RECORDER AND PAPER TRANSPORT

FOR "DATASPEED"* PRINTER

ADJUSTMENTS AND LUBRICATION

CONTENTS PAGE

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1. GENERAL

1.01 This section provides the adjustments and lubrication procedure for the maintenance of the page recorder and paper transport mechanisms of the "DATASPEED" printer. It is being reissued to incorporate all recent engineering changes and technical comments not previously presented. Since Issue 1 was printed in limited quantity, this is the first general distribution of this section.

2. ADJUSTMENTS

CAUTION: REMOVE POWER FROM SET BEFORE CHECKING OR MAKING ADJUSTMENTS UNLESS OTHERWISE STATED.

2.01 To check or make adjustments that do not require power, remove the recorder and transport mechanisms from the enclosure. Care should be taken during removal so that delicate mechanisms are not damaged.

2.02 To check or make adjustments that do require power, the recorder and paper transport mechanisms should remain in their normal operating position.

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

2.03 The adjustments are arranged in a sequence that should be followed as if a complete readjustment of the unit were being

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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 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.

2.04 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.

CAUTION: KEEP RECORDER AND TRANSPORT MECHANISMS IN AN UPRIGHT POSITION OR REMOVE RECORDER FROM THE TRANSPORT TO AVOID SPILLING INK. THIS INK HAS POWERFUL STAINING PROPERTIES AND DOES NOT READILY DRY.

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

2.07 Parts ordering information can be obtained from 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 mechanisms.

Number	Description
TP310430	Feeler gauge set
TP331041	Go-no-go gauge
TP331042	Spacer tool

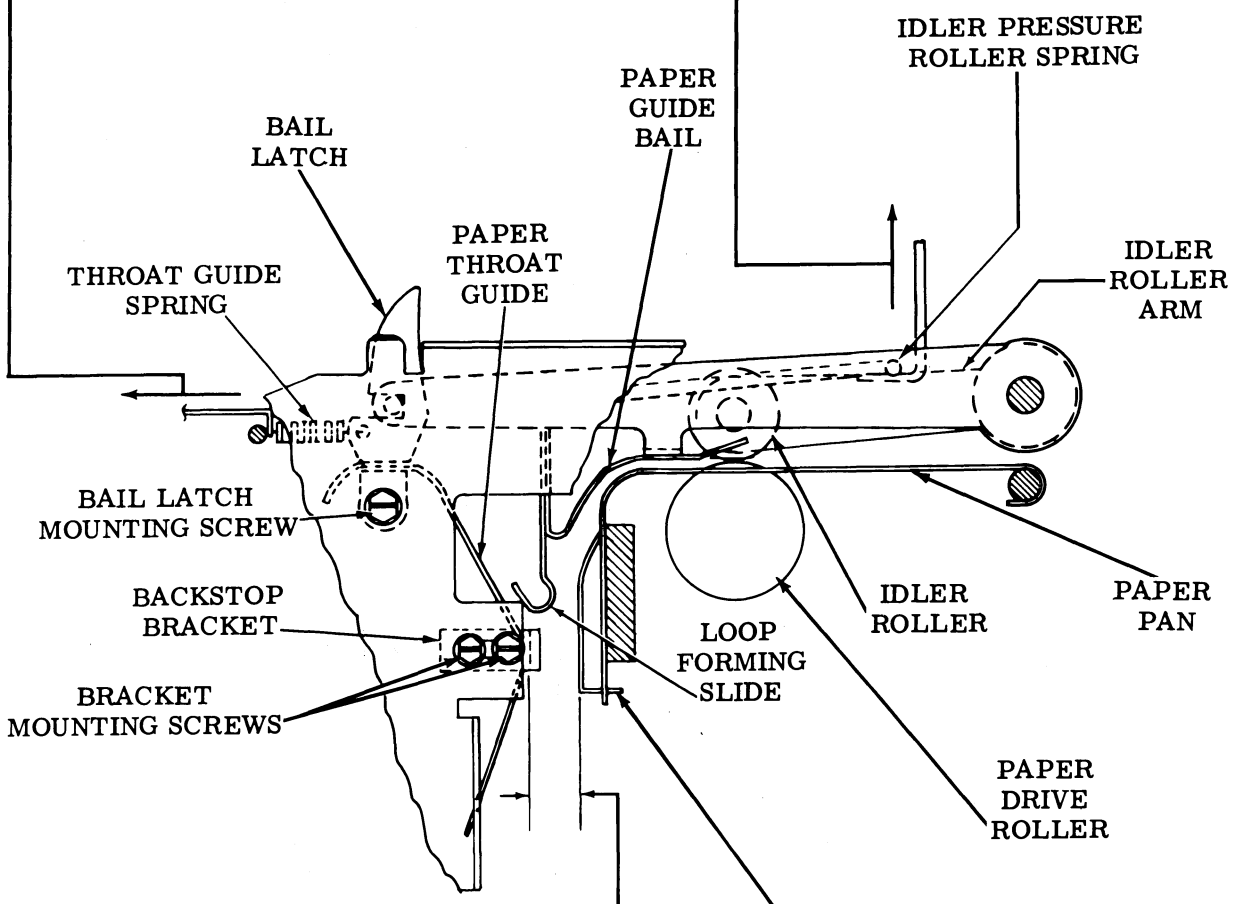
2.08 Paper Feed Mechanism

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 9 lb---Max 12 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

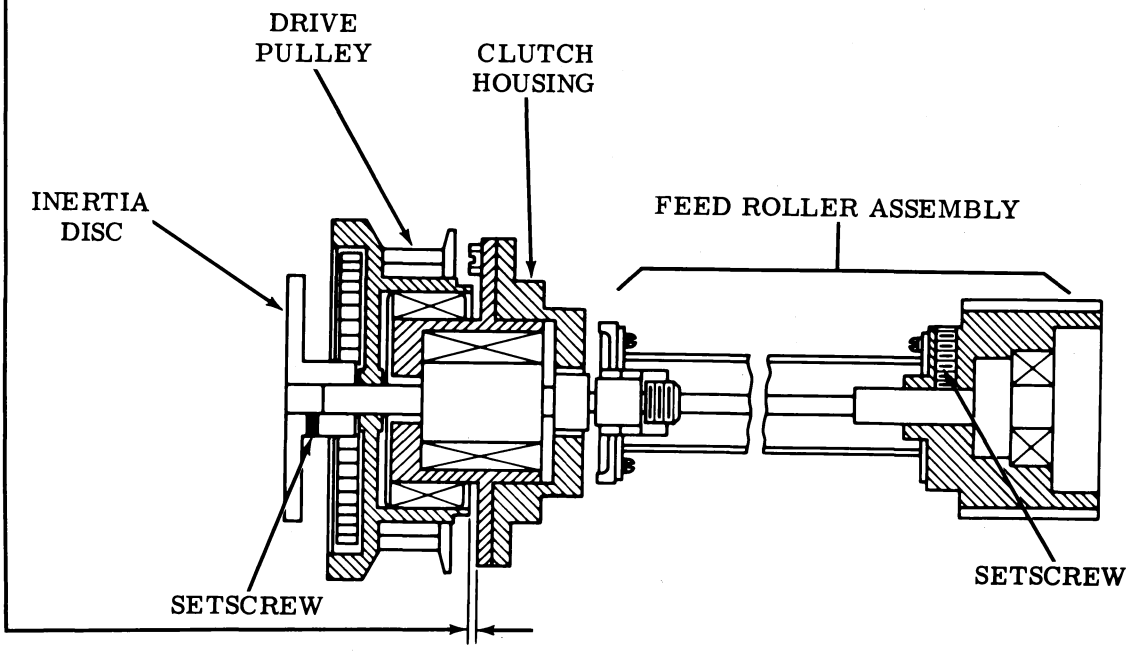
Requirement

Clearance between drive pulley and clutch housing should be
Min 0.025 inch---Max 0.030 inch

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)

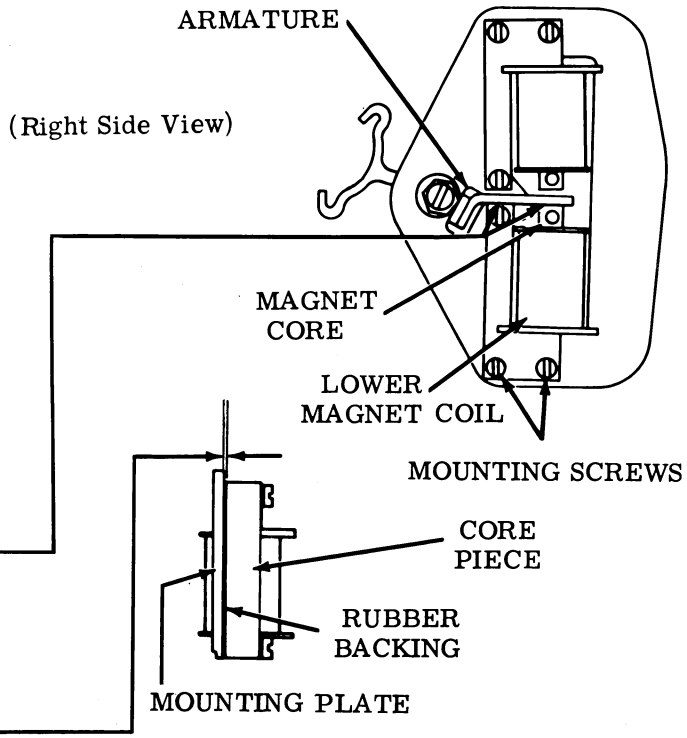
LOWER MAGNET ARMATURE

Note: This and the next adjustment should be checked or made with the magnet assembly removed. It may be necessary to remove the transport mechanism from its enclosure in order to facilitate magnet removal. After magnet assembly is removed, return transport mechanism to its normal operating position.

(1) Requirement
Armature should be in contact with both sides of lower magnet core when magnets are electrically energized with a current of 1 amp dc (1 amp dc is provided during actual operation).

(2) Requirement
Rubber backing should be compressed when mounting screws are tightened to leave
Min 0.030 inch---Max 0.040 inch
clearance between mounting plate and core piece.

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



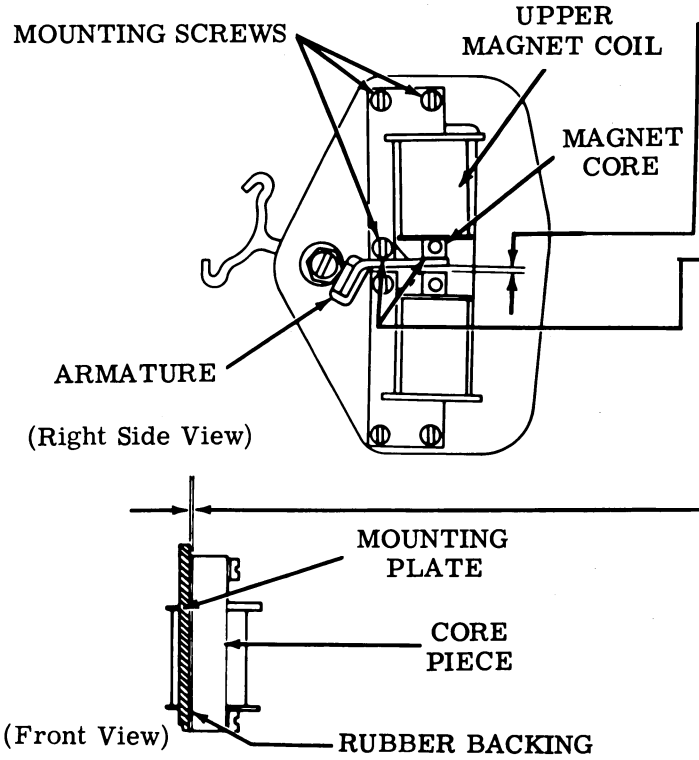
UPPER MAGNET ARMATURE

(1) Requirement
With armature in firm contact with upper magnet core, clearance between armature and lower magnet core should be
Min 0.028 inch---Max 0.032 inch
where clearance is the least.

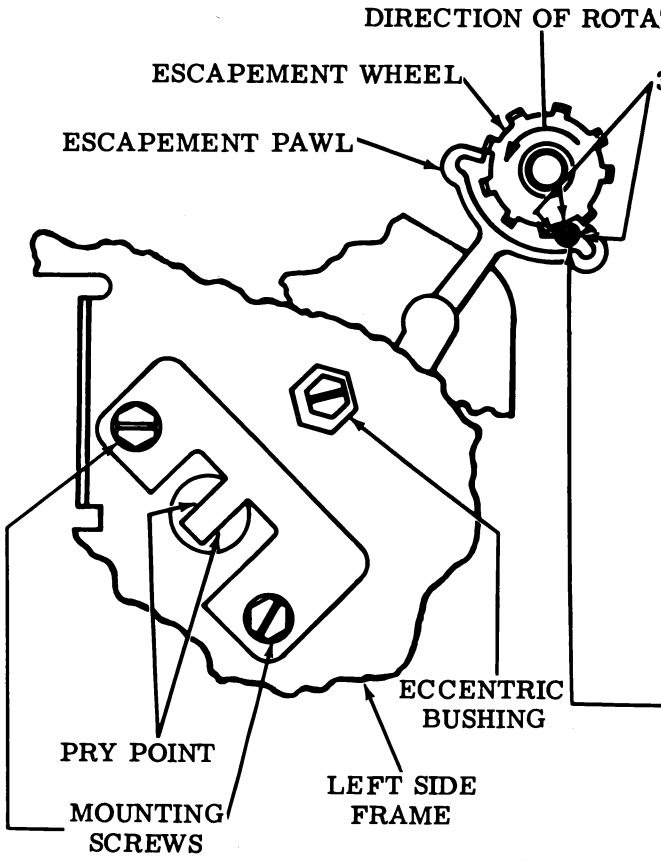
(2) Requirement
Armature should be in contact with both sides of upper magnet core when magnets are electrically energized with a current of 1 amp dc (1 amp dc is provided during actual operation).

(3) Requirement
Rubber backing should be compressed when mounting screws are tightened to leave
Min 0.030 inch---Max 0.040 inch
clearance between mounting plate and core piece.

To Adjust
Position upper magnet with three mounting screws loosened. Tighten screws.



2.11 Line Feed Mechanism (continued)



(Left Side View)

ESCAPEMENT PAWL

Note: This and the next adjustment must be made together.

To Check

Energize upper magnet with a current of 1 amp dc (1 amp dc is provided during actual operation). Supply full torque to the spiral spring and hold. Move paper guide away and step the escapement. Insert gauge so that it touches escapement wheel tooth, the base circle of the wheel, and the escapement pawl.

Requirement (use gauge)

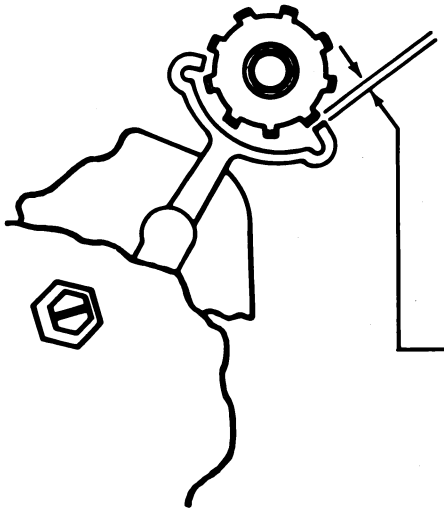
Clearance between the escapement wheel and the escapement pawl should be

Min 0. 147 inch---Max 0. 153 inch

Gauge should contact 3 points shown.

To Adjust

Rotate the eccentric bushing with its mounting screws friction tight. Tighten screws.



(Left Side View)

ESCAPEMENT PAWL CLEARANCE

To Check

Energize upper magnet with a current of 1 amp dc (1 amp dc is provided during actual operation) to release spiral spring. Position escapement wheel so that a tooth is opposite the tip of the escapement pawl.

Requirement

Clearance between a tooth on the escapement wheel and the escapement pawl should be

Min 0. 005 inch---Max 0. 010 inch

To Adjust (see above figure)

Position the magnet assembly, by means of the pry point, with its mounting screws loosened. Recheck the previous adjustment. Tighten screws.

2.12 Line Feed Mechanism (continued)

LINE FEED TORQUE

To Check

After unit has been operated for a minimum of 7 minutes, remove power and paper from unit; then, place the release arm in the engaged position.

Requirement

Energy supplied to spiral spring of the line feed assembly by torque motor should be enough to drive the line feed mechanism

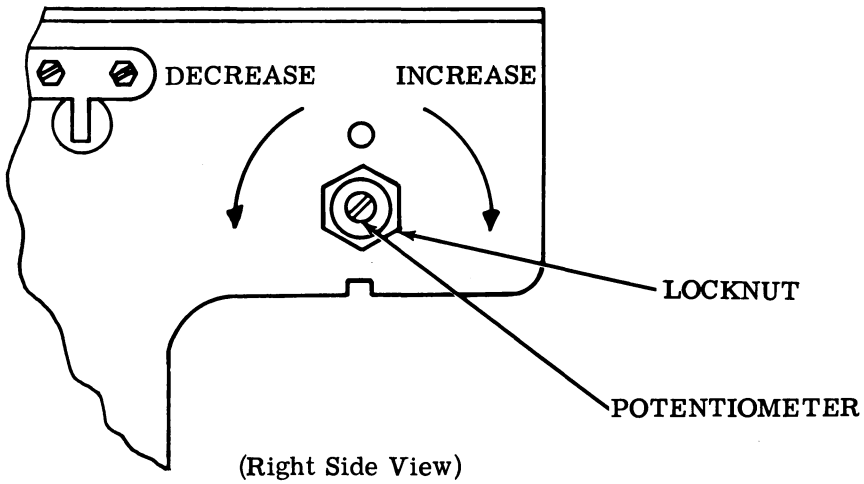
Min 50 steps---Max 58 steps

with no additional input from the torque motor.

To Adjust

Loosen locknut on potentiometer (located on right side frame) which controls the torque input to the line feed assembly. Adjust potentiometer to meet requirement. Tighten locknut.

Note: Turning potentiometer in a clockwise direction will increase number of steps (torque) and a counterclockwise direction will decrease number of steps (torque).



(Right Side View)

2.13 Line Feed Mechanism (continued)

PAPER GUIDEPLATE

To Check

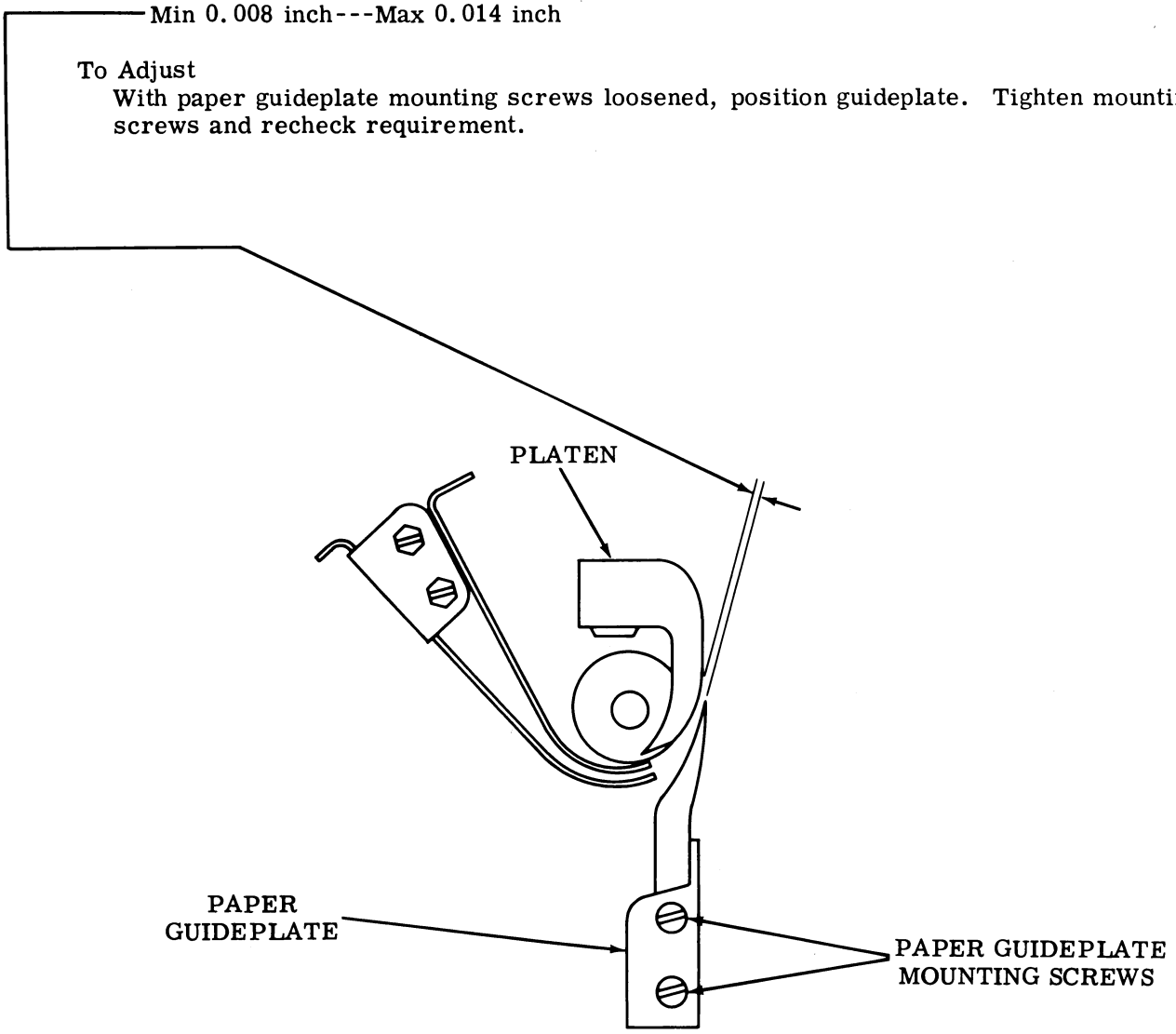
Gauge clearance between platen and guideplate approximately 1/4 inch from each end of paper guideplate. Minimum clearance across entire length should not be less than 0.008 inch nor more than 0.015 inch at any point.

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.



2.14 Line Feed Mechanism (continued)

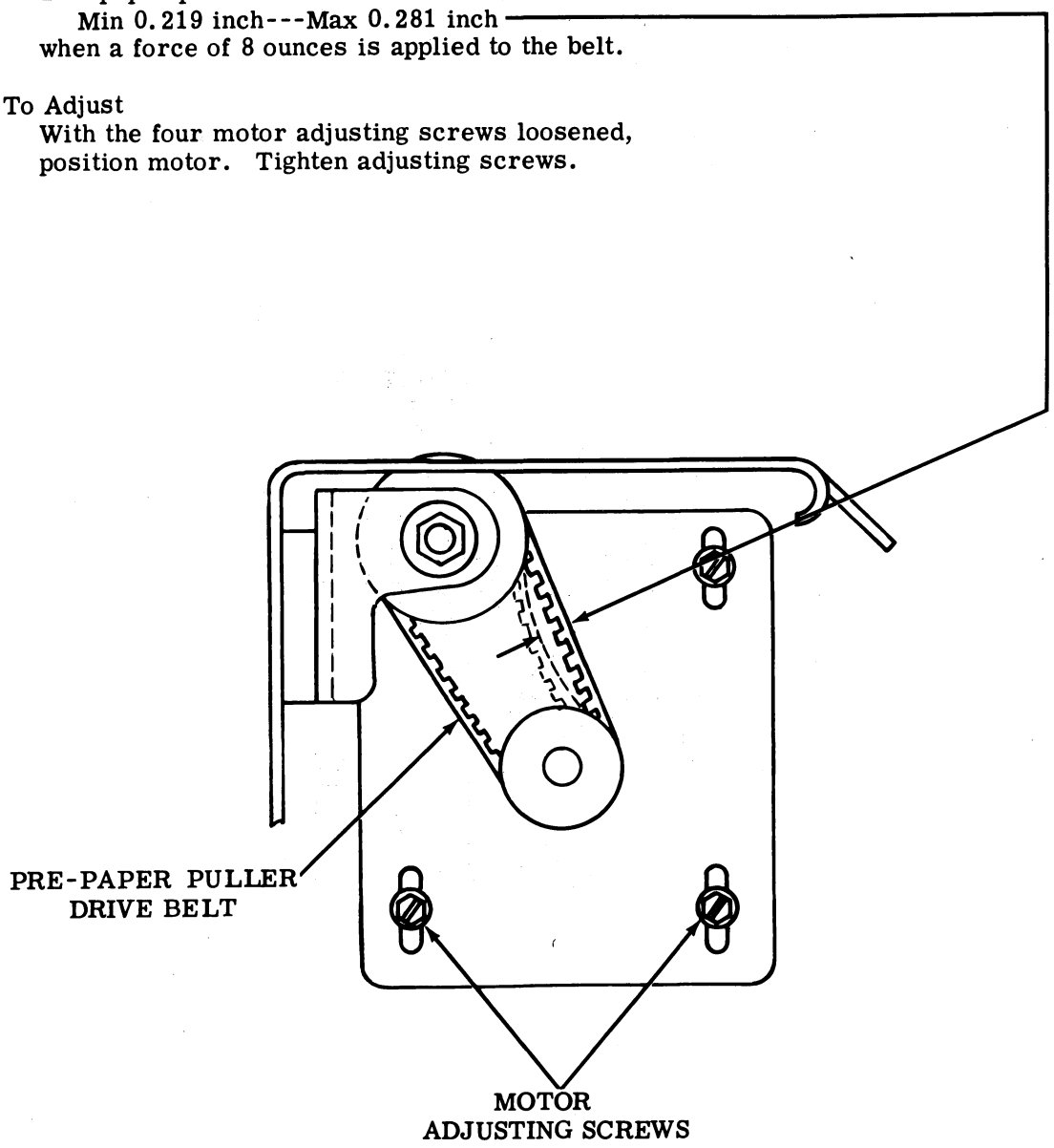
PRE-PAPER PULLER DRIVE BELT

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.



2.15 Paper Feed Mechanism (continued)

DETENT ARM

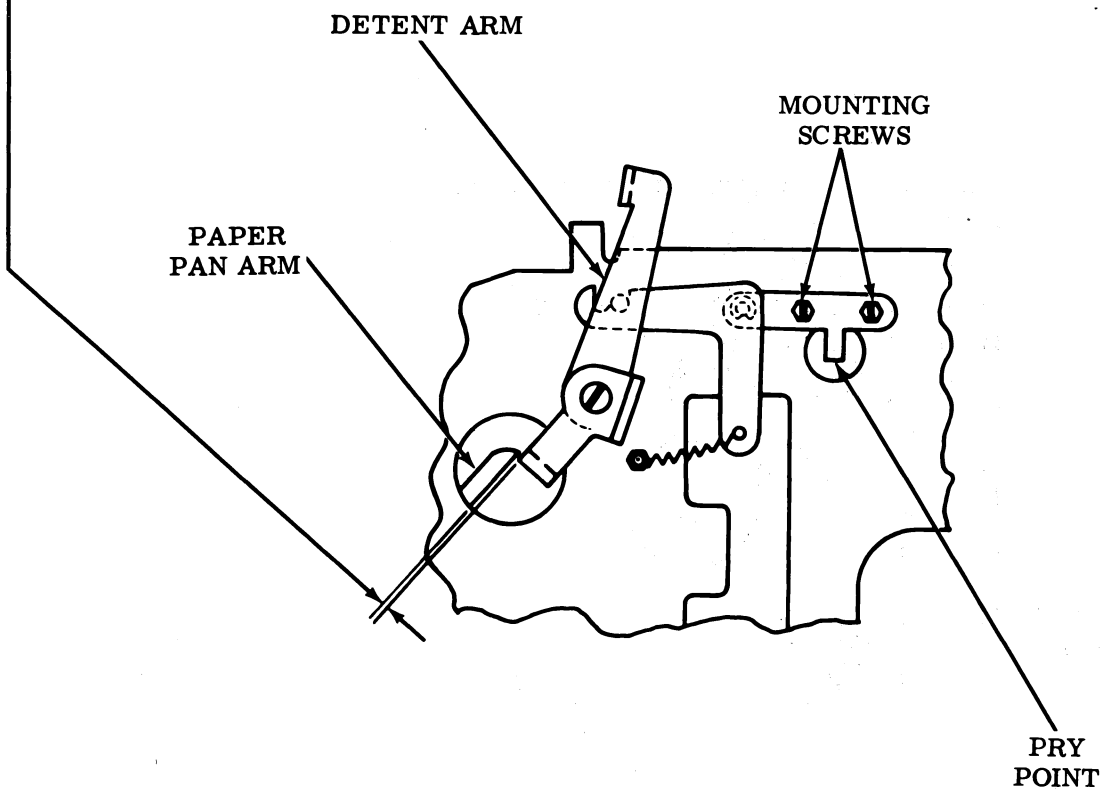
Requirement

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.



2.16 Paper Tensioner Mechanism

PAPER TENSIONER

(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

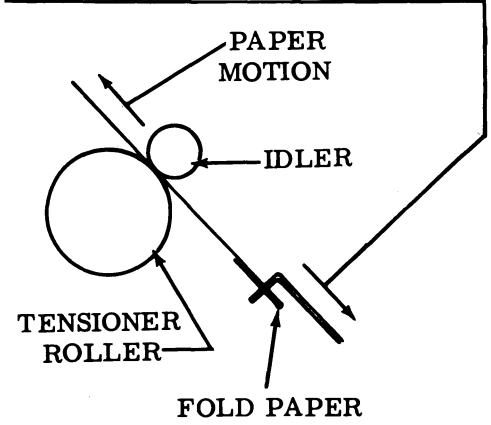
Apply spring scale to stretch each tensioner spring to installed length.

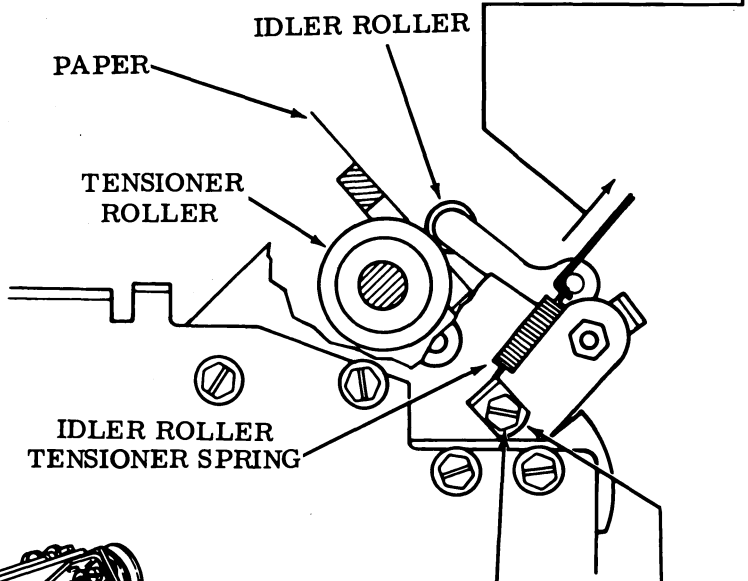
Requirement

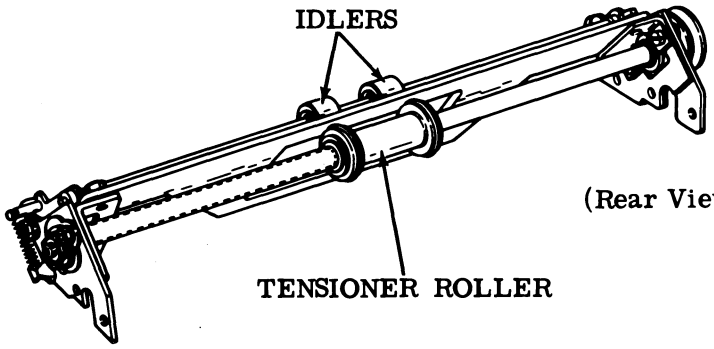
Tension should be equal within 1/2 ounce on both springs.

To Adjust

With each spring anchor bracket (2) mounting screw loosened, position bracket. Tighten screw. Recheck requirement.







2.17 Line Feed Mechanism (continued)

LINE FEED DRIVE BELT

Requirement

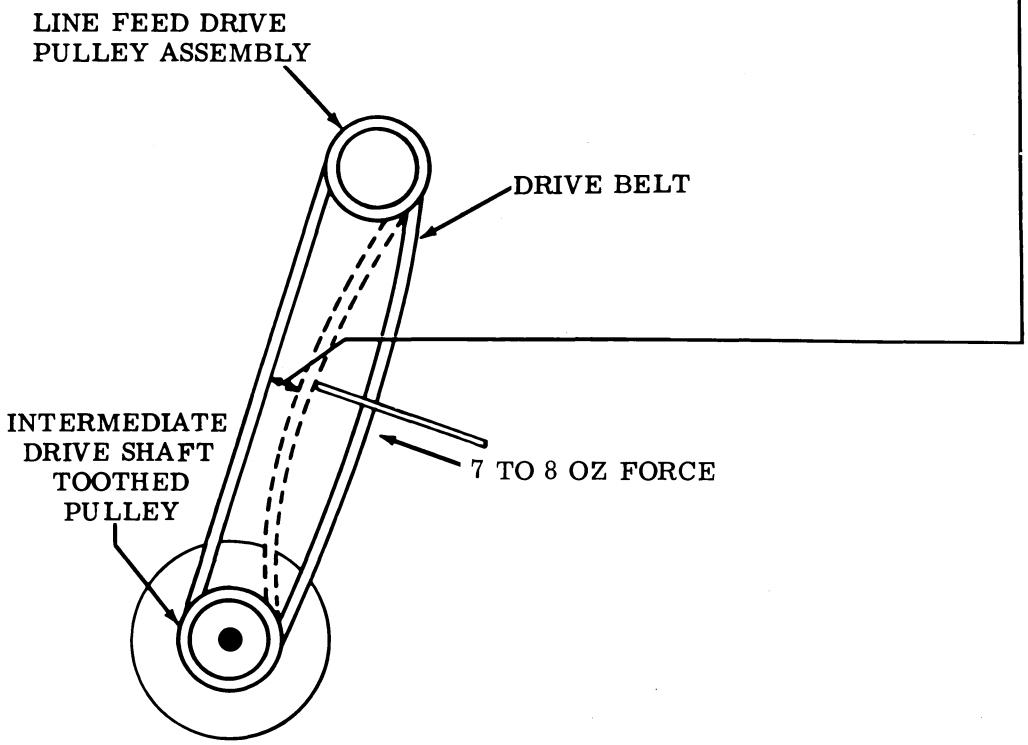
Inside dimension across belt loop, when 7 to 8 ounces of force is applied to one side of belt should be

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.



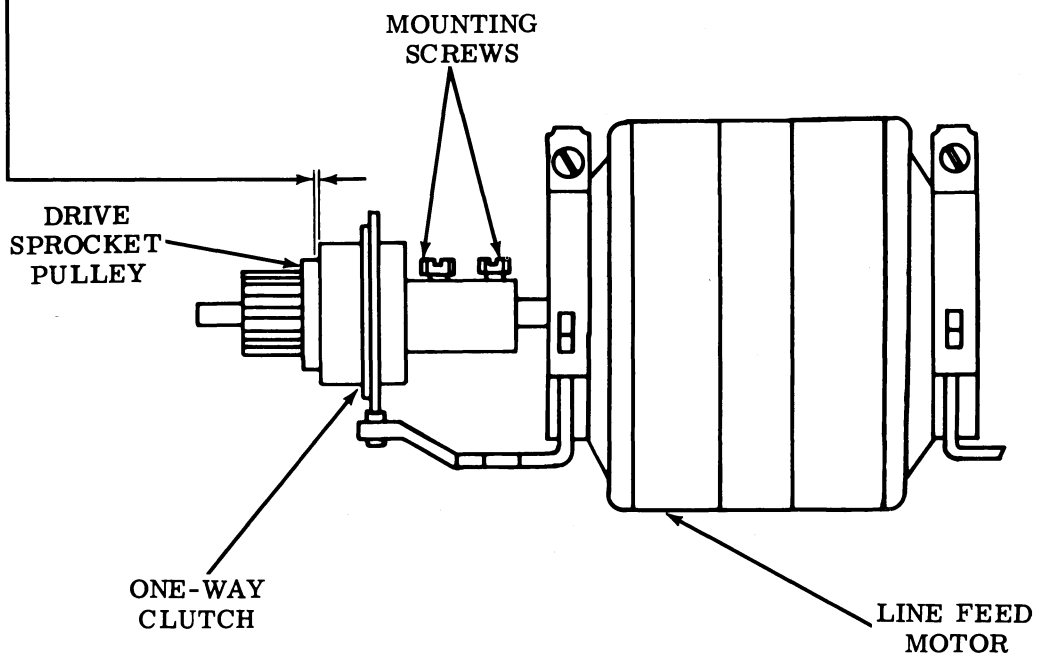
(Left Side View)

2.18 Line Feed Mechanism (continued)

LINE FEED ONE-WAY CLUTCH

Requirement
Clearance between one-way clutch housing and drive sprocket pulley should be
Min 0.010 inch---Max 0.025 inch

To Adjust
With one-way clutch mounting screws loosened, position clutch. Tighten screws.



(Front View)

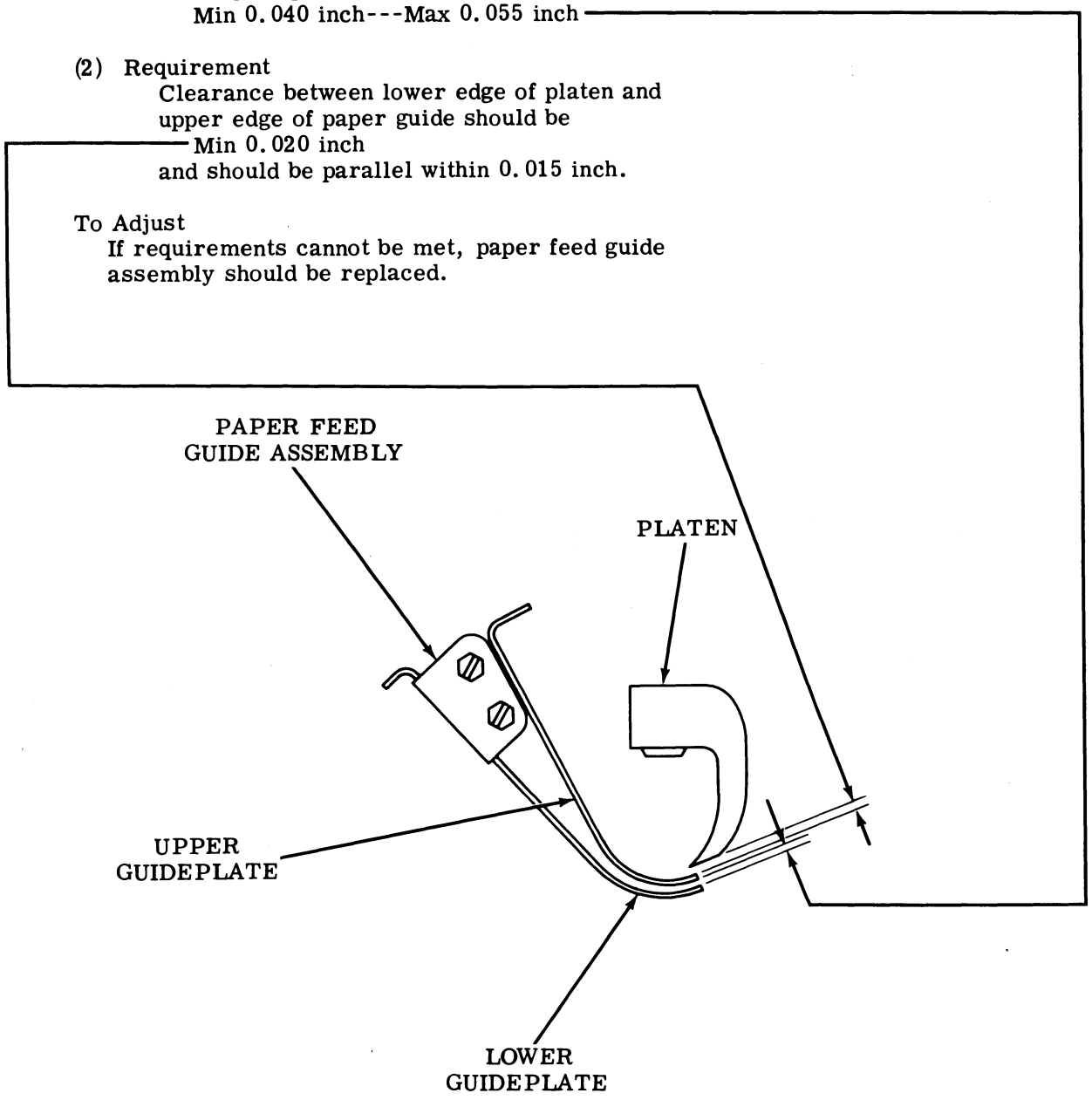
2.19 Line Feed Mechanism (continued)

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.



2.20 Printing Mechanism

PLATEN-MANIFOLD CLEARANCE

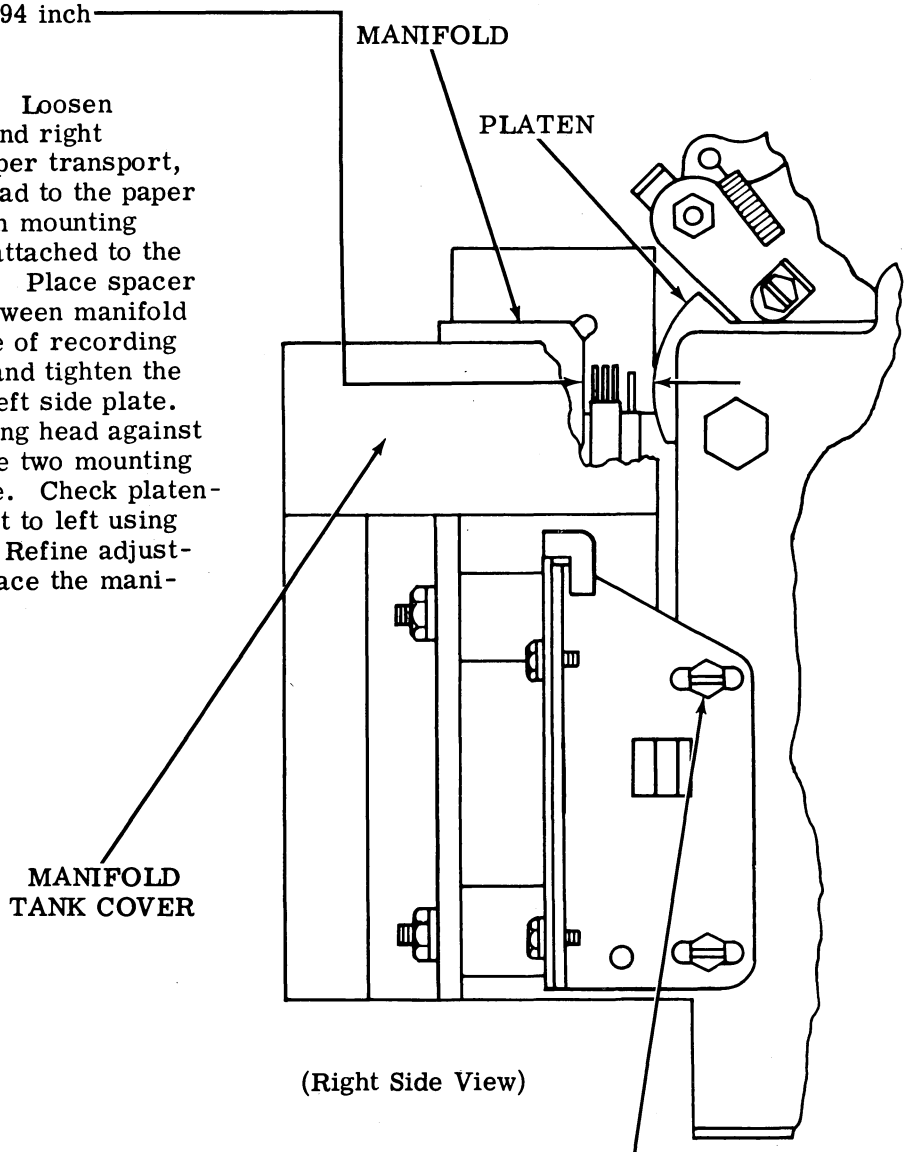
Requirement

Clearance between platen and recorder should be

Min 0.584 inch---Max 0.594 inch

To Adjust

Remove manifold tank cover. Loosen top mounting screws on left and right side brackets, attached to paper transport, which mount the recording head to the paper transport. Loosen the bottom mounting screws on the side bracket, attached to the paper transport if necessary. Place spacer assembly tool (TP331042) between manifold and platen. Position left side of recording head against the spacer tool and tighten the two mounting screws on the left side plate. Position right side of recording head against the spacer tool and tighten the two mounting screws on the right side plate. Check platen-manifold clearance from right to left using go-no-go gauge (TP331041). Refine adjustment, if necessary, and replace the manifold tank cover.



(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) The escapement wheel and escapement pawl should be cleaned and lubricated.

(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 trichlorethylene.

(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.

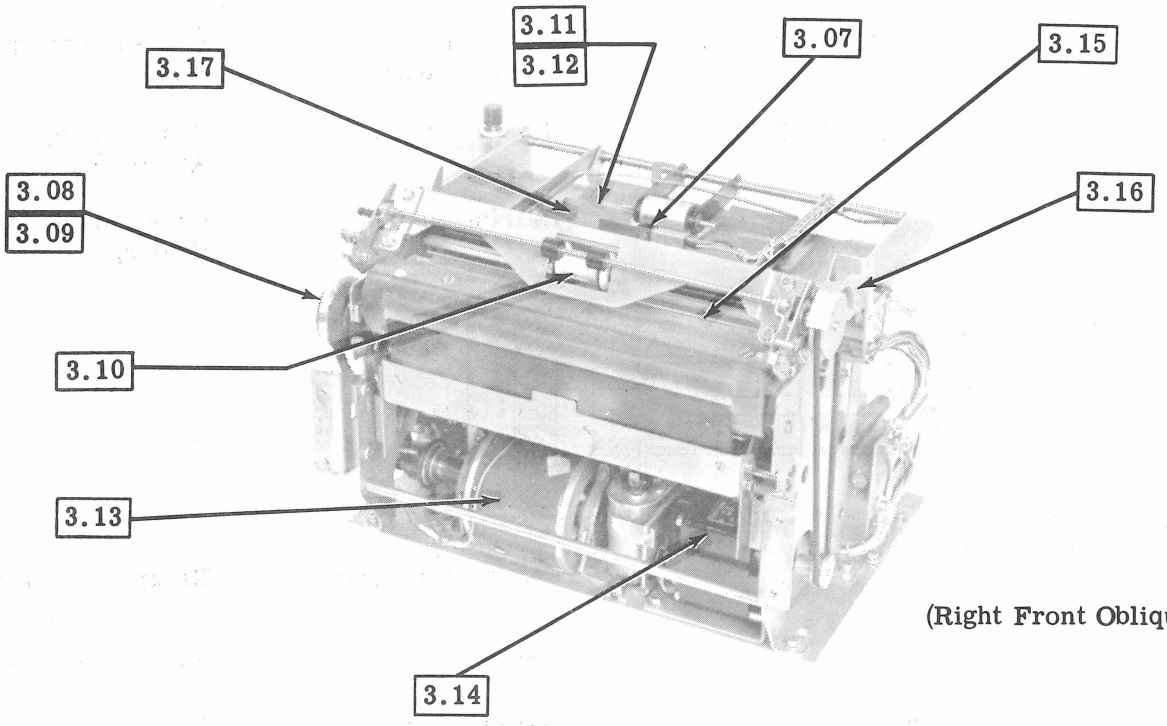
3.04 Spring loops, felt washers, and certain shafts should be oiled. The friction surfaces of all exposed moving parts should be lubricated; however, overlubrication should be avoided. Exercise care to prevent oil or grease from getting between magnet armature pole faces. Keep all electrical contacts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

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

Symbol	Meaning
O1	Apply one drop of oil (KS7470 - TP88970 - 1 quart)
O2	Apply two drops of oil (KS7470 - TP88970 - 1 quart)
O3	Apply three drops of oil (KS7470 - TP88970 - 1 quart)
G	Thin coat of grease (TP145867 - 4 oz)
AL	Grease (TP301313 - 1-3/4 oz)
D	Keep dry — do not lubricate

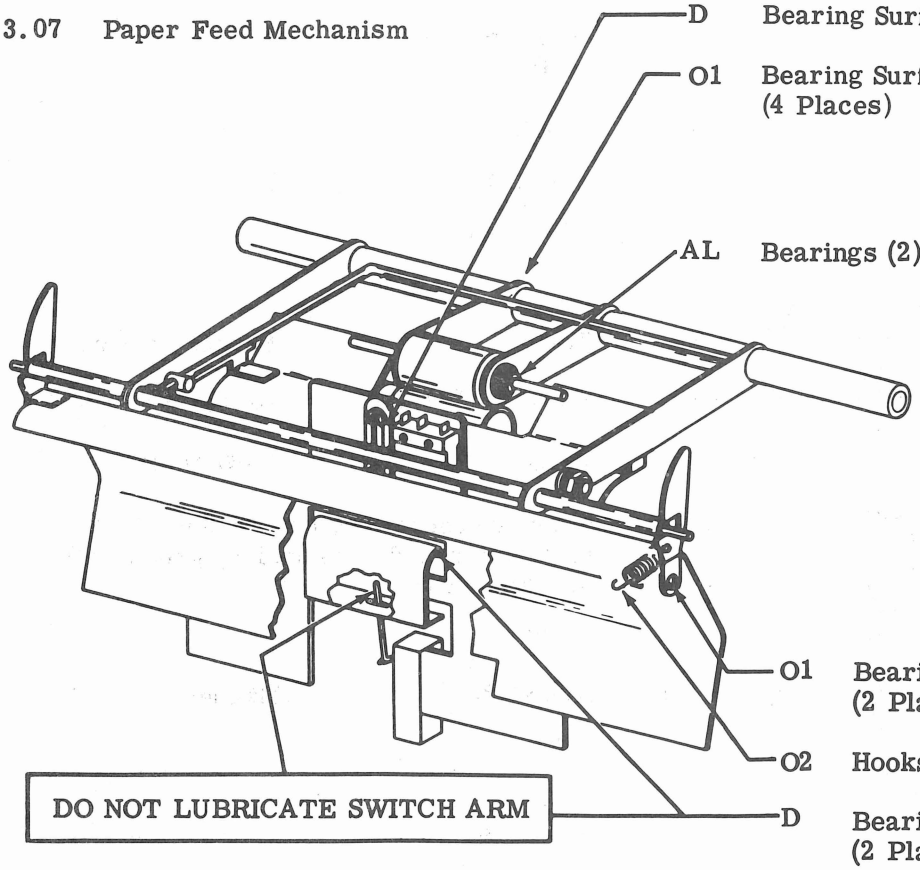
Note: Before lubricating, remove old lubricant and clean parts wherever possible.

3.06 Paper Transport



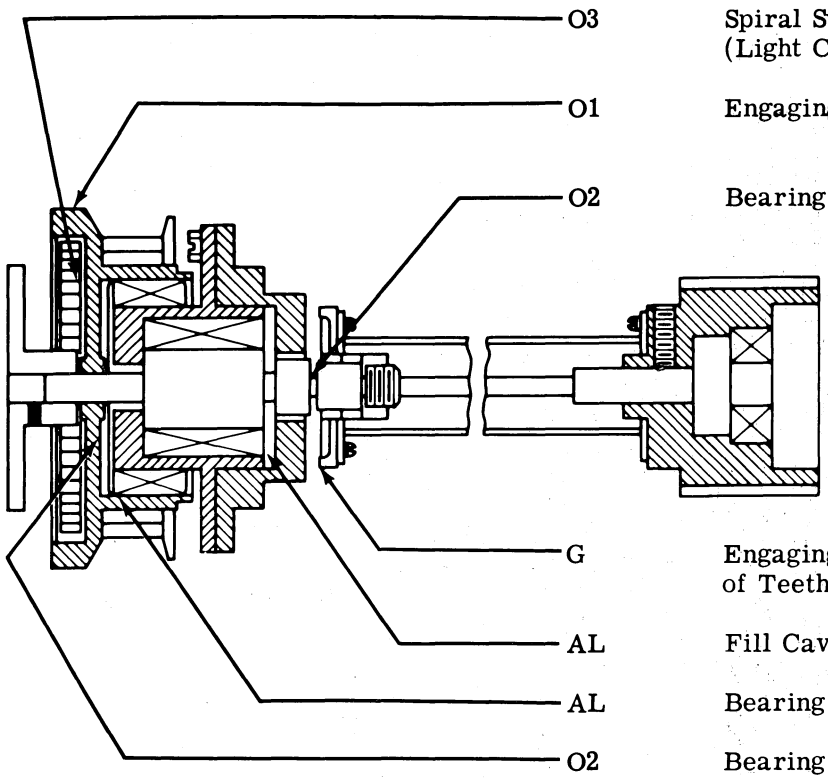
(Right Front Oblique View)

3.07 Paper Feed Mechanism



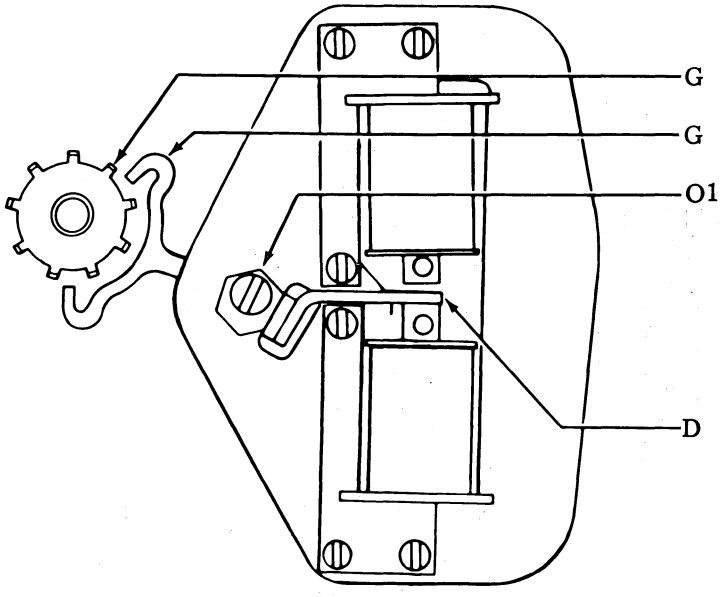
D	Bearing Surface	Slide
O1	Bearing Surfaces (4 Places)	Pressure Bail
AL	Bearings (2)	Pressure Roller
O1	Bearing Surfaces (2 Places)	
O2	Hooks (Each End)	Bail Springs (2)
D	Bearing Surfaces (2 Places)	Paper Loop Switch Arm

3.08 Clutch Assembly



O3	Spiral Surface (Light Coating)	Drive Pulley Spiral Spring
O1	Engaging Surface	Spiral Spring Anchor Pin
O2	Bearing Surface	Nylon Bushing and Bearing
G	Engaging Surface of Teeth	Escapement Wheel
AL	Fill Cavity	One-Way Clutch
AL	Bearing Surface	Drive Pulley
O2	Bearing Surface	Paper Drive Pulley

3.09 Escapement Mechanism



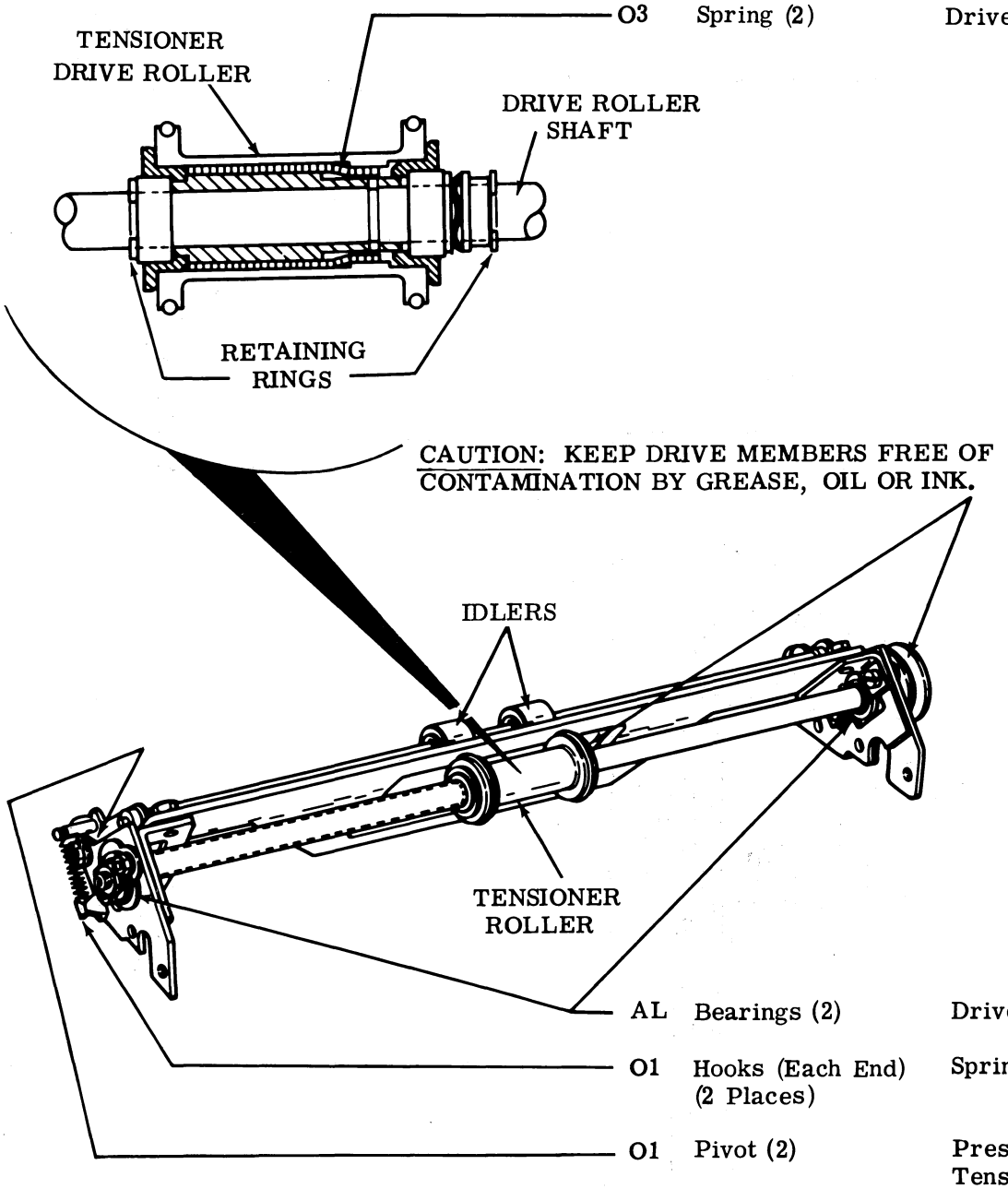
G	Teeth	Escapement Wheel
G	Engaging Surfaces	Escapement Pawl
O1	Pivot	Pawl Shaft

Note: Whenever the escapement mechanism is disassembled, grease (G) the pawl shaft.

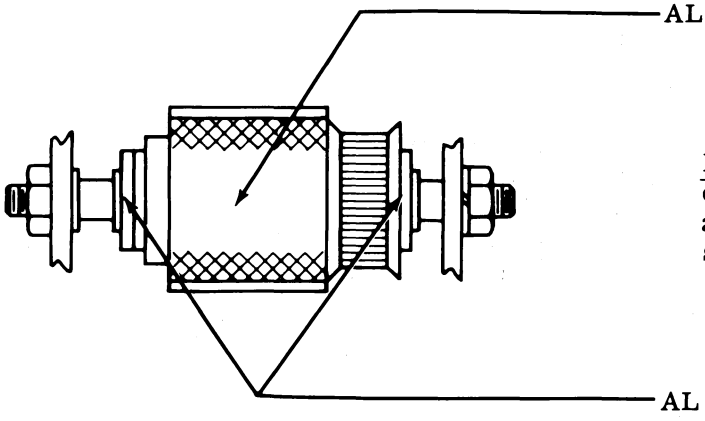
D	Armature	Magnet

3.10 Transport Mechanism

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.



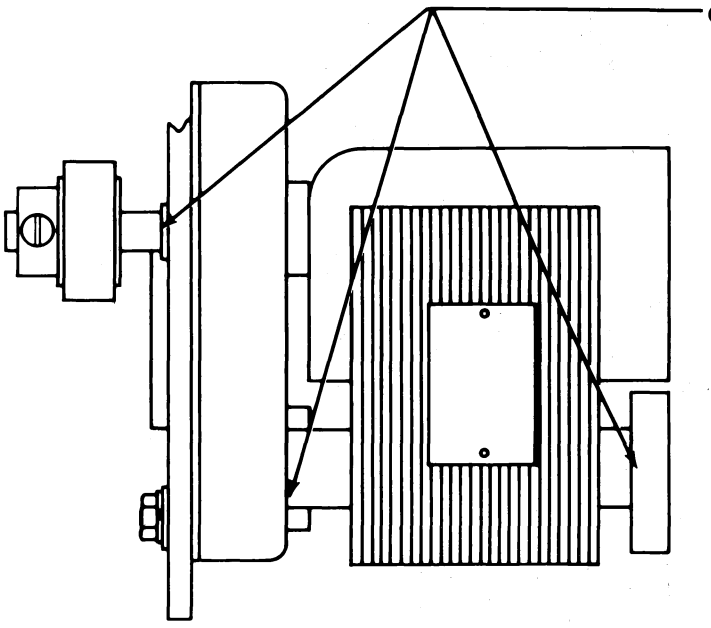
3.11 Pre-Paper Puller Roller Assembly



AL	Fill Cavity	One-Way Clutch
AL	Bearings (2)	Roller Bearings

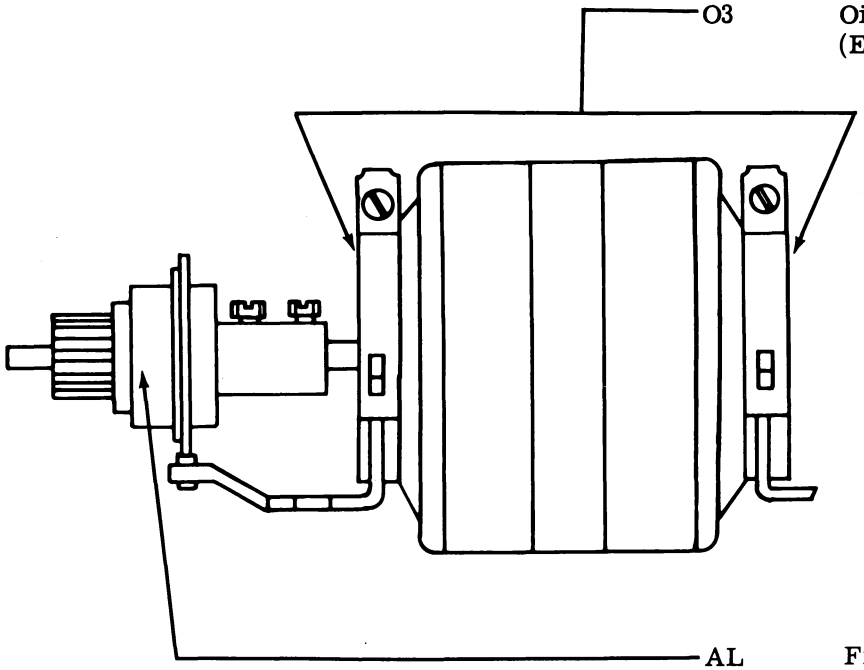
Note: In order to lubricate the one-way clutch and roller bearings, the roller assembly must be disassembled from its shaft.

3.12 Pre-Paper Puller Motor Assembly



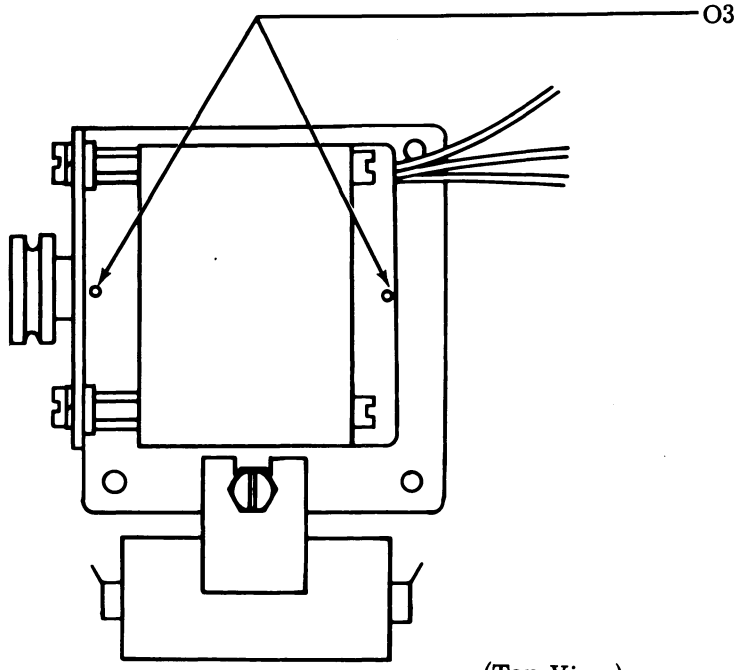
O2	Bearings (3)	Motor Bearings

3.13 Line Feed Motor Assembly



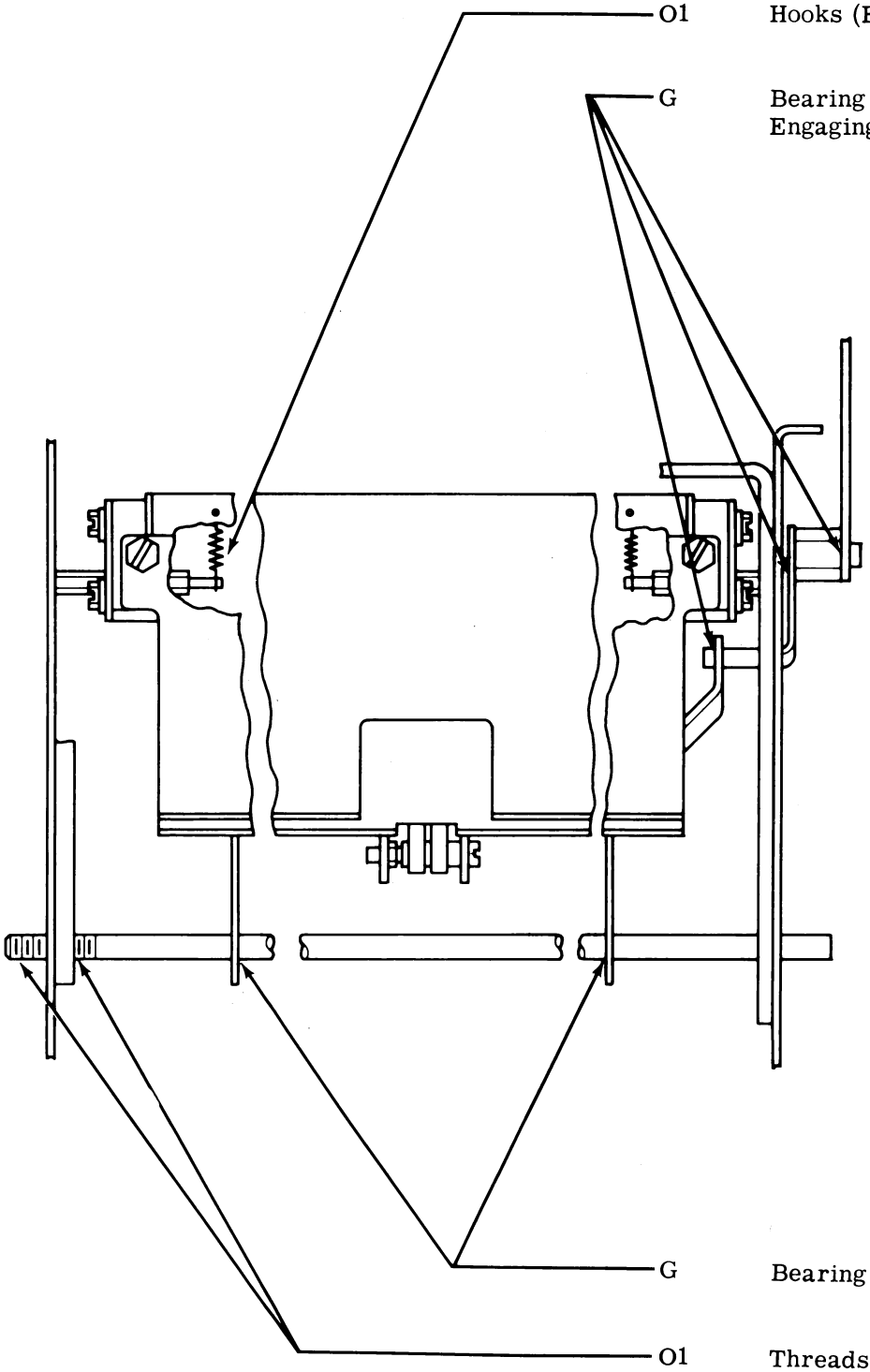
Note: In order to lubricate the one-way clutch, it must be removed from the motor shaft.

3.14 Paper Tensioner Motor Assembly



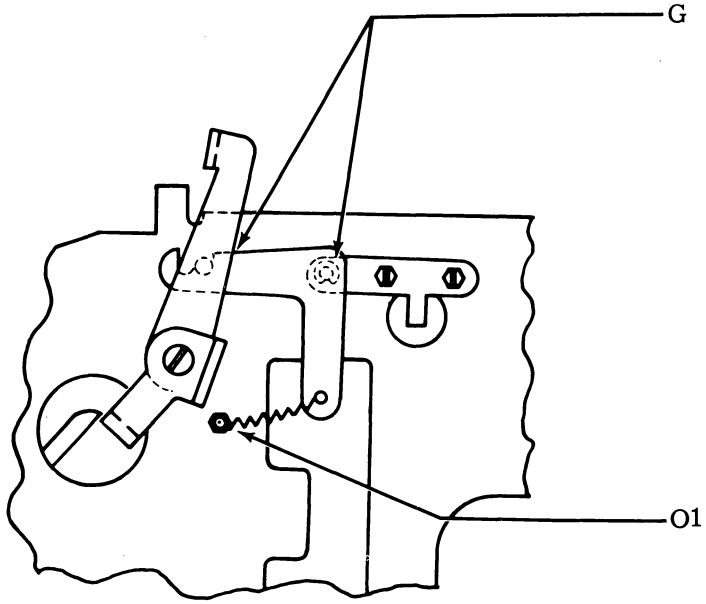
(Top View)

3.15 Paper Guide Assembly



O1	Hooks (Each End)	Bail Springs (2)
G	Bearing and Engaging Surfaces	Bail
G	Bearing Surfaces	Guide Shaft
O1	Threads	Guide Shaft

3.16 Right Side Frame

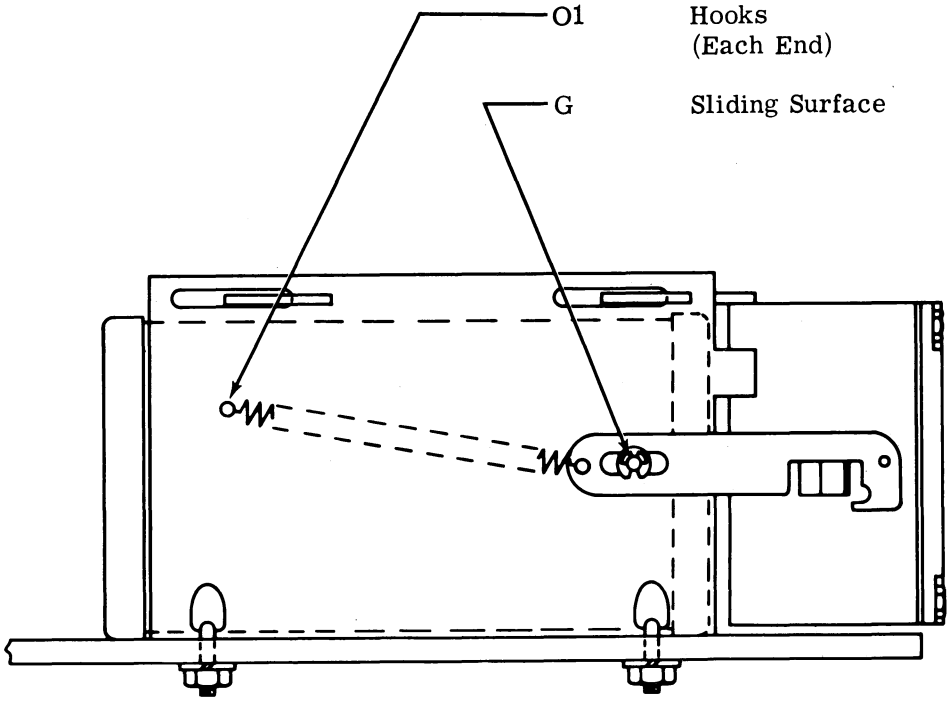


G Sliding Surface — Pressure Bail

O1 Hooks (Each End) — Lever Spring

(Right Side View)

3.17 Power Supply Cap Retainers



O1 Hooks (Each End) — Slide Springs (2)

G Sliding Surface — Anchor Slide

(Rear View)