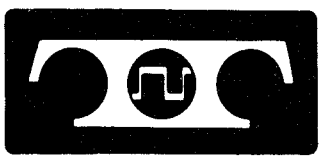
BULLETIN 318B
VOL 3

TECHNICAL MANUAL
MODEL 37
AUTOMATIC SEND-RECEIVE (ASR)
TELETYPEWRITER SET
FOR SWITCHED NETWORK SERVICE

CONTENTS

DISASSEMBLY AND REASSEMBLY
LUBRICATION



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INTRODUCTION

Bulletin 318B is a technical manual that provides general and specific technical information about the Model 37 Automatic Send-Receive (ASR) Teletypewriter Set and its component units. This bulletin contains adjustment and lubrication sections for the late design typing unit and early and late design answer-back units. The bulletin consists of three volumes.

Volume 1 contains sections for description, installation, and principles of operation. Volume 2 provides the adjustments for the components and troubleshooting for the set. Volume 3 includes information for lubrication and disassembly and reassembly.

Each volume is made up of a group of appropriate independent sections. Each section is complete within itself --- it is separately identified by a title and section number, and the pages are numbered consecutively.

Each individual section is identified by a 9-digit section number which appears at the top of each page of a section. The section number appears on the left corner of left-hand pages and on the right corner of right-hand pages. In addition, the section number contains the suffix TC which identifies it as a Teletype Corporation section. All sections are placed in the technical manual in ascending numerical order.

To locate specific information, refer to the table of contents on the following page. In the first column, under "Equipment," find the name of the component unit or set in question. Move across the page to the second column and locate the title being sought. The applicable 9-digit section number can then be found in the third column. Turn to Page 1 of the applicable section, and the contents of that section will be found.

The sections comprising this bulletin, and sections on earlier units not included, are stocked separately and may be ordered individually if the entire bulletin is not required.

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37 AUTOMATIC SEND-RECEIVE (ASR) TELETYPEWRITER SET

REMOVAL AND REPLACEMENT OF COMPONENTS

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1. GENERAL

1.01 This section provides removal and replacement of component information for the 37 Automatic Send-Receive (ASR) Teletypewriter Set (Figure 1).

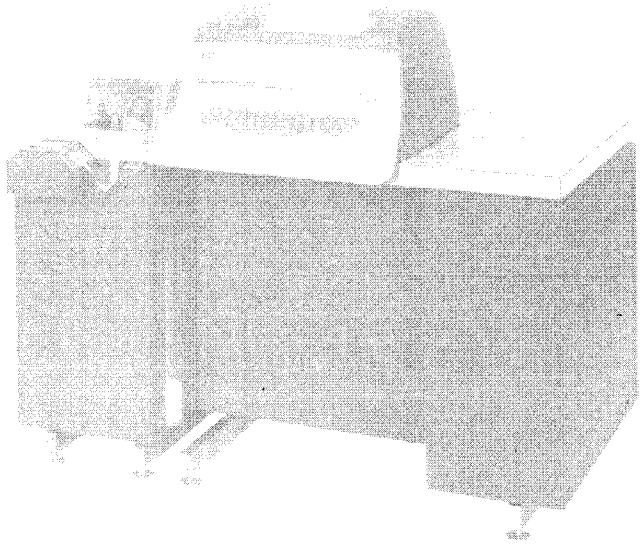
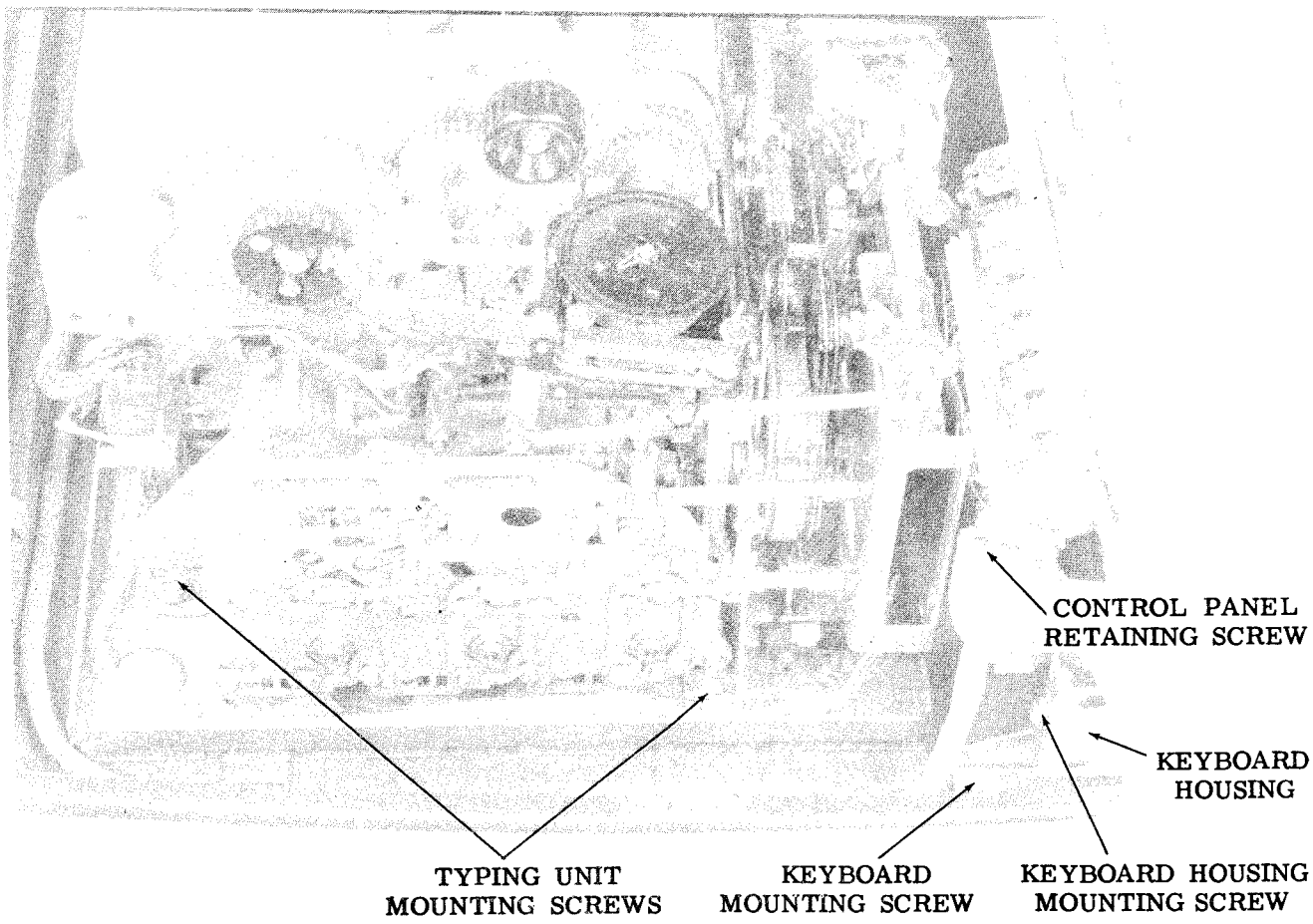


Figure 1 - 37 Automatic Send-Receive (ASR) Teletypewriter Set

1.02 Photographs and line drawings are used to identify the mechanisms and specific parts mentioned in the procedures. Refer to the appropriate parts section for illustrations and part numbers of parts and assemblies.

1.03 References in the procedures to left or right, up or down, top or bottom, etc, refer to the unit viewed with the keytops and controls facing the front (Figure 1).

1.04 Most maintenance, lubrication, and adjustments can be accomplished after a component has been removed with no further disassembly. If possible, disassembly should be confined to subassemblies which do not require adjustment, or which can be removed without disturbing adjustments. When reassembling the subassemblies, all requirements for adjustments, clearances, and spring tensions must be observed.



(Left Side View)

Figure 2 - Typing Unit and Control Panel

1.05 The loss of retaining rings and springs should be avoided during disassembly by holding the items with one hand while it is released with the other. Springs should not be stretched or distorted more than is necessary for removal or their effective spring tension may be altered.

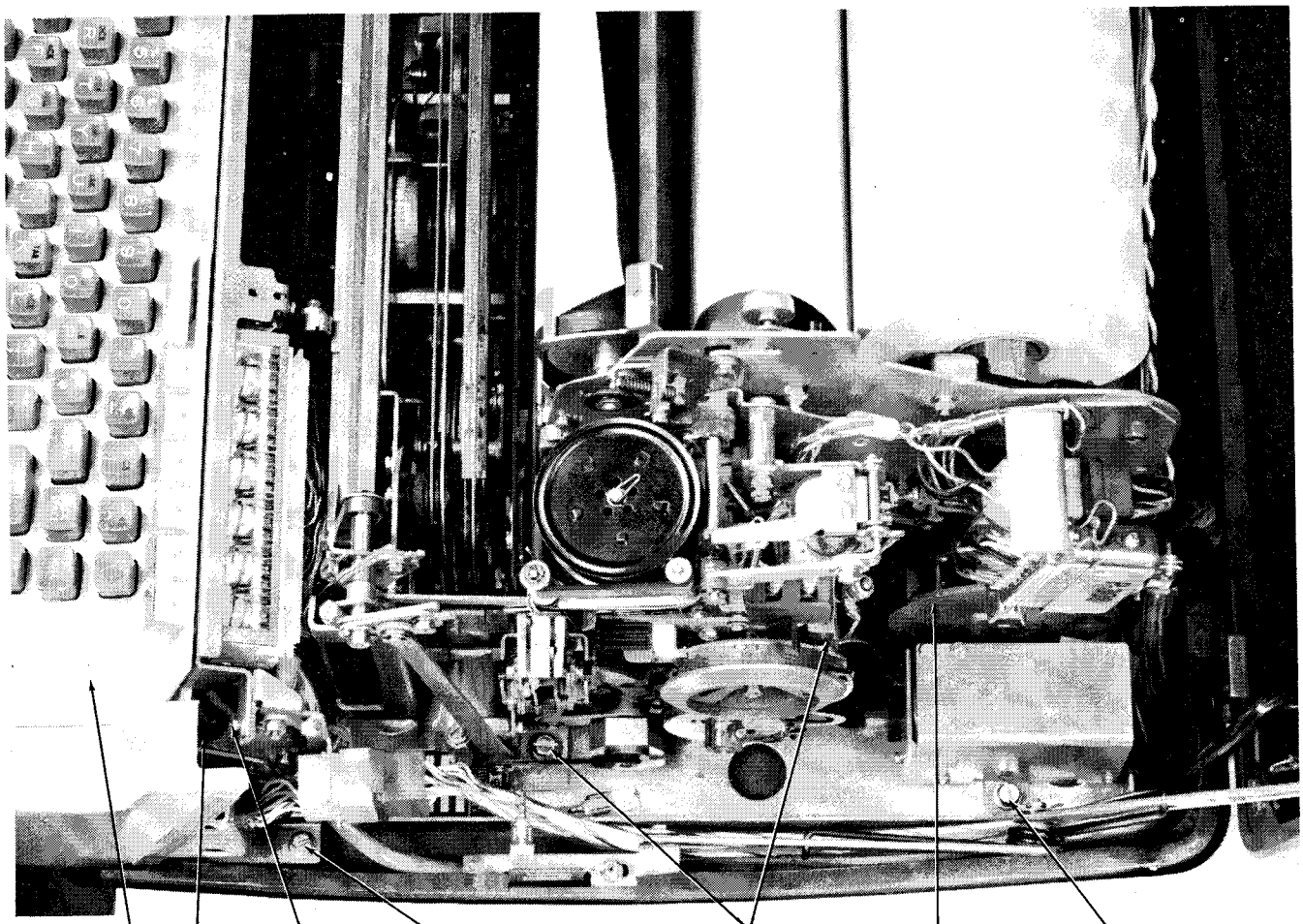
CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE SET.

2. KEYBOARD SEND-RECEIVE UNIT REMOVAL AND REPLACEMENT OF COMPONENTS

TYPING UNIT

2.01 To remove the typing unit from the base, proceed as follows (Figures 2 through 4).

(1) Depress the cover latches on both sides of the typing unit cover and tilt the cover back until it rests on the table.



(Right Side View)

Figure 3 - Typing Unit

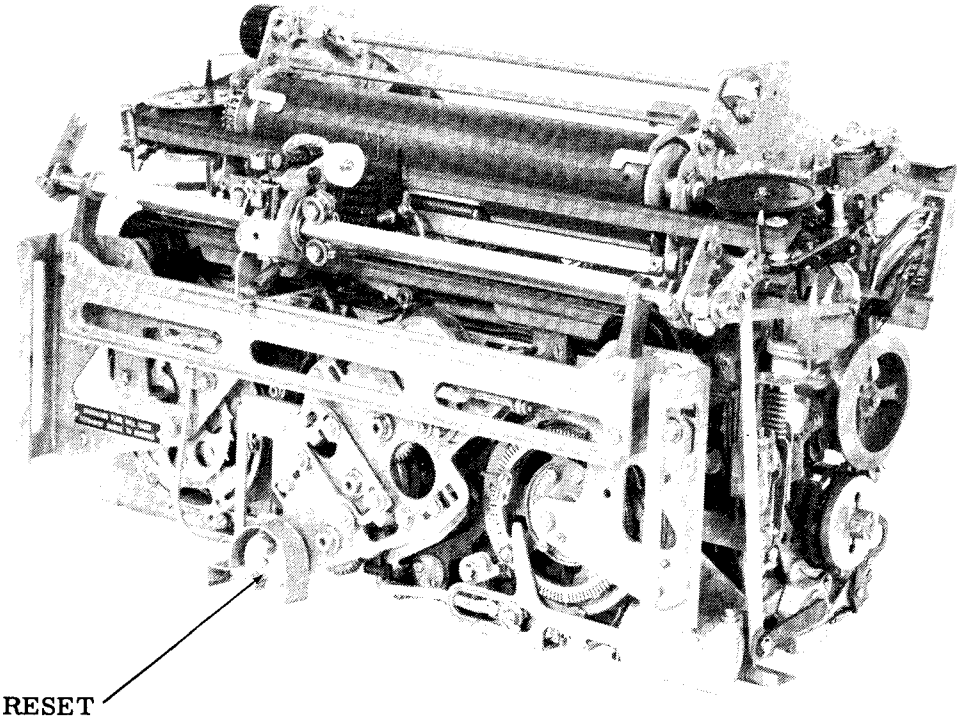


Figure 4 - Typing Unit

(2) Remove the paper roll from the typing unit.

(3) Disconnect electrical cable plugs P306 and P308 from the selector and function box connectors at the upper right rear corner of the typing unit.

(4) Remove four typing unit mounting screws from the feet at the bottom front and rear corners of the left and right sides of the typing unit.

Note: Steps (5) and (6) may be omitted unless the control panel is to be replaced.

(5) Remove two screws securing the control panel trim plate to the top of the control panel and remove the plate. Be careful not to drop the screws into the base.

(6) Loosen the control panel retaining screws at the right and left upper rear corners of the control panel. Raise the control panel upward and forward.

(7) Look straight down along the front plate of the typing unit and locate the keyboard reset coupler. The lug on the coupler must be located at the top facing forward. If it is not in this position, turn the motor fan counterclockwise until alignment is obtained.

(8) Grasp the typing unit under the curve at the top rear of the left side frame, and in the rectangular opening at the right top corner of the front plate. Lift the typing unit straight up away from the base. Be careful that the keyboard reset coupling guard clears the control panel components. Set the typing unit aside in a protected area.

CAUTION: REMOVE THE TYPING UNIT ONLY IN THE MANNER DESCRIBED IN 2.08(8).

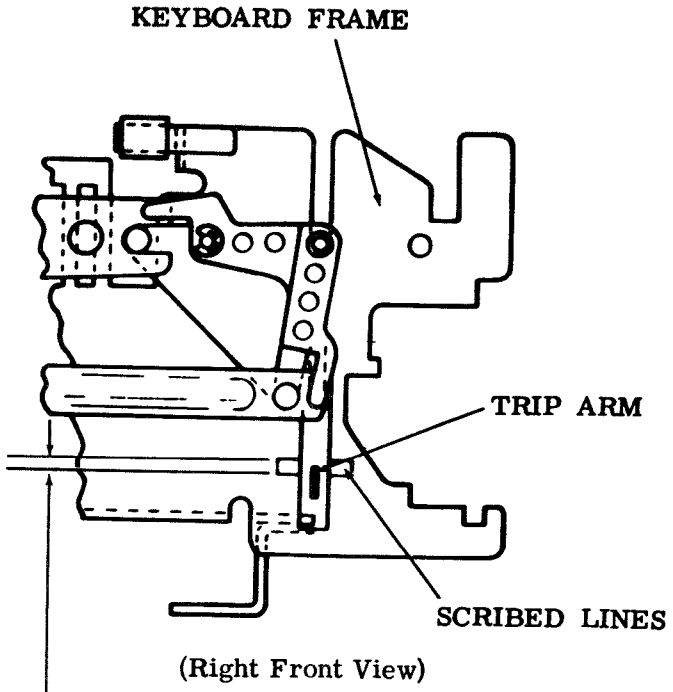
2.02 To replace the typing unit, proceed as follows (Figures 2 through 5).

(1) Locate the selector clutch on the right end of the typing unit main shaft, and the keyboard reset coupler at the lower center

Note: The typing unit must be installed on the base and secured to make these adjustments, and the keyboard housing must be removed.

To Check

Engage clutch. Rotate shaft until reset bail roller peaks on one of the high points of the cam. Note position of top edge of trip arm relative to scribed lines. Rotate the shaft until reset bail roller peaks on other high point of cam and note the trip position again.



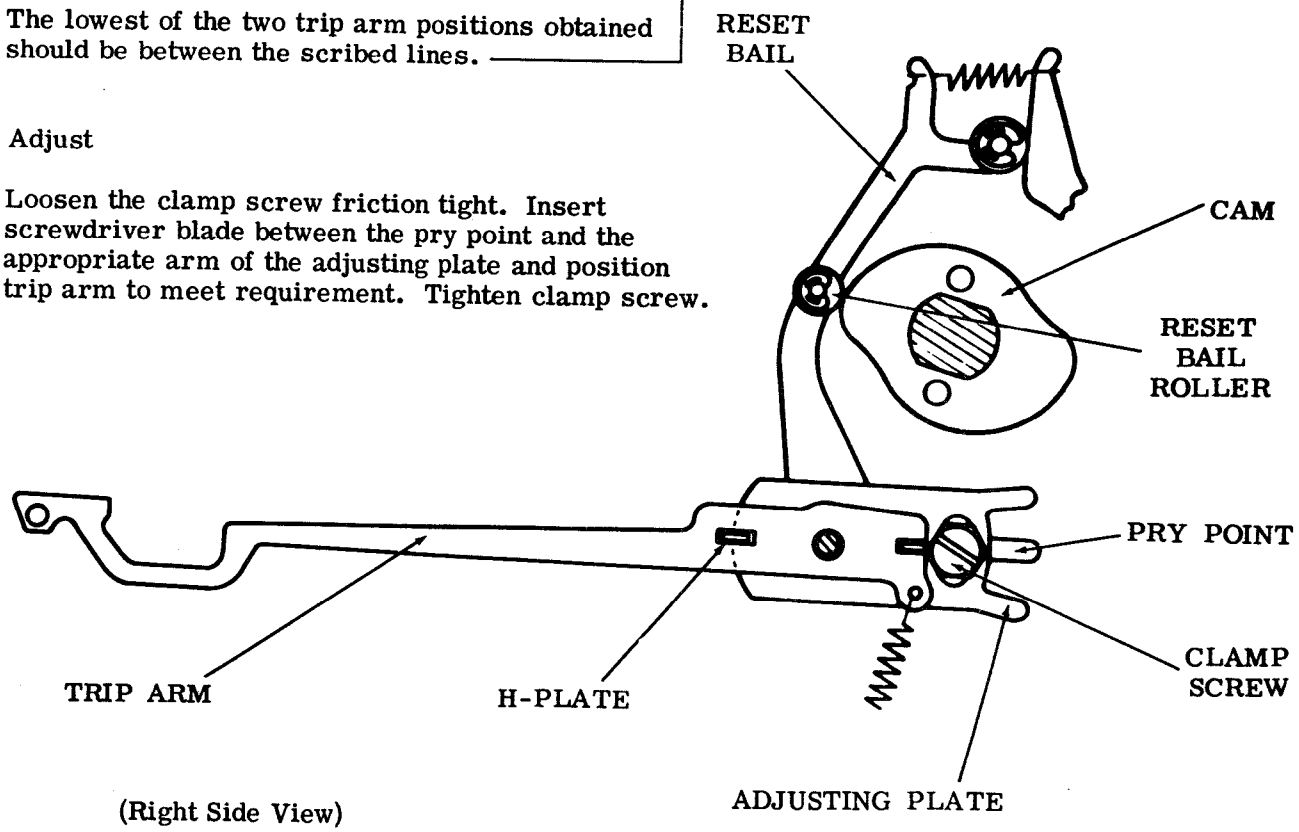
(Right Front View)

Requirement

The lowest of the two trip arm positions obtained should be between the scribed lines.

To Adjust

Loosen the clamp screw friction tight. Insert screwdriver blade between the pry point and the appropriate arm of the adjusting plate and position trip arm to meet requirement. Tighten clamp screw.



(Right Side View)

Figure 5 - Keyboard Trip Arm Adjustment

front. Facing the right end of the typing unit, rotate the selector clutch in a counterclockwise direction until the lugs on the keyboard reset coupler are vertical.

Note: Use handwheel TP161430, part of tool kit TP151940, to turn the selector shaft.

(2) Viewing the keyboard from the right side, rotate the mechanical reset shaft in a clockwise direction until the open slots in the plastic universal joint member are vertical to the base.

(3) Loosen the control panel retaining screws at the right and left upper rear corners of the control panel. Raise the control panel upward and forward.

(4) Grasp the typing unit under the curve at the top rear of the left side of the frame, and in the rectangular opening at the right top corner of the front plate. Raise the typing unit and position it directly over the base. Tilt the typing unit slightly forward (toward the keyboard) from a normal level attitude. Align the reset coupler with the slot in the plastic universal joint member, and carefully lower the typing unit onto the locating studs and tilt back to engage the intermediate gear assembly. Be certain that the main shaft driven gear and the intermediate gear mesh properly.

(5) Secure the typing unit to the base with the four typing unit mounting screws, beginning with the left rear screw.

Note: If a replacement typing unit (other than the original) is installed, the following adjustments are required.

(6) Adjust keyboard trip arm following the procedures given in Figure 5.

(7) Remove the two screws and lockwashers holding the intermediate gear guard to the typing unit base and remove the guard. Loosen the five motor mounting screws and move the motor away from engagement with the intermediate gear assembly.

(8) Using the pry points at the rear of the intermediate gear assembly, adjust the intermediate gear assembly from front to rear until there is a barely perceptible backlash between the main shaft driven gear and the intermediate drive gear. This backlash can be from 0.004 inch to 0.015 inch. Tighten the three intermediate gear assembly mounting screws.

(9) Using the back left edge of the motor cradle and the rear flange of the base as a pry point, move the motor forward to fully engage the motor pinion and the intermediate driven gear. Then using the pry point located forward of the left rear mounting screw, ease the motor unit back to establish a barely perceptible backlash. Tighten the five motor mounting screws. Make sure the fan guard does not interfere with free rotation of fan.

(10) Install the gear guard over the intermediate gear assembly with the two screws and lockwashers taken out during the removal procedures. Align guard to clear gears and motor unit, and tighten.

(11) Install the keyboard housing at this time by aligning it with the keyboard cover and sliding it back against the housing brackets.

(12) Secure keyboard housing with one keyboard housing mounting screw, lockwasher, and flat washer inserted from the rear center of the right and left housing brackets. Check housing for proper fit and secure screws.

(13) The remaining replacement procedures are the reverse of the removal procedures.

CONTROL PANEL

2.03 To remove the control panel, proceed as follows (Figures 2, 3, 6, and 7).

(1) Detach the control panel cable clamps from the rear of the keyboard by taking out the screw, lockwasher, and flat washer securing each (one clamp for each switch assembly).

(2) Disconnect the control panel cable plugs from the control panel by pulling them straight out, using care to avoid bending the connector pins. Wrap the plugs with a protective covering and tape it securely to protect the plug.

(3) Take out the control panel mounting screw, lockwasher, and flat washer at the upper right and left sides of the control panel securing the panel to the arc slides.

(4) Lift the control panel free from the keyboard and store it in a closed container to protect the switch and connector contacts.

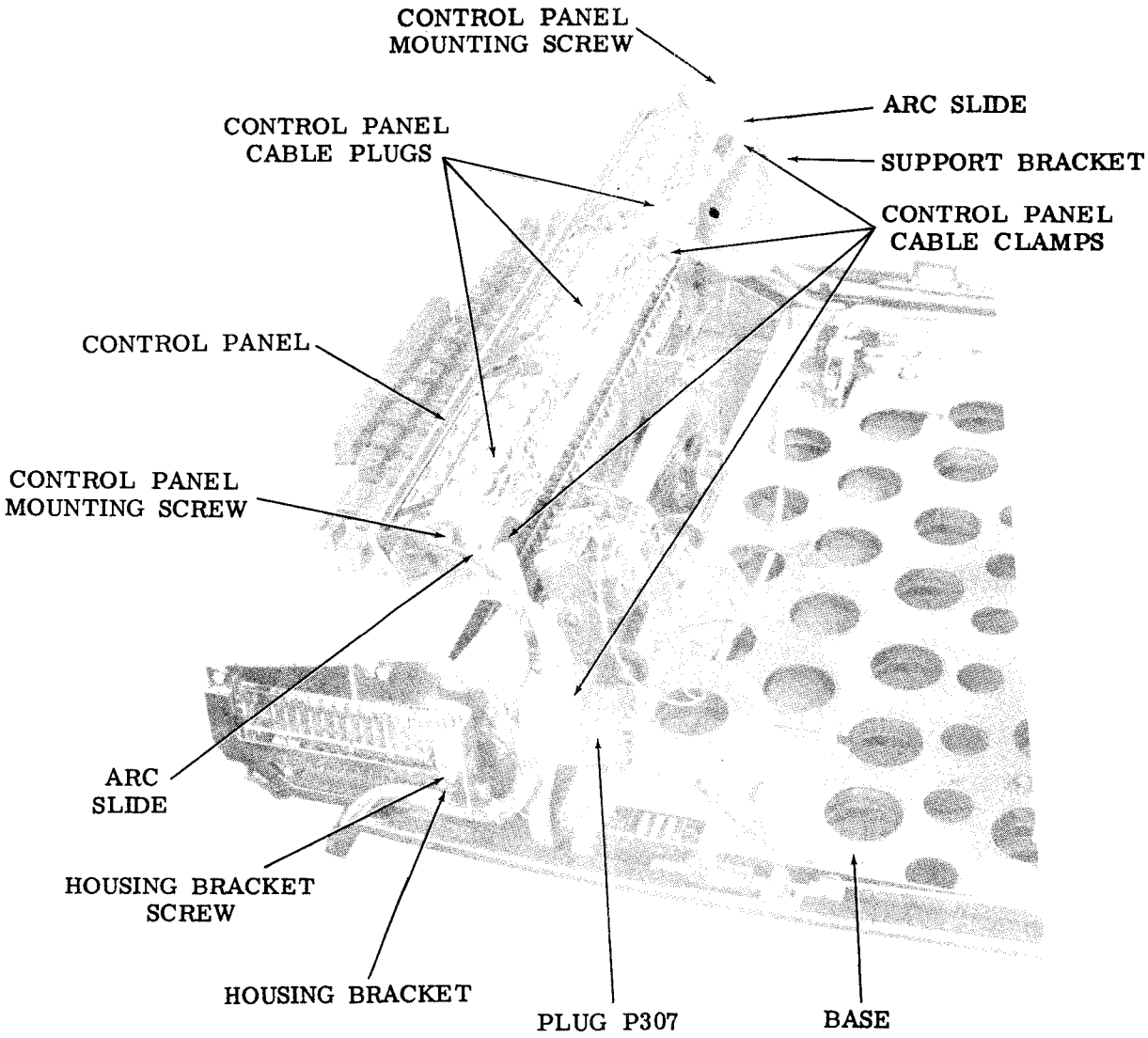
2.04 To replace the control panel, reverse the procedures used for removal.

Note: After installing and attaching the cable clamps on the control panel cables closest to the plugs, position the lower cable clamp 4 inches down the cable to allow a loop in the cable before securing the lower clamp.

KEYBOARD

2.05 To remove the keyboard from the base assembly, proceed as follows (Figures 2, 3, and 6).

(1) Remove the keyboard housing mounting screws, lockwashers and flat washers from the rear center of the left and right housing brackets. Slide the keyboard housing straight forward to remove.



(Right Rear View)

Figure 6 - Control Panel and Keyboard

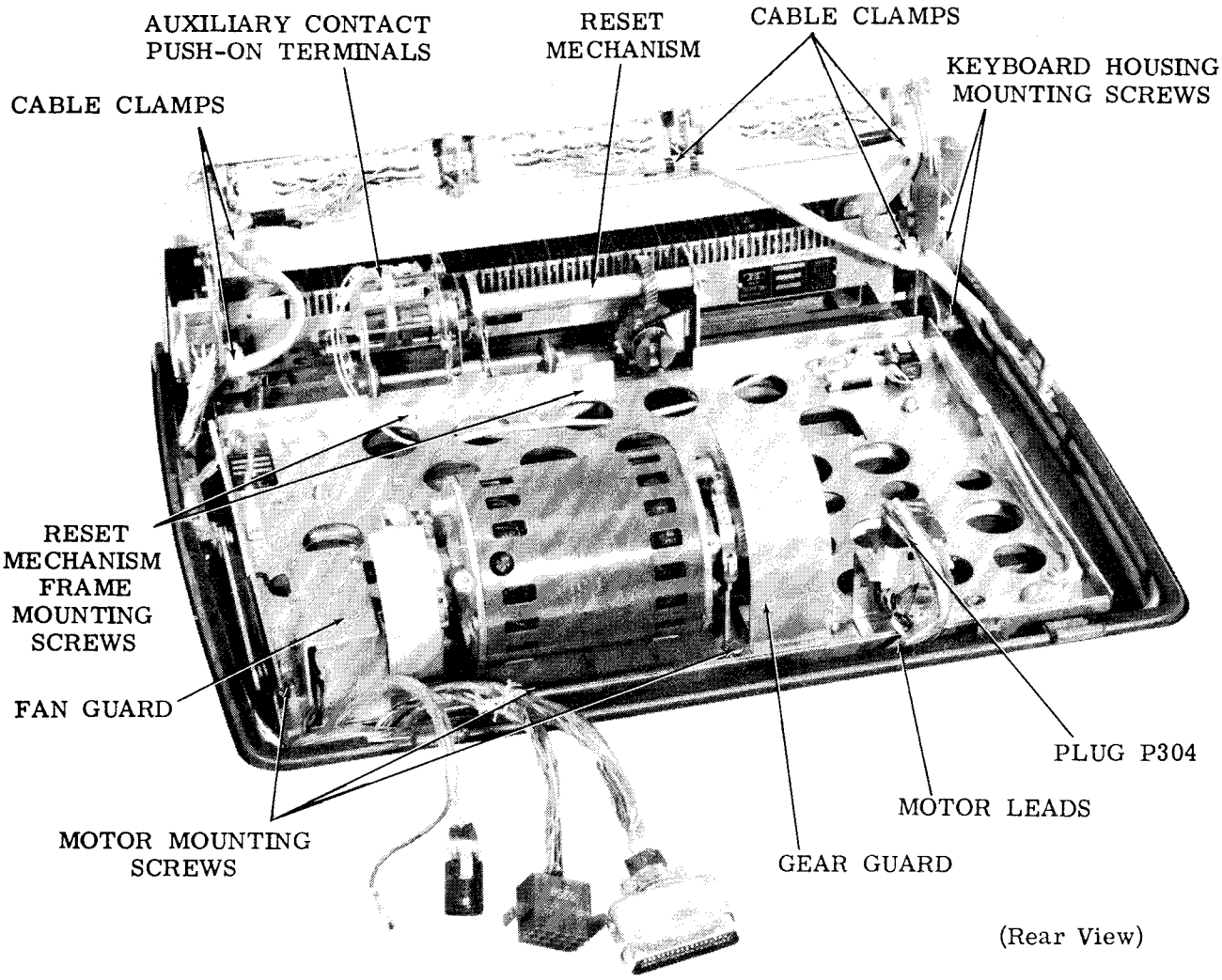


Figure 7 - Keyboard, Control Panel, Reset Mechanism, and Motor Unit

Note: Do not loosen or remove the two bracket retaining screws in the housing brackets that secure the brackets to the keyboard, unless removal is necessary. If the brackets are disturbed, they will require realignment during reassembly to properly align the keyboard housing.

(2) Disconnect electrical plug P307 from the keyboard connector.

(3) Support the lower front of the keyboard and remove the two keyboard mounting screws, lockwashers, and flat washers from each side securing the keyboard to the base.

(4) Lift the keyboard up very slowly, tilting the right side up slightly, and moving the keyboard a little to the right until the H-plate disengages from the trip arm in the keyboard. Holding the H-plate to the left as the keyboard is lifted will assist the disengagement process.

(5) Store the keyboard in a protected area.

2.06 To replace the keyboard, reverse the procedures used for removal.

Note: Use great care to assure the H-plate is properly engaged in the front and rear slots of the trip arm before lowering the keyboard and moving it to the left to its proper position on the base.

MOTOR UNIT

2.07 To remove the motor unit from the base, proceed as follows (Figure 7).

(1) Remove typing unit as described in 2.01.

(2) Disconnect the two motor leads from the two leads originating from the bottom of connector J304 mounted on the left rear of the base.

(3) Remove the fan guard by taking out the motor mounting screws securing it in the right rear corner of the base.

(4) Take out the remaining four motor mounting screws and lift the motor unit from the base. Set motor unit aside.

2.08 To replace the motor unit, reverse the procedures used for removal. Adjust the motor to the intermediate gear assembly as described in 2.02(8).

INTERMEDIATE GEAR ASSEMBLY

2.09 To remove the intermediate gear assembly from the base, proceed as follows (Figures 7 and 8).

(1) Remove typing unit as described in 2.01.

(2) Remove two screws and lockwashers securing the gear guard to the base.

(3) Remove the gear guard.

(4) Remove the three intermediate gear assembly mounting screws, lockwashers, and flat washers securing the intermediate gear assembly to the base.

(5) Lift the intermediate gear assembly from the base and set aside.

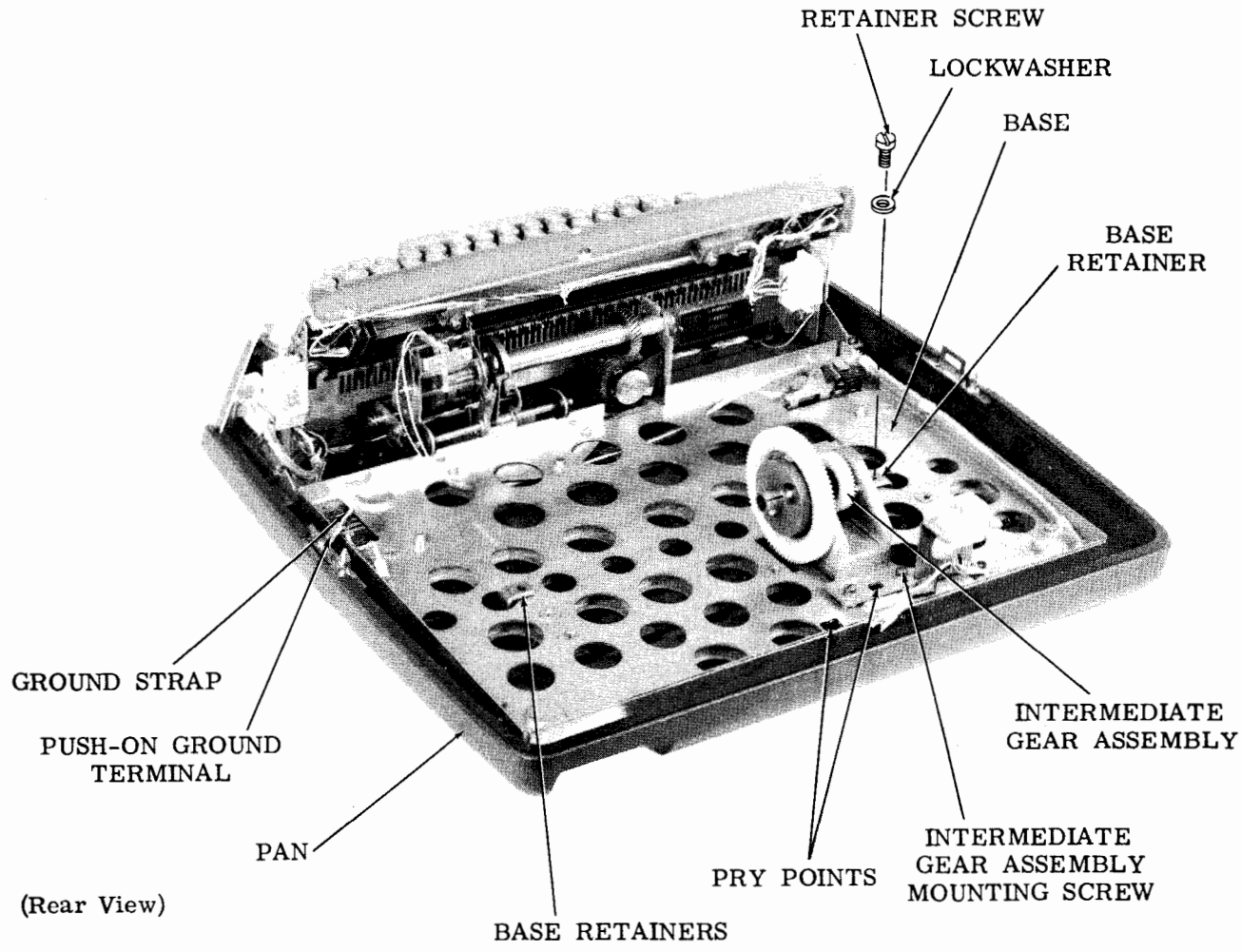
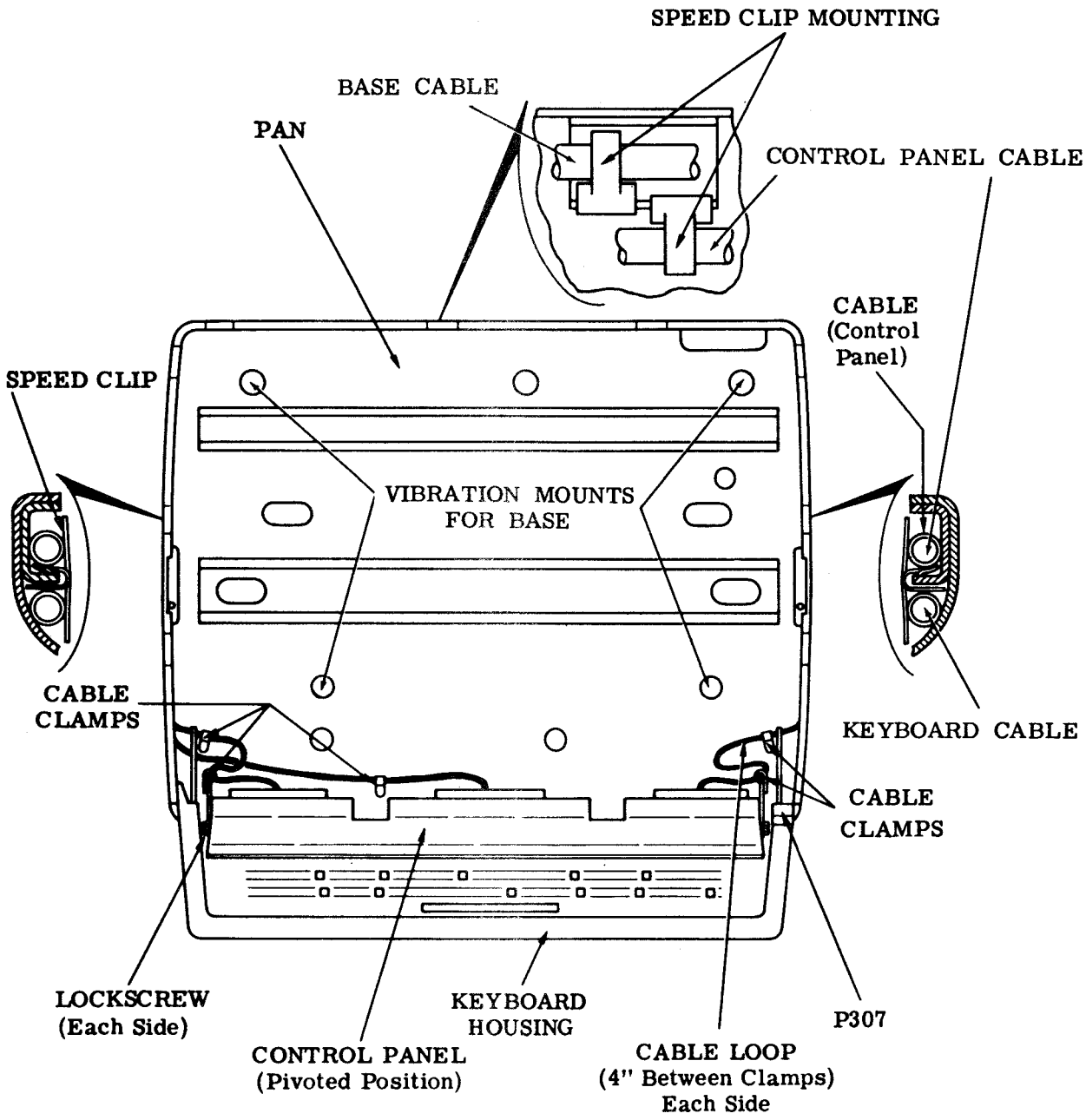


Figure 8 - Keyboard, Control Unit, Reset Mechanism, and Intermediate Gear Assembly



(Top View)

Figure 9 - Pan Cable Routing

2.10 To replace the intermediate gear assembly, reverse the procedures used during removal. If original intermediate gear assembly is installed, make sure there is a barely perceptible amount of backlash between the motor and intermediate gear assembly before tightening screws. If other than original intermediate gear assembly is installed, replace the typing unit and follow the adjustment information described in 2.02(7) and 2.02(8). Replace the gear guard.

KEYBOARD RESET MECHANISM

2.11 To remove the keyboard reset mechanism from the base, proceed as follows (Figure 6 and 7).

(1) Remove the typing unit as described in 2.01.

(2) Remove the control panel cables as described in 2.03(3) and 2.03(4).

(3) Remove the keyboard as described in 2.05.

(4) Pull the two push-on lead terminals straight off from the auxiliary contacts on the top rear of the keyboard reset mechanism.

(5) Remove the three reset mechanism frame mounting screws, lockwashers, and flat washers securing the reset mechanism to the base.

(6) Pull the keyboard reset mechanism forward until the frame extension clears the base. Set the keyboard reset mechanism aside in a protected area.

2.12 To replace the keyboard reset mechanism, reverse the procedures used for removal.

Note: Route the leads down through the first hole in the left front corner of the base, bring them back up through the front center hole, then pass leads back down through the second hole from the right front of the base, and finally bring them up through the hole in the right front center before attaching them to the auxiliary contacts.

BASE

2.13 To remove the base from the typing unit cover and pan, proceed as follows (Figure 8).

(1) Remove the typing unit (2.01), control panel cables (2.03(3) and (4)), and keyboard (2.05).

(2) Remove the two base retainers by taking out the retainer screws and lockwashers securing each to the pan.

Note: If the screw and lockwasher attaching each base retainer to the base for immobility during shipment are still in place, they should be removed and discarded at this time.

(3) Lift base retainers from the pan through holes in base.

(4) Remove the ground strap from the base by pulling the push-on ground terminal straight off from the terminal tab mounted on the right side of the base.

(5) Lift the base free from the pan one corner at a time. The shock mounts may hold the base firmly due to a suction formed in the cup in the base. A little force will break the base loose.

Note: No further disassembly of the base is recommended unless parts require replacement.

2.14 To replace the base, reverse the procedures used during removal.

TYPING UNIT COVER AND PAN

2.15 To remove the typing unit cover and pan, from the table, proceed as follows (Figures 9 and 11).

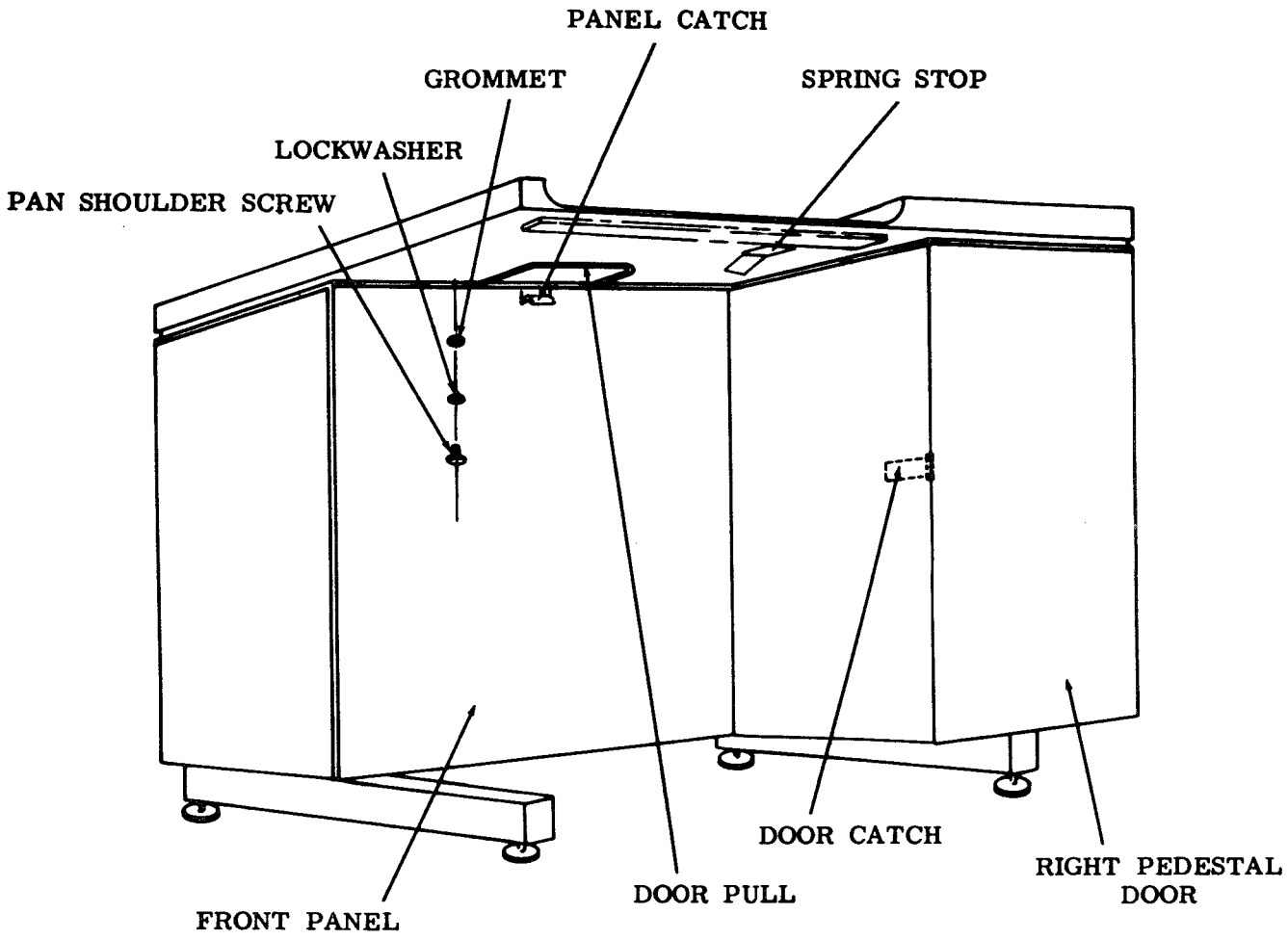
(1) Remove the typing unit pan (2.13).

(2) Disconnect the copylight cable plug P302 from the 2-pin connector in the cover.

(3) Pull the push-on ground terminal free from the ground terminal tab in the cover.

(4) Use a screwdriver blade or needle nose pliers to spring the upper speed clip at the rear of the pan inward, and pull the base cable free. In a similar manner release the control panel cable from the lower speed clip.

(5) Release the control cable(s) from the speed clips on the left side of the pan.



(Left Oblique Front View)

Figure 10 - Table

(6) Release the control cable and keyboard cable from the speed clips on the right side of the pan.

(7) Open the front panel of the table by pressing upward on the panel catch while pulling outward on the door pull. The panel will be stopped by the spring stop, but can be released by pressing upward on the strip. Lower the panel until the door pull rests on the floor.

(8) Locate the copylight cable under the table. Draw the cable down and carefully feed the plug P302 and ground terminal through the oblong slots in the pan and table.

(9) Draw the base cable down and feed its plug P304 through the slots.

(10) Draw the selector cable and its plug P306, and the function box cable and its plug P308 down through the hole.

(11) Draw the keyboard cable and its plug P307 back and down through the table slot.

(12) Very carefully work the control panel cables and connector plugs down through the slot.

(13) Remove the four pan shoulder screws and lockwashers from the grommets in the lower side of the table to release the typing unit pan and cover.

(14) Lift the typing unit pan and cover out of the recess in the table and set aside.

2.16 To replace the typing unit pan and cover, reverse the procedures used during removal.

ELECTRICAL SERVICE UNIT

2.17 To remove the electrical service unit from the left compartment in the base of the table proceed as follows (Figures 10 through 13).

(1) Open the front panel of the table and draw all electrical service unit cables back through the oblong slot in the table as directed in 2.15.

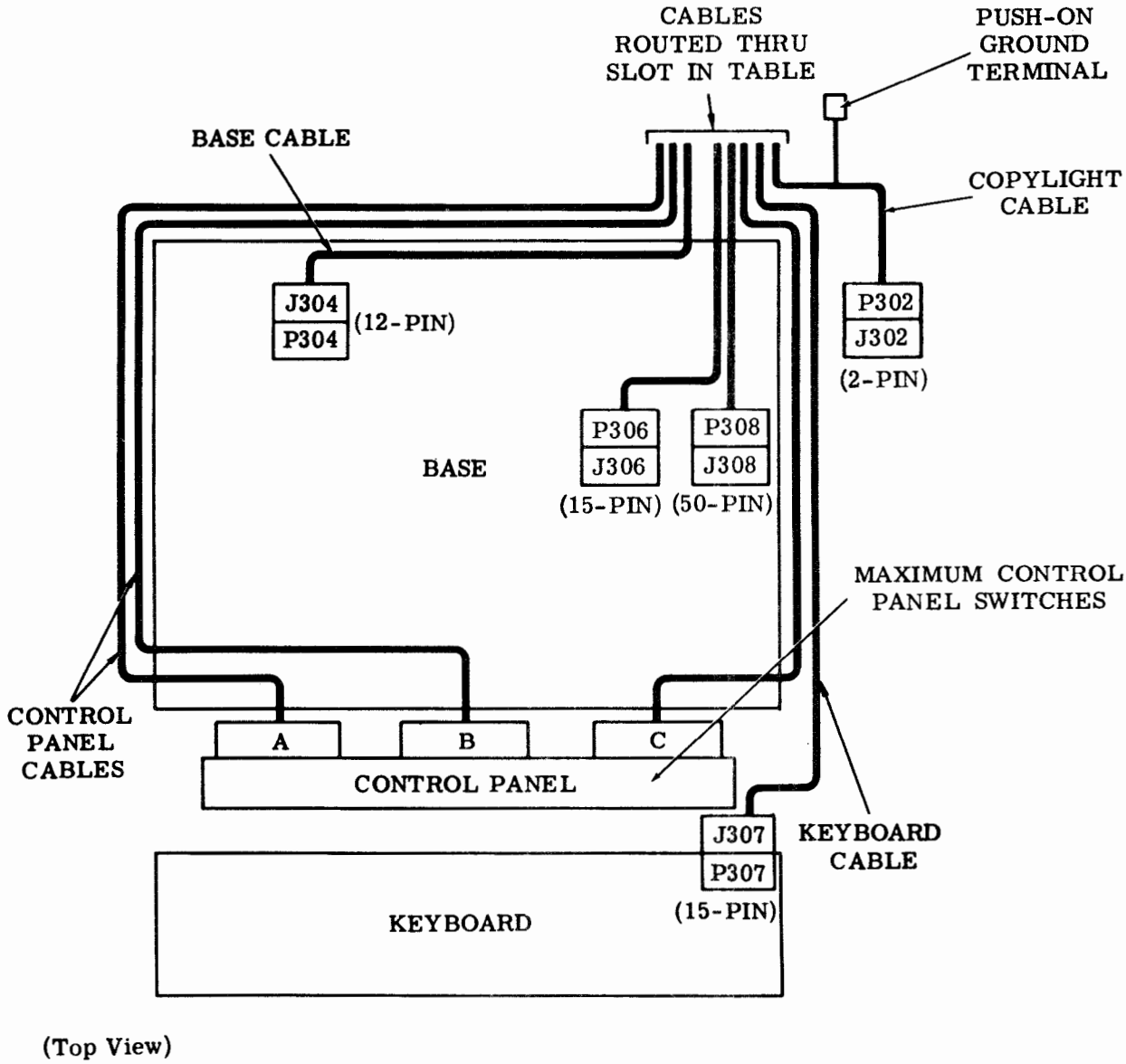


Figure 11 - Cable Routing Above Table

(2) Disconnect the power cord plug from the utility strip.

(3) Remove three service unit retaining screws, lockwashers, and flat washers from the retaining flanges at the front top and bottom of the unit.

(4) If the shipping bracket secured to the floor of the left table compartment for shipment has not been removed, take out the mounting screw and lockwasher holding it in place and discard this hardware.

(5) Lift the electrical cables out of the cable hanger at the top rear wall of the compartment.

(6) Pull the electrical service unit straight forward out of the table.

2.18 To replace the electrical service unit, reverse the removal procedures.

ANSWER-BACK ASSEMBLY

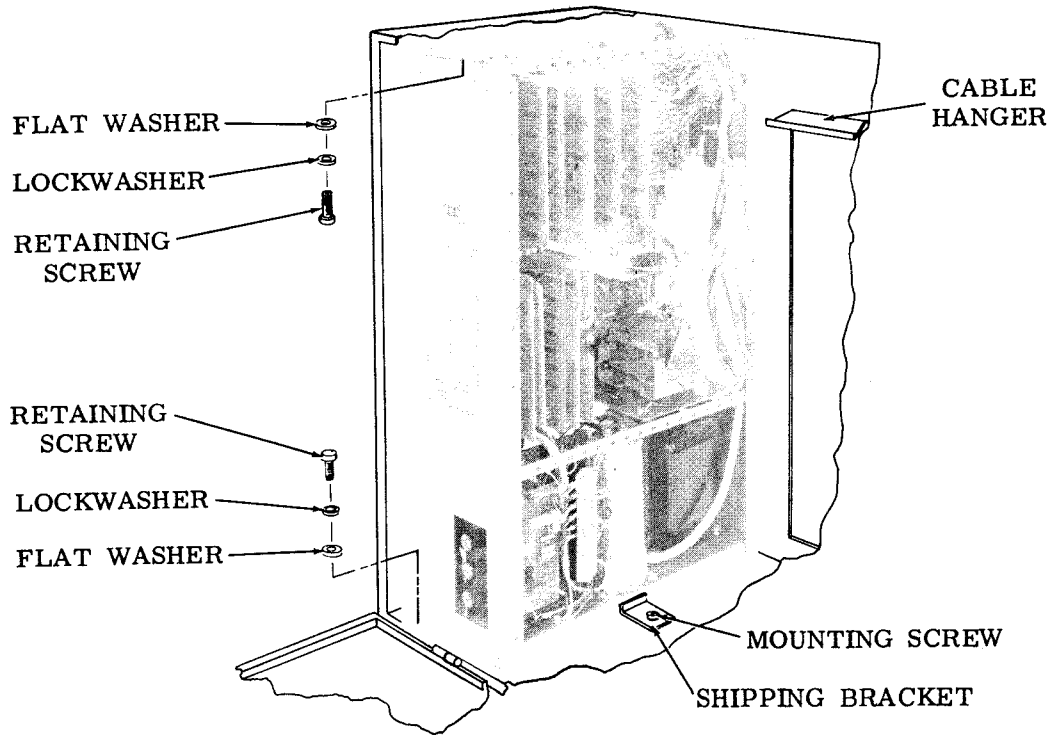
2.19 To remove the answer-back assembly from the electrical service unit, proceed as follows (Figure 11).

(1) Carefully pull plug connectors from the top of the printed circuit card on the answer-back assembly.

(2) Remove four answer-back mounting screws, lockwashers, and flat washers from the corners of the answer-back mounting plate.

(3) Lift the answer-back assembly out of the electrical unit, and set aside.

2.20 To replace the answer-back assembly, reverse the removal procedures.



(Right Oblique Cut-Away View of Table)

Figure 12 - Electrical Service Unit

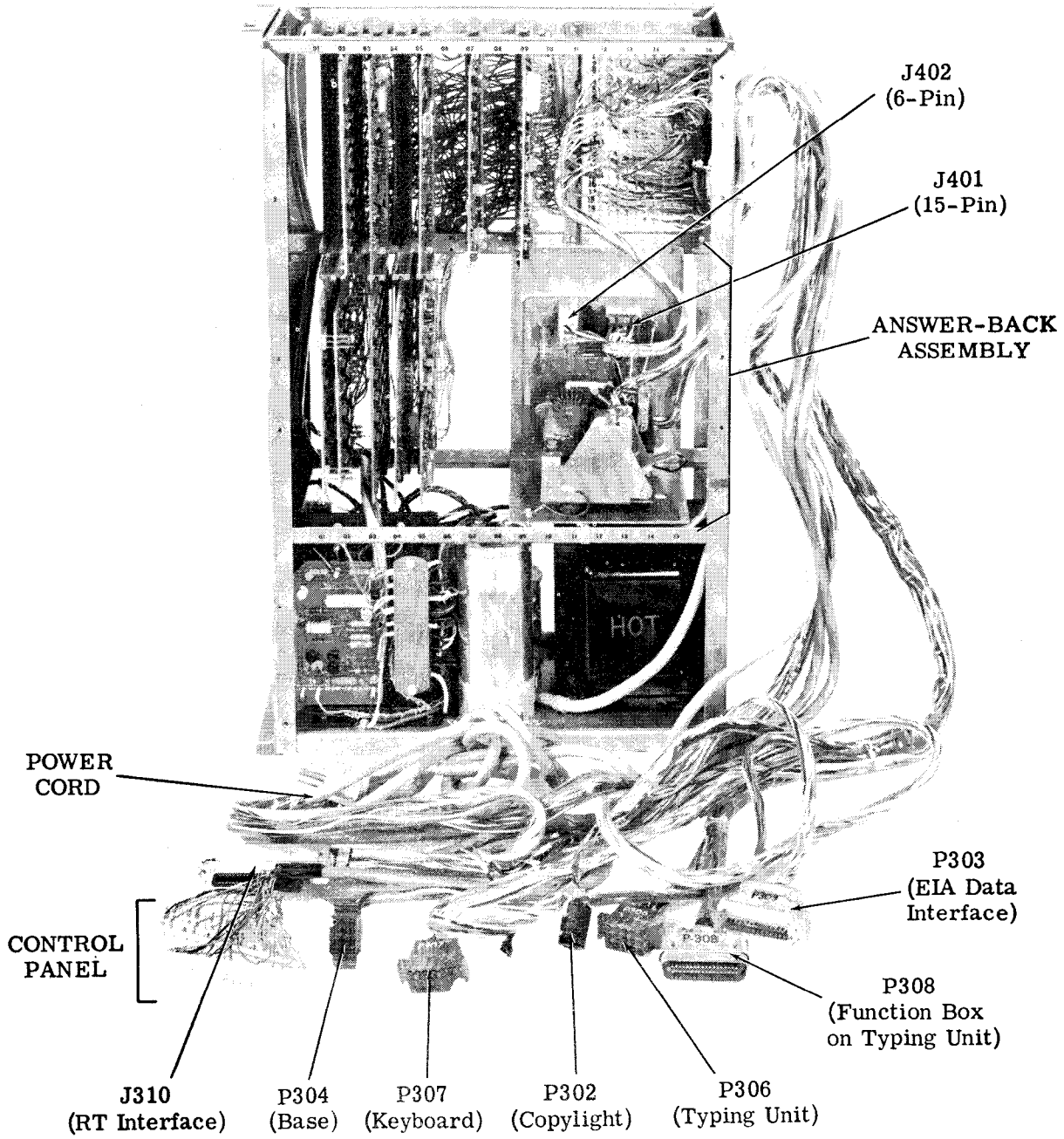
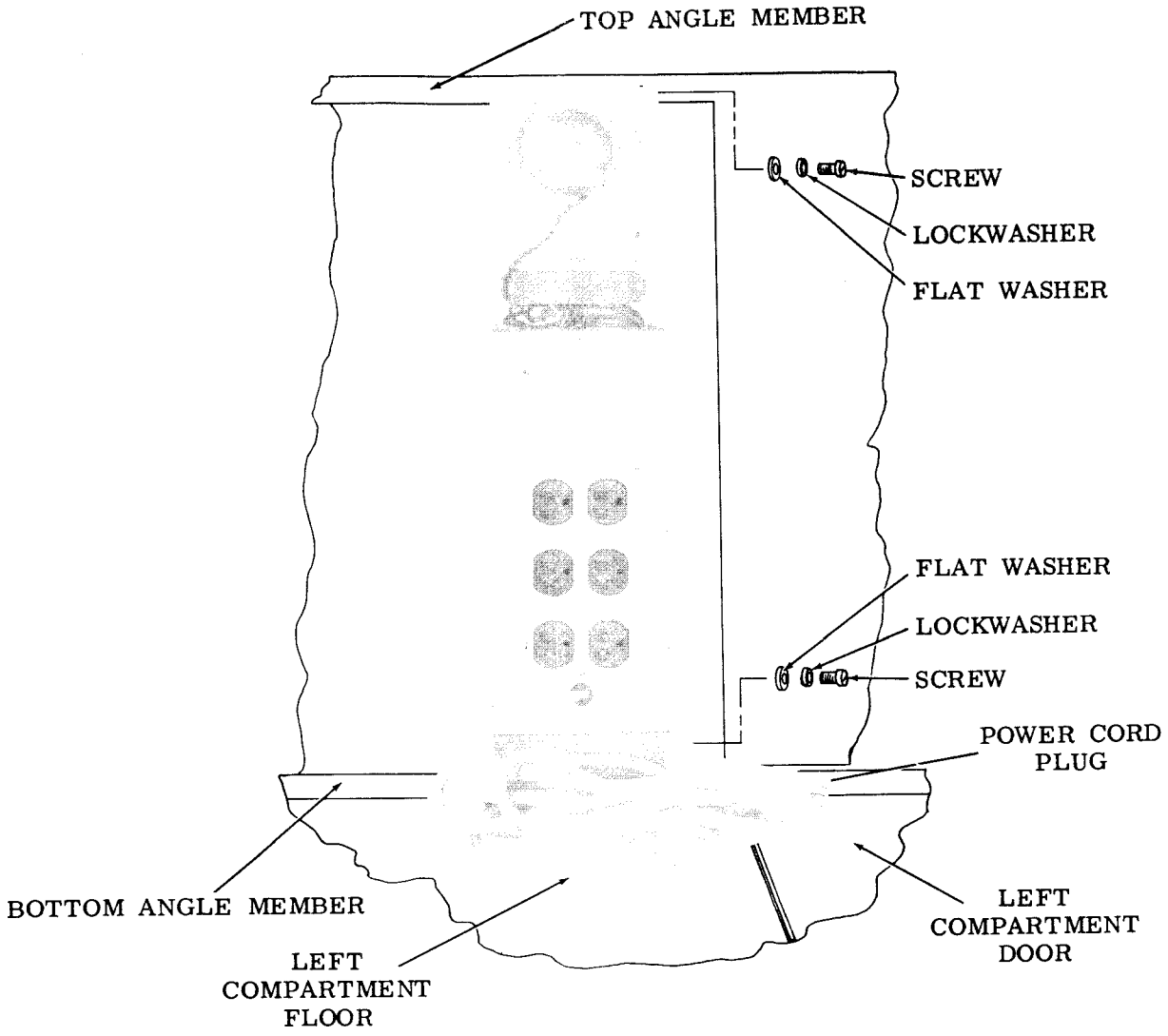


Figure 13 - Electrical Service Unit



(Left Cut-Away View of Table)

Figure 14 - Utility Strip

UTILITY STRIP

2.21 To remove the utility strip from the left compartment in the base of the table, proceed as follows (Figures 8 and 12).

(1) Open the front panel of the table by pressing upward on the panel catch, and pull forward on the door pull.

(2) Press upward on the spring stop, and continue to swing the panel outward and downward until the door pull rests on the floor.

(3) Disconnect the utility strip power cord plug, if it is connected to power.

(4) Remove two utility strip mounting screws, lockwashers, and flat washers securing the utility strip to the top and bottom angle members of the table on the right side of the left compartment.

(5) Remove the utility strip from the table and store.

2.22 To replace the utility strip, reverse the removal procedures.

TABLE

2.23 No removal or replacement procedures are required for the table since all areas are accessible through the front panel and the right pedestal door.

3. REPERFORATOR-TRANSMITTER (RT) MODULE REMOVAL AND REPLACEMENT OF COMPONENTS

REPERFORATOR MOUNTING PLATE

3.01 To remove the nontyping reperforator unit (reperforator unit), reperforator motor, and reperforator mounting plate from the RT module cabinet as an assembly, proceed as follows (Figures 15 and 16).

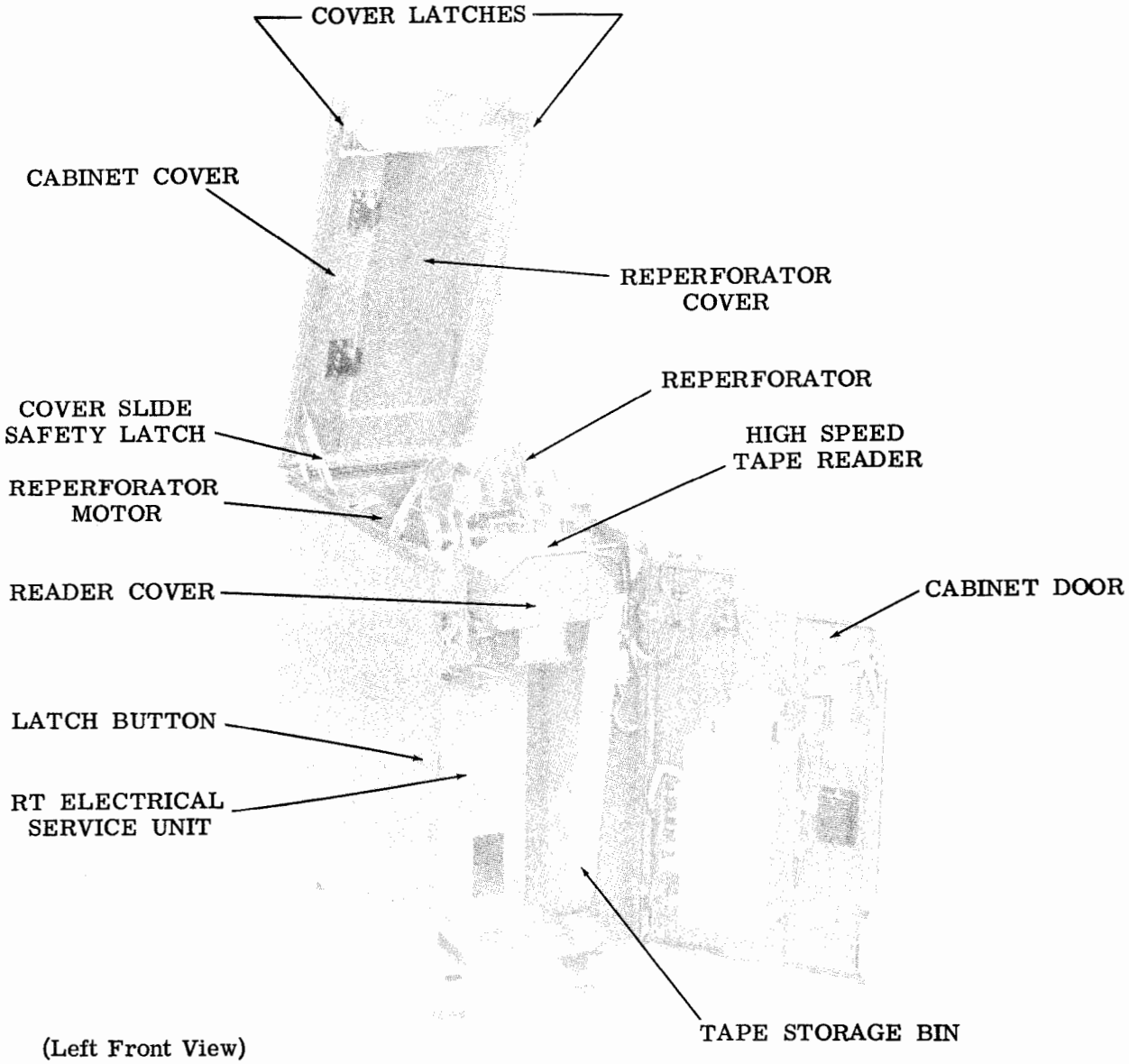
(1) Depress the cover latches in the recess on both sides of the cover assembly near the front.

(2) Raise the cover until the cover slide safety latch passes the stop, and the slide drops into the upstop position.

CAUTION: IF THE COVER IS NOT PROPERLY LATCHED, IT MAY DROP DURING REMOVAL OR REPLACEMENT PROCEDURES CAUSING INJURIES.

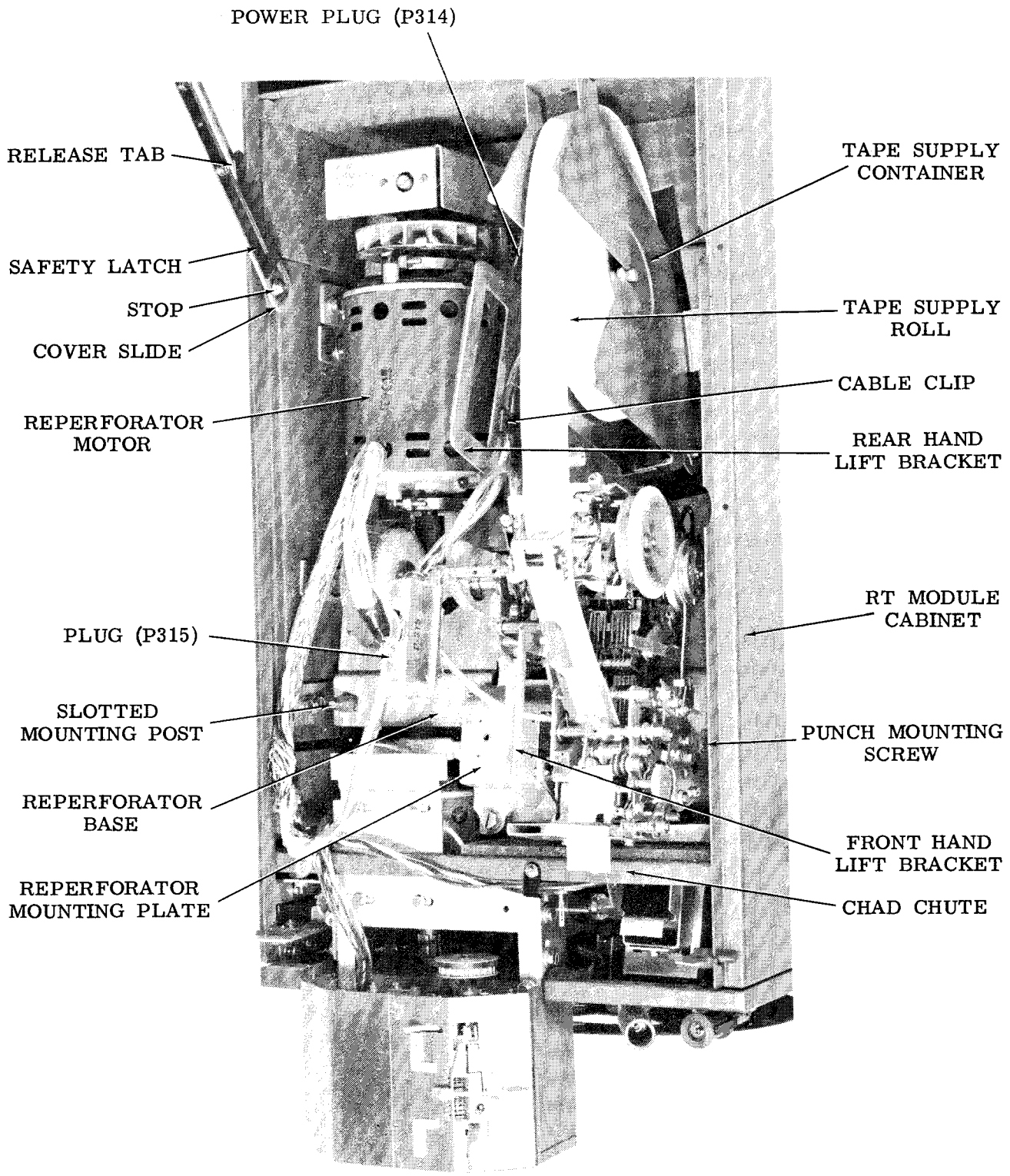
(3) Remove tape from the reperforator unit.

(4) Disconnect plug P315 from the connector located on the bracket above the drive gear hub.



(Left Front View)

Figure 15 - RT Module



(Top Front View)

Figure 16 - RT Module (Cabinet Opened)

(5) Disconnect power plug P314 from the 9-pin connector at the rear center of the reperforator mounting plate.

(6) Pull the cable out of the spring clip attaching it to the rear hand lift bracket.

(7) Turn the three slotted mounting posts to align the flats on the posts with the edges of the squared mounting holes in the reperforator mounting plate.

(8) Lift the reperforator mounting plate with the reperforator and reperforator motor attached straight up out of the cabinet, lifting by means of the front and rear hand lift brackets. Use care to avoid damaging the chad chute.

3.02 To replace the reperforator mounting plate with the reperforator unit and the reperforator motor attached, reverse the removal procedures. Use great care in guiding the chad chute in place to avoid damaging the chute.

REPERFORATOR UNIT

3.03 To remove the reperforator unit from the reperforator mounting plate, proceed as follows (Figures 16 through 18).

(1) Remove the two pilot screws from the feet at the front of the reperforator unit.

(2) Remove the reperforator mounting screw and flat washer from the left rear of the unit casting, and the lockwasher and nut from the channel in the center bottom of the reperforator mounting plate.

(3) Remove the punch mounting screw, lockwasher, and flat washer from the right of the front punch plate.

(4) Remove the two chad chute mounting screws, lockwashers, and flat washers from the upper front right, and pull the chad chute away from the punch block assembly.

(5) Loosen the gear guard retaining screws, and slide the gear guard to the left until it clears the screw heads. Lift the gear guard free from the reperforator mounting plate and store.

(6) Lift the reperforator unit straight away from the reperforator mounting plate. Store in a protected area.

3.04 To replace the reperforator unit, reverse the removal procedures, except that the motor pinion and reperforator gear engagement must be checked for a barely perceptible backlash, and there must be some clearance between the motor pinion retainer and the reperforator gear. If necessary, proceed as follows (Figure 17).

(1) With the front motor plate mounting screws loose, loosen the locknuts and adjust the threaded bushings to obtain the required backlash.

(2) If there is any interference between the pinion and gear, loosen the two rear motor plate mounting screws, position the plate, and tighten the screws.

(3) Replace the gear cover and adjust it to clear the reperforator gear at all points.

(4) Tighten both gear guard retaining screws.

(5) Complete replacement procedures in reverse of removal procedures.

REPERFORATOR MOTOR

3.05 To remove the reperforator motor from the reperforator mounting plate proceed as follows (Figures 16 through 18).

(1) Detach the green motor ground lead from the ground terminal tab on the reperforator mounting plate by pulling the push-on terminal straight off.

(2) Disconnect the two motor leads from the two pendant leads originating from the base of the 9-pin connector mounted in the rear center of the reperforator mounting plate.

(3) Remove the five motor mounting screws, lockwashers, and flat washers, and lift the reperforator motor from the reperforator mounting plate.

(4) If the motor mounting plate requires removal from the reperforator mounting plate, take out the two front motor plate mounting screws, two lockwashers, and two flat washers; and the two rear motor plate mounting screws, and two flat washers. Lift the motor mounting plate out of the reperforator mounting plate. Do not disturb the threaded bushings or locknuts.

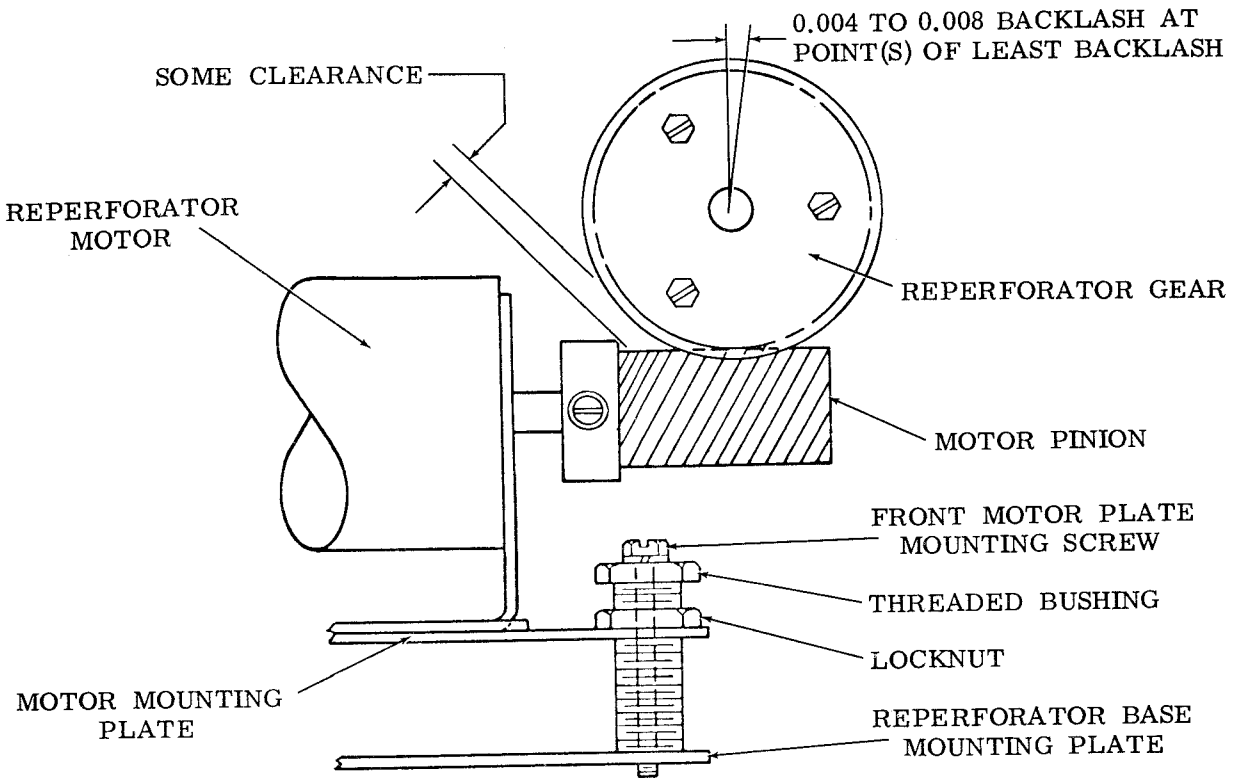


Figure 17 - Reperforator Motor Pinion and Gear Mesh

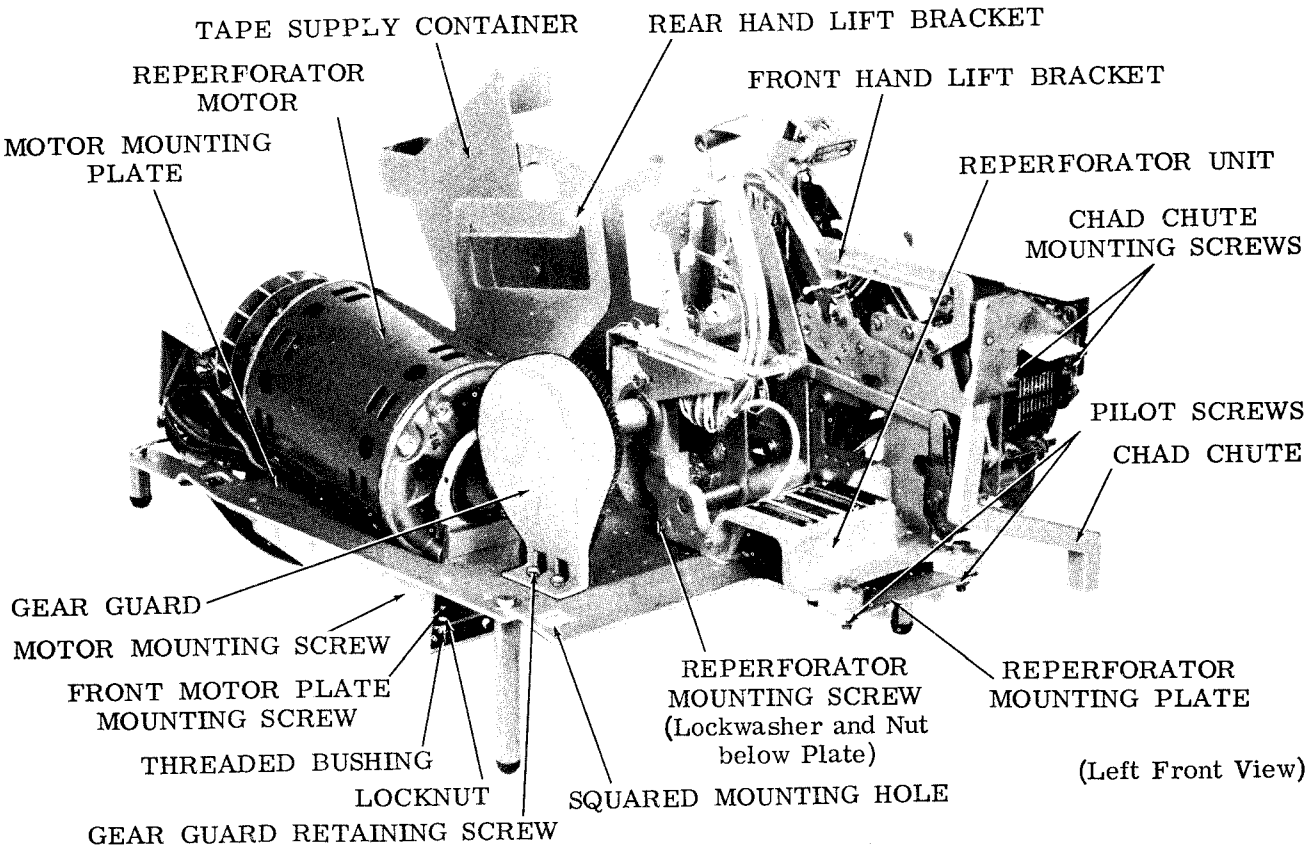


Figure 18 - Reperforator, Mounting Plate, and Motor

3.06 To replace the reperforator motor, reverse the removal procedures, except, do not tighten the motor plate mounting screws at this time.

HIGH SPEED TAPE READER

3.07 To remove the high speed tape reader (tape reader) from the RT module cabinet, proceed as follows (Figures 16, 19 and 20).

(1) Pull the reader cover straight off from the reader and set it aside.

(2) Take out the three reader mounting screws, lockwashers, and flat washers. The left side screw can be reached by lifting the coverplate of the reader. The two screws on the right are located under the overhanging tape guideplate and may require a wrench or offset screwdriver for removal.

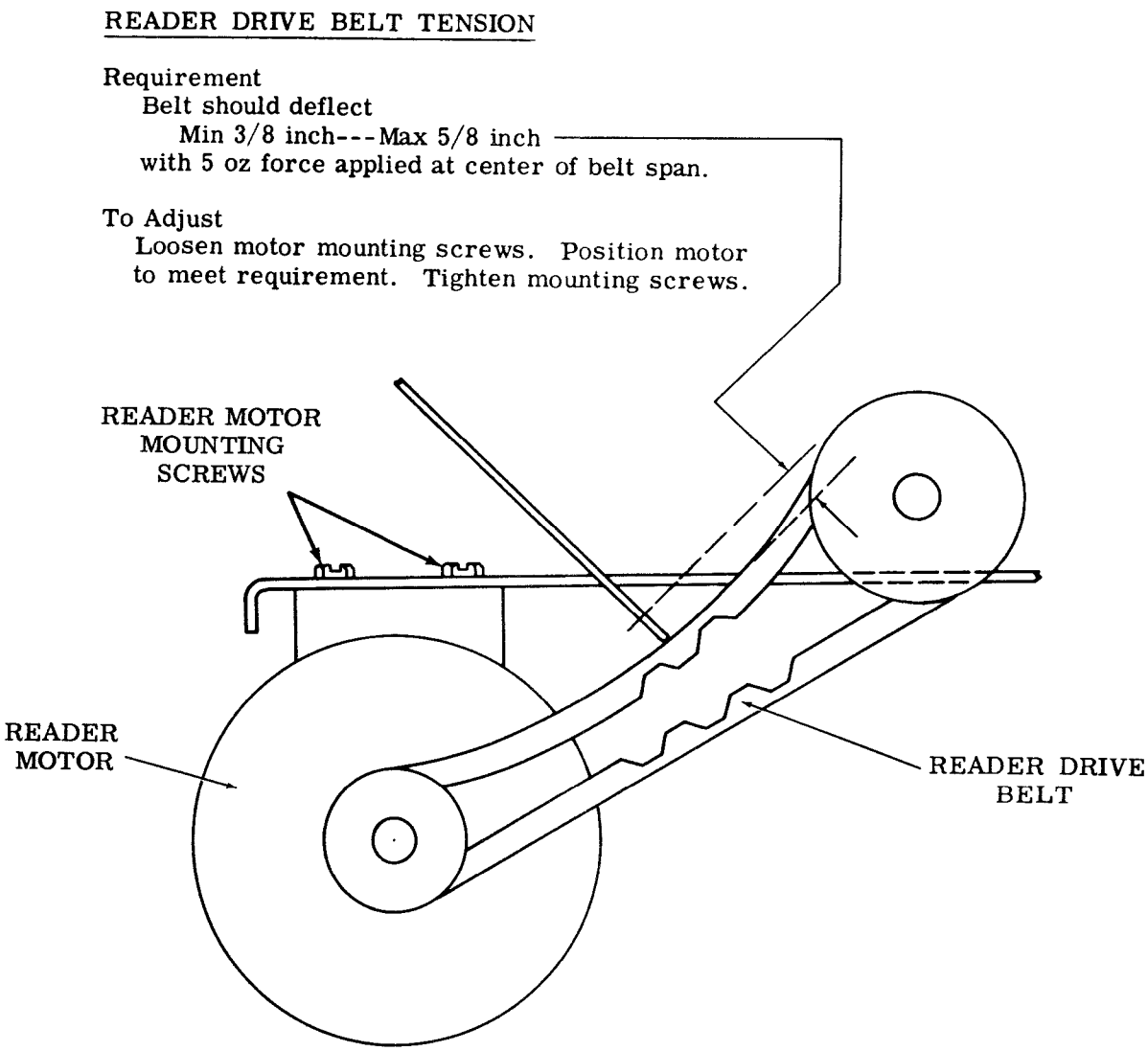


Figure 19 - Reader Drive Belt Tension

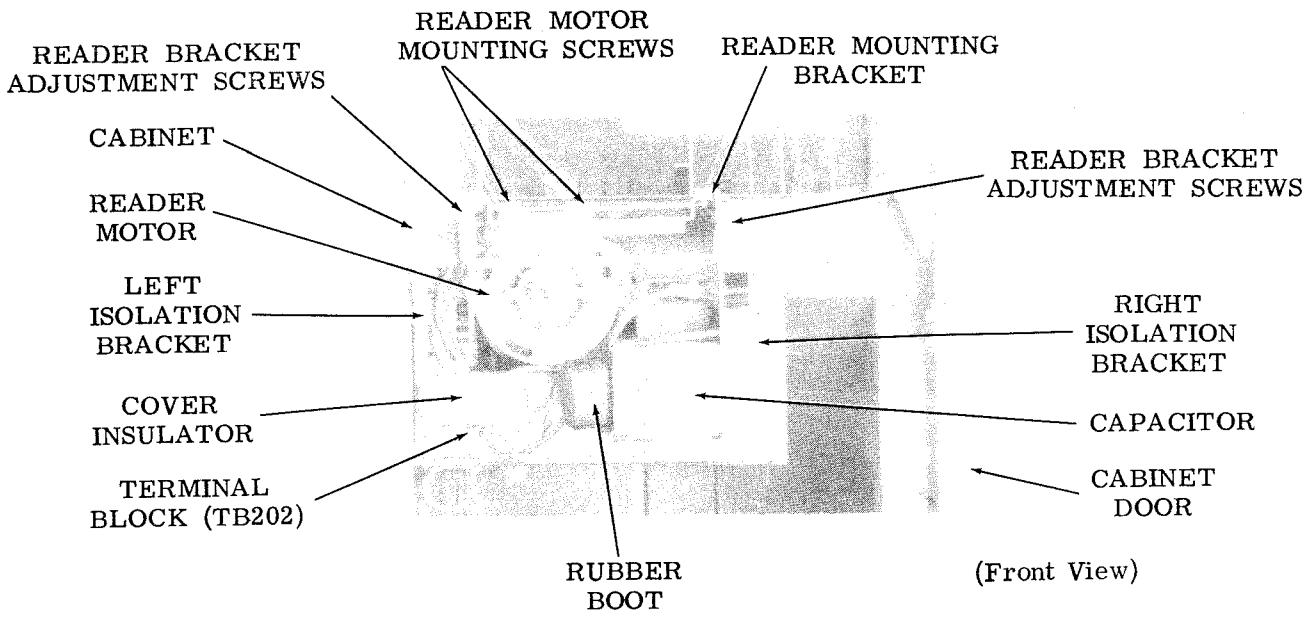


Figure 20 - Reader Motor Removal

(3) Remove the reader drive belt.

(4) Lift the reader straight up to separate it from the electrical connector P311, and the reader mounting bracket. Set the reader aside in a protected area.

3.08 To replace the reader, reverse the removal procedure. Adjust the position of the reader motor to the left in the reader mounting bracket until a deflection of 3/8 to 5/8 inch is obtained when a 5-ounce force is applied to the center of the belt, then tighten the four reader motor mounting screws (Figure 19).

READER MOTOR

3.09 To remove the reader motor from the reader mounting bracket, proceed as follows (Figures 19 and 20).

(1) Depress the latch button on the left side of the cabinet and swing the cabinet door open.

(2) Remove the cover insulator from the terminal block TB202 by taking out the two screws and lockwashers.

(3) Disconnect the blue and white motor leads, and the incoming RT electrical service unit leads from terminal block TB202. Replace screws and cover.

(4) Pull the rubber boot off the capacitor.

(5) Detach the red and black motor lead push-on terminals from the capacitor terminal tabs.

(6) Remove the four reader bracket adjustment screws, lockwashers, and flat washers from the right and left isolation brackets.

(7) Remove the two screws, lockwashers, and nuts attaching the reader connector P311 to the connector mounting bracket in the front of the reader mounting bracket.

(8) Lift the reader mounting bracket with the reader motor attached, and tilt it upward as it is pulled forward out of the RT module cabinet. Be sure the reader connector and cable drop free without hanging up on the motor or bracket.

(9) Remove the reader motor from the reader mounting bracket by taking out the four reader motor mounting screws, lockwashers, and flat washers.

3.10 To replace the reader motor in the RT module cabinet, reverse the procedures used for removal. In addition, after the reader mounting bracket has been attached to the right and left isolation brackets with the four reader bracket adjustment screws, lockwashers, and flat washers, adjust the bracket so the front face of the rear reader side plate is aligned with the front face of the top front cabinet member before tightening the screws.

RT ELECTRICAL SERVICE UNIT

3.11 Remove the RT electrical service unit from the RT module cabinet as follows (Figures 21 and 23).

(1) Disconnect the interface cable plug P310, and the power cable plug from their mating connectors in the KSR table. Be sure that power has been removed.

(2) Pull the interface and power cables back into the lower equipment compartment of the cabinet.

(3) Detach the pushbutton control switch P316, that is mounted through the slot in the front left of the cabinet cover, by taking out the four switch mounting screws and lockwashers. Do not disturb the two central alignment screws, or the three height adjustment screws that position the switch in the slot.

(4) Detach the control switch cable from the cabinet cover by removing the nut, lockwasher and cable clamp securing the cable in the cover.

(5) Remove door power plug P312.

(6) Remove four remaining cable clamps by taking off the nuts and lockwashers attaching them.

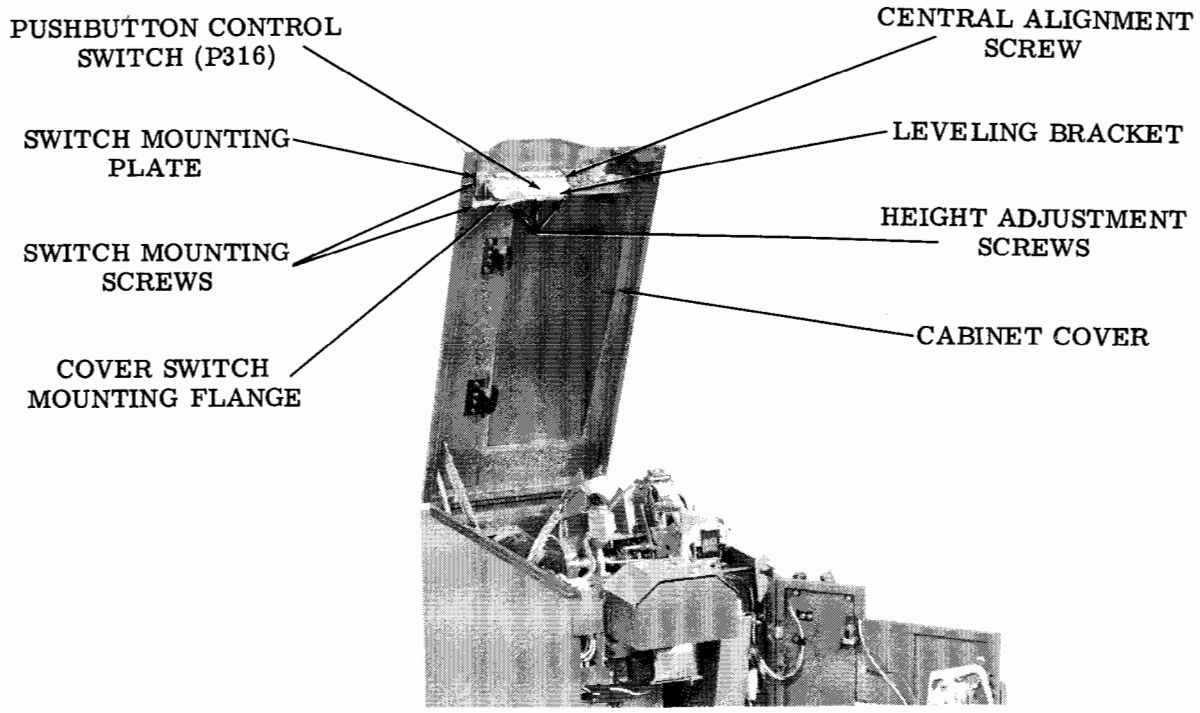


Figure 21 - Pushbutton Switch Removal

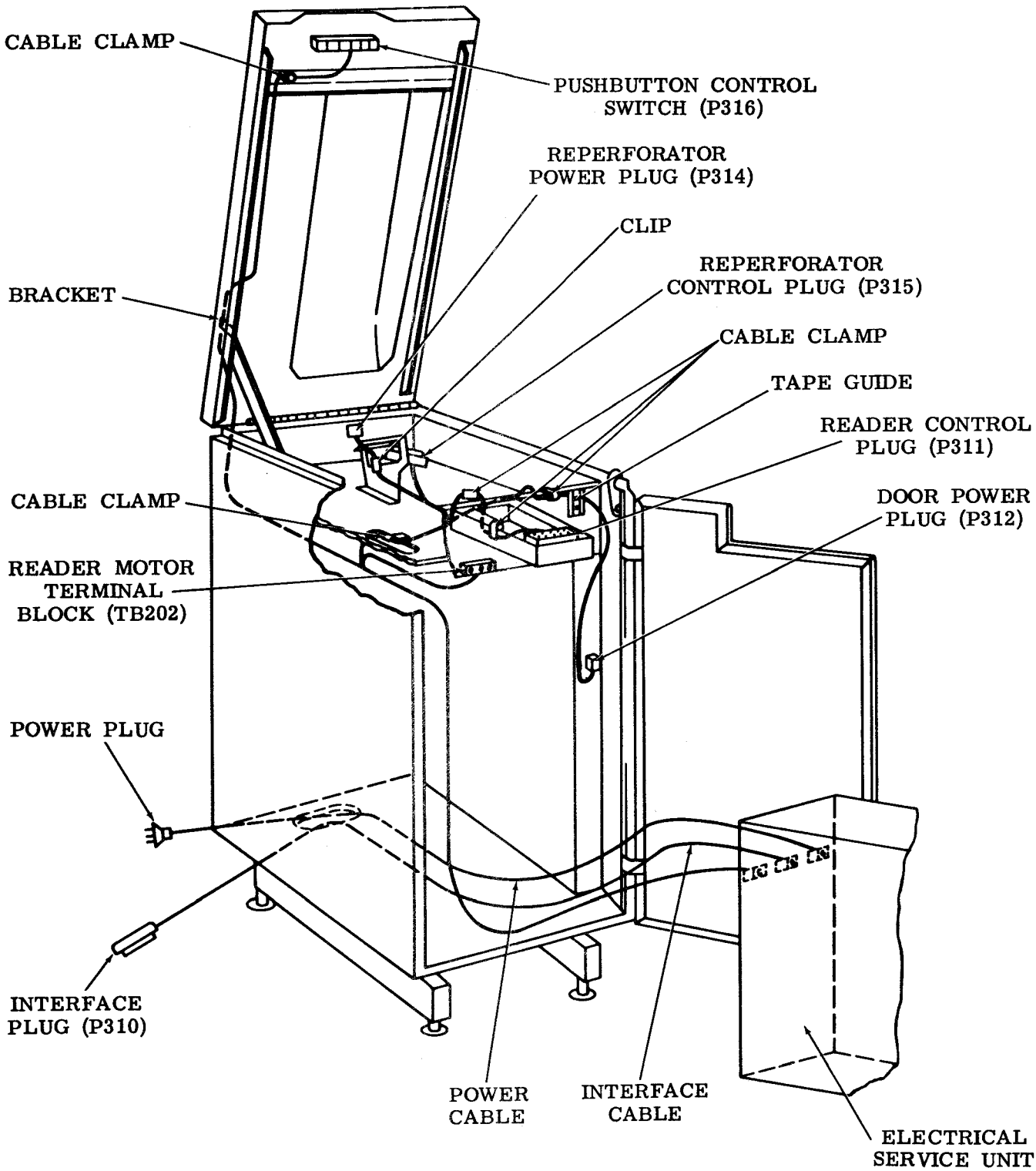


Figure 22 - RT Module Cable Routing

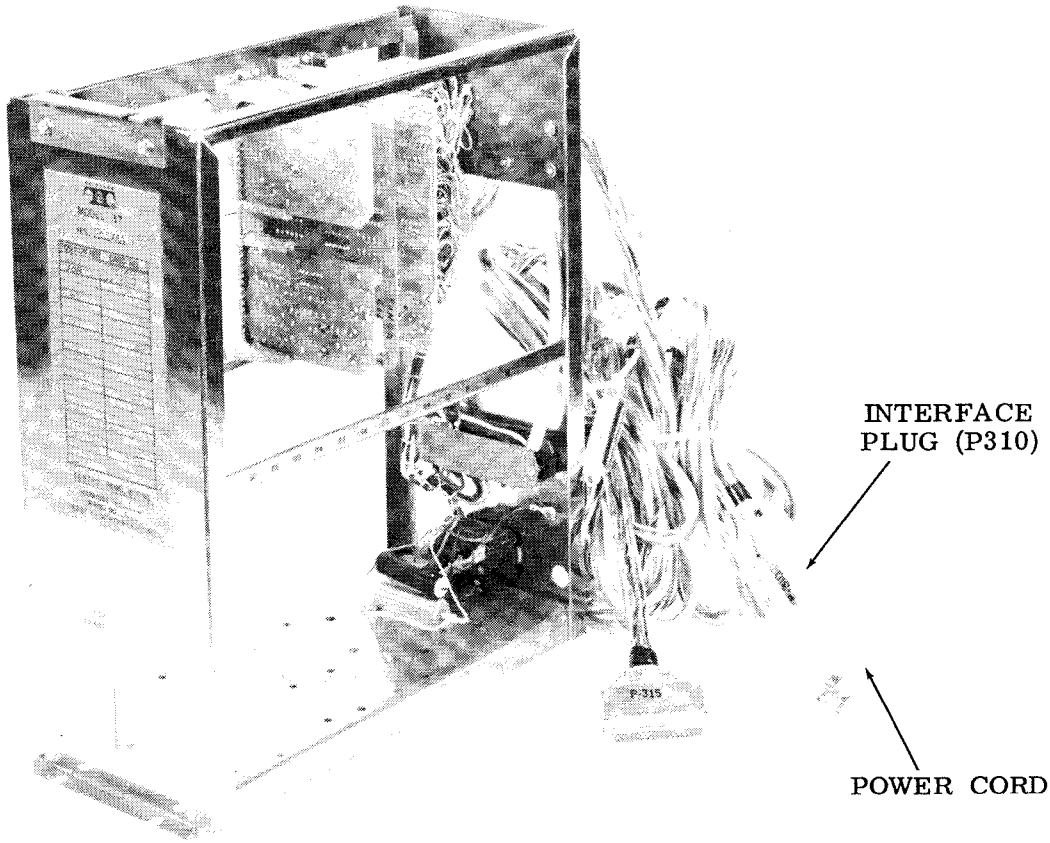


Figure 23 - 37 RT Electrical Service Unit

(7) Remove the four screws, lockwashers, and flat washers from the top and bottom angle brackets on the front of the RT electrical service unit.

(8) Pull the RT electrical service unit forward out of the RT module cabinet, at the same time feeding the cables down through the opening at the front of the reperforator shelf in the cabinet, into the lower equipment compartment.

RT MODULE CABINET

3.12 No removal or replacement procedures are required for the RT module cabinet since all areas are accessible through the cover and door. Any further removal is obvious, and alignment procedures are obvious. The intent of any alignment of cabinet parts is to keep edges, corners, and sides of the cover, door, etc, flush, parallel, and in alignment with the adjacent surfaces.

37 TYPING UNIT

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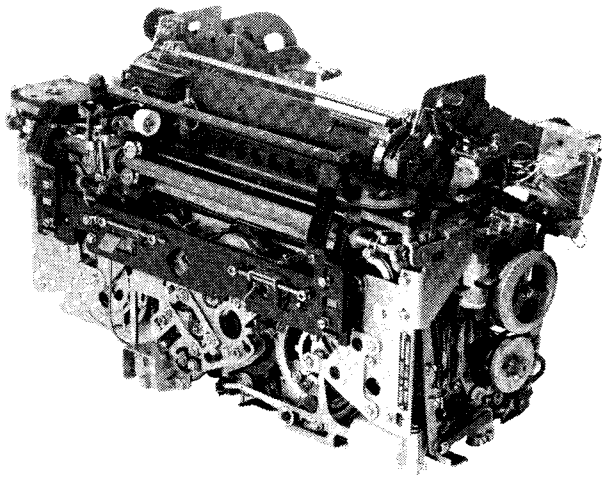

Figure 1 - 37 Typing Unit (Late Design)

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1. GENERAL

1.01 This section provides lubrication procedures for the late design 37 typing unit (Figure 1). For similar information about the early design 37 typing unit, refer to Section 574-320-701TC.

1.02 Lubrication of the 37 typing unit is presented by areas with the procedures arranged counterclockwise around the typing unit. Following the procedures in this manner minimizes shifting and handling of the unit.

1.03 Figures are used to show the lubrication areas. Paragraph numbers on the figures refer to the lubrication points. References made to front, bottom, rear, left, or right apply to the typing unit in its normal position as shown in 2.01.

1.04 Lubricate the 37 typing unit before placing it in service and just prior to putting it in storage. The mechanism of the typing unit should be relubricated after 200 hours of operation or four weeks, whichever comes first. Thereafter, lubricate all mechanisms of the typing unit according to the following schedule:

100 wpm . . . . . 2000 hours or 9 months*

150 wpm . . . . . 1500 hours or 6 months*

*Whichever occurs first.

CAUTION: DISCONNECT ALL AC POWER CORDS BEFORE PERFORMING ANY PROCEDURE.

1.05 The general lubrication requirements consist of oil locations on hollow shafts, oil cups, felt washers, and in most locations where parts rub or move with respect to each other. Grease should be used on gears, rollers, points of heavy pressure, and some ball bearings. Lubrication areas for the typing unit are outlined as follows.

Pivot points require two or three drops of oil.

Coil springs require one drop of oil for each end and one to two drops on the coil.

Felt washers are saturated with oil.

Cams and sliding surfaces require a film of oil.

Note: Refer to the appropriate section for ordering information on lubricants. A list of maintenance tools can be found in Section 570-005-800TC.

1.06 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, a minimum amount of oil should be applied so that the oil remains on the part and does not run off. Excessive lubricants should be removed with a dry lint-free cloth. Keep all electrical contacts free of oil or grease. If the surface between the selector relay armature and magnet

pole piece have oil or foreign matter, proceed as follows.

1. Place a piece of clean paper between the armature and pole piece.

2. Energize the magnet.

3. Pull the paper through the armature and pole piece and check to insure that lint or pieces of paper do not remain.

Note: Closed ball bearings do not require lubrication. All open ball bearings should be packed with grease (KS7471).

1.07 Symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols apply to the lubrication instructions:

O Oil KS7470
G Grease KS7471
D Keep dry, no lubricant permitted.

1.08 Over lubrication which would allow oil to drip or grease to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Maintenance pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

1.09 When replacing lubricating wicks or felt oilers, proceed as follows.

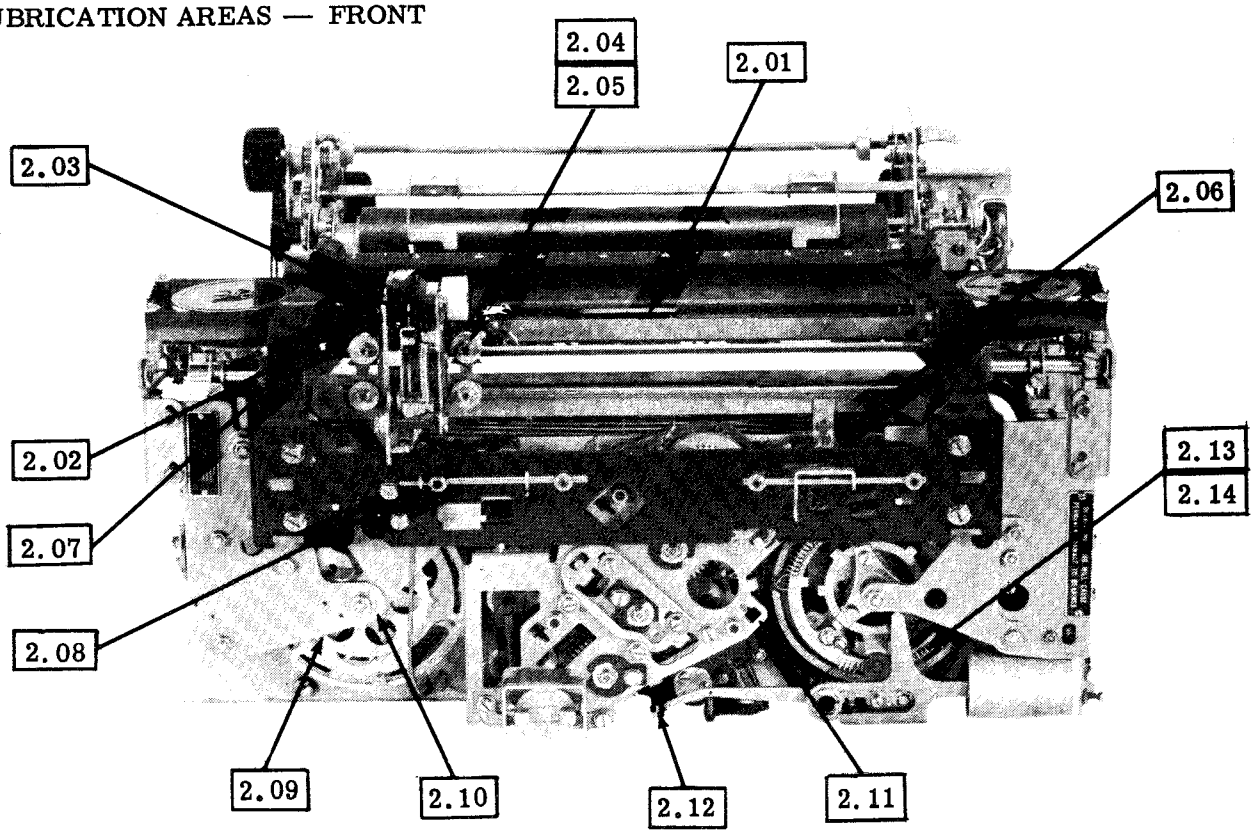
1. Thoroughly saturate with oil.

2. Remove all excess oil by pressing oiler or wick between a clean cloth.

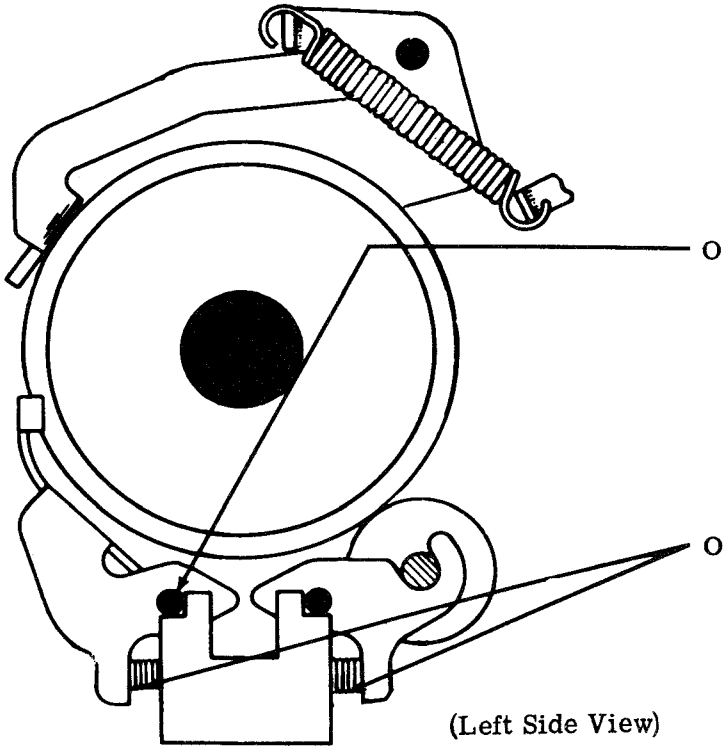
3. Place the saturated wick or felt oiler in its proper position on the mechanism.

2. BASIC UNIT

LUBRICATION AREAS — FRONT



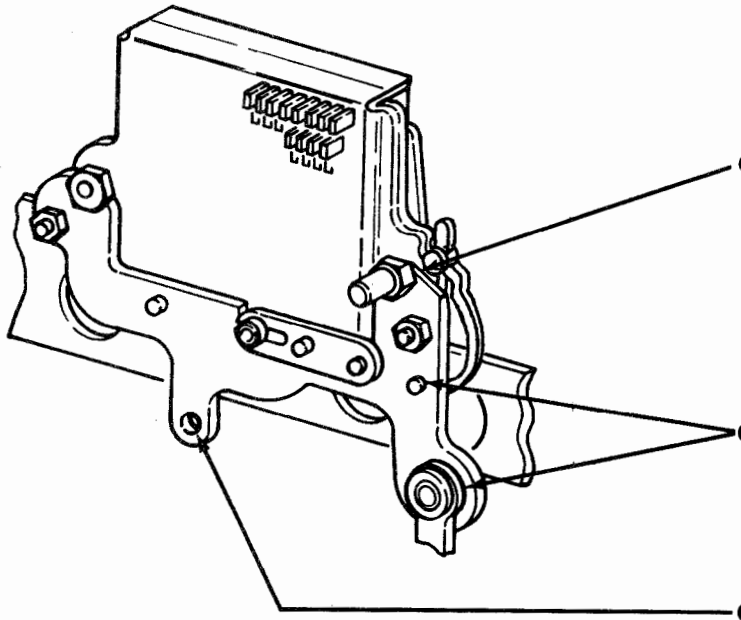
2.01 Platen Pressure Bail (Friction Feed)



O	Thin Film on Engaging Surface	Pressure Bail
O	Thin Film on Engaging Surface	Compression Springs (4)

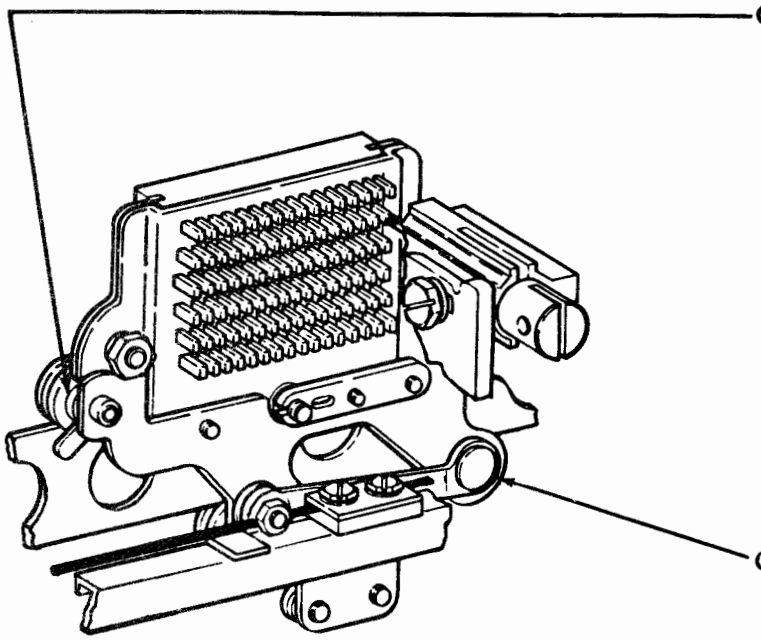
(Left Side View)

2.02 Typebox



O1	Contact Surface	Typebox Carriage Latch
O2	Pivot	Typebox Carriage Latch
O1	Bearing	Roller

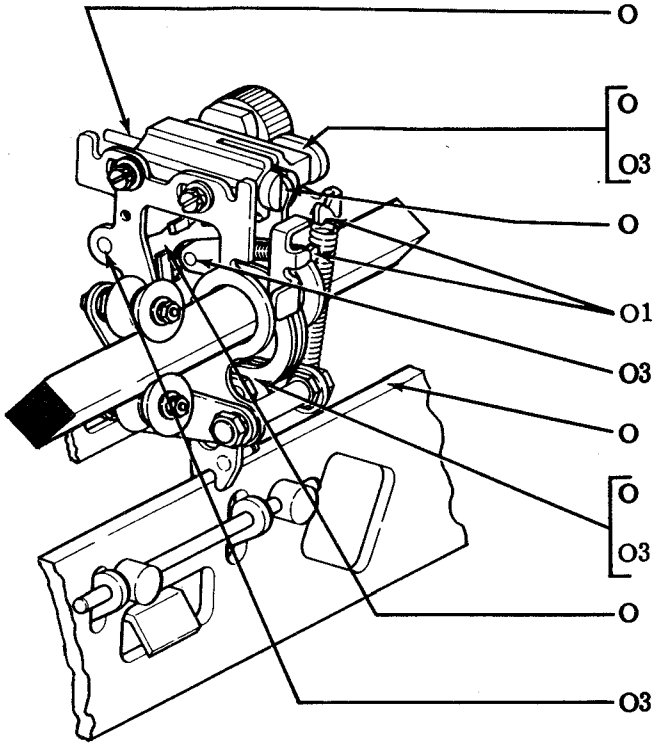
(Left Front View)



O1	Bearing	Rollers (Each End)
O1	Pivot Point	Typebox Carriage Link

(Right Front View)

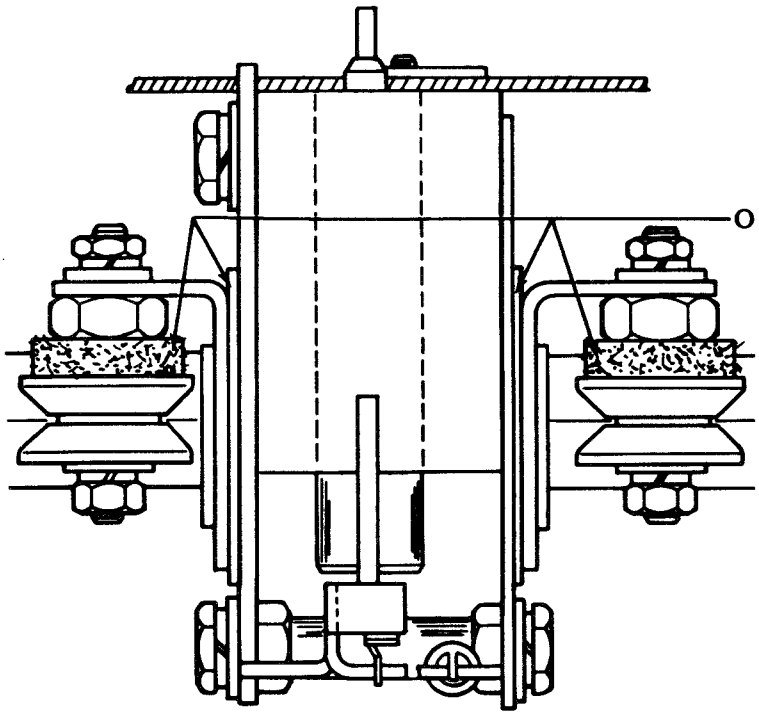
2.03 Print Hammer and Levers



O	Thin Film on Engaging Surface	Plunger
O	Thin Film on Engaging Surface	Spring Tension
O3	Pivot	Lever
O	Thin Film on Engaging Surface	Print Hammer
O1	Hooks (Each End)	Springs (2)
O3	Pivot	Print Hammer
O	Thin Film	Rail
O	Thin Film on Engaging Surfaces	Accelerating Lever
O3	Pivot	
O	Thin Film on Engaging Surface	Latchlever
O3	Pivot	Latchlever

(Left Front View)

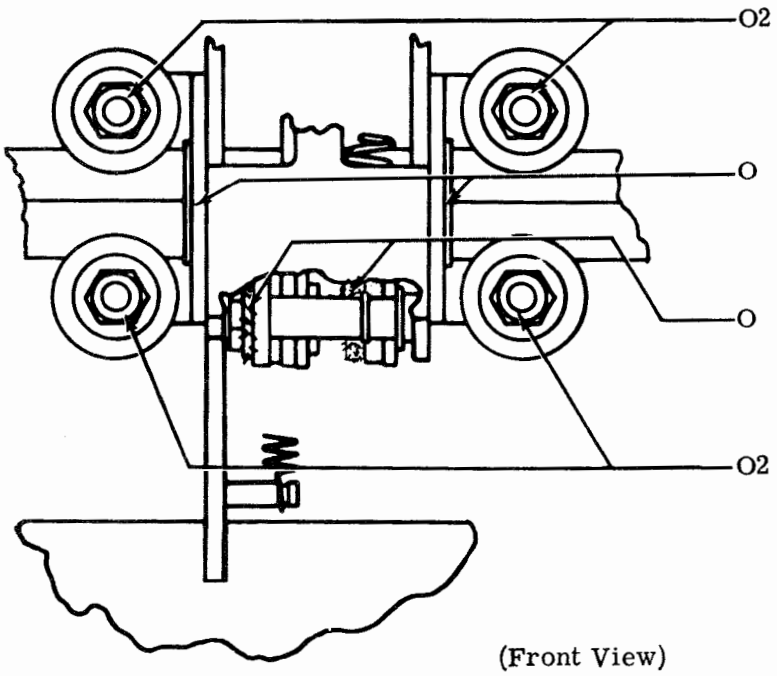
2.04 Print Hammer Carriage



O	Saturate Felt Oilers	Roller

(Top View)

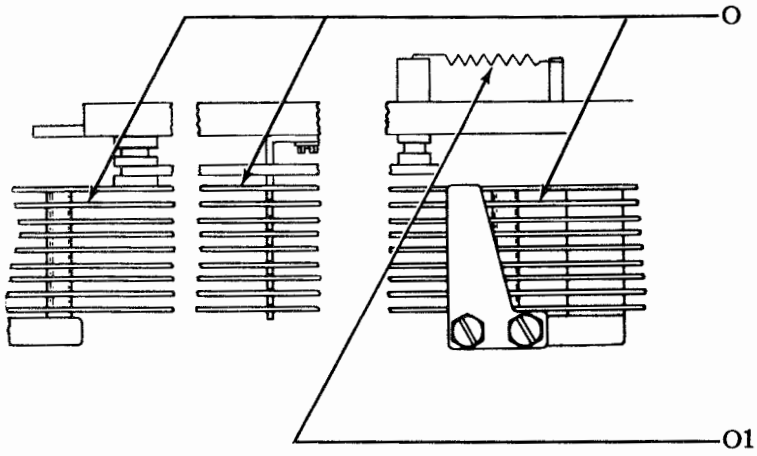
2.05 Print Hammer Carriage (continued)



O2	Bearings	Rollers (2)
O	Thin Film on Engaging Surfaces	Carriage Frame and Bracket
O	Saturate Felt Oilers	Print Hammer Shaft
O2	Bearings	Rollers (2)

(Front View)

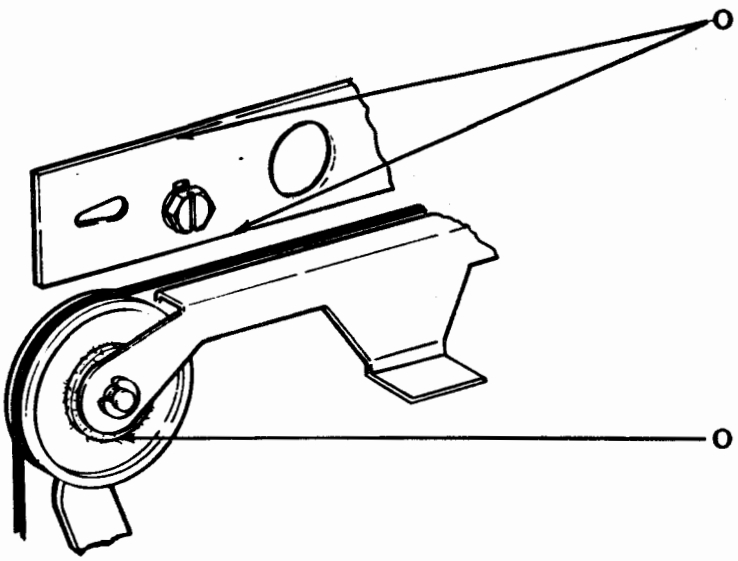
2.06 Codebars



O	Thin Film on Guide Slots (Right, Center, and Left — 9 Bars)	Codebars
O1	Hooks (Each End)	Spring

(Front View)

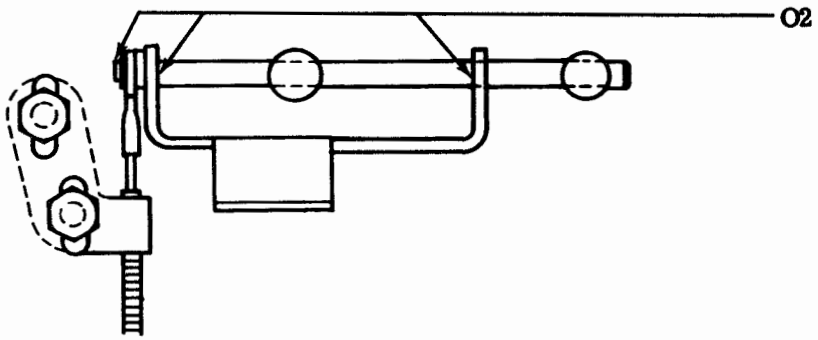
2.07 Oscillating Rail



O	Thin Film on Engaging Surfaces	Oscillating Rail and Typebox Rail
O	Saturate Felt Oilers (2)	Pulleys (Left and Right Sides)

(Left Front View)

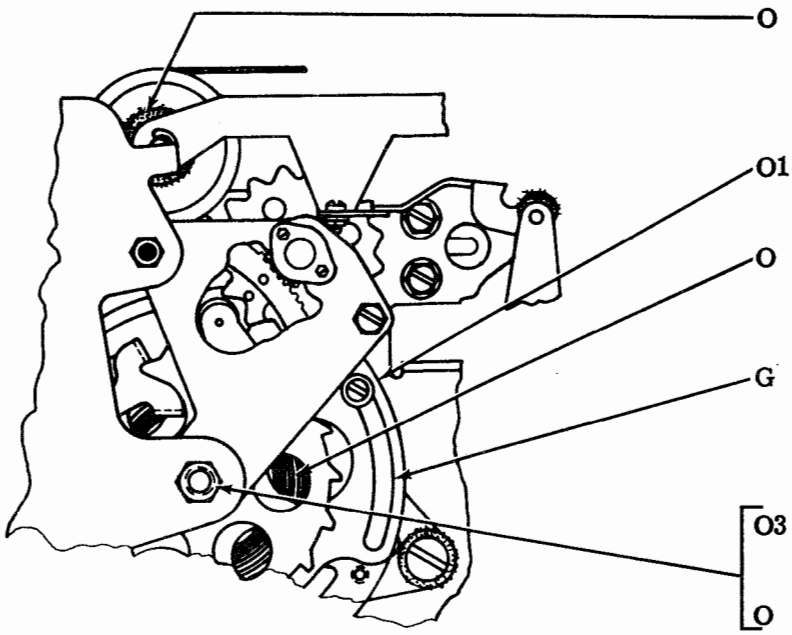
2.08 Local Line Feed Lever



O2	Pivot Points	Local Line Feed Lever

(Front View)

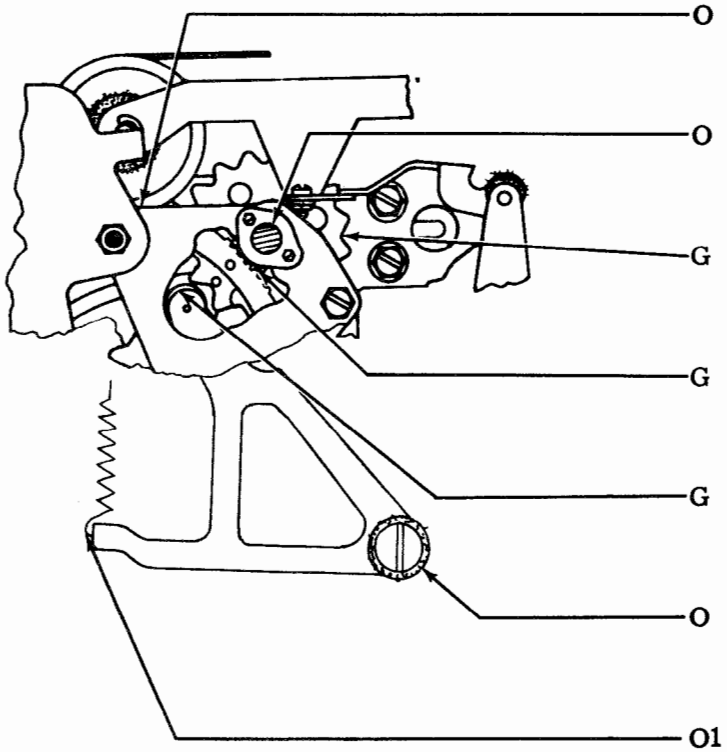
2.09 Spring Drum



(Front View)

O	Saturate Felt Oilers	Left and Right Pulleys
O1	Cable Grooves	Spring Drum
O	Thin Film Between Layers	Carriage Return Spring
G	Thin Coat on Camming Surface	Margin Indicator Cam Disc
O3	Bearing (Outer and Inner)	Spring Drum Shaft
O	Saturate Felt Oilers (Behind Drum)	

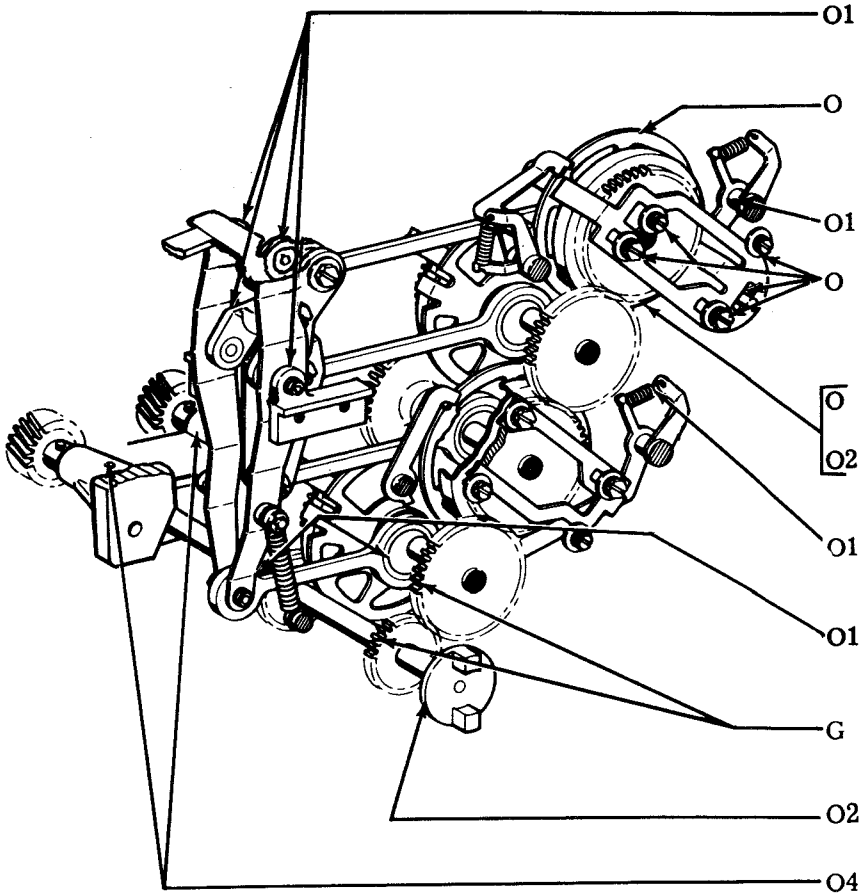
2.10 Horizontal Detent (Located Behind Spring Drum)



(Front View)

O	Saturate Felt Oilers	Oscillating Arm
O	Thin Film on Shaft	Pinion Gear
G	Thin Film on Detent	Horizontal Detent Disc
G	Thick Coat on Teeth	Pinion Gear
G	Thick Coat on Bearing	Detent Roller
O	Saturate Felt Oiler	Horizontal Detent Arm
O1	Hooks (Each End)	Horizontal Detent Arm

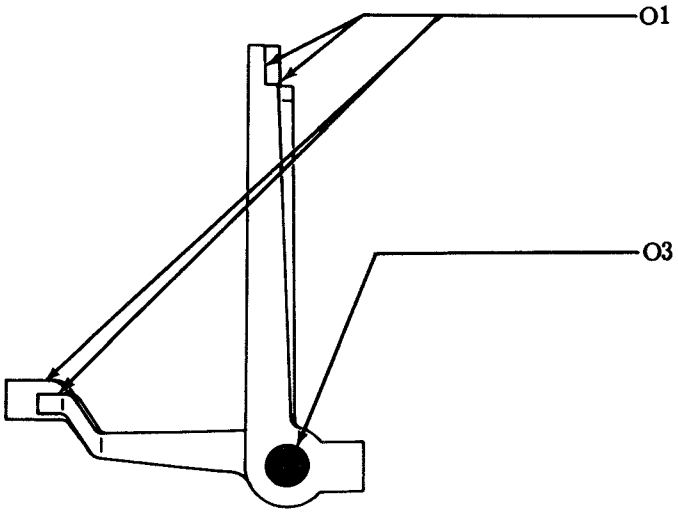
2.11 Horizontal Clutches, Gears, Levers, and Links



O1	Bearing Surfaces	Aggregate Motion
O	Thin Film on Camming Surface	Clutch Discs (4)
O1	Pivots	Latchlevers (4)
O	Thin Film on Engaging Surfaces	Clutch Trip Slides (4)
O O2	Saturate Felt Wick Internal Mechanism	Clutch Assembly (4)
O1	Hooks (Each End)	Springs (12)
O1	Bearing Surfaces	Drive Links (4)
G	Thick Coat on Teeth	Gears (9)
O2	Bearing Surface	Thruth Bearing
O4	Holes	Drive and Spacing Shaft Casting

(Front View)

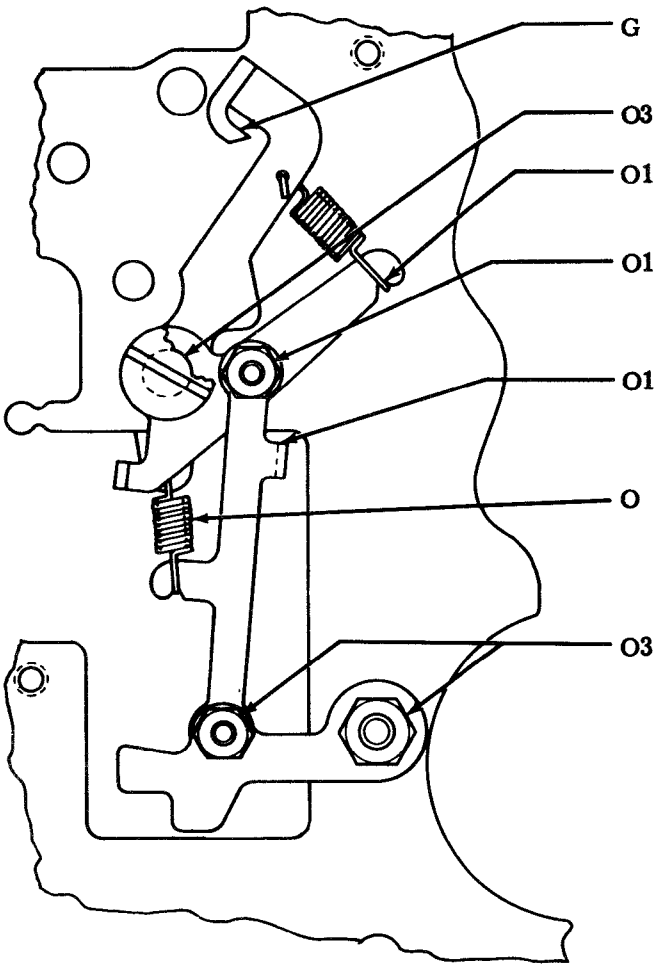
2.12 Carriage Return and Backspace Levers



O1	Contact Surfaces	Carriage Return and Backspace Levers
O3	Pivot Point	Carriage Return and Backspace Levers

(Right Side View)

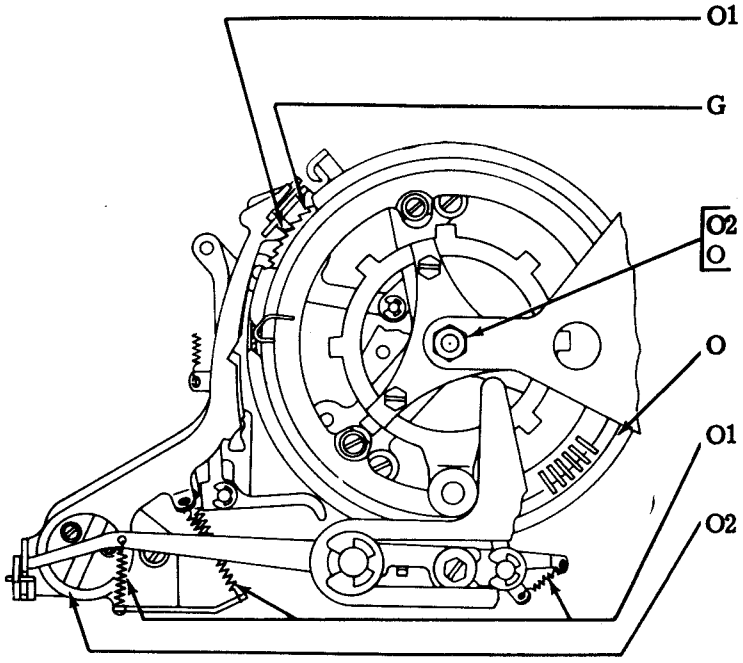
2.13 Backspace Bail, Lever, Link, and Pawl (Located Behind Spacing Drum)



G	Thin Coat on Contact Surface	Backspace Blocking Pawl
O3	Pivot	Backspace Bail
O1	Hooks (Each End)	Spring
O1	Bearing and Engaging Surface	Backspace Bail and Link
O1	Contact Surface	Link
O	Saturate Wick	Spring
O3	Pivots	Intermediate Lever

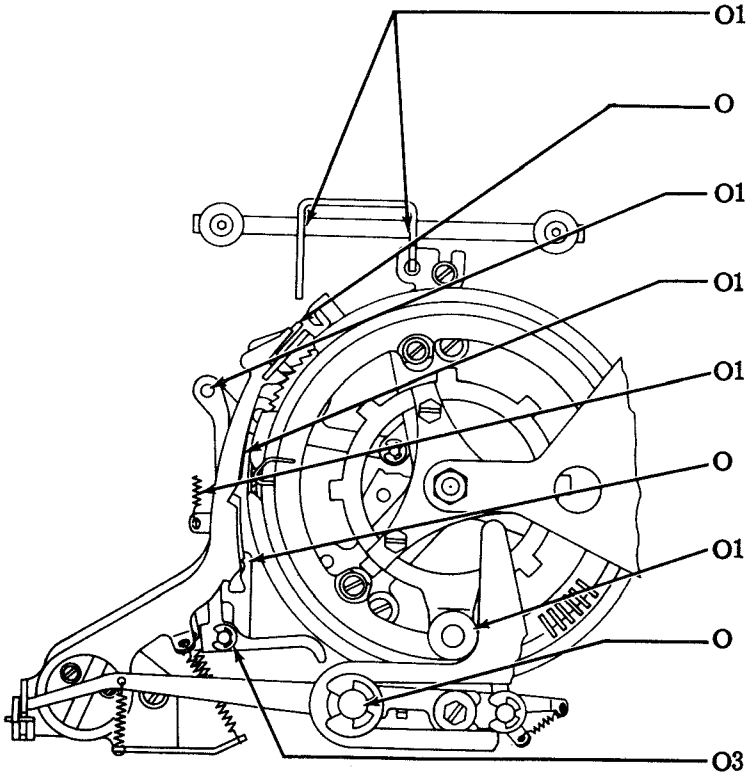
(Front View)

2.14 Spacing Drum



O1	Engaging Surface	Spacing Feed Pawls
G	Thin Coat on Teeth	Ratchet
O2 O	Pivot Point Saturate Felt Oiler	Spacing Drum Shaft
O	Thin Film on Cable Grooves	Spacing Drum
O1	Hooks (Each End)	Springs
O2	Pawls	Spacing Eccentric

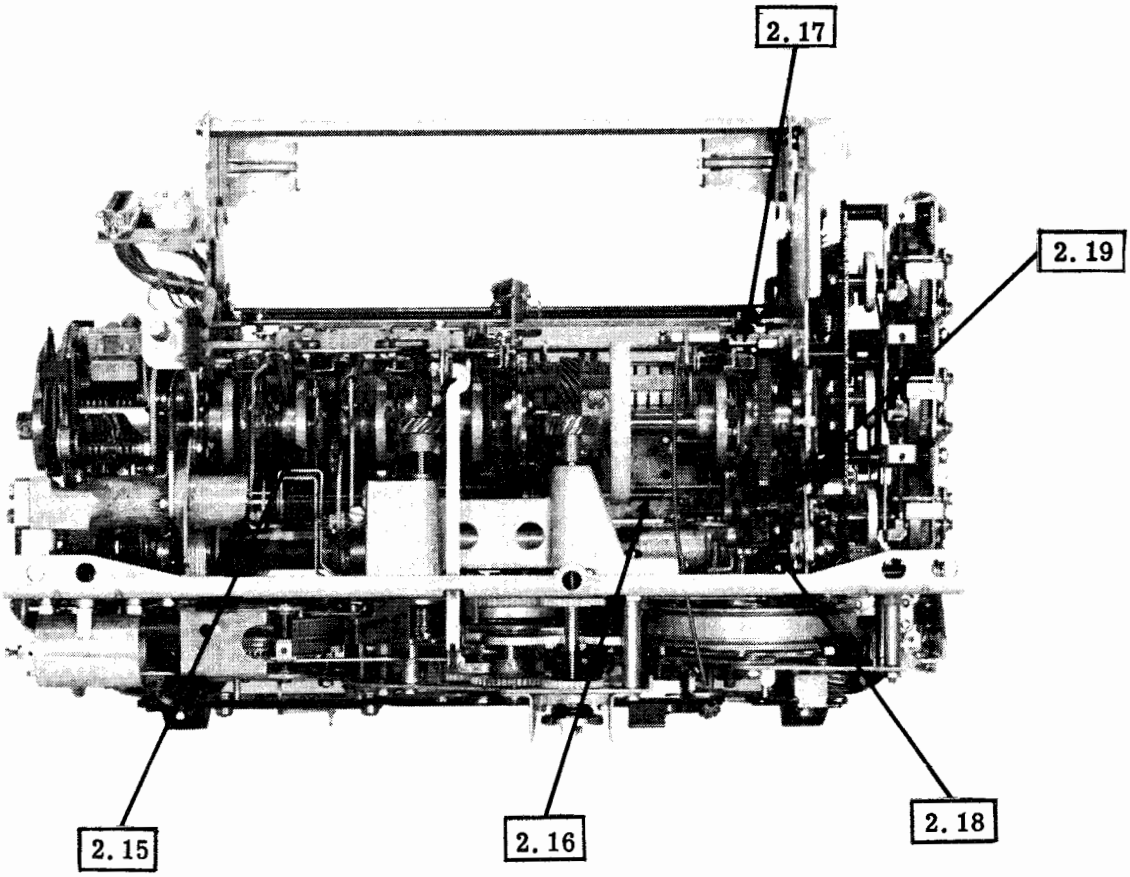
(Front View)



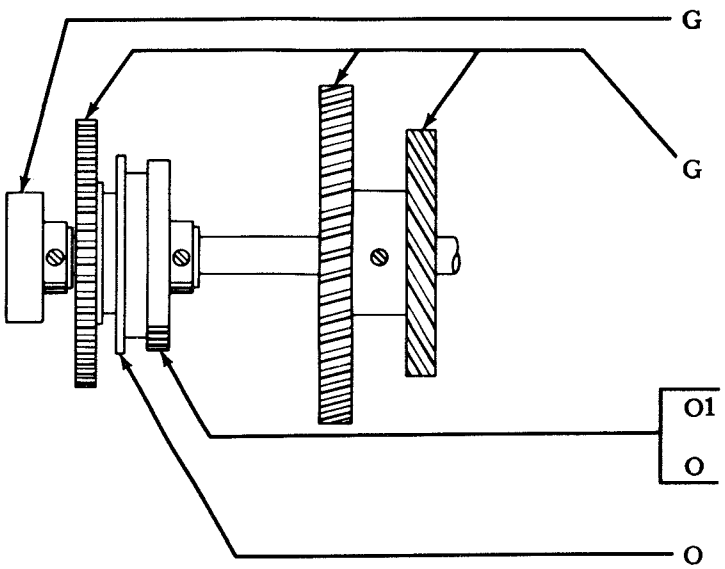
O1	Pivot Points	Local Carriage Return Lever
O	Thin Film on Contacting Surface	Feed Pawl, Release Link
O1	Pivot Points	Feed Pawl, Release Link
O1	Engaging Surfaces	Feed Pawl Release Link
O1	Hooks (Each End)	Spring
O	Thin Film on Contacting Surface	Carriage Return Latch Bail
O1	Bearing Surface	Roller
O	Thin Film on Engaging Surface	Transfer Slide
O3	Pivot Point	Carriage Return Latch Bail

(Front View)

LUBRICATION AREAS — BOTTOM

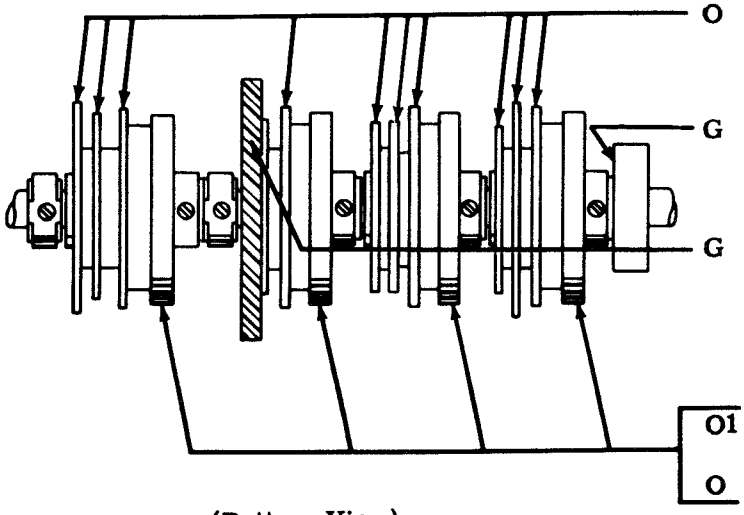


2.15 Main Shaft Clutches and Gears



(Bottom View)

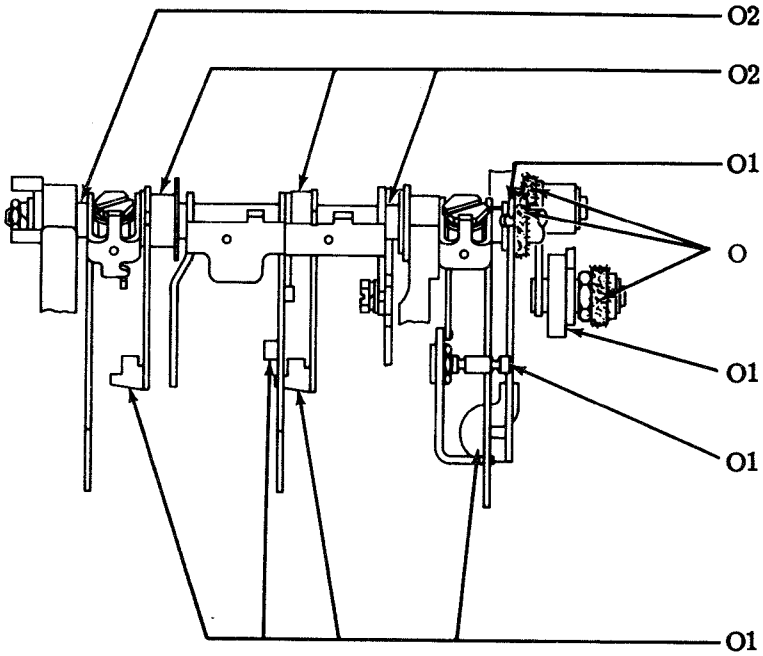
G	Pack Ball Bearing	Main Shaft Bearing
G	Thick Coat on Teeth	Main Shaft Gears (3)
O1	Internal Mechanism Saturate Felt Wick	Clutch Assembly
O	Thin Film on Camming Surface	Clutch Disc



(Bottom View)

O	Thin Film on Camming Surfaces	Clutch Discs and Eccentric Cams
G	Pack Ball Bearing	Main Shaft Bearing
G	Thick Coat on Teeth	Main Shaft Gear
O1	Internal Mechanism Saturate Felt Wick	Clutch Assemblies

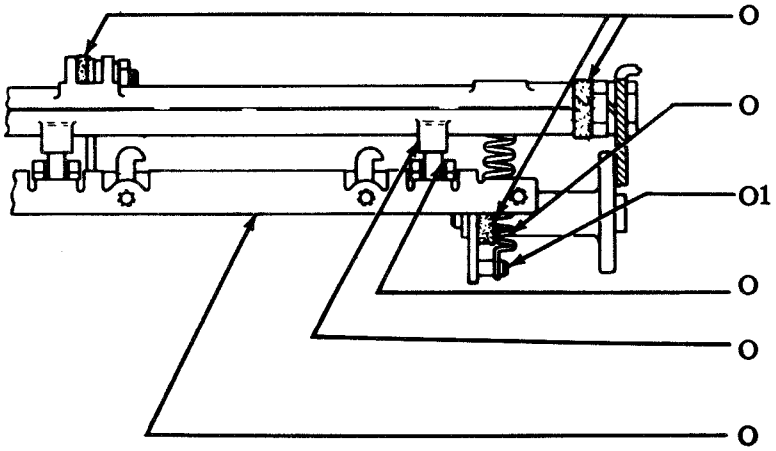
2.16 Trip Shaft Cam and Levers



(Rear View)

O2	Bearing Surface	Trip Shaft
O2	Bearing Surface	Clutch Trip and Latch Lever
O1	Guide	Suppression Slide
O	Saturate Felt Oilers	Trip Shaft and Cam Follower Arms
O1	Roller	Trip Cam Follower
O1	Pin	Trip Cam Follower
O1	Engaging Surfaces	Clutch Trip and Latch Levers

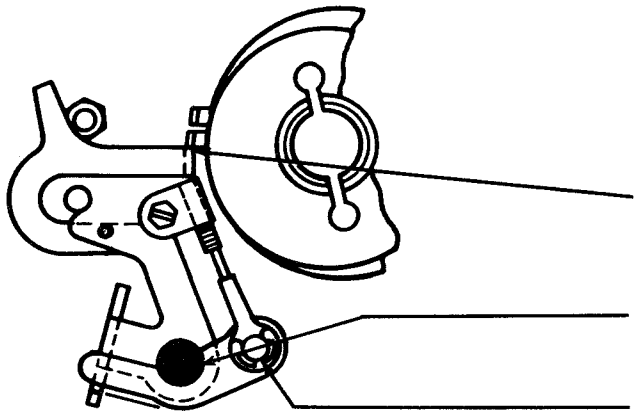
2.17 Reset Bail and Shaft



(Top View)

O	Saturate Felt Oilers (5)	Rocker Shaft
O	Saturate Felt Wick	Springs (2)
O1	Hooks (Each End)	Springs (2)
O	Rollers (3)	Reset Bail
O	Camming Surface (3)	Rocker Shaft
O	Surface	Reset Bail

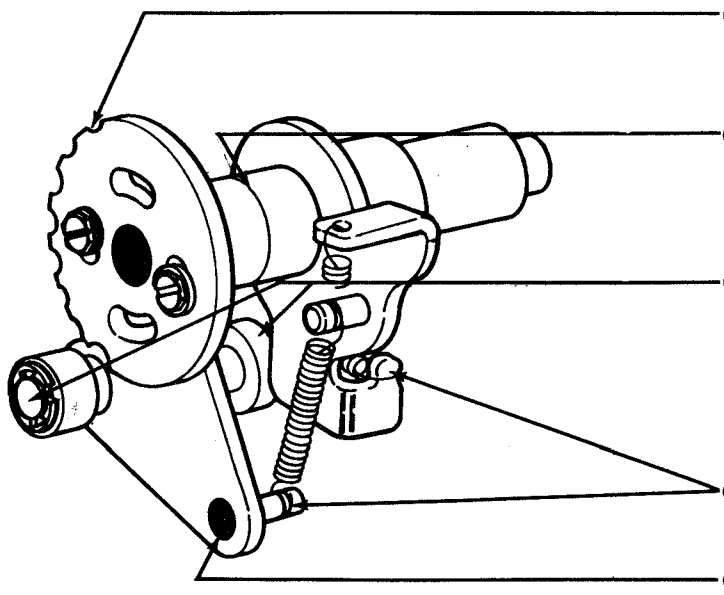
2.18 Local Line Feed Trip Lever



G	Thin Coat on Contact Surface	Local Line Feed Trip Lever
O2	Pivot	Local Line Feed Trip Lever
O2	Pivot	Cable Connector

(Left Side View)

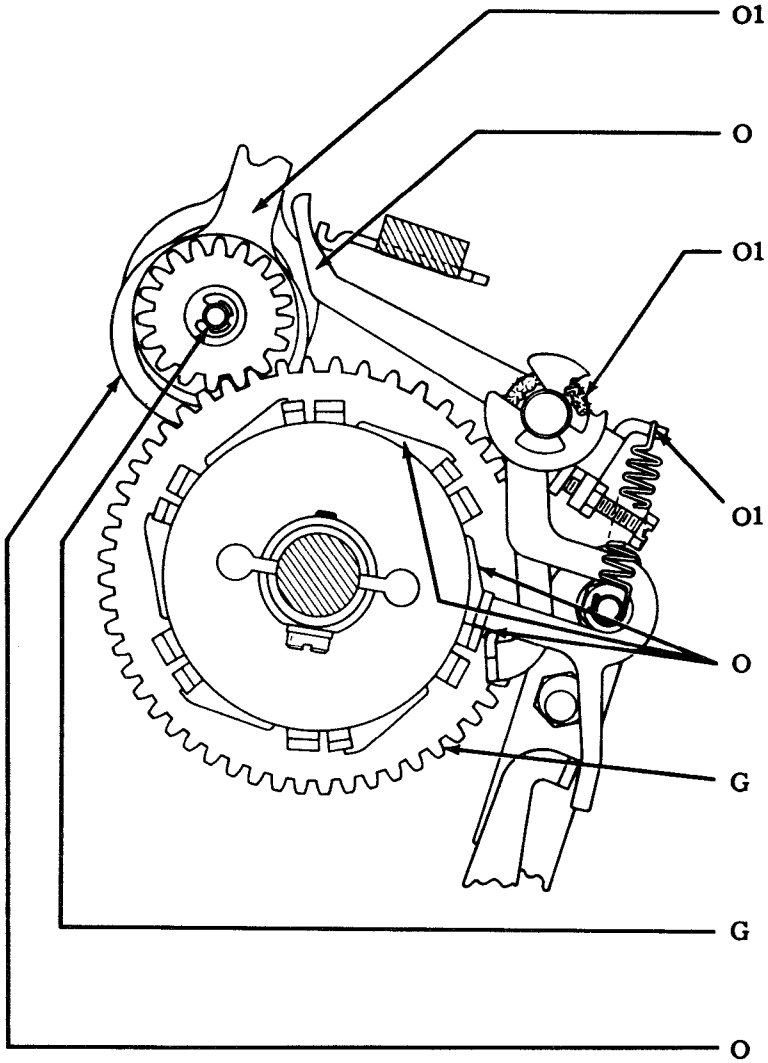
2.19 Vertical Detent



G	Thin Film on Camming Surface	Vertical Dampening Detent Disc
G	Bearings	Dampener Bail (Each End)
O	Thin Film on Rollers	Vertical Dampening
O1	Hooks (Each End)	Spring
O2	Pivot Point	Detent Lever

(Left Side View)

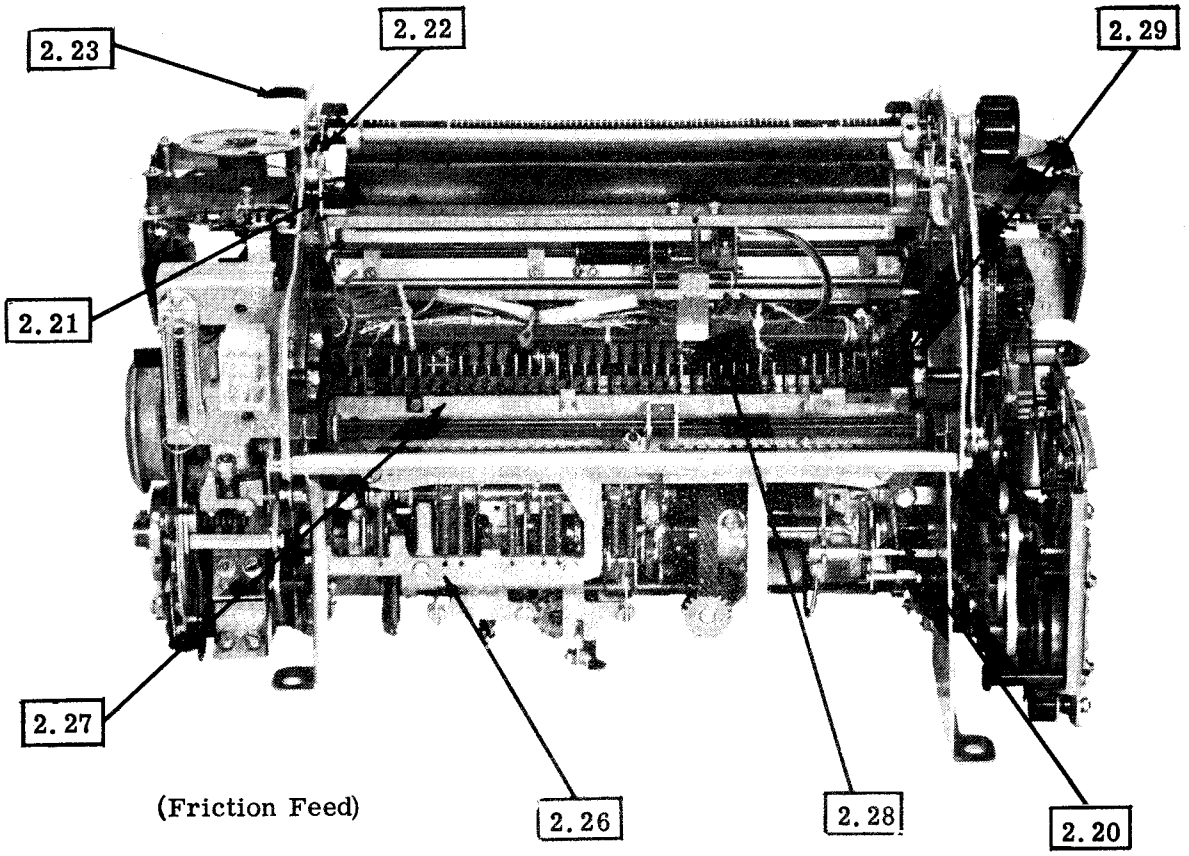
2.20 Line Feed Bail, Levers, and Gears



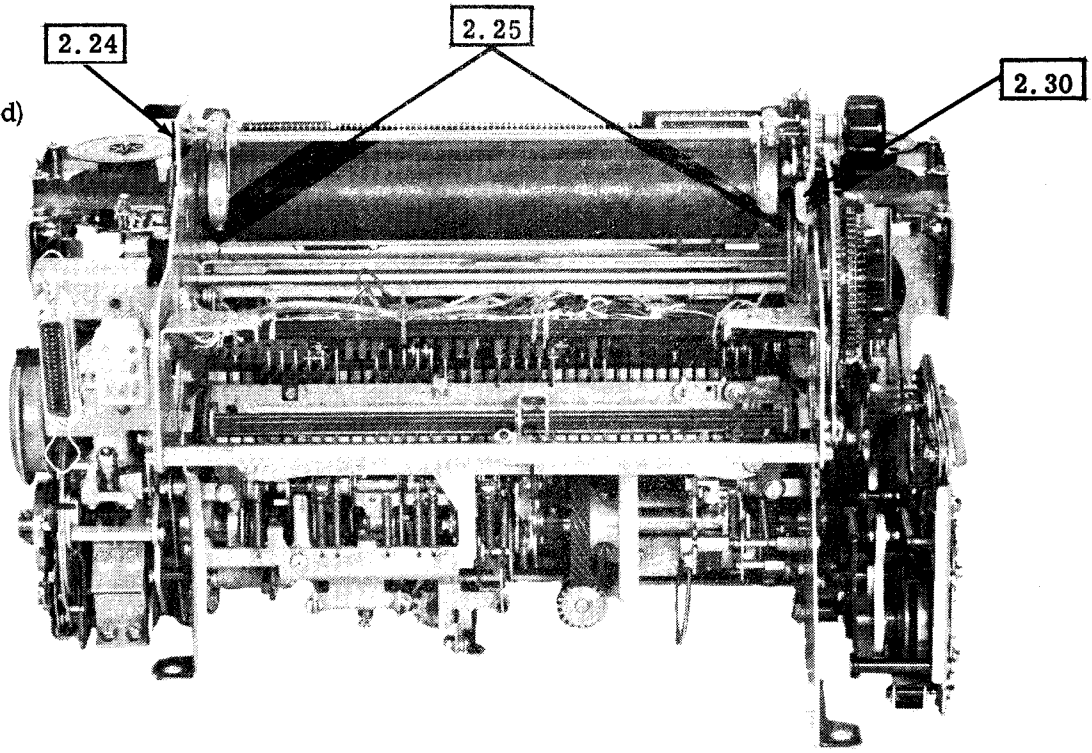
O1	Bearing Surfaces	Line Feed Bar Eccentric Bearing
O	Thin Film on Contact Surface	Slide Arm
O1	Felt Oiler	Trip and Latchlevers
O1	Hooks (Each End)	Springs (2)
O	Thin Film on Camming Surface	Clutch Cam, Latchlever, and Stripper Bail
G	Thin Coat Teeth	Driving and Driven Gears
G	Thin Coat on Bearing Surface	Driven Gear Shaft
O	Saturate Felt Oiler	Driven Gear Shaft

(Right Side View)

LUBRICATION AREAS — REAR

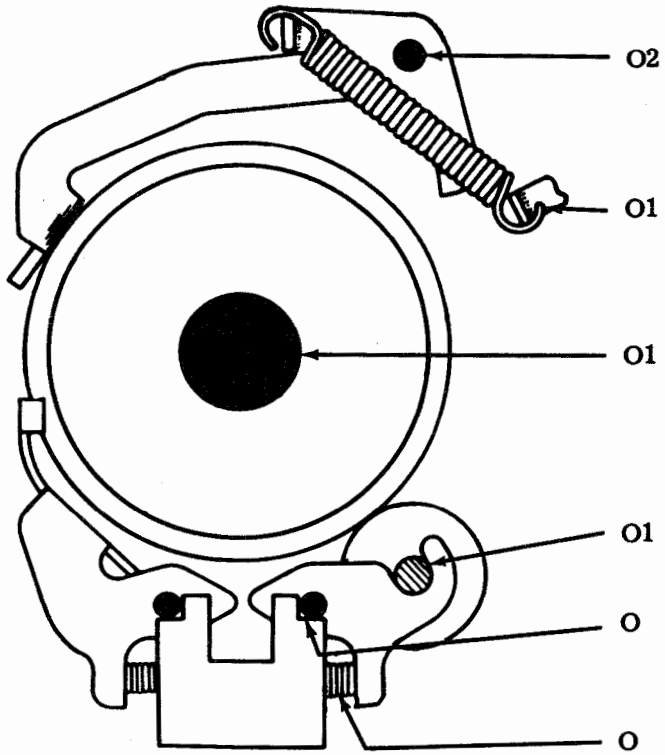


(Friction Feed)



(Sprocket Feed)

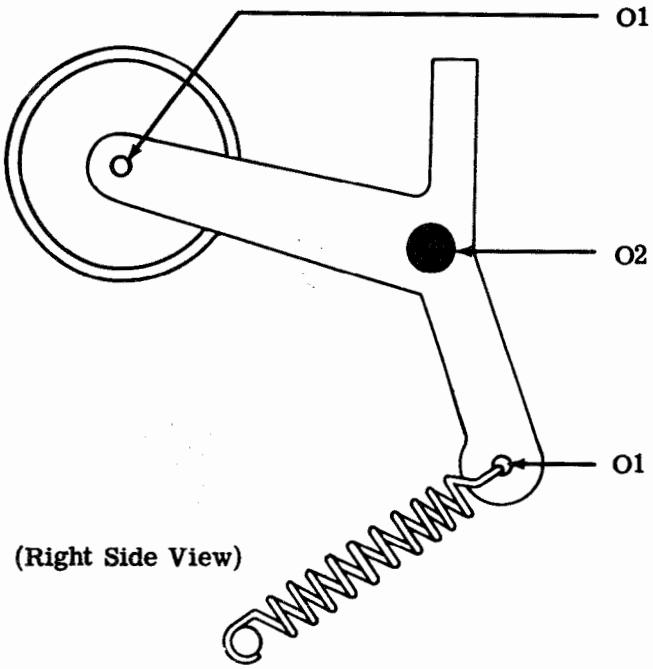
2.21 Platen Shaft and Rollers (Friction Feed)



(Right Side View)

O2	Pivots	Paper Finger Shaft
O1	Hooks (Each End)	Springs (2)
O1	Bearing Surfaces (Each End)	Platen Shaft
O1	Pivots	Pressure Rollers (Wipe Off Excess Oil)
O	Thin Film on Engaging Surfaces	Pressure Rollers
O	Thin Film on Engaging Surface	Compression Springs (2)

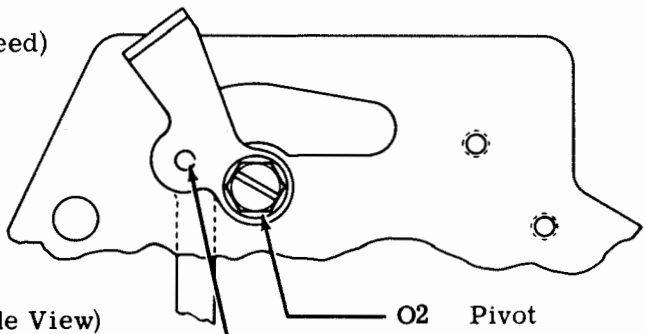
2.22 Paper Straightener (Friction Feed)



(Right Side View)

O1	Bearing Surfaces (Each End)	Paper Straightener Shaft (2)
O2	Pivots (Each End)	Paper Straightener Levers (2)
O1	Hooks (Each End)	Springs (2)

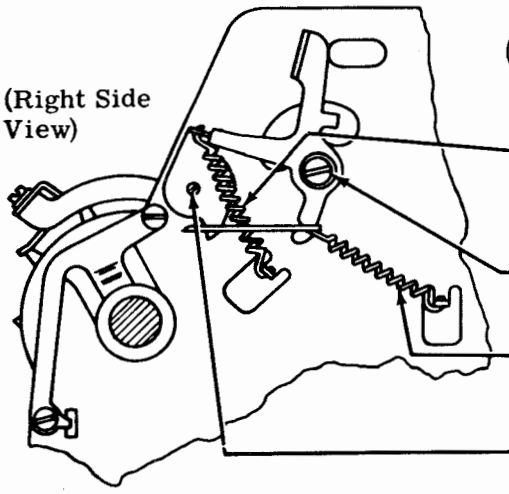
2.23 Paper Release (Friction Feed)



(Right Side View)

O2	Pivot	Paper Release Link
O1	Bearing Surfaces	Paper Release Lever
O1	Bearing Surface	Paper Release Link
O1	Bearing Surface	Paper Release Arm

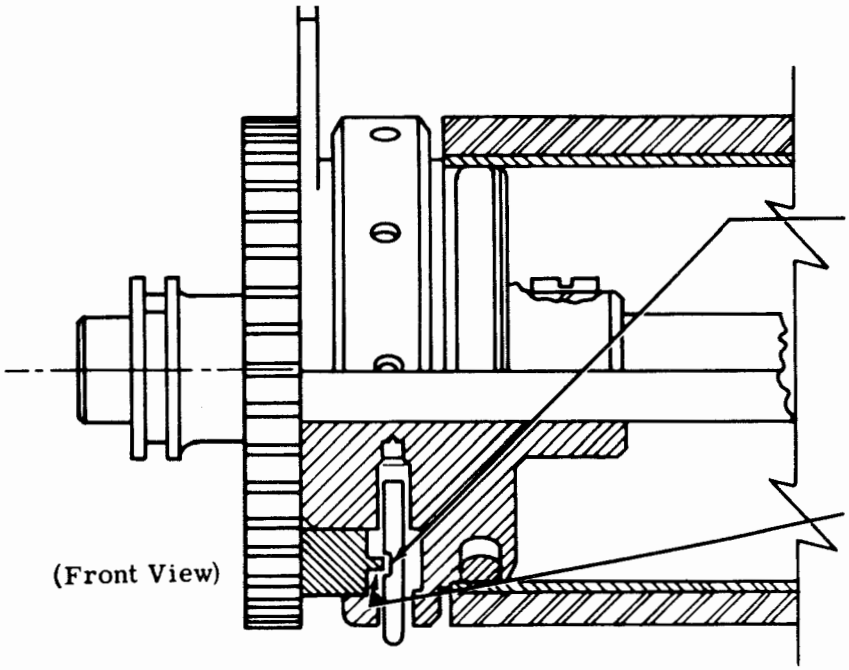
2.24 Paper Guide Bracket Shaft and Latch (Sprocket Feed)



(Right Side View)

O1	Hooks (Each End)	Spring
O1	Pivots (2 Places)	Guide Bracket Latch
O1	Hooks (Each End)	Spring
O1	Pivots (2 Places)	Guide Bracket Shaft

2.25 Platen Hubs and Pins (Sprocket Feed)



(Front View)

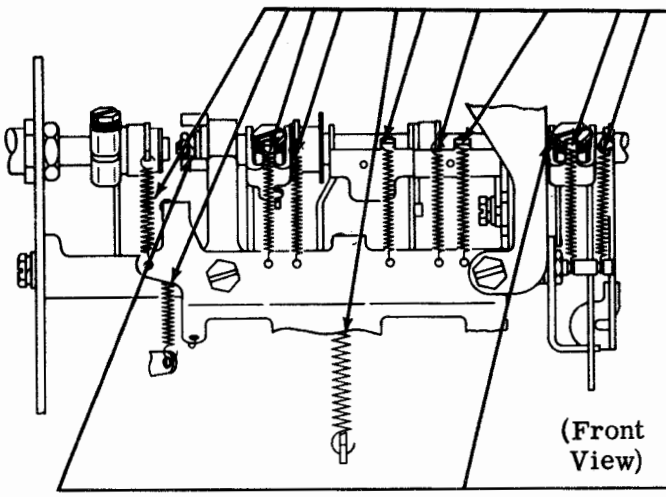
Note: See the disassembly and reassembly instructions given in the appropriate section before attempting to disassemble the platen hub.

G	Thin Coat on Contacting Surface (11 Places, Left and Right Hubs)	Sprocket Pins

Note: Do not pack notch of sprocket pins with grease.

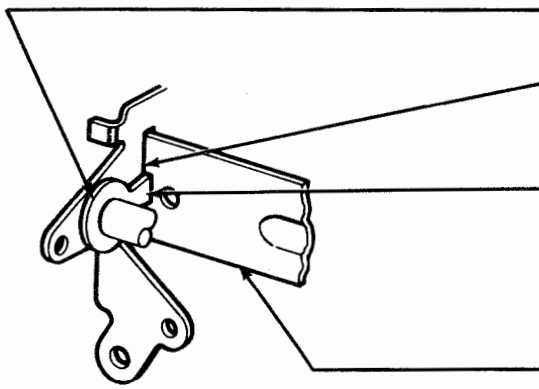
G	Thick Coat on Cavity (11 Places, Left and Right Hubs)	Platen Hub

2.26 Trip Shaft Bearings and Springs

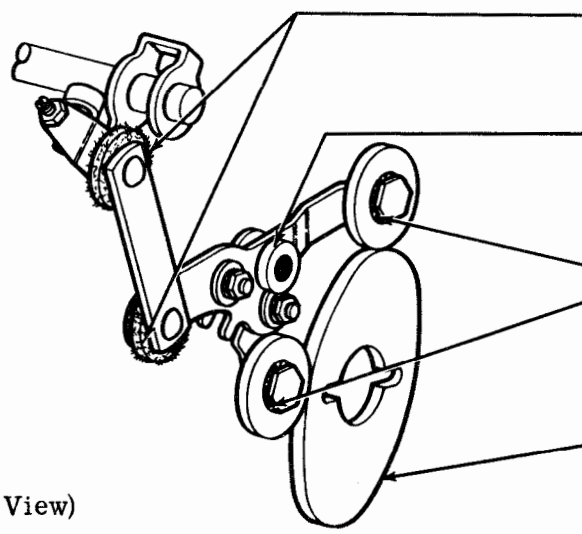


O1	Hooks (Each End)	Springs
O1	Bearings	Trip Shaft

2.27 Function Stripper Blade



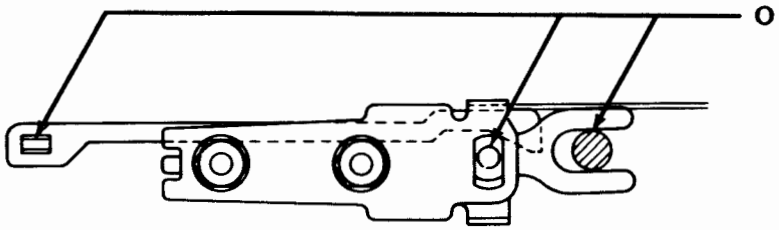
O2	Bearings	Drive Shaft
O2	Bearing Surface (Each End)	Stripper Blade Drive Arm
G	Thick Coat on Edge of Engaging Surfaces (Each End)	Drive Arm (Each End)
O	Thin Film on Engaging Surfaces	Stripper Blade



(Rear View)

O	Saturate Felt Oilers	Drive Link (Each End)
O2	Pivot	Cam Follower Arm
G	Pack Bearings	Cam Follower
O	Thin Film on Engaging Surfaces	Stripper Blade Cam

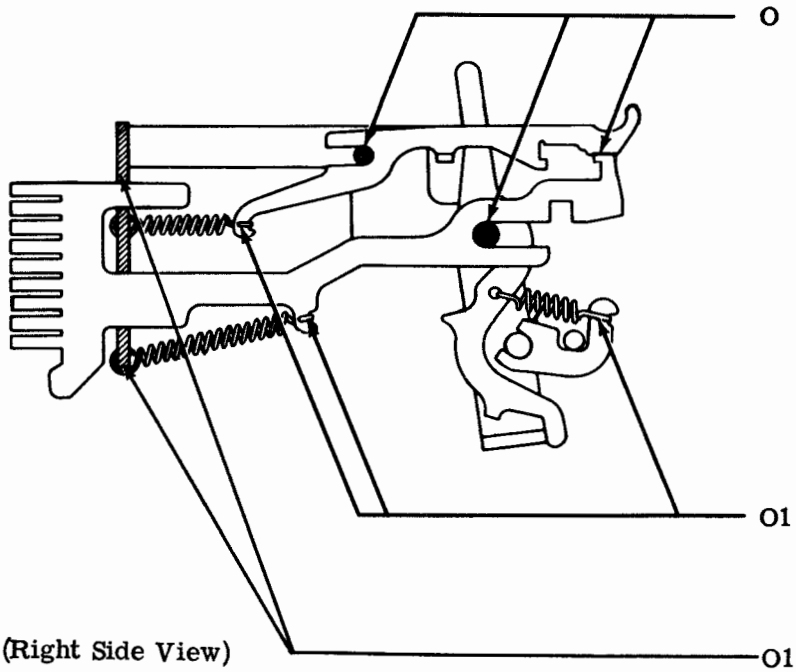
2.28 Suppression Function Lever



(Top View)

O	Thin Film on Engaging Surfaces	Suppression Function Lever

2.29 Function Bar and Pawl



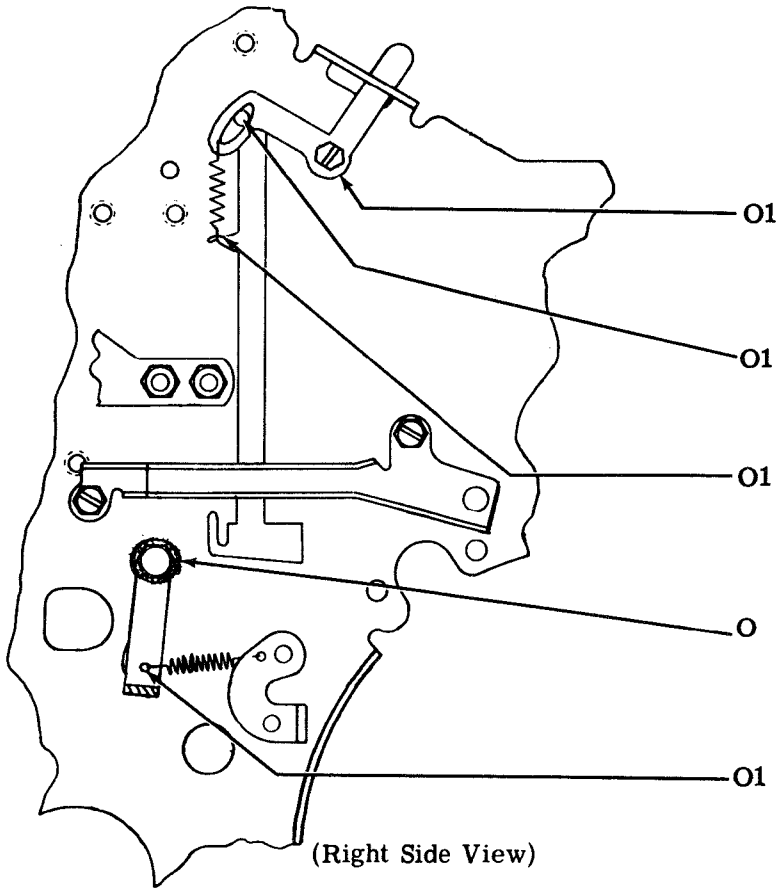
(Right Side View)

O	Thin Film on Engaging Surfaces	Function Bar, Lever, and Pawl

Note: Contact clips and arms on function switches must be kept dry.

O1	Hooks (Each End)	Springs
O1	Engaging Surfaces	Function Bar

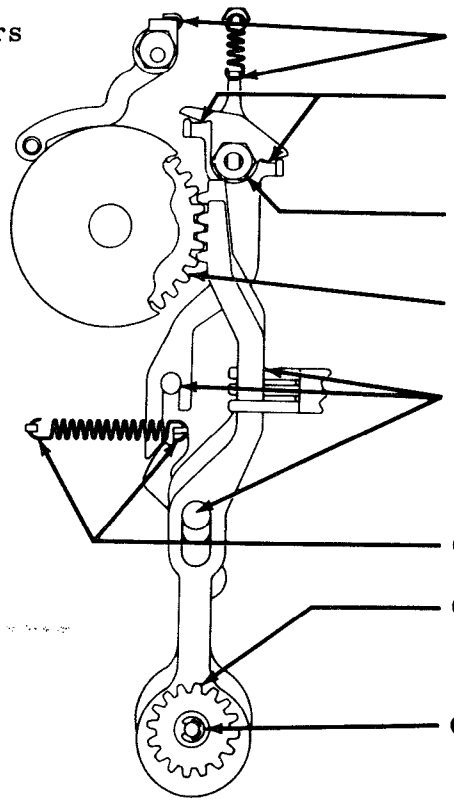
2.30 Single-Double Line Feed Lever



O1	Pivot	Single-Double Line Feed Lever
O1	Engaging Surface	Operating Arm
O1	Hooks (Each End)	Spring
O	Saturate Felt Oiler	Suppression Bail
O1	Hooks (Each End)	Spring

(Right Side View)

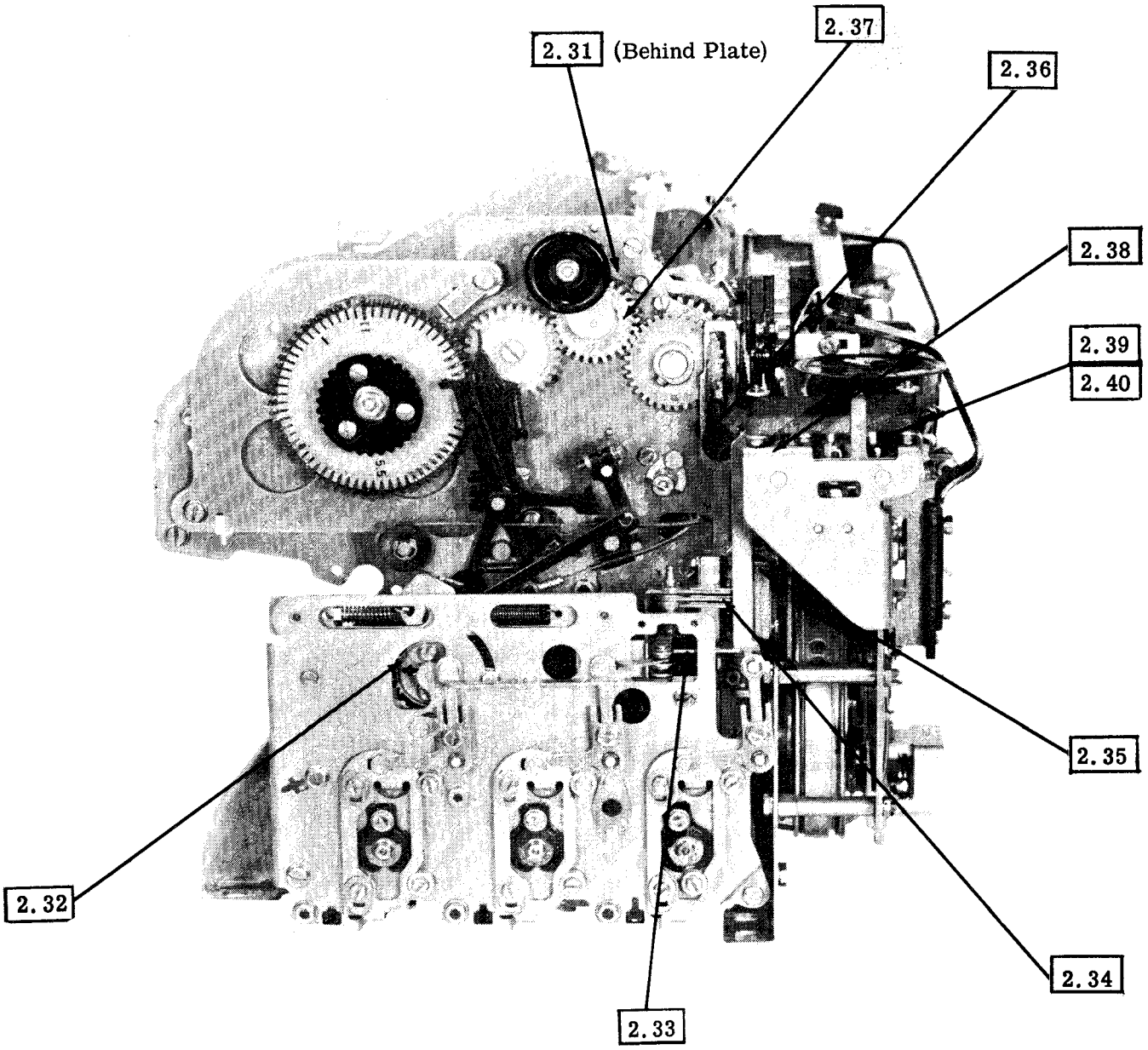
2.31 Line Feed Bars



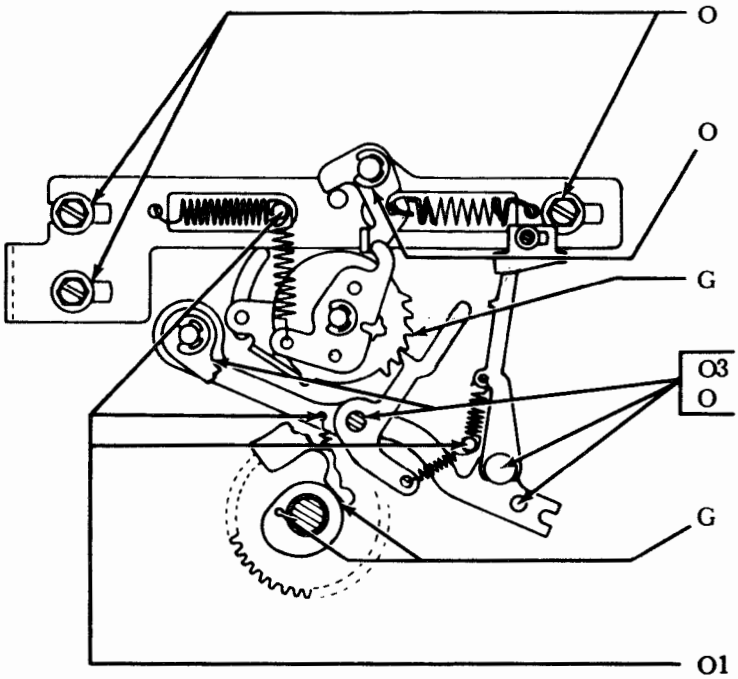
O1	Hooks (Each End)	Springs
O	Thin Film on Contact Surfaces	Line Feed Bar Release Lever
O	Thin Film on Engaging Surfaces	Reversing Lever
G	Thin Coat on Teeth	Line Feed Bars
O	Thin Film on Engaging Surfaces	Guides
O1	Hooks (Each End)	Spring
G	Thin Coat on Teeth	Driven Gear
O	Thin Film on Bearing Surface	Driven Gear Shaft

(Right Side View)

LUBRICATION AREAS — LEFT SIDE



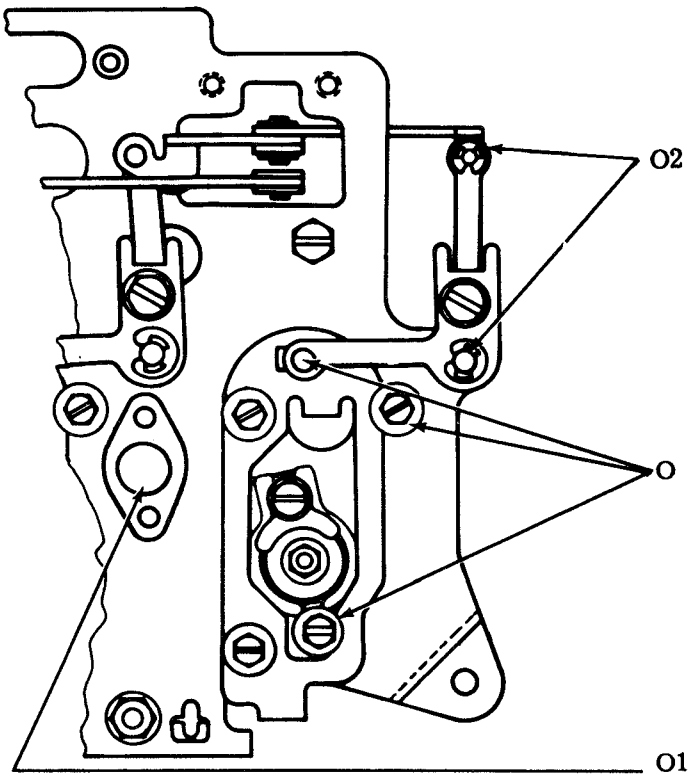
32 Retraction Slide and Pawls



O	Thin Film Engaging Surfaces	Retraction Slide
O	Thin Film Pivot, Engaging Surface	Bell Crank, Trip Plate
G	Thin Coat Teeth	Ratchet
O3 O	Pivots Thin Film on Engaging Surfaces	Feed Pawl, Blocking Pawl, Feed Pawl Cam Follower
G	Thin Coat on Camming Surface and Pin	Eccentric Cam
O1	Hooks (Each End)	Springs

(Right Side View)

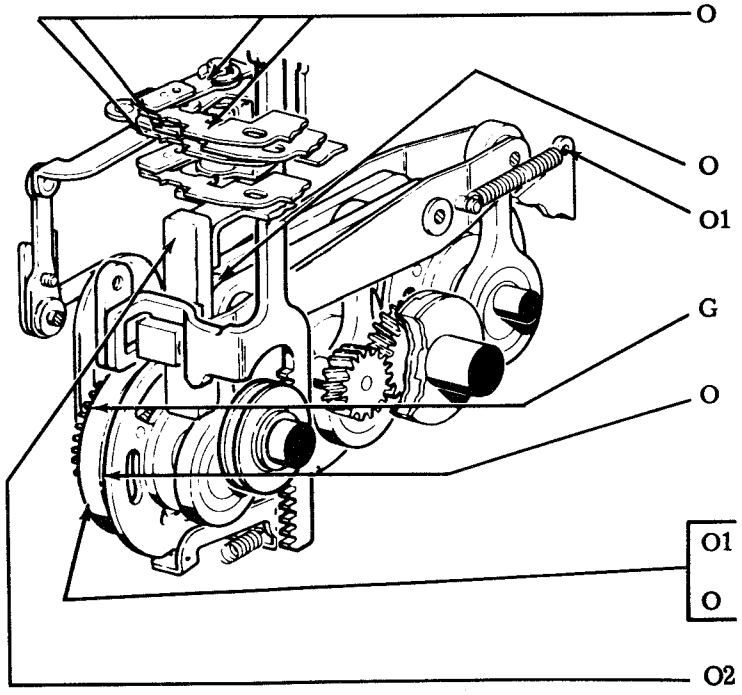
2.33 Vertical Linkage, Shafts, and Slides



(Left Side View)

O2	Bearing Surfaces	Trip Linkage
O	Thin Film on Sliding Surfaces	Clutch Trip Slides (3)
O1	Bearing	Driven Gear Shaft

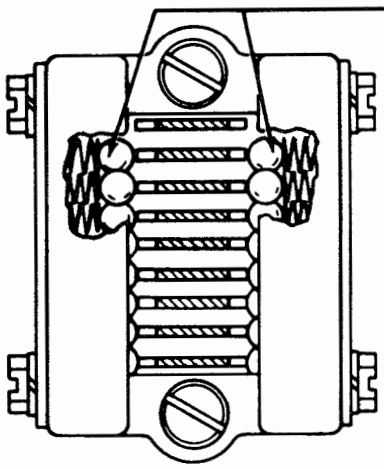
2.34 Vertical Clutches, Gears, and Bell Cranks



(Right Front View)

O	Thin Film on Pivots Guide	Positioning Trip Levers, Codebar Bell Cranks
O	Bearing Surface	Output Bearing
O1	Hooks (Each End)	Springs (13)
G	Thick Coat on Teeth	Gears (7)
O	Thin Film on Camming Surface	Clutch Discs (3)
O1 O	Internal Mechanism Saturate Felt Wick	Clutch Assembly (3)
O2	Track Surface	Track

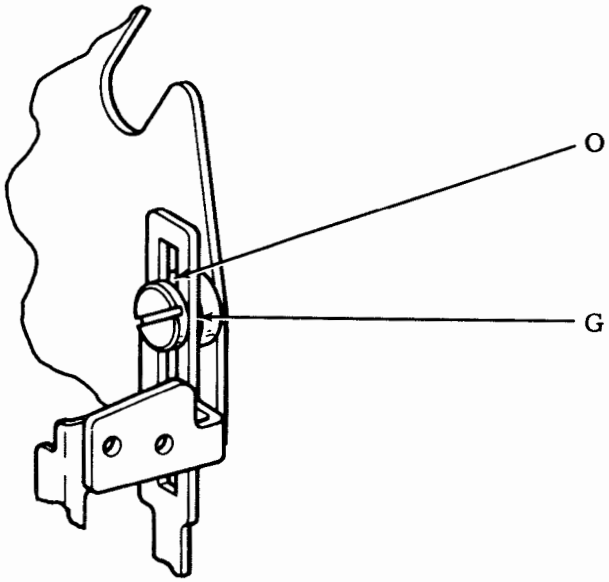
2.35 Codebar Detent



(Left Side View)

O1	Bearings and Compression Springs	Codebar Detents

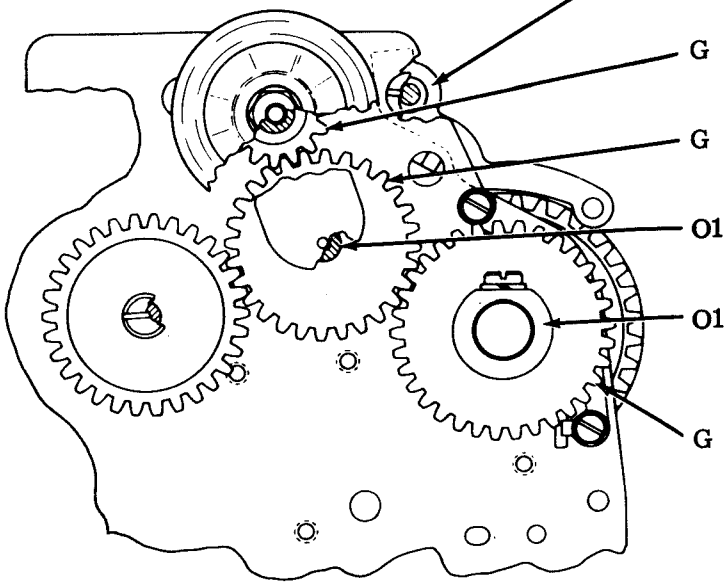
2.36 Vertical Positioning Rack



(Left Side View)

O	Saturate Felt Oiler	Spacer Guide
G	Thin Film on Engaging Surface	Spacer Upper Rack Guide
G	Thick Coat on Teeth, Engaging Surfaces, and Bearings	Lower Rack Guide Arm, Pinion, and Drive Shaft Bearings

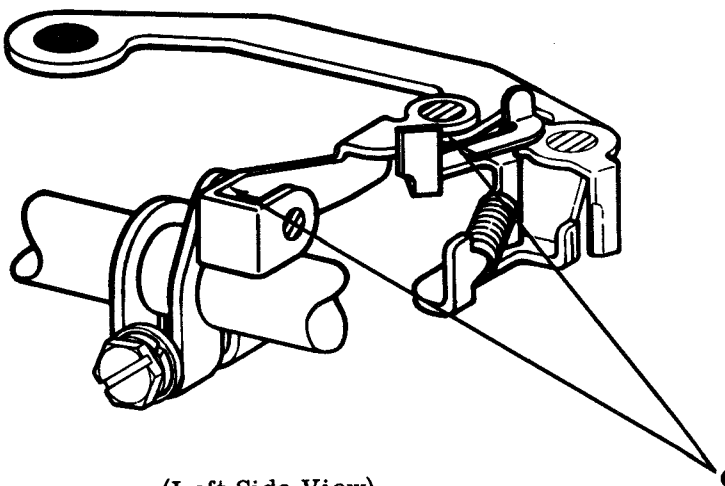
2.37 Line Feed Gears



O1	Bearing Surface	Platen Detent Bail
G	Thin Coat on Teeth	Handwheel Gear
G	Thin Coat on Teeth	Idler Gear
O1	Bearing Surface	Idler Gear
O1	Bearing Surface (2 Places)	Platen Gear
G	Thin Coat on Teeth	Platen Gear

(Left Side View)

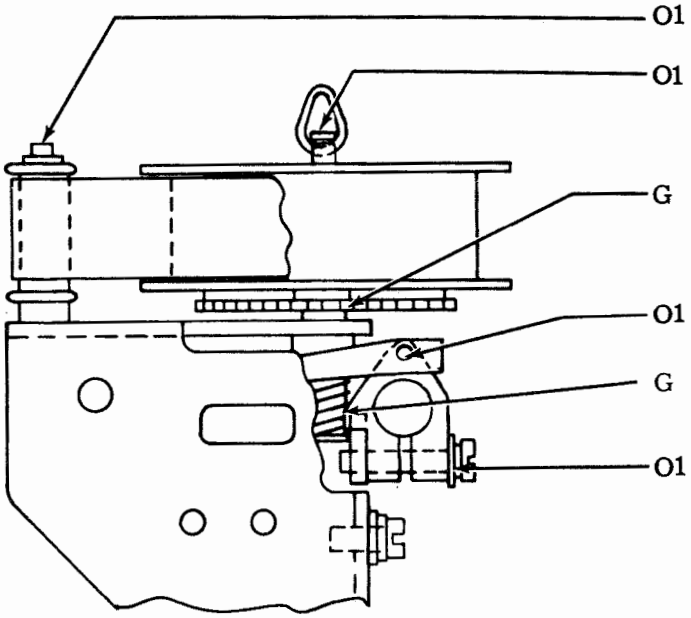
2.38 Ribbon Feed Drive Arm



O2	Pivots	Ribbon Feed Drive Arm

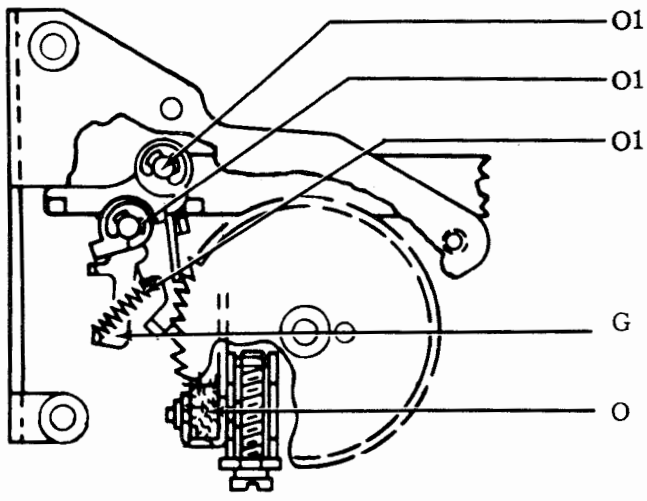
(Left Side View)

2.39 Ribbon Feed Bracket and Ratchet — Early Design



O1	Bearing Surface	Rollers
O1	Engaging Surface	Ribbon Spool Shaft
G	Teeth	Ratchet Wheel
O1	Pivot Point	Drive Bail
G	Spring	Ribbon Spool Shaft
O1	Pivot Point	Drive Lever

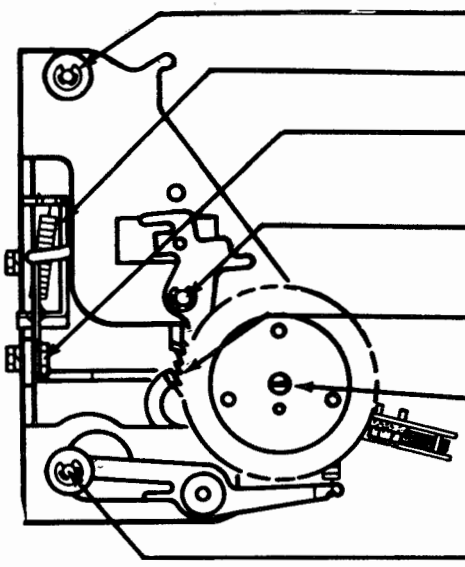
(Left Side View)



O1	Pivot Point	Detent Lever
O1	Pivot Point	Feed Lever
O1	Hooks (Each End)	Feed Lever Spring
G	Contact Surface	Feed Lever
O	Saturate Felt Oiler	Drive Bail

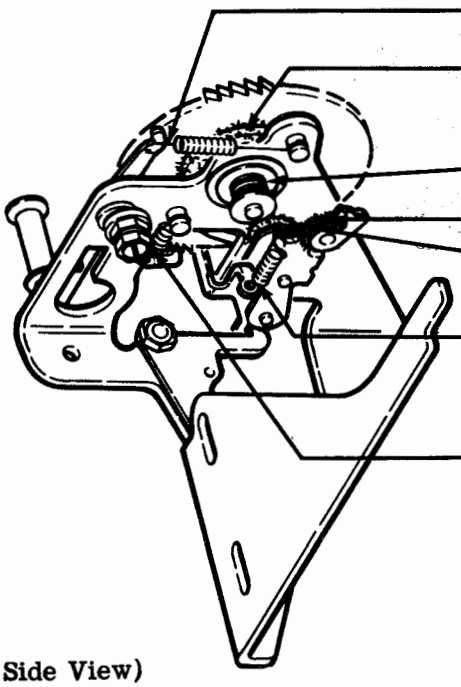
(Top View, Left Side)

2.40 Ribbon Feed Bracket and Ratchet - Late Design



O1	Bearing Surface	Roller
O1	Hooks (Each End)	Guide Lever Spring
O1	Pivot Point	Blocking Lever
O1	Pivot Point	Reversing Lever
G	Teeth	Ratchet Wheel
O1	Engaging Surface	Ribbon Spool Shaft
O1	Bearing Surface	Roller

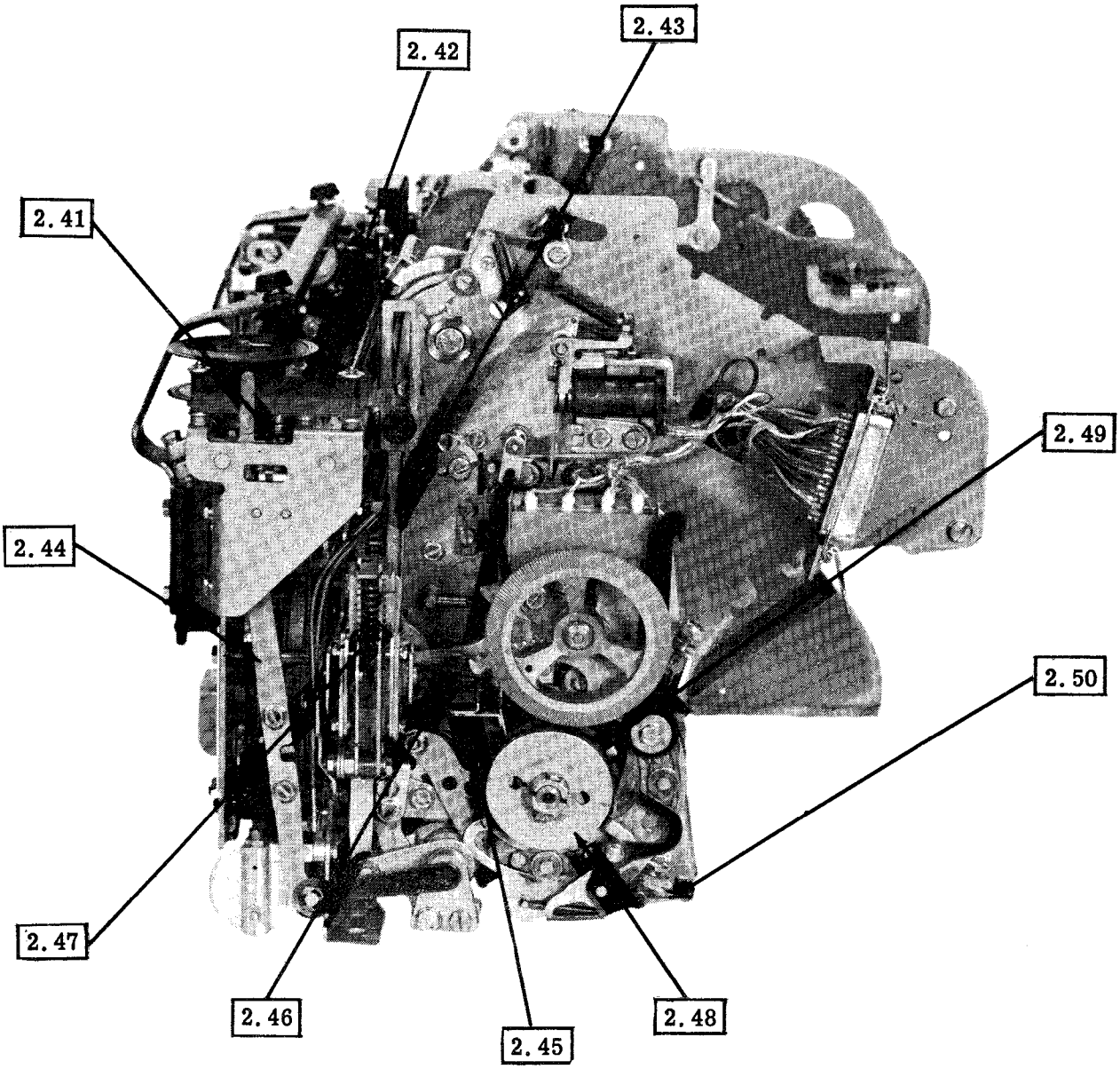
(Top Left View)



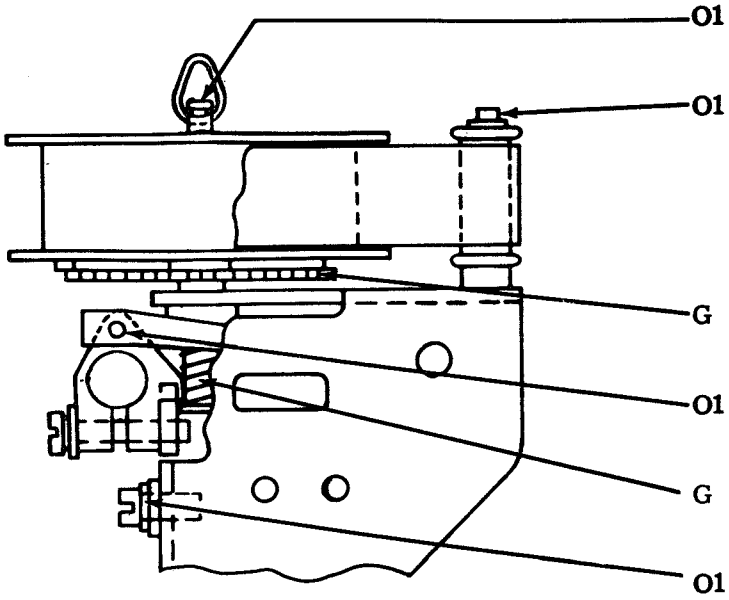
O1	Hooks (Each End)	Tension Lever Spring
O	Saturate Felt Oiler	Ratchet Wheel
G	Spring	Ribbon Spool Shaft
O	Saturate Felt Oiler	Drive Link
O	Saturate Felt Oiler	Drive Bail
O1	Hooks (Each End)	Feed Pawl Spring
O1	Hooks (Each End)	Check Pawl Spring

(Left Side View)

LUBRICATION AREAS — RIGHT SIDE

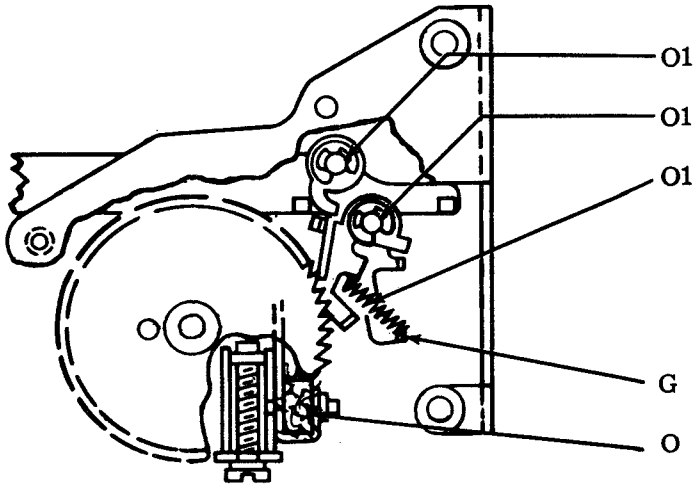


2.41 Ribbon Feed Bracket and Ratchet — Early Design



O1	Engaging Surface	Ribbon Spool Shaft
O1	Bearing Surface	Rollers
G	Teeth	Ratchet Wheel
O1	Pivot Point	Drive Bail
G	Spring	Ribbon Spool Shaft
O1	Pivot Point	Drive Lever

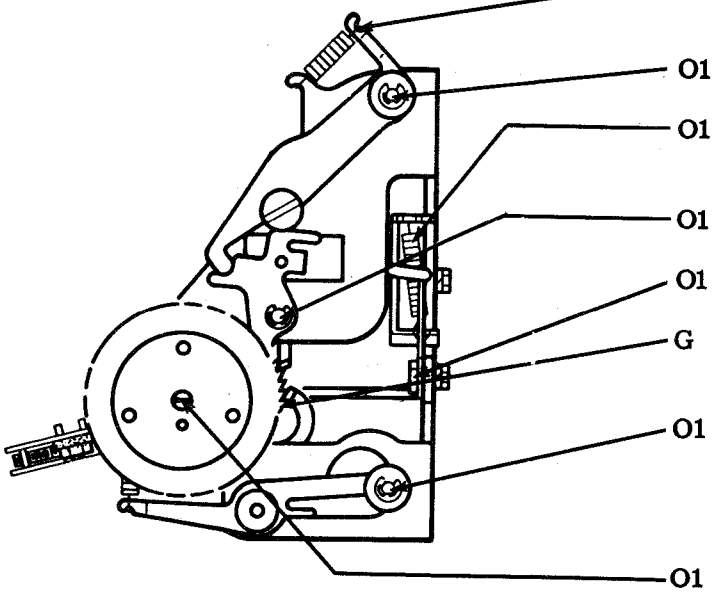
(Right Side View)



O1	Pivot Point	Detent Lever
O1	Pivot Point	Feed Lever
O1	Hooks (Each End)	Feed Lever Spring
G	Contact Surface	Feed Lever
O	Saturate Felt Oiler	Drive Bail

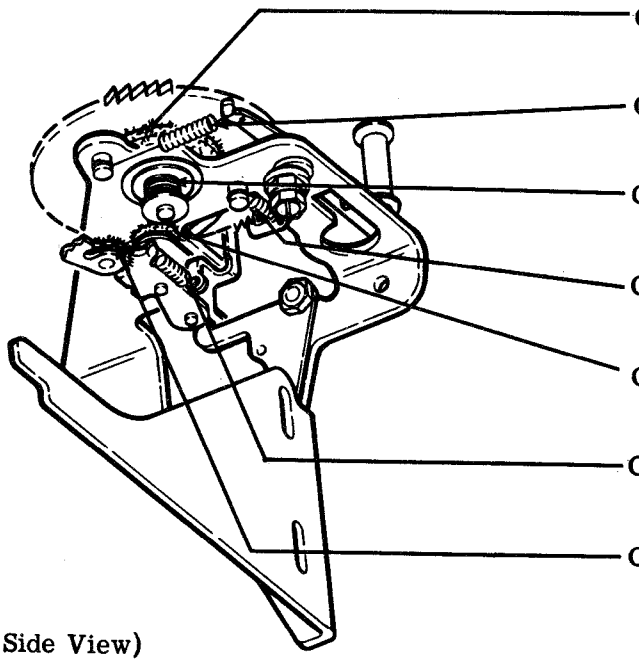
(Top Right View)

2.42 Ribbon Feed Bracket and Ratchet - Late Design



O1	Hooks (Each End)	Detent Lever Spring
O1	Bearing Surface	Roller
O1	Hooks (Each End)	Guide Lever Spring
O1	Pivot Point	Reversing Lever
O1	Pivot Point	Blocking Lever
G	Teeth	Ratchet Wheel
O1	Bearing Surface	Roller
O1	Engaging Surface	Ribbon Spool Shaft

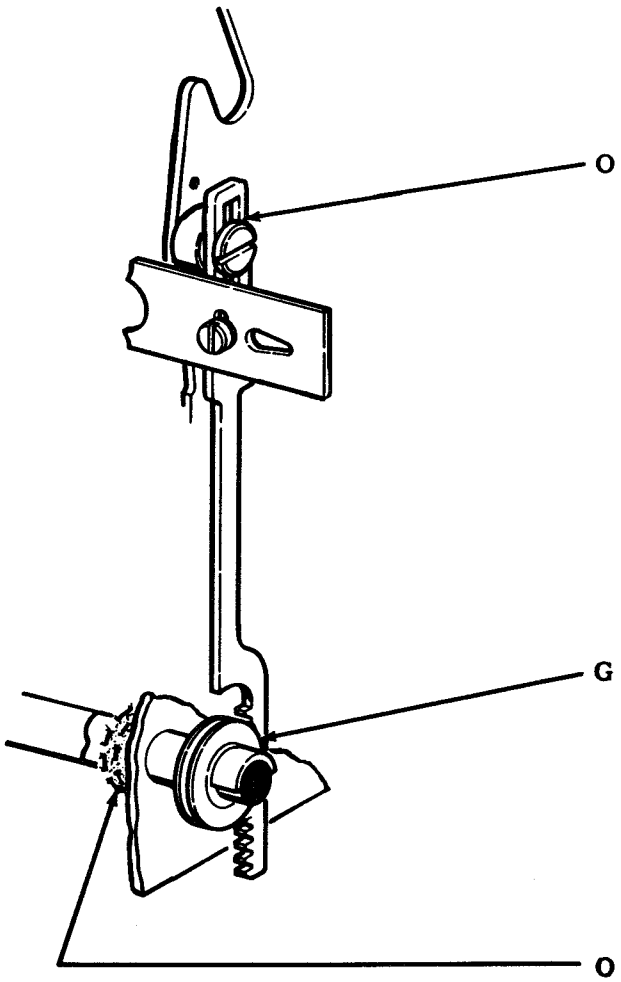
(Top Right View)



O	Saturate Felt Oiler	Ratchet Wheel
O1	Hooks (Each End)	Tension Lever Spring
G	Spring	Ribbon Spool Shaft
O1	Hooks (Each End)	Check Pawl Spring
O	Saturate Felt Oiler	Drive Bail
O1	Hooks (Each End)	Feed Pawl Spring
O	Saturate Felt Oiler	Drive Link

(Right Side View)

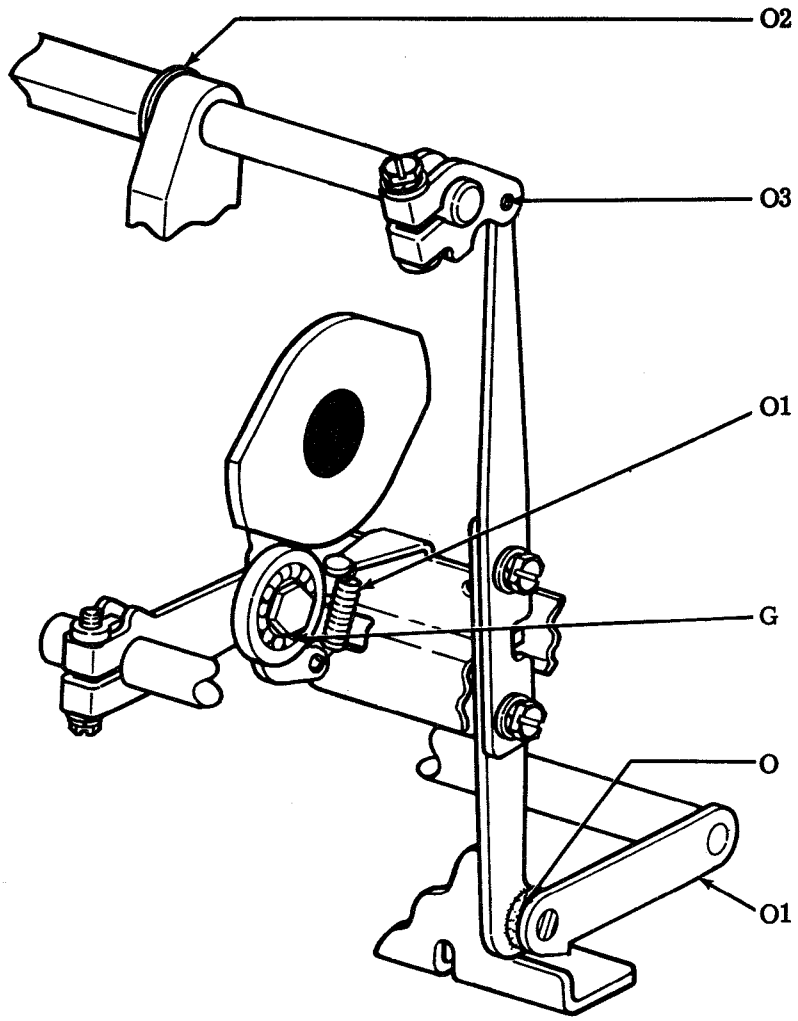
2.43 Vertical Positioning Rack



O	Thin Film on Engaging Surfaces	Upper Rack Guide
G	Thick Coat on Teeth, Engaging Surfaces, Bearings	Lower Rack Guide Arm, Pinion, Drive Shaft Bearings
O	Saturate Felt Oiler	Drive Shaft

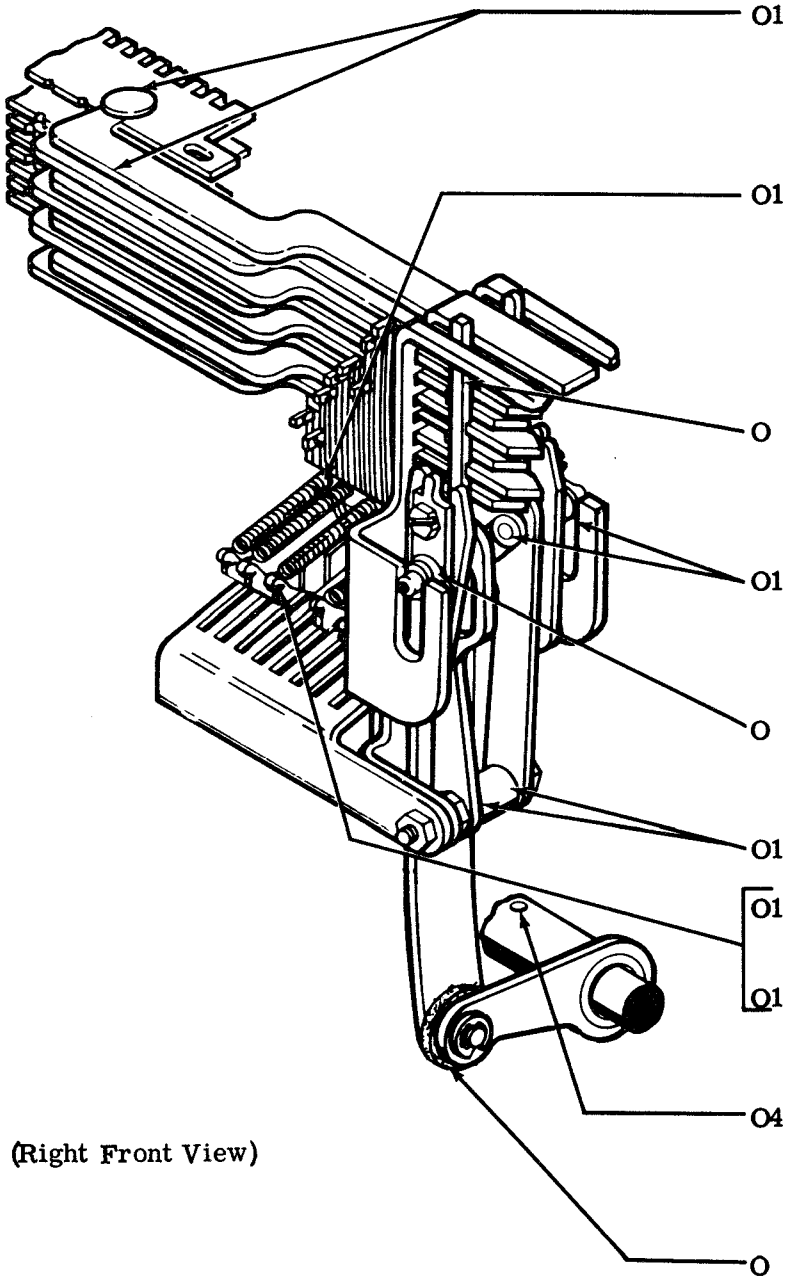
(Right Front View)

2.44 Printing Drive Arm and Link



(Right Front View)

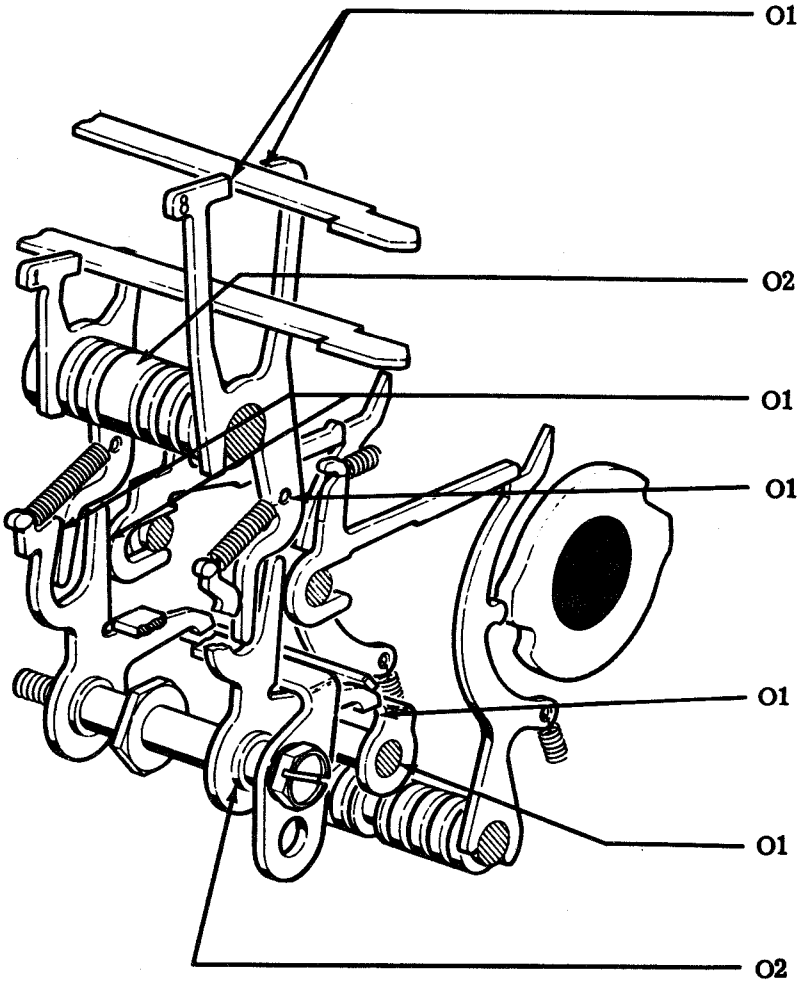
2.45 Shiftbars and Shift Levers



O1	Engaging Surfaces	Shiftbars (8)
O1	Pivot Points	Transfer Levers (8)
O	Contact Surfaces	Shift Lever
O1	Guide Slots and Rollers	Shift Lever and Shift Lever Link
O	Saturate Felt Oiler	Shift Lever and Shift Lever Link
O1	Pivot Points	Shift Lever
O1	Guide Slots	Intermediate Arms
O1	Hooks (Each End)	Springs
O4	Oil Hole	Shaft
O	Saturate Felt Oiler	Shift Lever Link

(Right Front View)

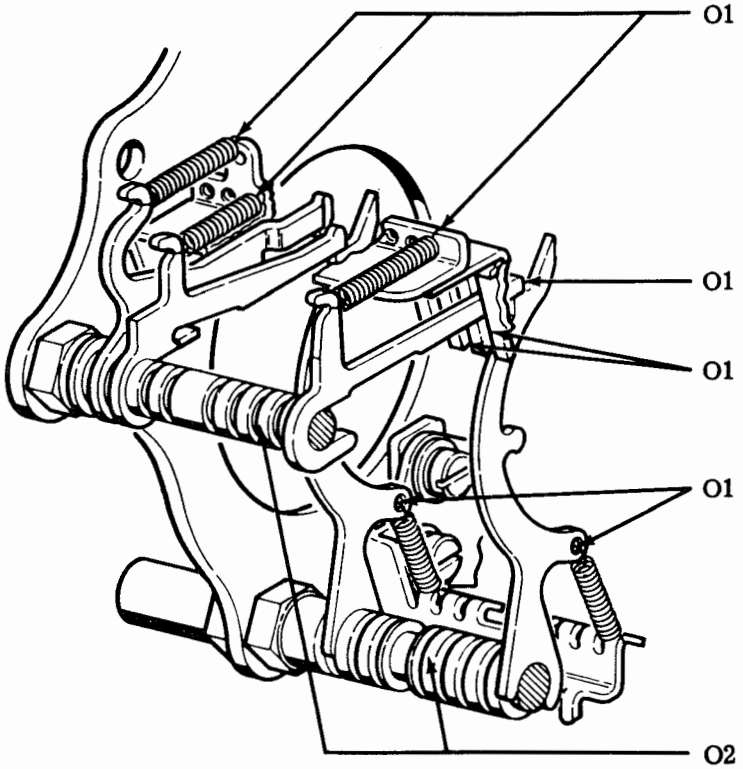
2.46 Transfer Levers



O1	Engaging Surfaces	Transfer Levers (8)
O2	Bearing Guide Slots	Transfer Levers (8)
O1	Engaging Surfaces	Intermediate Arms (8)
O1	Hooks (Each End)	Spring(s)
O1	Engaging Surfaces	Latch Bail
O1	Bearing and Roller	Latch Bail
O2	Bearing Surfaces	Intermediate Arms (8)

(Right Front View)

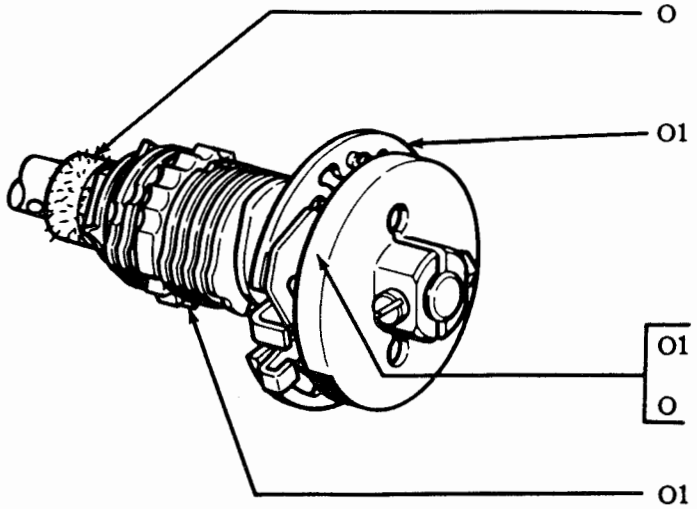
2.47 Selector Levers



(Right Front View)

O1	Hooks (Each End)	Springs (11)
O1	Engaging Surfaces	Push Levers
O1	Guide Slots	Start and Locklevers, Selector and Push Levers
O1	Hooks (Each End)	Springs (10)
O2	Bearing Guide Slots	Push and Selector Lever Guide Bearings

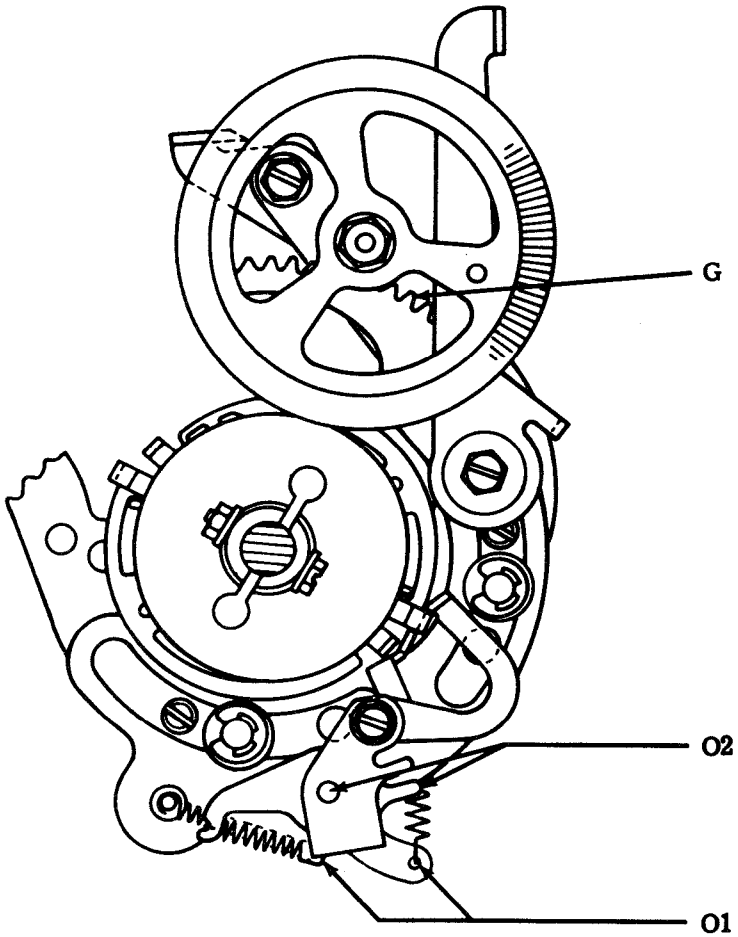
2.48 Selector Cams and Clutch



(Right Front View)

O	Saturate Felt Oiler	Selector Camshaft
O1	Camming Surface	Clutch Disc
O1 O	Internal Mechanism Saturate Felt Wick	Selector Clutch
O1	Camming Surface (Each Cam)	Selector Cams

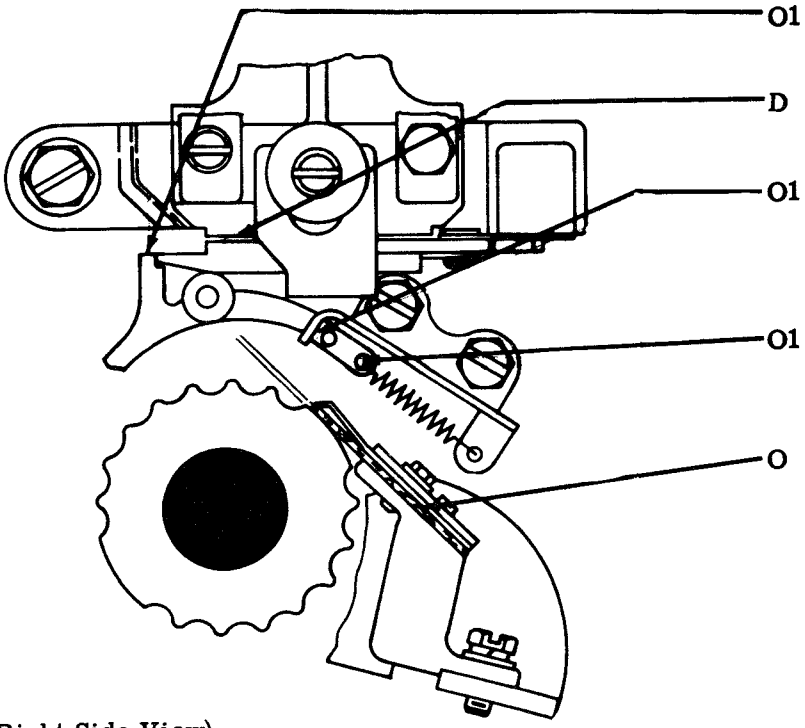
2.49 Selector Range Finder and Levers



G	Thin Coat on Teeth	Range Finder Pinion Gear and Rack
O2	Bearing Surface	Clutch Trip and Latchlevers, Lift Lever
O1	Hooks (Each End)	Springs (3)

(Right Side View)

2.50 Selector Cam Lubricator and Marking Locklever

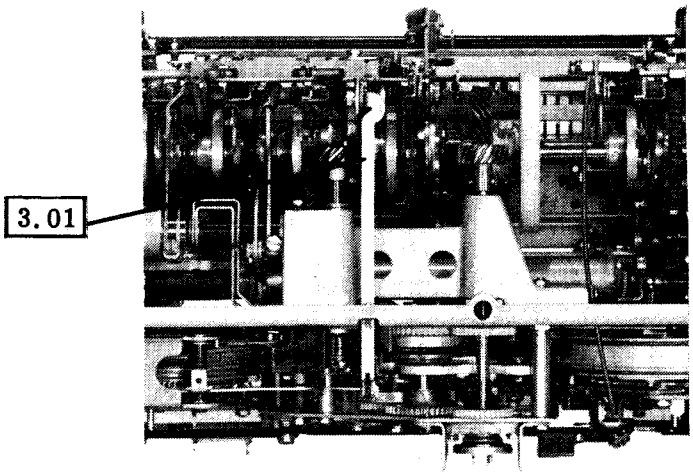


O1	Contact Surface	Armature Extension
D	Contact Surface	Front Button
O1	Guide Slot	Marking
O1	Hooks (Each End)	Spring
O	Saturate Wick Reservoir	Cam Lubricator

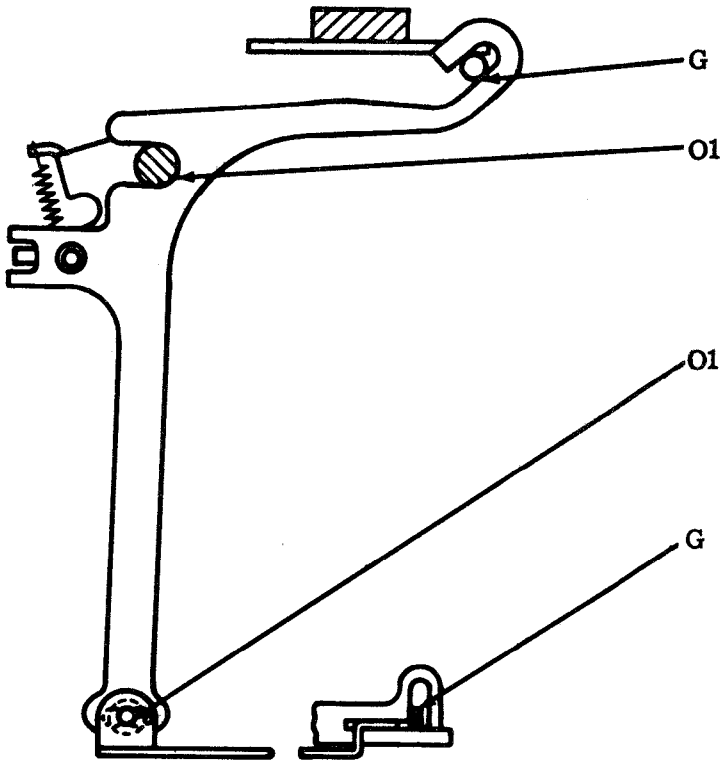
(Right Side View)

3. VARIABLE FEATURES

LUBRICATION AREA — BOTTOM



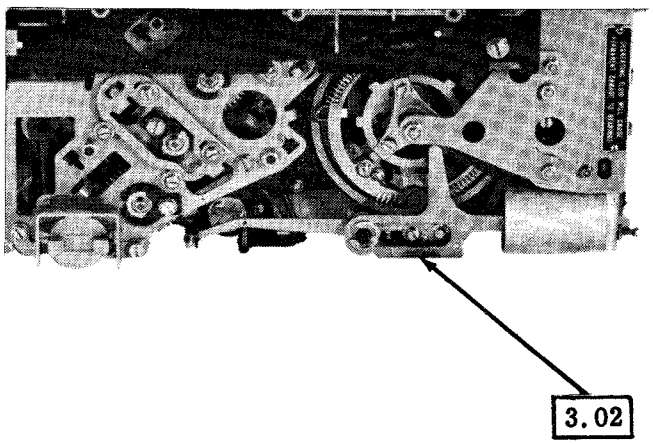
3.01 Horizontal Tabulator Cam and Levers



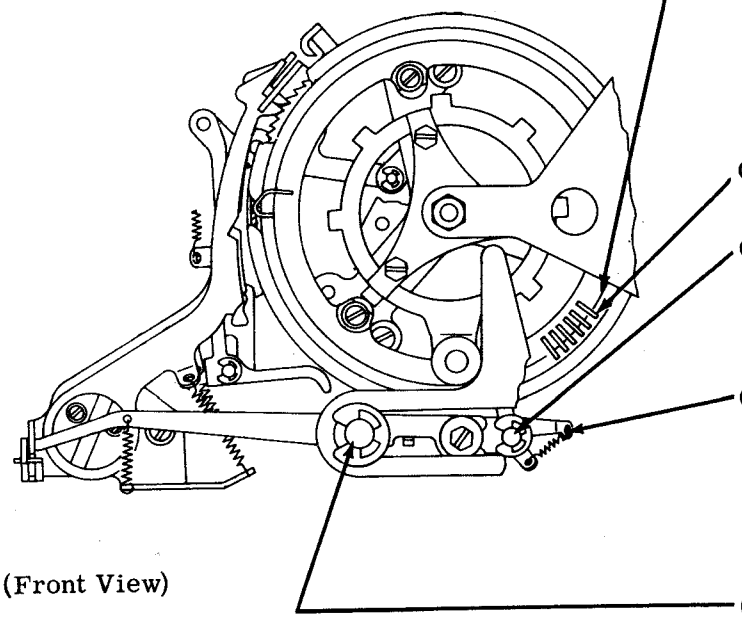
G	Contact Surface	Trip Arm
O1	Bearing Surface	Trip Shaft
O1	Bearing Surface	Trip Arm and Operating Lever Extension Link
G	Contact Surface	Operating Lever Extension Link, Guide Bracket, and Blocking Lever

(Right Side View)

LUBRICATION AREA — FRONT



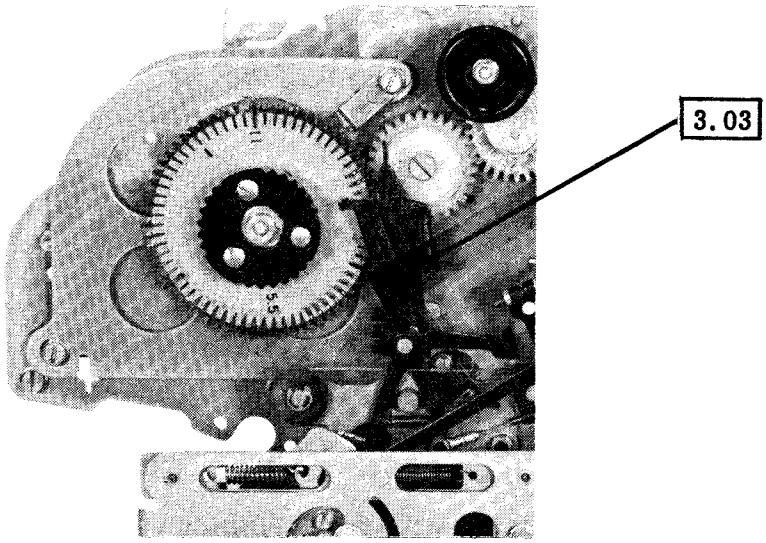
3.02 Horizontal Tabulator Stops and Pawls



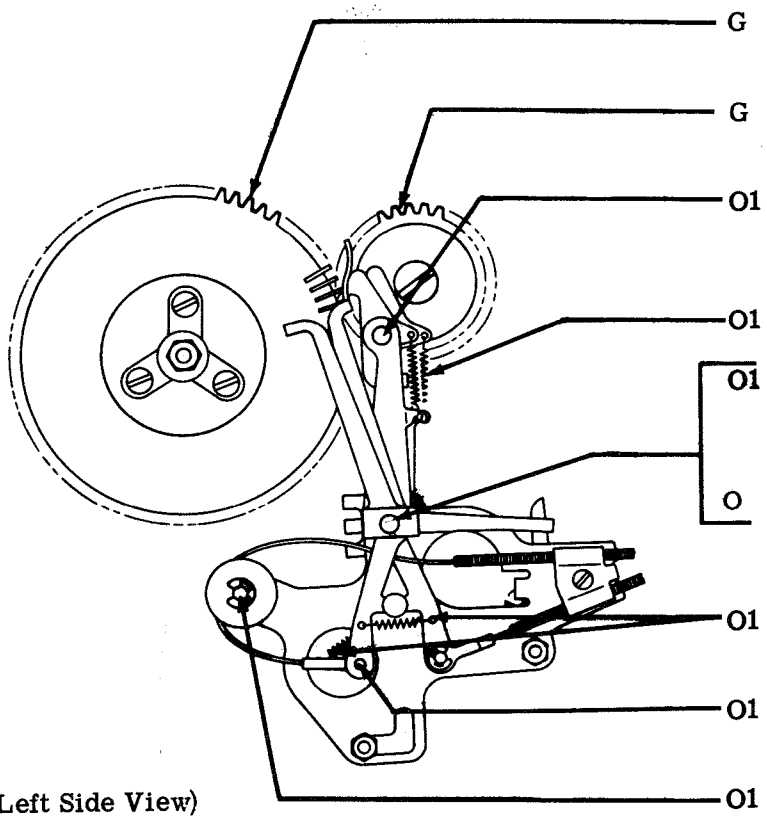
(Front View)

O	Thin Film on Engaging Surface	Tabulator Ring
O1	Engaging Surface	Tabulator Stops
O1	Bearing Surfaces	Tabulator Pawls
O1	Hooks (Each End)	Spring
O1	Bearing and Guide Surface	Blocking Lever

LUBRICATION AREA — LEFT SIDE



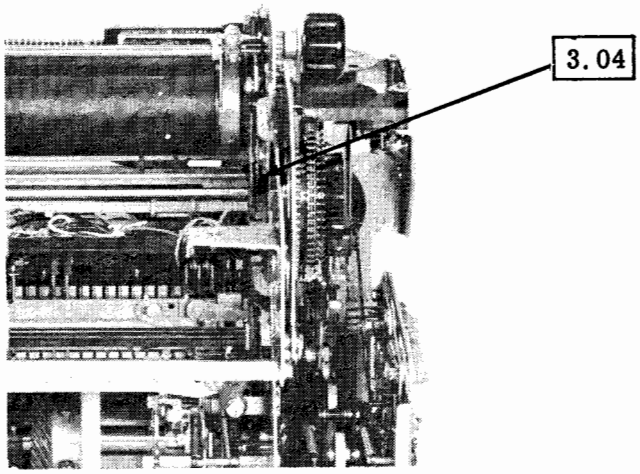
3.03 Vertical Tabulation and Form-Out Gears and Levers



G	Thin Coat on Teeth	Form Start Gear
G	Thin Coat on Teeth	Idler Gear
O1	Pivot Point	Form-Out and Vertical Tabulator Levers
O1	Hooks (Each End)	Springs (2)
O1	Pivot Points	Form-Out and Vertical Tabulator Levers
O	Saturate Felt Oiler	Form-Out and Vertical Tabulator Levers
O1	Hooks (Each End)	Springs (2)
O1	Pivot Points	Cable Connectors
O1	Pivot Point	Cable Roller

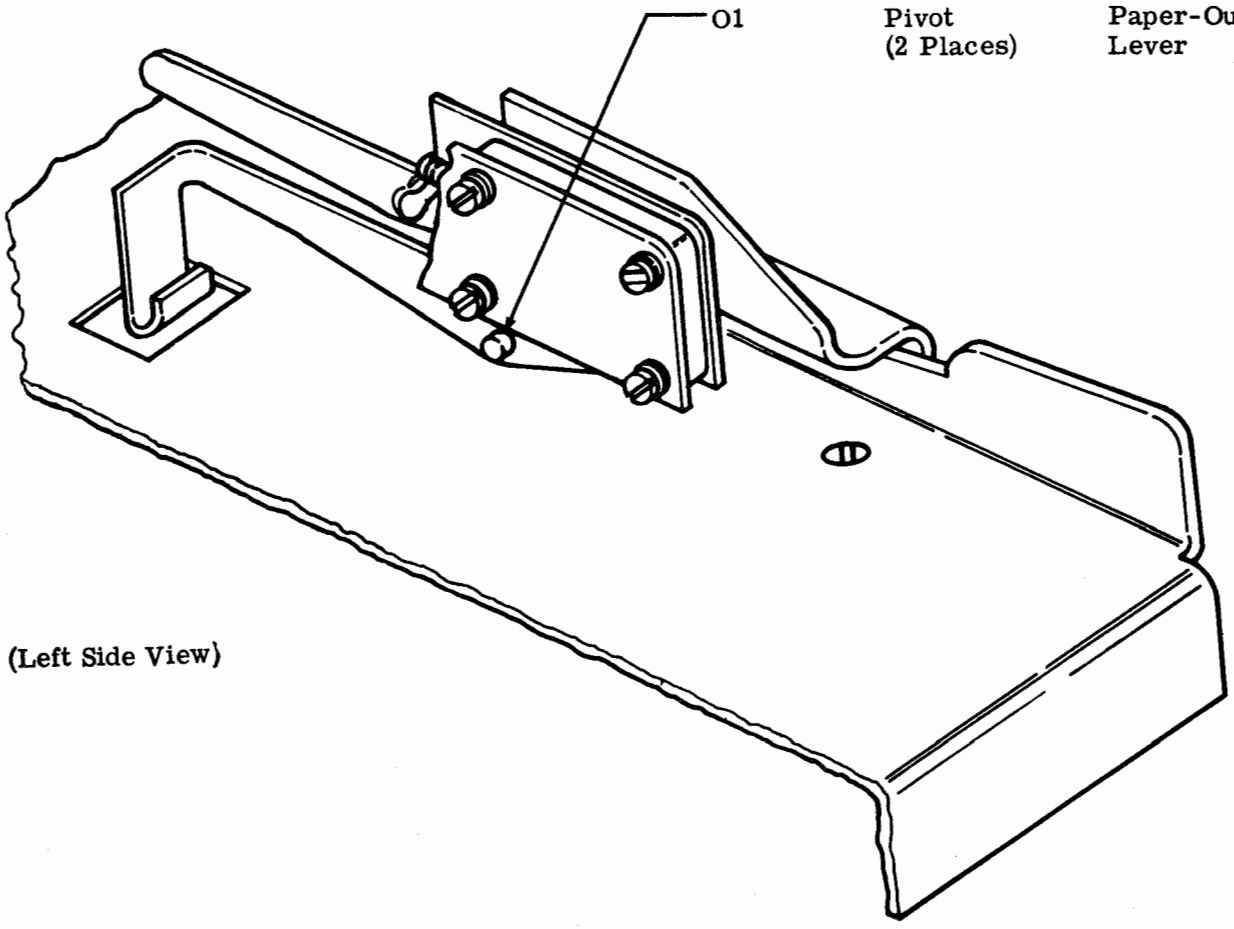
(Left Side View)

LUBRICATION AREA — REAR



(Sprocket Feed)

3.04 Paper-Out Alarm Switch (Sprocket Feed)



(Left Side View)

37 TYPING UNIT

DISASSEMBLY AND REASSEMBLY

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VERTICAL TABULATION MECHANISM 16

1. GENERAL

1.01 This section describes the procedures for the disassembly and reassembly of the principal subassemblies which comprise the late design Model 37 Typing Unit (Figure 1).

1.02 Photographs and line drawings are used to identify mechanisms and specific parts. Refer to parts Section 574-320-801TC for exploded views, for detailed disassembly and reassembly illustrations, and for identifying parts.

1.03 Refer to maintenance tools Section 570-005-800TC for information on tools necessary to perform the disassembly and reassembly procedures.

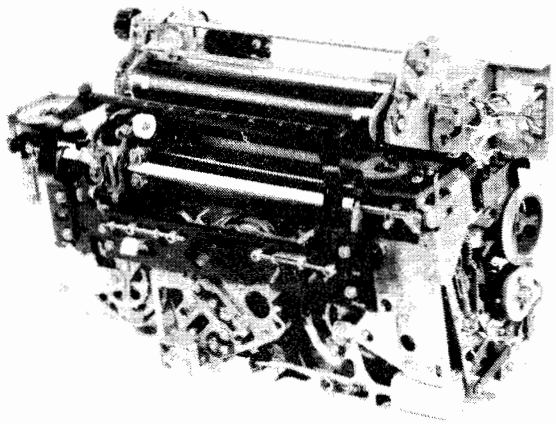


Figure 1 - 37 Typing Unit

1.04 Use maintenance pad TP124828 to protect furniture and floor coverings from oil, grease, and dirt, during the disassembly and reassembly of the typing unit.

1.05 After disassembly and reassembly of certain mechanisms, specific adjustments must be rechecked. These adjustments are listed in appropriate paragraphs in the text. See Section 574-320-703TC for all adjustment requirements to insure that the unit is operating properly.

1.06 Lubricate the typing unit according to lubrication Section 574-320-704TC, before placing unit back in service. Make a visual inspection of the unit for general lubrication requirements. Check oil locations on felt washers, oil cups, and in locations where parts rub or move with respect to each other. Apply grease to gears, rollers, points of heavy pressure, and on some ball bearings.

1.07 If a part is mounted on shims, the number of shims used at each mounting screw must be noted; when the part is remounted, the same shim pile-up must be used.

1.08 Retaining rings are made of spring steel and have a tendency to release suddenly on removal. To minimize loss of these retainers, use the following removal procedures.

(1) Hold the retainer in one hand to prevent it from rotating.

(2) Place the blade of a screwdriver in one of the slots of the retainer.

(3) Rotate the screwdriver in a direction to increase the diameter of the retainer, allowing easy removal of the retainer.

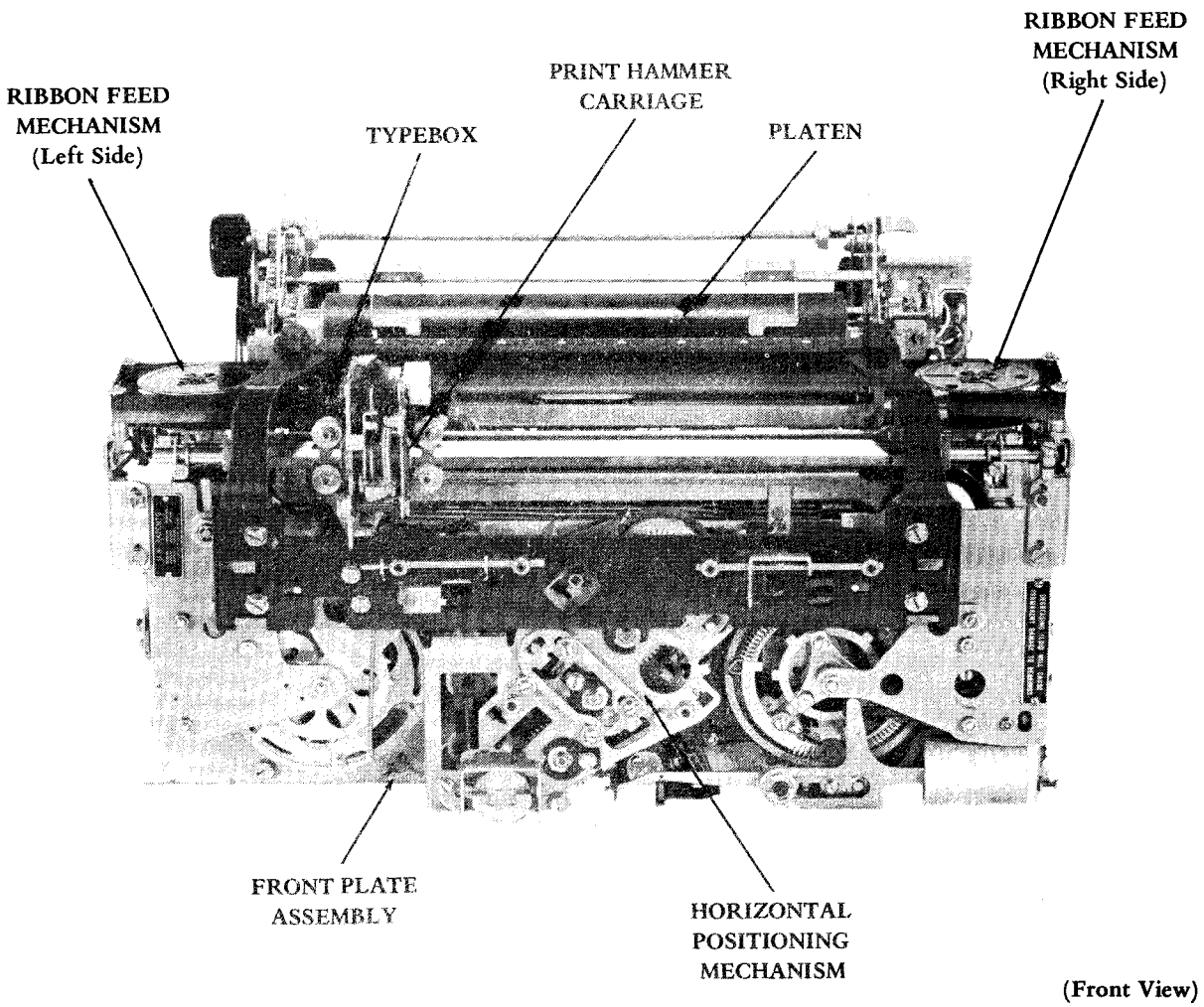


Figure 2 - 37 Typing Unit (Friction Feed)

1.09 Avoid loss of springs in disassembly by holding one spring loop with one hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs.

1.10 Reference in the procedures to left or right, up or down, top or bottom, etc, refer to the unit as viewed facing the front plate assembly (Figures 1 and 2).

CAUTION: DISCONNECT POWER BEFORE REMOVING THE TYPING UNIT FROM THE KEYBOARD AND BASE ASSEMBLY.

2. SUBASSEMBLIES

2.01 In removing a subassembly from the unit, the procedure followed and the location from where the part is removed must be carefully noted, so that proper reassembly can be accomplished. For reassembly, reverse the procedure used in removing the subassembly, except when different instructions are stated.

TYPEBOX

2.02 To remove the typebox from the carriage (Figure 3), trip the typebox latch toggle to the right. Lift the right end of the typebox up to an angle of 45 degrees, and pull the typebox toward the right to disengage it from the left hand bearing stud.

CAUTION: DO NOT OPERATE TYPING UNIT WITH TYPEBOX REMOVED, UNLESS TYPEBOX LATCH TOGGLE IS CAMMED OVER THE TYPEBOX CARRIAGE.

Typebox Disassembly

2.03 If it is necessary to replace the pallet or pallet spring TP157238, the typebox must be disassembled (Figure 3). The method used is as follows.

(1) Remove both screws and nuts that secure the front plate to the rear plate assembly. Separate the two plates and the typebox cover TP326183.

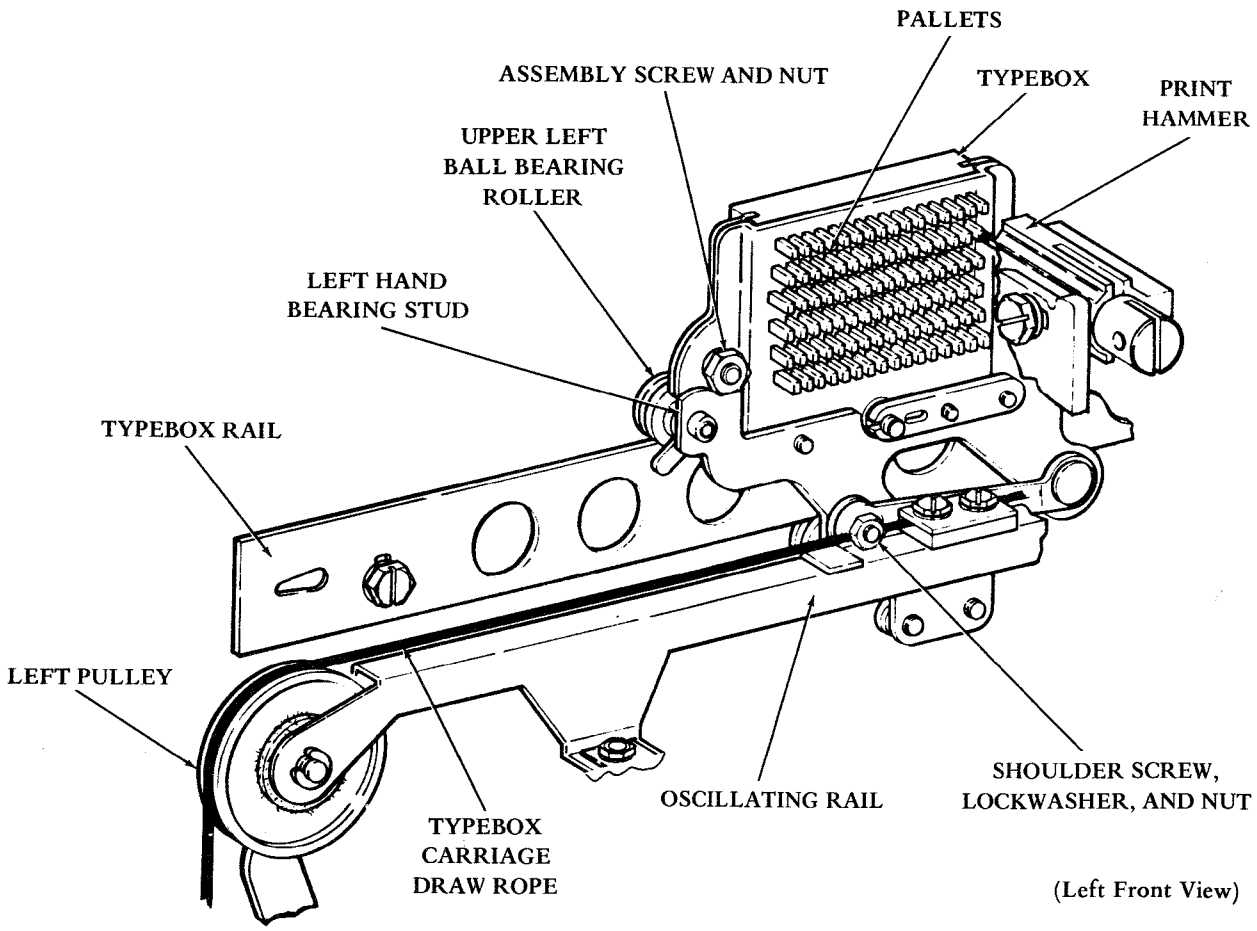


Figure 3 - Typebox, Typebox Carriage and Oscillating Rail

(2) To remove the pallet spring TP157238 from the pallet, compress the pallet spring slightly and pull the formed-end (hooked-end) out of the slot in the pallet.

(3) Remove the pallet from the typebox.

Note: Discard the pallet spring TP157238 once it has been removed.

(4) Replace the pallet (raised mark indicates top of pallet).

(5) Install a new pallet spring; make certain that the formed-end (hooked-end) of the pallet spring extends through the slot in the pallet and hooks onto the other side.

Typebox Reassembly

2.04 After replacing the pallet or pallet spring TP157238, the typebox must be reassembled (Figure 3). The method used is as follows.

(1) Line up the front plate with the rear plate assembly and draw the two plates together until the head of the pallet leaves the rear plate by 1/16 inch. Use two 6-40 screws (11/32-inch long) and nuts, in place of the two screws and nuts removed in 2.03(1) and tighten them only enough to hold the pallets as specified above. Do not clamp the plates together until all the pallets have been moved into their correct position.

(2) Manipulate the pallets until they fall into their respective openings in the front plate. Press the plates together.

(3) Replace the aligning screws and nuts used in 2.04(1) with the mounting screws and nuts removed in 2.03(1). Rebuilt typeboxes must be dipped in KS7470 oil; all excess oil must be drained before installing.

2.05 To replace the typebox (Figure 3), reverse the procedure used for removal.

CAUTION: TO AVOID SPRINGING THE TYPEBOX LATCH, THE TYPEBOX SHOULD BE FIRMLY SEATED ON THE BEARING STUDS AND THE POINT OF THE LATCH TOGGLE SHOULD BE PLACED IN THE NOTCH OF THE TYPEBOX PLATE BEFORE MOVING THE TOGGLE TO ITS LATCHED POSITION.

TYPEBOX CARRIAGE

2.06 To remove the typebox carriage from the unit proceed as follows (Figure 3).

(1) Set all codebars to the marking position and turn the main shaft until the typebox is in the uppermost position.

(2) Remove the shoulder screw, lockwasher, and nut which are used to connect the oscillating rail slide to the typebox arm.

(3) Loosen the screw, which mounts the upper left ball bearing roller, and slide it upward in its slots; then remove the carriage from the track.

2.07 To replace the typebox carriage (Figure 3), reverse the procedure used for removal. Check Carriage Roller adjustment.

RIBBON FEED MECHANISM

2.08 To remove the ribbon feed mechanism (Figure 2) from the unit – left side, proceed as follows.

(1) Remove the two ribbon spools from the ribbon feed mechanism.

(2) Loosen the ribbon feed drive arm clampscrew on the left side.

(3) Remove one locknut and sleeve from the left blocking lever and connecting rod connection.

(4) Remove the left ribbon bracket mounting screws and lift assembly.

2.09 To replace the ribbon feed mechanism – left side (Figure 2), reverse the procedure used in removal. Check the following adjustments:

(a) Ribbon Feed Main Brackets Left and Right

(b) Ribbon Feed Lever Left and Right

(c) Ribbon Reversing Connecting Rod

2.10 To remove the ribbon feed mechanism from the unit – right side (Figure 2), remove the retaining ring from the post on the drive arm. Remove one locknut and sleeve from the right blocking lever and connecting rod connection.

Note: If the left ribbon mechanism has been removed, it is not necessary to remove the locknut and sleeve from the right blocking lever and connecting rod connection.

Remove the right ribbon bracket mounting screws and lift assembly from unit.

2.11 To replace the ribbon feed mechanism – right side (Figure 2), reverse the procedure used in removal. Check Ribbon Reversing Connecting Rod adjustment.

PRINT HAMMER CARRIAGE

2.12 To remove the print hammer carriage from the unit (Figure 2), proceed as follows.

(1) Remove the two screws which mount the ribbon positioning bracket to the print hammer carriage; the bracket does not have to be removed from the unit. Loosen the print hammer carriage cable clampscrew and disconnect the cable; remove the left ribbon feed mechanism as described in 2.08.

(2) Remove the right ribbon bracket mounting screws. Take off the retaining ring from the print hammer lower drive arm and link connection. Separate the link and arm. Loosen the coordinating cable spring adjustment arm clamp nut to reduce tension on the pulleys. Also reduce carriage return spring tension to a minimum by loosening the nut on the front of the spring drum bearing post and then operating the ratchet escape lever. Remove the four print carriage guideplate mounting screws and then remove the guideplate. The left bearing bracket is now removed, and the print carriage is removed from the square shaft.

2.13 To replace the print hammer carriage (Figure 2), reverse the procedure used in removal. Check the following adjustments:

(a) Carriage Return Spring

(b) Coordinating Cable Spring Tension and Equalization

(c) Vertical Print Hammer Alignment

(d) Print Hammer Latch

(e) Print Hammer Position

(f) Spacing Rope Alignment

(g) Print Point Indicator

(h) Pointer Clearance

(i) Ribbon Feed Main Brackets Left and Right

(j) Ribbon Feed Lever Left and Right

(k) Ribbon Guide Alignment.

FRONT PLATE ASSEMBLY

2.14 To remove the front plate assembly from the unit, proceed as follows (Figures 2, 4, 5, and 6).

(1) Set all codebars to the marking position and turn the main shaft until the typebox is in the upper most position. Remove the shoulder screw, lockwasher, and nut used to connect the oscillating rail slide to the typebox arm. Remove the two screws used to mount the ribbon positioning bracket to the print hammer carriage; the bracket does not have to be removed from the unit. Take off the retaining ring from the print hammer lower drive arm and link connection. Separate the link and arm. Disconnect the line feed cable at the back of the unit by loosening the screw at the end of the line feed clutch trip support post and remove bracket and lever (Figure 5).

(2) Loosen the screw (under the printer) used to mount the print hammer lower drive shaft bearing clamp (Figure 4); rotate clamp to the left side. Center the bearing under the clamp when replacing the clamp. Remove the horizontal dampener spring TP78823, located at the lower left hand corner of the front plate (Figure 6).

(3) If the unit has horizontal tab-stop control, disconnect the horizontal control cables from the function levers in slots 15 and 16. Loosen the cable clamp on the codebar assembly and slip the cables from under the cable clamp. When the unit is equipped with horizontal tab-stop control, remove the horizontal tab connecting link; also remove the retaining ring which connects the link to the horizontal tab arm. Remove the four front plate mounting screws and remove the front plate.

2.15 To replace the front plate assembly (Figures 2, 4, 5, and 6), reverse the procedure used in removal. The carriage return lever must be in the slot in the carriage return link assembly. The horizontal positioning slide trip levers must be connected to their respective codebars.

Note: Make sure the horizontal dampener spring TP78823 has been replaced.

Before tightening the plate mounting screws, there must be some backlash in the horizontal drive gears and in the spacing drive gears. Check the following adjustments:

(a) Ribbon Guide Alignment

(b) Spacing Gear Phasing.

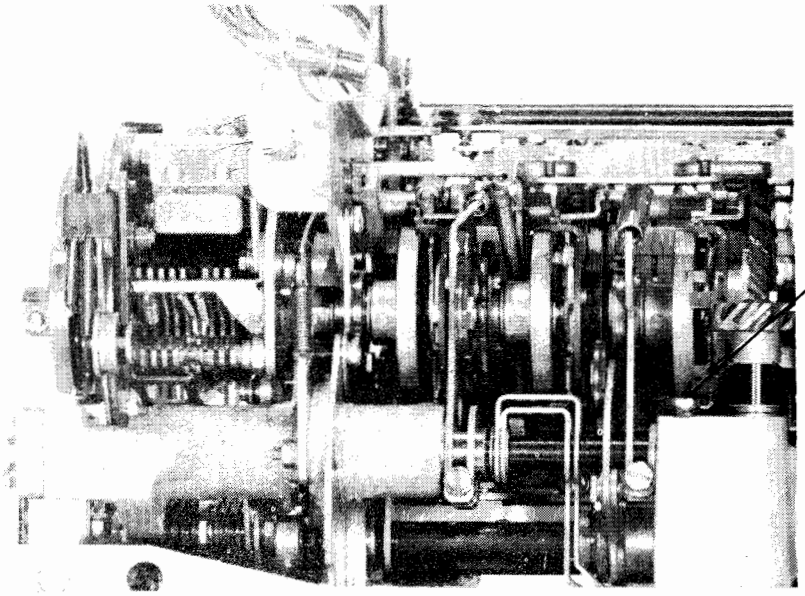


Figure 4 - Bottom Section of Unit Used in Connection With Front Plate Assembly Removal

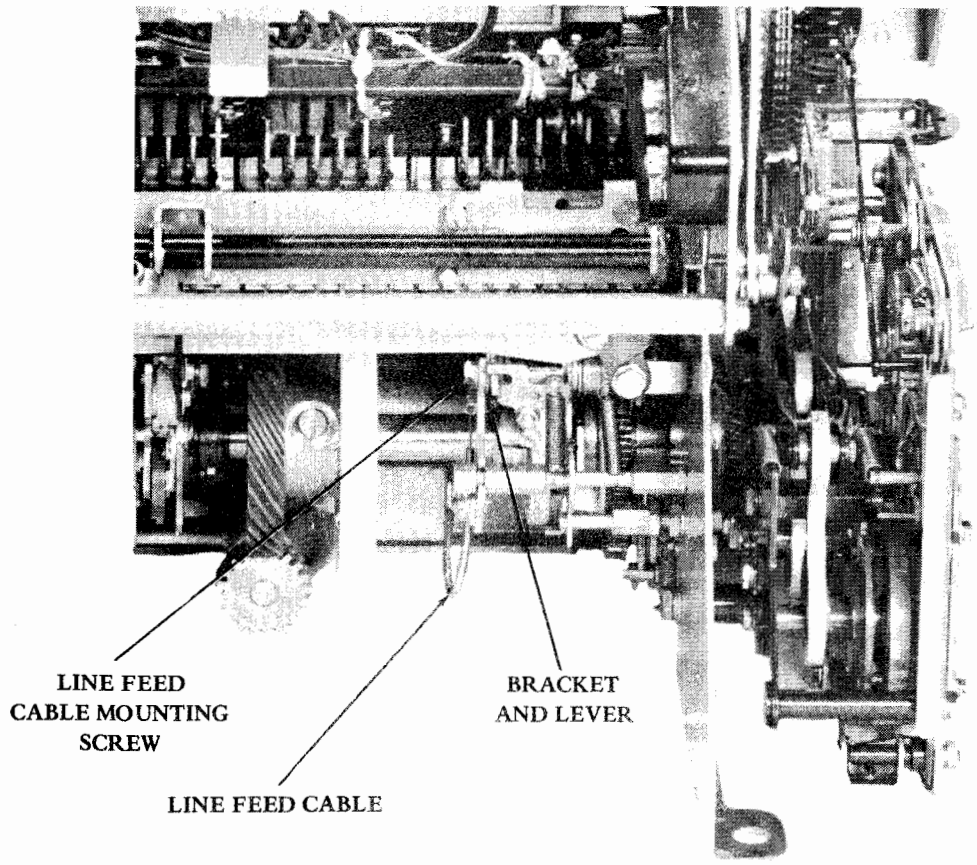


Figure 5 - Rear Section of Unit Used in Connection With Front Plate Assembly Removal

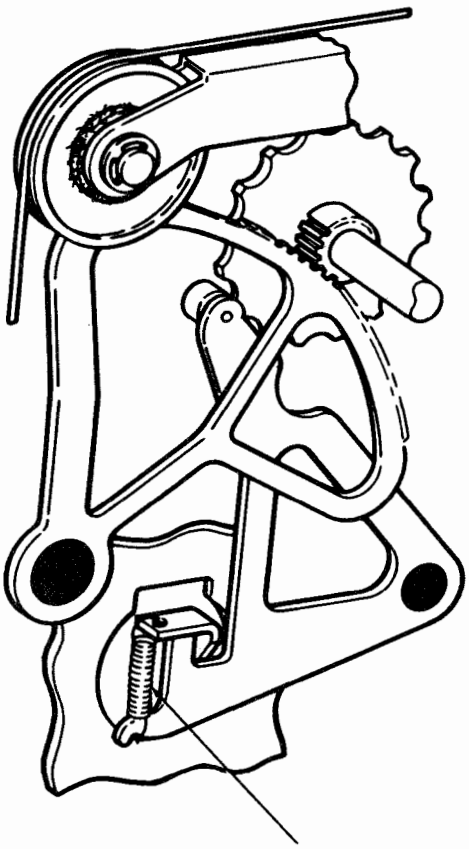


Figure 6 - Horizontal Detent Dampening Assembly

HORIZONTAL POSITIONING MECHANISM

2.16 To remove the horizontal positioning mechanism (Figure 2) from the unit, proceed as follows.

(1) Remove the front plate assembly as described in 2.14. Loosen the coordinating cable spring adjustment arm clamp nut to reduce tension on the pulleys. To reduce carriage return spring tension to a minimum, loosen the nut on the front of the spring drum bearing post and then operate the ratchet escape lever.

(2) Check and RECORD Ribbon Feed Main Brackets Left and Right adjustment. Remove the four print hammer carriage guideplate screws to release the guideplate. Remove the screw used to connect the aggregate motion output bail to the oscillating rail. Remove the screws from the three aggregate motion drive shaft gears and remove the shaft.

Note: Thrust washers and bearing with sleeve can remain on the shaft.

(3) Remove the eight nuts from the back and front ends of the clutch shafts. Unhook the clutch latch springs. Take off the two springs from the aggregate linkage. Remove the auxiliary plate by removing the four front auxiliary plate mounting screws. Remove the two idler gears from the clutch shafts. Check gears on the clutch drums. Remove the horizontal positioning mechanism from the front plate.

2.17 To replace the horizontal positioning mechanism (Figure 2), reverse the procedure used in removal. Make sure that the third idler gear is placed in position before mounting the horizontal positioning mechanism to the front plate. Remount print carriage guideplate; then set Ribbon Feed Main Brackets Left and Right adjustment to setting, recorded in 2.16(2), by moving the print carriage guide up or down. Check the following adjustments:

(a) Aggregate – Dampener Synchronization

(b) Carriage Return Spring

(c) Coordinating Cable Spring Tension and Equalization

(d) Ribbon Guide Alignment

FUNCTION BOX

2.18 To remove the function box from the unit, proceed as follows (Figures 7 and 8). (On units with sprocket feed, remove the paper tray.) Remove the connector mounting screws and feed connector through the side frame.

Note 1: Do not remove connector TP161238 if complete separation of function box from unit is not intended.

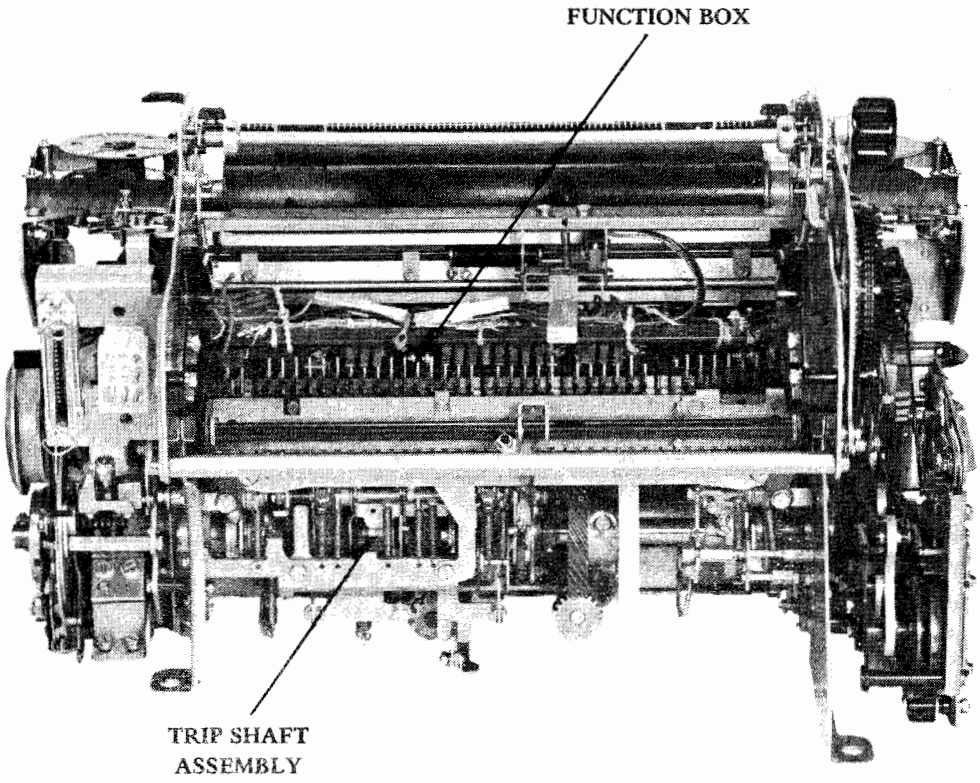
When the unit is equipped with horizontal and/or vertical tab-stop control, disconnect control cables from function levers in slots 15 and 16 and in slots 39 and 40. From the stripper blade drive mechanism, take off the two retaining rings, felt washers, and link. Remove the two mounting screws from the rear of the function box side plates. Remove one screw used to mount the function box brace to the trip shaft casting. Remove the function box from the unit.

Note 2: When removing function box, hold the line feed clutch trip lever in the tripped position to prevent the function box from catching on the trip arm.

Function Bar Removal

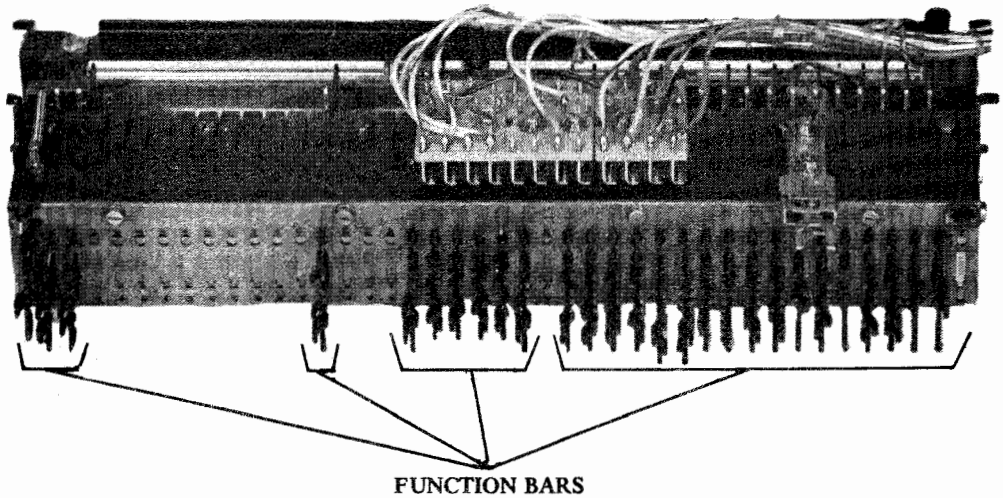
2.19 After removal of the function box (Figure 8), the function bar is removed by the following method.

(1) Unhook the function bar spring from the function bar.



(Back View)

Figure 7 - Function Box and Trip Shaft Assembly Mounted in Typing Unit



(Front Top View)

Figure 8 - Function Box

(2) Hold the function bar toward the rear of the function box and disengage the function pawl from the function bar.

(3) Pull the function bar toward the front to remove the function bar from the function box.

Function Bar Replacement

2.20 Reverse the procedure used in removal (Figure 8) in 2.19.

2.21 To replace the function box, reverse the procedure used in removal (Figures 7 and 8).

(1) During installation of the function box, the function clutch should be tripped and the main shaft rotated until the reset blade is toward the front of the unit. The shift forks must be in line with their respective posts on the codebar mechanism. Push the function box forward on its guide rails to 1/8 inch of its final position. Next manually disengage the function pawls from their function bars and push the function box into its final position.

(2) If the unit has horizontal and/or vertical tab-stop control, the bottom of the function levers in slots 17 and 41 must be inserted into the slot in their respective slides. To do this, raise the function lever to its maximum uppermost position, and push the function lever forward until it drops into the slot in the slide.

VERTICAL POSITIONING MECHANISM

2.22 To remove the vertical positioning mechanism from the unit (Figure 9), remove the retaining ring from the retraction reset arm post. Remove the screw from the upper right hand corner of the vertical positioning rear mounting plate. Remove the nuts from the bottom two posts on the inside of the left side frame. Now remove the mechanism from the unit. Notice the position of the loose gear and coupling assembly from the rear of the mechanism.

2.23 To replace the vertical positioning mechanism (Figure 9), set all codebars in the marking position. Rotate the main shaft so that the male portion of the coupling on the end of the main shaft is in the vertical position. Check that the gear and coupling on the back of the mechanism are in place and in position to line up with the main shaft coupling. Place vertical slides in the downward position and rotate clutches until aggregate is in the uppermost position. Also check that the racks and typebox rail are in the uppermost position. Replace the mechanism.

CODEBAR ASSEMBLY

2.24 To remove the codebar assembly from the unit, proceed as follows.

(1) Remove the front plate assembly as in 2.14. Remove the two mounting screws from the rear of the function box side plates. Remove one screw used to

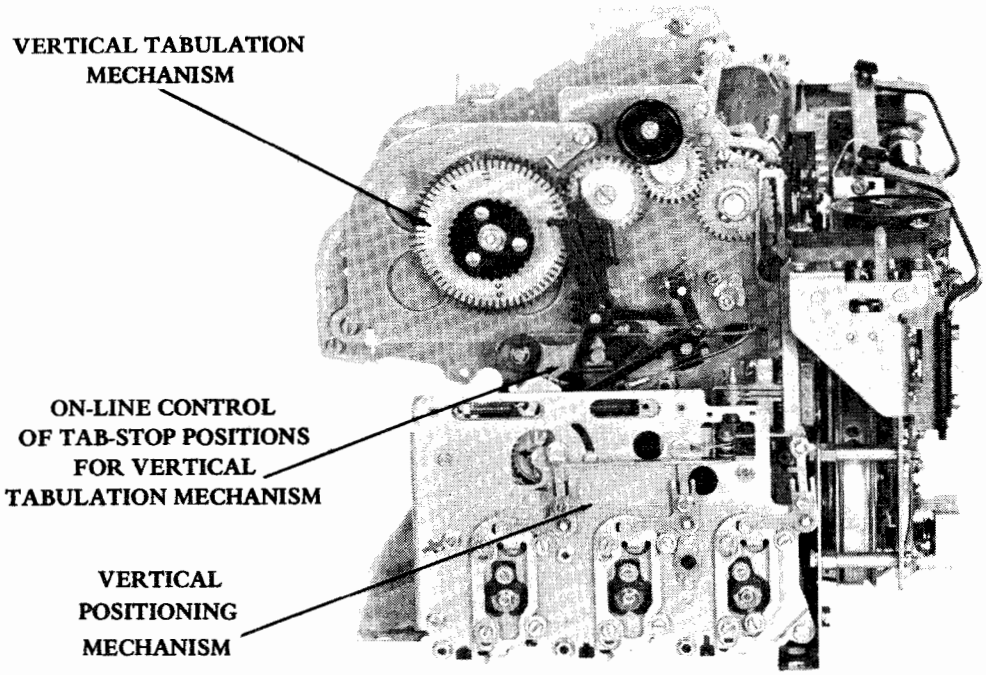


Figure 9 - Interrelated Positions of Three Vertical Movement Mechanisms

mount the function box brace to the trip shaft casting. Pull the function box toward the rear of the unit to take the pressure of the function bars off of the codebars.

(2) Remove one screw and loosen the other screw that mount the codebar shiftbar guideplate. Remove the two screws on either side frame used to mount the codebar guide castings.

(3) Pull the codebar shiftbars forward and to the right, to allow the codebar assembly to pass by the codebar shiftbars.

2.25 To replace the codebar assembly, reverse the procedure used in removal. If either tie bar mounting screw is loose, make sure both are loosened friction tight before mounting codebar assembly. Replace and tighten the four screws mounting the codebar assembly. Tighten the tie bar mounting screws. Replace the function box as described in 2.21. Replace the front plate assembly as described in 2.15.

SELECTOR CAM SLEEVE ASSEMBLY AND CLUTCH

2.26 To remove selector cam sleeve assembly and clutch from unit, remove selector clutch drum mounting nut, screw, and washers. Remove the selector clutch and cam sleeve assembly.

Note: Perform the following operations to insure easy removal of the cam sleeve assembly.

(1) Latch the pushlever reset bail up and out of the way on the notch (maintenance step) provided in the lever guide slot.

(2) Push the mark locklever to the left and insert a pin in the hole provided on the lever extension, so that the lever (and consequently the selecting levers) is held away from the cam by the mark locklever guide bracket.

(3) Hold the space locklever and start lever to the left. Hold lifter lever down. Slip the selector cam sleeve assembly off the shaft, at the same time rotating the assembly counterclockwise.

2.27 To replace the selector cam sleeve assembly and clutch, reverse the procedure used in removal, but rotate the selector cam sleeve assembly counterclockwise. To insure easy replacement when the sleeve is almost in place, pull the trip lever arm and selector clutch latchlever away from their respective cams.

SELECTOR ASSEMBLY

2.28 To remove the selector assembly from the unit, proceed as follows (Figure 10).

(1) Remove the selector cam sleeve assembly and clutch as in 2.26. Next remove the screw that secures the selector assembly to the intermediate bracket on the code positioning mechanism.

(2) Remove the retract arm cam follower spring TP90260 from the cam follower. Disconnect the cam follower arm from the retract oscillating shaft.

(3) Remove the three remaining selector assembly mounting nuts and lift the selector assembly from the main shaft bearing housing.

2.29 To replace the selector assembly (Figure 10), reverse the procedure used in removal. Replace the selector cam sleeve assembly and clutch as in 2.27. Check the following adjustments:

(a) Selector Magnet Bracket

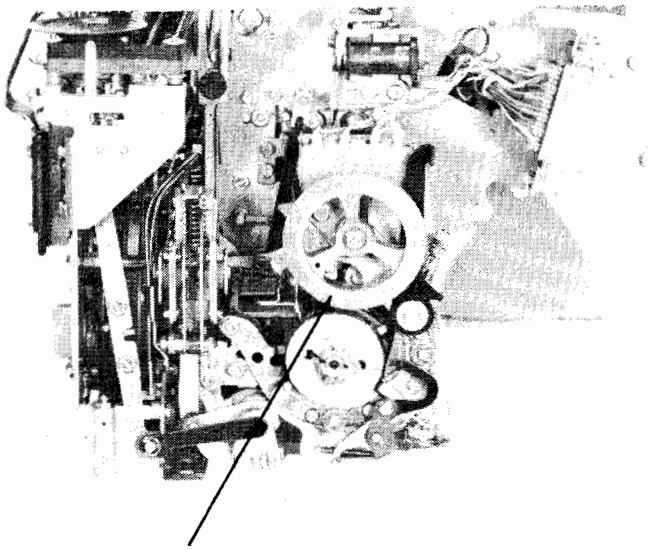
(b) Intermediate Arm Latch Bail

(c) Intermediate Arm Back Stop Bracket

MAIN SHAFT ASSEMBLY

2.30 To remove the main shaft assembly from the unit, proceed as follows (Figures 11 and 12).

(1) Remove the selector cam sleeve assembly and clutch as in 2.26. Remove the vertical positioning mechanism as in 2.22.



SELECTOR ASSEMBLY

(Right Lower Side View)

Figure 10 - Selector Assembly Mounted in Typing Unit

(2) Next engage all clutches; then remove all main shaft clutch drum mounting screws. From the selector end of the main shaft, remove screw and collar.

(3) Remove the screws from the two collars at the center of the main shaft. Remove the main shaft drive gear mounting screw and loosen the two setscrews. Take out the screw from the bearing collar at the left end of the main shaft.

(4) Take off the retaining ring used to connect the codebar shift lever link and separate the link and arm. Remove the retaining ring that connects the print hammer lower drive shaft arm to the square shaft drive links and separate the link and arm.

(5) Take off the print hammer cam follower spring TP334339 and codebar positioning cam follower arms spring TP82861. Tap the right end of the shaft with the handle of a screwdriver or soft hammer, until the shaft loosens up from the bearing in the right side frame.

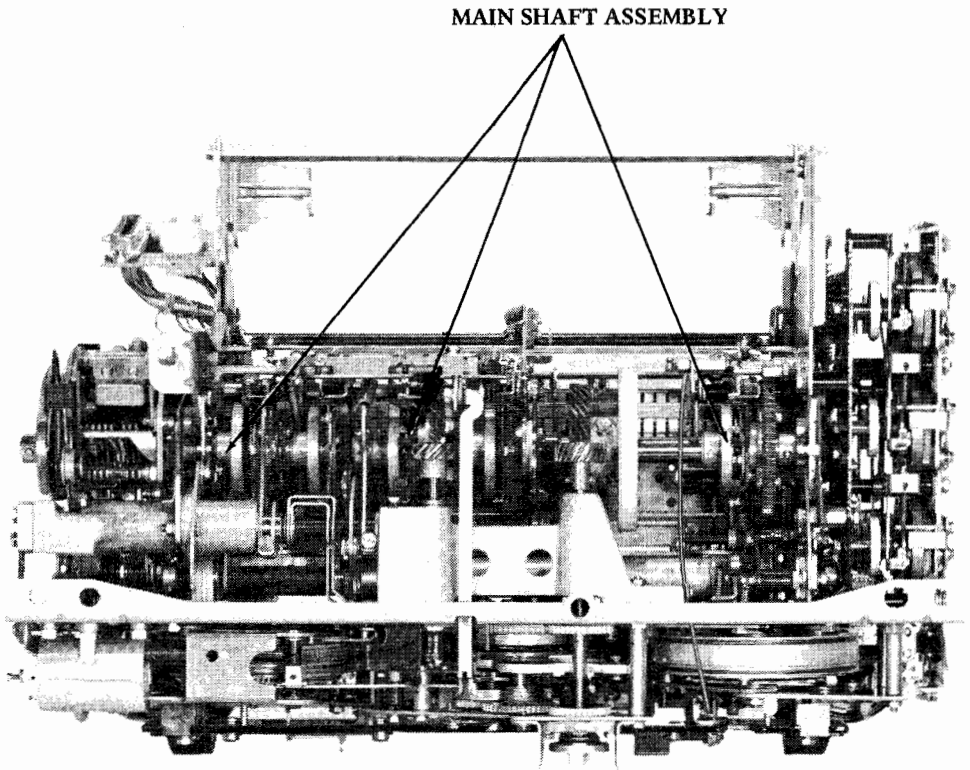
(6) Pull the shaft out of the left end of the unit, leaving the clutches in their plate. Remove all clutches that are required.

Note: When removing cams from clutches, note that the round circle stamped on the face of the cam should face toward the left end of the unit.

2.31 To replace the main shaft assembly (Figures 11 and 12), reverse the procedure used in removal. Do not disengage the clutch drum from the shoes when feeding the clutch onto the shaft. Replace the selector cam sleeve assembly and clutch as in 2.27. Replace the vertical positioning mechanism as in 2.23. Check the following adjustments:

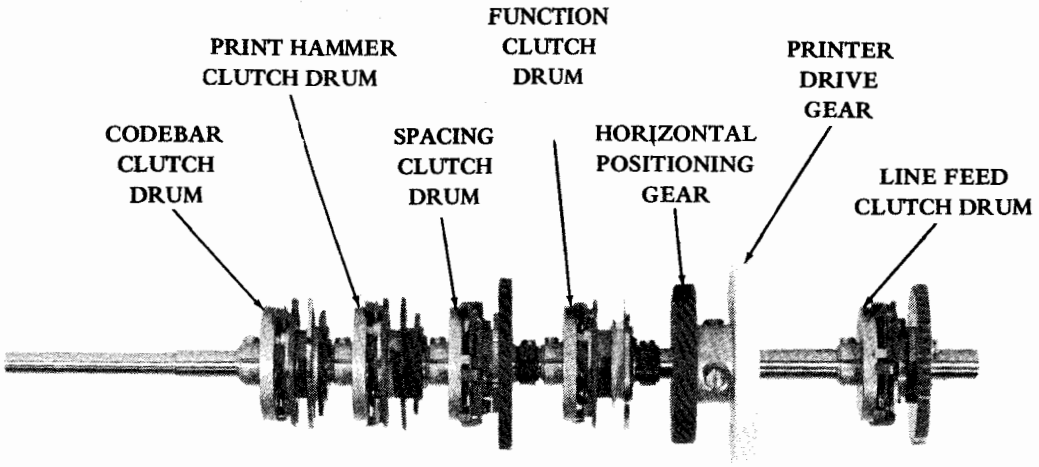
(a) Main Shaft Clutch Disc End Play

(b) Line Feed Clutch Phasing



(Bottom View)

Figure 11 - Main Shaft Assembly Mounted in Typing Unit



Note: Installation position shown; trip levers in up positions.

(Bottom View)

Figure 12 - Main Shaft Assembly

CODEBAR POSITIONING MECHANISM

2.32 To remove the codebar positioning mechanism from the unit, proceed as follows (Figure 13).

(1) Remove the front plate assembly as in 2.14. Remove the two range finder plate assembly mounting screws, nut, and washers; then remove the range finder plate assembly. Remove the retaining ring from the codebar positioning drive arm and shift lever drive link connection and separate link and arm.

(2) Remove the three mounting screws: The one on the selector, codebar positioning drive shaft casting, and side frame flange.

(3) Manipulate the transfer levers and codebar shiftbars, while gently twisting and sliding the mechanism off of the codebar shiftbars.

2.33 Replace the codebar positioning mechanism (Figure 13) by reversing the procedure used in removal, except push the shiftbars to the marking position (left/pushed in). Manipulate the shiftbars and transfer levers so that the shiftbars line up with their respective slots in the guide bracket and slide shiftbars one at a time through the slots. Replace the front plate assembly as described in 2.15.

PLATEN

2.34 To remove the platen from the unit (Figure 2), remove the platen bearing retainers. Remove the paper finger shaft (friction feed) or the guide bracket (sprocket feed, Figure 14). Remove driving gear. Hold off the detent and lift the platen out of the side frame.

2.35 To replace the platen (Figure 2), reverse the procedure used in removal. First put in the retainer upper screw when replacing the platen bearing retainers. Leave the retainer upper screw slightly loose. Press the lower end of the retainer down and hook it into the elongated hole in the side frame. Replace the lower screw; tighten both screws.

TRIP SHAFT ASSEMBLY

2.36 To remove the trip shaft assembly from the unit, proceed as follows (Figure 7).

(1) Remove the function box as in 2.18. Disconnect all springs from the spring bracket which is mounted on the trip shaft casting. Remove the two screws used to mount the spring bracket and remove the spring bracket. Loosen the print hammer clutch trip clamp mounting screw.

(2) For units equipped with horizontal tab, remove the retaining ring used to connect the horizontal tab blocking slide. Remove the screw used to mount the horizontal tab arm to the horizontal tab bail. Remove the horizontal tab arm.

(3) Loosen the two trip shaft bearing clamp plates and remove. Lift the trip shaft assembly up and out of the unit.

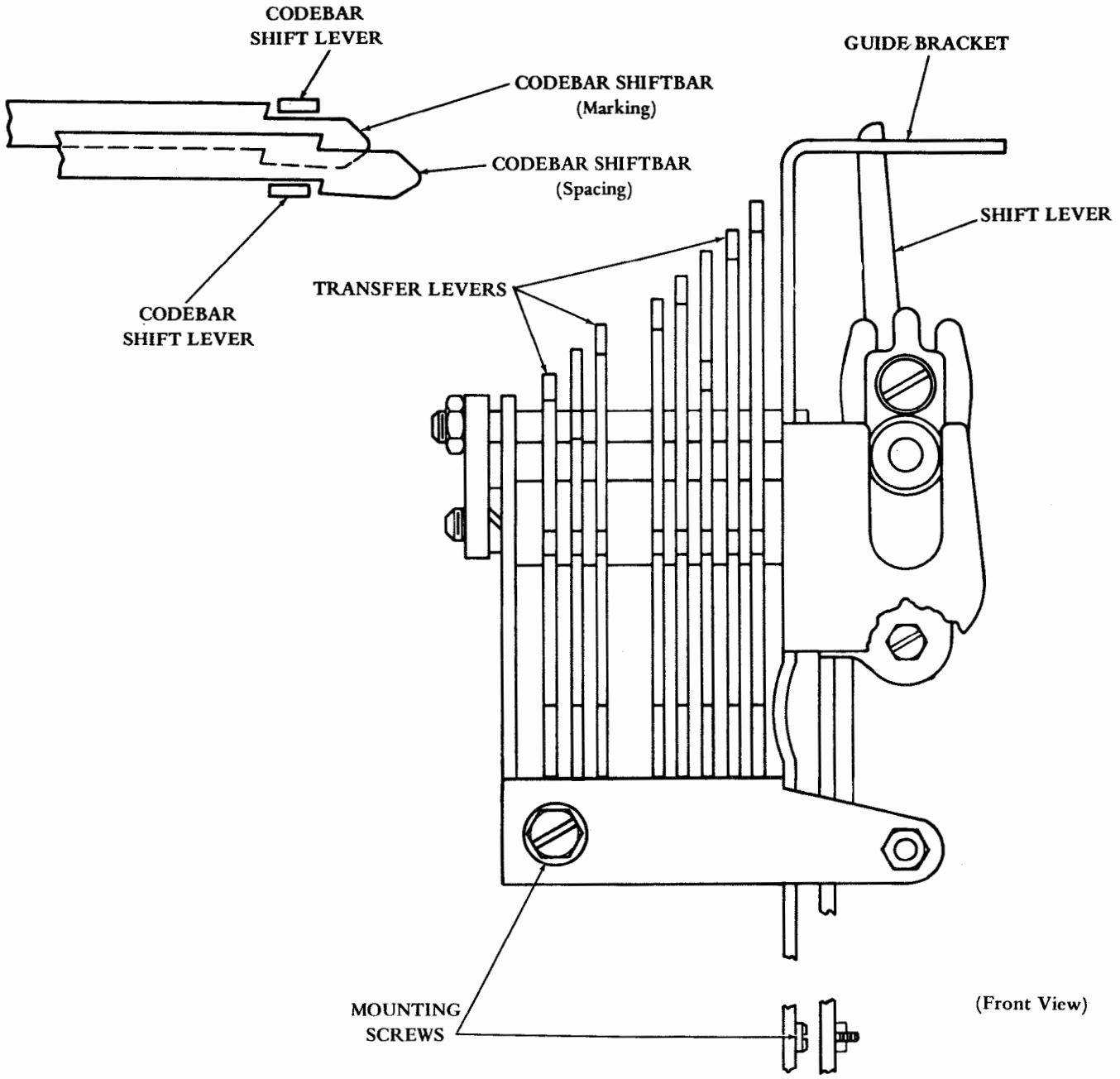


Figure 13 - Codebar Positioning Mechanism

2.37 To replace the trip shaft assembly (Figure 7), proceed as follows.

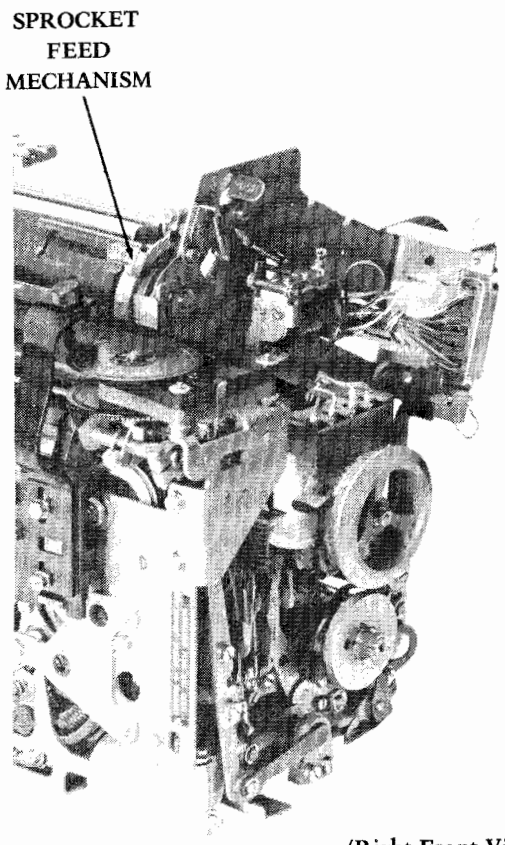
(1) Reverse the procedure used in removal. Check function clutch trip parts for their proper position.

(2) When installing the horizontal tab arm, make sure that the "C" shaped hole is fully seated on the raised portion of the horizontal tab bail.

(3) Before tightening the screws, align the bearing clamps over the center of the bearings. Check the following adjustments:

(a) Function Clutch Trip Arm (requirement no. 2)

(b) Printing Clutch Trip Lever



(Right Front View)

Figure 14 - 37 Typing Unit (Sprocket Feed)

SPACING CABLE

2.38 To remove the spacing cable (Figures 15 and 16) from the front plate, proceed as follows.

(1) Return the carriages to the left position. Unwind the carriage return spring by loosening the nut on the front of the spring drum bearing post and operate the ratchet escapement lever. Release the cable from the clamp on the printing carriage and also from the clamp on the oscillating rail slide. Remove the cable clamp-screw used to secure the spacing cable to the spring drum and remove the cable from the drum.

(2) When equipped with horizontal tab, remove the three screws used to mount the horizontal tab ring on the spacing drum; position the horizontal tab ring to allow access to cable mounting screws. Remove the cable mounting screws from the spacing drum used to secure the ends of the spacing cable; remove the spacing cable from the drum.

2.39 To replace the spacing cable (Figures 15 and 16), reverse the procedure used in removal. Check the following adjustments:

(a) Carriage Return Spring

(b) Right Hand Margin

(c) Print Hammer Position

(d) Spacing Rope Alignment

(e) Left Hand Margin

COORDINATING CABLE

2.40 To remove the coordinating cable from the front plate, proceed as follows (Figures 15 and 16).

(1) Loosen the coordinating cable spring adjusting arm clamp unit. Unhook the coordinating cable spring from the cable eyelets.

(2) Loosen the cam plate mounting screw on the spring drum, and rotate the cam plate to gain access to the cable clamping screw if necessary.

(3) When equipped with horizontal tab, remove the three screws used to mount the horizontal tab ring on the spacing drum; position the horizontal tab ring to allow access to the cable mounting screw. Remove the two cable mounting screws used to secure the ends of the cable to the spacing drum. Remove the coordinating cable from the drum.

2.41 To replace the coordinating cable (Figures 15 and 16), reverse the procedure used in removal.

Note: Check that the short cable is connected to the spring drum.

Check the following adjustments:

(a) Coordinating Cable Tension and Equalization

(b) Margin Indicator Lamp

SPRINGS OR CONTACT ARMS IN SWITCH ASSEMBLY

2.42 To remove the springs or contact arms in the switch assembly, proceed as follows.

(1) Remove the two screws and lockwashers used to secure the switch to the function box. Unsolder any connections to the terminal and spring. When unsoldering the cable to the contact spring and when lacing or routing cables, do not tug or pull on the

contact spring, because this will cause distortion to the spring.

(2) Remove the top plate with spring and the contact arms. To remove the spring from the top plate, clean the solder from the spring and place the end of an orange stick on the shoulder of the spring and push downward.

2.43 To replace the contact spring, proceed as follows.

(1) Place the loop end of the spring into the required position in the terminal plate. Hook a spring hook into the loop of the spring and pull the spring into position. Before mounting the contact plate on the switch block, check that the end of the spring is on top of the formed-over contact end.

(2) Mount the terminal plate with spring and block-in the required location on the function box; replace screws and lockwashers. Resolder the cables to their respective locations. Insert the pointed end of the contact arm between the bent up end of the spring and the formed end of the contact; the notch of the contact arm must be in the downward position. Push the arm into position, so that the notch is engaged. Check that the contact arm insulator is in alignment with the function lever. Loosen the screws and position the switch to meet this requirement.

(3) Also check that there is some clearance between the contact arm and the vertical face of the clip. Check both contacts if the switch is a transfer type with contact on the front and rear.

ON-LINE CONTROL OF TAB-STOP POSITIONS FOR VERTICAL TABULATION MECHANISM

2.44 To remove the on-line control of tab-stop positions for vertical tabulation mechanism, proceed as follows (Figure 9).

(1) Remove retaining rings from function lever in slots 39 and 40. Disconnect cable eyelets from post on function lever. Remove cables from guide brackets and

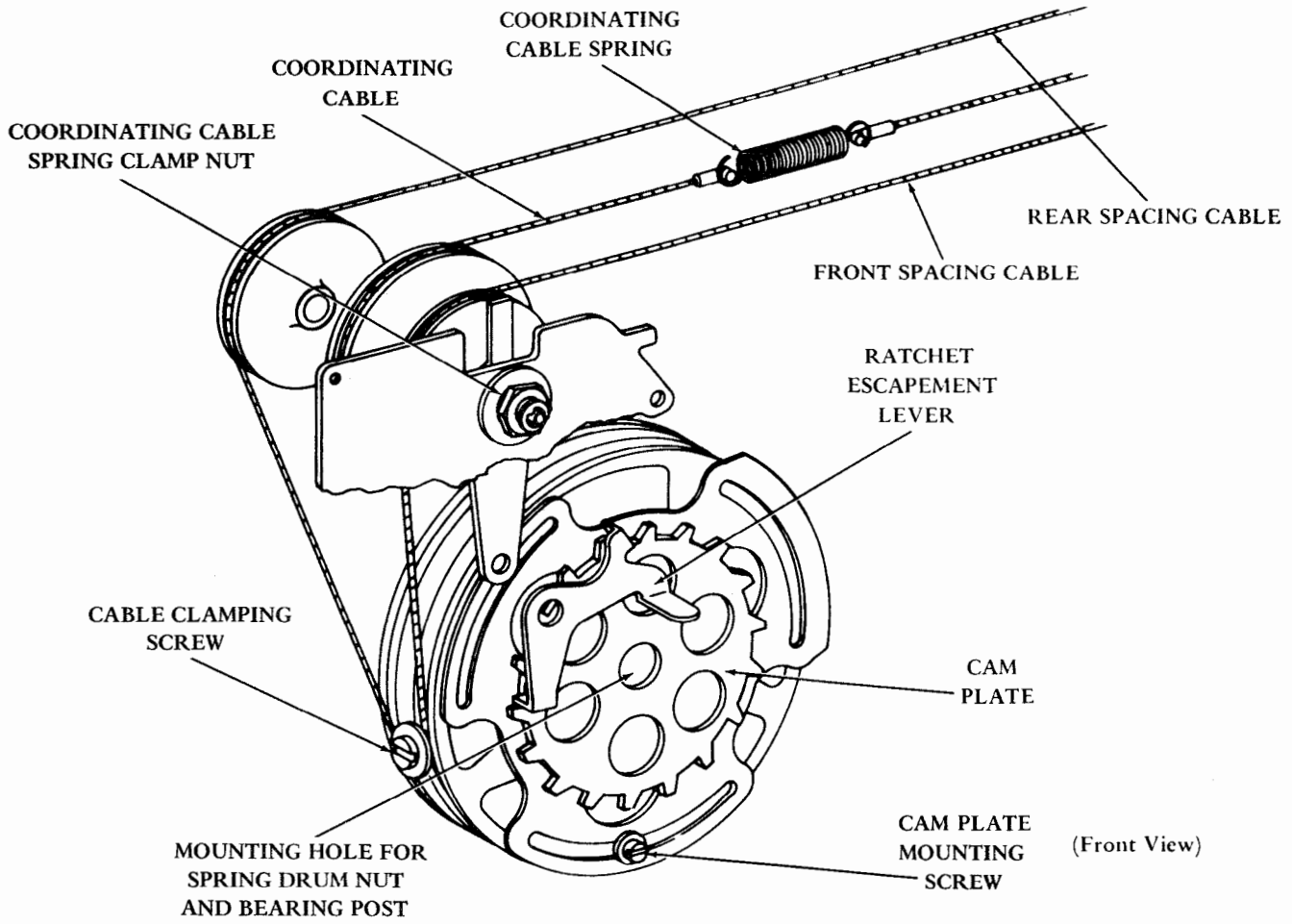


Figure 15 - Spring Drum and Cables

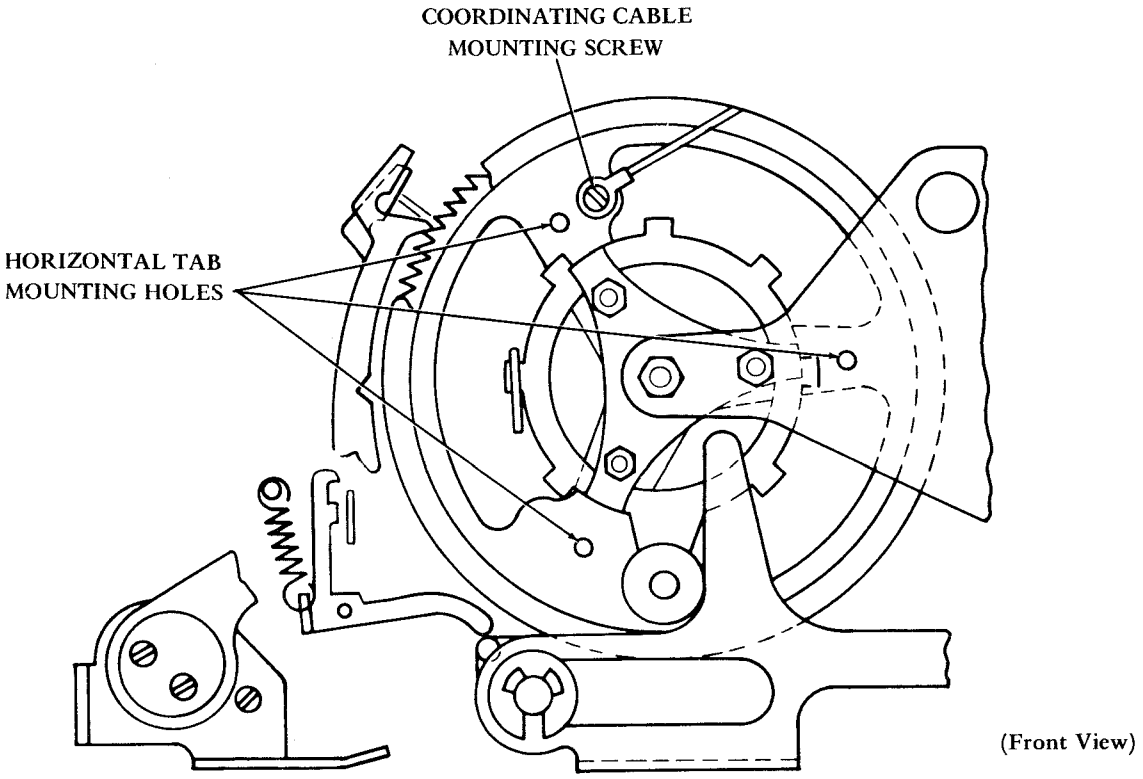


Figure 16 - Spacing Drum

feed out gradually through hole in left side frame, until inner cable can pass through small gap into large opening.

(2) Remove nut, lockwasher, and flat washer from lower post on vertical tabulator. Remove retaining ring from upper post on vertical tabulator. Remove the assembly from the unit.

2.45 To replace the on-line control of tab-stop positions for vertical tabulation mechanism (Figure 9), reverse the procedure used in removal. Check the following adjustments:

(a) Mounting Plate

(b) Tab Arm Spring Tension

(c) Tab Set Arm

(d) Tab Clear Arm

(e) Latch

(f) Latch Release

(g) Latch Spring

VERTICAL TABULATION MECHANISM

2.46 To remove the vertical tabulation mechanism (Figure 9) from the unit, remove the three screws, flat washers, lockwashers, and spacers used to hold the mounting plate assembly to the left side frame. Remove the pointer which is located between the mounting plate and the flat washer on the top mounting screw. Remove the mounting plate. Take out the vertical tabulation mechanism.

2.47 To replace the vertical tabulation mechanism (Figure 9), reverse the procedure used in removal. Check the following adjustments:

(a) Mounting Bracket

(b) Form Gear Play

(c) Tab Wheel

(d) Pointer

(e) Blocking Levers

(f) Sensing Arm Spring Tension

(g) Sensing Pawl Spring Tension

(h) Tab Wheel Synchronization

37 KEYBOARD UNIT

LUBRICATION

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1. GENERAL

1.01 This section provides lubrication procedures for the late design, 11-contact 37 keyboard unit (Figure 1). It is reissued to incorporate engineering changes and comments which were received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. Refer to Section 574-321-701TC for lubrication procedures for early design, 28-contact units.

1.02 Lubrication of the keyboard unit is presented by mechanisms with the procedures arranged counterclockwise around the mechanism. Following the procedures in this manner minimizes shifting and handling of the mechanisms.

1.03 Figures of each mechanism are used to show the lubrication area. The paragraph numbers on the figure refer to the specific lubrication points. References made to the front, top, rear, left, or right, apply to the keyboard unit in the position normally viewed by the operator.

1.04 Lubricate the keyboard unit before placing it in service and just prior to putting it in storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first) relubricate the keyboard unit to make certain that no mechanisms have been missed. Thereafter, lubricate the mechanisms according to the following schedule:

100 wpm	2,000 hr or 9 mo*
150 wpm	1,500 hr or 6 mo*

*Whichever occurs first.

CAUTION: WHEN THE KEYBOARD UNIT IS FUNCTIONALLY UTILIZED, REMOVE POWER FROM EQUIPMENT BEFORE ANY LUBRICATION IS PERFORMED.

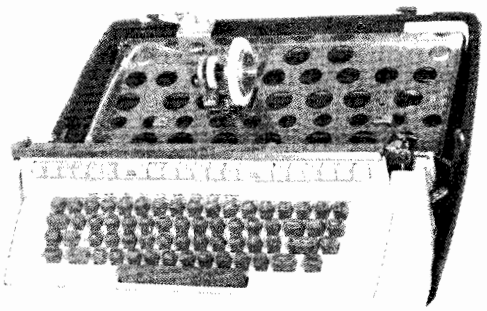


Figure 1 - 37 Keyboard Unit

1.06 The following list of symbols applies to the specific lubrication instructions given in each paragraph:

SYMBOL

D Keep dry, no lubricant permitted.

O Oil with KS7470 oil as instructed.

G Apply KS7471 grease.

L Apply Lubriplate (TP108805).

Note: In general, the symbols indicate the type of lubricant. Quantity of lubricant is normally given with the text associated with specific lubrication instructions. An exception to this method is where the exact number of drops of oil is specified. For example, O1, O2, O3, etc refer to 1, 2, 3 etc drops of oil.

1.07 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, only a single drop of oil should be applied so that the oil remains on the part and does not run off.

Note: Excessive oil tends to creep onto contacts and wiring insulation where it has a harmful effect.

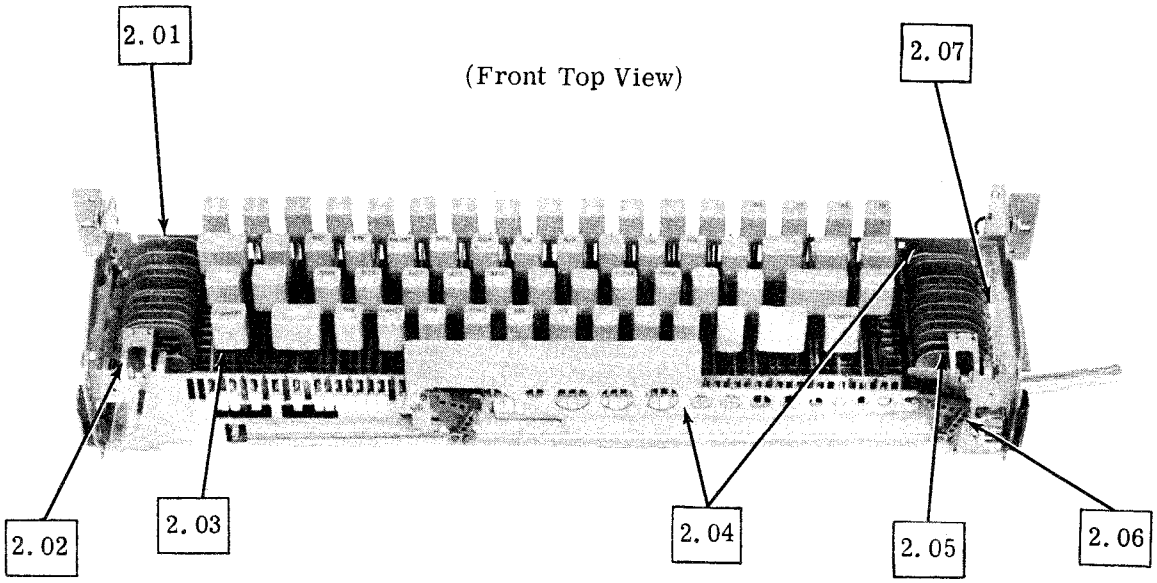
1.08 In general, oil should be used in such locations as hollow shafts, wicks, and in most locations where parts rub, slide, or move with respect to each other. Grease should be used on gear teeth and points of heavy pressure. Overlubrication which would allow oil to drip or grease to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

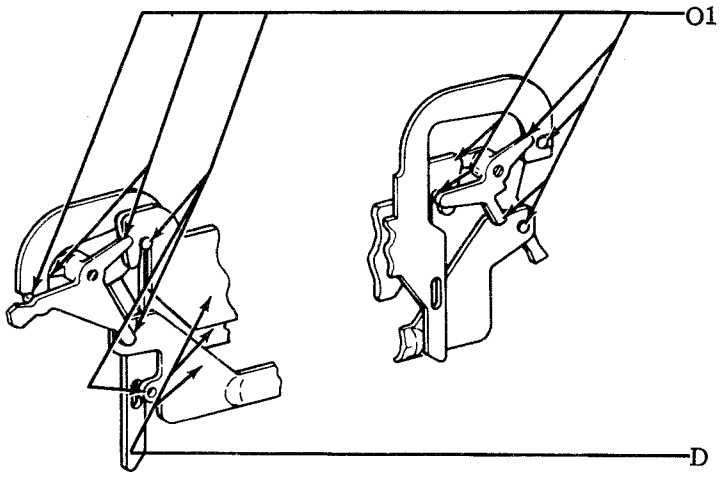
1.09 To remove the keyboard unit for lubrication, refer to Section 591-801-702TC.

2. BASIC UNIT

KEYBOARD MECHANISM



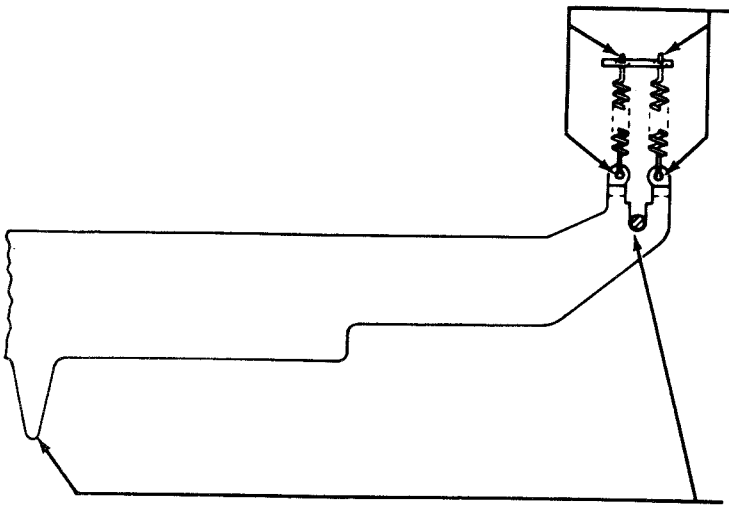
2.01 Codebar Sets



O1	Pivots and Guide Surfaces	T-Levers
D	Engaging Surfaces	Codebars and T-Levers

(Left Front View)

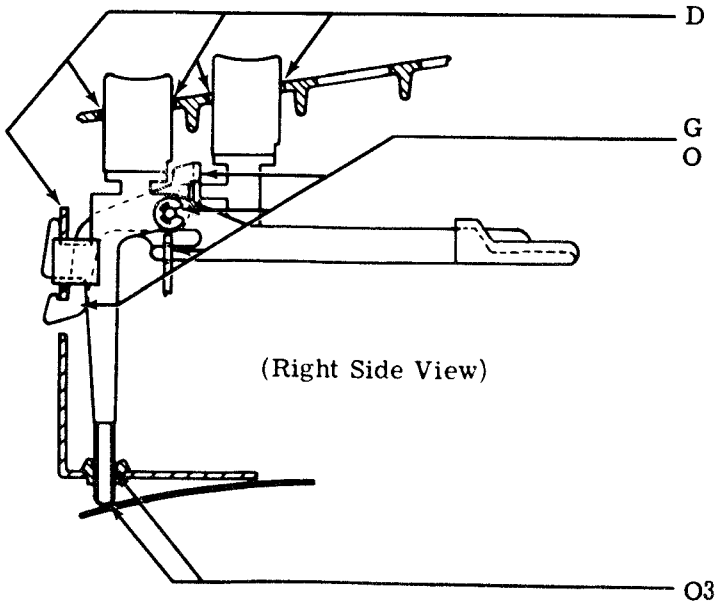
2.02 Downstop Bar



(Front View)

O1	Hooks, (Left and Right Side)	Springs (4)
O1	Contact Surfaces (Left and Right Side)	Downstop Bar

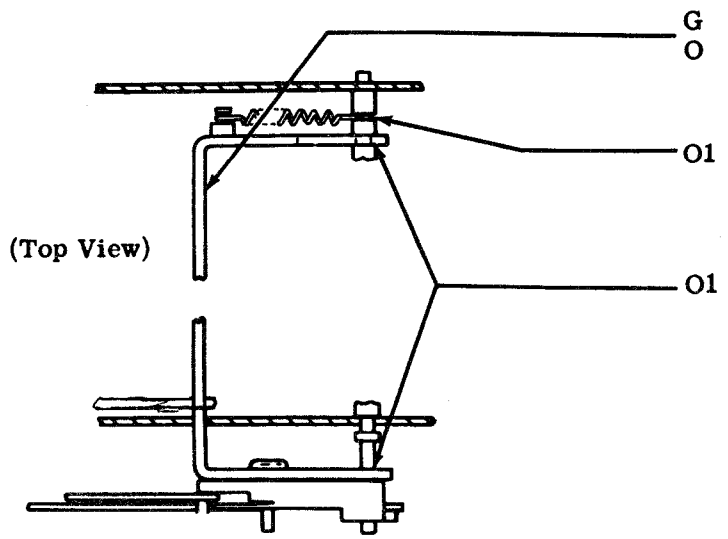
2.03 Keylevers



(Right Side View)

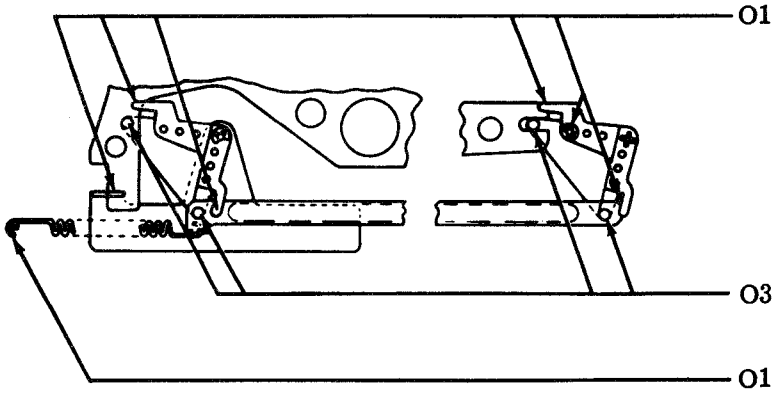
D	Sliding Surfaces	Keytops
G O	Brush Pivots, Engaging Surfaces with 50% G and 50% O	Keylevers (All)
O3	Contact Surfaces	Keylever Springs (All)

2.04 Spacebar and Space Bail



(Top View)

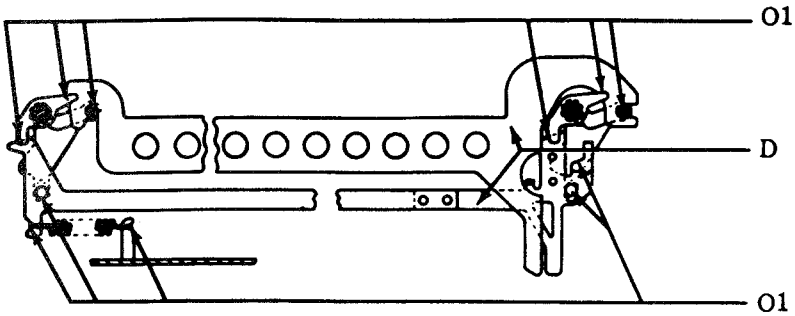
Brush Contact Surface with thin coat 50% G and 50% O		Space Bail
O1	Hooks (Each End)	Spring
O1	Pivots	Space Bail



(Front View)

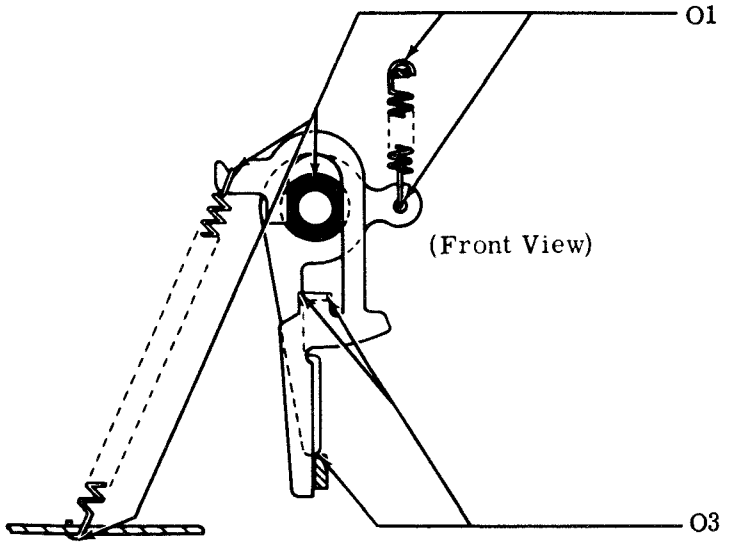
O1	Pivots and Guide Surfaces	L-Levers
O3	Pivots	L-Levers
O1	Hooks (Each End)	Spring

2.05 Universal Codebar



O1	Pivots and Guide Surfaces	T-Levers
D	Surfaces (Both Sides)	Codebar, Tie Link
O1	Engaging Surface, Pivots, Hooks	Tie Link, T-Levers, Spring

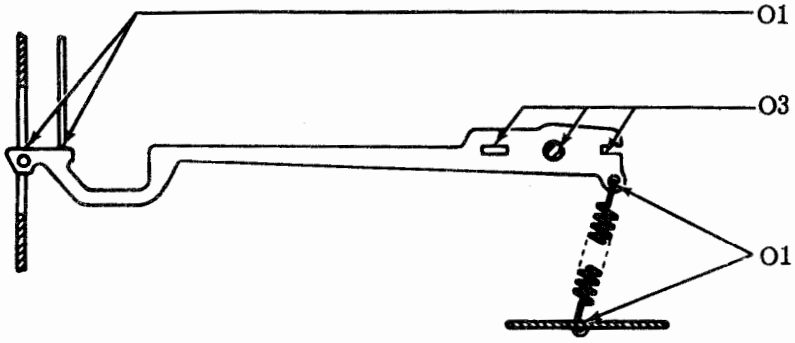
(Front View)



O1	Hooks, Pivots	Springs, Latchlever, Nonrepeat Lever
O3	Engaging Surfaces	Latchlever, Nonrepeat Lever

(Front View)

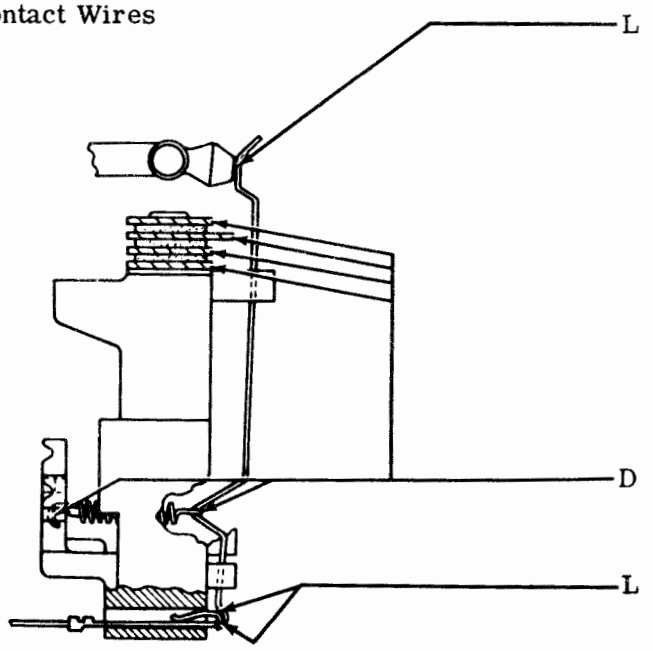
2.06 Trip Arm Lever



(Right Side View)

O1	Engaging Surface	Trip Arm
O3	Pivot, Engaging Surfaces	Trip Arm Post, H-Plate (Right Side Only)
O1	Hooks	Spring

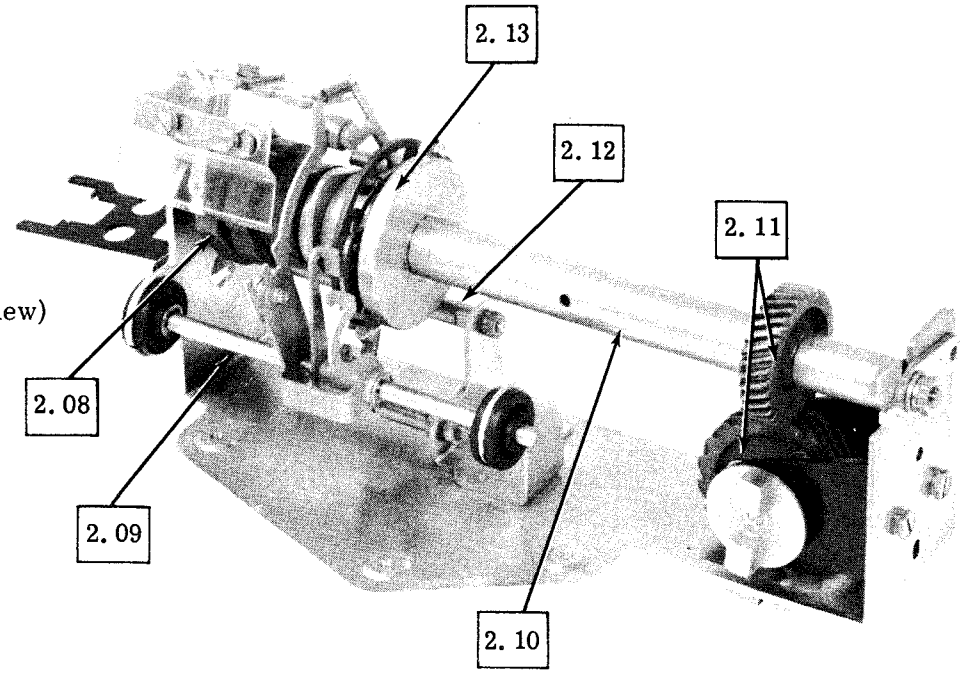
2.07 Contact Wires



(Right Front View)

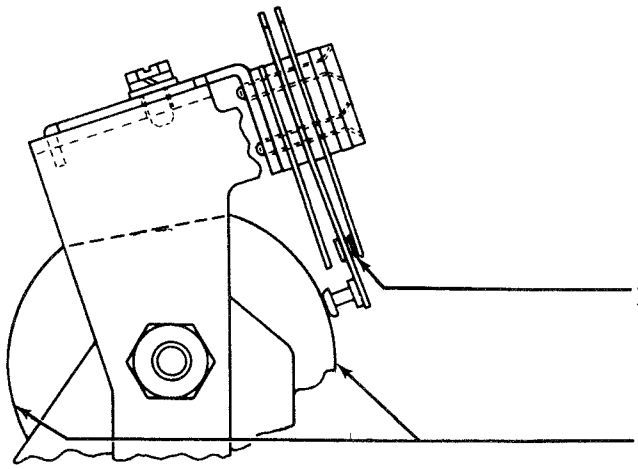
L	Thin Coat on engaging surface on disassembly and reassembly of Contact Mechanism	T-Levers
	CAUTION: DO NOT CLEAN CONTACT BLOCK WITH ALCOHOL, MINERAL SPIRITS, OR OTHER SOLVENTS. DO NOT USE A BURNISHING TOOL TO CLEAN CONTACTS; ALWAYS CLEAN GOLD PLATED CONTACTS USING TWILL CLOTH.	
D	Contact Surfaces	Contact Wires, Springs
L	Pivot Terminal	Contact Wires

RESET MECHANISM



(Rear View)

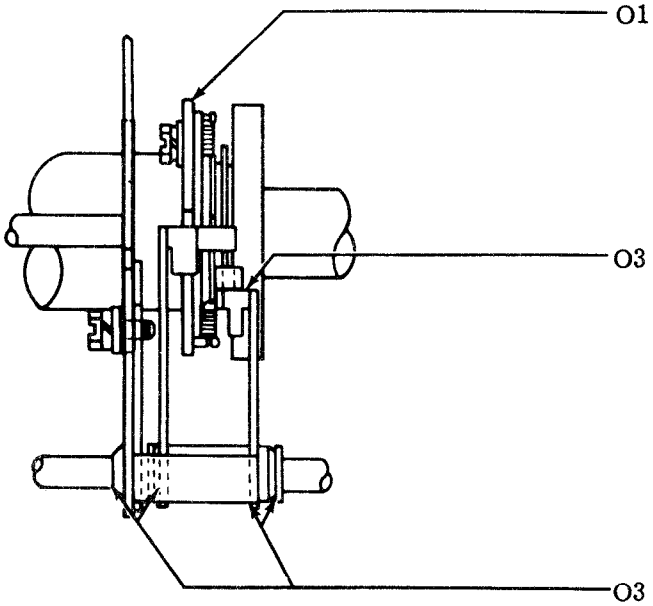
2.08 Auxiliary Contact Cam



D	Contacts	Auxiliary Contact
O1	Camming Surface	Auxiliary Contact Cam

(Right Side View)

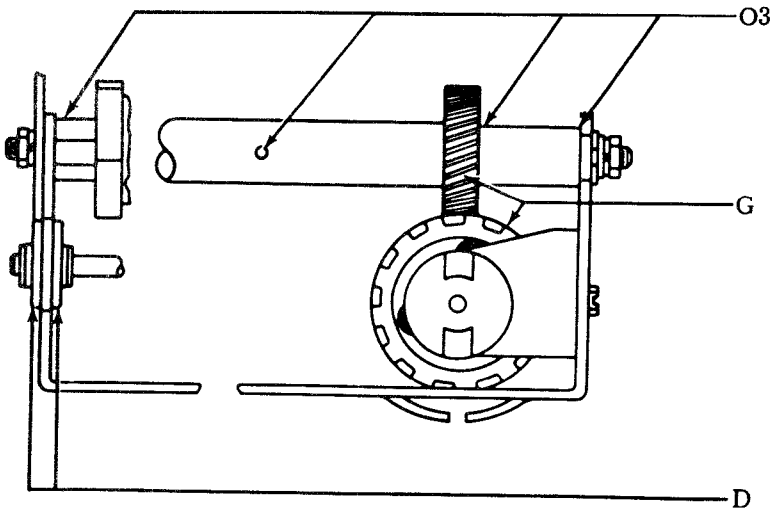
2.09 Clutch and Stop Arm Shaft



O1	Camming Surface	Clutch Disc
O3	Engaging Surfaces	Clutch Shoe and Stop Arm
O3	Bearing Surfaces	Stop Arm Shaft

(Rear View)

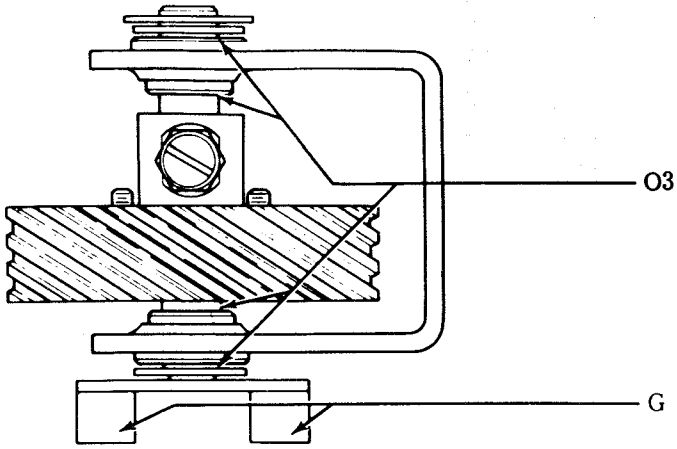
2.10 Main Shaft and Gears



O3	Bearing Surfaces, Oil Hole	Main Shaft
G	Teeth, Thin Coat	Driving and Driven Gears
D	Grommets (4)	Stop Arm Shaft

(Rear View)

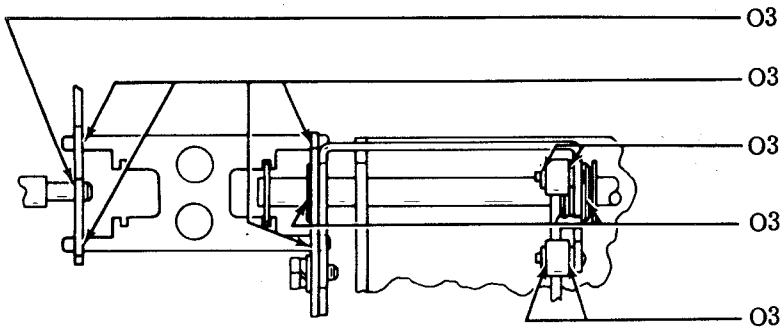
2.11 Driven Coupler and Driving Gear Shaft



O3	Bearing Surfaces	Driving Gear Shaft
G	Thin Coat on Engaging Surfaces	Driven Coupler

(Top View, Left End)

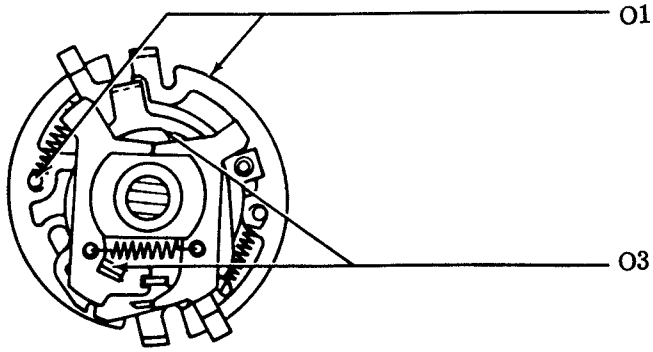
2.12 Reset Bail



O3	Bearing Surface	Trip Arm Post
O3	Engaging Surfaces	H-Plate
O3	Bearing Surfaces	Reset Bail Roller
O3	Bearing Surfaces	Reset Bail Bearing Shaft
O3	Bearing Surfaces	Trip Roller

(Top View, Right End)

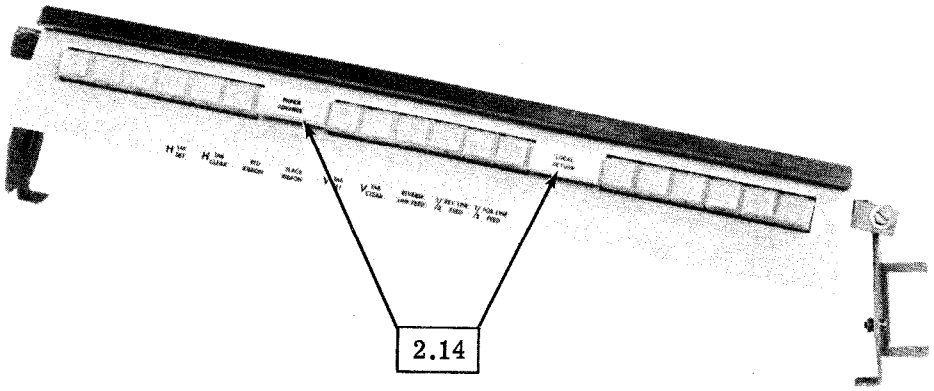
2.13 Clutch



O1	Camming Surface, Hooks	Clutch Disc, Spring
O3	Surface, Wick	Internal Mechanism

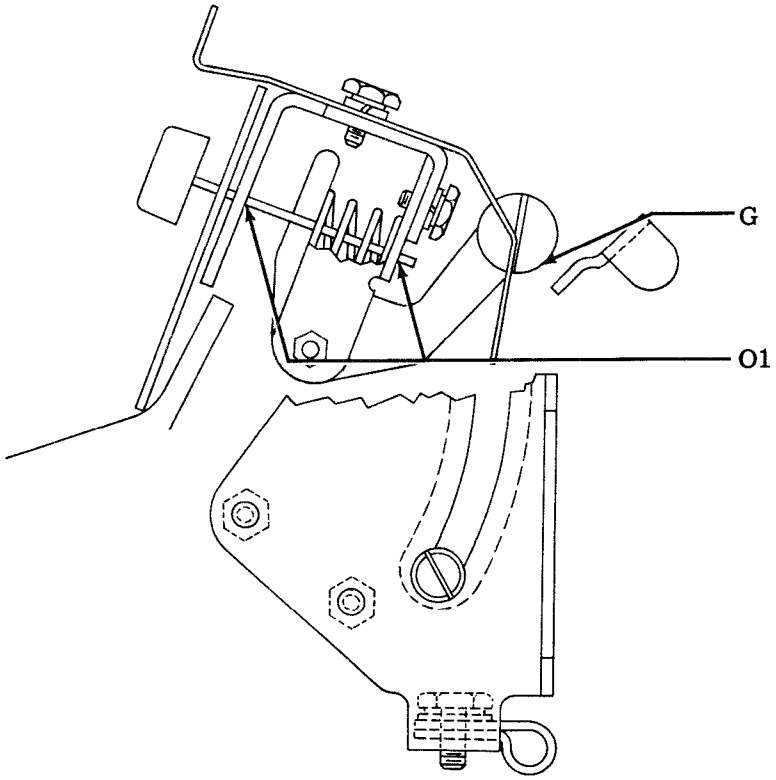
(Internal View)

CONTROL PANEL MECHANISM



(Left Front View)

2.14 Control Panel



Engaging Surface

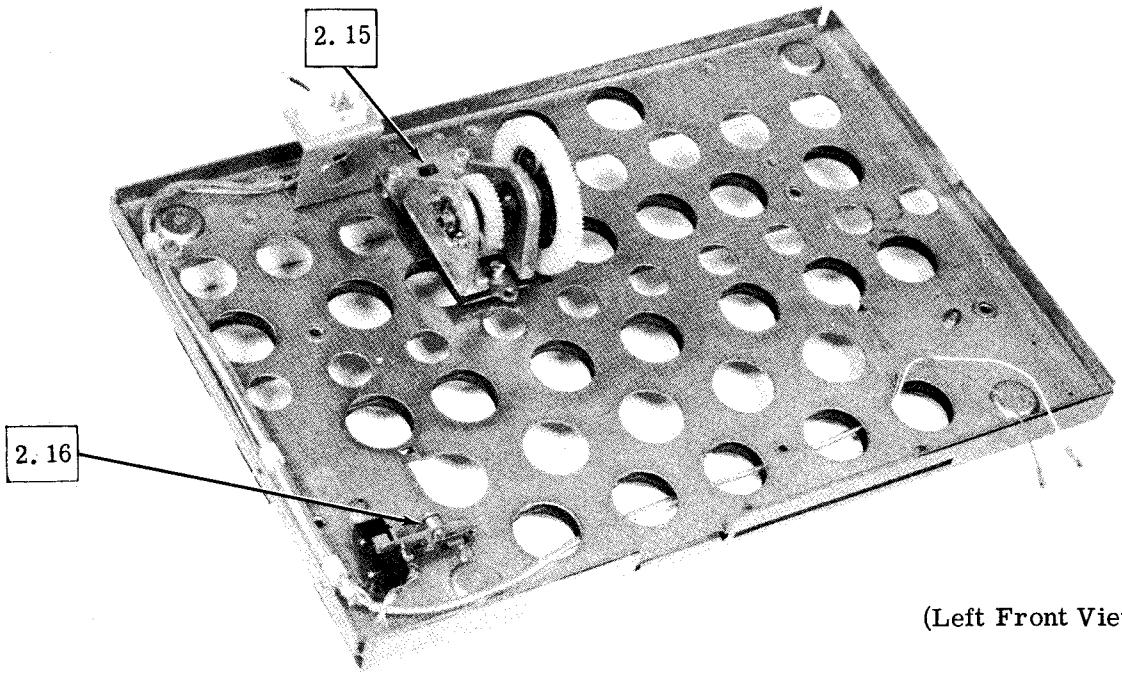
Eccentric Screw

Engaging Surface

Actuating Levers

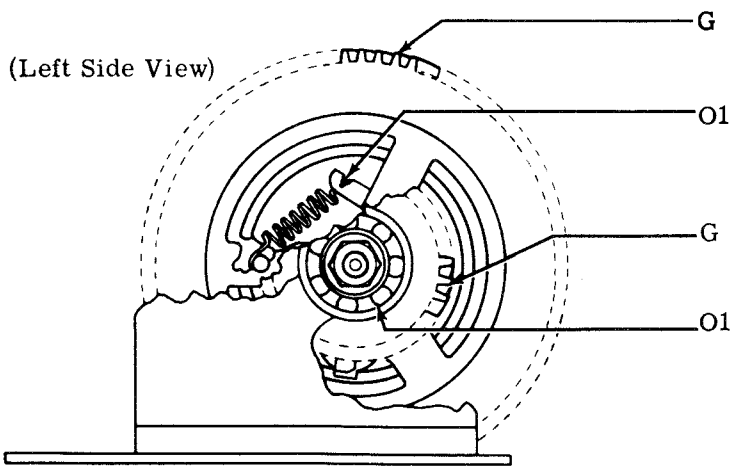
(Right Side View)

BASE MECHANISMS



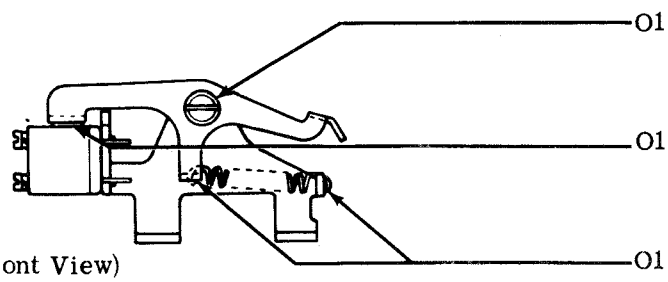
(Left Front View)

2. 15 Intermediate Gear Assembly



G	Teeth, Thick Coat	Driven Gear
O1	Hooks (Each End)	Spring
G	Teeth, Thick Coat	Driving Gear
O1	Ball Bearings (2 Bearings)	Shaft

2. 16 Margin Indicator Switch



O1	Bearing Surface	Lever Pivot
O1	Engaging Surface	Switch
O1	Hooks	Spring

37 KEYBOARD UNIT

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL 1
2. DISASSEMBLY AND REASSEMBLY . . 1
CONTROL PANEL 1
KEYBOARD HOUSING AND COVER . . 2
KEYBOARD 2
RESET MECHANISM 4
INTERMEDIATE GEAR ASSEMBLY . 4

1. GENERAL

1.01 This section provides disassembly and reassembly information for the late design, 11-contact 37 keyboard unit (Figure 1). It is reissued to incorporate engineering changes and other comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted.

1.02 Photographs are used to identify the mechanisms and specific parts mentioned in the procedures. Refer to the appropriate parts section for drawings showing the location of all parts and mechanisms.

1.03 Refer to Section 570-005-800TC, Maintenance Tools, for information on the tools necessary to perform the disassembly and reassembly procedures.

1.04 References in the procedures to left or right, up or down, top or bottom, etc refer to the unit viewed with the keytops and controls facing the front (Figure 1).

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE UNIT.

1.05 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

1.06 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.07 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

2. DISASSEMBLY AND REASSEMBLY

CONTROL PANEL

2.01 To remove the control panel, remove the TP151630 screws from left and right sides and lift the panel out (Figures 2 and 4).

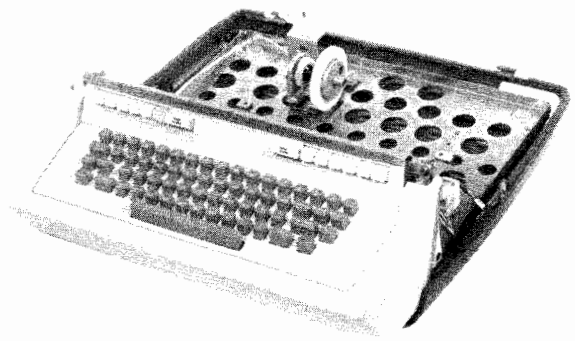


Figure 1 - 37 Keyboard Unit

2.02 To replace the control panel, reverse the removal procedure.

KEYBOARD HOUSING AND COVER

2.03 To remove the TP324035 keyboard housing, remove the two TP151631 screws (one on each side) and slide the keyboard housing forward (Figures 2 and 4).

2.04 To remove the TP315190 cover, proceed as follows:

(1) Pull the tab on the front of the TP315190 cover forward and remove it from the post.

(2) Slide the TP315190 cover toward the front while rotating the cover up and over keytops.

2.05 To assemble the keyboard housing and cover, reverse the removal procedure.

KEYBOARD

2.06 To remove the keyboard from the base assembly, proceed as follows (Figures 2 to 5):

(1) Loosen the four keyboard mounting screws (two on each side).

Note: Support the keyboard to prevent its falling when these screws are removed.

(2) Support the keyboard and remove the screws.

(3) Slowly lift the keyboard up and to the right side to disengage the TP315296 H-plate on the reset mechanism (or remove the TP119653 retaining ring on the H-plate and move the H-plate to the left).

(4) Refer to 2.08 through 2.10 for keyboard disassembly instructions.

2.07 To replace the keyboard, proceed as follows:

(1) Mount the keyboard to the base pan.

(2) Observe that the TP315296 H-plate on the reset mechanism engages the keyboard trip lever mechanism. (Install the TP315296 retaining if it was removed.)

(3) Secure the keyboard in place with its four mounting screws.

2.08 To remove the keytops and keylevers, proceed as follows:

Note: Before removing the SHIFT or CONTROL keylevers, remove their respective springs from the end brackets.

(1) Remove TP315190 keyboard cover (2.04).

(2) Remove the keylevers as required.

(3) Remove the keytops as required.

2.09 To remove the TP315370 contact block and TP324407 cable assembly, proceed as follows:

(1) Remove TP315190 keyboard cover (2.04).

(2) Pull the tab on the front of the keytop guide forward and remove it from the post.

(3) Rotate the TP315190 cover toward the rear and remove it.

(4) Remove the TP315484 trip arm spring.

(5) Remove the TP324414 right end bracket assembly by squeezing the frame lightly in rear assembly area or by applying slight pressure with a screwdriver inserted in the frame hole.

(6) Remove the two TP180031 compression springs from the TP315370 contact block.

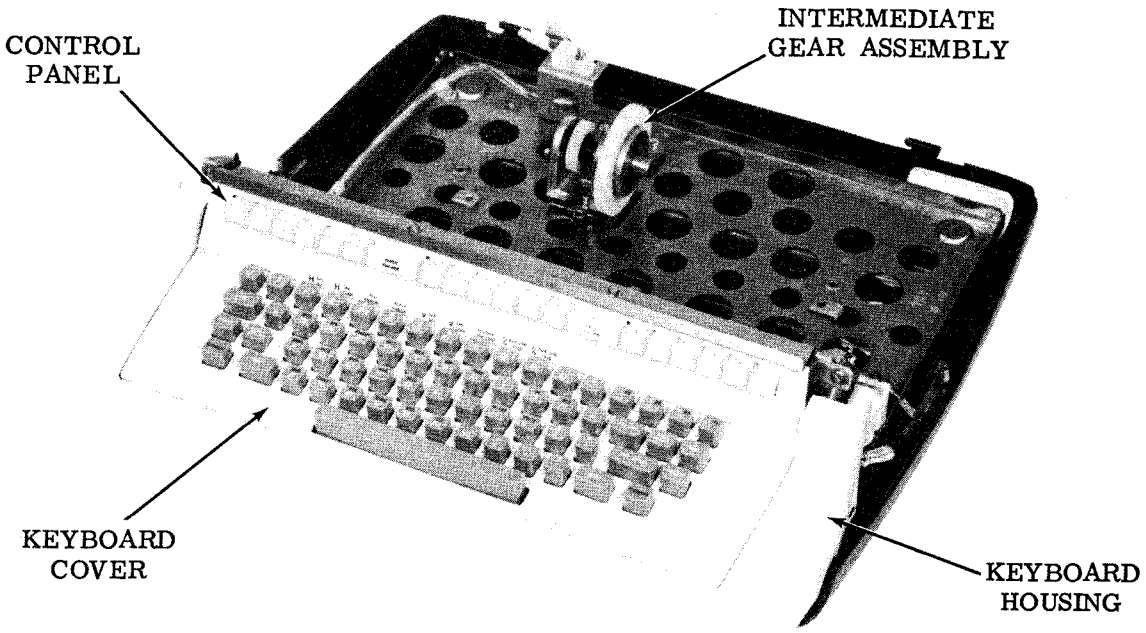
(7) Remove T-lever guide from right side of the unit.

(8) Remove the contact wires by detaching their springs.

(9) Remove the TP315370 contact block and TP324407 cable assembly.

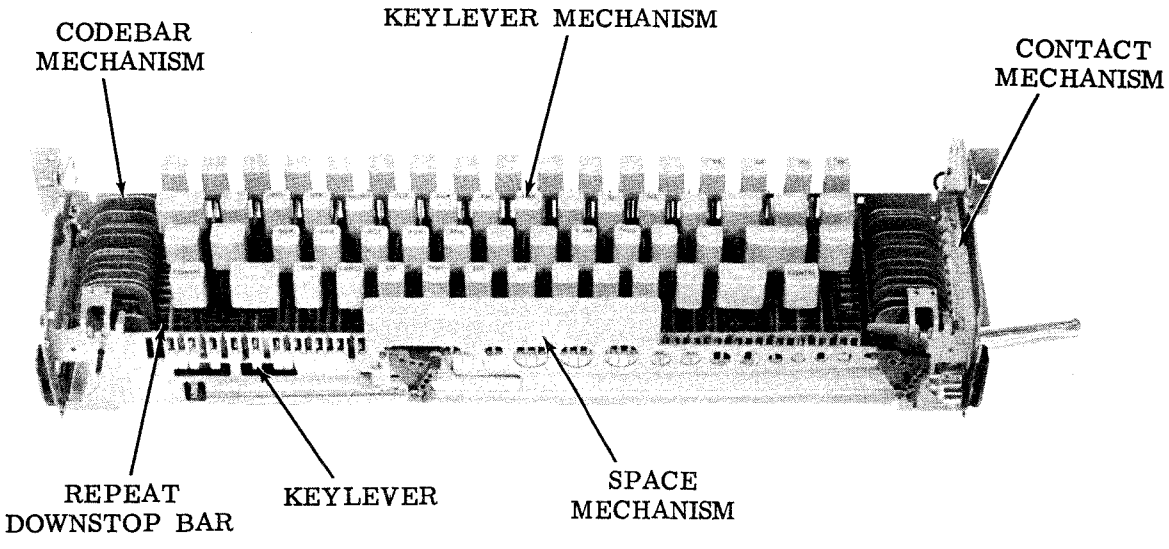
2.10 If further disassembly is required, proceed as follows to completely disassemble the keyboard.

(1) With keytops, keylevers, contact block, cable assembly and left and right end brackets removed, remove the spring from the space mechanism.



(Right Front View)

Figure 2 - 37 Keyboard Unit



(Front View)

Figure 3 - Keyboard (Cover Removed)

(2) Remove retaining rings from the space mechanism. Remove the L-levers, space keylever and tie link as a unit by rotating the space mechanism clockwise and forward.

(3) Rotate the L-levers until keylevers and tie link are separated.

(4) Release and remove the TP110436 spring on the TP315487 space bail.

(5) Remove the four TP315459 downstop springs.

(6) Remove the TP315445 latchlever spring and TP121923 nonrepeat lever spring.

(7) Remove the downstop spring brackets.

(8) Remove the codebars (snap fit on small end).

(9) Remove the universal TP315444 tie link spring from the frame.

(10) Remove the TP315401 universal codebar (snap fit on small end).

(11) Remove trip arm.

(12) Remove trip arm guide (snap fit).

(13) Remove T-lever shafts and T-lever assembly.

(14) Remove TP324391 downstop bar.

(15) Remove tie links, including the TP315493 universal tie link, by rotating T-levers until links are free.

(16) Remove TP119651 retaining rings and the T-levers on the left side as required.

(17) Remove the TP119651 retaining rings, T-levers, and trip mechanism bushing on right side as required.

(18) Remove retaining rings, TP315398 nonrepeat lever, washer, and latch from trip mechanism bushing as required.

(19) Remove TP315199 buffer upstop in front of frame.

(20) Remove the four TP315405 leaf springs from the underside of the frame.

(21) Remove the two TP315273 bushing strips from the frame.

2.11 To assemble the keyboard, reverse the disassembly procedure.

RESET MECHANISM

2.12 To remove the TP315100 reset mechanism, proceed as follows (Figures 4 and 5):

(1) Remove the TP315296 H-plate retaining ring and slide the H-plate out of the slots in the TP315399 keyboard trip arm lever and reset bail plate.

(2) Remove the keyboard (2.06).

(3) Disconnect the push-on cable terminals from the tabs on the auxiliary contacts.

(4) Unscrew the three reset mechanism frame mounting screws.

(5) Remove the reset mechanism by sliding it out.

2.13 Remove the TP315319 auxiliary contact bracket assembly by unscrewing the TP112626 shaft nut and removing the assembly.

2.14 To remove the driven gear clutch-sleeve-cam assembly, proceed as follows:

(1) Remove the TP2605 clutch stop arm spring.

(2) Loosen the TP112626 shaft nuts on each end of the shaft.

(3) Dislodge the gear backlash plate and contact bracket from their locating bosses.

(4) Lift the assembly from the frame.

2.15 Remove the driving gear-shaft-bracket assembly by unscrewing the two bracket mounting screws and removing the assembly.

2.16 To assemble the reset mechanism, reverse the disassembly procedures. Check that the H-plate is properly engaged with the keyboard trip lever mechanism.

INTERMEDIATE GEAR ASSEMBLY

2.17 Remove the intermediate gear assembly by removing the three TP104898 mounting screws (Figure 4).

2.18 Replace the intermediate gear by securing the mounting screws.

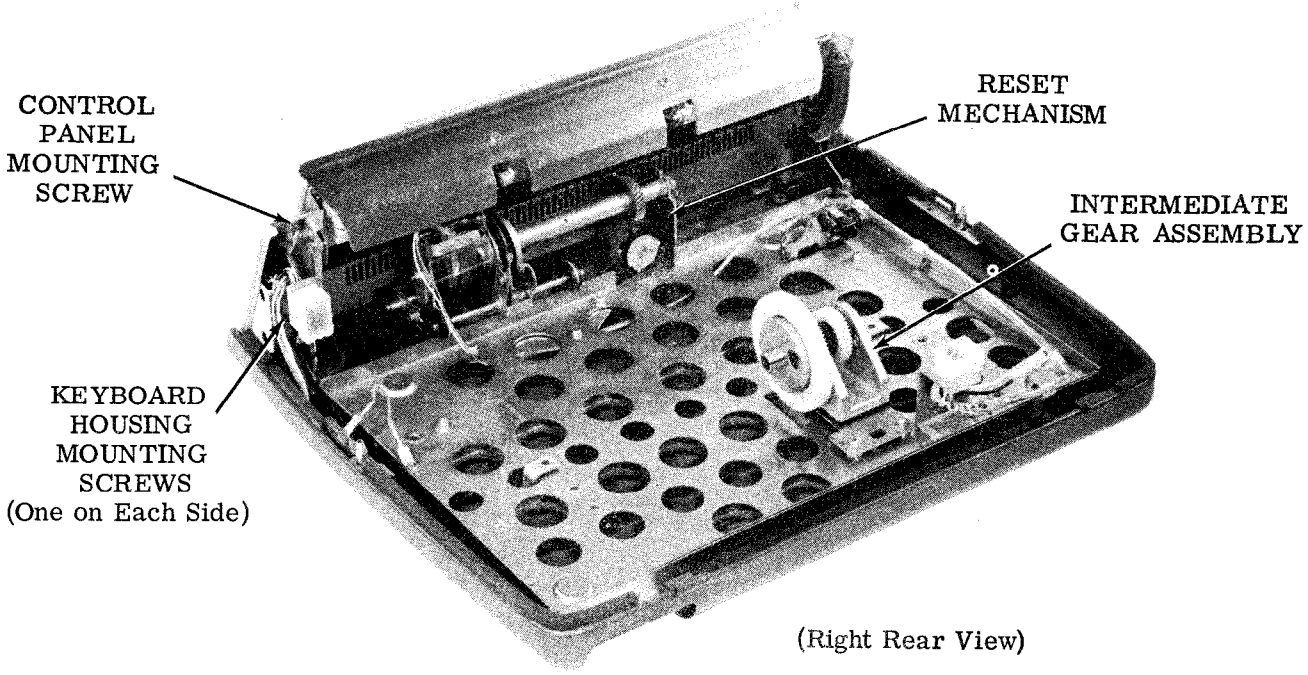


Figure 4 - Keyboard Unit

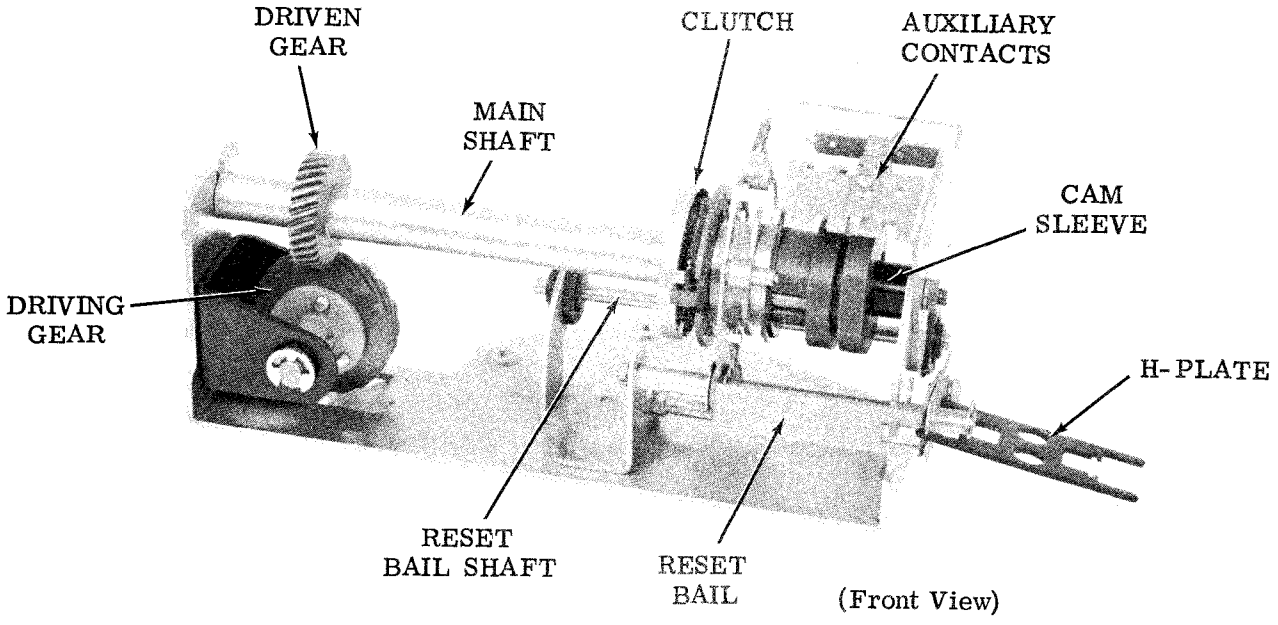


Figure 5 - Reset Mechanism

37 KEYBOARD UNIT

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL 1
2. DISASSEMBLY AND REASSEMBLY . . 1
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KEYBOARD HOUSING AND COVER . . 2
KEYBOARD 2
RESET MECHANISM 4
INTERMEDIATE GEAR ASSEMBLY . 4

1. GENERAL

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1.03 Refer to Section 570-005-800TC, Maintenance Tools, for information on the tools necessary to perform the disassembly and reassembly procedures.

1.04 References in the procedures to left or right, up or down, top or bottom, etc refer to the unit viewed with the keytops and controls facing the front (Figure 1).

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE UNIT.

1.05 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

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1.07 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

2. DISASSEMBLY AND REASSEMBLY

CONTROL PANEL

2.01 To remove the control panel, remove the TP151630 screws from left and right sides and lift the panel out (Figures 2 and 4).

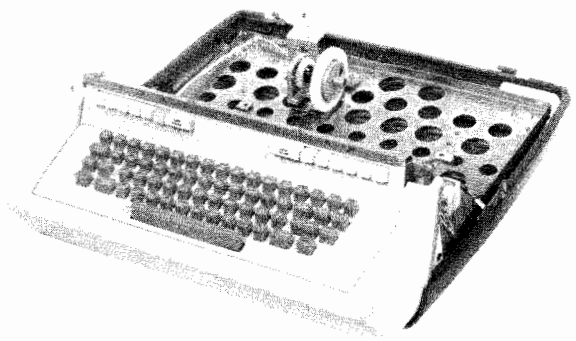


Figure 1 - 37 Keyboard Unit

2.02 To replace the control panel, reverse the removal procedure.

KEYBOARD HOUSING AND COVER

2.03 To remove the TP324035 keyboard housing, remove the two TP151631 screws (one on each side) and slide the keyboard housing forward (Figures 2 and 4).

2.04 To remove the TP315190 cover, proceed as follows:

(1) Pull the tab on the front of the TP315190 cover forward and remove it from the post.

(2) Slide the TP315190 cover toward the front while rotating the cover up and over keytops.

2.05 To assemble the keyboard housing and cover, reverse the removal procedure.

KEYBOARD

2.06 To remove the keyboard from the base assembly, proceed as follows (Figures 2 to 5):

(1) Loosen the four keyboard mounting screws (two on each side).

Note: Support the keyboard to prevent its falling when these screws are removed.

(2) Support the keyboard and remove the screws.

(3) Slowly lift the keyboard up and to the right side to disengage the TP315296 H-plate on the reset mechanism (or remove the TP119653 retaining ring on the H-plate and move the H-plate to the left).

(4) Refer to 2.08 through 2.10 for keyboard disassembly instructions.

2.07 To replace the keyboard, proceed as follows:

(1) Mount the keyboard to the base pan.

(2) Observe that the TP315296 H-plate on the reset mechanism engages the keyboard trip lever mechanism. (Install the TP315296 retaining if it was removed.)

(3) Secure the keyboard in place with its four mounting screws.

2.08 To remove the keytops and keylevers, proceed as follows:

Note: Before removing the SHIFT or CONTROL keylevers, remove their respective springs from the end brackets.

(1) Remove TP315190 keyboard cover (2.04).

(2) Remove the keylevers as required.

(3) Remove the keytops as required.

2.09 To remove the TP315370 contact block and TP324407 cable assembly, proceed as follows:

(1) Remove TP315190 keyboard cover (2.04).

(2) Pull the tab on the front of the keytop guide forward and remove it from the post.

(3) Rotate the TP315190 cover toward the rear and remove it.

(4) Remove the TP315484 trip arm spring.

(5) Remove the TP324414 right end bracket assembly by squeezing the frame lightly in rear assembly area or by applying slight pressure with a screwdriver inserted in the frame hole.

(6) Remove the two TP180031 compression springs from the TP315370 contact block.

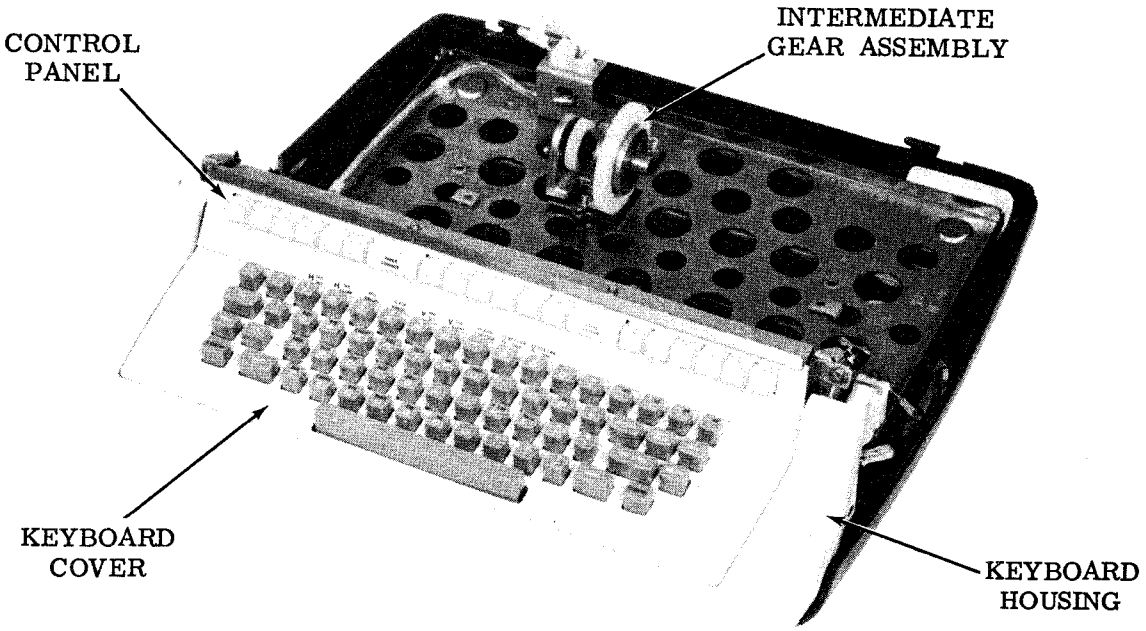
(7) Remove T-lever guide from right side of the unit.

(8) Remove the contact wires by detaching their springs.

(9) Remove the TP315370 contact block and TP324407 cable assembly.

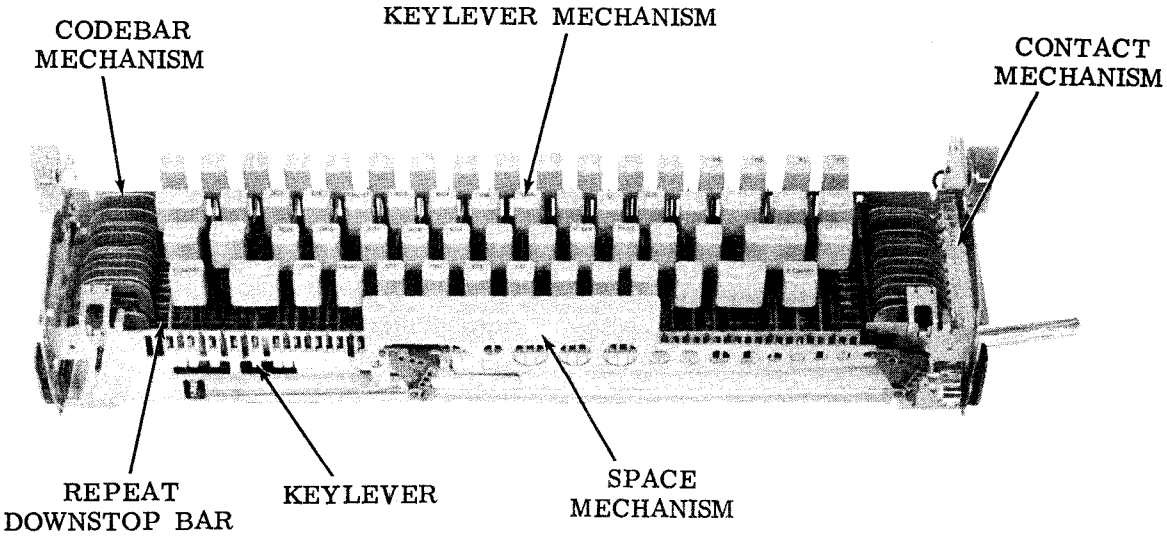
2.10 If further disassembly is required, proceed as follows to completely disassemble the keyboard.

(1) With keytops, keylevers, contact block, cable assembly and left and right end brackets removed, remove the spring from the space mechanism.



(Right Front View)

Figure 2 - 37 Keyboard Unit



(Front View)

Figure 3 - Keyboard (Cover Removed)

(2) Remove retaining rings from the space mechanism. Remove the L-levers, space keylever and tie link as a unit by rotating the space mechanism clockwise and forward.

(3) Rotate the L-levers until keylevers and tie link are separated.

(4) Release and remove the TP110436 spring on the TP315487 space bail.

(5) Remove the four TP315459 downstop springs.

(6) Remove the TP315445 latchlever spring and TP121923 nonrepeat lever spring.

(7) Remove the downstop spring brackets.

(8) Remove the codebars (snap fit on small end).

(9) Remove the universal TP315444 tie link spring from the frame.

(10) Remove the TP315401 universal codebar (snap fit on small end).

(11) Remove trip arm.

(12) Remove trip arm guide (snap fit).

(13) Remove T-lever shafts and T-lever assembly.

(14) Remove TP324391 downstop bar.

(15) Remove tie links, including the TP315493 universal tie link, by rotating T-levers until links are free.

(16) Remove TP119651 retaining rings and the T-levers on the left side as required.

(17) Remove the TP119651 retaining rings, T-levers, and trip mechanism bushing on right side as required.

(18) Remove retaining rings, TP315398 nonrepeat lever, washer, and latch from trip mechanism bushing as required.

(19) Remove TP315199 buffer upstop in front of frame.

(20) Remove the four TP315405 leaf springs from the underside of the frame.

(21) Remove the two TP315273 bushing strips from the frame.

2.11 To assemble the keyboard, reverse the disassembly procedure.

RESET MECHANISM

2.12 To remove the TP315100 reset mechanism, proceed as follows (Figures 4 and 5):

(1) Remove the TP315296 H-plate retaining ring and slide the H-plate out of the slots in the TP315399 keyboard trip arm lever and reset bail plate.

(2) Remove the keyboard (2.06).

(3) Disconnect the push-on cable terminals from the tabs on the auxiliary contacts.

(4) Unscrew the three reset mechanism frame mounting screws.

(5) Remove the reset mechanism by sliding it out.

2.13 Remove the TP315319 auxiliary contact bracket assembly by unscrewing the TP112626 shaft nut and removing the assembly.

2.14 To remove the driven gear clutch-sleeve-cam assembly, proceed as follows:

(1) Remove the TP2605 clutch stop arm spring.

(2) Loosen the TP112626 shaft nuts on each end of the shaft.

(3) Dislodge the gear backlash plate and contact bracket from their locating bosses.

(4) Lift the assembly from the frame.

2.15 Remove the driving gear-shaft-bracket assembly by unscrewing the two bracket mounting screws and removing the assembly.

2.16 To assemble the reset mechanism, reverse the disassembly procedures. Check that the H-plate is properly engaged with the keyboard trip lever mechanism.

INTERMEDIATE GEAR ASSEMBLY

2.17 Remove the intermediate gear assembly by removing the three TP104898 mounting screws (Figure 4).

2.18 Replace the intermediate gear by securing the mounting screws.

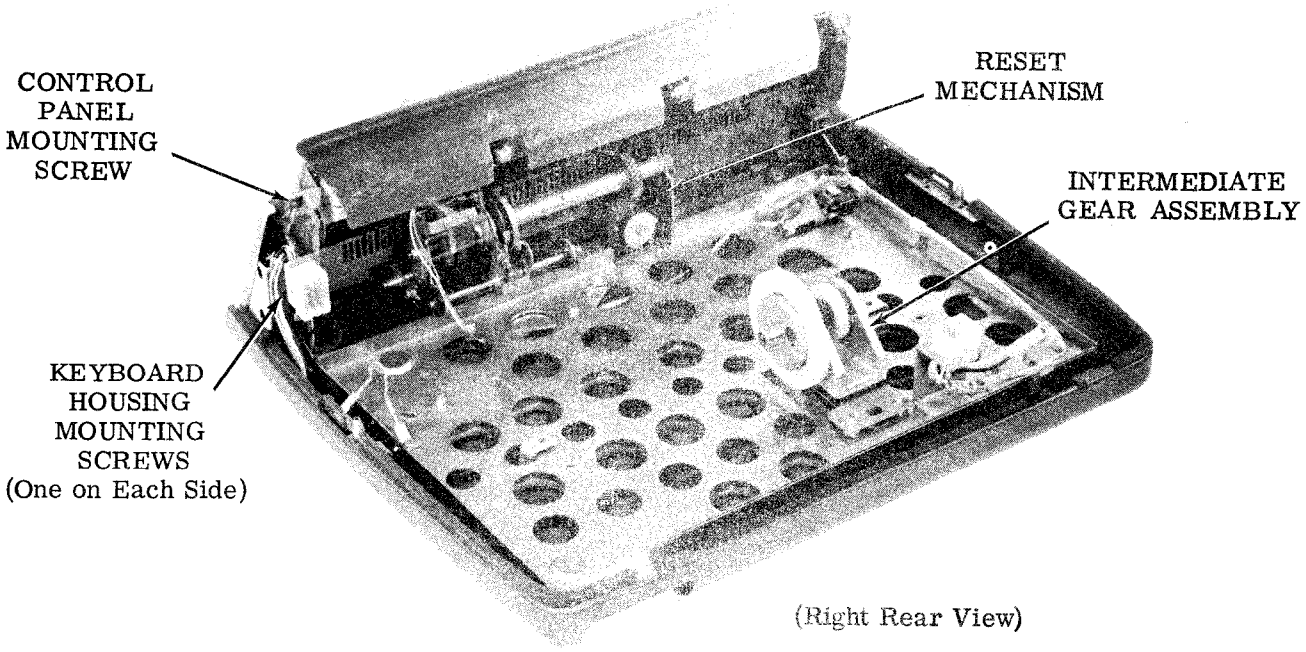


Figure 4 - Keyboard Unit

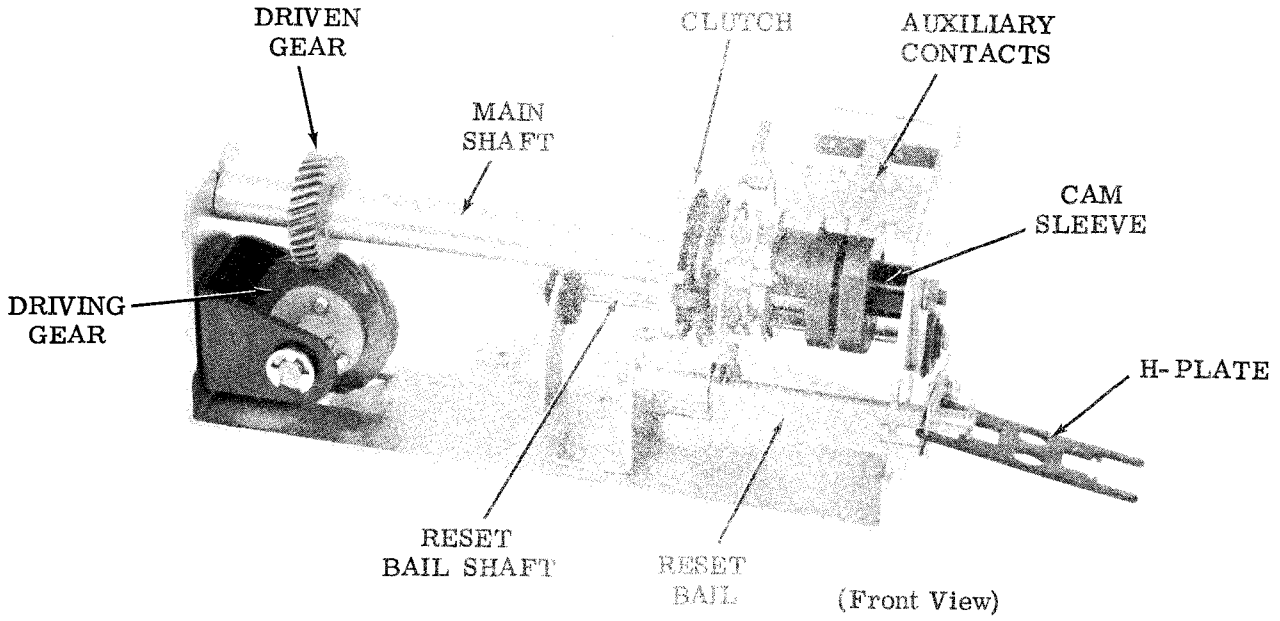


Figure 5 - Reset Mechanism

37 ANSWER-BACK UNIT

LUBRICATION

CONTENTS PAGE

1. GENERAL 1

2. BASIC UNIT 2

Answer-back 2
Code drum and feed mechanism 3
Contact assembly and detent 3

1. GENERAL

1.01 This section provides lubrication procedures for the early design 37 answer-back unit (Figure 1), and is reissued to incorporate changes in the lubrication requirements. Marginal arrows have been included to indicate these changes.

1.02 A figure of the mechanism is used to show the lubrication areas. The paragraph numbers on the figure refer to the specific lubrication points. Reference made to front or rear, left or right, or top or bottom applies to the answer-back unit in its normal operating position as viewed by the operator in front of the unit. In this position, the answer-back unit is resting on its base with the contact assembly in the front.

1.03 Lubricate the answer-back unit before placing it in service and just prior to putting it in storage.

1.04 After approximately four weeks of service, relubricate the unit to make certain that no points have been missed. Thereafter, lubricate the unit according to the following schedule:

100 wpm	2000 hours or 6 months*
150 wpm	1500 hours or 6 months*

*Whichever comes first.

1.05 The symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols apply to the lubrication instructions:

O	Oil KS7470
D	Keep dry, no lubricant permitted.
L	Lubriplate 105 grease

Note: Ordering information for lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1.06 Overlubrication which would allow oil to drip or to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Maintenance pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

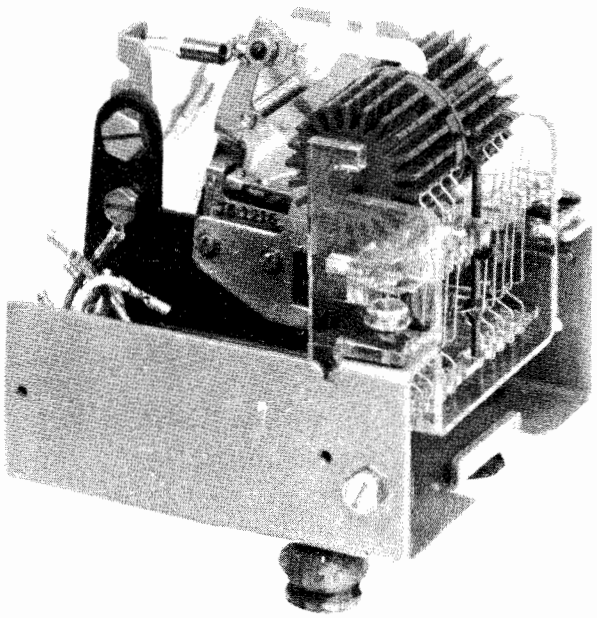


Figure 1 - 37 Answer-Back Unit

1.07 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, a minimum amount of oil should be applied so that the oil remains on the part and does not run off. Excessive lubricants should be removed with a dry lint-free cloth. If the surface between the relay armature and magnet pole piece has oil or foreign matter, proceed as follows.

(1) Place a piece of clean paper between the armature and pole piece.

(2) Energize the magnet.

(3) Pull the paper through the armature and pole piece and check to insure that lint or pieces of paper do not remain.

1.08 Use twill jean cloth KS2423 to clean gold-plated contacts. The code reading contacts should be cleaned after approximately 1000 hours of operation or 6 months of service, whichever occurs first. Use the following procedure: (1) Rotate the code drum to open the contacts, (2) drop a strip of twill jean between the contacts and the common bar, (3) close the contacts, (4) draw the twill jean part way through, and (5) reopen the contacts and withdraw the twill jean. This procedure will prevent small fibers from the edges of the twill jean strip from becoming lodged between the contacts.

Note: Do not use burnishers, files, etc, which will remove the gold plating.

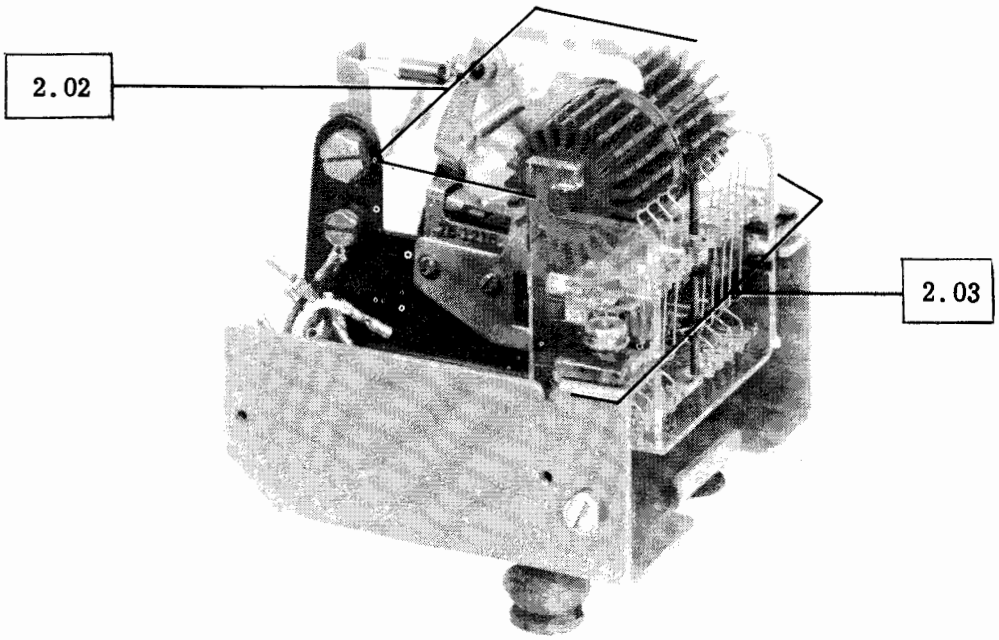
1.09 Special care should be taken to prevent any lubricant from getting on the circuit board, electrical contacts, and wiring.

CAUTION 1: DO NOT USE GOLD-PLATED CONTACTS ALTERNATELY IN HIGH- AND LOW-LEVEL CIRCUITS BECAUSE HIGH-LEVEL OPERATION MAY DAMAGE THE GOLD PLATING AND IMPAIR THE OPERATION OF THE CONTACTS WHEN USED IN LOW-LEVEL CIRCUITS.

CAUTION 2: REMOVE POWER BEFORE LUBRICATING THE EQUIPMENT.

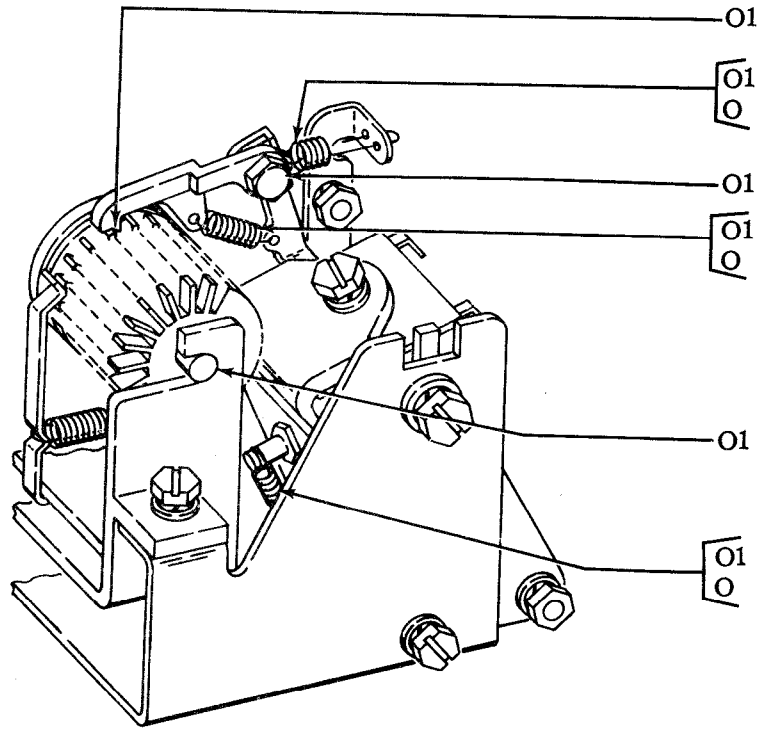
2. BASIC UNIT

2.01 Answer-Back



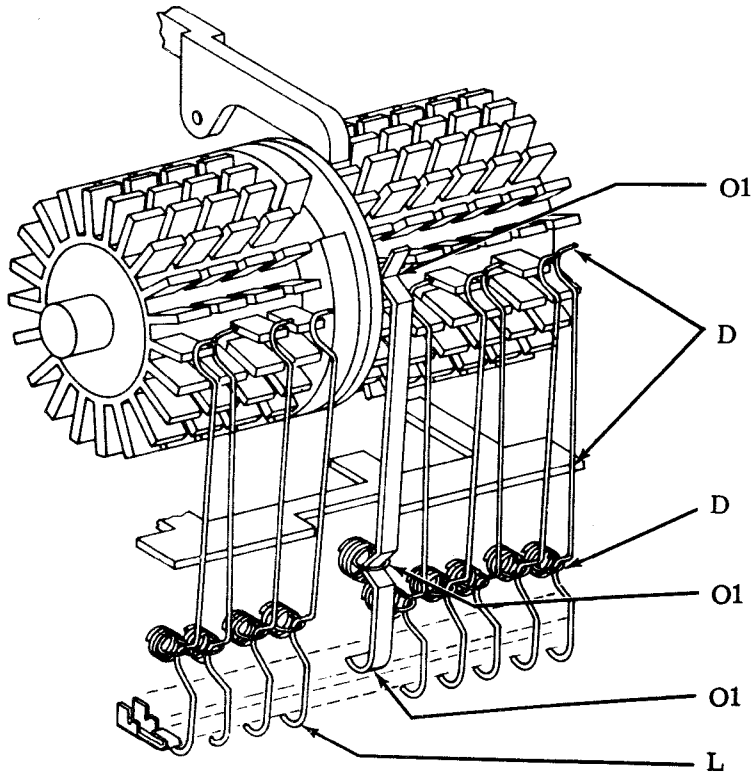
(Left Side View)

2.02 Code Drum and Feed Mechanism



O1	Tip	Feed Pawl
O1 O	Hook (Each End) Saturate Felt Wick	Feed Bail Spring
O1	Pivot	Feed Pawl
O1 O	Hook (Each End) Saturate Felt Wick	Feed Pawl Spring
O1	Bearing (Each End)	Code Drum
O1 O	Hook (Each End) Saturate Felt Wick	Armature Spring

2.03 Contact Assembly and Detent



O1	End	Detent
D	Surfaces	Contact Wires (9)
D	Hook (Each End)	Contact Wire Springs (9)
O1	Hooks (Each End)	Detent Spring
O1	End	Detent
L	Thin Coat on Contact Pivot Points	Contact Wires and Terminals (9)

37 ANSWER-BACK UNIT

LUBRICATION

CONTENTS PAGE

1. GENERAL 1

2. BASIC UNIT 2

Answer-back 2
Code drum and feed mechanism 3
Contact assembly and detent 3

1. GENERAL

1.01 This section provides lubrication procedures for the early design 37 answer-back unit (Figure 1), and is reissued to incorporate changes in the lubrication requirements. Marginal arrows have been included to indicate these changes.

1.02 A figure of the mechanism is used to show the lubrication areas. The paragraph numbers on the figure refer to the specific lubrication points. Reference made to front or rear, left or right, or top or bottom applies to the answer-back unit in its normal operating position as viewed by the operator in front of the unit. In this position, the answer-back unit is resting on its base with the contact assembly in the front.

1.03 Lubricate the answer-back unit before placing it in service and just prior to putting it in storage.

1.04 After approximately four weeks of service, relubricate the unit to make certain that no points have been missed. Thereafter, lubricate the unit according to the following schedule:

100 wpm	2000 hours or 6 months*
150 wpm	1500 hours or 6 months*

*Whichever comes first.

1.05 The symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols apply to the lubrication instructions:

O	Oil KS7470
D	Keep dry, no lubricant permitted.
L	Lubriplate 105 grease

Note: Ordering information for lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1.06 Overlubrication which would allow oil to drip or to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Maintenance pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

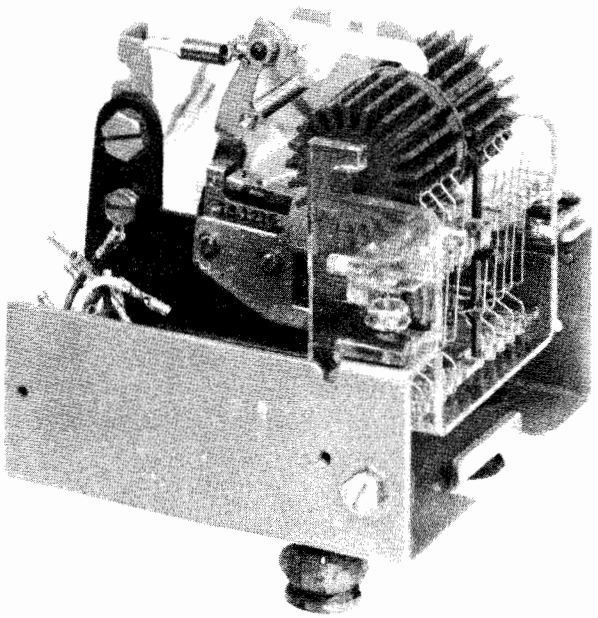


Figure 1 - 37 Answer-Back Unit

1.07 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, a minimum amount of oil should be applied so that the oil remains on the part and does not run off. Excessive lubricants should be removed with a dry lint-free cloth. If the surface between the relay armature and magnet pole piece has oil or foreign matter, proceed as follows.

(1) Place a piece of clean paper between the armature and pole piece.

(2) Energize the magnet.

(3) Pull the paper through the armature and pole piece and check to insure that lint or pieces of paper do not remain.

1.08 Use twill jean cloth KS2423 to clean gold-plated contacts. The code reading contacts should be cleaned after approximately 1000 hours of operation or 6 months of service, whichever occurs first. Use the following procedure: (1) Rotate the code drum to open the contacts, (2) drop a strip of twill jean between the contacts and the common bar, (3) close the contacts, (4) draw the twill jean part way through, and (5) reopen the contacts and withdraw the twill jean. This procedure will prevent small fibers from the edges of the twill jean strip from becoming lodged between the contacts.

Note: Do not use burnishers, files, etc, which will remove the gold plating.

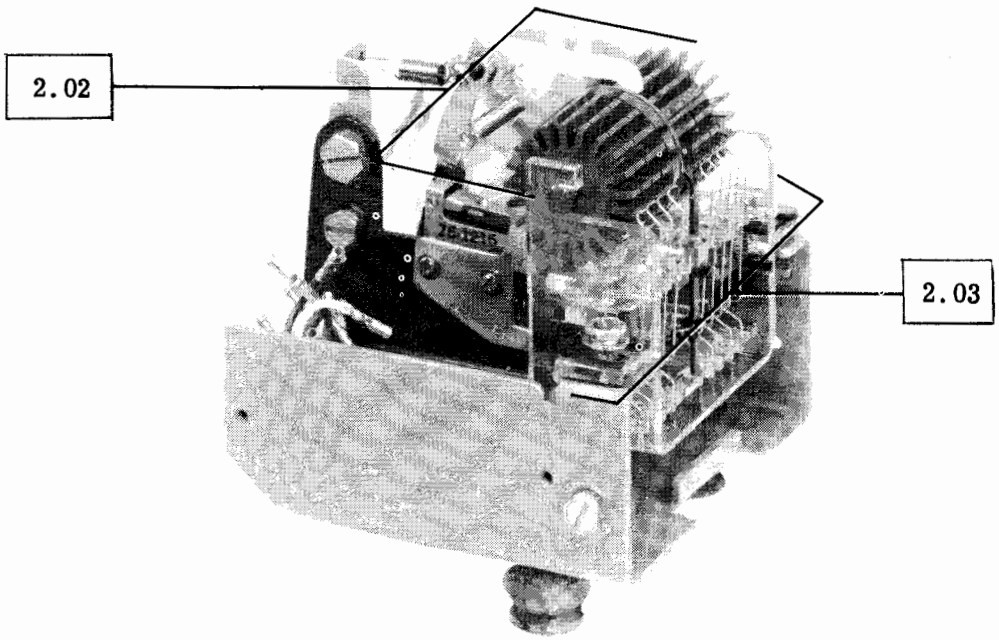
1.09 Special care should be taken to prevent any lubricant from getting on the circuit board, electrical contacts, and wiring.

CAUTION 1: DO NOT USE GOLD-PLATED CONTACTS ALTERNATELY IN HIGH- AND LOW-LEVEL CIRCUITS BECAUSE HIGH-LEVEL OPERATION MAY DAMAGE THE GOLD PLATING AND IMPAIR THE OPERATION OF THE CONTACTS WHEN USED IN LOW-LEVEL CIRCUITS.

CAUTION 2: REMOVE POWER BEFORE LUBRICATING THE EQUIPMENT.

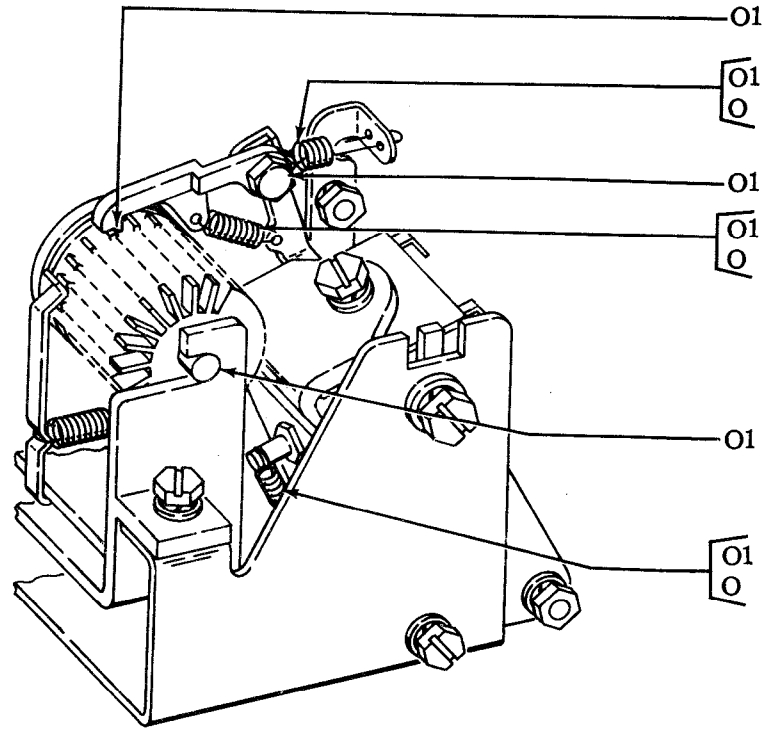
2. BASIC UNIT

2.01 Answer-Back



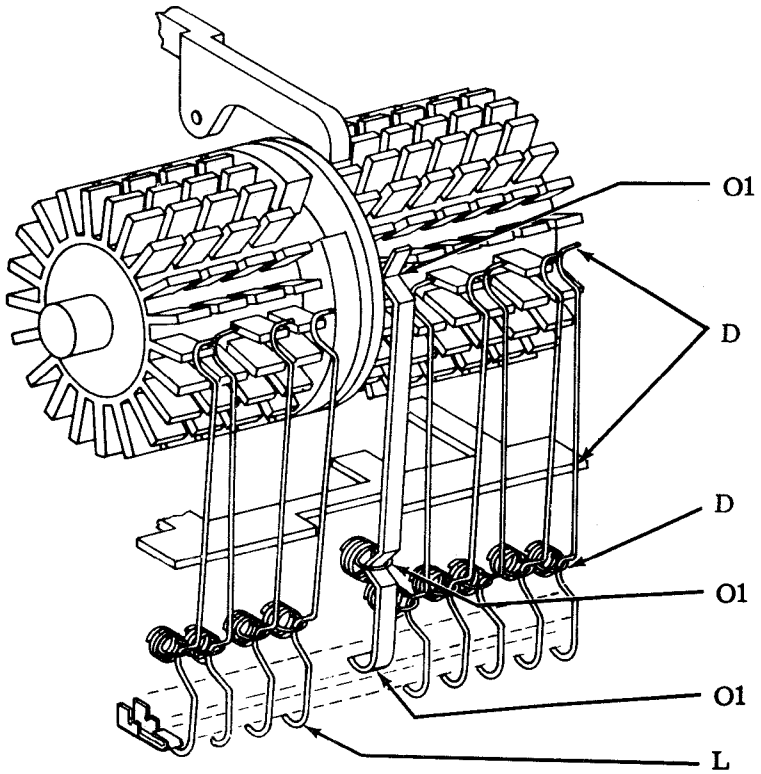
(Left Side View)

2.02 Code Drum and Feed Mechanism



O1	Tip	Feed Pawl
O1 O	Hook (Each End) Saturate Felt Wick	Feed Bail Spring
O1	Pivot	Feed Pawl
O1 O	Hook (Each End) Saturate Felt Wick	Feed Pawl Spring
O1	Bearing (Each End)	Code Drum
O1 O	Hook (Each End) Saturate Felt Wick	Armature Spring

2.03 Contact Assembly and Detent



O1	End	Detent
D	Surfaces	Contact Wires (9)
D	Hook (Each End)	Contact Wire Springs (9)
O1	Hooks (Each End)	Detent Spring
O1	End	Detent
L	Thin Coat on Contact Pivot Points	Contact Wires and Terminals (9)

37 ANSWER-BACK UNIT

LUBRICATION

CONTENTS

		PAGE
1.	GENERAL	1
2.	BASIC UNIT	2
	Answer-Back	2
	Feed Mechanism	3

Symbol	Meaning
O	Oil KS7470
G	Grease KS7471

Note: Ordering information for lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1. GENERAL

1.01 This section provides lubrication procedures for the late design 37 answer-back unit (Figure 1). The late design unit can be recognized by the location of the drum feed mechanism at the end of the code drum. The drum feed mechanism on the early design answer-back unit is located in the middle of the code drum.

1.02 A photograph of the mechanism is used to show the lubrication area. The paragraph number on the figure refers to the specific lubrication points. Reference made to front or rear, left or right, top or bottom, etc, applies to the answer-back unit in its normal operating position as viewed by the operator in front of the unit. In this position, the answer-back unit is resting on its base with the contact assembly on the right side.

1.03 Lubricate the answer-back unit before placing it in service and just prior to putting it in storage.

1.04 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the unit. Thereafter, lubricate the unit according to the following schedule:

100 wpm	2,000 hours or 9 months*
150 wpm	1,500 hours or 6 months*

*Whichever comes first.

1.05 The symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols apply to the lubrication instructions:

1.06 Overlubrication which would allow oil to drip or to be thrown on other parts should be avoided. Capillary action and vaporization tend to keep a thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

Note: Maintenance pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the unit.

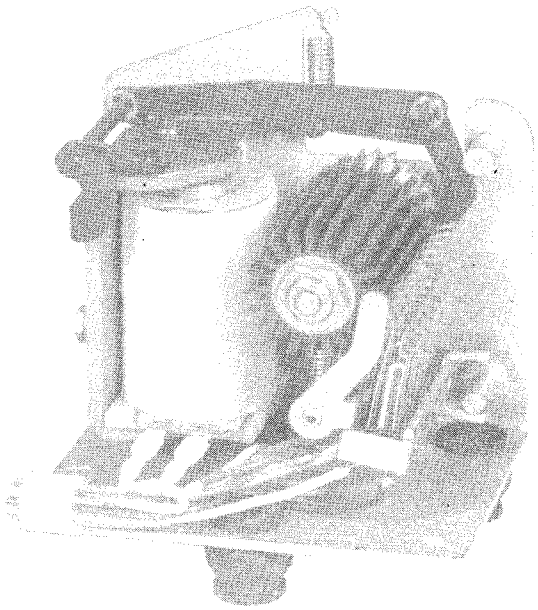


Figure 1 - Answer-Back Unit

1.07 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, a minimum amount of oil should be applied, so that the oil remains on the part and does not run off. Excessive lubricants should be removed with a dry lint-free cloth. If the surface between the relay armature and magnet pole piece has oil or foreign matter, proceed as follows.

(1) Place a piece of clean paper between the armature and pole piece.

(2) Energize the magnet.

(3) Pull the paper through the armature and pole piece and check to insure that lint or pieces of paper do not remain.

1.08 Use twill jean cloth KS2423 to clean gold-plated contacts. The code reading contacts should be cleaned after approximately 1000 hours of operation or 6 months of service, whichever occurs first. Use the following procedure: (1) deflect the tab on the contact assembly downward to open the contacts, (2) drop a strip of twill jean between the contacts, (3) close the contacts, (4) draw the twill jean part way through the contacts, and (5) reopen the contacts and withdraw the twill jean. This procedure will prevent small fibers from the edges of the twill jean strip from becoming lodged between the contacts.

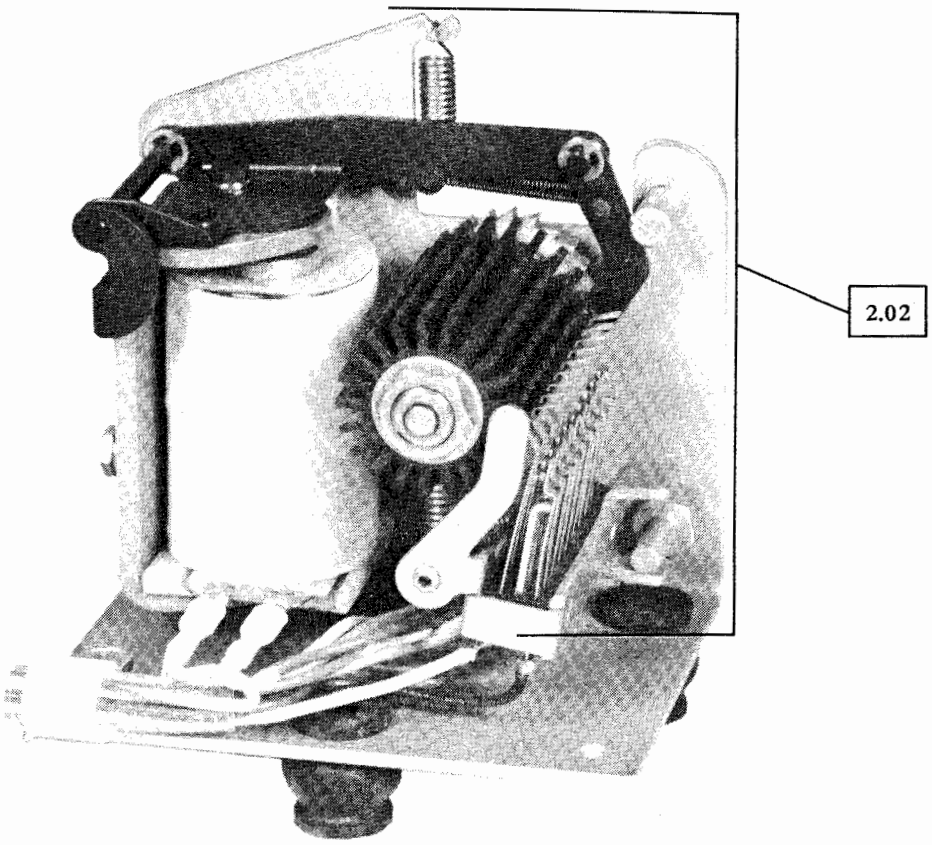
Note: Do not use burnishers, files, etc, which will remove gold plating.

CAUTION 1: DO NOT USE GOLD-PLATED CONTACTS ALTERNATELY IN HIGH- AND LOW-LEVEL CIRCUITS BECAUSE HIGH-LEVEL OPERATION MAY DAMAGE THE GOLD PLATING AND IMPAIR THE USE OF THE CONTACTS IN LOW-LEVEL CIRCUITS.

CAUTION 2: REMOVE POWER BEFORE LUBRICATING THE EQUIPMENT.

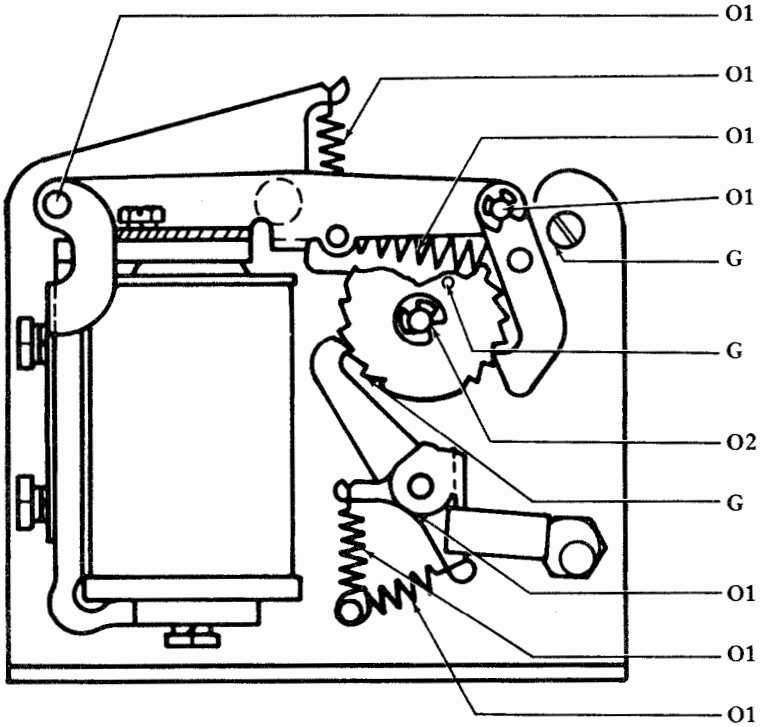
2. BASIC UNIT

2.01 Answer-Back



(Right Front View)

2.02 Feed Mechanism



O1	Pivots (2)	Armature Hinge
O1	Hook (Each End)	Feed Bail Spring
O1	Hook (Each End)	Feed Pawl Spring
O1	Pivot	Feed Pawl
G	Rear Surface (Thin Film)	Back Stop Eccentric
G	Locating Key (Thin Film)	Ratchet Wheel
O2	Pivot	Ratchet Wheel
G	Teeth (Thin Film)	Ratchet Wheel
O1	Pivot	Check Pawl
O1	Hook (Each End)	Contact Block Spring
O1	Hook (Each End)	Contact Pawl Spring

(Front View)

37 TYPING UNIT COVER AND PAN

LUBRICATION

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1. GENERAL 1

2. BASIC UNIT 3

Balancing arm 5
Cover and pan 3
Cover hinges 3
Cover latches 4
Front lid latches 5
Rear lid hinges 4

1. GENERAL

1.01 This section provides lubrication procedures for the late design 37 typing unit cover and pan which has the front cover cut out for WECo 635R2 switches (Figure 1). It is reissued to incorporate minor engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. For similar information on early design units which have the front cover cut out for Licon 76-type switches, see Section 574-326-701TC.

1.02 General areas of the cover and pan which require lubrication are shown by photographs. Specific points to receive lubrication are indicated by line drawings and descriptive text. The line drawings and descriptive text follow each photograph and are keyed to the photograph by paragraph numbers.

1.03 References made to the front, rear, left, or right apply to the cover in its normal operating position as viewed by the operator.

1.04 Lubricate the cover before placing it into service and just prior to putting it into storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the cover to make certain that no points have been missed. Thereafter, lubricate the cover according to the following schedule:

100 wpm	2000 hr or 9 mo*
150 wpm	1500 hr or 6 mo*

* Whichever occurs first.

1.06 The following symbols apply to the specific lubrication instructions given in each paragraph:

G Apply a thin coat of KS7471 grease.

O1 Apply one drop of KS7470 oil.

Note: Ordering information for the above lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1.07 Oil should be applied by means of an oiler. Over lubrication which would allow oil to drip on other parts should be avoided. Capillary action and vaporization tend to keep a film of oil on the parts. This prevents rust and provides sufficient lubrication to many points.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the cover.

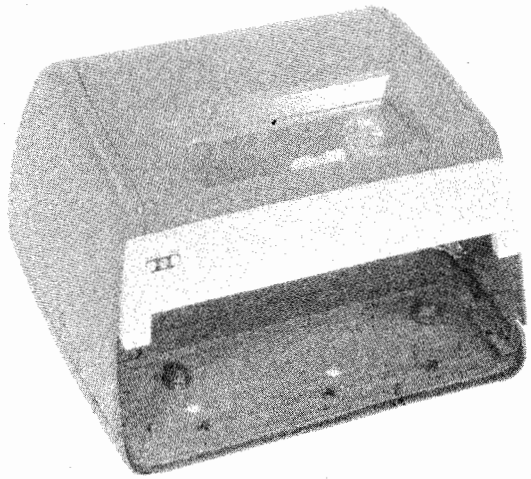


Figure 1 - Typing Unit Cover and Pan

1.08 The cover is hinged at the rear and can be opened for access to lubrication points. For instructions on separating the cover from the pan and other disassembly information, see Section 574-301-702TC.

Note: If the cover is removed for lubrication or other purposes and then set aside temporarily, be sure to place it in a location where it will not get damaged and where it will not be a hazard to other personnel in the area.

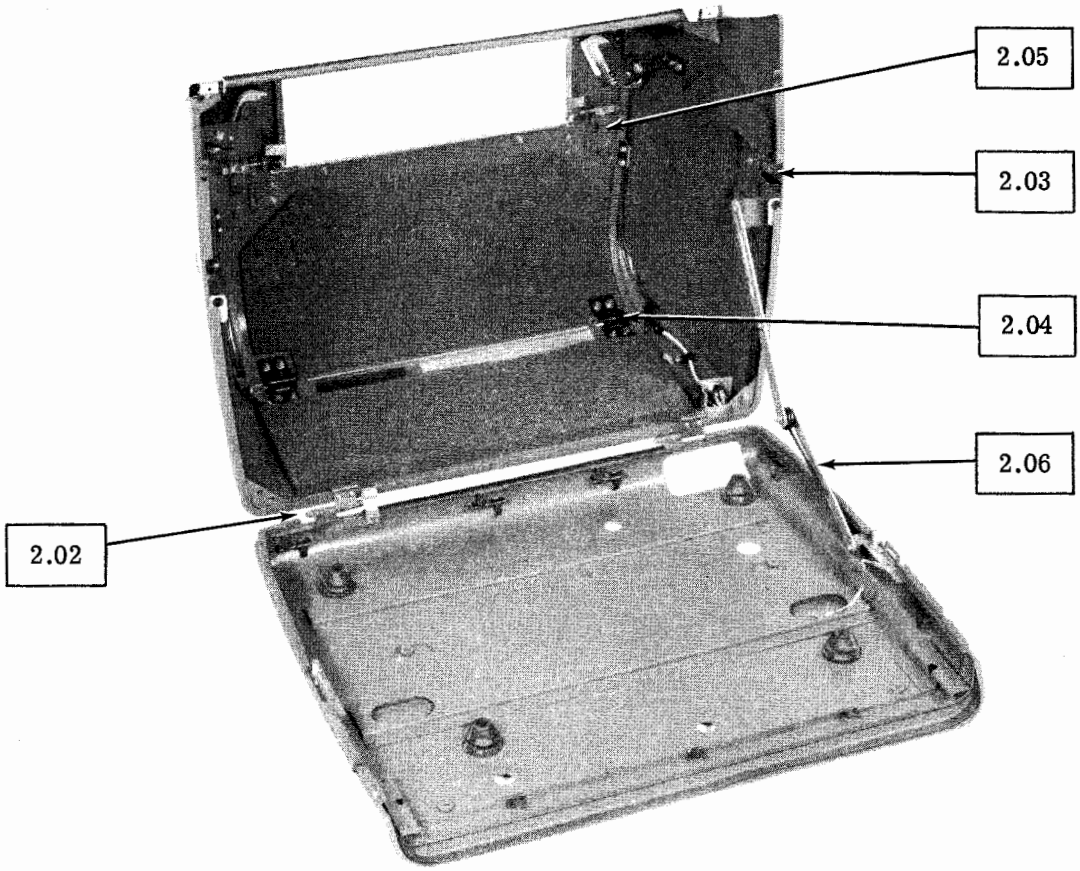
1.09 Clean the cover and pan before and after it is lubricated. Remove excess oil and/or grease which may have run onto surfaces which do not require lubrication. Remove the excess lubricant with care so that old lubricant or dirt does not get between bearing surfaces.

1.10 When cleaning plastic parts such as the plastic window, use soap or detergent and water. Do not use solvents containing alcohol or chlorinated ingredients.

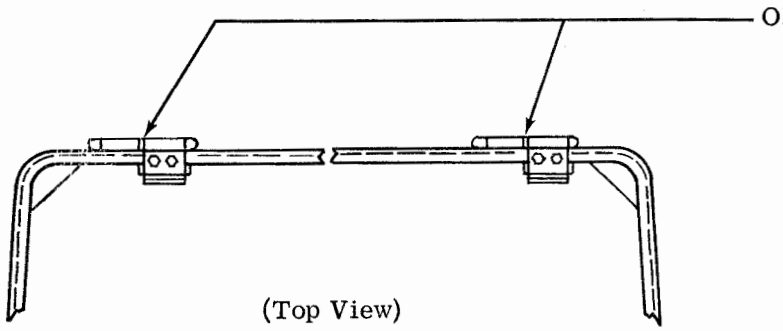
CAUTION: WHEN THE ASSEMBLY IS FUNCTIONALLY UTILIZED WITH A TYPING UNIT ETC, REMOVE POWER FROM EQUIPMENT BEFORE APPLYING ANY LUBRICANT.

2. BASIC UNIT

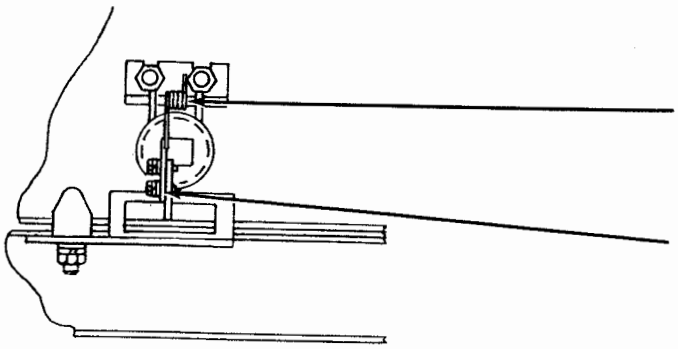
2.01 Cover and Pan (Cover Opened, Left Side View)



2.02 Cover Hinges (Left and Right)



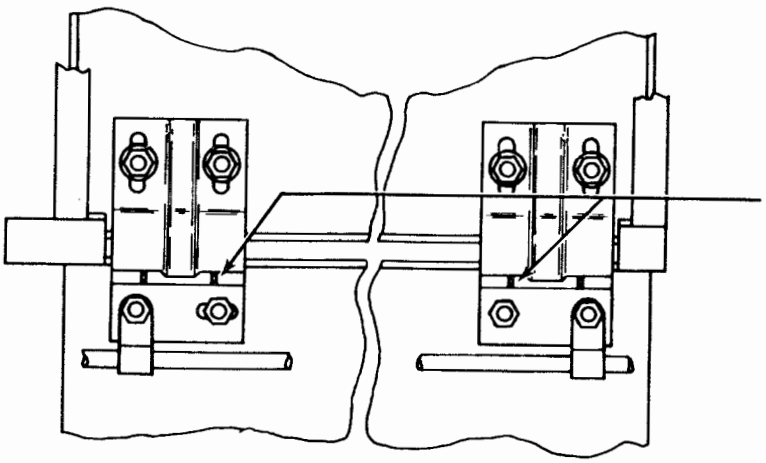
2.03 Cover Latches (Left and Right)



O1	Hooks - Each End	Spring
G	Latching Surface, Thin Coat	Latch Bolt

(Left Side View)

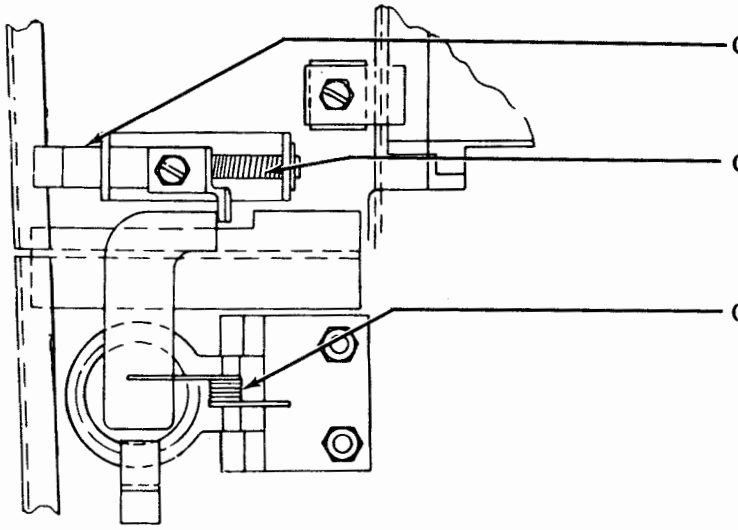
2.04 Rear Lid Hinges (Left and Right)



O1	Pivot	Hinge

(Front View)

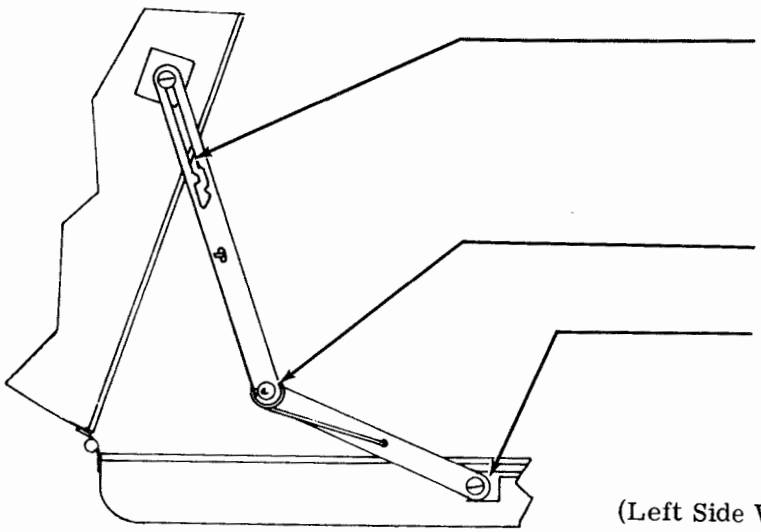
2.05 Front Lid Latches (Left and Right)



G	Latching Surface, Thin Coat	Latch Bolt
O1	Hooks - Each End	Spring
O1	Hooks - Each End	Spring

(Bottom View)

2.06 Balancing Arm



G	Sliding Surface, Thin Coat	Slide
O1	Hooks - Each End	Spring
O1	Pivot	Bolt

(Left Side View)

37 REPERFORATOR-TRANSMITTER (RT) CABINET

LUBRICATION

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1. GENERAL 1

2. BASIC UNIT 3
Cabinet 3
Reperforator gear mechanism 4
Tight tape assembly 4
Top latches 3

3. TAPE HANDLING DOORS 5
Lower left mercury switch assembly 7
Lower right mercury switch assembly 7
Tape handling door 5
Tape sensor latch assembly 6
Upper mercury switch assembly 6

1. GENERAL

1.01 This section provides lubrication procedures for the 37 reperforator-transmitter (RT) cabinet (Figure 1). It is reissued to incorporate minor engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted.

1.02 General areas of the cabinet which require lubrication are shown by photographs. Specific points to receive lubrication are indicated by line drawings and descriptive text. The line drawings and descriptive text follow each photograph and are keyed to the photograph by paragraph numbers.

1.03 References made to left or right and front or rear apply to the cabinet in its normal operating position as viewed by the operator facing the cabinet (Figure 1).

1.04 Lubricate the cabinet before placing it into service and just prior to putting it into storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the cabinet to make certain no points have been missed. Thereafter, lubricate the cabinet according to the following schedule:

100 wpm	2000 hours or 9 months *
150 wpm	1500 hours or 6 months *

*Whichever occurs first.

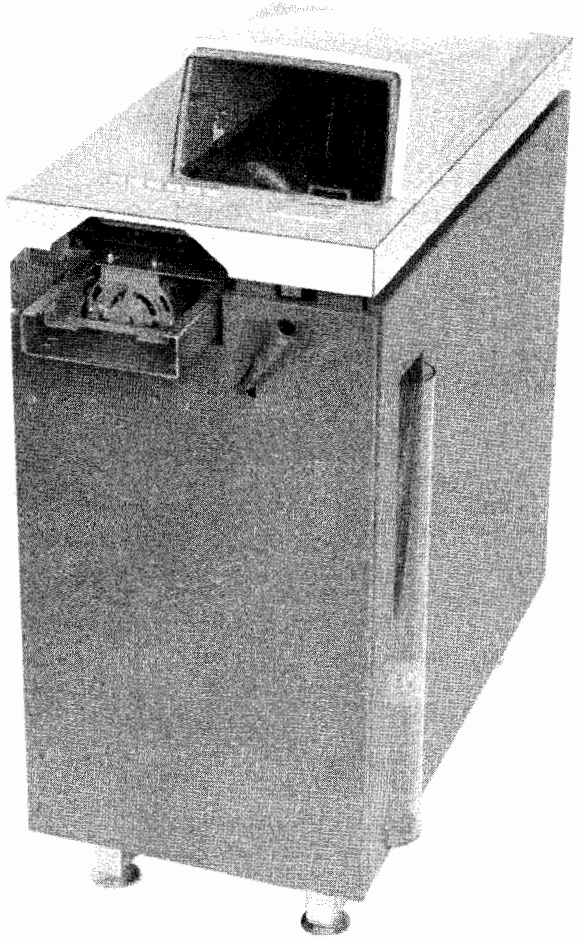


Figure 1 - Reperforator-Transmitter (RT) Cabinet

Note: Lubricate the reperforator (punch) motor in accordance with 570-220-701TC. The transmitter (reader) motor requires no lubrication except when disassembled. Then, the bearings should be repacked with TP195298 grease or equivalent.

1.06 The following symbol is used in the lubrication instructions to indicate the type and amount of lubricant:

O1 - Apply one drop of KS7470 oil

G - Apply KS7471 grease

Note: Ordering information for lubricants and a complete list of tools and materials available to maintain this equipment is given in Section 570-005-800TC.

1.07 Oil should be applied by means of an oiler. Overlubrication which would allow oil to drip on other parts should be avoided. Capillary action and vaporization tend to keep a film of oil on the parts. This prevents rust and provides sufficient lubrication to many points.

CAUTION: SPECIAL CARE SHOULD BE TAKEN TO PREVENT ANY LUBRICANT FROM GETTING BETWEEN ELECTRICAL CONTACTS.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease, and dirt while lubricating the cabinet.

1.08 Instructions for removing any components which are mounted within the cabinet can be found in Section 574-302-702TC.

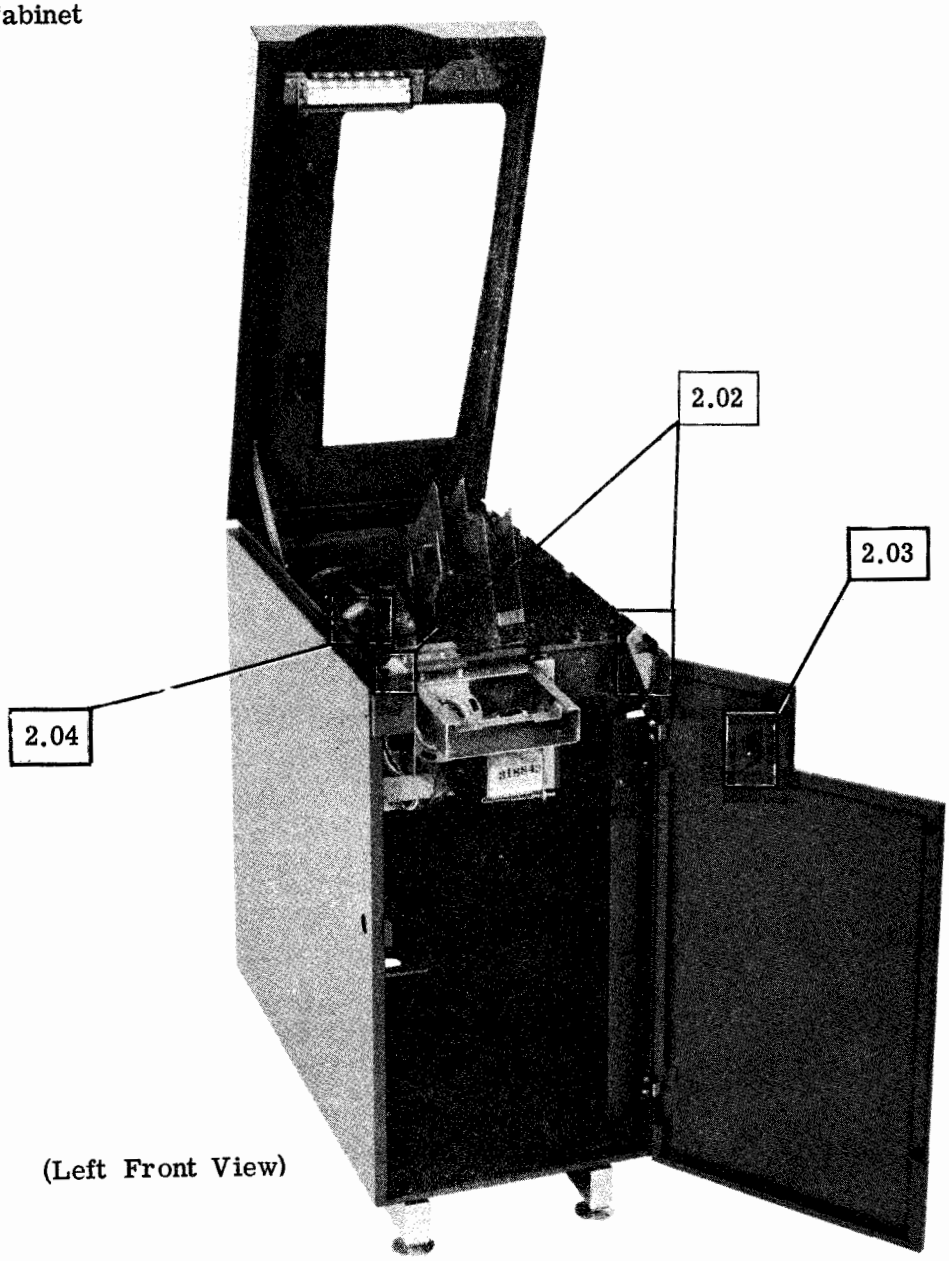
1.09 Clean the cabinet before and after it is lubricated. Remove excess oil and/or grease which may have run onto surfaces which do not require lubrication. Remove the excess lubricant with care so that old lubricant or dirt does not get between bearing surfaces.

1.10 When cleaning plastic parts such as the plastic window of the reperforator cover, use soap or detergent and water. Do not use solvents containing alcohol or chlorinated ingredients.

CAUTION: WHEN THE CABINET IS FUNCTIONALLY UTILIZED WITH PUNCH AND READER, REMOVE POWER FROM EQUIPMENT BEFORE APPLYING ANY LUBRICANT.

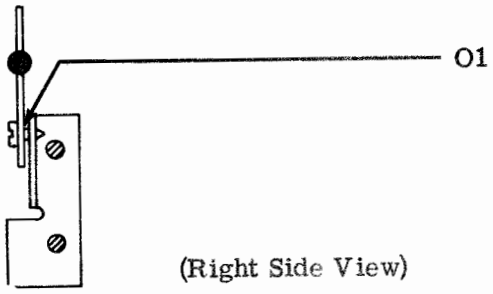
2. BASIC UNIT

2.01 Cabinet



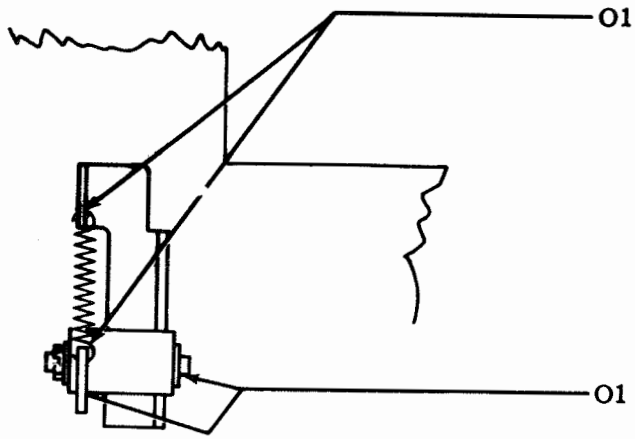
(Left Front View)

2.02 Top Latches (Left and Right Sides)



(Right Side View)

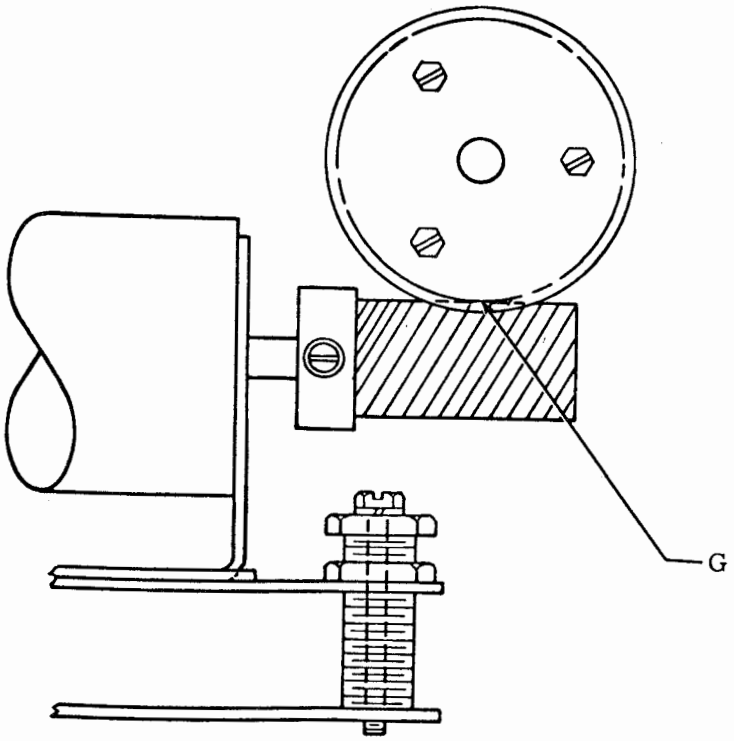
2.03 Tight Tape Assembly



O1	Hooks - Each End	Spring
O1	Bearing Surfaces	Tight Tape Bail Pivot

(Rear View)

2.04 Reperforator Gear Mechanism

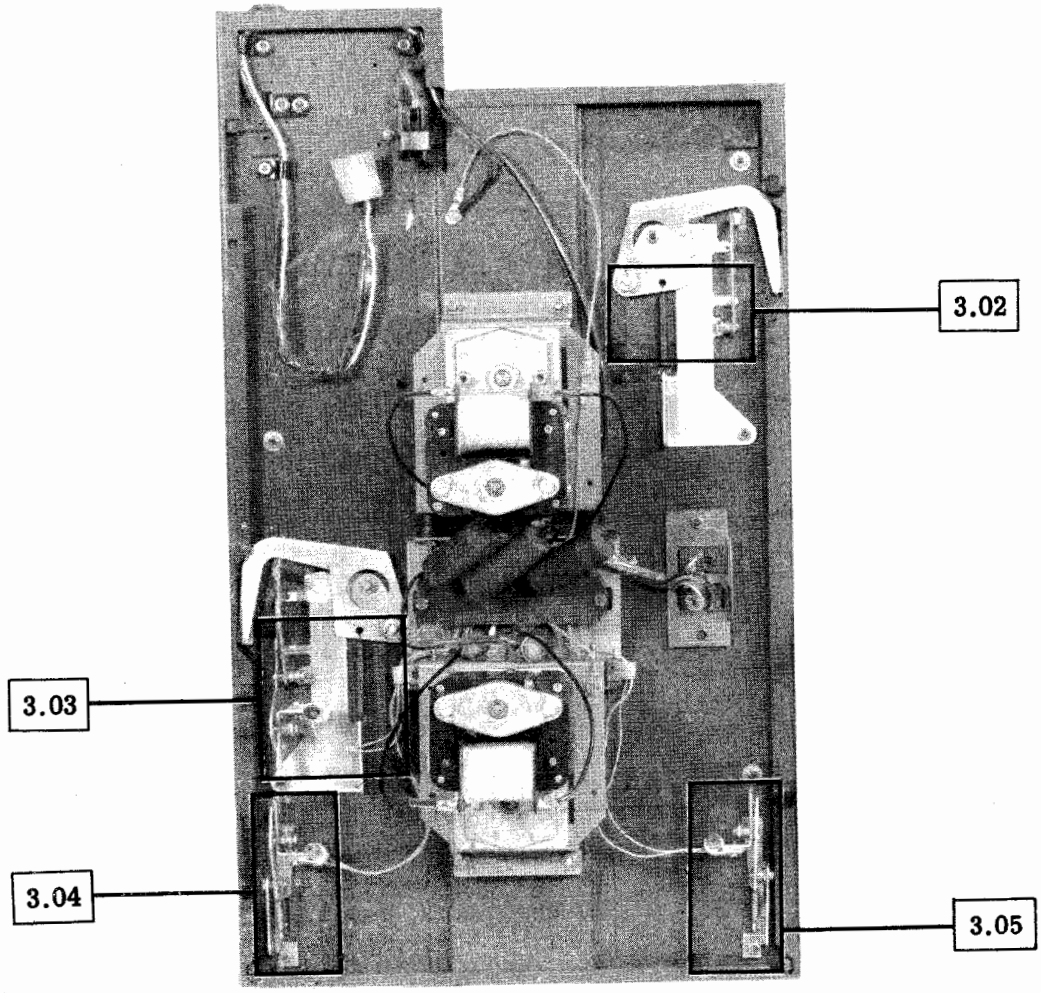


G	Teeth, Thick Coat	Reperforator Gear

(Left Side View)

3. TAPE HANDLING DOORS

3.01 Tape Handling Door



(Rear View)

37 NONTYPING REPERFORATOR

LUBRICATION

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	Manual interfering tape feed-out mechanism	15
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	Selector cam clutch	10
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1. GENERAL

1.01 This section provides lubrication procedures for the 37 nontyping reperforator (Figure 1). It is reissued to incorporate engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted.

1.02 General areas of the equipment are shown by photographs. Specific points to receive lubrication are indicated by line drawings and descriptive text. The line drawings and descriptive text follow each photograph and are keyed to the photographs by paragraph numbers.

1.03 References made to left or right, front or rear, and top or bottom apply to the reperforator in a normal operating position with the selector mechanism on the right and the function mechanism on the left.

1.04 Lubricate the reperforator before placing it into service and just prior to putting it into storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the reperforator to make certain no points have been missed. Thereafter, lubricate the reperforator according to the following schedule:

Operating Speed (WPM)	Lubrication Interval
100	2000 hours or 9 months *
150	1500 hours or 6 months *

*Whichever occurs first.

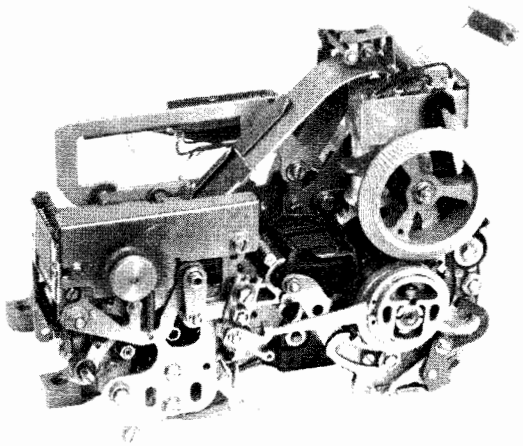


Figure 1 - 37 Nontyping Reperforator

1.06 The following symbols are used in the lubrication instructions to indicate the type of lubricant:

Symbol	Meaning
O	Apply KS7470 oil.
G	Apply KS7471 grease as specified.
D	Apply no lubricants. Keep dry.

Note: In general, the symbols indicate the type of lubricant. Quantity of lubricant is normally given with the text associated with specific lubrication instructions. An exception to this method is where the exact number of drops of oil is specified. For example, O1, O2, O3, etc refer to 1, 2, 3, etc drops of oil.

1.07 The following general instructions supplement the specific lubricating points illustrated on subsequent pages:

Apply one drop of oil to all spring hooks.

Apply a light film of oil to all cam surfaces.

Apply a thick coat of grease to all gears.

Saturage all felt washers, oilers, etc.

Apply oil to all pivot points.

Apply oil to all sliding surfaces.

Note: Ordering information for lubricants and a complete list of tools and materials available to maintain the reperforator is given in Section 570-005-800TC.

1.08 Oil should be applied by means of an oiler. Overlubrication which would allow oil to drip on other parts should be avoided. Wipe off excess amounts of lubricant. Capillary action and vaporization tend to keep a film of oil on the parts. This prevents rusts and provides sufficient lubrication to many points.

CAUTION: SPECIAL CARE SHOULD BE TAKEN TO PREVENT ANY LUBRICANT FROM GETTING BETWEEN ELECTRICAL CONTACTS.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease and dirt while lubricating the reperforator.

1.09 Gold-plated contacts are used in this equipment. The recommended cleaning interval for gold-plated contacts in special low-level applications (less than 250 microwatts and having an average weekly use of 60 hours) should not exceed 90 days. This interval may be reduced dependent on the signal circuit configuration, usage, and environment.

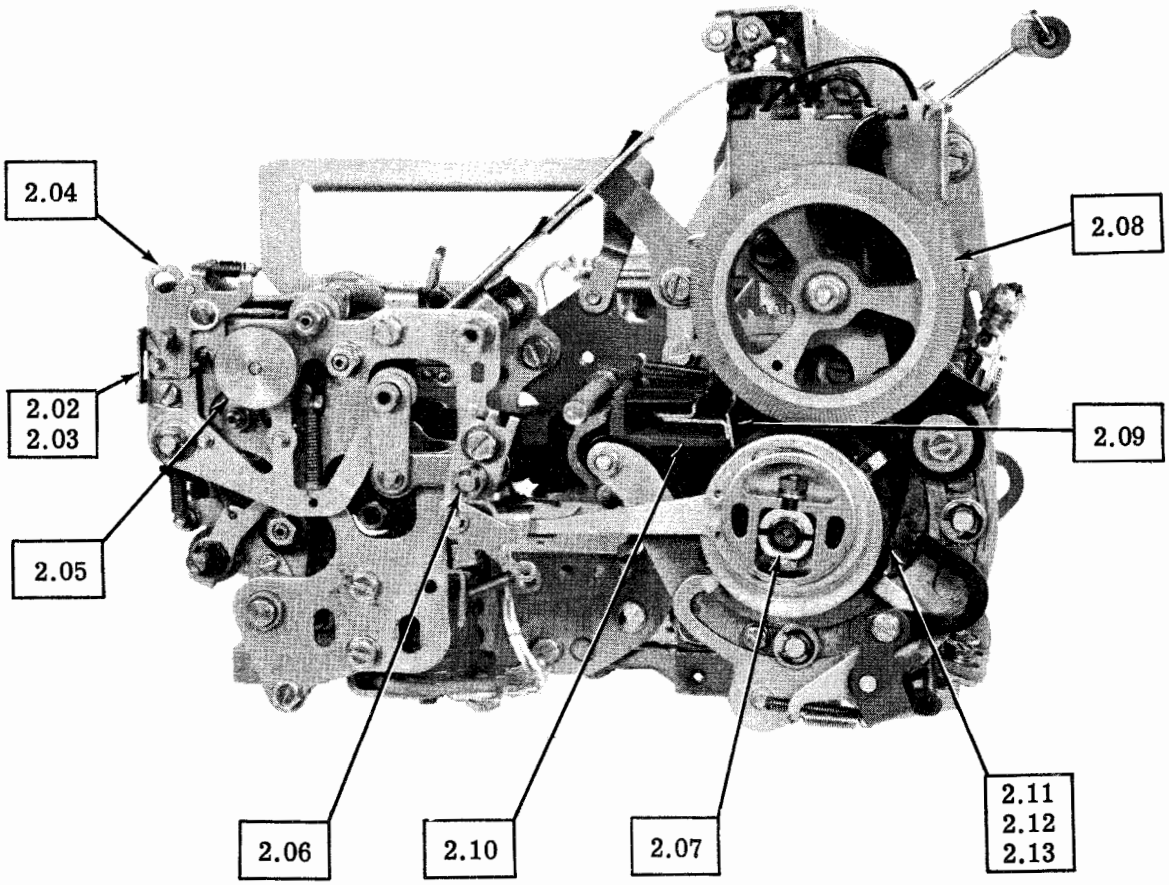
1.10 Use twill jean cloth (KS2423) to clean gold-plated contacts. Do not use burnishers, files, etc which will remove the gold plating.

CAUTION: DO NOT USE GOLD-PLATED CONTACTS ALTERNATELY IN HIGH- AND LOW-LEVEL CIRCUITS BECAUSE HIGH-LEVEL OPERATION MAY DAMAGE THE GOLD PLATING AND IMPAIR THE CONTACTS USED IN LOW-LEVEL CIRCUITS.

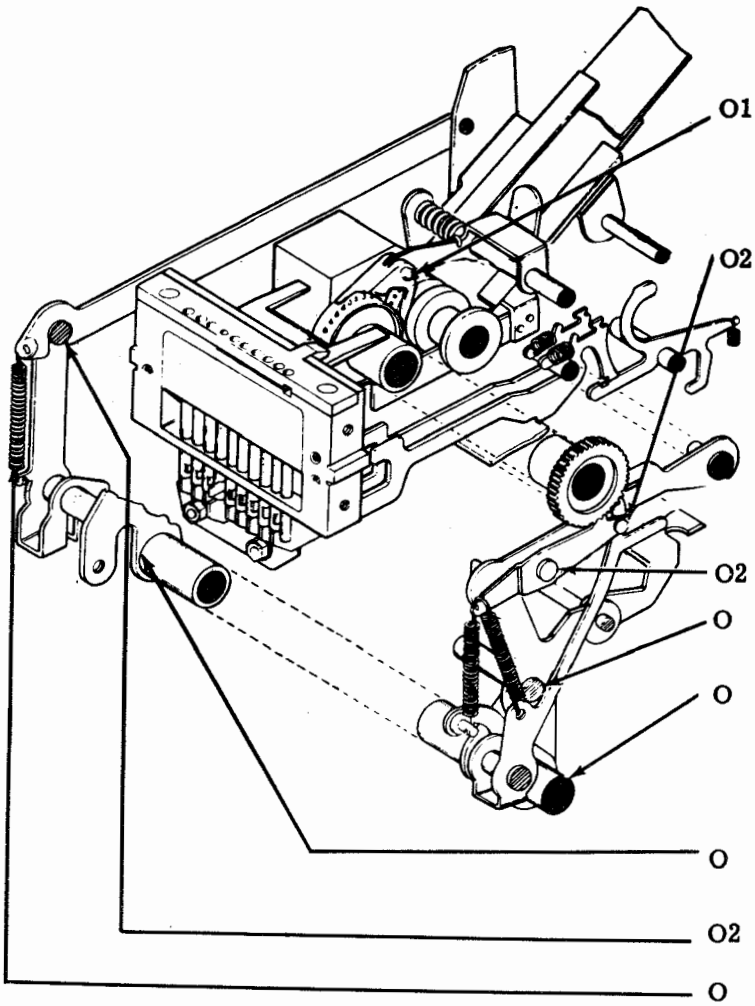
CAUTION: REMOVE POWER BEFORE LUBRICATING THE EQUIPMENT.

2. BASIC UNIT

2.01 Nontyping Reperforator (Right Side View)



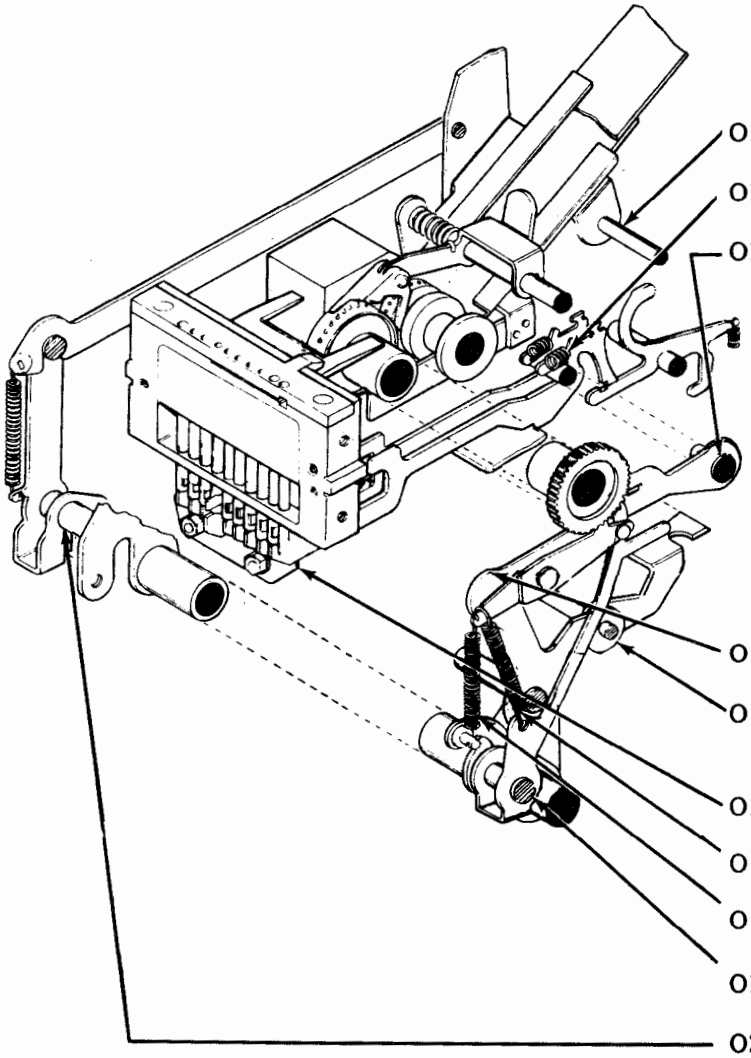
2.02 Perforator Mechanism



(Right Front View)

O1	Pivot Point	Tape Shoe
O2	Roller	Detent Lever
O2	Pivot Point	Detent Lever
O	Saturate Felt Washers at Pivot Points (4)	Front and Rear Toggle Link
O	Saturate Felt Washers at Pivot Points (2)	Toggle Ball
O	Saturate Felt Washers at Pivot Points (2)	Toggle Bail
O2	Pivot Points (2)	Punch Drive Link
O	Saturate Felt Wick	Drive Link Spring

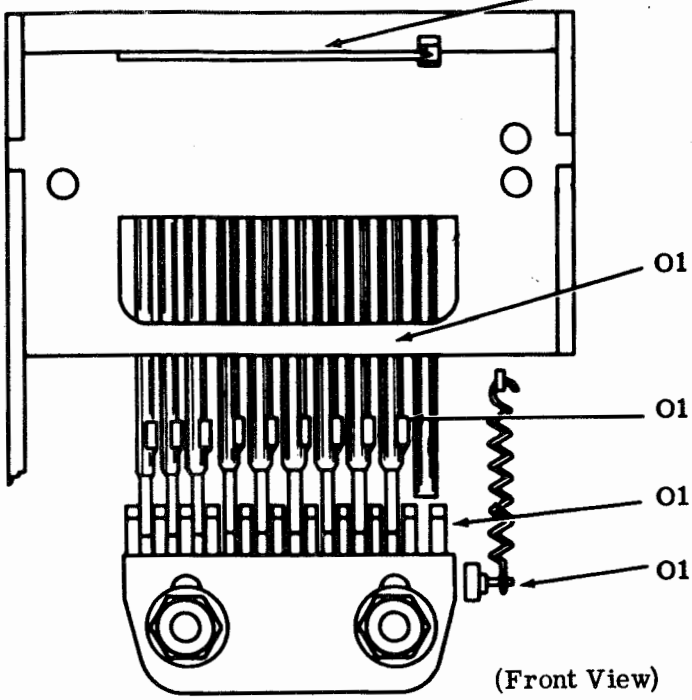
2.03 Perforator Mechanism (continued)



O1	Pivot Points (2)	Tape Shoe Arm
O1	Hooks - Each End	Springs
O1	Pivot Points (9)	Punch Slides
O	Saturate Felt Strip	Oscillating Slide
O	Saturate Felt Washers at Pivot Points (2)	Reset Bail
O1	Contact Surfaces (9)	Punch Slides
O	Saturate Felt Wick	Feed Pawl Spring
O	Saturate Felt Wick	Detent Spring
O1	Pivot Points (2)	Feed Pawl
O2	Pivot Points (2)	Rocker Arm

(Right Front View)

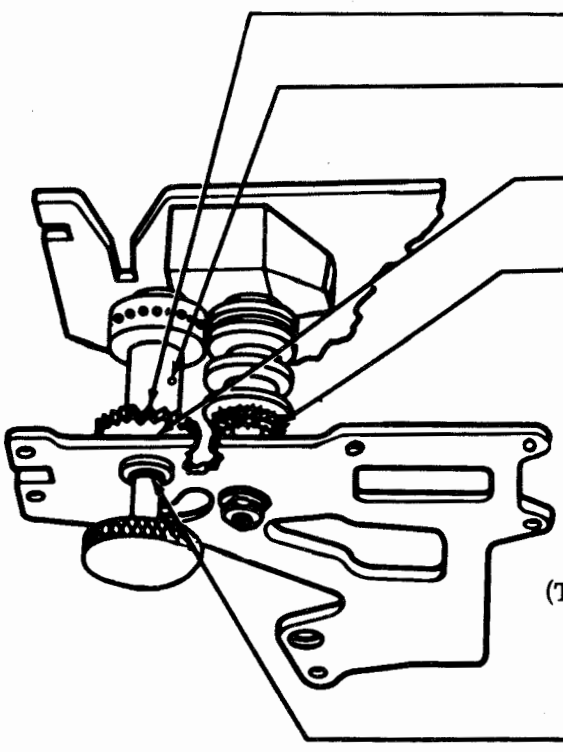
2.04 Punch Mechanism



O1	Sliding Surface (9) (Upper Guide)	Punch Pin
O1	Sliding Surface (9) (Lower Guide)	Punch Pin
O1	Sliding Surface (9)	Punch Pin
O1	Sliding Surface (9)	Punch Slide Guide
O1	Hooks - Each End	Spring

(Front View)

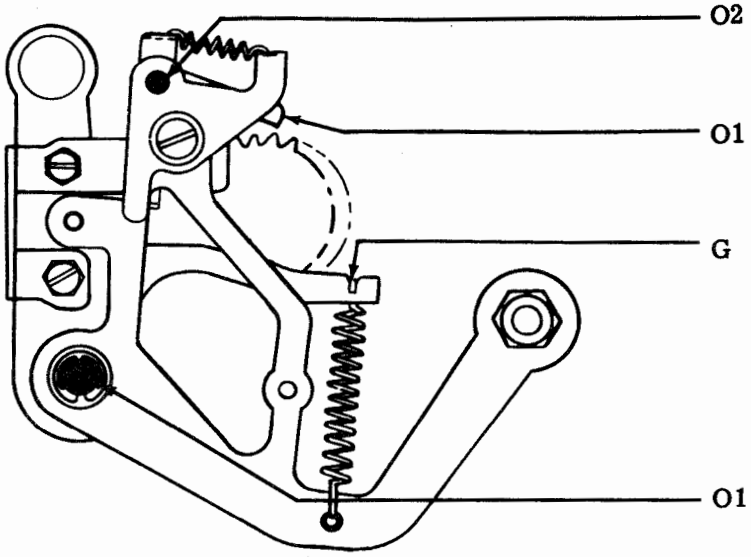
2.05 Feed Mechanism



G	Light Film on Ratchet Teeth (2)	Feed Wheel
O1	Oil Hole	Feed Wheel
O	Saturate Felt Washer, Pivot Point	Feed Wheel
O	Saturate Felt Washer, Pivot Point	Die Wheel
O2	Pivot Points (2)	Handwheel Bearing

(Top Right Side View)

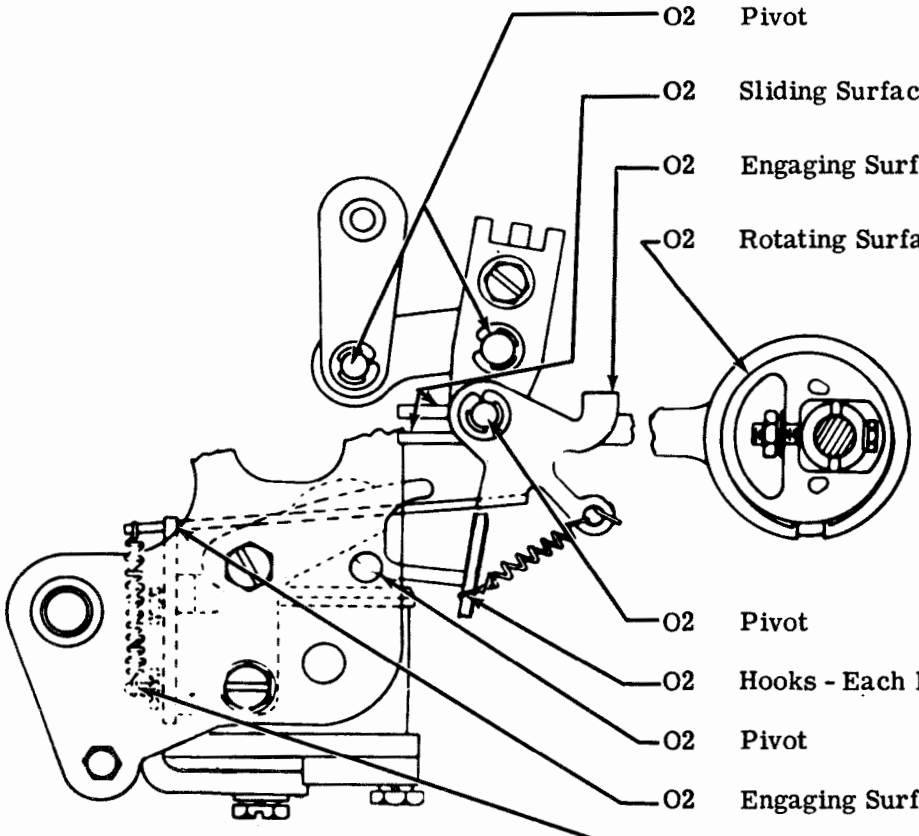
2.06 Backspace Mechanism



O2	Bearing Surface	Feed Wheel
O1	Hooks - Each End	Spring
G	Light Film on Contact Surface	Feed Pawl
O1	Hooks - Each End (3 Springs)	Spring

(Right Side View)

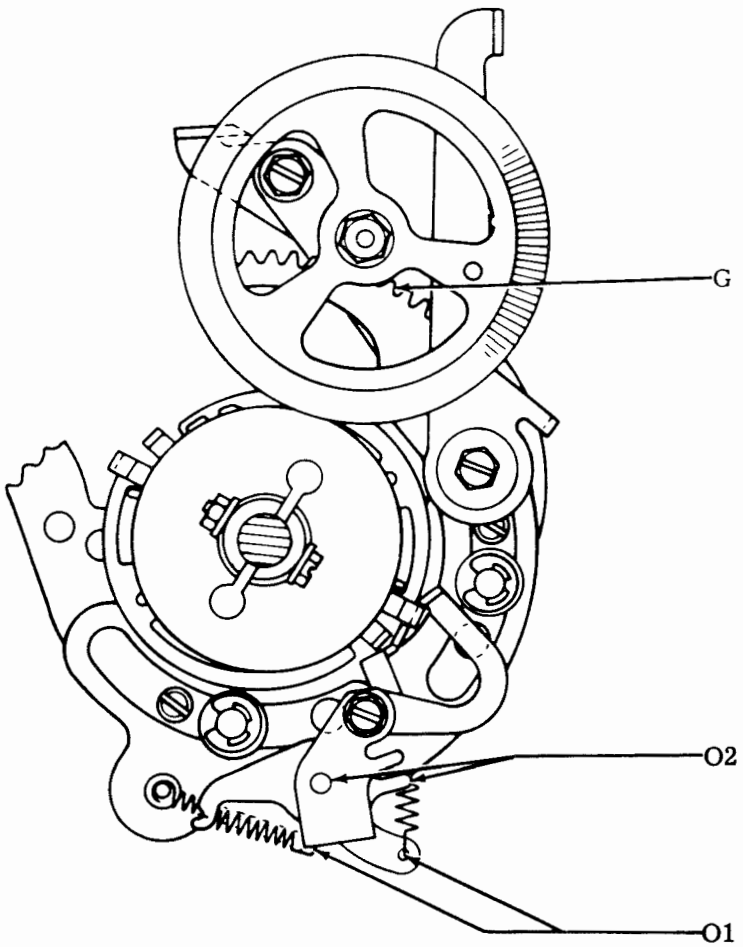
2.07 Backspace Mechanism (continued)



O2	Pivot	Link
O2	Sliding Surface	Eccentric Link Fork
O2	Engaging Surface	Latchlever
O2	Rotating Surface	Eccentric
O2	Pivot	Latchlever
O2	Hooks - Each End	Latchlever Spring
O2	Pivot	Arm
O2	Engaging Surface	Armature
O2	Hooks - Each End	Armature Spring

(Right Side View)

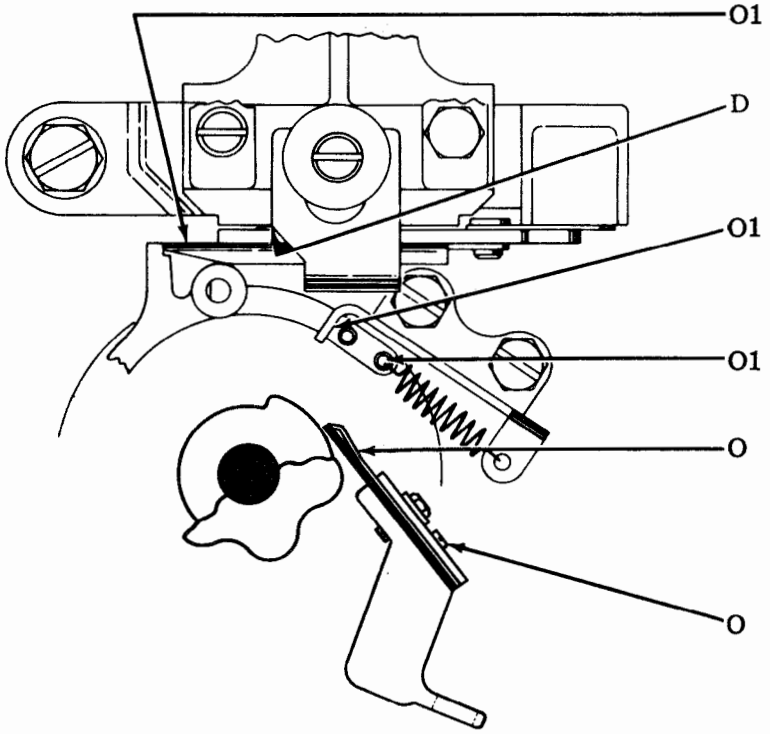
2.08 Selector Range Finder and Levers



G	Light Film on Teeth	Range Finder Pinion Gear and Rack
O2	Bearing Surface	Clutch Trip and Latch-levers, Lift Lever
O1	Hooks (Each End)	Springs (3)

(Right Side View)

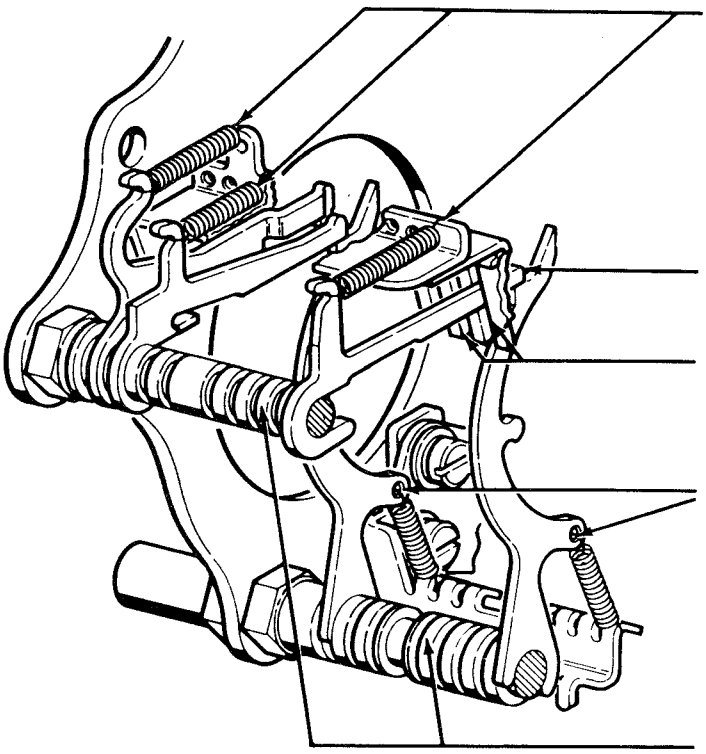
2.09 Selector Cam Lubricator and Marking Locklever



O1	Contact Surface	Armature Extension
D	Contact Surface	Front Button
O1	Guide Slot	Marking Locklever
O1	Hooks (Each End)	Spring
O	Saturate Wick	Cam Lubricator Wick
O	Fill Reservoir	Cam Lubricator

(Right Side View)

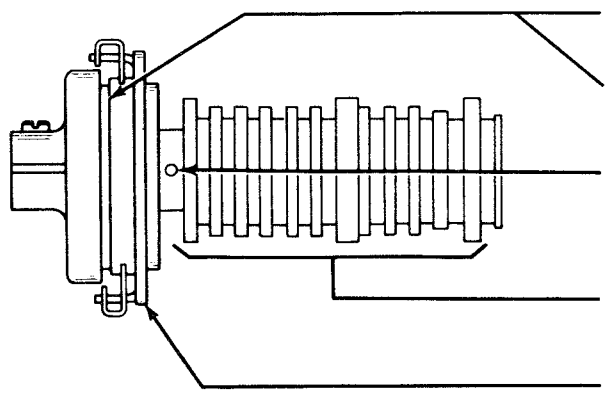
2.10 Selector Locklevers and Pushlevers



(Right Front View)

O1	Hooks (Each End)	Springs (11)
O1	Engaging Surfaces	Pushlevers
O1	Guide Slots	Start and Lock-levers, Selector and Pushlevers
O1	Hooks (Each End)	Springs (10)
O2	Bearing Guide Slots	Push and Selector Levers Guide Bearings

2.11 Selector Cam Clutch

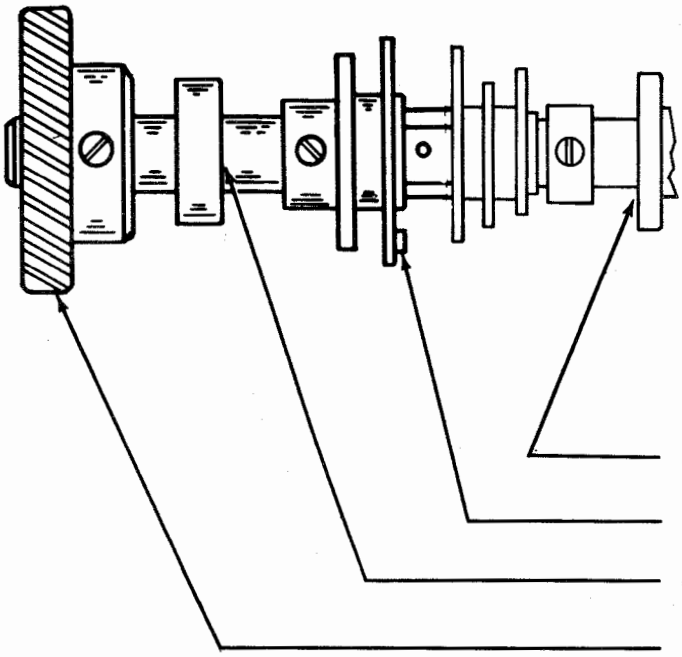


(Rear View)

O	Saturate Felt Wick	Selector Clutch
O4	Internal Mechanism	Selector Clutch
O2	Oil Holes (2)	Cam Sleeve Bearing
O2	Camming Surfaces	Selector Cams
O2	Camming Surfaces	Clutch Disc

2.12 Main Shaft Mechanism

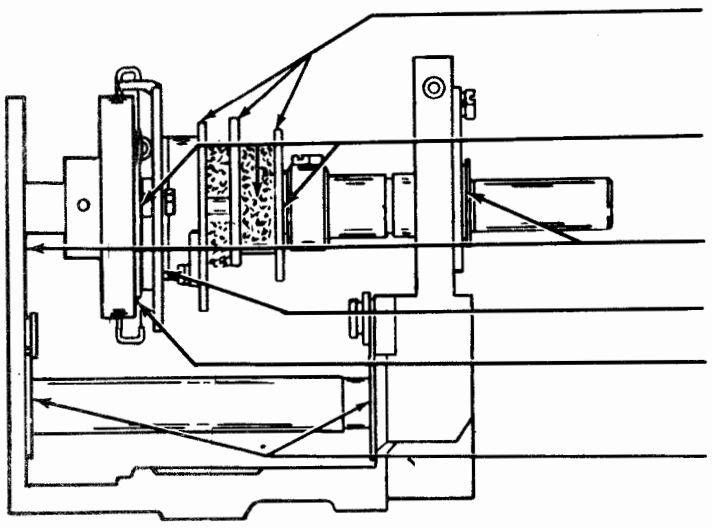
Note: If function cam needle bearings are disassembled at any time, repack bearings with grease (TP195298) or its equivalent.



O2	Bearing	Main Shaft
O2	Roller Pivot	Function Cam
O2	Bearing	Main Shaft
G	Light Film on Teeth	Driven Gear

(Top View)

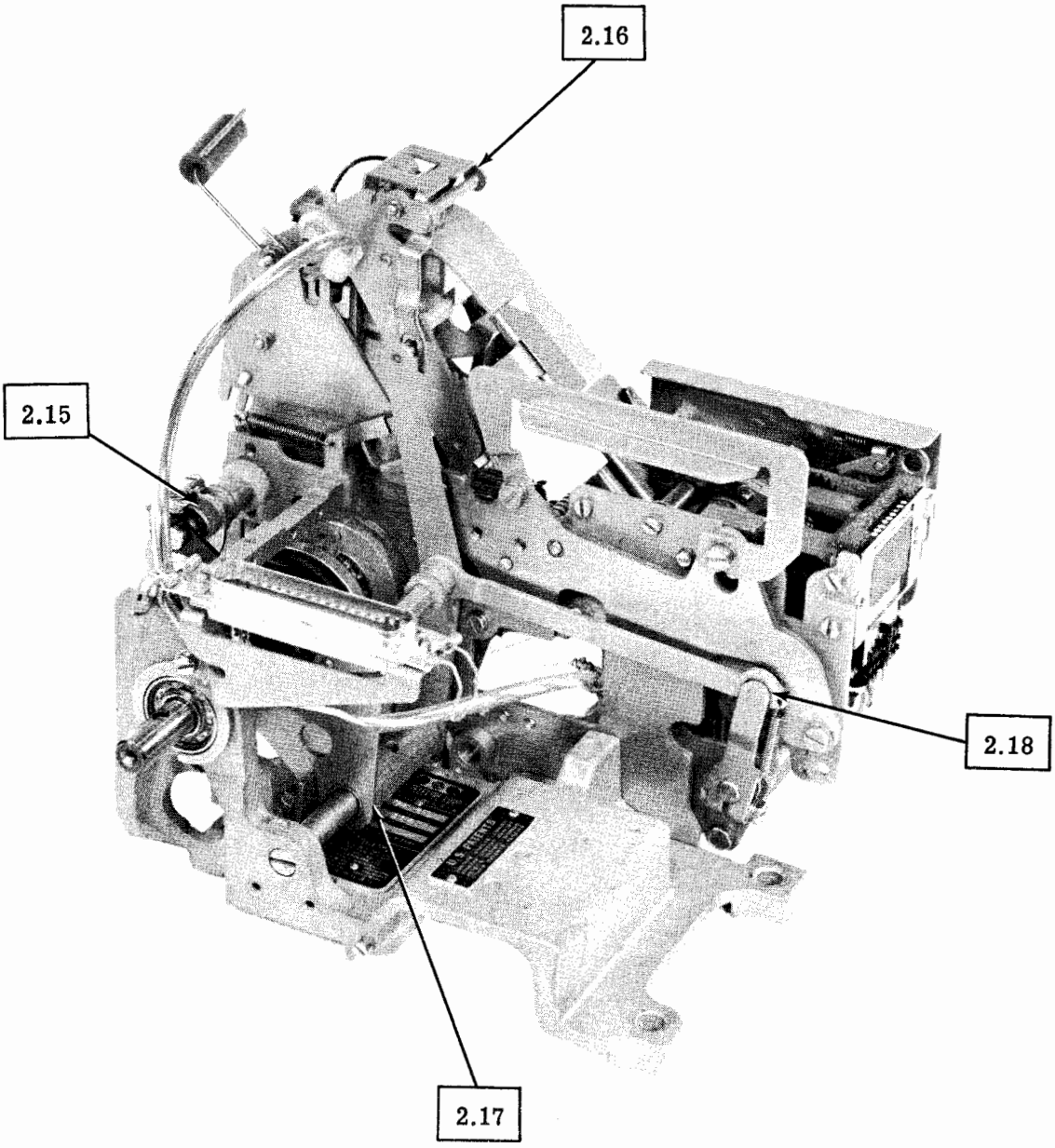
2.13 Main Shaft Mechanism (continued)



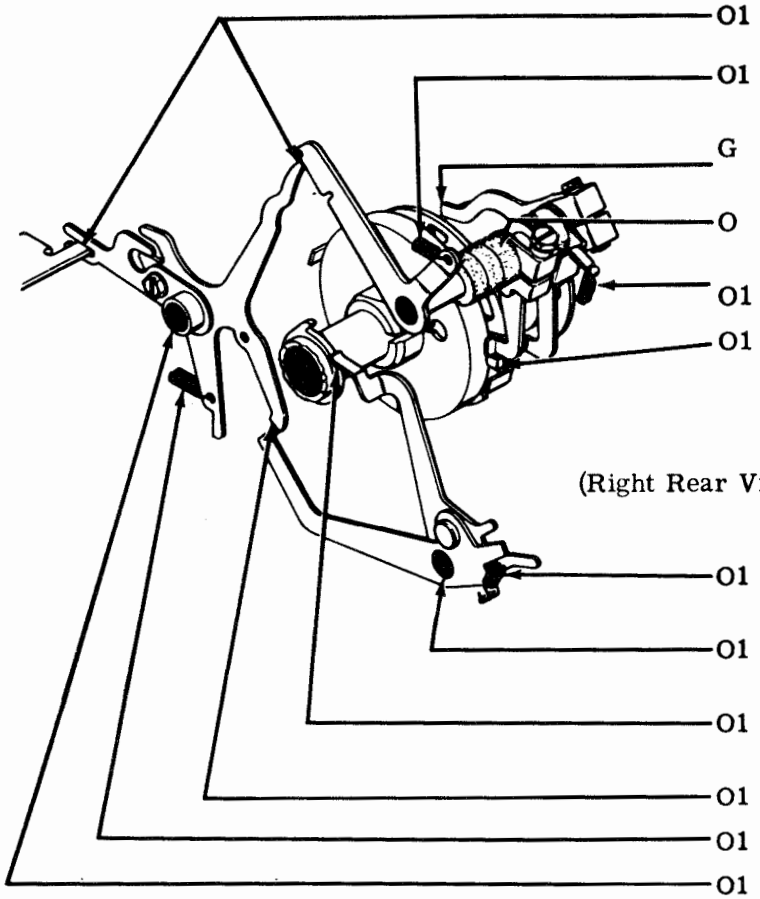
G	Thin Film on Camming Surfaces (2)	Function Cam
O6	Function Cam Needle Bearing Sleeve	Both Ends of Sleeve and Felt Oiler
O2	Bearing Surfaces	Ball Bearings (2)
O1	Camming Surface	Clutch Cam Disc
O1	Bearing Surface	Function Clutch Drum
O2	Bearing Surfaces	Ball Bearings (2)

(Rear View)

2.14 Nontyping Reperforator (Left Front View)



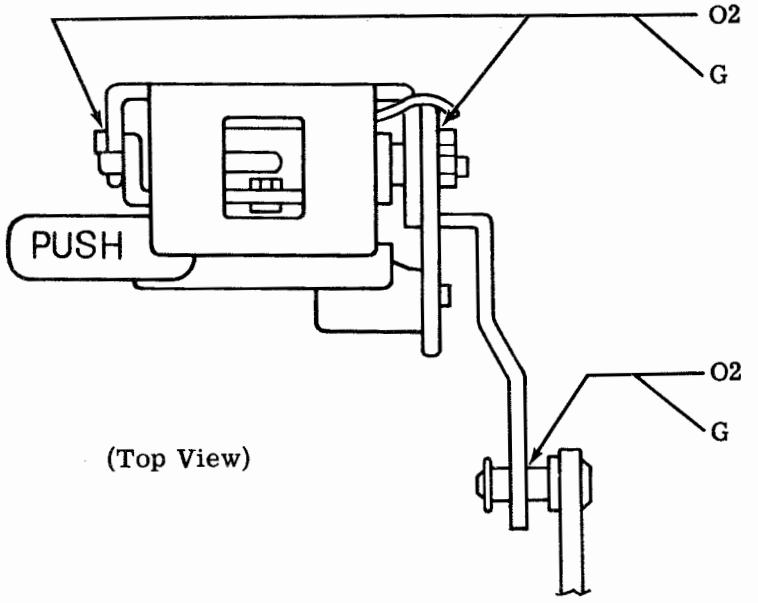
2.15 Function Cam-Clutch Trip Mechanism



(Right Rear View)

O1	Contact Points (2)	Trip Lever
O1	Hooks - Each End	Clutch Release Spring
G	Thin Film on Contact Surface	Reset Lever
O	Saturate Felt Washers	Clutch Trip Shaft
O1	Hooks - Each End	Latchlever Spring
O1	Contact Surface	Clutch Stop-Lug
O1	Hooks - Each End	Follower Lever Spring
O1	Pivot Point	Trip Cam Follower Lever
O1	Contact Surface	Trip Cam Follower Lever
O1	Contact Point	Trip Lever
O1	Hooks - Each End	Trip Lever Spring
O1	Pivot Point	Trip Lever

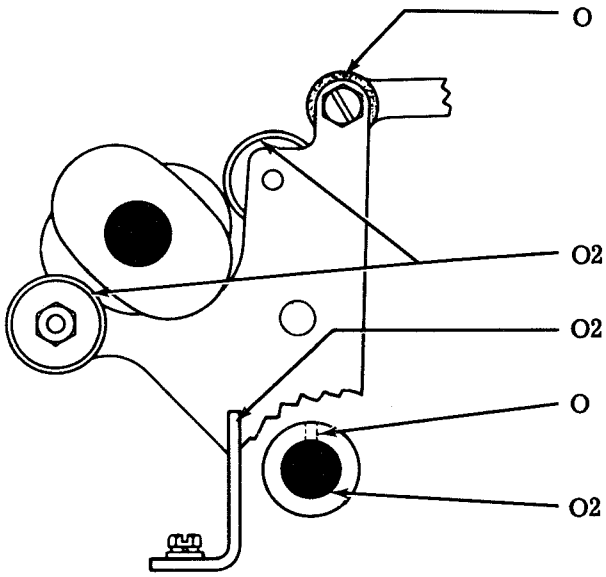
2.16 Tape Depressor Mechanism



(Top View)

O2	Pivot Points	Tape Depressor
G	Thin Film	Tape Depressor
O2	Roller Surface	Drive Roller
G	Thin Film	Tape Depressor

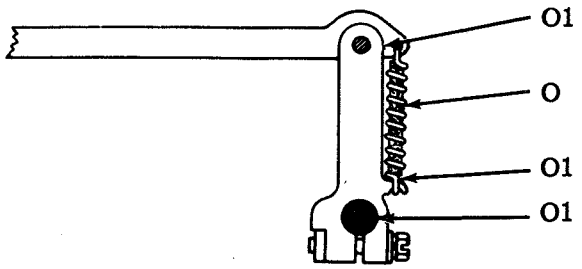
2.17 Rocker Bail Mechanism



O	Saturate Felt Wick	Drive Link Wick
O2	Rollers (2)	Rocker Bail Rollers
O2	Guide Slot	Rocker Bail Guide
O	Saturate Felt Wick — Use Oil Hole	Rocker Bail Shaft
O2	Pivot	Rocker Bail Shaft

(Left Side View)

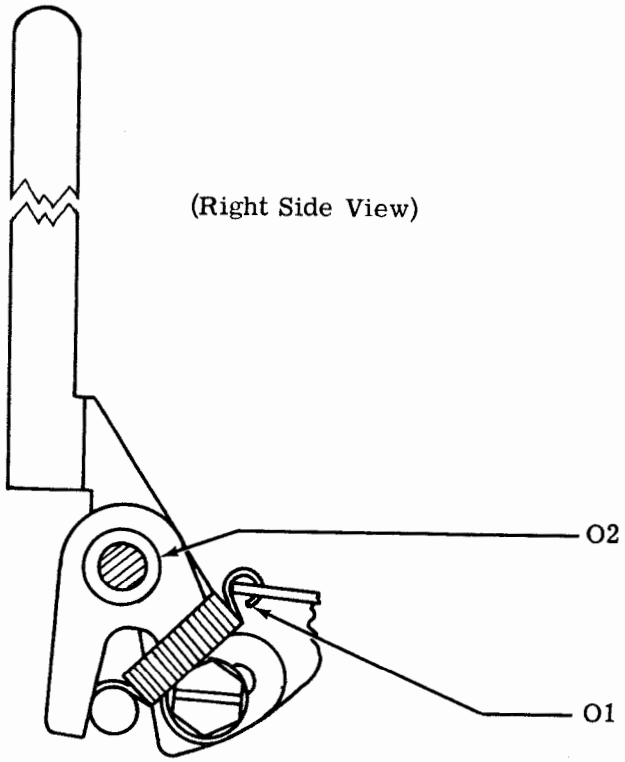
2.18 Rocker Arm



O1	Engaging Surface	Rocker Arm
O	Saturate Felt Wick	Rocker Arm
O1	Hooks - Each End	Spring
O1	Bearing Surface	Rocker Arm

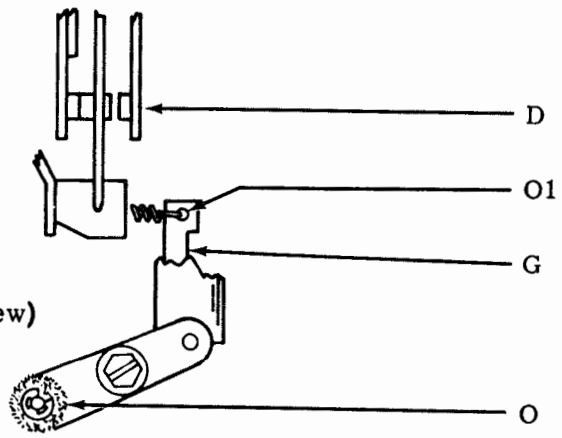
(Left Side View)

2.19 Manual Interfering Tape Feedout Mechanism



Pivot		Hand Lever
Hooks - Each End		Spring

2.20 Auxiliary Timing Contacts



Keep Lubricants Away From Contacts		
Hooks - Each End		Spring
Light Film on Bail		Bail
Saturate Wick		Bail Shaft

37 NONTYPING REPERFORATOR UNIT

DISASSEMBLY AND REASSEMBLY

CONTENTS PAGE

1. GENERAL 1

2. DISASSEMBLY AND REASSEMBLY .. 1

BACKSPACE MECHANISM 1

SELECTOR MECHANISM 2

MAIN SHAFT 2

1. GENERAL

1.01 This section provides disassembly and reassembly instructions for the 37 nontyping reperforator unit (Figure 1). It is reissued to incorporate engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted.

1.02 Photographs are used to identify the mechanisms and specific parts mentioned in the procedures. Refer to the appropriate parts section for drawings showing the location of all parts and mechanisms.

1.03 Refer to Section 570-005-800TC, Maintenance Tools, for information on the tools necessary to perform the disassembly and reassembly procedures.

1.04 References in the procedures to left or right, up or down, top or bottom, etc refer to the unit viewed in a normal operating position with the selector mechanism on the right and the function mechanism on the left.

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE UNIT.

1.05 Most maintenance, lubrication and adjustments can be accomplished simply by removing the subject component from the cabinet. If possible, disassembly should be confined to subassemblies, which can, in some cases, be removed without disturbing adjustments. When reassembling the subassemblies, be sure to check all associated adjustments, clearances and spring tensions.

1.06 If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.07 Retaining rings are made of spring steel and have a tendency to release suddenly when being removed. Loss of these retainers can be minimized as follows: Hold the retainer with the left hand to prevent it from rotating. Place the blade of a suitable screwdriver in one of the slots of the retainer. Rotate the screwdriver in a direction to increase the diameter of the retainer for removal.

1.08 Avoid loss of springs in disassembly by holding one spring loop with the left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs in removing them.

2. DISASSEMBLY AND REASSEMBLY

BACKSPACE MECHANISM

2.01 To remove the backspace mechanism, proceed as follows (Figure 2):

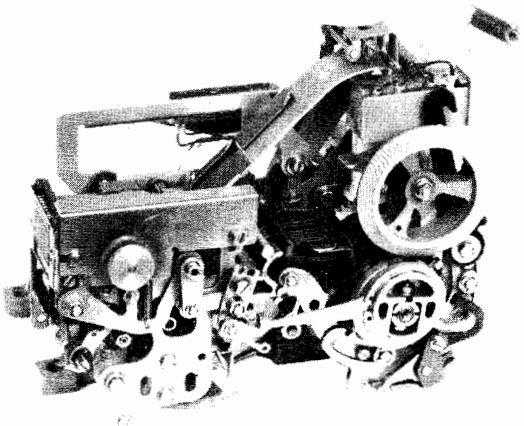


Figure 1 - 37 Nontyping Reperforator Unit

(1) Unhook the TP84575 spring from the TP159958 drive link latch.

(2) Loosen the TP151632 screw on the TP159960 eccentric and pull the TP159961 eccentric arm off the TP159963 hub.

(3) Disengage the eccentric arm from its guide between the TP159958 latch and TP159955 drive link.

(4) Remove the post from between the TP159954 adjusting link and the front punch frame. Then remove the link and latch assembly.

(5) Remove the two TP156632 screws on the front of the punch frame and remove the magnet assembly.

2.02 To assemble the backspace mechanism, reverse the removal procedure.

SELECTOR MECHANISM

2.03 To remove the selector mechanism, proceed as follows (Figure 2):

(1) Remove the selector clutch drum mounting nut, screw and washers. Remove the clutch drum.

(2) Remove the selector clutch and cam sleeve assembly as follows:

(a) Latch the pushlever reset bail up and out of the notch in the lever guide slot.

(b) Push the mark lever to the left side and insert a pin in the hole provided on the lever extension so that the lever (and selecting levers) is held away from the cam by the marking locklever guide bracket.

(c) Hold the spacing locklever and start lever to the left side and slip the cam sleeve assembly off the shaft by rotating it in a counterclockwise direction.

(3) Remove the function clutch latchlever spring, spring post, nut, and washer.

(4) Remove the selector backplate screw and washer (rear of plate, inserted through the casting).

(5) Remove the oil wick, wick holder screw and washer, and wick holder.

(6) Remove the selector mechanism.

2.04 To replace the selector mechanism, reverse the removal procedure. To facilitate replacing the cam sleeve, reverse the procedure but continue to rotate the sleeve counterclockwise. When the sleeve is almost fully in place, pull the trip lever arm and selector clutch latchlever away from their cams.

MAIN SHAFT

2.05 To remove the main shaft after the selector mechanism (2.03) has been removed, proceed as follows (Figure 3):

(1) Remove the retaining ring, spring washer and flat washer from the forward end of the main shaft.

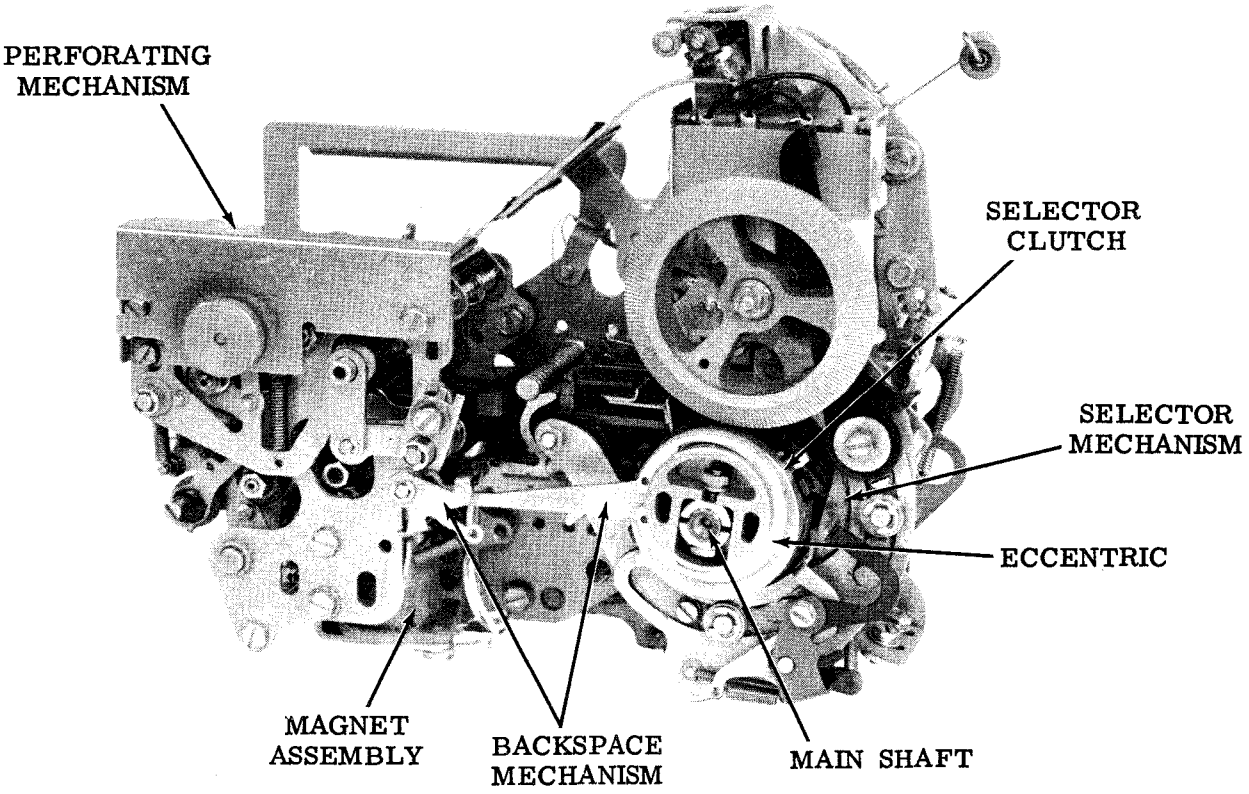
(2) Remove the screw and lockwasher from the TP150000 clutch drum.

(3) Remove the screw and lockwasher from the TP173340 collar.

(4) Remove the screw and lockwasher from the rear bearing clamp.

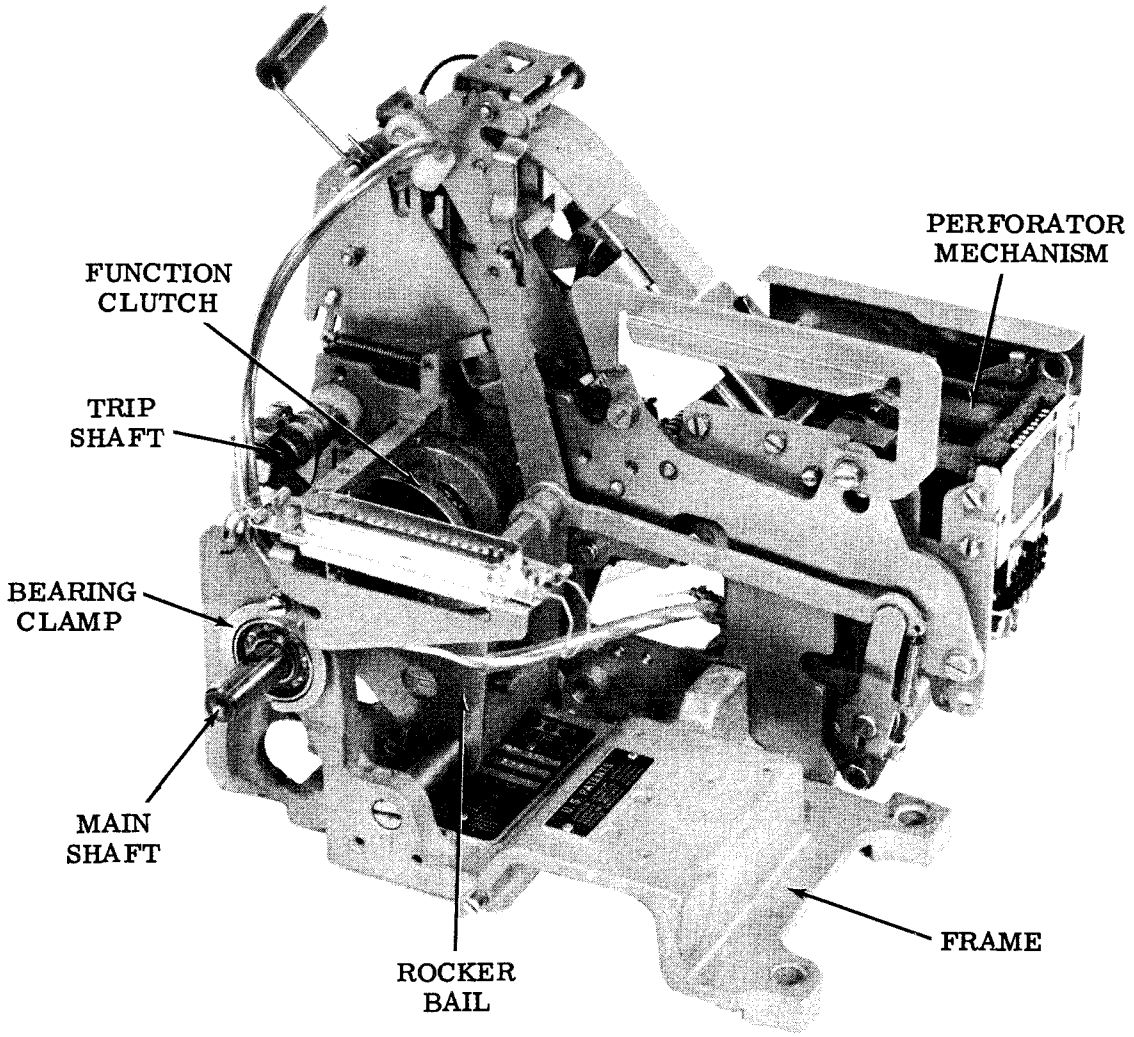
(5) Pull the main shaft out toward the rear while removing the function clutch and collar.

2.06 To replace the main shaft, reverse the disassembly procedure.



(Right Side View)

Figure 2 - 37 Nontyping Reperforator



(Left Front View)

Figure 3 - 37 Nontyping Reperforator

37 TYPING REPERFORATOR

LUBRICATION

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Power drive backspace mechanism 16
Remote control interfering tape delete feed-out mechanism 17
Two-color ribbon contact mechanism 18
Two-color ribbon mechanism 18

1. GENERAL

1.01 This section provides lubrication procedures for the Model 37 Typing Reperforator.

1.02 Photographs are used to show the general areas of lubrication. The paragraph numbers shown on the figures refer to specific lubrication areas. Each paragraph consists of one or more line drawings and descriptive text that cover precise lubrication points.

1.03 Lubricate the typing reperforator before placing it in service and just prior to putting it in storage.

1.04 The unit should be relubricated after 200 hours of operation or four weeks, whichever comes first. Thereafter, lubricate all mechanisms of the reperforator according to the following schedule:

Operating Speed	Lubrication Interval
100 wpm	1500 hours or 6 months*
150 wpm	1000 hours or 6 months*

*Whichever occurs first.

CAUTION: DISCONNECT ALL AC POWER CORDS BEFORE PERFORMING ANY PROCEDURE.

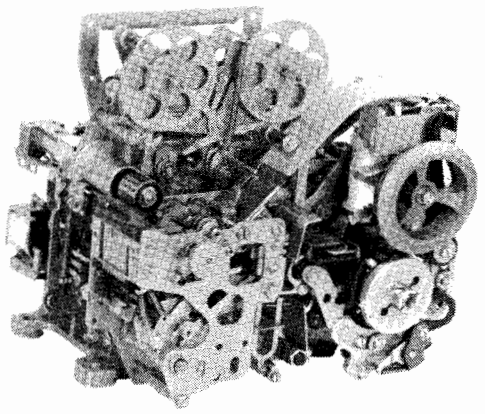


Figure 1 - 37 Typing Reperforator

1.05 The following list of symbols applies to the specific lubrication instructions given in each paragraph.

Symbol

O Oil with KS7470 oil as instructed.

G Apply KS7471 grease.

GO Apply a thin coat of a mixture containing equal parts of grease and oil.

Note: In general, the symbols indicate the type of lubricant. Quantity of lubricant is normally given with the text associated with specific lubrication instructions. An exception to this method is where the exact number of drops of oil is specified. For example, O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil.

1.06 Oil should be applied by means of an oiler to points where it will adhere or where pressure is nominal. In lubricating small parts, only a single drop of oil should be applied so that the oil remains on the part and does not run off.

Note: Care should be exercised to prevent lubricants from getting between armature and pole faces or between electrical contact points.

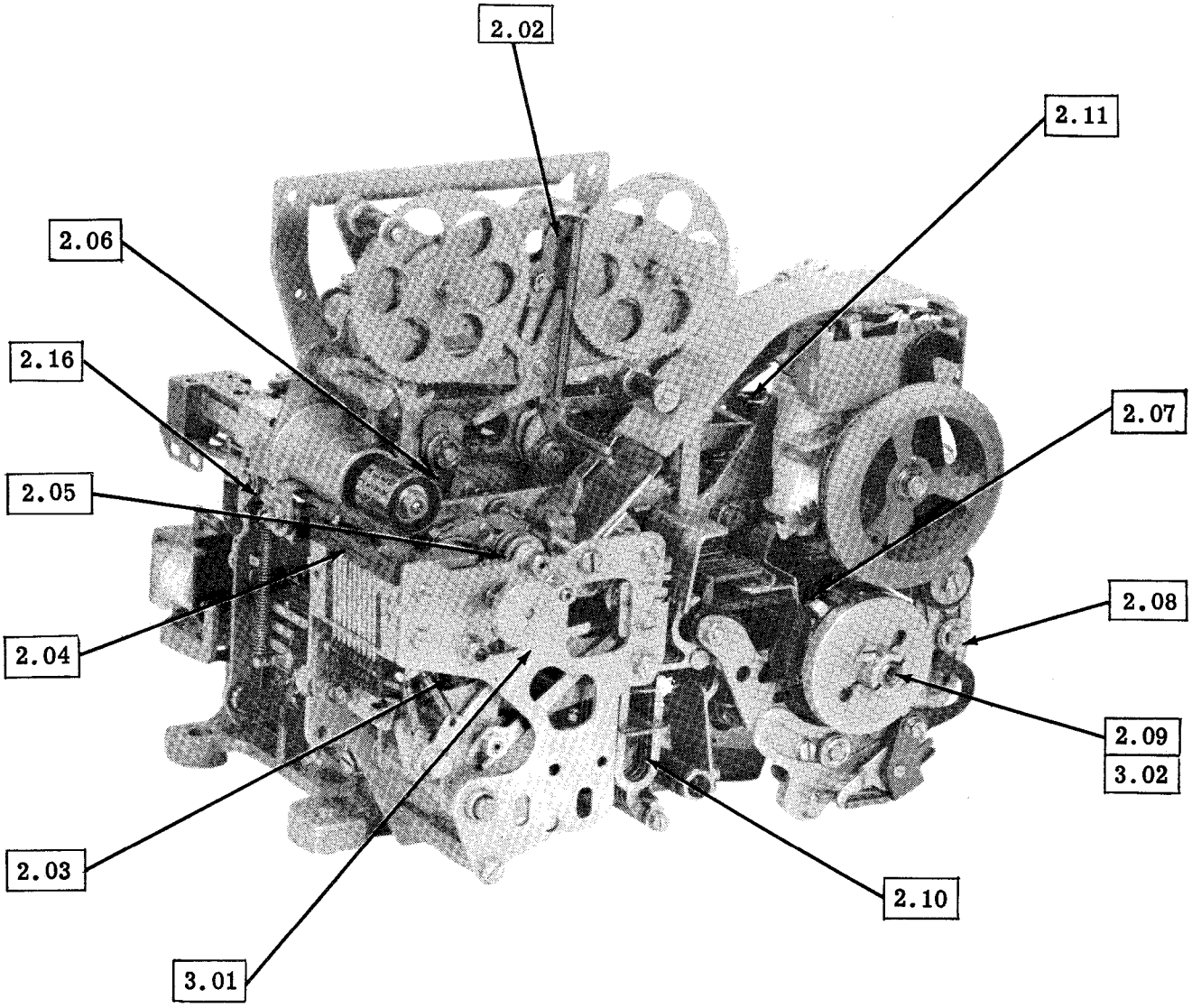
1.07 In general, oil should be used in such locations as hollow shafts, wicks, and in most locations where parts rub, slide, or move with respect to each other. Grease should be used on gear teeth and points of heavy pressure. Capillary action and vaporization tend to keep a film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

1.08 Refer to Section 570-005-800TC covering tools used and also a description of various lubricants used on the typing reperforator.

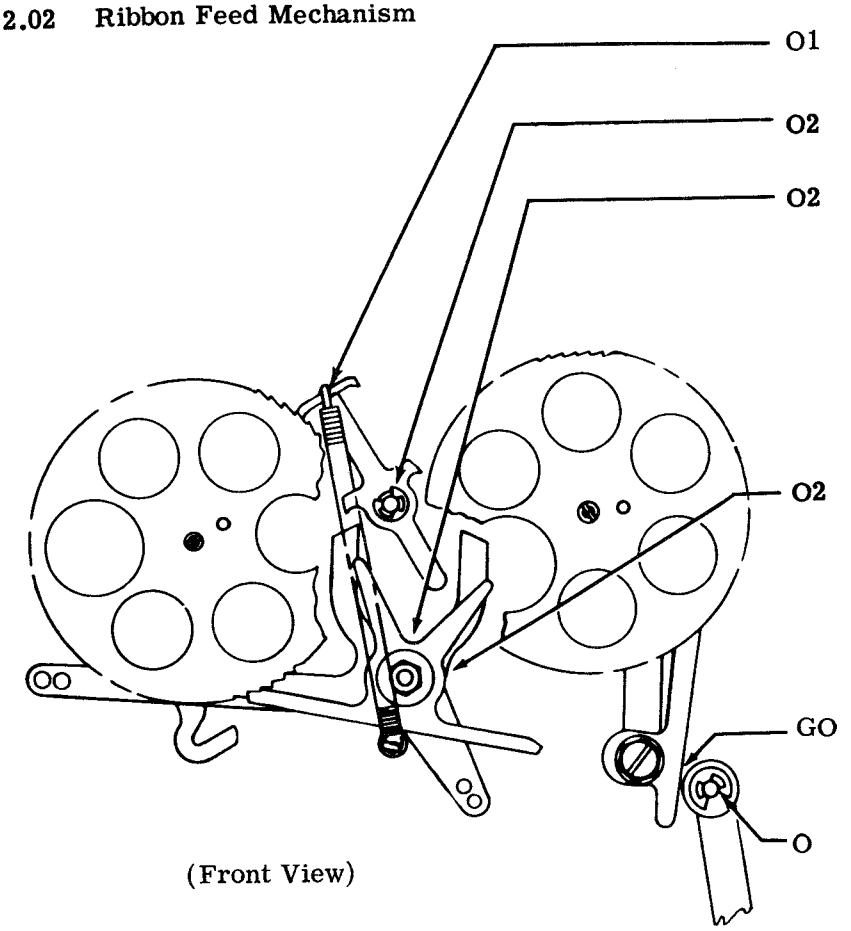
1.09 Protective pad TP124828 should be used to protect furniture and floor coverings from grease, oil, and dirt while lubricating the unit.

2. BASIC UNIT

2.01 Typing Reperforator (Left Front View)

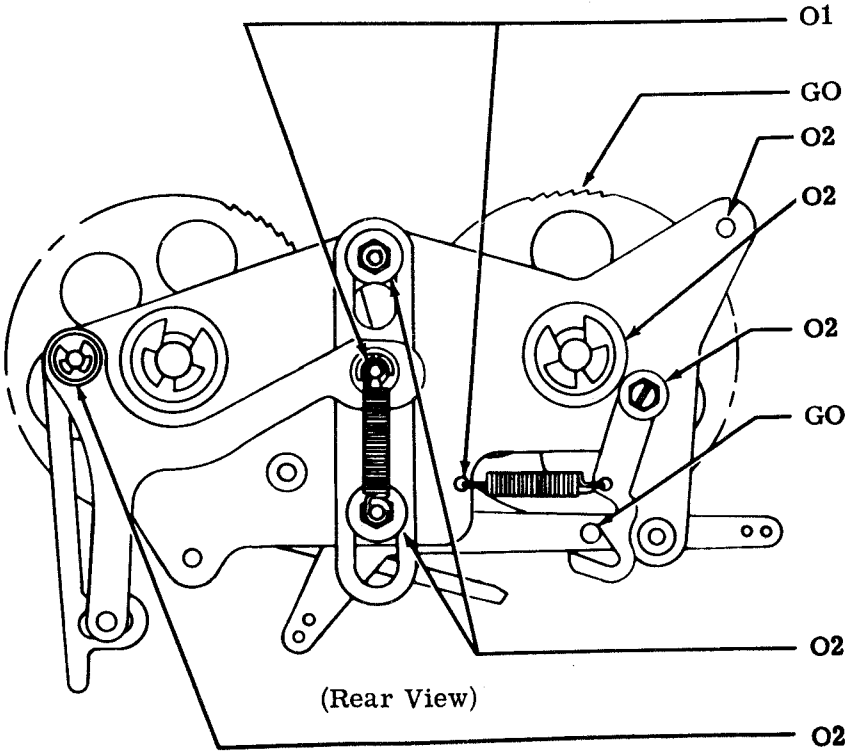


2.02 Ribbon Feed Mechanism



(Front View)

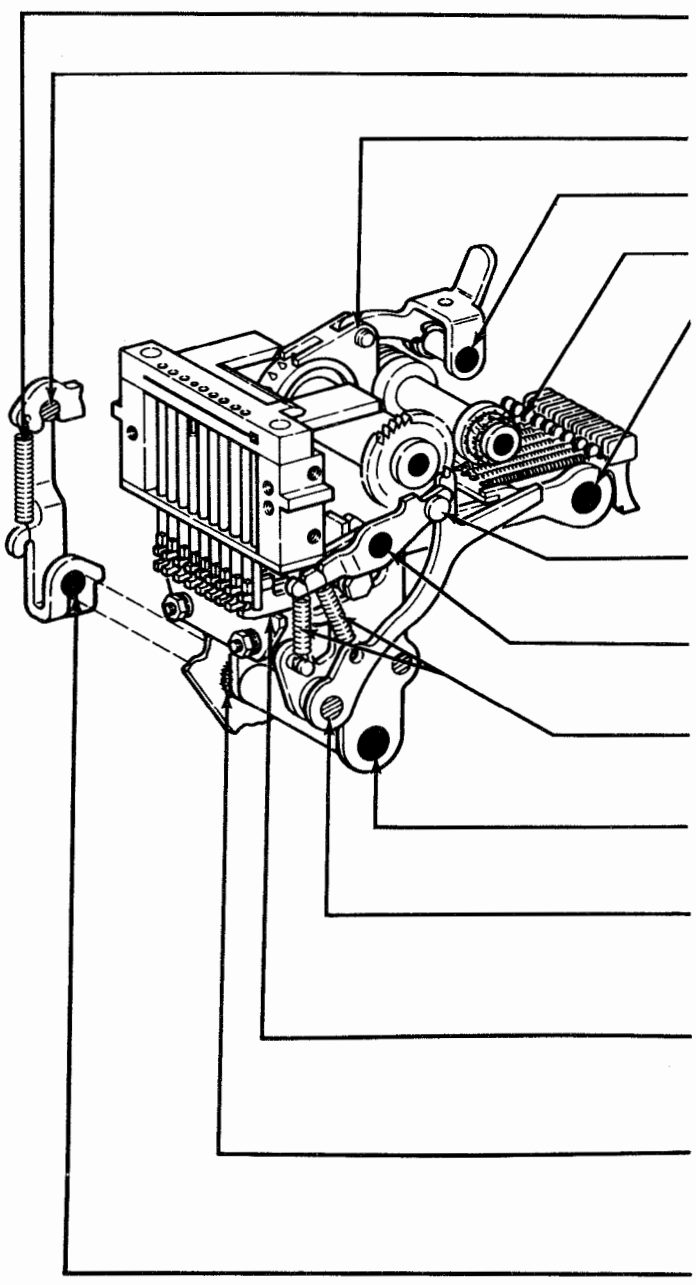
O1	Hooks - Each End	Spring
O2	Pivot Point	**Feed Pawl**
O2	Pivot	**Check Pawl**
O2	Pivot Points (2)	**Reversing Arm**
GO	Contacting Surface	**Drive Arm Adjustable Extension**
O	Saturate Felt Oiler	**Drive Arm Roller**



(Rear View)

O1	Hooks - Each End	Springs (2)
GO	Teeth	**Ratchet Wheel (2)**
O2	Shaft	**Rollers (2)**
O2	Shaft, Felt Oilers	**Ratchet Wheel (2)**
O2	Pivot	**Detent**
GO	Contacting Surfaces	**Detent**
O2	Upper and Lower Bushing	**Slide Lever**
O2	Pivot	**Drive Arm**

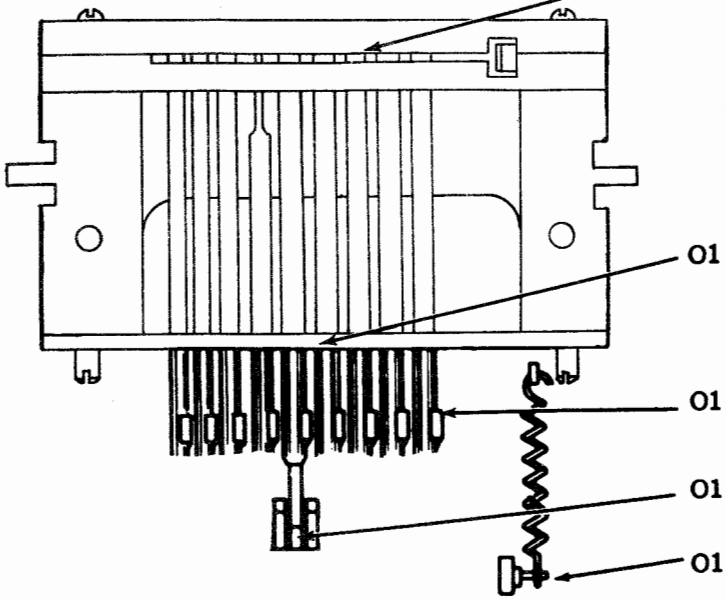
2.03 Perforator Mechanism



O	Saturate Felt Wick	Drive Link Spring
O1	Pivot Points (2)	Punch Drive Link
O1	Pivot Point	Tape Shoe
O1	Pivot Points (2)	Tape Shoe Arm
O1	Hooks - Each End	Springs (9)
O1	Pivot Points (9)	Punch Slides
O2	Roller	Detent Lever
O1	Pivot Point	Detent Lever
O1	Hooks - Each End	Springs (2)
O	Saturate Felt Oiler	Pivot Point
O1	Pivot Points (2)	Feed Pawl
O1	Contact Surface (9)	Punch Slides
O	Saturate Felt Oiler	Camming Bail
O1	Pivot Points (2)	Rocker Bail

(Left Front View)

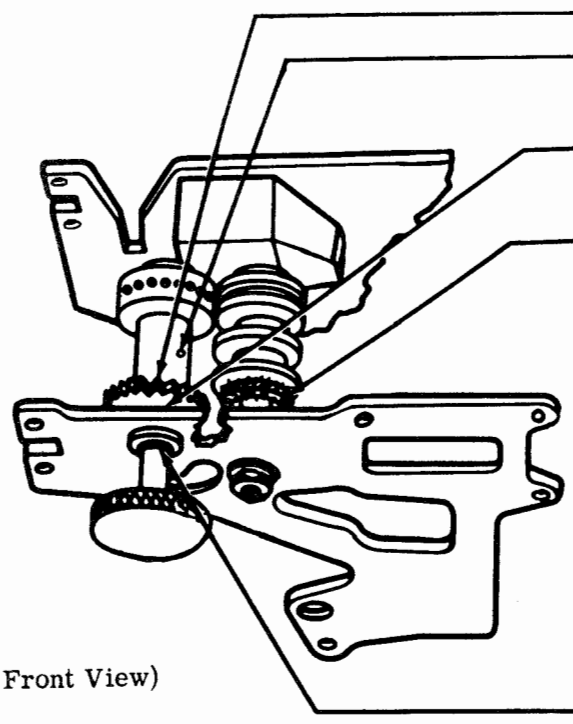
2.04 Punch Mechanism



O1	Sliding Surface (9) (Upper Guide)	Punch Pin
O1	Sliding Surface (9) (Lower Guide)	Punch Pin
O1	Sliding Surface (9)	Punch Pin
O1	Sliding Surface (9)	Punch Slide Guide
O1	Hooks - Each End	Spring

(Left Side View)

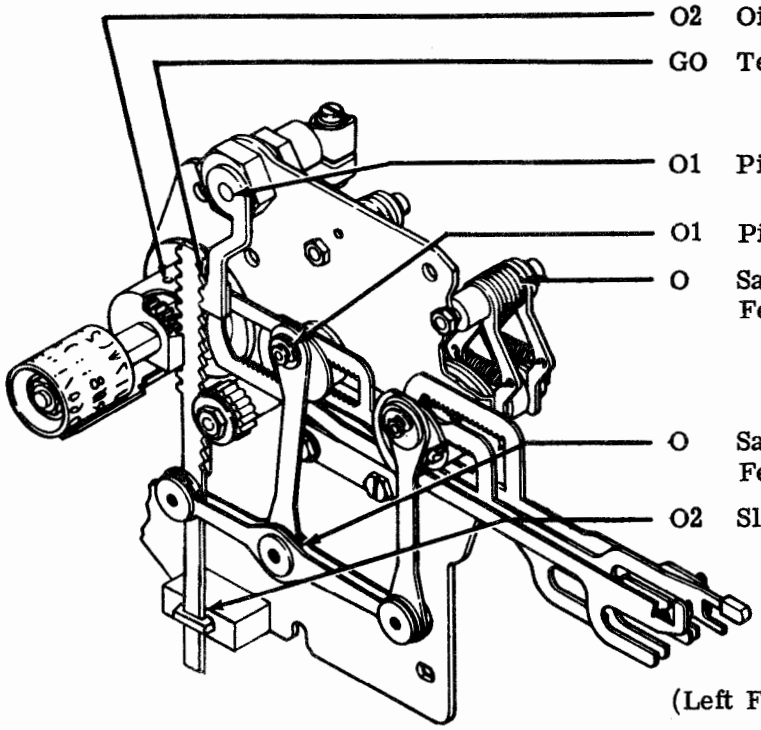
2.05 Feed Mechanism



GO	Ratchet Teeth	Feed Wheel
O1	Oil Hole	Feed Wheel
O	Saturate Felt Oiler (Pivot Point)	Feed Wheel
O	Saturate Felt Oiler (Pivot Point)	Die Wheel
O2	Pivot Points (2)	Handwheel Bearing

(Top Front View)

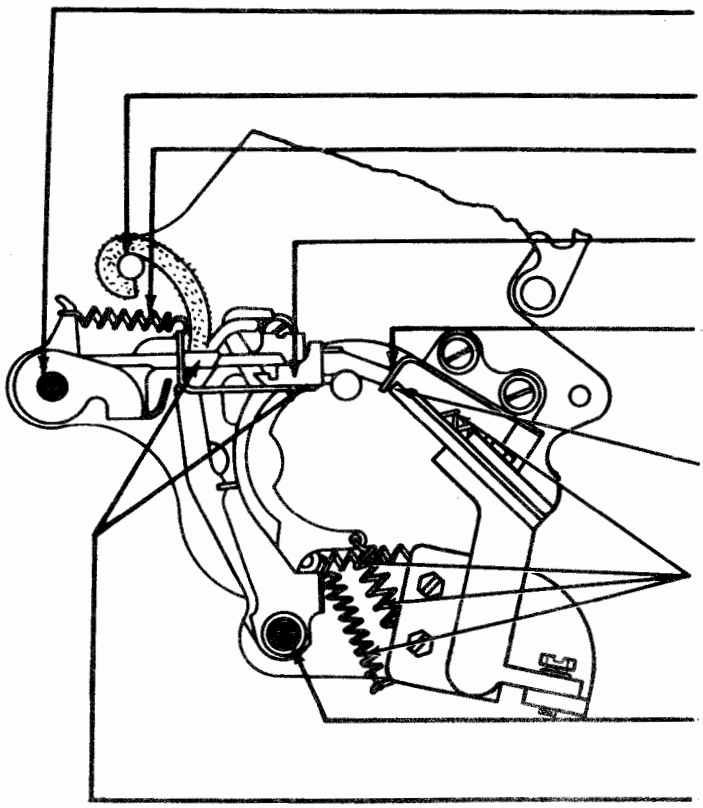
2.06 Rotary Positioning Mechanism



O2	Oil Hole	Typewheel Housing
GO	Teeth	Rotary Output Rack
O1	Pivot Point	Rotary Corrector Arm
O1	Pivot Points (2)	Connecting Racks
O	Saturate Felt Oilers	Detent Levers (8)
O	Saturate Felt Oilers	Cross Links (2)
O2	Slot	Rotary Output Rack

(Left Front View)

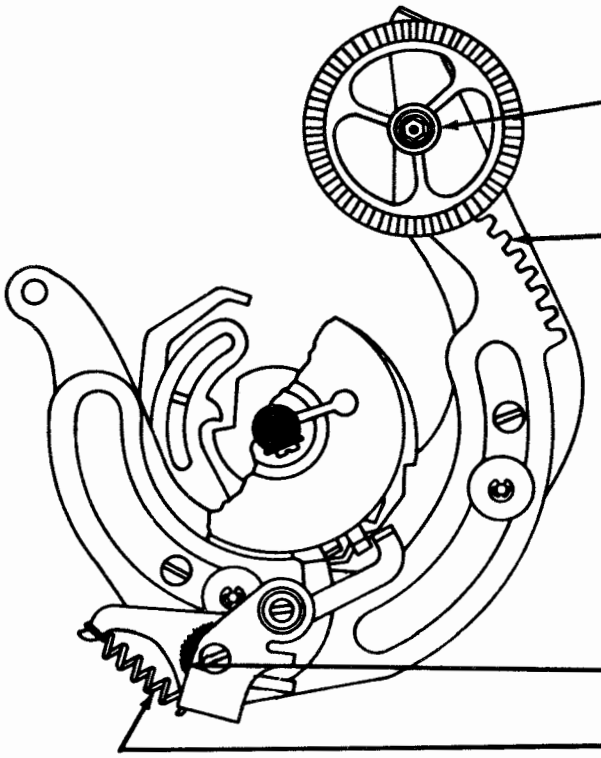
2.07 Selecting Mechanism



O2	Bearing Guide Slots (9)	Push Lever Guide
O	Saturate Felt Wick	Selector Wick
O1	Hooks-Each End	Springs (8)
O2	Engaging Surfaces	Push Levers (8)
O2	Guide Slot	Marking Locklever
O	Saturate Leather Wick	Lubricator
O1	Hooks-Each End	Springs (12)
O2	Bearing Guide Slots (12)	Selector Lever Guide
O2	Guide Slots	Selector and Push Lever Guide

(Left Front View)

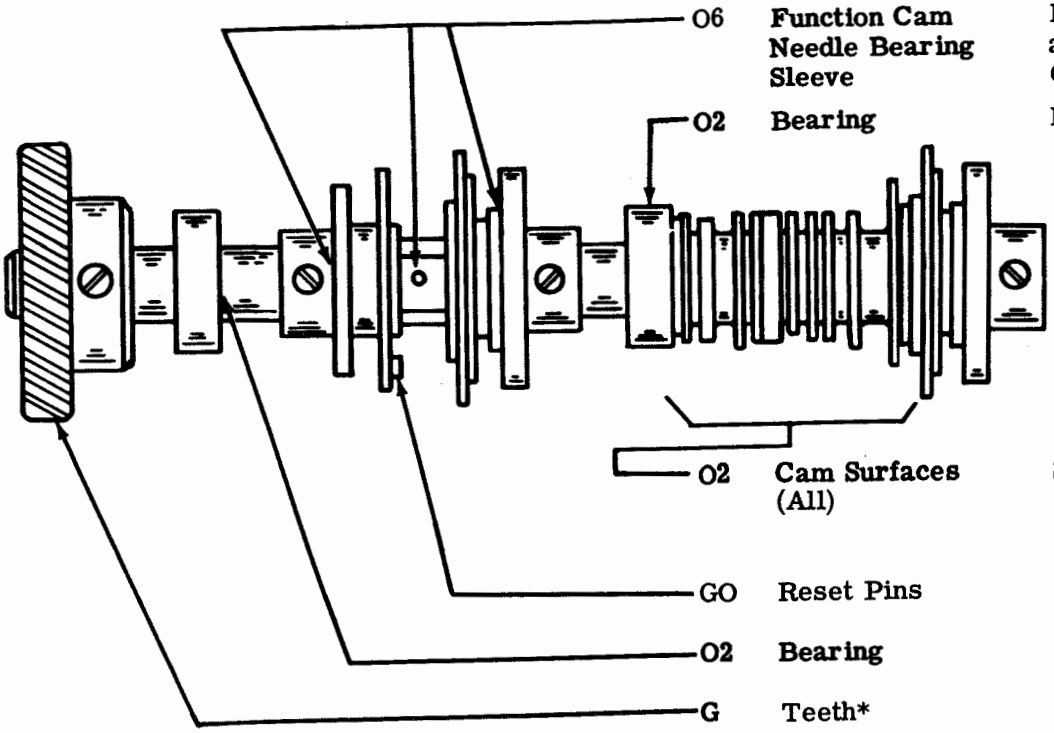
2.08 Range Finder Mechanism



G	Teeth	Knob
G	Teeth	Rack
O	Saturate Felt Oilers	Clutch Stop Arm
O1	Hooks - Each End	Spring

(Front View)

2.09 Main Shaft Mechanism

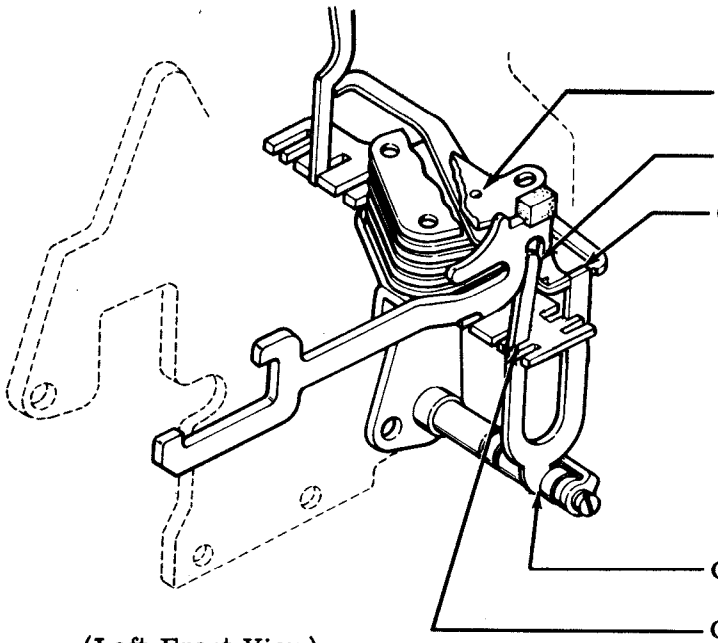


O6	Function Cam Needle Bearing Sleeve	Both Ends of Sleeve and Oil Hole in Center
O2	Bearing	Main Shaft
O2	Cam Surfaces (All)	Selector Cam
GO	Reset Pins	Function Cam
O2	Bearing	Main Shaft
G	Teeth*	Driven Gear

(Left Side View)

*Note: Do not lubricate when unit is equipped with a belt driven sprocket.

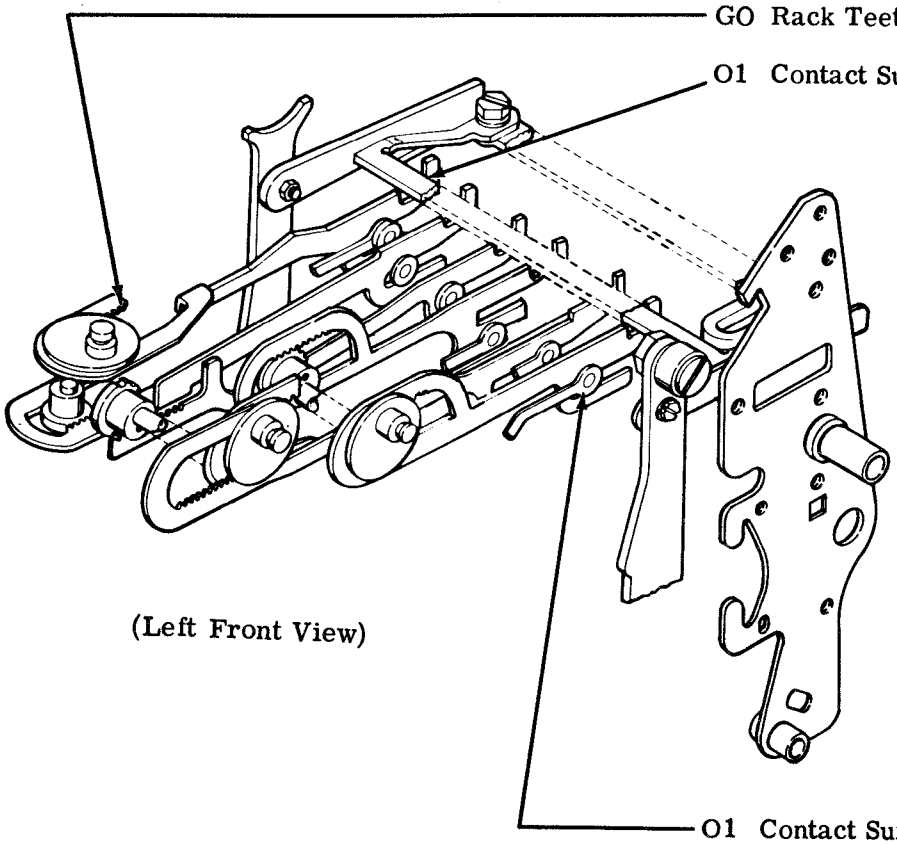
2.10 Transfer Mechanism



O1	Pivot Points (7)	Pulse Levers
O1	Contact Surfaces	Transfer Levers
O1	Contact Points	Pulse Levers
O1	Pivot Points	Transfer Levers
O1	Sliding Surfaces	Guide Bracket

(Left Front View)

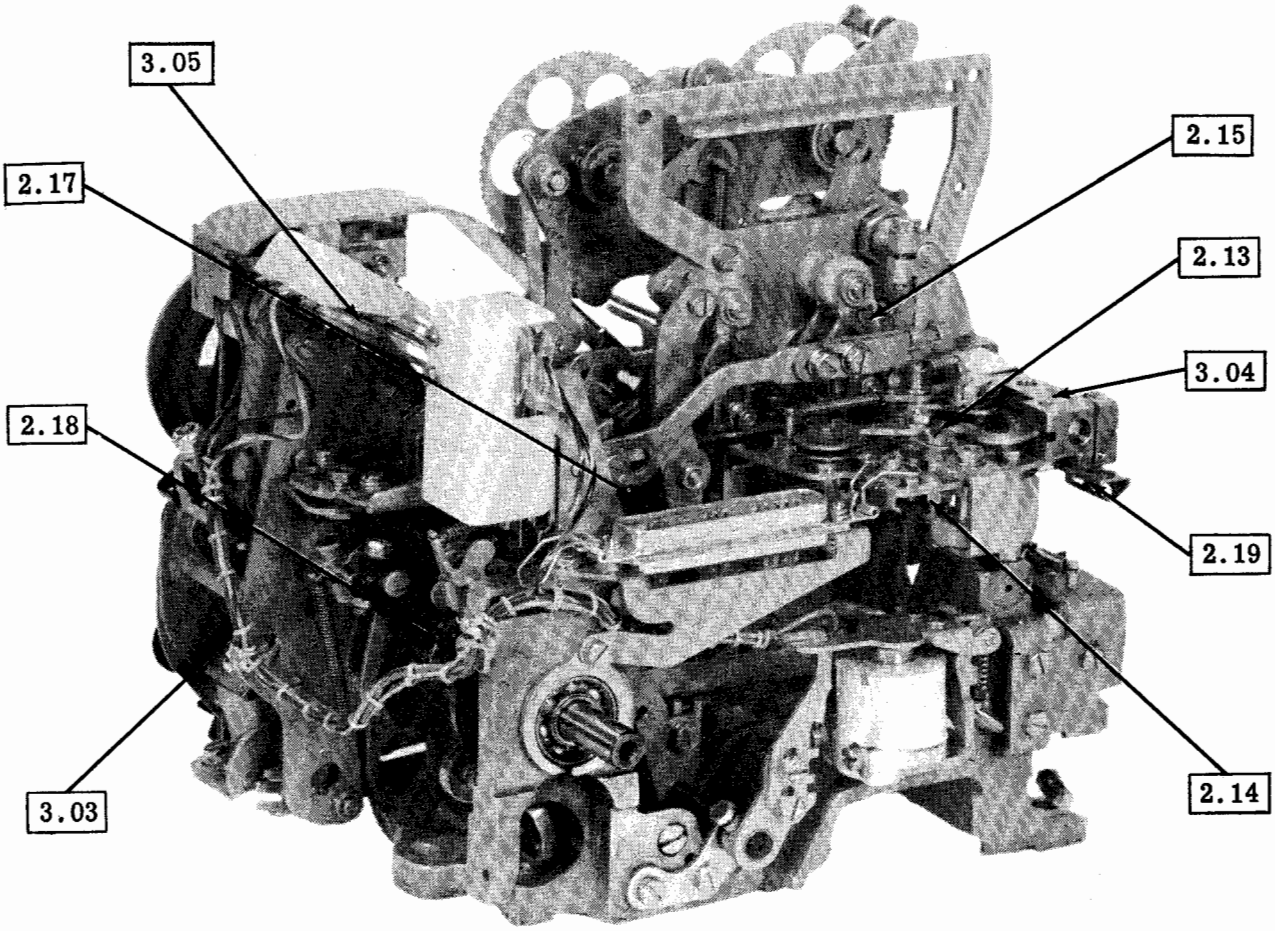
2.11 Pushbars



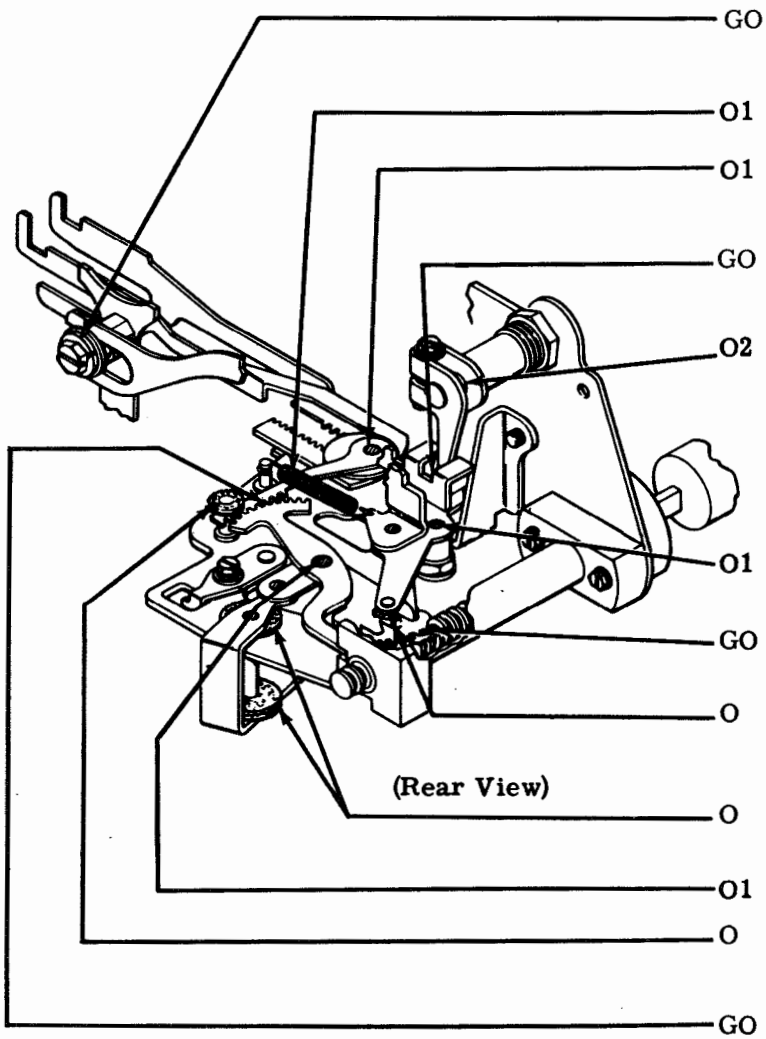
GO	Rack Teeth (7)	Pushbars
O1	Contact Surfaces (7)	Pushbars
O1	Contact Surfaces (7)	Pushbars

(Left Front View)

2.12 Typing Reperforator (Right Rear View)

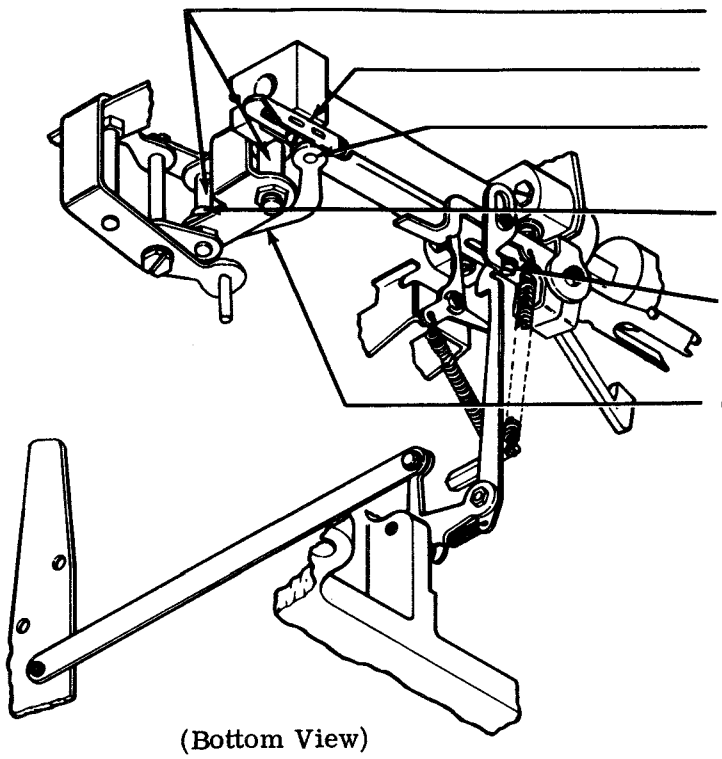


2.13 Axial Positioning Mechanism



GO	Sliding Guide Surfaces	Correcting Drive Link
O1	Hooks - Each End	Spring
O1	Pivot Point	Axial Output Rack
GO	Contact Points	Rotary Correcting Clamp
O2	Pivot Point	Rotary Correcting Lever Shaft
O1	Pivot Point	Axial Correcting Plate
GO	Teeth	Axial Sector Type-wheel Shaft
O	Saturate Felt Oiler	Axial Correcting Plate Roller
O	Saturate Felt Oiler (Pivot Point)	Oscillating Drive Bail
O1	Pivot Point	Axial Sector
O	Saturate Felt Oiler (Pivot Point)	Guide Roller
GO	Teeth	Axial Sector Axial Output Rack

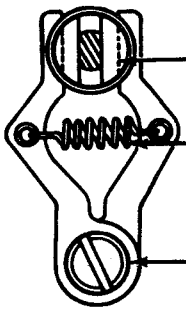
2.14 Axial Positioning Mechanism (continued)



(Bottom View)

O1	Pivot Point	Oscillating Bail
O1	Contact Surfaces	Ribbon Carrier
O1	Pivot Points	Ribbon Oscillating Lever
O	Saturate Felt Oiler	Ribbon Oscillating Lever
O1	Contact Surfaces	Ribbon Carrier
GO	Contact Point	Ribbon Oscillating Lever

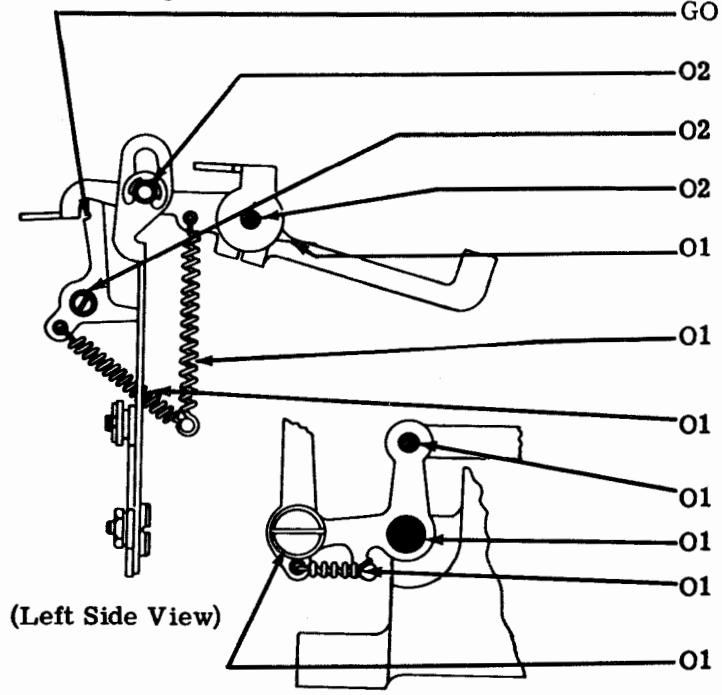
2.15 Detent Assemblies



(Front View)

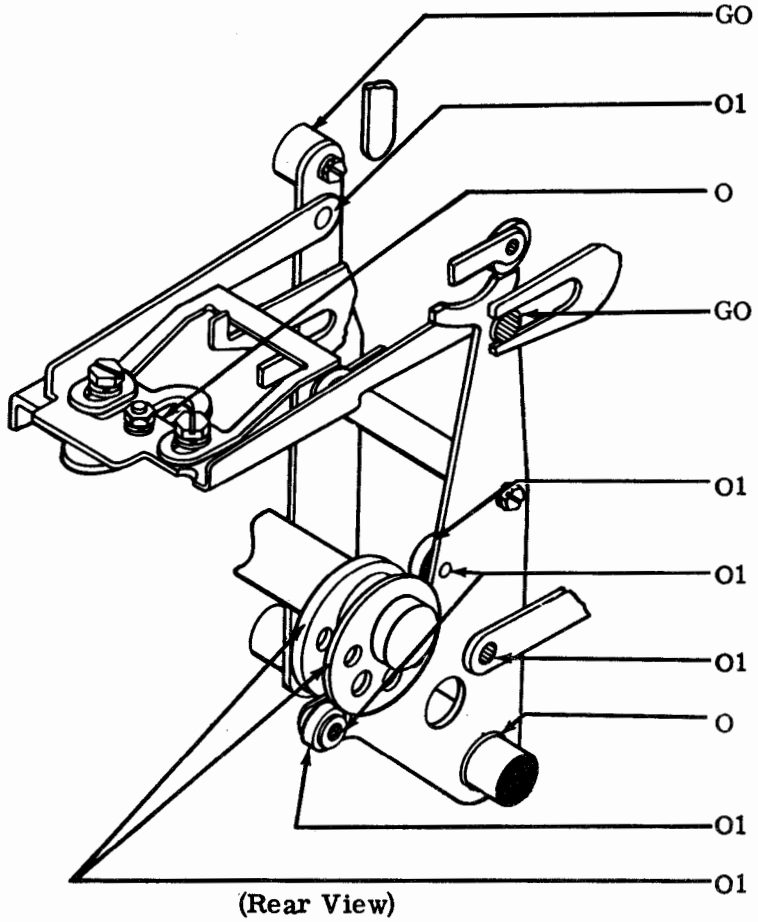
O1	Detent Points	Detent Levers
O1	Hooks - Each End	Detent Lever Springs (4)
O	Saturate Felt Oilers	Detent Levers

2.16 Printing Mechanism



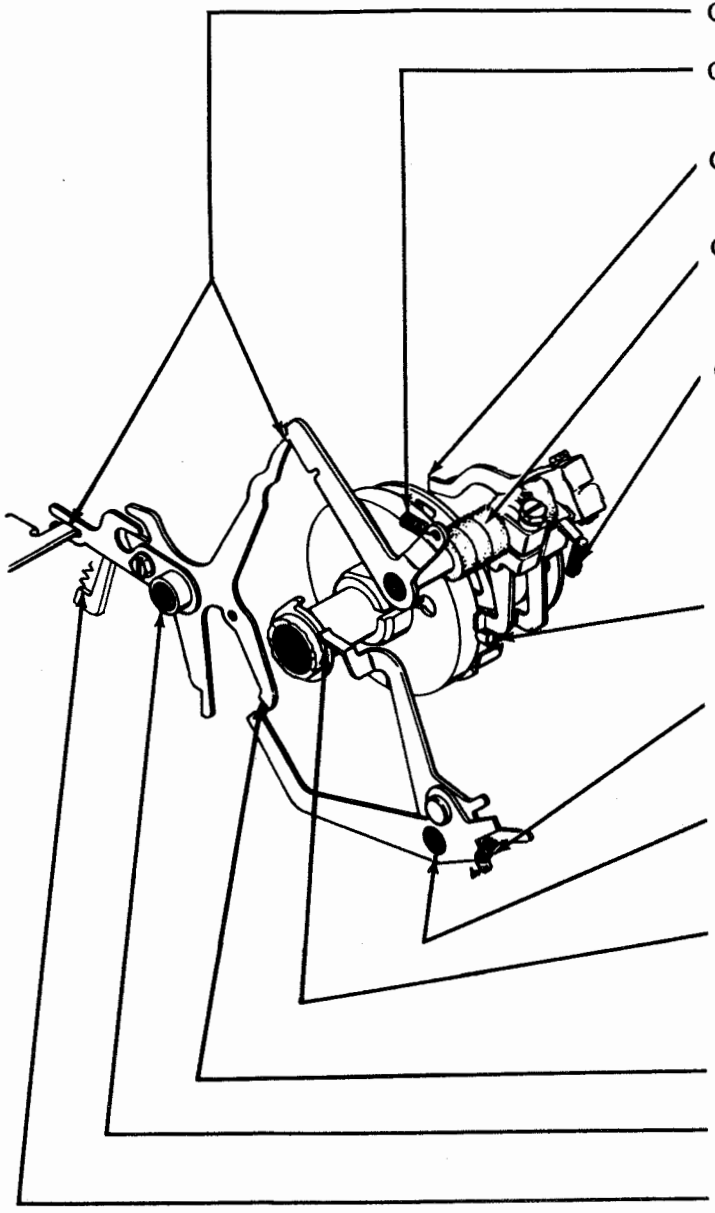
GO	Contact Surface	Printing Latch
O2	Sliding Surface	Printing Trip Link
O2	Pivot Point	Printing Latch
O2	Pivot Points	Print Hammer
O1	Hooks - Each End	Print Hammer Spring
O1	Hooks - Each End	Hammer Accelerator Spring
O1	Hooks - Each End	Printing Latch Spring
O1	Pivot Point	Printing Drive Link
O1	Pivot Point	Printing Pivot Arm
O1	Hooks - Each End	Printing Trip Link Spring
O1	Pivot Points (2)	Printing Pivot Arm

2.17 Rocker Bail Mechanism



GO	Contact Surface	Ribbon Feed Eccentric Stud
O1	Pivot Points	Pushbar Operating Blade
O	Saturate Felt Oiler (Sliding Surface)	Pushbar Operating Blade
GO	Pivot Point	Correcting Drive Link
O1	Roller Surface	Cam Follower Roller (Upper and Lower)
O1	Pivot Points	Cam Follower Rollers
O1	Pivot Point	Printing Drive Link
O	Saturate Felt Wick (Pivot Point)	Rocker Bail
O1	Roller Surface	Cam Follower Roller
O1	Contact Surface	Function Cam

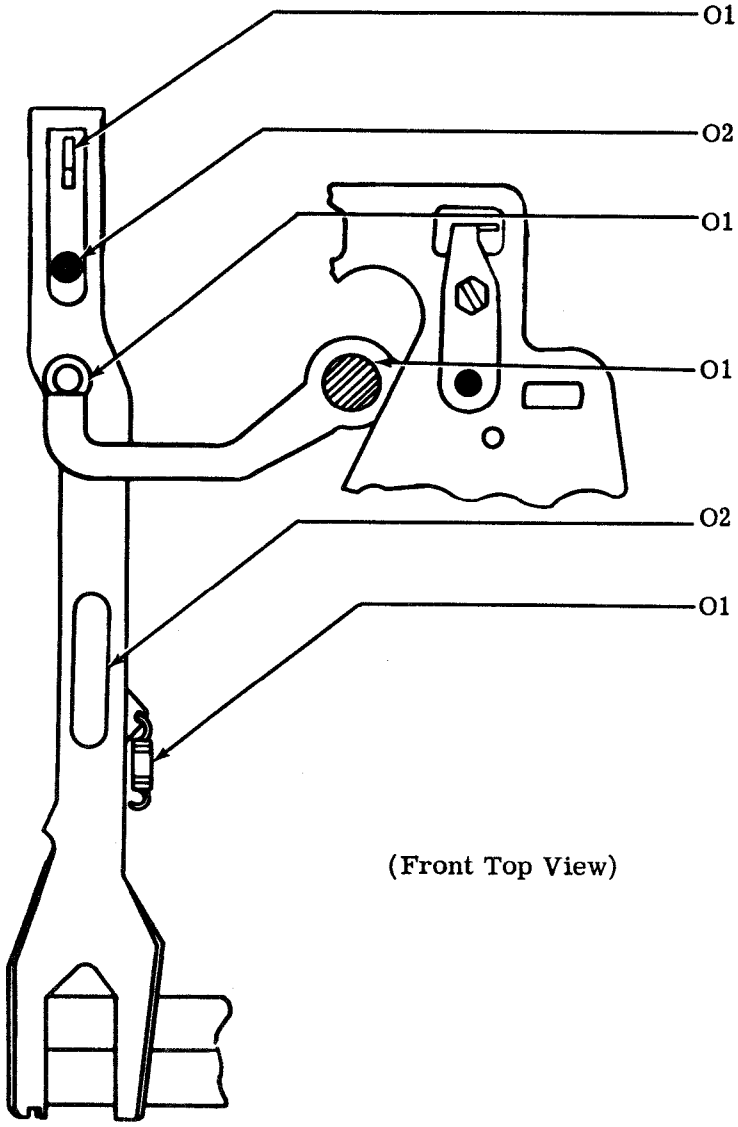
2.18 Clutch Trip Mechanism



GO	Contact Points	Trip Lever
O1	Hooks - Each End	Clutch Release Spring
GO	Contact Surface	Reset Lever
O	Saturate Felt Oilers	Clutch Trip Shaft
O1	Hooks - Each End	Latchlever Spring
G	Contact Surface	Clutch Stop-Lug
O1	Hooks - Each End	Follower Lever Spring
O1	Pivot Point	Trip Cam Follower Lever
O	Contact Surface	Trip Cam Follower Lever
GO	Contact Point	Trip Lever
O1	Pivot Point	Trip Lever
O1	Hooks - Each End	Trip Lever Spring

(Right Front View)

2.19 Ribbon Carrier Mechanism

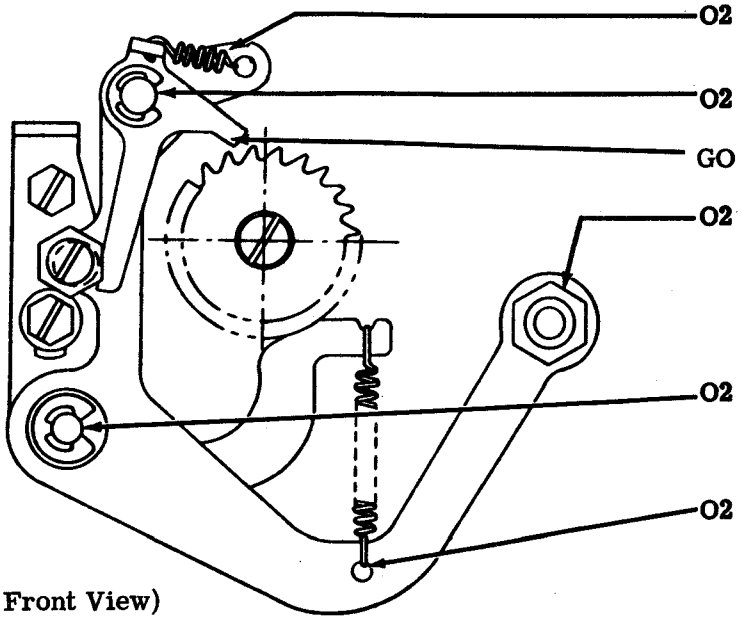


O1	Engaging Surfaces	Blocking Link
O2	Engaging Surfaces	Rear Guide Post
O1	Engaging Surfaces	Ribbon Oscillating Lever
O1	Pivot Point	Ribbon Oscillating Lever
O2	Engaging Surfaces	Ribbon Carrier
O1	Hooks - Each End	Spring

(Front Top View)

3. VARIABLE FEATURES

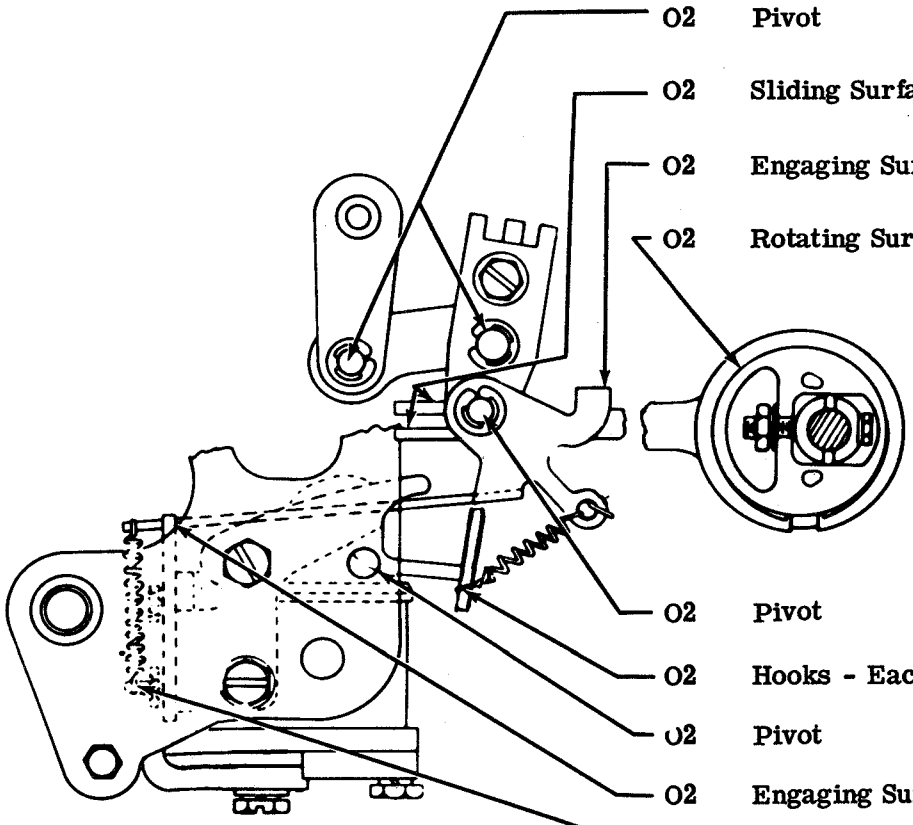
3.01 Manual Backspace Mechanism



(Front View)

O2	Hooks - Each End	Backspace Pawl Spring
O2	Bearing Surface	Backspace Pawl
GO	Feeding Surface	Backspace Pawl
O2	Bearing Surface	Nut, Shoulder
O2	Bearing Surface	Bellcrank
O2	Hooks - Each End	Bellcrank Spring

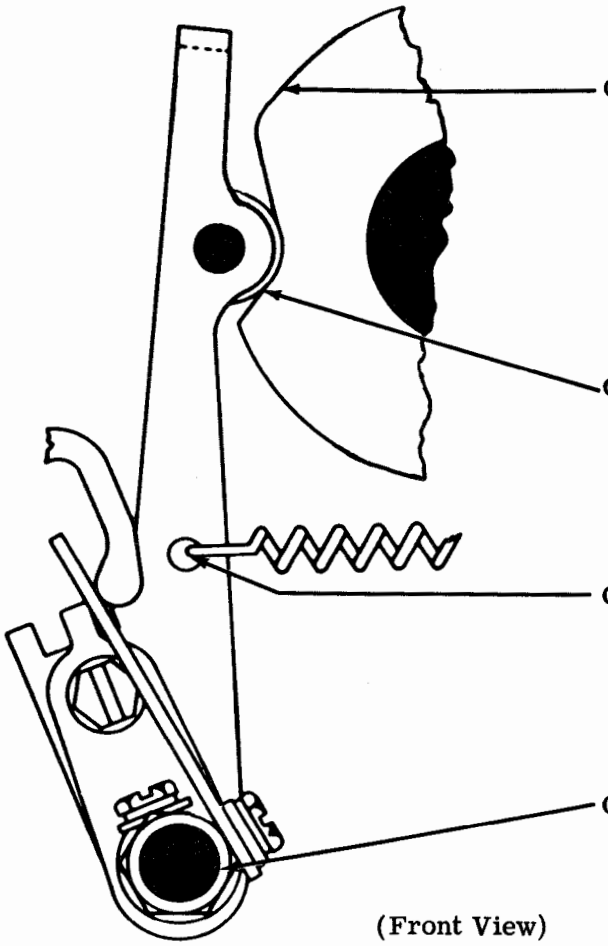
3.02 Power Drive Backspace Mechanism



(Right Front View)

O2	Pivot	Link
O2	Sliding Surface	Eccentric Link Fork
O2	Engaging Surface	Latchlever
O2	Rotating Surface	Eccentric
O2	Pivot	Latchlever
O2	Hooks - Each End	Latchlever Spring
O2	Pivot	Arm
O2	Engaging Surface	Armature
O2	Hooks - Each End	Armature Spring

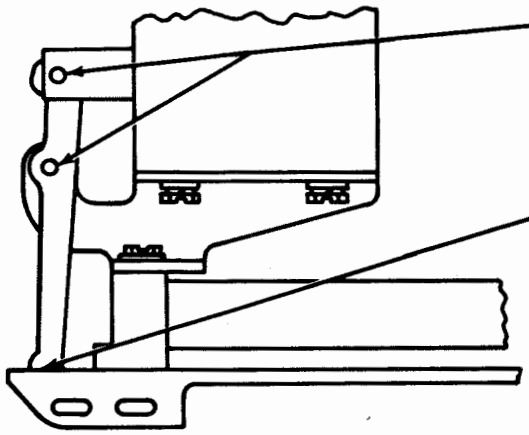
3.03 Remote Control Interfering Tape Delete Feed-Out Mechanism



O2	Camming Surface	Drive Cam
O2	Bearing Surface	Roller
O1	Hooks - Each End	Spring
O2	Bearing Surfaces	Bearings (Front and Rear)

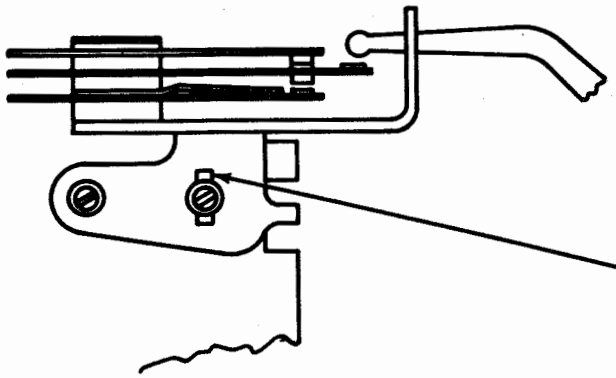
(Front View)

3.04 Two-Color Ribbon Mechanism



O1	Pivot Points (2)	Ribbon Carrier Retraction Lever
GO	Contact Surface	Ribbon Carrier Retraction Lever

3.05 Two-Color Ribbon Contact Mechanism



O1	Slot	Contact Mounting Bracket

37 TYPING REPERFORATOR

DISASSEMBLY AND REASSEMBLY

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TYPING MECHANISM 4
ROCKER BAIL ASSEMBLY 4
MAIN SHAFT ASSEMBLY 4

1. GENERAL

1.01 This section provides the disassembly and reassembly procedures for the major components of the 37 typing reperforator (Figures 1 and 2).

CAUTION: REMOVE ALL POWER FROM SET OR UNIT BEFORE REMOVING ANY COMPONENTS.

1.02 References to left, right, front, rear, etc, consider the typing reperforator to be viewed from a position where the ribbon feed mechanism is at the top and the selector mechanism is to the viewer's right.

1.03 Disassembly and reassembly, as outlined in this section, covers the procedure for removing and replacing the principle subassemblies which make up the unit. If a further breakdown of the unit is required, refer to the detailed parts section; where it will help in determining their location, the numbers of the parts are given in the instructions.

1.04 If a part that is mounted on shims is removed, the number of shims used at each of its mounting screws should be noted so that the same shim pile-up can be replaced when the part is remounted.

1.05 Retaining rings are made of spring steel and have a tendency to release suddenly. To avoid the loss of these rings when removing them, proceed as follows:

(a) Hold the retaining ring to prevent its rotating.

(b) Place the blade of a screwdriver into one of the slots in the ring and turn the screwdriver to increase the diameter.

(c) Ring will come off easily in fingers without flying.

1.06 All damaged, worn, or distorted parts should be replaced if encountered in the disassembly and reassembly procedures.

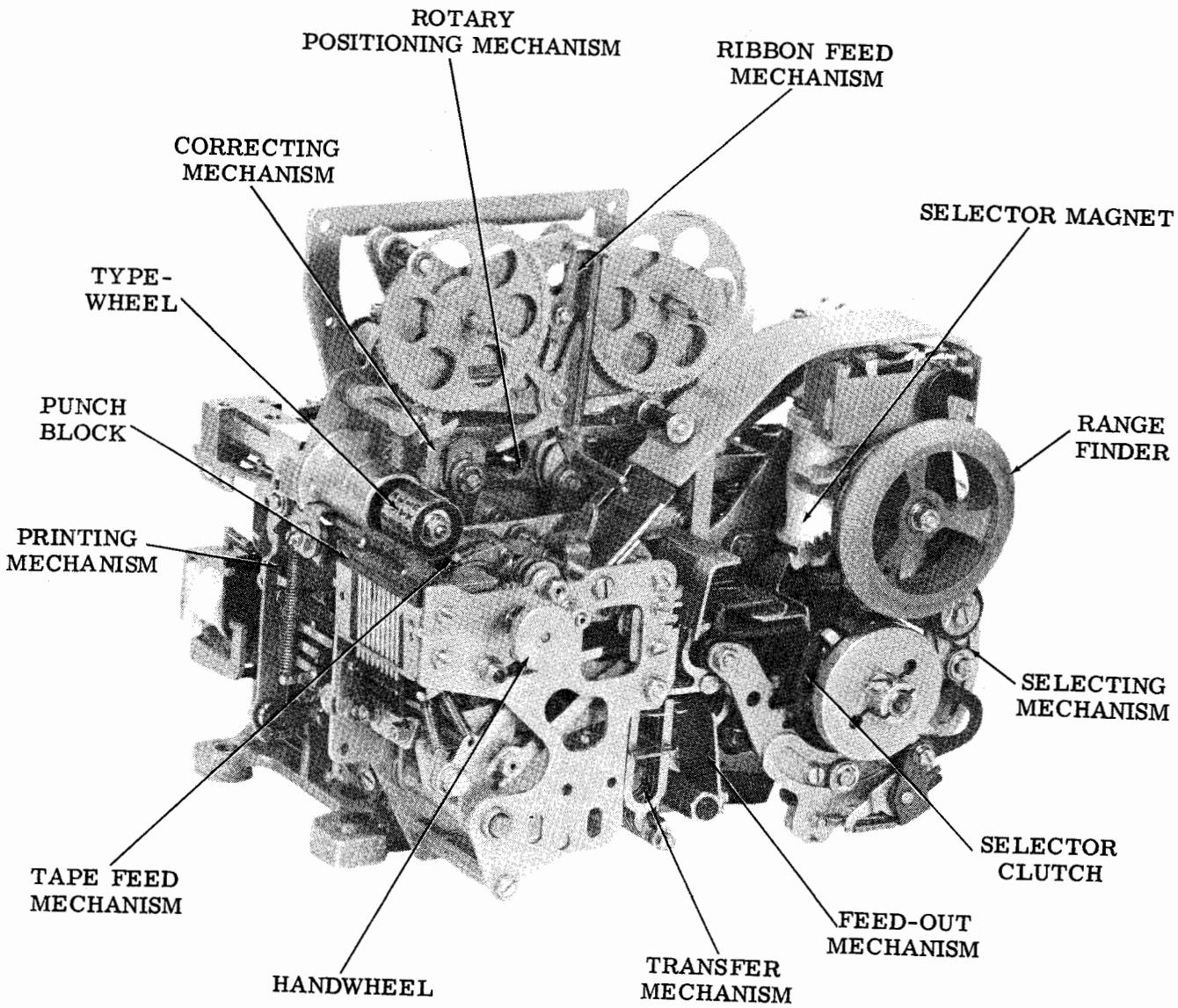
2. DISASSEMBLY AND REASSEMBLY

2.01 In removing a subassembly from the unit, the procedure followed and the location from which parts are removed must be carefully noted so that replacement can be done correctly. When replacing a component, be sure to check all associated adjustments, clearances and spring tensions.

2.02 Unplug the connecting cable at the rear of the unit. Remove the three casting mounting screws, lockwashers, flat washers and belt. Remove the typing reperforator from the base.

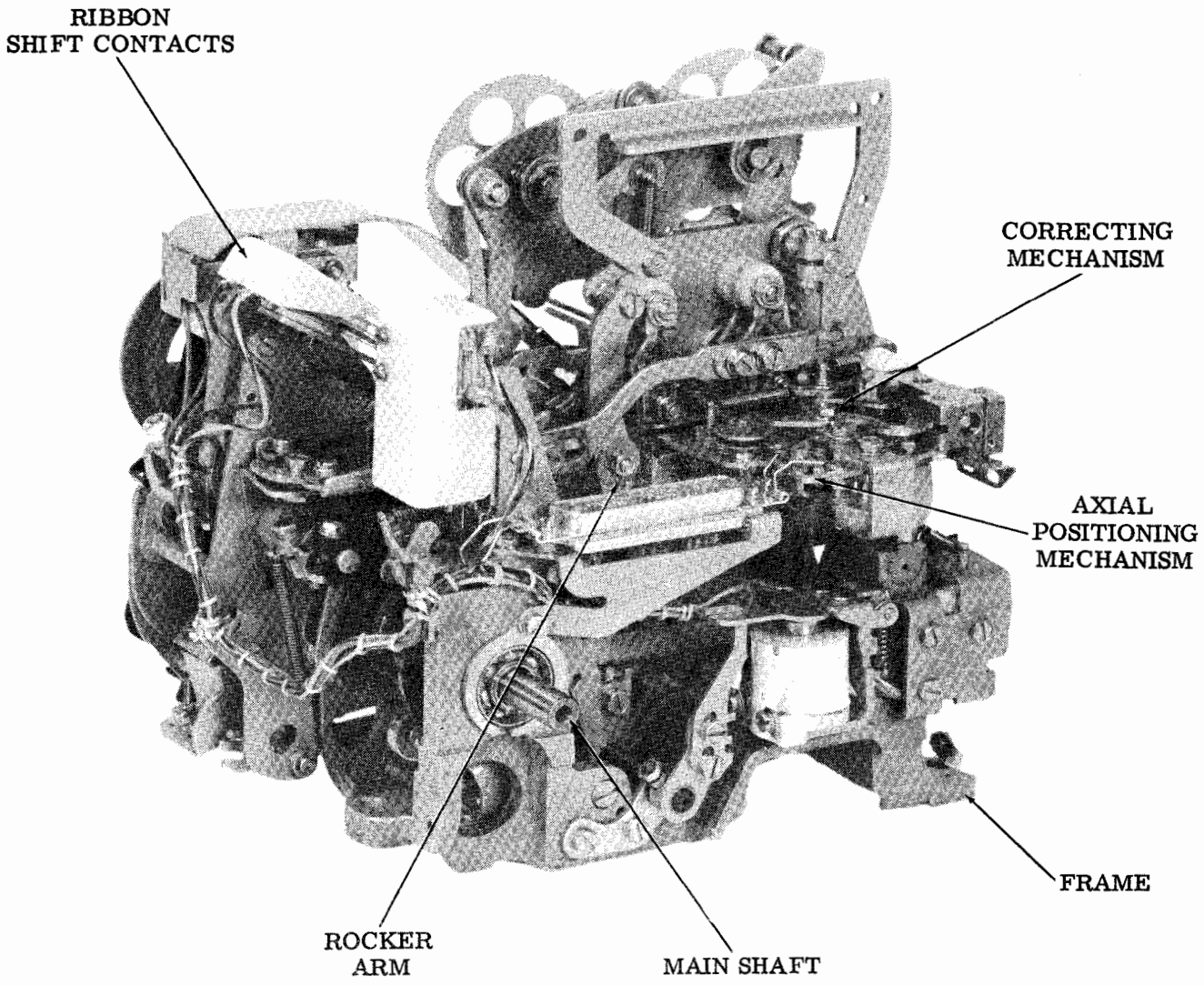
SELECTOR MECHANISM

2.03 Remove the screw, nut, and lockwasher that secure the TP150001 selector clutch drum to the main shaft. Place the TP306118 push lever reset bail in its raised position.



(Left and Front View)

Figure 1 - 37 Typing Reperforator



(Right Rear View)

Figure 2 - 37 Typing Reperforator

2.04 Push the TP312924 mark locklever to the left and insert a pin in the hole provided on the lever extension so that the lever is held away from the cam by the TP306115 mark locklever guide bracket.

2.05 Hold the TP312974 space locklever and the TP306127 start lever to the left and slip the TP312935 cam sleeve assembly off the shaft while rotating it in a counterclockwise direction.

Note: To replace the cam sleeve reverse the above steps, but still rotate cam in a counterclockwise direction. When the sleeve is almost fully in place, pull the trip lever and selector clutch latchlever away from their respective cams to facilitate replacement.

2.06 Unhook the spring on the TP150355 function clutch latchlever. Remove the TP156472 spring post by removing its locknut and lockwasher. Remove the TP151442 selector backplate screw. Remove the TP153538 screw and its associated washer that mounts the left leg of the tape platform. The selector mechanism can now be taken off.

RIBBON FEED MECHANISM

2.07 Remove the ribbon. Remove the two mounting screws that mount the ribbon feed mechanism plate. Remove the ribbon feed mechanism.

PERFORATOR MECHANISM

2.08 Remove the spring from the TP192709 perforator drive link and the TP170211 rocker arm.

2.09 Remove the TP76422 trip lever spring. Remove the two TP151442 mounting screws and one TP1248 flat head screw that fasten the TP324314 rear plate to the main plate. Remove the perforator mechanism, being careful not to lose any of the spacers.

TRANSFER MECHANISM

2.10 Remove the TP151631 and TP151632 mounting screws (with lockwashers and flat washers) from the TP192820 transfer mounting bracket. Remove the transfer mechanism.

TYPING MECHANISM

2.11 Remove the TP324236 pushbar operating blade from the TP195235 rocker bail by removing its two screws, lockwashers, shims, and flat washers. Remove the TP159512 print hammer trip link after removing its TP119651 retaining ring and spring.

2.12 Remove the TP154638 accelerator spring from the print hammer accelerator. Remove one TP3870 and one TP324284 spring and a retaining ring from the TP156413 corrector drive link. Remove the TP159536 rotary rack idle gear, its eccentric shaft, mounting screw and lockwasher.

2.13 Remove the screw, lockwasher and flat washer that holds the TP324277 bellcrank pivot shaft to the main plate. Remove the screw and lockwasher that mount the TP159525 axial plate to the post. Remove the three screws, lockwashers, and flat washers that mount the typing assembly to the casting. The typing unit can now be removed.

ROCKER BAIL ASSEMBLY

2.14 Disconnect the TP156937 printing drive link by removing the retaining ring at its left end. Remove the TP3598 nut, lockwasher, flat washer, felt washer bushing, and TP151632 screw from the TP156871 operating blade mounting bail.

2.15 Remove the nut, lockwasher and TP334854 adjusting lever guide, then remove the TP156366 rocker bail shaft. The rocker bail can now be removed.

MAIN SHAFT ASSEMBLY

2.16 Remove the spring from the function clutch latchlever. Remove the retaining ring, spring washer, and flat washers from the forward end of the TP324235 main shaft.

2.17 Remove the screw and lockwasher from the TP150000 function clutch drum. Pull the main shaft out of the rear of the unit.

37 TYPING REPERFORATOR

DISASSEMBLY AND REASSEMBLY

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1. GENERAL

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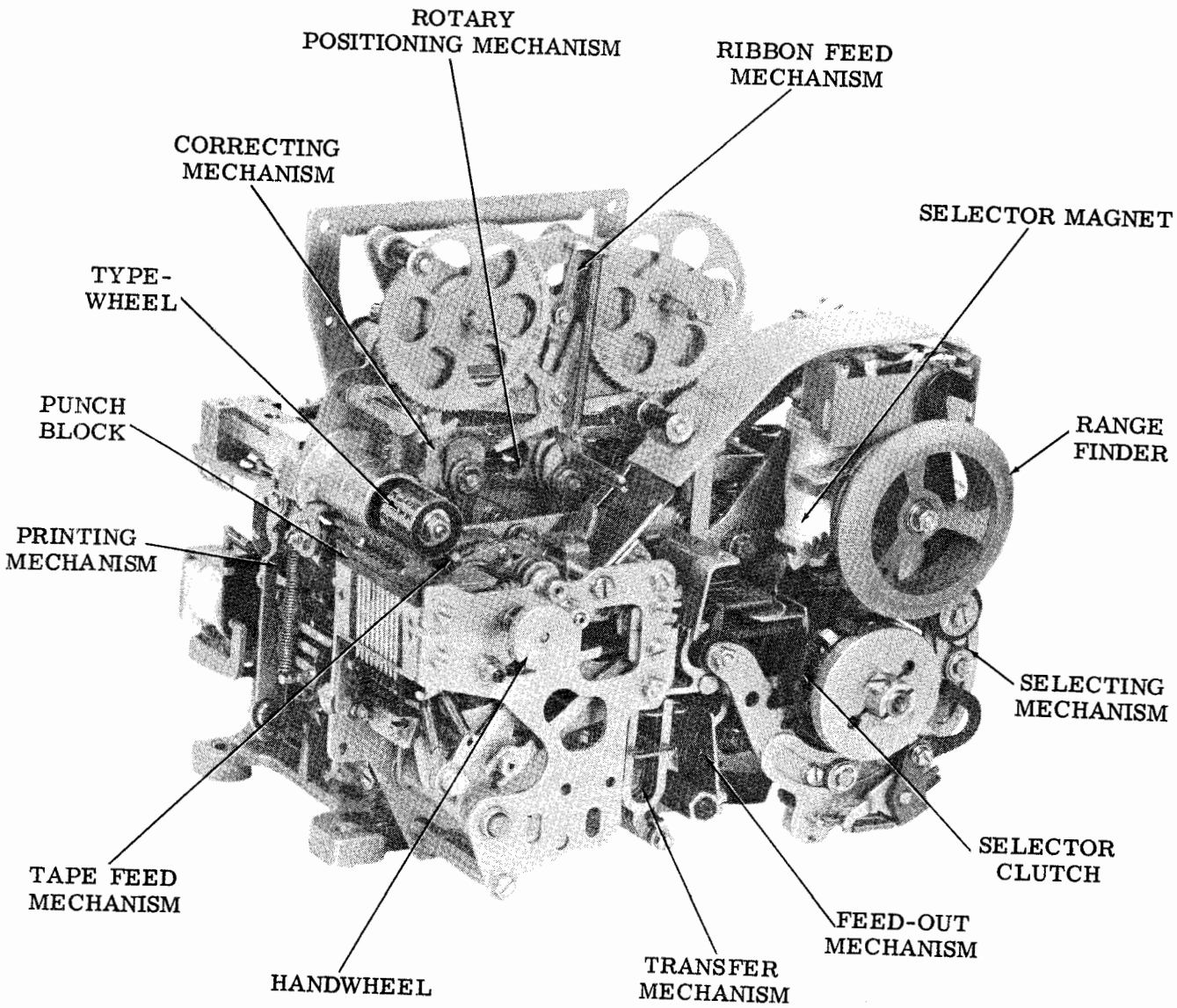
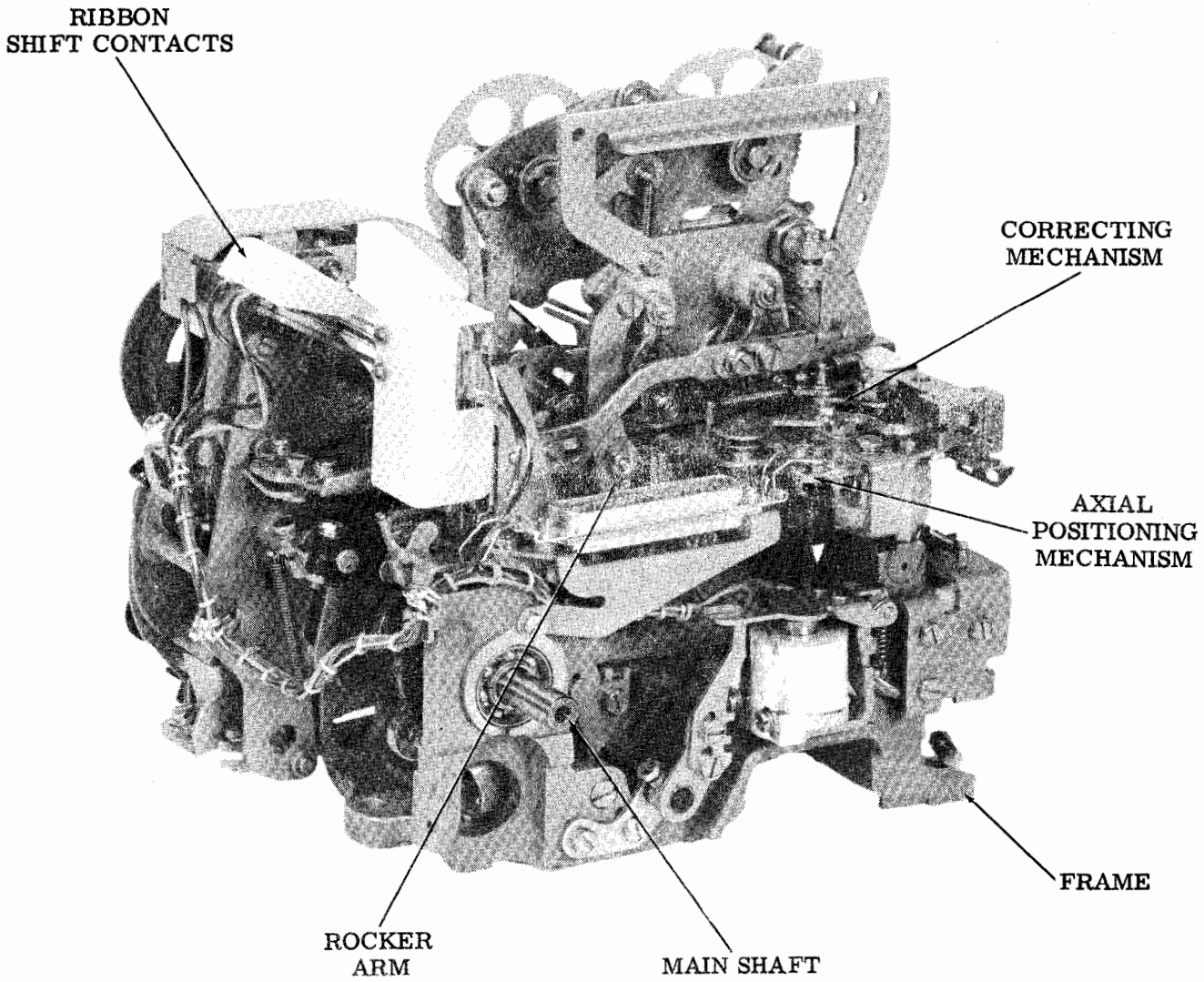
2.03 Remove the screw, nut, and lockwasher that secure the TP150001 selector clutch drum to the main shaft. Place the TP306118 push lever reset bail in its raised position.



(Left and Front View)

Figure 1 - 37 Typing Reperforator



(Right Rear View)

Figure 2 - 37 Typing Reperforator

2.04 Push the TP312924 mark locklever to the left and insert a pin in the hole provided on the lever extension so that the lever is held away from the cam by the TP306115 mark locklever guide bracket.

2.05 Hold the TP312974 space locklever and the TP306127 start lever to the left and slip the TP312935 cam sleeve assembly off the shaft while rotating it in a counterclockwise direction.

Note: To replace the cam sleeve reverse the above steps, but still rotate cam in a counterclockwise direction. When the sleeve is almost fully in place, pull the trip lever and selector clutch latchlever away from their respective cams to facilitate replacement.

2.06 Unhook the spring on the TP150355 function clutch latchlever. Remove the TP156472 spring post by removing its locknut and lockwasher. Remove the TP151442 selector backplate screw. Remove the TP153538 screw and its associated washer that mounts the left leg of the tape platform. The selector mechanism can now be taken off.

RIBBON FEED MECHANISM

2.07 Remove the ribbon. Remove the two mounting screws that mount the ribbon feed mechanism plate. Remove the ribbon feed mechanism.

PERFORATOR MECHANISM

2.08 Remove the spring from the TP192709 perforator drive link and the TP170211 rocker arm.

2.09 Remove the TP76422 trip lever spring. Remove the two TP151442 mounting screws and one TP1248 flat head screw that fasten the TP324314 rear plate to the main plate. Remove the perforator mechanism, being careful not to lose any of the spacers.

TRANSFER MECHANISM

2.10 Remove the TP151631 and TP151632 mounting screws (with lockwashers and flat washers) from the TP192820 transfer mounting bracket. Remove the transfer mechanism.

TYPING MECHANISM

2.11 Remove the TP324236 pushbar operating blade from the TP195235 rocker bail by removing its two screws, lockwashers, shims, and flat washers. Remove the TP159512 print hammer trip link after removing its TP119651 retaining ring and spring.

2.12 Remove the TP154638 accelerator spring from the print hammer accelerator. Remove one TP3870 and one TP324284 spring and a retaining ring from the TP156413 corrector drive link. Remove the TP159536 rotary rack idle gear, its eccentric shaft, mounting screw and lockwasher.

2.13 Remove the screw, lockwasher and flat washer that holds the TP324277 bellcrank pivot shaft to the main plate. Remove the screw and lockwasher that mount the TP159525 axial plate to the post. Remove the three screws, lockwashers, and flat washers that mount the typing assembly to the casting. The typing unit can now be removed.

ROCKER BAIL ASSEMBLY

2.14 Disconnect the TP156937 printing drive link by removing the retaining ring at its left end. Remove the TP3598 nut, lockwasher, flat washer, felt washer bushing, and TP151632 screw from the TP156871 operating blade mounting bail.

2.15 Remove the nut, lockwasher and TP334854 adjusting lever guide, then remove the TP156366 rocker bail shaft. The rocker bail can now be removed.

MAIN SHAFT ASSEMBLY

2.16 Remove the spring from the function clutch latchlever. Remove the retaining ring, spring washer, and flat washers from the forward end of the TP324235 main shaft.

2.17 Remove the screw and lockwasher from the TP150000 function clutch drum. Pull the main shaft out of the rear of the unit.

HIGH SPEED TAPE READER UNITS (CX)

LUBRICATION

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1. GENERAL 1

2. BASIC UNIT 2

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Feed mechanism 6
Latching mechanism 8
Motor and main shaft assembly 9
Operation control mechanism 6
Sensing mechanism 7
Tape lid mechanism 3
Tape reader (bottom view) 8
Tape reader (front view) 2
Tape reader (top view) 5
Universal tape reading mechanism . . 4

1. GENERAL

1.01 This section provides lubrication information for the high speed tape reader units (Figure 1). It is reissued to incorporate engineering changes and comments received on Issue 4. Since only a limited distribution was made on Issue 4, marginal arrows have been omitted.

1.02 General areas of the reader are shown by photographs. Specific points to receive lubrication are indicated by line drawings and descriptive text. The line drawings and descriptive text follow each photograph and are keyed to the photographs by paragraph numbers.

1.03 References made to left or right, front or rear, and top or bottom apply to the reader as viewed with the flywheel facing the viewer (Figure 1).

1.04 Lubricate the reader before placing it into service and just prior to putting it into storage.

1.05 After approximately 200 hours or four weeks of operation (whichever comes first), relubricate the reader to make certain no points have been missed. Thereafter, lubricate the reader according to the following schedule:

Operating Speed (wpm)	Lubrication Interval*
1000	250 hours or 6 weeks
750	500 hours or 12 weeks
500	1000 hours or 24 weeks
150	1500 hours or 6 months
100	2000 hours or 9 months

*Whichever occurs first.

1.06 The following symbols are used in the lubrication instructions to indicate the type of lubricant.

O Apply KS7470 oil
G Apply KS7471 grease as specified

Note: In general, the symbols indicate the type of lubricant. Quantity of lubricant is normally given in the lubrication instructions. An exception to this method is where the exact number of drops of oil is specified. For example, O1, O2, O3, etc refer to 1, 2, 3 etc drops of oil.

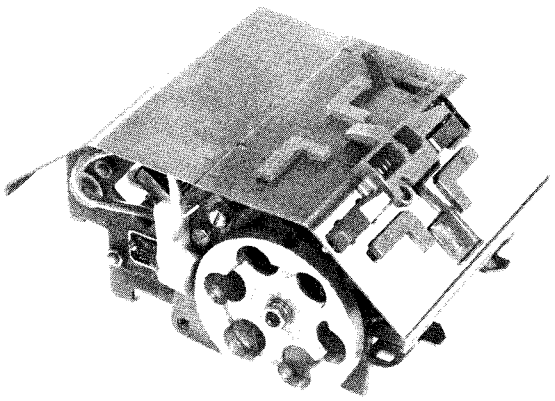


Figure 1 - High Speed Tape Reader Unit

1.07 Ordering information for lubricants and a complete list of tools and materials available to maintain the reader is given in Section 570-005-800TC.

1.08 Oil should be applied by means of an oiler. Overlubrication which would allow oil to drip on other parts should be avoided. Wipe off excess amounts of lubricant. Capillary action and vaporization tend to keep a film of oil on the parts. This prevents rust and provides sufficient lubrication to many points.

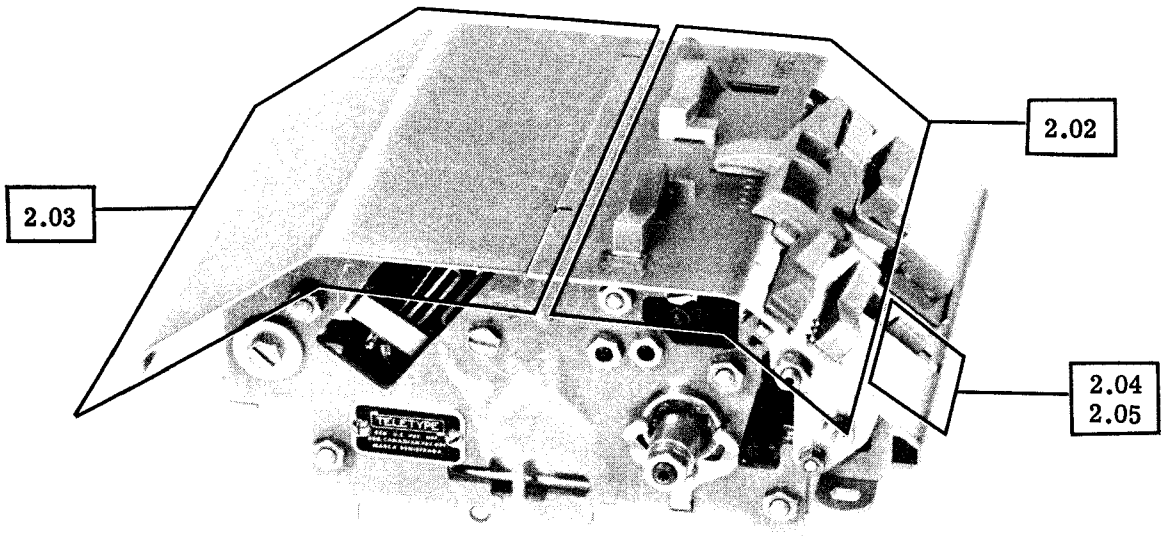
CAUTION: SPECIAL CARE SHOULD BE TAKEN TO PREVENT ANY LUBRICANT FROM GETTING BETWEEN ELECTRICAL CONTACTS.

Note: Protective pad TP124828 is available to protect furniture and floor coverings from oil, grease and dirt while lubricating the reader.

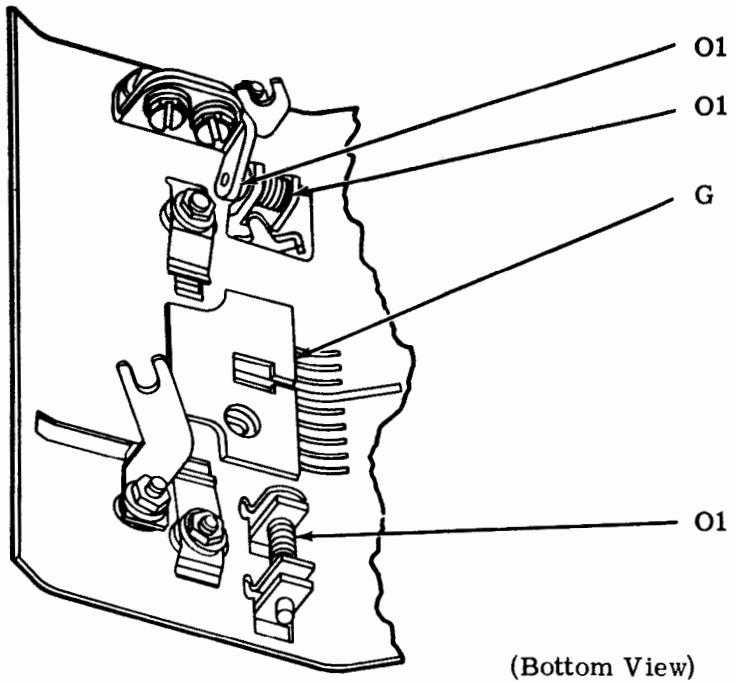
CAUTION: REMOVE POWER BEFORE LUBRICATING READER.

2. BASIC UNIT

2.01 Tape Reader (Front View)



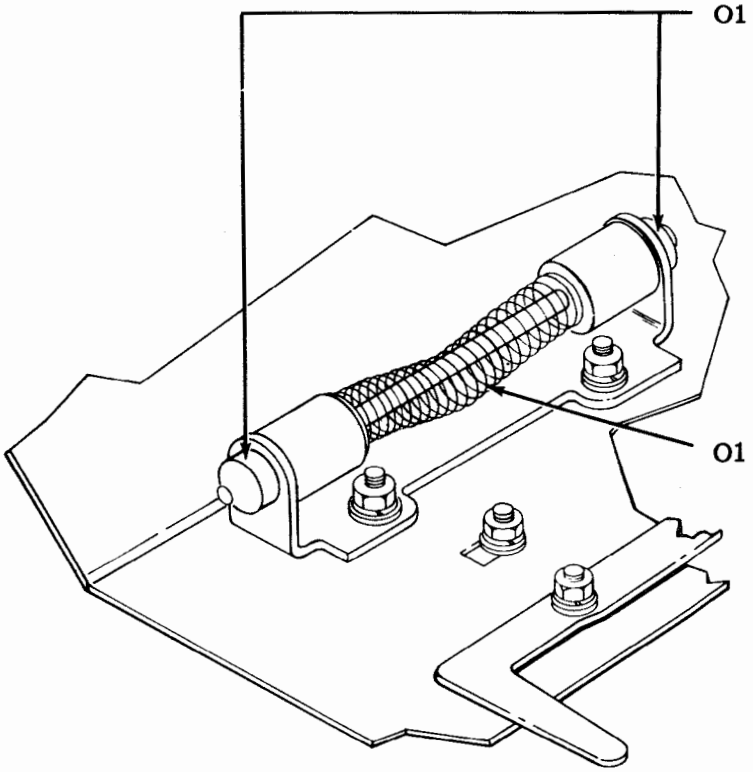
2.02 Tape Lid Mechanism



O1	Pivot Point	
O1	Hooks - Each End	Tape Lid Spring
G	Light Film on Wear Plate Edge	
O1	Spring	Slide Latch

(Bottom View)

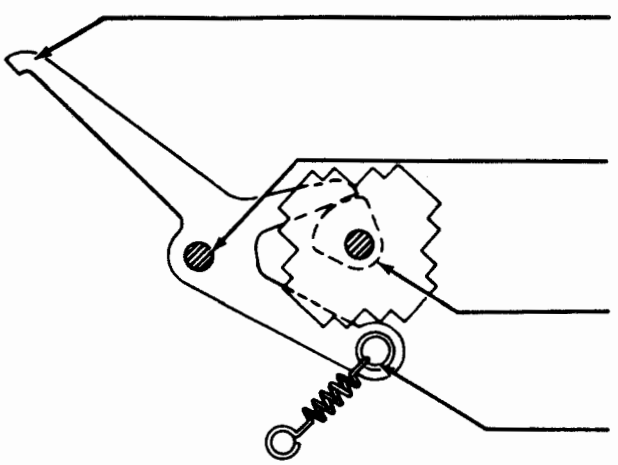
2.03 Cover Plate Plunger Mechanism



O1	Sliding Surface	Plunger
O1	Hooks - Each End	Plunger Spring

(Bottom View)

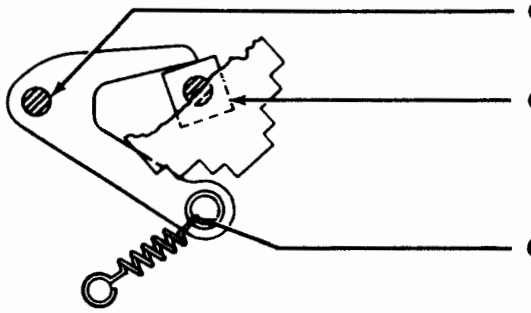
2.04 Universal Tape Reading Mechanism



G	Light Film on Contact Surface	Codelever
O1	Pivot	Codelever
G	Light Film on Surface	Codelever Cam
O1	Hooks - Each End	Codelever Spring

(Front View)

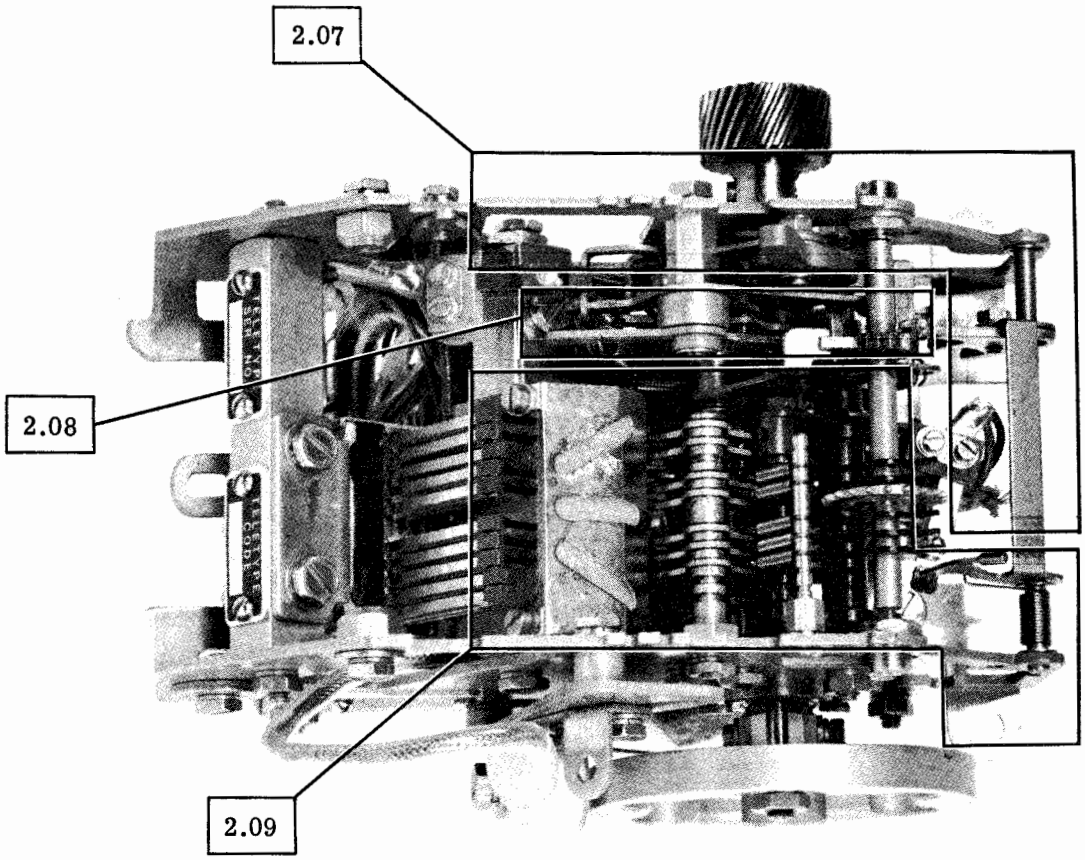
2.05 Universal Tape Reading Mechanism (continued)



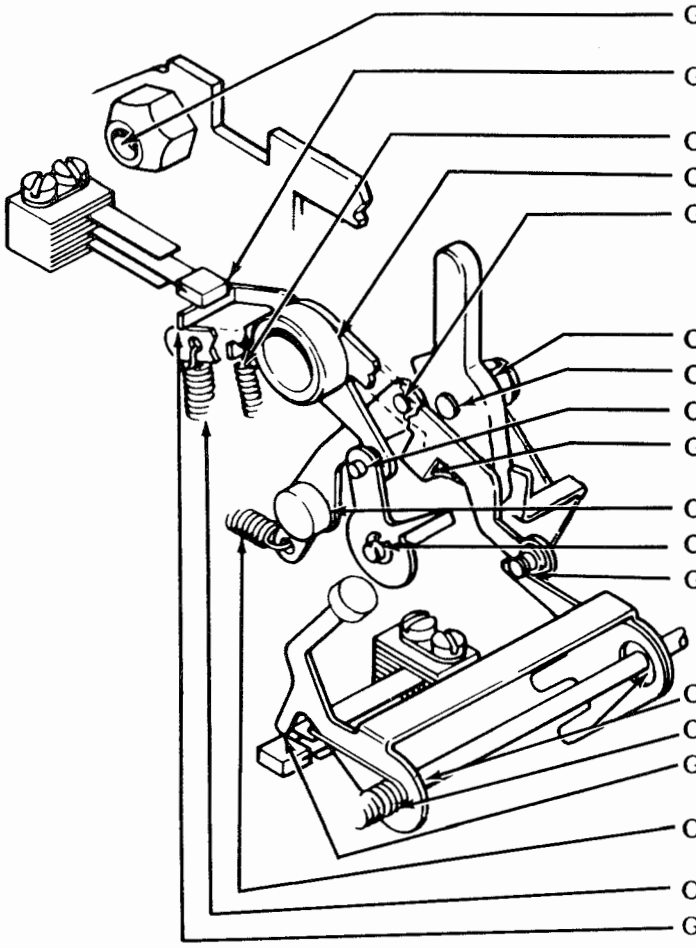
O1	Pivot	Detent Lever
G	Light Film on Surface	Detent
O1	Hooks - Each End	Detent Lever Spring

(Front View)

2.06 Tape Reader (Top View)



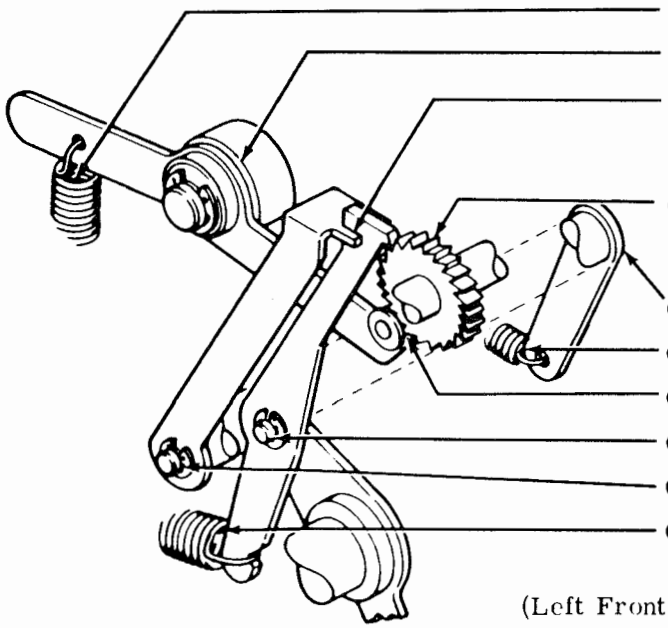
2.07 Operation Control Mechanism



(Left Front View)

G	Light Film on Plungers	Cover Plate
G	Light Film on Contact Surface	Swinger Tip
O1	Hooks - Each End	Tape-Out Arm Spring
O1	Pivot Point	Control Lever
G	Light Film on Contact Surface	Start-Stop Lever
O1	Pivot Point	Tape-Out Arm
O1	Pivot Point	Start-Stop Lever
O1	Pivot Point	Intermediate Lever
G	Light Film on Contact Surface	Start-Stop Lever
O1	Pivot Point	Detent Lever
O1	Pivot Point	Intermediate Lever
G	Light Film on Contact Point	Tape-Out Stop Arm
O1	Pivot Points	Tape-Out Extension
O1	Spring	Tape-Out Pin
G	Light Film on Contact Surface	Swinger Tip
O	Saturate Felt Wick	Detent Spring
O1	Hooks - Each End	Control Lever Spring
G	Light Film on Contact Surface	Control Lever

2.08 Feed Mechanism

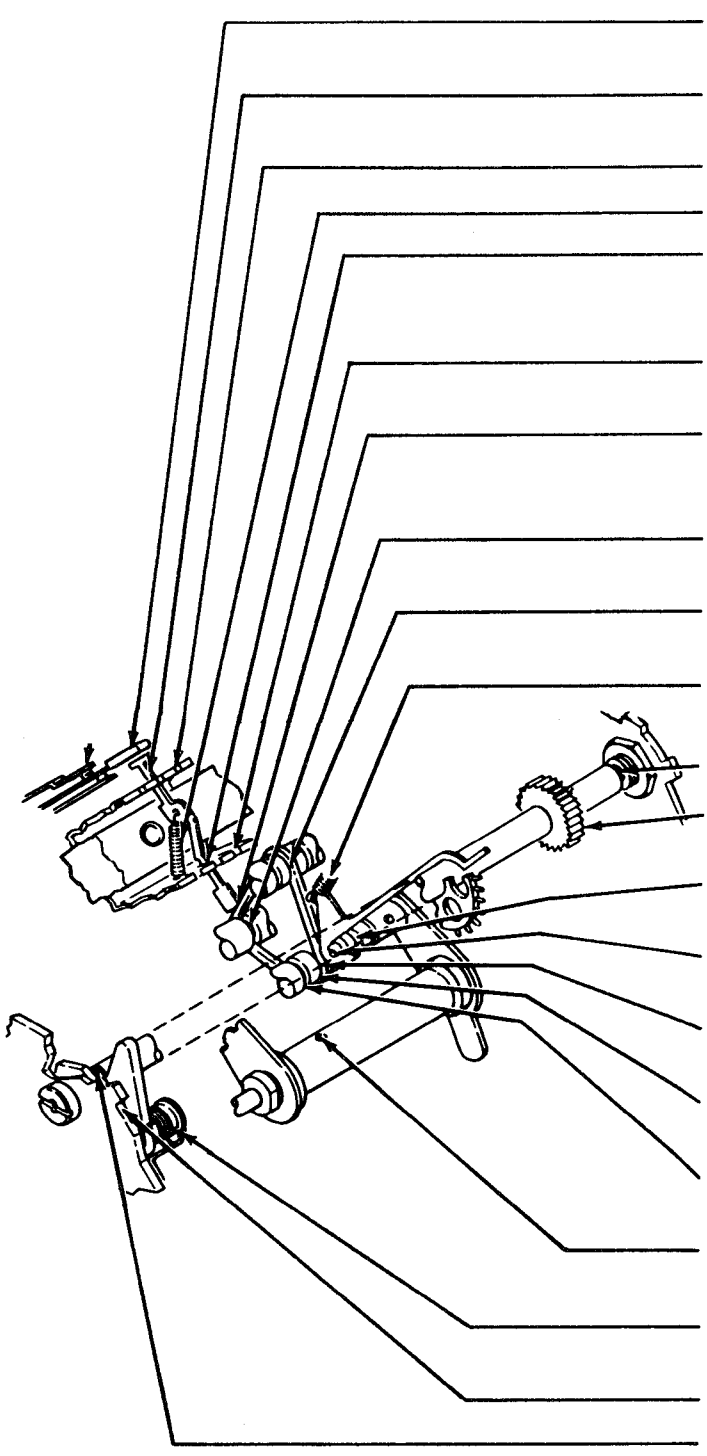


(Left Front View)

O	Saturate Felt Wick	Detent Lever Spring
O1	Pivot Point	Detent Lever
G	Medium to Heavy Film on Contact Point	Inertia Stop Lever
G	Medium to Heavy Film on Contact Points	Feed Ratchet Teeth
O1	Pivot Point	Inertia Stop Lever
O	Saturate Felt Wick	Inertia Stop Lever Spring
O1	Roller	Detent Lever
O1	Pivot Point	Feed Pawl
O1	Pivot Point	Inertia Stop Lever
O	Saturate Felt Wick	Feed Pawl Spring

2.09 Sensing Mechanism

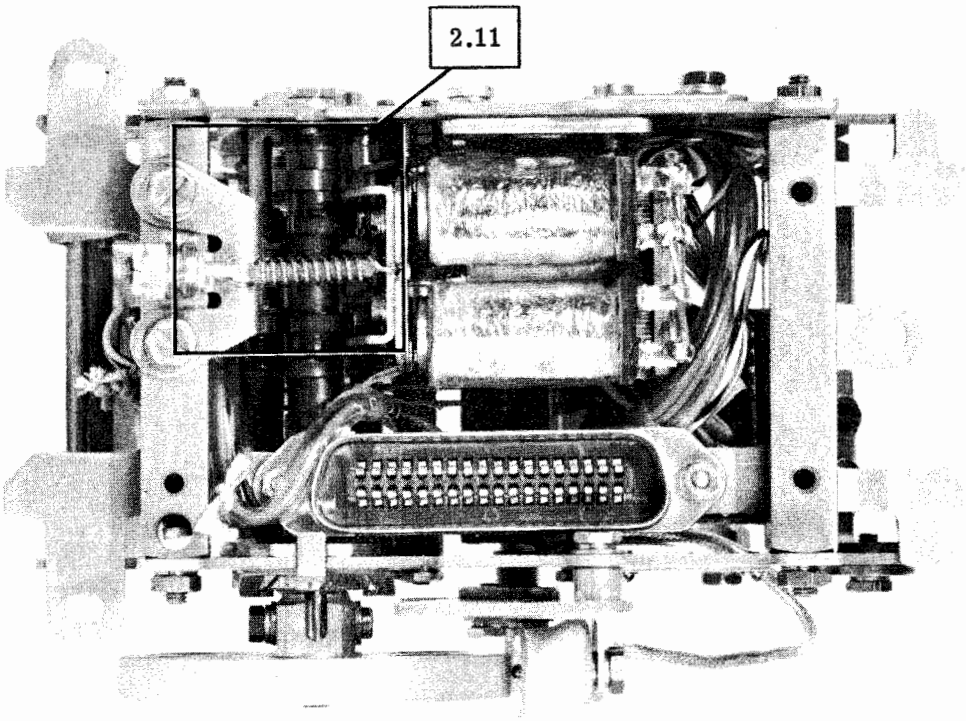
Note: Exercise care to prevent lubricant from finding its way to contact points.



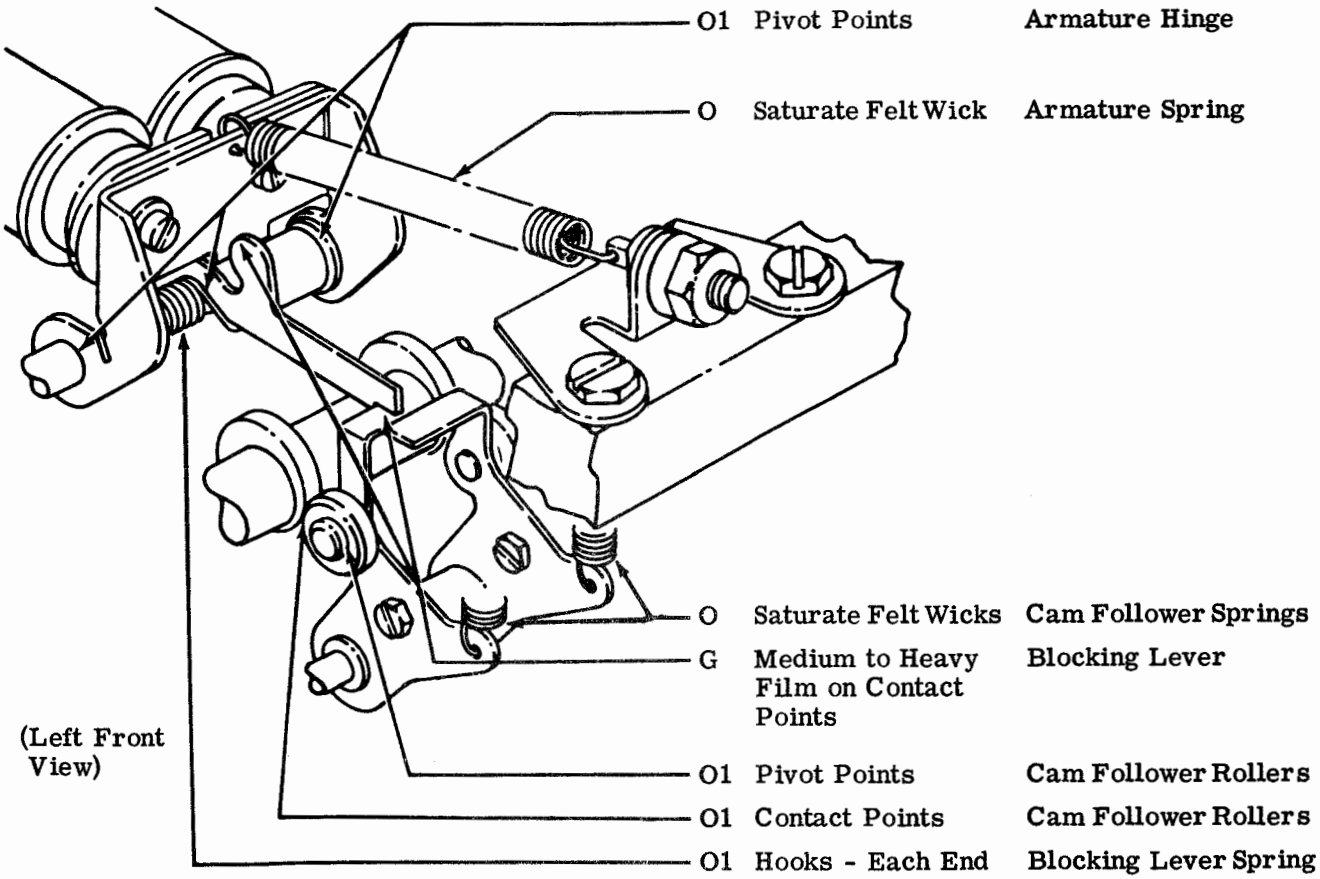
G	Light Film on Contact Surface	Swinger Tips
G	Light Film on Sliding Surfaces	Actuator Bars
G	Light Film on Slots	Actuator Bar Bracket
O	Saturate Felt Wicks	Actuator Bar Springs
G	Medium to Heavy Film on Sliding Surfaces	Actuator Bars
G	Medium to Heavy Film on Slots	Actuator Bar Bracket
G	Medium to Heavy Film on Contact Surfaces	Actuator Bars
G	Medium to Heavy Film on Slots	Transfer Lever Guide Post
G	Medium to Heavy Film on Pivot Points	Transfer Levers
O	Saturate Felt Wicks	Sensing Finger Springs
O1	Pivot Point	Feed Ratchet Shaft
G	Light Film on Contact Points	Feed Ratchet Teeth
G	Light Film on Slots	Sensing Finger Guide Post
G	Light Film on Pivot Points	Sensing Fingers
G	Light Film on Contact Points	Sensing Fingers
G	Light Film on Pivot Points	Transfer Levers
G	Light Film on Slots	Transfer Lever Guide Post
O2	Oil Hole	Feed and Sensing Bail Post
O1	Hooks - Each End	Tape Lid Latch Spring
O1	Sliding Surface	Tape Lid Latch
O1	Pivot Point	Feed Ratchet Shaft

(Left Front View)

2.10 Tape Reader (Bottom View)

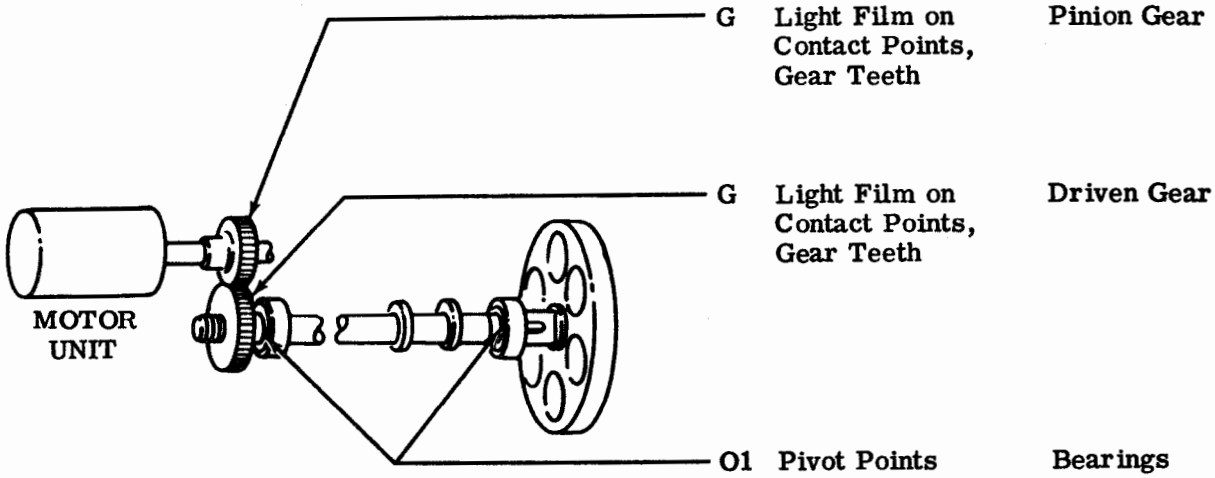


2.11 Latching Mechanism



2.12 Motor and Main Shaft Assembly

Note: Typical application is illustrated. Lubricate standard coded motor units as instructed in Section 570-220-701TC. Refer to the appropriate sections for lubrication instructions on other motor units.



(Left Rear View)

HIGH SPEED TAPE READER UNITS (CX)

DISASSEMBLY AND REASSEMBLY

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2. DISASSEMBLY AND REASSEMBLY . . 1

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CODE CONTACT ASSEMBLY 4

TAPE-OUT CONTACT ASSEMBLY . . 4

START-STOP CONTACT ASSEMBLY 5

OPERATING MAGNET ASSEMBLY . . 5

COVERPLATE 6

TAPE GUIDEPLATE 6

TAPE GUIDES 6

1. GENERAL

1.01 This section provides disassembly and reassembly information for the high speed tape reader units (Figure 1). It is reissued to incorporate engineering changes and comments received on Issue 4. Since only a limited distribution was made on Issue 4, marginal arrows have been omitted.

1.02 This section provides specific disassembly and reassembly instructions for the high speed tape reader units (CX). Unless specified otherwise in the instructions, the procedures apply generally to all units.

1.03 Photographs are used to identify the mechanism and specific parts mentioned in the procedures. Refer to the appropriate parts section for drawings showing the location of all parts and mechanisms.

1.04 Refer to Section 570-005-800TC, Maintenance Tools, for information on tools necessary to perform the disassembly and reassembly procedures.

1.05 References in the procedures to left or right, up or down, top or bottom, etc refer to the reader viewed with the flywheel facing the front (Figure 1).

1.06 While unsoldering leads from the terminals, the thermoplastic tubing over the leads might be damaged. If this happens, replace the tubing. Avoid using an excessive amount of solder and take care that no solder falls or becomes wedged between moving parts.

CAUTION: REMOVE POWER BEFORE DISASSEMBLING THE READER.

2. DISASSEMBLY AND REASSEMBLY

DRIVEN GEAR OR SPROCKET

2.01 The driven gear (Figure 2) or driven sprocket is removed from the TP171731 main shaft as follows:

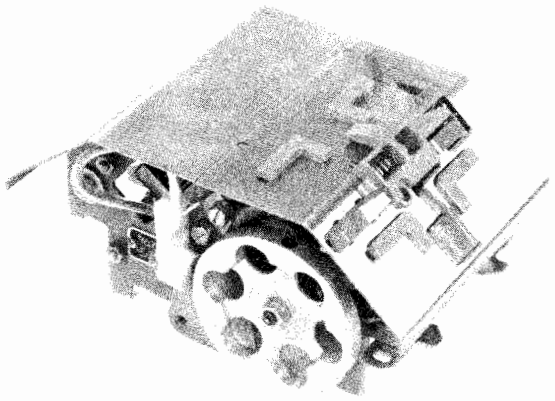

Figure 1 - Tape Reader Unit

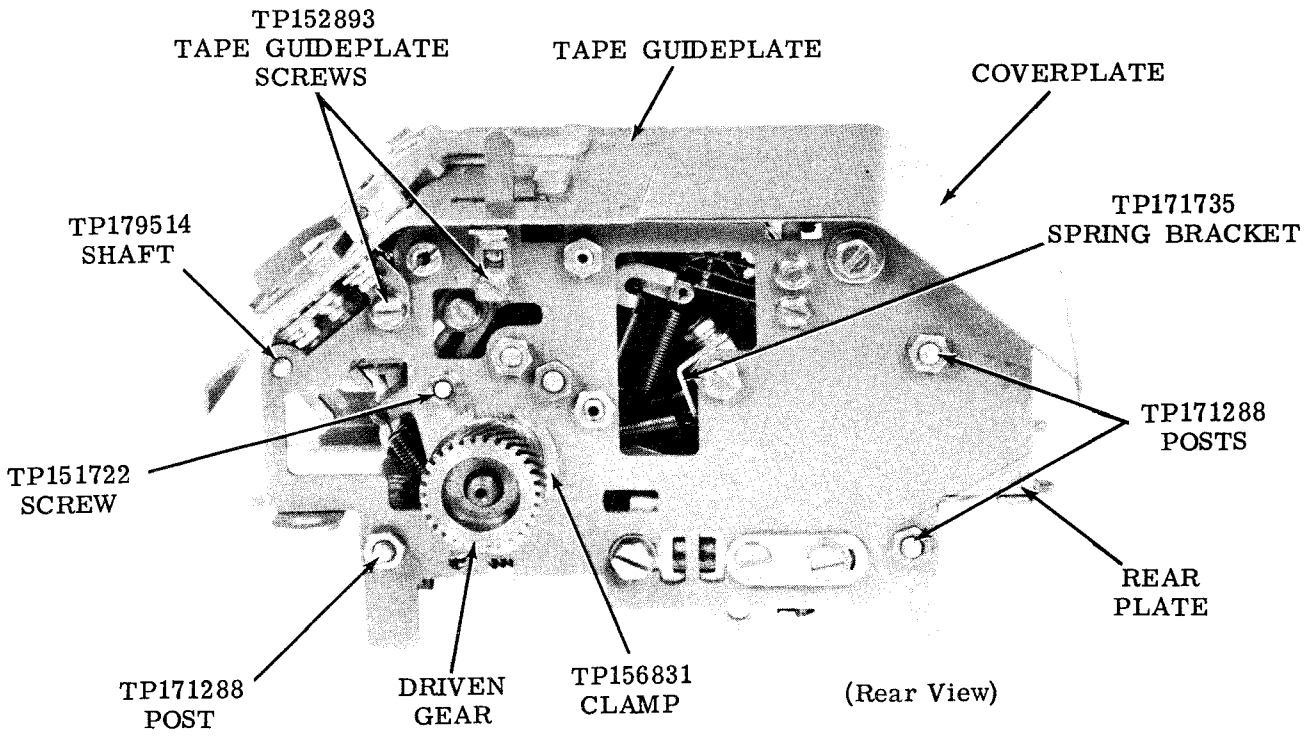

Figure 2 - Tape Reader Unit

(1) All readers except CX805: Remove the TP150089 screw, two TP125011 flat washers, two TP3640 lockwashers and the TP3599 nut that fastens the driven gear to the main shaft. (The TP150089 screw passes through the main shaft at the driven gear end.)

(2) CX805 reader: Remove the TP151685 screw, the TP125011 flat washer, and the TP3640 lockwasher that fastens the driven sprocket to the main shaft.

(3) Remove the TP112626 nut and TP2669 lockwasher from the main shaft.

2.02 To install the driven gear, reverse the steps in the removal procedure.

MAIN SHAFT

2.03 To remove the TP171731 main shaft, proceed as follows:

(1) Remove the driven gear or driven sprocket, whichever is applicable (2.01).

(2) Remove the TP151688 screw, the two TP125011 flat washers, the TP3640 lockwasher, and the TP3599 nut. (The TP151688 screw passes through the main shaft at the flywheel shoulder.)

(3) While holding the TP12782 flywheel firmly, remove the TP112626 nut, TP2669 lockwasher, and TP34432 flat washer (Figure 3).

Note 1: Some readers do not have a flywheel.

Note 2: The TP112626 nut clamps the bearing inner race in place when tightened.

(4) Remove the flywheel if so equipped.

(5) Remove the TP156501 screw, TP2191 lockwasher, and the TP156831 clamp from the front plate.

(6) Remove the TP151722 screw, the TP2191 lockwasher, and the TP156588 clamp from the rear plate (Figure 2).

(7) Guide the main shaft outward, toward the TP174125 rear plate, so that the TP130499 bearing is approximately one inch from the rear plate.

(8) If necessary, use a TP84020 bearing puller and remove the TP130499 rear bearing.

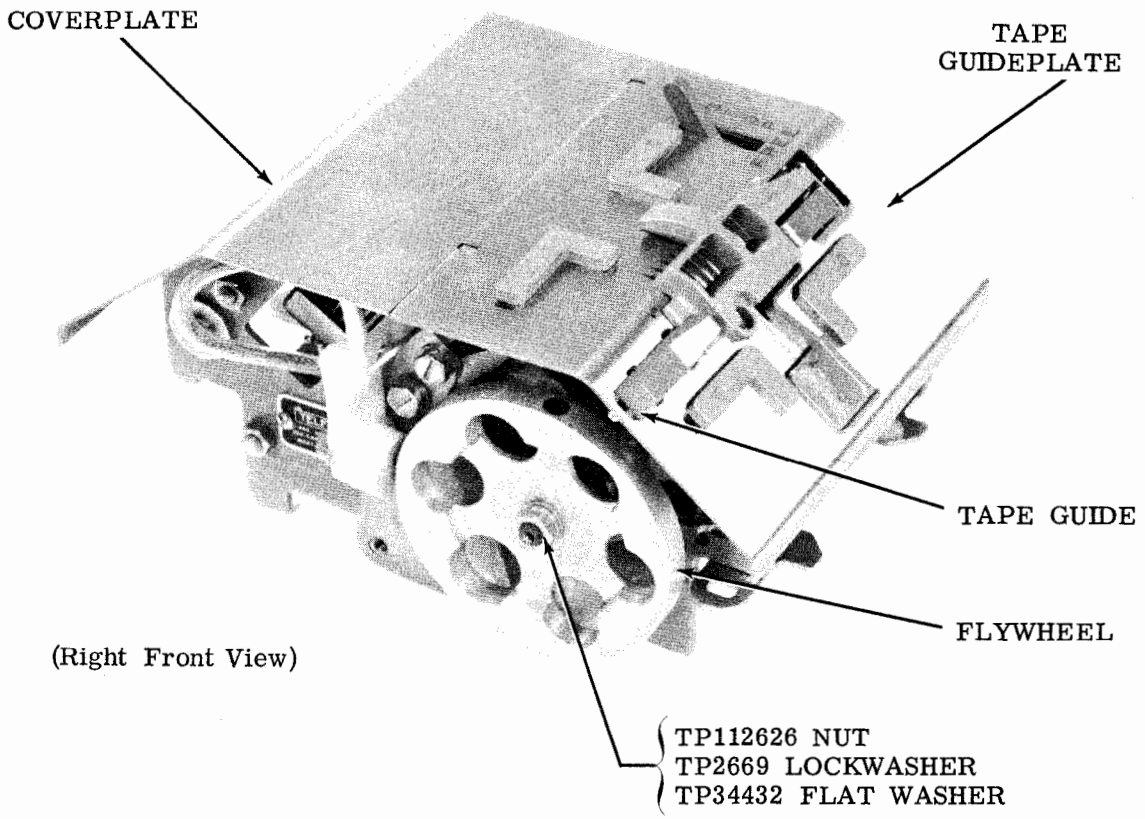

Figure 3 - Tape Reader Unit

(9) Carefully remove the main shaft from the front of the reader by rotating the shaft to assure that no cam followers are blocking the covers.

2.04 Install the main shaft by reversing the step of the removal procedure.

REAR PLATE ASSEMBLY

2.05 To remove the TP174125 rear plate assembly from the reader, proceed as follows:

(1) Unhook four springs from the TP171735 spring bracket (Figure 2).

(2) Remove the three TP3598 nuts and TP2191 lockwashers that secure the rear plate to the three TP171288 posts (Figure 2).

(3) Remove the TP151722 screw, TP2191 lockwasher, and TP156588 retaining ring from the TP171732 rear plate (Figure 2).

(4) Remove the TP156740 screw and TP2191 lockwasher that secure the rear plate to the TP171707 post.

(5) On units so equipped, remove the TP119649 retaining ring from the TP179514 shaft (Figure 2).

(6) Unhook the TP171313 spring from the TP171898 bracket to release the magnet and rear plate assembly from the reader.

(7) Check that the stop lever is not engaged with the TP171252 feed pawl.

(8) On units so equipped, unhook the TP179513 torsion spring from the rear plate (Figure 4).

(9) Remove the rear plate assembly from the reader. If it is necessary to remove it completely, remove the operating magnet

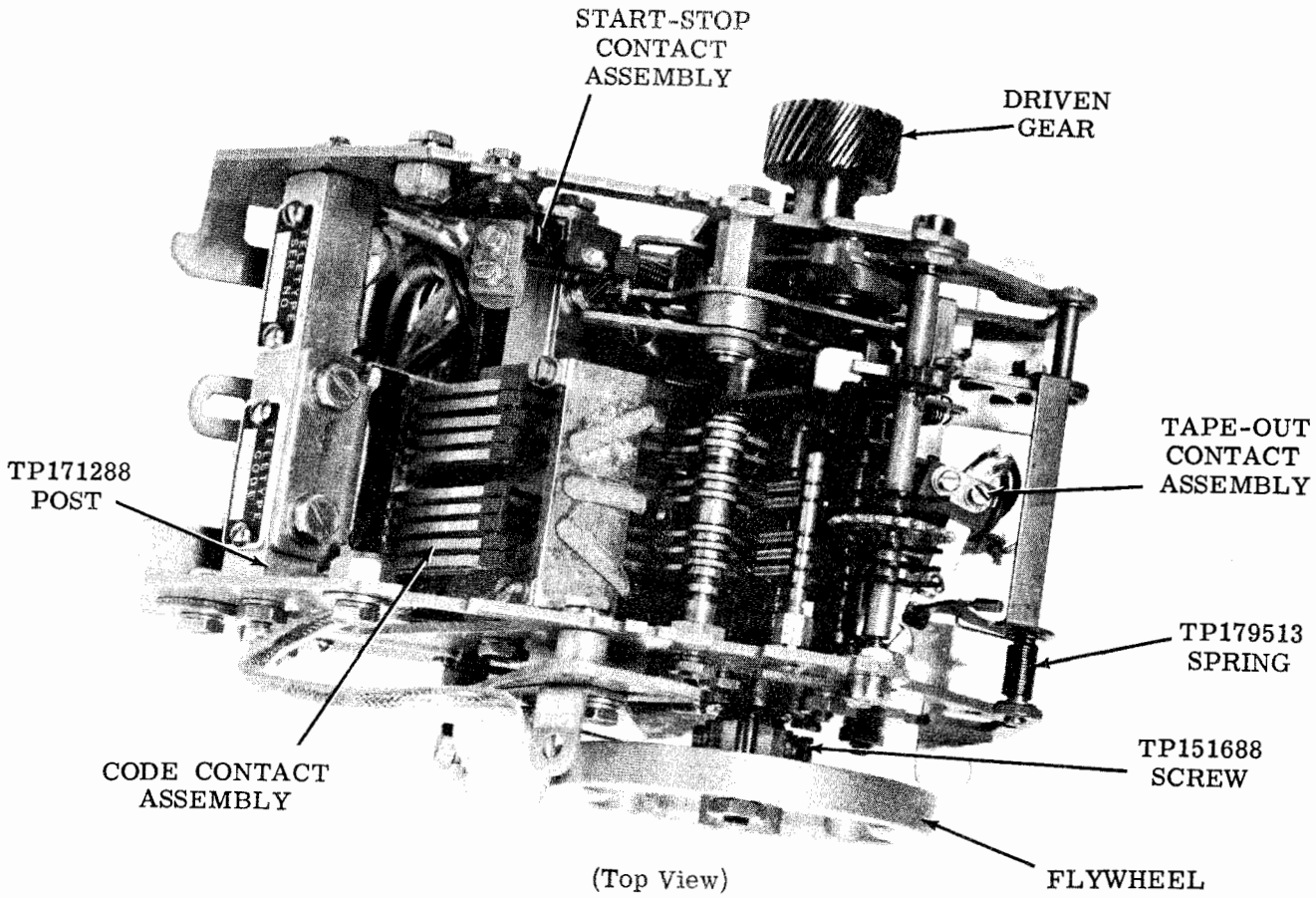

Figure 4 - Tape Reader Unit (Plates Removed)

assembly (2.13) and start-stop contact assembly (2.11) from the rear plate.

2.06 To install the rear plate assembly on the reader, reverse the removal procedure.

CODE CONTACT ASSEMBLY

2.07 To remove the code contact assembly from the reader, proceed as follows:

(1) Remove the two TP156740 screws, two TP2191 lockwashers, and two TP7002 flat washers that secure the code contact assembly to the TP171288 post. See Figure 4.

(2) It is now possible to move the code contact assembly about two inches outside of the reader.

(3) Unsolder and disconnect the cable assembly leads from the code contact assembly terminals.

(4) Remove the code contact assembly from the reader.

2.08 To install the code contact assembly in the reader, reverse the disassembly procedure.

TAPE-OUT CONTACT ASSEMBLY

2.09 To remove the TP171255 (or TP179521) tape-out contact assembly from the reader, proceed as follows:

(1) Unsolder and remove the cable assembly from the tape-out contact assembly (Figure 4).

(2) Remove the two TP152893 screws, two TP3640 lockwashers, and two TP125011 flat washers from the TP171256 assembly mounting bracket.

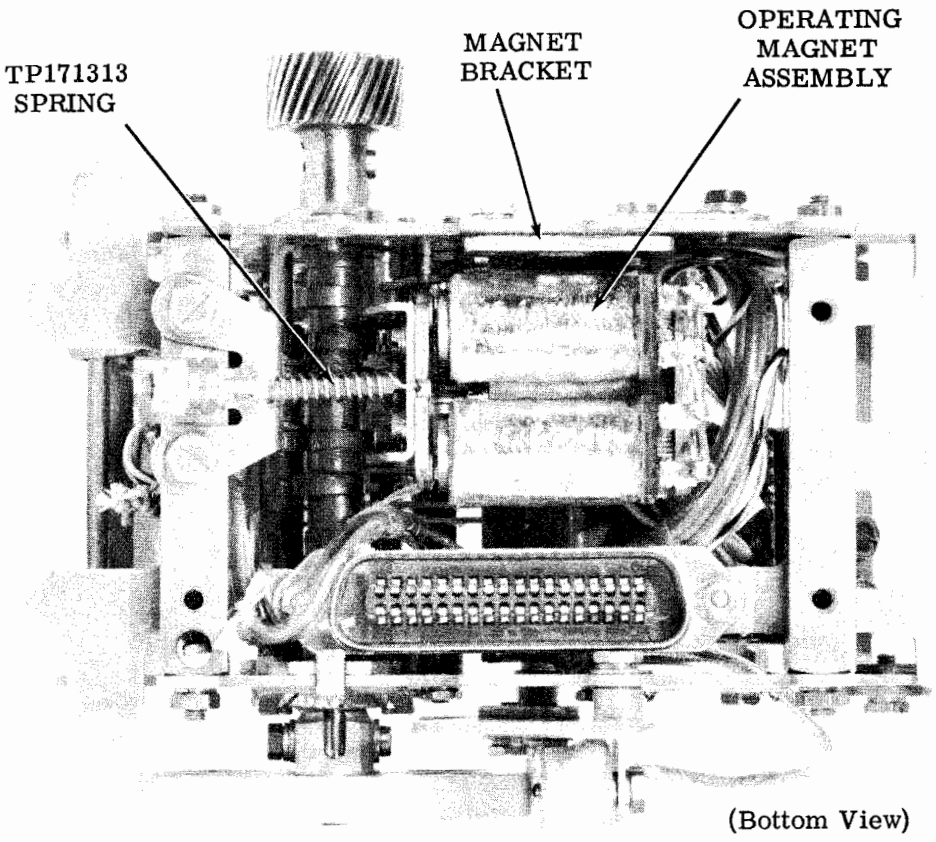

Figure 5 - Tape Reader Unit

(3) Remove the tape-out contact assembly from the reader.

2.10 To install the tape-out contact assembly, reverse the disassembly procedures.

START-STOP CONTACT ASSEMBLY

2.11 To remove the TP171237 start-stop assembly from the reader, proceed as follows:

(1) Unsolder and disconnect the leads from the TP171237 start-stop contact assembly (Figure 4).

(2) Remove the two TP152893 screws, two TP3640 lockwashers, and two TP125011 flat washers that secure the bracket to the rear plate.

(3) Remove the TP171237 start-stop contact assembly from the reader.

2.12 To install the start-stop contact assembly, reverse the disassembly procedures.

OPERATING MAGNET ASSEMBLY

2.13 To remove the operating magnet assembly from the reader, proceed as follows:

(1) Unsolder and disconnect the two color-coded leads (white, black, yellow and black, yellow) from the magnet terminals.

(2) Disconnect the TP171313 armature spring from the TP170749 armature extension. See Figure 5.

(3) Remove the TP156740 screw, TP2191 lockwasher, TP7002 flat washer, and TP150964 shoulder screw which secure the magnet bracket to the rear plate.

(4) Remove the operating magnet assembly with its bracket from the reader.

2.14 To install the operating magnet assembly in the reader, reverse the removal procedure.

COVERPLATE

2.15 To remove the coverplate, lift its left side and carefully pull it off the left side of the reader (Figure 2 and 3).

2.16 To install the coverplate, reverse the removal procedure.

TAPE GUIDEPLATE

2.17 To remove the tape guideplate, proceed as follows:

(1) Loosen the four TP152893 screws securing the tape guideplate brackets to the front and rear plates (Figure 2).

(2) Gently lift the tape guideplate off the reader.

2.18 To install the tape guideplate, place the tape guideplate on the reader so the mounting brackets just begin to engage their screws. Do not try to force the tape guide down completely.

2.19 Turn the reader to view the left side. Use a TP151959 spring hook and pull back each sensing finger from the underside of the tape guideplate and position them in their respective guide slots. Push the tape guideplate down until the mounting brackets are fully engaged with their screws.

CAUTION: DO NOT BEND OR DEFORM SENSING PINS.

TAPE GUIDES

2.20 To remove any of the four adjustable tape guides (TP179516 or TP179517), remove the associated nut, flat washer and spring (Figure 3).

2.21 To install the tape guide, reverse the removal procedure.