THOMPSON AUTOMATIC PLATEN

Instructions on operation and maintenance

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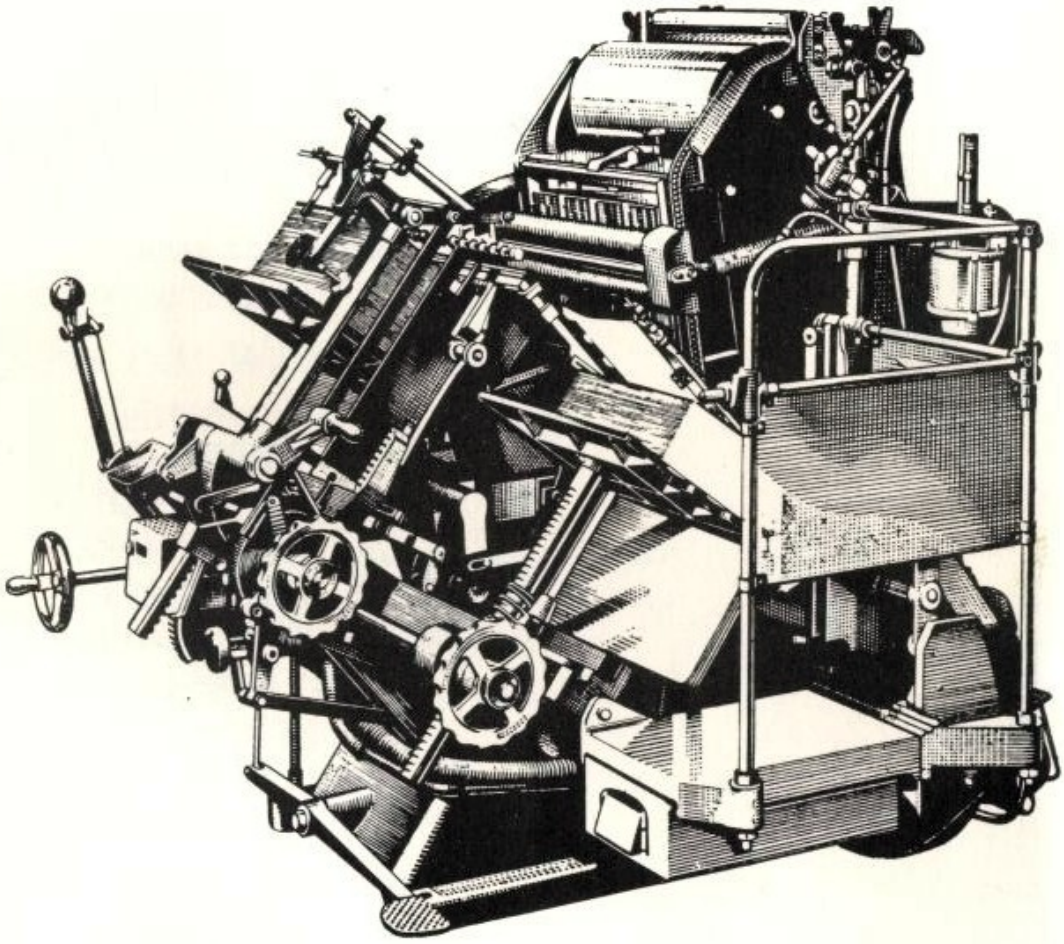

THOMPSON AUTO PLATEN

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CHAPTER 1

PREPARATION

When the machine is delivered to you it may have a large eye bolt screwed in the top. This is for lifting and tackle capable of handling 1½ tons (1525 kgs.) is required. A plug screw is provided to replace this bolt before the machine is used.

The machine will require cleaning and oiling. The oiling points are marked in red and note that oil wicks in the wells are pushed down the tubes with the attached pins. These wicks provide a drip feed to the main bearings all the time, even when the machine is not turning. It is wasteful, therefore, to fill the wells when the machine is idle. The back cover plate must be opened to oil the main toggle motion inside the body.

The delivery runs in an oil bath and about one pint of fairly heavy oil should be poured in through the filling aperture at the back. Fill to the level of the aperture.

It is important to clean and oil the rectangular slides for the feed and delivery.

To test the starter and motor see that the clutch is disengaged, i.e., with the starting handle to the left, and press the green button. Note that the direction of rotation of the flywheel is correct as shown by the arrow. The flywheel must never be turned the wrong way, even by hand. Next wind the speed control handle through fast and slow to ensure it works smoothly. Switch off the electric trip mechanism. Do not engage the clutch to start the machine until you have turned it round by hand to ensure that everything is free from obstruction. Press the red button to switch off the power. Always switch off while adjusting the machine.

The machine can be stopped by the foot pedal on the delivery side or by the handle at the back. It can only be started with the handle at the front.

To turn the machine by hand engage the clutch and hold the handle in position. The knock-off, which automatically stops the machine when no sheet is fed, will try to throw the handle back.

INKING

Two inking rollers are required each 2in. dia. and 15½in. long on the face. A good quality covering is necessary for high speeds.

Turn the machine to bring the -roller arms to the top, where the stretch on the springs is least, and insert the rollers and runners. The sprockets on the right engage with the chain.

Now use the type-high roller gauge from the tool kit to check the setting of the roller bearers. Loosen the locking screws at the side and adjust by means of the two screws projecting at the back of each bearer. Turn the machine to bring the top roller opposite the top adjusting screws and try the gauge between the type face and the roller at both ends. Turn the machine again and test the bottom roller opposite the bottom adjusting screws. Re-check at the top and fasten the lock screws.

The dissor roller is covered with plastic 1¾in. dia. and 15in. long on the face. Place it, together with the bronze ends having the elongated holes, in the slots above the ink drum with the steel dissor roller on top. The bronze ends with the round holes are for the steel top roller.

The vibrator roller may be covered with good composition and should be 1¾in. dia. and 15in. long on the face. It is held by the two crank levers and is retained on the right by a plate. The right-hand lever has a split boss and it may be loosened to bring the

roller into even contact with the reciprocating steel roller.

The duct is retained by two hexagon bolting down screws and these may be loosened to swing the duct into even contact with the vibrator roller.

The movement of the vibrator roller is limited by two screws placed at right angles in the cross stay and these should be set to give full contact between the rollers without undue pressure.

Please do not forget to oil the fast-running bearings on all these rollers and remember that flats will form if rollers are left in stationary contact for any length of time.

If the nature of the job indicates that the reciprocating rider roller will be required this will be found stored together with the spindle in one assembly. Push the spindle into the lever on the left-hand roller arm and secure with the side plates to the saddles. Press the rider lightly into even contact with the bottom roller and lock.

FIX THE BLANKET

Prepare a tympan consisting of two top sheets 16¼in. x 11½in. and six to twelve packing sheets 15½in. x 10in. or their equivalent. The whole, including the job to be printed, must not exceed ·040in. or 1 mm. in thickness. The top sheets should be of a substance similar to Large Post 181b. Cream Wove. The packing may be hard or soft and may include the rubber blanket if desired.

Remove the brass slides from the bar below the platen, also the top and bottom blanket rods and the right-hand blanket plate.

Place the two top sheets on the platen level with the left-hand edge and to overhang on the right and equally top and bottom. Fix the bottom blanket rod and clip

firmly. Insert the packing, pull the top sheets tightly over the packing and fix the top blanket rod. Smooth to the right and fix the blanket plate. There are two locating pegs on the blanket plate. The ends of the blanket rods must not project beyond the platen. Replace the brass slides.

SET THE FEEDER

Fan out the sheets to break adhesions on the cut edges and place the stock to be printed in the feed hopper against the right-hand plate. If in order to do this it is necessary to lower the feed table first to take hold of the delivery table handwheel, jerk it to the left to disengage the teeth, and lower the delivery table to the bottom. This will give freedom of action because normally as one table rises the other falls and *vice versa*. Independent action can only be obtained with the delivery table when the teeth on the handwheel are disengaged. To lower the feed table press down both the pile ratchet catch and the pile height pawl with the left hand and turn the feed table handwheel with the right hand. Please be careful in these operations not to raise the feed table or the pile too high and so bend the sucker bar upwards.

The position of the right-hand plate can be adjusted sideways by turning the control screw.

This position determines where the sheet is placed by the suckers on the platen and for accurate register it is important that the sheet be fed as close to the side lay on the platen as possible. Thus if the side lay is adjusted away from the platen, to give a larger delivery grip, the right-hand plate on the feed hopper should be moved outwards by a similar amount.

The feed pile is held in position on the left by the pillar and at the top edge by the sheet steadiers.

Three sizes of sheet separators are supplied — “short” and “medium,” which have the same drop

but a different amount of projection, and “long,” which has a greater drop, and they are fitted as required into the holes at the top of the feed back plate. Their action is to prevent more than one sheet at a time being lifted. They should be placed one at each corner of the pile using the long ones for thin paper and the shorter ones for heavier work. In the case of thin paper a short separator may be added in the centre, while retaining the two long ones at the corners.

Now set the bracket on the left of the feed back plate to tilt the sucker tube for the given stock according to the indicator and turn the machine to bring the suckers over the pile.

Turn “off” any suckers which will not cover the pile by sliding them to the right, giving a quarter turn towards you and then sliding them back onto the locating pegs.

For heavy and uneven work the rubber suckers may be used. They require stretching to slip into the grooves on the black suckers. When using the rubber suckers it is often better to use only a few and turn the remaining black suckers to the “off” position.

The height of the feed pile is maintained by a ratchet and pawl which only comes into engagement when the pile falls below a predetermined level. This level is controlled by the small handwheel on the front upright pillar. Turn this clockwise as far as possible and lower the feed pile a little. Start the motor and then set the regulator to medium speed, the flywheel must be in motion when the regulator is moved. To prevent the sheets from feeding push the suction plunger lever to the left. See that the check is “off” with the handle turned towards you and that the electric trip is switched off and start the machine by lifting the safety catch and moving the starting handle slowly from left to right.

Run the machine with no air blowing through the sheets until the pile stops lifting. This is the lowest position. Turn the handwheel anti-clockwise and the pile will start lifting again. Stop when the top of the pile is about 4in. below the suckers. With the machine still running turn on the air to blow between the sheets and adjust the height of the blower. The volume of air and the height of the blower should be sufficient to loosen twelve to eighteen sheets of paper or six to twelve cards and to lift the top one up to the suckers. When lifting card the gap between the top of the pile and the suckers may be reduced.

Please note that the rate of lift of the feed table for different thicknesses of work is automatic. The function of the pile height control is to regulate the gap between the top of the pile and the suckers.

SET THE DELIVERY

Raise the delivery table to the top and place a sheet of the size to be printed on it. This will give an indication of the positions of the jogger and of the left-hand upright which are adjusted to the fall of the sheet. The stationary extension jogger should be slightly in advance of the moving jogger.

To set the blowers loosen the two wing screws on the pillar and horizontal arm to allow the main blower to swing and tilt. Arrange it to blow along the sheet towards the tail end. Arrange the sliding auxiliary blower pipe to blow downwards onto the sheet. The positions of these blowers and the volume of air required are critical at high speeds and they can be varied while the machine is running, when it will become obvious what is required to keep the sheet flat.

RUN UP THE INK

Place ink in the duct and set the knife to give an even flow. The supply can be regulated by setting the small handle above the duct cam in the appropriate notch.

The ink check normally works in conjunction with the impression check handle so that ink will only feed when the impression check is “on.” The ink check lever can, however, be disengaged from the check handle and be locked in the “on” position. Ink will then feed whatever the position of the check.

Stop the machine with the rollers in the bottom position. They must be exactly at the bottom before the chase is inserted.

IMPOSITION IN THE CHASE

Measure from the right-hand edge of the paper to where the printed matter begins and deduct 13½ pts. This is the correct amount of furniture required at the side of the chase.

Measure from the bottom of the sheet and deduct 6 pts. to find the amount of furniture required at the bottom of the chase.

These figures are given for the position when the register slides and the side lay are set as near to the platen as possible.

If the adjustments on the platen are used to move them further away, i.e., to increase the delivery grip, then the amount of furniture must be correspondingly reduced.

Avoid the use of high furniture or leads at the bottom of the chase because clearance must be allowed to enable the register slides to work freely.

REGISTER

The method of registration is a diagonal movement of the register slides upwards and towards the side lay. Every sheet is registered and fine adjustment is provided on the platen without disturbing the forme.

The register bar carrying the register slides may be moved or tilted by means of the hexagon nuts on either side under the platen. The side lay is adjusted by means of the small screw and lock nut. Adjustment of the side lay increases the delivery grip which is an advantage on all stocks and essential for card.

The register slides are provided with pins which can be used with the loop or the point upwards. These pins must not foul the type matter and should be lowered until a safe working height can be determined from an actual impression.

Sheet guides are provided for curly paper. They clip on to the centre bar of the three at the bottom of the platen. They should lie just below the face of the platen and are adjusted by loosening the bar and twisting. When positioning them allow free sideways movements for the register slides.

IMPRESSION

Reduce the impression by turning the adjustment handwheel clockwise. Push the suction plunger lever to the right and as a sheet is lifted throw the check handle away from you to the “on” position and print.

Owing to the clam shell construction of the press it will be noticed that the adjustment of the impression handwheel to increase or reduce impression has more effect upon the top of the printed sheet than the bottom.

Therefore should impression be light at the top take out packing sheets and increase impression. If light at the bottom add packing sheets and reduce impression.

Obviously it is important to level the impression by these mechanical means before any patched sheets or overlays are added. If new sheets are added the equivalent packing must be removed. It may be found that the make-ready sheet is best at the bottom with all the other packing sheets on top of it.

RUN THE MACHINE

The machine is now ready to print. Release the lock on the ink check. Lift the safety catch and move the starting handle from left to right to engage the clutch. Then with the left hand move the suction plunger handle inwards and as a sheet is lifted push the check handle to the "on" position with the right hand.

The electric trip can now be switched "on" and it will automatically stop the machine should the delivery miss a sheet or when the delivery hopper is full.

Increase the speed and make adjustments to the delivery as required.
When you stop the machine switch "off" the electric trip.

POINTS TO WATCH

Should the suckers fail to take a sheet or feed several together check the following points :—

Is the suction plunger lever to the right ?
Are all the suckers not touching the sheet turned "off"?
Have you sufficient or too much air blowing through the sheets ?
Are the suckers tilted correctly ?
Is the feed blower too high or too low ?
Have you fitted the correct separators ?
Is the paper filter clean ?
Was the paper "fanned out" when loading the feed hopper ?

WASHING UP

When the job is finished pull the check handle "off" making sure that the ink control handle comes forward with it to stop the ink feed. Remove the chase and run the machine at speed with all rollers still in position. Sprinkle paraffin on the top roller and as it loosens the

ink depress the handle under the duct and rotate it to lock the scraper against the drum. Let the machine continue to run and apply a little more paraffin starting at one side of the machine and working across to the other. Release the scraper before stopping the machine.

To clean the ink duct move the ink knife, together with the knife holder, the adjusting screws and the lid, away from the ink roller by turning the finger screws under the support bracket until they are clear of their locating recesses and then sliding the whole unit backwards.

CHAPTER 2

SPECIAL WORK

Friskets

Friskets are not generally required as the delivery grippers take hold of the sheet during impression and will peel the majority of jobs from the type. Advantage should be taken of this where possible by arranging to print heavy solids on the delivery side of the platen. The use of a correct ink will also obviate the need to use friskets.

Secure the friskets to the bar at the bottom of the platen and see they lie flat with the red side upwards. They must be clear of the register slides and of the type. Narrow friskets are provided to be used in small margins but the wider ones should be used where possible and always for heavily inked formes. When using the cross frisket make sure it is securely fastened.

THIN WORK

This machine has been most successful with thin work and astonishing results can be obtained.

The difficulty lies in keeping the work flat during register. We provide sheet guides fitted with extensions which clip on to the square bar below the platen. The guides lie just below level with the platen face and the extensions project above it to form a vee into which the sheet is fed. These guides must of course be positioned clear of the type and must not interfere with the normal movement of the register slides.

Further assistance in keeping the work flat is provided by fitting on to the sucker tube the thin sheet attachments. These are made with a “Tee” end designed to

clip into the grooves, which normally carry the rubber suckers, of two adjacent black suckers. They are inserted by displacing the suckers sideways. These attachments are made in two different lengths and for thin work the longer ones are generally used.

The shorter ones can be used on work of any thickness where register difficulty is experienced.

Sheet smoothers are also provided to slip onto the bar carrying the sheet steadiers above the feed pile. These hold the top of the pile flat.

Narrow Margins

The machine normally prints up to 6 pts. from the bottom edge of the paper. If it is desired to print closer or to "bleed off" extensions must be fitted to the register slides.

To fit, remove the screw and wire pin from the slides and lay first the flat spring and then the extension in the groove. Replace the screw and tighten. In the register position the flat spring must touch the blanket and the lip of the extension should be just clear. The springs must lie in between rules or type.

When using the register slide extensions it is desirable to fit the two flat plates onto the feed back plate. By this means the whole feed pile is displaced and the total movement of the fed sheet remains unaltered. It is then not necessary to alter the valve opening and drop the sheet earlier to meet the new position of the lays.

Provision is made on the runner bracket plate for the timing of the valve opening to be altered, but the setting is carefully adjusted at our works, and we do not recommend altering it until every alternative, including fitting the "Tee" shaped attachments to the suckers, has been tried.

SMALL WORK

The smallest job which can normally be printed is 2¼in. x 1½in. When feeding small work stack it with the narrow edge against the feed back plate.

Retain the pile by using one of the two special bent sheet steadiers canted forward and with its edge against the side of the pile, the other should be used to retain the top edge of the pile in the normal way. Only one black sucker will be required and it should be fitted with a rubber sucker.

This very small work will not stack on the delivery in the normal way and one method is to place a card-board box on the delivery table.

Work even smaller than 2¼in. x 1½in. has been done on the Thompson by using a special left-hand lay and left-hand register.

THICK WORK

Work up to about twelve-sheet board can be printed by reducing packing. Much thicker work can be done if a permanent alteration is made to the machine at our works.

When feeding work thicker than ten-sheet board it will be necessary to increase the rate of climb of the feed pile by altering the movement of the ratchet pawl. This is done by unscrewing the stud which fastens the connecting lever to the bottom of the bellcrank, carrying the ratchet pawl, and re-fixing it in the hole provided higher up.

OVERSIZE WORK

The normal maximum size of sheet is 15¼in. x 10¼in. but some printers exceed this by removing the left-hand pillars from the feed and delivery and making other arrangements to retain the pile.

If the sheet extends to the type-high part of the chase the blanket must be cut away.

LEFT-HAND REGISTER

When a job requires perfecting to the same edge the machine can be altered to register to the left against a left-hand side lay.

While making this alteration turn off the power and make all movements of the machine by hand.

Turn the machine until the platen is open, set the right-hand side lay to give a generous delivery grip, then place a sheet to be printed on the platen in the normal registered position against the normal right-hand side lay.

Fasten the left-hand side lay to the slide on the square bar below the platen and bring it to the left-hand edge of the sheet. Loosen the bar and re-tighten with left-hand side lay firmly pressed on to the face of the platen. Make sure that both side lays touch the sheet, then remove it.

Depress the right-hand side lay out of action and lower the operating plate, which is on the bracket projecting from the body, as marked.

Turn the machine until the sucker tube travelling down the platen nears the left-hand side lay on the platen face. Loosen the sucker tube by unscrewing the knurled fastening screw and slide it sideways until one of the black suckers is in position, close to the lay, to slide the sheet under the lip. Re-tighten the screw.

Continue to turn the machine to the printing position and make sure that the suckers pass clear of the side lay.

Now alter the register motion by reversing the small circular cam on the left of the platen. Take hold of the bowl arm and pull it away from the cam; then pull out the cam, give it a half-turn, and let it drop back into the locating slot.

In setting the feed hopper it must be remembered that the sheet is to be registered from right to left,

which means that the right-hand plate must be set further outwards than usual so that the sheets will be fed just clear of the left-hand lay. Pile the sheets accurately and rotate the left-hand pillar in its base to bring the flat side against the paper. The pillar is held in the base by a wing screw. Please note that the sheets must be cut accurately to length because a short sheet will not be delivered, and do not move the left-hand lay to adjust the position of the printed matter on the paper because this also will alter the delivery grip. Friskets, if used, must clear the left-hand side lay.

When returning the machine to normal right-hand register check the following points :-

1. Remove the left-hand side lay and lock the slide in a safe position.
2. Re-set the cam on the left of the platen.
3. Raise the plate operating the normal right-hand side lay.
4. Lock the sucker tube in its fully extended position.
5. Re-set the plate on the right of the feed hopper.
6. Turn the left-hand pillar to bring the spring top against the pile.

INTERLEAVING

Normally the delivery pile is set to fall only slightly faster than the lift of the feed pile.

An alternative set of gears is provided to allow the delivery table to fall very much faster.

This is necessary to accommodate the extra sheets when interleaving or slip sheeting. It is sometimes an advantage with stock which lies very loosely in the delivery pile.

To make the alteration lower the delivery table to the bottom, then pull outwards the knurled shaft under the feed bracket on the left-hand side of the machine.

DRY SPRAY UNIT

The amount of powder used is controlled by the size of the needle. Use the fine needle No. 30 for light formes and the medium needle No. 40 for coated papers both in conjunction with fine grade powder.

Use the larger needles No. 41 and No. 42 only for very heavy formes and board in conjunction with medium grade powder.

The needles and the powder must be kept dry. The unit is switched on by means of the tap on the bottom of the pump. The tap should be fully "on" or fully "off."

CUTTING AND CREASING

For cutting out, creasing and similar work we can supply a special plate ·030in. thick which is fastened onto the bare metal face of the platen in place of the normal tympan.

A convenient fastening for this plate can be made by securing adhesive tape along each edge with half the width of the tape projecting. Additional tapes may be added.

Remove the top and bottom blanket rods and the right-hand blanket plate and position the special plate level with the bottom and right-hand edge of the platen face.

One covering sheet is required and this is best pasted or glued to the plate and platen face over the tape fastenings. The top and bottom blanket rods will not be required but the right-hand blanket plate must be replaced.

Place the forme in position and note that ·918in. for cutting rule and ·915in. for creasing rule must not be exceeded on machines made for ·918in. type height.

Please note that packings added on top of the cutting plate or behind the forme will defeat their object as the top of the platens cannot meet if they are held apart by excess thickness at the bottom. Impression must be increased by the use of the impression adjustment.

Adjustment of the impression and make-ready should aim at bringing up first the part of the job towards the top of the platen face. This is because a build-up at the bottom will hold the faces apart.

Apply strips of card to the cover sheet on either side of creasing rules to form a channel.

The suckers must be raised when feeding card over the plate and make-ready to give extra clearance. This is done by adjusting the small screw on the left of the sucker tube carrier.

CHAPTER 3

MAINTENANCE

Daily

1. Wipe the machine to clean off fluff, oil, ink and powder. In particular the delivery slides must be cleaned.
2. Fill the oil wells. Oil the slides and all the fast-moving parts including the inking roller bearings.
3. Clean the filter inside the end of the sucker tube. To reach this disconnect the rubber tube and unscrew the cap.
4. Empty the wash-up tray. To do this undo the two wing nuts and remove carefully to avoid spilling.
5. Give a turn to the grease cup on the variable speed pulley and refill with grease as required.
6. With the flywheel running under power move the speed regulator through its full range from fast to slow to ensure free movement of the pulley.

Weekly

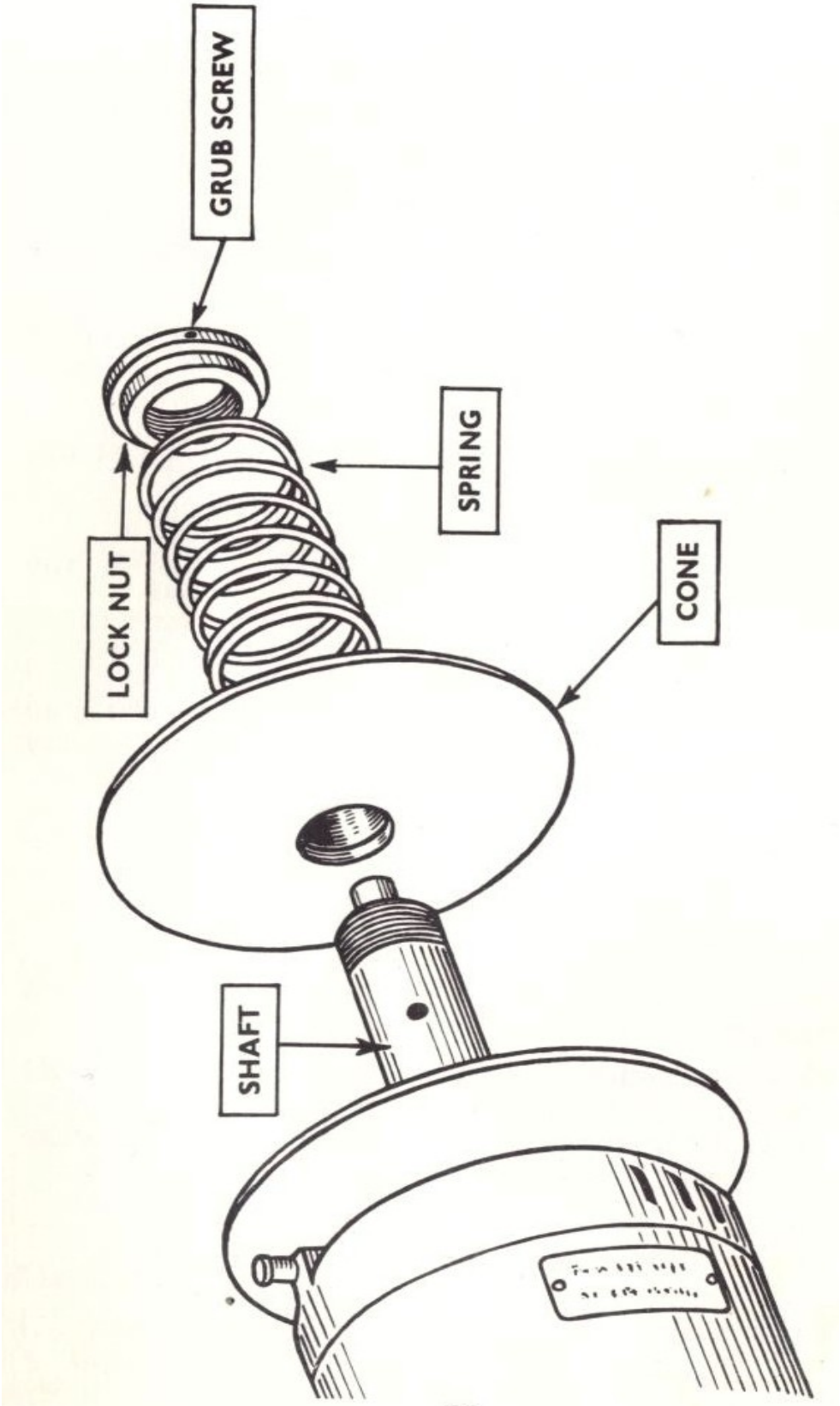
1. Oil every part of the machine.
2. Remove and clean the whole wash-up. To do this remove the tray and unhook the spring, then lift and push one end through the hole in the side of the machine to free the other end. The setting of the blade should not be disturbed.

Monthly

1. Give a turn to the three grease cups behind the delivery.
2. Remove the grub screw on the hub of the flywheel, fill with grease and replace. The guard will have to be removed to get at this.

Half Yearly

1. Check the air pipes to make sure they have not worked loose at the ends.
2. Remove the screw in the back of the body to allow any accumulation of the oil in the well to drain away. This is not intended to form an oil bath.
3. Undo the drain screw and empty the delivery sump. Refill with fresh oil.
4. Unscrew and lift the pump lid and apply a little graphite paste to the inside walls of the cylinder.
5. Dismantle and clean the variable speed pulley as follows : Remove the lower part of the guard. Undo the grub screw in the flange of the lock nut. Remove the lock nut and spring. Slide the cone off the shaft, clean the shaft and the inside of the cone, using paraffin. Dry and smear with grease. Replace the cone, spring and lock nut. Turn the lock nut as far as it will go and fasten with the grub screw. Refill the grease cup.
   The arrangement is shown in the illustration on page 26.
6. Clean the sucker tube. Remove the whole assembly together with the bracket in one piece by loosening the locking screw in the split bearing and with-drawing the hollow fulcrum pin.



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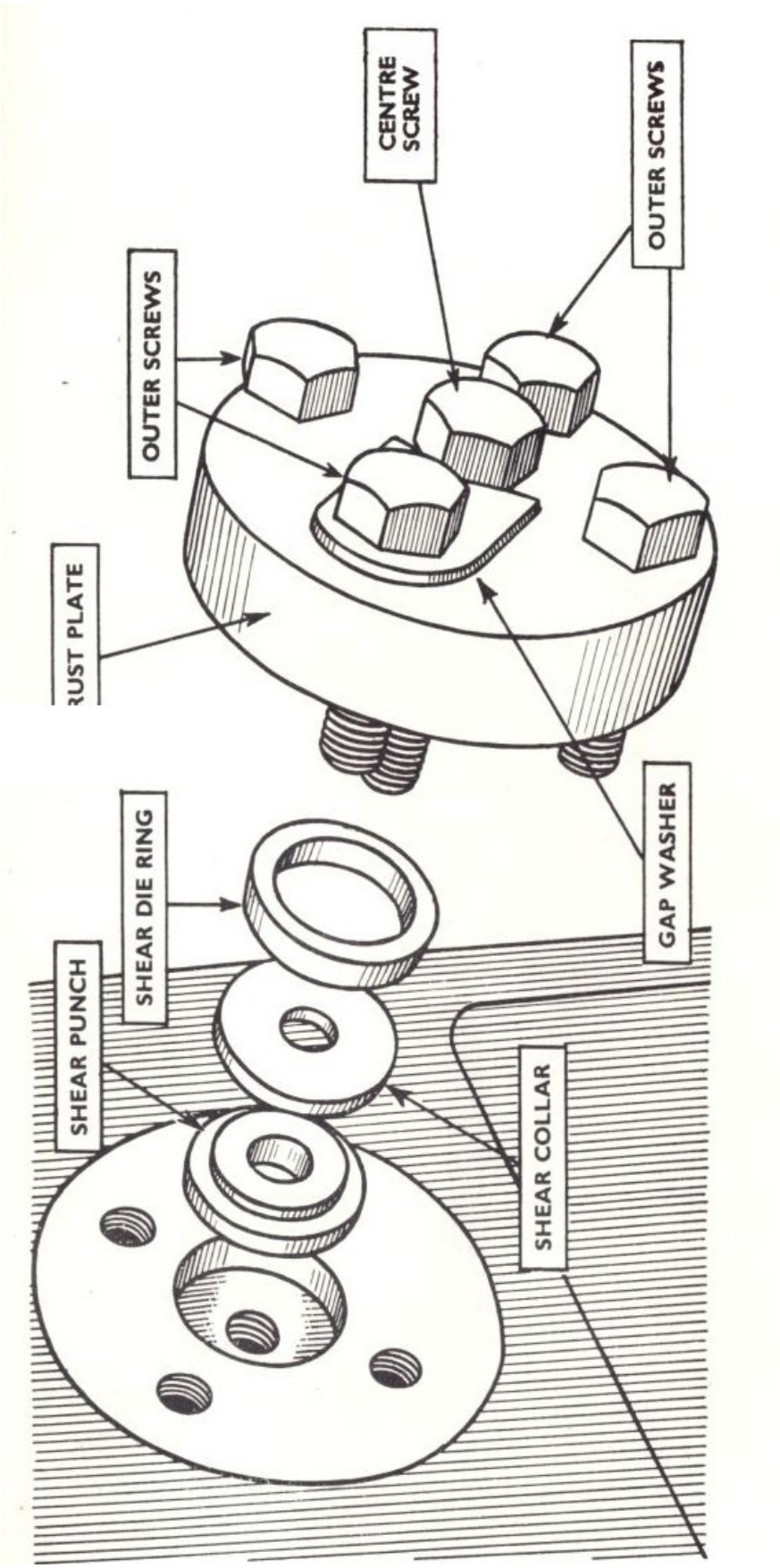
CENTRE SCREW
OUTER SCREWS
OUTER SCREWS
RUST PLATE
SHEAR DIE RING
SHEAR PUNCH
GAP WASHER
SHEAR COLLAR

CHAPTER 4

TRACING FAULTS

Failure of Impression

Remove the thrust plate at the back of the machine and examine the shear collar. This is a flat disc placed between a punch and die and it is intended to break if the machine is overloaded.

The arrangement is shown in the illustration on page 27.

Take out all the pieces and replace first the shear punch, then the new shear collar and then the shear die ring. The outer screws should be tightly locked but the centre screw requires only sufficient pressure to pull the parts firmly together. The gap washer is locked under the head of one of the outer screws and the vee end is set against the centre screw to stop it working loose.

Faulty Register

When the usual operational checks fail, make the following mechanical checks :

Examine the delivery gripper bar as it approaches the platen to remove a printed sheet. The fingers on top are open and the trip lever underneath should lie close to the bar and pass clear over the pin projecting from the side lay. If this is not so the trip lever may have been forced down out of position probably by turning the machine backwards. This may sometimes be corrected by pushing the trip lever up into its correct position, but it should be remembered that the taper pin which holds it will have been strained.

Make sure that the fulcrum shaft, under the platen, which carries the register slides is turning and sliding freely, so that the two bowls on the left maintain contact with the cams.

Examine the sucker tube as it passes down the platen past the side lay and make sure that the end sucker is near enough to the platen face to feed the sheet correctly under the spring clip on top of the lay. Check also that there is no gap between the top of the lay and the spring clip. The distance between the underside of the black sucker and the bare platen face when the sucker bar is completing its feeding stroke with impression "ON" should be ·050in. or less than $\frac{1}{16}$ in.

If the free end of the sucker tube has been lifted, loosen the screw in the split bearing, which holds the fulcrum pin, and press the free end of the tube down-wards while re-tightening the screw.

Failure to Maintain Correct Pile Height

The ratchet wheel on the right of the feed bracket is engaged by the pile height pawl and the ratchet catch.

The forward movement to turn the ratchet wheel and so lift the pile is made by the pawl, after which the catch drops into position to prevent the ratchet wheel from slipping backwards. The pawl does not engage the teeth of the ratchet wheel to lift the pile on every cycle of the machine except when feeding thick stock or when the table is climbing freely.

Set the feed table half-way down and let it climb freely.

Note that the pawl should take the ratchet wheel forward one tooth for every cycle of the machine and that the catch should engage each time to prevent it slipping backwards after the movement has taken place.

The plate extension of the pawl, which actually engages the teeth of the ratchet wheel, is adjustable.

Re-set it as required and if wear is suspected, possibly on the catch piece which moves downwards to force the pawl into engagement, move it forward one complete tooth.

Machine Continually Knocking-off

This can be caused by a short circuit in the electrically operated delivery knock-off, which is dealt with under a separate heading. Switch off the electric circuit and if the machine continues to knock-off the fault is not electrical.

The fault may be due to the revolving crank, which operates the trip to disengage the clutch, having moved out of position, or it may be due to lack of suction.

Examine the revolving crank, on the left of the body, which carries the square pin operating the trip to disengage the clutch. If set correctly this crank will pass the catch, lying against the auto stop plunger, while the sheet is being lifted from the feed pile and while the plunger is consequently withdrawn by the sucking air. The exact setting we recommend is to turn the machine until the delivery gripper opens to deposit the sheet, at which point the crank should be set at “five past the hour.” To re-set the crank loosen the screw in the split boss, re-set and tighten.

There are several reasons for lack of suction. It may be due to worn black suckers, which present an uneven surface to the paper. These must be replaced. It may be due to porous paper in which case we recommend putting alternate black suckers out of action and fitting rubber suckers to the remainder. Do not run the machine too slowly. Suction improves with faster speeds. If lack of suction persists, and the auto stop plunger is consequently not pulled back to miss the trip, the spring pressure may be reduced to allow the auto stop plunger to pull back with less suction. To reduce the spring pressure loosen the lock nut on the front of the air chamber, then turn the centre screw anti-clockwise with a screwdriver, and re-lock.

Lack of suction is more commonly due to a leak or blockage in the pipes.

Examine the pipes and pipe connections. It is possible for the inside of a pipe to collapse. Make sure also that there is no inlet of air past the leather washer on the valve at the front end of the sucker slide. Examine the swivel union at the bottom of the pipe connecting with the sucker slide. This consists of an adjustable cone, which should be maintained as a free-moving air-tight joint. To tighten hold the outer hexagon with a spanner and turn it to free the whole unit, then screw the inner lock nut against the swivel union until the correct pressure is obtained. Lock the whole unit back against the bracket by means of the outer hexagon. A little oil is required on the cone.

A fundamental cause of lack of suction is faulty action of the pump. This may be due to sticking of the piston rings in the grooves of the piston. In this case the whole pump and connecting rod will require dismantling for cleaning.

Machine Fails to Knock-off

The cause of failure to knock-off may be in the electrical trip mechanism on the delivery, which is dealt with under a separate heading, or it may be due to a fault in the mechanism which causes the machine to stop if a sheet is not fed.

The feed knock-off mechanism operates when the auto stop plunger is not drawn back out of the path of the trip by the suction created each time a sheet is lifted. To operate correctly it requires a clear passage of air through the pipes and a free-moving auto stop plunger.

Check the pipes, which can become blocked by a rubber pipe having a faulty inside wall or by a dirty filter or by an accumulation of fluff inside the sucker tube.

Make sure the auto stop plunger is moving freely. It can become stuck in the pulled back position. To free it, undo the two screws and remove the cap. Extract the spring and plunger. Examine the flanges of the plunger and polish off any sharp edges. Clean and oil the plunger and smear a little grease on the inside wall of the cylinder, and replace. If the plunger still fails to operate correctly the pressure on the spring may be increased by loosening the lock nut and turning the screw clockwise with a screwdriver and relocking.

ELECTRICAL FAULTS

Electrical Delivery Trip

The mechanism, which causes the machine to stop if a sheet is not delivered is operated by a solenoid which is energised to engage a trip when the delivery gripper closes without taking a sheet.

The main contact is on the delivery gripper bar, where it engages with the lowest gripper. Also incorporated in the circuit is an on/off switch, a transformer to reduce the voltage, a pick-up rail and brush to maintain contact with the moving gripper bar, and a revolving timing contact which puts the circuit into a live condition only during the period where the gripper is normally delivering a sheet.

The solenoid is also engergised to stop the machine when the delivery table reaches the end of its free downward movement.

Trip Mechanism

The trip mechanism is the same as for the feed and the solenoid is fitted by the side of the auto stop plunger.

Both work in conjunction with the revolving crank which must be correctly set at “five past the hour” when the machine is turned to the point where the delivery grippers open to deposit the sheet onto the delivery table.

Solenoid

As described elsewhere the auto stop plunger is pulled back by the suction caused each time a sheet is lifted to be fed onto the platen and the catch in front of the plunger falls back with it to avoid the trip. The catch is extended so that part of it comes opposite to the plunger end of the solenoid which, when energised by a sheet failing to deliver, prevents the catch from following the auto stop plunger out of the path of the trip, and so the machine is stopped.

It is important that the plunger end of the solenoid, when at rest, should be well clear of the catch in its fully withdrawn position. To check this, push the auto stop plunger, and the catch, inwards against the spring as far as it will go, and, by means of the adjustable stop on the solenoid casing, set the end of the solenoid plunger clear of the catch.

Gripper Contact

The electrical contact on the delivery gripper bar must be kept clean and there must be true contact with the lowest gripper. Note the setting of the other grippers to ensure that they do not close in advance of the lowest gripper.

Pick-up Rail and Brush

The pick-up rail is a square bar behind the delivery pile and contact is maintained by a spring-loaded carbon brush fitted under the delivery gripper bar. Free movement may be prevented by accumulated spray powder in which case the brush and spring must be

cleaned. To do this remove the two securing screws and lift the delivery gripper bar. If the brush is free it will jump up but if not it must be pushed out carefully from underneath. A damaged brush must be replaced. When replacing after cleaning avoid trapping the spring.

Revolving Timing Contact

This is situated behind the delivery bracket and revolves once for each cycle of the machine. The low part of the cam should clear the tappet, and the high part of the cam should make contact and push the tappet upwards about $\frac{1}{16}$in. The cover can be removed to adjust the tappet. Contact is only required while the sheet is being delivered and the high part of the cam should therefore make its first contact with the tappet when the delivery gripper begins to move away from the platen to deliver the sheet, and contact should cease when the delivery gripper has completed its movement ready to deposit the sheet. It is important however that it be fully broken before the delivery gripper actually opens.

If this does not appear to be correctly set, turn the machine until the platen, opening after impression, measures 4in. across the top from the back platen. Then loosen the screw in the timing cam and rotate it in an anti-clockwise direction, as seen from the back of the machine, until the beginning of the high part just touches the tappet. Lock the cam in this position.

BELT DRIVE AND CLUTCH

To change a worn belt remove the guard then locate the two screws which secure the vertical flywheel support bracket to its horizontal base. Undo the lock nuts below the base and tap the two screws upwards and remove them. The support will then swing out-wards from the top without disturbing the bearing on the end of the flywheel shaft.

To adjust the clutch, loosen the lock nuts on the two levers on either side of the flywheel shaft near the inside face of the flywheel. Turn the screws clockwise to tighten, and relock. Adjustment may be made from either or both sides of the clutch and an exact balance between the two adjustments is not required. It is important that when released the flywheel should run absolutely freely.

AUTOMATIC WASH-UP

When the blade becomes badly worn it can be trued up to present a flat sharp surface to the ink drum. It should be cut at a slight angle slanting away from the drum at the bottom. The clamp screws can be loosened and the blade pushed forward when the exposed area is worn away. The screw on the cross stay, which causes the eccentric collar to lock when the handle is turned, will require adjustment after re-setting the blade.

Light pressure only is needed to obtain a clean wash-up.

SPRAY ATTACHMENT

The usual causes of failure are damp powder and needles which are damp or greasy. Also the rubber diaphragm can become porous or fractured near the centre.