MAINTENANCE MANUAL

for

THE SELECTRO-MATIC QUADDER

(MODEL F)

GUARANTEE

All electrical parts of the Selectro-Matic Quadder are guaranteed against defects for a period of ninety days; mechanical parts for one year.

Any part deemed defective should be reported or returned to the factory at South Hackensack for adjustment.

COMMUNICATIONS

When writing to the factory regarding your STAR Quadder, please state the serial number. It will speed a reply also if, in referring to parts, catalog numbers are used for identification wherever possible. As an alternative references to parts shown in photographs or drawings used as illustrations in this Manual would also help.

Authorized Distributor for Mergenthaler Linotype Co.

Linotype Supply Co., Inc.
8 Beach Street
New York, N.Y. 10013
212 925-2364 –5
Peter Kantor
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PRINCIPLES OF THE SELECTRO-MATIC QUADDER

The Selectro-Matic Quadder consists of three principle divisions. They are:

1. The Memory System, which remembers signals and delivers them to the Quadder mechanism as each line reaches casting position.

2. The Hydraulic Unit, which provides the actuation necessary for moving the Quadder mechanism.

3. The Quadder Mechanism, which accepts signals from the Memory system, and, under Hydraulic Actuation, controls the Vise Jaw or Jaws for the required quadding function.

THE MEMORY SYSTEM

The Memory System requires no specialized electrical knowledge, either for operation or maintenance. The Memory System is diagrammed here, showing the route of quadder signals.

When a Selector Button is depressed, a circuit is completed through the Short Line Switch to the Transfer Box. The Short Line Switch, when closed by the Trip, will cancel any quadding signal, since the line is then full enough to justify. (For details see page 28).

Assuming that the line is short of full measure, quadding is then required. When one of the Selector Buttons is depressed the signal is held in the Selector Assembly until the Assembling Elevator rises. As the Elevator rises the plunger in the Memory Transfer Box is depressed, transferring the quadding signal to the relay or relays in the Memory Control Box. These relays remain energized, holding the signal until a pin on the Hydraulic and Switch Actuating Cam closes the Solenoid Actuating Switch through a lever. This transfers the signal from the relays to Solenoids A-A, in the lower part of the quadder housing. Energizing Solenoids A-A causes Pawls to engage either or both Vertical

Racks, which then provide for left, right or center quadding.

As the Solenoids A-A are energized they also close either or both Switches D-D. This completes a circuit to the Justification Stop Pawl Solenoid, locking out the Justification Rod to prevent Spaceband drive for quadding.

During casting, the relays in the Memory Control Box are cleared for the following quadding signal by the Relay Clearing Switch. After casting the Solenoid Actuating Switch is closed for the second time energizing Solenoids B-B to disengage the pawls from the vertical racks. This returns the quadder mechanism to normal, ready for the next signal.

THE HYDRAULIC ACTUATING UNIT

The basic function of the Hydraulic Actuating Unit is to raise the Actuating Slide attached to the vertical racks in the Quadder Mechanism to provide left, right or center quadding. This is achieved by depressing a piston in the master cylinder, by the specially designed, outboard Hydraulic and Switch Actuating Cam. Hydraulic power is transmitted through a connecting hose to a piston in the slave cylinder, raising the piston and the vertical racks. This provides the necessary actuation for quadding. The Cam, in addition to actuating the hydraulic system, allows the jaws to back off slightly between first and second justification to permit proper alignment of matrices to mold. A relief in the cam is also provided after casting, so the matrices are guided with a light wiping motion but not held tightly, as they rise out of the vise jaws.

A reservoir and two valves are parts of the hydraulic system. A relief valve opens when sufficient vise jaw pressure for proper casting has been attained, returning the excess fluid to the reservoir. After casting, fluid is syphoned from the reservoir through a check valve back into the master cylinder. This refills the cylinder for the next quadding cycle.

THE QUADDER MECHANISM

As the Hydraulic Piston, in the Slave Cylinder rises, it carries with it the Actuating Slide, which extends through the back of the quadder housing. Inside the quadder housing, the Slide Block is attached to the Actuating Slide, and it rises with each machine cycle. When quadding is required, the energizing of the "A" Solenoids causes Operating Pawls to engage with the Vertical Racks. As the Slide Block rises it carries the Vertical Racks with it. The Vertical Racks are engaged with gears, which, in turn, move the Horizontal Racks. The Vise Jaws are attached to the Horizontal Racks and either or both Jaws move inward to provide the proper quadding function. When the Slide Block and Vertical Racks descend, the Jaws open outward and return to their original position, ready for the next line.

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MAINTENANCE

LUBRICATION

Note: - Where oil is required for lubrication use only quadder oil.

1 - FASTENING PLATE:

A drop or two of oil daily (see photo 1).

2 - HYDRAULIC ACTUATING UNIT: (see photo 2).

(a) A few drops of oil in the oil cups daily.
(b) With Gun, grease cam roll about once a month at Zerk fitting.
(c) Check oil level daily. Lower line is danger level. Do not fill above the upper line. Use only Quadder Hydraulic Oil provided.

3 - QUADDER HOUSING: (see photo 1).

A drop or two of oil weekly.

4 - VISE CAP:

Clean and lubricate when necessary. Check occasionally by moving the Right Hand Vise Jaw to the extreme left with Selector in "Center" position. If it goes back by itself, (let it come back slowly), you will know the Vise Cap ways are clean. If not, clean and lubricate as follows:

Open the Vise and swab the ways with kerosene. Clean out thoroughly with a rag. Squirt a little Quadder Oil into the ways and spread it by moving jaws to and fro.

5 - MEASURE CONTROL: (see photo 3).

A drop or two in oil holes weekly, and also a few drops on the side of the gear through the hole in the guard, at point A.

6 - MEMORY TRANSFER UNIT: (see Dr. 8 Page 21).

A drop or two of oil every two or three months at points 1 and 2 on the Switch Actuating Rod, and on the swivel-joints of the Knuckle Actuators. DO NOT OVER-LUBRICATE.

PUMP STOP

Periodically the Pump Stop should be checked to see that the Pot Pump Lever Stop Lever Spring (see Dr. 6 Page 18) is intact, and operating with proper pressure. This is insurance against squirts.

MAINTENANCE cont'd.

SIGNAL LIGHTS

SELECTOR (see Photo 4)

If the GREEN (Pump Stop) light fails to show, though switch is "ON", it will indicate that one of the following is to be checked:

1 - The Bulb

2 - Power from the Master Control Box or Transformer.

3 - The Pump Stop Switch on top of the Selector Box.

If the RED (Cast) light fails to go on and off with each cast, check the following:

1 - The Bulb

2 - L.H. Vise Jaw Switch

3 - Solenoid

See the Electro-Pump Stop section of the Manual, Page 17, for more details.

MASTER CONTROL BOX PILOT LIGHT (see Photo 5)

This light goes on with the Main Switch next to it. If the light goes out with the switch in "ON" position, it will mean either that the bulb is burned out, or that the power line is no longer feeding current to the quadder.

TRANSFORMER

(See Photo 5)

When all signal lights except the one on the Master Control Box fail it will indicate that the Transformer needs replacing.

PHOTO #1

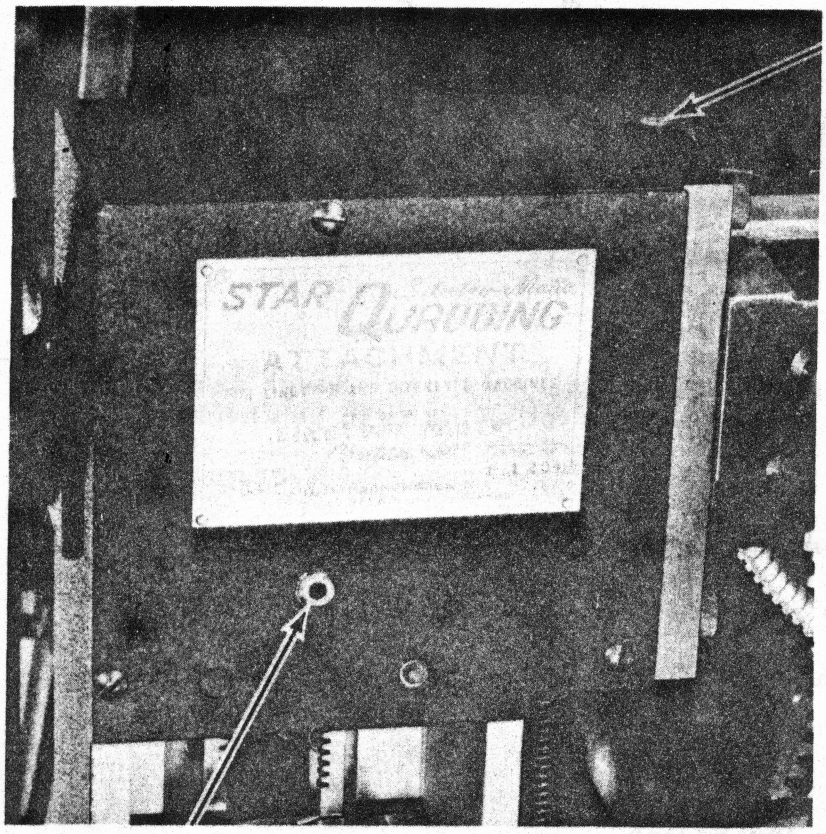
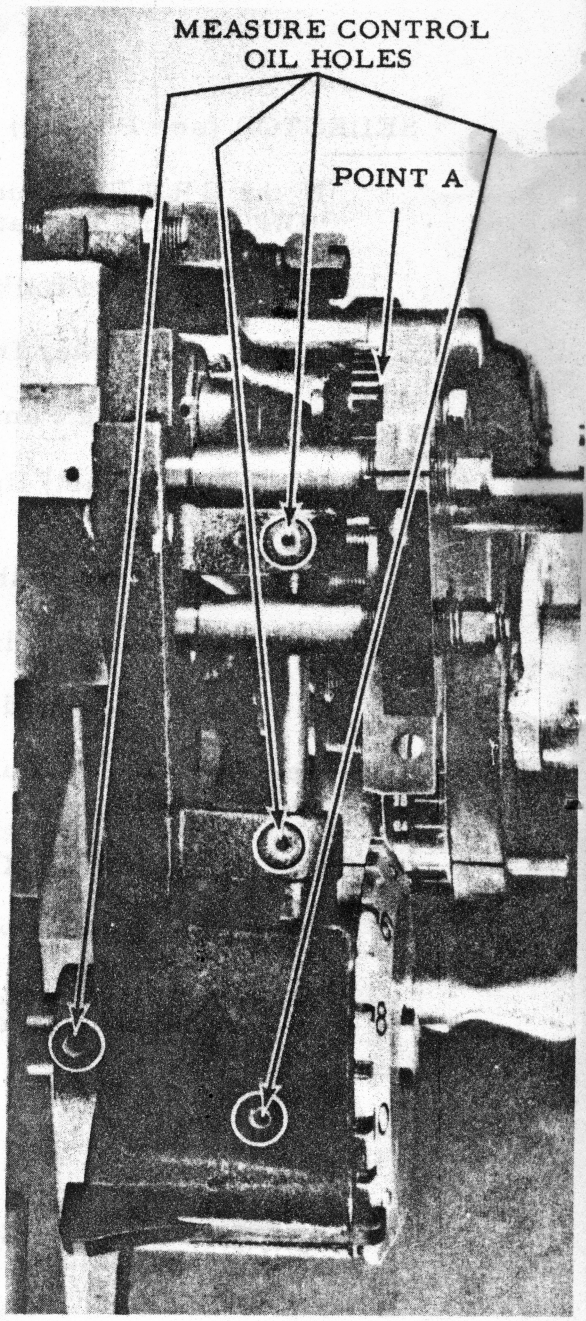


PHOTO #3



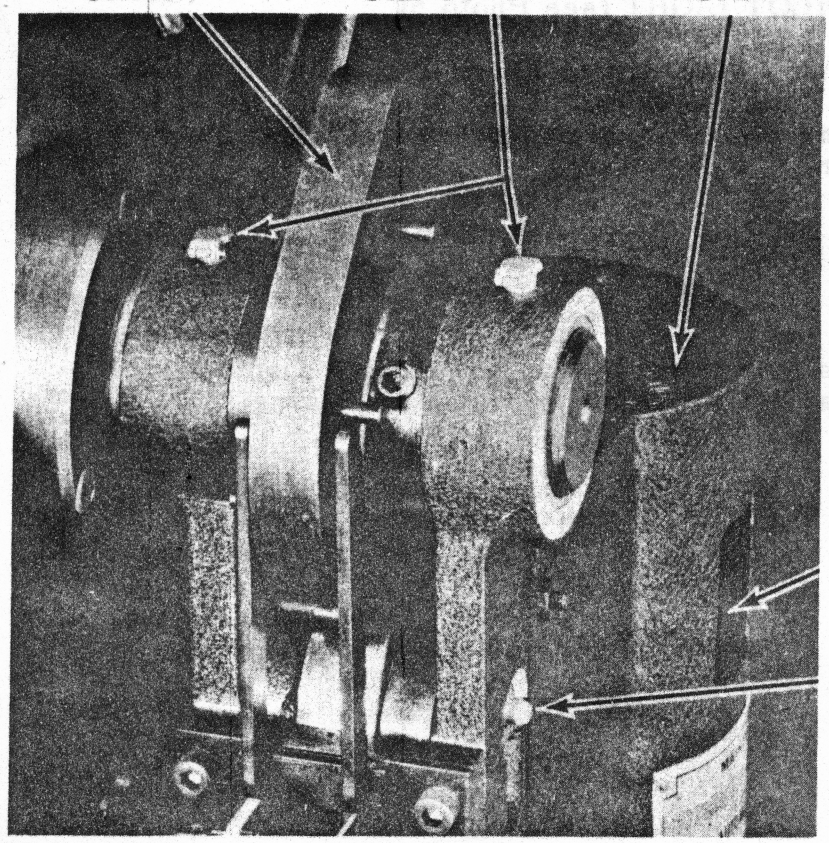
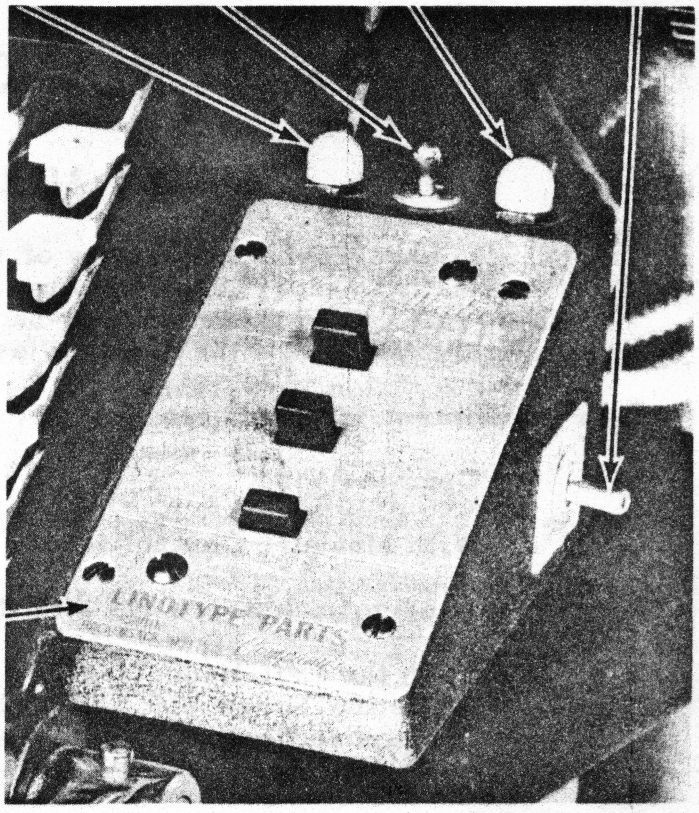


PHOTO #2

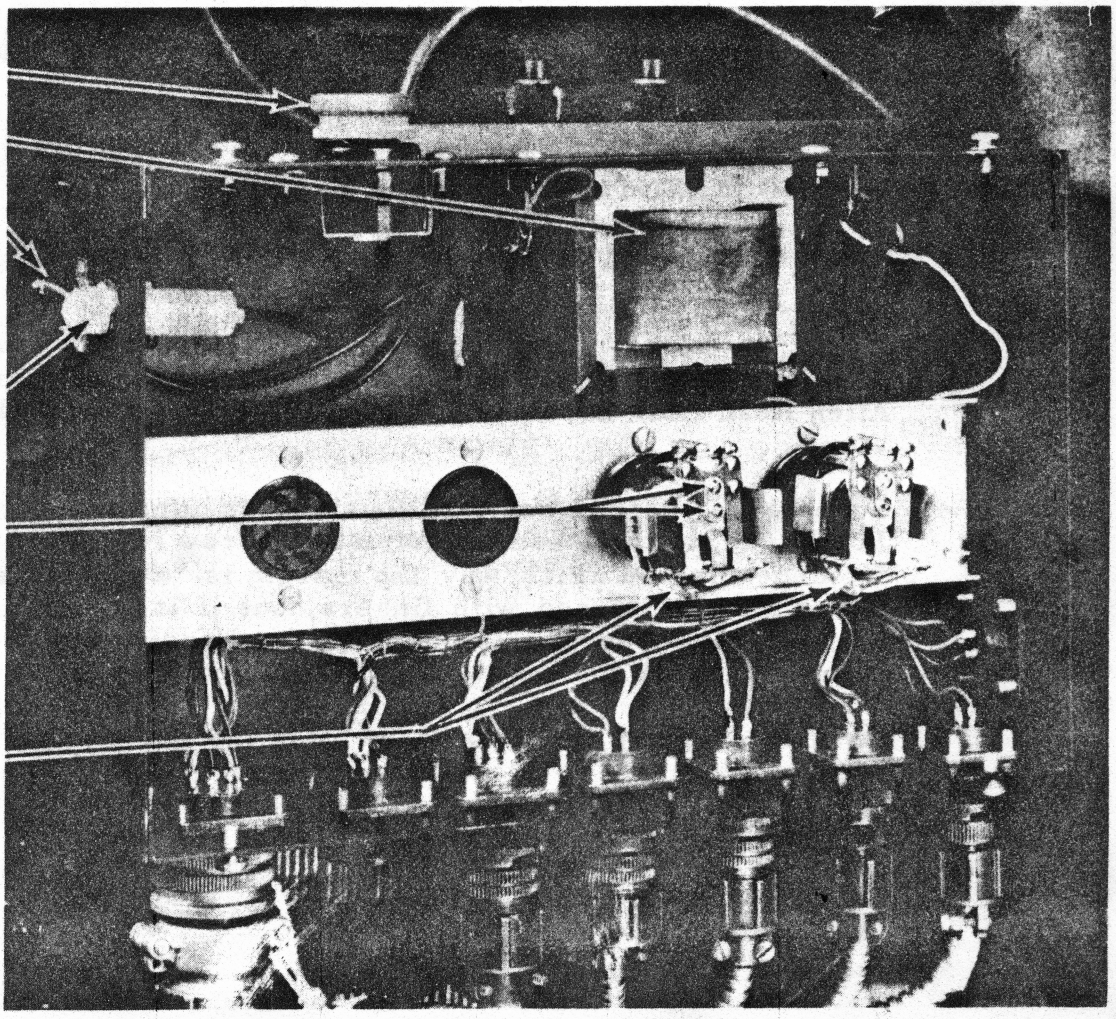
GREEN LIGHT | PUMP STOP SWITCH | RED LIGHT | CONTROL SWITCH

PHOTO #4



PLATE

PHOTO #5



FUSE

TRANSFORMER

POWER SWITCH

PILOT LIGHT

RELAY SCREWS

RELAYS

MAINTENANCE cont'd

CENTER ADJUSTMENT

In order to check for the accuracy of the centering adjustment of your Selectro-Matic Quadder, cast two slugs using matrix characters like "H" or a down-rule. Hold these back-to-back lined up evenly. It will become immediately apparent if the center adjustment is off, and if so, which way.

For adjustment, referring to Photo 6, proceed as follows:

1 - Open the Vise

2 - With Measure Control set the Vise Jaws to 24 ems.

3 - Loosen Lock Screw (1) with the small Allen Wrench

4 - Push the Left Hand Vise Jaw to the right to expose the Center Adjusting Screw (2). With the same wrench placed in one of the exposed holes, turn the Adjusting Screw (2) either way as needed to obtain proper center.

5 - Tighten Lock Screw (1) when final adjustment has been obtained.

INDENTATION ADJUSTMENT

If you wish to change indentions, adjust as follows:

THE LEFT HAND INDENTION (see Photo 6)

1 - Remove the cover in front of the Quadder Housing.

2 - Open Vise.

3 - In the recessed center of the Fastening Plate (6) there is an Allen Head Lock Screw (3). Loosen this screw, and close the Vise.

4 - Go back to the front of the Housing. Inside, above the Vise Jaw Racks, is the Indention Adjusting Screw (4). Turn it in or out depending on which way the margin is to go. This screw can usually be turned with fingers, but if it is stiff, remove the Rack Guard on the left side of the Housing and it can be reached through the screw slot (5) which will be found there.

5 - Be sure to tighten the Lock Screw (3) in the Fastening Plate (6).

MAINTENANCE cont'd.

RIGHT HAND INDENTION (see Photo 7)

After indention adjustments are made in usual way, by means of the Adjusting Screw on the Knife Block, loosen Lock Nut (1). Bring the Adjusting Screw (2) on the support to contact bearing against the R. H. Vise Jaw. Then cast a slug and if further adjustments are necessary, follow same procedure. When final adjustment is made there should be no rock, sidewise, in the R. H. Vise Jaw.

VIEW OF THE CENTERING AND RIGHT HAND ADJUSTMENT PARTS FROM INSIDE THE VISE CAP.

PHOTO #6

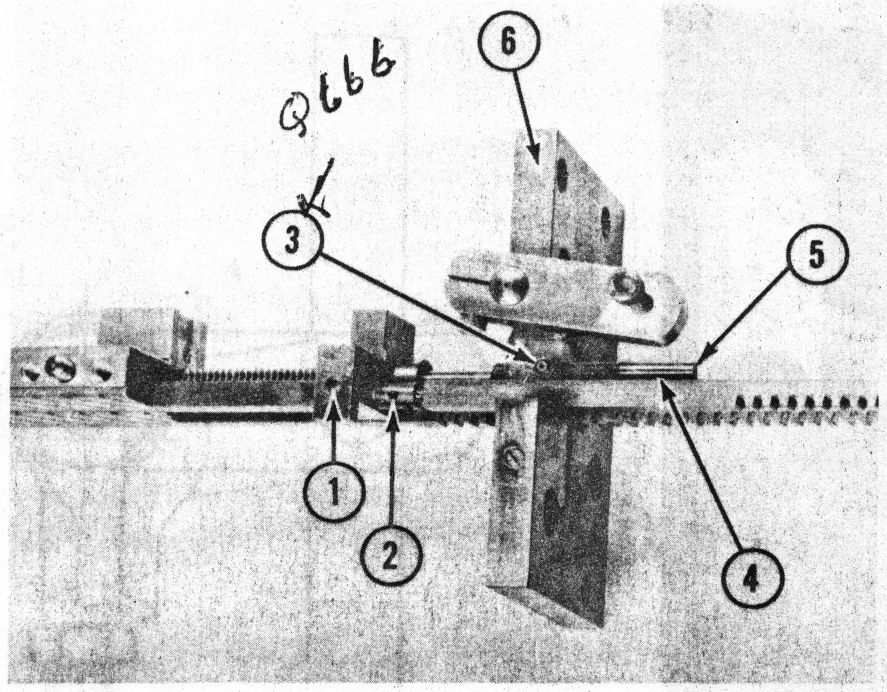
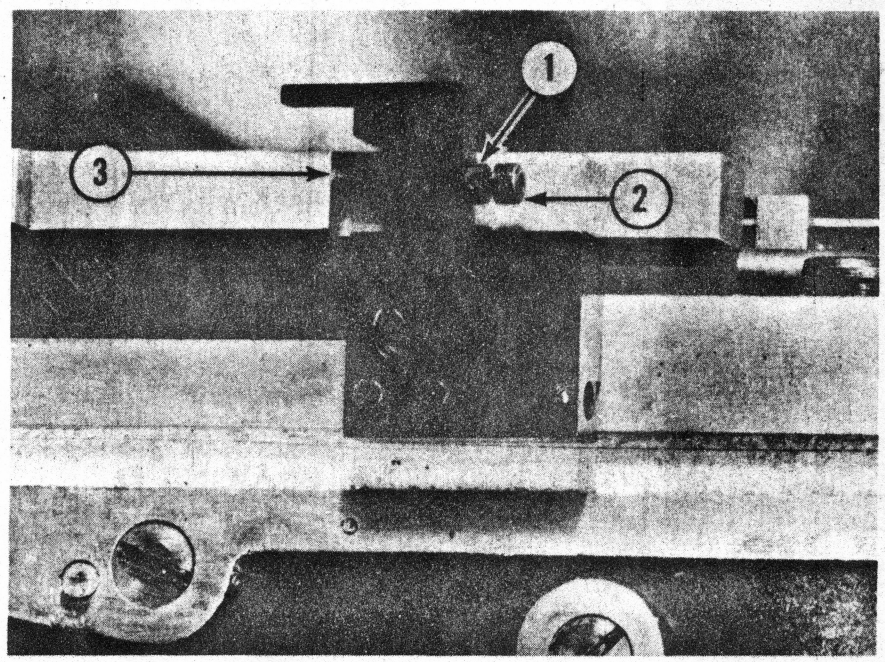


PHOTO #7



MAINTENANCE cont'd.

VISE CLOSING ADJUSTMENT

Loosen the Lock Nut (1) and turn Adjusting Screw (2) up or down to obtain approximately 3/16" - 1/4" movement between normal and casting positions. (See Photo 6A and Drawing 2.)

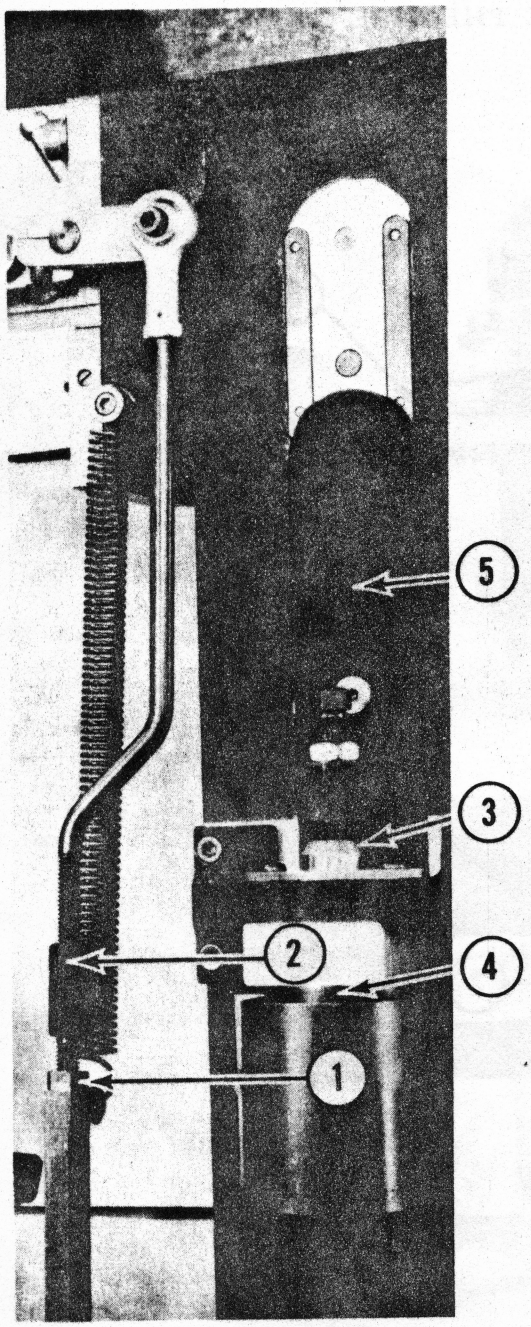
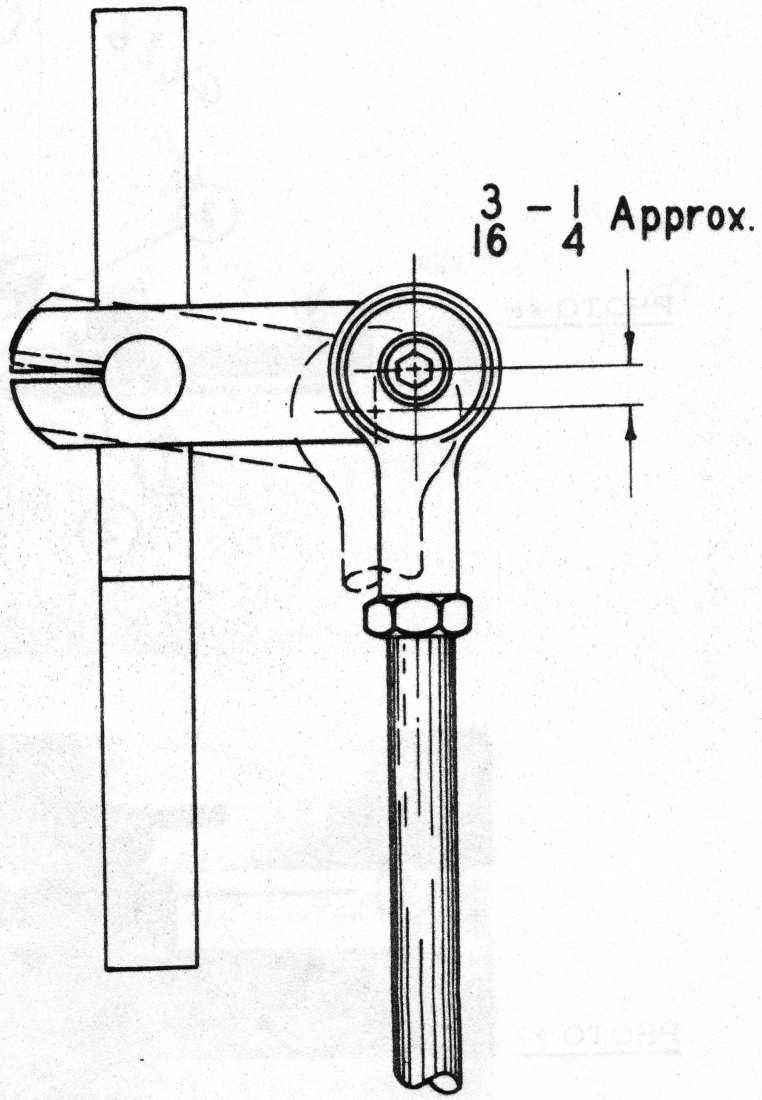


PHOTO #6 A



DRAWING #2

MAINTENANCE cont'd

DELIVERY SLIDE RATCHET & OPERATING FINGER ADJUSTMENT

ADJUSTMENT OF OPERATING PAWL AND FINGER (see Drawing 3)

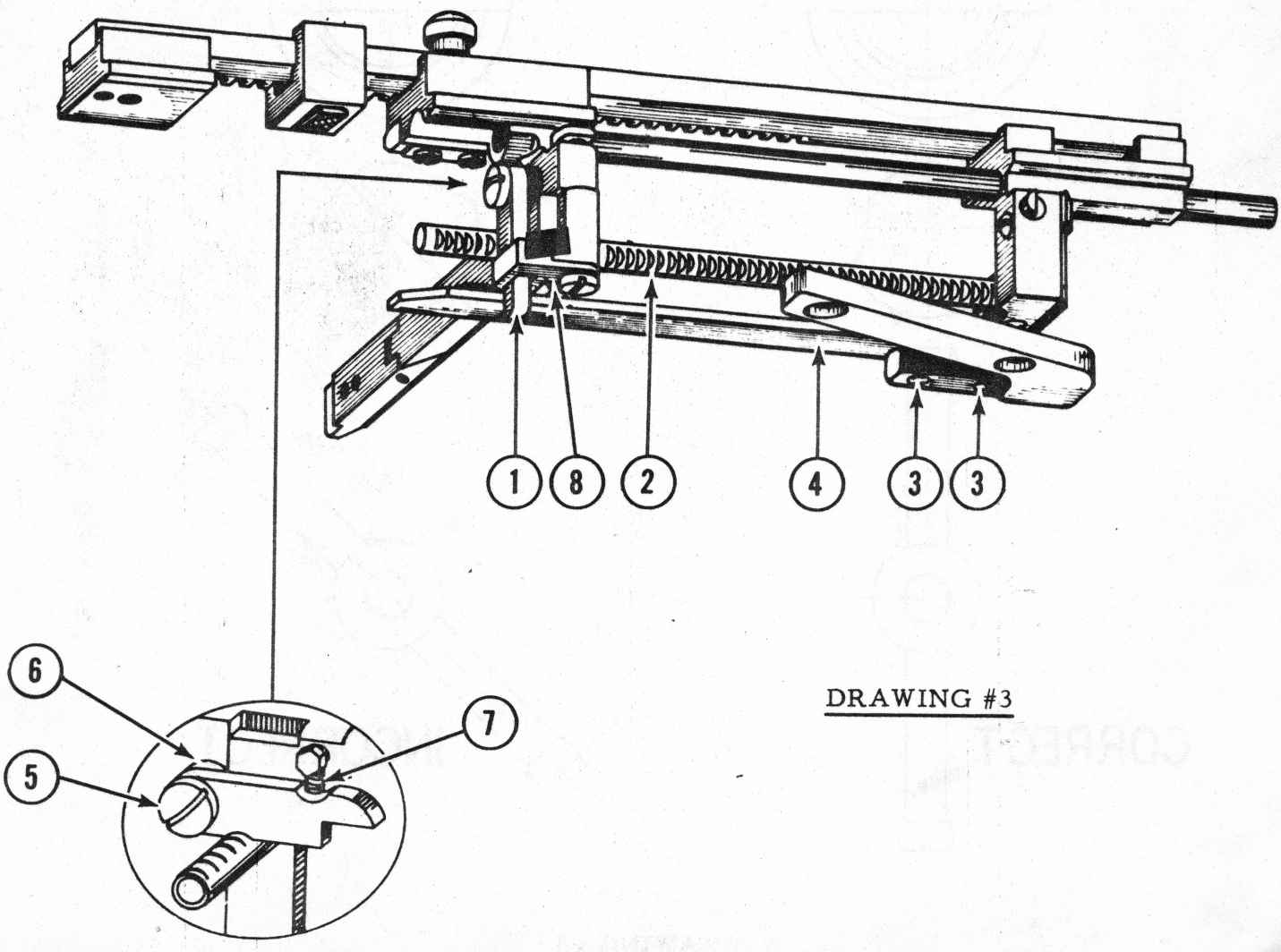
The Delivery Slide Ratchet Operating Pawl (1) must be clear of the Ratchet (2) when it is in normal position. If it is riding on the Ratchet, it should be adjusted in this way:

Loosen the two screws (3) and raise the Operating Finger (4) just enough to cause Pawl (1) to clear the Ratchet. Tighten screws.

If the Pawl (1) is found to be wearing too fast, check the Operating Lever (4) to see that it is not bent out. If the raised section of the inside of the Operating Lever (4) is not meeting with the Cam (8) on the Delivery Slide Long Finger Block, it will cause the Pawl to ride on the Ratchet (2), and cause premature wear.

OPERATING PAWL REPLACEMENT

When it is necessary to replace the Pawl (1), remove the screw (5), watching carefully not to drop the Bushing (6) and Spring (7). Be sure to replace all parts as shown in drawing.



DRAWING #3

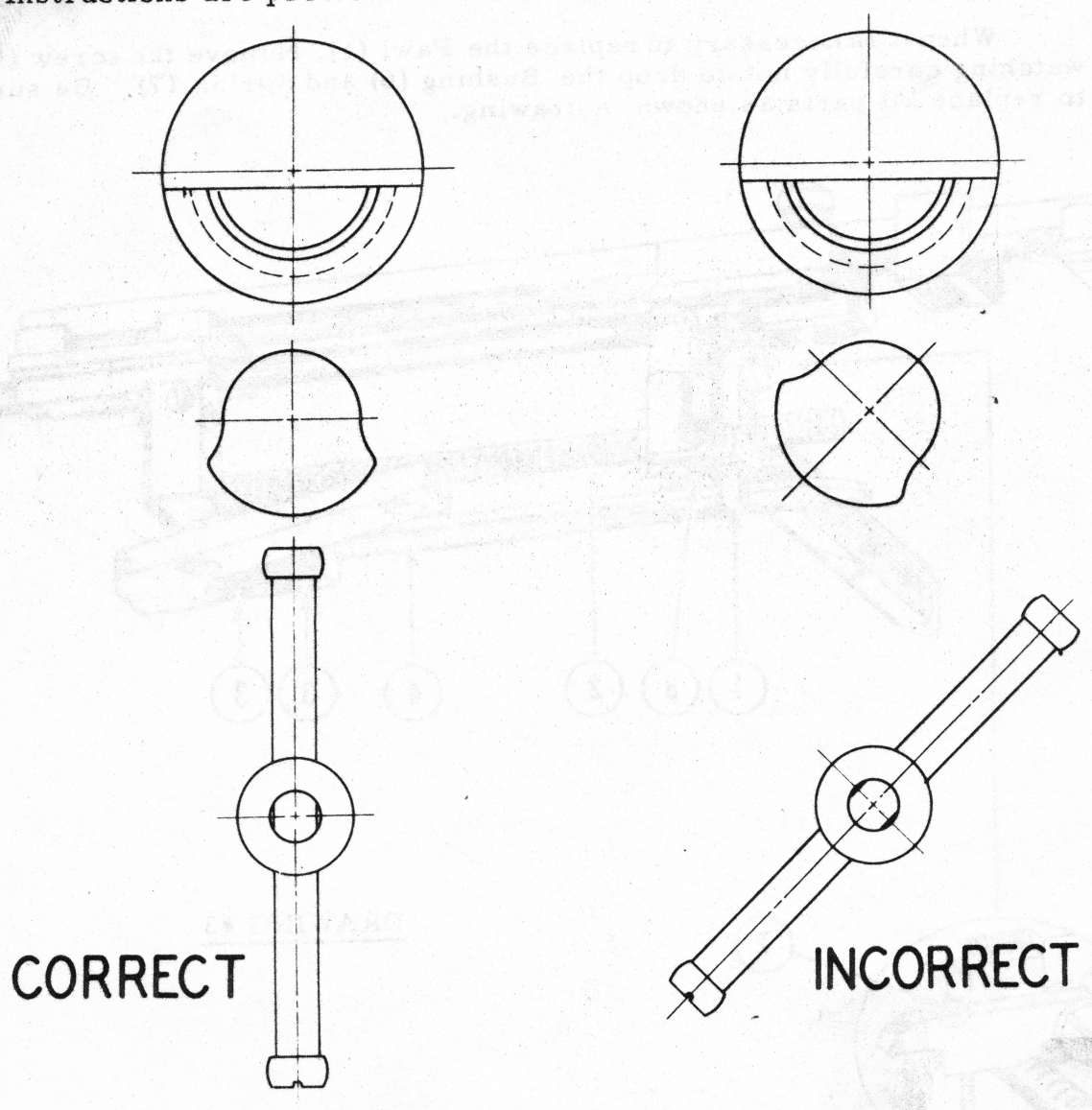
MAINTENANCE cont'd.

VISE LOCKING STUDS & SCREWS

When breakage occurs frequently it is because of improper bearing of the two "lip" surfaces of the Stud and Screw respectively. The bearing should be full at all times.

The drawing below shows the proper and improper relationships of the two parts.

Another cause of repeated breakage may be found in a Vise that is "out of square" with the frame. A Star Vise Aligning Tool is available which makes checking this portion of the machine an accurate procedure. Instructions are provided with the tool.



DRAWING #4

WHEN JAWS FAIL TO CLOSE COMPLETELY.

This will be checked by watching the rise of the Piston (3) (Photo 6-4 Page 10), in the Slave Cylinder (4). If it does not push the Actuating Slide (5) all the way up, and is slow in returning to position, you will know that the following three possible causes are to be sought out:

1 - Lack of lubrication in the seal of the Master Cylinder.

2 - Oil leak due to worn seals in either Slave or Master Cylinder.

3 - Air in the Hydraulic System.

The remedies are as follows:

For Cause No. 1:

Squirt a few drops of the Hydraulic Oil in the Breather Hole shown in Dr. 5, Page 15. This will put lubrication between piston and seal which may have become dried out.

For Cause No. 2:

If the leak is coming from the Bleeding Screw on either cylinder, it will be due either to a looseness of the screw or a distortion of the little seal between the screw and the cylinder. The screw should be finger tight, but if forced beyond that point, the seal may become distorted and make an imperfect closure. The seal should be replaced.

In the earlier production of the Hydraulic Actuating System illustrated in this section, leaks sometimes develop from the bottom of the Reservoir. In this case an exchange reservoir should be sent for. The present type is improved to prevent these leaks.

If there is a leak from any other part of the system it will be necessary to send for a replacement Hydraulic Actuating Unit Complete. Within the guarantee period replacement will be made gratis except for transportation both ways.

A nominal charge, based on age, is made for replacing the old style units (not illustrated here) with the new type; for exchange of the present Unit a charge is made only for the cost of the repair.

For Cause No. 3:

Air in the hydraulic system calls for the procedure as detailed in the following section found under the general heading of "The Hydraulic Actuating Unit".

THE HYDRAULIC ACTUATING UNIT

(See Dr. 5 - Page 15)

CARE:

This is a very simple mechanism but one of great precision. If used in sensible fashion, it will require very little attention. Certain precautions should be taken, however, as outlined below:

1 - DO NOT TURN THE BLEEDER SCREWS OR PERMIT ANYONE TO TAMPER WITH THEM. IF THIS SHOULD OCCUR, OIL WILL BE DRAINED FROM THE SYSTEM, AND IN ALL LIKELIHOOD AIR WILL GET INTO IT. LOSS OF PRESSURE WILL RESULT.

2 - FOLLOW THE LUBRICATION INSTRUCTIONS. (See Maintenance, Page 4).

3 - KEEP OIL AT SPECIFIED LEVEL WITH SPECIAL HYDRAULIC OIL PROVIDED. A FURTHER SUPPLY MAY BE ORDERED FROM THE FACTORY, BRANCH OR AGENCY.

4 - KEEP DIRT OUT OF OIL.

OIL LEVEL:

The oil level in the Reservoir should be checked daily merely as a matter of precaution. THE OIL SHOULD NOT GO BELOW THE LOWER LINE ON THE BOWL, NOR HIGHER THAN UPPER LINE. Use only the special oil provided with the hydraulic unit. A further supply may be ordered from the nearest branch or agency as noted previously.

To add oil unscrew the Cap on top of the Reservoir. Pour oil slowly into the Reservoir.

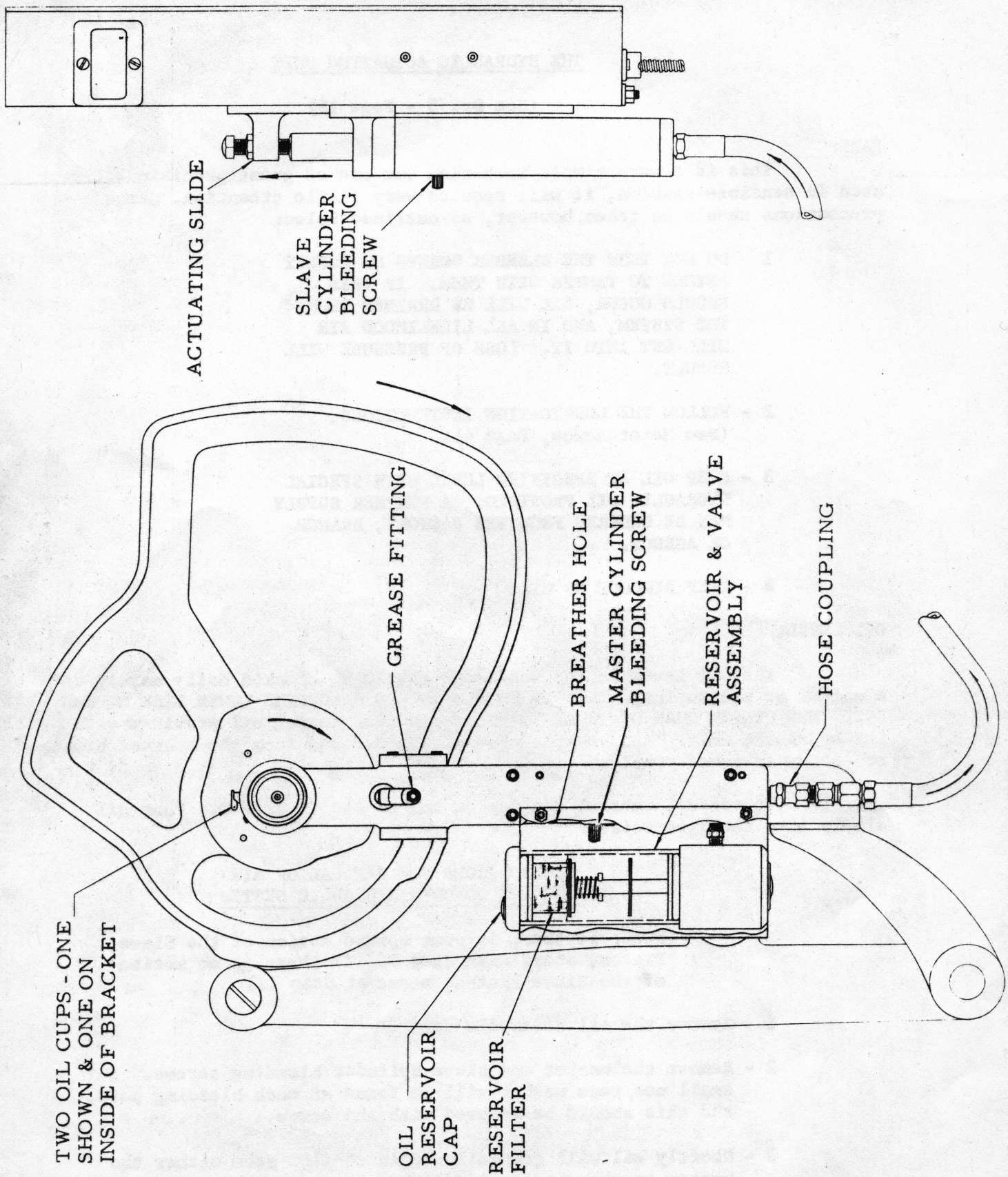
INSTRUCTIONS FOR REMOVAL OF AIR FROM THE QUADDER HYDRAULIC SYSTEM

(NOTE: If there is some upward motion of the Slave Piston, start with Step 7. If there is no motion of the Slave Piston, start at Step 1.)

1 - Remove the oil reservoir cap.

2 - Remove the master and slave cylinder bleeding screws. A small neoprene washer will be found at each bleeding port, and this should be removed with the screw.

3 - Shortly oil will gradually begin to flow from either the master or the slave cylinder bleeder ports.


ACTUATING SLIDE
SLAVE CYLINDER BLEEDING SCREW
GREASE FITTING
BREATHER HOLE
MASTER CYLINDER BLEEDING SCREW
RESERVOIR & VALVE ASSEMBLY
HOSE COUPLING
TWO OIL CUPS - ONE SHOWN & ONE ON INSIDE OF BRACKET
OIL RESERVOIR CAP
RESERVOIR FILTER

DRAWING #5

Continued.

4 - As soon as the oil flow begins, replace the bleeder screw and washer at the point of flow. Wait until oil begins to flow from the other cylinder and then replace the screw and washer at that point. It is important that both of these screws be finger tight only. Excessive pressure in replacing the screws will result in damage to the neoprene washers.

5 - Check to be sure that the oil level is between the two red lines on the reservoir, and add oil if necessary. Be sure the oil level does not go above the upper red line.

6 - At this point there should be some upward motion of the piston in the slave cylinder, as the machine revolves. If this piston does not move, write to us for further instructions. If there is some motion, but not sufficient to bring the Jaws all the way across, proceed with steps 7, 8, 9 and 10.

7 - Start machine and make four or five complete cycles.

8 - Stop the machine in casting position (highest point of hydraulic cam). Back off bleeding screw on slave cylinder two full turns. (Be sure to cover screw with a rag to prevent oil from squirting over the machine or the person doing the bleeding). As the oil flows out, the slave piston will drop. Tighten the bleeding screw, finger tight only, just before the piston reaches its lowest point.

9 - Make several more complete machine cycles and stop the machine in casting position. Back off the bleeding screw on the master cylinder two full turns, taking the same precautions against oil squirting. As the oil flows out, the slave piston will again begin to drop, and the bleeding screw should be tightened just before the piston reaches its lowest point.

10 - Repeat steps 7, 8 and 9 until the full upward stroke of the slave piston is obtained. When all the air is out of the system, set the quadder for left flush on 30 picas. The jaws should come together, relieve, and drift apart. If not, repeat steps 7, 8 and 9, until the desired jaw movement is attained.

IF ALL LINES FAIL TO CAST

(See Drawing 6)

Press the Switch Operating Rod (10) on the L. H. Vise Jaw. If a click results and the red light on the Selector Box comes on, it will indicate the Safety Switch needs adjustment. The adjustment instructions will be found below under the heading "THE ELECTRO PUMP STOP SAFETY".

If the red light comes on and there is no click from the Pump Stop, it will indicate the Solenoid is burnt out, or there may be loose connections on the twist-lock plug.

If a buzz is heard when the Vise Jaw Button is pushed in, it will indicate that any of the following may be wrong:

1 - The Solenoid Arm may be improperly seated because of dirt.

2 - The Stop Lever may be improperly adjusted so that it pulls arm out too far.

3 - The Pump Stop Bracket may be loose on the column.

4 - The Pot Pump Lever Cam Roll (BB-31) may have a flat spot on it causing the Stop Lever to bind.

THE ELECTRO PUMP STOP SAFETY

Adjustment of the L. H. Vise Jaw Safety Switch (See Drawing 7)

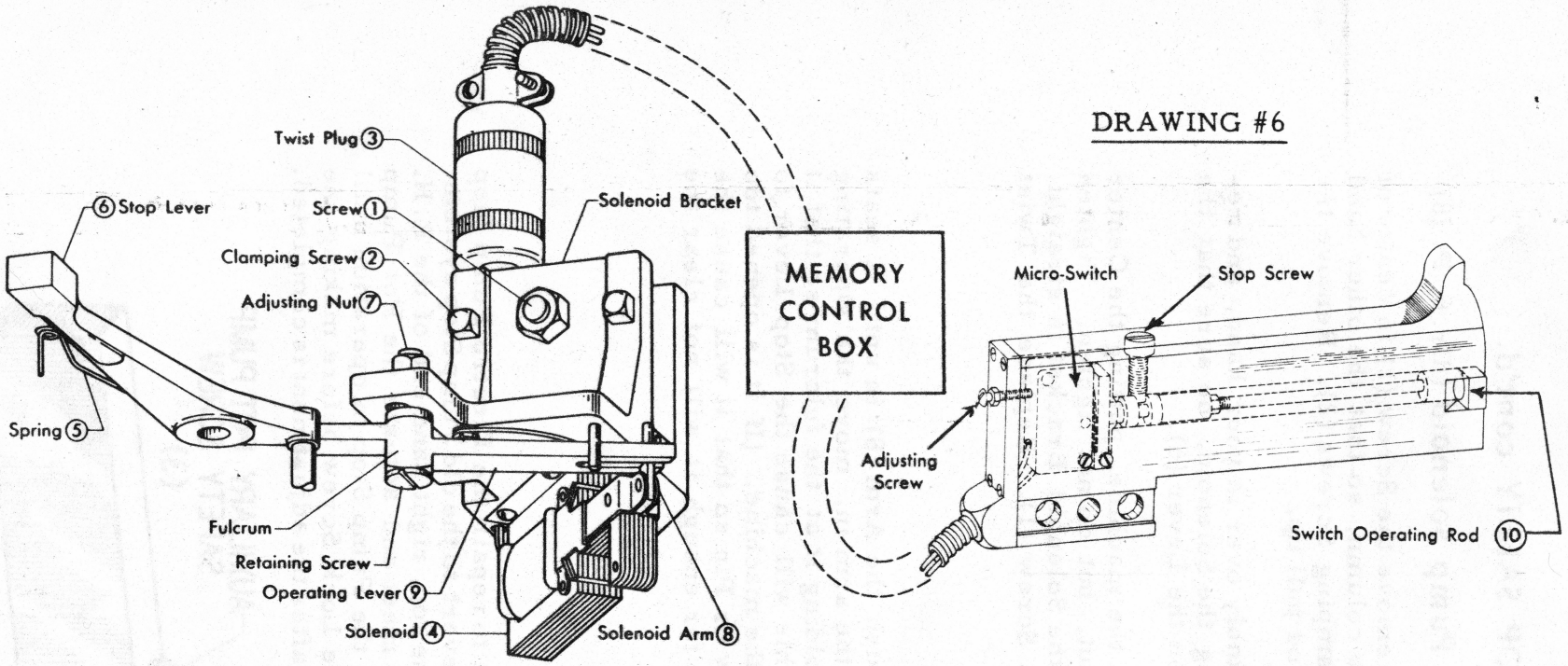
Bring the Left Hand Vise Jaw to the Right Hand Vise Jaw. Holding it tight against the R. H. Jaw, loosen the Lock-Nut (3) and turn Adjusting Screw (2) in until the Pump Stop clicks and the red light on the Selector Box goes on.

Be sure not to turn the Adjusting Screw in too far as it will cause the Pump Stop to stay open. If the red light stays on after pressure is released on the L. H. Vise Jaw, it will indicate adjustment has gone too far.

Replacement of L. H. Vise Jaw Safety Switch (See Drawing 7)

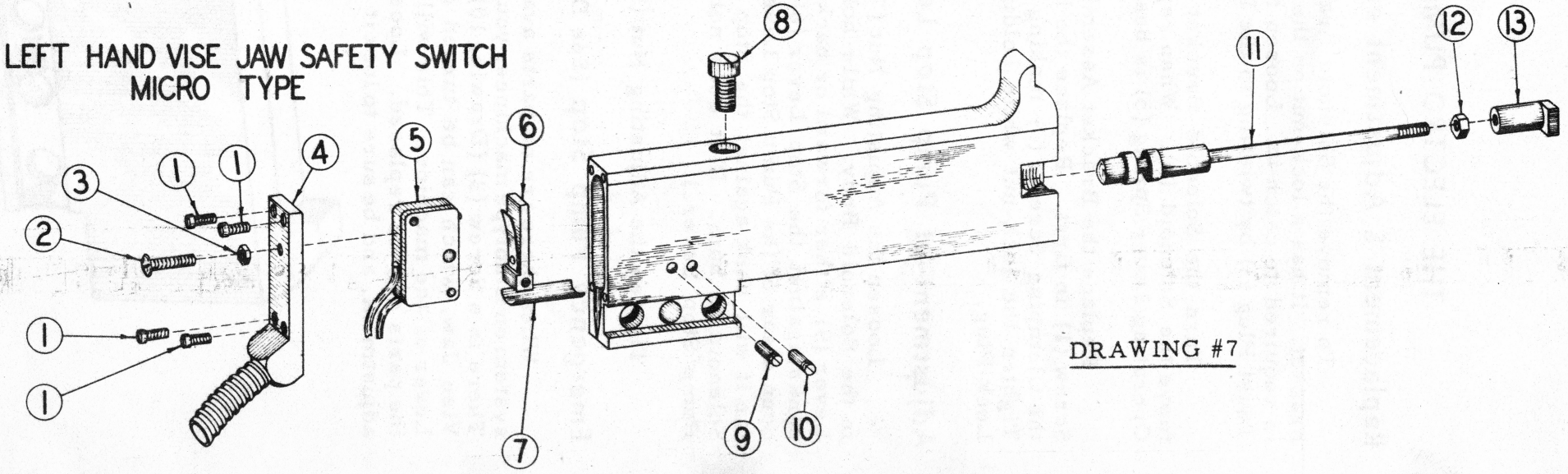
Remove the L. H. Vise Jaw from the Guide Block. Remove the four screws (1), and Switch Holding Screw (9). Remove leads from the Switch (5) and resolder them on the new switch.

Take out Screw (10) and remove the Spring Plate Assembly (6). See that Spring is intact and that the spacing at the top is about 1/8" from the plate. Reassemble as shown in drawing, and readjust the Switch as described above.



DRAWING #6

LEFT HAND VISE JAW SAFETY SWITCH MICRO TYPE



DRAWING #7

THE ELECTRO PUMP STOP SAFETY cont'd.

Replacement & Adjustment of Pot Pump Solenoid (Dr. 6, P. 18)

To remove the Solenoid Bracket remove the Screw (1) in center of bracket. It has a lock-nut on the inside column, so that the other hand is required to catch it. Loosen the Clamping Screws (2). Remove the Twist Plug (3) by twisting to the left, and pull up.

Turn the Solenoid Bracket Assembly over in your hand, and remove the Solenoid (4). When replacing the Solenoid, be sure that the Operating Lever Spring (5) is bearing on the Lever (6).

Replace the Bracket Assembly on the machine, putting the Center Screw (1) in first. Replace the lock-nut, but do not tighten. Tighten the Clamping Screws (2) making sure the Solenoid Bracket is straight. Tighten the lock-nut while holding the Screw (1). Replace the Twist Lock Plug.

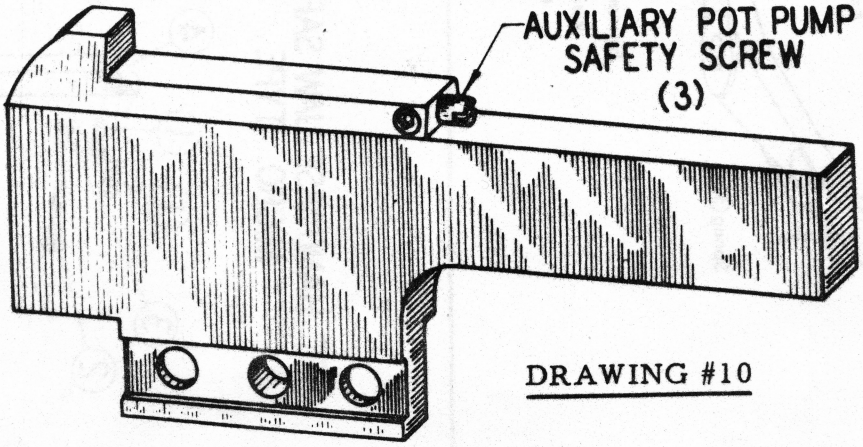
Adjustment of Pump Stop Levers

Loosen the Adjusting Nut (7). Push the Arm (8) in until it seats in the Solenoid Body. While holding the arm in, move the Operating Lever (9) either forward or back by holding it at the fulcrum so that it banks against the Stop Lever (6). This will cause the Stop Lever to open clear of the Pump Stop Lever of the machine. (If it is opened too far it will bank against the Stop Screw or Pin so that it will cause the Solenoid to hum. If it does not open far enough it will not clear the Pump Stop Lever.)

Tighten the Adjusting Nut (7).

Emergency Pump Stop (See Dr. 10)

When there are no parts available to repair the Electro Pump Stop system on Linotype machines, you can revert to the old Pump Stop system. There is a Screw (3) (Drawing 10) on the top, right hand end of the R. H. Vise Jaw, which can be turned out to meet and actuate the Pot Pump Lever of the machine. This will keep the Pump Stop in operation until the parts can be replaced. Loosen the Lock Screw before making the adjustment, and be sure to lock it again after the adjustment is completed.



DRAWING #10

IF LINE FAILS TO QUAD

If only Left Flush or Right Flush lines fail follow Steps 2, 3, 4, 6 and 7 as listed below. If the Center operation is included in the failure, begin with Step 1 and follow through until the cause of failure is found.

Step 1 - POWER (See Photos 4 and 5, Page 7). The green light on the Signal Box indicates that current is coming to the box and the Pump Stop Circuit. If it is out, check the Pump Stop Switch next to it, and see that it is in "ON" position. Next check the Control Switch on the side of the Selector Box, to make sure it is in quadding position. All being in order up to this point, go back to the Master Control Box and check in order: The Power Switch and the Signal Light which tells if the power supply is coming to the quadder; the power supply connections (plug and receptacle) to see if they are not loose or defective; and finally the Fuse to see if it is burnt out. If nothing wrong is found in this area, proceed to the next step.

Step 2 - SHORT LINE SWITCH: (See Dr. 9, Fig. 1, Page 29). Make sure the Short Line Adjustment (2) is at the correct position on the Scale (22), so that the Trip Rod (3) is not cancelling the quadder signals.

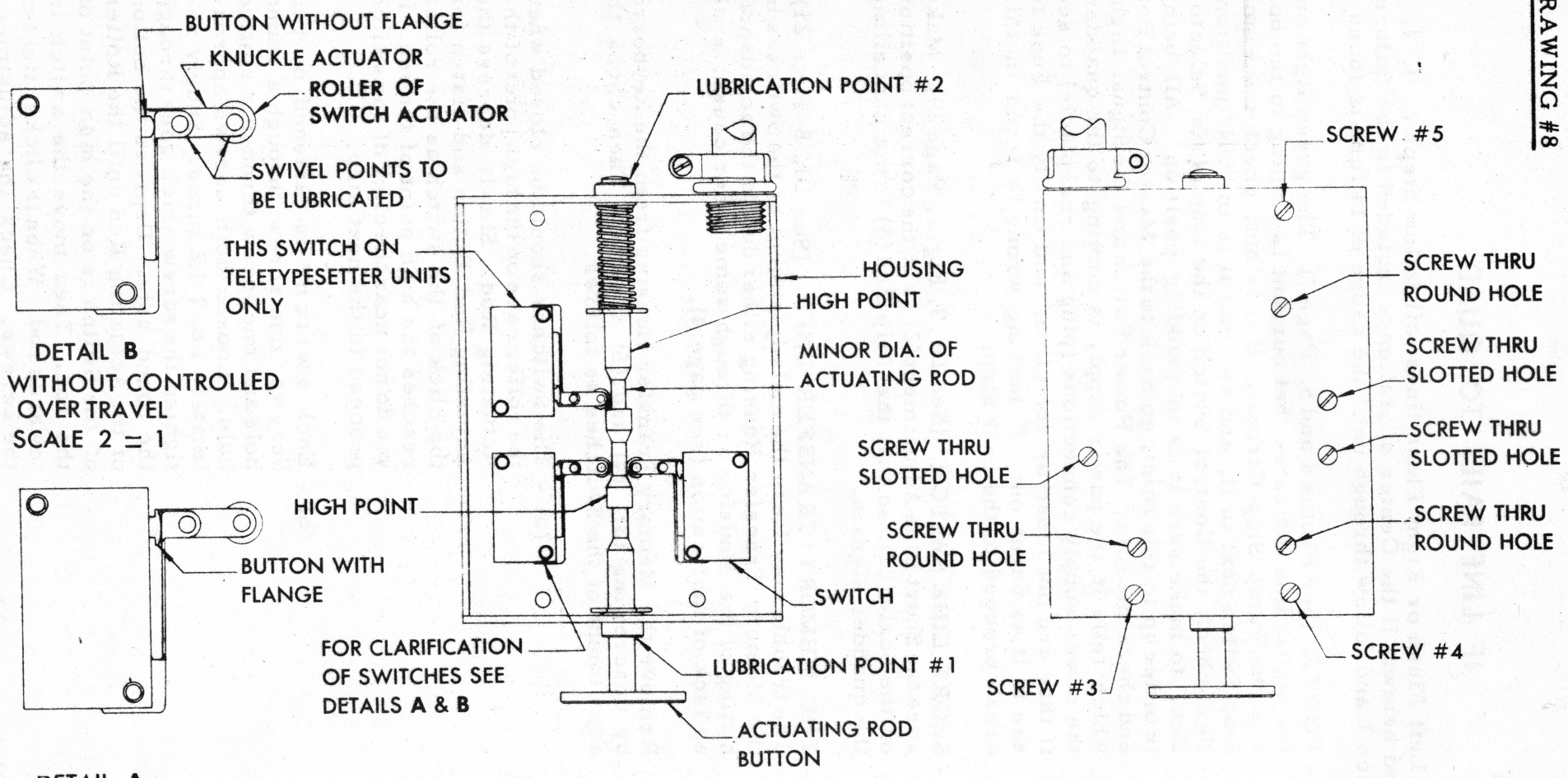
Step 3 - THE MEMORY TRANSFER UNIT: (See Dr. 8 Page 21). The trouble may lie in the maladjustment of the Switches in the Memory Transfer Housing either due to the accidental hitting of the Housing or through some other cause, such as lack of lubrication (see page 4).

Remove the Memory Transfer Housing from the keyboard by unscrewing (3), (4) and (5) screws. Then check the adjustment of the Switches as follows:

(a) - The Switches should be closed when the rollers are on the high point of the Actuating Rod. Slowly depress the Actuating Rod Button and listen for the click of the switch as the roller reaches the high point of the rod. If you do not hear the click of the switch proceed to the next step.

(b) - Each switch* is fastened by two Screws, one screw through a round hole and one screw through a slotted hole. Loosen both screws approximately 1 to 1 1/2 turns. Snugly retighten the screw which goes through the round hole. Depress the button of the Actuating Rod until the Roller of the Switch is on the high point of the rod. Then move the switch in towards rod. When it clicks, tighten the screws. Check the adjustment as in step a.

*-See Note, page 22



DETAIL **B**
SWITCH WITHOUT CONTROLLED OVER TRAVEL
SCALE 2 = 1

DETAIL **A**
SWITCH WITH CONTROLLED OVER TRAVEL
SCALE 2 = 1

THE ABOVE VIEW SHOWS THE SWITCHES AS THEY SHOULD APPEAR IN NORMAL POSITION

MEMORY TRANSFER UNIT

IF LINE FAILS TO QUAD cont'd.

Step 3 - THE MEMORY TRANSFER UNIT (cont'd.)

*NOTE: There are two types of switches in use in these Memory Transfer Units. They can be identified by an examination of the Detail A and Detail B in the drawing. One type as shown in Detail A has a controlled over-travel feature. This type of switch is supplied whenever a switch replacement is required. The two switches are interchangeable.

The second type shown in Detail B has no control for over-travel, so that additional care must be taken in making adjustment. At the time the click of the switch takes place, the button of the switch should be depressed by no more than approximately .005". This measurement is given only as a guide in adjusting so that the switch will not break down from mechanical failure. The test for this is to have some movement left in the switch after the click is heard.

(c) - When depressing the Actuating Rod, watch to see if it returns to its outer position freely. If it does not return freely, it will indicate the switches are probably set too close. This is assuming that the Actuating Rod has been lubricated as set forth on page 4 of this manual.

All Switch Knuckle Actuators should also return freely to their normal positions.

(d) - When all the adjustments have been checked and made, if necessary, replace the Housing Unit with great care. Watch for pinched wires, or wires which are rubbing against the Actuating Rod. This is of vital importance.

Step 4 - RELAYS: (See Photo 5, Page 7). Remove Master Control Box Cover. See if screws in Relays are tight. Push the Center button in on Selector Box. Transfer the signal by hand and see if Relays are operating in the Master Control Box. If either one or both do not operate, test further by pushing the contact leaves in by hand. If then they fail to operate, the Relay Clearing Switch may be at fault; proceed to the next step.

IF LINE FAILS TO QUAD cont'd.

Step 5 - RELAY CLEARING SWITCH: (See Photo 8). Remove the Cover of the Relay Clearing Box in the rear of the Hydraulic Actuating Unit. Be sure the Operating Lever (1) is not binding in the cover slot. Push the Operating Lever in to actuate the Switch (2). If the Switch fails to click replace it.

If Switch is operating and the Lever is free in slot, then revert back to the Relays in Master Control Box. Try a new relay. If the trouble is not cleared up at this point, go on to the next step.

Step 6 - SELECTOR SWITCH: (See Photo 4, Page 7). Remove the plate and withdraw the Switch from the Selector Box. The leads are easily pulled apart.

Put the three leads together and push in the Memory Transfer Button. If a Center operation results, it will indicate the Selector Switch needs replacing.

If, after all of the above procedure, the line still fails to quad, proceed to check:

Step 7 - SELECTOR OPERATING LEVERS: (See Photo 9). Remove the lower cover in the Quadder Housing. Either one or both of the Operating Levers (1) and (3) may be found behind the pins of the Engaging Pawls (2) and (4). If only Right Flush or Left Flush lines are obtained, one of the Levers will be out of position; if Centers only can be obtained, both Levers will be found disengaged.

ADJUSTMENT

Lift the Sliding Block (5), and the Actuating Slide in back simultaneously. Push either or both Levers (1) - (3) into position so the fork of each is engaged in the pins of the Sliding Block as you let it down.

IF LINE FAILS TO QUAD cont'd.

Step 5 - RELAY CLEARING SWITCH: (See Photo 8). Remove the Cover of the Relay Clearing Box in the rear of the Hydraulic Actuating Unit. Be sure the Operating Lever (1) is not binding in the cover slot. Push the Operating Lever in to actuate the Switch (2). If the Switch fails to click replace it.

If Switch is operating and the Lever is free in slot, then revert back to the Relays in Master Control Box. Try a new relay. If the trouble is not cleared up at this point, go on to the next step.

Step 6 - SELECTOR SWITCH: (See Photo 4, Page 7). Remove the plate and withdraw the Switch from the Selector Box. The leads are easily pulled apart.

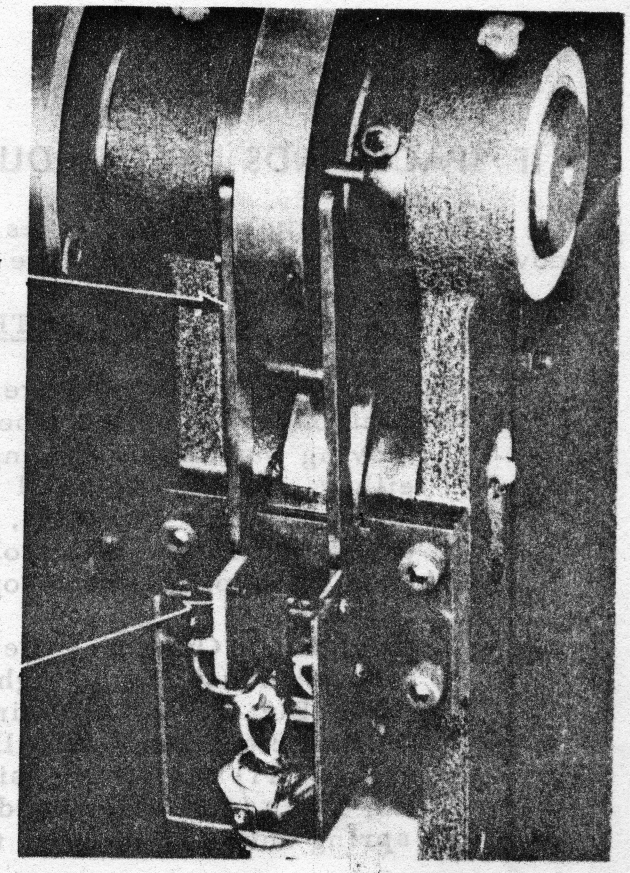
Put the three leads together and push in the Memory Transfer Button. If a Center operation results, it will indicate the Selector Switch needs replacing.

If, after all of the above procedure, the line still fails to quad, proceed to check:

Step 7 - SELECTOR OPERATING LEVERS: (See Photo 9). Remove the lower cover in the Quadder Housing. Either one or both of the Operating Levers (1) and (3) may be found bending the pins of the Engaging Pawls (2) and (4). If only Right Pluas or Left Pluas lines are obtained, one of the Levers will be out of position; if Centers only can be obtained, both Levers will be found disengaged.

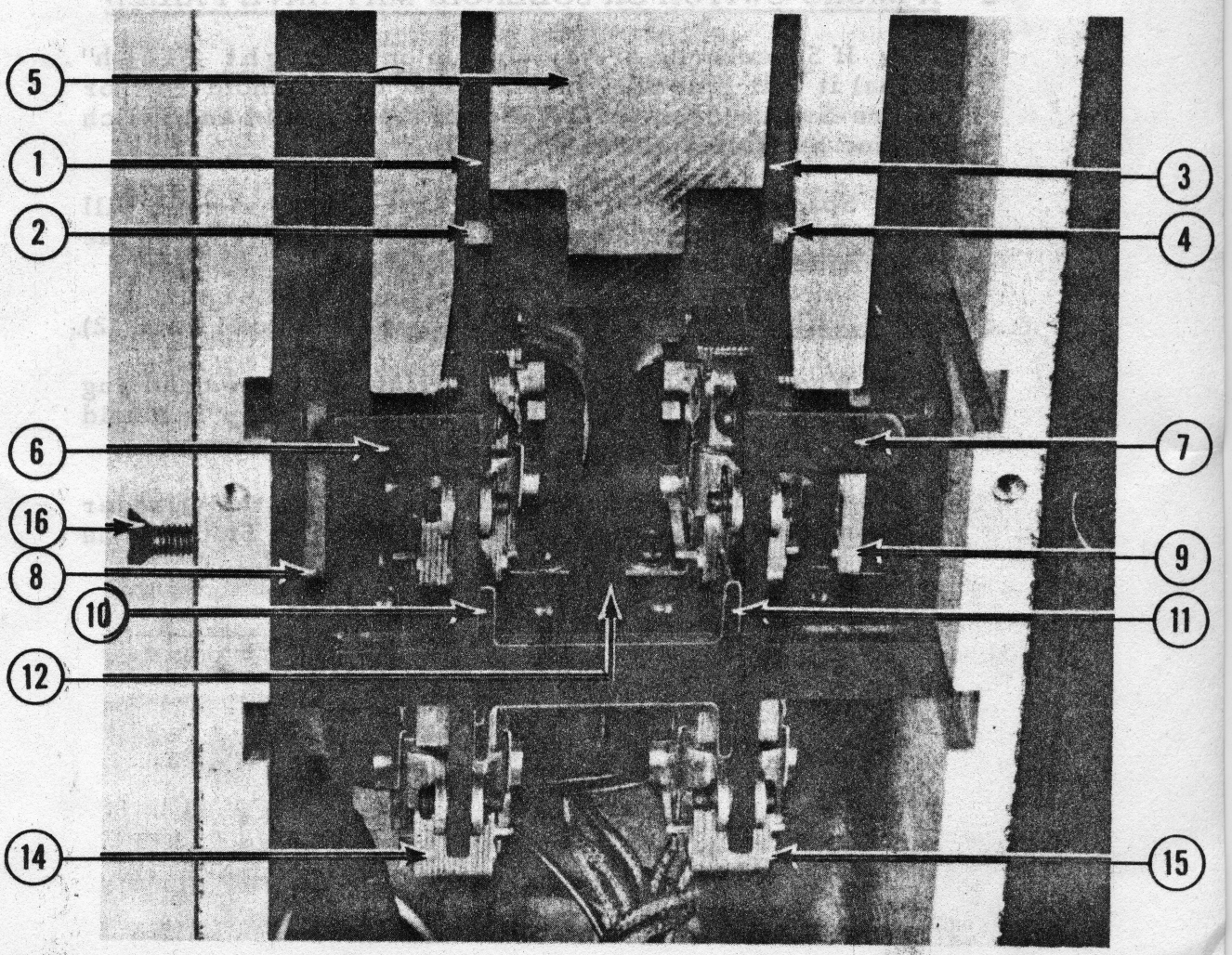
ADJUSTMENT

Lift the Sliding Block (5), and the Actuating Slide in back simultaneously. Push either or both Levers (1) - (3) into position so the fork of each is engaged in the pins of the Sliding Block as you let it down.



RIGHT - PHOTO #8

BELOW - PHOTO #9



IF SPACEBANDS JUSTIFY DURING QUADDING OPERATION

These are the possible causes, to be checked by removing the lower cover of the Quadder Housing (See Photo 9, Page 24).

1 - LOSS OF CONTACT WITH MICRO-SWITCH

The Operating Lever Extension, (6) or (7), may be bent outward, or the Operating Lever (1) or (3) may be moving out as the Sliding Block (5) begins to rise. In either case contact will be lost with the Button of the Micro-Switch, (8) or (9), causing interruption of current to the Justification Stop Solenoid which actuates the Justification Stop Lever to stop Spaceband drive.

If the Operating Lever Extension is found bent, it must obviously be straightened carefully to restore contact. But if the Operating Lever is coming out as the Sliding Block rises, it will mean that the Retaining Spring (10) or (11) has lost tension against the Lever. Remove the Plate (12) which holds the Spring. Stretch out the spring until satisfactory tension is obtained.

2 - A MICRO-SWITCH OR SOLENOID MAY HAVE FAILED

If Spacebands are driving up on a "Right Flush" signal it will generally indicate that the Solenoid (14), or Micro-Switch (8) on the left side of the Solenoid and Switch Frame has failed. (See Photo 9).

Spacebands driving up on "Left Flush" signals will mean that the Micro-Switch (9), or Solenoid (15), on the right side has failed.

3 - JUSTIFICATION STOP SOLENOID (See Photos 11 and 12).

When Spacebands justify during all three quadding operations, it will mean the Justification Stop Solenoid has failed.

Instructions for replacing parts in the Quadder Housing and the Solenoid of the Justification Stop will be found on Page 27.

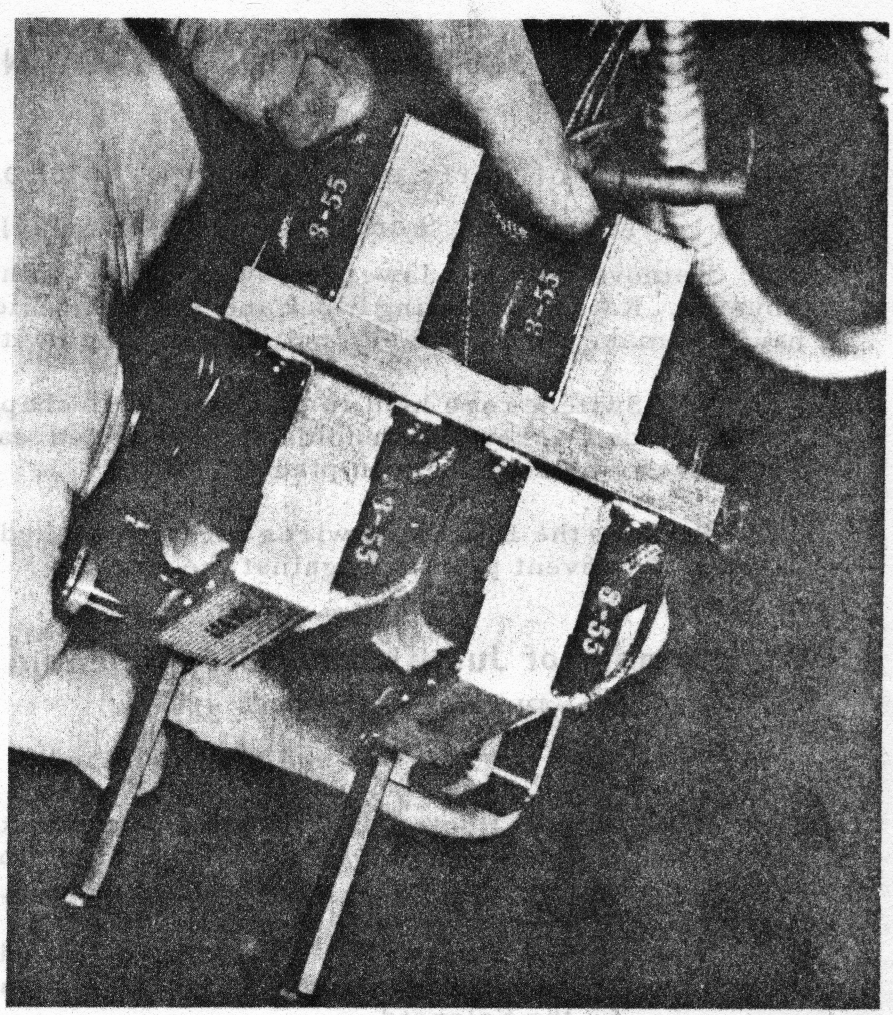


PHOTO #10

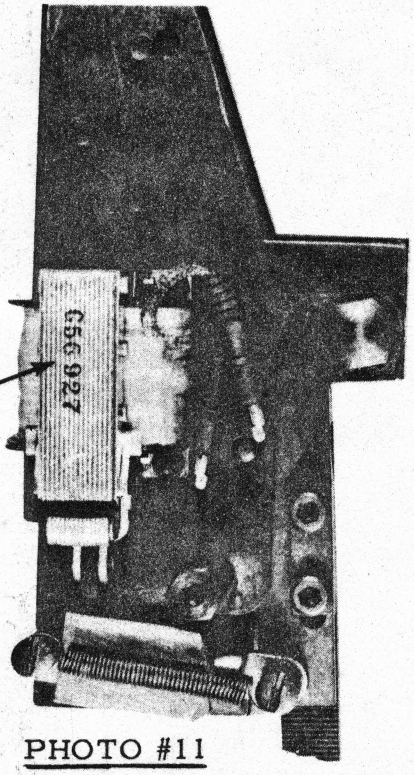


PHOTO #11
TYPE A SOLENOID

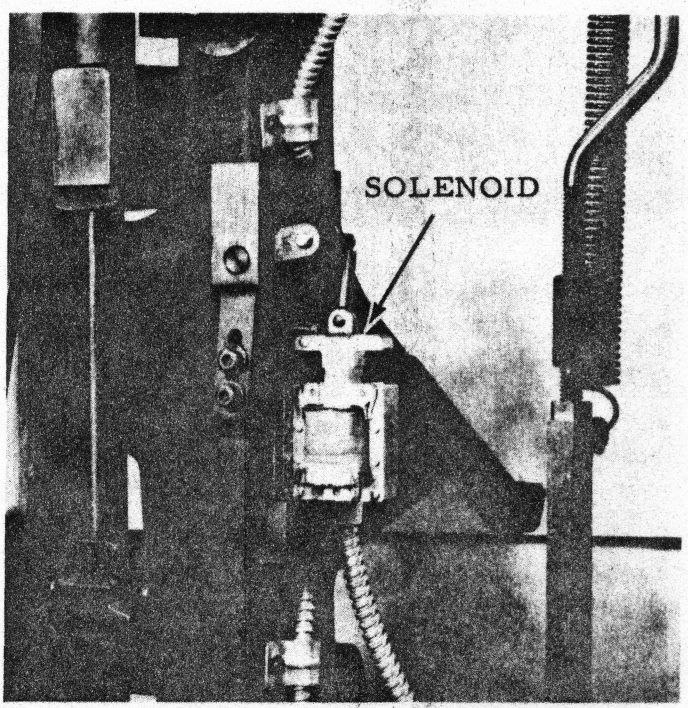


PHOTO #12 - TYPE B SOLENOID

IF SPACEBANDS JUSTIFY DURING QUADDING OPERATION cont'd.

Replacement of Parts on Switch and Solenoid Frame

(See Photos 9 and 10, Pages 24 and 26)

Remove the two lower screws (16) on both sides of the Quadder Housing. Raise the Sliding Block and Actuating Slide together, using both hands to make lifting easier, and slide out the Switch and Solenoid Block.

The Switches are held in place by an L-shaped bracket held on the frame by one screw. Solenoids are replaced easily by removing the four screws holding them in place.

Replace the Block with wires carefully tucked between the Solenoids in back to prevent pinching against the Housing.

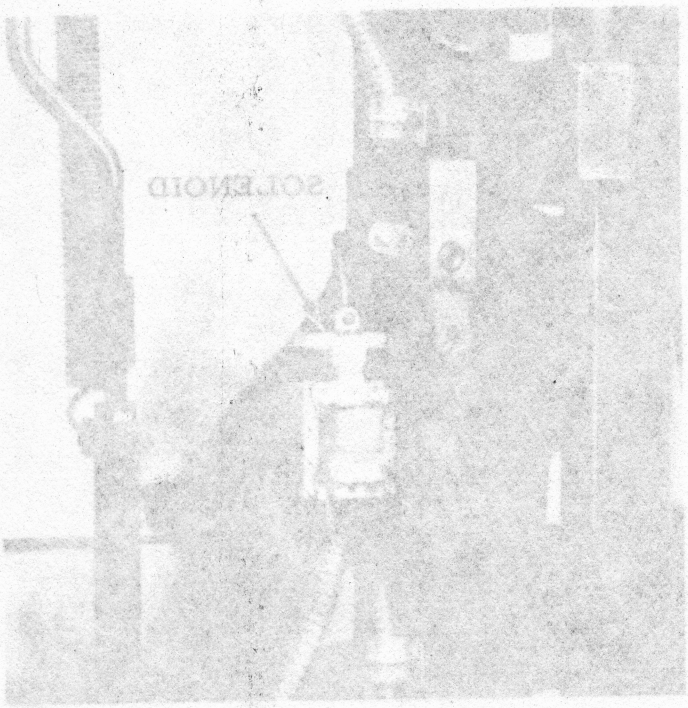
Replacement of Justification Stop Solenoid

(See Photos 11 and 12, P. 26)

There are two types in use as illustrated.

Type A (See Photo 11): Remove the bracket assembly which is under the Bar Brace on the Vise Support Frame. Remove the Guard and replace the Solenoid.

Type B (See Photo 12): Remove the Guard. Pull apart the snap connections holding the wire leads together and replace the Solenoid.





IF MACHINE FAILS TO JUSTIFY

First snap the switch at the Master Control Box to cut off power to the Quadder. If Vise Jaws still move in to quadding position it indicates that the Selector Pawl Operating Levers (1) - (3) are in front of the Rack Engaging Pawls (2) - (4). See Page 24 for way to make correction.

Another reason for failure of lines to justify may be failure or misadjustment of the Short Line Device, description of which follows.

THE SHORT LINE DEVICE

(Ref. Dr. 9 - Fig. 1, Page 29)

The Star Selectro-Matic Quadder (Model F) is provided with an automatic quadding feature for short lines - lines less than full by a preset distance. This distance is adjustable from 0-4 picas.

For example, if you are setting lines which range from 4 to 12 picas in length, you would set the Indicator Adjusting Knob (2) at 1 1/2. As the line of matrices is assembled the Pointer (6) in front of the Assembler Slide Indicating Bar (7) moves forward. When this pointer reaches 1 1/2 or less on the scale the line should justify. If the space left is more than 1 1/2 picas, the line should quad left automatically.

The line may fail to cast however, if there are not enough Spacebands in the line, even though it is apparently full to the indicated point. In other words, this is considered a loose line as on any normal machine, and the Automatic Pump Stop Safety takes over to prevent a squirt.

The rule for setting the Short Line Device is this: On short measures, use the lower numbered settings; on long measures use the higher numbers. When set at "0" the Short Line Device is out of operation, - lines are set as on any non-quadding machine.

How It Operates

On the Bracket (1) which holds the Adjusting Knob (2) is the Micro-Switch Trip Rod (3). As the line fills out this Rod goes over the Roller (4) of the Micro-Switch Assembly (19) and depresses the button of the Micro-Switch (5) underneath it. This cancels all quadder signals and the line will justify. If the line is short BEYOND the limit set, it will automatically quad left.

Adjustment of the Short Line Device is described on Page 30.

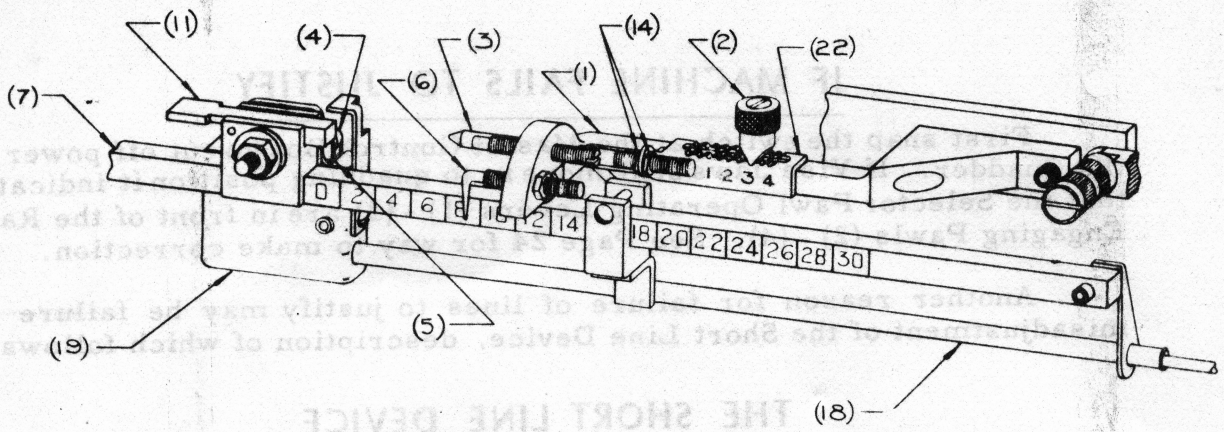


FIGURE 1

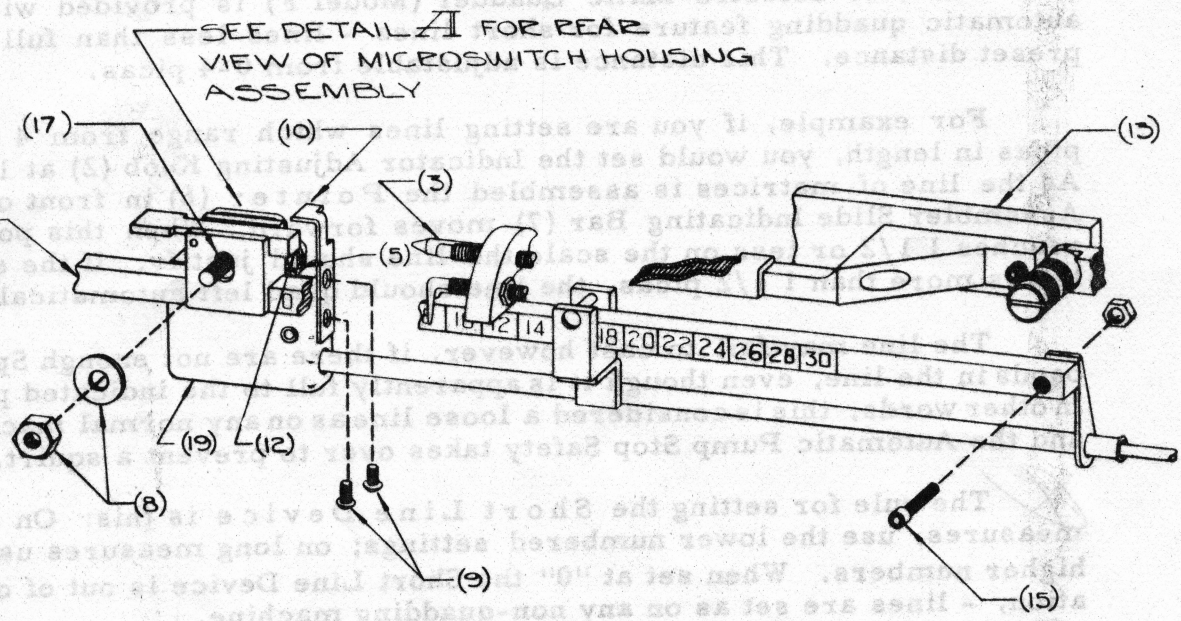
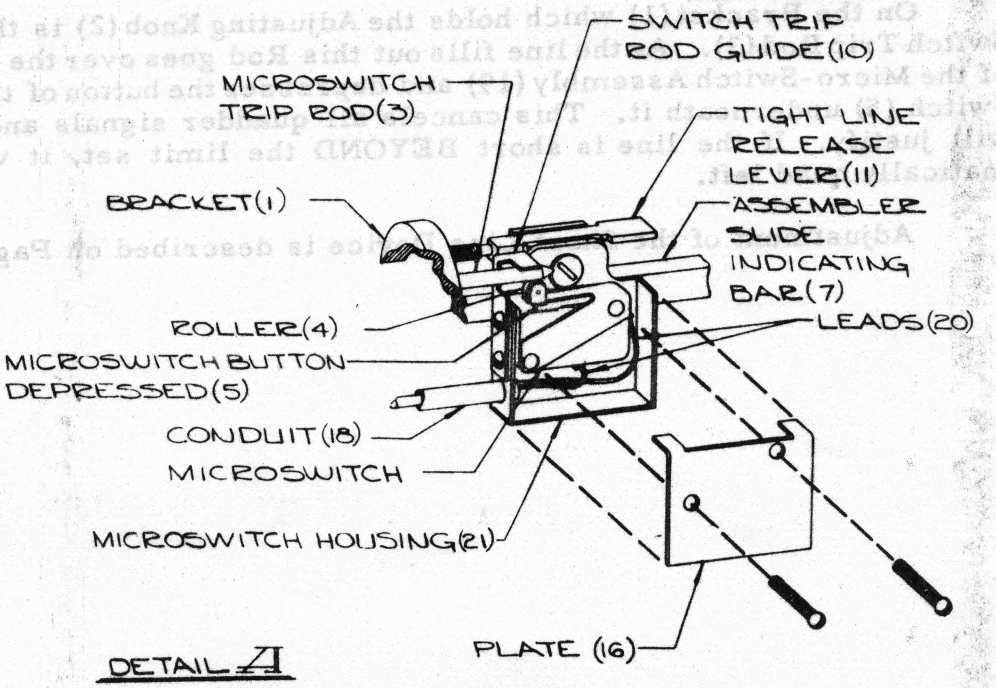


FIGURE 2



DETAIL A

IF MACHINE FAILS TO JUSTIFY cont'd.

Adjustment of the Short Line Device

1 - MICRO-SWITCH TRIP ROD (Ref. Drawing 9, page 29)

Remove the Nut and Washer (8) which holds the Micro-Switch Assembly (19) to the left end of the Assembler Slide Indicating Bar (7). It will expose a plate (17) with an elongated hole. Loosen the two 4-48 screws (9) which hold the Switch Trip Rod Guide (10). Raise the Guide to its highest position. Turn screws in to a snug bearing, not tight. Bring the Slide over so that the Trip Rod (3) is over the Roller (4) which depresses the Button (5). As you raise the Micro-Switch Assembly (19) you will hear a click. After it clicks, push it up about .010" higher, and tighten the lock-nut in front (8).

Remove the Plate (16) on the back of the Micro-Switch Assembly (19). If leads (20) are broken it will be obvious. If they are intact, and connections properly soldered, it can be assumed the switch must be replaced.

When the Trip Rod (3) is on the Roller, loosen the two 4-48 Screws (9) and bring the Guide (10) down so that the top of the Guide rests on the Rod (3) without binding.

If the adjustment is properly made the switch should operate perfectly UNLESS the Indicator Bar (7) is bent. It should be removed and straightened if necessary.

These rods are bent in practically every instance by repeated punching of the Tight Line Release Lever (11) which may be snug, to make it come out more easily. If this condition exists it is easily overcome by rounding off the Release Lever on the lower corner (12) with a file to eliminate excessive friction.

2 - TIGHT LINE RELEASE (Ref. Drawing 9, page 29)

Set the Vise Jaws for a 20 pica measure, and the Short Line Adjustment Knob (2) to "0" on the dial. Bring the Assembler Slide (13) forward to the Tight Line Release Lever (11). The Trip Rod (3) should now be resting just against the Micro-Switch Roller (4). If not, loosen the Lock-Nuts (14) on the Rod (3) and bring the Rod ahead. If too far advanced so that it is depressing the Switch Button (5) reverse the procedure, bringing the Rod back.

IF MACHINE FAILS TO JUSTIFY cont'd.

Adjustment of the Short Line Device

1 - MICRO-SWITCH TRIP ROD (Ref. Drawing 9, page 29)

Remove the Nut and Washer (8) which holds the Micro-Switch Assembly (19) to the left end of the Assembler Slide Indicating Bar (7). It will expose a plate (17) with an elongated hole. Loosen the two 4-48 screws (9) which hold the Switch Trip Rod Guide (10). Raise the Guide to its highest position. Turn screws in to a snug bearing, not tight. Bring the Slide over so that the Trip Rod (3) is over the Roller (4) which depresses the Button (5). As you raise the Micro-Switch Assembly (19) you will hear a click. After it clicks, push it up about .010" higher, and tighten the lock-nut in front (8).

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IF MACHINE FAILS TO JUSTIFY cont'd.

To check this setting, put the Short Line Adjustment at "3" on the dial. Then bring the Vise Jaws to 23 picas. At this point the Micro-Switch should be depressed, and any line sent in should justify.

3 - MICRO-SWITCH AND LEADS
(Ref. Drawing 9, page 29)

Lightly press down on the Switch Roller (4) with a finger until you hear the switch click. Hold the Switch closed in this position as you raise the Assembling Elevator. If the Vise Jaws move to a quadding position, you will know that the switch is not working - either because it is "burned out" or because its wire leads (20) are disconnected or broken.

If this is the case, replace as follows:

Remove the Nut and Washer (8) which hold the Micro-Switch Housing (21) to the Assembler Slide Indicator Bar (7), as well as the Allen Head Screw (15) at the other end of the Bar. The Conduit (18) and Micro-Switch Assembly (19) will come off together.

IF LINES FAIL TO CAST

Check the following:

1 - Power source. Examine plug and connections. (See Page 20)

2 - Pump Stop Switch on top of Selector Box. ("On" and "Off"). (See Page 6)

3 - Micro-Switch in Left Hand Vise Jaw. (See Page 17)

4 - Pump Stop Solenoid. (See Pages 17 - 19)

5 - Examine Spacebands and make sure they are clean and sliding freely.

WIRING DIAGRAM

WIRING DIAGRAM

EMERGENCY OPERATION OF QUADDER

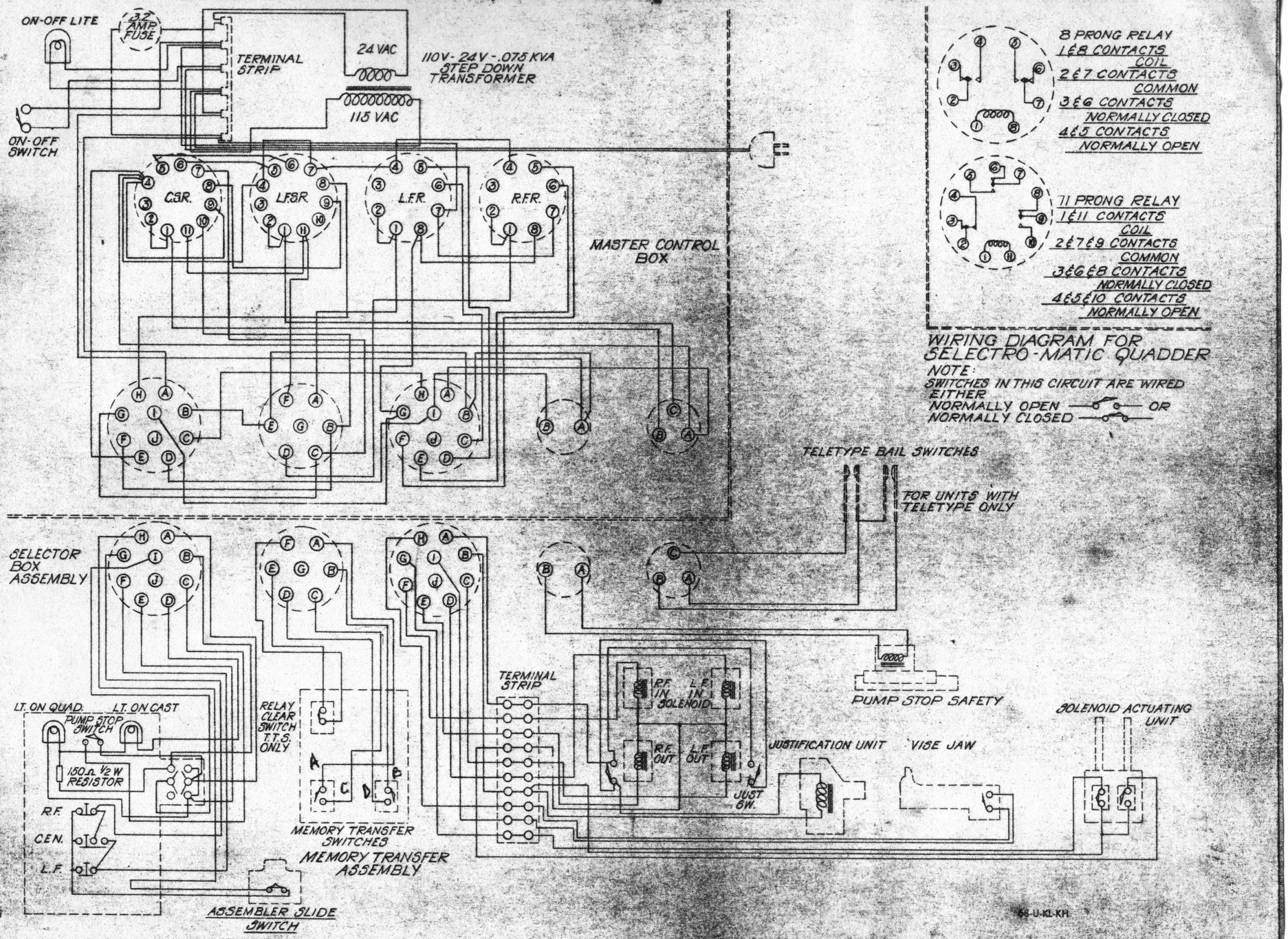
Should the Memory Circuit be put out of operation because of a damaged electrical unit the Quadder may be operated manually. First remove the relays (Photo 5, page 7), then remove the lower front cover on the Quadder Housing, (Photo 9, page 24) and manually push operating levers (1) and (3) in and out for the quadding function desired. Push in the left hand lever (1) for right flush; right hand lever (3) for left flush; and both levers for center.

For justified composition, remember to depress the lower part of operating levers (1) and (3), so the engaging pawls, (2) and (4) are in "out" position, as illustrated in photo 9.

This method of operation is not as efficient as when the push buttons are used, but it will keep the Quadder in operation during an emergency. Although the electrical components of the Star Quadder have been thoroughly checked out for long life and durability, it is recommended that a small electrical parts kit be kept on hand. These parts, which are listed below, will help you keep your Quadder operating at its best.

Solenoid	Q-358
Relay	Q-474
Relay (For TTS only)	Q-735
Relay Clearing Switch Solenoid Actuating Switch	Q-55
Light Switch	Q-364
Justification Solenoid Pot and Pump Solenoid	Q-734
L. H. Vise Jaw Safety Switch	Q-59
Dome Light Bulb	Q-441
Fuse	Q-463
Push Button Switch	Q-434

If the Left Hand Vise Jaw Safety does not operate, do not attempt quadding operation until repair has been made. In the meantime, see "Emergency Pump Stop" (page 19) and quad out all lines to justified lengths in the assembling elevator.


ON-OFF LITE
.32 AMP FUSE
TERMINAL STRIP
24 VAC
110V-24V-.075 KVA STEP DOWN TRANSFORMER
115 VAC
ON-OFF SWITCH
C.S.R.
L.F.S.R.
L.F.R.
R.F.R.
MASTER CONTROL BOX
8 PRONG RELAY
1 & 8 CONTACTS COIL
2 & 7 CONTACTS COMMON
3 & 6 CONTACTS NORMALLY CLOSED
4 & 5 CONTACTS NORMALLY OPEN
11 PRONG RELAY
1 & 11 CONTACTS COIL
2 & 7 & 9 CONTACTS COMMON
3 & 6 & 8 CONTACTS NORMALLY CLOSED
4 & 5 & 10 CONTACTS NORMALLY OPEN
WIRING DIAGRAM FOR SELECTRO-MATIC QUADDER
NOTE:
SWITCHES IN THIS CIRCUIT ARE WIRED EITHER
NORMALLY OPEN — OR
NORMALLY CLOSED
TELETYPE BAIL SWITCHES
FOR UNITS WITH TELETYPE ONLY
SELECTOR BOX ASSEMBLY
LT. ON QUAD.
LT. ON CAST
PUMP STOP SWITCH
150 Ω 1/2 W RESISTOR
R.F.
CEN.
L.F.
RELAY CLEAR SWITCH T.T.S. ONLY
MEMORY TRANSFER SWITCHES
MEMORY TRANSFER ASSEMBLY
ASSEMBLER SLIDE SWITCH
TERMINAL STRIP
R.F. IN
L.F. IN
SOLENOID
R.F. OUT
L.F. OUT
JUST SW.
JUSTIFICATION UNIT
VISE JAW
PUMP STOP SAFETY
SOLENOID ACTUATING UNIT
58-U-K1-KH

SELECTOR BOX GREEN LIGHT

All Selectro-Matic Quadders beginning with Serial No. F4-1744 will have the Quadding Indicator Light which is mounted on the Selector Box, wired in series with the Delivery Slide Switch. This will have the effect of having the green light go out when the line being set is long enough to justify. When the light stays on, the line being set will either quad right, left, or center as selected by the operator.

Outstanding Quadders can be changed by disconnecting the lead of the green light going to the back terminal of the Selector Switch on the side of the Selector Box, and then joining it with the two leads in the solderless connector.

Green light on Quadders up to F-1743: the green light stays on when the Quadder is on.

Q-59 Vice Jaw Micro Switch

Q-358 Pump Stop Solenoid
-734

1-800-221-2684