
**INSTRUCTION
BOOK**
for the
OPERATION
and
MAINTENANCE
of the

V-50
**MIEHLE
VERTICAL**

MIEHLE PRINTING PRESS & MFG. COMPANY

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FOREWORD

This instruction book is provided for operators of the V-50 Vertical press. In preparing this manual the aim has been to give the essential details covering the installation, operation and maintenance of the press. It is assumed that the operator has acquired a thorough knowledge of the fundamental principles of presswork. Hence, basic principles of pressmanship, which are thoroughly covered in available textbooks, have not been included in this manual.

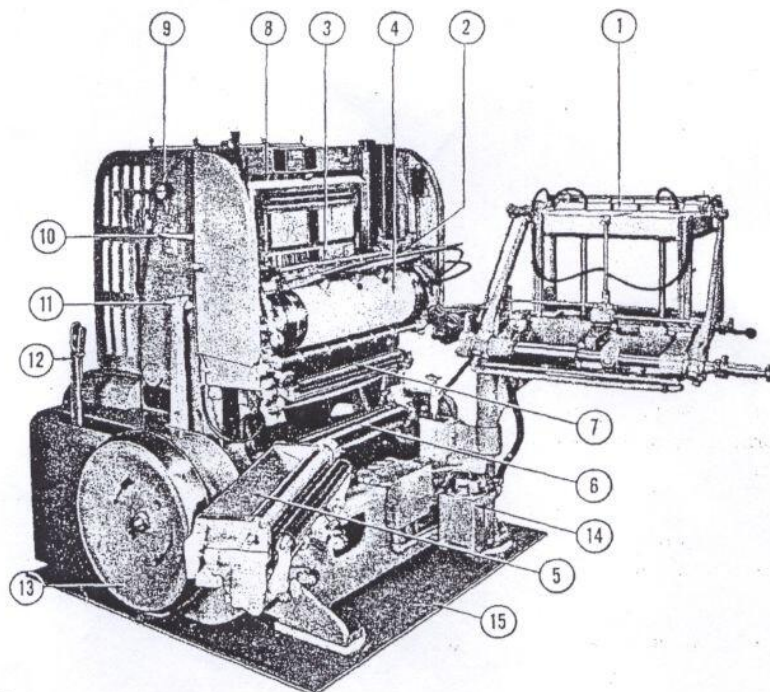
Section I of this book gives general and detailed descriptions of the press which, together with the photographs accompanying the text, will enable the operator to thoroughly familiarize himself with the various functional components of the press.

Section II gives the essential information necessary for the installation of the press.

In the event that a demonstrator is not present when a new press is installed, a procedure for starting the press and checking press operation is given in Section III. Detailed information and instructions for making all the operating adjustments that may be required for running the various classes of jobs within the range of the V-50 are also given in Section III. A step by step procedure for starting a job is given in this section and should be followed as given therein in order that maximum press efficiency may be assured.

Section IV provides general instructions covering the lubricating of the press. A series of instructions outlining general precautions to be observed during make ready and press operation are given in Section IV. The operator should thoroughly familiarize himself with these precautions in order to avoid excessive press wear, thereby extending the life of the press. Detailed instructions for servicing the press are also given in this section of the manual. Finally, in Section IV, a trouble shooting chart is provided which, in the event of trouble occurring due to faulty settings or adjustments, will aid the operator in quickly locating and remedying the cause of the trouble, thereby reducing to a minimum the time the press is inoperative.

At the back of the book, tipped in, is a lubrication chart giving complete detailed instructions for oiling and greasing the V-50 Vertical press.

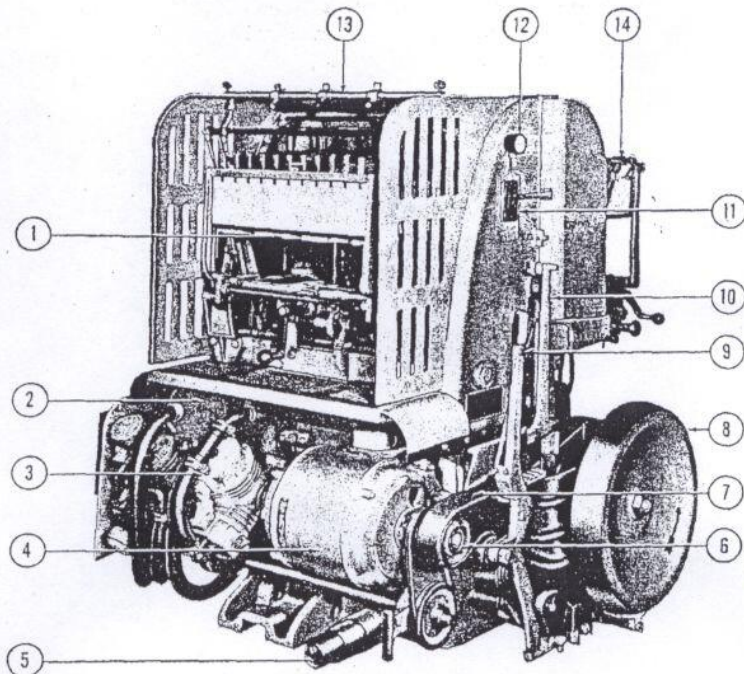


- 1—Feeder (Open Position)
- 2—Transfer Table
- 3—Side Guide Rod
- 4—Impression Cylinder
- 5—Ink Fountain (Open Position)
- 6—Distributor Rollers (Open Position)
- 7—Form Rollers (Open Position)
- 8—Form Chase
- 9—Oil Pressure Gage
- 10—Motor Push-Button Control
- 11—Auto-Stop Lever
- 12—Belt Tightener Lever
- 13—Flywheel
- 14—Automatic Lubricator Pump
- 15—Oil Drip Pan

Figure 1—Feeder end of Press

- 1—Delivery
- 2—Vacuum Surge Tank
- 3—Air Pump
- 4—Motor
- 5—Change Pulleys
- 6—Change Pulley (Installed)
- 7—Drive Belt
- 8—Flywheel
- 9—Belt Tightener Lever
- 10—Auto-Stop Lever
- 11—Motor Push-Button Control
- 12—Oil Pressure Gage
- 13—Delivery Air Blast Tube
- 14—Feeder (Closed Position)

Figure 2—Delivery End of Press
(Motor drive and drive belt
guards removed)



SECTION I—DESCRIPTION

1. GENERAL DESCRIPTION.

The Model V-50 Vertical is an automatic job cylinder press designed to handle the majority of printing jobs at maximum speed and minimum cost. It has a sheet size range of $3\frac{1}{4}" \times 5\frac{1}{2}"$ to $14" \times 20"$, handling all stock from .002 to .015 thickness stock. It is designed to print from simple type forms, half-tones, color and process plates with maximum efficiency. The operating speed of the V-50 ranges from 3,000 to 5,000 impressions per hour, depending upon the nature of the job to be run.

The V-50 employs the principle of having the bed and cylinder each performing one-half the printing stroke, with the combined weight of the bed and associated parts, including the form, counterbalancing the combined weight of the cylinder and associated parts, thus permitting high-speed production with an almost total absence of jar or vibration. The impression mechanism, through the use of the stop-cylinder principle, permits the cylinder to revolve only on the up (printing) stroke. The press rests upon three points of support, making it impossible for the press to get out of alignment and eliminating the need for leveling the machine.

The major functional assemblies of the V-50 are the Feeder, Transfer Table, Impression Cylinder, Chase, Ink Distribution Mechanism and Delivery. (See figures 1 and 2.) An improved air system assures positive sheet control from the time the sheet is fed until it is printed and delivered. The press is driven by a 3 h.p. motor which, together with five easily changeable speed pulleys, permits operating speeds of 3,000, 3,500, 4,000, 4,500 and 5,000 impressions per hour. The press incorporates an automatic lubrication system which automatically supplies and meters the correct amount of oil necessary to lubricate individual bearings.

The following is a brief description of the operation of the V-50 Vertical. The feeder pile top sheets are fluffed at the ends and center of the front edge by air blast, which can be regulated for maximum and minimum weight stock; separator shoes (four types for varied weight stocks are supplied) carried on a separator frame, pick up the separated sheet

and, by means of feeder arms, deposit it on the transfer table. At this instant the shoes release the sheet and suction is transferred to holes in the transfer table, holding the sheet in position as the table travels forward and downward toward the impression cylinder. The front edge of the sheet is then gently positioned against the cylinder grippers, which also act as front guides. At this point transfer table suction is released and the table moves forward about $1/16"$, insuring accurate front register; the sheet is then positioned by the side guide for side register, after which the transfer table again moves forward slightly, positioning the sheet once again against the front guides in the event that front register may have been disturbed during side-guide positioning. While the cylinder is at bottom center (bottom of down stroke) and cylinder and sheet are at rest, the grippers close on the sheet; the cylinder then starts its upward (printing) stroke, during which stroke the cylinder revolves and the sheet, held firmly in place by the grippers, receives its impression. When the cylinder reaches top center (top of up stroke), the sheet is taken directly from the cylinder grippers by the delivery grippers and deposited, printed side up, on the delivery table.

While sheets are running through the press, the feeder pile is automatically maintained at proper feeding height and the delivery table lowers automatically as the pile of printed sheets increases. In addition, a tripping mechanism (set for operation by the operator after sheets start feeding) automatically stops the press when a sheet remains on the transfer table instead of transferring to the cylinder, thus preventing sheets from piling up on the table and then going through the press in a bunch. The trip mechanism also operates to stop the press when a sheet is not fed from the feeder. This serves to automatically stop the press after the last sheet of the pile has been fed. A cylinder trip mechanism prevents the cylinder from revolving when a sheet is not accurately positioned against the front guides (cylinder grippers), thus acting as a front register detector. This mechanism also prevents impressions being made on cylinder when automatic stop is not operating and sheets are not being fed.

2. DETAILED DESCRIPTION.

a. FEEDER. (See figure 3.)—The feeder consists of the pile table (1) and its raising mechanism; feeder arms (2) and separator frame (3) to which are attached feeder shoes (4) and holders and sheet guards (5); front and rear pile guides (6) and (7), adjustable feeder blower nozzle (8), and feeder control air valve assembly. These units are mounted on a platform (17) which may be swung away from the press, permitting access to the impression cylinder and inking mechanism. This allows for loading of stock on the pile table while pressman is working on make ready.

The pile table, which holds twelve inches of stock, may be raised or lowered manually by means of its adjusting crank (10). During press operation the table is automatically maintained at correct feeding height for any weight stock between thin manifold and lightweight cardboard.

The front and rear pile guides, which also serve as side guides, are adjustable to accommodate any sheet size within the range of $3\frac{1}{4}'' \times 5\frac{1}{2}''$ to $14'' \times 20''$.

A graduated scale is provided on the front edge of the pile table and corresponds to a scale on the transfer table. This scale is provided to enable the oper-

ator to set the pile guide to the same setting as the side register guide. For running small size jobs such as post cards, a special rear pile guide is provided.

Air blast is used to fluff the front edge of the top sheets on the pile. This blast is supplied to the front corners of the pile through two jets (14) located in the front pile guides. A feeder blower nozzle (8), the height of which is adjustable by means of a handwheel (9), fluffs through to separate the top sheets. The feeder air control valve, located in the feeder shaft, controls suction to the feeder shoes and is operated by a handle (16) located at the left side of the feeder.

The feeder arms, which are mechanically linked and timed with the other functional assemblies of the press, carry the sheets from the pile table to the transfer table. The arms support the separator frame and separator frame air tube (12). A feeder paper guard (15) clips to the air tube and serves to prevent the tail end of sheet from folding ahead after sheet is deposited on transfer table. Feeder shoes, inserted in shoe holders, are mounted on the separator frame and are connected to the separator frame air tube by short lengths of flexible hose (11). V-50 Vertical presses are provided with several sets of

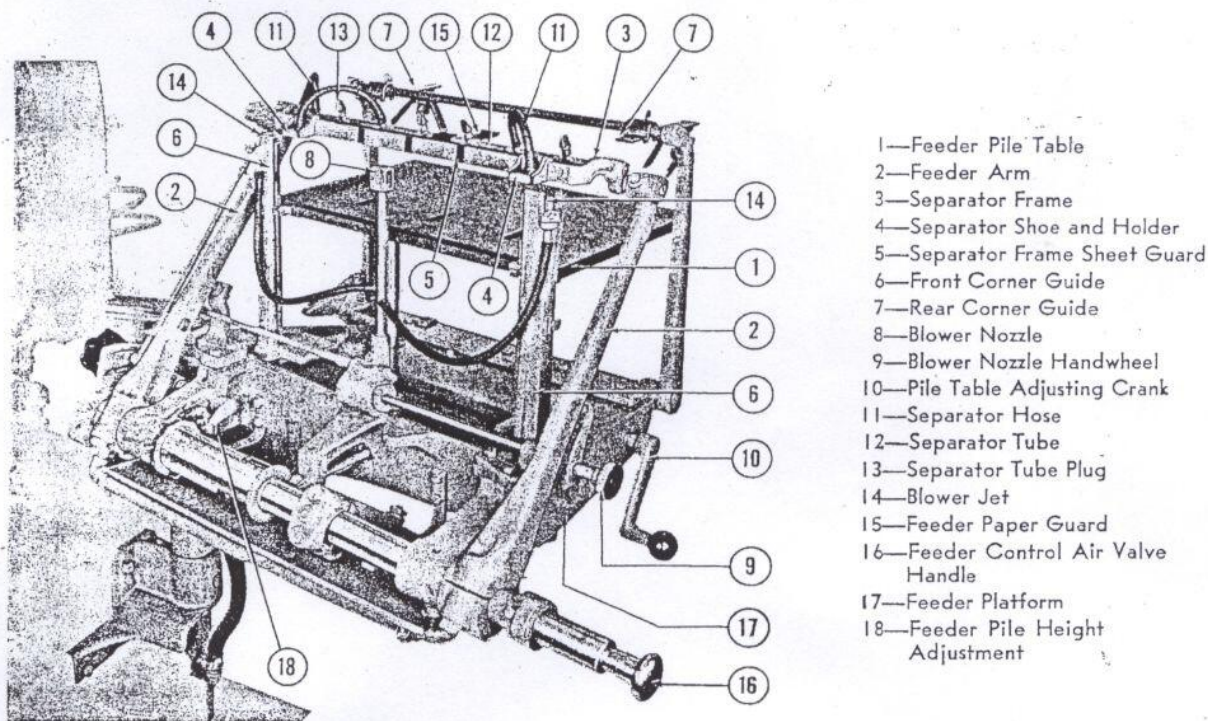


Figure 3—Feeder

feeder separator shoes which are fully described on page 13, paragraph 4 a (4). Different shoes are used for feeding various weights of stock and it is important to use shoes that are correctly adaptable to the stock being run. The shoe holders are movable along the separator frame to handle different sized sheets. Conveniently located nipples in the separator frame air tube are provided for connecting the flexible hoses leading to the shoes to accommodate the varied positions of the shoes. Rubber plugs (13) are provided to cover the nipples not in use. Three separator frame sheet guards (5) are provided to be attached to the separator frame and serve to assure positive control of the sheets when deposited on the transfer table.

A shelf attached to the feeder platform is provided for holding the extra sets of shoes and miscellaneous tools.

b. TRANSFER TABLE AND SIDE GUIDE. (See figure 4.)—The transfer table (1), supported by two levers (2) attached to the cylinder journal cap, receives a sheet from the feeder separator shoes and transfers it to the impression cylinder. During the travel of the transfer table toward the cylinder, the sheet is held on the table by means of suction applied through a series of holes (3) in the table. A

graduated scale (4) on the transfer table enables the operator to note the setting of the side guide (5) and to set the feeder pile guide accordingly. When the transfer table is not in use, the spring clip (6) holding the table to its levers is released, permitting the table to be removed and placed in the brackets (7) provided at the top of the press frame. Three card guard wheels, located underneath the front end of the transfer table, are positioned in the printing margins and serve to prevent printed sheets from smudging against the transfer table front plate.

Two side guides (5) are mounted on the side guide rod to provide either left or right side register. Two guides are provided to facilitate interchange from left to right side guide, and adequate space is allowed between the two guides so that there is no interference from the opposite side guide even when handling a maximum sized sheet or form. Two transfer table brushes (8), which serve to hold the sheet against the front guides, are also mounted on the side guide rod. In addition, three sheet guard wheels (9) are mounted on the side guide rod. These sheet guard wheels are positioned downward and in the blank margins, and are used only when running large sheets which have a tendency to whip; at other times they are swung up to non-operating position.

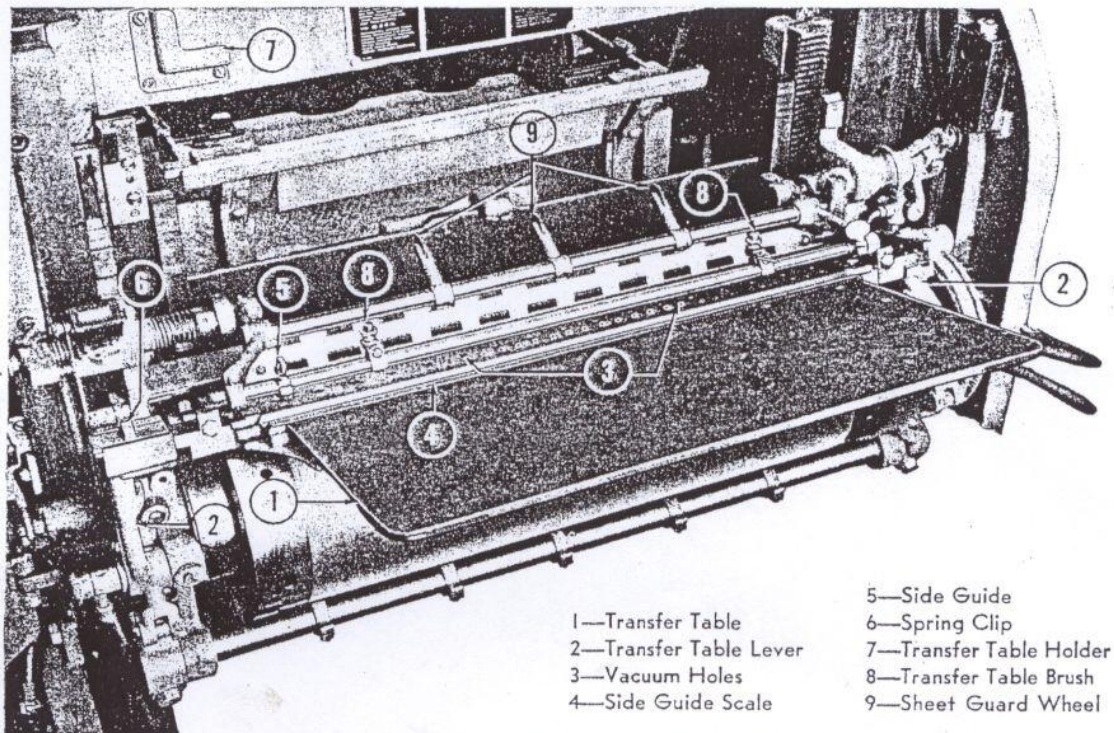


Figure 4—Transfer Table and Side Guide

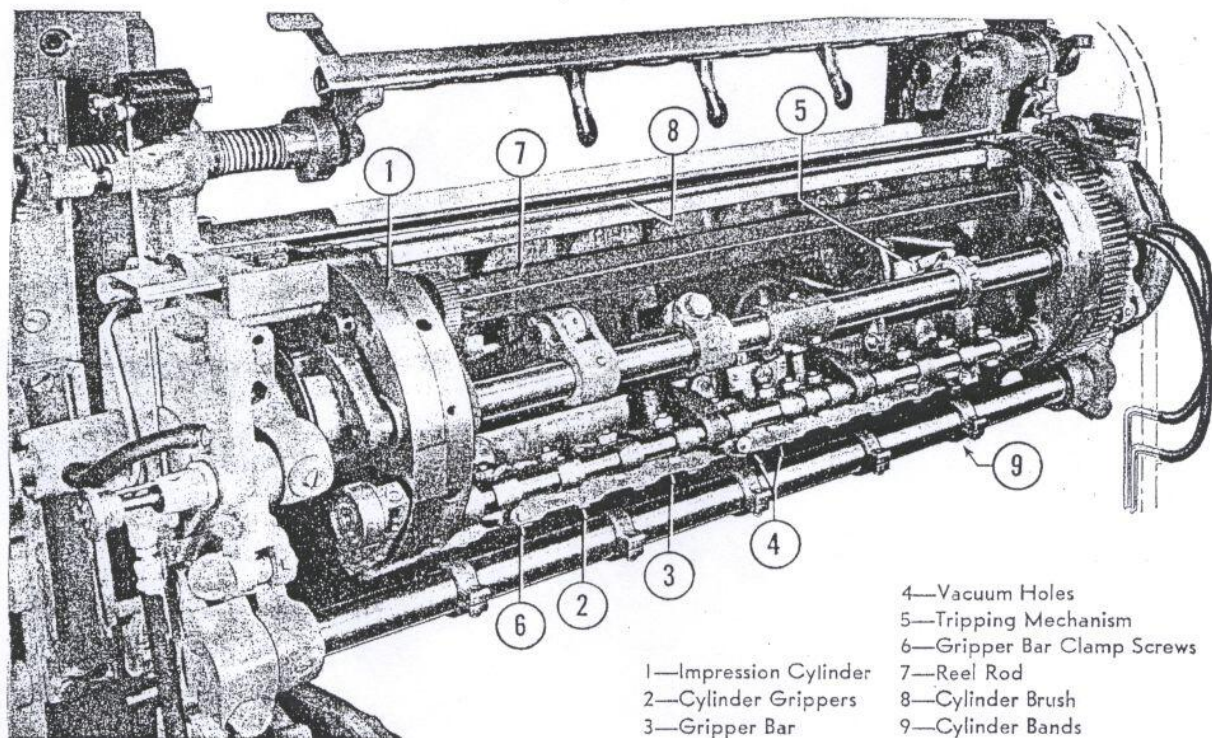


Figure 5—Impression Cylinder

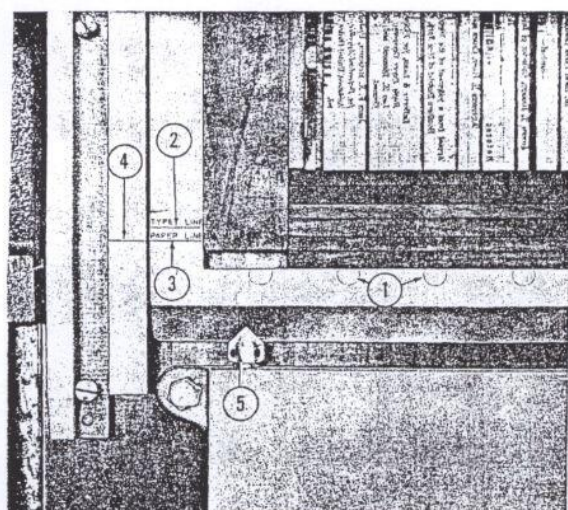
c. IMPRESSION CYLINDER. (See Figure 5.)—When the impression cylinder (1) reaches the bottom of its downward stroke, it receives the sheet from the transfer table. During its upward (impression) stroke, the cylinder revolves and the sheet receives the impression from the form on the bed which is travelling in an opposite direction. When the cylinder reaches the top of its upward stroke, it has completed one revolution and does not revolve as the sheet is taken from the cylinder grippers by the delivery grippers. On the downward stroke, the cylinder gap faces the form, clearing all type high matter.

The cylinder grippers (2), mounted in the gripper bar (3), take the sheet from the transfer table and hold it while receiving its impression. The grippers are self-adjusting for gripping all thicknesses of paper within the range of the V-50. The grippers also act as front guides for sheet front register and are adjustable for evenly or unevenly cut stock. The six vacuum holes (4) in the center of the gripper bar connect with a tripping mechanism (5) which controls the turning of the cylinder.

When front register is accurate, these holes (4) are

covered by the sheet, and suction is applied to a trip diaphragm inside the cylinder, permitting the cylinder drive mechanism to engage. When these holes are uncovered due to inaccurate sheet front register, insufficient suction is applied to the trip diaphragm, and the cylinder does not revolve. This prevents impressions being made on sheets not accurately positioned for front register. This also serves to prevent impressions being made on cylinder packing if press is running and sheets are not being received by the grippers. The gripper bar also acts as tympan clamp. Four holes are provided on one side of the gripper bar to receive the cylinder tympan pins, and three large countersunk holes are provided on the reverse side to receive the three clamp screws (6) which clamp the bar to the cylinder. A reel rod (7) serves to tighten and secure the tail end of the cylinder packing draw sheet.

An adjustable cylinder brush (8) is provided to smooth out and hold the sheet to the cylinder packing. Cylinder bands (9), attached to a cylinder band tube, serve to prevent the sheet from coming into contact with the rollers and are adjustable for positioning in blank margins.



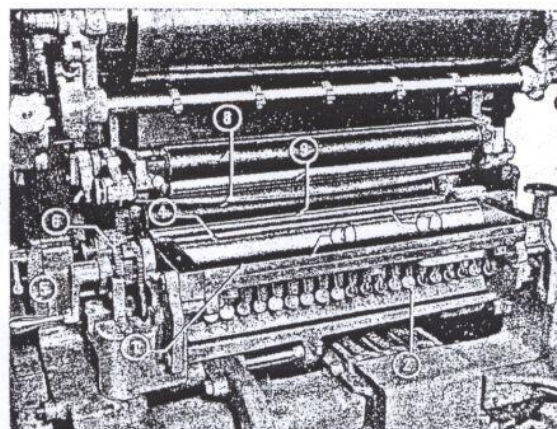
- | | |
|---|-------------------------|
| 1—Cylinder Gripper
Position Markings | 3—Paper Line |
| 2—Type Line | 4—Bed Bearer Marking |
| | 5—Chase Adjusting Screw |

Figure 6—Chase Alignment Markings

d. CHASE. (See figure 6.)—Two chases are furnished with each press. The inside dimensions of the chases are $14\frac{1}{8}$ " x $19\frac{3}{4}$ " which allow the locking-up of a $12\frac{1}{4}$ " x 19" form (two roller coverage). A $13\frac{1}{4}$ " x 19" maximum form (one roller coverage) can be locked-up by using quoins on the gripper edge. Circles (1) are stamped on the gripper edge of the chase to show the exact position of the cylinder grippers. This is done to facilitate the proper positioning of the form in the chase for best gripper handling. Alignment markings near the bottom edge of the chase indicate the type line and the paper line. The "PAPER LINE" (3), used in conjunction with an alignment marking (4) on the bed bearer, serves as a guide in the imposition of the form. The "TYPE LINE" (2) indicates the point beneath which no type or type-high material should extend. Chase adjusting screws (5), mounted on the ink table, are provided for raising and lowering the chase. The chase adjusting screws may be used to raise or lower the chase about $\frac{1}{16}$ " if front margin is not correct after printing first sheet. Chase side pins take up side play between bed bearers, and allow for angling chase slightly by turning either one of the chase adjusting screws. The chase is kept in place by the chase clamp located at the top of the bed.

e. INKING MECHANISM. (See figure 7.)

(1) INK FOUNTAIN.—The ink fountain (1) has a capacity of over five pounds of book ink. It contains fountain screws (2) and a flexible blade (3)



- | | |
|-------------------|------------------------|
| 1—Ink Fountain | 6—Roller Feed Setwheel |
| 2—Fountain Screws | 7—Fountain Ductor |
| 3—Fountain Blade | 8—Form and Ink Rollers |
| 4—Fountain Roller | 9—Vibrator Rollers |
| 5—Roller Crank | |

Figure 7—Inking Mechanism

to permit fine adjustment of the ink flow. Numbers stamped on the fountain frame adjacent to each fountain screw correspond to the numbers stamped on the delivery sheet stop bar. This numbering system is provided to aid the operator in making the necessary adjustments for proper ink distribution after checking the printed sheets. The ink fountain can be swung away from the press and is equipped with a drop blade to facilitate wash-ups. The fountain roller (4) may be manually turned by means of a fountain crank (5) which will fit either end of the roller. A set wheel (6) at the left end of the fountain regulates the amount of ink the fountain roller will feed during press operation. The fountain ductor roller (7) is factory set for proper contact with fountain roller and vibrator. A safety arrangement is provided to prevent the possibility of the fountain being swung against the distributor roller when in the wash-up position.

(2) FORM AND INK ROLLERS.—Ink is distributed by four composition rollers (8), each two inches in diameter, and two gear-driven, steel vibrators (9). All the composition rollers are screw adjusted for proper contact with the ink table and, as the ink table is type high, this brings them into proper contact with the form and vibrator rollers.

The rollers may be swung down out of operating position when press is not running, to prevent flattening of the composition rollers, also to provide for easy wash-up. Provision is made for easy removal of the composition rollers.

f. DELIVERY. (See figure 8.) — The delivery mechanism includes the delivery table and its lowering mechanism, the delivery arms to which are attached the delivery grippers, the delivery stop finger bar and stop fingers, the jogger supporting bar with the side and rear joggers, and the delivery air blast tube and nozzles.

The delivery table (1), which holds twelve inches of stock, may be raised or lowered manually by means of its crank (2). During press operation the table is automatically lowered as printed sheets are delivered to the table.

The rate at which the table lowers may be varied to accommodate different thicknesses of stock by the setting of the table lowering set wheel (3).

The delivery arms (4) carry the sheet from the impression cylinder to the delivery table. The delivery arms support the delivery grippers (5), which are self-adjusting regardless of the size or weight of stock.

The delivery side and rear joggers (6 and 7) are adjustable to accommodate any sheet size within the range of $3\frac{3}{4}'' \times 5\frac{1}{2}''$ to $14'' \times 20''$.

The delivery stop finger bar (8) can be lowered to permit the removal of the pile. The bar is numbered to correspond to the numbers on the fountain frame

to aid the operator, when inspecting printed sheets for proper ink distribution, in making the necessary fountain screw adjustments. The three air blast nozzles (9) on the delivery blow tube direct air blast down onto the sheets as they are deposited on the delivery table, thereby quickly settling sheets on the table. This air blast is required only for thin stock. When air blast is not required the nozzles may be turned up. The position of the blow tube is adjustable, along the delivery side guards to which it attaches, to accommodate varying sheet sizes.

g. DRIVE. (See figure 9.)—The V-50 press is driven by a 3 h.p. constant speed motor (1). Five speed-change pulleys (2) supplied with the press are easily installed on a motor drive shaft splined adaptor (3) and provide for press speeds of 3,000, 3,500, 4,000, 4,500 and 5,000 impressions per hour. A press driving belt (4) links the speed pulley directly with a flywheel pulley (5) which in turn is directly geared with the press main cam shaft. A heavy flywheel (6) attached to the flywheel pulley shaft insures smooth press operation. A belt tightener lever (7) provides for gradual starting or stopping of the press, while the drive motor is running, by flywheel braking and belt slacking adjustment.

The press bed is driven from a crank shaft geared

- 1—Delivery Table
- 2—Table Adjusting Crank
- 3—Table Lowering Set Wheel
- 4—Delivery Arms
- 5—Delivery Grippers
- 6—Side Joggers
- 7—Rear Joggers
- 8—Stop Finger Bar
- 9—Air Blast Nozzles

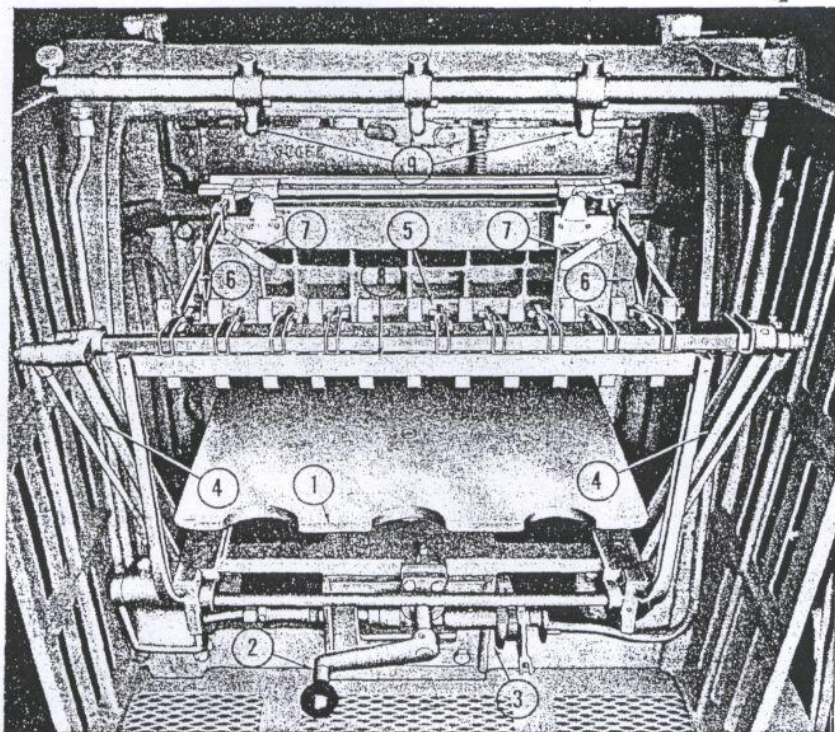


Figure 8—Delivery

to a main drive gear on the main cam shaft. A press bed rack and cylinder gear provide for rotation of the impression cylinder.

The feeder and delivery mechanisms are driven and timed through cams mounted on the main cam shaft. Another system of cams on the cam shaft operate and time the opening and closing of the press air valve. The automatic lubrication pump is also driven and timed from the main cam shaft.

h. AUTOMATIC TRIPPING SYSTEM.—During press operation, in order to prevent piling up of sheets on transfer table with the possibility of jamming the press, an automatic stop immediately stops the press when a sheet is not taken from the transfer table by the cylinder grippers.

The same trip is actuated, thereby stopping the press, when the transfer table does not receive a sheet from the feeder separator shoes. This provides for automatic stopping of press when the last sheet has been fed from the feeder pile. The automatic stop is set for operation by the operator when sheets are being fed.

When no sheets have reached the cylinder at the start of a run, a trip diaphragm in the cylinder prevents the cylinder from revolving on the impression stroke, thereby avoiding printing on the packing.

While the left cylinder end guard is open, a lever pushes the "STOP" (red) motor control push-button, thereby acting as a positive safety device.

i. AIR SYSTEM.—The blast and suction for the press are supplied from two diaphragm-type pumps, (8) figure 9, mounted at the delivery end of the press. The pumps are belt driven from a common drive shaft which is belt connected to the press motor drive shaft. The mounts for the pumps and motor are screw adjustable to maintain proper belt tension. The pumps require no lubrication, thereby reducing the possibility of oil entering the blast lines and staining the job being run.

Two independent air blast lines are employed. One leads to the delivery nozzles and the other is used for feeder separation, therefore the air blast used for feeder separation is not affected when the delivery nozzles are opened. The petcock at the bottom of the feeder post is the only point where the amount of air blast used for feeder separation can be controlled. It is opened to decrease the amount of air blast.

Suction is controlled by three valves which are operated by independent cams on the cam shaft. Suction to the feeder shoes is controlled by the feeder control air valve. The amount of suction can be regulated by the setting of the vacuum relief valve.

- 1—Motor
- 2—Speed-Change Pulleys
- 3—Adaptor
- 4—Drive Belt
- 5—Flywheel Pulley
- 6—Flywheel
- 7—Belt-Tightener Lever
- 8—Pumps

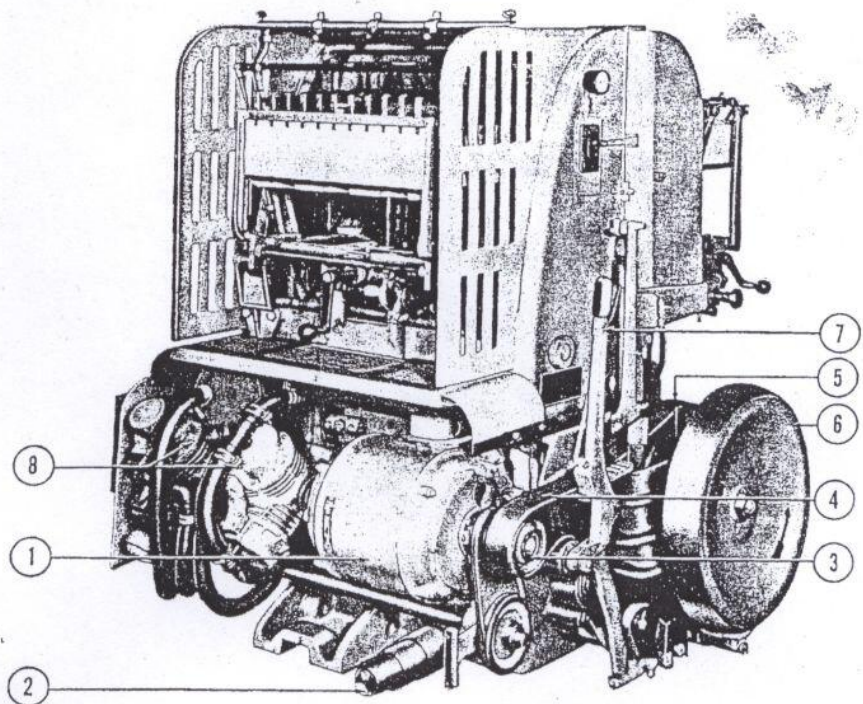


Figure 9—Drive and Air Pumps

j. **LUBRICATION SYSTEM.**—Automatic lubrication is supplied by means of an oil pressure unit, and this system provides a controlled metered flow to all the major bearings. During press operation the oil is forced to the bearings by a chain-driven pump at intervals of approximately every 1,800 press impressions. An oil pressure gage indicates the oil pressure during a pressure impulse. As long as the gage indicates oil pressure, it is certain that all the bearings are securing adequate lubrication. In addition to automatic lubrication, the system also provides for immediate lubrication (required for new installation and when press has been inoperative for an

extended period) by the use of the "Instant Feed Button," located on top of the pump.

Special self-lubricating bushings are used extensively in conjunction with the automatic lubricating system as well as for bearings requiring manual lubrication. Oil cups and grease fittings are provided for bushings and other parts which require manual lubrication, the oil holes leading to bushings being covered by screw plugs which have to be removed when oiling. A drain plug is provided at the right side of the base frame in order to permit draining of oil that may accumulate in the bottom of the press. An overflow pipe is located adjacent to the drain plug.

SECTION II—INSTALLATION

The V-50 press is timed and adjusted at the factory. No adjustments other than those necessary for running the various sheet sizes and weights of paper stock handled by the V-50 (refer to Section III) need be made by the pressman for a new installation. The following instructions outline the necessary steps for installing a new V-50 Vertical.

1. UNCRATING.

a. Remove press and accessories from shipping crates and inspect for any damage that may have occurred during shipment.

b. Make certain that all press accessories are accounted for. Report any press damage or missing items to the transportation company that delivered the press.

c. The transfer table board is shipped detached from its metal frame. Attach board to frame, using screws inserted in frame screw holes.

2. INSTALLING PRESS.

a. Position a sheet metal oil pan (47 x 47 inches, with rolled edges) in location decided upon for press.

b. Move press onto oil pan, placing the three balsawood blocks (supplied with the press) under the three "feet" of the press. It is not necessary for the press to be absolutely level.

CAUTION

When moving press use jacks or bars under the press main frame only. Do not jack up under press flywheel or drive mechanism. Failure to comply with this caution may result in damage to the press.

c. An electrician must make the electrical connections as shown on the diagram which is on the inside of the control box located on the right side of the press adjacent to the air pumps. If a multi-phase motor is supplied with press, check, upon completing electrical connections, that the rotation of motor is correct. This is checked by observing the direction of rotation of the press flywheel while press is operating under power. Arrows on the flywheel indicate the correct direction of rotation. If rotation is in opposite direction, interchange any two wire connections to the motor.

d. An on-and-off switch, not supplied with press, should be mounted on the press frame or in a location near the press where it will be easily accessible to the press operator.

3. PREPARATION FOR USE.

a. Using a clean cloth dampened with a naphtha or benzine solvent, remove the protective grease coating (applied at factory) from all exposed metal parts. Be sure that all press parts having direct contact with the sheets to be printed are entirely free of the protective grease coating.

b. Lubricate the press thoroughly. (Refer to Lubrication, Section IV of this book).

c. After installation is completed, make a check run of the press to make certain that all parts are operating properly. Follow the procedure given in paragraph 3, page 10 of this book.

SECTION III—OPERATION

1. GENERAL OPERATING INFORMATION.

In order to obtain maximum production from the V-50 Vertical, the operator must be sure that the press is correctly adjusted and set for the particular job to be run. Running the press at maximum operating speed will not necessarily result in maximum production. The press is designed to operate at speeds of 3,000, 3,500, 4,000, 4,500, and 5,000 impressions per hour, depending upon the nature of the job to be run. Set the speed of the press so that maximum press efficiency will be obtained for the particular job that is to be run.

The following instructions are provided to enable the operator to clearly understand how to operate the press and make the necessary adjustments for running the varied sizes and weights of stock handled by the V-50. The operator should thoroughly familiarize himself with these instructions and make the necessary adjustments and settings as directed. By checking and making certain that all adjustments and settings are accurately made, the operator can insure continuous press operation, thereby resulting in maximum finished sheets at the end of the day.

It is assumed that the operator has acquired a thorough knowledge of the fundamental principles of presswork. Hence, basic principles of pressmanship have not been included in this section.

2. OPERATING CONTROLS. (See figure 10.)—The following information identifies and explains the function of all controls used during press operation.

a. **START-STOP PUSH BUTTONS.**—The "START-STOP" push buttons (1) control the starting and stopping of the press motor.

b. **BELT-TIGHTENER LEVER.**—The belt-tightener lever (2) is used during press operation to start and stop the press while the motor continues to operate. When the lever is released (pulled to the left) the press drive belt is disengaged from the pulley and braking is applied to the press flywheel.

c. **BELT-TIGHTENER TRIP AND AUTO-STOP LEVERS.**—The belt-tightener trip and auto-stop levers (3) and (4) automatically release the belt-tightener lever when sheets are not being fed and automatic stop control knob (5) has been turned to its up position. After tripping occurs, the belt-tightener trip and auto-stop levers are automatically re-engaged.

d. **FEEDER CONTROL AIR VALVE HANDLE.**—The feeder control air valve handle (6) controls the operation of the feeder air valve which supplies suction to the separator shoes. When handle is pushed in, suction is supplied to shoes for sheet pick-up.

- 1—Start-Stop Push Buttons
- 2—Belt-Tightener Lever
- 3—Belt Tightener Trip Lever
- 4—Auto Stop Lever
- 5—Automatic Stop Control Knob
- 6—Feeder Control Air Valve Handle

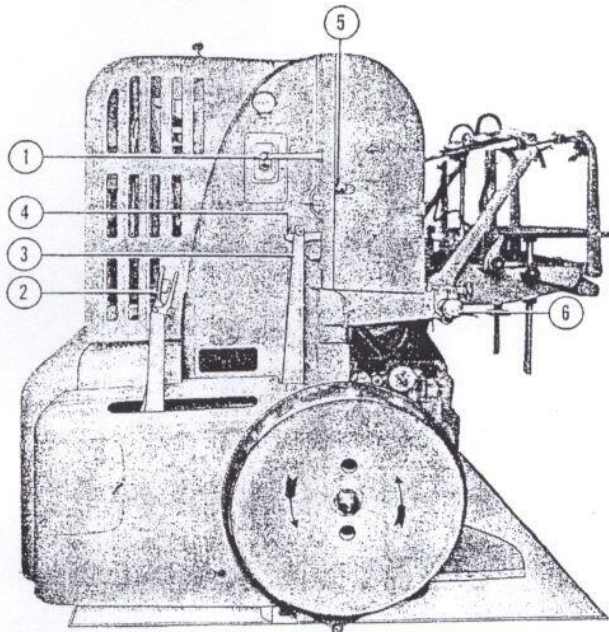


Figure 10—Operating Controls

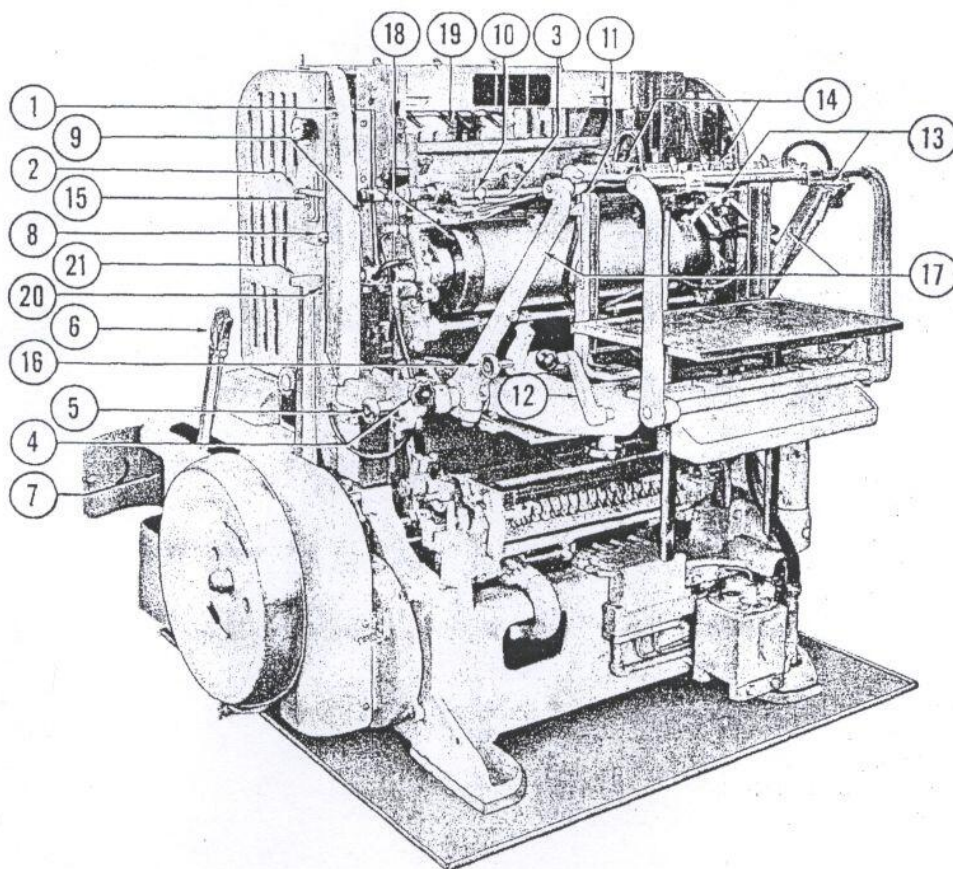


Figure 11—Starting Press

3. STARTING PRESS.—The following instructions outline the steps required to start the press for the purpose of observing press operation or for making a check run of a new press after installation. It is recommended that the operator study the entire operation section of this book before starting the press. However, in cases where a demonstrator is not present to check the operation of a newly installed press, the operator can make a check run of the press by adhering to the following procedure. Reference is made to other paragraphs in this section which give detailed instructions for performing the operations specified in the procedure.

CAUTION

A new press to be started for the first time must be thoroughly lubricated prior to starting. Lubricating instructions are given in Section IV of this book.

a. PROCEDURE FOR STARTING PRESS. (See figure 11:) Before starting press, turn flywheel manually one complete cycle to be sure that there is clearance for all moving parts.

(1) Make certain power is off by opening left end cylinder guard (1), thereby tripping the "STOP" (red) motor control push-button (2).

(2) Attach transfer table (3). (Refer to paragraph 1, page 14).

(3) Lock feeder (4) in operating position (refer to paragraph 7, page 14) and then pull feeder control air valve handle (5) to its out position.

(4) Release belt-tightener lever (6) (extreme left position).

(5) Install 3,000 I.P.H. (smallest) change pulley (7). (Refer to paragraph 4, page 21).

(6) Turn automatic stop control knob (8) so that red button is in its down position.

(7) Close the left end cylinder guard (1).

(8) Check that side-guide shifting cam (9) is positioned for left side register and then set left side guide (10) at $9\frac{1}{2}$. (Refer to paragraph 2, page 14).

(9) Set left side front pile guide (11) so that "0" alignment marking is at $9\frac{1}{2}$. (Refer to paragraph 1, page 12). Position opposite pile guide to suit size of sheet to be used for check-run (11" x 17" medium weight stock is recommended).

(10) Lower feeder pile table by turning crank (12) and then place a few sheets of stock on table.

(11) Raise table until top sheet of pile is $\frac{1}{2}$ " below top of front pile guides. (Refer to paragraph 2, page 12).

(12) Set rear corner pile guides (13). (Refer to paragraph 3, page 12).

(13) Check that correct feeder separator shoes (14) are installed in holders for the stock to be run. (Refer to paragraph 4, page 13).

(14) Position separator shoes to suit size of sheet. (Refer to paragraph 4, page 13).

(15) Raise delivery table to its highest position. (Refer to paragraph 1, page 20).

(16) Push "START" (black) motor control push button (15), thereby starting motor and air pumps.

(17) Slowly pull belt-tightener lever (6) to running position, thereby starting press.

Observe that cylinder does not revolve when sheets are not being fed. The press is now ready for feeding sheets.

(18) When feeder arms are moving toward the feeder pile, push the feeder control air valve handle (5) in. Suction is now supplied to separator shoes and top sheet of pile should now be picked up by the shoes. If top sheet does not separate from pile, turn blower nozzle handwheel (16) until nozzle is at correct height and sheet is separated from pile.

(19) Observe that sheet is carried by feeder arms (17) and deposited on transfer table, at which point suction is released from separator shoes and applied to the holes in transfer table, thereby holding the sheet on the table.

(20) Observe that the transfer table moves forward and downward toward the impression cylinder (18) which in turn is travelling in its down stroke but not revolving.

(21) Observe that the transfer table positions the sheet up against the cylinder grippers which now are acting as front register guides, and also note that at this point the suction is released from the transfer table, allowing the sheet to move on the table for front register.

(22) Observe that the forward movement of the transfer table now stops momentarily, allowing the side guide to position the sheet for side register. After side register is completed, observe that there is again a slight forward movement of the transfer table which serves to once again position sheet for front register in the event that sheet may have been disturbed during side positioning of sheet. At this point the cylinder will be at rest at bottom center (bottom of down stroke), sheet will be at rest, and cylinder grippers close on sheet.

(23) Observe that cylinder now starts its up (printing) stroke and starts to revolve; the sheet, held firmly in place by the cylinder grippers, is smoothed against the cylinder packing by the cylinder brush located ahead of printing. When the cylinder reaches top center (top of up stroke), the sheet is released by the cylinder grippers and is taken by the delivery grippers (19).

(24) At the point just before sheet is released by delivery grippers, stop the press by moving the belt-tightener lever (6) to extreme left position. Position delivery side and rear joggers to suit the size of sheet. (Refer to paragraph 2, page 21).

(25) Start the press again by slowly moving the belt-tightener lever (6) to the right, and then turn the automatic stop control knob (8) to its up (red knob up) position. If a sheet is not deposited on the transfer table, or if a sheet remains on the transfer table during the cylinder up stroke, the press will now stop automatically; that is, the auto-stop lever (20) will disengage from the belt-tightener trip lever (21), causing the belt-tightener lever (6) to release, thereby braking the flywheel.

(26) Allow the press to run until all sheets have been fed through the press. Observe that as the pile increases on the delivery table, the table automatically lowers. The amount that the table lowers per impression may be varied by changing the setting of the delivery set-wheel. (Refer to paragraph 1, page 20). Observe that, after the last sheet has been fed from the feeder pile table, the press automatically stops by means of the auto-stop mechanism, as described in step (25).

(27) Lower the delivery sheet stop finger bar and remove the pile from the delivery table.

(28) If the press is not to be immediately operated, again press the "STOP" (red) motor control push button.

The operator should repeat the above procedure several times until he is thoroughly familiar with the movements of the V-50 press.

4. OPERATING ADJUSTMENTS.

The following information and instructions are provided so that the operator of the V-50 Vertical may be thoroughly familiar with all parts of the press that may require adjustments and will understand how to make the necessary adjustments or settings. It is not necessary to make all adjustments for each job. The adjustments to be made will depend upon the size and type of stock to be run. In order to obtain maximum efficiency from the V-50, the operator must be sure that all adjustments necessary for a particular job are accurately made.

a. FEEDER ADJUSTMENTS.—The following information covers all the adjustments to be made in connection with the feeder.

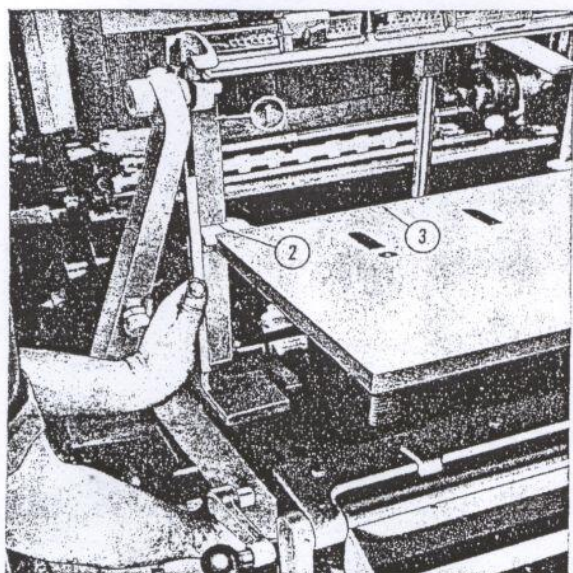


Figure 12—Positioning Front Pile Guides

(1) HOW TO POSITION FRONT PILE GUIDES. (See figure 12.)—The feeder table front pile guides (1) may be shifted along the front of the feeder table as desired. To shift the guides, loosen hand wheel (underside of feeder platform), and slide guides to desired position. The positioning of the guides is dependent upon side-guide setting and size of sheet to be fed. An "0" alignment marking (2) on the guides and a graduated scale (3) on the front edge of the feed pile table corresponding to the scale on the transfer table, are provided for accurate setting of the pile guides. Pile guide corner wires, attached to the pile guides, restrict the amount of sheet corner separation when being fluffed. These wires may be adjusted to suit weight of stock.

After side guide has been set and reading noted

(refer to "How to Set Side-Guides," paragraph 2, page 14), set left hand pile guide (right hand if right side-guide is used) to coincide with side-guide setting. That is, if side-guide is set at $9\frac{1}{2}$ as indicated on the transfer table scale, set pile guide so that its "0" alignment marking (2) lines up with $9\frac{1}{2}$ on feeder pile table scale. Then set opposite pile guide to suit the size of sheet to be fed.

(2) HOW TO SET FEEDER TABLE FOR PILE HEIGHT.—The feeder pile table (1) figure 13, may be raised or lowered manually by means of the feeder table pile adjusting crank, (2) figure 13. Push crank in and turn clockwise to raise, and counter-clockwise to lower.

After placing supply of stock on feeder pile table

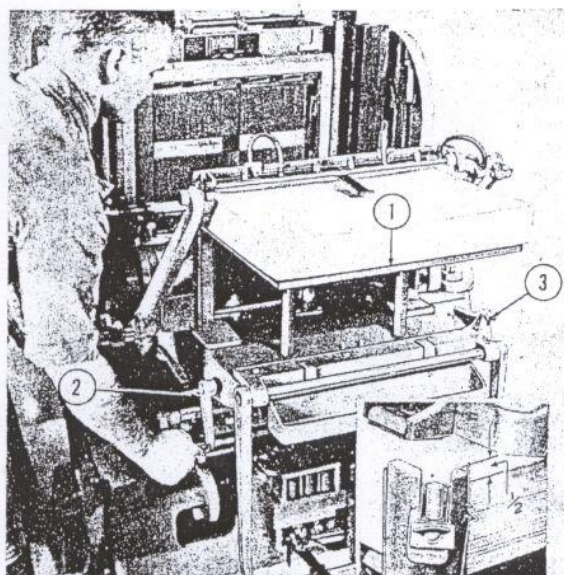


Figure 13—Setting Pile Height

with sheet front corners positioned in front pile guides, raise table until top sheet is $\frac{1}{2}$ " below top of front pile guides (see insert in figure 13). After height of pile is set, pull out adjusting crank, thereby locking table for automatic raising. If necessary to change pile height, an adjustment screw is provided as shown at 18 in figure 3.

(3) HOW TO SET REAR CORNER PILE GUIDES. (See figure 14.)—The rear corner pile guides (1) which serve to keep top sheets square on pile, should be set at rear corners of stock so that the sheets are held against the front pile guides but do not bind. By sliding the holders (2) along the bar to which they attach, or by shifting the guides in or out in their holders, or by turning the guides around so that they extend toward the front of the

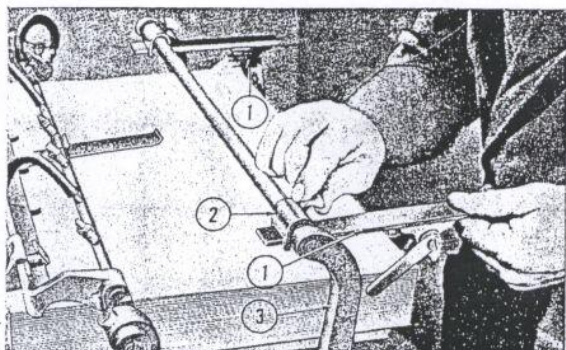


Figure 14—Setting Rear Corner Guides

pile table (in this case the guides must be interchanged), the guides may be positioned to accommodate any sheet size (within the range of the V-50) except post card size. For maximum sheet sizes it may be necessary to change the setting of the rear corner pile guide bracket (3) by adjusting the bracket stop stud (see (3) in figure 13) against which the right side bracket bears. For post card size sheets, a special guide is supplied for attaching to the corner pile guide rod. For convenience in loading the pile table, the corner pile guide rod bracket may be lowered out of operating position (see figure 13).

(4) HOW TO SELECT, INSERT AND POSITION SEPARATOR SHOES. (See Figure 15)—The feeder separator shoes (1) supplied with the press are numbered 1A, 2A and 3C and fit into common holders (2). The shoes to be selected and used for a job depend upon the weight and porosity of the stock. Generally the stock best handled by each type of shoe is as follows:

- No. 1A—Thin or porous stock.
- No. 2A—Medium weight stock.
- No. 3C—Some medium weight stock, heavy paper, cardboard and blotter stock.

Presses carrying serial number prior to No. 18073 are supplied with four different separator shoes:

- No. 1A—Thin paper.
- No. 2A—Medium weight stock.
- No. 4A—Heavy paper and light weight cardboard.
- No. 3B—Cardboard, blotter and heavy card stock.

To insert shoe in holder, place shoe lugs in holder slot, swing shoe up, and snap in place. The shoe holders are attached to the separator frame (3) by means of a snap catch which is opened or closed by flipping the holder wing latch (4).

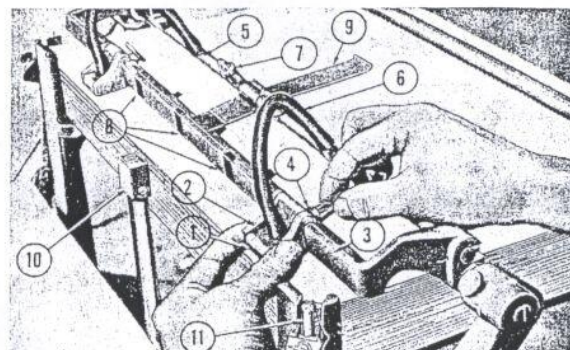


Figure 15—Positioning Separator Shoes

The holders may be shifted along the separator frame to fit different sizes of sheets. Vacuum for the shoes is supplied from the separator frame air tube (5) through the flexible hoses (6) which attach to the nipples on the shoes. The air tube outlets not to be used are covered with the rubber plugs (7) supplied with the press. When running large sizes of heavy cardboard, it is advisable to use a third shoe positioned at the center of the sheet.

Suction for the shoes is controlled by a feeder control air valve which is actuated by a handle located on the left side of the feeder. (See (1) figure 16.) When this handle is pushed to its *in* position, suction is supplied for the shoes.

After front and rear feeder corner pile guides have been set, insert proper shoes for the stock to be run in shoe holders. Position shoe holders, (2) figure 15, along separator frame (3) approximately one inch in from the sides of stock. Be sure that shoe holders are locked to separator frame. Attach shoe hoses to nearest nipples on air tube, and put plugs over the nipples not to be used.

(5) SEPARATOR FRAME SHEET GUARDS AND FEEDER PAPER GUARD.—The three separator frame sheet guards, (8) figure 15, which serve to assure positive control of the sheets onto the transfer table, may be shifted along the separator frame to accommodate different sizes of sheets.

The feeder paper guard, (9) figure 15, which clips to the separator frame air tube, need only be used when running large sized sheets. This guard serves to prevent the tail end of sheet from folding ahead after sheet is deposited on transfer table.

(6) HOW TO ADJUST FEEDER BLOWER NOZZLE AND JETS.—Air blast is fed through the feeder blower nozzle, (10) figure 15, to fluff through and separate the top sheets, and through the jets, (11) figure 15, located in the front pile guides, to

fluff the ends of the sheets. The amount of air blast used for sheet separation on the feeder is controlled by a petcock located in the bottom of the feeder post. When running heavy stock it is advisable to use maximum blast; in this case the petcock must be closed. When running thin paper the petcock should be fully opened (minimum air blast).

In order to obtain accurate sheet separation, thereby assuring continuous feeding, it may be necessary during press operations to adjust the height of the feeder blower nozzle. This is accomplished by turning the adjusting hand wheel, (2) figure 16, which will raise or lower the blower nozzle.

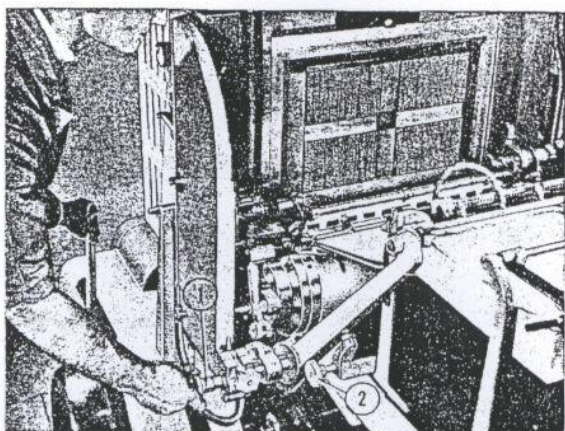


Figure 16—Air Control Valve Handle

(7) HOW TO LOCK FEEDER. (See figure 17.)—To lock feeder, swing feeder until feeder shaft (1) is engaged in fixed half of feeder shaft bracket (2). Swing hinged half of bracket (3) in place and securely tighten bracket lock wheel (4).

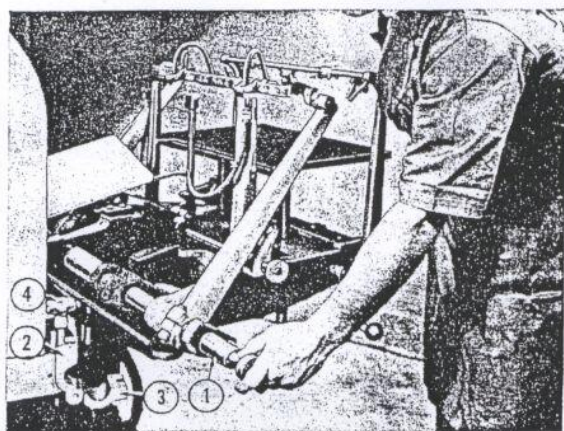


Figure 17—Locking Feeder

b. TRANSFER TABLE AND SIDE-GUIDE ADJUSTMENTS.—The following information covers all the adjustments to be made in connection with the transfer table and side guides.

(1) HOW TO ATTACH TRANSFER TABLE. (See figure 18.)—The transfer table (1), which receives the sheets from the feeder and transfers them to the impression cylinder, is supported by two levers (2) attached to the cylinder journal cap.

During inking-up, etc., the transfer table may be detached from its levers and placed in the brackets provided at the top of the press frame. To attach transfer table to levers, proceed as follows:

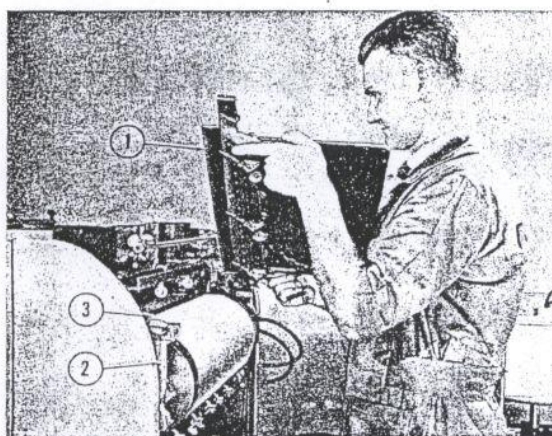


Figure 18—Attaching Transfer Table

(a) With the belt tightener lever pulled to the right, turn the press over manually by turning the flywheel until the cylinder has reached the top of its up stroke.

(b) Slip right transfer table clip into right supporting lever, holding table as shown in figure 18. When right end of table is in place, lower the left end into left bracket slot and then slide key (3) into place, locking transfer table in position.

Note: Avoid hitting metal edge of transfer table against other parts of press. Denting of metal edge may result in inaccurate front register.

(2) HOW TO POSITION SIDE GUIDE SHIFTING CAM AND SET SIDE GUIDES.—The left and right side guides, (1) figure 22, which attach to the side guide tube, (2) figure 22, are adjustable along the tube. Either the left or the right side guide is used, depending upon the particular job to be run. The position of the side guide along the side guide rod is dependent upon the side register requirements as measured from the form for the particular job to be run. A scale along the front edge of the transfer

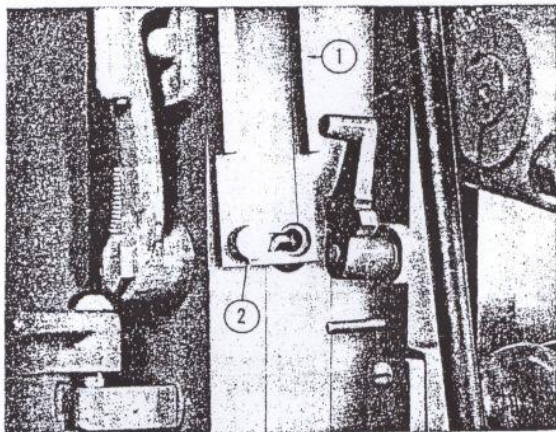


Figure 19—Side Guide Shifting Cam

table is used to obtain a side guide position reading for setting feeder pile guide.

The side guide shifting cam, (1) figure 19, mounted on the left side of the press frame and behind the left end cylinder guard, must be correctly positioned for left or right side register depending upon which is to be used.

The following steps outline the procedure for positioning the side guide shifting cam and setting the side guides.

(a) Open the left end cylinder guard by lifting up on the guard, which permits it to be swung open.

Note: With guard in open position, the "STOP" button which controls the press motor is automatically tripped, thereby preventing the press from accidentally starting while this adjustment is being made.

(b) Check the position of the side guide shifting cam. If left side register is to be used, the cam

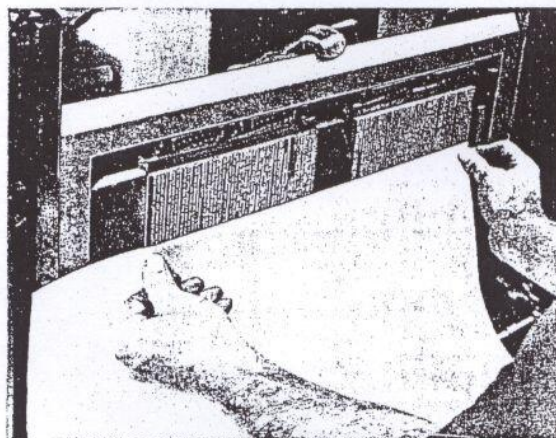


Figure 20—Measuring Form With Sheet

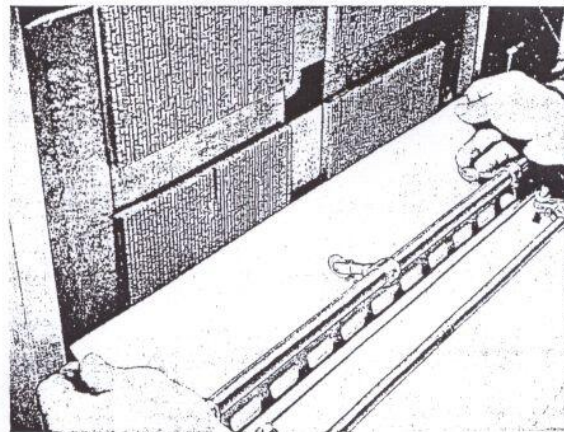


Figure 21—Positioning Sheet On Transfer Table

should be positioned to the right. (See figure 19.) For right side register, position cam to the left.

(c) To change the position of the cam, loosen (do not remove) the cam stud, (2) figure 19, and shift the cam as required. Tighten stud after cam has been correctly positioned.

(d) After position of side guide shifting cam has been checked, position the cylinder at bottom center (bottom of stroke) and then measure length of form with sheet to be printed (see figure 20); fold the left-over margin in half and crease to center form on sheet. Pass the sheet under the side guide rod and position the sheet on the transfer table with the sheet margin crease in line with edge of form (see figure 21.)

(e) With sheet in this position, set side guide, (1) figure 22, against the side of sheet and tighten side guide thumb screw (3). A side guide micro-meter adjusting screw, (2) figure 23, is provided for

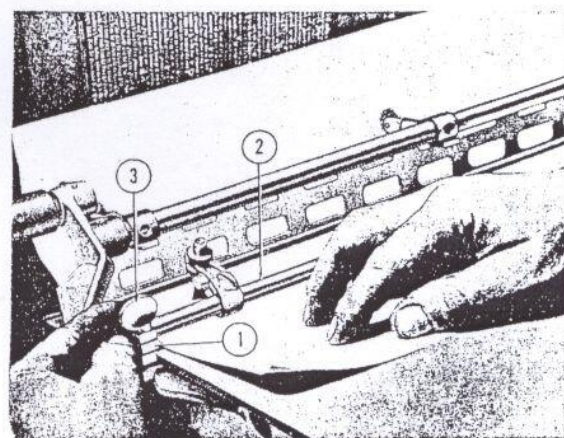


Figure 22—Setting Side Guide

finer side guide register. When this adjustment is used, be sure that the setting is locked by tightening thumb screw, (2) figure 23. Slide and secure opposite side guide (not to be used) to opposite end of side guide rod.

(f) After side guide has been accurately positioned, remove the sheet and note the position of side guide as indicated on the scale on the edge of the transfer table. This reading is used to set the position of the feeder table front pile guides. (Refer to "How to Position Front Pile Guides," paragraph 1 on page 12.)

(3) HOW TO POSITION TRANSFER TABLE

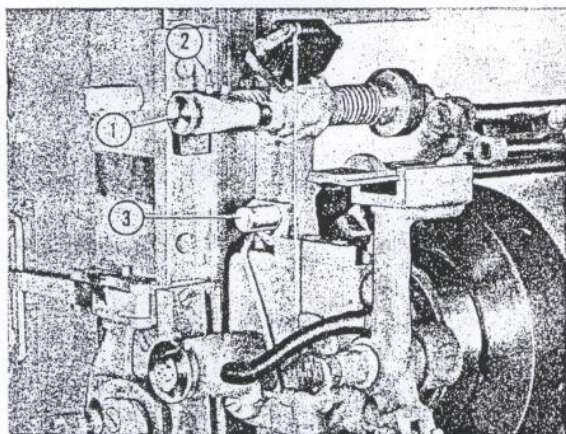


Figure 23—Side Guide and Cylinder Brush Adjustment

BRUSHES AND SHEET GUARD WHEELS.—When a sheet is being automatically positioned on the transfer table for correct side and front register, the suction holding the sheet to the table is released, allowing the sheet to move. After the sheet has been correctly registered, the transfer table moves forward slightly until the cylinder grippers close on the sheet. The transfer table brushes, which attach to the side guide tube, (1) figure 24, hold sheets to front register during front and side guide registering.

The brushes should be positioned laterally approximately 3" in from the sides of large sheets and approximately 1" for small sheets. Be sure that the brushes are positioned between the screws attaching the transfer table front plate to its supporting casting. Both brushes must be set for identical tension on the sheet. Too tight a setting will interfere with side guide movement and will also indent gripper edge of sheets. Too loose a setting will result in register variation. Test brush tension by sliding a small strip of paper to be run under each brush and check that the strip can be moved forward easily but not backward. The brushes should be ad-

justed with the cylinder positioned at bottom center.

Also attached to the side guide rod are three sheet guard wheels, (2) figure 24, which are required only when running large sheets which have a tendency to "whip" as the sheet is taken from the cylinder by the delivery grippers. When these wheels are used, they are positioned so as to point downward and should be positioned laterally so as to fit into the blank margins of the forms and not be in line with the delivery grippers.

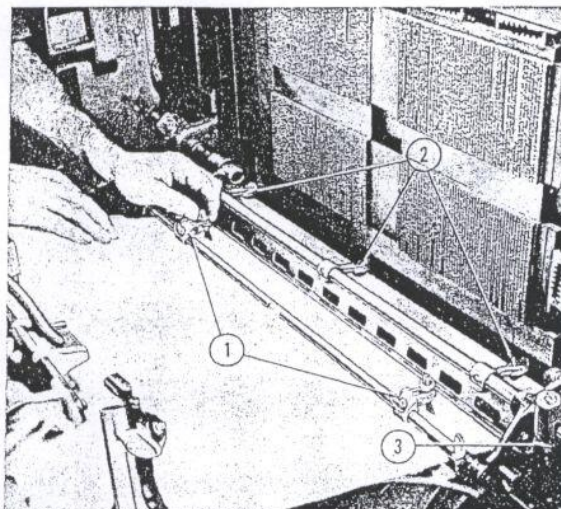


Figure 24—Adjusting Transfer Table Brushes

c. **IMPRESSION CYLINDER ADJUSTMENTS.**—The following information covers all adjustments in connection with the impression cylinder.

(1) **HOW TO REPACK CYLINDER.**—When a press is shipped from the factory, the cylinder packing used in testing the press at the factory is left on the cylinder. This will indicate the correct amount of packing required for the average form, also how it is placed and held on the cylinder. The following table and instructions outline packing sheet requirements and procedure for repacking cylinder:

CYLINDER PACKING SHEET REQUIREMENTS

	Thickness
Three 14 $\frac{3}{4}$ " x 20" manilla sheets .006" thick	.018
Six sheets 14 $\frac{3}{4}$ " x 20" S and S.C., .003" thick	.018
One 22" long x 20" wide (grain parallel with cylinder) manilla draw sheet .006" thick	.006
Two 14" x 20" filler sheets (to be placed loosely in the packing for make ready purposes) approximately .004" thick	.008
Total Thickness	.050

Note: This amount of packing should bring the top sheet even with the cylinder bearers and should give a light, even impression on a type high form. If it seems necessary to add much more packing to get the desired impression, it indicates that the form is too low.

(a) Run the press until the cylinder is approximately 1" below top center and the cylinder is on the down stroke. At this point the cylinder ratchet pawl lock collar spring pin (1) should be in line with the red alignment mark (2) on the cylinder end guard. (See figure 25).

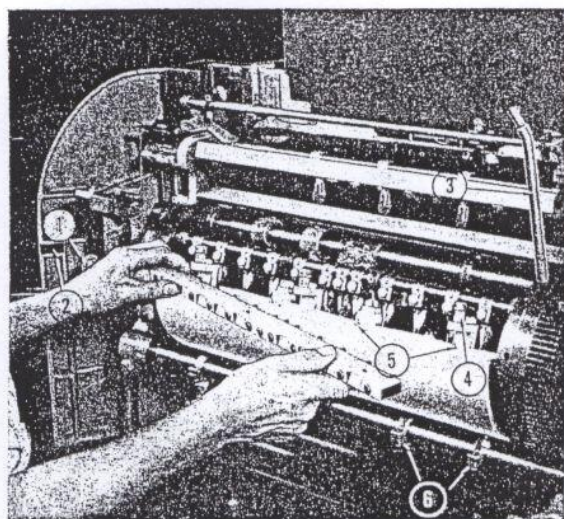


Figure 25—Removing Cylinder Packing

(b) Open left cylinder end guard by lifting guard slightly and swinging it out. Pull out spring pin, (1) figure 25, thereby disengaging cylinder and permitting it to be revolved manually. *Do not turn press by hand when cylinder is disengaged.*

(c) Using large pin wrench, (3) figure 25, turn cylinder until it is in the position shown in figure 26.

(d) Using small pin wrench, turn reel rod (1) slightly until pawl (2) can be released from reel rod ratchet (3). (See figure 26.) Release draw sheet from reel rod.

(e) Turn cylinder until gripper bar is facing forward, loosen gripper bar clamp screws, (4) figure 25, using small pin wrench, permitting gripper bar to be removed from the cylinder (see figure 25). The packing sheets can now be removed from the pins, (5) figure 25, which secure the sheets to the cylinder.

(f) Working from the center of the cylinder, hang new packing sheets on the cylinder, one at a time, spiking the sheets on the cylinder pins.

(g) Replace gripper bar and tighten gripper bar clamp screws, clamping gripper bar and sheets in place.

(h) Turn cylinder, at the same time smoothing out packing, until the reel rod (1) is in position shown in figure 26. Tuck top draw sheet under reel rod, fold and tighten packing by turning reel rod with small pin wrench and then engage reel rod ratchet pawl in ratchet. (See figure 26.)

(i) Turn cylinder and inspect packing, making sure that packing is perfectly smooth and free from buckles. Turn cylinder until spring pin, previously pulled out, springs back into place, engaging cylinder.

(2) HOW TO SET GRIPPER STEMS FOR

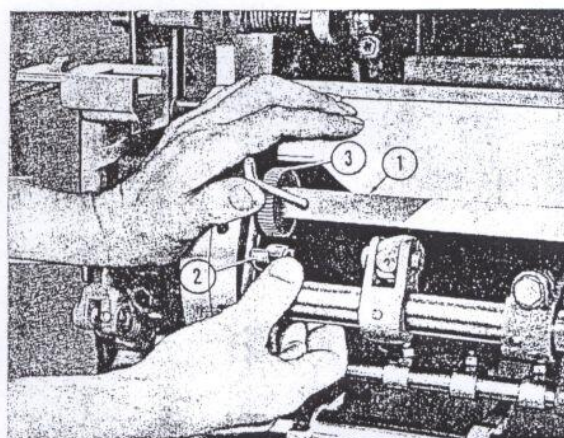


Figure 26—Tightening Cylinder Packing

GRIPPER BAR FRONT REGISTER.—The cylinder gripper bar is a combination tympan clamp, cylinder gripper and front guide. There is no adjustment necessary for the gripping action of the grippers since they are self adjusting for all thicknesses of stock handled by the V-50.

The gripper stems, which act as front guides when the sheets are brought in contact with them by the movement of the transfer table, are designed to insure accurate front register for all types of stock. Each gripper stem has a rounded face on one side, indicated by an arrow stamped on the head of each gripper, and a flat face on the opposite side. When running evenly cut stock, the gripper stems should be turned (using screw-driver) so that the rounded face of each gripper contacts the sheets. When running unevenly cut, ragged or deckled-edged stock, all grippers, excepting those to be used as front guides, should be turned so that the flat face of the gripper stems face the sheet (arrow facing bed).

(3) HOW TO ADJUST CYLINDER BRUSH TENSION.—The cylinder brush, mounted on the

cylinder frame just ahead of printing, serves to smooth out and hold the sheet to the cylinder while the cylinder revolves.

To adjust the brush tension, loosen the set screws, (3) figure 23, on each side of the cylinder frame, permitting the brush rod to be turned. To check the tension, place a sheet to be run on the cylinder packing; revolve the cylinder by hand until the sheet is in contact with the brush, and then move sheet. Brush tension on the sheet should be uniform across the full width of the sheet. After brush has been adjusted, tighten set screws.

(4) HOW TO POSITION CYLINDER BANDS. —The five cylinder bands attached to the cylinder band tube (see (6) figure 25) serve to prevent sheets from contacting rollers. The band sockets can be moved along the tube and should be spaced so that the bands are positioned in blank margins.

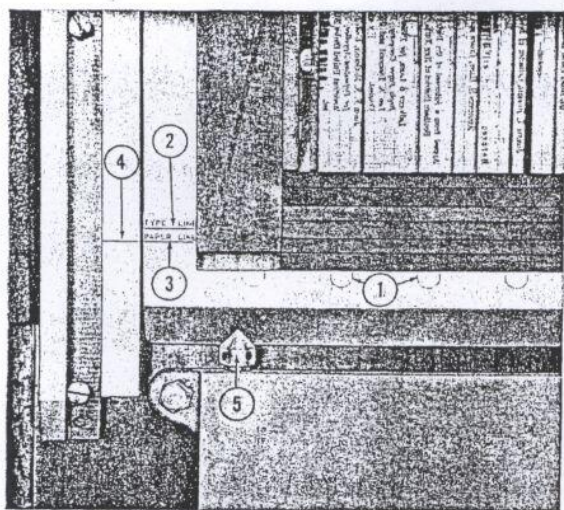


Figure 27—Chase Alignment

d. CHASE ADJUSTMENTS. (See figure 27).—Each chase furnished with the press has an inside dimension of $14\frac{7}{8}$ " x $19\frac{3}{4}$ " which will accommodate a full sized form $12\frac{1}{4}$ " x 19" (two roller coverage). A $13\frac{3}{4}$ " x 19" maximum form (one roller coverage) can be locked up by using quoins on the gripper edge. Circles (1), stamped on the gripper edge of the chase, indicate exact position of cylinder grippers. These circles are provided to aid the operator in properly positioning the form to secure the best gripper handling.

Alignment markings on the chase, labeled "TYPE LINE" (2), indicate the point below which no type or type high material should extend. Another align-

ment marking, labeled "PAPER LINE" (3), serves as a guide in the imposition of the form. Measure from this line to correctly position the form with relation to the gripper edge. An alignment marking on each bed bearer (4) serves as a guide for positioning the form in the bed.

The two chase adjustment screws (5) mounted on the ink table are provided for raising or lowering the chase for correct alignment.

(1) HOW TO PLACE AND ALIGN FORM IN PRESS.—To place form in press (after form has been locked in chase), proceed as follows:

(a) Turn press until cylinder is at bottom center and then swing feeder out of operating position. Turn press until cylinder is at top center and remove transfer table, placing it in brackets at top of press frame. (Removal of transfer table is necessary only when placing heavy forms in press bed.)

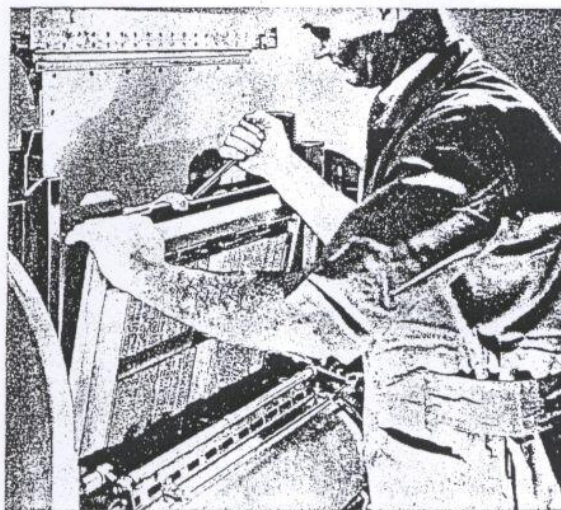


Figure 28—Locking Form In Press

(b) Turn press until cylinder is at bottom center and type bed is at top center, and then place form on bed with the bottom edge of chase resting on chase adjusting screws.

(c) Using large pin wrench supplied with press, open chase lock clamp (see figure 28) and lock chase in place.

(d) Be sure the "PAPER LINE" (3) registers with alignment marking (4) on bed bearer as shown in figure 27. If necessary, raise or lower chase, as required, by turning chase adjusting screws.

e. INKING ADJUSTMENTS.—The following information and instructions cover all adjustments in connection with the press inking mechanism.

(1) HOW TO OPEN AND ADJUST FOUNTAIN BLADE.—The ink fountain may be swung away from the press for facilitating wash-ups and change-overs. To swing fountain out of operating position, swing feeder to open position, loosen fountain lock wheel (1) permitting fountain (2) to be swung away from the press. (See figure 29).

The fountain is equipped with a "drop-blade", (3) figure 29, for facilitating wash-ups. To open the blade, push in fountain latch cam levers, (4) figure 29 and lower blade to open position. To close blade, lift up on blade lifting-edge as shown in figure 29 and latch cam levers securely.

Note: When closing blade, do not grasp blade so that fingers are close to fountain roller. Hold blade as shown in figure 29. Failure to comply with this warning may result in injury to the fingers.

The fountain blade is adjustable for uniform ink flow by means of fountain screws located under the

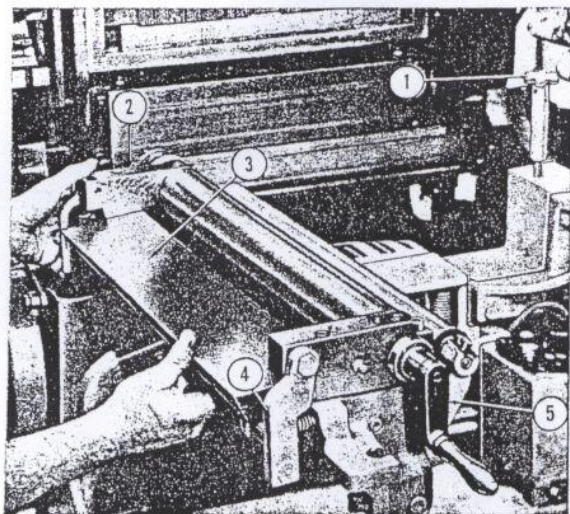


Figure 29—Closing Fountain Blade

blade. When adjusting the fountain screws for uniform ink flow, start at the center and work toward the ends, thereby preventing blade buckling. A crank, (5) figure 29, attachable to either end of the fountain roller, is provided for turning the fountain roller.

Note: To prevent injury to the fountain roller, do not over-tighten fountain screws. The fountain screws are over-tightened if it is noticed that the blade is cutting ink clean from the fountain roller.

Each fountain screw is identified by a number stamped on the fountain frame. These numbers correspond with the numbers stamped on the delivery sheet stop bar. If, after examining a printed sheet on

the delivery table, it is indicated that ink flow adjustment is necessary, the operator can immediately ascertain which fountain screws require adjusting.

(2) HOW TO SET FOUNTAIN ROLLER FEED. (See figure 30.)—The fountain roller is geared and timed to turn slightly with each press impression. The amount that the roller turns is determined by the setting of a cam set-wheel (1) which controls the movement of the fountain roller pawl and ratchet (2). Figure 30 shows the recommended setting (set-wheel spring (3) engaged in eighth notch of set wheel) when starting a job. With set wheel in this position, each notch in set wheel will represent $\frac{1}{8}$ full ink flow, thereby permitting, by moving the position of the spring, ink flow, to be reduced as low as $\frac{1}{8}$ full flow.

The fountain ductor roller needs no adjustment, having been factory set for proper contact with fountain roller. When the fountain is swung away from

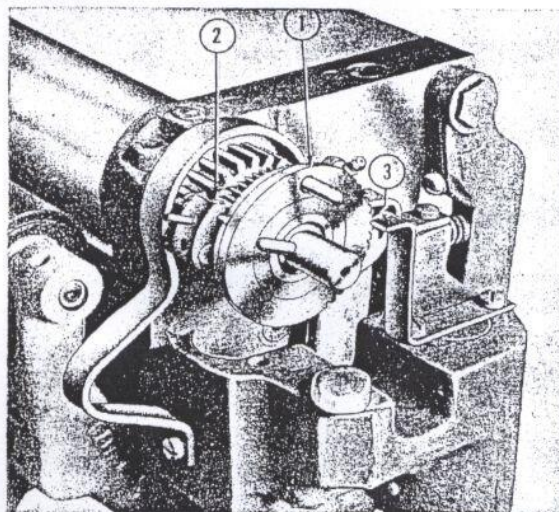


Figure 30—Fountain Blade Roller Feed Setting

the press, the fountain ductor roller automatically separates from the fountain roller.

(3) HOW TO OPEN OR REMOVE FORM AND DISTRIBUTOR' ROLLERS.—The composition form and distributing rollers are mounted in roller boxes which attach to the form and distributing roller frames. (See figure 31.) The roller frames are so designed that the composition rollers may be lowered out of operating position. Roller lock levers, (1) figure 31, one on each end of roller frames, lock the frames in operating position.

Note: In order to prevent flattening of composition rollers, the form and distributing rollers should always

be lowered to non-operating position when press is not to be operated. When the form or distributing rollers are in this position, the composition rollers are separated from the steel vibrator rollers, leaving them free for wash-up.

The rollers are locked in their boxes by means of roller box keys, (2) figure 31, in the right side roller box. A roller may be removed from its box by sliding the key from the box, permitting the removal of the roller. In addition, the roller frames can be easily removed from the press by swinging the roller lock levers (1) figure 31, to their up position, permitting the roller frames to be lifted from the studs on which they mount.

(4) HOW TO ADJUST FORM AND DISTRIBUTOR ROLLERS.—Roller adjusting screws, (3) figure 31, provide for adjusting the form and distributor composition rollers for correct contact with ink table and their vibrator rollers. When the rollers are adjusted for correct contact with ink table, they will also be in correct contact with their vibrator rollers. To check for correct composition roller setting, proceed as follows:

(a) With form and distributor rollers installed on their frames, lock frames in operating position, being sure that lock levers, (1) figure 31, are in down position. (Figure 31 shows form rollers in open position.) If new composition rollers are installed, reset to proper contact by means of adjusting screws.

(b) Ink lower vibrator roller and then run press until ink is distributed. Stop press with either set of composition rollers contacting ink table.

(c) Unlock roller frame and lower to open position. Wash ink table clean and then raise and lock roller frame in operating position.

(d) Unlock and lower roller frame to open po-

sition, and then examine roller impression on ink table. The impression should be approximately $3/16$ " wide the full length of roller. If impression is not correct, turn roller adjusting screw, (3) figure 31, as required.

(e) Unlock and lower other roller frame and position ink table opposite these rollers. Repeat roller impression operations for these rollers and check that impression is $3/16$ " wide. If necessary, make roller adjustment as required.

f. DELIVERY ADJUSTMENTS.

(1) HOW TO SET LOWERING OF DELIVERY TABLE. (See figure 32.)—The delivery table (1) may be raised or lowered manually by turning the delivery table crank (2). The crank must be pushed in when raising or lowering the table. When starting a job, the delivery table should be raised to its highest position.

During press operation the delivery table lowers automatically as the pile of printed sheets increases. The amount that the table lowers may be regulated to suit different thicknesses of stock.

The distance the table lowers at each press impression is controlled by the setting of the delivery table set wheel, (3) figure 32. The setting of the delivery table set wheel is dependent upon the thickness of stock being run. When starting a job, run the press until delivery pile has built up to about 1", then set delivery set wheel by engaging the set wheel spring, (4) figure 32, with the notch in the set wheel that will give the required amount of delivery table drop for the stock being run. With a little experience the operator will learn the correct settings for the various thicknesses of stock.

(2) HOW TO SET DELIVERY SIDE AND REAR JOGGERS. (See figure 33.)—The side and

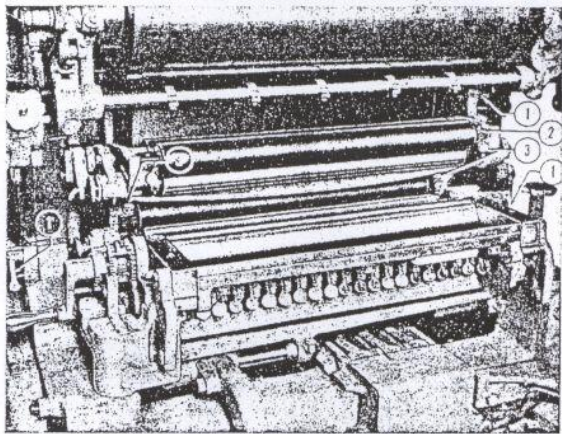


Figure 31—Form and Distributor Rollers

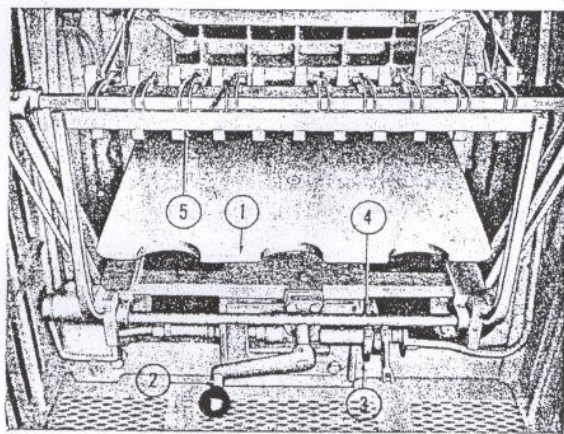


Figure 32—Delivery Table

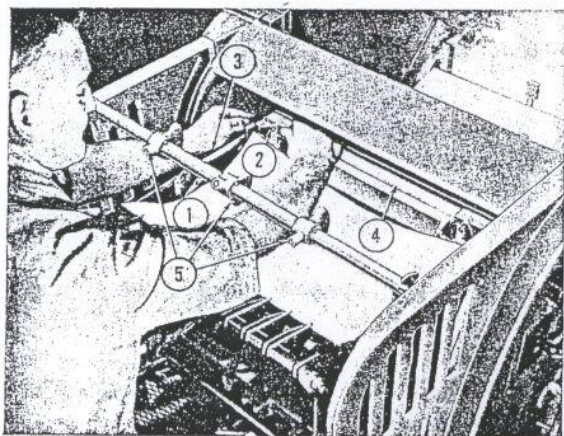


Figure 33—Setting Side and Rear Joggers

rear joggers, (1) and (2), may be shifted along the side jogger bar (3) to which they attach. The side jogger bars may also be shifted along the jogger supporting bar (4), thereby permitting the positioning of side and rear joggers for all sizes of stock handled by the press. To set the side and rear joggers, proceed as directed in the following instructions.

(a) With delivery table raised to its highest position, run a sheet through the press. When delivery grippers have taken the sheet from the cylinder and just before grippers have released the sheet, stop the press by releasing the belt-tightener lever.

(b) Set the side jogger wings, (1) figure 33, according to length of sheet. Turn press ahead until sheet is dropped by delivery grippers onto delivery table. Set rear jogger wings, (2) figure 33, according to width of sheet.

(3) **DELIVERY AIR NOZZLES, SHEET STOP FINGER BAR, AND DELIVERY GRIPPERS.**—The three air blast nozzles, (5) figure 33, are provided to quickly settle the sheets down on the delivery table. The nozzles are adjustable on the air tube so that air blast may be directed as required. A separate line from the air pumps to the delivery air nozzles provides for constant air pressure. The number of nozzles used, as well as the positioning of the nozzles, is dependent upon the size of the sheet. They need only be used when running thin stock. When not in use, turn nozzles so that they face away from the delivery table.

To remove pile from delivery table, lower the delivery sheet stop finger bar, (see (5) figure 32).

The delivery grippers are self-adjusting for all thicknesses of stock within the range of the V-50. An adjustment for regulating the opening and closing of the delivery grippers, as necessary, is provided just

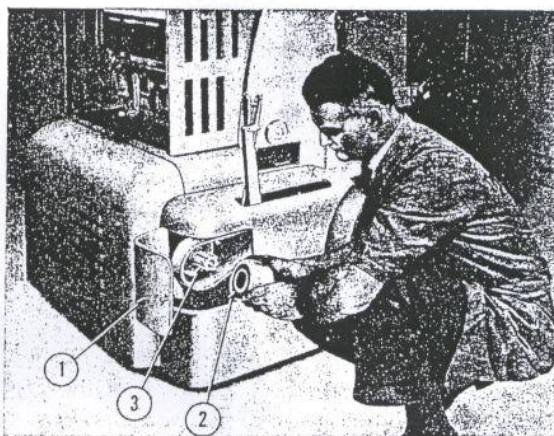


Figure 34—Installing Speed-Change Pulley

back of the delivery gripper arm on the operator side. Also, for regulating the height of the delivery grippers, an adjustment is provided back of the delivery gripper arm on the opposite side.

g. HOW TO INSTALL SPEED-CHANGE PULLEY. (See figure 34.)

(a) Stop motor by pressing the "STOP" (red) motor control push button and position belt-tightener lever to the left.

(b) Open pulley access door (1) in belt guard, permitting access to pulley installed on motor drive shaft. Slide pulley (2) from splined adaptor (3), replace and latch pulley selected on to spline shaft, and close pulley access door.

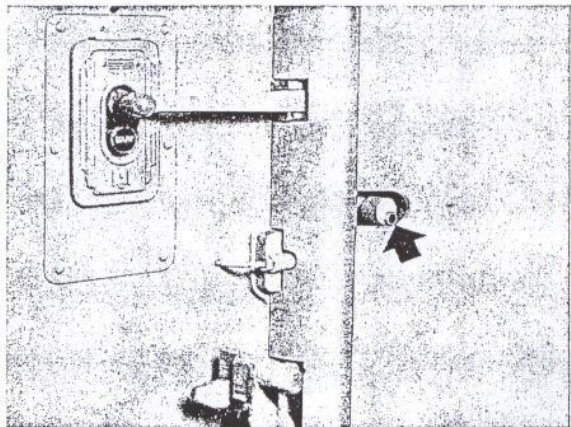
5. STARTING A JOB.

The following step-by-step directions and illustrations are provided to guide and show the operator the entire operation for starting a job. The operator should perform the operations in the order given and should be careful that all settings are accurately made. If the operator will comply with these directions and proceed in the order given, the entire operation of starting a job can be performed in a minimum of time. It is assumed that the operator is thoroughly familiar with the information given in the preceding paragraphs in this section and knows how to make the required adjustments. However, reference is made, in the following directions, to the pages in this section which give detailed information for making the settings and adjustments called for.

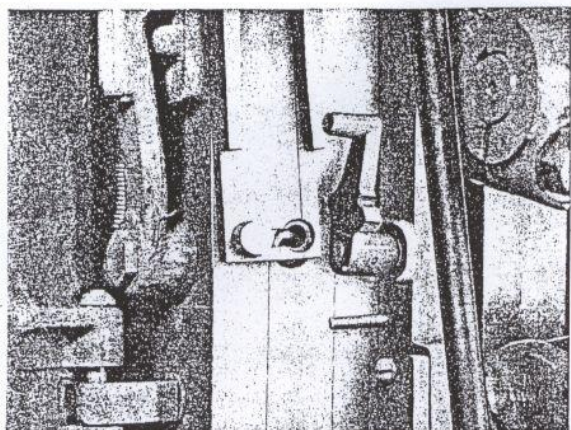
a. PROCEDURE FOR STARTING A JOB.

(1) Be sure power is off by opening the left end cylinder guard, thereby tripping the "STOP" (red) motor control push-button; release belt-tightener lever, and then install speed-change pulley for the job to be run. (Refer to para. g, page 21.)

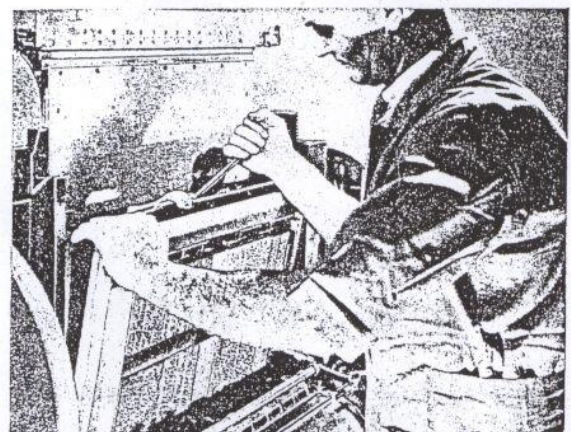
**Continuation of
Procedure For Starting A Job**



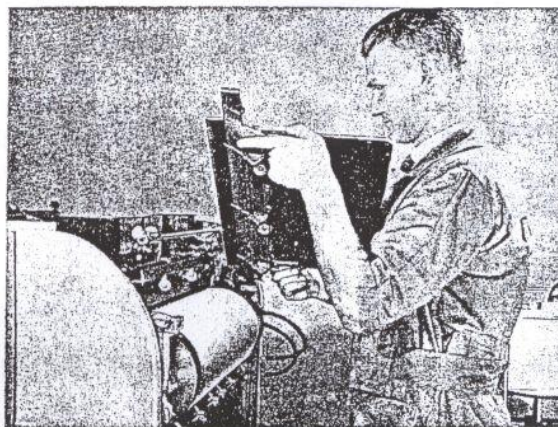
(2) Turn the automatic stop control knob to its *down* position.



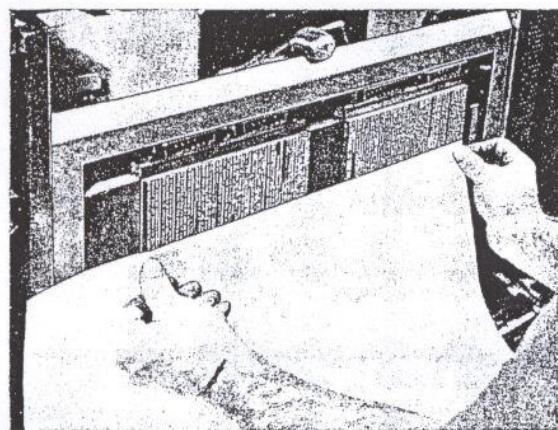
(3) Check that side guide shifting cam is correctly positioned for side guide to be used. (Refer to para. (2) steps (a) through (c), pages 14 and 15.)



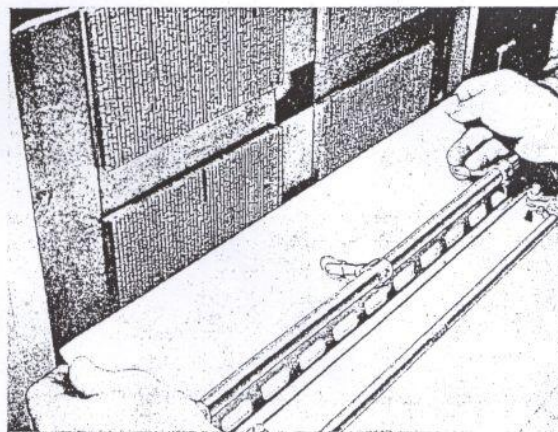
(4) Place form in press and check chase alignment. (Refer to para (1), page 18.)



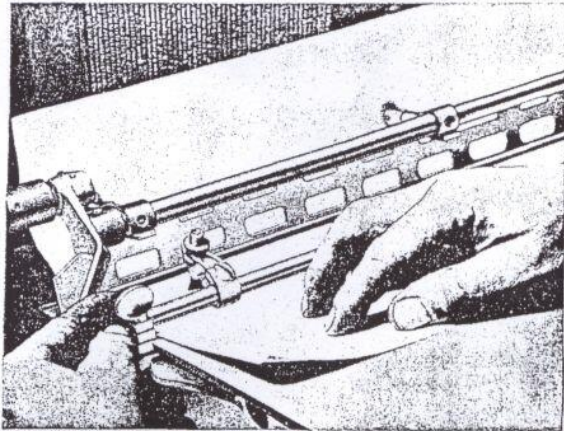
(5) Attach transfer table. (Refer to para. (1), page 14.)



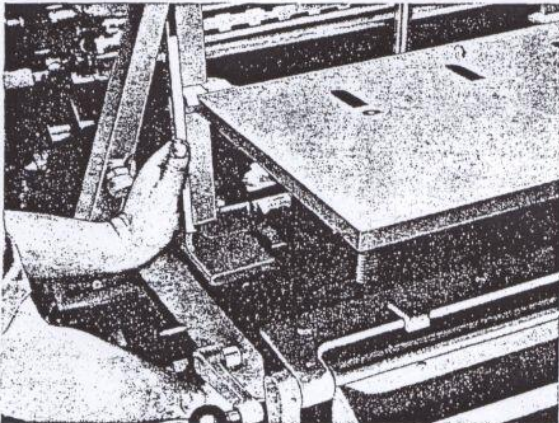
(6) Measure length of form with sheet on which job is to be printed, fold left-over margin in half and crease to center form on sheet.



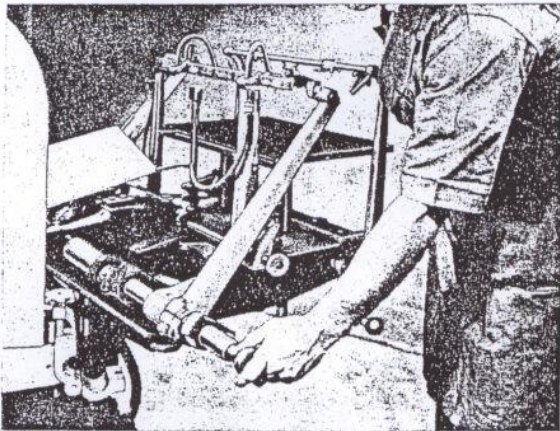
(7) Pass sheet under side guide rod and bring crease in line with the edge of the form.



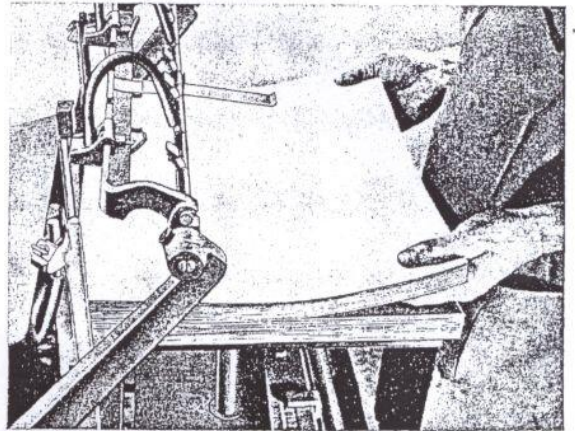
(8) Set side guide and note scale reading. (Refer to step (e), page 15.)



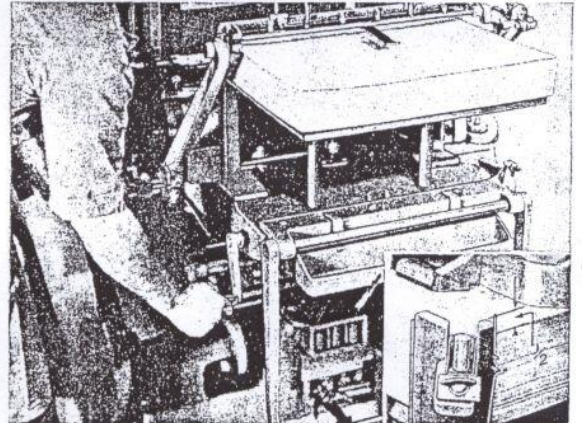
(9) Set feeder front pile guide according to side guide reading. Set opposite pile guide to suit the size of sheet to be fed. (Refer to para. (1), page 12.)



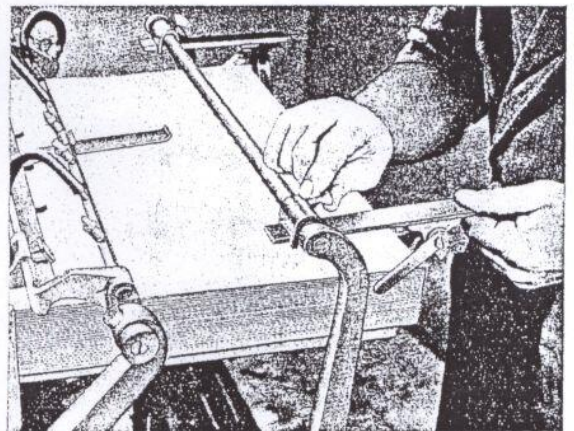
(10) Lock feeder in operating position. Pull out feeder control air valve handle.



(11) Place supply of stock to be run on feeder pile table.

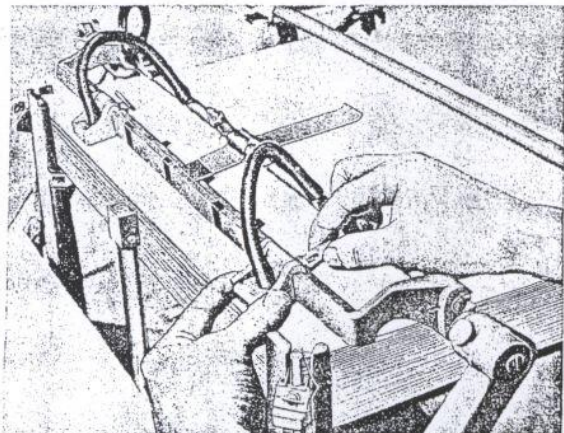


(12) Raise feeder pile table to proper feeding level (about $\frac{1}{2}$ " below top of front pile guide as shown in above insert).

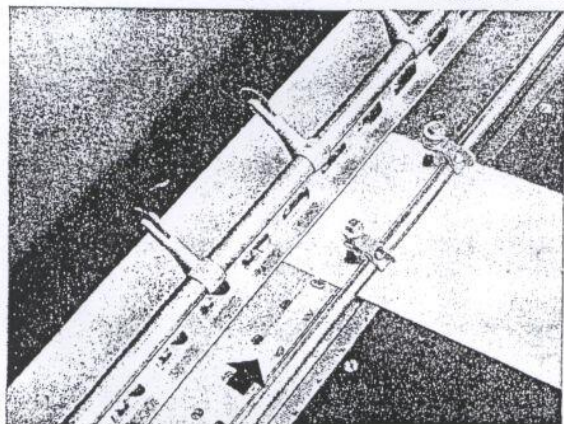


(13) Set rear corner pile guides up to the pile. (Refer to para. (3), page 12.)

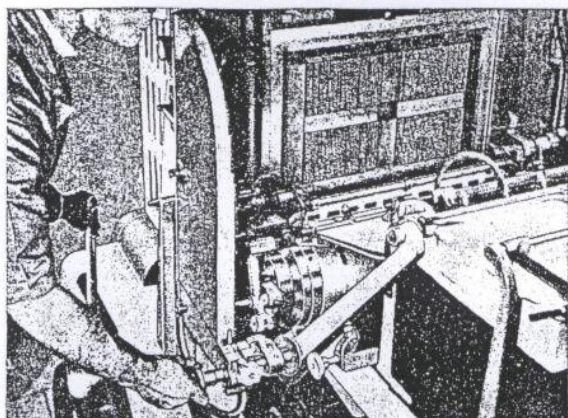
Continuation of
Procedure For Starting A Job



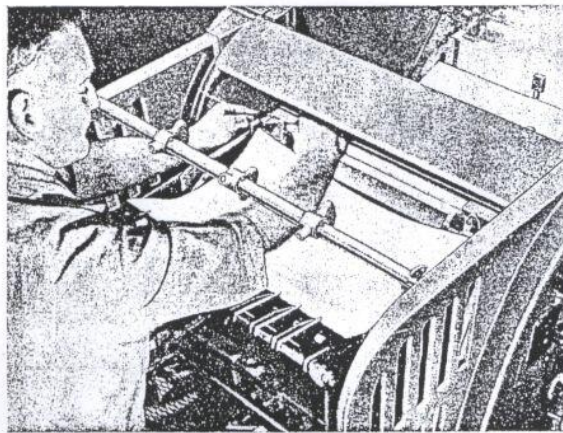
(14) Install correct separator shoes for the stock to be fed and position shoes about 1" in from the ends of the stock. (Refer to para. (4), page 13.)



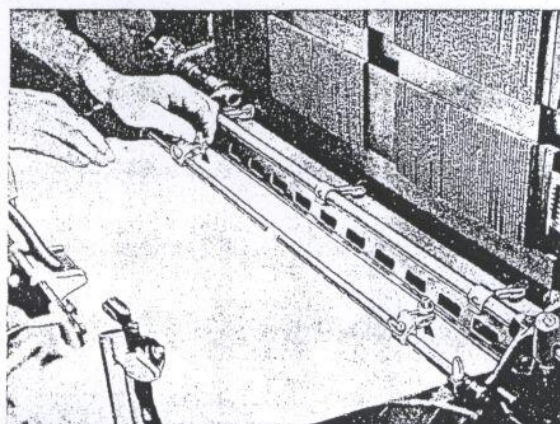
(15) If small size sheets are to be fed, cover open transfer table holes with gummed paper.



(16) Close left end cylinder guard and start the press. Feed one sheet through and stop the press just before sheet is released by delivery grippers.



(17) Position delivery side and rear joggles to suit the size of sheet while sheet is still in the delivery grippers. (Refer to para. (2), page 21.)



(18) Adjust transfer table brush tension to hold sheet against front guides (cylinder grippers), and position sheet guard wheels. (Refer to para. (3), page 16.)

(19) Turn counter to zero reading. Press is now ready to run the job.

(20) After the first sheet of job has been fed into press, turn the automatic stop control knob, shown in step (2), to its up position.

SECTION IV—MAINTENANCE

1. LUBRICATION.

a. AUTOMATIC LUBRICATION SYSTEM.—

The automatic lubrication system used in the V-50 press consists of a pump unit (see Figure 35), chain driven from press main cam shaft, which forces oil through a branched tubing line to drip plug meter units, one of which is located at or near each bearing. The pump automatically feeds and measures the total quantity of oil fed to the system at each interval of approximately 1800 press impressions. The self-contained non-adjustable meter units proportion the quantity of oil fed according to the individual requirements of the bearings.

(1) OIL TO BE USED.—Use only a clean, clear mineral oil possessing persistence of film and body equivalent to Saybolt Universal Viscosity of approximately 650 seconds at 100° F. Do not use "dripless" oils, or oils containing soap, graphite or other foreign substances. Always refill reservoir before oil level drops to bottom of gage (1).

(2) STARTING AND FEEDING.—Before operating a new press or one that has been inoperative for a considerable length of time be sure oil reservoir is full. An oil level gage (1) located on side of pump indicates level of oil in the reservoir. Start press and hold down "Instant-Feed Button" (2) until oil shows freely at bearings. After releasing button, lubricator automatically operates on its regular cycle whenever press is running. The oil pressure gage (mounted on left side of press frame) should indicate a pressure of at least 25 pounds at each pre-determined feeding interval (every 1800 impressions).

(a) During the greater part of the cycle there is

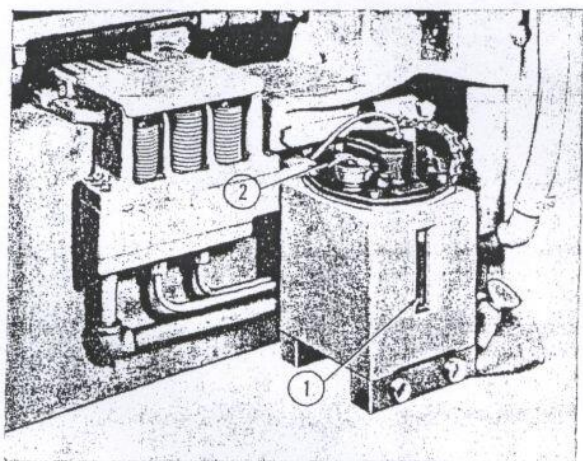


Figure 35—Lubrication Pump

no pressure in the oil line. Check valves in meter units prevent reverse flow and maintain tubing full of oil at all times.

Pressure gage is equipped with a red "telltale" pointer as well as a pressure pointer. When the pre-determined feeding interval is reached the pressure pointer moves up to indicate pressure at that instant and carries with it the "telltale" pointer. Then pressure pointer returns to "0" and "telltale" pointer remains fixed at latest reading.

The peak pressure is high in a cold press and lowers as temperature rises. This variation in pressure automatically compensates for changes in oil viscosity and assures a constant volume of oil being fed to bearings independent of viscosity and temperature.

If oil is not reaching bearings, or pressure gage fails to register, check system as directed in paragraph (3) following.

Note: The oil pump on a new press is factory adjusted to provide ample lubrication during the breaking-in period. After thirty days of press operation, it is recommended that the pump be readjusted for normal operation. To readjust the pump, remove the pump unit by loosening the screws in the pump top cover plate, which permits the pump unit to be lifted out of the reservoir casing. Disengage drive pin from cam index hole, and rotate cam until drive pin enters index hole #1. (Each index hole is numbered on cam face.) Return pump unit and tighten screws.

(3) INSPECTION AND SERVICE.—While press is operating check pressure gage occasionally by returning "telltale" pointer to "0," then holding down "Instant-Feed Button." Pressure should be at least 25 pounds. Inspect for evidence of oil at bearings and ascertain that there are no leaks in tubes or at connections. If bearings are getting insufficient oil check as follows:

1. Be sure oil reservoir is full.
2. Replace any defective tubing as required.
3. Tighten any loose connections.
4. Replace filter in bottom of pump unit if clogged.

Note: If a meter unit is slow in feeding make sure that oil reaches inlet of unit when pump is feeding; check rate of feed with meter unit connected to drip free in air. Should there be any question as to the flow rate compare it with a meter unit of the same rate number on another part of the press. If meter unit is feeding a proper quantity in accordance with its rate number and increased flow is desired, replace with same type carrying next higher rate number. *Never disassemble*

meter unit or drill out to increase flow. Do not test by blowing through meter units, flow direction is indicated by arrow stamped on each unit. Disassembly, drilling or blowing will ruin meter unit's operation.

b. MANUAL LUBRICATION.—In order to insure continuous operation of the V-50 Vertical press, it is extremely important that all parts, requiring manual lubrication, be lubricated regularly. An oiling can and grease pressure gun are supplied with the press.

A lubrication chart, illustrating points to be manually lubricated at regular intervals, is inserted in the back of this book. Close attention to the procedures outlined will ensure proper lubrication of the press at all times. A separate copy of the lubrication chart is also provided for hanging on wall near the press.

It is extremely important that a new press is thoroughly lubricated before operating for the first time. A tag, attached to the press, gives proper operating procedure and speeds for new presses.

Lubricate regularly instead of excessively. Excessive oiling may result in oil or grease-spotted sheets. Keep in mind that a clean and regularly lubricated press will result in maximum production of better work.

2. GENERAL PRECAUTIONS.

The following is a list of precautions to be observed during make ready and press operation. By observing these precautions the operator can avoid excessive press wear, thereby extending the life of the press.

a. FEEDER.

(1) Before raising or lowering feeder pile table manually, be sure that pile table crank is pushed in fully, thereby avoiding excessive clutch wear.

(2) Before positioning separator shoe holders along the separator frame, be sure that holder is disengaged from separator frame, thereby avoiding excessive separator frame wear.

(3) Check that vacuum holes in shoes are not clogged. To blow out shoes refer to paragraph a page 27.

(4) Before opening or closing feeder, be sure that cylinder is at bottom center position.

b. TRANSFER TABLE.

(1) Before removing or attaching transfer table, be sure that cylinder is at top center (top of up stroke) and while removing or attaching table use extreme care so that metal edge of table does not hit against other parts of press, thereby avoiding denting of table edge.

(2) Check that vacuum holes in transfer table

are not clogged. Blow out air lines in transfer table at frequent intervals, especially when running linty stock. (Refer to paragraph b page 27.)

c. SIDE GUIDE.—Check that side guide shifting cam block stud is always tightened securely, thereby avoiding the possibility of cam block fouling against cam.

d. IMPRESSION CYLINDER.

(1) Be sure that cylinder gripper stems are always clean.

(2) Check that cylinder brake lining is clean and brake spring pressure properly adjusted. For instructions on cleaning and adjusting cylinder brake, refer to paragraph 5 page 31.

(3) Check that air holes in cylinder gripper bar are not clogged. Blow out air lines in cylinder at frequent intervals, especially when running linty stock (Refer to paragraph c page 28.)

(4) Before opening cylinder for make ready be sure that cylinder is on its down stroke and positioned approximately 1" below top center. The ratchet pawl lock collar pin should be in line with red alignment marking on cylinder end guard.

(5) When cylinder is opened, do not turn press over by hand. Failure to comply with this may result in cylinder locking on bed bearers.

(6) Always turn cylinder slowly when returning cylinder to operating position, thereby preventing bending of spring pin.

e. INKING MECHANISM.

(1) Keep fountain and fountain keys clean. Do not allow dry ink to accumulate.

(2) Before removing fountain blades, loosen fountain keys in order to avoid blade from becoming sprung.

(3) When adjusting fountain ink flow do not tighten fountain screws excessively as they may cause roller surface damage. If blade is completely cutting ink from roller or portions of roller, loosen the fountain screws that are over-tightened.

(4) When opening form or distributing rollers to non-operating position, carefully lower the frames so as to avoid breaking or bending of locking mechanism.

f. CHASE AND TYPE BED.

(1) When locking form in chase, do not lock quoins too tightly as this may result in springing chase and resultant "work-ups".

(2) Do not use warped or sprung furniture.

(3) When placing form in type bed do not rest chase on any other part of the press.

(4) When aligning form in press by means of the chase jack screws, do not raise jack screws too high, thereby preventing the possibility of jack screw nuts dropping off the screws.

g. DELIVERY.

(1) Before raising or lowering delivery table manually, make sure that crank is pushed in fully, thereby avoiding excessive clutch wear.

(2) When attaching heaters to the press, locate them so that the delivery grippers will not be excessively heated. If the grippers are overheated, the metal will lose its temper, resulting in bent and mis-adjusted grippers.

(3) Check that auxiliary attachments such as heaters and sheet sprays are securely fastened in place.

h. DRIVE.

(1) When starting the press do not jerk belt-tightener lever to starting position as this may cause belt failure. Inspect belt periodically for signs of wear, dryness or grease saturation. For maintenance of belt refer to paragraph 4 page 30.

i. AIR PUMPS.

(1) Check that combination air filter and muffler screen is not clogged. Under normal operating conditions, clean the screen once a week, using a suitable brush.

(2) At weekly intervals open vacuum surge tank drain cock and drain off any oil that may have accumulated in tank. This operation should be performed with the press motor shut off. Be sure to close drain cock after draining oil. The press will not operate unless this drain cock is closed tightly.

(3) Service pumps periodically as directed in paragraph *d* page 29.

j. GENERAL.—In general, be sure that the press is regularly lubricated as directed in the Lubrication instructions (refer to paragraphs 1a and b pages 25 and 26). Do not allow sheet spray dust to accumulate on press.

3. SERVICING AIR SYSTEM.

The following maintenance procedures should be performed at the intervals specified and as directed in the following instructions in order to insure continuous and efficient operation.

a. HOW TO CLEAN FEEDER SEPARATOR SHOES.—Under normal operating conditions, feeder separator shoes should be blown out each week, and oftener when running dusty or linty stock. However, if at any time separator shoes are clogged, requiring cleaning, blow out the shoes as directed in the following instructions:

Note: As a safety measure remove change pulley

from motor shaft, thereby preventing the possibility of press starting while the following operations are being performed.

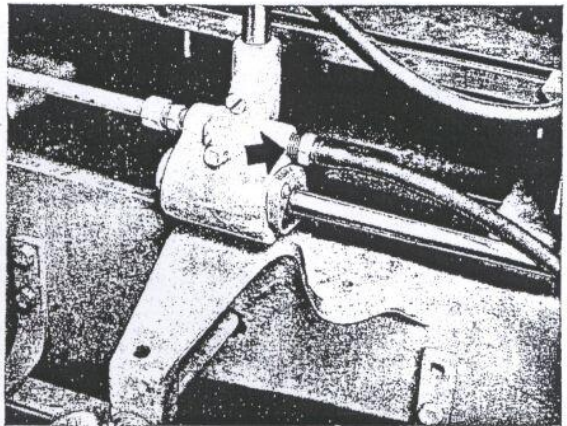


Figure 36—Hose Connection For Servicing Air System

(1) With feeder swung away from press, remove the $\frac{1}{4}$ " plug located at the bottom of feeder table blower nozzle tube and screw in nipple attached to special hose supplied with press (see figure 36).

(2) Remove vacuum hose from separator shoe and attach opposite end of special hose to shoe nipple.

(3) Start press motor, thereby supplying air blast through separator shoe.

(4) After shoes are blown clean, remove special blast hose and replace shoe vacuum hoses.

(5) Disconnect special blast hose from feeder nozzle tube and replace plug previously removed. (If transfer table or cylinder air lines are to be cleaned at this time, leave special blast hose connected to feeder nozzle tube.)

b. HOW TO CLEAN TRANSFER TABLE AIR LINES.—Under normal operating conditions, transfer table air lines should be blown out each week and oftener when running dusty or linty stock. However, if at any time transfer table air lines are clogged, requiring cleaning, blow out lines as directed in the following instructions.

(1) With feeder swung away from press, position cylinder at top center and then remove transfer table.

Note: As a safety measure remove change pulley from motor shaft, thereby preventing the possibility of press starting while the following operations are being performed.

(2) Remove the $\frac{1}{4}$ " plug located at the bottom

of feeder table blower nozzle tube and screw in nipple attached to special hose supplied with press. (See figure 36.)

(3) Disconnect short hose (connecting left transfer table lever to auto stop suction cylinder—left side of press) from lever nipple. (See (1) figure 37.)

(4) Connect opposite end of special hose to lever nipple, remove washer, (2) figure 37, in counter-sunk hole in top of transfer table lever and then start press motor, applying blast to air line in lever. Allow motor to run until lever air line is clean.

(5) Replace washer, disconnect blast hose from lever, and reconnect hose from auto stop suction cylinder to left transfer table lever.

(6) Remove vacuum hose from right side transfer table lever, connect blast hose and blow out air line in this lever after removing lever washer.

(7) Replace washer and reconnect vacuum hose to lever.

(8) With transfer table placed in brackets at top of press remove set screw at each end of transfer table frame.

(9) Start motor and apply air blast through vacuum holes along transfer table edge.

(10) After these holes are blown clean, cover holes with strip of gummed paper. Apply air blast to holes from which set screws were removed. While applying air blast, hold finger over table vacuum inlet hole adjacent to hole to which air blast is being applied. If air line in table is badly clogged, run a length of thin wire through line and then repeat blowing operation.

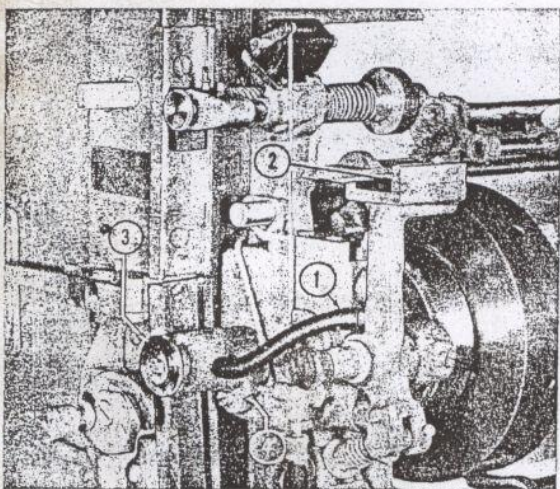


Figure 37—Hose Connection to Left Transfer Table Lever

(11) After table air line is blown clean, replace set screws and remove gummed paper strip.

(12) Disconnect blast hose from feeder nozzle tube and replace plug previously removed. (If separator shoes or cylinder air lines are to be cleaned at this time, leave blast hose connected to feeder nozzle tube.)

c. HOW TO CLEAN CYLINDER AIR LINES.

—Under normal operating conditions, cylinder air lines should be blown out each week and oftener when running dusty or linty stock. However, if at any time cylinder air lines are clogged, requiring cleaning, blow out lines as directed in the following instructions.

(1) Swing feeder away from press, position cylinder 1" below top center (on down stroke), and then remove transfer table.

Note: As a safety measure remove change pulley from motor shaft, thereby preventing the possibility of press starting while the following operations are being performed.

(2) Pull out cylinder collar spring pin and then turn cylinder manually to its open position.

(3) Remove $\frac{1}{4}$ " plug at bottom of feeder blower nozzle table and screw in nipple attached to special hose supplied with press. (See figure 36.)

(4) Disconnect short hose from cylinder air tube, at right end of cylinder and adjacent to right transfer table lever air nipple.

(5) At inside of cylinder, disconnect the two hoses connected to cylinder gripper suction tubes

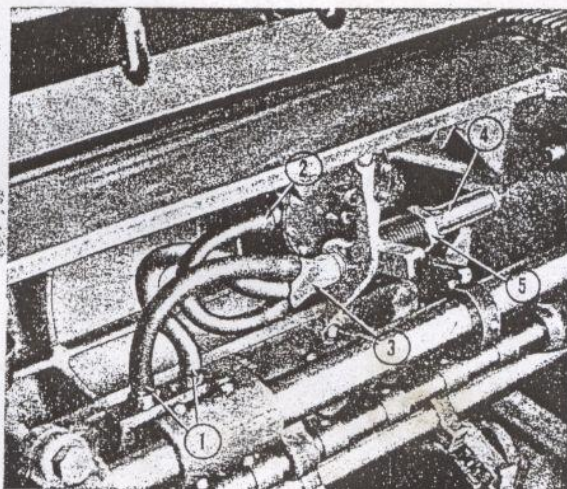


Figure 38—Hose Connections In Cylinder

(1) and the hose connected to cylinder trip diaphragm air nipple (2). (See figure 38.) Disconnect and remove three way hose fitting from cylinder trip diaphragm air tube, (3) figure 38.

(6) Loosen gripper bar clamp screws and remove gripper bar.

(7) Connect special blast hose to cylinder air tube at right end of cylinder. Turn and lock cylinder back in operating position and then close cylinder end guard. Start press motor, applying blast, and allow to run until cylinder trip diaphragm air tube, (4) figure 38, is clean.

(8) Connect special blast hose to three way hose fitting, previously removed, and blow out fitting and hoses connected to it.

(9) Apply blast to two gripper bar suction holes in cylinder.

Note: Do not attempt to blow out cylinder trip diaphragm. Applying blast into diaphragm may result in rupturing of diaphragm rubber disc.

(10) After lines have been thoroughly cleaned, open cylinder and replace all parts previously removed. Disconnect blast hose from feeder nozzle tube and replace plug. (If separator shoes or transfer table air lines are to be cleaned at this time, leave blast hose connected to feeder nozzle tube.)

d. **SERVICING AIR PUMPS.**—Uniform vacuum and oil-free air blast is provided by a pair of diaphragm air pumps. These pumps are equipped with sealed ball bearings which require no lubrication. A vacuum surge tank assures uniform vacuum under all printing conditions.

(1) **THE VACUUM RELIEF VALVE** (located in the vacuum line) is factory set to handle most stocks normally run on press. Should it be necessary to adjust this valve to operate under abnormal conditions, always return valve to original setting (indicated by adjustment limiting wire) after completion of run.

(2) **HOW TO CLEAN AIR FILTER AND MUFFLER.**—Under normal operating conditions the combination air filter and muffler should be cleaned once a week with a suitable brush. New filter felts should be installed each year.

(3) **HOW TO CLEAN VACUUM SURGE TANK.**—Each month open surge tank drain cock (press motor shut off) and drain off any accumulated oil. Press will not operate properly unless drain cock is tightly closed after draining. In order to prevent excessive accumulation of paper dust and spray material in tank, remove tank cover once a year and clean tank interior with a suitable solvent.

(4) **REPAIRS.**—If pumps fail to provide adequate blast or vacuum, check diaphragms and valve discs for proper operation. If repairs are necessary, proceed as follows:

(a) **Diaphragms.** Inspect diaphragm (1, Figure 39) for possible rupture by removing hose and manifold which connects the two air domes (2). *Do not damage gasket between manifold and air domes.* Remove 6 screws holding air head in place and remove entire head at point "A."

If diaphragm is ruptured install new diaphragm as follows:

Remove pull plate (3) by turning in a counter-clockwise direction, using special spanner wrench supplied with press. When pull plate separates from piston (4) remove damaged diaphragm.

Place new diaphragm and piston on pull plate making certain the two bosses on pull plate extend through the two holes in diaphragm and replace piston in recess as shown at point "D." Fold diaphragm over edge of pull plate and, holding plate and diaphragm at fold, screw pull plate assembly into connecting rod in a clockwise direction. Do not push piston away from diaphragm as this might disengage bosses from piston and diaphragm. Grasp edge of diaphragm with both hands and screw diaphragm and plate down as tightly as possible, then finish tightening with spanner wrench.

Before proceeding, examine valve discs (5) and if broken or chipped, or valve springs do not function

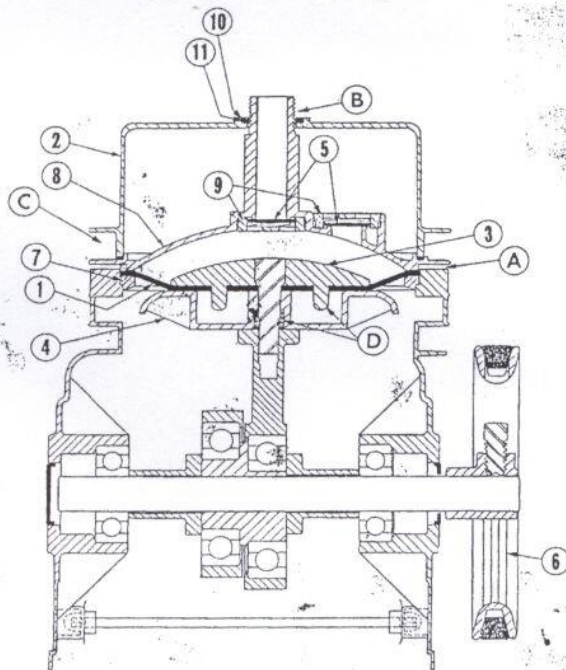


Figure 39—Air Pump Diagram

properly, make valve repairs as necessary before completing diaphragm installation. (See paragraph (b) following.)

To complete diaphragm installation turn pump by hand until pull plate (3, Figure 39) is at top center. Locate diaphragm in proper position and reassemble head. Be sure head is properly centered then tighten screws slightly and uniformly. Turn pump pulley (6) several revolutions by hand to assure proper seating of diaphragm on top of diaphragm ring (7) and then tighten screws securely. Reassemble manifold and hose.

Note: Locating pins have been provided in valve bridge (8) and air dome (2) to assure proper assembly. These pins should not be altered or moved.

To avoid press shut-down in case a new diaphragm is not available, a temporary diaphragm can be made from any high grade rubber diaphragm stock or cloth reinforced sheet packing approximately 3/32" thick, cut to a diameter of 4-29/32". A standard diaphragm should be installed as soon as procurable.

(b) *Valve Discs.* To replace worn or broken discs (5), remove fitting and gaskets from point "B" and separate air dome (2) from valve bridge (8) at point "C." The valve retainer (9), two used in each head, should be unscrewed using the special spanner wrench and valve disc replaced. Do not pinch or bend discs as this will cause faulty operation or valve failure. After reassembly, inspect to be sure discs operate freely. Replace gaskets (10 and 11) if worn and position properly to assure tight fit and no leakage.

4. SERVICING PRESS DRIVE BELT.

The V-50 press is equipped with a leather belt which does not require excessive tension. Belt should be inspected periodically and if dry a small quantity of good quality belt dressing should be applied to both sides. If belt is too oily, wipe with gasoline and then apply dressing.

Should belt become saturated with oil or grease, remove from press and soak in gasoline overnight. After drying apply dressing generously to both sides of belt.

(a) **HOW TO REMOVE AND REPLACE BELT.**
(See Figure 40.)

(1) Remove the 6 screws and 2 cap screws from guard and pull guard toward flywheel to disengage guard from large dowel pin on side, then lift and remove guard.

(2) Remove cotter pin (1) and washer. Move belt tightener lever (3) to extreme right then remove brake shoe (2).

(3) Move belt tightener lever to extreme left and slide belt away from motor pulley. Then move lever to right, turn belt sideways and remove from idler pulley (4).

(4) Move lever (3) to extreme left and disengage trip lever (7) from automatic stop lever (8). Move trip lever to the right, past the notched stop. Pass belt between lever (3) and ratchet (6). Remove belt.

(5) Install new belt by reversing the procedure

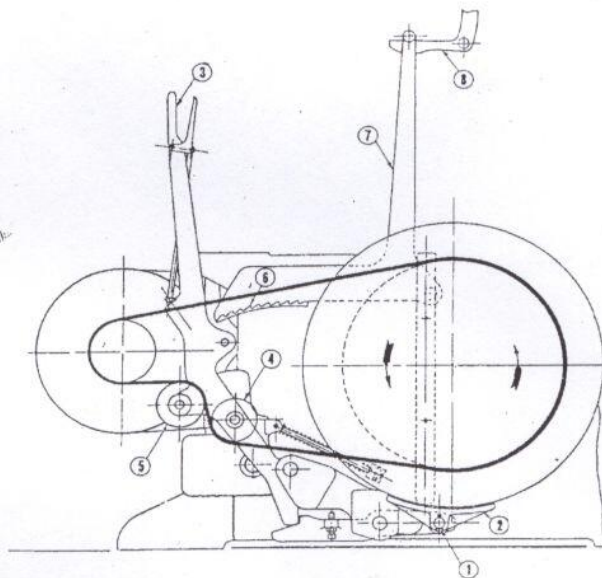


Figure 40—Press Drive Belt Diagram

outlined in paragraph (4) above. Then move lever (3) to extreme right and pull doubled end of belt in between pulleys (4 and 5). Turn belt sideways and slip under pulley (4).

(6) Move belt tightener lever to extreme left and slide upper part of belt over motor pulley. Then move lever to extreme right, replace brake shoe, washer and cotter pin (1).

(7) Replace guard and fasten screws securely.

5. HOW TO ADJUST AND CLEAN CYLINDER BRAKE.

When turning cylinder by hand check that it moves with a definite drag. If cylinder moves too freely, increase brake spring (1) pressure by tightening spring adjustment nut (2). (See figure 41.)

To clean brake lining, remove spring adjustment

nut (2) permitting brake band to be opened. Clean brake lining with gasoline and roughen surface.

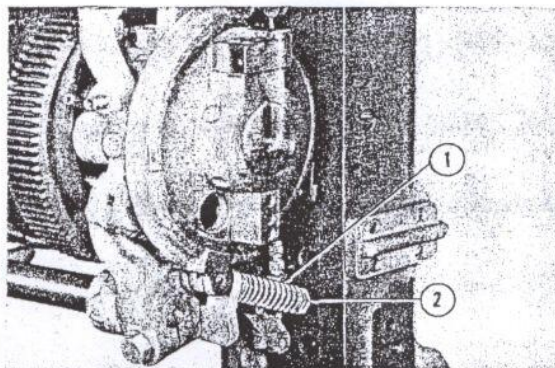


Figure 41—Cylinder Brake Adjustment

SECTION V—TROUBLE SHOOTING

The quality and quantity of work that can be produced with the V-50 Vertical press are dependent upon the care with which the operator makes the required adjustments and settings. If the press should not operate properly, causing press stoppage, the cause may usually be traced to inaccurate settings or adjustments. In the event that trouble of this nature may occur, the operator can, by referring to the following Trouble Shooting Chart, quickly locate and remedy the cause of the trouble, thereby reducing to a minimum the time that the press is non-operative.

The chart is broken down into five groups, namely, Feeding, Register, Cylinder, Ink Distribution, and

Delivery. The first column in each group lists the trouble symptoms most likely to occur, in each group heading mechanism, due to faulty settings or adjustments; the second column lists the probable causes for the given symptom; the third column lists the remedy for each probable cause and also refers to the paragraph in this book which gives detailed information and instructions for making the necessary adjustment or setting. The following chart does not cover troubles that may be due to mechanical failure. In the event of mechanical failure, the trouble must be checked and remedied by a competent mechanic.

TROUBLE SHOOTING CHART

FEEDING

SYMPTOM	PROBABLE CAUSE	REMEDY
Shoes picking up two sheets	Wrong separator shoes being used. Shoes not positioned correctly to side edge of sheet.	Check shoe number and position of shoes along separator frame. Refer to paragraph (4) page 13.
	Insufficient air blast due to air blast petcock being open. Feeder blower nozzle set at wrong height.	Check setting of air blast petcock and feeder blower nozzle. Refer to paragraph (6) page 13.
	Top of pile too high or too low.	Check height of pile. Refer to paragraph (2) page 12.
	Sheets not up to front pile guides.	Check that rear pile guides are correctly positioned. Refer to paragraph (3) page 12.
	Sheets sticking due to offset, dull knife, static electricity.	Separate sheets by rolling sheets before placing on pile table.
Shoes do not pick up sheet	Wrong separator shoes being used.	Check shoe number for weight of stock being run. Refer to paragraph (4) page 13.
	Top of pile not level, causing failure of shoes to seal.	Check that pile is level.
	Pile guides set too tight.	Check that sheets are not binding due to incorrect setting of front and rear pile guides.
	Front pile guide hair pin wires too tight. Corner wires too far in on corner of sheet.	Check front guide hair pin and corner wire settings.
	Leaky or clogged vacuum line.	Check for leaks in vacuum line. Check that shoes are not clogged. Clean shoes if necessary. Refer to paragraph a page 27.
	Top of pile too high or too low.	Check height of pile. Refer to paragraph (2) page 12.
	Sheets sticking due to offset, dull knife, static electricity.	Separate sheets by rolling before placing on pile table.
	If running heavy card stock, amount of suction may need to be increased.	Change setting of vacuum relief valve as required for stock being run. After job is printed, set valve to its original setting.

CYLINDER (Continued)

SYMPTOM	PROBABLE CAUSE	REMEDY
Cylinder will not trip.	Cylinder diaphragm latch spring not properly adjusted.	Change setting of diaphragm latch spring. See (5) figure 38.
Press automatic trip does not function (sheets pile up on transfer table or press does not stop after last sheet is fed).	Curly stock not sealing holes in transfer table.	Check that sheets seal vacuum holes in transfer table.
	All holes in transfer table not covered due to small sheet.	Cover holes (not covered by sheet) with strip of gummed paper. Refer to step (15) on page 24.
	Leather washers in transfer table levers not properly seated.	Check that washers are properly seated in transfer table lever holes.
	Auto-stop piston not operating freely due to excessive or gummy oil. Vent hole in auto-stop cylinder is clogged.	Check that auto-stop piston, (3) figure 37, moves freely. Check that vent hole is not clogged. See (4) figure 37.
	Leak in hose between auto-stop cylinder and transfer table lever.	Check for broken hose or leaky connection. See (1) figure 37.
Cylinder grippers do not hold sheet.	Cylinder over packed.	Check cylinder packing. Refer to Cylinder Packing Sheet Requirements page 16.
	Tacky ink.	
	Burr or paper under gripper head.	Check that grippers are seating properly.
Cylinder grippers tear sheet.	All grippers not lifting together due to gripper bar not seated properly.	Check that gripper bar is seated level on packing.
	Burr or paper under gripper head.	Check that grippers are seating properly.

INKING DISTRIBUTION

Incorrect inking for job being printed.	Fountain blade not properly adjusted.	Adjust fountain blade, by means of fountain screws, for job being printed. Refer to paragraph (1) page 19.
	Fountain roller feed not properly set.	Change setting of fountain roller set-wheel as required. Refer to paragraph (2) page 19.
	Form and distributing rollers contact not properly adjusted.	Check contact of form and distributing rollers. Refer to paragraph (4) page 20.

DELIVERY

Sheets not settling properly on delivery pile table.	Delivery side and rear joggers not correctly positioned for sheet being run.	Check settings of side and rear joggers. Refer to paragraph (2) page 21.
	Delivery air nozzles not correctly positioned.	Check that nozzles and air tube are so positioned that air blast settles sheet on pile table. Refer to paragraph (3) page 21.
Delivery pile table not lowering sufficiently for thickness of stock.	Delivery pile table set-wheel not properly set.	Change setting of set-wheel until proper amount of table drop is obtained. Refer to paragraph (1) page 20.