

# PART 6

## The strip moulds

CHAPTER 38 **Super caster lead and rule mould, 1–3 pt**

CHAPTER 39 **Super caster lead and rule mould, 4–18 pt**

CHAPTER 40 **Super caster furniture mould**

# PART 6

## Key references

### Chapter 38

- 1 Spring block
- 2 Distance piece
- 3 Adjustable side block
- 4 Matrix clamp screw
- 5 Holding-down screws (2)
- 6 Left-hand side block inset
- 7 Matrix clamp
- 8 Right-hand side block inset
- 9 Plain cap
- 10 Matrix clamp pad
- 11 Holding-down screw
- 12 Spring block cover plate screws (2)
- 13 Spring block cover plate
- 14 Matrix setting plate screw
- 15 Matrix setting plate
- 16 Holding-down screws (2)
- 17 Holding-down screw
- 18 Clamp screw
- 19 Spring block inset screw
- 20 Distance piece
- 21 Lead clamp screw
- 22 Mould lead clamp lever
- 23 Lead clamp screw lock nut
- 24 Straightening device
- 25 Straightening device roller
- 26 Adjusting screw
- 27 Rule dotting attachment
- 28 Fixed side block
- 29 Jet cam
- 30 Jet pusher
- 31 Dotted rule supporting pad
- 32 Screws (6)
- 33 Eccentric pin
- 34 Horizontal screws (3)
- 35 Jet block stop
- 36 Jet block
- 37 Horizontal bolts (3)
- 38 Inset cover plate screws (2)
- 39 Side block holding-down screw
- 40 Matrix locator
- 41 Holding-down screw
- 42 Mould blade

- 43 Mould blade connection
- 44 Mould blade slide
- 45 Pump driving rod
- 46 Spring box end
- 47 Mould blade slide drive lever connecting tube
- 48 Spring box rod
- 49 Wedge screw housing
- 50 Counter bracket
- 51 Lead clamp intermediate lever
- 52 Lead clamp intermediate lever rod
- 53 Lead clamp intermediate lever rod swivel collar, upper
- 54 Yoke pin
- 55 Cutter blade bracket
- 56 Shear block
- 57 Lead guide bracket
- 58 Galley side wall
- 59 Galley plate
- 60 Lead clamp intermediate lever rod yoke
- 61 Mould clamps (2)
- 62 Jet block driving rod
- 63 Jet block driving rod connection rod
- 64 Jet block driving rod connection rod yoke
- 65 Yoke position pin screw
- 66 Connection rod yoke pin position pin
- 67 Type carrier cam lever extension
- 68 Matrix cam lever

### Chapter 39

- 1 Nuts (3)
- 2 Jet block setting piece
- 3 Locking key
- 4 Washers (3)
- 5 Spring
- 6 Holding-down screw
- 7 Holding-back screws (3)
- 8 Matrix guide
- 9 High blade cap
- 10 Packing piece (0.075 in)
- 11 Facing plate
- 12 Matrix guide cover
- 13 Right-hand inset (special)
- 14 Matrix clamp screw
- 15 Matrix clamp
- 16 Distance plate
- 17 Holding-down screw
- 18 Holding-down screw
- 19 Left-hand side block inset
- 20 Fixed side block
- 21 Right-hand side block inset
- 22 Holding-down screw
- 23 Distance piece
- 24 Holding-down screws (2)
- 25 Mould blade
- 26 Matrix clamp pad
- 27 Horizontal bolts (3)
- 28 Clamp screw post
- 29 Adjustable side block
- 30 Cover clamp screw
- 31 Inset screw (short)
- 32 Base facing strip
- 33 Inset screw (long)
- 34 Inset screw (long)
- 35 Oil channel block
- 36 Screws (2)
- 37 Mould base
- 38 Friction plunger spring abutment
- 39 Spring
- 40 Friction plunger
- 41 Jet cam
- 42 Jet block
- 43 Mould lead clamp lever

44 Lead clamp screw  
 45 Spring  
 46 Retaining plate  
 47 Lead clamp screw block  
 48 Retainer  
 49 Distance piece  
 50 Dotted rule supporting pad  
 51 Lead clamp  
 52 Straightening device  
 53 Straightening device roller  
 54 Cam  
 55 Screw  
 56 Matrix locator (end)  
 57 Matrix sealing slide  
 58 Dotted rule attachment locator  
 59 Distance piece  
 60 Screw  
 61 Matrix locator (side)  
 62 Matrix cam lever  
 63 Jet block driving rod connection rod lock nut, right-hand  
 64 Jet block driving rod connection rod  
 65 Yoke position pin screw  
 66 Type carrier cam lever extension  
 67 Jet block driving rod connection rod lock nut, left-hand  
 68 Matrix lifter wedge spring box  
 69 Mould blade slide drive lever connecting tube  
 70 Lead clamp intermediate lever spring box  
 71 Matrix lifter bracket hexagon screw  
 72 Matrix lifter  
 73 Matrix lifter lock wedge  
 74 Lead clamp intermediate lever rod  
 75 Lead guide bracket  
 76 Cutter blade bracket  
 77 Shear block  
 78 Galley plate  
 79 Galley side wall  
 80 Jet block driving rod

## Chapter 40

1 Wrench  
 2 3-em setting gauge  
 3 Cap  
 4 Cap clamp screws (2)  
 5 Core piece  
 6 Screw  
 7 Guard  
 8 Cap clamps (2)  
 9 Recess (in distance piece)  
 10 Small side block  
 11 Screws (2)  
 12 Screws (2)  
 13 Distance piece  
 14 Screws (2)  
 15 Large side block  
 16 Bolt  
 17 Nut  
 18 Blade guide  
 19 Knob  
 20 Bracket  
 21 Adjustable (non-fusing) stop  
 22 Screw  
 23 Actuating lever link  
 24 Screw  
 25 Ejection stop  
 26 Screw  
 27 Blade stop catch  
 28 Mould blade  
 29 Facing strip  
 30 Mould base  
 31 Screws (2)  
 32 Jet strip  
 33 Clamping bolts (2)  
 34 Key-way  
 35 Jet pushers  
 36 Nozzle seating plate  
 37 Jet cam  
 38 Jet block  
 39 Gib plate  
 40 Friction plate  
 41 Mould lead clamp lever  
 42 Clamping lever assembly  
 43 Clamping screw

44 Core piece screws  
 45 Clamping lever  
 46 Clamping shoe  
 47 Side block alignment key  
 48 Clamping shoe lever pivot  
 49 Core piece  
 50 Facing strip  
 51 Mould blade slide drive lever  
 52 Intermediate lever  
 53 Mould blade slide drive lever connecting tube  
 54 Nut  
 55 Connecting tube ball end joint  
 56 Mould blade slide, driving block abutment  
 57 Matrix cam lever  
 58 Lead clamp intermediate lever spring box rod end  
 59 Jet block driving rod connection rod yoke  
 60 Type carrier cam lever extension  
 61 Wedge screw housing  
 62 Lead mould blade stop lever handle  
 63 Ratchet pin chain  
 64 Plunger lever fulcrum pin  
 65 Actuating lever  
 66 Mould blade slide  
 67 Mould oiler  
 68 Counter bracket  
 69 Lead clamp intermediate rod  
 70 Furniture guide  
 71 Lead stacker  
 72 Nut  
 73 Furniture trimmer attachment  
 74 Box  
 75 Matrix box tray

# CHAPTER 38

## Super caster lead and rule mould 1–3 pt

This mould is designed to cast high and low leads, strip rules and full-faced rules in the 1–3 pt range.

The various point sizes are obtained by the use of interchangeable mould blades and distance pieces, whilst blade caps or rule matrices are used as necessary according to the product being cast. Two sets of mould side block insets are available, one of which is provided specially for 1 pt only. Another two sets are also available for casting full-faced rules, including again a special pair for 1 pt if required.

The mould consists basically of two side blocks, one which remains fixed to the mould base and one which is adjustable; together with a jet block which serves to provide both part of the floor and the jet aperture for the casting cavity, and a means of shearing and ejecting the jet tang from the cast, whereby the product is freed and duly pushed forward by the mould blade to enable the next cast to be formed immediately behind it.

The mould is linked with and largely controlled by the several parts which comprise the counter bracket, the mould blade being operated by the mould blade slide drive lever.

The counter bracket jet block driving rod links the jet block with the type carrier cam lever extension, whilst the matrix cam lever controls the mould lead clamp, the movement of which regulates the tension on the spring block of the adjustable side block during casting and ejection. Similarly, the counter mechanism, being linked with both the pump driving rod and the cutter mechanism, controls the shearing of the cast strip into the required lengths on completion of the requisite number of casts.

Finally, the action of the cutter also operates the lead stacker which stacks the sheared strip in a neat and tidy row on the galley.

We will now briefly outline the main parts of the mould before dealing with its various adjustments and going on to a detailed description of its assembly and operation.

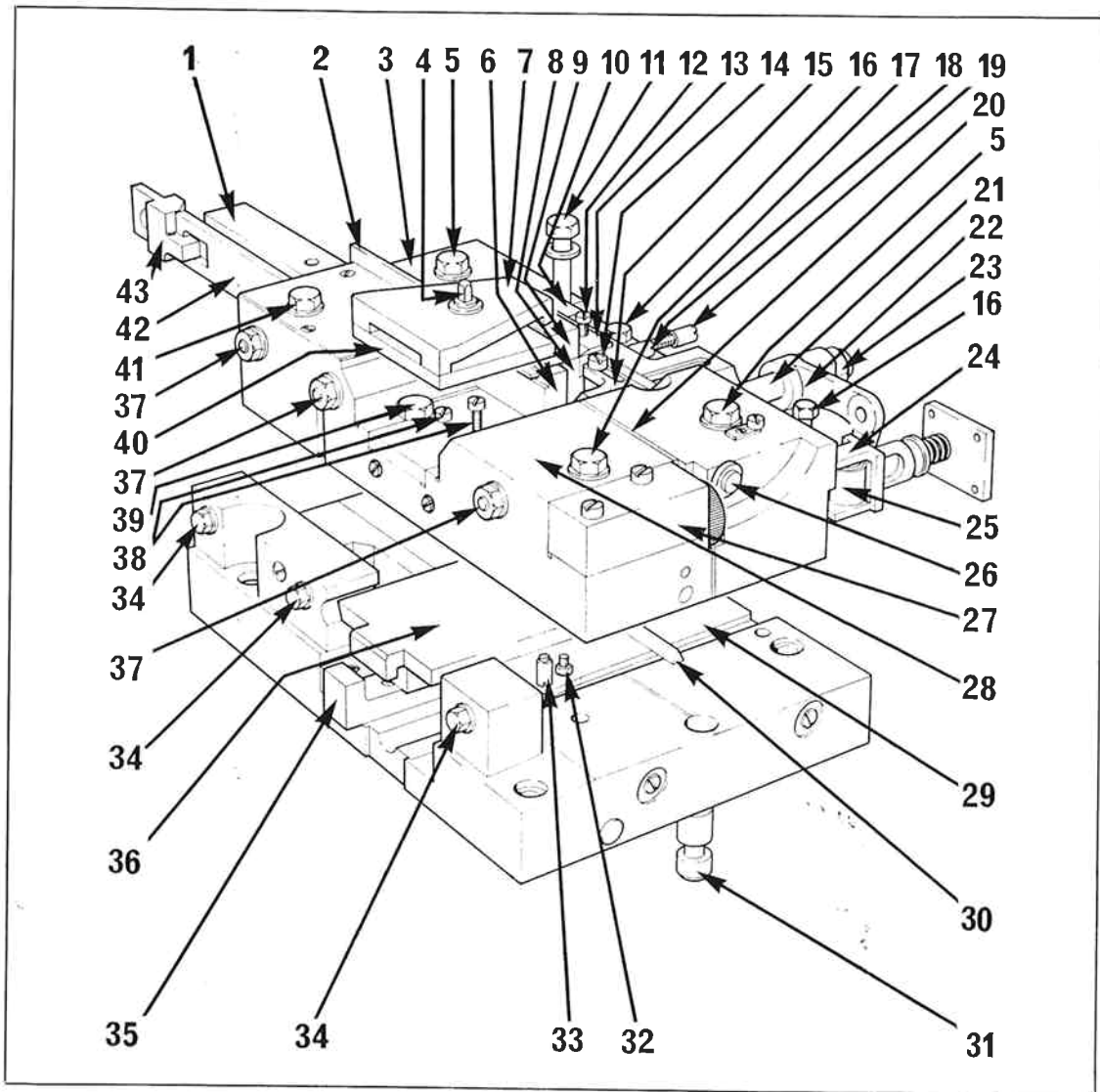
### Description of the main parts of the mould

- 38.1 Mould base** The mould base, to which the side blocks (3) and (28) are secured, provides a base facing strip on which the mould blade travels, the jet cam (29) which operates the jet pusher located on the underside of the jet block, the supporting pad (31) used when producing dotted rules, and the nozzle seating plate which is located on the underside of the base itself.
- 38.2 Jet block** The jet block (36), like the crossblock of the type moulds, is so designed as to provide both part of the floor of the mould casting cavity and the jet aperture through which the molten metal is injected. Again, like the crossblock, the jet block is connected to the type carrier cam lever extension which controls its movement back and forth across the mould. However, unlike the type mould

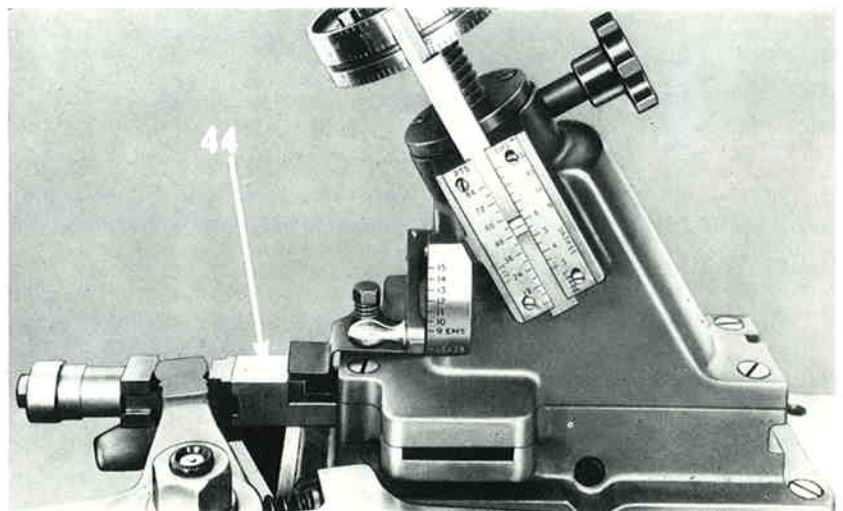
crossblock, its linkage with the type carrier cam lever is in no way concerned with removing the cast product from the mould, but only with the shearing of the jet tang from the foot of the product. This it does in the same manner as a crossblock as it travels to the left from the casting position. The jet tang is ejected when the crossblock subsequently moves to the right. A track cam on the floor of the mould actuates a sliding jet pusher (30) which presses the cut-off metal tang out of the jet block, whereupon it drops through an aperture in the base of the mould, back into the melting pot from whence it came.

The jet block driving rod (62) must be linked with the type carrier cam lever extension (67) via the connecting rod yoke pin position pin (66) which you insert in the hole marked '12'; the pin being secured to the yoke (64) by the yoke position pin screw (65) via the hole marked for the required point size.

Information concerning the adjustment of the jet position when necessary, is contained in the detailed instructions which follow in Section 19.



- 38.3 **Side block (fixed)** The fixed side block (28) which remains attached to the mould base (except when stripped for cleaning) carries the left-hand side block inset (6), the matrix locator (40) and the matrix clamp (7). The locator for the rule dotting attachment (27) is positioned at the forward end of the fixed side block.
- 38.4 **Side block (adjustable)** The adjustable side block (3) carries the straightening device (24), the spring block (1), the matrix setting plate (15), the matrix clamp pad (10) and the right-hand side block inset (8).
- 38.5 **Straightening device** This consists of a roller (25) located in the adjustable side block, which controls the direction taken by the product as it leaves the mould. If the strip has a tendency to rise, the knurled head adjusting screw (26) should be turned anti-clockwise sufficiently to ensure that straight product is produced, ready for shearing and stacking on the galley.
- 38.6 **Dotted rule supporting pad** The dotted rule supporting pad (31) is located in the mould base near the point where the cast strip leaves the mould. It is used when required, in conjunction with the rule dotting attachment, to transform a plain cast rule into dotted rule as it is ejected. To bring it into operation, the supporting pad must be raised into contact with the underside of the adjustable side block. When not required, it should be locked out of action in its lowest position.
- 38.7 **Spring block** The spring block (1), which is fixed to the adjustable side block (3), provides a seating for the right-hand side block inset (8).
- 38.8 **Mould blades** The mould blades (42) are less complex than those of the type moulds, being constructed in one piece. They are connected to the mould blade slide (44) by means of a simple mould blade connection (43).
- The several types of mould blade available for use with this mould include those for producing low leads which are easily identified by their shouldered upper edge, others which are used to produce high leads and for casting strip rules of 0.030in drive (0.015in for 1 pt, or any size if specially ordered) and those which are used for casting full-faced rules.



- 38.9 The distance pieces** The distance pieces (20) and (2) are positioned in the mould to sit on top of the mould blade itself at the rear of the mould, and on a shoulder formed in the fixed side block at the front. The distance pieces required are therefore supplied in sets of two for each point size, with a special rear distance piece for full-faced rules, which is marked accordingly. The combination of the required mould blade and correctly matched distance pieces consequently controls the width of the casting cavity formed between the interchangeable insets which line the walls of the fixed (28) and adjustable (3) side blocks.
- 38.10 Side block insets** There are two basic inset designs; those which are recessed at the back are supplied especially for casting strip product in 1 pt only, and they are designed to accommodate a 0.015 in drive matrix when casting strip rules in this size. A set of plain insets is supplied for 1½ pt, 2 pt and 3 pt product, which are used with 0.030 in drive matrices for strip rules. Insets in these sizes for use with strip rule matrices of 0.015 in drive are supplied if specially requested. Two sets of insets can also be provided for casting full-faced rules.
- When assembling mould blade insets it is most essential that the faces of both the insets themselves and the side block walls against which they abut are absolutely clean.
- 38.11 Lead clamp lever** The mould lead clamp lever (22), by exerting pressure on the spring block (1), serves to hold the cast portion of the strip firmly in the mould whilst the successive fusing casts are taking place. This clamping pressure ensures that the product already cast remains in position, since it acts as the front wall of the casting cavity; the force of the molten metal would otherwise push it forward out of the mould. The clamp pressure is released to allow the mould blade to push the strip forward as each fusing cast is completed.
- All this is controlled automatically by the various parts which comprise the lead clamp intermediate lever (51), located on the counter bracket. The intermediate lever is connected to the mould lead clamp lever (22) at one end, and to the matrix cam lever (68) at the other, via the lower of the two connection holes provided.
- The mould lead clamp lever has an extension which acts as a safety stop. This stop must not be allowed to touch the main stand of the machine during casting, or the cast strip in the mould will not be securely clamped in position. On the other hand, if the gap between the lever and the main stand is too great, the clamp pressure will not be sufficiently reduced when required and the product will not be fully ejected from the mould.
- When the product is clamped in the mould, the lead clamp lever should be approximately  $\frac{3}{16}$  in (4.763 mm) clear of the main stand.
- The procedure for adjusting the lead clamp lever when necessary is contained in the detailed adjustment instructions which follow in Section 18.
- 38.12 Blade caps and matrices** The mould casting cavity, which is formed by the front edge of the mould blade, the cast product still in the mould at the other end, the floor, of which the jet block is part, and the flanking walls formed by the side block insets, is sealed at the top by either a blade cap or a matrix; blade caps being used when casting high or low leads and full-faced rules, and matrices when casting strip rules.
- When casting low leads, the blade cap is placed on the mould with the projection inserted in the mould opening, whilst for high leads a plain cap (9)



is used, which is secured in position sitting on top of the mould. The blade caps are positioned on the mould with their identification markings in view on the side. Full-faced rules cast to type-height are similarly produced using special blade caps which project into the mould.

Matrices for casting strip rule, which are also positioned on top of the mould, are supplied to cast product of either 0.015 in or 0.030 in drive (the distance measured from the printing surface to the shoulder). They are designed to cast rules of varying line strength. The 1 pt rule, which has a body-width of only 0.01383 in, is always cast with the special 1 pt side block insets to 0.015 in drive.

**38.13 Matrix locator** The matrix locator (40) is placed on the fixed side block. It is a form of matrix locator plate and it serves to locate both the strip rule matrices and the caps used for casting high and low leads and full-faced rules. The matrix clamp (7) is fitted on top of it.

It is most essential that the faces of the locator and the surfaces against which it abuts on the side block are absolutely clean.

**38.14 Matrix setting plate** The matrix setting plate (15), located on the adjustable side block, is used with the caps and matrices (except the high lead cap) to ensure they are correctly positioned on the mould in relation to the formed shape of the mould blade and the basic size of the cast; in order to avoid the possibility of a splash occurring during casting. The plate is marked for four, five and six 12-point ems, and it should be set according to the basic cast size, with the relevant figure in alignment with the correct zero line for the point size required. That is to say, the setting plate must be positioned to coincide with the figure set on the wedge indicator em scale of the mould blade sizing mechanism; whilst taking care to ensure that the correct setting plate zero line is used, there being a short one for 1 pt and 1½ pt, and a longer one for 2 pt and 3 pt.

**38.15 Matrix clamp pad** The matrix clamp pad (10) is used in conjunction with rule matrices, and with the high blade cap when casting high leads. It rests on the spring block cover plate (13) on the adjustable side block (3) and presses the matrix or blade cap against the matrix locator (40), when the clamp screw (18) is tightened.

*The matrix clamp pad must never be used in conjunction with the low blade caps which are inserted into the mould when casting low leads or full-faced rules.*

**38.16 Matrix clamp** The matrix clamp (7) is positioned on top of the matrix locator on the fixed side block (28) by means of the matrix clamp screw (4), to secure the blade cap when casting high and low leads, or the matrix when casting strip rules. A special matrix clamp (marked FFR) is used when casting full-faced rules.

**38.17 Adjustments** The following adjustments must be carried out with the mould connected up on the machine.

**38.18 Adjusting the lead clamp** Insert a piece of appropriate product of the required size in the mould, clamp up to it, and then release the lead clamp screw lock nut (23) (it has a left-hand thread). Turn the machine by hand to position the lead clamp lever (22)  $\frac{3}{16}$  in (4.763 mm) from the main stand, and then firmly tighten the lead clamp screw (21) against the spring block (1) in the adjustable side block.

Tighten the lock nut again and rotate the machine to check the setting, taking it through the casting position and stopping it at the point where the



telescopic rod (52) is about to release the clamp screw (21). Now attempt to release the clamp screw by lifting the clamp lever upwards. If this can be achieved easily, it indicates that the lever (22) is touching the main stand and must therefore be adjusted.

Should you experience any difficulty in satisfactorily completing these adjustments, you should check and, if necessary, adjust the lead clamp intermediate lever rod (52) accordingly.

To be correctly adjusted, the distance from the top of the upper swivel collar (53) to the top of the yoke (60) should measure  $4\frac{1}{16}$  in (119.063 mm) with the spring compressed, and  $5\frac{5}{8}$  in (142.875 mm) when it is free.

The correct setting of the lead clamp screw (21) is of considerable importance. The object is to ensure the minimum withdrawal of the spring box rod (48) from the spring box end (46). The stop face of the lead clamp lever (22) is then approximately  $\frac{3}{16}$  in (4.763 mm) from the main stand.

The threads, and the clamping end of the lead clamp screw, must be frequently lubricated with machine oil via the slot in the adjustable side block where marked OIL.

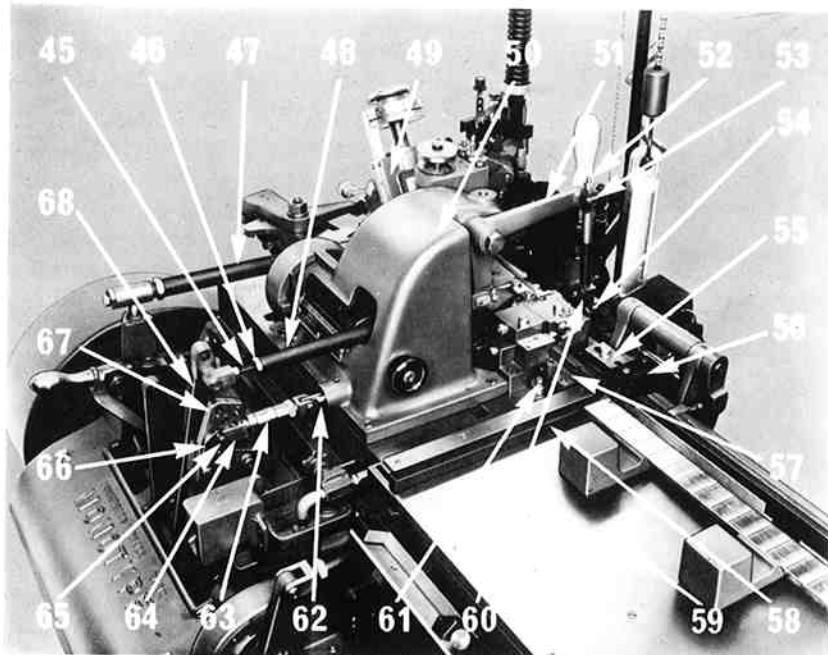
### 38.19 Adjusting jet position

This adjustment must also be carried out with the mould connected up on the machine.

You proceed as follows:

See that the position pin (66) of the jet block driving rod connection rod (63) is correctly positioned for  $1-1\frac{1}{2}$  pt. Turn the machine to approximately  $260^\circ$  until the jet block (36) rests against the jet block stop (35). You then adjust the jet block driving rod connection rod (63) by loosening the lock nuts, both right-hand and left-hand, and turning the rod either right or left as necessary until tension is just apparent on the type carrier cam lever plunger.

Finally, lock the nuts again, whilst taking care that the flat on the jet block driving rod (62) remains in the horizontal position; then check the setting.



When the above adjustment is correctly made, the jet block driving rod, connecting rod yoke position pin will be correct for all sizes cast on the strip moulds, if it is placed in the 12 pt hole in the type carrier cam lever extension.

The degree of precision called for in this adjustment, you will doubtless appreciate, is absolutely vital for both 1 pt and 1½ pt strip, since, if the jet aperture is not exactly positioned, the mould would either produce faulty product, or possibly fail to cast at all.

The jet position, having been correctly adjusted for the smaller sizes, will be likewise correct for both 2 pt and 3 pt, and, in this instance, tension on the type carrier cam lever plunger is not required in order to confirm the setting.

**38.20 Preparing the machine to receive the mould**

Very little machine preparation is required before the mould itself is connected up. You should first of all, however, ensure that the pump is fully prepared and all necessary adjustments made to make certain it is ready and with the metal at the required temperature by the time you are ready to commence casting.

Reference to the 'Product Information Table' will give you all the information you need in respect of metal temperature, piston, pump and nozzle sizes and the position of the piston spring rod nut, together with the recommended casting speeds in revolutions per minute and other relevant settings and adjustments.

**38.21 Attaching the counter bracket to the main stand of the machine**

The counter bracket is attached direct to the main stand, secured in position by four screws and placed with the jet block driving rod connecting rod (63) and the lead clamp intermediate lever spring box (48) running right to left across the machine, their extremities adjacent to the cam levers to which they will subsequently be connected.

**38.22 Connecting the counter bracket to the cam levers**

Connect the counter bracket to the cam levers as detailed in Chapter 13, linking the jet block driving rod (62) with the 12 pt hole of the type carrier cam lever extension (67), and the lead clamp intermediate lever rod end (46) to the matrix cam lever, via the lower of the two holes.

Care must be taken to ensure that the yoke position pin screw (65) is set in the correct hole for the point size of product being cast, when linking the yoke position pin (66) to the 12 pt hole in the type carrier cam lever extension.

Connect the actuating lever to the pump driving rod (45), and attach the weight to the chain which is linked to the ratchet pin on the counter mechanism.

**38.23 Preparing the mould for casting**

When preparing the mould for casting, you must ensure it is equipped with the required mould blade, distance pieces, insets and blade cap or matrix for the product to be cast. You also need a piece of product of the correct point size, cast from the same mould. All these are contained in the mould box, and you should make certain you retain a newly cast piece of product on completion.

Preparation of the mould will sometimes involve changing insets (special insets being used for 1 pt) whilst on other occasions it will only be necessary to change the mould blade and distance pieces. Remember, also, that a different set of insets is required for full-faced rules; a special pair again being used for 1 pt only.

The utmost care must be taken to ensure that the mould parts do not suffer any damage, and absolute cleanliness must be maintained throughout. It is therefore essential that a suitable place is properly prepared for the purpose

and covered with clean paper before you begin the operation. A comfortable, smooth and level, wooden or linoleum-covered workbench is ideal.

You should never attempt to assemble a mould, working direct on to the metal surface of the main stand of the machine. However, when making a change during casting, which does not involve changing insets, and the consequent necessity to remove the mould from the machine, the necessary parts (mould blade and distance pieces, etc.) might well be laid out on the galley tray, provided it is covered first with a clean, soft cloth to act as a protective cushion.

The sharp edges of all the mould parts must be carefully preserved if the mould is to function properly. Always place the parts down on the bench with care – do not drop them, or rub one part against another for any reason whatsoever. Clean them where necessary with a piece of lead product, whilst being careful even so in the process not to cause scratches with the edges or corners. Lead, you will find, if used carefully and with patience, will always remove any lead deposit.

Never attempt to lap or polish any of the mould parts with oilstones or other abrasives, or faulty product will inevitably result.

The above must be borne in mind whenever you are dismantling or assembling the mould, changing insets or stripping the mould down for cleaning.

#### **38.24 Dismantling the mould**

When dismantling the mould on the workbench, you must first remove the matrix clamp, the matrix or blade cap and the matrix setting plate etc. The adjustable side block can then be removed by taking out, first, the three horizontal bolts (37) and then the five vertical holding-down screws (16), (5) and (11). The distance pieces and the mould blade can then be removed.

This is as far as it is necessary to dismantle the mould for a product change involving mould blade and distance pieces only – when you are not concerned with changing insets.

During casting, the mould can be partially dismantled in this way without removing it from the machine, when making a product change which does not involve a change of insets, provided due care is exercised. You must first run down the metal pot and swing it back, away from the machine, and disconnect the mould lead clamp lever (22) from the lead clamp intermediate lever rod (52).

The mould must be dismantled on the workbench when insets are being changed. When changing insets during casting, the mould must be removed from the machine, as instructed in Section 42 at the end of this Chapter.

#### **38.25 Instructions for changing insets**

Before attempting to remove insets, you must first dismantle the mould – on the workbench, as instructed in 38.24 – maintaining scrupulous care as already emphasised.

The side blocks and the insets must be thoroughly cleaned each time a change is made. Failure to do this can result in the insets being incorrectly seated and the consequent casting of faulty product, or possible mould seizure.

#### **38.26 Removing right-hand inset from the adjustable side block**

a) Remove the matrix setting plate screw (14) and remove the matrix setting plate (15).

b) Remove the spring block cover plate screws (12) which secure the inset to the spring block (1).

c) Release the spring block inset screw (19) located on the outside of the side block. This screw passes right through the side block and pulls the side block inset firmly into its seating.

d) Take a fairly solid piece of lead product and tap on the inset screw (19) to release the inset from its seating, taking care to ensure it does not fall forward on to anything metallic which could damage its sharp edges. This is most important, as there is a tendency for the parts to stick together – and then to part suddenly.

e) Complete the withdrawal of the inset screw, and the side block itself can then be thoroughly cleaned in readiness to receive the replacement inset.

**38.27 Replacing right-hand inset in the adjustable side block**

a) First make absolutely sure that both the inset itself (8) and its locating faces on the spring block are perfectly clean, smear lightly with Mould Oil No. 1 – then place the inset in position.

b) Replace the inset screw (19) on the outside of the side block, lightly tightening until it just grips.

c) Replace the two screws (12) in the spring block and lightly tighten them.

d) Firmly tighten the inset screw.

e) Firmly tighten the other two screws which secure the inset to the spring block.

f) Replace the matrix setting plate and secure with the screw (14).

**38.28 Removing left-hand inset from the fixed side block**

a) After removing the matrix locator (40), remove the side block holding-down screw (39) and then the two inset cover plate screws (38).

b) Release the two side block inset screws located on the outside of the side block. These screws pass right through the side block and pull the side block inset firmly into its seating.

c) Once again, with the aid of a piece of lead product, tap on the two screws to release the inset from its seating, taking care that it does not fall forward on to the base of the mould.

d) Complete the withdrawal of the two screws, and the side block can then be thoroughly cleaned in preparation for the replacement inset.

**38.29 Replacing left-hand inset in the fixed side block**

a) Check first to make sure that both the inset itself (6) and its locating faces on the side block are perfectly clean, smear lightly with Mould Oil No. 1 – then place the inset in position.

b) Replace the two side block inset screws on the outside of the side block and lightly tighten them.

c) Replace the two inset cover plate screws (38) and firmly tighten them.

d) Replace the side block holding-down screw (39) and lightly tighten it.

e) Firmly tighten the two side block inset screws on the outside of the side block, holding the inset in position with one hand.

f) Firmly tighten the side block holding-down screw, then check to make sure that the jet block moves freely.

g) Replace the matrix locator (40).

*Note:* A more thorough job of cleaning can be achieved if the fixed side block is removed from the mould base by releasing the other two holding-down screws (17) and (41) and the three horizontal screws (34). This can be done before you remove the inset. It is important, however, that you remember to firmly secure the fixed side block in position on the mould base again, before you replace the fixed side block inset, in order to ensure it is correctly positioned in relation to the jet block (36), which must itself be in position whilst this is being done.

**38.30 Replacing fixed side block after removal for cleaning**

- a) Again ensure all the parts are perfectly clean.
- b) First make certain the jet block is in position on the mould base.
- c) Locate the fixed side block in position on the mould base, insert the three holding down screws (39), (17) and (41), and the three horizontal screws (34), and firmly tighten them to secure the side block in its correct position.
- d) Release the centre holding-down screw again, withdraw it completely and proceed to replace the fixed side block inset as instructed in Section 29.

**38.31 Preparing mould for casting full-faced rules**

- a) Remove the insets from the mould and replace with the correct insets for full-faced rules according to the size to be cast, using the special recessed insets for 1 pt.
- b) Assemble mould blade and distance pieces of the correct point size, marked FFR.
- c) Assemble the mould complete as for casting low leads, using the special low blade cap marked FFR which is used only for full-faced rules.

**38.32 Assembling the mould**

- a) Ensure the mould is equipped with the required mould blade, distance pieces, insets and blade cap or matrix for the product to be cast, dismantling the mould and changing insets as necessary as detailed in Sections 25 to 29 inclusive. (You also need a piece of product of the correct point size, cast from the same mould.)

All the required parts are contained in the mould box.

- b) Smear the mould blade with either castor oil or Mould Oil No. 1, and place in position in the mould, together with the correct matching distance pieces for the type of product to be cast. These must also be smeared with a little oil. (Mould Oil No. 1 is not recommended for use with low grade metals.)
- c) Place the adjustable side block (3) in position against the distance pieces and make sure the lead clamp screw (21) is not contacting the spring block (1).
- d) Secure the adjustable side block in position, by inserting first the five vertical screws provided (making them finger-tight only), two (16) being located near the mould lead clamp lever as indicated, two others (5) at either end of the side block, whilst the fifth one (11) is positioned in the middle. *These vertical screws must be inserted first.*
- e) Now insert the three horizontal bolts (37), adjusting them similarly by hand until they are just finger-tight.

- f) Lightly tighten the vertical screws with a spanner.
- g) Lightly tighten the horizontal bolts with a spanner.
- h) Firmly tighten the five screws and the three horizontal bolts in the same order, that is, the vertical screws first.
- i) Make sure the mould blade is quite free to move its full traverse between the side blocks when the lead clamp is released.

The mould is now ready to be attached to the main stand of the machine.

**38.33 Setting up  
the mould on  
the machine**

- a) First move the mould blade slide (44) right forward and connect the blade connection (43), using the mould blade fork connecting pin. This you must remove from the slide and re-insert, passing it through the blade connector, turning it clockwise until it just grips, and tightening with the set-screw.
- b) Now turn the machine to approximately  $20-30^{\circ}$  to conveniently position the hook of the counter bracket jet block driving rod (62) to engage the mould jet block (36).
- c) Place the mould in position on the main stand of the machine, pushing the jet block forward and raising it a little to engage the hook of the jet block with the jet block driving rod.
- d) You must now secure the mould to the main stand, first with the two eccentric mould clamps (61), to bring the mould to bear against the locating faces of the counter bracket (50) and the wedge screw housing (49), fitting the clamp nearest the melting pot first. Secure the mould to the main stand with the four mould screws.
- e) Hold the straightening roller (25) by means of the roller carrier cam located on top of the adjustable side block (using a screwdriver) and push the sample strip product into the mould opening. Make certain you insert the product far enough to ensure it will be covered by the matrix or cap, remembering that this portion of strip acts as the front wall of the mould for the first cast.
- f) Place the matrix locator (40) in position on the fixed side block (28), after first making absolutely certain that all the contacting faces are perfectly clean.
- g) Take the 6-em border length gauge, and carry out the mould blade sizing mechanism adjustments for casting strip material, detailed in 9.4.
- h) Adjust the wedge screw of the mould blade sizing mechanism to position the mould blade for the size of cast required, and set the counter drum scale of the counter mechanism to produce the requisite number of casts for the desired length of sheared strip.
- i) Adjust the matrix setting plate (15) to conform with the basic length of cast in ems, in accordance with the wedge screw em scale setting already made. This applies equally when casting both rules and low leads, since low blade caps must be similarly positioned against the matrix setting plate when low leads are being cast.
- j) Place the required rule matrix (or low blade cap) in position against the matrix locator (40) and the matrix setting plate (15), bearing in mind that if you are casting rules you must first fill the open end of the matrix with soap which is sufficiently soft not to crumble. This ensures you do not have a

splash on your first cast, should you not have an appropriate piece of rule to use instead. The identification markings of the low blade cap or matrix must be in view on the side.

If casting low leads, you place the low blade cap on top of the mould so that the projection enters the mould opening, whereas for high leads you position the high lead cap resting on the mould, somewhat similar to a matrix; except that the matrix setting plate is not used. The high lead cap, which has markings on two sides, must be positioned with the required size displayed on top.

k) After having correctly positioned the matrix (or high lead cap), place the matrix clamp pad (10) on top of the spring block cover plate (13) and lightly tighten the clamp screw (18) which is located in the adjustable side block. (*It is important to remember that the matrix clamp pad must never be used together with low blade caps as used for casting low leads and full-faced rules.*)

l) Now place the triangular-shaped matrix clamp (7) in position over the matrix locator (side) on the fixed side block, with the apex of the triangle sitting on top of the rule matrix or blade cap. Secure the clamp in position with the clamp screw (4) which must be tightened with the special locking key provided.

m) Release the clamp pad screw again and retighten to make absolutely certain that the matrix is correctly seated on the mould.

#### 38.34 Connecting the mould to the counter bracket lead clamp lever

a) The connection between the mould and the counter bracket is completed by linking the mould lead clamp lever (22) with the lead clamp intermediate lever rod (52) by means of the yoke pin (54).

b) Check that the mould lead clamp lever is correctly adjusted as previously described,  $\frac{3}{16}$  in (4.763 mm) away from the main stand.

#### 38.35 Other attachments and connections

a) Attach the correct water supply piping. It is clearly marked L & R FURNITURE.

b) Fill the adjustable drip feed mould oiler with oil, connect up the appropriate oil pipe assembly, and place the oiler valve lifters in the vertical position to allow the oil to feed through. Also fill the oil holes in the mould.

Refer to 20.2 in connection with the adjustable drip feed mould oiler.

c) Ensure that the lead stacker and the lead guide bracket (57) are attached on the main stand, together with the cutter blade bracket (55). These parts are referred to in Chapter 14. Fit the galley side wall (58) on the galley plate (59), locating the side wall key in the keyway on the shear block (56), and placing the other end on the galley side wall locating stud.

d) Reconnect the mould blade slide drive lever connecting tube (47) to the intermediate lever, engaging the ball end in the hole marked 'Leads'; ensuring the snug pin is engaged in the slot and securing with the ball end nut.

#### 38.36 Final adjustments and checks before casting

a) Quickly check over all the attachments, settings and adjustments you have completed and re-assure yourself that everything is as it should be; ensuring at the same time, that all relevant connections, settings and adjustments have been completed, in respect of the product to be cast.

Set the Varigear gear box for the required speed range for the product being cast, as indicated in the 'Product Information Table'. Make sure the lead mould blade stop lever handle is in the position marked 'Leads'. Turn on the water supply; check the flow at the water supply tap and adjust as necessary.



b) Insert the piston, raise the melting pot and turn the machine to the casting position by hand, taking care to ensure that the pump body operating rod lever is under the crosshead stud.

c) Before you commence casting, rotate the machine once by hand with the pump locked out, then engage the pump and rotate once more by hand to make the first cast and to establish that both the mould and the machine are working correctly before starting up under power.

If the type carrier cam lever plunger throws out of engagement, the mould should be warmed up by swinging the pump into position for a short time before you subsequently commence casting.

d) Finally, provided that before you prepared the mould for casting, you fitted the  $\frac{7}{8}$  in pump (with long stroke piston) and the No. 10 nozzle, and made any necessary adjustment to bring the metal to the required temperature in accordance with the 'Product Information Table', you can commence to cast.

Refer to Chapter 15 dealing with the pump mechanism, and Chapter 41, 'The production of good type'.

#### **Instructions for casting various products from the mould**

**38.37 Low leads** When casting low leads, the mould must be equipped with low lead blade, low lead cap and distance pieces of the required point size, together with the matrix locator (40), matrix setting plate (15) and the matrix clamp (7). *Do not use the clamp pad.*

Remember to use the special recessed side block insets for 1 pt only.

**38.38 High leads** When casting high leads, the mould must be equipped with high lead blade and distance pieces of the required point size, together with the high lead cap (9), matrix locator (40), matrix setting plate (15), matrix clamp pad (10) and the matrix clamp (7).

Remember to use the special recessed side block insets for 1 pt only.

The high lead cap has to be positioned one way for 1 pt, and another way for  $1\frac{1}{2}$  pt to 3 pt. The cap is marked accordingly, and it must be located in position on the mould with the required size displayed on top.

**38.39 Rules** When casting rules, the mould must be equipped with high lead blade, distance pieces and the rule matrix of the required point size, together with the matrix locator, matrix setting plate, matrix clamp pad and the matrix clamp.

Remember to use the special recessed side block insets for 1 pt only.

**38.40 Full-faced rules** When casting full-faced rules, the mould must be equipped with the correct insets, distance pieces, blade, blade cap and matrix clamp, all of which are clearly marked FFR; also the matrix locator (40) and the matrix setting plate (15). *Do not use the clamp pad.*

Remember to use the special recessed side block insets for 1 pt only.

**38.41 Suggestions for casting satisfactory product** This is a brief résumé of the several points raised in the foregoing detailed instructions with regard to the 1-3 pt lead and rule mould, much of which is also covered to some considerable extent in Chapter 15 which covers the pump mechanism, and Chapter 41 which deals at length with the many factors involved in the casting of good type.

- a) Remember to frequently clean both the nozzle and the pump, using the drills provided.
- b) Always keep the surface of the molten metal clean and free from dross. This will allow ejected jet tangs to melt instantly on falling into the pot.
- c) See that the crosshead stud is adjusted as low as possible for 1-1½ pt and raised when casting 2-3 pt.
- d) Do not forget to adjust the temperature regulator as necessary, when changing style of product or from one point size to another, so that the metal will be at the required heat when you are ready to commence casting.
- e) Always test to check that the product is straight as soon as it is fusing correctly. Cast two long strips and lay them on the galley bracket, foot to foot. If the feet do not touch right throughout their length, the roller carrier actuating screw (26) must be adjusted until they do.
- f) If the cast strip is marked on the side, it usually indicates 'tinning' of the facing plate of the side block, against which the product is pressed when clamped.

Every time the mould is changed over from one size or type of product to another, it is advisable to rub both the facing plate and the insets with a piece of lead product to remove any accumulation of unwanted metal.

- g) If the overall length of the product is short to an extent which cannot be otherwise accounted for, the lead clamp screw (21) may not be correctly adjusted, thereby restricting ejection; or the cap or matrix may be incorrectly located.
- h) If the product is too long overall, it could again be due to incorrect adjustment of the lead clamp screw, whereby the product is not clamped firmly during casting; or the screw itself could require oiling - a point you should bear in mind from time to time.
- i) Make certain you always have a piece of product in the mould before applying pressure to the lead clamp lever (22). Failure to do this could cause the spring block to be unduly strained.
- j) Make a point of occasionally checking to ensure that the oil has a clean and unobstructed passage through the small oil holes in the side blocks and jet block. Use an air line to assist you when necessary.

#### 38.42 Removing mould from the machine

- a) First, run the metal pot right down and swing it back to its fullest extent, out of engagement with the machine.
- b) Turn the machine by hand to approximately 170° to release the tension on the mould blade slide drive lever connecting tube and enable you to disconnect it from the intermediate lever. Disengage the ball end by removing the ball stud nut, replacing the nut on the stud for safe keeping.
- c) Raise the mould blade stop lever handle to its uppermost position and manipulate the intermediate lever by hand to bring the mould blade forward, clear of the wedge screw housing.
- d) Place the mould oiler valve lifters in the horizontal position to cut off the oil drip feed to the mould and jet block.

- e) Turn off the water supply at the main valve and disconnect the water piping assembly from the mould, and from the stud on the main stand of the machine.
- f) Disconnect the mould lead clamp lever (22) from the lead clamp intermediate lever rod (52).
- g) Remove the remaining product from the mould and preserve it as your sample product, if you have not already put a piece aside for this purpose.
- h) Remove the four screws which secure the mould to the main stand, and the two eccentric mould clamps. Move the front one first and leave the one nearest the melting pot until you are about to remove the mould from the machine.
- i) Now pull the mould towards you until the mould blade is clear of the blade connection, and the jet block is against the jet block stop. Then raise the 'ejection' end of the mould until the jet block is clear of the hook of the jet block driving rod.
- j) Finally, remove the matrix clamp, locator, matrix or cap, etc. and the mould blade and distance pieces. Blow the water out of the mould waterways, with the aid of an air line; blow a little oil through and then carefully and thoroughly clean and oil the mould before returning it to the mould box. At this juncture you should make a point of checking that the several blades, insets and various parts and sample strips are all assembled in the box in an orderly fashion before putting it away.

If any defect should develop in the mould which cannot be attributed to any specific cause, or which you are unable to correct yourself by carefully following the foregoing instructions and others relevant to the casting of good product touched on throughout the manual, the complete mould should be returned to The Monotype Corporation Ltd for examination, repair and adjustment. When returning a mould, you should also include a few pieces of the defective product and jet tangs, together with a note outlining the details of your trouble.

#### 38.43 **Cleaning the jet block**

You should make a point of frequently removing the jet block for cleaning. Generally speaking, it will only be necessary to remove the jet pusher (30), smear it with castor oil (Mould Oil No. 1, provided low-grade metal is not being used) and replace it in position. If, however, the faces of the jet block require cleaning, proceed to do so as follows:

Remove the large plate only, by releasing the six screws (32). The small plate must not be removed under any circumstances. Clean the angle faces on both the plate and the pusher (30), using a piece of lead rule and nothing else. No other material or abrasives of any kind must be used for this purpose.

Thoroughly clean all other faces of the jet block, including both the key and the keyway.

To re-assemble the jet block, replace the large plate and secure lightly in position with the six screws (32); then oil and replace the pusher (30).

Now release the locking screw of the eccentric pin (33) and adjust the position of the large plate by means of the eccentric pin, until the pusher is a good sliding fit; then lock the eccentric. Complete the re-assembly by firmly tightening the six screws which secure the large plate, then finally smear all the jet block faces with oil before replacing it in the mould.

# CHAPTER 39

## Super caster lead and rule mould 4–18 pt

This mould is designed to cast high and low leads, rules, full-faced rules, clumps, dashes and continuous borders, in any point size in the 4–18 pt range, as specified when ordering. The mould is normally supplied equipped for 6 pt and 12 pt only. Auxiliary parts can also be supplied for casting full-faced rules and 12 pt and 18 pt tie-up slugs.

The mould functions much the same as the 1–3 pt strip mould, its greater size and product range, however, also includes clumps, decorative dashes (cast from matrices in one piece from 9 ems to 16 ems long) and a wide variety of continuous borders produced from matrices which are automatically lifted off the mould after each successive fusing cast.

The various point sizes are obtained by the use of interchangeable mould blades and distance pieces (in conjunction with the relevant blade cap or matrix as necessary). Three sets of mould side block insets are available, special insets being required for full-faced rules and also for tie-up slugs.

The fundamentals of the mould again consist of two side blocks which are fixed to the mould base, one of which is adjustable; together with a jet block which likewise provides both part of the floor and the jet aperture of the casting cavity, and a means of shearing and ejecting the jet tang from the cast product, thus enabling the mould blade to push it forward to make room for the next cast to be formed immediately behind it.

The mould, when set up on the machine, is linked with the counter bracket and the mould blade slide drive lever. The jet block is linked with the type carrier cam lever, whilst the matrix cam lever in this instance controls both the mould lead clamp lever which clamps the cast product in the mould, and the matrix lifter which is used when casting dashes and continuous borders.

The matrix lifter attachment has to be fitted to the counter bracket as required, and secured in position with the matrix lifter bracket hexagon screw (71). The matrix lifter wedge spring box (68) runs through the aperture provided in the counter bracket and must be connected to the matrix cam lever, linking the matrix lifter wedge spring box yoke to the upper of the two holes, by means of the yoke pin.

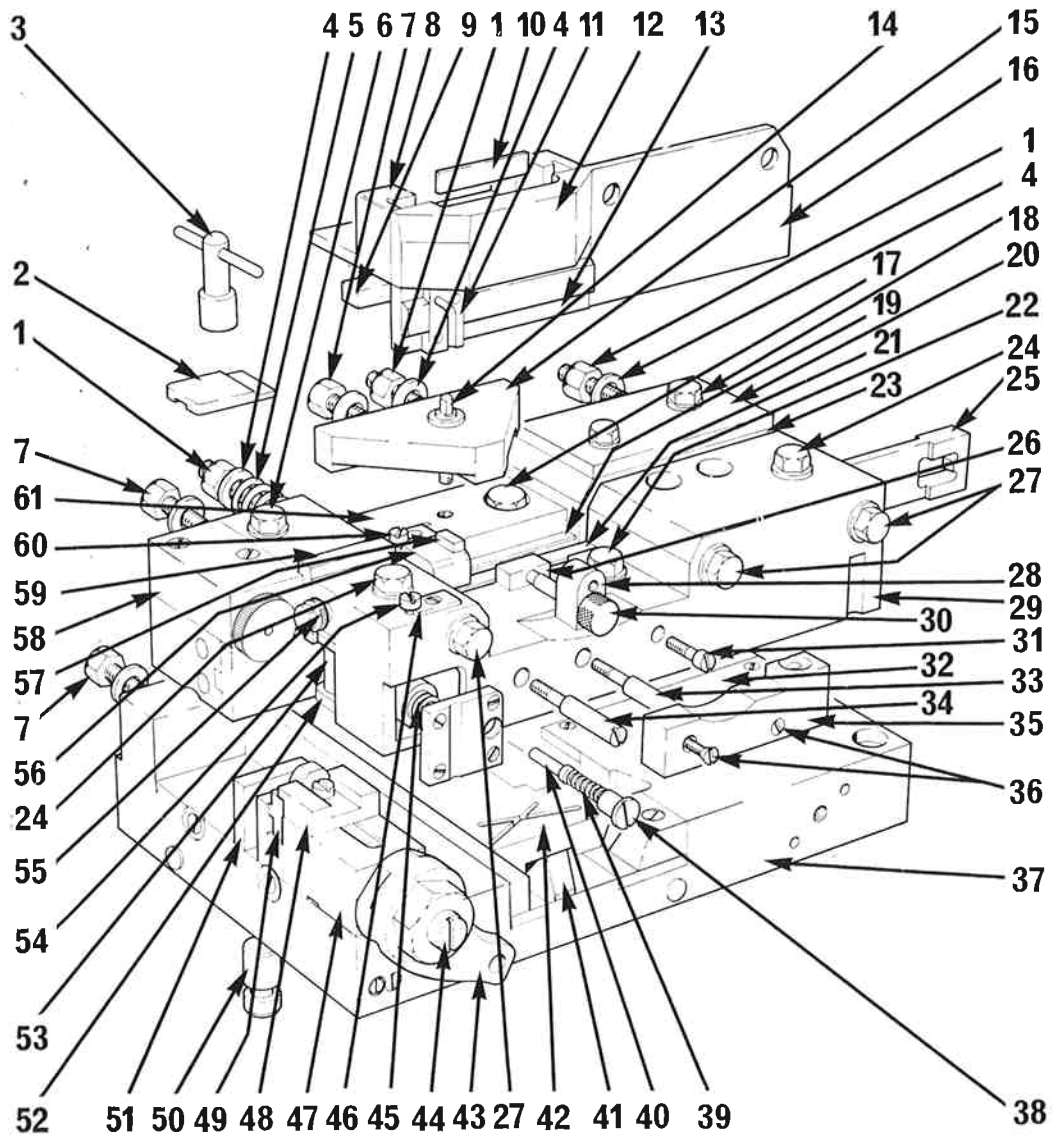
The action of the cutter mechanism and the lead stacker, to which the counter mechanism is linked, is the same as with the 1–3 pt mould, except that the cutter blade itself (which is not required for shearing when casting dashes and clumps) is reversed and used for stacking the product on the galley.

Refer to Chapter 13 for detailed information on the counter bracket, and Chapter 14 in connection with the strip cutting and stacking mechanism.

### Description of the main parts of the mould

#### 39.1 Mould base

The mould base (37), to which the side blocks are secured, provides a base facing strip (32) on which the mould blade travels, the jet cam (41) which operates the jet block jet pusher, the supporting pad (50) used when producing dotted rules, and the nozzle seating plate which is located on the underside.



- 39.2 **Jet block** The function of the jet block (42) is the same as its counterpart on the 1-3 pt mould. It is designed to provide part of the floor of the casting cavity and the jet aperture through which the molten metal is injected. Its movement is controlled by the type carrier cam lever extension to which it is connected via the jet block driving rod (80). This movement serves to shear and subsequently eject the jet tang out of the block after each cast is completed, as the tang comes into contact with the jet stop which deflects it clear of the jet block, through an aperture in the mould base and back into the melting pot.
- 39.3 **Side block (fixed)** The fixed side block (20), which remains permanently attached to the mould base (except when stripped for cleaning), carries the left-hand side block inset (19), the matrix locator (61), the matrix guide (8), the matrix sealing slide (57) and the matrix clamp (15). The locator for the dotted rule attachment (58) is positioned at the front of the block.
- 39.4 **Side block (adjustable)** The adjustable side block (29) carries the straightening device (52), the oil channel block (35), the friction plunger (40) and the right-hand side block inset (21).
- 39.5 **Straightening device** This consists of a roller (53) which is designed to direct the product as it leaves the mould. If the product has a tendency to rise, the knurled head screw (55) at the forward end of the block should be turned anti-clockwise until satisfactory straight product is being produced. Strip should be checked for straightness as instructed in Section 49 which follows.
- 39.6 **Dotted rule supporting pad** This device (50), which can be brought into use as required, will (in conjunction with the dotted rule attachment) transform plain strip rule into dotted rule as it is ejected from the mould. It is located in the mould base where the cast strip leaves the mould, and to bring it into operation it must be raised into contact with the underside of the adjustable side block. When not required, it should be locked out of action in its lowest position.
- 39.7 **Friction plunger** The friction plunger (40), located at the forward end of the adjustable side block, is designed to prevent the cast product moving back with the mould blade when the blade is withdrawn after pushing the cast strip forward to make room for the next fusing cast.
- 39.8 **Mould blades** The mould blades (25), like those of the 1-3 pt mould, are constructed in one piece. They are, however, somewhat different in appearance, being square at the front edge, of more robust design and without shoulders.  
Three mould blades are supplied for each point size; one for casting low leads, one for high leads, rules, dashes, clumps and continuous borders, and one for full-faced rules. They are connected direct to the mould blade slide by means of the mould blade fork connecting pin and secured with the set screw, no blade connection being necessary.
- 39.9 **The distance pieces** Distance pieces, (23), (59) and (49), are provided for assembly in the mould, to adjust it for casting in any desired point size. Whereas only one distance piece for each point size is supplied for the front end of the mould, three larger distance pieces are provided in each point size for the other end, where the distance piece sits directly on top of the mould blade. The ones used for

full-faces rules are marked FFR in addition to the point size, whilst those used when casting low leads (marked for point size only) can be distinguished from their counterparts (similarly marked) used for high leads, rules, dashes, clumps and continuous borders by the difference in height, the former being taller than the latter.

The combination of the required mould blade and correctly matched distance pieces (the front one for point size only, and the rear one for both point size and product) therefore controls the width of the casting cavity formed between the interchangeable side block insets (21) and (19) which line the walls of the side blocks, according to the nature and point size of the product being cast.

#### 39.10 Side block insets

The interchangeable side block insets are used to line the walls of the side blocks to form the casting cavity of the required height according to the exact nature of the product.

Three pairs of insets are available, one of which is used for both high and low leads, rules, dashes, clumps and continuous borders, whilst the others are used only when casting full-faced rules or tie-up slugs.

It is essential that you should remember, whenever you are assembling mould insets, to ensure that the faces of both the insets themselves and the side block walls against which they abut are absolutely clean.

#### 39.11 Lead clamp

The lead clamp (51) and the lead clamp screw (44) are located in the lead clamp screw block (47) which is secured to the mould base at the forward end of the adjustable side block.

The purpose of the lead clamp, operated by the mould lead clamp lever (43), is to hold the cast portion of the strip firmly in the mould whilst each successive fusing cast is being made. This ensures that the cast product (which acts as the front wall of the casting cavity) is not pushed forward out of the mould by the force of the molten metal injected into the cavity behind it.

The clamp pressure is automatically released between each cast to allow the mould blade to push the product forward to make room for the next injection of metal.

Distance pieces of varying width are provided for insertion between the lead clamp (51) and the lead clamp screw (44) according to the point size of strip being cast. Once the lead clamp has been correctly set to clamp any particular size of product, any other size can be clamped without adjusting the lead clamp lever, merely by inserting the appropriate distance piece.

Note that the lead clamp distance pieces must be correctly positioned. The correct way to assemble them is with the marking indicating the point size displayed on top and reading the same way as the marking on the front distance piece (59).

You should make a point of frequently oiling the threads and the clamping end of the screw (44) by running oil into the slot marked 'oil' on the lead clamp screw block (47).

The action of the clamp is controlled automatically by the lead clamp intermediate lever located on the counter bracket. This is connected to the mould lead clamp lever (43) at one end and to the matrix cam lever at the other, via the lower of the two connection holes provided.

The lead clamp should be adjusted as and when necessary in accordance with the detailed instructions which follow in Section 22.



**39.12 Blade caps and matrices**

The mould casting cavity, which is formed by the front end of the mould blade, the cast product still in the mould at the other end, the jet block floor and the floor of the mould, and the flanking walls formed by the side block insets, is sealed during casting by either a blade cap or a matrix; the former when casting high or low leads, full-faced rules and clumps, and the latter when producing strip rules, dashes and continuous borders.

When casting low leads and full-faced rules, the blade cap is placed on the mould with the projection inserted in the mould cavity, whilst for high leads and clumps a high blade cap is used, which is secured in position sitting on top of the mould. The identification markings must be in view on the side.

Matrices for casting strip rules are likewise positioned on top of the mould, whereas continuous border matrices and those used for casting dashes are lifted off the mould after each separate cast. The latter are each used in conjunction with special matrix holders which are inserted in the matrix lifter (72) located on the counter bracket.

The matrix lifter is operated by the matrix lifter lock wedge (73) and the wedge spring box (68), which you connect to the upper hole of the matrix cam lever.

**39.13 Matrix locator (side)**

The matrix locator, side (61) (to which is attached the matrix locator, end), is placed on the fixed side block (20). It serves to locate the strip rule matrix and has a projection which acts as a splash guard. It also locates the blade caps used for casting low leads and full-faced rules.

It is most essential that the faces of the locator and the surfaces against which it abuts on the side block are absolutely clean.

**39.14 Matrix locator (end)**

The matrix locator, end (56) (which is secured to the matrix locator, side), is provided as a means of setting both the matrix and the blade cap (as used for low leads and full-faced rules) in correct relation to the front of the mould blade, according to the length of the cast. The matrix locator, side (61), bears markings for 4 ems, 5 ems and 6 ems, and the locator (end) must be set to the appropriate mark which coincides with the basic length of cast being used to produce the required length of strip. That is to say, if the wedge screw of the mould blade sizing mechanism has been set to show a basic setting of 5 ems on the wedge screw scale, the matrix locator (end) must likewise be set in the same position.

**39.15 The matrix locator packing piece**

The 0.075 in packing piece (10) is used in conjunction with the matrix locator, (side) when casting 14-18 pt multiple line rules only (and certain 18 pt central rule matrices). It is inserted between the front edge of the matrix locator (side) and the rule matrix, thus positioning the matrix a little further to the right.

**39.16 Matrix sealing slide**

The sealing slide (57), positioned on the matrix locator end, is used to seal the open end of rule matrices when making the first cast, thus obviating the need to use soap for the same purpose in order to avoid a splash.

It is most important that you should remember to always turn the machine by hand when making the first cast. It is also important that you take great care to ensure that you lift the sealing slide clear of the mould face before attempting to eject the cast product from the mould and subsequently proceeding to operate under power.

- 39.17 **Matrix clamp pad** The matrix clamp pad (26) is used with the high blade cap and rule matrices. It rests on the adjustable side block (29) and presses the matrix (or high blade cap) against the locator (side) (or matrix guide) when the cover clamp screw (30) is tightened. The cover clamp screw must be positioned in the lower hole of the clamp screw post (28) whenever the matrix clamp pad (26) is used.  
*The matrix clamp pad must never be used in conjunction with low blade caps such as are used when casting low leads and full-faced rules.*
- 39.18 **Matrix clamp** The matrix clamp (15) is positioned on top of the matrix locator, side, on the fixed side block (20), by means of the matrix clamp screw (14); this secures the blade cap when casting high or low leads, and likewise the rule matrix when casting strip rules. (A special clamp marked FFR is provided for use when casting full-faced rules.)
- 39.19 **Matrix guide** Two matrix guides are available. The matrix guide 7035 (8) supplied with the standard mould is used to position the border matrix holder and dash matrices up to and including 13pt, and for locating the high blade cap for casting high leads of less than 18pt.  
The matrix guide (10431) is used in place of the standard matrix guide when casting continuous borders or dashes in the 14–18pt range, and for locating the high blade cap when casting 18pt high leads. Matrix guide (10431) is clearly marked accordingly.
- 39.20 **Matrix guide cover** The guide cover (12) is used in conjunction with the matrix guide when casting continuous borders or dashes; that is, when the raising and lowering of the matrix is involved. It is held in contact with the matrix guide by the cover clamp screw (30), which must be positioned in the upper hole of the matrix cover clamp screw post (28).
- 39.21 **Matrix guide cover clamp screw** The matrix guide cover clamp screw (30), together with the clamp screw post (28), is located in the centre of the adjustable side block. The cover clamp screw should be positioned in the upper hole when clamping the matrix guide cover (12), and in the lower hole to clamp the rule matrix clamp pad (26).

#### Adjustments

- 39.22 **Adjusting the lead clamp** The following details the procedure for adjusting the lead clamp (51), should it become necessary to do so at any time. Remember, its purpose is to clamp the product firmly during casting and to free it for subsequent ejection.

Make sure first of all that the correct point size lead clamp distance piece (49) is located in position, and that it is correctly assembled with the point size marking upward, and reading the same way as the marking on the distance piece (front).

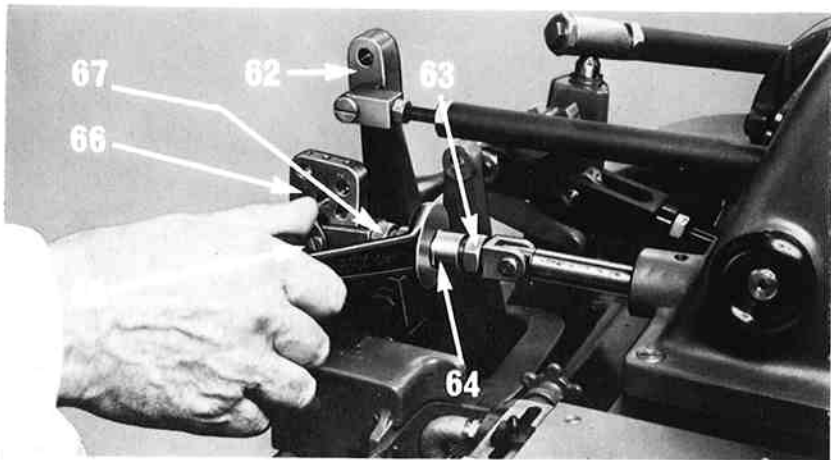
Insert a piece of product in the mould and adjust the lead clamp screw (44) so that when the mould lead clamp lever (43) is in its lowest position (which you can set by turning the machine carefully by hand) the lead clamp intermediate lever spring box rod, located on the counter bracket, is withdrawn  $\frac{1}{4}$  in (6.350 mm) from the spring box (70).

Whilst thus set, and in this position, there should be about  $\frac{3}{8}$  in (9.525 mm) between the underside of the mould lead clamp lever and the main stand of the machine, and  $\frac{3}{16}$  in (2.381 mm) between the inside boss of the lever and the mould.

### 39.23 Adjusting the jet position

This adjustment must also be carried out with the mould on the machine, with the adjustable side block removed. You proceed as follows:

- a) First, ensure that the yoke position pin of the jet block driving rod is connected to the type carrier cam lever extension in the 4-pt position.
- b) Take the jet block setting piece (2) from the mould box and place it so that the flat side (with clearance for the nick) is against the fixed side block (20).
- c) Carefully turn the machine by hand to the casting position at approximately  $220^{\circ}$ .
- d) Release the lock nuts (67) and (63) on the jet block driving rod connecting rod, and turn the rod to either the right or left as necessary to adjust the position of the jet block (42), until the right-hand side of the jet aperture is exactly level with the side of the jet block setting piece (2).



- e) Lock the nuts (67) and (63), taking care to ensure that the flat on the jet block driving rod (80) remains in the horizontal position – and then check the setting once again.

When the jet position has been correctly adjusted in this manner, the jet block driving rod yoke position pin will be correct for all sizes cast on both this mould and the 1-3 pt lead and rule mould, if it is placed in the 12-pt hole in the type carrier cam lever extension.

### 39.24 Preparing the machine to receive the mould

As with the 1-3 pt mould dealt with in Chapter 38, very little preparation is called for before the mould is attached to the machine. Once again you should first of all ensure that the pump is fully prepared in accordance with the requirements of the product you are about to cast, and that the metal will be at the required temperature by the time you are ready to commence casting. The 'Product Information Table' will give you all the information you need in respect of all settings and adjustments required, including metal temperature, piston, pump and nozzle sizes and the position of the piston spring rod nut; together with the recommended casting speeds in revolutions per minute.

### 39.25 Attaching the counter bracket

The counter bracket is attached direct to the main stand, secured in position by four screws and placed with the jet block driving rod connection rod (64) and the lead clamp intermediate lever spring box (70) running right to left

across the machine, their extremities adjacent to the cam levers to which they will subsequently be connected. The matrix lifter attachment is attached as required.

The actuating lever of the counter mechanism must be connected to the actuating rod, via the actuating rod eye, and the weight must be attached to the hook. (The actuating rod is linked with the pump driving rod, and thus imparts its movement to the counter mechanism each time a cast is made.)

Refer to Chapter 13 for detailed information on the counter mechanism and the function of the weight.

### 39.26 Connecting the counter bracket to the cam levers

Connect the counter bracket to the cam levers as detailed in Chapter 13, linking the jet block driving rod (80) with the 12-pt hole of the type carrier cam lever extension (66), and the lead clamp intermediate lever rod end to the matrix cam lever, via the lower of the two holes.

Care must be taken to ensure that the yoke position pin screw (65) is set in the correct hole for the point size of product being cast, when linking the yoke position pin to the 12-pt hole in the type carrier cam lever extension.

An outline description of the several parts which comprise the counter bracket and their function in the casting of strip material in conjunction with the lead and rule moulds is also contained in Chapter 13.

### 39.27 Preparing the mould for casting

When preparing the mould for casting, you must ensure it is equipped with the required mould blade, distance pieces, insets and blade cap or matrix for the product to be cast. You also need a piece of product of the correct point size, cast from the same mould. All these are contained in the mould box, and you should be sure you retain a newly cast piece of product on completion.

Preparation of the mould will sometimes involve changing insets, whilst on other occasions it will only be necessary to change the mould blade and distance pieces. A different set of insets is required for full-faced rules, and a special inset (right-hand) is used when casting tie-up slugs.

The utmost care must be taken to ensure that the mould parts do not suffer any damage, and absolute cleanliness must be maintained throughout. It is therefore essential that a suitable place is properly prepared for the purpose and covered with clean paper before you begin the operation. A comfortable, smooth and level, wooden or linoleum-covered workbench is ideal.

You should never attempt to assemble a mould, working direct on to the metal surface of the main stand of the machine. However, when making a change during casting, which does not involve changing insets and the consequent necessity to remove the mould from the machine, the necessary parts (mould blade and distance pieces, etc.) might well be laid out on the galley tray, provided it is covered first with a clean, soft cloth.

The sharp edges of all the mould parts must be carefully preserved if the mould is to function properly. Always place the parts down on the bench with care – do not drop them, or rub one part against another for any reason whatsoever. Clean them where necessary with a piece of lead product, whilst being careful even so not to cause scratches with the edges or corners in the process. Lead you will find, if used carefully and with patience, will always remove any lead deposit. Never attempt to lap or polish any of the mould parts with oil-stones or other abrasives, or faulty product will inevitably result.

The above must be borne in mind whenever you are dismantling or assembling the mould, changing insets or stripping the mould down for cleaning.

### 39.28 Dismantling the mould

When dismantling the mould on the workbench, you must first remove the matrix clamp (or matrix guide) together with the matrix or cap and the matrix locator, etc. The adjustable side block can then be removed by taking out, first, the three horizontal bolts (27) and then the three vertical holding down screws (24) and (22). The distance pieces and the mould blade can then be removed.

This is as far as it is necessary to dismantle the mould for a product change involving mould blade and distance pieces only – when you are not concerned with changing insets.

During casting, the mould can be partially dismantled in this way without removing it from the machine, when making a product change which does not involve a change of insets, provided due care is exercised as stressed previously. You must first run down the metal pot and swing it back, away from the machine, and disconnect the mould lead clamp lever (43) from the lead clamp intermediate lever rod (74).

The mould must be dismantled on the workbench when insets are being changed. When changing insets during casting, the mould must be removed from the machine, as instructed in Section 50 at the end of this chapter.

### 39.29 Instructions for changing insets

Before attempting to remove insets, you must first dismantle the mould – on the workbench, as instructed in Section 28 – maintaining scrupulous care as already emphasised.

The side blocks and the insets must be thoroughly cleaned each time a change is made. Failure to do this can result in the insets being incorrectly seated, and the consequent casting of faulty product, or possible mould seizure.

### 39.30 Removing right-hand inset from the adjustable side block

- a) Take off the oil channel block (35) by removing the two screws (36).
- b) Remove the short inset screw (31) which is located towards the rear of the mould.
- c) Remove the long inset screw (33) which is located in the centre, and place it in the hole from which the short inset screw (31) was removed.
- d) Free the other long inset screw (34) and then push on both the long inset screws to remove the inset from its seating in the side block, whilst taking care to see that it does not fall and suffer any damage in the process.
- e) Thoroughly clean all the contacting surfaces and recesses of the parts concerned.

### 39.31 Replacing right-hand inset in the adjustable side block

- a) First make absolutely sure that both the inset itself (21) and its locating faces on the side block are perfectly clean – then place the inset in position.
- b) Replace the three inset screws, ensuring you return the short one (31) to the rear end of the inset.
- c) Lightly tighten all the inset screws.
- d) Firmly tighten all the inset screws.
- e) Replace the oil channel block (35) and secure with the two screws (36).

**39.32 Removing left-hand inset from the fixed side block**

- a) After having first removed the matrix locator (61), remove the side block holding-down screw (22). (This will have already been done if the side block has been removed from the mould base.)
- b) Remove the short inset screw (31) which is located towards the rear of the mould.
- c) Remove the long inset screw (33) which is located in the centre, and place it in the hole from which the short inset screw (31) was removed.
- d) Free the other long inset screw (34) and then, once again, push on both the long inset screws to remove the inset from its seating in the side block, taking precautions once more to ensure it does not fall and suffer any damage.
- e) Thoroughly clean all the contacting surfaces and recesses of the parts concerned.

**39.33 Replacing left-hand inset in the fixed side block**

- a) Check first to make sure that both the inset itself (19) and its locating faces on the side block are perfectly clean – then place the inset in position.
- b) Replace the three inset screws, ensuring you return the short one to the rear end of the inset.
- c) Lightly tighten all the inset screws.
- d) Firmly tighten all the inset screws.
- e) Replace the side block holding-down screw (17). (This you do only when the side block is assembled on the mould base.)

*Note:* It is again emphasised that a more thorough job of cleaning can more easily be achieved when the fixed side block is removed from the mould base. This you do by removing both the three horizontal holding-back screws (7) and the three holding down screws (6), (17) and (18), and you can do this before you remove the inset. It is important, however, that you remember to firmly secure the fixed side block in position on the mould base again before you replace the fixed side block inset, in order to ensure it is correctly positioned in relation to the jet block (42) which must also be in position in the mould when this is being done.

**39.34 Replacing fixed side block after removal for cleaning**

- a) Again ensure all the parts are perfectly clean.
- b) First make certain the jet block is in position on the mould base.
- c) Locate the fixed side block in position on the mould base, insert the three holding back screws (7) and the three holding-down screws (6), (17) and (18), and make them all finger-tight.
- d) Replace the fixed side block inset and lightly tighten the three inset screws.
- e) Firmly tighten the three holding-down screws, then the three holding-back screws, in that order.
- f) Firmly tighten the three fixed side block inset screws, holding the inset in position with one hand.

You can now proceed to completely assemble the mould as instructed in Section 39.

**39.35 Auxiliary parts  
for casting 12 pt  
tie-up slugs**

In order to cast 12 pt tie-up slugs from the 4-18 pt lead and rule mould, the following parts are required:

- a) A special right-hand inset (13) for the adjustable side block. This inset is supplied complete with facing plate (11).
- b) A distance plate (16) which is inserted in the rear end of the mould, against the fixed side block. This distance plate measures approximately 6 points.
- c) The standard low lead blade distance piece for 6 pt product. The distance piece, when in position against the 6 pt distance plate, has the effect of providing a 12 pt distance piece between the side blocks, with clearance for a 6 pt mould blade.
- d) The standard 6 pt low lead mould blade.
- e) The standard 12 pt front distance piece. This balances the combined 6 pt distance plate and 6 pt distance piece located at the rear of the mould.
- f) The standard 12 pt low lead blade cap.
- g) A special friction plunger. This plunger (Part No. 8692) is longer than the standard plunger (8913) used when casting other product from this mould.

**39.36 Preparing  
the mould for  
casting 12 pt  
tie-up slugs**

- a) Remove the right-hand inset (21) from the adjustable side block, and replace with the special inset (13), carefully carrying out both removal and replacement as detailed in Sections 30 and 31.
- b) Remove the friction plunger spring abutment (38) and take out the spring (39) and the plunger 8913 (40). Place the special plunger (8692) in position and replace the spring and abutment. The special plunger, you will observe, is longer than the standard one which you remove.
- c) Remove the cam retaining plate (46) and the cam (54), and take out the straightening device roller carrier (52) complete, together with the spring (45).
- d) Assemble the 6 pt low lead mould blade, the 6 pt low lead blade distance piece (rear), the 12 pt distance piece (front), the distance plate, and the 12 pt low blade cap. Place the distance plate (16) in position against the rear distance piece, replace the adjustable side block and secure with the three horizontal bolts as detailed in Section 39, completing the assembly of the other parts of the mould as for casting 12 pt low leads.

*Note:* The procedure is the same for 18 pt tie-up slugs, though these are best produced from the furniture mould.

**39.37 Auxiliary  
parts required  
for casting  
full-faced rules**

In order to cast full-faced rules, the following parts are required;

- a) Special right-hand inset marked FFR.
- b) Special left-hand inset marked FFR.
- c) Matching high mould blade marked FFR (one for each point size).
- d) Special blade distance piece (rear) marked FFR (one for each point size).
- e) Blade cap marked FFR; special for full-faced rules.
- f) The normal front distance piece (one for each point size). This distance piece is standard equipment of the mould, and only one for each point size is necessary for casting any 4-18 pt material, including full-faced rules.



39.38 **Preparing  
the mould  
for casting  
full-faced rules**

a) Remove the side block insets from the mould and replace with the special insets marked FFR, carefully carrying out both removal and replacement as detailed in Sections 29 to 33 inclusive.

b) Assemble the special high blade, the special rear distance piece and the standard front distance piece; all of the required point size. Replace the adjustable side block and secure with the three horizontal bolts as detailed in Section 39.

Complete the assembly of the other parts of the mould as for casting rules, using the special blade cap (marked FFR) in place of a matrix.

39.39 **Assembling  
the mould**

a) Ensure the mould is equipped with the required mould blade, distance pieces, insets and blade cap or matrix for the product to be cast; dismantling the mould and changing insets as necessary as detailed in Sections 29 to 33 inclusive. (You also need a piece of product of the correct point size, cast from the same mould.) All the required parts are contained in the mould box.

b) Smear the mould blade with either castor oil or Mould Oil No. 1, and place in position in the mould, together with the correct matching distance pieces for the type of product to be cast. These must also be smeared with a little oil. (Mould Oil No. 1 is not recommended for use with low-grade metals.)

c) Place the adjustable side block in position against the distance pieces.

d) Replace first the three vertical screws (24) and (22) and then the three horizontal bolts (27) together with the side block spring (5), washers (4) and nuts (1), making them finger-tight only.

e) Lightly tighten the vertical screws with a spanner.

f) Lightly tighten the horizontal bolts with a spanner.

g) Firmly tighten the three screws and the three horizontal bolts in the same order – that is, the three vertical screws first.

*Note:* When casting product up to and including 8pt, however, the front horizontal bolt, which has a spring seating, must be released one-quarter turn after it has been tightened, as the adjustable side block must be under spring pressure.

When casting product over 8pt, the front bolt must be tightened again, as the side block must be locked solid.

h) Place the lead clamp distance piece (49) of the required size in position, and secure in position with the retainer (48) and the screw.

i) Make sure the mould blade is quite free to move its full traverse between the side blocks when the lead clamp (51) is released by the lever (43).

The mould can now be attached to the main stand of the machine.

39.40 **Setting up  
the mould on  
the machine**

a) Ensure that the mould blade slide drive lever intermediate lever is disengaged from its connecting tube (69); then turn the machine to approximately 20-30° to conveniently position the hook of the jet block driving rod (80) to engage with the mould jet block (42).

b) Raise the lead mould blade stop lever to its uppermost position and manipulate the intermediate lever to withdraw the mould blade slide to the rear.

- c) Ease the mould blade forward into the mould as far as it will go.
- d) Place the mould in position on the main stand of the machine, pushing the jet block (42) forward to engage with the hook of the jet block driving rod (80); then move the mould to the left and rear until it butts up against the locating faces of the counter bracket and the wedge screw housing.
- e) Now secure the mould to the main stand, first with the two eccentric mould clamps, to bring the mould to bear against the locating faces of the counter bracket and the wedge screw housing; fitting the clamp nearest the melting pot first. This you must do immediately, then complete by securing it with the four mould screws provided.
- f) Withdraw the mould blade and connect it direct to the mould blade slide with the mould blade fork connecting pin, securing with the set screw.  
It should be noted that the purpose of the pin is to prevent slackness between the mould blade and the slide, and not to lock the two parts together.
- g) Return the lead mould blade stop lever to the 'Leads' position, then check to ensure that the mould blade and slide are quite free when the intermediate lever of the mould blade slide drive lever is operated by hand.
- h) Hold the straightening device roller (53) by means of the roller carrier cam (54) located on top of the adjustable side block (using a screwdriver) and push the sample strip product into the mould opening. Make certain you insert the product far enough to ensure it will be covered by the matrix or cap, remembering that this portion of strip acts as the front wall of the mould for the first cast.
- i) Adjust the wedge screw of the mould blade sizing mechanism to open the mould blade the required amount for the size of cast required, and set the counter drum scale of the counter mechanism to produce the requisite number of casts for the desired length of sheared strip.
- j) Take the 6-cm border length gauge and carry out the mould blade sizing mechanism adjustments for casting strip material, detailed in Section 9.4.
- k) Place the matrix locator (side) (61) in position on the fixed side block (20) complete with the matrix locator (end) (56) as necessary, after first making absolutely certain that all the contacting surfaces are clean.
- l) Slacken the screw (60) on the matrix locator (side) and set the matrix locator (end) to the correct position to conform with the basic length of cast in ems, in accordance with the micrometer wedge screw em scale setting already made. This applies equally when casting both rules and low leads, since low blade caps must be similarly positioned against the matrix locator when low leads are being cast. (The matrix guide (8), together with the matrix guide cover (12) as necessary, are used when setting up to cast high leads, dashes and continuous borders.)
- m) Place the required rule matrix or low blade cap in position against the matrix locator, taking care to ensure that, when using rule matrices, the open end is against the sealing slide (57).

When casting low leads, you place the appropriate point size low blade cap on top of the mould so that the projection enters the mould opening. (The high blade cap used for high leads is positioned in conjunction with the matrix guide, as outlined in Section 45.)

n) *The matrix clamp pad (26), which is provided for use only with rule matrices and high blade caps, must never be used in conjunction with low blade caps, including full-faced rules.*

Place the pad on top of the adjustable side block, and secure it in position bearing against the side of the rule matrix, by lightly tightening the cover clamp pad screw (30).

o) Now place the triangular-shaped matrix clamp (15) in position over the matrix locator (side) on the fixed side block (20), with the apex of the triangle sitting on top of the rule matrix or blade cap. Secure the matrix clamp in position with the clamp screw (14) which must be tightened with the special locking key (3) provided.

p) When using a rule matrix, release the clamp pad screw again and retighten to make absolutely certain that the matrix is correctly seated on the mould, then push the matrix sealing slide (57) down until it contacts with the side block insets (21) and (19), thus sealing the end of the matrix for the first cast.

*Note:* Remember to rotate the machine by hand to make the first cast, and then to raise the sealing slide before ejecting the first cast and commencing to operate under power.

#### 39.41 **Connecting the mould to the counter bracket lead clamp lever**

a) The connection between the mould and the counter bracket is completed by linking the mould lead clamp lever (43) with the lead clamp intermediate lever rod (74) by means of the yoke pin.

b) Check that the mould lead clamp lever is correctly adjusted as previously described,  $\frac{3}{8}$  in (9.525 mm) away from the main stand and with a  $\frac{3}{32}$  in (2.381 mm) clearance between the inside boss of the lever and the mould.

#### 39.42 **Other attachments and connections**

a) Attach the correct water supply piping. It is clearly marked L & R FURNITURE.

b) Fill the adjustable drip feed mould oiler with oil, connect up the appropriate oil pipe assembly, and place the oiler valve lifters in the vertical position to allow the oil to feed through. Also fill the oil holes in the mould.

Refer to 20.2 in connection with the adjustable drip feed mould oiler.

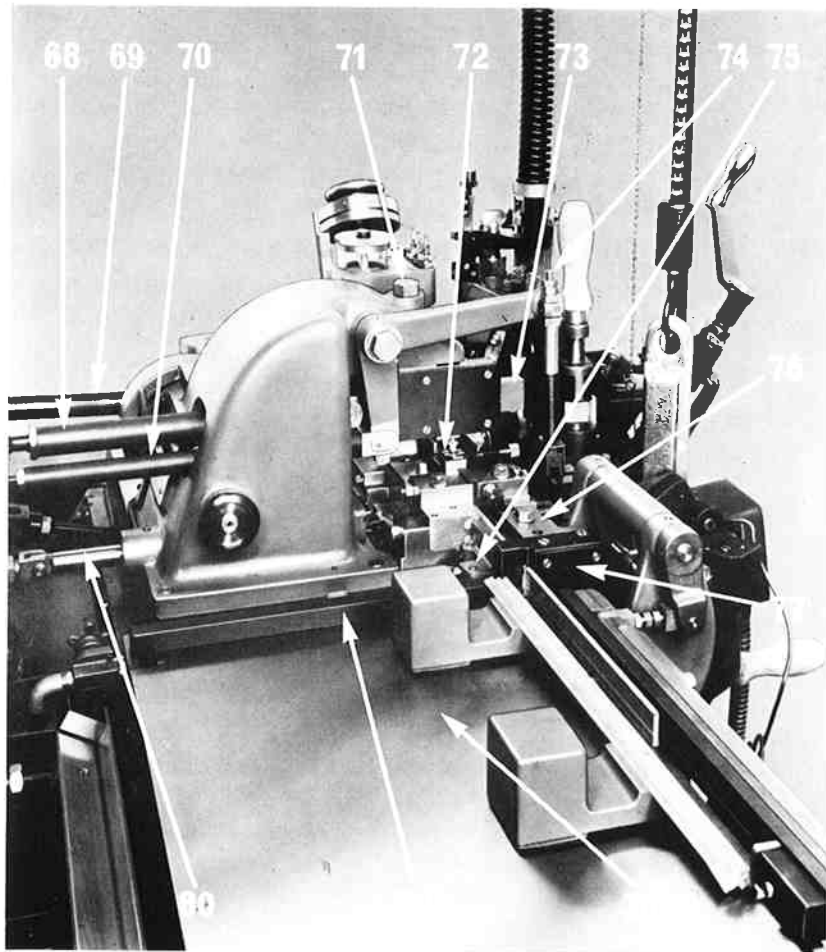
c) Ensure that the lead stacker and the lead guide bracket (75) are attached on the main stand, together with the cutter blade bracket (76). These parts are referred to in Chapter 14. Fit the galley side wall (79) on the galley plate (78), locating the side wall key in the keyway on the shear block (77), and placing the other end on the galley side wall locating stud.

d) Re-connect the mould blade slide drive lever connecting tube (69) to the intermediate lever, engaging the ball end in the hole marked 'Leads', ensuring the snug pin is engaged in the slot and secure the assembly with the ball end nut.

#### 39.43 **Final adjustments and checks before casting**

a) Quickly check over all the attachments, settings and adjustments you have completed and re-assure yourself that everything is as it should be, ensuring at the same time, that all relevant connections, settings and adjustments have been completed, as indicated in the 'Product Information Table', in respect of the product to be cast.

Set the Varigear gear box for the required speed range for the product being cast, as indicated in the 'Product Information Table'. Make sure the lead



mould blade stop lever handle is in the position marked 'Leads'. Turn on the water supply; check the flow at the water supply tap and adjust as necessary.

b) Insert the piston, raise the melting pot and turn the machine to the casting position by hand, taking care to ensure that the pump body operating rod lever is under the crosshead stud.

c) Before you commence casting, rotate the machine once by hand with the pump locked out, then engage the pump and rotate once more by hand to make the first cast and to establish that both the mould and the machine are working correctly before starting up under power.

If the type carrier cam lever plunger throws out of engagement, the mould should be warmed up by swinging the pot into position for a short time before you subsequently commence casting.

d) Finally, provided that before you prepared the mould for casting, you fitted the correct pump and the correct nozzle for your immediate requirements, and made any necessary adjustment to bring the metal to the required temperature (and other settings and adjustments as required) in accordance with the 'Product Information Table', you can commence to cast.

Refer to Chapter 15 dealing with the pump mechanism, and Chapter 41, 'The production of good type'.

### Instructions for casting various products from the mould

39.44 **Low leads** When casting low leads, the mould must be equipped with low lead blade, cap and distance pieces of the required point size, together with the matrix locator (side), the matrix clamp (15) and the correct side block insets.

39.45 **High leads** When casting high leads, the mould must be equipped with high blade, cap and distance pieces of the required point size, also the matrix locator (61), the matrix clamp and the correct side block insets.

For high leads up to and including 12 pt, use the standard matrix guide (8), but for 14–18 pt, the alternative matrix guide must be used.

39.46 **Dashes (and clumps)** When casting dashes, the mould must be equipped with high blade, distance pieces of the required point size and the correct matrix guide, using the standard guide (8) up to 12 pt, or the alternative guide for the 14–18 pt range.

The guide cover (12) must also be used, together with the required dash matrix and matrix holder, and the correct side block insets.

The dash matrix must always be positioned in the matrix holder so that the side on which the size is marked is towards the matrix guide.

(Clumps are cast with the mould similarly equipped, using the required matrix guide, but not the matrix cover, the matrix lifter not being used. The special high blade cap (9) is located in the matrix guide and secured with the matrix clamp (15).)

39.47 **Rules** When casting rules, the mould must be equipped with high blade and distance pieces of the required point size, the matrix locator (side) complete with locator (end) and sealing slide (57), and the matrix clamp pad (26); together with the correct side block insets.

For 18 pt multiple-line rules, the matrix locator packing piece (10) must be placed between the rule matrix and the matrix locator (side).

*Note:* Details concerning the assembly and operation of all the mould parts will be found in Section 39 which deals with assembling the mould, and Section 40 which covers the setting up of the mould on the machine.

39.48 **Continuous borders** When casting continuous borders, the mould must be assembled the same as for casting dashes – but with a border matrix and holder.

The border matrix holder is provided with a matrix sealing plunger which obviates the necessity for using soap to seal the end of the matrix when making the first cast. You must remove the matrix holder from the matrix lifter after taking the first cast, and raise the sealing plunger, checking at the same time, that the cast has not lifted with the matrix.

The plunger can be lifted by means of the knurled knob on top of the matrix holder, and retained in this position by placing the projection at the bottom of the knob in the shallow slot in the holder.

Note that the matrix must be placed in the holder with the open end towards the sealing plunger – and that the matrix lifter (72) must be in its uppermost position when the matrix holder is attached.

The casting length of the border matrix must be carefully set on the micrometer wedge. The standard border length is 6 pica ems (0.996 in), and any variation from this is indicated by the marking stamped on the matrix side. Refer to Chapter 9, 'The mould blade sizing mechanism'.

Before engaging the pump, turn the machine by hand to ensure that the matrix seats on the mould and that when it is in its lowest position, the matrix lifter wedge spring box rod withdraws  $\frac{1}{8}$  in (3.175 mm) from the spring box (68).

Engage the pump and turn the machine by hand again, to make the first cast, before starting up under power.

39.49 **Suggestions  
for casting  
satisfactory  
product**

The following is a brief résumé of some of the points raised in the foregoing detailed instructions with regard to the 4-18 pt lead and rule mould, much of which is also covered to some considerable extent in Chapter 15 which deals with the pump mechanism, and Chapter 41 which is concerned at some length with the many factors involved in the casting of good type.

- a) Remember to frequently clean and drill out both the nozzle and the pump.
- b) Always keep the surface of the molten metal clean and free from dross. Apart from other factors involved, this will allow the ejected jet tangs to melt instantly on falling into the pot.
- c) Make sure that the jet opening is correctly set as explained in Section 23.
- d) Do not forget to adjust the temperature regulator as necessary when changing from one point size or product to another, so that the metal will be at the required heat when you are ready to commence casting again.
- e) When changing product, take a piece that has just been cast and keep it stored in a safe place so that it can be used to insert in the mould for the first cast the next time you are casting the identical product. Mark the product for ready identification as necessary.
- f) Always test to check that the product is straight as soon as it is fusing correctly. Cast two long strips and lay them on the galley bracket, foot to foot. If they do not touch right throughout their length, the roller carrier actuating screw (55) must be adjusted until they do.
- g) Make a point of occasionally checking to make sure that the oil has a clear and unobstructed passage through the oil holes in the side blocks and jet block. Use an air line to assist you if necessary.
- h) Ensure that all settings and adjustments, casting speeds, temperature, pump and nozzle sizes and trip settings, etc. (and the nozzle seating timing mechanism) are always set in accordance with the 'Product Information Table', and in relation to your individual working conditions.
- i) When casting 18 pt material, make sure that the cutter actuating plunger link pin is connected to the outer hole of the cutter actuating plunger link, otherwise the product will hit the lead stacker as it emerges from the mould.
- j) Secure the cutter blade bracket (76) with the  $4\frac{1}{8}$  in (104.775 mm) long hexagon head screw and washer, in addition to those used for the smaller product sizes.
- k) The water flow should be adjusted for the point-size of the product being cast, as indicated in the 'Product Information Table'.
- l) Make sure that the mould oiler is always kept filled with oil during casting, and that the lead clamp screw is lubricated with machine oil.

**39.50 Removing  
the mould from  
the machine**

- a) First, lower the melting pot and swing it back to its fullest extent, out of engagement with the machine; *then switch off the power supply to the motor.*
- b) Turn the machine by hand to approximately  $170^{\circ}$  to release the tension on the mould blade slide drive lever connecting tube, to enable you to disconnect it from the intermediate lever. Disengage the ball end by removing the ball stud nut, replacing it on the stud for safe keeping.
- c) You can now raise the mould blade stop lever handle to its uppermost position and manipulate the intermediate lever by hand to bring the mould blade slide forward, clear of the wedge screw housing.
- d) Place the mould oiler valve lifters in the horizontal position to cut off the oil drip feed to the mould and jet block, and detach the oil pipe assembly from the mould.
- e) Turn off the water supply at the main valve and disconnect the water piping assembly from the mould and from the stud on the main stand of the machine.
- f) Disconnect the mould lead clamp lever from the lead clamp intermediate lever rod.
- g) Remove the remaining product from the mould and keep it as your sample product for use next time, if you have not already put a piece aside for this purpose.
- h) Release the mould blade fork connecting pin and push the mould blade forward clear of the mould blade slide.
- i) Remove the four screws which secure the mould to the main stand and the two eccentric mould clamps. Remove the front one first and leave the one nearest the melting pot until you are about to remove the mould from the machine.
- j) Now pull the mould towards you; then raise the mould until the jet block is clear of the hook of the jet block driving rod.
- k) Finally, remove the matrix clamp, locator, matrix or cap, etc. (together with the matrix guide, if fitted) after which you can remove the adjustable side block and remove the mould blade and distance pieces. Blow the water out of the mould waterways, with the aid of an air line; blow a little oil through and then carefully and thoroughly clean and oil the mould before returning it to the mould box. At this juncture you should make a point of checking that the several blades, insets and various parts and sample strips are all assembled in the box in an orderly fashion before putting it away.

If any defect should develop in the mould which cannot be attributed to any specific cause, or which you are unable to correct yourself by carefully following the foregoing instructions and others relevant to the casting of good product touched on throughout the manual, the complete mould should be returned to The Monotype Corporation Ltd for examination, repair and adjustment. When returning a mould, you should include a few pieces of the defective product and jet tangs, together with a note outlining the details of your trouble.



# CHAPTER 40

## Super caster furniture mould

The furniture mould is designed to cast product to predetermined lengths, and is normally supplied equipped for casting 24pt, 36pt, 48pt, 60pt and 72pt furniture. The mould product range, however, includes a wide range of mounting material, and type-high foundry furniture, 18pt and 24pt tie-up slugs, and 18pt full-faced rules, etc. as listed in 23.18.

Product from the furniture mould is presented on the galley in finished form, in separate completed strips, cast to any desired predetermined length. This is achieved, broadly speaking, by the combination of an adjustable rear wall and blade guide (a special feature of this mould) which can be pre-set for required size of cast, together with a stop which controls the forward movement of the mould blade, and a device which links the stop with the counter mechanism. The latter causes the mould blade to eject the cast strip an additional 5ems in order to produce a longer non-fusing cast, when the requisite number of fusing casts have been completed as determined by the setting of the counter drum.

The required size and shape of product is obtained by the use of core pieces which are inserted in the mould to line the side walls, together with matching caps which seal the top of the casting cavity.

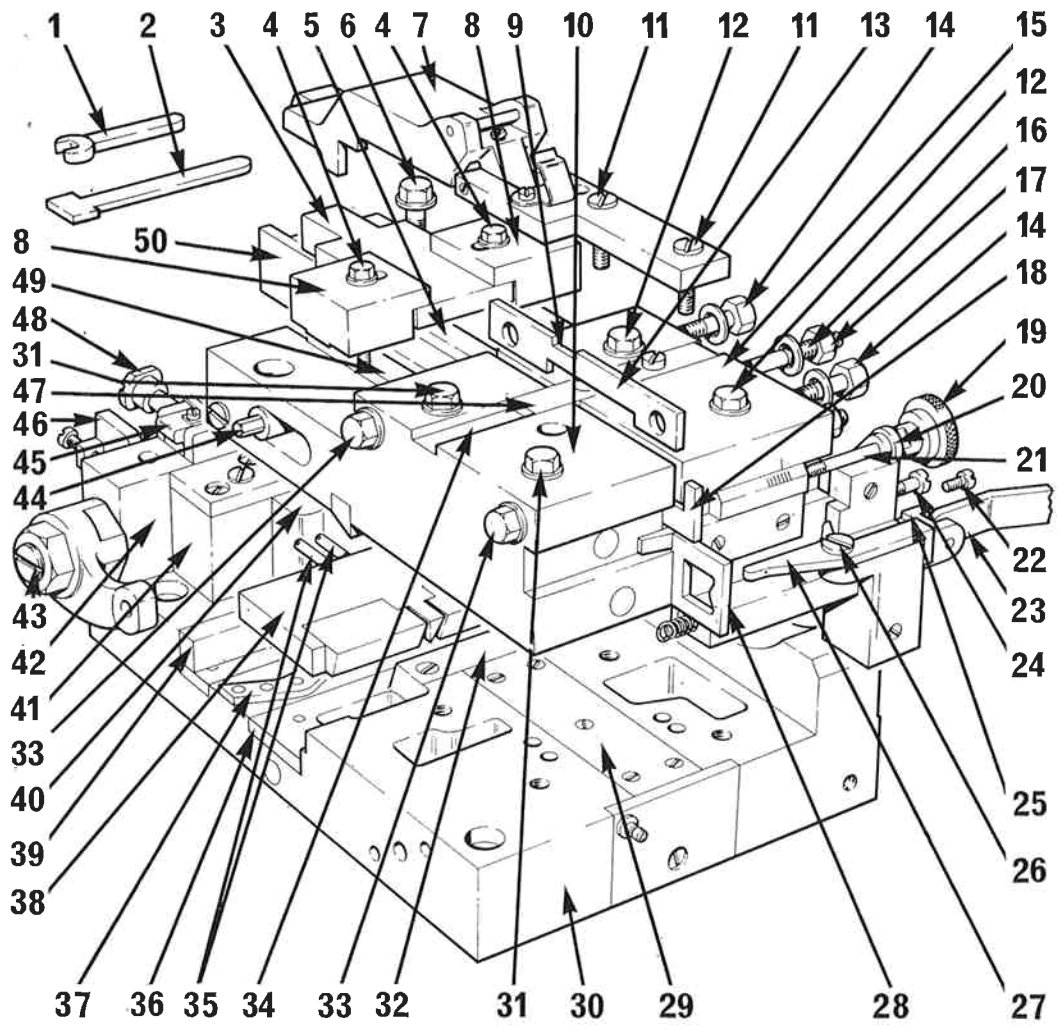
Before going on to a detailed description of the main parts of the mould, some introductory remarks on the blade ejection stops (and the external adjustment) will help you to an understanding of how the mould operates, and the role played by each of the parts involved.

### 40.1 The blade ejection stops

The furniture mould is provided with two stops which control the length of the fusing and non-fusing casts.

The retractable 'ejection' stop (25), which limits the forward movement of the mould blade to the pre-set length for the fusing casts, is controlled by the counter mechanism, being withdrawn by means of the actuating lever link (23) when the required number of fusing casts have been made. The completed length is thereupon ejected further until the upper shoulder of the mould blade comes into contact with the 'non-fusing' stop (21). This additional amount, as controlled by the blade and the stop, will never be less than 5ems, but it can be very slightly increased as necessary to adjust any overall length discrepancy due to contraction of the type metal on cooling. This is accomplished by means of the adjustable stop (21) which consists of a graduated wedge and screw, indicating 0.001 in and 0.01 in from the 5-em addition. By this means, the longer non-fusing cast can be increased by an amount equal to the total overall contraction of the cast strip, up to a limit of 0.06 in, thus ensuring that the completed lengths are consistently cast to the required measure.

Adjustment of the blade stop is by means of a knob (19) which controls a notched nut. By turning the knob clockwise one notch, the non-fusing cast is increased 0.001 in. Ten such notches make 0.01 in, which can be read off on the graduated scale on the side of the wedge (21). The distance between each



graduation represents 0.01 in movement of the adjustable wedge and a consequent increase of 0.01 in the length of the non-fusing cast which it controls.

The retractable ejection stop (25) (which controls the length of the fusing cast), on being withdrawn by the actuating lever link (23), is held back by the retractable blade stop catch (27) which, influenced by a small coiled spring, moves into a recessed groove in the side of the stop and holds it back, thus allowing the mould blade (28) to move forward to the non-fusing stop (21). As the mould blade moves forward, the mould blade slide pushes on the tip of the stop catch (27), which is pivoted on the screw (26); whereupon the other end of the catch is moved out of the groove in the retractable ejection stop, thereby permitting it to move into position again to restrict the forward movement of the mould blade for the fusing casts.

#### **Description of the main parts of the mould**

#### **40.2 Mould base**

The mould base (30) carries the two side blocks, known as the 'side block (large)' and the 'side block (small)'. Both side blocks are adjustable and can be positioned as necessary according to the size and nature of the product being cast. This, in the case of the large side block (15), is achieved by means of packing plates, whilst the ultimate position of the small side block (10) is basically determined by the distance piece (13). The base also provides a facing strip (29) on which the mould blade travels; a jet strip (32); a channel for the jet block (38), together with a jet cam (37) which operates the two jet pushers (35); and the nozzle seating plate (36).

#### **40.3 Jet block**

The function of the jet block (38) is similar to that of its counterpart on the lead and rule moulds, and it likewise provides part of the floor of the casting cavity. It is, however, designed with two jet apertures, whereby metal delivered by the pump nozzle is divided on entering the casting cavity, thus ensuring satisfactory fusing of the product. Its movement is likewise controlled by the type carrier cam lever extension to which it is connected via the jet block driving rod, the yoke position pin being located in the 12 pt position, with the set screw engaging the pin with the connection rod yoke via the hole marked '12 point'.

The movement of the jet block after casting causes the jet tangs to be sheared and subsequently ejected into the melting pot, by the motion imparted to the jet pushers (35) by the influence of the jet cam (37).

#### **40.4 Side block (large)**

The large side block (15) is secured to the mould base by three horizontal screws (14) and (24) and three vertical screws (12) and (6). These screws need only be disturbed when the packing plates are being inserted or removed, or when the mould is stripped down for cleaning. Packing plates, as will be explained, are used when casting certain products.

The facing strip (50) fitted to the large side block is used when casting any size of standard-width furniture. This facing strip must be replaced with a strip of the appropriate thickness for casting product other than furniture.

The side block alignment key (47), which is recessed in the top of the side block, engages with a corresponding key-way (34) in the small side block, when the mould is completely assembled in readiness for casting.

The adjustable blade stop, which controls the non-fusing cast, is recessed into the back of the large side block.

**40.5 Side block (small)** The small side block is secured to the mould base by two vertical screws (31). Two distance piece clamping bolts (33) pass horizontally through the side block and the distance piece (13), and right through the large side block, to lock the mould for casting, positioning and securing the several parts. The alignment key (47) engages both the key-way in the small side block and in a corresponding cut-away portion (9) in the distance piece.

The small side block abuts against the clamping lever assembly (42) which includes the clamping shoe (46) and the friction plate (40). The former clamps the cast product in the mould whilst casting is taking place, and the latter ensures the cast strip remains in position when the clamp is released and the mould blade is withdrawn.

**40.6 Mould blade and adjustable rear wall** The combined assembly of the blade guide and the mould blade (28) which form the rear wall of the mould (both parts of which are adjustable) constitutes a special feature of the furniture mould, and provides a means whereby the same mould blade can be used for a varied size and product range.

The mould blade itself does not have to conform to the shape of the product in order to provide a sealed rear wall for the casting cavity, as is the case with other moulds. Its function is to provide only a part of the rear wall and to act as a 'pusher' to eject the cast product the required distance after each successive cast. There are, broadly speaking, three different rear wall and blade assemblies; one for furniture, one for mounting material, and one for full-faced rules.

The blade (28), which passes through the rear wall to eject the product, is positioned for the required length of cast by adjusting the wedge screw of the mould blade sizing mechanism. The adjustable rear wall is then moved into flush contact with the front of the mould blade to form the rear wall of the casting cavity, which can thus be set for fusing casts from 3 ems to 6 ems long.

The mould must not be set to produce fusing casts in excess of 6 ems - this is the absolute maximum.

The rear wall sits on the mould base on the facing strip (29) on which the mould blade runs, whilst the distance piece (13) positioned on the large side block, above the blade guide, determines the exact distance at which the two side blocks are set, and ensures that the mould blade, and the blade guide as necessary, are free to move between them.

The blade guide locking bolt (16), which passes through the large side block, secures the rear wall in position, in line with the stop face of the mould blade, according to the required length of cast. The rear wall is thus held securely in position, whilst the mould blade is free to pass through it to eject the product.

**40.7 Distance pieces** A distance piece is provided to match each combined blade guide and mould blade assembly, the distance piece in each case being approximately 0.0003 in (0.0076 mm) thicker than the blade, to allow the blade and the blade guide free movement between the side blocks. Each distance piece (other than those supplied as standard equipment for casting furniture) is marked to indicate the product for which it is intended to be used.

The mould is assembled with the required distance piece sitting on top of the blade guide, and held in position by the two horizontal bolts (33) which pass through both side blocks to lock the mould in readiness for casting. The key-way must be uppermost, to engage the side block alignment key (47) which links the two side blocks together.

The distance piece ensures that the right-hand face of the mould blade is always exactly the same distance from the left-hand edge of the mould base, and consequently always correctly positioned for connection to the mould blade slide. It is in order to achieve this that packing plates are used to vary the position of the large side block when casting certain products.

**40.8 Packing plates** Packing plates are inserted between the walls of the mould base and the large side block, and their purpose, as stated, is to position the large side block so that the mould blade and the mould blade slide are in correct alignment, regardless of the nature and size of the product being cast. Packing plates are used as follows:

- a) The two plates marked 'Furniture' are used when casting furniture.
- b) The plates marked 'Foundry Furniture' are used when casting the upper half of foundry furniture.
- c) Plates suitably inscribed are provided for casting 18 pt full-faced rules.

*Note:* Packing plates are not required for casting mounting material.

**40.9 Core pieces** Core pieces for standard furniture sizes are supplied in sets of two for each size of product. Core pieces for other products are marked accordingly.

The core pieces provide the side walls of the casting cavity and they must be positioned in the mould with their squared edges fitted tightly against the rear wall. Their bevelled edges must always face the front of the mould.

Each core piece is held in position in the mould by a core piece screw (44). The core piece screws are passed through the side blocks and tightened with the small wrench (1) provided specially for this purpose.

**40.10 The caps** A cap of the required depth is supplied for each set of core pieces. The caps (3) are inserted in the mould between the core pieces, to seal the top of the mould.

The cap sits on the shoulders of the core pieces and is held in position by the two cap clamps (8), which are, in turn, secured to the side blocks by the cap clamp screws (4).

**40.11 The facing strips** The large side block is supplied fitted with a facing strip (50) which is used for all sizes of standard-width furniture. This facing strip provides a surface in flush alignment with the core piece lining the large side block. The face of the large side block in front of the core piece is thus adjusted to the width of the product that will pass through the mould on being ejected from the casting cavity.

When casting material other than furniture, this facing strip (secured in position by two screws inserted through the back of the side block) must be removed and replaced by a strip of the appropriate thickness, according to the width of the product. Facing strips bear point-size markings accordingly.

**40.12 Clamping block** The clamping shoe (46) located on the clamping block (42) is operated by the clamping lever (45), which is connected to the yoke of the lead clamp intermediate rod (69) located on the counter bracket (68). The clamping lever, controlled by the counter bracket, is thus caused to clamp the product during each successive cast, and to subsequently release it to allow the cast product to

be ejected. This is achieved by means of the clamping screw (43), which transmits the movement of the clamping lever to the clamping shoe. (The friction plate (40) ensures that the product in the mould remains in the position to which it is ejected on completion of the cast.) The clamping shoe lever pivot (48) has two setting positions, and regulates the level at which pressure is applied to the clamping shoe. It must be set in the 60–72 pt position when casting mounting material, 60–72 pt furniture and full-faced rules.

The mould is supplied fitted with the clamping shoe and friction plate used for casting furniture. Clamping shoes and friction plates supplied for casting other products are marked accordingly, and they must be changed as necessary.

#### 40.13 Dismantling the mould

Dismantling of the mould, which involves removing the large side block, is perhaps best carried out with the mould off the machine; but for product changes which require removal of the small side block only, the mould need not be removed.

Suitable precautions must be taken to protect the various mould parts being changed (place a soft cloth on the galley) and due care must be exercised when cleaning as already emphasised in respect of all the moulds (no lapping or polishing of the parts, etc.) and a suitable workbench must be properly prepared.

The mould is dismantled as follows:

- a) Release the two clamp screws (4) and remove the two cap clamps (8); then release the two small screws (11) and remove the guard (7).
- b) Remove the cap (3) and the core pieces (5) and (49).
- c) Release and remove the two horizontal bolts (33) which pass through both side blocks; repeat the procedure with the two vertical screws (31), and the small side block can then be removed.
- d) Remove the blade guide locking bolt nut (17) and remove the locking bolt (16).
- e) Remove the mould blade (28) together with the blade guide and distance piece (13). (The facing strip (50) can also be removed as necessary, by removing the two screws which pass through the back of the large side block.)
- f) Remove the three vertical screws (12) and (6) from the large side block.
- g) Remove the two screws (14) from the back of the large side block, then the blade stop screw bracket screw (22), followed by the holding-back screw (24) (using a screwdriver, and holding the washer against the bracket (20)).
- h) Carefully lift the large side block (15) off the base of the mould. It comes away complete with the adjustable stop (21).
- i) Remove the two packing plates.

*Note:* To complete the dismantling, when stripping the mould for cleaning, slide the jet block (38) out of its channel and then remove the gib plate (39).

#### 40.14 Assembling the mould

The mould must be re-assembled in the reverse order to that in which it is dismantled, depending on the extent to which this has been done; replacing the gib plate (39) and the jet block (38) first, if they have been removed for cleaning.

All contacting surfaces must be thoroughly cleaned, and all moving parts and the surfaces they contact smeared with a light coat of oil.

Complete the assembly of the mould as follows:

- a) Replace packing plates as necessary.
- b) Replace the large side block (complete with the adjustable stop) and secure the holding-back screw (24), the blade stop bracket screw (22) and the two screws (14) at the back of the block; tightening all screws firmly.
- c) Replace the three vertical screws (12) and (6) and tighten them down firmly, whilst ensuring that the jet block runs freely.
- d) Ensure that the large side block (15) is fitted with the required facing strip (50) for the product to be cast, and that the clamping block (42) is equipped with the correct clamping shoe (46) and friction plate (40).
- e) Position the required mould blade and blade guide assembly against the large side block, together with the relevant distance piece (13).
- f) Replace the blade guide locking bolt (16), passing it through the blade guide (18) and the large side block; then replace the locking bolt nut (17), making it finger-tight (this is sufficient to retain it until you secure it in the required position for casting when the mould is on the machine).
- g) Place the small side block in position against the blade guide and the distance piece, locating it by engaging the side block alignment key (47).
- h) Replace the two vertical screws (12) in the small side block, and then the two horizontal bolts (33), making them finger-tight.
- i) Lightly tighten the vertical screws.
- j) Lightly tighten the horizontal bolts.
- k) Firmly tighten the three vertical screws and then the horizontal bolts, in that order; that is, the vertical screws first. Check to ensure that the jet block runs freely.

*Note:* The required cap and core pieces can be positioned in the mould and secured with the cap clamps, when the mould is being set up on the machine.

#### 40.15 Preparing the machine

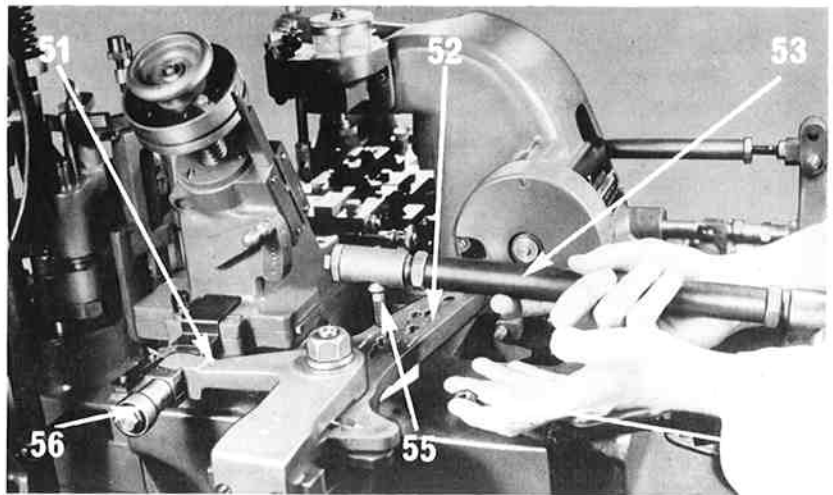
Very little preparation is required before the mould itself is connected. You should, however, first of all ensure that the pump is fully prepared and all necessary adjustments made to make certain it is ready and with the metal at the required temperature by the time you are ready to commence casting.

Reference to the 'Product Information Table' will give you all the information you need in respect of metal temperature, piston, pump and nozzle sizes, the nozzle seating timing mechanism, the position of the piston spring rod, etc. and all other necessary adjustments, together with the recommended casting speeds in revolutions per minute.

The main stand should be cleaned down to remove any trace of oil or type metal; and the counter bracket attached to the machine in due course.

We will deal first, however, with the preparation of the mould blade slide drive lever:

- a) Turn the machine to  $170^\circ$  to release the tension on the intermediate lever (52), and disconnect the mould blade slide drive lever connecting tube (53) (if



not already disconnected) by removing the nut (54) which secures the connecting tube ball end joint (55) to the intermediate lever.

Return the nut to the ball end for safe keeping.

b) Move the lead mould blade stop lever down to the position marked 'Leads' and turn the plunger spring adjusting nut on the mould blade slide drive lever (51) in an anti-clockwise direction, bringing it back as far as possible on the guide rod to reduce the spring pressure to the absolute minimum.

c) Set the plunger lever fulcrum pin (64) in the 1-3 L & R position: then firmly grasp the intermediate lever (52) and pull it to the left until it becomes disconnected from the mould blade slide drive lever plate; the plunger being held back out of position by the lock pin.

d) Release the two screws, remove the intermediate plate and fit the plate marked '15739 and Furniture', taking care to ensure that the plate markings are uppermost when assembled. Secure it in position with the screws provided.

This 'furniture' plate must be fitted when casting product from the furniture mould in predetermined lengths, in order to absorb the excess movement of the intermediate lever when making the shorter fusing casts.

e) Place the intermediate lever back in position to re-engage the plunger in the plate, and release the plunger by pulling the lock pin knob downwards.

f) Set the plunger lever fulcrum pin eccentric (64) in the 42-72 pt position and make sure the plunger spring adjusting nut is screwed back into contact with the stop collar, thus causing the plunger spring to exert maximum pressure again.

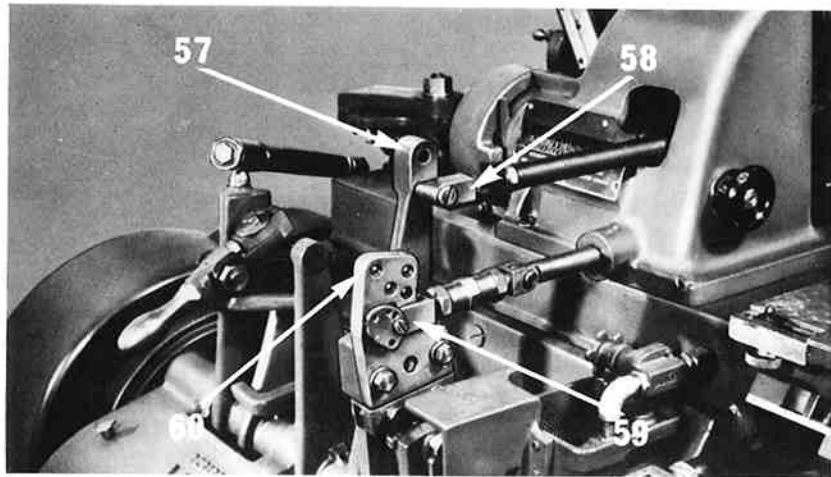
g) Raise the lead mould blade stop lever to its uppermost position.

#### 40.16 Attaching counter bracket

a) The counter bracket is attached direct to the main stand, and secured in position by four screws, with its two connecting rods running right to left across the machine, their extremities adjacent to the cam levers (57) and (60) to which they will subsequently be connected.

Refer to Chapter 13 for an outline description of the several parts which comprise the counter bracket, and their function in the casting of strip material from the furniture mould.





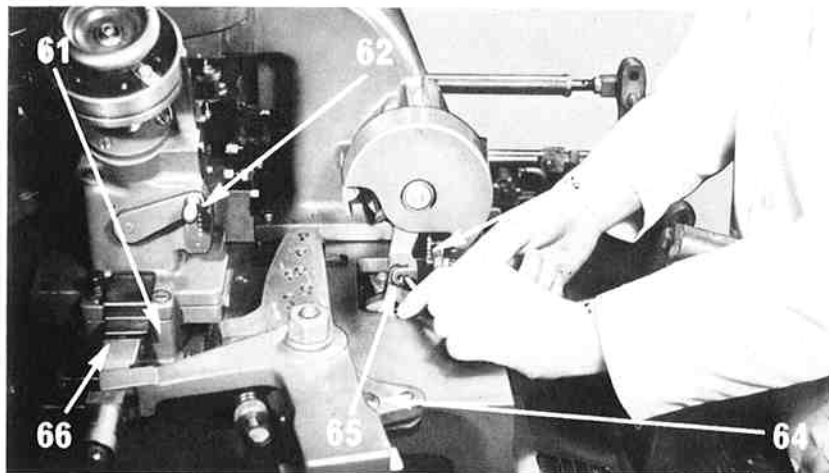
b) Connect the counter bracket to the cam lever as detailed in Chapter 13, connecting the lead clamp intermediate lever spring box rod end (58) to the lower hole on the matrix cam lever (57). Secure it with the rod end pin and nut.

c) Link the jet block driving rod connection rod yoke (59) to the hole marked '12' on the type carrier cam lever extension (60) using the yoke position pin, having first secured the position pin to the yoke in the 12 pt position, with the yoke position pin screw.

d) Ensure that the actuating rod eye, located on the actuating rod, is connected to the actuating lever (65) of the counter mechanism. The actuating rod is linked with the pump driving rod, and thus imparts its movement to the counter mechanism each time a cast is made.

The upper hole of the actuating rod eye must be used to make the connection, using the actuating rod eye pin. (This pin is used to link the actuating rod to its housing on the pump driving rod, where it is retained in an inoperative position when the counter bracket is not being used.)

e) Finally, place the weight on the hook of the ratchet pin chain (63).



Refer to Chapter 13 for detailed information on the counter mechanism and the function of the weight.

**40.17 Preparing the mould for casting**

The mould must be equipped with the several parts required for the product being cast; namely the correct facing strip for the large side block, the appropriate clamping shoe and friction plate and the necessary distance piece, mould blade and adjustable rear wall and blade guide. Packing plates must also be fitted as required. All the parts are contained in the mould box.

Having duly completed the preparation of the mould, you must make certain that the mould lead clamp lever (41) is positioned so that the clamping shoe will clamp the required point size of product before you attach the mould to the machine. This is most important because the movement of the mould lead clamp lever is restricted by the cutter bracket when the mould is positioned on the main stand.

Test by raising the upper end of the clamping shoe lever (45) to withdraw the clamping shoe, inserting a piece of product in the open end of the mould and clamping up to it. The clamping position being thus established, the product can be released and withdrawn from the mould before it is put on the machine. If, however, the test piece of the product is very short, it can be left clamped in position in the mould if you wish at this stage, and subsequently positioned for the first cast with the aid of a longer strip in due course.

**40.18 Setting up the mould on the machine**

a) Turn the machine to  $200^{\circ}$  to position the jet block driving rod (59) to engage with the mould jet block (38), ensure the lead mould blade stop lever handle (62) is placed in its uppermost position and then move the mould blade slide (66) backwards into the wedge screw housing (61).

b) Place the mould in position on the main stand of the machine; raise it a little and push the jet block forward to engage with the hook of the jet block driving rod, and then move the mould itself into contact with the counter bracket.

c) Secure the mould firmly in position against the locating faces of the counter bracket and the wedge screw housing base, with the two eccentric mould clamps, fitting the one nearest the pump first and tightening them in the same order. This you should do immediately, and complete by securing the mould to the main stand with the four screws.

d) Connect the mould blade (28) to the mould blade slide (66) with the mould blade fork connecting pin. Turn the pin until it just grips and then tighten the connecting pin set screw.

e) Place the 3-em setting gauge (2) between the fusing stop (25) and the lower edge of the blade; then adjust the wedge screw so that the gauge is lightly held in position, and set the wedge screw handwheel scales to zero.

Check again with the 3-em gauge to ensure the setting is still correct and then make sure the wedge indicator scale is reading correctly at 3 ems, adjusting the scale position accordingly, if necessary, by loosening the two scale screws.

f) Refer to the 'Furniture Table' for details of both the size and the number of casts required to produce the desired length of product, bearing in mind that the table takes due account of the additional 5 ems of the non-fusing cast.

Should you for any reason cast product without reference to the 'Furniture Table', you too must take this 5-em addition into account and deduct it from the overall length required before you calculate the size and number of casts you need.

g) Set the counter drum scale for the number of casts required, and adjust the wedge screw to position the mould blade for the length of the fusing cast.

h) Connect the mould blade slide drive lever connecting tube to the intermediate lever, engaging the ball end in the appropriate hole, and secure with the ball end nut.

i) Rotate the handwheel to bring the mould blade back as far as possible, as dictated by the position of the wedge of the mould blade sizing mechanism.

j) Release the adjustable rear wall clamping nut (17) at the rear of the large side block. This frees the rear wall and permits the mould blade to be moved freely without restriction.

k) Move the adjustable rear wall into contact with the stop face of the blade, and lock it in position with the blade guide locking bolt (16). The wall, which is now set flush with the front of the mould blade, is correctly positioned for the required length of cast.

l) Select the required cap and core pieces from the mould box, coat the core pieces with caster oil and assemble them in the mould in contact with the rear wall, with their bevelled edges towards the open end of the mould.

Secure the core pieces firmly in contact with the rear wall with the core piece screws (44).

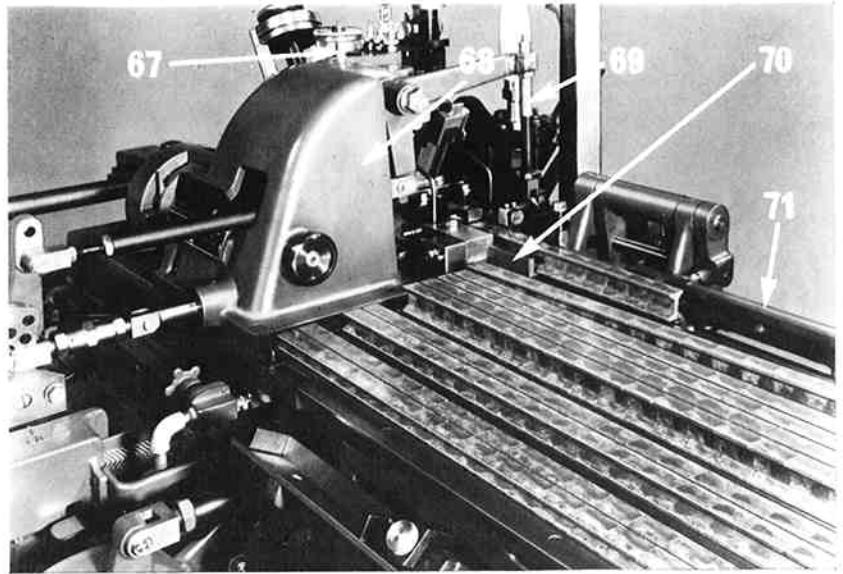
m) Raise the upper end of the clamping shoe lever (45) to withdraw the clamping shoe (46), and insert a strip of product in the open end of the mould. Push the product right through the mould and into contact with the adjustable rear wall.

n) Place the cap between the core pieces, making sure it is likewise in contact with the rear wall. Clamp the cap securely in position with the cap clamps (8).

o) Connect the mould clamping lever (41) to the lead clamp intermediate lever rod on the counter bracket. Ensure that the rod yoke pin clip is placed over the yoke pin to retain it in position, and then rotate the machine by hand to make sure the clamping screw (43) is correctly adjusted to give approximately  $\frac{1}{3}$  in compression in the lead clamp intermediate lever spring box. Compression on the spring box can be varied as required by adjusting the spring box rod collar accordingly.

p) Connect the counter mechanism actuating lever with the blade stop (25) which controls the length of the fusing cast, by means of the actuating lever link (23). Slip the circular part of the elongated slot over the actuating lever pin and slide it forward to hook the other end on to the blade stop.

The link, thus connected, is positioned to withdraw the fusing stop (25) as required, thereby allowing the mould blade to push the product an additional 5 ems through the mould to make room for the longer non-fusing cast to be formed behind it. Refer to Chapter 13 which deals with the function of the counter mechanism when casting from the furniture mould.



**40.19 Other attachments and connections**

a) Attach the correct water supply piping. It is clearly marked L & R & FURNITURE. First cover the two locating faces with grease, then fasten to the stud on the main stand with the nut and washer, making them finger-tight. Secure the other end to the mould with the piping screw. Complete by tightening the screw and then the nut, in that order.

b) Attach the adjustable drip feed mould oiler (67) to the counter bracket, securing the mould oiler piping to the underside and locking it in position with the knurled nut. Connect the oil pipes to the mould and place the oiler valve lifters in the vertical position to allow the oil to feed through.

Refer to 20.2 in connection with the adjustable drip feed mould oiler.

c) Ensure that the lead guide bracket and the cutter bracket are removed from the machine, and place the lead stacker (71) out of action by removing the cutter actuating plunger link pin.

Remove the lead stacker bar.

d) Attach the furniture guide (70) to the main stand, using the cutter blade bracket screw collar, the washer and the long screw.

e) Ensure that the mould blade slide driving block abutment (56) is correctly positioned, with its larger diameter at the rear.

f) Re-connect the mould blade slide drive lever connecting tube (53) to the intermediate lever (52), engaging the ball end in the hole marked 'Furniture' and securing it with the ball end nut (54).

**40.20 Final checks and adjustments before casting**

a) Quickly check over all the attachments, settings and adjustments you have completed, and assure yourself that everything is as it should be.

b) Set the Varigear gear box for the required speed range, as indicated in the 'Product Information Table' for the product being cast.

c) Turn on the water supply valve, check the flow at the water supply tap, and adjust as necessary.

d) Before you commence casting, rotate the machine once by hand, with the pump out of engagement. This will give you the opportunity to make a final overall check and allow the mould blade to push the product forward in the mould to make room for the first cast.

e) Engage the pump and rotate the machine once more by hand to make the first cast, to establish that both the mould and the machine are working correctly before starting up under power.

f) Finally, provided that before you prepared the mould for casting, you fitted the correct pump and nozzle for your immediate requirements; positioned the nozzle seating timing mechanism and the upper and lower 'leaves' as required; adjusted the piston spring rod nut for the product to be cast, and made any necessary adjustments to bring the metal to the required temperature, all in accordance with the 'Product Information Table', you can set the machine in motion under power, engage the pump and commence to cast.

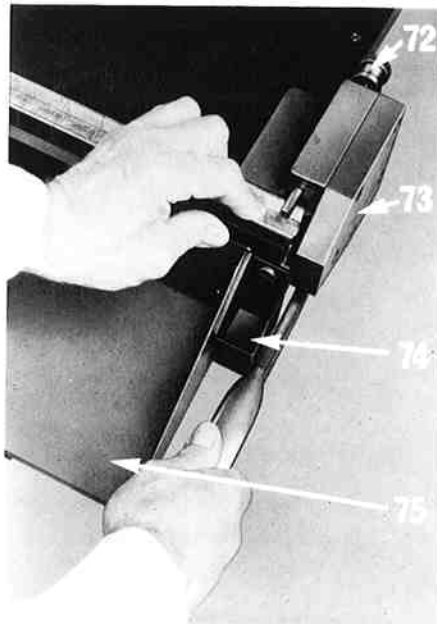
*Note:* 18 pt full-faced rules may be cast, either to predetermined lengths, or sheared to any desired length, the same as when casting from the lead and rule mould. When using the latter method you must make sure the cutter actuating lever pin is connected to the outer hole of the cutter actuating plunger link; otherwise the product will foul the cutter blade.

You must also remove the actuating lever link to ensure that the fusing stop remains permanently in position, since the longer non-fusing cast is not required.

#### 40.21 Furniture trimming attachment

As the non-fusing cast does not always produce a perfectly clean end to the completed lengths, it is advisable to fit the furniture trimmer attachment (73) to the end of the galley bracket. It should be fitted so that the rim of the detachable box (74) just clears the matrix box tray (75).

The knurled nut (72) on the attachment should be set so that the front of the shear blade is level with the clean portion of the end to be trimmed.



**40.22 Removing the mould from the machine**

- a) First, lower the melting pot and swing it back to its fullest extent, out of engagement with the machine; then switch off the power supply.
- b) Turn the machine by hand to approximately  $170^{\circ}$  to release the tension on the mould blade slide drive lever connecting tube, to enable you to disconnect it from the intermediate lever. Disengage the ball end by removing the ball stud nut, replacing it on the stud for safe keeping.
- c) You can now raise the mould blade stop lever handle to its uppermost position and manipulate the intermediate lever by hand to bring the mould blade slide forward, clear of the wedge screw housing.
- d) Place the mould oiler valve lifters in the horizontal position to cut off the oil drip feed to the mould and jet block, and detach the oil pipe assembly from the mould.
- e) Turn off the water supply at the main valve and disconnect the water piping assembly from the mould, and from the stud on the main stand of the machine.
- f) Disconnect the mould lead clamp lever from the lead clamp intermediate lever rod.
- g) Remove the remaining product from the mould and keep it as your sample product for use next time, if you have not already put a piece aside for this purpose.
- h) Release the mould blade fork connecting pin and push the mould blade forward clear of the mould blade slide.
- i) Remove the four screws which secure the mould to the main stand, and the two eccentric mould clamps. Remove the front one first and leave the one nearest the melting pot until you are about to remove the mould from the machine.
- j) Now pull the mould towards you; then raise the mould until the jet block is clear of the hook of the jet block driving rod.
- k) Finally, remove the cap clamps and the cap and core pieces; after which you can remove the small side block and then the mould blade and guide, together with the distance piece. Blow the water out of the mould waterways, with the aid of an air line; blow a little oil through and then carefully and thoroughly clean and oil the mould before returning it to the mould box. At this juncture you should make a point of checking that the several blades, insets and various parts and sample strips are all assembled in the box in an orderly fashion before putting it away.

If any defect should develop in the mould which cannot be attributed to any specific cause, or which you are unable to correct yourself by carefully following the foregoing instructions and others relevant to the casting of good product touched on throughout the manual, the complete mould should be returned to The Monotype Corporation Ltd for examination, repair and adjustment. When returning a mould, you should include a few pieces of the defective product and jet tangs, together with a note outlining the details of your trouble.