 11 casts would have to be increased by $\frac{5}{11}$ of a pica em (that is, each of the casts would have a length of $6\frac{5}{11}$ pica ems); this length of cast would be excessive, and we must therefore divide by 5.

Dividing 71 by 5 gives an answer of 14, with a remainder of 1; this means that each of the 14 casts must be increased by $\frac{1}{14}$ of a pica em, or ·0118″ (that is, each of the casts must have a length of $5\frac{1}{14}$ pica ems).

The position of the counter drum decides the actual number of casts to be made. The length of each cast can be increased by adjusting the micrometer wedge; this is done by rotating the wedge screw handwheel by the amount shown on the drum opposite the "remainder" figure on the remainder scale.

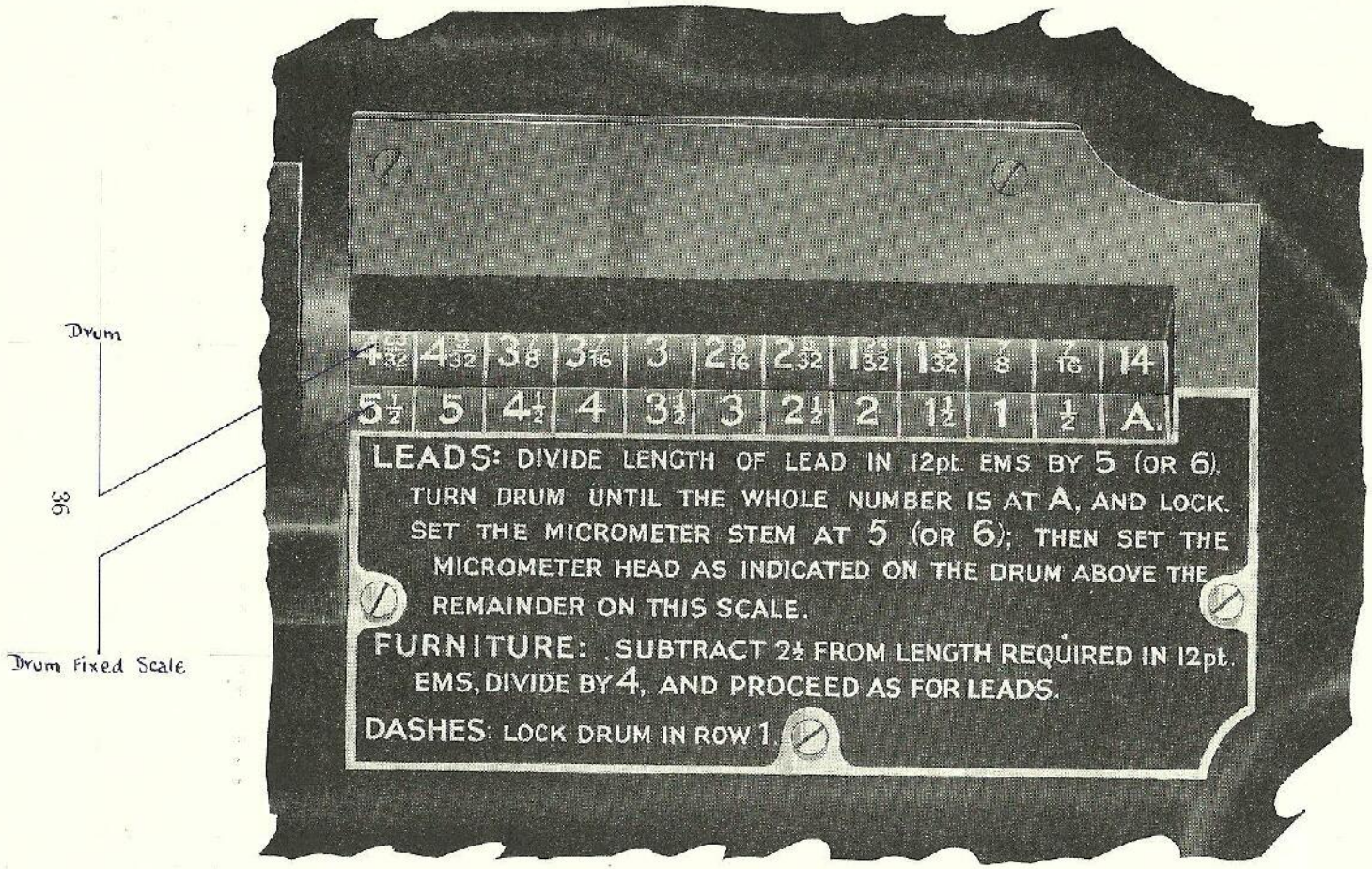
Turn the drum until the number of casts (in our example 14) comes immediately above "A" on the remainder scale (5SD1), and lock it in this position by the latch (5SD4). As we have divided by 5, set the wedge indicator pin (9SF1) to 5 on the Scale (9SF5). Then from the remainder scale (5SD1) refer to the figure on the drum (5SD) indicated by the remainder (which in our example is 1). On the drum scale (5SD6), above "1" on the remainder scale, will be seen $\frac{7}{8}$. Rotate the wedge screw handwheel until the lower scale (10SF4) has registered $\frac{7}{8}$ of 1 point (that is, 14 graduations or $\frac{14}{16}$ of a point).

In the example given the drum is adjusted to 14; therefore 14 casts of 5 ems each will be made (as we divided by 5). This gives a total length of 70 ems. Therefore an addition of $\frac{1}{14}$th of a pica (·0118″) must be given to each cast. Above the figure 1 on the remainder scale the fraction $\frac{7}{8}$ is given, indicating that the micrometer wedge must be adjusted to add $\frac{7}{8}$ of one point to each cast. Seven-eighths of one point is ·0138×7÷8=·0121″. (The difference between this and $\frac{1}{12}$th of a pica is only ·0003″.)

The remainder scale figures are only used in the case of leads and plain rule strips.

When Casting Continuous Borders

When casting continuous border strip the number of casts for each strip is decided by positioning the drum so that the required number of casts is indicated above the letter "A" on the remainder scale. *Any required alteration to the length of casting of strip border, governed by the design of the border, is indicated on the matrix.* (For further instructions see: "Micrometer Adjustment Head"—Adjustments when Strip Borders are to be cast, page 18).



COUNTER BRACKET

The length to which strip material is sheared is decided by the drum figures, one row of which is seen in the upper row of figures in the illustration. Assume 71-em leads are required. Dividing 71 by 5 gives 14 with a remainder of 1. Turn drum until the whole number 14 (in the extreme right-hand column) comes above "A" on the remainder scale, and lock drum in position. As we divided by 5, set the wedge indicator pin (9SF1) at 5 on the "leads" scale plate (9SF5), and place the micrometer scale wheel at zero. Then refer to the remainder scale (1); above it will be seen $\frac{7}{8}$. Advance the micrometer scale wheel to $\frac{7}{8}$ (which is the same as 14/16ths), and the adjustment is complete

COUNTER DRUM SCALE AND REMAINDER SCALE, FOR USE IN CUTTING STRIP MATERIAL TO PICA EMS AND HALF EMS

Points to be Added to Each Cast											Casts
2 5/8	2 13/32	2 5/32	1 29/32	1 11/16	1 7/16	1 3/16	31/32	23/32	15/32	1/4	**25**
2 3/4	2 1/2	2 1/4	2	1 3/4	1 1/2	1 1/4	1	3/4	1/2	1/4	**24**
2 7/8	2 19/32	2 11/32	2 3/32	1 13/16	1 9/16	1 5/16	1 1/32	25/32	17/32	1/4	**23**
3	2 23/32	2 15/32	2 3/16	1 29/32	1 5/8	1 3/8	1 3/32	13/16	17/32	9/32	**22**
3 1/8	2 7/8	2 9/16	2 9/32	2	1 23/32	1 7/16	1 1/8	7/8	9/16	9/32	**21**
3 5/16	3	2 11/16	2 13/32	2 3/32	1 13/16	1 1/2	1 3/16	29/32	19/32	5/16	**20**
3 13/32	3 5/32	2 27/32	2 17/32	2 7/32	1 29/32	1 9/16	1 1/4	15/16	5/8	5/16	**19**
3 21/32	3 11/32	3	2 21/32	2 11/32	2	1 21/32	1 11/32	1	21/32	11/32	**18**
3 7/8	3 17/32	3 3/16	2 13/16	2 15/32	2 1/8	1 3/4	1 13/32	1 1/16	23/32	11/32	**17**
4 1/8	3 1/2	3 3/8	3	2 9/32	2 1/4	1 7/8	1 1/2	1 1/8	3/4	3/8	**16**
4 13/32	4	3 19/32	3 3/16	2 13/16	2 13/32	2	1 19/32	2 3/16	13/16	13/32	**15**
4 23/32	4 9/32	3 7/8	3 7/16	3	2 9/16	2 5/32	1 23/32	1 29/32	7/8	7/16	**14**
5 1/16	4 5/8	4 5/32	3 11/16	3 1/4	2 25/32	2 5/16	1 27/32	1 3/8	15/16	15/32	**13**
5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	**12**
6	5 7/16	4 29/32	4 3/8	3 13/16	3 9/32	2 23/32	2 3/16	1 21/32	1 3/32	9/16	**11**
6 19/32	6	5 13/32	4 13/16	4 3/16	3 19/32	3	2 13/32	1 13/16	1 3/16	19/32	**10**
7 11/32	6 21/32	6	5 11/32	4 21/32	4	3 11/32	2 21/32	2	1 11/32	21/32	**9**
8 1/4	7 1/2	6 3/4	6	5 1/4	4 1/2	3 3/4	3	2 1/4	1 1/2	3/4	**8**
9 7/16	8 9/16	7 23/32	6 7/8	6	5 1/8	4 9/32	3 7/16	2 9/16	1 23/32	7/8	**7**
11	10	9	8	7	6	5	4	3	2	1	**6**
	12	10 13/16	9 19/32	8 13/32	7 3/32	6	4 13/16	3 19/32	2 13/32	1 3/16	**5**
			12	10 1/2	9	7 1/2	6	4 1/2	3	1 1/2	**4**
					12	10	8	6	4	2	**3**
							12	9	6	3	**2**
											1
5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	A

REMAINDER SCALE

The boldface figures of the right-hand column indicate the casts that will be made before the shearing mechanism is tripped into action. The figures in the main section of the scale indicate the "points" and fractions of a point that must be added to each cast in order to obtain the total correct length of strip. Although each cast should be approximately 6 ems of pica in length, other lengths of cast may be made. In no case however should a length of 6 ems be exceeded when casting strip material of under 6 point body. This is exemplified as follows, assuming a strip of 35 pica ems is required.

If a minimum 6-em cast is required set the micrometer indicator to 6 ems.

35÷6=5+5. On the 5 line of drum, above 5 on the remainder scale, is shown 12 points, indicating that the micrometer wedge must be taken back 12 points. Each cast therefore becomes 6 ems+12 points (7 ems), and 5 casts become 35 ems.

If a minimum 5-em cast is required set the micrometer indicator to 5 ems.

35÷5=7, and no remainder. Each cast is therefore exactly 5 ems, and 7 casts become 35 ems.

If a minimum 4-em cast is required set the micrometer indicator to 4 ems.

35÷4=8+3. On the 8 line of drum, above 3 on the remainder scale, is shown $4\frac{1}{2}$ points, indicating that the micrometer wedge must be taken back $4\frac{1}{2}$ points. Each cast therefore becomes 4 ems+$4\frac{1}{2}$ points, and 8 casts become 35 ems.

If a minimum 3-em cast is required set the micrometer indicator to 3 ems.

35÷3=11+2. On the 11 line of drum, above 2 on the remainder scale, is shown $2\frac{3}{16}$ points, indicating that the micrometer wedge must be taken back $2\frac{3}{16}$ points. Each cast therefore becomes 3 ems−$2\frac{3}{16}$ points, and 11 casts become 35 ems + $\frac{1}{16}$th of a point, an error of only ·0008″.

From the foregoing it will be understood that any length of cast up to 7 ems may be made, but owing to the limited adjustment possible on strip rule matrices the desired cut length of any rule strip should only be divided by 6 if there is no remainder, or by 5 if there is a remainder, to decide the adjustment of the shear trip mechanism. There would be no harm, however, in reducing the length of cast of leads by dividing by 4 or 3, if improved results could thereby be obtained. For example, a 14½-pica strip is required. If we divide by 6 it would require two casts of 7 picas + ·0415"; if we divide by 5 it would require two casts of 7 picas + ·0415"; if we divide by 4 it would require three casts of 4½ picas + ·0553". The latter would be the method of producing a 14½ pica strip rule, as the matrix could not be adjusted to 7 picas + ·0415".

HOW TO REMOVE COUNTER MECHANISM

Remove the cover (4SD3), taking care that the drum lock latch spring (5SD5) is not lost.

Remove actuating lever (1SD) by first removing the screw (5SD10) and washer (5SD9).

Disconnect from upper post the springs attached to retaining pawl and stop lever; withdraw ratchet disc with weight and chain; remove stop lever (a22SD), and drum locking latch (5SD4).

HOW TO REPLACE COUNTER MECHANISM

Assemble stop lever, (a22SD) drum locking latch (5SD4) and screw.

Turn drum to position 25 above "A" on the remainder scale and lock.

Assemble the ratchet disc with chain and weight, *making certain that the stop on the ratchet disc is on top of the stop at the end of the drum*. This is important.

Connect retaining pawl and stop lever springs.

Replace actuating lever (1SD) and secure by washer and screw.

Replace cover (4SD3) and drum locking latch spring (5SD5).

HOW TO REMOVE JET BLOCK DRIVING ROD

Knock out pin (6SD2). Remove eye (6SD1), remove spring (6SD5) and washer (6SD6), and slide out the rod (a6SD).

CONTINUOUS BORDER MATRIX LIFTER

In attaching this to the counter mechanism head, slide the spring box through the gap in the head, and before tightening the bolt (a12SD1) see that the matrix lifter bracket (a12SD) is pressed firmly against the stop on the counter mechanism head.

The border matrix lifter consists of a slide having an inclined bearing, acting as a wedge. When moved in one direction this raises the border matrix. When moved in the other direction it clamps the matrix to the mould. When the matrix is clamped to the mould surface any overthrow motion from the driving cam is absorbed by a spring in the tube (14SD).

To remove the border matrix lifter and bracket, disconnect the pin (20SDD) and remove the screw (a12SD1); the matrix lifter bracket and spring can then be withdrawn through the gap in the counter head.

HOW TO ADJUST THE COUNTER MECHANISM

When adjusting this mechanism the mould should not be on the machine.

Before commencing any adjustment see that the pump driving rod (29SH) is adjusted correctly. (See under "PUMP MECHANISM" —HOW TO ADJUST PUMP DRIVING ROD, page 43).

Fix counter head to machine with four screws (4SD12). Hook on the weight (23SD), couple up the cam lever yoke (14SD7), lead clamp rod end (10SD5) and the jet block driving rod yoke (7SD6), placing the jet position pin (7SD7) in hole marked "12" on type carrier lever extension and placing screw (7SD8) through hole marked "1½" on jet position pin (7SD7).

Remove counter cover (4SD3) by taking out the two screws (4SD4 and 4SD5) and spring (5SD5).

Engage pump handle (29SH8) and turn machine one complete revolution and then set to 110°. Slack off actuating rod lock nut (3SD9) on actuating rod (3SD). *Note.*—See that ratchet (15SD) is firmly engaged by detent (15SD1) (this is the lower pawl) and that the drum locking latch (5SD4) is engaged in drum with No. 5 on drum opposite "A" on remainder scale plate. The drum locking latch (5SD4) must be held by hand while this adjustment is being made.

Adjust the actuating rod (3SD) to give the actuating pawl (2SD) approximately ·005" clearance of tooth of ratchet (15SD) setting to the fourth tooth up from detent pawl. Lock up nut (3SD9) and turn machine to see if adjustment holds good.

Turn machine to 260°, slack off actuating trip lock nut (2SD4). Rotate the actuating trip pin (2SD3) with a screwdriver to give approximately ·005" clearance between actuating pawl (2SD) and actuating trip pin (2SD3) in other words, the pawl should just clear the trip pin. The adjustment of these parts should be accurately made, so as to give the maximum time for the weight to return to zero. These parts must be kept clean, and thin oil should be used.

With machine still at 260°, and the drum locking latch (5SD4) engaged in drum with "5" opposite "A" on drum remainder scale (5SD1), release the pawl from ratchet by hand, allowing the weight to drop to its stop; loosen the nut (9SC8) and adjust the counter weight stop plate (23SD6) just to touch the weight (23SD); tighten nut (9SC8).

HOW TO ADJUST STRIP MOULD JET BLOCK OPERATING BAR

Place the base section of the strip mould on machine with blade left-hand "1½ point" side plate in position. Place jet block driving rod position pin (7SD7) on type carrier lever extension in position marked "1½ point." 2-4-

Turn machine to casting position (220°) then place gauge (6ST1) against left-hand side plate of mould; the narrow projection on the gauge should then enter the jet opening in mould. If it will not do so unlock nuts (7SD1 and 7SD2) and turn jet block driving rod adjusting nut (7SD) to right or left as required; lock up nuts, taking care not to twist rod (a6SD). Check setting.

When this adjustment is correct the jet block driving rod position pin (7SD7), when placed in its correct hole in type carrier lever extension, will be correct for all sizes.

HOW TO ADJUST STRIP CLAMPING LEVER

When the strip mould is fixed to machine and arranged ready for casting, and machine is in casting position (220°), adjust the lead clamp rod (10SD2) so that it withdraws from ⅛" to ¼" from lead clamp spring box end (10SD1). This adjustment should be checked when the mould is warmed up. The end of clamping lever should not be more than ⅛" below the horizontal centre line when the mould is clamped.

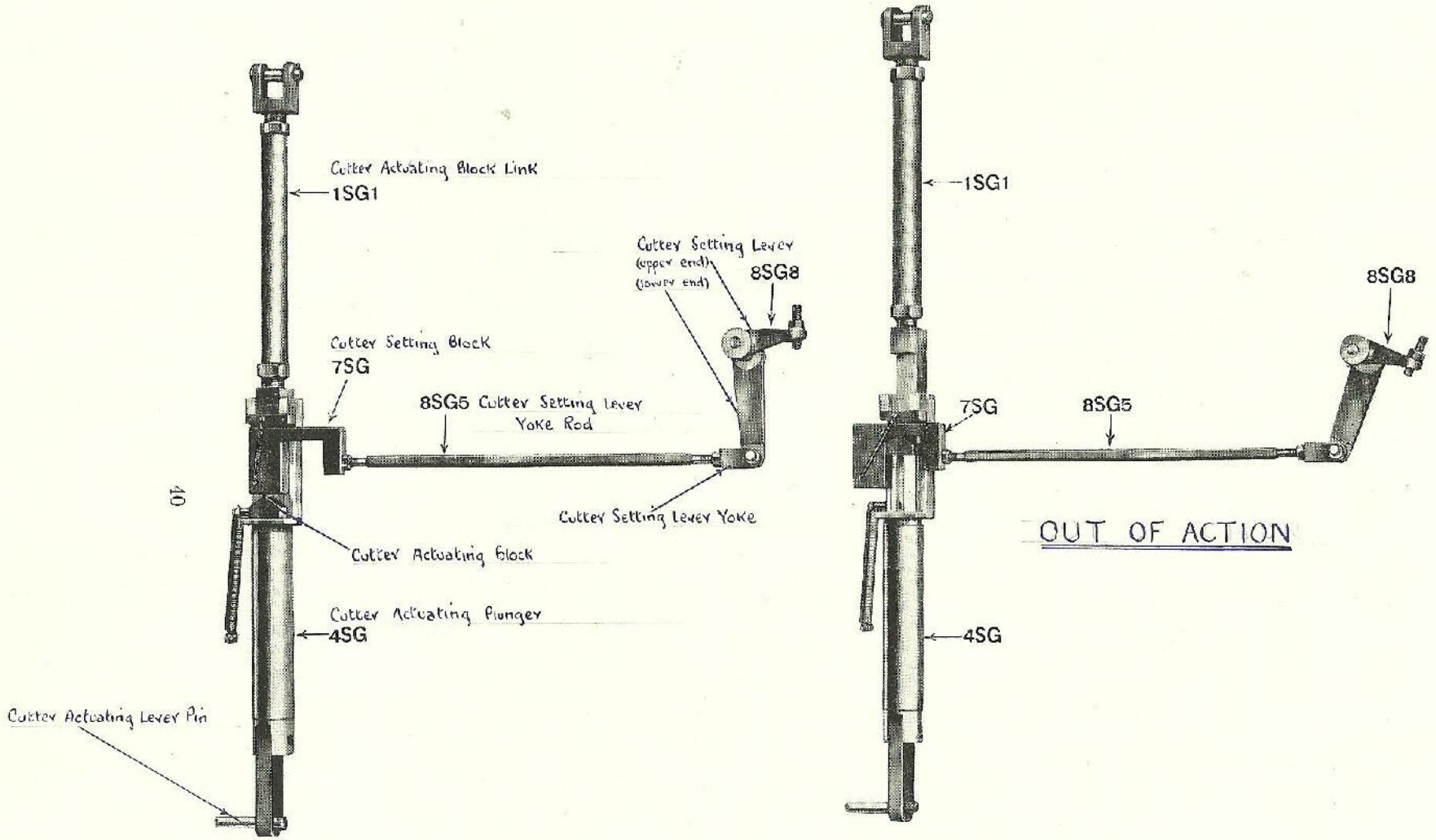
STRIP CUTTING AND STACKING MECHANISM

This mechanism is for shearing strip material to required lengths and stacking it on the galley.

It is operated by the cutter cams (X11SC) through the cutter cam lever (12SC) and the cutter actuating block link (1SG1), and is controlled by the counter mechanism.

The cutter actuating block (1SG) moves in the slot in the cutter actuating plunger (1SG) until the cutter setting block (7SG) is brought between the cutter actuating plunger abutment (4SG1) on the cutter actuating plunger and the projection on the cutter actuating block. This cutter setting block is brought into engagement by the counter actuating lever (1SD) which, when the required number of casts have been made, makes a longer stroke and operates the upper end of the cutter setting lever (8SG8). The lower end of this lever (8SG) is connected through the cutter setting lever yoke (8SG2) and cutter setting lever yoke rod (8SG5) to the cutter setting block.

It will thus be understood that the lengthened stroke of the counter lever (1SD) moves the cutter setting block (7SG) into an operative position.



STRIP SHEARING MECHANISM

This is brought into action by the counter mechanism. When shearing is not required, the cutter cams reciprocate the actuating block link (1SG1), and the end of this moves without obstruction in a slot at end of cutter actuating plunger (4SG). When shearing is required, the counter lever (1SD) makes a longer stroke, and presses against the cutter setting lever (8SG8), causing the rod (8SG5) to pull the cutter setting block (7SG) into the path of the actuating block link (1SG1), so that as the latter advances it pushes the cutter actuating plunger (4SG), causing the cutter blade to move forward and make a shear. In the illustration the right-hand section shows the cutter actuating plunger (4SG) out of action, and the left-hand section shows the plunger in action

When the cutter setting block (7SG) is in engagement the cutter actuating block (1SG) and cutter actuating plunger (4SG) move as one piece, and, being connected by the cutter actuating link (1SG3) to the cutter actuating lever (2SG), they move the cutter blade forward and shear the strip against the shear blade (24SG).

THE STACKER LEVER

The stacker lever (19SG) is fixed to the same shaft as the cutter actuating lever, and thus when a shear takes place the lead stacker (a16SG) is carried forward and pushes the product against the stacker blocks (X20SG) clear of the next strip.

After a shear has been made the pressure is released from the cutter setting block, and it is pulled out of engagement by the spring (8SG13). The cutter actuating plunger (4SG) is returned to its original position by the spring (4SG5).

When casting dashes the front of shear blade (24SG) is set to the mark on the galley plate (11SG), corresponding to the length in 12-point ems of the dash being cast. In order to push dashes forward, the cutter blade (5SG) must be taken out and reversed, as no shearing takes place when dashes are cast.

HOW TO DISMANTLE THE STRIP CUTTING AND STACKING MECHANISM

To remove cutter blade bracket (a6SG) turn machine to 360° and loosen locking screw (a2SG3). Then push in cutter actuating lever until the actuating lever pin (a2SG2) can be taken out through hole in bracket (3SG). Withdraw the cutter blade. Take out two screws (15SG1) from lead guide bracket (a15SG) and bolt (a6SG3) from the cutter blade bracket (a6SG). The cutter blade bracket and lead guide bracket can then be taken off together.

HOW TO REMOVE THE CUTTER SETTING LEVER AND STOP

Disconnect spring (8SG13) from spring post (8SG14).

Remove split pin (8SG4) and yoke pin (8SG3).

Disconnect spring (7SG1) from the spring post (4SG7) in the cutter actuating plunger abutment (4SG1).

The cutter setting block (7SG) complete with rod (8SG5) and yoke (8SG2) can now be removed.

Knock out pin (8SG11) from the cutter setting lever (8SG8).

The cutter setting lever group can now be removed.

HOW TO REMOVE CUTTER ACTUATING BLOCK

Turn machine to 350°.

To remove cutter actuating block (1SG) and plunger (4SG), complete with cutter actuating block link (1SG1) and fork eye (1SG2), remove split pin (1SG4) and take out the fork eye pin (1SG3). Remove split pin (2SG5) and take out the cutter actuating lever pin (2SG4). Disconnect the spring (4SG5) from the post (4SG6). This unit complete may then be taken out through the hole in main stand.

HOW TO REMOVE CUTTER ACTUATING LEVER

To remove cutter actuating lever (2SG) and stacker lever (19SG) slacken the locknut (17SG5) and disconnect the lead stacker connecting rod (17SG); knock out the two pins (2SG6 and 19SG5) and drive out the actuating lever fulcrum pin (2SG1).

HOW TO REMOVE STRIP STACKER

To remove the lead stacker (a16SG) loosen screw (a18SG2) and pull stacker towards front of machine; this will carry with it the stacker fulcrum (18SG) and enable the stacker to be withdrawn.

HOW TO ASSEMBLE THE STRIP CUTTING AND STACKING MECHANISM

Replace lead stacker (a16SG), push in stacker fulcrum (18SG) and lock in position with screw (a18SG2).

Assemble the cutter actuating lever (2SG) and stacker lever (19SG); drive in the actuating lever fulcrum (2SG1) and secure with the two pins (2SG6 and 19SG5). (*Note.*—As the fulcrum is a tight fit, care should be taken to see that the pin holes are in correct alignment before driving the fulcrum in position.)

Connect up stacker connecting rod (17SG).

Insert cutter actuating block and cutter actuating plunger (complete with link (1SG1) and fork eye (1SG2) through hole in main stand; connect to cam lever with pin (1SG3), and to cutter actuating lever (2SG) with pin (2SG4). Connect spring (4SG5) to post (4SG6).

Place in position the cutter setting lever (8SG) complete with yoke (8SG2), rod (8SG5) and cutter setting block (7SG).

Push setting lever fulcrum pin (8SG12) up through its hole in the main stand; assemble the cutter setting lever (8SG8) and secure with pin (8SG11).

Connect the two springs (7SG1 and 8SG13).

Replace the cutter blade bracket (a6SG) and the lead guide bracket on main stand; secure with bolt (a6SG3) and two screws (15SG1).

Assemble cutter blade (5SG) in bracket.

Push in the actuating lever (2SG) until the actuating lever pin (a2SG2) can be passed through the hole in bracket (3SG); connect with blade (5SG). Lock the pin in position with screw (a2SG3).

HOW TO ADJUST THE POSITION OF CUTTER BLOCK (7SG)

With the cutter setting lever group out of operation, that is with machine set at 270°, the cut away section of the cutter setting block (7SG) comes directly opposite the cutter actuating block (1SG). Adjust the rod (8SG5) so that there is a clearance of $\frac{1}{32}$" between the setting block (7SG) and the front edge of the actuating block (1SG), when this block is moved from right to left by the action of the shear cam lever.

With the cutter setting lever group in operation, that is with machine set at 360°, adjust the cutter lever screw (8SG9) so that the actuating block (1SG) is central with the wide section of the setting block (7SG).

HOW TO ADJUST CUTTER BLOCK LINK (1SG1)

After loosening the two nuts (1SG5 and 1SG6), adjust the cutter block link (1SG1) so that when it is fully to the right (240°) there is $\frac{1}{32}$" clearance between the end of the cutter actuating block (1SG) and the cutter setting block (7SG).

When the cutter block link is fully to the left (at 350°) the cutter actuating block must not strike the end of the slot in the cutter setting block (7SG).

HOW TO ADJUST STRIP STACKER (a16SG)

When the strip stacker (a16SG) is fully to the right (at 80°) adjust the strip stacker connecting rod (17SG) so that the strip stacker (a16SG) recedes behind the cutter cover (a5SG1) by $\frac{1}{32}$", and tighten the nut (17SG5).

THE PUMP MECHANISM

The pump cams (X23SC) drive a lever to which is attached the pump drive release (29SH7). This release may be instantaneously raised by hand for placing the entire casting mechanism out of action.

When the release is placed into action it connects the pump driving rod (29SH) to the cam lever, so that for every revolution of the machine a cast will be made.

To the pump rod (29SH) is attached an actuating rod (3SD). When strip moulds are being used, this rod is connected to the counter mechanism for operating same. When any other moulds are in use, this rod is placed out of action by connecting the yoke (3SD8) to the housing (3SD3).

The pump driving link (a29SH1) is connected to pump bell crank (18SH). One end of the pump bell crank (18SH) is forked to engage a cross head (16SH1) attached to a vertical rod (16SH) in the swing frame post (33SH), the reciprocation of which (16SH) operates the mechanism connected to the pump body and piston.

The melting pot (10SH), attached to a swing frame, is raised or lowered by a screw up to or away from its working position. Immersed in the melting pot (10SH) is a pump body. At one end of the pump body is a piston which, when depressed, forces the metal into the mould. By the action of the pump mechanism the pump body first rises, so that the nozzle (12SH) becomes seated against the mould, forming a metal-tight joint whilst casting takes place; immediately after the type has been cast the pump body recedes to prevent chilling of metal at the nozzle point.

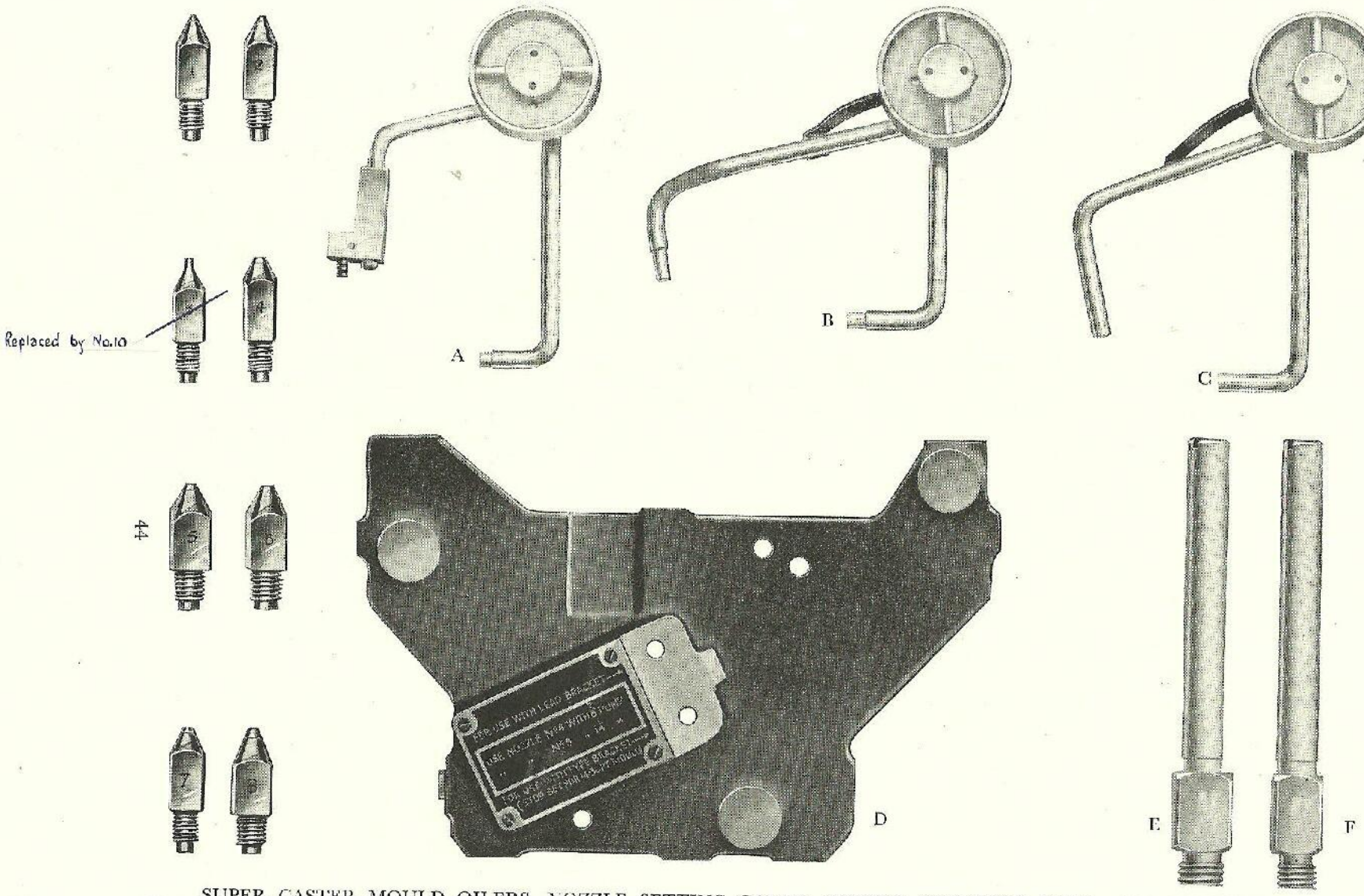
The action of the pump mechanism is as follows: As the bell crank (18SH) rises, taking with it the vertical rod (16SH), the cross head (16SH1) at the same time compresses a spring encircling the vertical rod (27SH1), causing the latter to rise by the spring acting against a shoulder at the upper end of the rod. Cross heads (16SH3 and 27SH2) are attached to the upper ends of these two rods (16SH and 27SH1). Two levers (15SHH and 21SHH) are connected to these cross heads, the lower lever terminating in the pump body and the upper lever operating the piston. At a given distance in the rise of the rods (16SH and 27SH1) the latter is checked in its upward motion by the nuts (27SH12) coming into contact with the swing frame post (33SH), or with one or more leaves (9SH) attached to the swing frame post (33SH) which may be brought into use, according to the product being cast

By this time the pump body will have risen, causing the nozzle to fit into the mould base. Although the progress of the rod (27SH1) has been arrested, the rod (16SH) continues its upward motion, with the result that the piston lever (15SHHH) is rocked by the spring (17SH), causing the piston to descend. As the piston lever is connected by a link (30SH) to the pump body lever, the upward motion of the spring rod (17SH1) in lifting the end of the piston lever has also a tendency to lift the pump body lever. At the other end of these levers the piston, in descending, is opposed by the pump body trying to rise; in short, the pump body and piston are working against each other. Were it not for this action the nozzle would be forced away from the mould in the event of a piston becoming seized in the pump body, because the nozzle lifting spring (24SH) would not be strong enough to withstand the friction of the piston. When the mould has received the full quantity of metal required to form the body of the product the rod (16SH) will not have completed its stroke; its surplus motion will be absorbed by the spring (17SH).

The pump body rises in a perfectly vertical direction through being supported at each end upon separate levers (23SHH and 22SHH); these levers are operated by a spring (24SH). The spring itself is operated by a lever (26SH) terminating under the piston lever (15SHHH). As the latter rises the lever (26SH) is released, and the spring (24SH) elevates the pump body till the nozzle becomes seated in the mould base. As the piston lever (15SHH) descends it depresses the pump body operating rod lever (26SH), causing the pump body to recede from the mould.

HOW TO ADJUST PUMP DRIVING ROD (29SH)

With the pump cross head (16SH3) resting on the rubber washer (31SH), and the machine turned to 120°, adjust the pump driving rod (this has a right and left-hand thread at the ends), so that there is $\frac{1}{64}$" clearance between the end of slot in pump driving link (a29SH1) and pin (24SC3). Should the pin foul the link at the end of the slot the rubber washer will be unnecessarily compressed. After adjusting this, and fixing the two lock nuts (29SH3 and 29SH2), move the actuating rod housing (3SD3) around the pump driving rod so that the actuating rod yoke pin (3SD10D) can be inserted freely; fasten it by actuating rod housing screw (3SD4).



SUPER CASTER MOULD OILERS, NOZZLE SETTING GAUGE, NOZZLE SQUARING POSTS, AND NOZZLES

9 10

A—Mould Oiler—Type Moulds 14-36 Point and Didot, Series 72,000
B—Mould Oiler—40-72 Point and Didot, Series 74,000
C—Mould Oiler—Composition Moulds
D—Pump Nozzle Setting Gauge
E—Nozzle Squaring Post, $1\frac{1}{2}$ Pump
F—Nozzle Squaring Post, $\frac{7}{8}$ Pump
No. 1 Nozzle—5-13 Point Moulds
No. 2 Nozzle—14-36 Point Moulds
No. 3 Nozzle—Lead and Rule 10
No. 4 Nozzle—40-72 Point Moulds—$\frac{7}{8}$ Pump
No. 5 Nozzle—40-72 Point Moulds—$1\frac{1}{4}$ Pump – Furniture Mould
No. 6 Nozzle—40-72 Point Moulds—$1\frac{1}{4}$ Pump. Small Set Size Type
No. 7 Nozzle—Low Space and Quotations
No. 8 Nozzle—42-48 Point Moulds and 12 Point Lead and Rule Moulds—$1\frac{1}{4}$ Pump

PUMP ADJUSTMENTS (GENERAL)

To adjust the pump proceed as follows: (1) Insert piston in the pump body; (2) screw the melting pot up to casting position; (3) place pump drive release (29SH7) in its operative position; (4) see that the upper and lower leaves (9SH and 28SH) are withdrawn to their inoperative positions, and then turn the machine by hand to 220°. Next loosen the nuts (27SH12) at the lower end of the rod (27SH1) so that they are well clear of the casting (33SH). The cross head stop (27SH8) should then be adjusted so that the connecting link pin (30SH1) is central in the hole in the piston lever (15SHH). The diameter of this hole is $\frac{1}{32}$" larger than the pin. During adjustment the upward movement of the piston (13SHH) is checked by a ridge on its upper end coming into contact with the guide lug on the pump body. In this position (at 220°) the pin (30SH1) should be free if tried by the fingers. The stop (27SH8) should next be locked by tightening the nut (27SH9) at the lower end of the stop. The upper nut on the lower end of rod (27SH1) should then be brought up until it touches the casting (33SH) and locked firmly in this position. A buffer (30SH3) in the connecting link (30SH) supports the piston against a projection on the pump body head.

With the machine still at 220°, set the pump body operating lever (26SH) $\frac{1}{30}$" away from the piston lever (15SHH). This setting may be varied slightly, as for hard metal the nozzle should be brought away earlier from the mould base by reducing this distance.

HOW TO ADJUST PUMP BODY VALVE (19SH13)

This and its seating should always be clean, and the valve should have $\frac{1}{32}$" or $\frac{3}{64}$" clear hole in its centre. This valve checks the return of the metal from the nozzle, but *if too much metal remains in the nozzle stop-casting is likely to result.* The small hole in the valve allows a small quantity of metal to return during the up-stroke of the piston, and this prevents stop-casting. On the other hand, if the hole is too large insufficient metal will remain in the nozzle and metal channel, and defective types will result.

To regulate the inlet of metal beneath the piston slacken the lock nut just above the piston end, and turn the piston screw in or out as required and lock in position with nut.

HOW TO ADJUST PUMP BODY OPERATING ROD (25SH)

The nuts on the pump body operating rod which operate the lifting levers (22SHH and 23SHH) should not be altered except when fitting another pump body to the machine, when they must be readjusted to suit that pump body. *If the adjustment of these nuts is incorrect, or if they become loose, squirting between the mould and nozzle is likely to result.* To adjust these parts, first bring the nozzle to rest in the mould base (220°), then measure the distance the lifting lever (23SHH) has risen from the stand support, immediately above the spring (24SH). Next remove the mould, the nozzle and piston. Screw up the melting pot to casting position and regulate the end of the lifting lever (23SHH) till it measures the same distance as when the nozzle and mould were on the machine. This can be done by packing it up with a few pieces of type equal in thickness to the distance required. Fix the nozzle squaring post into the pump body, and by means of a square, test the squaring post from the machine base. Regulate the nuts (25SH3) which raise the lifting lever until the squaring post is correct at right angles with the machine base; then lock the nuts securely.

Care should be taken to keep the nozzle and the pump body channel free from dross. The nozzle should not be drilled whilst it is heated, as this will soften the drill and render it useless. The piston should be free from any dross or carbonized oil, the ports should be kept clear, and all grooves in the piston kept clean. It may be lubricated with graphite; oil and vaseline should be avoided, as they become carbonized and create a tendency for the piston to seize in the pump body. *Observe that no particles of metal or other matter adhere to the upper end of the piston,* otherwise the piston will not function freely. *Keep all parts well oiled, especially* the stop (27SH8), and the spring rod (17SH1). The pump driving link connecting pin (29SH6) inside the machine base must be oiled regularly.

USE OF LATCH (3SH), UPPER LEAVES (9SH) AND LOWER LEAVES (28SH)

After the adjustments have been made as explained above, it will be understood that the piston stroke will commence immediately the pump body spring rod stop nut (27SH12) reaches the casting of the swing frame post. This is the action when casting small type, but improved results are obtained when casting large type and other material if the piston is brought into action earlier and if the piston is given a more sudden descent.

To provide for these conditions a series of four leaves is placed beneath the casting of the swing frame post (33SH) so that one or more of these leaves may be placed in the path of the pump body spring rod stop nut (27SH12) in order to bring the piston into action earlier, and thereby give a longer stroke to the piston, both in distance and time.

The pumping mechanism is fitted with a trip latch (3SH) so that the piston spring (17SH) may be further compressed and then suddenly released. This causes a stronger and quicker pressure to be applied to the piston.

The trip latch is attached to a shaft (8SH1H), the lower end of which is fixed in an arm (8SH2), guided by a stud running from the lower end of the pump body spring rod cross head eye (27SH3). Running upon the shaft (8SH1H) is an abutment sleeve (4SH), having an arm upon the upper end which rests upon the piston spring rod eye (17SH2).

The trip latch may be placed in or out of action by moving the latch pin (6SHH) up or down as required.

When the trip latch is placed in action, the piston spring is prevented from operating until the latch is tripped. Therefore when the pump body spring rod is arrested by the stop nut (27SH12) coming in contact with the casting or the leaves (28SH), the piston operating rod continues to rise, carrying with it the piston cross head (16SH3). This compresses the piston spring (17SH), but the piston will not act, as the trip latch holds up the abutment sleeve (4SH), and this in turn holds up the piston spring rod (17SH1). As the piston cross head continues to rise it trips the latch, and this releases the piston spring (17SH), causing sudden pressure to be placed upon the piston.

As both the length and strength of the piston stroke need to be varied according to the cubic content of the types to be cast, it has been found to be of great advantage to position a group of eight leaves near the trip latch, so that one or more of the leaves may be inserted between the piston cross head (16SH3) and the trip latch, thus causing the latch to trip earlier.

The leaves are hinged upon a stud in the upper end of the piston operating rod (16SH), and therefore rise as the piston operating rod rises; consequently the greater the number of leaves placed in action the earlier will the piston spring rod be tripped.

Each of the lower leaves causes the piston operating rod (16SH) to be acted upon earlier, and each of the upper leaves causes the latch to be tripped earlier.

A very wide range of pumping conditions is made possible by the different combinations available in connection with—

(1) The lower leaves.

(2) The upper leaves.

(3) The adjustment of the pump spring rod nut (17SH5).

A Product Information chart is included in this book showing the distance to which the pump spring rod nut (17SH5) must be adjusted, and the number of upper and lower leaves to be brought into use for casting various products on the Super Caster. There can be no hard and fast rule about these instructions, as the quality of type metal varies considerably, and worn pistons and pump bodies give results different to those obtained on new machines. The attendant should therefore make out similar charts to suit his own conditions and experience. After a little practice at the machine, carefully studying the effects obtained by the use of different numbers of leaves and different degrees of compression of the pump spring, the attendant very soon acquires experience which causes him automatically to adjust the pumping mechanism to suit the conditions of the product he is casting.

PISTON OPERATING ROD CROSSHEAD STUD (16SH5)

With the machine at 220° this stud must be adjusted to clear the pump body operating lever (26SH) by $\frac{1}{32}$". This amount may be varied, according to the quality and temperature of the metal, in order to prevent stop-casting. This stud must leave the operating lever before the piston acts, in order to insure that the nozzle will seat in the mould base before the piston acts. On the other hand, the closer that the stud is to the operating lever at 220° the less likelihood will there be of stop-casting occurring.

HOW TO REMOVE PUMP BRACKET

Remove pump body.

Disconnect gas supply piping (2SH) from regulator or if electric melting pot is fitted to machine disconnect wires from switch box.

Disconnect pump connecting rod by removing the pump driving rod pin head screw (29SH6), and removing the pump driving rod pin (29SH5H).

(Before doing the following secure help in holding up the pump bracket, to prevent it falling.)

Run pot down and remove hexagon-headed bolt (33SH1), then remove the screw (33SH10).

Run pot up and remove screw (33SH11).

PUMP NOZZLE SETTING GAUGE (10ST)

This gauge is used for testing the upward movement of the nozzle, in order to test that the nozzle rises centrally to its seat in the mould base. The gauge occupies the same position as the mould and can be used when either the matrix head base or the counter mechanism head is fixed to the machine. It is positioned by the eccentric clamps (14SL1) and secured by the three screws (17SL1). When used with the matrix head base the narrow sides of the gauge are located against the mould positioning faces; when used with the counter head the broader sides of the gauge are against these faces.

If the $1\frac{1}{4}$" pump is to be used fit nozzle (12SH3); if the $\frac{7}{8}$" pump is to be used fit nozzle (12SH2). If any adjustment has to be made, loosen the two nuts (10SH7), the two screws (32SH2) and one screw (32SH1) underneath the melting pot casing. Remove the piston and screw the pot up to casting position. Put pump operating rod handle (29SH8) into the operating position, and turn the machine to 220°, making certain that the latch (3SH) is not in engagement, and that the lever (26SH) is not under the stud (16SH5).

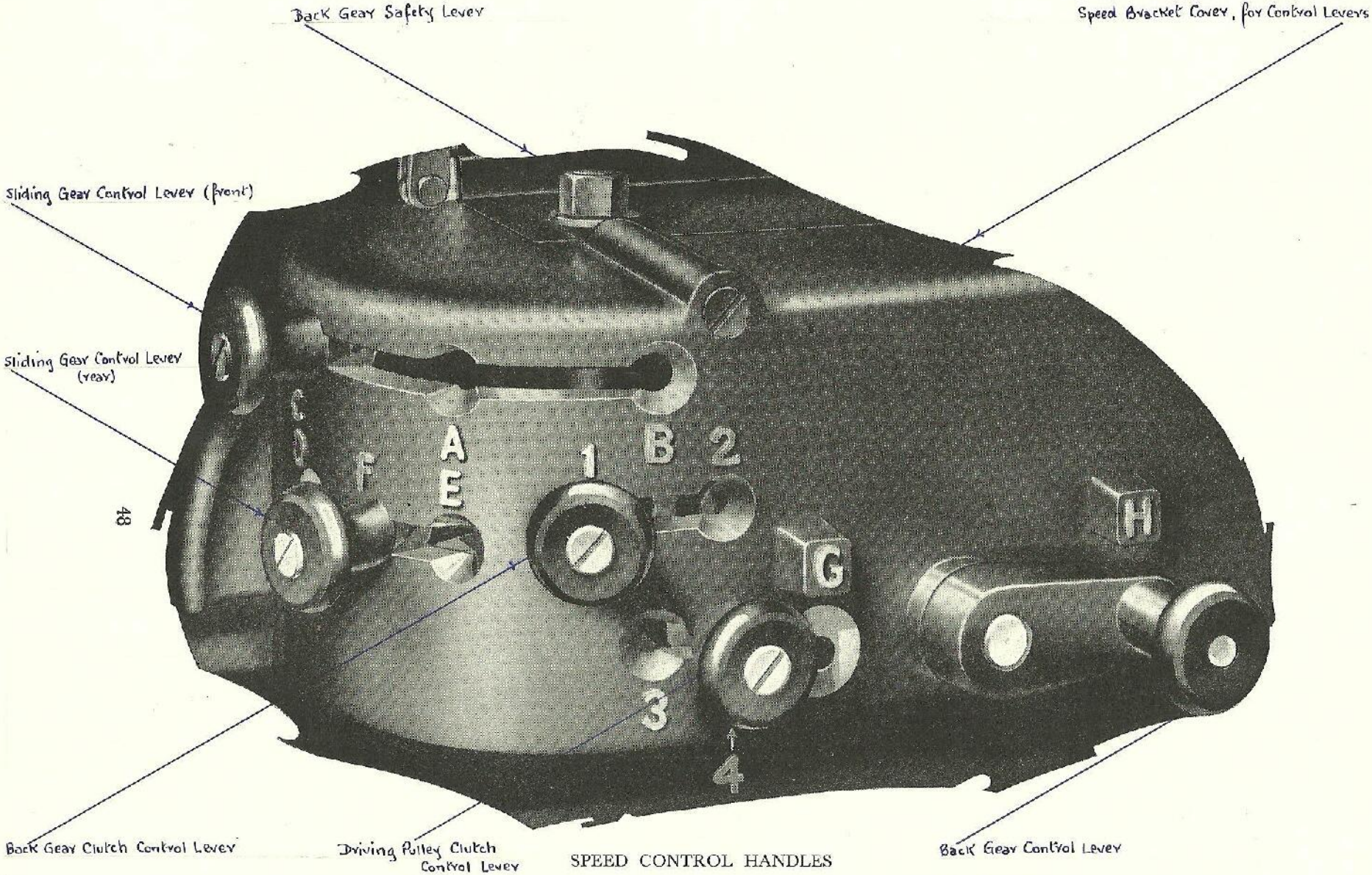
On depressing the lever (26SH) by hand it can be seen if the nozzle rises centrally in the hole in the gauge. If it does not rise centrally push the pot in the desired direction until the nozzle seats correctly, taking care to see that the pump body lifting levers (22SH and 23SH) do not foul the pump body operating rod (25SH) and then carefully run down the pot without moving it on its bracket and tighten the two nuts (10SH7); then tighten the two screws (32SH2) and one screw (32SH1). Re-check setting of nozzle to make certain that the pot has not moved when screwing it down.

SPEED REGULATING MECHANISM

The object of this mechanism is to provide the change of speed required to suit various classes of product. The speed of casting varies in inverse proportion to the cubic content of metal pumped into the mould. Nineteen speeds are obtainable. All matrices are marked with the set size of the type that will be cast from it, and a chart is provided which shows the speed at which the caster is to be run to produce these set sizes in any point size of body.

The maximum speed of 144 r.p.m. is obtained when the machine is driven direct from the pulley (2.4.II position). The speed regulating mechanism gives a range of speeds from $4\frac{1}{2}$ to 125 r.p.m. An indicator plate is provided showing the positions of the control handles to produce the different speeds.

The mechanism is fitted with safety devices to prevent the machine being started with the gears imperfectly meshed.



SPEED CONTROL HANDLES

By manipulating the five handles, nineteen speeds are obtainable. When not on top speed the three right-hand handles must be in positions 1-3-H or 2-3-G. To produce the top speed of 144 revolutions per minute, the handles should be in 2-4-H. To turn the machine easily by hand the right-hand lever should be in H

1-3-H control ..	AD	BD	CD	AE	BE	CE	AF	BF	CF	2-3-G control ..	AD	BD	CD	AE	BE	CE	AF	BF	CF
Speed	125	102	83	68	55	45	37	30	25	Speed	22	18	15	12	10	8	6½	5½	4½

HOW TO DISMANTLE THE SPEED REGULATING MECHANISM

Assuming the gear box has been removed from machine.

Remove the two screws (16SB4), pin (17SB5) and clutch lever group (X16SB), also the gear (14SB).

Remove the four handles (2SB1, 15SB1, 20SB1, 21SB1) and springs (2SB2, 15SB2, 20SB2, 21SB2) by withdrawing four screws (2SB3, 15SB5, 20SB3, 21SB3). Knock out pin (8SB4) and remove back gear lever (8SB).

Take out three screws (25SB5) and remove control lever cover (25SB4) and back gear safety spindle (8SB5).

Remove sixteen screws (25SB3) and take off all the bearing caps.

Lift out back gear (1SB) and back gear shaft (1SB1).

Lift out sliding gear (front) (24SB1), sliding gear (rear) (24SB2) and shaft (24SB).

Lift out driving shaft (rear) (13SB), complete with gears (13SB2 and 13SB1).

Lift out driving shaft (front) (12SB), complete with gears (12SB2 and 12SB1), back gear clutch gear (3SB), and back gear clutch pinion (6SB).

Remove nut (11SB1) and take out the control lever fulcrum pin (11SB).

To remove the four control levers, take out the four split pins and three stop rod yoke pins.

Remove pulley driving clutch safety rod (18SB), complete with link (18SB1) and eyes (18SB5 and 18SB2).

Remove fulcrum pin (4SB1) and split pin (4SB3) when back gear clutch lever (4SB) and link (5SB) complete with eyes (5SB4 and 5SB1) can be taken out.

Remove back gear clutch safety rod (7SB) complete with link (7SB1) and eyes (7SB2 and 7SB5).

To remove the two sliding gear yokes (22SB8 and 23SB8) knock out the pins (22SB9 and 23SB9), withdraw the sliding gear safety rod (22SB), complete with link (22SB1) and eyes (22SB2 and 22SB3); take out the sliding gear safety rod (23SB), complete with link (23SB1) and eyes (23SB2 and 23SB3). NOTE.—*These safety rod links have been set to the correct length, and their adjustment should not be disturbed unless absolutely necessary.*

To remove safety stop lever (19SB) take out the fulcrum (19SB1).

HOW TO ASSEMBLE THE SPEED REGULATING MECHANISM

Replace safety stop lever (19SB) and fulcrum (19SB1).

Re-assemble the sliding gear (rear) safety rod (23SB), complete with link (23SB1) and eyes (23SB2 and 23SB3); connect sliding gear yoke (23SB8), fixing with pin (23SB9).

Re-assemble the sliding gear (front) safety rod (22SB), complete with link (22SB1) and eyes (22SB2 and 22SB3); connect sliding gear yoke (22SB8), fixing with pin (22SB9). *Note.*—When connecting these sliding gear yokes, the concave end should be nearest the operating handle end of bracket.

Replace back gear clutch safety rod (7SB), complete with link (7SB1) and two eyes (7SB2 and 7SB5).

Replace link (5SB), complete with eyes (5SB4 and 5SB1) and back gear clutch lever (4SB); secure pin in lever to eyes (5SB4 and 7SB5) with split pin (7SB4).

Lock lever (4SB) in place with fulcrum pin (4SB1).

Re-assemble pulley driving clutch safety rod (18SB), complete with link (18SB1) and eyes (18SB5 and 18SB2).

Replace the four control levers in the following order: first (20SB), second (2SB), third (21SB) and fourth (15SB). Connect to the eyes at end of safety rod links with three stop rod yoke pins and four split pins.

Replace the control lever fulcrum pin (11SB) and lock up with nut (11SB1). Ensure that all bearings and caps are clean.

Assemble driving shaft (front) (12SB), complete with gears (12SB2 and 12SB1), back gear clutch gear (3SB) and back gear clutch pinion (6SB).

Assemble driving shaft (rear) (13SB), complete with gears (13SB2 and 13SB1).

Replace sliding gear (front) (24SB1), sliding gear (rear) (24SB2) and shaft (24SB).

Replace back gear (1SB) and back gear shaft (1SB1).

Replace all bearing caps and sixteen screws (25SB3), making sure that each cap is in its correct position as indicated by the number stamped upon the cap and on the bracket.

Replace the back gear safety spindle, ensuring that, with the back gear out of mesh and with the lever (8SB) in the "H" position, the pin (15SB6) in lever (15SB) is engaging the slot in the shaft (8SB5).

Replace control lever cover (25SB4) and secure with three screws (25SB5).

Assemble back gear lever (8SB) and fix with pin.

Assemble four handles (2SB1, 15SB1, 20SB1, 21SB1), springs (2SB2, 15SB2, 20SB2, 21SB2) and screws (2SB3, 15SB5, 20SB3, 21SB3).

Slide the gear (14SB) on to shaft (13SB). *Note.*—The clutch lever group (X16SB) should not be assembled until cam shaft stand is in place.

CAM SHAFT STAND

This carries the cams, cam levers, and belt shifter mechanism. It is fastened to the main stand with three screws (9SC6, 9SC7) along the upper edge and two screws (9SC5) from inside the main stand.

HOW TO REMOVE CAM SHAFT STAND

Turn machine to 280°.

Disconnect the water drain pipe union (16SA10A) and water supply pipe union (19SA10A).

Disconnect water supply union (19SA14) on water supply pipe (19SA15).

Remove cutter actuating block fork eye pin (1SG3).

Slacken lock nuts (29SH3 and 29SH2) on pump rod (29SH), disconnect fork end (3SD8) and unscrew pump rod.

Take out two screws (a14SA1) and remove type carrier cam lever guard (a14SA).

Loosen screw (26SC15) and withdraw plunger (26SC16) and bush (26SC14) complete.

Remove screws (a17SA2 and 17SA3) and take off water service bracket (a17SA).

Turn machine to 100° and remove two screws (13SC1 and 13SC2) from gear guard (front) (a13SC).

To remove the oil pan (a20SC) take out two screws (20SC2) and two screws (20SC3).

Remove two hexagon headed bolts (9SC5) from inside the main stand.

Remove clutch operating lever (16SB).

Remove nut (9SC8) from screw (9SC7) and take off the counter weight stop plate (23SD6).

Obtain help in holding up the cam shaft bracket (9SC) and remove two screws (9SC6) and one screw (9SC7) from top of bracket.

Lift bracket off, taking care of back gear stop rod (10SB).

HOW TO REMOVE INDIVIDUAL CAM LEVERS

Turn machine to 185°.

To remove mould blade cam lever (18SC), type pusher cam lever (28SC) or matrix cam lever (16SC) remove screw (6SC4) and washer (6SC5). Replace screw (6SC4) and then take out retaining screw (6SC3) and withdraw cam lever shaft (6SC) until the required lever can be removed.

HOW TO REMOVE PUMP CAM LEVER (24SC)

Loosen nuts (29SH3 and 29SH2), disconnect fork end (3SD8) and unscrew pump rod (29SH). Withdraw cam lever shaft (6SC) and remove lever.

HOW TO REMOVE TYPE CARRIER CAM LEVER (a26SC)

Remove two screws (a14SA1) and take off type carrier cam lever guard (a14SA). Withdraw shaft and remove lever.

HOW TO REMOVE CUTTER CAM LEVER (12SC)

Place machine at 350°. Remove cutter cam lever eye pin (1SG3) and two screws (14SC1); take off gear vernier (14SC). Remove two screws (13SC1 and 13SC2) from gear guard (front) (a13SC). Slacken grub screw (4SC4) and remove starter handle (4SC3), allowing back gear stop rod (10SB) to drop down. [*Note.*—Care must be taken that belt shifter rod latch (5SC) does not rise and allow the spring (5SC5) to drop out.] Remove gear guard (front) (a13SC) and turn machine until the four zero marks on gears coincide. Remove screw (6SC4) and washer (6SC5). Remove retaining screw (6SC3) and push cam lever shaft (6SC) back until cutter cam lever (12SC) and graduated gear (6SC1) can be removed.

HOW TO REMOVE ALL CAM LEVERS

When it is necessary to remove all the cam levers, proceed according to the directions under the heading, "TO REMOVE CUTTER CAM LEVER," but instead of pushing the shaft back a few inches pull it right out; all the levers can then be withdrawn, provided that the pump rod (29SH) is disconnected and that the type carrier cam lever guard (a14SA) is removed.

HOW TO REMOVE PULLEY AND CLUTCH

Remove nut (7SC8) and washer (7SC9) and slide off loose pulley (22SC), driving pulley (21SC) and clutch (21SC1).

HOW TO REMOVE BELT SHIFTER GEAR

Slacken grub screw (4SC4) and remove starter handle (4SC3). Drive out taper pin (4SC2) from belt shifter rod collar (4SC1).

HOW TO REMOVE CAM SHAFTS

Take off the four caps (9SC1) and shafts complete with cams, and gears can then be lifted out.

HOW TO ASSEMBLE THE CAM SHAFT STAND

Slide belt shifter gear and shaft (4SC) into the cam shaft stand, assembling the collar (4SC1) and then the spring (4SC6); lock in place with the pin (4SC2). Screw on handle (4SC3) temporarily.

See that all bearings and caps are clean, replace cam shafts complete and firmly screw on caps, making sure that each cap is in the correct position as indicated by the number stamped upon it.

Obtain assistance and lift cam shaft stand on to machine, securing with two screws (9SC6) and one screw (9SC7) at top of bracket.

Replace two hexagon headed bolts (9SC5) inside the main stand.

Place the counter weight stop plate (23SD6) in position on screw (9SC7) and secure with nut (9SC8).

Replace graduated gear (6SC1) and cutter cam lever (12SC), taking care that the four zero marks on the gears coincide.

Slide in cam lever shaft (6SC) until lever and gear are secure.

Replace oil pan (a20SC) and fix in position with two screws (20SC2) and two screws (20SC3).

Remove starting handle (4SC3), taking care that the handle does not come up and allow spring (5SC5) to fall out.

Replace gear guard (a13SC) and secure with two screws (13SC1 and 13SC2).

Replace starting handle (4SC3) and lock in place with grub screw (4SC4).

Replace gear vernier (14SC) with two screws (14SC1).

Turn machine to 190° and place type carrier cam lever (a26SC) in position.

Replace matrix cam lever (16SC) and type pusher cam lever (28SC) together, and slide shaft along far enough to secure these levers.

Replace pump cam lever (24SC) and then turn machine to 200° and replace mould blade cam lever (18SC).

Push shaft into position, and replace washer (6SC5) and screw (6SC4). Lock the shaft in place with screw (6SC3).

Replace water service bracket (a17SA) and connect up the three unions.

Replace type carrier cam lever guard (a14SA).

Connect pump rod, adjust according to instructions on "PUMP ADJUSTMENTS (GENERAL)", page 45, and lock up.

Replace cutter actuating block fork eye pin (1SG3) and split pins.

DISMANTLING THE MACHINE IN SECTIONS

(The machine is assumed to be fitted with the counter mechanism head)

HOW TO REMOVE COUNTER MECHANISM HEAD

Remove the three cam lever connecting pins: matrix lifter cam yoke pin (X20SD), lead clamp spring box end pin (18SD) and jet block driving rod position pin (7SD7).

Remove four screws (4SD12) holding counter mechanism head to machine base.

Remove actuating rod yoke pin (3SD10D) and connect the actuating rod yoke (3SD8) to its rest position in actuating rod housing (3SD3).

Remove counter mechanism head from machine base.

Note. On early pattern machines take care not to let actuating lever (1SD) swing too far to the right, otherwise the driving pawl of counter gear will get out of position and need readjustment.

HOW TO REMOVE GALLEY BRACKET

Loosen lead stacker lock nut (17SG5) and unscrew lead stacker connecting rod (17SG).

Remove five screws (9SG1) and one screw (9SG2) from galley bracket (9SG), disconnect air pipe union (5SA7A) and lift bracket off.

HOW TO REMOVE PUMP BRACKET

Proceed according to directions given under the heading "THE PUMP MECHANISM"—HOW TO REMOVE PUMP BRACKET, page 47.

HOW TO REMOVE CAM SHAFT STAND

Proceed according to directions given under the heading "CAM SHAFT STAND"—HOW TO REMOVE CAM SHAFT STAND, page 50.

HOW TO REMOVE MAIN STAND

Remove gear cover plate (12SA).

Remove three bolts from the left side of inside of stand and two from the right side.

Lift main stand off, tilting to left to clear water pipes.

HOW TO REMOVE GEAR BOX

Remove three hexagon headed bolts (25SB8) from beneath gear box casting. The gear box complete may now be lifted off.

ASSEMBLING THE MACHINE

Place on gear box and tighten the three hexagon headed bolts (25SB8).

Lift main stand to position on gear box, locate it on keys at each end of the gear box.

Screw in location screw (10SA1) (*this has a shouldered portion under the head*) and two screws (10SA2).

Next screw in the two long bolts (7SA7) at each end of the right-hand side of main stand.

Place in the gear cover plate (12SA).

Lift camshaft stand into position, taking care that the clutch actuating stud (16SB7) fits into the groove of clutch (21SC1).

In lifting the camshaft stand into position grip the bracket and not the pulleys; otherwise the stand may swing over. The edge of the camshaft stand rests on a shelf on the main stand.

Fix camshaft stand to main stand by two short screws (9SC6) at each end of the bracket and the long screw (9SC7) in the centre.

Insert connecting pin (1SG3) in shearing mechanism lever (12SC). Connect water pipes by the outside and inside unions.

See that the pump connecting rod is in machine base in position ready for connecting to pump bell crank, and then replace pump bracket and metal pot by lifting on to shelf on main stand.

First place in top screw (33SH11).

Run pot down and place in lower screw (33SH10) and then the hexagon headed bolt (33SH1).

Connect pump operating bell crank (18SH) to connecting rod by placing the pin (29SH5) in the upper hole in bell crank.

Place on galley bracket and fix by five screws (9SG1), one special screw (9SG2), to main stand.

Screw in lead stacker connecting rod (17SG) to stacker eye (17SG3) and tighten lead stacker lock nut (17SG5). Connect air pipe union.

Place on the required bridge head, according to the product next to be cast.

MOULDS

"MONOTYPE" COMPOSITION MOULDS, 5 POINT TO 14 POINT

Designed for use on the "Monotype" composing machine, for casting type in any size from 5 to 14 point from ·2″ matrices. A separate mould is required for casting type of each point size. The 13 point and 14 point moulds produce type with a slight bevel on the upper edge; this is to give the matrices a larger seating area on the mould. To enable all these moulds to be used on the Super Caster an adaptor base must be used.

"MONOTYPE" LARGE TYPE COMPOSITION MOULDS, 14 POINT TO 24 POINT

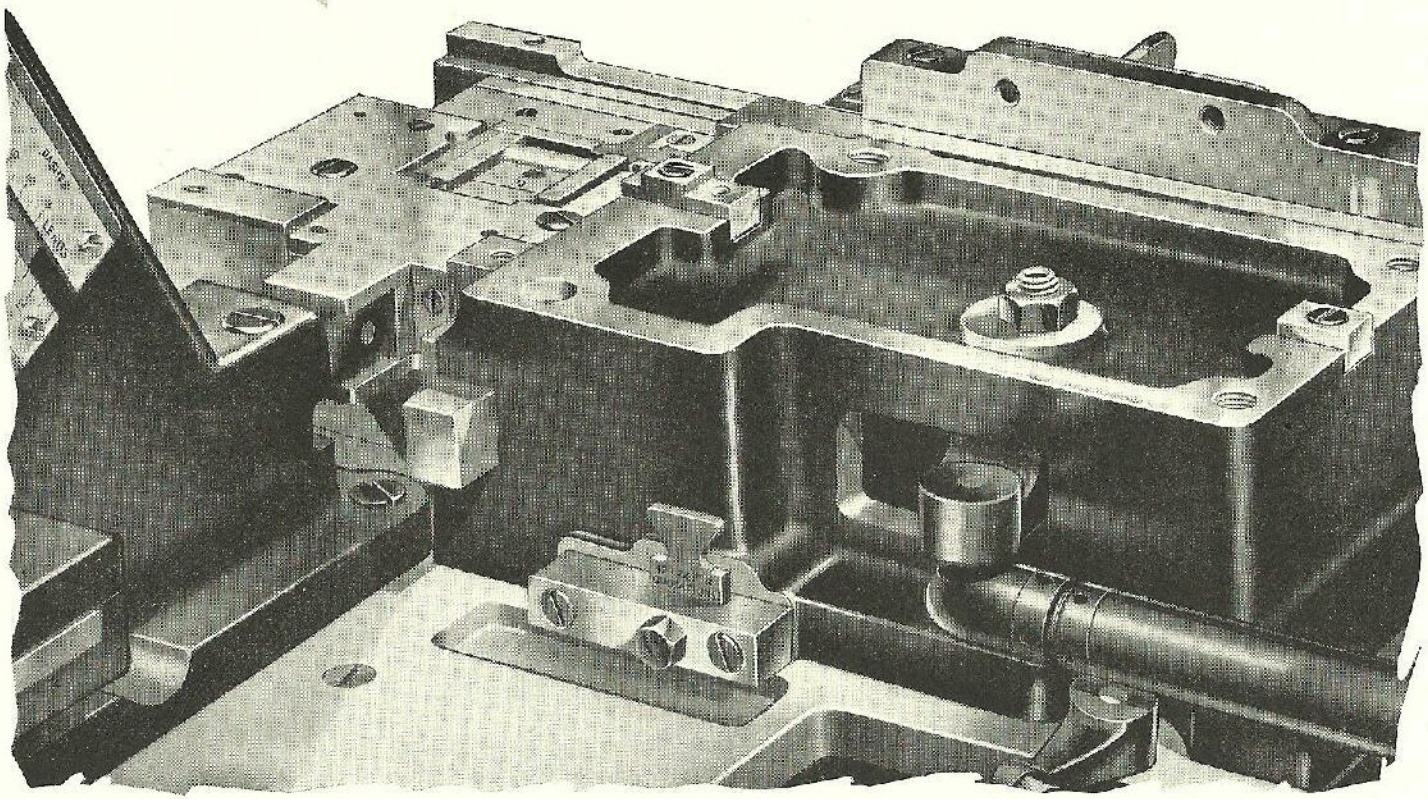
Designed for use on the "Monotype" composing machine, for casting type in 14 point, 18 point, and 24 point from ·4″ matrices. These consist of a base containing interchangeable mould blade insets, one for each point size. The type nick is on the right-hand mould blade block, similar to that of the 5 to 14 point composition moulds.

To enable these moulds to be used on the Super Caster an adaptor base must be used.

"MONOTYPE" DISPLAY MACHINE TYPE MOULDS, 14 POINT TO 48 POINT

Designed for use on the "Monotype" Caster, for casting type in 14, 18, 24, 30, 36, 42, and 48 point, from large display type matrices. These consist of a base containing interchangeable mould blade insets, one for each point size. The type nick is on the left hand mould blade block, as the display matrices are positioned on the mould in a direction reverse to that of the composition matrices.

To enable these moulds to be used on the Super Caster an adaptor base must be used.



MATRIX LOCATING STOP

The matrix locating stop (88E6), is shown in position on matrix head base for casting type above 36-point. This must be reversed for casting type 36-point and under

SUPER CASTER DISPLAY TYPE MOULD, 14 POINT TO 36 POINT

Designed for use on the Super Caster, for casting type and high and low quads and spaces in 14, 18, 24, 30 and 36 point from large display type matrices. These consist of a base containing interchangeable mould blade insets, one for each point size. The type nick is on the left hand mould blade block, as the display matrices are positioned on the mould in a direction reverse to that of the composition matrices.

SUPER CASTER DISPLAY TYPE MOULD, 42 POINT TO 72 POINT

Designed for use on the Super Caster, for casting cored type in 42, 48, 60 and 72 point, from large display type matrices. These consist of a base containing interchangeable mould blade insets, one for each point size. The type nick is on the left hand mould blade block, as the display matrices are positioned on the mould in a direction the reverse to that of the composition matrices.

SUPER CASTER LOW SPACE AND QUOTATION INSETS, 36 POINT TO 72 POINT

Mould blade insets are provided for use with the base of the 42 point to 72 point Super Caster display type mould, for casting low spaces and cored quotations in 36, 48, 60 and 72 points on the Super Caster.

STRIP MOULDS

Designed for use on the Super Caster for casting rules and high or low leads in 1½, 2, 3, 6 and 12 point; continuous strip border in 6 and 12 point; clumps and dashes in any length from 9 ems pica to 16 ems pica. These consist of a base containing interchangeable plates and blades with adjustable side blocks.

INSTRUCTIONS UPON THE "MONOTYPE" COMPOSITION MOULDS, 5 POINT TO 14 POINT

(Applicable to Moulds Nos. 20,000 and upwards)

ATTACHING MOULD TO MACHINE

Set the matrix-head base to the correct position (5½ TO 36 POINT) by reversing (if necessary) the locating piece (8SE6).

Place stop lever handle (2SF5) in the "15 ems" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (12SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until a mould opening of approximately 60 points is obtained.

Connect the pin (24SE7) to hole marked "12" in the type carrier cam lever extension.

Assemble mould on adaptor base (23SL), locating it with screw (23SL5) and securing with screw (23SL4). Care must be taken to ensure that the mould is against the locating faces of adaptor base.

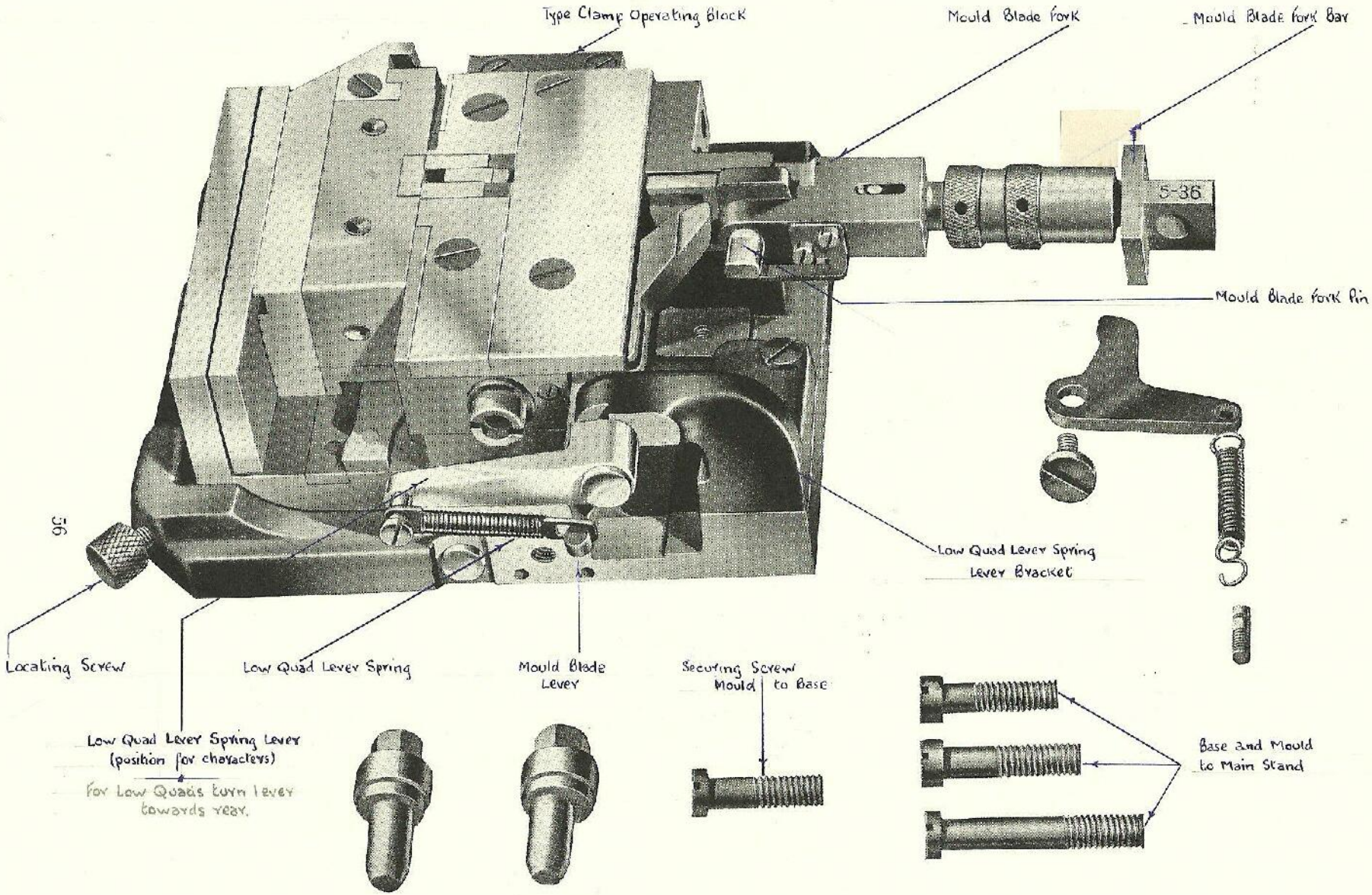
Fill the hollow screw on end of mould with *warm* oil to prevent an air lock.

Before attaching the syphon oiler (29SL1) to the mould fill the two tubes with warm oil. Before starting the day's work fill the oiler and replenish it as soon as three-quarters have been consumed. Nothing but pure heavy mineral oil should be used; any other may cause tinning and seizure after a short run.

Attach syphon oiler (29SL1).

Connect spring to low quad lever (*refer to instructions for* "CASTING LOW QUADS AND SPACES," page 77). Push crossblock and coupling hook back until hook is just clear of mould.

Place mould and adaptor base on machine, sliding the mould crossblock coupling hook into engagement with hook on type carrier. Locate the adaptor base against its two positioning



"MONOTYPE" COMPOSITION MOULD ON ADAPTOR BASE

(Applies to moulds with numbers over 22,000)

The mould must be screwed to adaptor base with the thin-headed screw (shown separately in photograph) before placing adaptor-base on machine. The lever shown on the right is for applying the adaptor-base for use with early pattern moulds equipped with the early pattern upper mould blade actuating lever

faces by means of the two eccentric clamps (24SL1); secure with three screws (17SL1, 23SL2 and 23SL3). (*Note.*—In securing adaptor base with mould to machine care should be taken to place the three screws in their correct holes, otherwise damage will be done to the mould.)

Connect mould blade to mould blade fork (12SLL) by means of the pin (12SL5), using handle (12SL6); draw mould blade back to contact with pin (12SL5) by means of the nut (12SL3); lock with nut (12SL4). (*Note.*—Two pin wrenches should be used when locking these nuts in order to prevent damage to the mould blade by twisting of mould blade fork.)

Attach water connection (30SLL).

Make certain that the abutment cap (4SF8) is in the correct position for small set sizes, *i.e.*, the end with large diameter towards the front.

Connect ball end (6SF1) to hole marked "TYPE TO 12 POINT" on mould blade slide drive lever, and set the fulcrum pin eccentric (5SF18) in the "SMALL TYPE" position.

Turn machine to 150°, and screw micrometer wedge right down; set the micrometer wedge scale at zero, and see that the "5 TO 13 POINT" type channel block (29SEE) is fitted.

REMOVING MOULD FROM MACHINE

Turn machine to 170° and disconnect the ball end (6SF1) from mould blade slide drive lever.

Bring mould blade to forward position, loosen nuts (12SL3 and 12SL4), and remove the pin (12SL5).

Screw back the micrometer wedge until approximately 60 points opening is indicated by the scales, and pull slide back until the connection is clear of mould blade.

Remove water connection and oiler.

Remove the three screws and two eccentric clamps that secure the mould, removing the clamp nearest the front of machine first.

Slide mould and adaptor base squarely forward until coupling hook is clear of mould and can be withdrawn from type carrier; mould can now be lifted off.

Remove mould from adaptor base and blow out water. Oil the mould and place it in box.

TAKING MOULD APART FOR CLEANING

Never take a mould apart whilst it continues to give satisfactory type. Should it become necessary to do so, prepare a suitable place, cover it with clean paper, and proceed in the following manner:

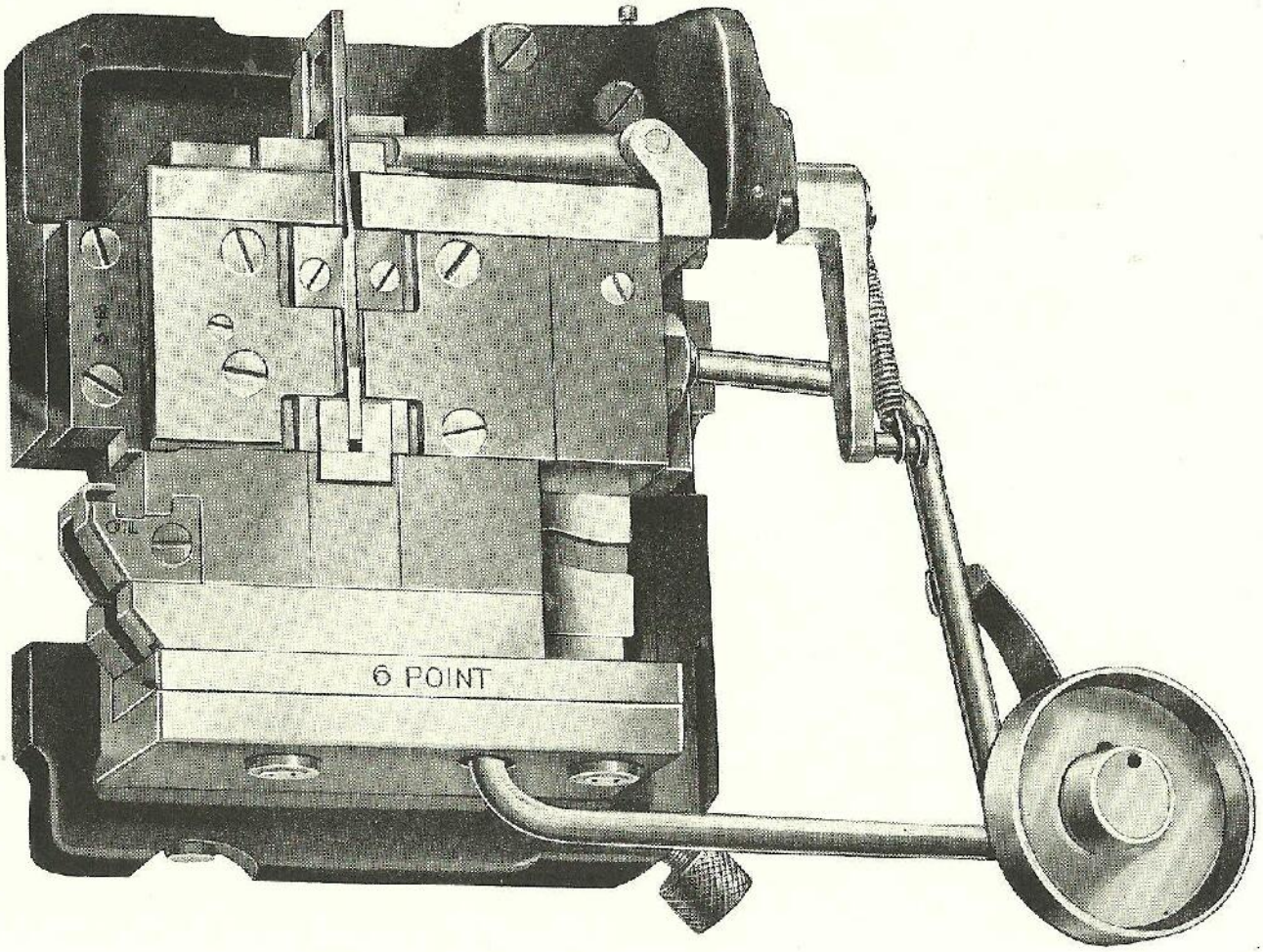
1. Remove the crossblock.
2. Remove hollow screw on end of spring block.
3. Remove blade stop and support.
4. Take off blade cover plate.
5. Take off cover springs.
6. Remove the blades by pulling them straight out; in doing this the blade lever will swing out with the blades and clear itself.
7. Insert a few thicknesses of paper in place of the mould blades and remove the side blocks by canting them towards the blade opening.

This is as far as the mould need be taken apart for cleaning. The two eccentric dowel pins which position the side blocks must not be interfered with in any way; should they be moved, even slightly, the mould will be thrown out of adjustment.

Clean all parts thoroughly with clean naphtha, benzine or petrol. Rust or adhering metal may be scraped away with a piece of brass rule, care being taken that the edges are sharp, not dulled or nicked. On no account use any stone or grinding powder for this operation.

REASSEMBLING THE MOULD PARTS

1. Place screw slide block in position.
2. Place nick side block in position.
3. Replace blades and insert mould blade lever while so doing.



X "MONOTYPE" COMPOSITION MOULD X

(Applies to moulds with numbers under 20,000)

4. Advance the hollow screw into the spring block until it touches the helical spring, then give it an additional half-turn.

5. Replace blade cover plate and screw down firmly.

6. Replace cover springs and screw down firmly. If the mould has been cleanly assembled the blades will now work freely and without shake.

7. Add to the pressure of the helical spring by screwing the hollow adjusting screw firmly home.

8. Replace blade stop and support.

9. Oil all parts thoroughly and replace cross block.

INSTRUCTIONS UPON THE "MONOTYPE" COMPOSITION MOULDS, 5 POINT TO 14 POINT

(*Applicable to Moulds numbered under* 20,000)

ATTACHING MOULD TO MACHINE

Set the matrix-head base to the correct position (5½ TO 36 POINT) by reversing (if necessary) the locating piece (8SE6).

Place stop lever handle (2SF5) in the "15 EM" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (12SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until a mould opening of approximately 60 points is obtained.

Connect the pin (24SE7) to hole marked "12" in the type carrier cam lever extension.

Assemble mould on adaptor base (23SL), locating it with screw (23SL5) and securing with screw (23SL4). Care must be taken to ensure that the mould is against the locating faces of adaptor base.

Fill the hollow screw on end of mould with *warm* oil to prevent an air lock.

Before attaching the syphon oiler (29SL1) to the mould fill the two tubes with warm oil. Before starting the day's work fill the oiler and replenish it as soon as three-quarters have been consumed. Nothing but pure heavy mineral oil should be used; any other may cause tinning and seizure after a short run.

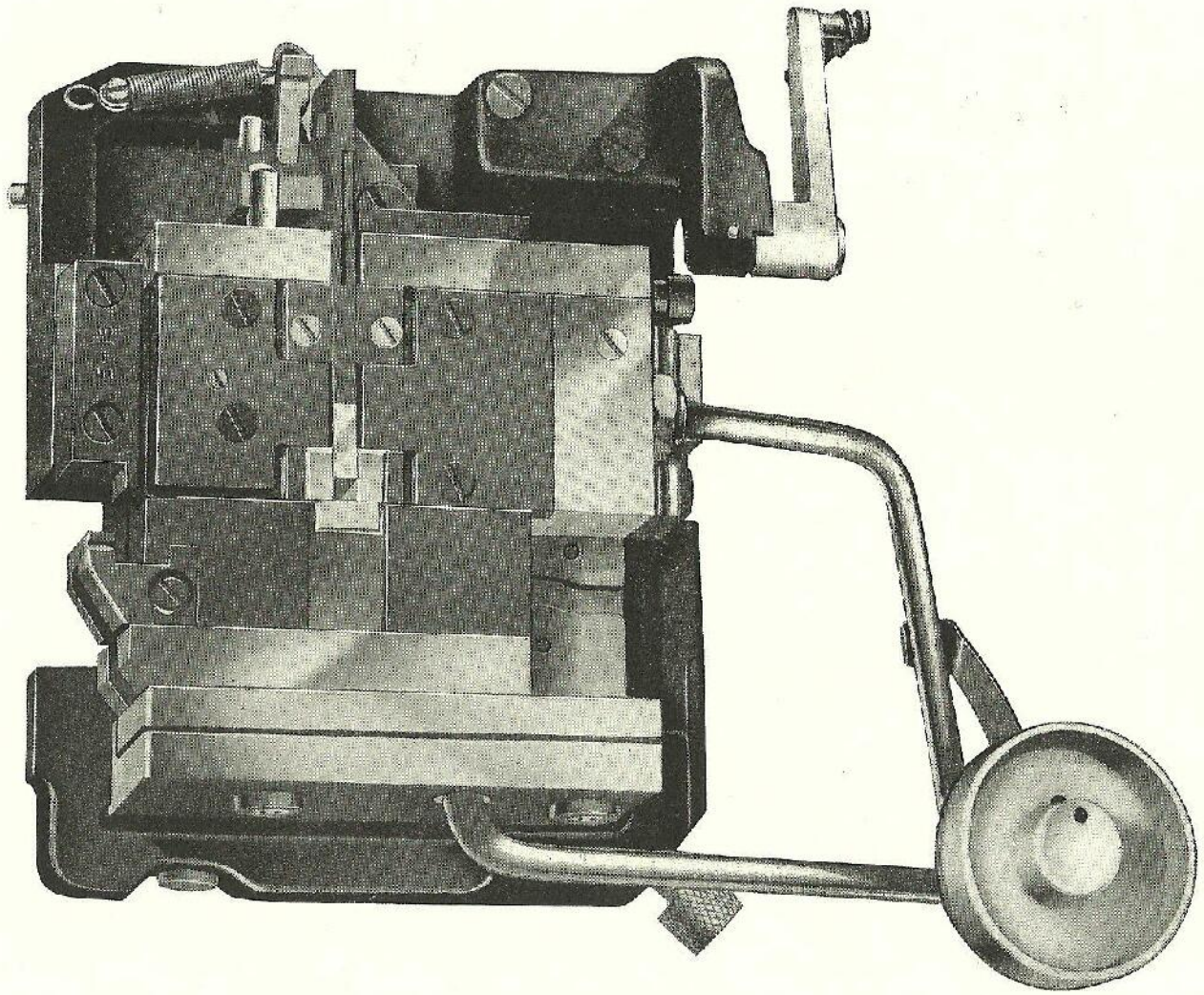
Attach syphon oiler (29SL1).

Connect spring to low quad lever (*refer to instructions for* "CASTING LOW QUADS AND SPACES," page 77). Push crossblock and coupling hook back until hook is just clear of mould.

Place mould and adaptor base on machine, sliding the mould crossblock coupling hook into engagement with hook on type carrier. Locate the adaptor base against its two positioning faces by means of the two eccentric clamps (24SL1); secure with three screws (17SL1, 23SL2 and 23SL3). (*Note.*—In securing adaptor base with mould to machine care should be taken to place the three screws in their correct holes, otherwise damage will be done to the mould.)

Connect mould blade to mould blade fork (12SLL) by means of the pin (12SL5), using handle (12SL6); draw mould blade back to contact with pin (12SL5) by means of the nut (12SL3); lock with nut (12SL4). (*Note.* Two pin wrenches should be used when locking these nuts, in order to prevent damage to the mould blade by twisting of mould blade fork.)

Attach water connection (30SLL).



X "MONOTYPE" COMPOSITION MOULD ON ADAPTOR BASE X

(Applies to moulds with numbers under 20,000 fitted with early pattern upper mould blade actuating lever)

Shows adaptor base fitted with lever and spring for closing the upper mould blade when mould is in use for casting spaces. In the illustration the lever and spring are shown in position for casting types or high quads

Make certain that the abutment cap (4SF8) is in the correct position for small set sizes, *i.e.*, the end with large diameter towards the front.

Connect ball end (6SF1) to hole marked "TYPE TO 42 POINT" on mould blade slide drive lever, and set the fulcrum pin eccentric (5SF18) in the "SMALL TYPE" position.

Turn machine to 150°, and screw micrometer wedge right down; set the micrometer wedge scale at zero, and see that the "5 TO 13 POINT" type channel block (29SEE) is fitted.

REMOVING MOULD FROM MACHINE

Turn machine to 170° and disconnect the ball end (6SF1) from mould blade slide drive lever.

Bring mould blade to forward position, loosen nuts (12SL3 and 12SL4), and remove the pin (12SL5).

Screw back the micrometer wedge until approximately 60 points opening is indicated by the scales, and pull slide back until the connection is clear of mould blade.

Remove water connection and oiler.

Remove the three screws and two eccentric clamps that secure the mould, removing the clamp nearest the front of machine first.

Slide mould and adaptor base squarely forward until coupling hook is clear of mould and can be withdrawn from type carrier; mould can now be lifted off.

Remove mould from adaptor base and blow out water. Oil the mould and place it in box.

STARTING MOULD AT BEGINNING OF RUN

The cross block should be uncoupled from the carrier and withdrawn until the oil hole at the back is uncovered. This hole should be filled with warm oil, and the oil cup which feeds this oil hole should be filled. The oil cup which feeds through the screw (1727) should be half filled. A few drops of oil should be applied to this cup from time to time as required.

If the blade be loose type will be cast large, setwise, at the bottom. This can be remedied by adjusting the eccentric blade spring (1777). Release the check screw (158), adjust the eccentric spring, and again tighten the check screw. The blade should be quite free, but without shake.

If the metal is allowed to become too hot, or if insufficient water is run through the mould, or the cross block is imperfectly lubricated, the hot type metal has a tendency to adhere to the intermediate plate and gate blocks. If this metal is allowed to accumulate, the gate blocks will be forced away from the intermediate plate and the type will be cast big, setwise, at the bottom; if much metal is allowed to accumulate, fins will be cast at the edges. To remedy this the cross block must be removed and the metal which has adhered to the bearing surfaces of the gate blocks and intermediate plate should be carefully scraped off with a sharp penknife, great care being observed that the edges of blocks and blade are not damaged. On no account use any grinding material for this operation. The adjustment of the gib screws (1736) must not be altered.

See that the mould is at all times sufficiently lubricated. The block of felt on the outer end of the mould should be kept saturated with oil, and it should also be seen that it projects far enough to oil the gate block. If it becomes worn, adjust by inserting a piece of cardboard between the felt and the holder. *Do not allow the metal pot to remain under the mould when the machine is not running.*

TAKING THE MOULD APART FOR CLEANING

Note.—Never take a mould apart so long as it continues to give satisfactory type, but clean it frequently by removing the cross block and by washing or wiping away all metal chips which have accumulated during working. While a mould is working satisfactorily the less interference it receives in the way of taking apart the better it will be for the mould.

The screws (220, 125, 1736, *and* 256) *and the four slotted taper pins* (1730 *and* 1769), *with their set screws* (302), *must not be adjusted. If any of these screws or taper pins are moved it will be impossible to put the mould into working order without the aid of special tools, and the mould must be returned to the makers.*

Take mould apart in the following order:

Remove the cross block and gib.

Remove the blade stop (1772).

Take off the two flat cover springs by removing the four screws (187) and slacken the adjusting screw (1727) and its check nut (1053).

Release the screw (158) and push out the eccentric blade spring (1777) by inserting a piece of stout wire through the hollow screw (1727).

Draw out the mould blade, distance piece, and shoe by carefully pulling them straight out at back of mould.

Remove the side blocks by lifting them upwards so that the ends of their adjustment pins (1730) clear the intermediate plate. This is as far as the mould should be taken apart for cleaning.

Wash all parts in naphtha with a jeweller's brush, and wipe with a clean brush. Wash a second time in fresh naphtha with a clean brush, and place on a clean piece of paper ready for assembling. The attendant's hands should be thoroughly cleansed between the first and second washings.

ASSEMBLING THE MOULD

Place the screw side block, with its felt washer, in position. Great care should be exercised when replacing the side blocks, which are held by taper pins, for if either the pins or the taper slots into which they fit are in the least nicked or distorted the mould will be out of adjustment and must be returned to the makers.

Replace the blade, distance piece and shoe. The narrow end of the distance piece must be placed nearest to the nick pin slot in the blade and the shoe with the oil grooves down.

Insert the eccentric blade spring (1777) through the screw block and bring the distance piece and shoe into correct position by pushing it through the slot in the distance piece. The pointed end of the eccentric blade spring (1777) must not be pushed beyond the distance piece and blade, block cannot be placed in position.

Press the distance piece down on the shoe and see that the top is quite clear of the blade; *this is important.*

To replace the spring side block first press down the nick pin in its slot as far as it will go. Replace the side block, at the same time holding down the blade, as any movement of the latter may cause the distance piece to rise. To position this side block bring it well forward over the front of the intermediate plate until the nick pin is in line with its recess in the blade; then gently push back into position so that the adjustment pin (1730) seats itself into the slot of the intermediate plate. Before attempting to replace the spring side block the spring block plug (1746) must be pressed as far back into the spring block as it will go.

Screw the side block into position and push home the eccentric blade spring (1777), tightening this with the set screw (158), and screw in screw (1727) with the fingers to ensure side blocks are against the side stops. Replace the spring covers, and screw down tightly.

When the screw (1727) has been adjusted, as given in the preceding paragraph, give it an extra one and a half turns. Hold it in this position while the check nut is being screwed up hard against the spring block.

Replace the blade stop.

Adjust the blade by turning eccentric blade spring as required. The blade should work freely but without any shake.

Replace the cross block and gib and fill the mould with warm oil as described under the instructions for placing mould on casting machine.

Note.—The small recess cut into the top of the spring side block is for the purpose of pressing down the distance piece, with the aid of the point of a penknife after the mould is assembled, but it will not be necessary to make use of this slot if the instructions given are faithfully carried out. When assembling after cleaning, see that the small piece of felt is replaced in this recess.

INSTRUCTIONS UPON THE "MONOTYPE" COMPOSITION MOULDS, 14 POINT TO 24 POINT

ATTACHING MOULD TO MACHINE

Set the matrix-head base to correct position (5½ TO 36 POINT) by reversing (if necessary) the locating piece (8SE6). Place stop lever handle (2SF5) in the "15 EMS" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (12SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until a mould opening of approximately 60 points is obtained, and connect pin (24SE7) to hole marked "24" in type carrier cam lever extension.

Assemble mould in adaptor base (23SL) locating with screw (23SL5) and securing with screw (23SL4). Care must be taken to ensure that mould is against the locating faces of adaptor base.

Fill oil hole at end of inset with *warm* oil to prevent an air lock. Before attaching syphon oiler (15SL1) to mould fill the two tubes with warm oil. Before starting the day's work, fill the oiler and replenish it as soon as three-quarters have been consumed. Nothing but pure heavy mineral oil should be used; any other will cause tinning and seizure after a short run. Attach syphon oiler (15SL1).

Place mould and adaptor base on machine, sliding mould crossblock coupling hook (33SL1) into engagement with hook on type carrier. Locate the adaptor base against its two positioning faces by means of two eccentric clamps (24SL1) and secure with three screws (17SL1, 23SL2, 23SL3). (*Note.*—In securing adaptor base with mould to machine care should be taken to place the three screws in their correct holes, otherwise damage will be done to mould.)

Connect mould blade to mould blade fork (12SLL) by means of the pin (12SL5) using handle (12SL6); draw mould blade back to contact with pin (12SL5) by means of the nut (12SL3); lock with nut (12SL4). (*Note.*—Two pin wrenches should be used when locking these nuts in order to prevent damage to the mould blade by twisting of mould blade fork).

Attach water connection (30SLL).

Make certain that the abutment cap (4SF8) is in the correct position for "setwise" sizes of type to be cast. (*Refer to* "MOULD BLADE SIZING MECHANISM"—ADJUSTMENTS WHEN PREPARING TO CAST TYPE, page 17.) Connect ball end (6SF1) to hole marked "TYPE TO 42 POINT" on mould blade slide drive lever, and set the fulcrum pin eccentric (5SF18) in the "SMALL TYPE" position.

Turn machine to 150°, and screw micrometer wedge right down; set the micrometer wedge scale at zero and see that the 14 TO 72 POINT type channel block (30SEE) is fitted.

REMOVING MOULD FROM MACHINE

Turn machine to 170° and disconnect the ball end (6SF1) from mould blade slide drive lever.

Bring mould blade to forward position, loosen nuts (12SL3 and 12SL4), and remove the pin (12SL5).

Screw back the micrometer wedge until approximately 60 points opening is indicated by the scales, and pull slide back until the connection is clear of mould blade.

Remove water connection and oiler.

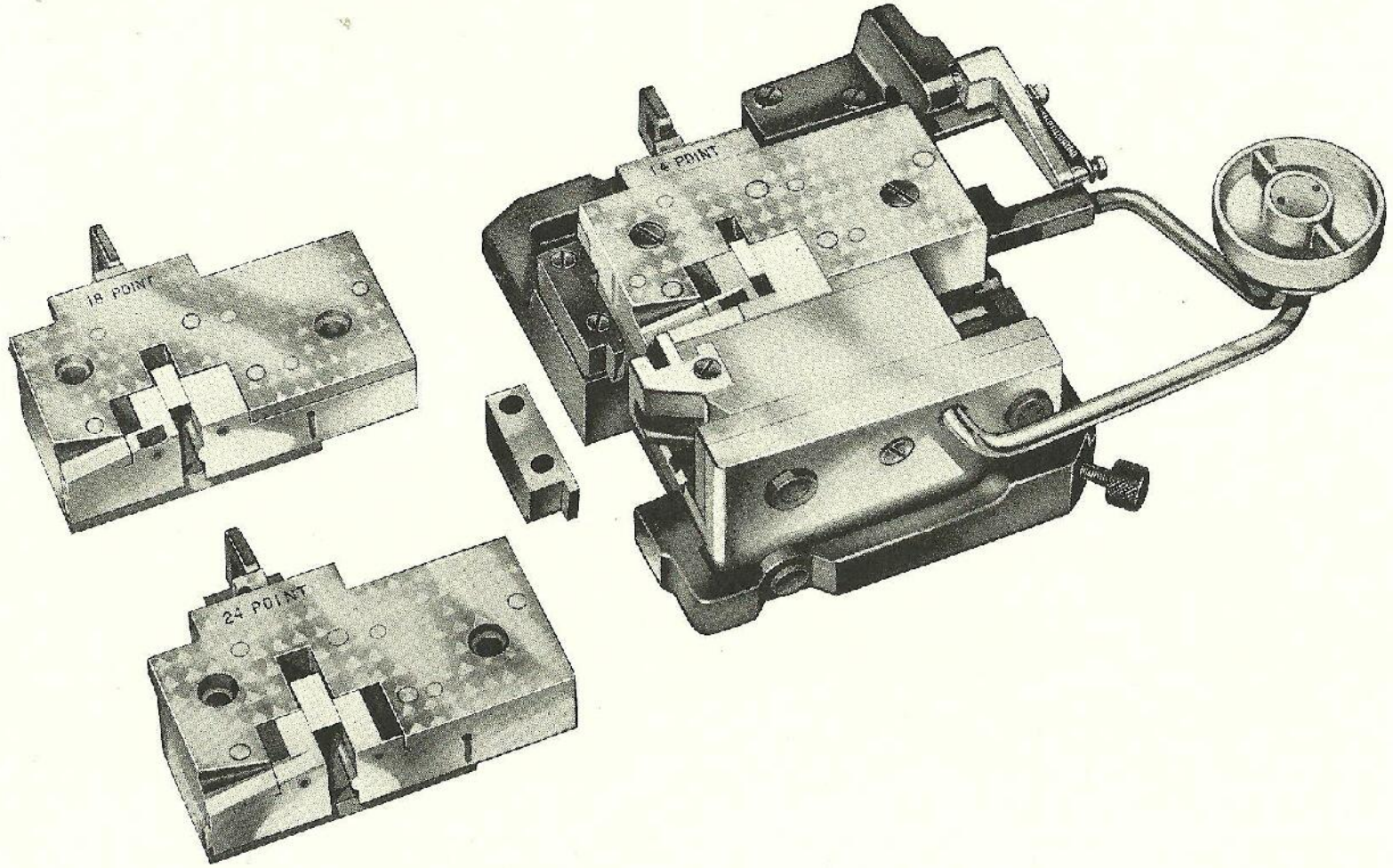
Remove the three screws and two eccentric clamps that secure the mould, removing the clamp nearest the front of machine first.

Slide mould and adaptor base squarely forward until coupling hook is clear of mould and can be withdrawn from type carrier; mould can now be lifted off.

Remove mould from adaptor base and blow out water. Oil the mould and place it in box.

TO CHANGE FROM ONE POINT SIZE OF INSET TO ANOTHER

(1) Prepare a place covered with clean paper, and have hands clean and free. (2) Remove crossblock. (3) Open the blade to approximately 18 points. (4) Swing blade operating lever spring box out of contact with lower blade lever. (5) Remove the two small screws on side of base and two large ones on top of inset.



X "MONOTYPE" LARGE TYPE COMPOSITION MOULD ON ADAPTOR BASE X

The illustration shows mould blade inset section for changing the type sizes

The inset can now be removed by pushing it away from the back of the base in the direction formerly occupied by the cross block, at the same time holding it down on the base to prevent the blade operating levers from being bent.

When the inset is forward sufficiently to clear the aperture in the base which positions the inset, push end-wise to disengage the levers from the blades.

As the important sharp edges of the inset are unprotected when away from the base, extreme care must be taken that they are neither dulled nor damaged.

Blow the waterways clear, and wipe and oil thoroughly before placing it in its compartment in the mould box.

6. The required inset and the mould base must be thoroughly washed in clean naphtha, benzine or petrol, and dried with a clean white cloth; any small particle of type metal adhering to any part should be removed with a piece of brass rule. In no circumstance must grinding substances (such as emery cloth or oil stone) be used.

Smear a light coating of clean oil on the bottom of the inset and slide into position,engaging the blade levers by reversing the instructions contained in paragraph 5 above.

Insert the two small screws for holding the inset to the base and screw up firmly, then release and bring them just up to bearing. Insert the two large screws and screw down firmly, then release and bring them just up to bearing. Finally tighten the two small screws firmly; then the two large ones.

The crossblock must also be thoroughly washed before replacing, and care taken that the jet blade is in its correct position, *i.e.*, the fluted end to the front. The cross block must be oiled before inserting, and should work freely; if not, it indicates that the inset has been replaced with dirt between it and the base, in which case it must be taken out and cleaned.

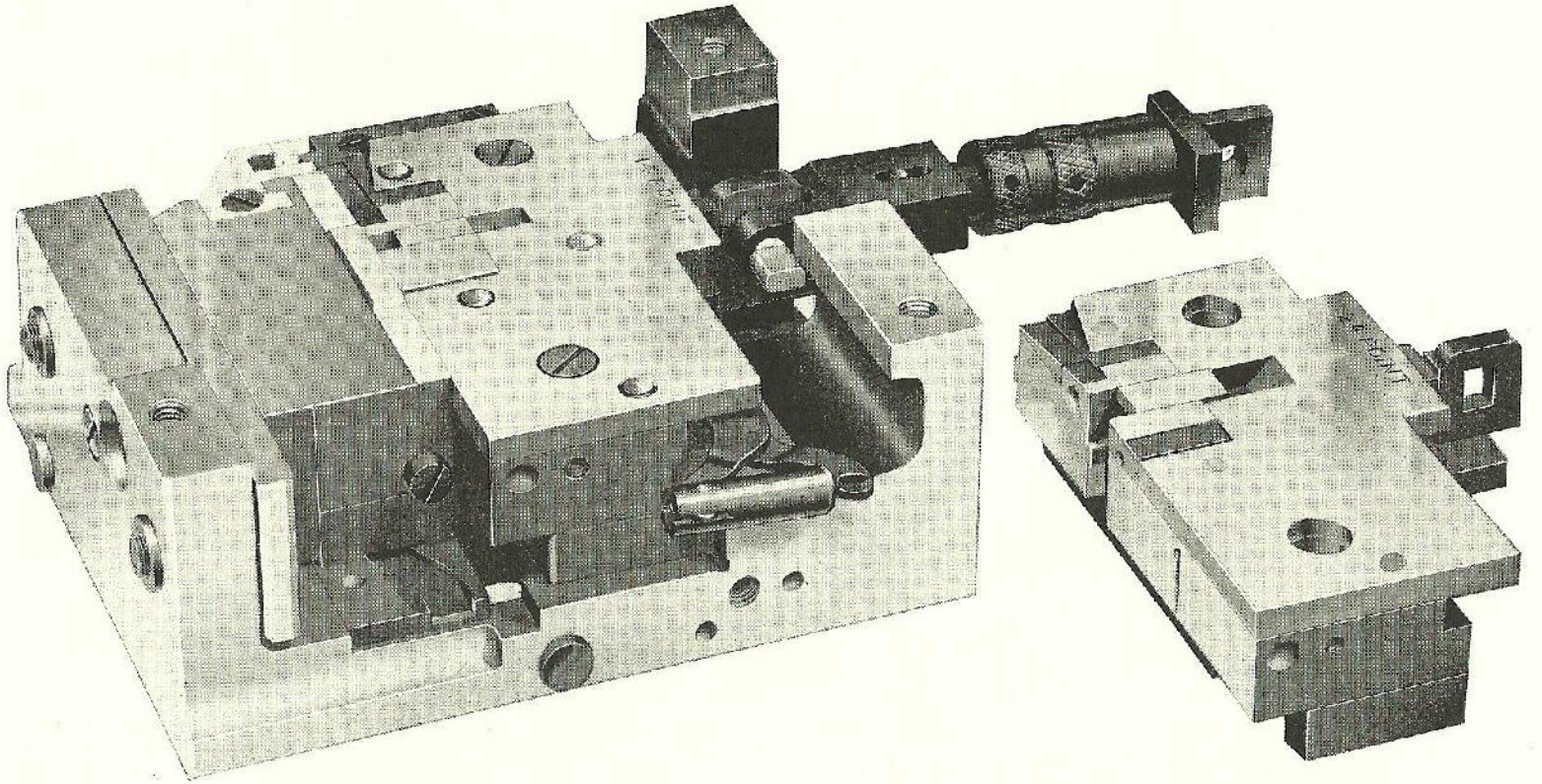
DISMANTLING AND ASSEMBLING INSETS

If it is found necessary to take apart an inset proceed in the following manner: Prepare a suitable place and bear in mind that success or failure to make a satisfactory job will depend entirely on scrupulous cleanliness and the preservation of the sharp edges of the insets.

1. Drill $\frac{1}{4}$" hole in ingot of type metal.
2. Procure a steel punch of suitable size (this may be purchased from the Corporation).
3. Plan a method whereby the tapered dowels are ensured of being replaced in the identical holes from which they are taken.
4. With the cover plate facing downward, place the inset on the ingot of type metal, with the dowel over the $\frac{1}{4}$" hole; remove the dowels with the punch by giving the latter a sharp tap with a small hammer.
5. Remove the four screws holding the cover and take off the cover plate. Remove the blade back stop screw in centre of intermediate plate.
6. In removing the blades they must be slid from front to rear. *Never lift the rear of the blades when passing them between the side blocks, nor try to force them over the nick pin,* as this would injure the blade or nick pin.
7. Clean carefully all parts which have been removed and insert blade. This is best done by placing the upper blade on the lower, and working backwards and forwards to make sure there is not dirt between them. Place the blades on the intermediate plate and hold them firmly down when sliding into position. These should also be worked backwards and forwards.
8. Before replacing dowels pull a strip of clean cloth backwards and forwards through the holes.
9. Replace the cover; clean the dowels and insert them lightly. Replace the four cover screws and bring them just up to bearing. Tap the dowels gently and tighten screws a little. Tap the dowels home and screw up firmly.

The water passages of the mould must be kept clean, and whenever the mould is taken off the machine blow water out and blow oil through them.

If any defects occur in the mould that cannot be corrected by following these directions it is necessary only to return the particular inset which is troublesome. Return to us samples of the defective type and a memorandum giving particulars of the trouble.



X SUPER CASTER DISPLAY TYPE MOULD, 14-36 POINT X

With illustration of mould blade inset section for casting another size of type

INSTRUCTIONS UPON THE "MONOTYPE" DISPLAY MACHINE MOULD WITH 14 POINT TO 36 POINT INSETS

ATTACHING MOULD TO MACHINE

Set matrix-head base to correct position (5½ TO 36 POINT) by reversing (if necessary) the locating piece (8SE6).

Place stop lever handle (2SF5) in the "15 EM" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (12SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until mould blade opens to approximately 60 points.

Connect the pin (24SE7) to hole marked for size of type to be cast in the type carrier cam lever extension.

Push crossblock and coupling hook back until hook is just clear of mould.

Fill the oil hole on end of the inset with *warm* oil to prevent air lock.

Before attaching the syphon oiler (15SL1) to the mould, fill the two tubes with warm oil. (Always before starting the day's work, fill the oiler and replenish it as soon as three-quarters have been consumed.) Nothing but pure heavy mineral oil should be used; any other will cause tinning and seizure after a short run.

Attach syphon oiler (15SL1).

Assemble mould on adaptor base (23SL6), locating with screw (23SL7), and securing with screw (23SL4). (Care must be taken to ensure that the mould is against the locating face in the adaptor base.)

Fix the type clamp operating block marked "14 TO 36" (31SL3) on adaptor base by means of screws (31SL5).

Attach the syphon oiler (15SL1).

Place mould and adaptor base on machine, sliding the mould crossblock coupling hook (8447) into engagement with hook on type carrier. Locate the adaptor base against its two positioning faces by means of the two eccentric clamps (24SL1) and secure with three screws (17SL1, 23SL2 and 23SL3). [To prevent damage to mould when screwing adaptor base to machine, care should be taken to place the three screws in their correct holes.]

Place the bridge for display matrix (a1SE) on the adaptor base and secure with two screws (1SE3) and one screw (1SE6).

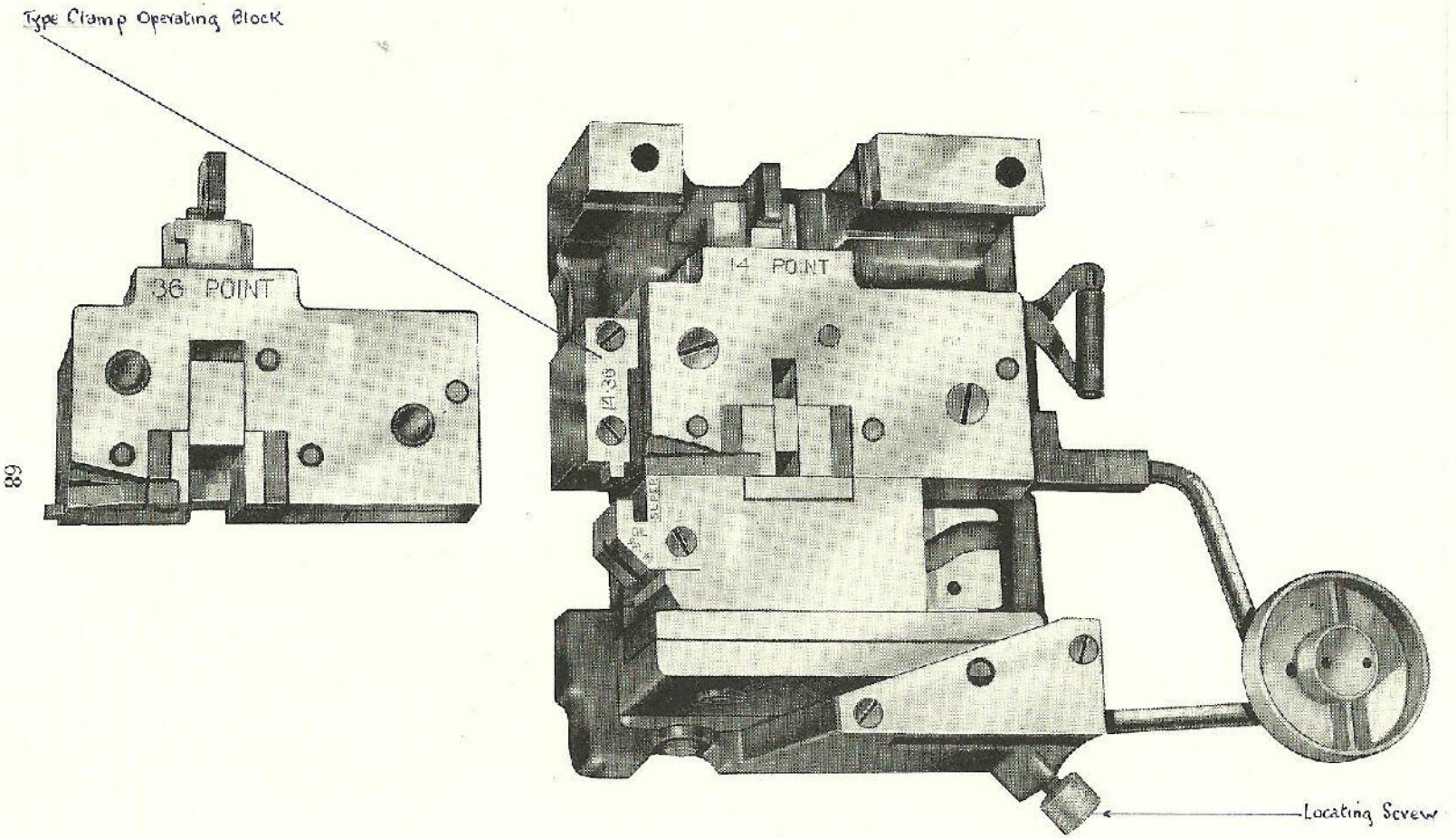
REMOVING MOULD FROM MACHINE

Remove bridge (a1SE) by taking out screws (1SE3 and 1SE6). Turn machine to 170° and disconnect the ball end (6SF1). Remove water connection (30SLL) and oiler (15SL1). Disconnect the mould blade from the mould blade fork (32SLL) by loosening the nuts (32SL3) and (32SL4) and removing the pin (32SL5). Screw back the micrometer wedge until approximately 60 points opening is indicated by the scales, and pull slide back until the connection is clear of the mould blade. Remove the three screws and two eccentric clamps that secure the mould, removing first the clamp nearest front of machine. Slide mould adaptor base squarely forward until coupling hook is clear of mould and can be withdrawn from type carrier, when adaptor base and mould can be lifted off machine.

Remove mould from adaptor base and blow out water; oil the mould and place in box.

TO CHANGE FROM ONE POINT SIZE OF INSET TO ANOTHER

1. Prepare a place covered with clean paper, and have the hands clean and free.
2. Remove the crossblock.
3. Open the blades to approximately 18 points.
4. Swing the blade operating lever spring box out of contact with the lower blade lever.
5. Remove the two small screws on the side of the base and the two large ones on top of inset



Display Typecaster Mould on Adaptor Base, with illustration of mould blade inset section for casting another size of type

The inset can now be removed by pushing it away from the back of the base in the direction formerly occupied by the crossblock, at the same time holding it down on the base to prevent the blade operating levers from being bent.

When the inset is forward sufficiently to clear the aperture in the base which positions the inset, push end-wise to disengage the levers from the blades.

As the important sharp edges of the inset are unprotected when away from the base, extreme care must be taken that they are neither dulled nor damaged.

Blow the waterways clear, and wipe and oil thoroughly before placing it in its compartment in the mould box.

6. The required inset and the mould base must be thoroughly washed in clean naphtha, benzine or petrol, and dried with a clean white cloth; any small particle of type metal adhering to any part should be removed with a piece of brass rule. In no circumstance must grinding substances (such as emery cloth or oil stone) be used.

Smear a light coating of clean oil on the bottom of the inset and slide into position, engaging the blade levers by reversing the instructions contained in paragraph 5 above.

Insert the two small screws for holding the inset to the base and screw up firmly, then release and bring them just up to bearing. Insert the two large screws and screw down firmly, then release and bring them just up to bearing. Finally tighten the two small screws firmly; then the two large ones.

The crossblock must also be thoroughly washed before replacing, and care taken that the jet blade is in its correct position, *i.e.*, the fluted end to the front. The crossblock must be thoroughly oiled before inserting, and it should work freely; if not, it indicates that the inset has been replaced with dirt between it and the base, in which case it must be taken out and cleaned.

DISMANTLING AND ASSEMBLING INSETS

If it is found necessary to take apart an inset proceed in the following manner: Prepare a suitable place and bear in mind that success or failure to make a satisfactory job will depend entirely on scrupulous cleanliness and the preservation of the sharp edges of the insets.

1. Drill $\frac{1}{4}''$ hole in ingot of type metal.
2. Procure a steel punch of suitable size (this may be purchased from the Corporation).
3. Plan a method whereby the tapered dowel pins are ensured of being replaced in the identical holes from which they are taken.
4. With the cover plate facing downward, place the inset on the ingot of type metal, with the dowel pin over the $\frac{1}{4}''$ hole, and remove the pins with the punch by giving them a sharp tap with a small hammer.
5. Remove the four screws holding the cover and take off the cover plate. Remove the blade back stop screw in centre of intermediate plate.
6. In removing the blades they must be slid from front to rear. *Never lift the rear of the blades when passing them between the side blocks, nor try to force them over the nick pin,* as this would injure the blade or nick pin.
7. Clean carefully all parts which have been removed and insert blade. This is best done by placing the upper blade on the lower, and working backwards and forwards to make sure there is not dirt between them. Place the blades on the intermediate plate and hold them firmly down when sliding into position. These should also be worked backwards and forwards.
8. Before replacing the dowel pins pull a strip of clean cloth backwards and forwards through the holes.
9. Replace cover and clean and insert dowel pins lightly; replace the four cover screws and bring them just up to bearing. Tap the pins lightly and tighten screws a little. Tap the pins home and screw up firmly.

If any defect occurs in the mould that cannot be corrected by following these directions it is necessary only to return to our Works the particular inset which is troublesome. Return to us samples of the defective type, also a memorandum giving particulars of the trouble.

INSTRUCTIONS UPON THE "MONOTYPE" DISPLAY MACHINE MOULD WITH 42 POINT TO 48 POINT INSETS

ATTACHING MOULD TO MACHINE

Set matrix-head base to correct position (12 TO 72 POINT) by reversing (if necessary) the locating piece (8SE6).

Place stop lever handle (2SF5) in the "15 EM" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (12SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until mould blade opens to approximately 60 points.

Connect the pin (24SE7) to hole marked for size of type to be cast in the type carrier cam lever extension.

Push crossblock and coupling hook back until hook is just clear of mould.

Fill the oil hole on end of the inset with *warm* oil to prevent air lock.

Before attaching the syphon oiler (15SL1) to the mould, fill the two tubes with warm oil. (Always before starting the day's work, fill the oiler and replenish it as soon as three-quarters have been consumed.) Nothing but pure heavy mineral oil should be used; any other will cause tinning and seizure after a short run.

Attach syphon oiler (15SL1).

Assemble mould on adaptor base (23SL6), locating with screw (23SL7), and securing with screw (23SL4). (Care must be taken to ensure that the mould is against the locating face in the adaptor base.)

Fix the type clamp operating block marked "42 TO 48" (31SL4) on the adaptor base by means of screws (31SL5).

Attach the syphon oiler (15SL1).

Place mould and adaptor base on machine, sliding the mould crossblock coupling hook (8447) into engagement with hook on type carrier. Locate the adaptor base against its two positioning faces by means of the two eccentric clamps (24SL1); secure with three screws (17SL1, 23SL2 and 23SL3). *Note.*—In securing adaptor base with mould to machine, care should be taken to place the three screws in their correct holes, otherwise damage will be done to the mould.

Connect mould blade to mould blade fork (32SLL) by means of the pin (32SL5), using handle (12SL6), draw mould blade back to contact with pins (32SL5) by means of the nut (32SL3) and lock with nut (32SL4).

Connect ball end (6SF1) to mould blade slide lever, according to hole marked for size of type to be cast, and set the fulcrum pin eccentric (5SF18) in position marked "40-72".

Attach water connection (30SLL).

Place the bridge for display matrix (a1SE) on the adaptor base and secure with two screws (1SE3) and one screw (1SE6).

REMOVING MOULD FROM MACHINE

Remove bridge (a1SE) by taking out screws (1SE3 and 1SE6). Turn machine to 170° and disconnect the ball end (6SF1). Remove water connection (30SLL) and oiler (15SL1). Disconnect the mould blade from the mould blade fork (32SLL) by loosening the nuts (32SL3) and (32SL4) and removing the pin (32SL5). Screw back the micrometer wedge until approximately 60 points opening is indicated by the scales, and pull slide back until the connection is clear of the mould blade. Remove the three screws and two eccentric clamps that secure the mould, removing first the clamp nearest front of machine. Slide mould adaptor base squarely forward until coupling hook is clear of mould and can be withdrawn from type carrier, when adaptor base and mould can be lifted off machine.

Remove mould from adaptor base and blow out water; oil the mould and place in box.

TO CHANGE FROM ONE POINT SIZE OF INSET TO ANOTHER

1. Prepare a place covered with clean paper, and have the hands clean and free of particles of metal.

2. Remove the crossblock.

3. Open the blades to approximately 18 points.

4. Swing the blade operating lever spring box out of contact with the lower blade lever.

5. Remove the two small screws on the side of the base and the two large ones on top of inset.

The inset can now be removed by pushing it away from the back of the base in the direction formerly occupied by the crossblock, at the same time holding it down on the base to prevent the blade operating levers from being bent.

When the inset is forward sufficiently to clear the aperture in the base which positions the inset, push end-wise to disengage the levers from the blades.

As the important sharp edges of the inset are unprotected when away from the base, extreme care must be taken that they are neither dulled nor damaged.

Blow the waterways clear, and wipe and oil thoroughly before placing it in its compartment in the mould box.

6. The required inset and the mould base must be thoroughly washed in clean naphtha, benzine or petrol, and dried with a clean white cloth; any small particle of type metal adhering to any part should be removed with a piece of brass rule. In no circumstance must grinding substances (such as emery cloth or oil stone) be used.

Smear a light coating of clean oil on the bottom of the inset and slide into position, engaging the blade levers by reversing the instructions contained in paragraph 5 above.

Insert the two small screws for holding the inset to the base and screw up firmly, then release and bring them just up to bearing. Insert the two large screws and screw down firmly, then release and bring them just up to bearing. Finally tighten the two small screws firmly; then the two large ones.

The crossblock must also be thoroughly washed before replacing, and care taken that the jet blade is in its correct position, *i.e.*, the fluted end to the front. The crossblock must be thoroughly oiled before inserting, and it should work freely; if not, it indicates that the inset has been replaced with dirt between it and the base, in which case it must be taken out and cleaned.

DISMANTLING AND ASSEMBLING INSETS

Note.—Before dismantling be certain to remove the small blade cover plate attached to the large cover plate on top of inset. This is important, because if it is not removed it will be broken when removing tapered dowel pins. Also, when assembling, do not attach this blade cover plate until the remainder of the inset is assembled.

If it is found necessary to take apart an inset proceed in the following manner: Prepare a suitable place and bear in mind that success or failure to make a satisfactory job will depend entirely on scrupulous cleanliness and the preservation of the sharp edges of the insets.

1. Drill $\frac{1}{4}$" hole in ingot of type metal.

2. Procure a steel punch of suitable size (this may be purchased from the Corporation).

3. Plan a method whereby the tapered dowel pins are ensured of being replaced in the identical holes from which they are taken.

4. With the cover plate facing downward, place the inset on the ingot of type metal, with the dowel pin over the $\frac{1}{4}$" hole, and remove the pins with the punch by giving them a sharp tap with a small hammer.

5. Remove the four screws holding the cover and take off the cover plate. Remove the blade back stop screw in centre of intermediate plate.

6. In removing the blades they must be slid from front to rear. *Never lift the rear of the blades when passing them between the side blocks, nor try to force them over the nick pin,* as this would injure the blade or nick pin.

7. Clean carefully all parts which have been removed and insert blade. This is best done by placing the upper blade on the lower, and working backwards and forwards to make sure there is not dirt between them. Place the blades on the intermediate plate and hold them firmly down when sliding into position. These should also be worked backwards and forwards.

8. Before replacing dowels pull a strip of clean cloth backwards and forwards through the holes.

9. Replace cover and clean and insert dowel pins lightly; replace the four cover screws and bring them just up to bearing. Tap the pins lightly and tighten screws a little. Tap the pins home and screw up firmly.

If any defect occurs in the mould that cannot be corrected by following these directions it is necessary only to return to our Works the particular inset which is troublesome. Return to us samples of the defective type, also a memorandum giving particulars of the trouble.

INSTRUCTIONS UPON THE SUPER CASTER DISPLAY MOULD, 14 POINT TO 36 POINT

ATTACHING MOULD TO MACHINE

Set the matrix-head base to the correct position, that is (5½ TO 36 POINT) by reversing (if necessary) the locating piece (8SE6).

Place stop lever handle (2SF5) in the "15 EM" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (12SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until mould blade opening of approximately 60 points is obtained.

Connect the pin (24SE7) to hole marked for size of type to be cast in the type carrier cam lever extension.

Push crossblock and coupling hook back until hook is just clear of mould.

Fill the oil hole on end of the inset with *warm* oil to prevent air lock.

Before attaching the syphon oiler (15SL1) to the mould, fill the two tubes with warm oil. (Always before starting the day's work, fill the oiler and replenish it as soon as three-quarters have been consumed.) Nothing but pure heavy mineral oil should be used; any other will cause tinning and seizure after a short run.

Attach syphon oiler (15SL1).

Place mould on machine, sliding coupling hook into engagement with hook on type carrier. Locate the mould against its two positioning faces by means of the two eccentric clamps (14SL1) and secure with three screws (17SL1).

Connect the mould blade to mould blade fork (12SLL) by means of the pin (12SL5) using handle (12SL6); draw mould blade back to contact with pin (12SL5) by means of the nut (12SL3) and lock with nut (12SL4).

Place the bridge for display matrix (a1SE) on the mould and secure with three screws (1SE3).

Attach water connection (19SLL).

Make certain that the abutment cap (4SF8) is in the correct position for "setwise" size of type to be cast. (*Refer to* "MOULD BLADE SIZING MECHANISM"—ADJUSTMENTS WHEN PREPARING TO CAST TYPE, page 17.)

Connect ball end (6SF1) to hole marked "TYPE TO 42 POINT" on mould blade slide drive lever and set the fulcrum pin eccentric (5SF18) in the "SMALL TYPE" position.

Turn the machine to 150°, and screw micrometer wedge right down and set the micrometer wedge scale at zero and see that the 14 to 72 point type channel block (30SEE) is fitted.

REMOVING MOULD FROM MACHINE

Remove the display matrix bridge (a1SE) by taking out the three screws (1SE3). Turn machine to 170° and disconnect the ball end (6SF1). Take off the water connection (19SLL) and the oiler (15SL1).

Disconnect the mould blade from the mould blade fork (12SLL) by loosening the nuts (12SL3) and (12SL4) and removing the pin (12SL5). Turn up the micrometer wedge screw handwheel until approximately 60 points opening is indicated by the scales.

Take out the three screws (17SL1) and the two eccentric clamps (14SL1), pull the mould toward the right-hand side of machine until the coupling hook is clear of the mould and can be uncoupled from the type carrier.

Lift mould off machine, blow out water, oil the mould and place in box.

TO CHANGE FROM ONE POINT SIZE OF INSET TO ANOTHER

1. Prepare a place covered with clean paper, and have the hands clean and free.
2. Remove the crossblock.
3. Open the blades to approximately 18 points.
4. Swing the blade operating lever spring box out of contact with the lower blade lever.
5. Remove the two small screws on the side of the base and the two large ones on top of inset.

The inset can now be removed by pushing it away from the back of the base in the direction formerly occupied by the crossblock, at the same time holding it down on the base to prevent the blade operating levers from being bent.

When the inset is forward sufficiently to clear the aperture in the base which positions the inset, push end-wise to disengage the levers from the blades.

As the important sharp edges of the inset are unprotected when away from the base, extreme care must be taken that they are neither dulled nor damaged.

Blow the waterways clear, and wipe and oil thoroughly before placing it in its compartment in the mould box.

6. The required inset and the mould base must be thoroughly washed in clean naphtha, benzine or petrol, and dried with a clean white cloth; any small particle of type metal adhering to any part should be removed with a piece of brass rule. In no circumstance must grinding substances (such as emery cloth or oil stone) be used.

Smear a light coating of clean oil on the bottom of the inset and slide into position, engaging the blade levers by reversing the instructions contained in paragraph 5 above.

Insert the two small screws for holding the inset to the base and screw up firmly, then release and bring them just up to bearing. Insert the two large screws and screw down firmly, then release and bring them just up to bearing. Finally tighten the two small screws firmly; then the two large ones.

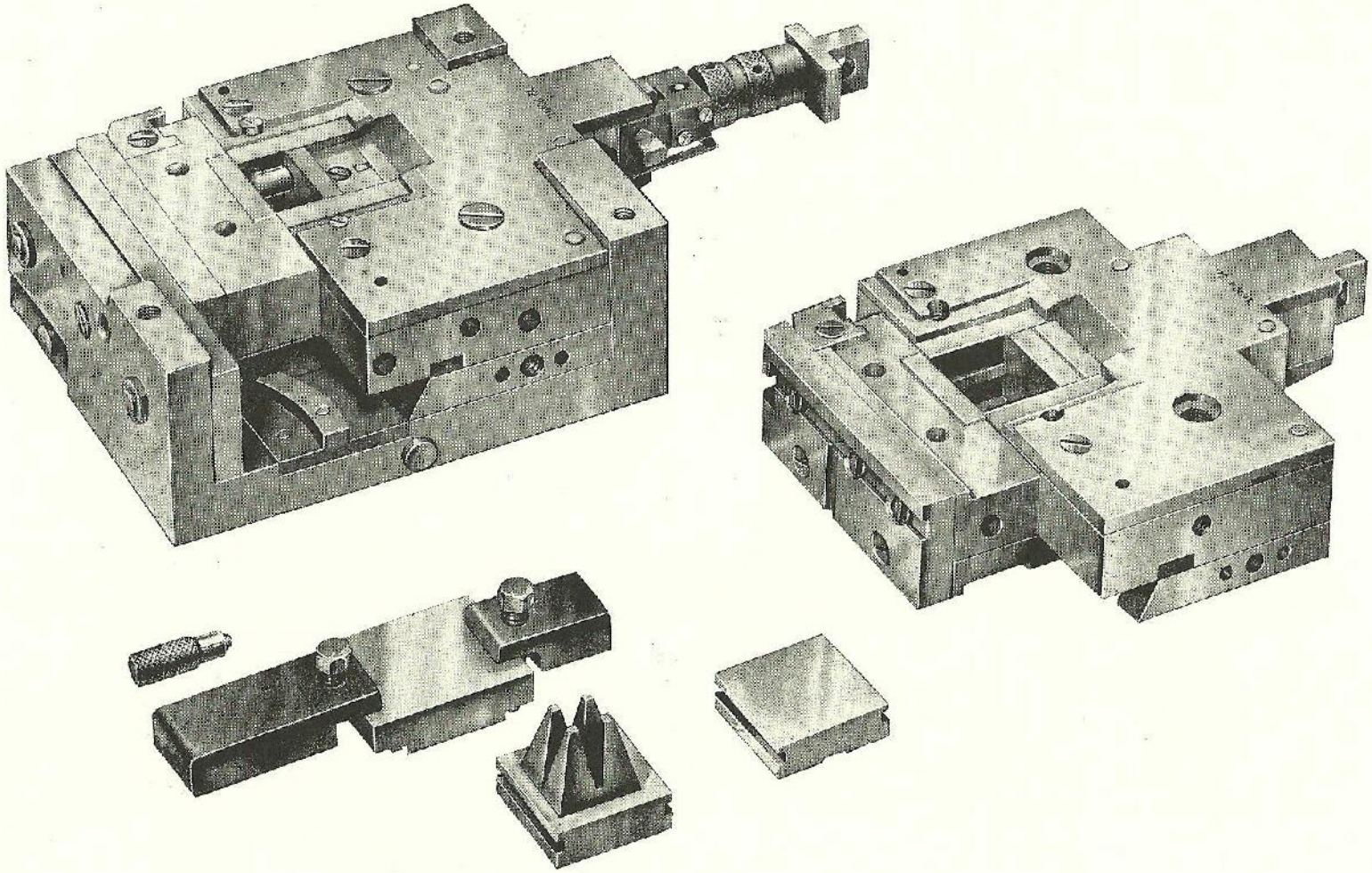
The crossblock must also be thoroughly washed before replacing, and care taken that the jet blade is in its correct position, *i.e.*, the fluted end to the front. The crossblock must be thoroughly oiled before inserting, and it should work freely; if not, it indicates that the inset has been replaced with dirt between it and the base, in which case it must be taken out and cleaned.

DISMANTLING AND ASSEMBLING INSETS

Note.—Before dismantling be certain to remove the small blade cover plate attached to the large cover plate on top of inset. This is important, because if it is not removed it will be broken when removing tapered dowel pins. Also, when assembling, do not attach this blade cover plate until the remainder of the inset is assembled.

If it is found necessary to take apart an inset proceed in the following manner: Prepare a suitable place and bear in mind that success or failure to make a satisfactory job will depend entirely on scrupulous cleanliness and the preservation of the sharp edges of the insets.

1. Drill $\frac{1}{4}''$ hole in ingot of type metal.
2. Procure a steel punch of suitable size (this may be purchased from the Corporation).
3. Plan a method whereby the tapered dowel pins are ensured of being replaced in the identical holes from which they are taken.
4. With the cover plate facing downward, place the inset on the ingot of type metal, with the dowel pin over the $\frac{1}{4}''$ hole, and remove the pins with the punch by giving them a sharp tap with a small hammer.



72-POINT SUPER CASTER DISPLAY TYPE MOULD

The illustration also shows mould blade inset section and special crossblock for casting hollow quotations, quotation core block, and cap for casting 72-point low spaces

5. Remove the four screws holding the cover and take off the cover plate. Remove the blade back stop screw in centre of intermediate plate.

6. In removing the blades they must be slid from front to rear. *Never lift the rear of the blades when passing them between the side blocks, nor try to force them over the nick pin,* as this would injure the blade or nick pin.

7. Clean carefully all parts which have been removed and insert blade. This is best done by placing the upper blade on the lower, and working backwards and forwards to make sure there is not dirt between them. Place the blades on the intermediate plate and hold them firmly down when sliding into position. These should also be worked backwards and forwards.

8. Before replacing the dowel pins pull a strip of clean cloth backwards and forwards through the holes.

9. Replace cover and clean and insert dowel pins lightly; replace the four cover screws and bring them just up to bearing. Tap the pins lightly and tighten screws a little. Tap the pins home and screw up firmly.

If any defect occurs in the mould that cannot be corrected by following these directions it is necessary only to return to our Works the particular inset which is troublesome. Return to us samples of the defective type, also a memorandum giving particulars of the trouble.

INSTRUCTIONS UPON THE SUPER CASTER DISPLAY MOULD, 42 POINT TO 72 POINT

ATTACHING MOULD TO MACHINE

Set the matrix-head base to the correct position, that is "42 TO 72 POINT" by reversing (if necessary) the locating piece (8SE6).

Place stop lever handle (2SF5) in the "15 EM" position, turn machine to 170° and disconnect the ball end (6SF1) from the mould blade slide drive lever.

Bring mould blade slide (4SF) to the forward position, so that the mould blade fork (13SLL) can be connected by means of pin (3SF).

Screw back the micrometer wedge screw until mould blade opens to approximately 60 points.

Connect the pin (24SE7) to hole marked for size of type to be cast in the type carrier cam lever extension.

Push crossblock and coupling hook back until hook is just clear of mould.

Fill the oil hole on end of the inset with *warm* oil to prevent air lock.

Before attaching the syphon oiler (16SL1) to the mould, fill the two tubes with warm oil.

Before starting the day's work, fill the oiler and replenish it as soon as three-quarters have been consumed. Nothing but pure heavy mineral oil should be used; any other will cause tinning and seizure after a short run.

Attach syphon oiler (16SL1) and mould on machine, sliding coupling hook into engagement with hook on type carrier. Locate the mould against its two positioning faces by means of the two eccentric clamps (14SL1); secure with three screws (17SL1).

Connect the mould blade to mould blade fork (13SLL) by means of the pin (13SL5) using handle (12SL6); draw mould blade back to contact with pin (13SL5) by means of the nut (13SL3) and lock with nut (13SL4).

Place the bridge for display matrix (a1SE) on the mould and secure with three screws (1SE3).

Attach water connection (20SLL).

Make certain that the abutment cap (4SF8) is in the correct position for "setwise" size of type to be cast. (*Refer to* "MOULD BLADE SIZING MECHANISM"—ADJUSTMENTS WHEN PREPARING TO CAST TYPE, page 17.)

Connect ball end (6SF1) to hole marked for size of type to be cast on mould blade slide drive lever and set the fulcrum pin eccentric (5SF18) in the position marked "40 to 72".

Turn machine to 150°, and screw micrometer wedge right down and set the micrometer wedge scale at zero and see that the "14 to 72 POINT" type channel block (30SEE) is fitted.

REMOVING MOULD FROM MACHINE

Remove the display matrix bridge (a1SE) by taking out the three screws (1SE3). Turn machine to 170° and disconnect the ball end (6SF1). Take off the water connection (20SLL) and the oiler (16SL1).

Disconnect the mould blade from the mould blade fork (12SLL) by loosening the nuts (13SL3) and (13SL4) and removing the pin (13SL5). Turn the micrometer wedge screw handwheel until approximately 60 points opening is indicated by its scales.

Take out the three screws (17SL1) and the two eccentric clamps (14SL1); pull the mould toward the right-hand side of machine until the coupling hook is clear of the mould and can be uncoupled from the type carrier.

Lift mould off machine, blow out water, oil the mould and place in box.

TO CHANGE FROM ONE POINT SIZE OF INSET TO ANOTHER

1. Prepare a place covered with clean paper, and have the hands clean and free from particles of metal.
2. Remove the crossblock.
3. Open the blade to approximately 18 points.
4. Swing the blade operating lever spring box out of contact with the lower blade lever.
5. Remove the two small screws on the side of the base and the two large ones on top of inset.

The inset can now be removed by pushing it away from the back of the base in the direction formerly occupied by the crossblock, at the same time holding it down on the base to prevent the blade operating levers from being bent.

When the inset is forward sufficiently to clear the aperture in the base which positions the inset, push end-wise to disengage the levers from the blades.

As the important sharp edges of the inset are unprotected when away from the base, extreme care must be taken that they are neither dulled nor damaged.

Blow the waterway clear, and wipe and oil thoroughly before placing it in its compartment in the mould box.

6. The required inset and the mould base must be thoroughly washed in clean naphtha, benzine or petrol, and dried with a clean white cloth; any small particle of type metal adhering to any part should be removed with a piece of brass rule.

In no circumstance must grinding substances (such as emery cloth or oil stone) be used.

Smear a light coating of clean oil on the bottom of the inset and slide into position, engaging the blade levers by reversing the instructions contained in paragraph 5 above.

Insert the two small screws for holding the inset to the base and screw up firmly, then release and bring them just up to bearing. Insert the two large screws and screw down firmly, then release and bring them just up to bearing. Finally tighten the two small screws firmly; then the two large ones.

The crossblock must also be thoroughly washed before replacing, and care taken that the jet blade is in its correct position, *i.e.*, the fluted end to the front. The crossblock must be thoroughly oiled before inserting, and it should work freely; if not, it indicates that the inset has been replaced with dirt between it and the base, in which case it must be taken out and cleaned.

DISMANTLING AND ASSEMBLING INSETS

Prepare a suitable place, and bear in mind that success or failure to produce a satisfactory job will depend entirely upon scrupulous cleanliness and the preservation of the sharp edges of the insets.

1. Place the inset on the bench with the cover downward, and remove the three screws that secure the cover, taking care to remove the correct screws only: *i.e.*, those which have their points flush with the face of the cover plate. Place these screws on the bench in such a manner that they can with certainty be replaced in the same holes. Turn the inset over and remove the two screws from the front of cover plate. Do not remove or damage the dowel pins.

Take off the cover plate by inserting two screwdrivers under the cover in the slots provided, and gently prise it up.

2. Remove the mould blade stop by taking out the two small screws.

3. The blade can now be removed by sliding it toward the back of the inset. *Never lift the rear of the blade when passing it between the side blocks, nor try to force it over the nick pin,* or damage will be done to blade or nick pin.

4. Clean carefully all parts which have been removed and insert blade. This is best done by placing the blade on the intermediate plate, and holding it down while sliding it into position; do not push it straight, but work backwards and forwards until it is in position.

5. Make sure that the cover and blocks are clean. Replace cover on the pins and secure with the two screws at the front; turn inset over and replace the three screws. Replace the mould blade stop and screws.

The water passages of the mould must be kept clean, and whenever the mould is taken off the machine, blow water out and blow oil through them.

CASTING LOW QUADS AND SPACES

(Applicable to "Monotype" Composition Moulds Nos. 20,000 and upward, and to 14, 18 and 24 Point "Monotype" Composition Moulds)

The low quad lever on these moulds is operated by means of the spring (25SL) attached to the lever (25SL1). To cast low quads and spaces turn the lever (25SL1) towards the rear; to cast types or high quads, turn the lever towards the front.

(Applicable to "Monotype" Composition Moulds numbered under 20,000)

These moulds must be fitted with the low quad lever (27SL). When assembling these moulds to the adaptor base (23SL) the bracket (a25SL2) must first be removed from the base by taking out the two screws (25SL3).

With mould assembled in base, replace the bracket (a25SL2) and connect the spring (25SL) to the lever (25SL1).

To cast low quads and spaces turn the lever (25SL1) towards the rear; to cast types or high quads, turn the lever towards the front.

(Applicable to "Monotype" Composition Moulds numbered under 20,000, fitted with Low Quad Mechanism—Old Style)

The low quad mechanism on these moulds is operated by means of the spring (28SL2) attached to the lever (28SL). To cast low quads and spaces attach the spring to the post on the left hand side of adaptor base. To cast types or high quads, attach the spring to the post on the right hand side of adaptor base.

A special mould blade fork (26SLL) must be connected in place of the fork (12SLL).

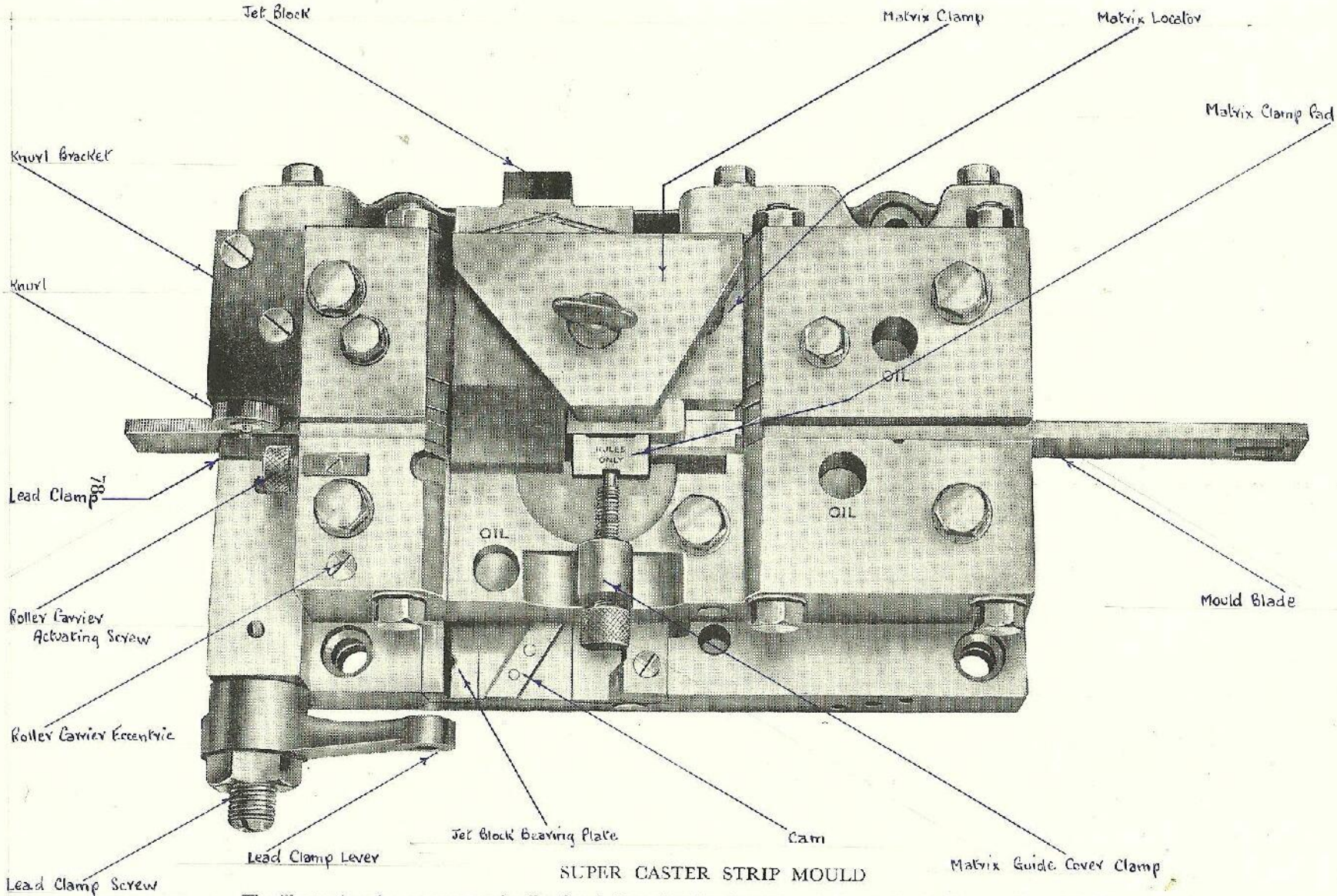
(Applicable to Super Caster, 14 to 36 Point Moulds)

Swing the blade operating lever spring box out of contact with the lower blade lever into the reverse position, abutting on the stop fixed to the lubricator. It is not necessary to remove the bridge to make this adjustment. When casting low quads or spaces it is important that a blank matrix be inserted in the matrix-case, otherwise the pressure of the molten type metal will spring the blades apart.

(Applicable to Super Caster, 42 to 72 Point Moulds)

With an inset of the required point size in position, and the cross slide fitted, remove the screw from top of blade and, using the mould blade cap handle, remove the blade cap.

Make sure that the matrix seat and low space cap are clean, and assemble the cap on the mould with the slot toward the cross slide. Assemble the two low space cap clamps. In clamping



SUPER CASTER STRIP MOULD

The illustration shows a patterned roller fitted, for embossing the strip printing surface with a continuous border pattern

with the two hexagon headed screws, great care should be taken to clamp both sides of the cap evenly. This is best done by tightening both screws until they just bear, and then making them both moderately tight, finally tightening them firmly in position.

When reassembling the blade cap, make certain that the blade and cap are perfectly clean.

Note.—When casting low quads and spaces always use a blank matrix in the matrix-holder, otherwise the pressure of the molten metal will spring the blades apart.

TO CAST QUOTATIONS

To cast quotations it is necessary for the mould to be equipped with the special crossblock used for quotations only; this is additional to the inset required for each quotation point size.

The machine must be equipped with the type channel block (fixed) (30SEE), and the matrix lifter lever shaft handle (17SE3) must be to the left. To set this handle in the correct position, turn the machine to 10° and lift the knob (19SE), turn handle to left and release the knob (19SE), making sure that it locks the shaft (17SE1) with handle (17SE3) in the correct position.

Open mould to the correct set size required, insert the core in the holder (8SLL) and place on machine, making sure that the core is in correct position over the mould opening. Care must be taken to ensure that the quotation core as it descends does not foul the mould blade.

INSTRUCTIONS FOR ASSEMBLING AND USING SUPER CASTER STRIP MOULDS (IMPROVED PATTERN)

The matrix guide (7035) is clamped on to the fixed side block by a hexagon headed screw (278), and is used to position the border matrix holder and dash matrix. It is also used for locating 6-point to 12-point low blade caps. Great care must be taken to see that the faces which locate on the fixed side block are quite clean.

The matrix cover (7400) is used in conjunction with the guide when casting borders or dashes. It is held in contact with the guide by a knurled headed screw (7410), placed in the upper hole of matrix clamp post (7409). This post should be inserted in the hole near the outside edge of the movable side block.

The matrix clamp (8725) is used when casting low leads from 1½ point to 12 point and with all rule matrices. With this clamp use the wing screw (9212) and washer (2194).

The matrix locater (7465) is used with 1½-point to 4-point low blade caps and with all rule matrices.

The knurled headed screw (7410) in the lower hole of the clamp post (7409) is used for keeping the rule matrix against the locater by means of the clamp pad (8724). This screw must not, in any circumstances, be used in conjunction with the low blade caps.

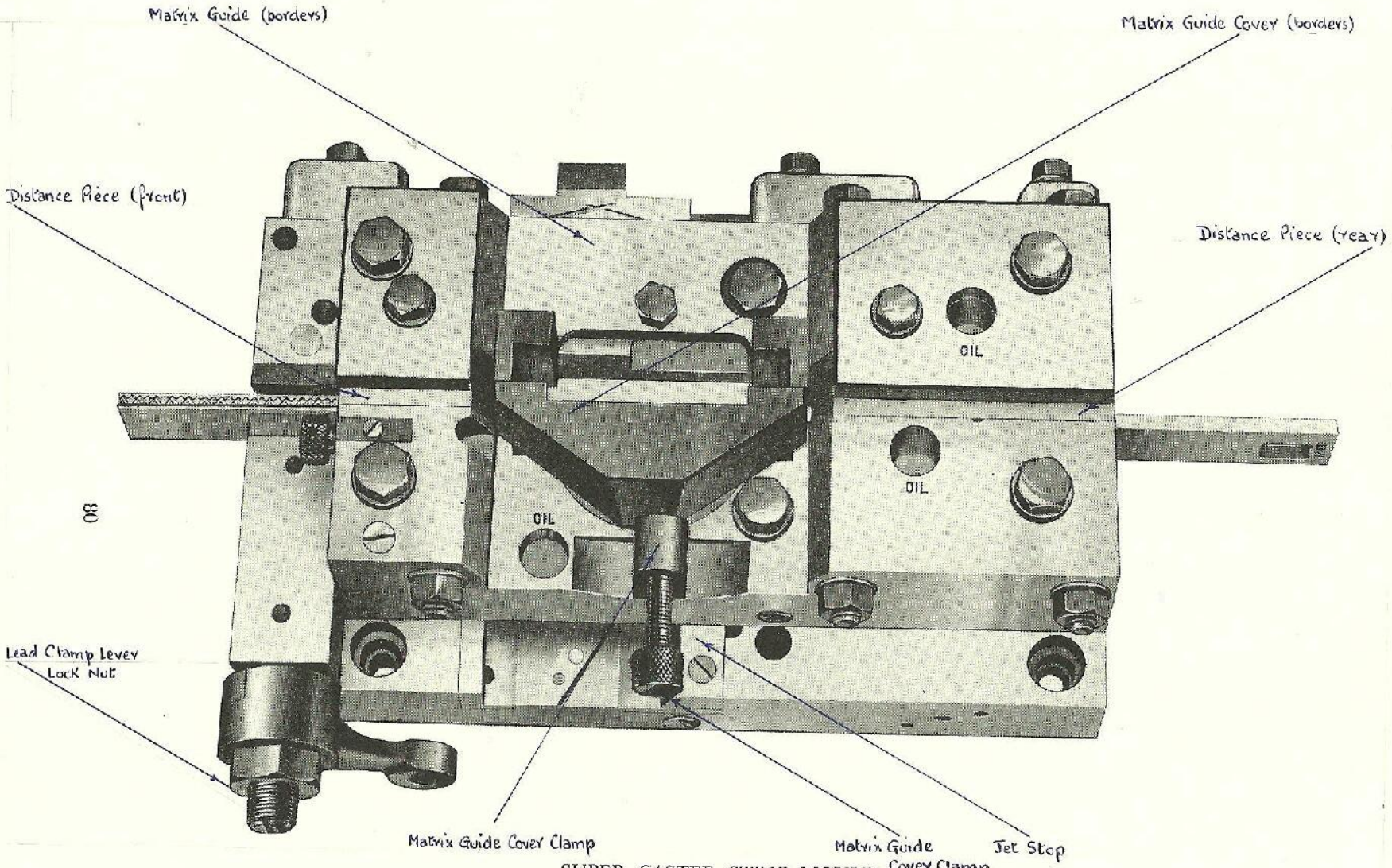
The splash guard (8891) slides between the matrix clamp and locater, thus covering the open end of rule matrices. It affords protection for the operator should a cast be so hollow that the next cast passes through it.

The side plates are of three different designs. Those with horizontal grooves (8596 and 8597) are for 1-point low leads; those with vertical grooves (8592 and 8594) for 1½-point to 4-point leads and rules, and the plain plates (7425 and 8465) for 6-point to 12-point leads, rules, dashes, etc.

[illegible] 4 point; those with the grooves are for 6 point to 12 point.

The blade connection (8684) is used when casting from 1 point to 4 point. When changing to the larger sizes (6 point to 12 point) the blade connection can be removed from the machine by raising the lever (2SF3) at rear of micrometer head to the 15-em position, the side plates having first been removed from the mould.

The roller (8924) in movable side block is designed to direct the product as it leaves the mould. Should the product have a tendency to rise the knurled head should be turned anti-clockwise until a straight product is produced. The roller can be put out of action by means of



SUPER CASTER STRIP MOULD

Shows continuous strip border material being cast

the roller carrier eccentric (8921) in top of block. This should be done when changing the mould to a different size.

When using the dotted rule attachment, the supporting pad (8922) in mould base should be raised to the level of the bottom of the side plates. This is adjusted by means of the pad eccentric (8923), the head of which is just below the lead clamp lever. Lock in position by screw at side of eccentric. The support pad should, when casting any product except dotted rule, be locked in position below the level of the clearance in the mould base.

The lead clamp (7453) is for holding the product while the cast takes place. (*For adjustments see* paragraph 19 under heading "CHANGING THE STRIP MOULD TO CAST ANOTHER SIZE.")

The friction plunger (8913) in movable side block is designed to prevent the product moving back with the blade.

CHANGING THE STRIP MOULD TO CAST ANOTHER SIZE

Removing Parts to be Changed

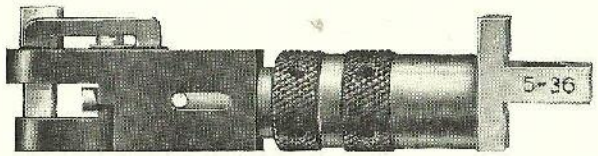
1. Turn off water supply.
2. Disconnect lead clamp screw from its operating rod.
3. Remove side block and side plate.
4. Remove distance pieces and blade, and, if necessary, the left-hand side plate.

Assembling Parts of Size Required

5. Make sure that all parts are perfectly clean.
6. See that the correct left-hand side plate is in position. Do not forget oil pad.
7. Smear blade and distance piece with castor oil and place them in position. (See that all parts selected are for the required size.)
8. Select a piece of product of the size to be cast and place it against side plate.
9. Place right-hand side plate against distance pieces and see that oil pad is in position.
10. Place movable side block in position against lead clamp block.
11. Hold side block firmly in position and tighten with the fingers the three vertical and three horizontal holding down screws.
12. Lightly tighten vertical screws with spanner.
13. Lightly tighten horizontal screws with spanner.
14. Repeat instructions 12 and 13 in the same order, firmly tightening all six screws.
15. Connect the blade to the blade slide. It should be understood that the purpose of the eccentric connecting pin (7711) is to prevent slackness between blade and its slide; there is no necessity to use it to lock the blade to the slide.
16. Disconnect the mould blade lever from its connecting rod, and check to ascertain that blade is quite free in mould.
17. Replace connecting rod on blade lever, making certain that it is in the correct hole.
18. Connect lead clamp lever (7455) to its connecting rod.
19. Adjust lead clamp lever screw (7452) so that when lever is in its lowest position there is $\frac{1}{4}$" compression on spring. In this position there should be about $\frac{3}{8}$" clearance between under side of lever and main stand, and $\frac{3}{32}$" between inside boss of lever and mould.
20. Attach low blade cap or matrix, whichever is required.
21. Fill the oil holes with castor oil.

If it is desired to change any 1½-point to 4-point size from high to low product or *vice versa*, it is not necessary to dis-assemble the mould.

22. Turn off water supply.
23. Disconnect lead clamp screw from its operating rod and remove eccentric (7711).
24. Remove mould from machine.
25. Change blade—make certain that the new blade is smeared with castor oil.
26. Change the mould covering (cap or matrix) as required.
27. Replace the mould.



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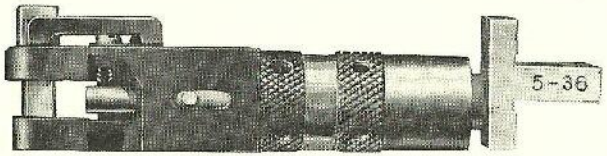

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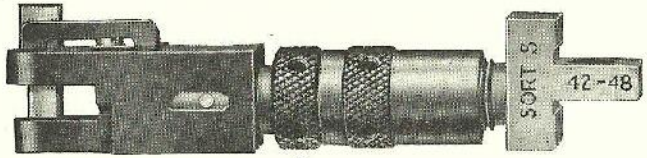

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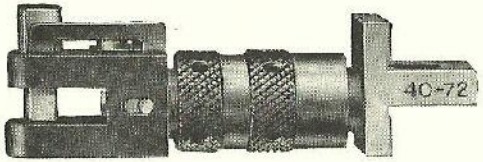

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MOULD BLADE CONNECTING LINKS

1—12SL —Mould Blade Fork—New Style Low Quad.
2—26SL —Mould Blade Fork—Old Style Low Quad.
3—32SL —Mould Blade Fork—Display Mould 42-48 Point and Didot.
4—13SL —Mould Blade Fork—40-72 Point and Didot, Series 74,000.
5—12SL6—Mould Blade Fork Pin Handle.

HOW TO REPLACE THE STRIP MOULD FIXED SIDE BLOCKS

To replace the fixed side block should it be necessary to remove it for cleaning purposes:

28. See that all parts are quite clean.
29. Place jet block (7456) in position.
30. Firmly hold side block in position and make the centre vertical screw and the three horizontal screws finger tight.
31. Place cover plates (9214 and 9215) in position and make the remaining four vertical screws finger tight.
32. Lightly tighten all vertical screws with spanner.
33. Lightly tighten all horizontal screws with spanner.
34. Repeat instructions in paragraphs 32 and 33 in the same order, firmly tightening all eight screws.
35. Place on machine and proceed as when changing from one size to another.

SUGGESTIONS TO ENSURE CASTING SATISFACTORY STRIP PRODUCT

The jet opening position should be very carefully adjusted. This applies especially when casting 1-point, 1½-point and 2-point material.

Place the eccentric connecting pin, attached to the cam lever, in the 1-point position, and adjust so that the edge of the jet is exactly flush with the front of fixed side plate.

Use gauge (6ST1).

When making this adjustment see that the side plate is in good contact with the side block.

Make sure that the flat on jet block driving rod is quite clear under the fixed side block.

Always keep the cone-shaped oil pads in the side plates.

Keep oil holes filled with castor oil.

When casting 1½-point and 2-point rules always set the matrix so that the end of the pattern is approximately $\frac{1}{32}$" in front of top of blade.

Material from 1 point to 4 point should be cast with the water half turned on. For 6 point to 12 point the water should be fully turned on.

For all work the spring should be so adjusted that about 3½" of screw shows above the nut.

See that speeds, temperatures and trip are set in accordance with the chart.

It is absolutely essential that both nozzle and pump well be frequently cleaned.

PREPARING TO CAST CONTINUOUS BORDER STRIP

When placing the matrix in holder insert the open end towards the stop.

Seal the open end of matrix with hard soap.

The matrix lifter must be in its upper position in order to attach matrix holder.

Very carefully set micrometer head for length of border (the amount plus or minus of ·996" is stamped on side of matrix).

Before taking a cast, turn machine to see that matrix can seat on the mould and that when matrix is in its lowest position there is approximately $\frac{1}{8}$" compression on spring.

Take first cast by turning machine by hand.

After the first cast has been made remove matrix and clean out soap.

Save the piece of border left in mould. This can be used for the first cast when using the same matrix again, thus avoiding the need for soap.

CORRECT POSITION FOR DASH MATRICES

When using dash matrices always place the side on which the size is marked towards the matrix guide.

DOTTED RULE CASTING

When casting 12 point or didot "full body" dotted rules it is necessary to use the galley eccentric to support the product.

CONVERTING EARLY PATTERN STRIP MOULDS TO PRESENT PATTERN

Should customers wish to convert their older pattern strip moulds to the present pattern, the following new parts will be required:

Two side block holding down screws (9197) to replace the longer vertical cheese headed screws in the fixed side block.

Two side plate clamp wing screws and washers (9211 and 2194) to replace hexagon headed screws (337).

Matrix clamp wing screw and washer (9212 and 2194) to replace hexagon headed screw (279).

Blade cap clamp wing screw and washer (9213 and 2194) to replace hexagon headed screw (276) for 1-point low leads only.

The object of these parts is to enable the fixed side block to be more rigidly held in place and to provide thumb screws instead of hexagon headed screws so that undue pressure should not be placed on the side plate.

The mould with these alterations can be operated in a similar manner to moulds of the latest design, except that under the heading "ASSEMBLING THE MOULD" the side plate clamp screws should be lightly tightened between the instructions in paragraphs 11 and 12, and finally tightened between instructions in paragraphs 13 and 14.

ATTACHING STRIP MOULD TO MACHINE

Place counter head in position on machine, secure with four screws (4SD12) and make certain that the weight (23SD) is hanging correctly. Remove border matrix lifter from counter bracket, unless borders or dashes are to be cast.

Connect lead clamp spring rod end pin (18SD) to cam lever.

Connect mould cross block connecting rod to type carrier cam lever extension (a26SC3) by putting the jet block position pin (7SD7) into hole marked "12."

Connect counter mechanism actuating lever (1SD) to yoke (3SD8) by means of actuating rod yoke pin (3SD10D).

Place strip mould on machine, attaching the cross block to jet block driving rod (a6SDD).

Insert eccentric clamps (14SL1) in main stand and tighten mould in position.

Fix mould to main stand with four screws (18SL1).

Connect the mould blade slide (4SF) to the mould blade by means of the connecting pin (3SF) and lock with screw (3SF1).

Put on water connection (21SLL).

Connect lead clamp lever (7455) by means of lead clamp lever pin (17SDD), and lock same with screw (17SD2).

Test mould blade action by moving mould blade slide lever by hand.

Connect mould blade slide lever to mould blade slide lever connection by means of the ball end (6SF1), which must be placed in the hole marked according to the product to be cast. Lock ball end by means of nut (6SF2).

REMOVING STRIP MOULD FROM MACHINE

Disconnect mould blade slide lever (a5SF1) by removing the ball end (6SF1).

Move the mould blade stop lever handle (2SF5) to the 15-em position.

Slide mould blade forward and take out the mould blade fork connecting pin (3SF).

Disconnect lead clamp lever (7455).

Remove product from mould.

Remove water connection (21SLL).

Remove four screws (18SL1) from mould base and the two eccentric clamps (14SL1) from the sides of the mould. Always remove the eccentric nearest the front of the machine first.

Pull mould toward metal pot and detach cross block from driving rod (a6SD) by lifting the left-hand side of mould.

RETURNING MOULDS TO OUR WORKS FOR REPAIRS

It is not possible for operators to repair moulds; they have neither the special tools nor the necessary experience. Further, moulds should never be altered in any particular, nor should they be taken apart as long as they produce good type (or other material).

If in any mould any defect should develop that cannot be corrected by following the instructions in this book the mould or inset should be returned to our Works for repair or adjustment. In returning any such mould or inset send also a few of the defective types or a few short pieces of the defective strip, with a note giving particulars of the trouble.

When returning a mould for repair enclose in the box the nozzle appertaining to such mould.

OIL TO USE

It is important that only the best oil should be used. This applies very particularly to the moulds, which are highly-finished pieces of mechanism, and upon which the accuracy of the product depends.

For general use on the machine we recommend the Vacuum Oil Company's product, and for the type mould Duckham's mould oil. For the Lead and Rule Mould use a reliable quality of castor oil.

MICROMETER AND ALIGNING GAUGE

The caster attendant must be provided with a micrometer for measuring his product, and with a reliable gauge with which to test the alignment of the type faces.

MATRIX HOLDERS

Holders are supplied for carrying the various styles of matrices in correct positions over the mould. Full details of the various patterns of holders and their uses are described in the following paragraphs:

·2″×·2″ MATRIX HOLDER (3SLL)

This holder is used only for the ·2″×·2″ matrix. The matrix is inserted in the holder by pushing forward the trigger (3SL4), thus bringing back the matrix retainer (3SL11) and allowing the matrix to be placed in position. The matrix must be placed in the holder with the designation number to the right, when holder is in position on machine. When the trigger is released the matrix retainer comes forward through the hole in the matrix, and thus holds the matrix in position. Squaring plungers (3SL12 and 3SL13) are provided in the holder to ensure that any matrix that has become badly worn shall still be held quite squarely.

HOW TO DISMANTLE THE ·2″×·2″ MATRIX HOLDER

Take out the two screws (3SL7) and remove the trigger block cover (3SL6); the trigger block, complete with trigger (3SL4), plunger (3SL9) and spring (3SL10) can then be withdrawn and the matrix retainer (3SL11) can then be taken out.

Remove the handle (3SL1) by taking out the two screws (3SL2).

Remove the squaring plunger cover (3SL14) by taking out the four screws (3SL15), when the two squaring plungers (13SL12 and 13SL13) and levers (3SL16) with the spring (3SL18) can be withdrawn.

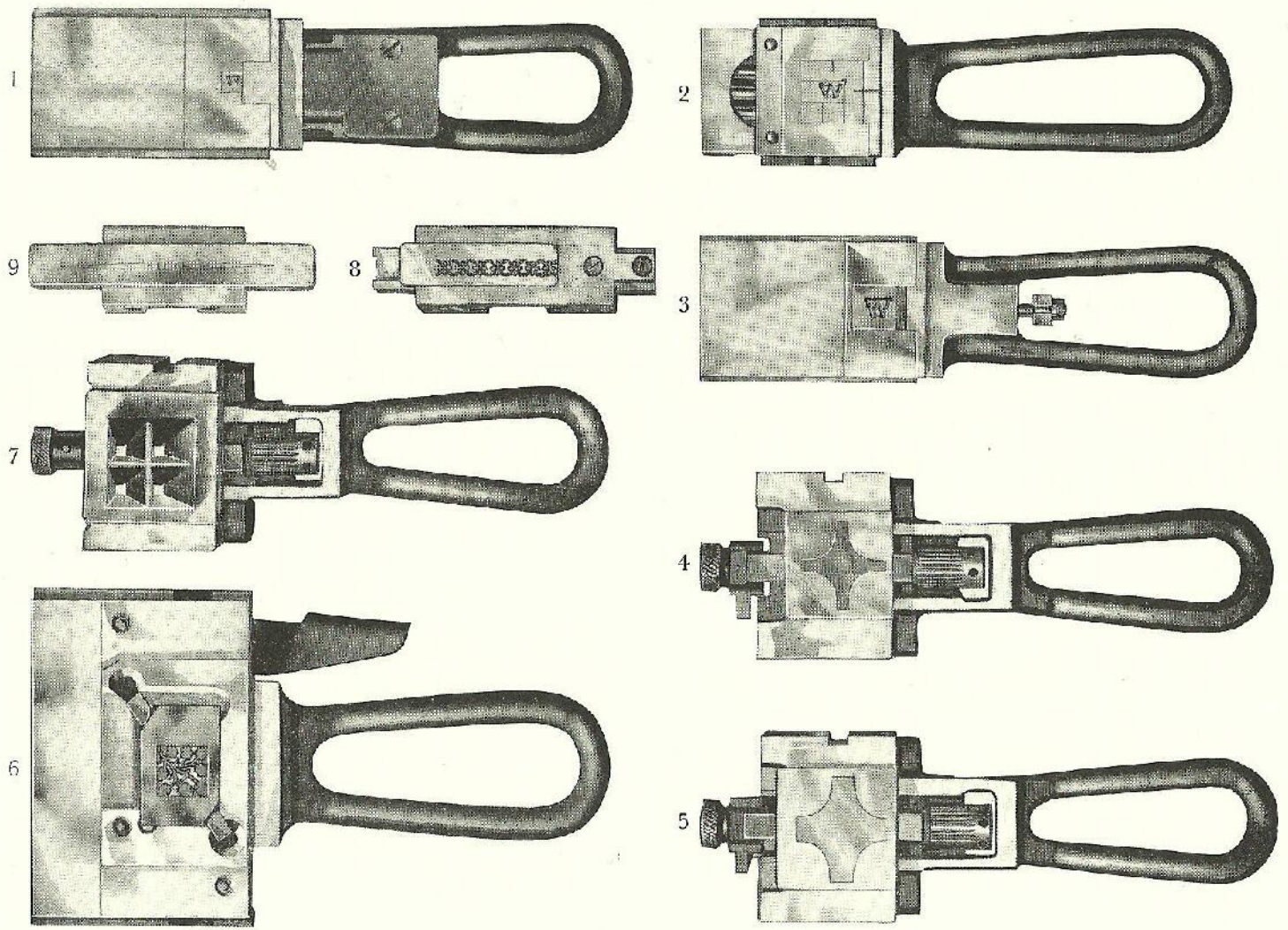
HOW TO ASSEMBLE THE ·2″×·2″ MATRIX HOLDER

Replace spring plungers and levers. *Note.*—The spring should be inserted through the small hole in side of matrix holder body.

Replace squaring plunger cover and secure with the four screws.

Assemble the handle to the matrix holder body with the two screws.

Place matrix retainer in position, and slide trigger block (complete with trigger, plunger and spring) into place; replace the trigger block cover and secure.



MATRIX HOLDERS

1.–For Standard (Small Type) Composition Matrices, ·2″ × ·2″.
2.–For Extended (Small Type) Composition Matrices, ·2″ × ·4″ or ·4″ × ·2″ or ·4″ × ·4″. In this holder ·2″ × ·2″ matrix blanks are used as packing pieces, and an angular locating block is also used for bringing the matrix cone hole directly under the centring pin. There are two grooves in the face of the angular locating block, and one of these must be brought in line with a corresponding groove in the lower surface of the holder, as shown in the illustration. The cone hole used is not central in the composite group. The locating wire block is shown partly withdrawn.
3.–For Large Type Composition Matrices, ·4″ × ·2″ or ·4″ × ·4″. In these matrices the cone hole is central (pointwise), and the locating wire also enters centrally. A stepped recess is provided to allow for the use of flanged matrices (for characters with extra-projecting kerns). When using ·4″ × ·2″ matrices a ·4″ × ·2″ large type composition matrix blank is used as a packing piece. The locating wire block is shown partly withdrawn.
4.–For 1″ (Pointwise) Display Matrices.
5.–For 1½″ (Pointwise) Display Matrices.
6.–For Electro (U.S.A.) Matrices.
7.–For Quotation Cores.
8.–For Border Matrices.
9.–For Dash Matrices.

·2″ EXTENDED MATRIX HOLDER (4SLL)

This holder is used for the ·2″ EXTENDED MATRICES, and is provided with a reversible retaining block (4SL6) to enable any of these matrices to be used (whether extended above or below the line.) This retaining block is secured by means of the screw (4SL7).

When inserting a ·2″ extended matrix in the holder, another matrix or blank must be used, to make up an overall size of ·4″ × ·4″, both being retained by the wires and plates (4SL9L).

Before placing holder in machine, make certain that the cone hole is in the correct position to engage with the centring pin.

HOW TO DISMANTLE THE ·2″ EXTENDED MATRIX HOLDER

Remove the wires and plate (4SL9L) and the retaining block (4SL6).

Take out the four screws (4SL2) and remove the cover (4SL1) when the plungers (4SL10) and springs (4SL11) can also be taken out.

Remove handle (4SL3) by taking out the two screws (4SL4) and washers (4SL5).

HOW TO ASSEMBLE THE ·2″ EXTENDED MATRIX HOLDER

Replace handle (4SL3), two screws (4SL4) and two washers (4SL5).

Assemble plungers (4SL10), springs (4SL11) and cover (4SL1) securing with the four screws (4SL2).

Replace retaining block (4SL6) also wires and plates (4SL9L).

·4″ × ·4″ MATRIX HOLDER (5SLL)

This holder is used for the ·4″ × ·4″* and the ·4″ × ·2″* matrix; when the ·4″ × ·2″ is being used another matrix of the same size must be located in the holder to retain the matrix in the correct position.

To insert the matrix in the holder pull back the trigger (5SL7) until the matrix can be placed in position. The matrix must be placed in the holder with the designation number to the right when holder is in position on machine. When the trigger is released, it goes forward and carries with it the matrix retaining pin (5SL6) which secures the matrix in the holder.

HOW TO DISMANTLE THE ·4″ × ·4″ HOLDER

Remove the handle (5SL3) by taking out the two screws (5SL4). Remove the nut (5SL10) and the trigger (5SL7) spring (5SL8) and retaining pin can then be removed.

To take off the cover remove the four screws (5SL2).

HOW TO ASSEMBLE THE ·4″ × ·4″ HOLDER

Replace cover and secure with the four screws. Place the spring, retaining pin and trigger in position and lock with nut, replace the handle and secure in position.

1″ × 1″ MATRIX HOLDER (6SLL)

This holder can be used for 1″ × 1″, 1″ × 1⅛″ and 1″ × 1·35″ matrices. The matrix is inserted in the holder by pulling back the rear clamp (6SL6) until it can be turned round and enable the matrix to be placed in position. The matrix must be placed in the holder with the designation number towards the handle. Secure the matrix by turning the rear clamp back until the projection abuts on the matrix. When clamping the 1″ × 1″ or 1″ × 1⅛″ matrix the rear clamp is turned so that the right-angled projection clamps the matrix, but when the 1″ × 1·35″ matrix is in the holder the straight projection must be used.

A knurl-headed screw (6SL3) is provided in the holder to move the matrix locator (6SL10) and thus alter the alignment of the matrix (setwise) on the mould.

* When referring to ·4″ × ·2″ or ·2″ × ·4″ matrices always mention the "point" direction dimension first and the "set" direction dimension last. Thus: a ·2″ × ·4″ matrix means that it is a small type composition matrix extended setwise, whereas a ·4″ × ·2″ matrix means that it is a large type composition matrix limited setwise to ·2″.

HOW TO DISMANTLE THE 1″×1″ MATRIX HOLDER

Remove the handle (6SL1) complete with plunger (6SL4) and spring (6SL5) by taking out the two screws (6SL2). Knock out the pin (6SL7) and remove the rear clamp (6SL6) when the shaft (6SL8), together with the spring (6SL9), can be taken out. Unscrew the knurl-headed screw (6SL3) and remove the matrix locator (6SL10) and spring (6SL11).

HOW TO ASSEMBLE THE 1″×1″ MATRIX HOLDER

Replace the matrix locator and spring, securing with the knurl-headed screw. Reassemble the spring (6SL9), shaft and rear clamp; lock in position with the pin (6SL7). Place spring and plunger in handle, and secure to the matrix holder body with the two screws.

$1\frac{1}{8}$″×$1\frac{1}{8}$″ MATRIX HOLDER (7SLL)

This holder can be used for $1\frac{1}{8}$″×$1\frac{1}{8}$″ and $1\frac{1}{8}$″×1·35″ matrices.

The construction of this holder is similar to that of the 1″×1″ matrix holder and the instructions on operating, dismantling and reassembling can be applied to both holders.

LOW SPACE AND QUOTATION MATRIX HOLDER (8SLL)

This holder is for locating the low space blanks and the quotation cores on the mould.

The construction of the low space and quotation matrix holders is very similar to that of the 1″×1″ matrix holder, and the paragraphs on operating, dismantling and reassembling can be applied to both holders.

DASH MATRIX HOLDER (10SL1)

This holder simply consists of a block into which the dash matrix is fitted; it is used in conjunction with the lead and rule mould.

BORDER MATRIX HOLDER (9SLL)

In this holder the matrix is pushed into position against a stop (9SL1) and held there by a spring operated clamp (9SL3).

It is advisable not to remove the clamp and spring, as they are exceedingly difficult to reassemble.

AMERICAN DISPLAY (ELECTRO) MATRIX HOLDER (33SLL)

This holder is used for the American sorts (electro) matrix, and can only be used in conjunction with the special bridge (1SE7). The matrix is secured in the holder by pressing inward the lever (33SL13) until the matrix can be inserted between the two jaws (33SL10 and 33SL23); when the lever is released the jaws grip the matrix and lock it in position.

To set the matrix holders for the point size of matrix to be used, loosen the three screws on the upper portion of the holder and slide the lower portion along until the line corresponding to the point size to be cast corresponds with its line on the upper portion of the holder.

HOW TO DISMANTLE THE AMERICAN DISPLAY MATRIX HOLDER

Take out two screws (33SL9) and remove handle.

Take out the three screws (33SL3, 33SL4 and 33SL5); the upper half of the holder can then be lifted off, exposing the whole of the mechanism, and any part can be removed by disconnecting the springs and lifting the part out.

MATRICES

COMPOSITION TYPE MATRICES

Composition type matrices are made in four forms:

(1) ·2″ pointwise × ·2″ setwise.
(2) ·2″ pointwise × ·4″ setwise
(3) ·4″ pointwise × ·2″ setwise.
(4) ·4″ pointwise × ·4″ setwise.

In referring to the latter three forms by measurement always quote the "point" measurement first. For instance, a ·4″ × ·2″ matrix means that its point size direction measures ·4″. Following this rule will often save misunderstanding.

Type from these matrices are cast to units, a unit being the 18th part of the em. A special card of sizes is provided for these matrices.

COMPOSITION TYPE MATRICES SIDE WALL MEASUREMENT

Composition matrices are punched a certain distance from one particular side of the matrix body. With a few exceptions the following side walls apply:

In English founts from 5 point to 11 point inclusive, the standard side wall measurement is ·035″. In 12-point founts the standard side wall measurement is ·025″. In some large type composition matrices the side wall is reduced to ·015″.

Didot roman founts from Didot 5 point to Didot 10 point inclusive, have ·035″ side wall; Didot 11 point ·025″; and Didot 12 point ·015″.

Didot Fraktur founts correspond with the English: Didot 5 point to Didot 11 point, ·035″; Didot 12 point, ·025″.

The centring pin must be adjusted so that the set mark is cast centrally setwise upon the type body.

"LINE"

In the "Monotype" specimen books the "line" of the ·2″ × ·2″ composition matrices is given thus: "Line ·1295". This means that the "line" of the character comes ·1295″ from the opposite edge of the matrix. In type above 14 point the "line" given indicates the measurement from the "line" of the character to the top of the type body.

DISPLAY TYPE MATRICES

Display type matrices are made in various sizes:

1″ pointwise × 1″ (or more) setwise.
$1\frac{1}{8}$″ pointwise × $1\frac{1}{8}$″ (or more) setwise.

These matrices are for casting display type from 14 point to 72 point. They are marked with the face series number and the point size of the type to be cast from them; also with the set measurement in points. Thus, 199-18 towards one edge of the matrix means that the face series is No. 199, and the body size is 18. At the other end of the same edge of the matrix is a number indicating the point size of the "set" to which type must be cast from that matrix: such as $16\frac{3}{4}$, indicating that the micrometer wedge must be adjusted to $16\frac{3}{4}$ points.

The "set" number, taken into consideration with the point body size of the type, is an indication of the speed at which the type must be cast. A chart is provided from which the speed of casting may be obtained from any matrix marking.

DISPLAY TYPE MATRICES SIDE WALL MEASUREMENT

From 14 to 60 point the side wall measurement is ·150″, 60 point Didot and 72 point, ·1025″.

ELECTRO DISPLAY TYPE MATRICES

A quantity of electro matrices are in circulation for casting display type from 14 point to 36 point. A special holder is provided for casting from these.

These are marked with the face series number, the point size and the set size. Thus, 159-24-*9-6 or 159-24-9-6. This indicates 159 series of face, 24 point; with the asterisk it means $9\frac{3}{4}$ points in set, and without the asterisk $26\frac{3}{4}$ points. The asterisk implies a difference of 17 points. On these matrices the final 2 indicates $\frac{1}{4}$ point, 4 indicates $\frac{1}{2}$ point, and 6 indicates $\frac{3}{4}$ point.

A sizing card is provided which indicates the micrometer head adjustment to be made when using these matrices.

A limited number of electro matrices are in use from 12 point to 48 point. These have special markings, such as asterisks or diamonds, the significance of which is indicated on the sizing card.

RULE MATRICES

These are for use on the strip mould for casting plain rules in different strengths of line, either single or double. The matrices remain fixed on the mould.

CONTINUOUS STRIP BORDER MATRICES

These are for casting strip material with a continuous border design. A special holder is provided for these matrices. The matrix is lifted from the mould whilst the strip is advanced, and when the matrix is again taken to the mould surface another section of strip may be cast.

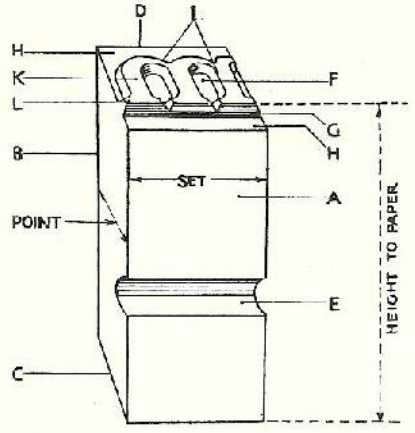
QUOTATION CORES

These take the place of matrices, and a special holder is provided. The core block is taken down to the mould, projections on the block entering the mould, so that a cored body is cast. Quotation moulds are provided with a special inset and cross block to correspond with the height of the quotations.

QUAD AND QUOTATION HEIGHT

Mould lower blades are made to produce quads and spaces to a height of ·750″. Quotations are also produced to this height. This permits the use of quads and quotations as base material for mounting stereos and electros, machined to a uniform thickness of 12 points. It allows ·002″ for the thickness of the adhesive employed in attaching the plates to the quad or quotation base.

NAMES OF TYPE FEATURES



ENGLISH TYPE HEIGHT IS ·9185″. DIDOT TYPE HEIGHT IS ·9274″

(A) front (of body), (B) back (of body), (C) foot, (D) head, (E) nick, (F) counter, (G) beard (shows depth of drive), (H) shoulder, (I) hair line, (K) main stroke, (L) serif.

Depth of drive of "Monotype" matrices: composition matrices (·2″ × ·2″) ·050″; display matrices up to 36 point, ·050″; display matrices, 42 points and above, ·065″. The mould height is ·9185″ minus the depth of matrix drive.

TYPE HEIGHT

Before commencing to cast a fount of display type always measure the height of the type. This will prevent the use of matrices possessing a drive inconsistent with the height of the mould.

HEIGHT OF TYPE IN DIFFERENT COUNTRIES

English type height measures ·9185″. This applies to Great Britain, Canada, Australia, India, New Zealand, South Africa, Mexico and South America. In Egypt, Austria, Germany, France, Italy, Portugal, Spain, Greece, Sweden, Turkey and Switzerland it is ·9275″. In Belgium it varies from ·928″ to ·932″ and ·934″. Three sizes are also used in Denmark, ·982″, ·986″ and ·987″. In Bulgaria it is ·936″; Holland, ·975″; Hungary, ·944″; Dutch East Indies, ·980″; and Russia, ·990″.

ALLOWANCE FOR SHRINKAGE

Where perfect precision is required, types should be measured when cold, and not as they come from the mould. The shrinkage in cooling in the length of a type is ·003″; the same applies to the body of a 72-point type.

Typecasting should be carried out with as few stoppages as possible, so as to maintain a regular mould temperature and uniform type shrinkages. Types cast in a cold mould contract less than when cast in a hot mould.

TYPE BODY SIZES

The standard unit for English type body measurements is called a "point," and this measures ·01383″. This is the twelfth part of a pica, which measures ·0166″.

The old English terms, such as nonpareil, minion, brevier, etc., are out of date, and types based upon these sizes are now seldom used. The maintenance of these old-fashioned sizes is to be discouraged.

English "Monotype" moulds can be made to any body size required, but printers should make every effort to encourage the use of moulds made to "point" sizes only.

We append a table showing the measurements of the standard "point" sizes, as well as the sizes of the old-fashioned English types. In regard to the latter, definite standard measurements do not exist; the "authorities" simply state that they measure (for example) "about 19" or "about 20" lines to the inch. The measurements we give are what we think they should be, and are based upon the average measurements of type produced by the leading typefounders, and we have standardised the smaller sizes to some definite fraction of the 12-point em. They are merely included to show their relation to the true point sizes, as a printer seldom remembers whether, for example, agate is larger or smaller than pearl.

In newspaper "small" advertisement composition the difference of one-quarter of a "point" in the body size of type is a very important consideration, as it might mean a difference of at least ten lines per column at a charge of one shilling per line per day.

THE CICERO

The "cicero" is the base standard for measures and type sizes in most Continental countries, corresponding to the manner in which the term "pica" is applied in English-speaking countries. The cicero is 12 didot points, and measures ·1776 inch; the didot point measures ·0148 inch. The didot point and cicero measure respectively ·376 and 4·512 millimetres.

TABLE OF TYPE BODY SIZES

ENGLISH AND AMERICAN					DIDOT			
Names	Point	Inch	Lines to 6 picas (Approx. 1″)		Corps	Mm.	Inch	Lines to 6 picas (Approx. 1″)
	1	·013833	72·00	...	1	·376	·0148	67·29
	2	·0276	36·00	...	2	·752	·0296	33·64
Minikin	3	·0415	24·00	...	3	1·128	·0444	22·43
Brilliant	3½	·0484	20·57	...	—	—	—	—
Gem	4	·0553	18·00	...	4	1·504	·0592	16·82
Diamond	4½	·0622	16·01	...	4½	1·692	·0666	14·95
Pearl	5	·0691	14·40	...	5	1·880	·0740	13·45
Ruby or Agate ...	5½	·0760	13·08	...	5½	2·068	·0814	12·23
	6	·0830	12·00	...	6	2·256	·0888	11·21
Nonpareil	—	·0833	11·95	...	—	—	—	—
Emerald	6½	·0899	11·07	...	6½	2·444	·0962	10·35
	7	·0968	10·28	...	7	2·632	·1036	9·61
Minion	—	·0972	10·24	...	—	—	—	—
Brevier	—	·1083	9·19	...	—	—	—	—
	8	·1106	9·00	...	8	3·008	·1184	8·41
Bourgeois	—	·118	8·44	...	—	—	—	—
	9	·1244	8·00	...	9	3·384	·1332	7·47
Long Primer	—	·135	7·37	...	—	—	—	—
	10	·1383	7·20	...	10	3·760	·1480	6·72
Small Pica	—	·145	6·86	...	—	—	—	—
	11	·1521	6·54	...	11	4·136	·1628	6·11
	12	·1660	6·00	...	12	4·512	·1776	5·60
Pica	—	·1667	5·97	...	—	—	—	—
	13	·1798	5·54	...	13	4·888	·1924	5·17
English	—	·188	5·29	...	—	—	—	—
	14	·1936	5·14	...	14	5·264	·2072	4·80
2-line Brevier	—	·2166	4·59	...	—	—	—	—
	16	·2213	4·50	...	16	6·016	·2368	4·20
Great Primer	—	·235	4·23	...	—	—	—	—
	18	·249	4·00	...	18	6·768	·2664	3·73
Paragon	—	·2626	3·79	...	—	—	—	—
	20	·2766	3·60	...	20	7·520	·2960	3·36
Double Pica	—	·289	3·44	...	—	—	—	—
	22	·3043	3·27	...	22	8·272	·3256	3·05
	24	·332	3·00	...	24	9·024	·3552	2·80
2-line Pica	—	·3362	2·96	...	—	—	—	—
2-line English	—	·375	2·65	...	—	—	—	—
	—	—	—	...	28	10·528	·4144	2·40
	30	·415	2·40	...	30	11·280	·4440	2·24
	36	·498	2·00	...	36	13·536	·5328	1·86
	42	·581	1·71	...	42	15·792	·6216	1·60
	48	·664	1·50	...	48	18·048	·7104	1·40
	54	·747	1·33	...	54	20·304	·7992	1·24
	60	·8301	1·19	...	60	22·560	·8880	1·12
	72	·996	1·00	...	72	27·072	1·0656	0·93

The American "pica" or 12 points (adopted also by English typefounders) is based upon 35 centimetres divided into 83 parts, and therefore measures ·166 inch. The didot point was based upon the 72nd part of the pre-metric French inch (1·0658 English inch), and measures ·0148 inch, the cicero (12 didot points) being ·1776 English inch.

THE PRODUCTION OF GOOD TYPE

To be considered perfect a type must possess the following attributes:

(1) It must be quite solid, have the corners sharp, a solid, flat foot, the face sharp and well defined, and must be neither too soft nor too brittle.

(2) It must be *square* in all directions, exact to size pointwise and setwise, and of correct height from the foot to the face of the character.

Of first importance in governing the quality of the type produced is the adjustment of the pump connections; after that everything depends upon the attendant and the metal he is using. The pump adjustments being correct, there remain solely the question of metal, which may be influenced by some outside condition.

In the case of imperfect type, make sure of the following points: that a suitable quantity of metal enters the pump body, and that no dross exists in the piston base, pump body valve hole, valve face and seating, pump body channel, or nozzle channel. The pump body should be cleaned every week, and a drill run up the main channel till it can be seen at the nozzle end. The nozzle should be drilled every week whether it appears to require it or not. If dross be allowed to accumulate in the nozzle it will be very difficult to drill, as the dross is extremely hard.

The pump connections should all be free and kept well oiled. The piston must slide freely in pump body, but should never be filed. No metal should accumulate on the upper shoulder of piston thereby preventing it reaching the top of its stroke. The piston should be removed ~~during meal times and~~ when not in use. Before replacing the piston, warm it, and see that it is clean. If the piston be hard to turn, and on being withdrawn from the pump body be covered with dust, it is a sign of dirty metal, and it may be difficult to obtain good type.

The metal should be occasionally cleaned and run into small ingots. The dross floating on top of the metal consists mainly of antimony (being lighter than lead), oxide and dirt. Do not throw it away *en bloc*, but remove the dirt and preserve the metal. In cases where a stereotyper is employed he should be able to treat the metal, but where there is no stereotyper the attendant must exercise his own intelligence. A good plan is to heat the metal well and then add a little pure Russian tallow. Then press the floating substance against the side of the pot, to squeeze the metal from the dirt. Remove the dirt with a perforated spoon, and scrape the side of the pot against which the dirt was squeezed. Afterwards, puddle the metal well and skim again. If these skimmings are dirt only, it will be possible to crumble them into dust when cold. If they contain metal they will be quite solid. Be careful of nostrums advocated for cleansing the metal. If they contain acids or salts the pump body valve may become corroded, and the small hole in the latter will become enlarged. The main point is to keep the antimony well mixed with the lead. Being lighter, it has a tendency to rise and oxidise. Occasional puddling preserves the mixture, and assists the dirt in the metal to rise to the surface. The practice of dipping the piston in vaseline is rather overdone; it is improbable that the vaseline used can be absolutely pure, as it must contain some mineral matter. After the oils in it have evaporated in the pump body, or have been carried to the types, there remain the mineral matters. These adhere to the piston and to the pump body channel, in time causing the latter to become choked. It is far better to use Russian tallow, or to wipe the piston lightly with an oily rag or brush it with plumbago, taking care to shake off any surplus plumbago. When inserting the piston, skim away any dross above the pump body boring so that the piston may enter clean metal and not carry dirt down with it.

Regulate the metal passing into the pump body so that the type is cast solid and too much metal does not remain in the nozzle. In the latter event, stop-casting may be the result. For small type the piston should have a short, sharp stroke, but a slightly longer one for large type. Theoretically, the port must be wider open for large type than small, but in practice it is sometimes necessary to reduce the metal supply for large type to prevent stop-casting. As it is impossible to see the metal entering beneath the piston an idea of the action taking place must be based on theory, and the question of metal, therefore, gives the attendant scope for reflection and discretion.

Never run the pot up without making certain that the nozzle end of pump body is seated correctly, or the nozzle will become damaged against the mould. The nozzle should be a perfect fit in mould base to prevent squirting. The dross which accumulates on the surface of the metal near the nozzle should be cleared away so as to allow the jet pieces from the mould to melt quickly. In the case of metal squirting over the nozzle, or the jets not being melted, the latter may accumulate so that it is impossible to eject any more, and the cross block will in consequence become wedged. In this event do not force the machine round, but run the pot down and clear away all the jet pieces from the opening in the mould through which they fall.

The height of the type depends upon the height of the mould blade and the depth of the matrix. These are fixed quantities, and will only alter through wear, which should be very small if proper care and attention are given to the adjustment of the matrix holders.

The standard height for English "Monotype" type, from the foot of the type to the face of the character, is ·918″, and on no account should the type become more than ·002″ less than this.

GENERAL CLEANLINESS

The necessity of maintaining general cleanliness cannot be too strongly impressed upon the Super Caster attendant. It is particularly essential that the pump body channel and the nozzle should be regularly drilled, and that all mould and matrix seatings should be kept free from every kind of dirt and grit.

TEMPERATURE OF METAL AND MOULD

These temperatures are variable, and no exact rule can be given that will answer in *all* cases; they are governed mainly by the speed at which the machine is run, the size of the type cast, and the quality of the metal used. The larger the type cast or the greater the rate at which the machine is running the greater will be the quantity of metal that will be passed through the mould in a given time; a greater flow of water will consequently be necessary to keep it at the proper temperature. The mould should be kept at a heat consistent with good working: that is to say, it must not be so hot as to cause the mould blade to hang up or the cross block to bind. On the other hand, the types must be sufficiently cooled whilst in the mould to ensure that they do not disintegrate or swell during their transit from the mould to the type channel. There are two limits to the temperature of the metal in the pot: (1) the lower limit, at which the machine will not cast, and (2) the higher limit, at which the metal is prone to squirt and the type likely to blister and burst. Between these limits lies the correct temperature. The proper temperature is judged from the appearance and quality of the type produced. If the type has a frosted appearance, and the corners are not well defined, the temperature is too low; if, on the other hand, the type is very bright but shows signs of blistering the temperature is too high. The ideal to be aimed at is that in which the type is solid and not blown and the corners are well defined. Having obtained type fulfilling all these requirements, attention must be paid to the face, that is, the character; this must be sharp and well defined, every part of the outline showing clear and distinct. If defective, the fault most likely lies in one of the following causes: the temperature of the metal or mould too low, the metal dirty, the nozzle not clear, oil on the face of the matrices, or a foul piston. Examine the piston first and then raise the temperature of the metal and regulate that of the mould accordingly. By strengthening the piston spring (17SH) the face of the type is often improved, but care should be taken in this connection that too much pressure is not applied. It may be regarded as an axiom that the pump spring should be worked with the minimum compression consistent with good results. Given satisfactory type metal, the main factor in obtaining good results is the maintenance of a temperature consistent with the quality of the metal in use; particular attention should therefore be paid to it, and when once the point has been arrived at which gives the best results it should be noted and maintained throughout the run.

The "Monotype" heat regulator maintains the metal automatically at a uniform temperature.

METAL HINTS

Type metal is an alloy of tin, antimony and lead, with sometimes an addition of a very small percentage of copper. The important qualities of the constituents of this alloy are:

	Melting Point	Specific Gravity	Weight per Cubic Inch
Tin	449 Fahr.	7·29	·263 lb.
Antimony ..	1,166 Fahr.	6·71	·242 lb.
Lead	621 Fahr.	11·37	·410 lb.

As the melting points and specific gravities of tin, antimony and lead are so divergent it is impossible to maintain the quality of the metal without occasional attention. The low melting point of tin causes it to oxidise rapidly at the temperatures at which it is used in type metal, and the low specific gravity of both antimony and tin causes these to have a tendency to rise to the surface and to become separated from the main mass. It is therefore advisable occasionally to have an analysis made to ensure that the quality is maintained.

Never use slug composing machine metal unless brought up to "Monotype" metal standard.

A suitable metal (except for unusually long runs, or for making display type that is to be distributed and used many times) may be made from clean, raw material in about the following proportions:

Tin	9 per cent.
Antimony	19 ,,
Lead	72 ,,

For display type, 14 point to 72 point, an exceptionally hard metal is composed of:

Tin	12·5 per cent.
Antimony	24 ,,
Lead	62·5 ,,
Copper	1·0 ,,

A good workable and reliable softer metal may be composed of:

Tin	6 per cent.
Antimony	13 ,,
Lead	81 ,,

Antimony contributes hardness to the alloy and causes the corners of the type to remain sharp; tin contributes toughness and causes the metal to flow freely.

If the metal is to stand frequent re-melting add more tin.

Foundry type does not contain such a high percentage of tin as type cast from good "Monotype" metal, and consequently will not flow so freely. Whilst it can be used for the Super Caster after the addition of about 7 to 8 per cent. of tin and 40 lb. of tea lead to every cwt. it is far more satisfactory to obtain good new metal on the first installation.

A suitable flux is a great aid in keeping metal in good condition. The following mixture is specially suitable:

$\frac{1}{8}$ by weight	Sal Ammoniac
$\frac{3}{8}$,,	Tallow or Lard Oil
$\frac{1}{2}$,,	Charcoal

Use one tablespoonful for every 1,000 lb. of metal.

Never skim the metal under a temperature of 730° Fahr., for if this is done a large part of the skimmings will be antimony. Always stir the metal thoroughly before skimming. A small piece of tallow placed in the skimming spoon cleans the metal, but do not use too much, as the smell of the resultant vapours is objectionable. On no account permit any zincos to become mixed with the metal.

STANDARDISED FOUNT SCHEMES

(Based on lower-case founts of 1,000, 500, and 250 characters)

Lower-case	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z		
1 Strength (Body) ...	74	18	34	42	118	24	18	50	74	6	8	42	26	66	66	20	6	58	66	84	38	12	20	6	20	4	=	1,000
1 ,, (Jobbing) ...	74	18	34	42	118	24	18	50	74	6	8	42	26	66	66	20	6	58	66	84	38	12	20	6	20	4	=	1,000
½ ,, ,, ...	36	10	16	20	58	12	10	24	36	4	6	20	14	32	32	12	4	26	32	40	18	8	10	6	10	4	=	500
¼ ,, ,, ...	18	6	8	10	28	6	6	12	16	4	4	10	6	14	14	8	4	12	14	18	8	4	6	4	6	4	=	250

Capitals	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	&	£	—
1 Strength (Body) ...	8	8	6	6	12	6	8	10	10	6	4	8	18	8	8	8	4	8	12	12	6	4	8	4	6	4	8	6	6
1 ,, (Jobbing) ...	28	10	14	16	44	10	10	20	28	6	6	16	14	24	24	10	4	22	26	32	14	6	10	4	8	4	8	12	8
½ ,, ,, ...	16	6	8	10	26	6	6	12	16	4	4	10	8	14	14	6	4	14	16	20	8	4	6	4	6	4	6	8	6
¼ ,, ,, ...	10	4	6	6	16	4	4	8	10	4	4	6	6	10	10	4	4	8	10	12	6	4	4	4	4	4	4	4	4

Figures, etc.	1	2	3	4	5	6	7	8	9	0	¼	½	¾	⅓	⅔	⅛	⅜	⅝	⅞	.	,	;	:	-	'	!	?	(	[
1 Strength (Body) ...	10	6	6	4	4	4	4	4	8	12	2	2	2	2	2	2	2	2	2	40	50	8	6	10	10	2	3	12	6
1 ,, (Jobbing) ...	20	12	12	8	8	8	8	8	18	24	4	4	4	2	2	2	2	2	2	40	40	12	6	10	20	4	6	18	8
½ ,, ,, ...	16	10	10	8	8	8	8	8	10	16	—	—	—	—	—	—	—	—	—	20	30	6	6	8	10	4	4	10	6
¼ ,, ,, ...	10	6	6	4	4	4	4	4	8	12	—	—	—	—	—	—	—	—	—	14	24	6	6	6	8	4	4	8	6

Ligatures	Æ	Œ	æ	œ	æ	œ	ff	fi	fl	ffi	ffl
1 Strength (Body) ...	4	4	4	2	2	2	3	4	3	3	3
1 ,, (Jobbing) ...	8	8	—	—	4	4	6	8	6	6	6
½ ,, ,, ...	4	4	—	—	4	4	6	8	6	6	6
¼ ,, ,, ...	4	4	—	—	4	4	6	6	4	4	2

Spaces	Ems	Ens	Thick	Mid.	Thin	Hair
1 Strength ...	100	50	200	100	100	50
1 ,, ...	100	50	200	100	100	50
½ ,, ...	75	40	100	80	80	40
¼ ,, ...	50	30	60	40	40	20

Accents	á	à	â	ä	é	è	ê	ë	í	ì	î	ï	ó	ò	ô	ö	ú	ù	û	ü	Ç	ç	ñ
	2	2	2	2	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Small Caps	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
	8	3	4	5	13	3	3	6	8	2	2	5	6	8	8	3	2	7	8	10	4	2	3	2	3	2

Signs	*	†	‡	‖	§	¶	–	...	@	℔	a/c	$	%	/	+	—	×	÷	=
	6	4	2	2	4	6	4	12	2	2	2	2	4	6	2	2	2	2	2

The proportions of the "body" founts are based upon the average recurrence of the various characters in average English literature. The proportions of the capital letters of the "jobbing" founts relative to the lower-case characters provide for the greater use of capital letter composition when using jobbing founts. An all-capital fount should equal the strength of a "body" lower-case and capital fount combined. Em quads should be ordered separately; the quantity required should depend upon the nature of the composition. The number of em quads given above applies to the ems used in straightforward composition.

FORMULA FOR FINDING NUMBER OF SORTS TO MAKE ONE POUND

Multiply the body points of the sort required by the set points and divide the answer into 22,000.*

Example.—Cast 2 lbs. of 36 point characters, the set width of which is $12\frac{1}{2}$ points.

Answer.—$22{,}000 \times 2 \div (36 \times 12\frac{1}{2}) = 98$ characters (approx.).

In the case of cored type bodies add 20 per cent. to the answer to give the approximate number required.

FOUNT SCHEMES

In casting founts it is highly desirable that an approximately correct number of the various characters should be cast, otherwise much time will be wasted in casting characters that will not be needed.

Founts are divided into two categories; those that are intended for book work and those intended for jobbing work.

The proportions of the various characters necessary for ordinary English book composition are fairly accurately defined, but this is not the case in jobbing composition, where different subjects often cause a heavy demand to be made upon certain characters. In jobbing work the demand upon capitals is much greater than in the case of straightforward news or book work, and this demand varies according to the class of work that is being composed. In book and news work the six most frequently used characters, arranged in order, are e, t, a, i, o, n, whereas in a large directory a count of the initials of the surnames gave the following as the order for the six most frequently used capitals: B, S, C, H, M, W. As the latter apply to the initials of names of English persons their order cannot be accepted as a standard of average frequency of use of capitals.

Therefore, whereas it is a simple matter to give the proportions for founts to be used for English book work, it is not so easy to arrive at the quantities of capitals required for jobbing work.

We give a table of the quantities required to make a fount of 1,000 lower-case characters in both English book and jobbing founts.

A TO Z MEASUREMENTS

The "a to z" measurements for determining the relative space-covering qualities of a fount are comparatively useless when desiring to know how many lines or pages certain copy will make. The "a to z" measurements of two founts may be identical but if the frequently-used characters in one fount are more condensed than those of the other fount, and the infrequently-used characters of the former fount are wider than the similar characters in the latter fount, the former fount would cover considerably less space than the latter.

CHECK THE CHARACTERS WHEN FOUNT CASTING

When casting a fount, check on a slip of paper each character as it is cast. This will avoid characters being overlooked, and may avoid unnecessary mould changes.

ARRANGE MATRICES BEFORE STARTING TO CAST TYPE

Before starting to cast a fount arrange the matrices in the order of the progressive thickness of the characters, from thinnest to thickest. This will save considerable gear changing.

* Four square inches (20,736 square points) is only approximately equivalent to one pound avoirdupois; for all-round estimates 22,000 square points is a more satisfactory basis. This applies to English type height.

OUTPUTS

Owing to so many intervening factors which qualify our calculations we can only give estimates of approximate hourly outputs of the various products of the "Super Caster."

For type above 14 point the speeds given in this book in the "Change Speed Table" and the "Product Information Table" are based upon a non-stop production of about 40 lb. per hour. Cored type is cast to the same weight per hour, but shows 20 per cent more in *quantity*.

The weight of hourly output must primarily depend upon the cubic content of the material cast, multiplied by the speed of casting. These are definite factors, but they are qualified by other influences, such as temperature of metal, area of surface exposed (during casting) to the cooling influence of the mould, the cubic area of the matrix drive,* the condition of wear of the pump body and piston, and other considerations.

It will thus be understood that it is impossible to estimate hourly outputs with anything like mathematical precision, even on non-stop runs over a given period.

At the same time we wish to give printers and machine attendants a reasonable idea of the output of the various products that is obtainable from the Super Caster on non-stop runs, and to inform them how to arrive at estimates of production. As we must have an area basis for our calculations we will accept the usual basis of four square inches of solid type as being equivalent to one pound avoirdupois. We have tested this formula rather extensively, and find that in "body" types rather less than one pound avoirdupois is contained in four inches, whereas in display type there is often rather more than one pound. Strip rules are slightly heavier than type, as the drive of the rule matrix is less than that of type matrices.

Four square inches of type contain 20,736† square points, and this weighs approximately one pound. Therefore if we divide the square points of output per hour by this sum we shall arrive at the approximate weight of output in pounds per hour. To estimate the square-point output per hour multiply the body in points by the set in points of the product to be cast, and multiply the answer by the number of casts per hour.

An average of 20 per cent. in *speed* should be added for all cored type bodies, so that although a greater *number* of cored types are cast per hour, the approximate *weight* cast per hour remains the same. This applies also to casting quotations.

Leads may be cast 20 per cent. faster than rules, being approximately 20 per cent. lighter, owing to the difference in height.

Type below 12 point can only be cast at 144 revolutions per minute; therefore the smaller the type below 12 point the less the weight produced per hour.

In the case of very large types, where the speed demanded is less than that provided by the lowest gear, the speed required is doubled, and the pump must be disengaged during every alternate revolution. This applies only to a few characters of the largest sizes.

In actual running practice the weights obtainable depend largely upon the size of founts cast, as it will be understood that in the case of founts of small weight the time taken to change the matrices and gears will, proportionate to the actual casting time, be considerably more than in the case of founts of greater weight.

If customers wish to run their machines faster than the speeds given in the tables in this book, they may do so, at their own risk, but we think a non-stop output of 40 lbs. per hour is a sufficiently reasonable basis to satisfy the most exacting printer, although the machine is capable of producing a much higher output.

Where a machine is kept constantly employed the quantity of output is governed by the ability of the Super Caster attendant and the organisation of his department.

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* The difference in weight between a given number of types of the same character of Caslon and Braggadocio is very considerable, owing to the difference in face design.

† A more satisfactory all-round basis in estimating weights of production is to take 22,000 square points as being equivalent to one pound avoirdupois. This applies to English type height.

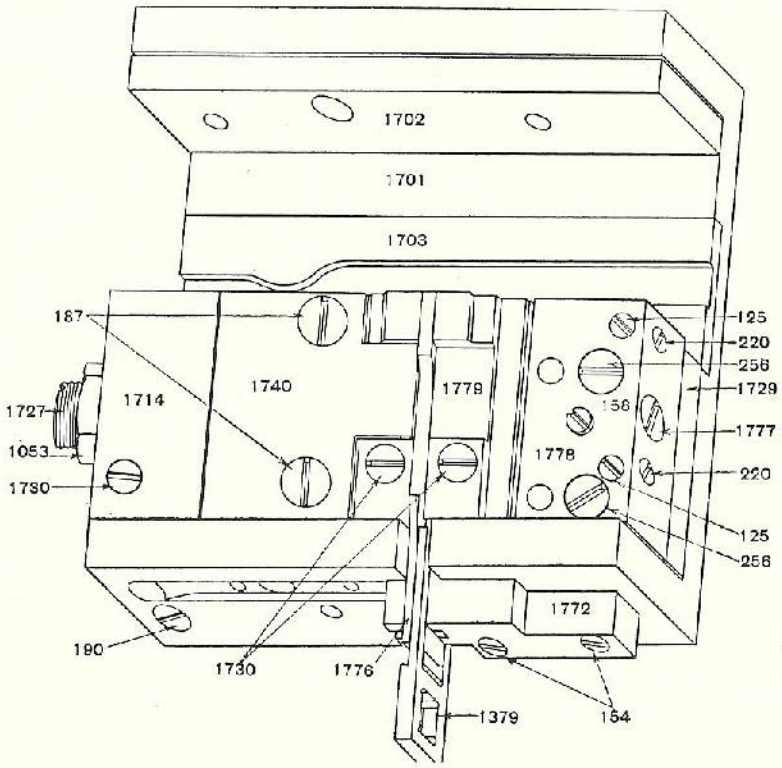


FIG. 2—View from rear of body of mould with cross block removed

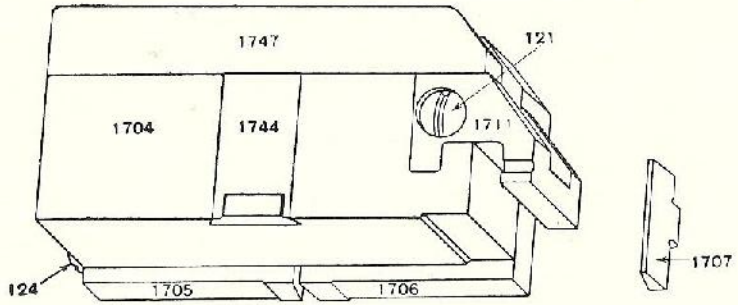


FIG. 3—View from rear of mould cross block

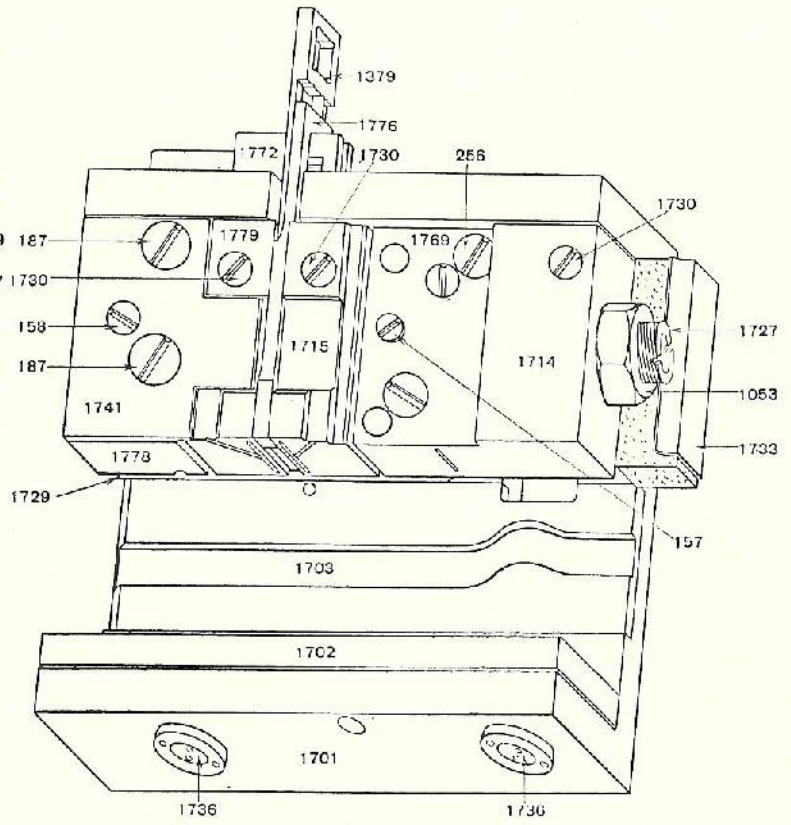


FIG. 1—View from front of body of mould, with cross block removed

COMPOSITION MOULDS (NUMBERED UNDER 20,000)

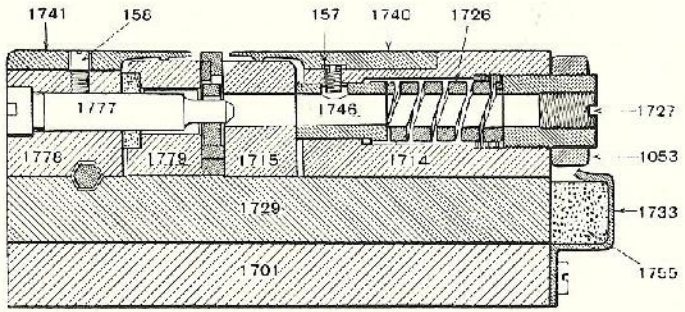


FIG. 4—Section through mould from left to right

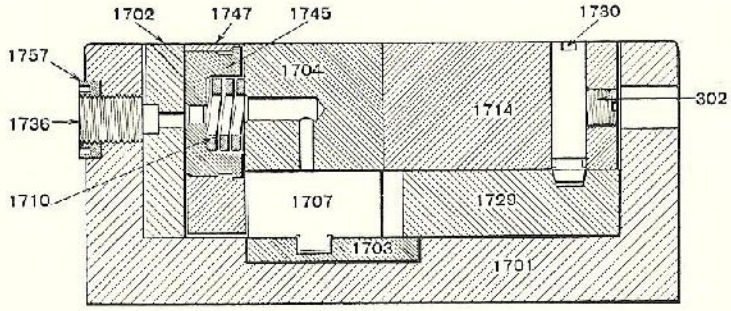


FIG. 5—Section through mould from front to rear

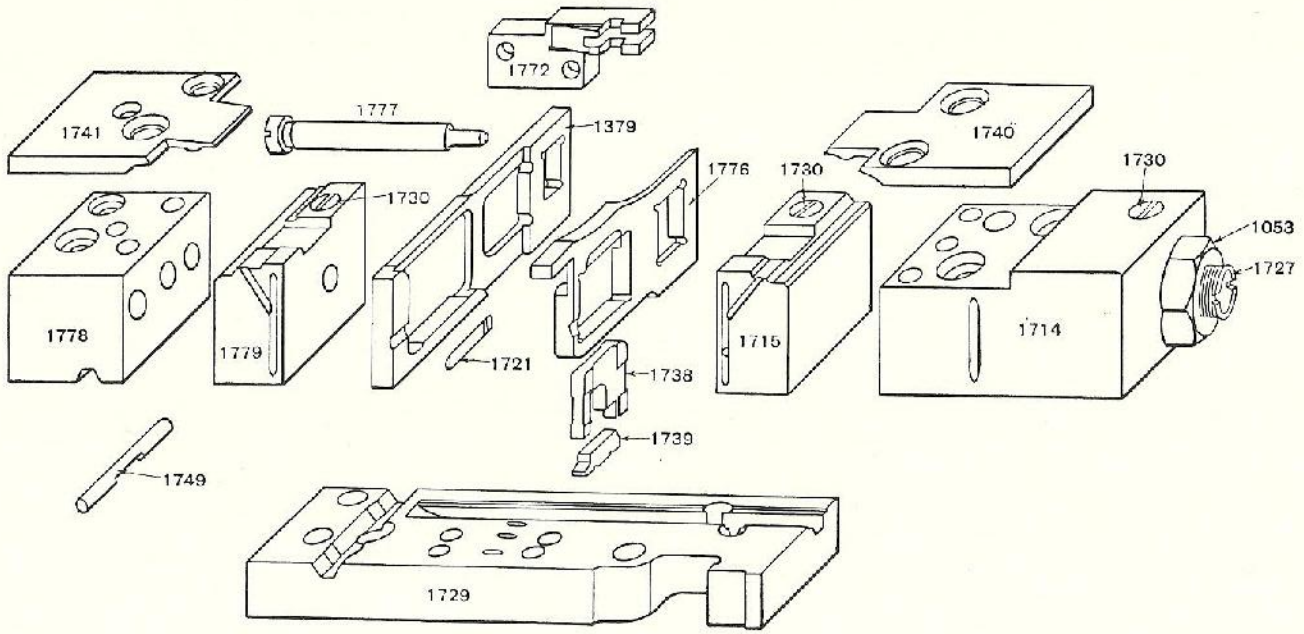


FIG. 6—Shows lower and upper blades with the various parts which go at each side of the blades, the intermediate plate upon which these parts are built, and the mould blade rear stop

COMPOSITION MOULDS (NUMBERED UNDER 20,000)

DIAGRAMS OF "MONOTYPE" COMPOSITION MOULDS

NUMBERED UNDER 20,000

In the foregoing diagrams of this mould Figs. 1 and 2 are perspective views of the upper portion of mould with the cross slide removed. Fig. 3 is a perspective view of the crossblock with the jet blade adjacent. Fig. 4 is a longitudinal section of the mould. Fig. 5 is a cross section of the mould. Fig. 6 shows the blade, the side blocks, and adjacent parts unassembled but in their relative positions.

The markings on the mould gib plate represent the respective type sizes. For example:

BREVIER—indicates old type size (English).
8-POINT BREVIER—indicates old point size based on ·1667″ (Pica).
8-POINT—indicates true point size based on ·166″ (12 point).

The mould parts shown are numbered as follows:—

1701 Base
1702 Gib
1703 Cam
1704 Cross block
1705 Angle gate block
1706 Fixed gate block
1707 Jet blade
1744 Matrix seat
1747 Back plate
1745 Back plate plug
1710 Back plate spring
1711 Connecting piece
1778 Screw block
1779 Screw side block
1714 Spring block
1715 Spring side block
1740 Cover spring
1741 Cover spring
1379 Lower blade
1776 Upper blade
1738 Distance piece
256 Spring block screws
154 Blade stop screws
190 Intermediate plate, angle, and fixed gate block screws
1739 Shoe
1721 Nick pin
1777 Eccentric blade spring
157 Spring block plug screw
158 Blade spring set screw
1726 Spring
1746 Spring block plug
1727 Spring adjusting screw
1053 Spring check nut
1729 Intermediate plate
1730 Taper eccentric dowel (long)
1769 Taper eccentric dowel (short)
302 Dowel set screws
1772 Blade stop
1733 Cross block lubricator
1755 Felt pad
220 Aligning screws
125 Aligning set of screws
1736 Gib screw
256 Screw block screws
187 Cover screws
121 Connecting piece screw
124 Gate block adjusting screw
1749 Screw block round key

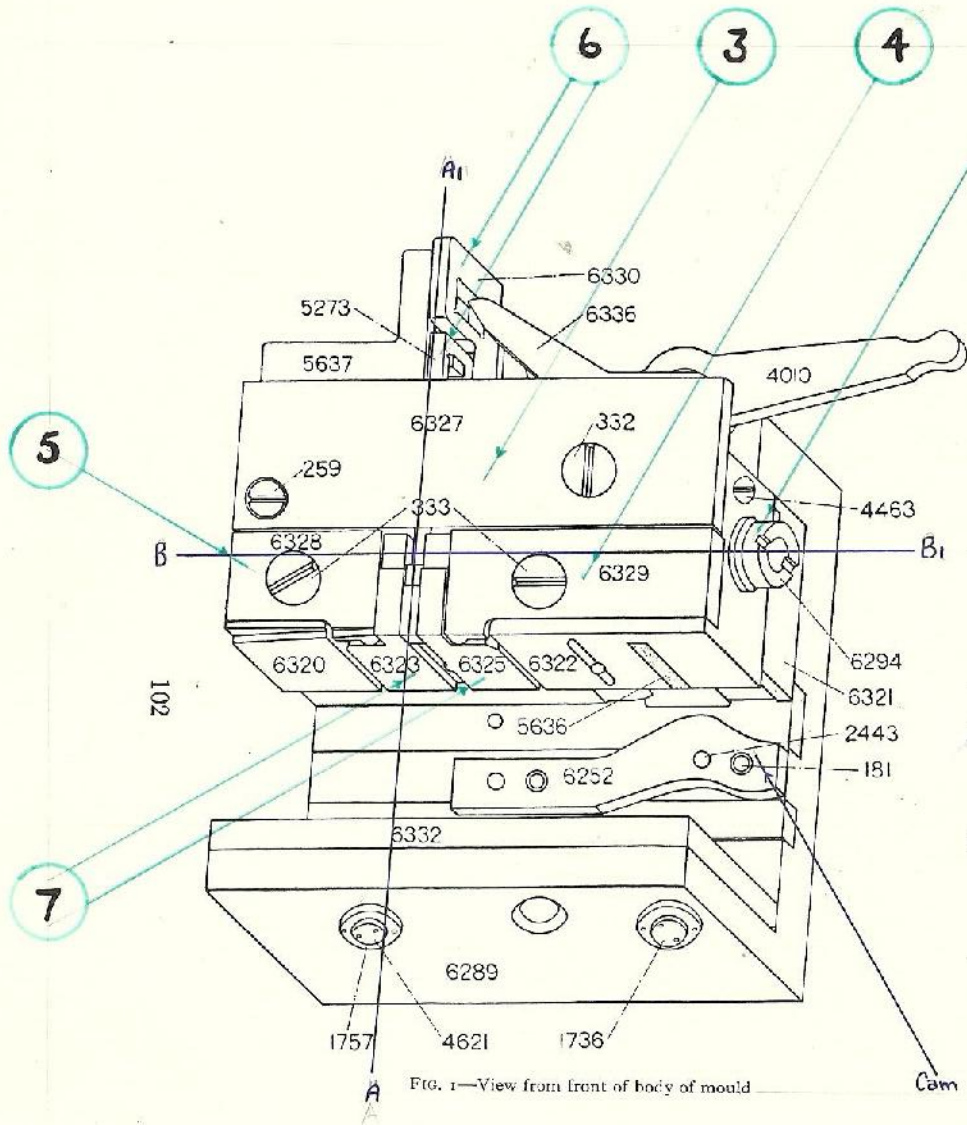


FIG. 1—View from front of body of mould

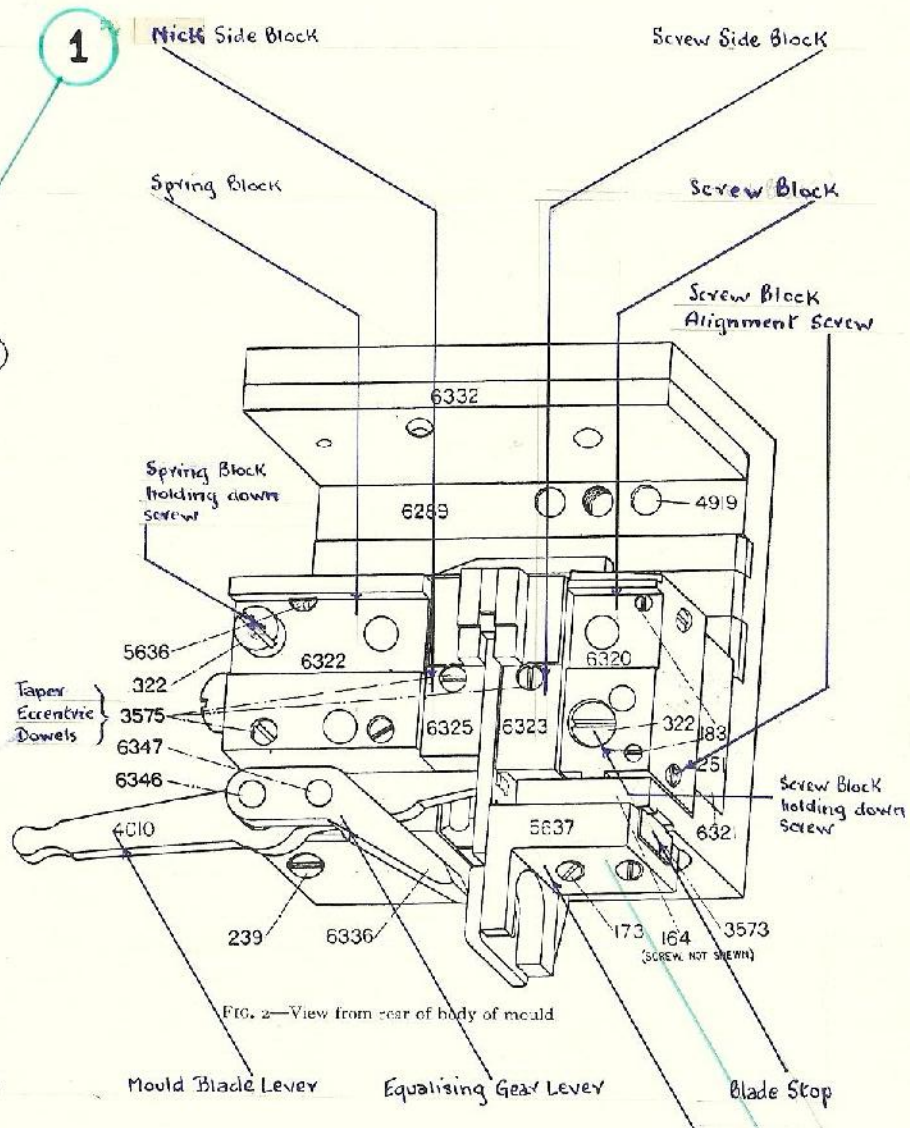


FIG. 2—View from rear of body of mould

COMPOSITION MOULDS (NUMBERED OVER 22,000)

Order of Dismantling for Cleaning (see page 57)

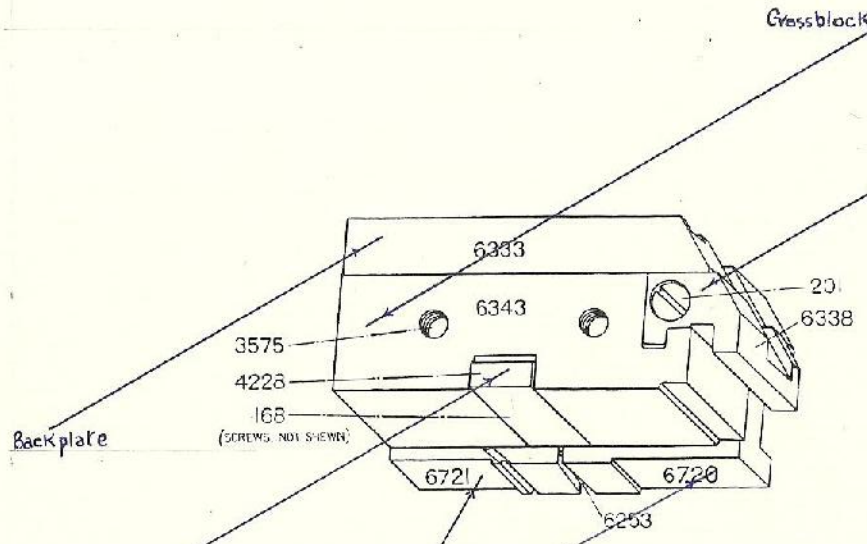


FIG. 3—View from rear of cross block

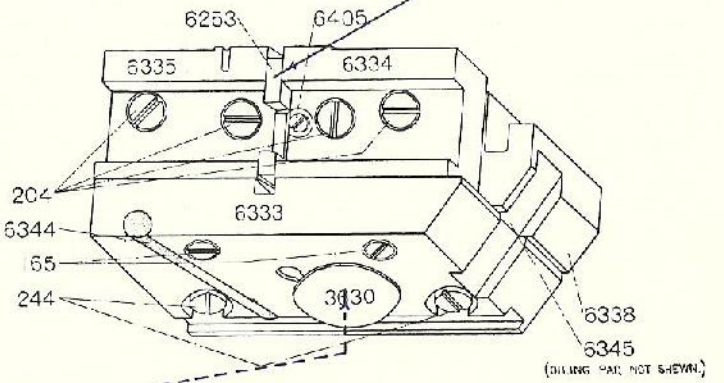


FIG. 4—View of lower side of cross block

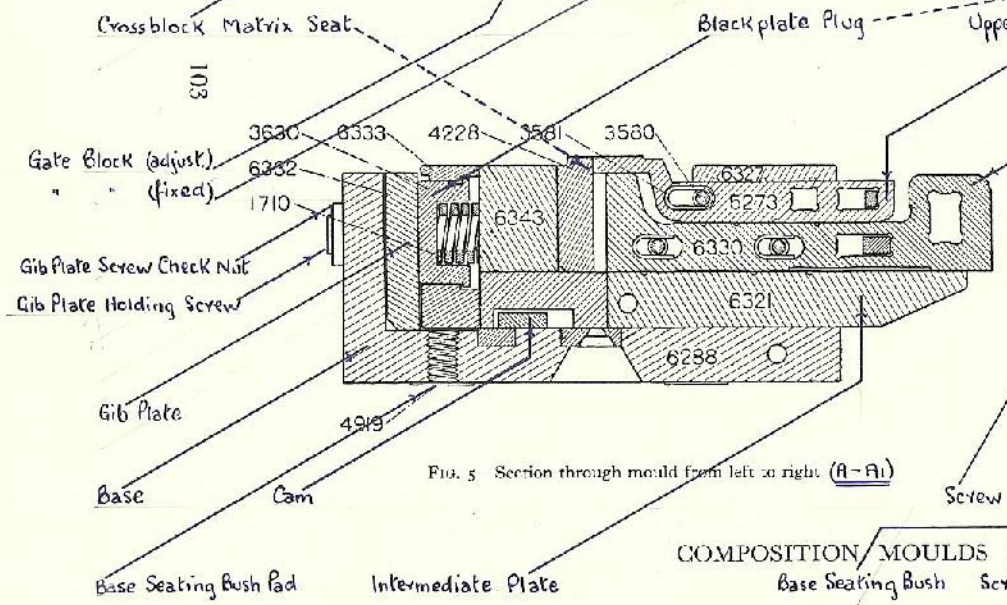


FIG. 5 Section through mould from left to right (A–A1)

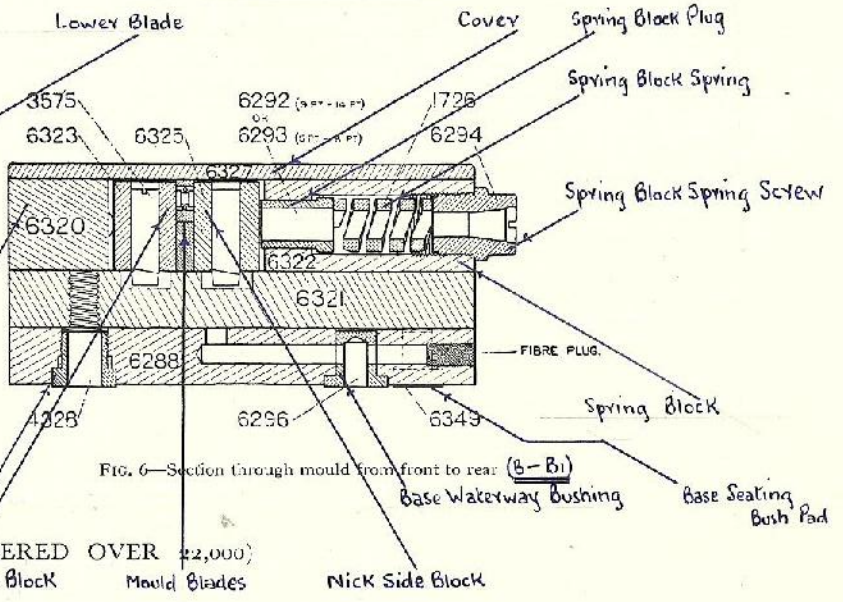


FIG. 6—Section through mould from front to rear (B–B1)

COMPOSITION MOULDS (NUMBERED OVER 22,000)

Base Seating Bush Screw Side Block Mould Blades Nick Side Block

NAMES OF PARTS OF THE COMPOSITION MOULD

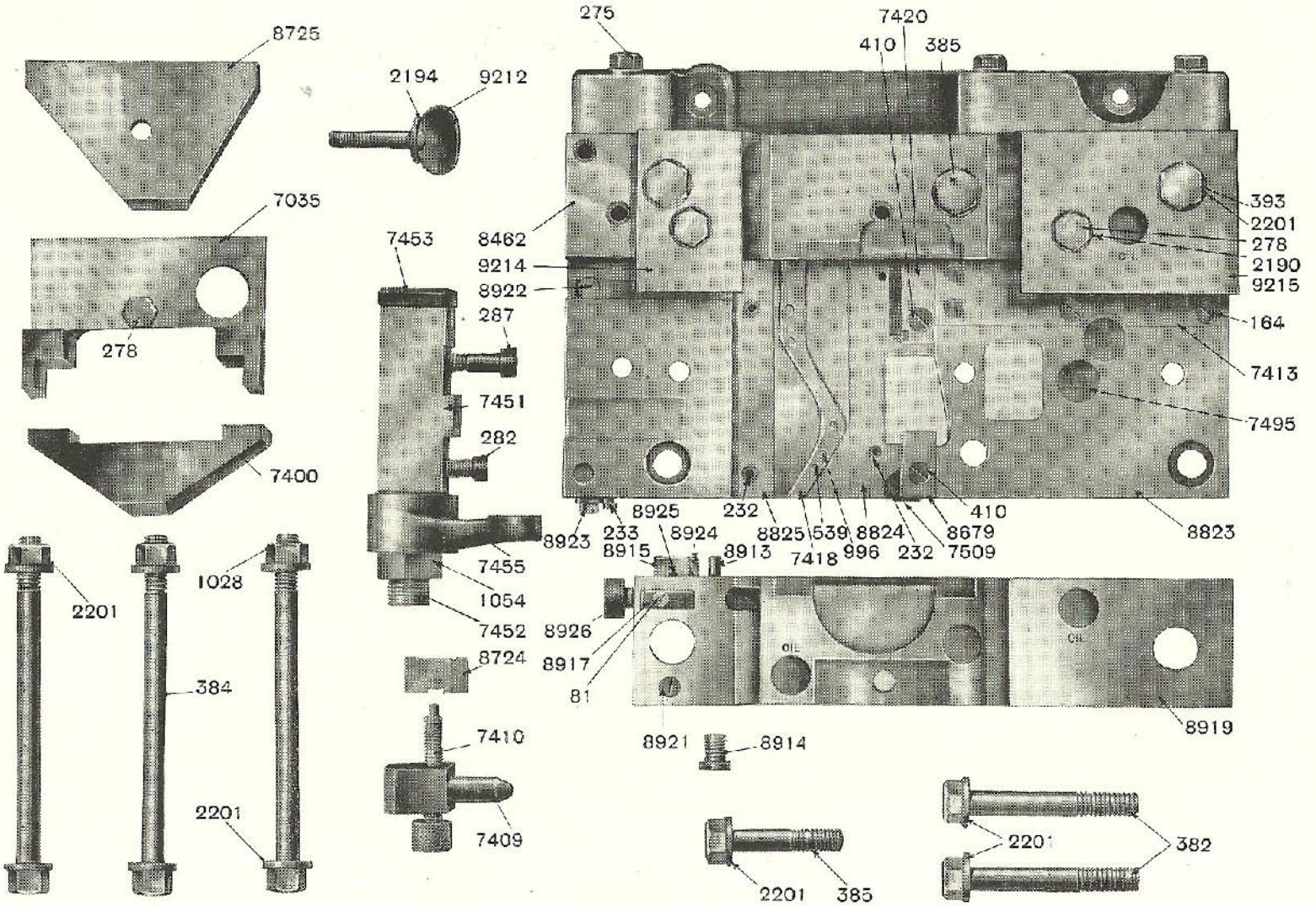
NUMBERED 22,000 UPWARDS

6289 Base (assembled)
6288 Base
Base plug ($\frac{3}{16}$ to 40 fibre)
4328 Base seating bush
4919 Base seating bush pad
6349 Base seating bush pad
6215 Base seating bush pad washer (repairs)
6218 Base seating bush pad washer (repairs)
6296 Base waterway bushing
4234 Nozzle seating plate
185 Nozzle seating plate screw
6251 Gate block plate
185 Gate block plate screw
6252 Cam
181 Cam screw
2443 Cam dowel pin
3573 Blade stop
5637 Blade support
173 Blade support screw
6342 Equalizing gear (assembled)
6336 Equalizing gear lever
6346 Equalizing gear lever hinge pin
4010 Mould blade lever
6347 Mould blade lever hinge pin
6321 Intermediate plate
Intermediate plate plug ($\frac{3}{16}$—40 fibre)
239 Intermediate plate screw
329 Intermediate plate holding down screw
6332 Gib plate
1736 Gib plate screw
4621 Gib plate holding screw
1757 Gib plate screw check nut
6320 Screw block
251 Screw block alignment screw
183 Screw block alignment screw set screw
164 Screw block holding back screw
322 Screw block holding down screw (in base)
6339 Spring block (assembled)
6322 Spring block
3575 Spring block taper eccentric dowel
4463 Spring block taper eccentric dowel set screw
322 Spring block holding down screw (in base)
6293 Spring block plug (5—8 point and didot)
6292 Spring block plug (9—14 point and didot)
858 Spring block keep pin
1726 Spring block spring
6294 Spring block spring screw
5636 Spring block felt oiling pad
6698 Screw side block (standard) (5—7 point, 5—6 didot)
6699 Screw side block (special height) (5 7 point, 5—6 didot)
6323 Screw side block (standard) (8—9 point, 7 9 didot)
6324 Screw side block (special height) (8—9 point, 7—9 didot)
6854 Screw side block (standard) (10—12 point and didot)
6855 Screw side block (special height) (10—12 point and didot)
6727 Screw side block (13—14 point and didot)
6328 Screw side block spring
333 Screw side block spring holding down screw (in base)
3575 Screw side block taper eccentric dowel
4463 Screw side block taper eccentric dowel set screw
6325 Nick side block (standard) (5—9 point and didot) solid nick
6326 Nick side block (special height) (5 9 point and didot) solid nick
6857 Nick side block (standard) (10—12 point and didot) solid nick
6858 Nick side block (special height) (10 12 point and didot) solid nick
6729 Nick side block (13—14 point and didot) solid nick
6329 Nick side block spring
333 Nick side block spring holding down screw (in base)
3575 Nick side block taper eccentric dowel
4463 Nick side block taper eccentric dowel set screw
6341 Blades (assembled)

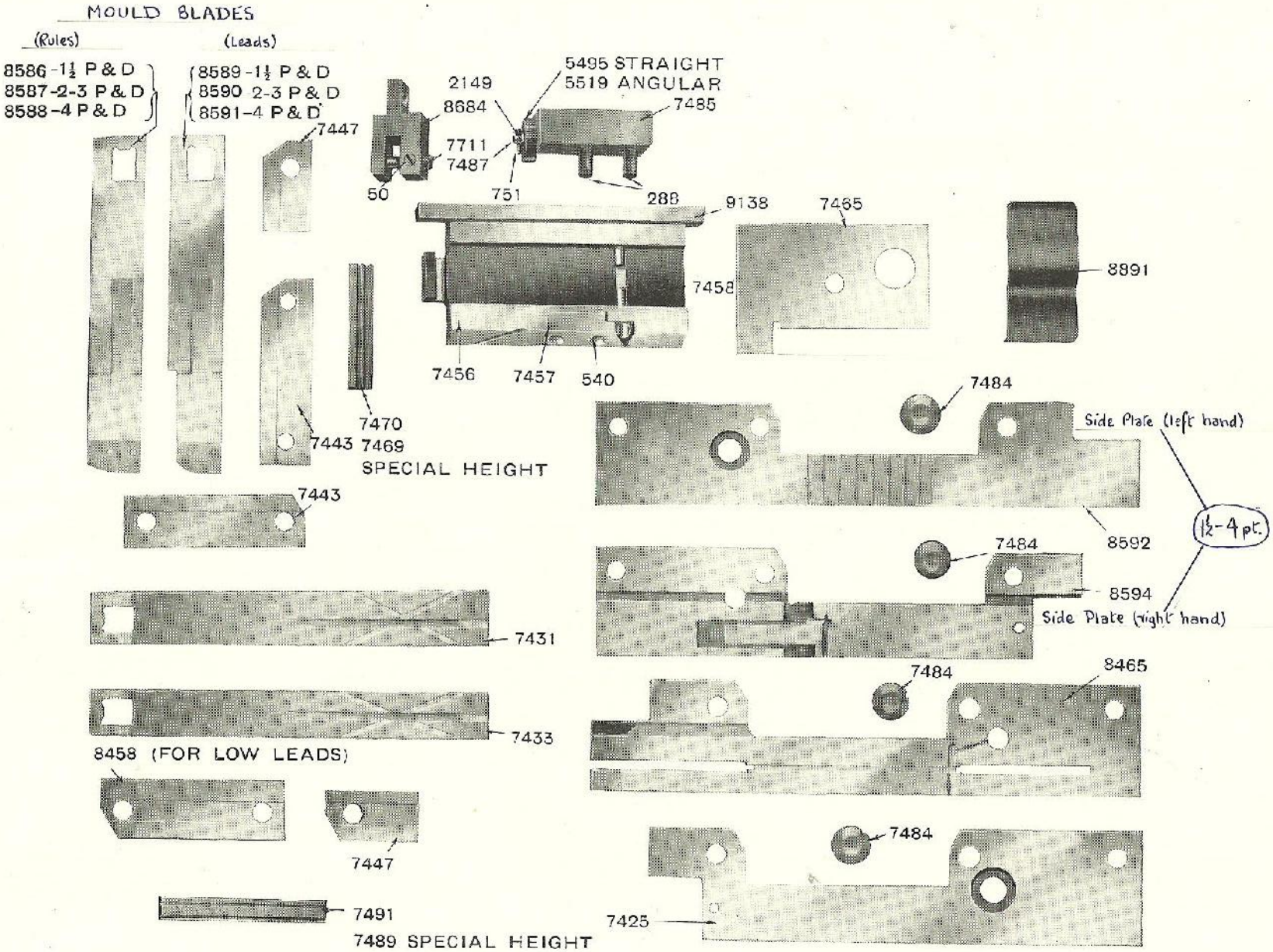
NAMES OF PARTS OF THE COMPOSITION MOULD

NUMBERED 22,000 UPWARD (CONTINUED)

6859 Blades and nick side block (assembled)
5273 Blade (upper) (standard)
5274 Blade (upper) (special height)
6330 Blade (lower) (standard) solid nick
6331 Blade (lower) (high standard) solid nick
8274 Blade (lower) (standard) solid nick
8275 Blade (lower) (high standard) solid nick
3580 Blade distance piece
3581 Blade distance piece spring wire
6327 Cover
332 Cover holding down screw (intermediate plate)
259 Cover holding down screw (screw block)
6343 Crossblock (assembled) (5—9 point and didot)
6862 Crossblock (assembled) (10—14 point and didot)
6337 Crossblock
4228 Crossblock matrix seat (standard) (5—9 point and didot)
4228 Crossblock matrix seat (standard) (5—9 point and didot)
4466 Crossblock matrix seat (special height) (5—9 point and didot)
6860 Crossblock matrix seat (standard) (10 14 point and didot)
168 Crossblock matrix seat screw
6861 Crossblock matrix seat (special height) (10—14 point and didot)
3575 Crossblock taper dowel
Crossblock taper dowel plug ($\frac{1}{4}$—40 fibre)
4465 Crossblock taper dowel set screw
Crossblock taper dowel set screw plug ($\frac{3}{10}$ 40 fibre)
3575 Crossblock taper eccentric dowel
4463 Crossblock taper eccentric dowel set screw
Crossblock taper eccentric dowel set screw plug ($7\frac{7}{32}$—40 fibre)
6340 Backplate (assembled)
6333 Backplate
165 Backplate screw (in gate block)
244 Backplate screw (in crossblock)
3630 Backplate plug
1710 Backplate spring
6344 Backplate felt oiling pad
6720 Gate block (fixed)
204 Gate block screw (in crossblock)
6721 Gate block (adjustable)
204 Gate block screw (in crossblock)
6253 Jet blade
6405 Jet blade cap screw
6338 Coupling hook
201 Coupling hook screw (in fixed gate block)
6345 Coupling hook felt oiling pad



PARTS OF THE "MONOTYPE" SUPER CASTER STRIP MOULD



PARTS OF THE "MONOTYPE" SUPER CASTER STRIP MOULD—*continued*

NAMES OF PARTS OF THE SUPER CASTER STRIP MOULD

HIGH LEADS, ·8885″ high (·03″ under type height)

LOW LEADS, ·75″ high (·1685″ under type height)

MAIN PARTS FOR CASTING 1 TO 12 POINT AND 1 TO 12 CORPS DIDOT MATERIAL

Base (assembled)
8823 Base
Base plug
7413 Base facing strip
164 Base facing strip screw
7509 Base clamp pad
7495 Base waterway bushing
Base bushing
8824 Nozzle seating plate
232 Nozzle seating plate screws
Nozzle seating plate screw
8825 Jet block bearing plate
232 Jet block bearing plate screw
7418 Cam
539 Cam screw
996 Cam dowel pin
7420 Jet block strip
410 Jet block screw
Base seating pad
7453*Lead clamp
7455 Lead clamp lever
1054 Lead clamp lever lock nut
7452 Lead clamp screw
7451*Lead clamp screw nut
282 Lead clamp screw nut screw (short)
287 Lead clamp screw nut screw (long)
Side block (fixed) (assembled)
8462 Side block (fixed)
Side block waterway plug (long)
Side block waterway plug (short) ($\frac{5}{16}$—40 brass)
275 Side block holding back screw (to base)
393 Side block holding down screw (long)
2201 Side block holding down washer
385 Side block holding down screw (short)
Side block locating pin
Side block (adjustment) (assembled)
8919 Side block (adjustment)
Side block waterway plug ($\frac{5}{16}$—40 brass)
Side block waterway bushing
Side block waterway bushing (angular)
Side block facing pad
9214 Side plate cover (front)
9215 Side plate cover (rear)
278 Side plate cover screw
2190 Side plate cover screw washer
8913 Friction plunger (for product)
Friction plunger spring
8914 Friction plunger spring abutment
382 Side block holding down screw (long)
2201 Side block holding down washer
385 Side block holding down screw (short)
2201 Side block holding down screw washer
Side block oiling pad
384 Blade distance piece clamping bolt
1028 Blade distance piece clamping bolt nut
2201 Blade distance piece clamping bolt washer
Jet block (assembled)
7456 Jet block (large)
7457 Jet block (small)
540 Jet block screw
Jet block adjustment screw
Jet block adjustment screw lock nut
9138 Jet block gib
8679 Jet stop
410 Jet stop screw
7458 Jet pusher
8891 Splash guard
8922 Supporting pad, *for use with "Dotted Rule" attachment*
8923 Supporting pad eccentric, *for use with "Dotted Rule" attachment*
233 Supporting pad eccentric locking screw, *for use with "Dotted Rule" attachment*
8924 Roller
8925 Roller pin

* Must be fitted with the lead straightening device.

Roller carrier (assembled)
8915 Roller carrier
Roller carrier actuating pin
8926 Roller carrier actuating screw
Roller carrier actuating screw friction plunger
8917 Roller carrier actuating screw friction plunger spring plate
81 Roller carrier actuating screw friction plunger spring plate screw
Roller carrier spring
Roller carrier spring abutment plate
Roller carrier spring abutment plate screws
8921 Roller carrier eccentric

AUXILIARY PARTS FOR CASTING 1 POINT AND 1 CORPS DIDOT MATERIAL

Side plate (left hand)
Side plate (right hand)
Side plate oiling pad
Side plate clamp (eccentric)
Blade (*low leads*)
7447 Blade distance piece (front)
8674 Blade distance piece (rear)
Blade distance piece (bottom)
Blade distance piece locator
Blade distance piece locator screw
7470 Blade cap (standard height) *standard height, low leads*
7469 Blade cap (special height) *standard height, low leads*
Blade cap (standard and special height) *special height, low leads*
Blade cap adjusting screw, *special height, low leads*
Blade cap adjusting screw lock nut, *special height, low leads*
Blade cap clamp
Blade cap screw
Blade cap clamp screw
Blade cap clamp screw washer
8684 Blade connection
7711 Blade connection pin
50 Blade connection screw

AUXILIARY PARTS FOR CASTING 1½ TO 4 POINT AND 1½ TO 4 CORPS DIDOT MATERIAL

8592 Side plate (left hand)
8594 Side plate (right hand)
7481 Side plate oiling pad
8586 Blade 1½ point and didot, *rules and high leads*
8587 Blade 2 to 3 point and didot, *rules and high leads*
8588 Blade 4 point and didot, *rules and high leads*
8589 Blade 1½ point and didot, *low leads*
8590 Blade 2 to 3 point and didot, *low leads*
8591 Blade 4 point and didot, *low leads*
8684 Blade connection
7711 Blade connection pin
50 Blade connection pin screw
7447 Blade distance piece (front)
7443 Blade distance piece (rear) *rules and high leads*
8458 Blade distance piece (rear) *low leads*
Blade cap, *high leads, standard height, low leads*
7470 Blade cap (standard height) *high leads, standard height, low leads*
7469 Blade cap (special height) *high leads, standard height, low leads*
Blade cap (standard and special height) *special height, low leads*
Blade cap adjusting screw, 1½ to 3 point and didot, *special height, low leads*
Blade cap adjusting screw, 4 point and didot, *special height, low leads*
Blade cap adjusting screw lock nut, *special height, low leads*
8725 Matrix clamp
9212 Matrix clamp screw
2194 Matrix clamp washer
8724 Matrix clamp pad
7035 Matrix guide (high leads and borders)
7400 Matrix guide cover, *borders*
7410 Matrix guide cover clamp screw, *borders*
7409 Matrix guide cover clamp screw post, *borders*
278 Matrix guide screw, *borders*
7465 Matrix locator (rules)

AUXILIARY PARTS FOR CASTING 6 TO 12 POINT AND 6 TO 12 CORPS DIDOT MATERIAL

8465 Side plate (left hand)
7425 Side plate (right hand)
7431 Blade (rules and high leads)
7433 Blade (low leads)
7447 Blade distance piece (front)
7443 Blade distance piece (rear) *rules and high leads*
8458 Blade distance piece (rear) *low leads*
Blade cap, *high leads, standard height, low leads*
7491 Blade cap (standard height) *high leads, standard height, low leads*
7489 Blade cap (special height) *high leads, standard height, low leads*
Blade cap (standard and special height) *special height, low leads*
Blade cap adjusting screw, *special height, low leads*
Blade cap adjusting screw lock nut, *special height, low leads*
8725 Matrix clamp
9212 Matrix clamp screw
2194 Matrix clamp washer
8724 Matrix clamp pad
7035 Matrix guide, *high leads and borders*
7400 Matrix guide cover
7410 Matrix guide cover clamp screw, *borders*
7409 Matrix guide cover clamp screw post
278 Matrix guide screw
7465 Matrix locator, *rules*

STRIP MOULD RULE DOTTING ATTACHMENT

7485 Knurl bracket
288 Knurl bracket screws
5495 Knurl (straight)
5519 Knurl (angular)
7487 Knurl fulcrum pin
751 Knurl fulcrum pin cotter
2149 Knurl fulcrum pin washer

SUPER CASTER CHARTS

MICROMETER HEAD SETTINGS

FOR COMPOSITION MATRICES

5 Set to 9¾ Set

Units	5 Set	5¼ Set	5½ Set	5¾ Set	6 Set	6¼ Set	6½ Set	6¾ Set	7 Set	7¼ Set	7½ Set	7¾ Set	8 Set	8¼ Set	8½ Set	8¾ Set	9 Set	9¼ Set	9½ Set	9¾ Set	Units
3	27/32	7/8	29/32	31/32	1	1 1/32	1 3/32	1 1/8	1 5/16	1 7/32	1 1/4	1 9/32	1 11/32	1 3/8	1 13/32	1 15/32	1 1/2	1 17/32	1 19/32	1 5/8	3
	.0115	.0121	.0127	.0133	.0138	.0144	.0150	.0156	.0161	.0167	.0173	.0179	.0184	.0190	.0196	.0202	.0207	.0213	.0219	.0225	
4	1 1/8	1 5/32	1 7/32	1 9/32	1 11/32	1 3/8	1 7/16	1 1/2	1 9/16	1 5/8	1 11/16	1 23/32	1 25/32	1 27/32	1 7/8	1 15/16	2	2 1/16	2 1/8	2 3/16	4
	.0154	.0161	.0169	.0177	.0184	.0192	.0200	.0207	.0215	.0223	.0231	.0238	.0246	.0254	.0261	.0269	.0277	.0284	.0292	.0300	
5	1 13/32	1 15/32	1 17/32	1 19/32	1 11/16	1 3/4	1 13/16	1 7/8	1 15/16	2 1/32	2 3/32	2 5/32	2 7/32	2 5/16	2 3/8	2 7/16	2 1/2	2 9/16	2 21/32	2 23/32	5
	.0192	.0202	.0211	.0221	.0231	.0240	.0250	.0259	.0269	.0279	.0288	.0298	.0307	.0317	.0327	.0336	.0346	.0355	.0365	.0375	
6	1 11/16	1 3/4	1 27/32	1 29/32	2	2 1/32	2 3/16	2 1/4	2 11/32	2 13/32	2 1/2	2 13/32	2 15/16	2 3/4	2 27/32	2 29/32	3	3 1/32	3 5/32	3 1/4	6
	.0231	.0242	.0254	.0265	.0277	.0288	.0300	.0311	.0323	.0334	.0346	.0357	.0369	.0380	.0392	.0403	.0415	.0427	.0438	.0450	
7	1 15/16	2 1/32	2 5/32	2 1/4	2 11/32	2 7/16	2 17/32	2 5/8	2 23/32	2 25/32	2 29/32	3	3 1/8	3 7/32	3 5/16	3 13/32	3 1/2	3 19/32	3 11/16	3 13/16	7
	.0269	.0282	.0296	.0309	.0323	.0336	.0350	.0363	.0377	.0390	.0403	.0417	.0430	.0444	.0457	.0471	.0484	.0498	.0511	.0525	
8	2 7/32	2 11/32	2 7/16	2 9/16	2 11/16	2 25/32	2 29/32	3	3 1/8	3 7/32	3 11/32	3 7/16	3 9/16	3 21/32	3 25/32	3 7/8	4	4 1/8	4 7/32	4 11/32	8
	.0307	.0323	.0338	.0354	.0369	.0384	.0400	.0415	.0430	.0446	.0461	.0478	.0492	.0507	.0523	.0538	.0553	.0569	.0584	.0599	
9	2 1/2	2 5/8	2 3/4	2 7/8	3	3 1/8	3 1/4	3 3/8	3 1/2	3 5/8	3 3/4	3 7/8	4	4 1/8	4 1/4	4 3/8	4 1/2	4 5/8	4 3/4	4 7/8	9
	.0346	.0363	.0380	.0398	.0415	.0432	.0450	.0467	.0484	.0501	.0519	.0536	.0553	.0571	.0588	.0605	.0622	.0640	.0657	.0674	
10	2 29/32	2 29/32	3 1/16	3 3/16	3 11/32	3 15/32	3 5/8	3 3/4	3 7/8	4 1/32	4 5/32	4 5/16	4 7/16	4 19/32	4 23/32	4 7/8	5	5 5/32	5 9/32	5 13/32	10
	.0384	.0403	.0423	.0442	.0461	.0480	.0500	.0519	.0538	.0557	.0576	.0596	.0615	.0634	.0653	.0672	.0692	.0711	.0730	.0749	
11	3 1/16	3 7/32	3 3/8	3 1/2	3 21/32	3 15/16	3 31/32	4 1/8	4 9/32	4 7/16	4 19/32	4 5/4	4 7/8	5 1/32	5 5/16	5 11/32	5 1/2	5 21/32	5 13/16	5 31/32	11
	.0423	.0444	.0465	.0486	.0507	.0528	.0549	.0571	.0592	.0613	.0634	.0655	.0676	.0697	.0719	.0740	.0761	.0782	.0803	.0824	
12	3 11/32	3 1/2	3 21/32	3 27/32	4	4 5/32	4 11/32	4 1/2	4 11/16	4 27/32	5	5 5/16	5 11/32	5 1/2	5 11/16	5 27/32	6	6 5/32	6 11/32	6 1/2	12
	.0461	.0484	.0507	.0530	.0553	.0576	.0599	.0622	.0646	.0669	.0692	.0715	.0738	.0761	.0784	.0807	.0830	.0853	.0876	.0899	
13	3 5/8	3 13/16	3 31/32	4 5/32	4 11/32	4 1/2	4 11/16	4 7/8	5 1/16	5 1/4	5 13/32	5 15/32	5 25/32	5 31/32	6 1/8	6 5/16	6 1/2	6 11/16	6 7/8	7 1/32	13
	.0500	.0525	.0549	.0574	.0599	.0624	.0649	.0674	.0699	.0724	.0749	.0774	.0799	.0824	.0849	.0874	.0899	.0924	.0949	.0974	
14	3 7/8	4 3/32	4 9/32	4 15/32	4 11/16	4 7/8	5 1/16	5 1/4	5 7/16	5 21/32	5 27/32	6 1/32	6 7/32	6 13/32	6 5/8	6 15/16	7	7 3/16	7 15/32	7 19/32	14
	.0538	.0565	.0592	.0619	.0646	.0672	.0699	.0728	.0753	.0780	.0807	.0834	.0861	.0888	.0915	.0941	.0968	.0995	.1022	.1049	
15	4 5/32	4 3/8	4 19/32	4 15/16	5	5 1/32	5 13/32	5 5/8	5 27/32	6 1/32	6 1/4	6 15/32	6 21/32	6 7/8	7 3/32	7 5/16	7 1/2	7 25/32	7 29/32	8 1/8	15
	.0576	.0605	.0634	.0663	.0692	.0720	.0749	.0778	.0807	.0836	.0865	.0893	.0922	.0951	.0980	.1009	.1037	.1066	.1095	.1124	
16	4 7/16	4 11/16	4 7/8	5 1/8	5 11/32	5 9/16	5 25/32	6	6 7/32	6 7/16	6 21/32	6 7/8	7 1/32	7 11/32	7 9/16	7 25/32	8	8 7/32	8 7/16	8 21/32	16
	.0615	.0646	.0676	.0707	.0738	.0769	.0799	.0830	.0861	.0892	.0922	.0953	.0984	.1014	.1045	.1076	.1107	.1137	.1168	.1199	
17	4 23/32	4 31/32	5 5/16	5 7/16	5 11/16	5 29/32	6 1/8	6 3/8	6 3/4	6 27/32	7 5/32	7 5/16	7 9/16	7 15/16	8 1/32	8 1/4	8 1/2	8 3/4	8 31/32	9 7/32	17
	.0653	.0686	.0719	.0751	.0784	.0817	.0849	.0882	.0915	.0947	.0980	.1013	.1045	.1078	.1111	.1143	.1176	.1208	.1241	.1274	
18	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	8 1/4	8 1/2	8 3/4	9	9 1/4	9 1/2	9 3/4	18
	.0692	.0726	.0761	.0795	.0830	.0865	.0899	.0934	.0968	.1003	.1038	.1072	.1107	.1141	.1176	.1210	.1245	.1280	.1314	.1349	
19	5 9/32	5 9/16	5 13/16	6 1/16	6 11/32	6 19/32	6 7/8	7 1/8	7 13/32	7 21/32	7 29/32	8 5/16	8 7/16	8 23/32	8 31/32	9 1/4	9 1/2	9 25/32	10 1/32	10 5/16	19
	.0730	.0767	.0803	.0840	.0876	.0913	.0949	.0986	.1022	.1059	.1095	.1132	.1168	.1205	.1241	.1278	.1314	.1351	.1387	.1424	
20	5 9/16	5 27/32	6 1/8	6 15/32	6 21/32	6 25/32	7 7/32	7 1/2	7 25/32	8 1/16	8 11/32	8 5/8	8 7/8	9 5/32	9 7/16	9 25/32	10	10 9/32	10 9/16	10 27/32	20
	.0769	.0807	.0845	.0884	.0922	.0961	.0999	.1037	.1076	.1114	.1153	.1191	.1230	.1268	.1307	.1345	.1383	.1422	.1460	.1499	
21	5 27/32	6 1/8	6 15/32	6 25/32	7	7 5/16	7 19/32	7 7/8	8 5/32	8 15/32	8 5/4	9 1/32	9 11/32	9 5/8	9 29/32	10 7/32	10 1/2	10 13/16	11 5/32	11 3/8	21
	.0807	.0847	.0888	.0928	.0968	.1009	.1049	.1089	.1130	.1170	.1210	.1251	.1291	.1331	.1372	.1412	.1452	.1493	.1533	.1574	
22	6 1/8	6 13/32	6 25/32	7 1/32	7 11/32	7 21/32	7 15/16	8 1/4	8 9/16	8 7/8	9 5/32	9 13/32	9 25/32	10 3/32	10 13/32	10 1/16	11	11 5/16	11 5/8	11 29/32	22
	.0845	.0888	.0930	.0972	.1014	.1057	.1099	.1141	.1184	.1228	.1268	.1310	.1353	.1395	.1437	.1479	.1522	.1564	.1606	.1648	
23	6 3/8	6 25/32	7 1/32	7 11/32	7 21/32	8	8 5/16	8 5/8	8 15/16	9 1/4	9 19/32	9 29/32	10 7/32	10 17/32	10 7/8	11 3/16	11 1/2	11 13/16	12 1/8	12 15/32	23
	.0884	.0928	.0972	.1016	.1061	.1105	.1149	.1193	.1237	.1281	.1325	.1369	.1414	.1458	.1502	.1548	.1591	.1635	.1679	.1723	
24	6 21/32	7	7 11/32	7 21/32	8	8 11/32	8 21/32	9	9 11/32	9 21/32	10	10 11/32	10 21/32	11	11 11/32	11 21/32	12	12 11/32	12 21/32	13	24
	.0922	.0968	.1014	.1060	.1106	.1152	.1198	.1244	.1291	.1337	.1383	.1429	.1475	.1521	.1567	.1613	.1660	.1706	.1752	.1798	
25	6 15/16	7 9/32	7 21/32	8	8 11/32	8 11/16	9 1/32	9 3/8	9 23/32	10 1/16	10 15/32	10 3/4	11 1/8	11 15/32	11 13/16	12 5/32	12 1/2	12 27/32	13 7/16	13 27/32	25
	.0961	.1009	.1057	.1105	.1153	.1201	.1249	.1297	.1345	.1393	.1441	.1489	.1537	.1585	.1633	.1681	.1729	.1777	.1825	.1873	
26	7 7/32	7 19/32	7 15/16	8 5/16	8 11/16	9 1/32	9 3/8	9 3/4	10 1/8	10 15/32	10 27/32	11 3/16	11 9/16	11 29/32	12 9/32	12 5/8	13	13 3/8	13 25/32	14 3/32	26
	.0999	.1049	.1099	.1149	.1199	.1249	.1299	.1349	.1399	.1449	.1499	.1549	.1599	.1648	.1698	.1748	.1798	.1848	.1898	.1948	

Upper figures show adjustment in points and fractions of a point of wedge screw handwheel scale; lower figures show resultant sizes in thousandths of an inch

MICROMETER HEAD SETTINGS

FOR COMPOSITION MATRICES

10 Set to 14 Set

Units	10 Set	10¼ Set	10½ Set	10¾ Set	11 Set	11¼ Set	11½ Set	11¾ Set	12 Set	12¼ Set	12½ Set	12¾ Set	13 Set	13¼ Set	13½ Set	13¾ Set	14 Set	Units
3	1 11/16	1 23/32	1 3/4	1 15/16	1 27/32	1 7/8	1 29/32	1 31/32	2	2 1/32	2 1/16	2 3/32	2 1/8	2 5/32	2 7/32	2 1/4	2 9/32	2 11/32	3
	.0231	.0236	.0242	.0248	.0254	.0259	.0265	.0271	.0277	.0282	.0288	.0294	.0300	.0305	.0311	.0317	.0323		
4	2 7/32	2 9/32	2 11/32	2 13/32	2 7/16	2 1/2	2 9/16	2 5/8	2 11/16	2 23/32	2 25/32	2 27/32	2 7/8	2 15/16	3	3 1/16	3 5/32	4
	.0307	.0315	.0323	.0330	.0338	.0346	.0354	.0361	.0369	.0377	.0384	.0392	.0400	.0407	.0415	.0423	.0430		
5	2 29/32	2 27/32	2 29/32	3	3 1/16	3 1/8	3 3/16	3 1/4	3 11/32	3 13/32	3 15/32	3 17/32	3 9/16	3 19/32	3 5/8	3 21/32	3 11/16	5
	.0384	.0394	.0403	.0413	.0423	.0432	.0442	.0452	.0461	.0471	.0480	.0490	.0500	.0509	.0519	.0528	.0538		
6	3 11/32	3 13/32	3 1/2	3 19/32	3 21/32	3 3/4	3 27/32	3 29/32	4	4 3/32	4 5/32	4 1/4	4 11/32	4 13/32	4 1/2	4 19/32	4 21/32	6
	.0461	.0473	.0484	.0496	.0507	.0519	.0530	.0542	.0553	.0565	.0576	.0587	.0599	.0610	.0622	.0633	.0645		
7	3 7/8	4	4 3/32	4 3/16	4 9/32	4 5/8	4 15/32	4 9/16	4 11/13	4 25/32	4 7/8	4 31/32	5 1/16	5 5/32	5 1/8	5 11/32	5 7/16	7
	.0538	.0551	.0565	.0578	.0592	.0605	.0619	.0632	.0646	.0659	.0672	.0685	.0699	.0712	.0726	.0739	.0753		
8	4 7/16	4 9/16	4 11/13	4 25/32	4 7/8	5	5 1/8	5 7/32	5 11/32	5 7/16	5 9/16	5 21/32	5 25/32	5 7/8	6	6 3/32	6 7/32	8
	.0615	.0630	.0646	.0661	.0676	.0692	.0707	.0722	.0738	.0753	.0769	.0784	.0799	.0815	.0830	.0845	.0861		
9	5	5 1/8	5 1/4	5 3/8	5 1/2	5 5/8	5 3/4	5 7/8	6	6 1/8	6 1/4	6 3/8	6 1/2	6 5/8	6 3/4	6 7/8	7	9
	.0692	.0709	.0726	.0744	.0761	.0778	.0795	.0813	.0830	.0847	.0865	.0882	.0899	.0916	.0934	.0951	.0968		
10	5 9/16	5 25/32	5 27/32	5 31/32	6 1/8	6 1/4	6 13/32	6 17/32	6 21/32	6 13/16	6 15/16	7 5/32	7 7/32	7 3/8	7 1/2	7 21/32	7 25/32	10
	.0789	.0788	.0807	.0826	.0845	.0885	.0884	.0903	.0922	.0941	.0961	.0980	.0999	.1018	.1037	.1057	.1076		
11	6 1/8	6 9/32	6 13/32	6 9/16	6 23/32	6 7/8	7 1/32	7 3/16	7 11/32	7 1/2	7 21/32	7 25/32	7 15/16	8 5/32	8 1/4	8 13/32	8 9/16	11
	.0845	.0867	.0888	.0909	.0930	.0951	.0972	.0993	.1014	.1036	.1057	.1078	.1099	.1120	.1141	.1162	.1184		
12	6 21/32	6 27/32	7	7 5/32	7 11/32	7 1/2	7 11/16	7 27/32	8	8 5/32	8 11/32	8 1/2	8 21/32	8 27/32	9	9 5/32	9 11/32	12
	.0922	.0945	.0968	.0991	.1014	.1037	.1061	.1084	.1107	.1130	.1153	.1176	.1199	.1222	.1245	.1268	.1291		
13	7 7/32	7 13/32	7 19/32	7 25/32	7 15/16	8 1/8	8 5/16	8 1/2	8 21/32	8 27/32	9 1/32	9 7/32	9 3/8	9 9/16	9 3/4	9 15/16	10 1/8	13
	.0999	.1024	.1049	.1074	.1099	.1124	.1149	.1174	.1199	.1224	.1249	.1274	.1299	.1324	.1349	.1374	.1399		
14	7 25/32	7 31/32	8 5/32	8 3/8	8 9/16	8 3/4	8 15/16	9 1/8	9 11/32	9 17/32	9 23/32	9 29/32	10 1/8	10 5/16	10 1/2	10 11/13	10 7/8	14
	.1076	.1103	.1130	.1157	.1184	.1210	.1237	.1264	.1291	.1318	.1345	.1372	.1399	.1426	.1453	.1479	.1506		
15	8 11/32	8 17/32	8 3/4	8 31/32	9 5/32	9 3/8	9 19/32	9 15/16	10	10 7/32	10 13/32	10 5/8	10 27/32	11 1/32	11 1/4	11 15/32	11 21/32	15
	.1153	.1182	.1210	.1239	.1268	.1297	.1326	.1355	.1383	.1412	.1441	.1470	.1499	.1528	.1556	.1585	.1614		
16	8 7/8	9 1/8	9 11/32	9 9/16	9 25/32	10	10 7/32	10 7/16	10 11/16	10 7/8	11 1/8	11 11/33	11 9/16	11 25/32	12	12 7/32	12 7/16	16
	.1230	.1260	.1291	.1322	.1353	.1383	.1414	.1445	.1476	.1506	.1537	.1568	.1599	.1629	.1660	.1691	.1722		
17	9 7/13	9 11/16	9 29/32	10 5/32	10 13/32	10 5/8	10 7/8	11 3/32	11 11/32	11 9/10	11 15/16	12 1/32	12 3/32	12 1/2	12 3/4	13	13 7/32	17
	.1306	.1339	.1372	.1404	.1437	.1470	.1502	.1535	.1568	.1600	.1633	.1666	.1698	.1731	.1764	.1798	.1829		
18	10	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2	11 3/4	12	12 1/4	12 1/2	12 3/4	13	13 1/4	13 1/2	13 3/4	14	18
	.1383	.1418	.1453	.1487	.1522	.1556	.1591	.1625	.1660	.1695	.1729	.1764	.1798	.1833	.1868	.1902	.1937		
19	10 9/16	10 15/16	11 5/32	11 11/32	11 5/8	11 7/8	12 1/8	12 13/32	12 21/32	12 25/16	13 5/16	13 13/32	13 25/32	14	14 1/4	14 1/2	14 25/32	19
	.1460	.1497	.1538	.1570	.1606	.1643	.1679	.1716	.1752	.1789	.1825	.1862	.1898	.1935	.1971	.2008	.2044		
20	11 1/8	11 15/32	11 21/32	11 15/16	12 7/32	12 1/8	12 25/32	13 5/16	13 11/32	13 5/8	13 7/8	14 5/32	14 7/16	14 25/32	15	15 9/32	15 9/16	20
	.1537	.1576	.1614	.1652	.1691	.1729	.1768	.1806	.1844	.1883	.1921	.1960	.1998	.2037	.2075	.2113	.2152		
21	11 21/32	11 31/32	12 1/4	12 17/32	12 27/32	13 1/8	13 13/32	13 25/32	14	14 5/16	14 19/32	14 7/8	15 5/32	15 15/32	15 3/4	16 1/32	16 11/32	21
	.1614	.1654	.1695	.1735	.1775	.1816	.1858	.1896	.1937	.1977	.2017	.2058	.2098	.2138	.2179	.2219	.2259		
22	12 7/32	12 17/32	12 27/32	13 5/32	13 7/16	13 3/4	14 1/16	14 3/8	14 11/16	14 31/32	15 9/32	15 19/32	15 7/8	16 3/16	16 1/2	16 13/16	17 1/8	22
	.1691	.1733	.1775	.1818	.1860	.1902	.1944	.1987	.2029	.2071	.2113	.2156	.2198	.2240	.2282	.2325	.2367		
23	12 25/32	13 3/32	13 13/32	13 3/4	14 1/16	14 3/8	14 11/16	15 1/32	15 11/32	15 21/32	15 31/32	16 9/32	16 5/8	16 15/16	17 1/4	17 9/16	17 7/8	23
	.1767	.1811	.1855	.1899	.1944	.1988	.2032	.2076	.2121	.2165	.2209	.2253	.2298	.2342	.2386	.2430	.2474		
24	13 11/32	13 21/32	14	14 11/32	14 21/32	15	15 11/32	15 21/32	16	16 11/32	16 11/16	17	17 11/32	17 21/32	18	18 11/32	18 21/32	24
	.1844	.1890	.1936	.1982	.2029	.2075	.2121	.2167	.2213	.2259	.2305	.2351	.2398	.2444	.2490	.2536	.2582		
25	13 7/8	14 1/4	14 19/32	14 15/16	15 9/32	15 5/8	15 31/32	16 5/16	16 11/16	17	17 3/8	17 25/32	18 1/16	18 13/32	18 3/4	19 5/32	19 7/16	25
	.1921	.1969	.2017	.2065	.2113	.2161	.2209	.2257	.2306	.2354	.2402	.2450	.2498	.2546	.2594	.2642	.2690		
26	14 7/16	14 15/16	15 5/32	15 17/32	15 7/8	16 1/4	16 5/8	16 31/32	17 11/32	17 11/16	18 1/16	18 13/32	18 25/32	19 1/8	19 1/2	19 7/8	20 7/32	26
	.1998	.2048	.2098	.2148	.2198	.2248	.2298	.2348	.2398	.2448	.2498	.2548	.2598	.2647	.2697	.2747	.2797		

Upper figures show adjustment in points and fractions of a point of wedge screw handwheel scale; lower figures show resultant sizes in thousandths of an inch

MICROMETER HEAD SETTINGS

FOR LARGE COMPOSITION MATRICES

14 Set to 18¾ Set

Units	14 Set	14¼ Set	14½ Set	14¾ Set	15 Set	15¼ Set	15½ Set	15¾ Set	16 Set	16¼ Set	16½ Set	16¾ Set	17 Set	17¼ Set	17½ Set	17¾ Set	18 Set	18¼ Set	18½ Set	18¾ Set	Units
3	2 11/32	2 3/8	2 13/32	2 15/32	2 1/2	2 17/32	2 19/32	2 5/8	2 21/32	2 11/16	2 3/4	2 25/32	2 27/32	2 7/8	2 29/32	2 31/32	3	3 1/32	3 3/32	3 1/8	3
	.0328	.0328	.0334	.0340	.0346	.0351	.0357	.0363	.0369	.0374	.0380	.0386	.0392	.0398	.0403	.0409	.0415	.0421	.0426	.0432	
4	3 3/32	3 5/32	3 7/32	3 9/32	3 11/32	3 3/8	3 7/16	3 1/2	3 9/16	3 19/32	3 21/32	3 23/32	3 25/32	3 27/32	3 7/8	3 15/16	4	4 1/16	4 3/32	4 5/32	4
	.0430	.0438	.0446	.0453	.0461	.0469	.0476	.0484	.0492	.0499	.0507	.0515	.0522	.0530	.0538	.0546	.0553	.0561	.0569	.0576	
5	3 7/8	3 31/32	4 1/32	4 3/32	4 5/32	4 1/4	4 5/16	4 3/8	4 7/16	4 1/2	4 19/32	4 21/32	4 23/32	4 25/32	4 7/8	4 15/16	5	5 1/16	5 1/8	5 3/16	5
	.0538	.0547	.0557	.0567	.0576	.0586	.0596	.0605	.0615	.0624	.0634	.0644	.0653	.0663	.0672	.0682	.0692	.0701	.0711	.0720	
6	4 21/32	4 3/4	4 27/32	4 29/32	5	5 3/32	5 5/32	5 1/4	5 11/32	5 3/8	5 1/2	5 9/16	5 2/32	5 3/4	5 27/32	5 29/32	6	6 3/32	6 5/32	6 1/4	6
	.0645	.0657	.0668	.0680	.0692	.0703	.0715	.0726	.0738	.0749	.0761	.0772	.0784	.0795	.0807	.0818	.0830	.0841	.0853	.0865	
7	5 7/16	5 17/32	5 5/8	5 23/32	5 27/32	5 15/16	6 1/32	6 1/8	6 1/4	6 5/16	6 13/32	6 1/2	6 19/32	6 23/32	6 15/16	6 29/32	7	7 3/32	7 3/16	7 9/32	7
	.0753	.0766	.0780	.0793	.0807	.0820	.0834	.0847	.0861	.0874	.0888	.0901	.0914	.0928	.0941	.0955	.0968	.0982	.0995	.1009	
8	6 7/32	6 11/32	6 7/16	6 9/16	6 21/32	6 25/32	6 7/8	7	7 1/8	7 7/32	7 11/32	7 7/16	7 9/16	7 21/32	7 25/32	7 7/8	8	8 1/8	8 7/32	8 11/32	8
	.0861	.0876	.0891	.0907	.0922	.0938	.0953	.0968	.0984	.0999	.1014	.1030	.1045	.1060	.1076	.1091	.1107	.1122	.1137	.1153	
9	7	7 1/8	7 1/4	7 3/8	7 1/2	7 5/8	7 3/4	7 7/8	8	8 1/8	8 1/4	8 3/8	8 1/2	8 5/8	8 3/4	8 7/8	9	9 1/8	9 1/4	9 3/8	9
	.0868	.0885	.1003	.1020	.1037	.1055	.1072	.1089	.1107	.1124	.1141	.1158	.1176	.1193	.1210	.1228	.1245	.1262	.1280	.1297	
10	7 25/32	7 29/32	8 1/16	8 3/16	8 11/32	8 15/32	8 19/32	8 3/4	8 7/8	9 1/32	9 5/32	9 9/16	9 7/16	9 19/32	9 25/32	9 27/32	10	10 1/8	10 9/32	10 13/32	10
	.1076	.1095	.1114	.1133	.1153	.1172	.1191	.1210	.1230	.1249	.1268	.1287	.1306	.1326	.1345	.1364	.1383	.1402	.1422	.1441	
11	8 9/16	8 11/16	8 7/8	9	9 5/32	9 3/16	9 15/32	9 3/8	9 29/32	9 15/16	10 3/32	10 1/4	10 5/8	10 17/32	10 11/16	10 27/32	11	11 5/32	11 5/16	11 15/32	11
	.1184	.1204	.1226	.1247	.1268	.1289	.1310	.1331	.1352	.1374	.1395	.1416	.1437	.1458	.1479	.1500	.1522	.1543	.1564	.1585	
12	9 11/32	9 1/2	9 21/32	9 27/32	10	10 5/32	10 11/32	10 1/2	10 21/32	10 27/32	11	11 5/32	11 11/32	11 1/2	11 21/32	11 27/32	12	12 5/32	12 11/32	12 1/2	12
	.1291	.1314	.1337	.1360	.1383	.1406	.1429	.1452	.1475	.1498	.1522	.1545	.1568	.1591	.1614	.1637	.1660	.1683	.1706	.1729	
13	10 1/8	10 9/32	10 13/32	10 21/32	10 27/32	11	11 5/16	11 3/8	11 9/16	11 3/4	11 29/32	12 3/32	12 9/32	12 15/32	12 5/8	12 13/16	13	13 3/16	13 3/8	13 17/32	13
	.1399	.1423	.1449	.1473	.1498	.1523	.1548	.1573	.1598	.1623	.1648	.1673	.1689	.1723	.1748	.1773	.1798	.1823	.1848	.1873	
14	10 7/8	11 3/32	11 9/32	11 15/32	11 27/32	11 7/8	12 1/16	12 1/4	12 7/16	12 21/32	12 27/32	13 1/32	13 7/32	13 13/32	13 5/8	13 13/16	14	14 3/16	14 3/8	14 19/32	14
	.1506	.1533	.1560	.1587	.1614	.1641	.1668	.1694	.1721	.1748	.1775	.1802	.1829	.1856	.1883	.1910	.1937	.1963	.1990	.2017	
15	11 21/32	11 7/8	12 3/32	12 9/32	12 1/2	12 23/32	12 29/32	13 1/8	13 11/32	13 17/32	13 3/4	13 31/32	14 5/32	14 3/8	14 19/32	14 13/16	15	15 7/32	15 13/32	15 3/8	15
	.1614	.1642	.1671	.1700	.1729	.1758	.1787	.1816	.1844	.1873	.1902	.1931	.1960	.1988	.2017	.2046	.2075	.2104	.2133	.2161	
16	12 7/16	12 15/32	12 7/8	13 3/32	13 11/32	13 9/16	13 25/32	14	14 7/32	14 7/16	14 21/32	14 7/8	15 1/32	15 11/32	15 9/16	15 25/32	16	16 7/32	16 7/16	11 11/16	16
	.1722	.1752	.1783	.1813	.1844	.1875	.1906	.1937	.1967	.1998	.2029	.2060	.2090	.2121	.2152	.2182	.2213	.2244	.2275	.2306	
17	13 7/32	13 7/16	13 11/16	13 15/16	14 5/32	14 15/32	14 5/8	14 7/8	15 5/32	15 11/32	15 19/32	15 15/16	16 1/16	16 9/32	16 17/32	16 25/32	17	17 1/4	17 15/32	17 23/32	17
	.1829	.1861	.1894	.1927	.1960	.1992	.2025	.2058	.2090	.2123	.2156	.2188	.2221	.2254	.2286	.2319	.2352	.2384	.2417	.2450	
18	14	14 1/4	14 1/2	14 3/4	15	15 1/4	15 1/2	15 3/4	16	16 1/4	16 1/2	16 3/4	17	17 1/4	17 1/2	17 3/4	18	18 1/4	18 1/2	18 3/4	18
	.1937	.1971	.2006	.2040	.2075	.2110	.2144	.2179	.2213	.2248	.2282	.2317	.2351	.2386	.2421	.2455	.2490	.2524	.2559	.2594	
19	14 25/32	15 1/32	15 9/16	15 9/16	15 27/32	16 5/32	16 5/8	16 5/8	16 7/8	17 5/32	17 13/32	17 11/13	17 15/16	18 7/32	18 15/32	18 5/4	19	19 9/32	19 7/32	19 13/16	19
	.2044	.2080	.2117	.2154	.2190	.2227	.2263	.2300	.2336	.2373	.2409	.2446	.2482	.2519	.2555	.2592	.2628	.2665	.2701	.2738	
20	15 9/16	15 27/32	16 5/32	16 13/32	16 21/32	16 15/16	17 7/32	17 1/2	17 25/32	18 1/16	18 11/32	18 13/32	18 29/32	19 5/32	19 7/13	19 23/32	20	20 9/32	20 9/16	20 27/32	20
	.2152	.2190	.2228	.2267	.2305	.2344	.2382	.2421	.2459	.2498	.2536	.2574	.2613	.2651	.2690	.2728	.2767	.2805	.2843	.2882	
21	16 11/32	16 5/8	16 29/32	17 7/32	17 1/2	17 25/32	18 5/32	18 3/3	18 21/32	18 31/32	19 1/4	19 17/32	19 27/32	20 1/8	20 13/32	20 25/32	21	21 9/32	21 13/32	21 7/8	21
	.2259	.2299	.2340	.2380	.2421	.2461	.2501	.2542	.2582	.2622	.2663	.2703	.2744	.2784	.2824	.2865	.2905	.2945	.2986	.3026	
22	17 1/8	17 13/32	17 25/32	18 1/32	18 11/32	18 5/8	18 15/16	19 1/4	19 9/16	19 7/8	20 5/32	20 13/32	20 29/32	21 9/32	21 3/8	22 11/16	22	22 5/16	22 5/8	22 29/32	22
	.2367	.2409	.2451	.2494	.2536	.2578	.2621	.2663	.2705	.2747	.2790	.2832	.2874	.2916	.2959	.3001	.3043	.3088	.3128	.3170	
23	17 7/8	18 3/16	18 17/32	18 27/32	19 5/32	19 15/32	19 13/16	20 1/8	20 7/16	20 3/4	21 3/32	21 13/32	21 23/32	22 1/32	22 3/8	22 11/16	23	23 5/16	23 21/32	23 31/32	23
	.2474	.2518	.2563	.2607	.2651	.2695	.2740	.2784	.2828	.2872	.2916	.2961	.3005	.3049	.3093	.3137	.3182	.3226	.3270	.3314	
24	18 21/32	19	19 11/32	19 21/32	20	20 5/16	20 21/32	21	21 11/32	21 21/32	22	22 5/16	22 11/16	23	23 11/32	23 21/32	24	24 11/32	24 21/32	25	24
	.2582	.2628	.2674	.2720	.2767	.2813	.2859	.2905	.2951	.2997	.3043	.3089	.3136	.3182	.3228	.3274	.3320	.3366	.3412	.3458	
25	19 7/16	19 25/32	20 1/8	20 15/32	20 27/32	21 3/16	21 17/32	21 7/8	22 7/32	22 9/16	22 29/32	23 1/4	23 5/8	23 31/32	24 5/16	24 27/32	25	25 11/32	25 11/16	26 1/32	25
	.2690	.2737	.2786	.2834	.2882	.2930	.2978	.3026	.3074	.3122	.3170	.3218	.3266	.3314	.3362	.3410	.3458	.3506	.3554	.3602	
26	20 7/32	20 19/32	20 15/16	21 5/16	21 21/32	22 1/32	22 13/32	22 3/4	23 5/32	23 15/32	23 27/32	24 3/16	24 9/16	24 23/32	25 9/32	25 21/32	26	26 3/8	26 23/32	27 5/32	26
	.2797	.2847	.2897	.2947	.2997	.3047	.3097	.3147	.3197	.3247	.3297	.3347	.3397	.3447	.3497	.3547	.3596	.3647	.3697	.3746	

Upper figures show adjustment in points and fractions of point of wedge screw handwheel scale; lower figures show resultant sizes in thousandths of an inch.

MICROMETER HEAD SETTINGS

FOR LARGE COMPOSITION MATRICES

19 Set to 23¾ Set

Units	19 Set	19¼ Set	19½ Set	19¾ Set	20 Set	20¼ Set	20½ Set	20¾ Set	21 Set	21¼ Set	21½ Set	21¾ Set	22 Set	22¼ Set	22½ Set	22¾ Set	23 Set	23¼ Set	23½ Set	23¾ Set	Units
3	3 5/32	3 7/32	3 1/4	3 9/32	3 11/32	3 3/8	3 13/32	3 15/32	3 1/2	3 17/32	3 19/32	3 5/8	3 21/32	3 23/32	3 3/4	3 25/32	3 27/32	3 7/8	3 29/32	3 31/32	3
	.0438	.0444	.0450	.0455	.0461	.0467	.0473	.0478	.0484	.0490	.0496	.0501	.0507	.0513	.0519	.0524	.0530	.0536	.0542	.0548	
4	4 7/32	4 9/32	4 11/32	4 3/8	4 7/16	4 1/2	4 9/16	4 5/8	4 21/32	4 23/32	4 25/32	4 27/32	4 7/8	4 15/16	5	5 1/16	5 3/32	5 5/32	5 7/32	5 9/32	4
	.0584	.0592	.0599	.0607	.0615	.0622	.0630	.0638	.0646	.0653	.0661	.0669	.0678	.0684	.0692	.0699	.0707	.0715	.0722	.0730	
5	5 9/32	5 11/32	5 13/32	5 15/32	5 9/16	5 5/8	5 11/16	5 3/4	5 27/32	5 29/32	5 31/32	6 1/32	6 3/32	6 5/32	6 1/4	6 5/16	6 3/8	6 13/32	6 17/32	6 19/32	5
	.0730	.0740	.0749	.0759	.0769	.0778	.0788	.0797	.0807	.0817	.0826	.0836	.0845	.0855	.0865	.0874	.0884	.0893	.0903	.0913	
6	6 11/32	6 13/32	6 1/2	6 19/32	6 21/32	6 3/4	6 27/32	6 29/32	7	7 3/32	7 5/32	7 1/4	7 11/32	7 13/32	7 1/2	7 19/32	7 21/32	7 3/4	7 27/32	7 29/32	6
	.0876	.0888	.0899	.0911	.0922	.0934	.0945	.0957	.0968	.0980	.0991	.1003	.1014	.1026	.1038	.1049	.1061	.1072	.1084	.1096	
7	7 3/8	7 15/32	7 19/32	7 11/16	7 25/32	7 7/8	7 31/32	8 1/16	8 5/32	8 1/8	8 5/8	8 15/32	8 9/16	8 31/32	8 3/4	8 27/32	8 15/16	9 1/32	9 1/8	9 1/4	7
	.1022	.1036	.1049	.1062	.1076	.1089	.1103	.1116	.1130	.1143	.1157	.1170	.1183	.1197	.1210	.1224	.1237	.1251	.1264	.1278	
8	8 7/16	8 9/16	8 21/32	8 25/32	8 7/8	9	9 3/32	9 7/32	9 11/32	9 7/16	9 9/16	9 21/32	9 25/32	9 7/8	10	10 1/8	10 7/32	10 11/32	10 7/16	10 9/16	8
	.1168	.1184	.1199	.1214	.1230	.1245	.1260	.1276	.1291	.1306	.1322	.1337	.1353	.1368	.1383	.1399	.1414	.1429	.1445	.1460	
9	9 1/2	9 5/8	9 3/4	9 7/8	10	10 1/8	10 1/4	10 3/8	10 1/2	10 5/8	10 3/4	10 7/8	11	11 1/8	11 1/4	11 3/8	11 1/2	11 5/8	11 3/4	11 7/8	9
	.1314	.1331	.1349	.1366	.1383	.1401	.1418	.1435	.1452	.1470	.1487	.1504	.1522	.1539	.1556	.1574	.1591	.1608	.1625	.1643	
10	10 9/16	10 11/16	10 27/32	10 31/32	11 3/32	11 1/4	11 3/8	11 17/32	11 21/32	11 15/16	11 15/16	12 5/32	12 7/32	12 3/8	12 1/2	12 21/32	12 25/32	12 29/32	13 1/16	13 5/16	10
	.1460	.1479	.1499	.1518	.1537	.1556	.1575	.1595	.1614	.1633	.1652	.1672	.1691	.1710	.1729	.1748	.1768	.1787	.1806	.1825	
11	11 19/32	11 3/4	11 29/32	12 1/16	12 7/32	12 3/8	12 17/32	12 11/16	12 27/32	13	13 5/32	13 9/32	13 7/16	13 19/32	13 3/4	13 29/32	14 1/16	14 7/32	14 3/8	14 1/2	11
	.1608	.1627	.1648	.1670	.1691	.1712	.1733	.1754	.1775	.1796	.1818	.1839	.1860	.1881	.1902	.1923	.1944	.1965	.1987	.2008	
12	12 21/32	12 27/32	13	13 5/32	13 11/32	13 1/2	13 21/32	13 27/32	14	14 5/16	14 11/32	14 1/2	14 21/32	14 27/32	15	15 5/32	15 11/32	15 1/2	15 21/32	15 27/32	12
	.1752	.1775	.1798	.1821	.1844	.1867	.1891	.1914	.1937	.1960	.1983	.2006	.2029	.2052	.2075	.2098	.2121	.2144	.2167	.2190	
13	13 23/32	13 29/32	14 3/32	14 1/4	14 7/16	14 5/8	14 13/16	15	15 5/32	15 11/32	15 17/32	15 23/32	15 7/8	16 1/16	16 1/4	16 7/16	16 5/8	16 25/32	16 31/32	17 5/32	13
	.1898	.1923	.1948	.1973	.1998	.2023	.2048	.2073	.2098	.2123	.2148	.2173	.2198	.2223	.2248	.2273	.2298	.2323	.2348	.2373	
14	14 25/32	14 31/32	15 5/32	15 3/8	15 9/16	15 5/8	15 13/16	16 5/32	16 11/32	16 17/32	16 23/32	16 29/32	17 3/32	17 5/16	17 1/2	17 11/16	17 29/32	18 3/32	18 9/32	18 15/32	14
	.2044	.2071	.2098	.2125	.2152	.2179	.2206	.2233	.2259	.2286	.2313	.2340	.2367	.2394	.2421	.2448	.2475	.2502	.2528	.2555	
15	15 27/32	16 1/32	16 1/4	16 15/32	16 11/16	16 7/8	17 5/32	17 9/32	17 1/2	17 23/32	17 29/32	18 1/8	18 11/32	18 17/32	18 3/4	18 31/32	19 5/32	19 3/8	19 19/32	19 25/32	15
	.2190	.2219	.2248	.2277	.2306	.2334	.2363	.2392	.2421	.2450	.2478	.2507	.2536	.2565	.2594	.2622	.2651	.2680	.2709	.2738	
16	16 7/8	17 5/32	17 11/32	17 9/16	17 25/32	18	18 7/32	18 7/16	18 21/32	18 29/32	19 1/8	19 11/32	19 9/16	19 25/32	20	20 7/32	20 7/16	20 21/32	20 7/8	21 5/32	16
	.2336	.2367	.2398	.2429	.2459	.2490	.2521	.2551	.2582	.2613	.2644	.2674	.2705	.2736	.2767	.2797	.2826	.2859	.2890	.2920	
17	17 15/16	18 5/16	18 13/32	18 21/32	18 29/32	19 1/8	19 3/8	19 19/32	19 27/32	20 1/16	20 5/16	20 17/32	20 25/32	21	21 1/4	21 15/32	21 25/32	21 61/32	22 5/16	22 7/16	17
	.2482	.2515	.2548	.2580	.2613	.2646	.2678	.2711	.2774	.2776	.2809	.2842	.2874	.2907	.2940	.2972	.3005	.3038	.3070	.3103	
18	19	19 1/4	19 1/2	19 3/4	20	20 1/4	20 1/2	20 3/4	21	21 1/4	21 1/2	21 3/4	22	22 1/4	22 1/2	22 3/4	23	23 1/4	23 1/2	23 3/4	18
	.2628	.2663	.2697	.2732	.2767	.2801	.2836	.2870	.2905	.2940	.2974	.3009	.3043	.3078	.3112	.3147	.3182	.3216	.3251	.3285	
19	20 1/16	20 3/16	20 19/32	20 27/32	21 1/8	21 3/8	21 9/32	21 25/32	22 5/32	22 7/16	22 11/16	22 31/32	23 7/32	23 15/32	23 1/4	24	24 5/32	24 17/32	24 15/16	25 1/16	19
	.2774	.2811	.2847	.2884	.2920	.2957	.2993	.3030	.3066	.3103	.3139	.3176	.3212	.3249	.3285	.3322	.3358	.3395	.3431	.3468	
20	21 3/32	21 3/8	21 21/32	21 15/16	22 7/32	22 1/2	22 25/32	23 1/16	23 11/32	23 3/8	23 7/8	24 5/32	24 7/16	24 25/32	25	25 5/32	25 9/16	25 27/32	26 3/32	26 3/8	20
	.2920	.2959	.2997	.3036	.3074	.3112	.3151	.3189	.3228	.3266	.3305	.3343	.3381	.3420	.3458	.3497	.3535	.3574	.3612	.3650	
21	22 5/32	22 15/32	22 3/4	23 1/32	23 11/32	23 3/8	23 29/32	24 7/32	24 1/2	24 25/32	25 5/32	25 3/8	25 21/32	25 31/32	26 1/4	26 17/32	26 27/32	27 1/16	27 15/32	27 25/32	21
	.3066	.3107	.3147	.3187	.3228	.3268	.3308	.3349	.3389	.3430	.3470	.3510	.3550	.3591	.3631	.3672	.3712	.3752	.3793	.3833	
22	23 7/32	23 17/32	23 27/32	24 5/32	24 7/16	24 3/4	25 1/16	25 3/8	25 21/32	25 31/32	26 9/32	26 19/32	26 7/8	27 3/16	27 1/2	27 13/16	28 1/8				22
	.3212	.3255	.3297	.3339	.3381	.3424	.3466	.3509	.3551	.3593	.3635	.3677	.3720	.3762	.3804	.3846	.3889					
23	24 9/32	24 19/32	24 29/32	25 1/4	25 9/16	25 7/8	26 3/16	26 1/2	26 27/32	27 5/32	27 15/32	27 25/32									23
	.3358	.3403	.3447	.3491	.3535	.3579	.3624	.3668	.3712	.3756	.3800	.3845									
24	25 11/32	25 21/32	26	26 11/32	26 21/32	27	27 11/32	27 21/32	28												24
	.3504	.3551	.3597	.3643	.3689	.3735	.3781	.3827	.3873												
25	26 3/8	26 3/4	27 3/32	27 7/16	27 25/32	28 1/8															25
	.3650	.3700	.3747	.3795	.3843	.3891															
26	27 7/16	27 13/16	28 5/32																		26
	.3796	.3856	.3896																		

Upper figures show adjustment in points and fractions of a point of wedge screw handwheel scale; lower figures show resultant sizes in thousandths of an inch

MICROMETER HEAD SETTINGS

FOR DISPLAY MATRICES

Width in Points denotes the Micrometer Head Setting

Matrix Marking		Width in Inches	Matrix Marking		Width in Inches	Matrix Marking		Width in Inches	Matrix Marking		Width in Inches	Matrix Marking		Width in Inches	Width in Points	Width in Inches	Width in Points	Width in Inches	Width in Points	Width in Inches	Width in Points	Width in Inches
Width in Points	Old Style		Width in Points	Old Style		Width in Points	Old Style		Width in Points	Old Style		Width in Points	Old Style								
2		.0277	12	* 11 8	.1660	22	4 8	.3043	32	14 8	.4427	42	** 7 8	.5810	52	.7194	62	.8576	72	.9960	82	1.1343
1/4	* 2 2	.0311	1/4	* 12 2	.1695	1/4	5 2	.3078	1/4	15 2	.4461	1/4	** 8 2	.5844	1/4	.7228	1/4	.8611	1/4	.9994	1/4	1.1378
1/2	* 2 4	.0346	1/2	* 12 4	.1729	1/2	5 4	.3113	1/2	15 4	.4496	1/2	** 8 4	.5879	1/2	.7263	1/2	.8646	1/2	1.0029	1/2	1.1412
3/4	* 2 6	.0380	3/4	* 12 6	.1764	3/4	5 6	.3147	3/4	15 6	.4530	3/4	** 8 6	.5913	3/4	.7297	3/4	.8680	3/4	1.0064	3/4	1.1447
3	* 2 8	.0415	13	* 12 8	.1798	23	5 8	.3182	33	15 8	.4565	43	** 8 8	.5948	53	.7332	63	.8715	73	1.0098	83	1.1481
1/4	* 3 2	.0450	1/4	* 13 2	.1833	1/4	6 2	.3216	1/4	16 2	.4600	1/4	** 9 2	.5983	1/4	.7366	1/4	.8749	1/4	1.0133	1/4	1.1516
1/2	* 3 4	.0484	1/2	* 13 4	.1868	1/2	6 4	.3251	1/2	16 4	.4634	1/2	** 9 4	.6017	1/2	.7401	1/2	.8784	1/2	1.0167	1/2	1.1551
3/4	* 3 6	.0519	3/4	* 13 6	.1902	3/4	6 6	.3285	3/4	16 6	.4669	3/4	** 9 6	.6052	3/4	.7435	3/4	.8819	3/4	1.0202	3/4	1.1585
4	* 3 8	.0553	14	* 13 8	.1937	24	6 8	.3320	34	16 8	.4703	44	** 9 8	.6086	54	.7470	64	.8853	74	1.0236	84	1.1620
1/4	* 4 2	.0580	1/4	* 14 2	.1971	1/4	7 2	.3355	1/4	17 2	.4738	1/4	** 10 2	.6121	1/4	.7505	1/4	.8888	1/4	1.0271	1/4	1.1655
1/2	* 4 4	.0623	1/2	* 14 4	.2006	1/2	7 4	.3389	1/2	17 4	.4773	1/2	** 10 4	.6156	1/2	.7539	1/2	.8922	1/2	1.0306	1/2	1.1689
3/4	* 4 6	.0657	3/4	* 14 6	.2040	3/4	7 6	.3424	3/4	17 6	.4807	3/4	** 10 6	.6190	3/4	.7574	3/4	.8957	3/4	1.0340	3/4	1.1724
5	* 4 8	.0692	15	* 14 8	.2075	25	7 8	.3458	35	17 8	.4842	45	** 10 8	.6225	55	.7608	65	.8991	75	1.0375	85	1.1758
1/4	* 5 2	.0726	1/4	* 15 2	.2110	1/4	8 2	.3493	1/4	18 2	.4876	1/4	** 11 2	.6259	1/4	.7643	1/4	.9026	1/4	1.0409	1/4	1.1793
1/2	* 5 4	.0761	1/2	* 15 4	.2144	1/2	8 4	.3528	1/2	18 4	.4911	1/2	** 11 4	.6294	1/2	.7677	1/2	.9061	1/2	1.0444	1/2	1.1827
3/4	* 5 6	.0795	3/4	* 15 6	.2179	3/4	8 6	.3562	3/4	18 6	.4945	3/4	** 11 6	.6328	3/4	.7712	3/4	.9095	3/4	1.0479	3/4	1.1862
6	* 5 8	.0830	16	* 15 8	.2213	26	8 8	.3597	36	18 8	.4980	46	** 11 8	.6363	56	.7746	66	.9130	76	1.0513	86	1.1896
1/4	* 6 2	.0865	1/4	* 16 2	.2248	1/4	9 2	.3631	1/4	** 2 2	.5014	1/4	** 12 2	.6398	1/4	.7781	1/4	.9164	1/4	1.0548	1/4	1.1931
1/2	* 6 4	.0899	1/2	* 16 4	.2283	1/2	9 4	.3666	1/2	** 2 4	.5049	1/2	** 12 4	.6432	1/2	.7816	1/2	.9199	1/2	1.0582	1/2	1.1966
3/4	* 6 6	.0934	3/4	* 16 6	.2317	3/4	9 6	.3700	3/4	** 2 6	.5083	3/4	** 12 8	.6467	3/4	.7850	3/4	.9234	3/4	1.0617	3/4	1.2000
7	* 6 8	.0968	17	* 16 8	.2352	27	9 8	.3735	37	** 2 8	.5118	47	** 12 8	.6501	57	.7885	67	.9268	77	1.0651	87	1.2035
1/4	* 7 2	.1003	1/4	* 17 2	.2386	1/4	10 2	.3770	1/4	** 3 2	.5153	1/4	** 13 2	.6536	1/4	.7919	1/4	.9303	1/4	1.0686	1/4	1.2069
1/2	* 7 4	.1038	1/2	* 17 4	.2421	1/2	10 4	.3804	1/2	** 3 4	.5187	1/2	** 13 4	.6571	1/2	.7954	1/2	.9337	1/2	1.0721	1/2	1.2104
3/4	* 7 6	.1072	3/4	* 17 6	.2455	3/4	10 6	.3839	3/4	** 3 6	.5222	3/4	** 13 6	.6605	3/4	.7989	3/4	.9372	3/4	1.0755	3/4	1.2139
8	* 7 8	.1107	18	* 17 8	.2490	28	10 8	.3873	38	** 3 8	.5256	48	** 13 8	.6640	58	.8023	68	.9406	78	1.0790	88	1.2173
1/4	* 8 2	.1141	1/4	* 18 2	.2525	1/4	11 2	.3908	1/4	** 4 2	.5291	1/4		.6674	1/4	.8058	1/4	.9441	1/4	1.0824	1/4	1.2208
1/2	* 8 4	.1176	1/2	* 18 4	.2559	1/2	11 4	.3943	1/2	** 4 4	.5326	1/2		.6709	1/2	.8092	1/2	.9476	1/2	1.0859	1/2	1.2242
3/4	* 8 6	.1210	3/4	* 18 6	.2594	3/4	11 6	.3977	3/4	** 4 6	.5360	3/4		.6743	3/4	.8127	3/4	.9510	3/4	1.0894	3/4	1.2277
9	* 8 8	.1245	19	* 18 8	.2628	29	11 8	.4012	39	** 4 8	.5395	49		.6778	59	.8161	69	.9545	79	1.0928	89	1.2311
1/4	* 9 2	.1280	1/4	2 2	.2663	1/4	12 2	.4046	1/4	** 5 2	.5429	1/4		.6813	1/4	.8196	1/4	.9579	1/4	1.0963	1/4	1.2346
1/2	* 9 4	.1314	1/2	2 4	.2698	1/2	12 4	.4081	1/2	** 5 4	.5464	1/2		.6847	1/2	.8231	1/2	.9614	1/2	1.0997	1/2	1.2381
3/4	* 9 6	.1349	3/4	2 6	.2732	3/4	12 6	.4115	3/4	** 5 6	.5498	3/4		.6882	3/4	.8265	3/4	.9649	3/4	1.1032	3/4	1.2415
10	* 9 8	.1383	20	2 8	.2767	30	12 8	.4150	40	** 5 8	.5533	50		.6916	60	.8300	70	.9683	80	1.1066	90	1.2450
1/4	*10 2	.1418	1/4	3 2	.2801	1/4	13 2	.4185	1/4	** 6 2	.5568	1/4		.6952	1/4	.8335	1/4	.9718	1/4	1.1101	1/4	1.2484
1/2	*10 4	.1453	1/2	3 4	.2836	1/2	13 4	.4219	1/2	** 6 4	.5602	1/2		.6986	1/2	.8369	1/2	.9752	1/2	1.1136	1/2	1.2519
3/4	*10 6	.1487	3/4	3 6	.2870	3/4	13 6	.4254	3/4	** 6 6	.5637	3/4		.7021	3/4	.8404	3/4	.9787	3/4	1.1170	3/4	1.2554
11	*10 8	.1522	21	3 8	.2905	31	13 8	.4288	41	** 6 8	.5671	51		.7055	61	.8438	71	.9821	81	1.1205		
1/4	*11 2	.1556	1/4	4 2	.2940	1/4	14 2	.4323	1/4	** 7 2	.5706	1/4		.7090	1/4	.8473	1/4	.9856	1/4	1.1240		
1/2	*11 4	.1591	1/2	4 4	.2974	1/2	14 4	.4358	1/2	** 7 4	.5741	1/2		.7125	1/2	.8507	1/2	.9891	1/2	1.1274		
3/4	*11 6	.1625	3/4	4 6	.3009	3/4	14 6	.4392	3/4	** 7 6	.5775	3/4		.7159	3/4	.8542	3/4	.9925	3/4	1.1309		

CHANGE SPEED TABLE

Based upon direct drive speed of 144 Revolutions per minute

42 Point to 72 Point (Cored)					Present Matrix Marking	Old Matrix Marking	36 Point and Below					
72	60	54	48	42			36	30	24	18	14	12
†AD 125	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2	△ 6 8	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†BD 102	†AD 125	†AD 125	2-4-H 144	2-4-H 144	2½	△ 7 4 * 2 4	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†CD 83	†BD 102	†BD 102	†AD 125	2-4-H 144	3	△ 7 8 * 2 8	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†AE 68	†CD 83	†BD 102	†BD 102	†AD 125	3½	△ 8 4 * 3 4	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†BE 55	†AE 68	†CD 83	†CD 83	†BD 102	4	△ 8 8 * 3 8	†AD 125	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†BE 55	†AE 68	†AE 68	†CD 83	†CD 83	4½	△ 9 4 * 4 4	†BD 102	†AD 125	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†CE 45	†AE 68	†AE 68	†AE 68	†CD 83	5	△ 9 8 * 4 8	†BD 102	†AD 125	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†CE 45	†BE 55	†BE 55	†AE 68	†AE 68	5½	△ 10 4 * 5 4	†CD 83	†BD 102	2-4-H 144	2-4-H 144	2-4-H 144	2-4-H 144
†AF 37	†CE 45	†BE 55	†BE 55	†AE 68	6	△ 10 8 * 5 8	†CD 83	†CD 83	†AD 125	2-4-H 144	2-4-H 144	2-4-H 144
†AF 37	†CE 45	†CE 45	†BE 55	†BE 55	6½	△ 11 4 * 6 4	†CD 83	†CD 83	†AD 125	2-4-H 144	2-4-H 144	2-4-H 144
†AF 37	†CE 45	†CE 45	†BE 55	†BE 55	7	△ 11 8 * 6 8	†AE 68	†CD 83	†CD 83	2-4-H 144	2-4-H 144	2-4-H 144
†BF 30	†AF 37	†CE 45	†CE 45	†BE 55	7½	△ 12 4 * 7 4	†AE 68	†CD 83	†CD 83	2-4-H 144	2-4-H 144	2-4-H 144
†BF 30	†AF 37	†AF 37	†CE 45	†BE 55	8	△ 12 8 * 7 8	†BE 55	‡AE 68	†CD 83	†BD 102	2-4-H 144	2-4-H 144
†BF 30	†AF 37	†AF 37	†CE 45	†CE 45	8½	△ 13 4 * 8 4	‡BE 55	†AE 68	†CD 83	‡BD 102	2-4-H 144	2-4-H 144
†CF 25	†BF 30	†AF 37	†CE 45	†CE 45	9	△ 13 4 * 8 8	‡BE 55	†AE 68	†CD 83	‡BD 102	2-4-H 144	2-4-H 144
†CF 25	†BF 30	†BF 30	†AF 37	†CE 45	9½	△ 14 4 * 9 4	†CE 45	†BE 55	†AE 68	†CD 83	†AD 125	2-4-H 144
†CF 25	†BF 30	†BF 30	†AF 37	†AF 37	10	△ 14 8 * 9 8	†CE 45	†BE 55	†AE 68	†CD 83	†AD 125	2-4-H 144
†CF 25	†CF 25	†BF 30	†BF 30	†AF 37	10½	△ 15 4 * 10 4	†CE 45	‡CE 45	†AE 68	†CD 83	†BD 102	‡AD 125
‡AD 22	†CF 25	†BF 30	†BF 30	†AF 37	11	△ 15 8 * 10 8	†CE 45	‡CE 45	†AE 68	†CD 83	†BD 102	†AD 125
‡AD 22	‡CF 25	†BF 30	†BF 30	†AF 37	11½	△ 16 4 * 11 4	†CE 45	‡CE 45	†AE 68	†CD 83	†BD 102	†AD 125
‡AD 22	‡CF 25	†CF 25	†BF 30	†AF 37	12	△ 16 8 * 11 8	†AF 37	†CE 45	†BE 55	†CD 83	‡CD 83	†BD 102
‡BD 18	‡AD 22	†CF 25	†BF 30	‡BF 30	13	△ 17 8 * 12 8	†AF 37	†CE 45	†BE 55	†CD 83	†CD 83	†BD 102
‡BD 18	‡AD 22	‡AD 22	‡CF 25	†BF 30	14	* 18 8 * 13 8	†BF 30	†AF 37	†CE 45	†AE 68	†CD 83	†CD 83
‡CD 15	‡BD 18	‡AD 22	‡CF 25	‡CF 25	15	* 2 8 * 14 8	†BF 30	†AF 37	†CE 45	†AE 68	†CD 83	†CD 83

42 Point to 72 Point (Cored)					Present Matrix Marking	Old Matrix Marking	36 Point and Below					
72	60	54	48	42			36	30	24	18	14	12
‡CD 15	‡BD 18	‡AD 22	‡AD 22	†CF 25	16	* 3 8 * 15 8	‡CF 25	‡BF 30	†CE 45	†BE 55	†CD 83	†CD 83
‡CD 15	‡BD 18	‡BD 18	‡AD 22	†CF 25	17	* 4 8 * 16 8	‡CF 25	†BF 30	‡CE 45	†BE 55	†CD 83	†CD 83
‡AE 12	‡CD 15	‡BD 18	‡AD 22	‡AD 22	18	* 5 8 * 17 8	‡AD 22	†CF 25	†AF 37	†CE 45	†AE 68	†CD 83
‡AE 12	‡CD 15	‡CD 15	‡BD 18	‡AD 22	19	* 6 8 * 18 8	‡AD 22	†CF 25	†AF 37	†CE 45	†AE 68	†CD 83
‡AE 12	‡CD 15	‡CD 15	‡BD 18	‡AD 22	20	* 7 8 2 8	‡BD 18	‡AD 22	†BF 30	†CE 45	†BE 55	†AE 68
‡AE 12	‡AE 12	‡CD 15	‡CD 15	‡BD 18	21	* 8 8 3 8	‡BD 18	‡AD 22	†BF 30	†CE 45	†BE 55	†AE 68
‡BE 10	‡AE 12	‡CD 15	‡CD 15	‡BD 18	22	* 9 8 4 8	‡BD 18	‡BD 18	†CF 25	†AF 37	†CE 45	†BE 55
‡BE 10	‡AE 12	‡CD 15	‡CD 15	‡BD 18	23	* 10 8 5 8	‡BD 18	‡BD 18	†CF 25	†AF 37	†CE 45	†BE 55
‡BE 10	‡AE 12	‡AE 12	‡CD 15	‡BD 18	24	* 11 8 6 8	‡BD 18	‡BD 18	†CF 25	†AF 37	†CE 45	†BE 55
‡BE 10	‡BE 10	‡BE 10	‡CD 15	‡CD 15	25	* 12 8 7 8	‡CD 15	‡BD 18	‡AD 22	†BF 30	†CE 45	
‡BE 10	‡BE 10	‡BE 10	‡CD 15	‡CD 15	26	* 13 8 8 8	‡CD 15	‡BD 18	‡AD 22	†BF 30	†CE 45	
‡CE 8	‡BE 10	‡BE 10	‡AE 12	‡CD 15	27	* 14 8 9 8	‡CD 15	‡BD 18	‡AD 22	†BF 30	†CE 45	
‡CE 8	‡BE 10	‡BE 10	‡AE 12	‡CD 15	28	* 15 8 10 8	‡AE 12	‡CD 15	‡BD 18	†CF 25	†AF 37	
‡CE 8	‡BE 10	‡BE 10	‡AE 12	‡CD 15	30	* 17 8 12 8	‡AE 12	‡CD 15	‡BD 18	†CF 25	†AF 37	
‡AF 6½	‡CE 8	‡BE 10	‡BE 10	‡AE 12	33	3 8 15 8	‡BE 10	‡AE 12	‡BD 18			
‡AF 6½	‡CE 8	‡BE 10	‡BE 10	‡BE 10	36	6 8 18 8	‡CE 8	‡AE 12	‡CD 15			
‡BF 5½	‡AF 6½	‡CE 8	‡CE 8	‡CE 8	42	12 8 ** 7 8	‡BE 5½	‡BE 10				
‡CF 4½	‡BF 5½	‡AF 6½	‡AF 6½	‡CE 8	48	18 8 ** 13 8	‡CF 4½					
§‡CE 8	‡CF 4½	‡BF 5½	‡BF 5½	‡AF 6½	54	** 12 8						
§‡CE 8	‡CF 4½	‡CF 4½	‡BF 5½	‡AF 6½	60							
§‡AF 6½	§‡CE 8	‡CF 4½	‡CF 4½	‡BF 5½	66							
§‡BF 5½	§‡CE 8				72							
§‡BF 5½	§‡AF 6½				84							
§‡CF 4½	§‡CF 4½				90							

† These have speed control 1-3-H in operation

‡ These have speed control 2-3-G in operation

§ Pump to be stopped every alternate revolution

TABLE FOR CUTTING STRIP MATERIAL TO PICA EMS AND HALF-EMS

The following table shows the position of the counter drum and the adjustment of the micrometer wedge to shear strip material to pica ems and half-ems. The calculations are based upon casting in multiples of 5, 5½ or 6 pica ems per cast, plus any necessary additions in "thousandths" of an inch. In the column under "Adjustments" the first column shows the row of the drum which must be brought to "A" on the remainder scale on the counter mechanism head; the second column shows the position of the pointer on the Micrometer Indicator Scale; and the third shows the addition in "thousandths" of an inch to be added by the micrometer wedge (this is indicated, as the micrometer wedge is adjusted, by the figures on the upper edge of the upper section of the handwheel on the micrometer wedge). The total amount in the third and fourth columns multiplied by the number of casts in the second column, is equivalent to the measure given in the first column.

Pica Ems	ADJUSTMENTS			Pica Ems	ADJUSTMENTS			Pica Ems	ADJUSTMENTS			Pica Ems	ADJUSTMENTS			Pica Ems	ADJUSTMENTS			Pica Ems	ADJUSTMENTS		
	Drum (Casts)	Indicator Scale (Ems)	Micrometer Wedge −		Drum (Casts)	Indicator Scale (Ems)	Micrometer Wedge +		Drum (Casts)	Indicator Scale (Ems)	Micrometer Wedge +		Drum (Casts)	Indicator Scale (Ems)	Micrometer Wedge +		Drum (Casts)	Indicator Scale (Ems)	Micrometer Wedge +		Drum (Casts)	Indicator Scale (Ems)	Micrometer Wedge +
5	1	5	—	29	5	5½	.0498	53	9	5½	.0645	77	14	5½	—	101	17	5½	.0792	125	25	5	—
5½	1	5½	—	29½	5	5½	.0684	53½	9	5½	.0737	77½	13	5½	.0766	101½	17	5½	.0781	125½	21	5½	.0790
6	1	6		30	5	6		54	9	6	—	78	13	6	—	102	17	6	—	126	21	6	—
6½	2	3	.0415	30½	6	5	.0138	54½	10	5	.0747	78½	14	5½	.0178	102½	18	5½	.0323	126½	23	5½	—
7	2	3½	—	31	6	5	.0276	55	11	5	—	79	14	5½	.0237	103	18	5½	.0369	127	22	5½	.0453
7½	2	3½	.0415	31½	6	5	.0414	55½	10	5½	.0083	79½	14	5½	.0296	103½	18	5½	.0415	127½	22	5½	.0490
8	2	4	—	32	6	5	.0552	56	10	5½	.0168	80	16	5	—	104	18	5½	.0461	128	22	5½	.0528
8½	2	4	.0415	32½	6	5	.0691	56½	10	5½	.0249	80½	14	5½	.0415	104½	19	5½	—	128½	22	5½	.0566
9	2	4½	—	33	6	5½	—	57	10	5½	.0332	81	14	5½	.0474	105	21	5	—	129	22	5½	.0603
9½	2	4½	.0415	33½	6	5½	.0138	57½	10	5½	.0415	81½	14	5½	.0534	105½	18	5½	.0599	129½	22	5½	.0641
10	2	5	—	34	6	5½	.0276	58	10	5½	.0498	82	14	5½	.0593	106	18	5½	.0646	130	26	5	—
10½	2	5	.0415	34½	6	5½	.0415	58½	10	5½	.0581	82½	15	5½	—	106½	18	5½	.0692	130½	22	5½	.0716
11	2	5½	—	35	7	5	—	59	10	5½	.0664	83	14	5½	.0711	107	18	5½	.0738	131	22	5½	.0754
11½	2	5½	.0415	35½	8	5½	.0691	59½	10	5½	.0747	83½	14	5½	.0771	107½	18	5½	.0784	131½	22	5½	.0792
12	2	6	—	36	6	6	—	60	10	6	—	84	14	6	—	108	18	6	—	132	22	6	—
12½	3	4	.0276	36½	7	5	.0355	60½	11	5½	—	84½	15	5½	.0221	108½	19	5½	.0349	132½	23	5½	.0433
13	3	4	.0553	37	7	5	.0474	61	11	5½	.0075	85	17	5	—	109	19	5½	.0393	133	23	5½	.0469
13½	3	4½	—	37½	7	5	.0592	61½	11	5½	.0151	85½	15	5½	.0332	109½	19	5½	.0437	133½	23	5½	.0505
14	3	4½	.0276	38	7	5	.0711	62	11	5½	.0226	86	15	5½	.0387	110	22	5		134	23	5½	.0541
14½	3	4½	.0553	38½	7	5½	—	62½	11	5½	.0301	86½	15	5½	.0443	110½	19	5½	.0524	134½	23	5½	.0577
15	3	5	—	39	7	5½	.0118	63	11	5½	.0377	87	15	5½	.0498	111	19	5½	.0568	135	27	5	—
15½	3	5	.0276	39½	7	5½	.0237	63½	11	5½	.0453	87½	15	5½	.0553	111½	19	5½	.0612	135½	23	5½	.0650
16	3	5	.0553	40	8	5	—	64	11	5½	.0528	88	16	5½	—	112	19	5½	.0655	136	23	5½	.0686
16½	3	5½	—	40½	7	5½	.0474	64½	11	5½	.0604	88½	15	5½	.0664	112½	19	5½	.0699	136½	23	5½	.0722
17	3	5½	.0276	41	7	5½	.0592	65	13	5	—	89	15	5½	.0719	113	19	5½	.0743	137	23	5½	.0758
17½	3	5½	.0553	41½	7	5½	.0711	65½	11	5½	.0754	89½	15	5½	.0774	113½	19	5½	.0786	137½	25	5½	—
18	3	6	—	42	7	6	—	66	11	6	—	90	15	6	—	114	19	6	—	138	23	6	—
18½	4	4½	.0207	42½	8	5	.0519	66½	12	5½	.0069	90½	16	5½	.0259	114½	20	5½	.0374	138½	24	5½	.0450
19	4	4½	.0415	43	8	5	.0622	67	12	5½	.0138	91	16	5½	.0311	115	23	5	—	139	24	5½	.0484
19½	4	4½	.0622	43½	8	5	.0726	67½	12	5½	.0208	91½	16	5½	.0363	115½	21	5½	—	139½	24	5½	.0519
20	4	5	—	44	8	5½	—	68	12	5½	.0276	92	16	5½	.0415	116	20	5½	.0498	140	28	5	—
20½	4	5	.0207	44½	8	5½	.0103	68½	12	5½	.0345	92½	16	5½	.0467	116½	20	5½	.0540	140½	24	5½	.0583
21	4	5	.0415	45	9	5	—	69	12	5½	.0415	93	16	5½	.0519	117	20	5½	.0581	141	24	5½	.0623
21½	4	5	.0622	45½	8	5½	.0311	69½	12	5½	.0484	93½	17	5½	—	117½	20	5½	.0623	141½	24	5½	.0657
22	4	5½	—	46	8	5½	.0415	70	14	5	—	94	16	5½	.0623	118	20	5½	.0664	142	24	5½	.0692
22½	4	5½	.0207	46½	8	5½	.0518	70½	12	5½	.0622	94½	16	5½	.0675	118½	20	5½	.0705	142½	24	5½	.0726
23	4	5½	.0415	47	8	5½	.0622	71	12	5½	.0691	95	19	5	—	119	20	5½	.0747	143	26	5½	—
23½	4	5½	.0622	47½	8	5½	.0727	71½	13	5½	—	95½	16	5½	.0778	119½	20	5½	.0788	143½	24	5½	.0795
24	4	6	—	48	8	6	—	72	12	6	—	96	16	6	—	120	20	6	—	144	24	6	—
24½	5	4½	.0664	48½	9	5	.0645	72½	13	5½	.0127	96½	17	5½	.0293	120½	21	5½	.0395				
25	5	5	—	49	9	5	.0715	73	13	5½	.0191	97	17	5½	.0342	121	22	5½	—				
25½	5	5	.0166	49½	9	5½	—	73½	13	5½	.0265	97½	17	5½	.0391	121½	21	5½	.0474				
26	5	5	.0332	50	10	5	—	74	13	5½	.0319	98	17	5½	.0439	122	21	5½	.0514				
26½	5	5	.0498	50½	10	5	.0083	74½	13	5½	.0383	98½	17	5½	.0488	122½	21	5½	.0553				
27	5	5	.0664	51	10	5	.0166	75	15	5	—	99	18	5½	—	123	21	5½	.0593				
27½	5	5½	—	51½	10	5	.0249	75½	13	5½	.0511	99½	17	5½	.0586	123½	21	5½	.0632				
28	5	5½	.0166	52	9	5½	.0481	76	13	5½	.0575	100	20	5	—	124	21	5½	.0672				
28½	5	5½	.0332	52½	9	5½	.0553	76½	13	5½	.0638	100½	17	5½	.0683	124½	21	5½	.0711				

CUTTING STRIP MATERIAL TO CICEROS AND HALF-CICEROS

The following table shows the position of the counter drum and the adjustment of the micrometer wedge to shear strip material to ciceros and half-ciceros. The calculations are based upon casting in multiples of 5 pica ems or 6 pica ems per cast, plus any necessary additions in "thousandths" of an inch. In the columns under "Adjustment" the first column shows the row of the drum which must be brought to "A" on the remainder scale on the counter mechanism head; the second column shows the position of the pointer on the Micrometer Indicator Scale; and the third shows the addition in "thousandths" of an inch to be added by the micrometer wedge (this is indicated, as the micrometer wedge is adjusted, by the figures on the upper edge of the upper section of the hand wheel on the micrometer wedge).

Cicero	ADJUSTMENTS			Cicero	ADJUSTMENTS			Cicero	ADJUSTMENTS			Cicero	ADJUSTMENTS			Cicero	ADJUSTMENTS			Cicero	ADJUSTMENTS		
	Drum (Casts)	Indicator Scale (Ems*)	Micrometer Wedge† −		Drum (Casts)	Indicator Scale (Ems*)	Micrometer Wedge† +		Drum (Casts)	Indicator Scale (Ems*)	Micrometer Wedge† −		Drum (Casts)	Indicator Scale (Ems*)	Micrometer Wedge† −		Drum (Casts)	Indicator Scale (Ems*)	Micrometer Wedge† +		Drum (Casts)	Indicator Scale (Ems*)	Micrometer Wedge† +
5	1	5	.0580	21	4	5½	.0194	37	7	5½	.0257	53	10	5½	.0283	69	13	5½	.0296	85	16	5½	.0305
5½	1	5½	.0638	21½	4	5½	.0416	37½	7	5½	.0384	53½	10	5½	.0372	69½	13	5½	.0385	85½	16	5½	.0361
6	2	3	.0348	22	4	5½	.0638	38	7	5½	.0511	54	10	5½	.0460	70	13	5½	.0433	86	16	5½	.0416
6½	2	3	.0792	22½	5	4½	.0522	38½	7	5½	.0638	54½	10	5½	.0549	70½	13	5½	.0501	86½	16	5½	.0472
7	2	3½	.0406	23	5	4½	.0700	39	7	5½	.0765	55	10	5½	.0638	71	13	5½	.0570	87	16	5½	.0527
7½	2	4	.0020	23½	5	5	.0047	39½	8	5	.0469	55½	10	5½	.0727	71½	13	5½	.0638	87½	17	5½	.0011
8	2	4	.0464	24	5	5	.0225	40	8	5	.0580	56	10	5½	.0816	72	14	5½	.0004	88	17	5½	.0063
8½	2	4½	.0078	24½	5	5	.0402	40½	8	5	.0691	56½	12	5	.0062	72½	14	5½	.0067	88½	17	5½	.0116
9	2	4½	.0522	25	5	5	.0580	41	8	5	.0802	57	11	5½	.0078	73	14	5½	.0131	89	17	5½	.0168
9½	2	5	.0138	25½	5	5	.0758	41½	8	5½	.0083	57½	11	5½	.0154	73½	14	5½	.0194	89½	17	5½	.0220
10	2	5	.0580	26	5	5½	.0105	42	8	5½	.0194	58	11	5½	.0234	74	14	5½	.0257	90	17	5½	.0272
10½	2	5½	.0194	26½	5	5½	.0283	42½	8	5½	.0305	58½	11	5½	.0315	74½	14	5½	.0321	90½	17	5½	.0325
11	2	5½	.0638	27	5	5½	.0460	43	8	5½	.0416	59	11	5½	.0396	75	14	5½	.0384	91	17	5½	.0377
11½	3	4	.0169	27½	5	5½	.0638	43½	8	5½	.0527	59½	11	5½	.0477	75½	14	5½	.0448	91½	17	5½	.0429
12	3	4	.0464	28	5	5½	.0816	44	8	5½	.0638	60	11	5½	.0557	76	14	5½	.0511	92	17	5½	.0481
12½	3	4	.0760	28½	6	5	.0138	44½	8	5½	.0749	60½	11	5½	.0638	76½	14	5½	.0574	92½	17	5½	.0534
13	3	4½	.0226	29	6	5	.0284	45	9	5	.0580	61	11	5½	.0719	77	14	5½	.0638	93	18	5½	.0046
13½	3	4½	.0522	29½	6	5	.0432	45½	9	5	.0679	61½	11	5½	.0799	77½	15	5½	.0046	93½	18	5½	.0095
14	3	4½	.0818	30	6	5	.0580	46	9	5	.0777	62	12	5½	.0046	78	15	5½	.0105	94	18	5½	.0145
14½	3	5	.0284	30½	6	5	.0728	46½	9	5½	.0046	62½	12	5½	.0120	78½	15	5½	.0164	94½	18	5½	.0194
15	3	5	.0580	31	6	5½	.0046	47	9	5½	.0145	63	12	5½	.0194	79	15	5½	.0224	95	18	5½	.0243
15½	3	5½	.0046	31½	6	5½	.0194	47½	9	5½	.0243	63½	12	5½	.0268	79½	15	5½	.0283	95½	18	5½	.0293
16	3	5½	.0342	32	6	5½	.0342	48	9	5½	.0342	64	12	5½	.0342	80	15	5½	.0342	96	18	5½	.0342
16½	3	5½	.0638	32½	6	5½	.0490	48½	9	5½	.0441	64½	12	5½	.0416	80½	15	5½	.0401	96½	18	5½	.0391
17	4	4½	.0078	33	6	5½	.0638	49	9	5½	.0539	65	12	5½	.0490	81	15	5½	.0460	97	18	5½	.0441
17½	4	4½	.0300	33½	6	5½	.0786	49½	9	5½	.0638	65½	12	5½	.0564	81½	15	5½	.0519	97½	18	5½	.0490
18	4	4½	.0522	34	7	5	.0326	50	9	5½	.0737	66	12	5½	.0638	82	15	5½	.0579	98	19	5½	.0030
18½	4	4½	.0744	34½	7	5	.0453	50½	10	5	.0869	66½	12	5½	.0712	82½	16	5½	.0028	98½	19	5½	.0077
19	4	5	.0136	35	7	5	.0580	51	10	5	.0758	67	13	5½	.0023	83	16	5½	.0083	99	19	5½	.0124
19½	4	5	.0358	35½	7	5	.0707	51½	10	5½	.0016	67½	13	5½	.0092	83½	16	5½	.0138	99½	19	5½	.0171
20	4	5	.0580	36	7	5½	.0004	52	10	5½	.0105	68	13	5½	.0160	84	16	5½	.0194	100	19	5½	.0217
20½	4	5	.0802	36½	7	5½	.0131	52½	10	5½	.0194	68½	13	5½	.0228	84½	16	5½	.0249				

* These are ems and half ems of pica (.166 English inch). † These figures represent thousandths of an English inch

PRODUCT INFORMATION TABLE

Product	Gears†‡	Revolutions per Minute	Temperature		Pump Body to Use	Nozzles			Pump Spring Compression (from Top of Spring Rod to Top of Nut)	Number of Leaves to Use	
			Fahr.	Cent.		Number	Diameter of Drilling			Upper	Lower
							Top	Bottom			
*Type: 6, 7, 8 point	2-4-H	144	730°	387°	7/8	1	.062	.125	—	—	—
*Type: 9, 10, 11 point	2-4-H	144	700°	371°	7/8	1	.062	.125	1/2"	—	—
*Type: 12 point	2-4-H	144	675°	357°	7/8	1	.062	.125	1"	—	—
*Type: 14 point	†AD	125	650°	343°	7/8	2	.125	.125	1 1/2"	6	1
*Type: 18 ×9 point	†BD	102	645°	340°	7/8	2	.125	.125	1 1/2"	6	1
*Type: 24 × 12 point	†BE	55	640°	337°	7/8	2	.125	.125	2"	6	1
*Type: 30 × 15 point	†AF	37	635°	335°	7/8	2	.125	.125	2 1/2"	6	1
*Type: 36 × 18 point	‡AD	22	630°	332°	7/8	2	.125	.125	3"	5	2
*Type: 42 × 21 point	‡BD	18	620°	326°	1 1/4	5 ¶§	.213	.302	4"	6	2
*Type: 48 × 24 point	‡CD	15	615°	323°	1 1/4	5 ¶§	.213	.302	4"	4	2
*Type: 60 ×30 point	‡BE	10	610°	321°	1 1/4	5 ¶	.213	.302	4" 5"	3	3
*Type: 72 ×36 point	‡AF	6 1/2	610°	321°	1 1/4	5 ¶	.213	.302	5"–7"	3	4
Quotations: 6 ×6 ems	‡CF	4 1/2	600°	315°	1 1/4	5	.213	.302	5"	3	4
Quotations: 6 ×5 ems	‡BF	5 1/2	600°	315°	1 1/4	5	.213	.302	4 1/2"	4	4
Quotations: 6 ×4 ems	‡AF	6 1/2	605°	318°	1 1/4	6	.125	.125	5"	3	3
Quotations: 6 ×3 ems	‡CE	8	605°	318°	1 1/4	6	.125	.125	4 1/2"	4	3
Quotations: 6 ×2 ems	‡CE	8	605°	318°	1 1/4	6	.125	.125	4"	4	2
Quotations: 5 ×5 ems	‡BF	5 1/2	600°	315°	1 1/4	6	.125	.125	5"	3	4
Quotations: 5 ×4 ems	‡AF	8 1/2	600°	315°	1 1/4	6	.125	.125	5"	4	3
Quotations: 5 ×3 ems	‡CE	8	600°	315°	1 1/4	6	.125	.125	4 1/2"	4	2
Quotations: 5 ×2 ems	‡BE	10	600°	315°	1 1/4	6	.125	.125	4"	4	2
Quotations: 4 ×4 ems	‡CE	8	600°	315°	7/8	4	.213	.213	3 1/2"	4	1
Quotations: 4 ×3 ems	‡BE	10	600°	315°	7/8	4	.213	.213	3"	5	1
Quotations: 4 ×2 ems	‡AE	12	600°	315°	7/8	4	.213	.213	3"	6	—
Strip Borders: 8 point	†CE	45	625°	329°	7/8	2	.125	.125	3"–4"	5	2
Strip Borders: 12 point ...	‡AD	22	625°	329°	7/8	2	.125	.125	3"–4"	5	3
Rules: 1½ point	†AD	125	725°	385°	7/8	~~3~~	.070	.152	3" 4"	—	—
Rules: 2 point	†BD	102	700°	371°	7/8	~~3~~	.070	.152	3"–4"	—	—
Rules: 3 point	†CD	83	650°	343°	7/8	~~3~~	.070	.152	3"–4"	6	1
Rules: 6 point	†CE	45	625°	329°	7/8	2	.125	.125	3"–4"	5	2
Rules: 12 point	‡AD	22	625°	329°	7/8	2	.125	.125	3"–4"	5	3
Leads: 1½ point	†AD	125	725°	385°	7/8	~~3~~	.070	.152	3" 4"	—	—
Leads: 2 point	†BD	102	700°	371°	7/8	~~3~~	.070	.152	3"–4"	—	—
Leads: 3 point	†CD	83	650°	343°	7/8	~~3~~	.070	.152	3"–4"	6	1
Leads: 6 point	†BE	55	625°	329°	7/8	2	.125	.125	3"–4"	5	2
Leads: 12 point	‡AD	22	625°	329°	7/8	2	.125	.125	3"–4"	5	3
△16-em Dashes: 6 point ...	‡BD	18	625°	329°	7/8	2	.125	.125	3" 4"	5	2
△16-em Dashes: 12 point ...	‡CE	8	625°	329°	1 1/4	8	.125	.125	3"–4"	5	3

* Speeds based upon the half-em body
† These have speed control 1-3-H in operation
‡ These have speed control 2-3-G in operation

§ When using 42-48 point Display Moulds use No. 8 nozzle
¶ For casting thin spaces on Super Caster Moulds use No. 6 nozzle
△ For didot machines these particulars apply to 15 cicero ems

PARTICULARS OF

MOULDS AND MATRIX HOLDERS

TO USE WHEN CASTING TYPE

Size	Moulds	Mould High Space Height	Matrix	Matrix Drive	Matrix Holder	Mould Blade Fork*	Water Block	Oiler	Head
5 pt. to 12 pt.	Composition. Use adaptor plate	·868″	Composition (·2″ × ·2″) ..	·050″	3SLL	12SLL	30SLL	29SL1	Composition
5 pt. to 12 pt.	Composition. Use adaptor plate	·868″	Composition ·2″ Extended ..	·050″	4SLL	12SLL	30SLL	29SL1	Composition
14 pt. to 24 pt.	Composition (large type) with interchangeable insets. Use adaptor plate	·868″	Composition (large type, ·2″ × ·4″ and ·4″ × ·4″)	·050″	5SLL	12SLL	30SLL	15SL1	Display
14 pt. to 48 pt.	Display, 14 pt. to 36 pt. and 42 pt. to 48 pt. Either kind fitted with interchangeable insets. Use adaptor plate	·868″	Display (1″ × 1″, 1″ × 1⅛″, 1″ × 1·35″)	·050″	6SLL	14 pt. to 36 pt. 12SLL 42 pt. to 48 pt. 32SLL	30SLL	15SL1	Display
14 pt. to 36 pt.	Display. Fitted with interchangeable insets. Use adaptor plate	·868″	Display. American Electrotype (1⅛″ × ¾″)	·050″	33SLL	12SLL	30SLL	15SL1	Display
14 pt. to 36 pt.	Super Type. Fitted with interchangeable insets	·868″	Display (1″ × 1″)	·050″	6SLL	12SLL	19SLL	15SL1	Display
42 pt. to 72 pt.	Super Type. Fitted with interchangeable insets	·853″	Display (1⅛″ × 1⅛″, 1⅛″ × 1·35″)	·065″	7SLL	13SLL	20SLL	16SL1	Display

* When casting type from 5 point to 36 point, with the old-style low quad arrangement, use Mould Blade Fork, 26SLL

INDEX TO SYMBOLS USED IN THIS BOOK

This index shows the pages on which the symbols referred to appear. Where the page number is printed in italic figures it indicates that the symbol appears more than once on that page

ALPHABETICAL INDEX

NUMERICAL PAGE INDEX

(Main headings are in capitals, sub-headings in small capitals and illustrations in italics)

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43 FETTER LANE, LONDON, E.C.4

CLEANING INSTRUCTIONS FOR JET BLOCK. Mould No.77228.

Frequently remove the Jet Block for cleaning. It will usually be necessary to remove the Jet Pusher only, smear it with Castor Oil, and replace it.

If, however, the faces of the Jet Block require cleaning, proceed as follows:-

Remove the large Plate only (the small Plate must not be removed);
Clean angle faces on both plates and pusher;
Clean all other faces of the Jet Block including the key and keyway.

Replace the large Plate and secure with the six screws ;
Oil and replace Pusher;
Release Locking Screw of Eccentric Pin and adjust the position of the large Plate by means of the Eccentric Pin;
Firmly tighten the six screws securing large Plate;
Smear all faces of the Jet Block with Castor oil before replacing in the Mould.

Mould No. 76475. There are no instructions.

SUGGESTIONS TO ENSURE CASTING A SATISFACTORY STRIP.

Adjust the Crosshead Stud 16SH5 as low as possible for 1-1½ point, but back off for 2-3 point.

marks on the side of product usually indicate that the Facing Plate in the Side Block (Fixed) against which the product is pressed by the Roller is "tinning". It is advisable to remove discolouration from this Facing Plate and the Insets when changing-over.

If the product is short the Lead Clamp Screw may not be correctly adjusted, or the Matrix may not be properly located.

If the product is long (blowing out) the Lead Clamp Screw may not be correctly adjusted, or it may require oiling.

When casting 18-point material, make sure that the pin 2SG4 is connected in the OUTER hole of the Cutter Actuating Plunger Link, otherwise the product as it leaves the Mould will strike the Lead Stacker. Secure the Cutter Blade Bracket with the Screw 6SG3 and Washer 6SG15 in addition to those used for the smaller sizes.

/over

Notes. Always place a piece of product in the Mould before applying pressure to the Lead Clamp Lever. Failure to do so may cause the Spring Block to be unduly strained.

Occasionally make sure that the oil has a clear passage through the small oil holes in Side Blocks and Jet Block.

Keep surface of the metal clean to allow Jets to melt as soon as they fall into the metal pot.

INSTRUCTIONS FOR REMOVING INSETS. Mould No. 76475.

TO REMOVE R.H. INSET (from adjustable Side Block).

1. Take off the Oil Channel Block 10460 by removing the two screws 140;
2. Remove the short inset screw, 141;
3. Remove the long inset screw, 10413, from centre of inset and place it in the hole from which the short inset screw was removed;
4. Loosen the other inset screw, and push on both screws to eject the inset.

Thoroughly clean inset and its locating faces on the Side Block, and replace inset in position;
A. Replace the three screws (short one at rear end);
B. Lightly tighten all screws; firmly tighten all scre
C. Replace Oil Channel Block.

TO REMOVE L.H. INSET (from fixed Side Block).

1. Remove the Side Block holding down screw, 385 140;
2. Remove the short inset screw, 140;
3. Remove the long inset screw, 10413, from centre of inset and place it in the hole from which the short inset screw was removed;
4. Loosen the other inset screw, and push on both screws to eject the inset.

Thoroughly clean inset and its locating faces on the Side Block, and replace inset in position;
A. Replace the three screws (short one at rear end);
B. Lightly tighten all screws; firmly tighten screws;
C. Replace the holding down screw and washer.

THE LEAD CLAMP LEVER ROD Xb9SD.

The length of the Lever Rod, from the top of the Swivel Pin Collar (9SD15D) to the top of the Yoke (9SD8) should be :-

With Spring compressed solid 4 11/16 in.
Free 5 5/8 in.

THE LEAD CLAMP LEVER.

The setting of the Lead Clamp Screw is of considerable importance. The aim should be to get the minimum withdrawal of the Spring Box Rod from the Spring Box end when the Lead Clamp Lever is in its lowest position.

Mould No. 77228. Aim at adjusting the Screw so that there is a gap of approximately 1/8 in. between the Lever and the Stop when the product is clamped. (Screw Lock Nut is L.H.)

Rotate machine by hand and pause as the telescopic rod is about to release the Clamp Lever. Attempt to lift the Clamp lever upwards. If this can be done easily it proves that the Lever is touching the Stop; and must be re-adjusted.

Mould No. 76475. When the Lever is in its lowest position there should be about 3/8 in. clearance between the underside of the Lever and Main Stand, and 3/32 in. between inside boss of Lever and Mould.

ADJUSTING THE JET POSITION.

Mould No. 77228. As printed in the Instruction Book.

Mould No. 76475. Proceed as for other mould, but--
Position the Jet Block Position Yoke Pin for 4-point;
Use Jet Setting Piece 6ST3 and make the adjustments so that the right hand side of the Jet opening is exactly level with the side of the Jet Piece.