

"DATASPEED®" PRINTER  
RECORDER AND PAPER TRANSPORT  
ADJUSTMENTS AND LUBRICATION

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Pre-paper puller drive belt . . . . .	8	1. GENERAL	
Upper magnet armature . . . . .	6	1.01 This section provides the adjustments and lubrication procedure for the maintenance of the recorder and paper transport of the DATASPEED printer. It is being reissued to change the title and to incorporate recent engineering changes. Since it is a general revision, marginal arrows ordinarily used to indicate changes and additions are omitted. This section was formerly designated 592-820-700, but this number is now cancelled. Since this issue of Section 578-500-700 is a revision of Section 592-820-700, Issue 2, it is designated Issue 3.	
Paper Feed Mechanism		2. ADJUSTMENTS	
Detent arm (early design) . . . . .	9	CAUTION: REMOVE POWER FROM SET BEFORE CHECKING OR MAKING ADJUSTMENTS UNLESS OTHERWISE STATED.	
Detent arm spring . . . . .	9	2.01 The adjustments are arranged in a sequence that should be followed as if a complete readjustment of the unit were being undertaken. In following such a procedure, parts or assemblies that are removed to facilitate adjustments should not be replaced until all other adjustments, which would be affected by the removal of these parts, have been made. If	
Idler pressure roller spring . . . . .	3		
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SECTION 578-500-700

any adjustment is changed, related adjustments should be checked. Read the adjustment instructions thoroughly before attempting to make the adjustment. After an adjustment is completed, be sure to tighten any nuts or screws which may have been loosened.

2.02 The cover must be removed for most adjustments on the recorder and transport. To check or make adjustments that require power (for example, line feed adjustments), place jumper connector TP330131 into the interlock socket at the left front of the base. If the jumper connector is not available, insert a jumper wire between terminals 3 and 4 of the interlock socket.

**CAUTION: DO NOT TOUCH PLATEN AREA WHEN POWER IS ON.**

2.03 The recorder must be separated from the transport to provide access to many of the transport mechanisms. For some adjustments you may also find it convenient to separate the transport frame from the transport base. See Section 592-820-703TC for disassembly instructions.

**CAUTION: ALWAYS KEEP RECORDER IN AN UPRIGHT POSITION TO AVOID SPILLING INK. THIS INK HAS POWERFUL STAINING PROPERTIES.**

2.04 The spring tension values indicated are scale readings which should be obtained when the proper scales are used. Springs that do not meet the requirements, and for which no adjustment procedure is given, should be replaced by new springs.

2.05 Check all moving parts to make sure they are free from binds before operating the unit under power.

2.06 References to right or left, up or down, front or rear, apply to the units as viewed when facing them from front or recorder side.

2.07 Parts ordering information can be obtained from Section 578-500-800 (formerly Section 592-820-800). For the tools necessary in making the adjustments, refer to Section 570-005-800. The following tools are also necessary to adjust the recorder and transport:

<u>Number</u>	<u>Description</u>
TP310430	Feeler gauge set
TP331041	Go-no-go gauge

2.08 Paper Feed Mechanism

THROAT GUIDE SPRING

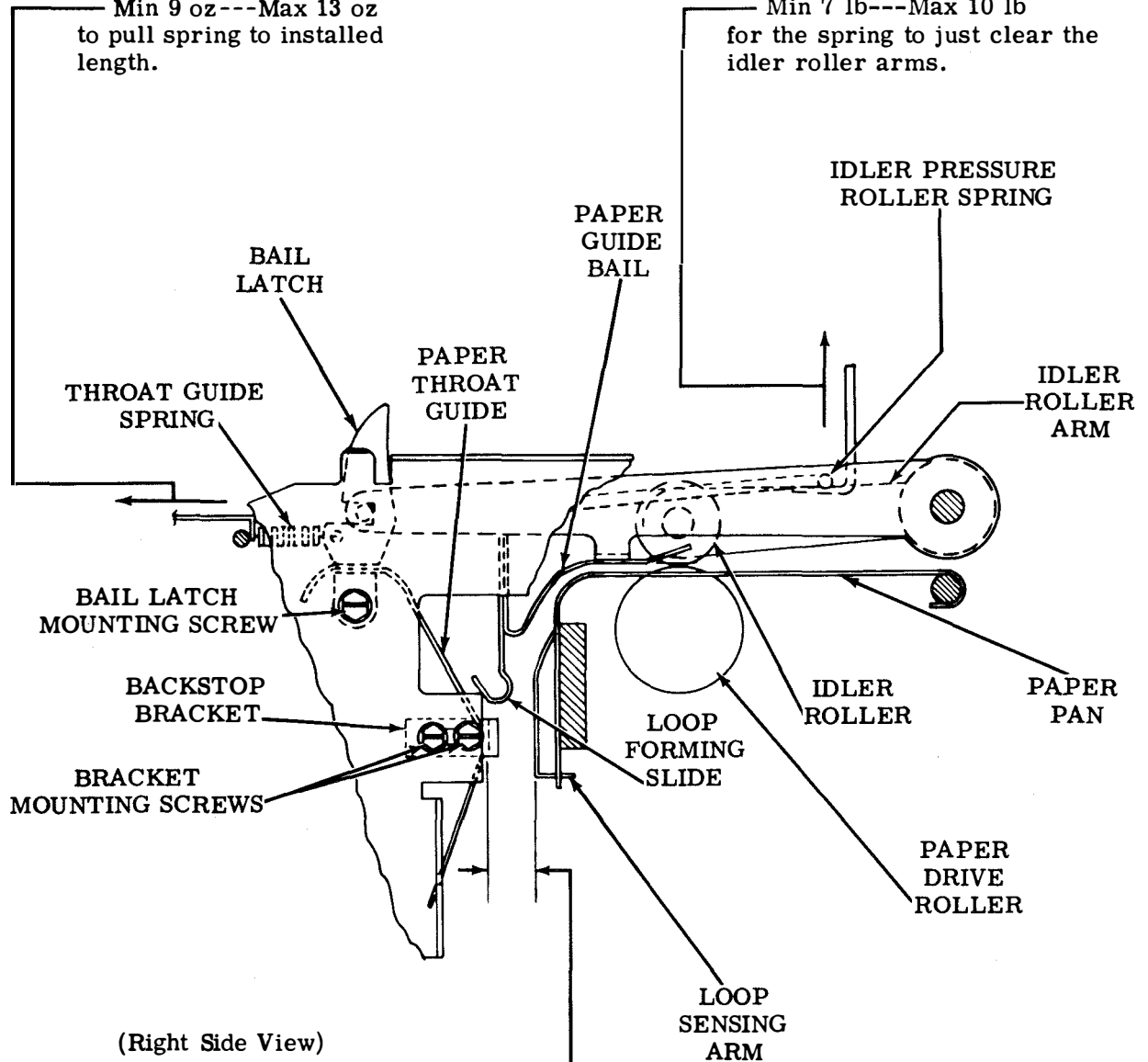
Requirement

Min 9 oz---Max 13 oz  
to pull spring to installed  
length.

IDLER PRESSURE ROLLER SPRING

Requirement

With spring scale positioned between  
idler roller arms (with roller idler  
arm in the down and locked  
position), it should require  
Min 7 lb---Max 10 lb  
for the spring to just clear the  
idler roller arms.



(Right Side View)

PAPER THROAT

Requirement

Clearance between the loop sensing switch  
arm and the paper throat guide should be  
Min 0.280 inch---Max 0.320 inch

To Adjust

Position backstop brackets for paper throat  
guide with their mounting screws loosened.

2.09 Line Feed Mechanism

DRIVE PULLEY ENDPLAY

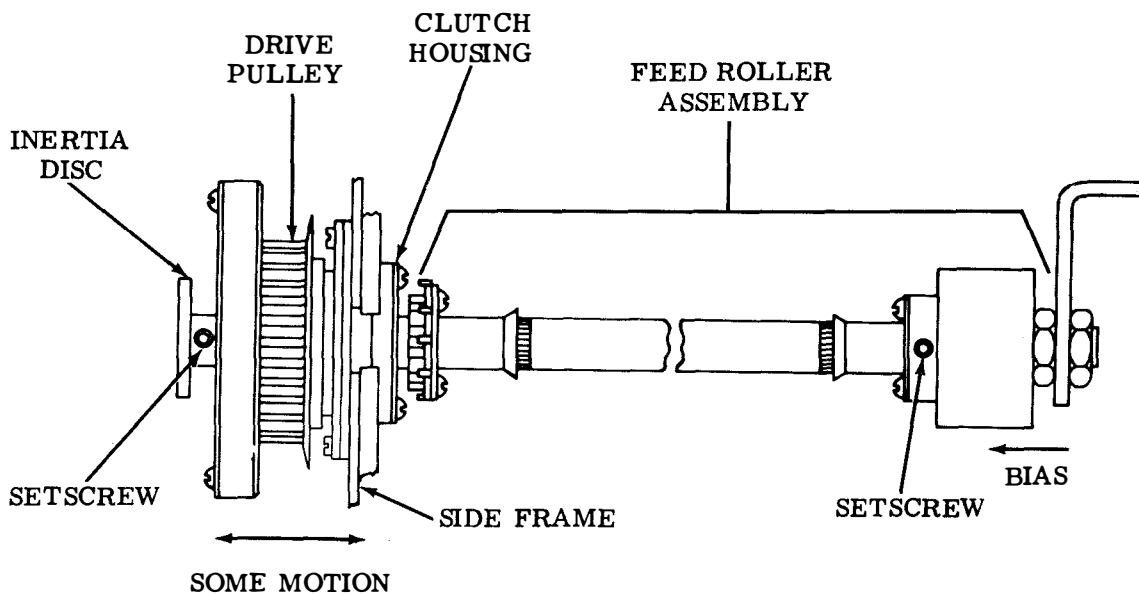
Requirement

With the drive pulley held parallel to side frame, there should be some motion, left to right, between drive pulley and its mounting.

To Adjust

Loosen two setscrews on inertia disc and position disc to meet requirement while holding feed roller assembly at right end to make clearance a minimum. Tighten setscrews.

Note: There are two flats on the torsion rod at either end. The setscrews should be tightened against the flats.



## 2.10 Line Feed Mechanism (continued)

ESCAPEMENT PAWL CLEARANCE**Requirement**

Clearance between the end of a tooth on escapement wheel and top of each pawl should be

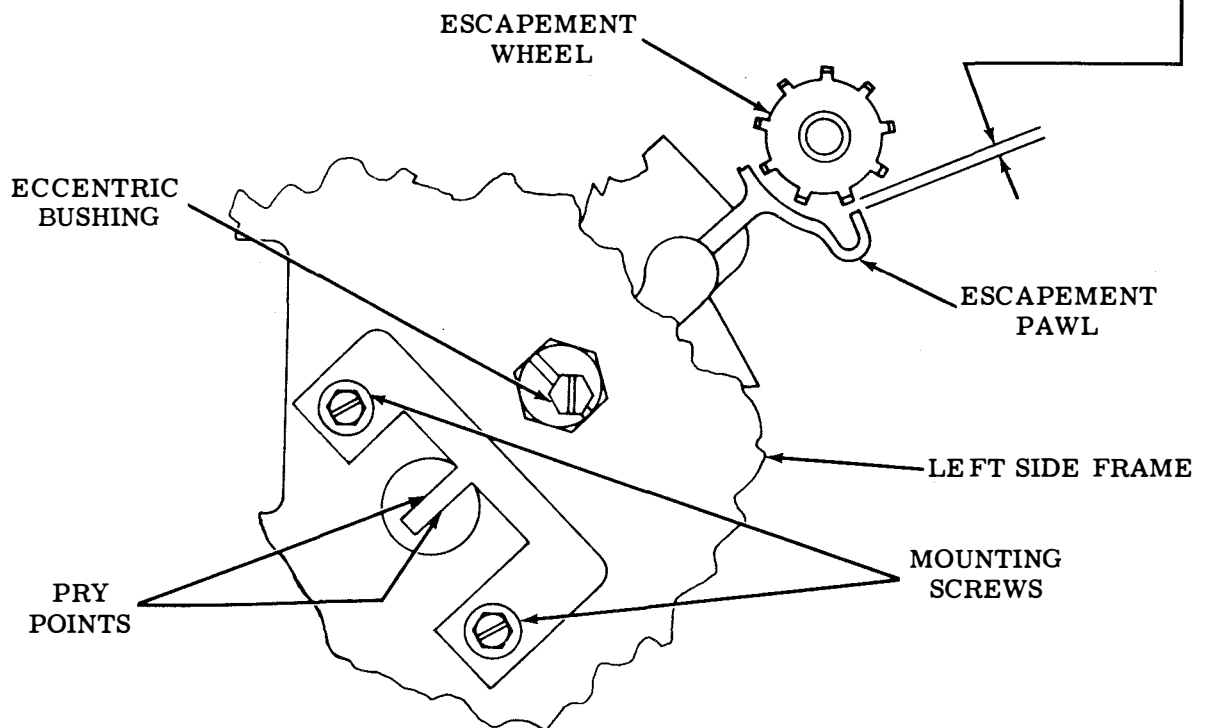
Min 0.004 inch---Max 0.008 inch

**To Adjust**

**Note 1:** When undertaking a complete readjustment, loosen the escapement eccentric bushing and position the eccentric with the slot in the large side of the bushing pointing at a 45 degree angle toward the top rear of the transport.

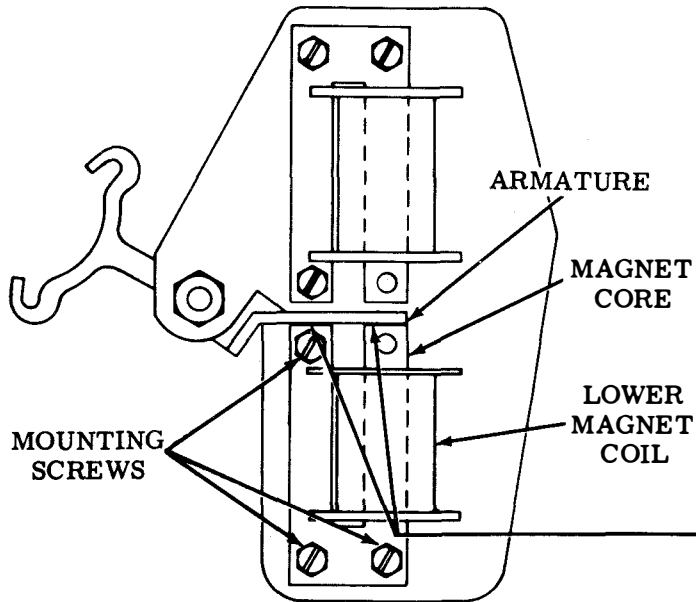
**Note 2:** Power is required for this adjustment. However, the line feed motor should be off or its drive belt removed. To remove drive belt, grasp the drive pulley, remove the belt, and let the drive pulley unwind slowly to prevent damage to the spiral spring.

With the escapement bushing tight, loosen two magnet pole mounting screws friction tight. With upper magnet energized (1 amp dc is the normal operating current), position the escapement wheel so that a tooth on the wheel is lined up with the lower tip of escapement pawl. Position magnet assembly by using pry point. Tighten mounting screws. Place drive belt back on pulleys.



2.11 Line Feed Mechanism (continued)

LOWER MAGNET ARMATURE



(Right Side View)

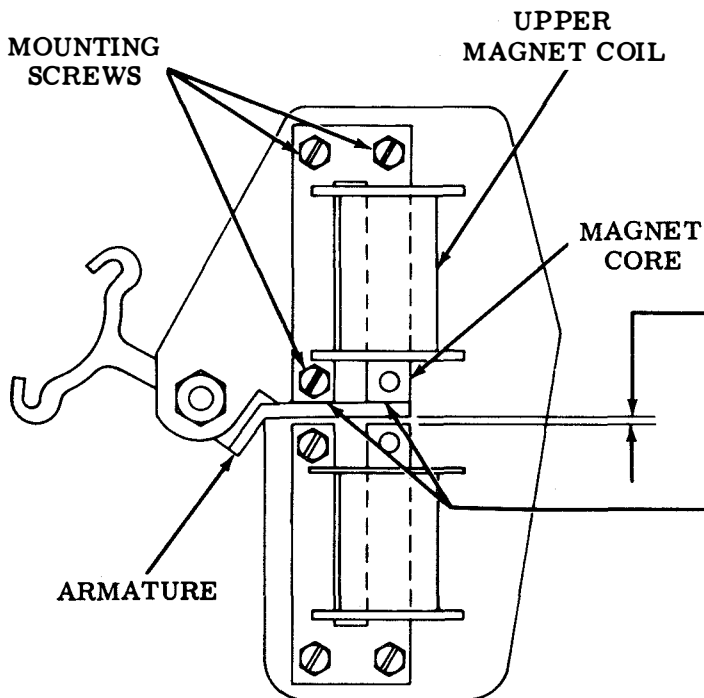
Note: This and the UPPER MAGNET ARMATURE adjustment require removal of the magnet assembly from the transport. They should be made only if the preceding adjustments related to the escapement pawl are not satisfactory, and if there is improper line feed action. For quickest access to the magnet assembly, remove the guide assembly that covers the lower part of the platen. Since power is required for the adjustment, leave the magnet leads connected. However, remove the high voltage cover from the power supply so the platen area will not be "hot" while making the adjustment.

Requirement

Armature should be in contact with both sides of lower magnet core when magnets are electrically energized (1 amp dc is the normal operating current).

To Adjust

Position lower magnet with three mounting screws loosened. Tighten screws.



(Right Side View)

UPPER MAGNET ARMATURE

(1) Requirement

With armature in firm contact with upper magnet core, clearance between armature and lower magnet core should be

Min 0.025 inch---Max 0.029 inch where clearance is least.

(2) Requirement

Armature should be in contact with both sides of upper magnet core when magnets are electrically energized (1 amp dc is the normal operating current).

To Adjust

Position upper magnet with three mounting screws loosened. Tighten screws. Restore magnet assembly to transport. Recheck ESCAPEMENT PAWL CLEARANCE (2.10) adjustment.

## 2.12 Line Feed Mechanism (continued)

ESCAPEMENT ECCENTRIC

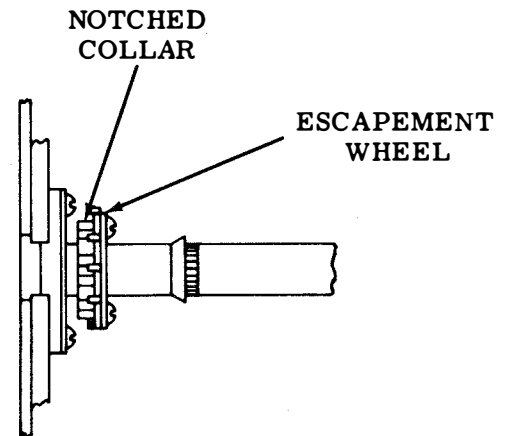
## Requirement

With the transport under power and stepping at the local line feed rate of 16 operations per second, there should be no perceptible variation in the notches on the collar next to the escapement wheel when wheel is stopped between steps.

## To Adjust

Loosen lower magnet assembly mounting screw and escapement bushing friction tight. Rotate eccentric until there is no perceptible change in motion of notches on collar. Keep large part of eccentric toward upper rear of unit. Tighten screws. Recheck ESCAPEMENT PAWL CLEARANCE (2.10) adjustment and refine, if necessary, to meet the 0.004 inch to 0.008 inch requirement.

**Note:** If stepping action stops or begins to skip during this adjustment, stop and tighten mounting screws. Readjust ESCAPEMENT PAWL CLEARANCE (2.10) adjustment and then resume the ESCAPEMENT ECCENTRIC adjustment.

LINE FEED TORQUE

**Note:** If transport is being operated for the first time, or if it has been out of service for a long period of time, operate it for at least seven minutes to make sure all parts are operating freely.

## To Check

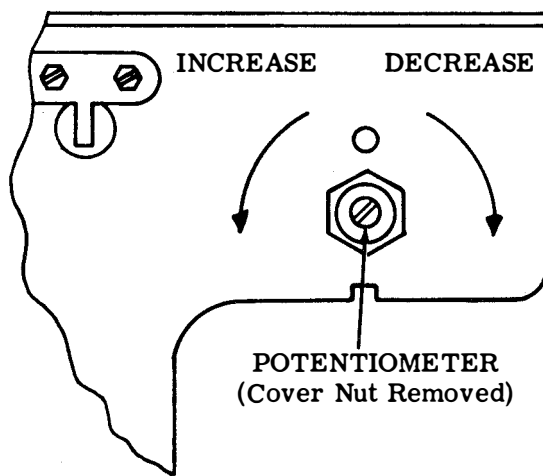
With no paper in unit, place release arm in the engaged position. Press paper advance button for at least five seconds to make sure spiral spring is fully wound. Grasp outer surface of line feed drive pulley to prevent it from moving. Press and quickly release paper advance button so line feed mechanism advances one line at a time. Count the number of times the mechanism advances as you continue to press and release the button.

## Requirement

Spiral spring should store enough energy to drive line feed mechanism 29 to 31 steps with no additional input from the line feed motor.

## To Adjust

Remove cover nut from potentiometer on right side frame. Adjust potentiometer to meet requirement. When viewing potentiometer from right side counterclockwise rotation increases the number of steps (torque); clockwise rotation decreases the number of steps (torque). Replace cover nut on potentiometer.



(Right Side View)

2.13 Line Feed Mechanism (continued)

PAPER GUIDEPLATE

To Check

Gauge clearance between platen and guideplate approximately 1/4 inch from each end of paper guideplate. Minimum clearance across entire length should not be less than 0.008 inch nor more than 0.015 inch at any point.

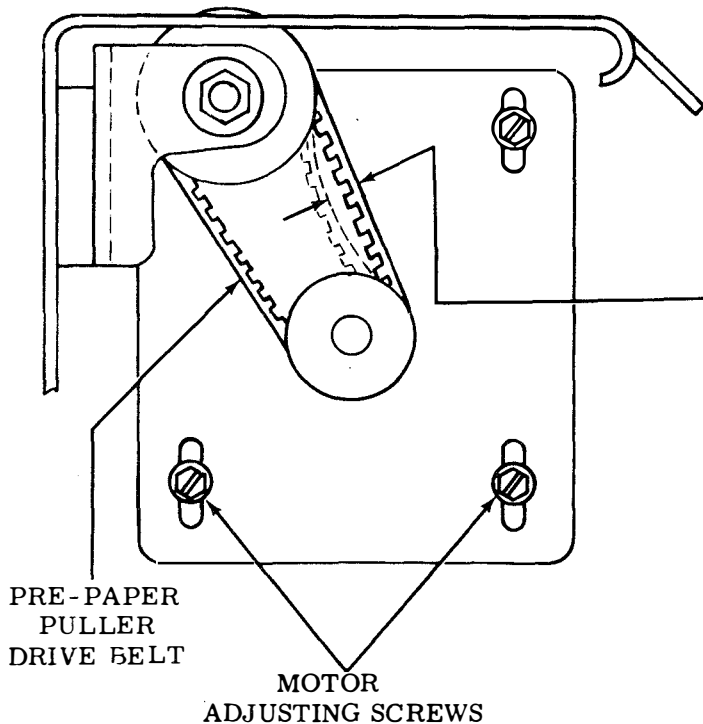
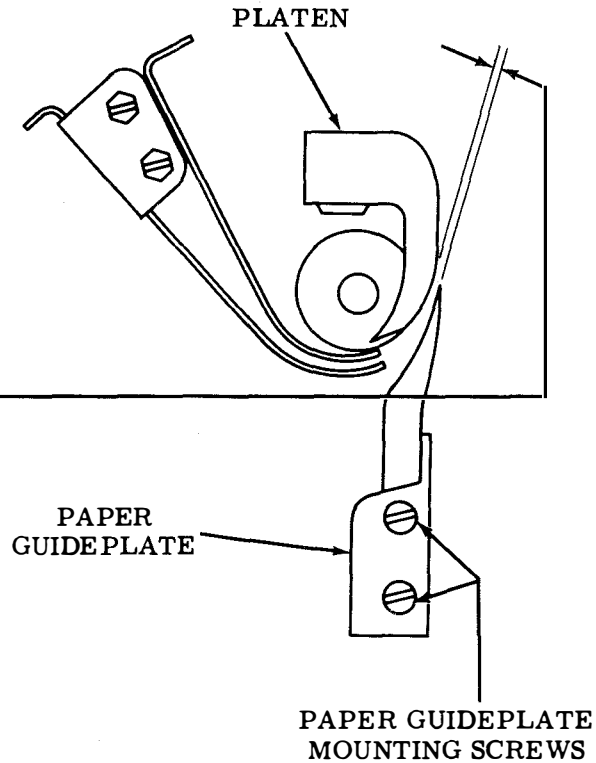
Requirement

Clearance between platen and paper guideplate (measured at designated points) should be

Min 0.008 inch---Max 0.014 inch

To Adjust

With paper guideplate mounting screws loosened, position guideplate. Tighten mounting screws and recheck requirement.



PRE-PAPER PULLER DRIVE BELT

Requirement

Pre-paper puller drive belt should deflect  
Min 0.219 inch---Max 0.281 inch  
when a force of 8 ounces is applied to the belt.

To Adjust

With the four motor adjusting screws loosened, position motor. Tighten adjusting screws.



2.131 Paper Feed Mechanism (continued)

PAPER-OUT SWITCH

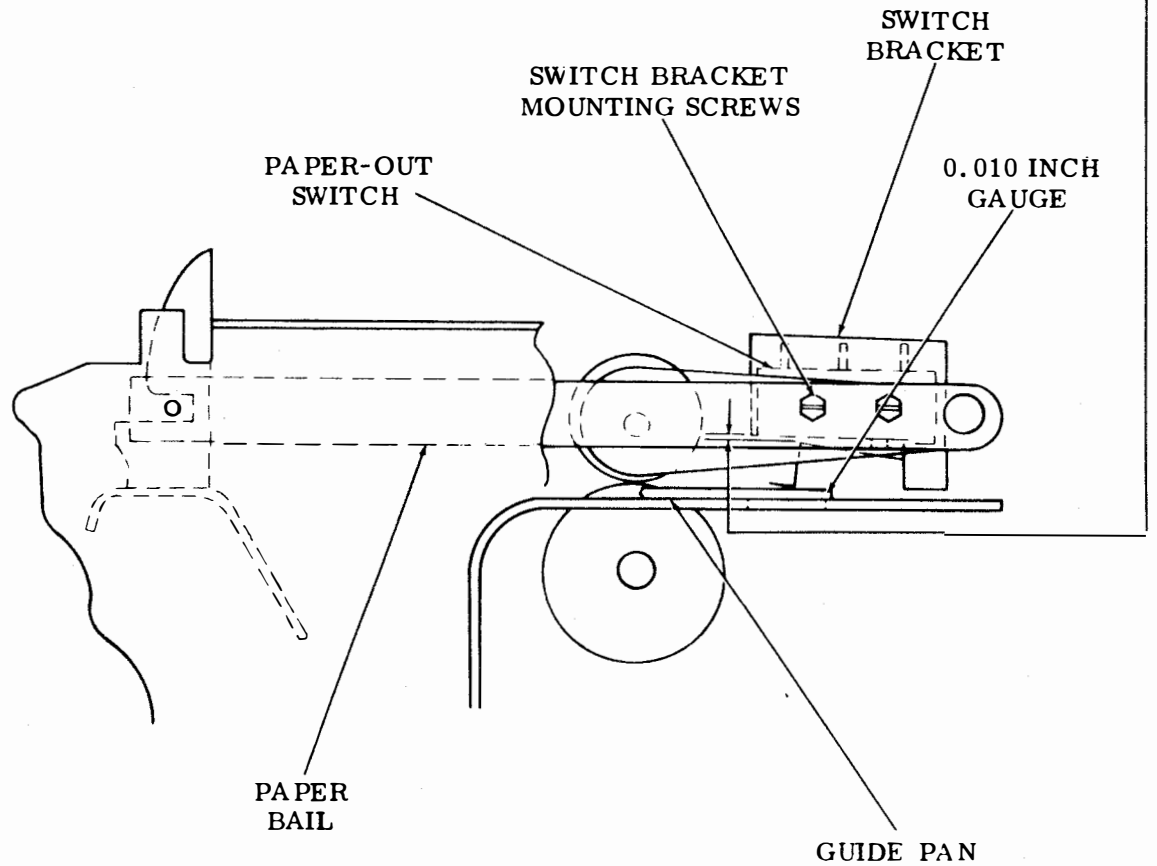
Requirement

With a 0.010 inch shim covering the clearance hole in the paper pan and the switch sensing arm resting upon the shim, there should be

Min some---Max 0.003 inch \_\_\_\_\_  
 clearance between sensing arm and front edge of switch (under side).

To Adjust

With the switch bracket mounting screws loosened, position switch bracket.  
 Tighten screws and recheck.



(Right Side View)

2.132 Paper Feed Mechanism (continued)

PRESSURE ROLLER RELEASE LEVER SPRING (Latest Design)

To Check

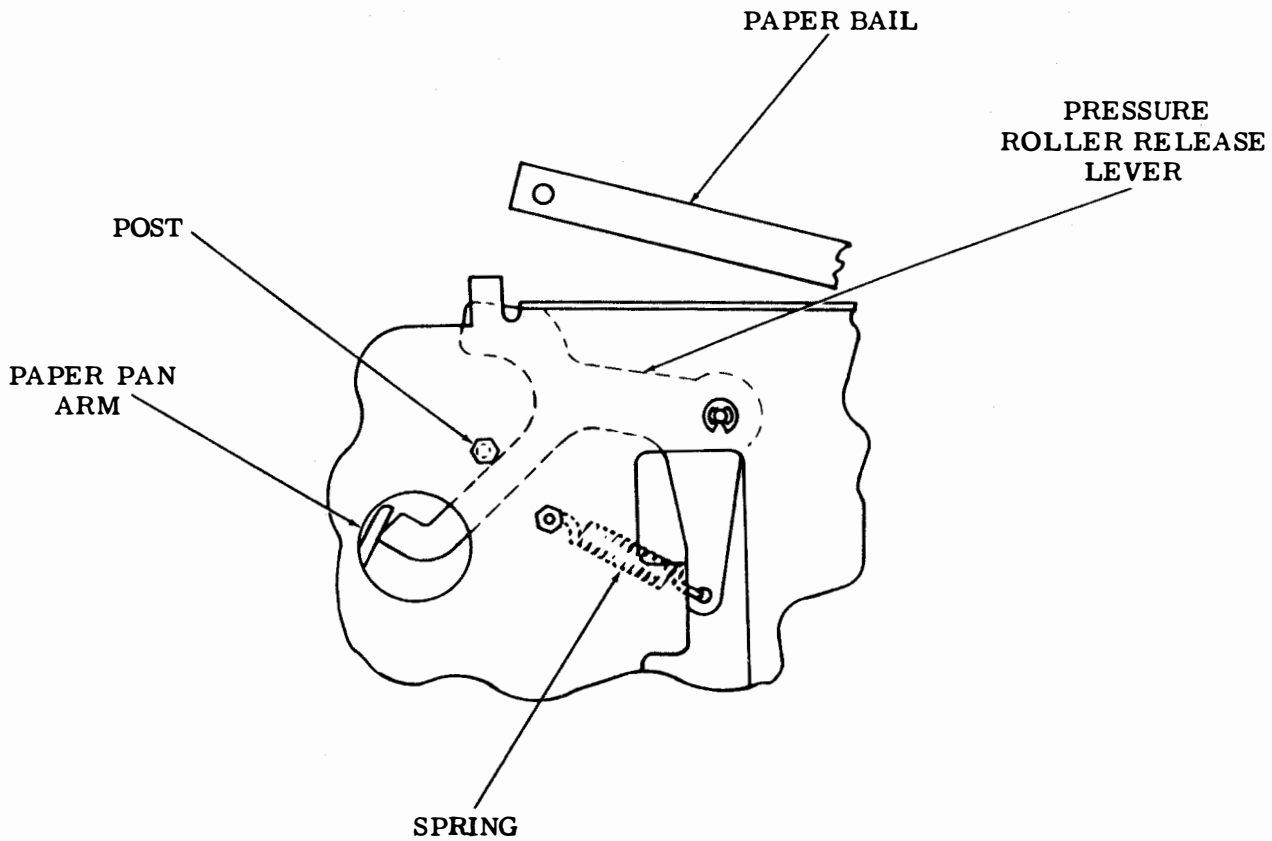
Release the paper bail. The lever should stop against post.

Requirement

With the paper bail in the released position, the lever should move the pressure roller away from the paper feed roller.

To Adjust

Replace spring if requirement is not met.



## 2.14 Paper Feed Mechanism (continued)

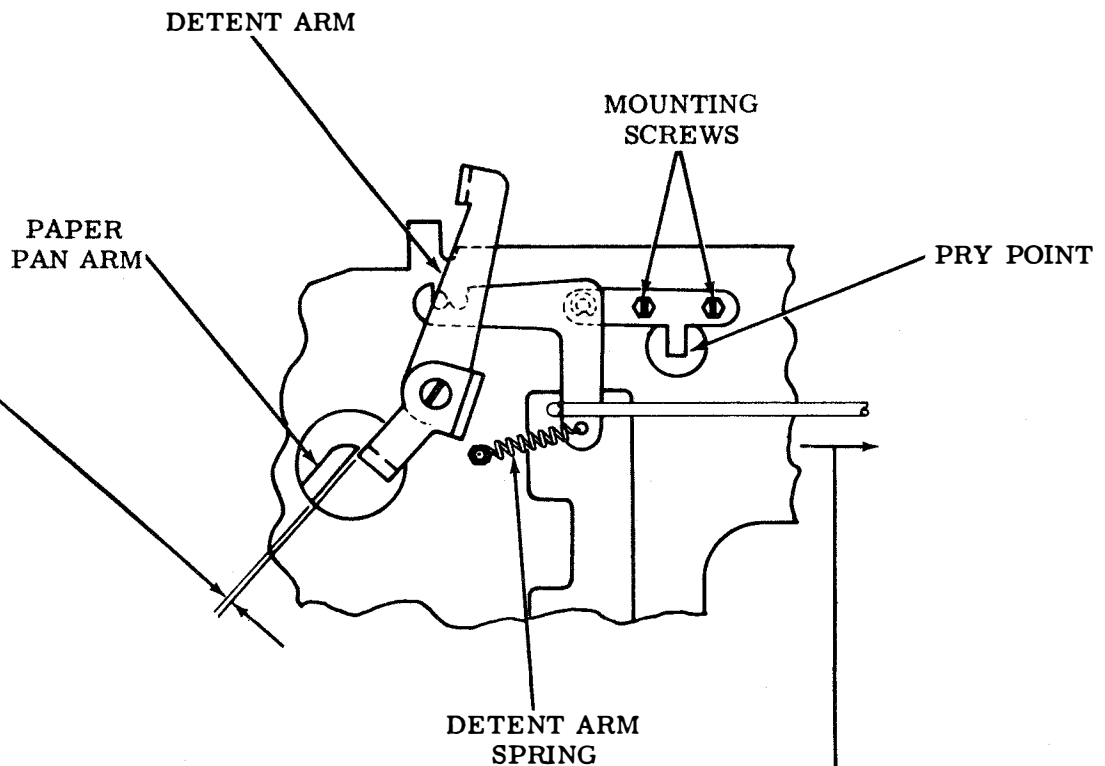
DETENT ARM (Early Design)**Requirement**

With detent arm in released position, clearance between detent arm and paper pan arm should be

Min 0.100 inch---Max 0.125 inch

**To Adjust**

With two screws securing detent pivot arm loosened, position pivot arm using pry point. Tighten screws.

DETENT ARM SPRING**Requirement**

With detent arm in released position

Min 2-1/2 lb

should be required to start arm moving.

2.15 Paper Tensioner Mechanism

PAPER TENSIONER (Early Design)

(1) To Check

Insert a piece of teletypewriter paper in paper tensioner assembly. Turn on motors. Attach spring scale through hole in paper and allow paper to move forward slowly (about 1/2 inch per second) for at least a distance of 2 inches.

Requirement

Pulling force of paper tensioner should be

Min 1-1/4 oz --- Max 2-1/2 oz

When paper is moved, it should move slowly without jerks.

To Adjust

No adjustment possible. If tensioner fails to meet requirement, it should be replaced.

(2) To Check

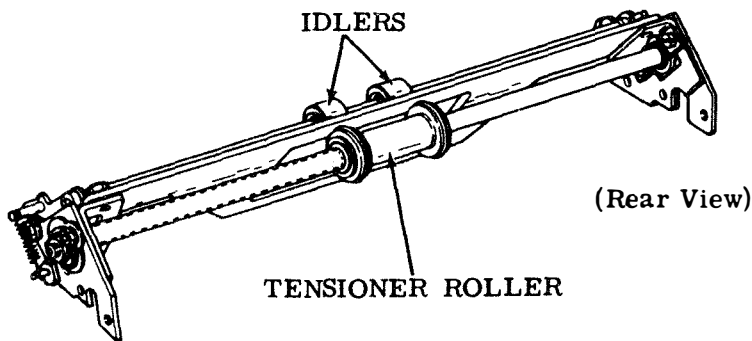
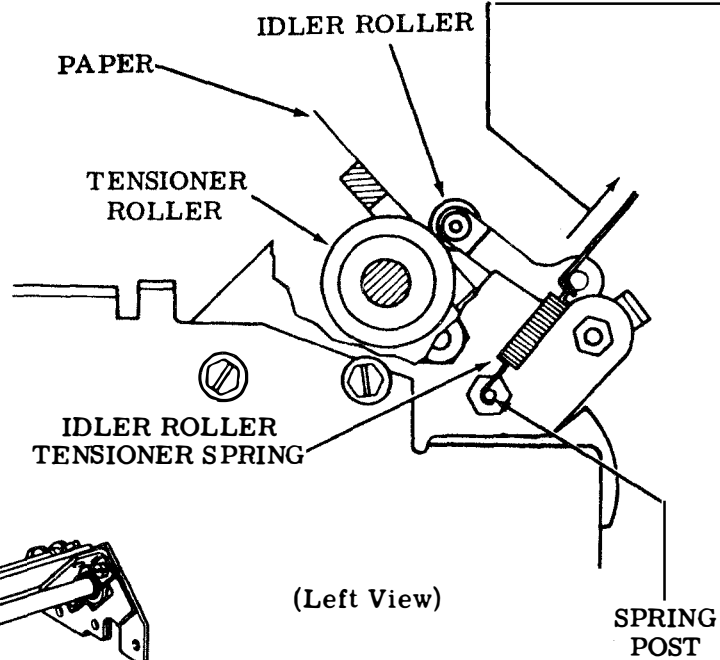
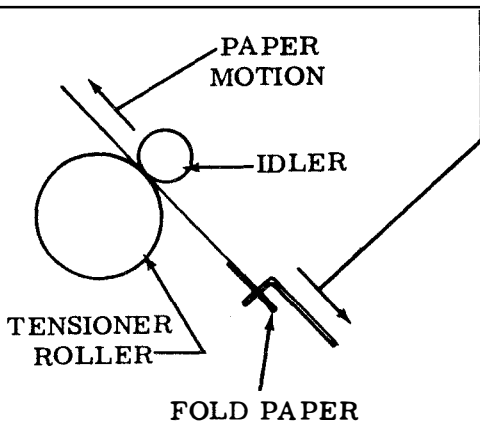
Apply spring scale to stretch each tensioner spring to installed length.

Requirement

Tension should be equal within 1/2 ounce on both springs.

To Adjust

No adjustment possible. If requirement cannot be met, replace spring(s) and recheck.



2.151 Paper Tensioner Mechanism

PAPER TENSIONER (Latest Design)

(1) To Check

Insert a piece of teletypewriter paper in paper tensioner assembly. Turn on motors. Attach spring scale through hole in paper and allow paper to move forward slowly (about 1/2 inch per second) for at least a distance of 2 inches.

Requirement

Pulling force of paper tensioner should be

Min 1-1/4 oz---Max 3-1/2 oz

When paper is moved, it should move slowly without jerks.

To Adjust

No adjustment possible. If tensioner fails to meet requirement, it should be replaced.

(2) To Check

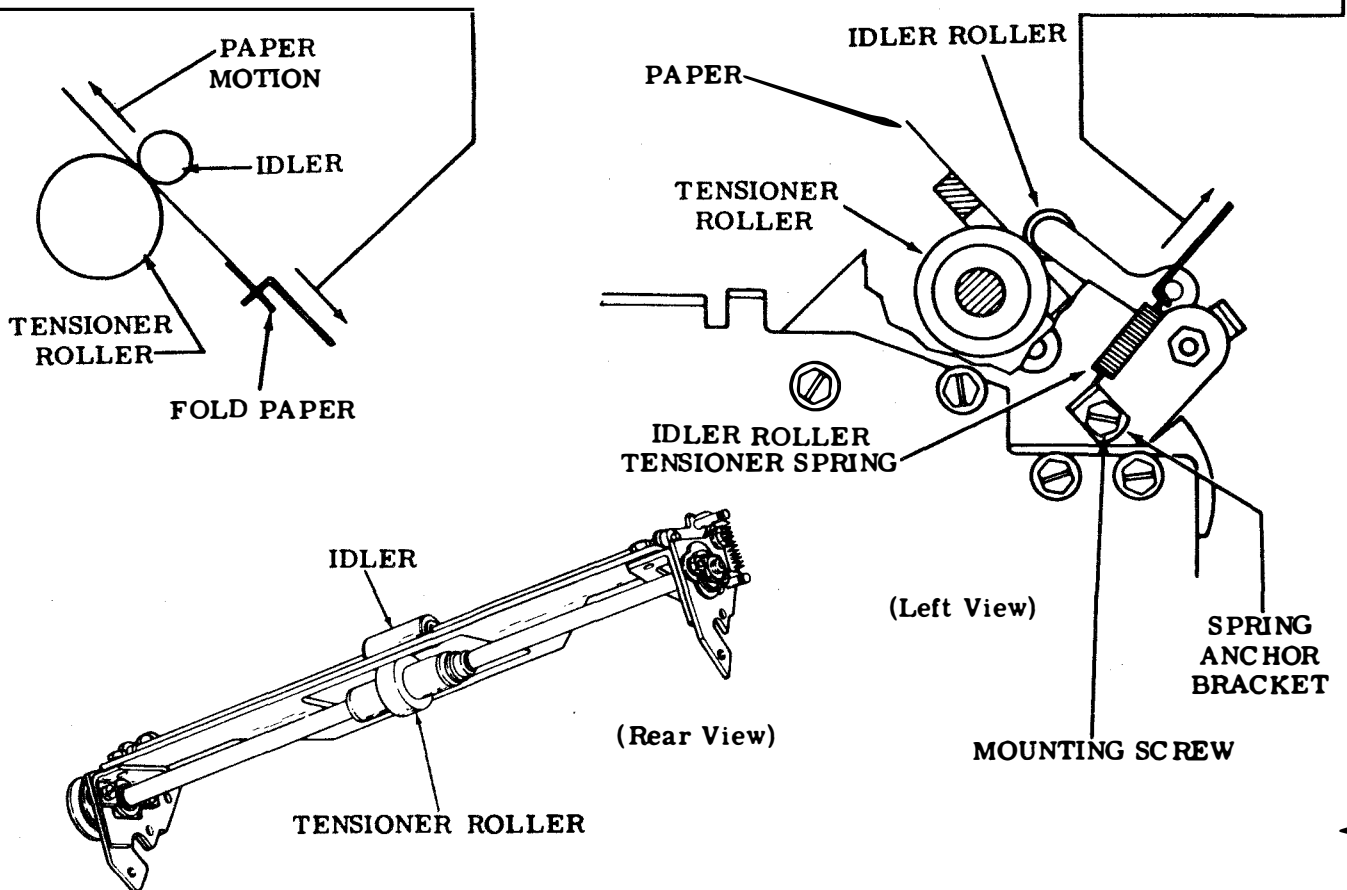
Apply spring scale to stretch each tensioner spring to installed length.

Requirement

Tension should be equal within 1/2 ounce on both springs.

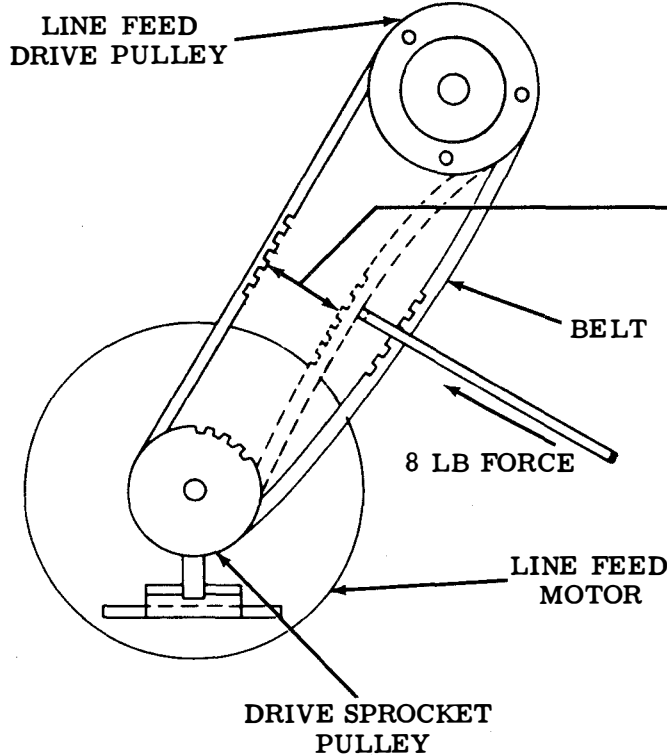
To Adjust

No adjustment possible. If requirement cannot be met, replace spring(s) and recheck.





2.16 Line Feed Mechanism (continued)



LINE FEED DRIVE BELT

**Requirement**

Inside dimensions across belt loop, when an 8 oz force is applied to one side of belt should be

Min 1/2 inch---Max 3/4 inch

**To Adjust**

Position line feed motor with its mounting screws loosened. Tighten screws.

**Note:** Be sure that motor shock mounts do not deflect when force is applied to belt.

LINE FEED ONE-WAY CLUTCH

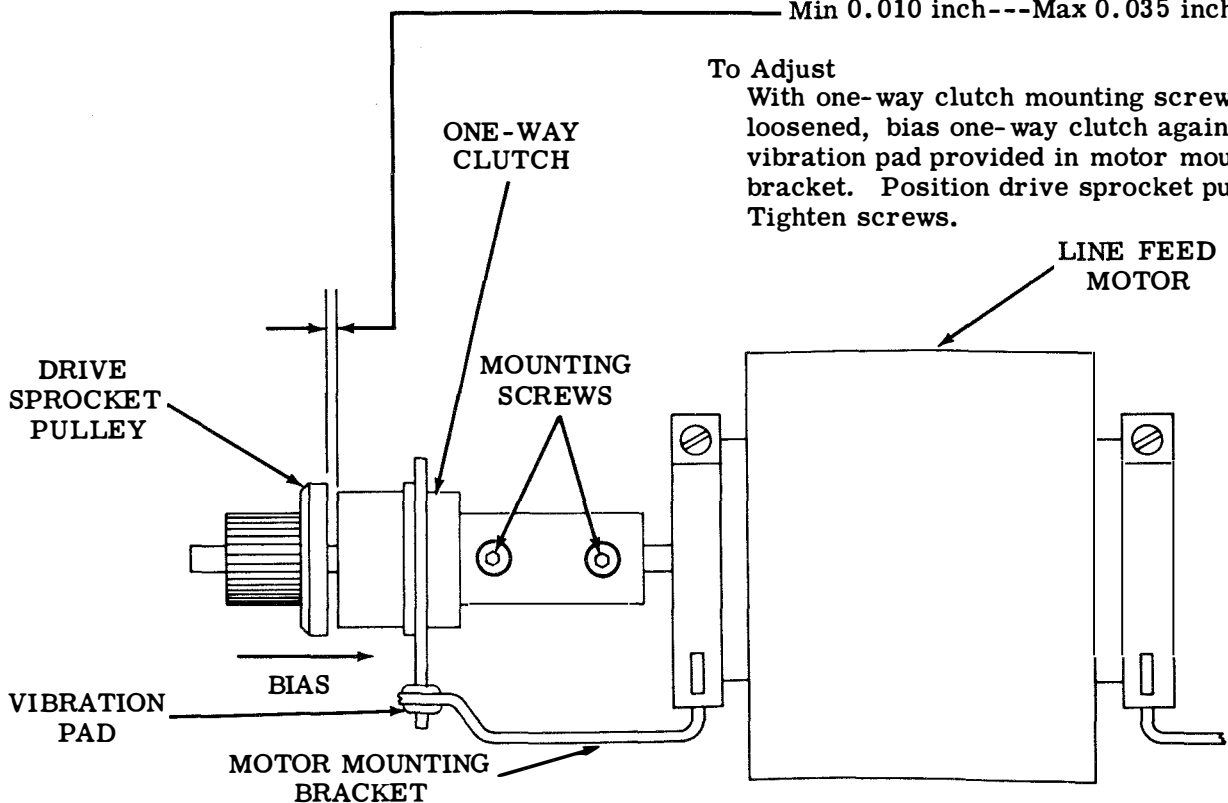
**Requirement**

With clearance taken up between one-way clutch and motor mounting bracket

Min 0.010 inch---Max 0.035 inch

**To Adjust**

With one-way clutch mounting screws loosened, bias one-way clutch against vibration pad provided in motor mounting bracket. Position drive sprocket pulley. Tighten screws.



2.17 Line Feed Mechanism (continued)

PAPER FEED GUIDE

(1) Requirement

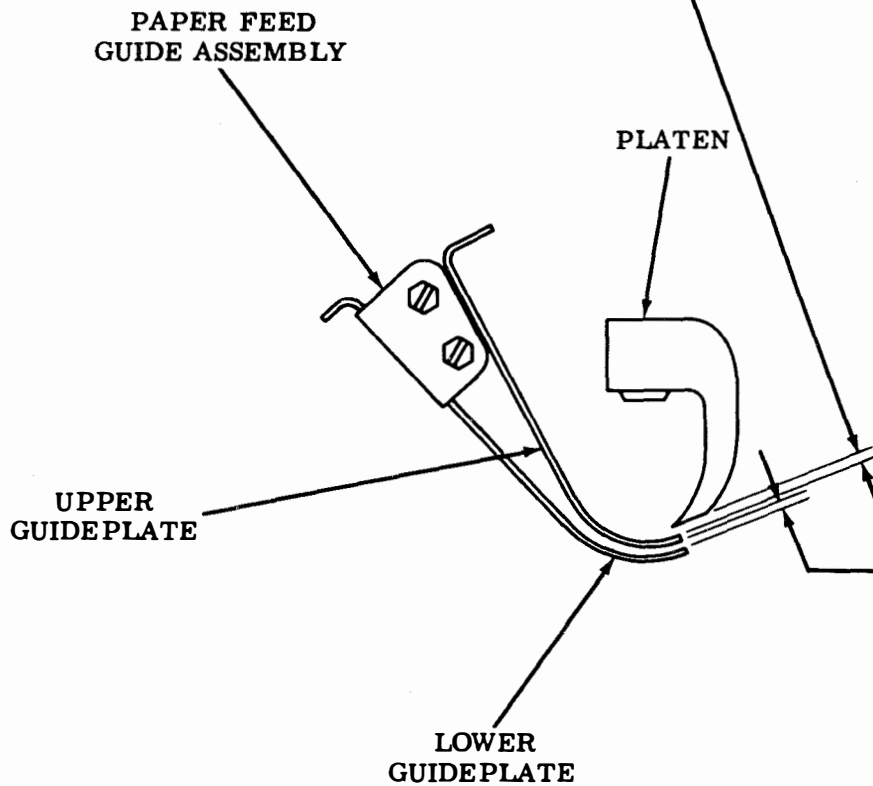
Clearance between upper guideplate and lower guideplate should be  
Min 0.040 inch---Max 0.055 inch

(2) Requirement

Clearance between lower edge of platen and upper edge of paper guide should be  
Min 0.020 inch  
and should be parallel within 0.015 inch.

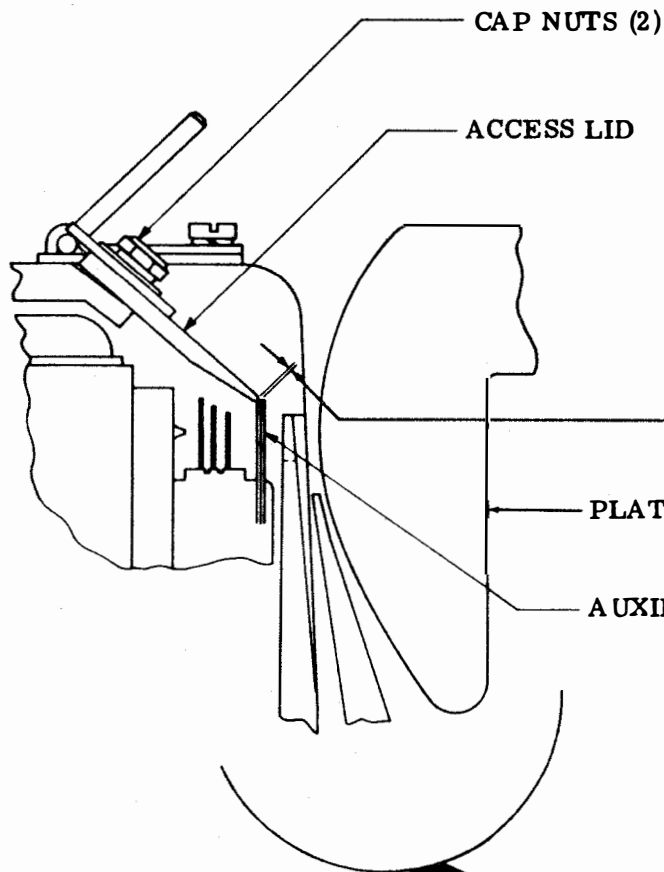
To Adjust

If requirements cannot be met, paper feed guide assembly should be replaced.





2.18 Printing Mechanism



ACCESS LID

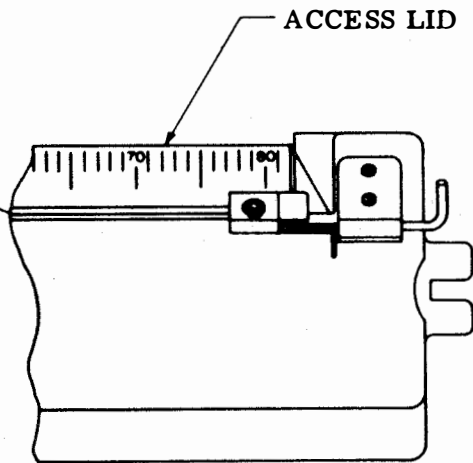
**Requirement**

With recorder mounted on transport (tank cover on), uniform clearance should exist between front of access lid and rear edge of electrode mask (check closest point).

Min some--- Max 0.005 inch

**To Adjust**

Loosen cap nuts (2) on access lid and position lid.



(Top View)



## 2.181 Printing Mechanism (continued)

PLATEN-MANIFOLD CLEARANCE**Requirement**

Clearance between platen and recorder manifold should be

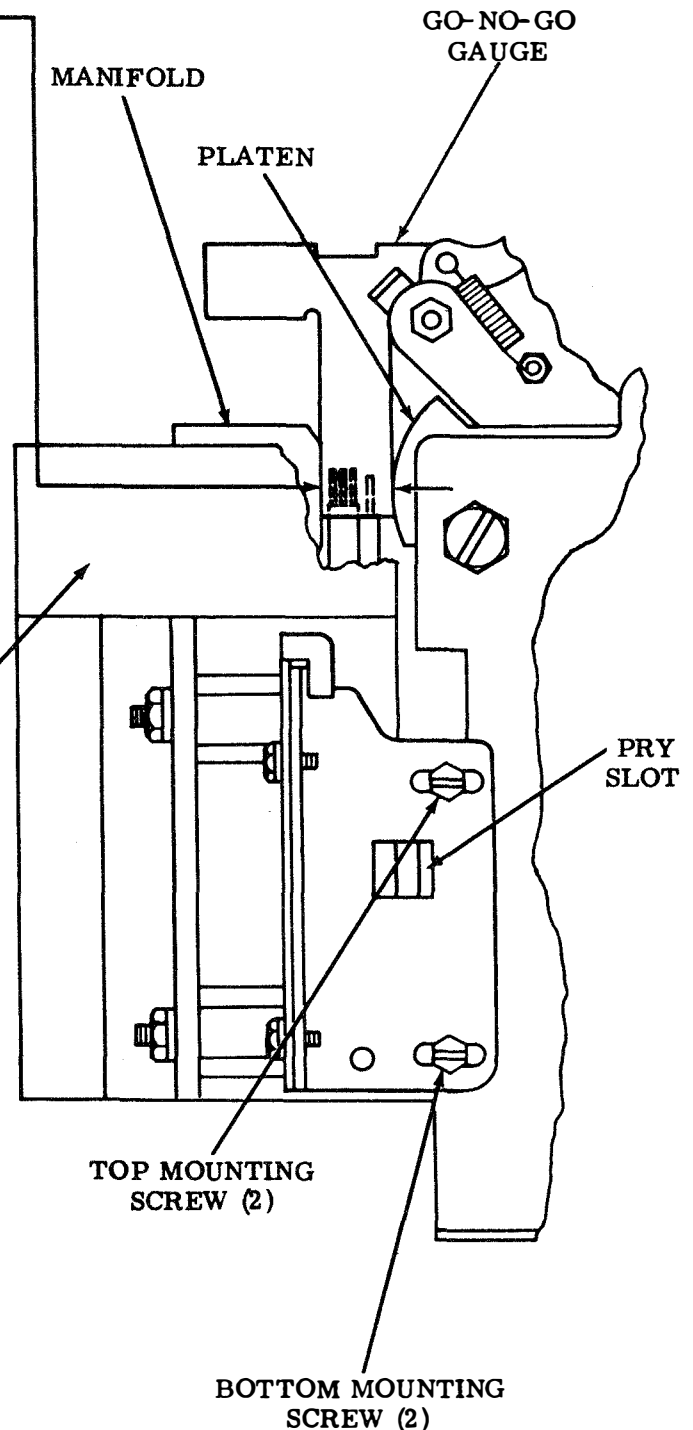
Min 0.584 inch -- Max 0.594 inch

**To Adjust**

Remove recorder tank cover. Loosen four mounting screws on left and right side brackets, attached to paper transport, which mount the recording head to paper transport. Retighten top mounting screws friction tight. Place go-no-go gauge (TP331041) between front edge of left end of manifold and the platen. Use pry slot to position manifold against gauge. Tighten top mounting screw on left side. Place gauge between right side of manifold and the platen, and use pry slot to position manifold against gauge. Tighten the two mounting screws on right side plate, and bottom screw on left side plate. Check platen-manifold clearance from right to left using go-no-go gauge. Refine adjustment, if necessary, and replace tank cover.

RECORDER  
(Cover Removed)

(Right Side View)



3. LUBRICATION

3.01 The general servicing interval for the recorder and paper transport mechanisms is 5000 operating hours or 1000 rolls of paper run through the transport, whichever occurs first. At this point the unit should be disassembled, cleaned, lubricated, reassembled, and adjusted.

3.02 The following are secondary servicing intervals at which time partial servicing should be accomplished. The secondary servicing intervals are necessary because of the need for: (1) paper lint accumulation, dependent maintenance, and (2) time dependent maintenance.

(a) At 6 month intervals or 100 rolls of paper run through the machine, whichever comes first, perform the following:

- (1) Clean and lubricate the escapement wheel and escapement pawl.
- (2) Oil (2 drops) the line feed bearings.
- (3) Disassemble, clean, reassemble, adjust, and lubricate the paper tensioner assembly.
- (4) Clean the paper tensioner pressure roller (nylon covered) with a shop towel (TP310397) moistened with trichloroethylene.
- (5) Check to see if any ink or lubricant has dripped onto the escapement armature or magnet pole faces; if it has, clean them thoroughly.

(b) At the general servicing interval, or when servicing is required due to improper operation, the following parts should be checked for wear or cracks:

- (1) Escapement wheel
- (2) Escapement pawl
- (3) Escapement pawl pivot shaft

- (4) Line feed roller (rubber covered)
- (5) Pre-paper puller roller (rubber covered)
- (6) "O" rings on paper tensioner roller
- (7) All drive belts (line feed, paper tensioner, and pre-paper puller).

**CAUTION: REMOVE POWER FROM SET BEFORE AN ATTEMPT IS MADE TO INSPECT, LUBRICATE, OR CLEAN ANY PORTION OF THE UNIT.**

3.03 The photograph shows paragraph numbers referring to particular line drawings of mechanisms and illustrates the location of these mechanisms on the unit. Parts are shown in an upright position, viewed from the front of the unit, unless otherwise specified.

3.04 Spring loops, felt washers, and certain shafts should be oiled. The friction surfaces of all exposed moving parts should be lubricated; however, overlubrication should be avoided. Exercise care to prevent oil or grease from getting between magnet armature pole faces. Keep all electrical contacts free of ink, oil, or grease. Also, keep the cover gasket free of contamination.

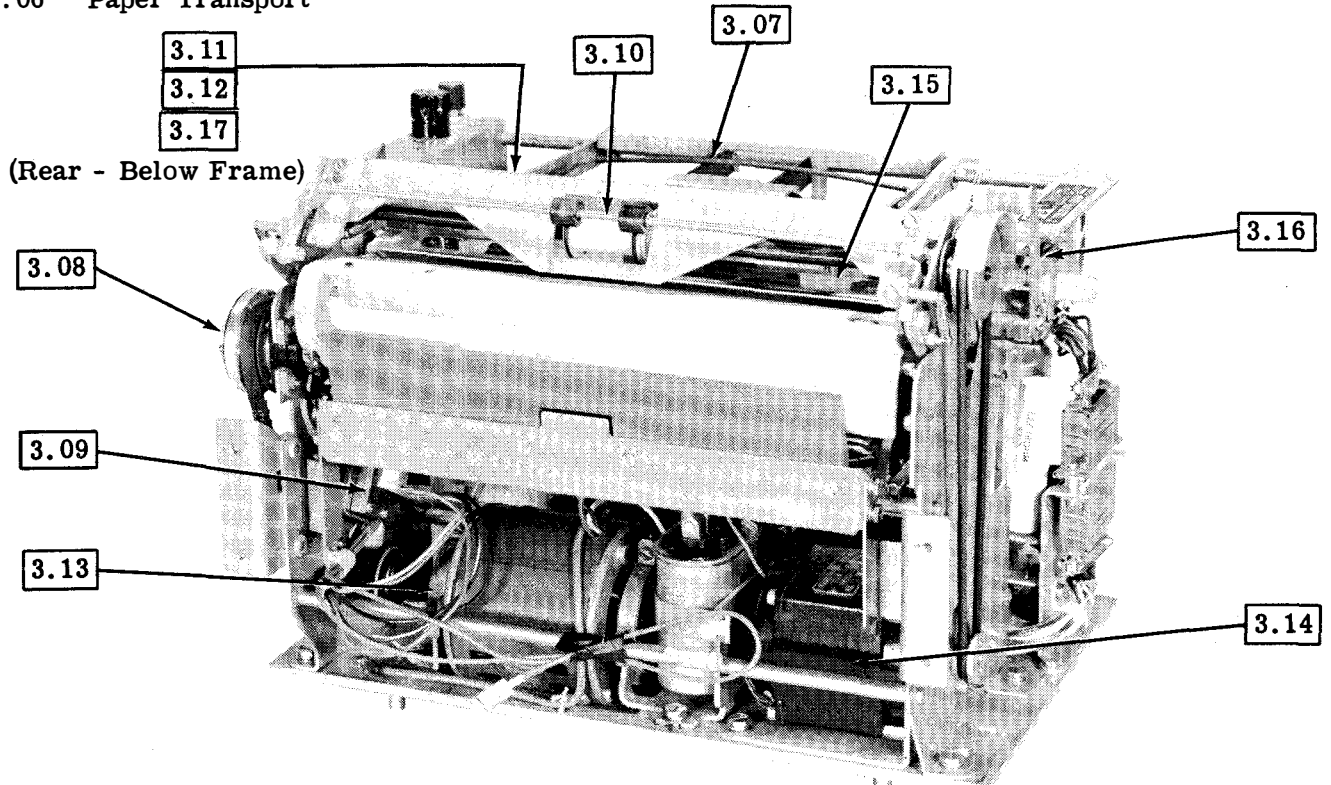
3.05 Refer to Section 570-005-800TC for lubricant ordering information.

3.06 The following symbols are used to indicate the type and amount of lubricant required:

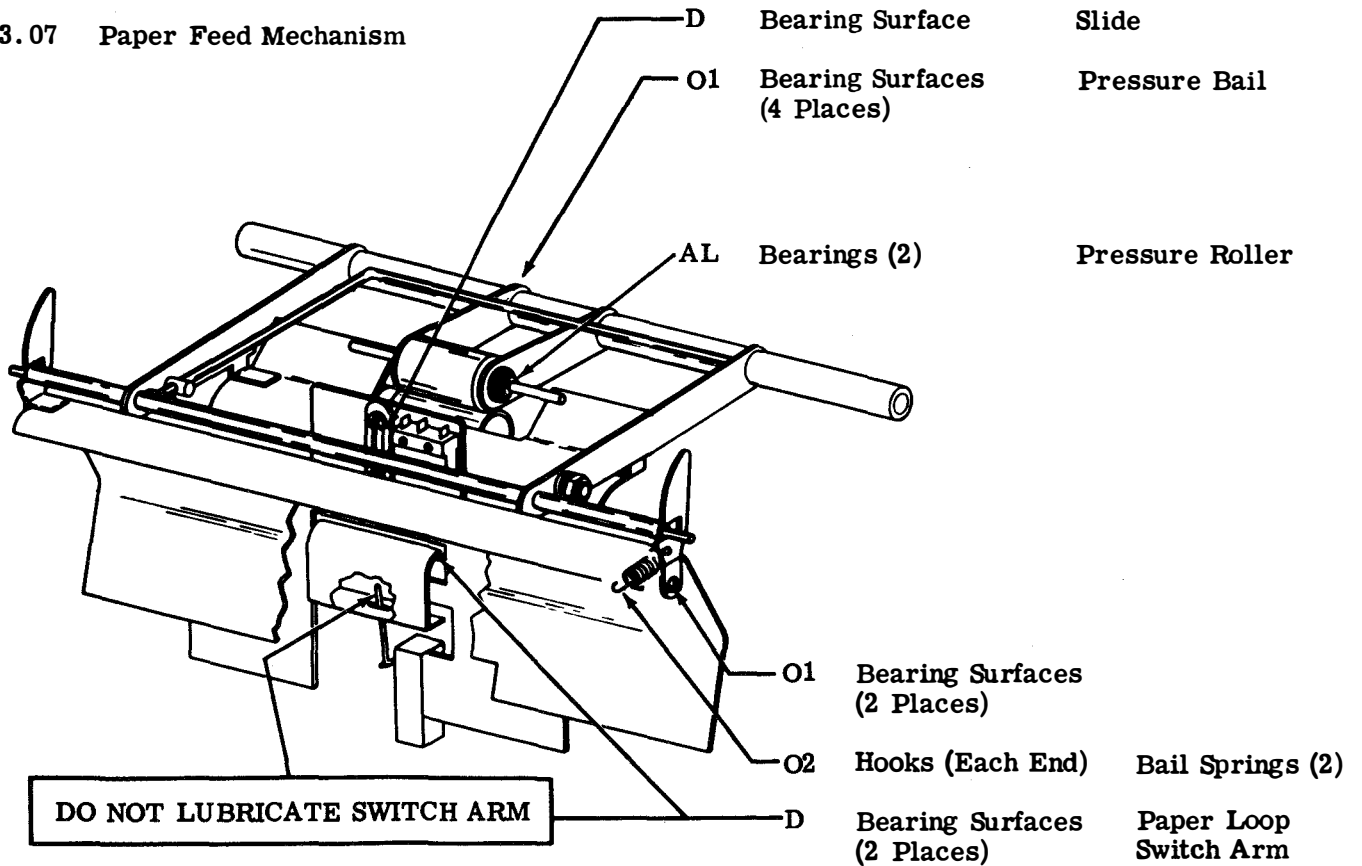
<u>Symbol</u>	<u>Meaning</u>
O1	One drop of oil (KS7470)
O2	Two drops of oil (KS7470)
O3	Three drops of oil (KS7470)
G	Thin coat of tacky grease (TP145867)
AL	Areo Lubriplate (TP301313) or Lubriplate 105 (TP108805)
D	Keep dry — do not lubricate

**Note:** Before lubricating, remove old lubricant and clean parts wherever possible.

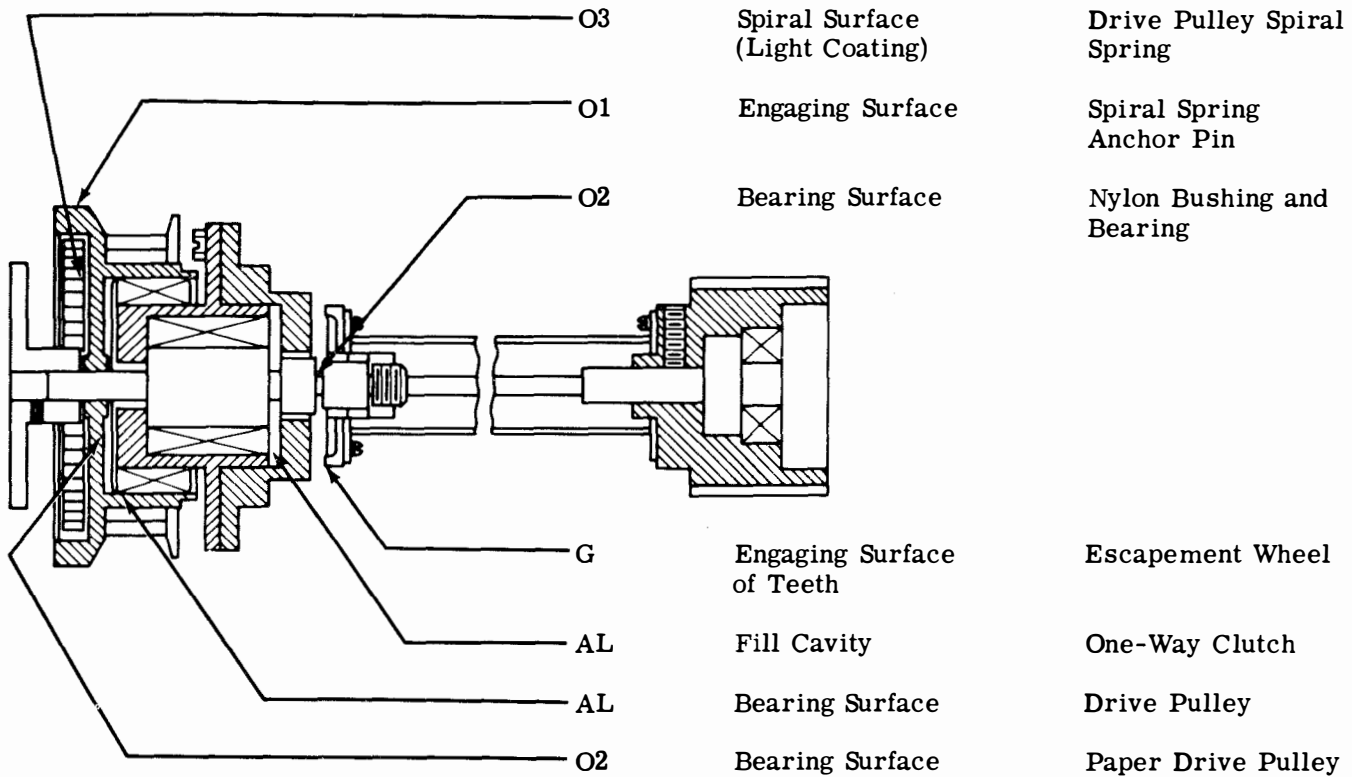
3.06 Paper Transport



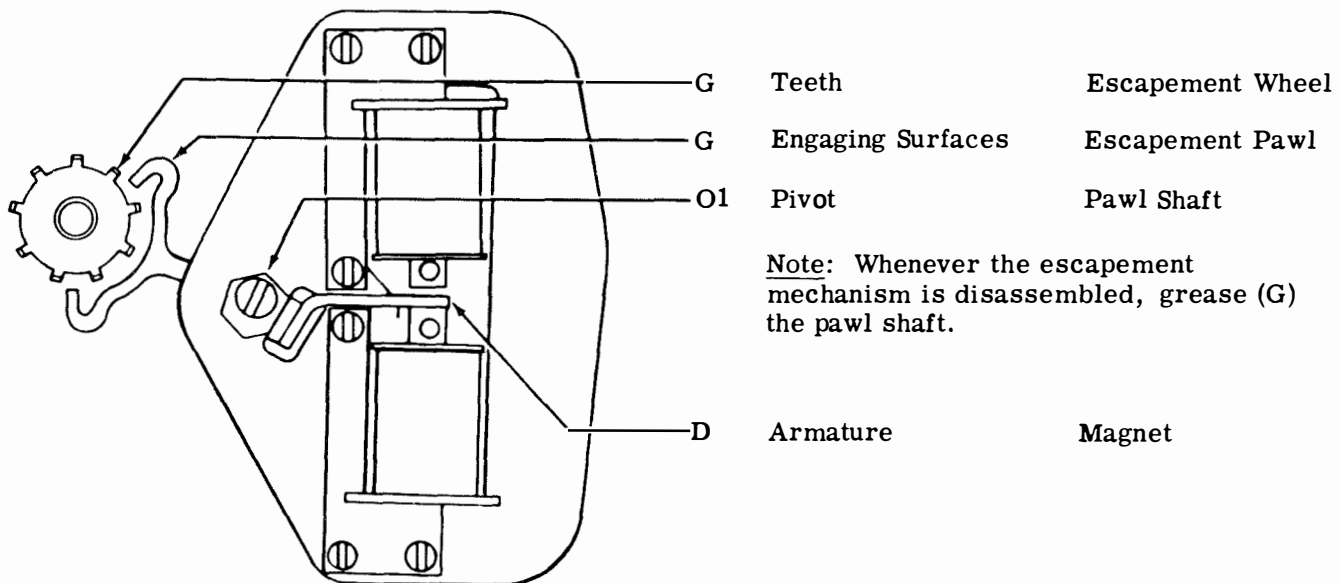
3.07 Paper Feed Mechanism



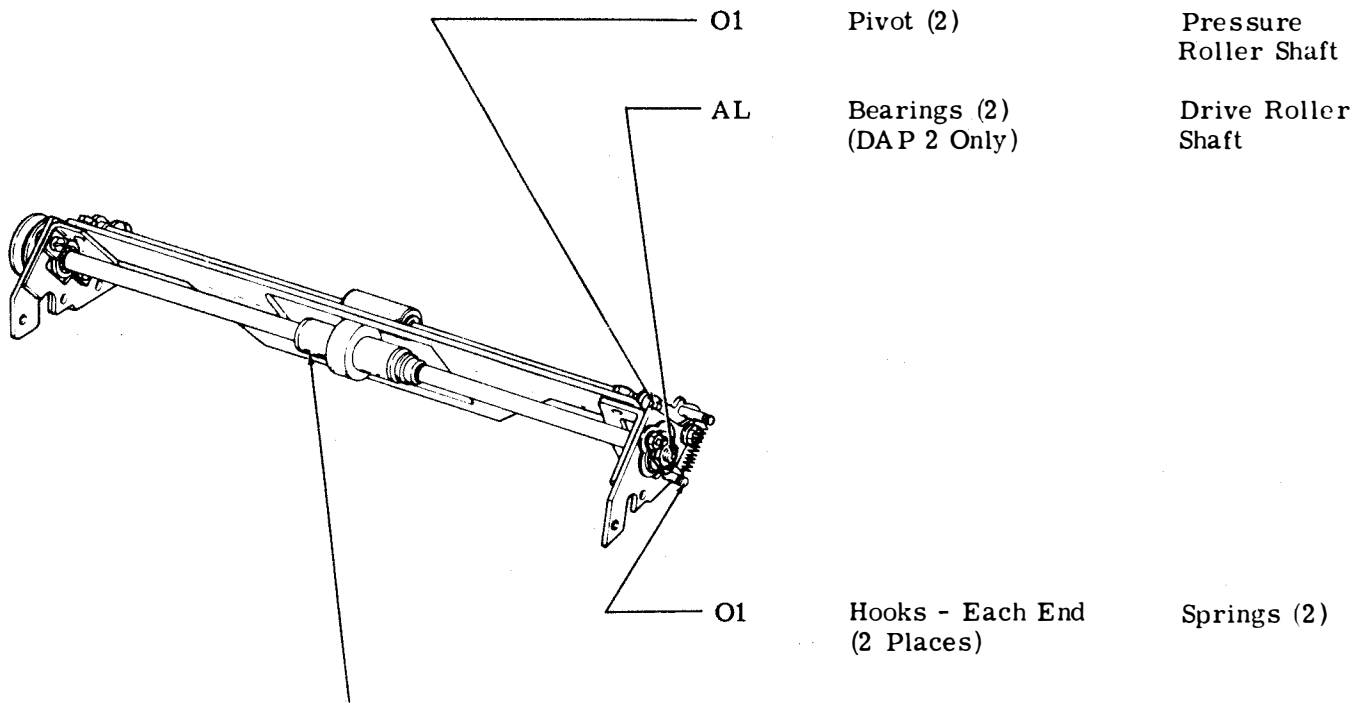
3.08 Clutch Assembly



3.09 Escapement Mechanism



3.10 Tensioner Mechanism (Latest Design)



DRIVE ROLLER ASSEMBLY IS PERMANENTLY LUBRICATED AND SHOULD NOT REQUIRE ANY ADDITIONAL LUBRICANT.

CAUTION: DO NOT USE ANY SOLVENTS TO CLEAN THIS ASSEMBLY.

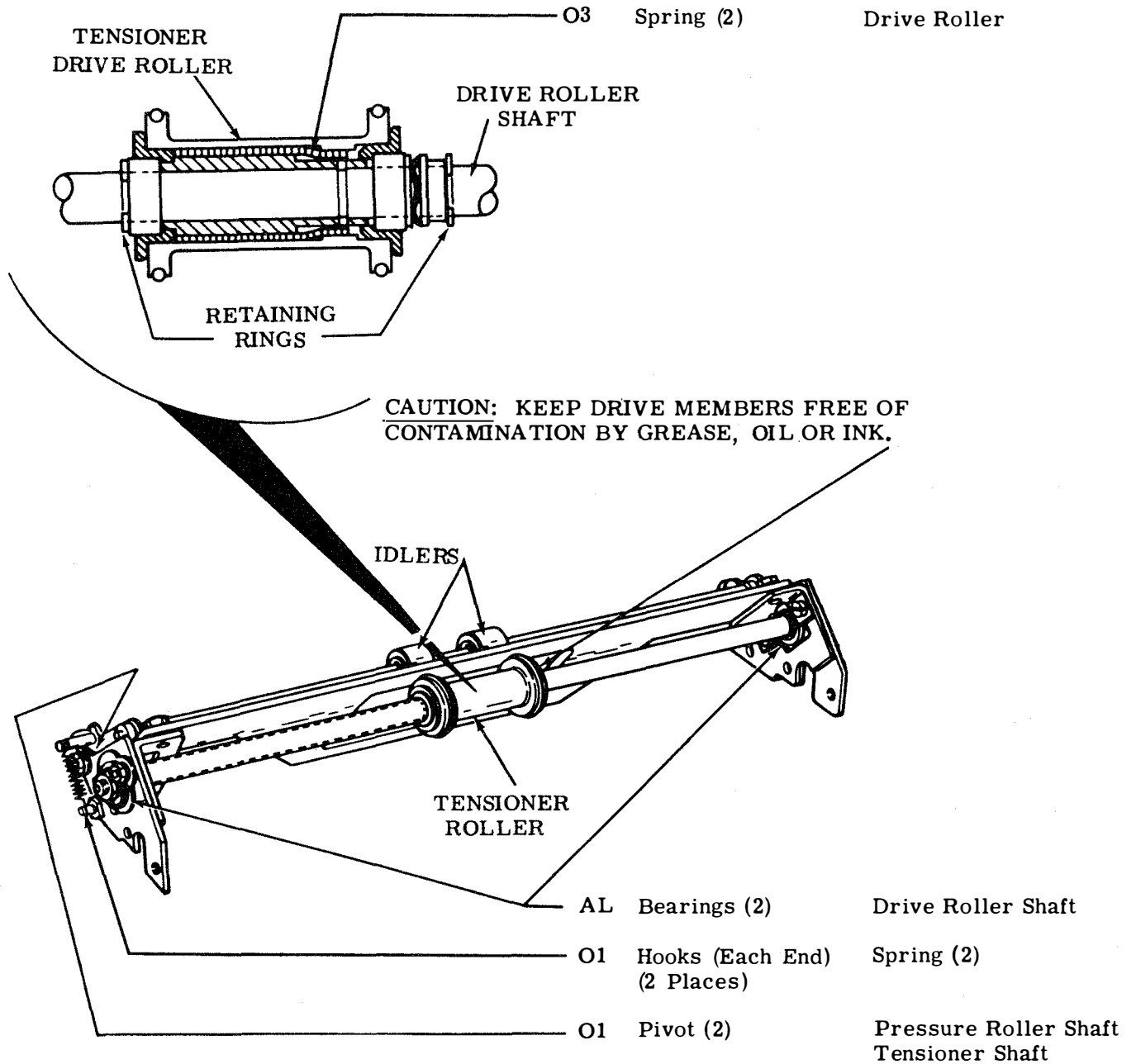




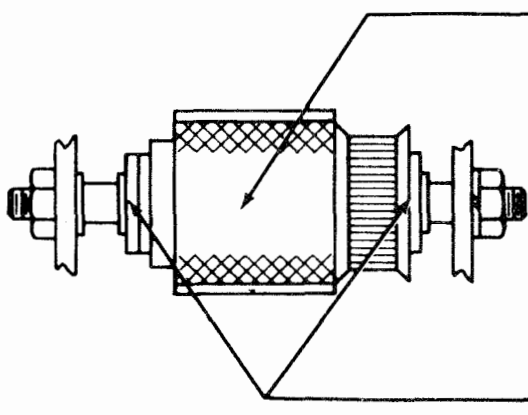
3.101 Tensioner Mechanism (Early Design)

Note: Disassemble paper tensioner to facilitate lubrication.

Procedure — remove tensioner shaft assembly from printer and remove retaining ring from each end of roller assembly. Rotate drive roller counterclockwise while holding shaft stationary and exerting approximate 8 ounces pull to separate the shaft and roller. Clean and oil; then reassemble in the reverse order.



3.11 Pre-Paper Puller Roller Assembly

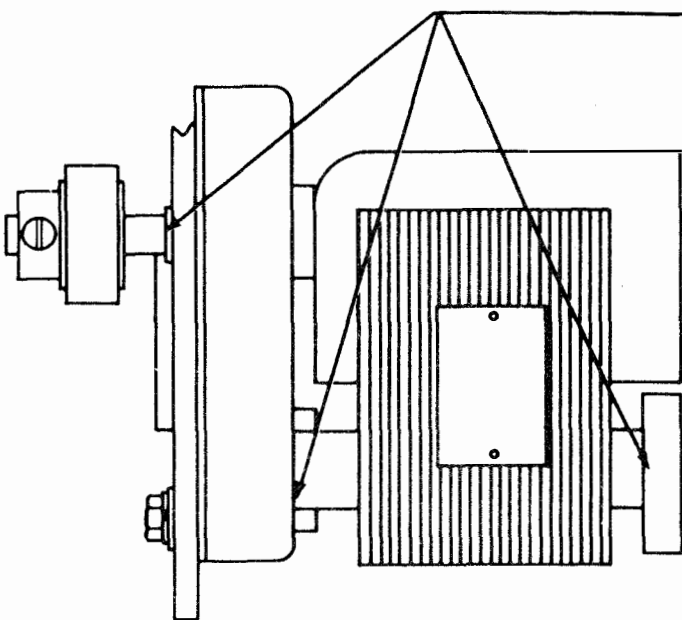


Fill Cavity      One-Way Clutch

Note: In order to lubricate the one-way clutch and roller bearings, the roller assembly must be disassembled from its shaft.

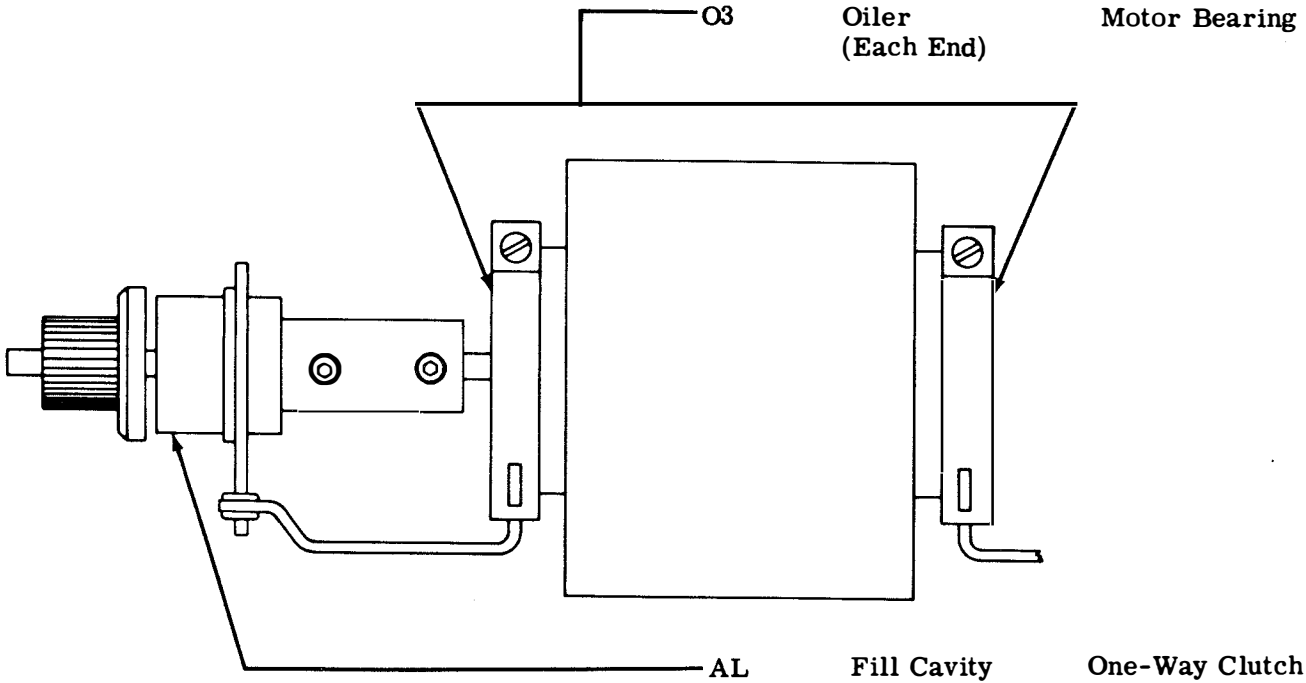
Bearings (2)      Roller Bearings

3.12 Pre-Paper Puller Motor Assembly



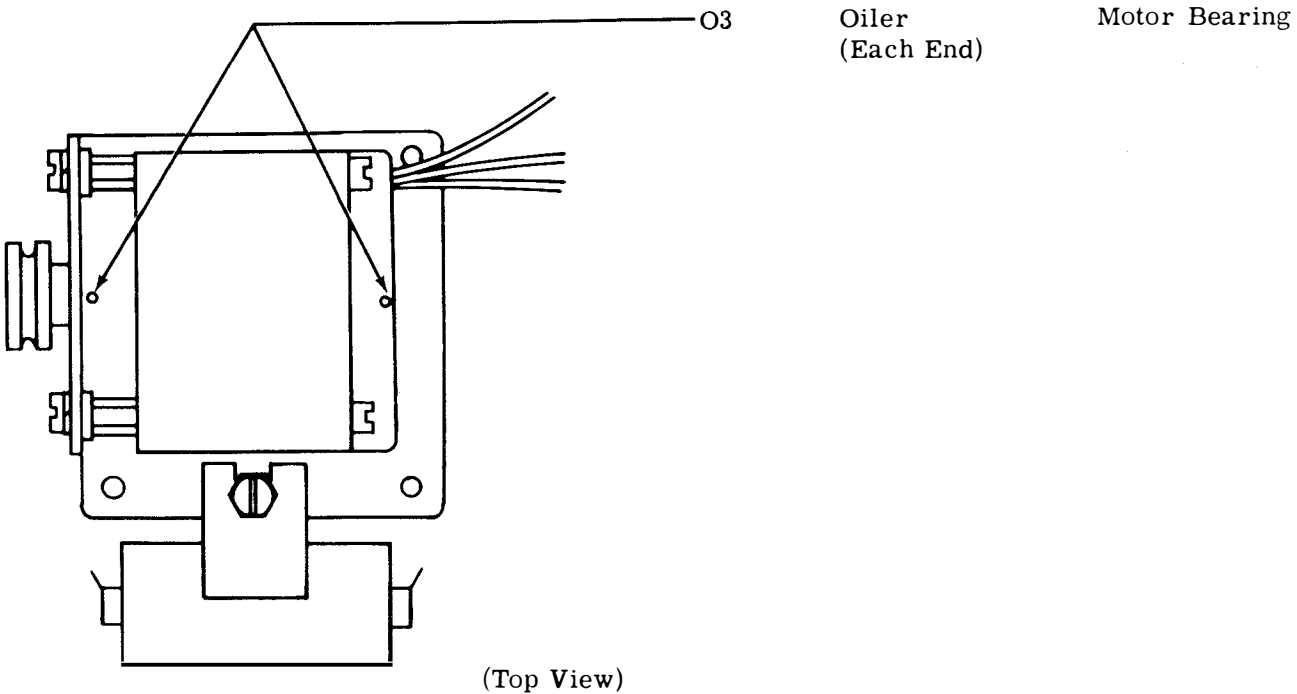
Bearings (3)      Motor Bearings

3.13 Line Feed Motor Assembly

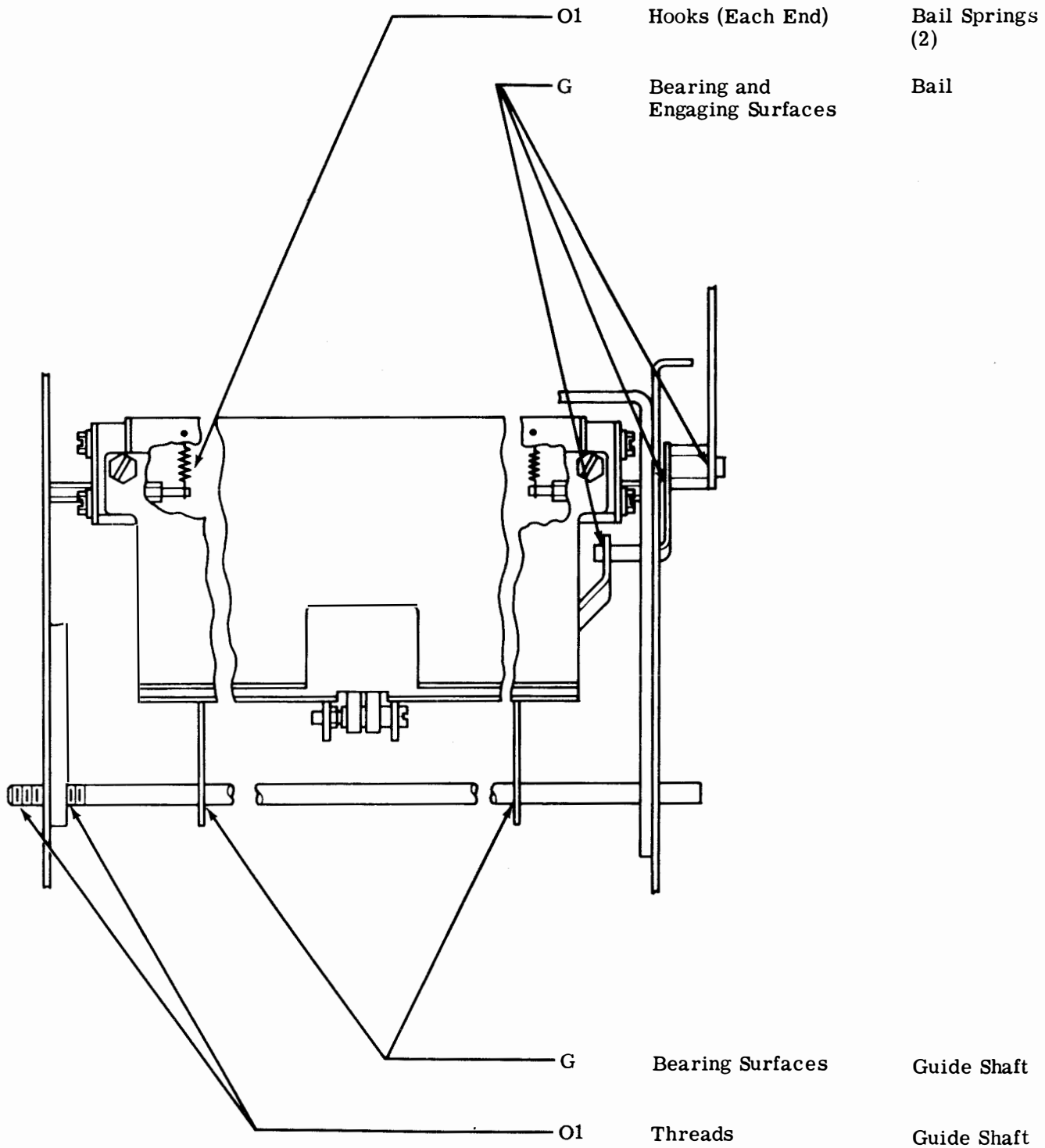


Note: In order to lubricate the one-way clutch, it must be removed from the motor shaft.

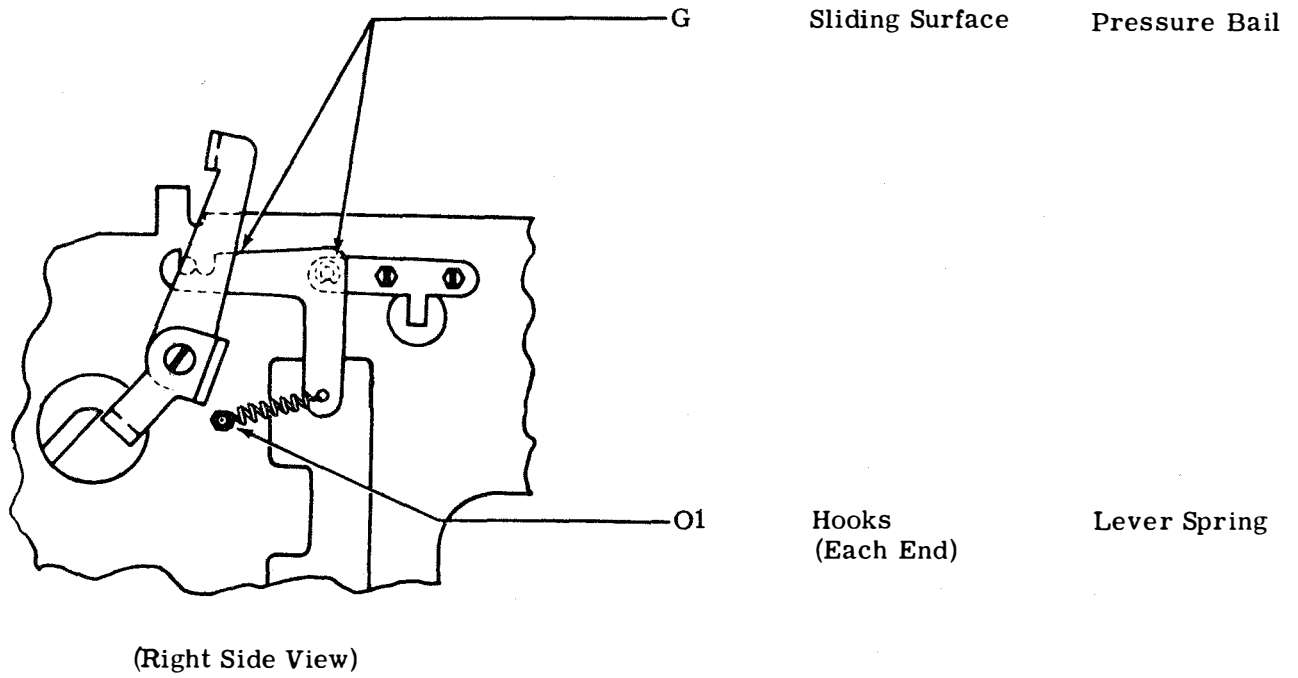
3.14 Paper Tensioner Motor Assembly



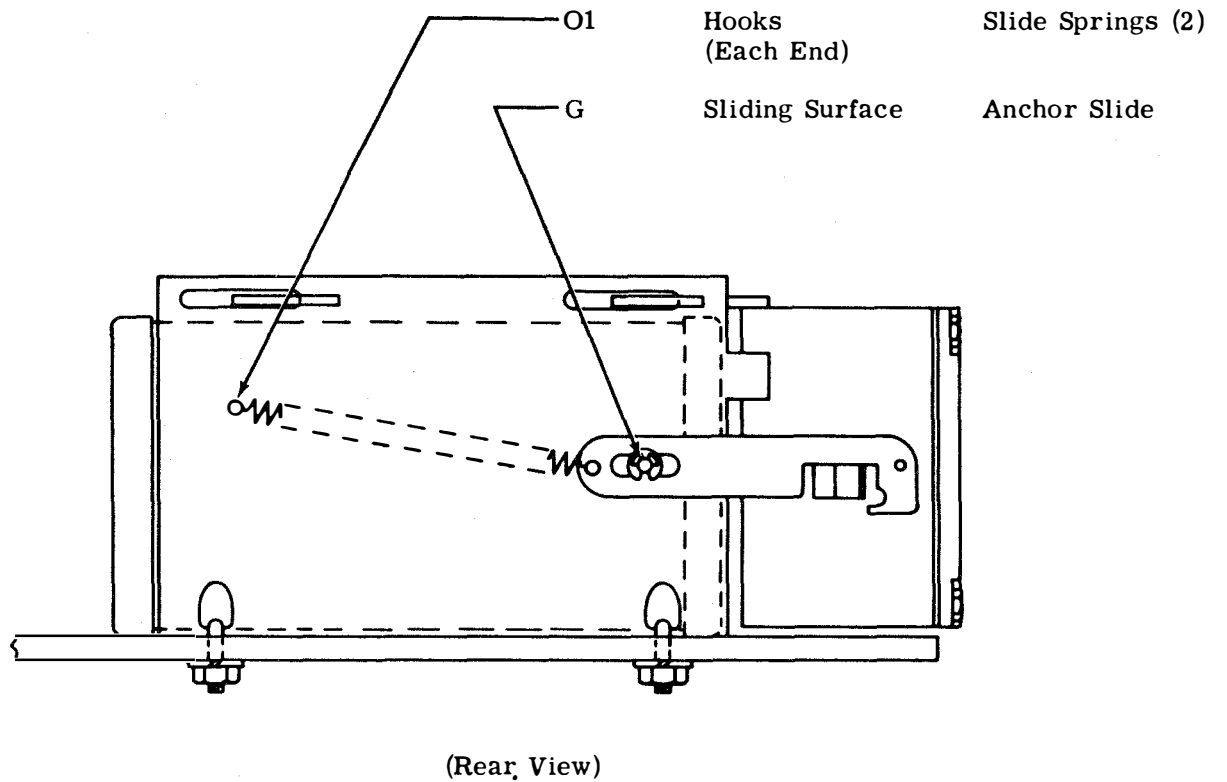
3.15 Paper Guide Assembly



3.16 Right Side Frame (Early Design)



3.17 Power Supply Cap Retainers



3.18 Right Side Frame (Latest Design)

