

“DATASPEED\*” 40 PRINTER

ADJUSTMENTS AND LUBRICATION

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1. GENERAL

1.01 This section provides adjustment and lubrication procedures for the DATA-SPEED 40 printers (Fig. 1, 2, 3, and 4).

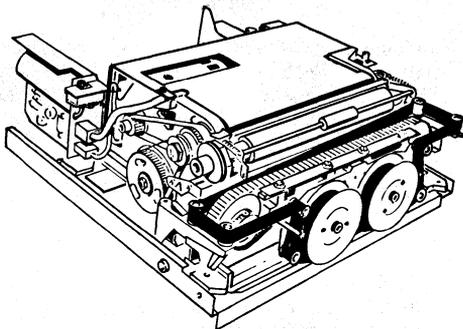


Fig. 1—40P101 and 40P102 80-Column Friction Feed

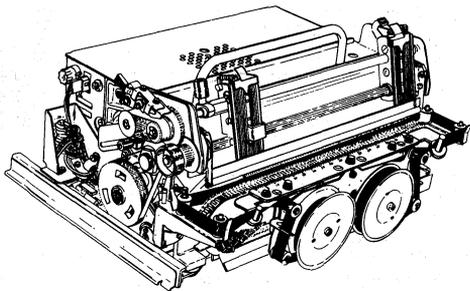


Fig. 2—40P151, 40P153, or 40P154 80-Column Tractor Feed

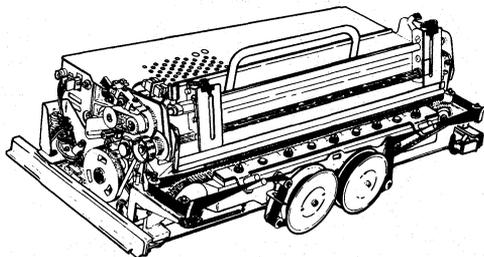


Fig. 3—40P201 or 40P202 132-Column Tractor Feed

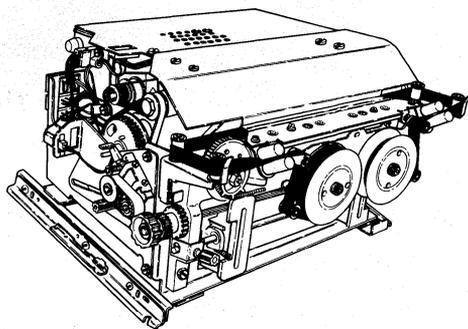


Fig. 4—40P253 80-Column Forms Access Printer

1.02 This section is reissued to add the adjustments for the 40P102 80-column friction feed printer (noise reduced), 40P154 80-column tractor feed printer, and 40P253 80-column forms access printer.

1.03 Unless specified otherwise, adjustments and lubrication apply to all printers (80-column friction and tractor, 132-column tractor, and forms access).

*Note:* When ordering replaceable components, prefix each part number with the letters "TP" (ie, TP123456), unless specified otherwise.

1.04 Refer to Maintenance Tools, Section 570-005-800 for a complete listing of the various types of hand tools available to make the adjustments. Gauge 402617 (80-column forms access, 80-column friction or tractor), 402716 and 402717 (132-column tractor), and two 408765 gauges (132-column and forms access) are required for certain adjustments. Also, 402868 dynamic backup bar gauge and 402878 type carrier alignment gauge are used in adjusting 80-column friction or tractor, 80-column forms access, and 132-column tractor printers.

1.05 To remove the printer from the cabinet, reverse the procedure in Section 582-210-200 covering installation of the printer.

1.06 Use maintenance pad 124828 to protect bench top or floor coverings from oil, grease, and dirt while adjusting or lubricating the unit.

1.07 Some adjustments require access to subassemblies that have to be removed. For removal of these subassemblies, see Section 582-210-702.

1.08 The adjustments for the printer are arranged in a sequence that should be followed if a complete readjustment of the printer is undertaken. A complete adjustment procedure should be read before attempting to make the adjustment. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened to facilitate the adjustment, unless otherwise instructed.

1.09 The belt tensions given in this section are indicated values and should be checked with proper spring scales. The adjusting illustrations, in addition to indicating adjustment tolerances, show the angle at which the scale should be applied when measuring belt tensions.

1.10 Some of the adjustments require the printing of the font identification character. This character is printed when the printer is running and the TEST switch is placed in the ON position. The associated printer cover Interlock switch must be disabled (bypassed) for printer operation.

1.11 All tolerances in the adjustments in this section unless otherwise stated, are in inches.

1.12 When a requirement specifies a disengaged clutch, the clutch must be fully latched so that the clutch shoes are completely disengaged from the clutch drum. To become fully latched, the trip lever (or stop arm) must engage the clutch shoe lever, and the clutch disc must rotate far enough to permit the latchlever to fall into the notch in the clutch disc.

1.13 When rotating the clutch shaft of the printer by hand, the clutch does not fully disengage upon reaching its stop position. In order to relieve the drag on the clutch drum and permit the shaft to rotate freely, apply pressure

to the stop lug on the clutch disc with a screwdriver until the latchlever falls into its notch on the clutch disc. The internal expansion clutch is then fully disengaged. This procedure should be followed before placing the printer in its cabinet and switching on the power.

1.14 When engaged, the clutch shoe lever is unlatched (tripped), and the clutch shoes are wedged against the clutch drum.

1.15 Lubricate the printer just prior to placing in service or before putting it in storage. The printer should be relubricated after it has been in service a few weeks. Thereafter, lubricate the mechanisms every 2,000 hours of running time or one year, whichever occurs first.

1.16 The general lubrication requirements consist of using KS-7470 oil at all locations where the use of oil is indicated and Mobile No. 2 grease on all surfaces where grease is indicated. Thoroughly saturate the felt oilers and remove all excess oil by wiping lightly with a clean cloth. The friction surfaces of all moving parts should be thoroughly lubricated.

1.17 Symbols 01, 02, 03, etc, refer to 1, 2, 3, etc, drops of oil. The following list of symbols applies to the lubrication instructions:

- O Oil KS-7470.
- G Apply thin film of Mobile No. 2 (145867) grease.
- S Saturate felt oilers, washers and wicks with oil.
- D Keep dry, no lubricant permitted.

1.18 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 thin film of oil on the mechanisms. This prevents rust and provides sufficient lubrication to many points.

1.19 Closed ball bearings do not require lubrication. All open ball bearings should be packed with grease (TKS-103, 195298).

2. ADJUSTMENTS

IMPELLER SHAFT DRIVE BELT TENSION

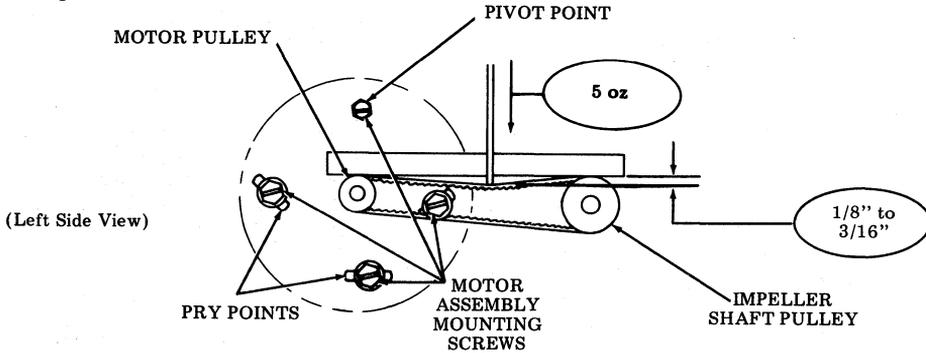
Requirement

With a force of 5 ounces applied perpendicular to drive belt approximately midway along its free length, the belt should deflect

Min 1/8 inch -- Max 3/16 inch  
from a line tangent to both pulleys.

To Adjust

Loosen four motor assembly mounting screws friction tight. Using a screwdriver, pry the flat washer under one of the mounting screws in the desired direction using appropriate end of slot. Tighten mounting screws.



RIBBON FEED DRIVE BELT TENSION

(80-Column Friction or Tractor Only)

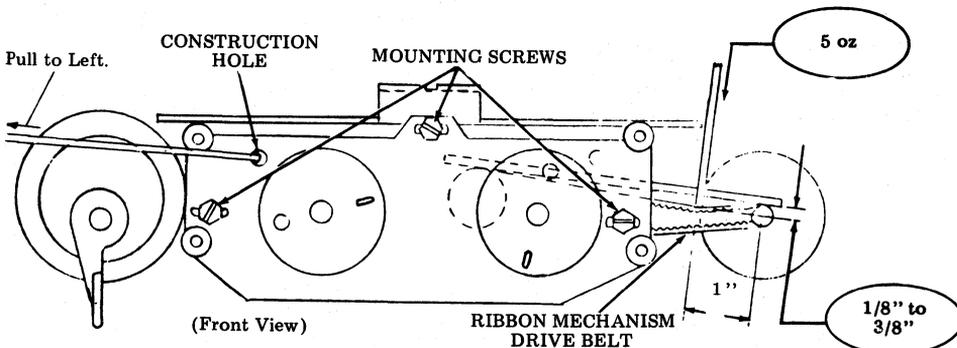
Requirement

With a force of 5 ounces applied perpendicular to the drive belt approximately 1 inch from right pulley, belt should deflect

Min 1/8 inch --- Max 3/8 inch  
from a line tangent to both pulleys.

To Adjust

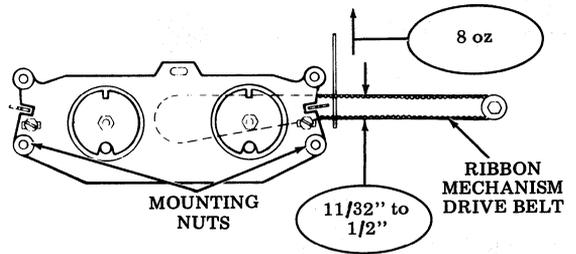
Loosen mounting screws to allow mechanism to move freely to right or left. Pull against construction hole to left. Tighten mounting screws with tension applied.



**RIBBON FEED DRIVE BELT TENSION (Cont)**  
**(132-Column Tractor)**

**Requirement**

There should be  
 Min 11/32 inch --- Max 1/2 inch  
 between outside surfaces of drive belt when  
 a force of 8 ounces is applied adjacent to  
 ribbon mechanism frame.



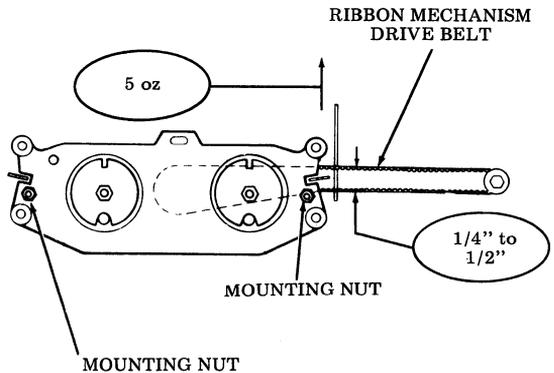
**To Adjust**

Loosen mounting nuts to allow mechanism to move freely to right or left. Position ribbon mechanism to meet requirement. Tighten mounting nuts.

**RIBBON FEED DRIVE BELT TENSION**  
**(Forms Access Printer)**

**Requirement**

There should be  
 Min 1/4 inch --- Max 1/2 inch  
 between outside surfaces of drive belt when  
 a force of 5 ounces is applied adjacent to  
 ribbon mechanism frame.



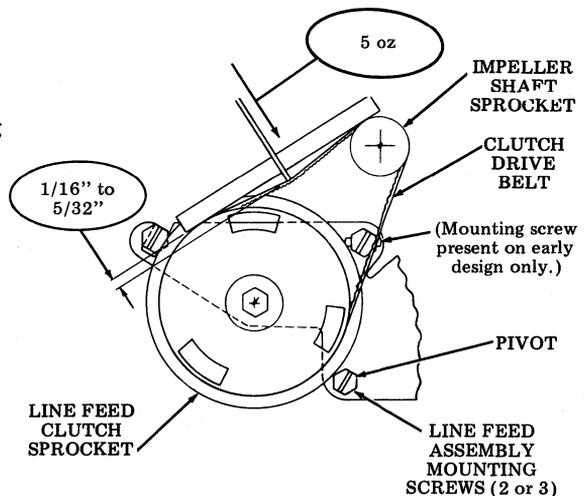
**To Adjust**

Loosen the two ribbon mounting nuts and position the ribbon mechanism left or right to meet requirement. Tighten mounting nuts.

**CLUTCH DRIVE BELT TENSION**

**Requirement**

With a force of 5 ounces applied perpendicular to drive belt approximately midway along its free length, belt should deflect  
 Min 1/16 inch --- Max 5/32 inch  
 from a line tangent to both pulleys.



**To Adjust**

Loosen line feed assembly mounting screws to allow assembly to move freely about its pivot. Position line feed assembly to meet requirement. Tighten mounting screws.

**FEED BAR BAIL SPRING TENSION**  
(80-Column Friction or Tractor Feed or  
132-Column Tractor Feed)

**Requirement (Late Design Tractor)**

It will require

Min 42 oz --- Max 68 oz  
(402905 spring)

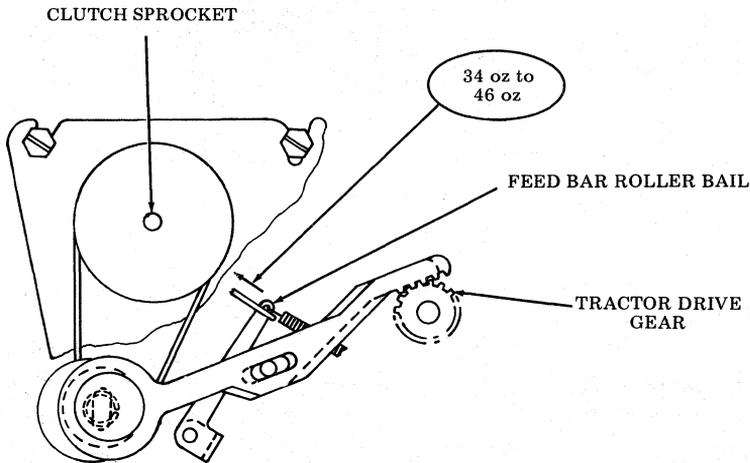
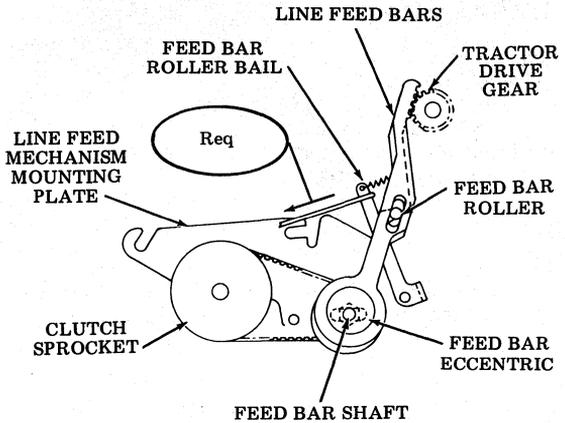
to start the feed bar roller bail moving.

**Requirement (Friction Feed and Early Design Tractor)**

It will require

Min 32 oz --- Max 44 oz  
(41385 spring-friction,  
55089 spring-tractor)

to start the feed bar roller bail moving.



**FEED BAR BAIL SPRING TENSION**  
(Forms Access Printer)

**Requirement**

It will require

Min 34 oz --- Max 46 oz

to start the feed bar roller bail moving.

RIBBON MECHANISM DRAG (Early Design)**Requirement**

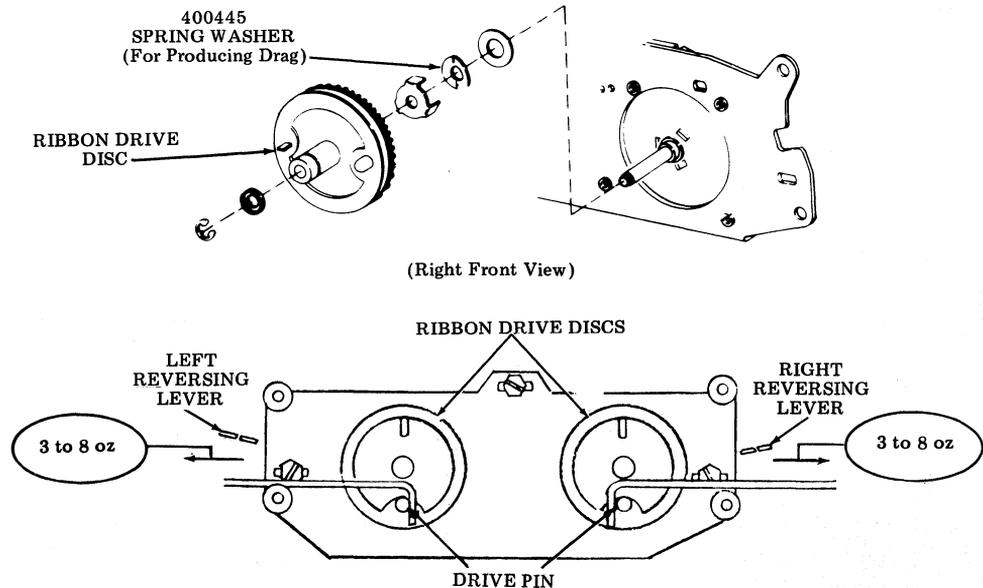
It should take

Min 3 oz --- Max 8 oz

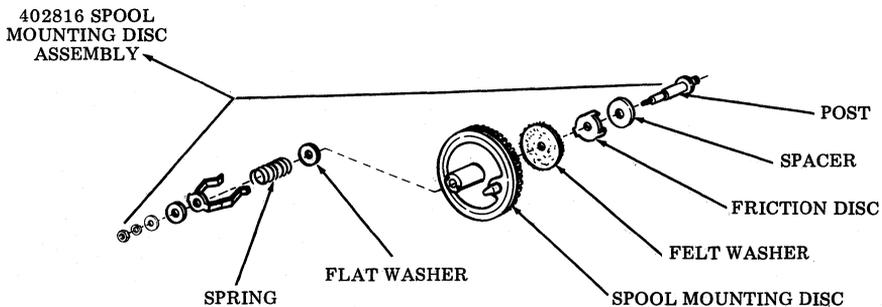
to start the free-wheeling ribbon drive disc moving when pulling tangentially on its drive pin. To check the other ribbon drive disc, reverse ribbon mechanism by pulling up on reversing lever adjacent to the free-wheeling drive disc and manually rotating impeller shaft clockwise as viewed from the right side of printer until reversal occurs. The other ribbon drive disc is now the free-wheeling disc and may be checked.

**To Adjust**

Remove ribbon drive disc assembly as shown and replace spring washer. Reassemble and recheck requirement.



*Note:* Late Design — No adjustment required if 402816 spool mounting disc assemblies are present.



CLUTCH BIDREC GAP (Friction Feed Printers) (Early Design)

- Clutch engage.

**Requirement**

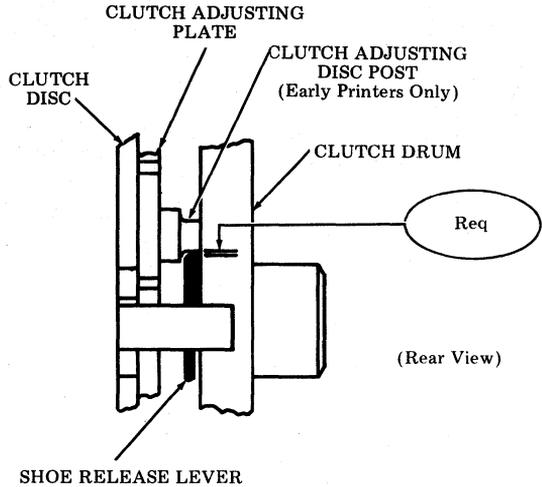
Gap between clutch adjusting disc post and shoe release lever

Min 0.002 inch --- Max 0.018 inch  
from machines operated under 100 hours --

Min 0.002 inch --- Max 0.025 inch  
for machines operated over 100 hours.

**To Adjust**

If requirement cannot be met, replace clutch shoes and/or clutch drums.



CLUTCH SHOE RELEASE ARM SPRING

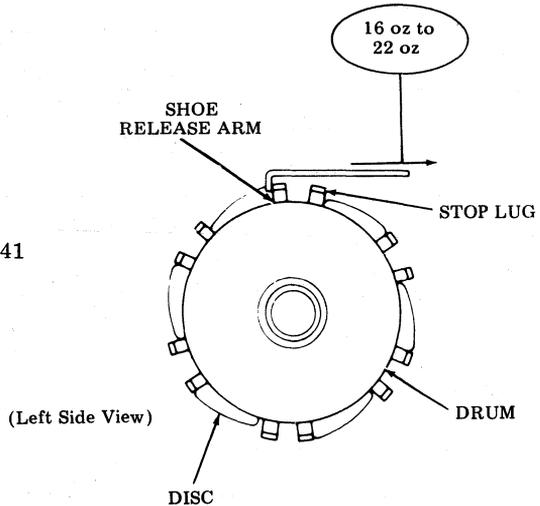
- Engage clutch.
- Hold clutch disc.
- Pull with scale on shoe release arm tangent to the clutch.

**Requirement**

Min 16 oz --- Max 22 oz  
to move the shoe release arm into contact with the stop lug.

**To Adjust**

Remove clutch assembly and replace 150241 spring.

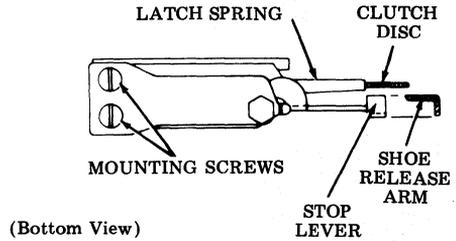


CLUTCH MAGNET AND LATCH SPRING**Requirement**

The clutch disc should be in the center of the latch spring, and the shoe release arm should be central to the end of the stop lever as gauged by eye.

**To Adjust**

Remove line feed magnet assembly. Loosen mounting screws friction tight. Position stop lever and latch spring. Tighten mounting screws.



(Bottom View)

**Note:** Perform CLUTCH STOP LEVER adjustment after reassembling line feed magnet assembly.

CLUTCH SHOE RELEASE ARM**Requirement**

There should be

Min 0.065" --- Max 0.095"

gap between the shoe release arm and the stop lug while the clutch is engaged.

**To Measure**

Momentarily disengage clutch by pulling against shoe release arm. After reengaging the clutch momentarily apply 16 ounces of tension on shoe release arm in a direction to give a maximum gap. Rotate clutch disc in a direction to close the gap with sufficient force to overcome the disc spring tension until clutch disc is at rest against its positive stop. While holding clutch disc against its stop, measure gap between shoe release arm and stop lug of the clutch disc.

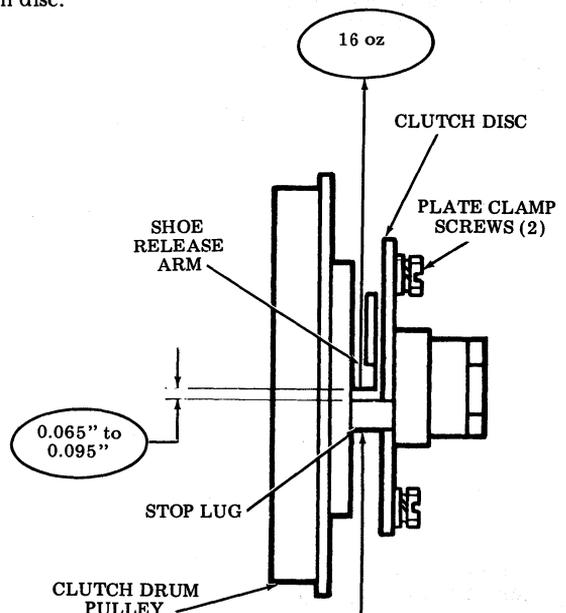
**To Adjust**

Loosen two plate clamp screws friction tight. Rotate clutch disc until the requirement is met. Tighten clamp plate screws.

**Note:** This adjustment is to be made before the clutch assembly is assembled to the line feed mechanism mounting plate and before the plastic output pulley is installed.

To Check the Requirement When the Clutch Assembly is Installed in a Unit:

Hold the clutch drum pulley to prevent it from moving. Trip the clutch magnet. While holding the clutch drum pulley from rotating momentarily apply 16 ounces to shoe release arm in a direction to give a maximum gap. Rotate clutch drum pulley in a direction to close the gap with sufficient force to take up all the play. While holding clutch drum pulley in this position measure the gap.



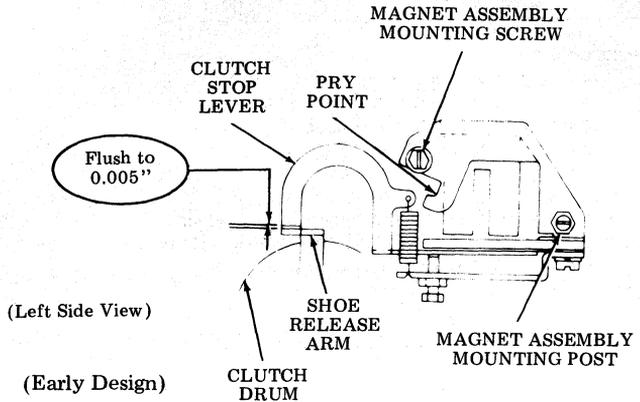
**CLUTCH STOP LEVER**  
(Early and Late Design)

**Requirement**

The top surface of the clutch stop lever should be  
Min flush --- Max 0.005 inch  
overflush with the top surface of the shoe release arm.

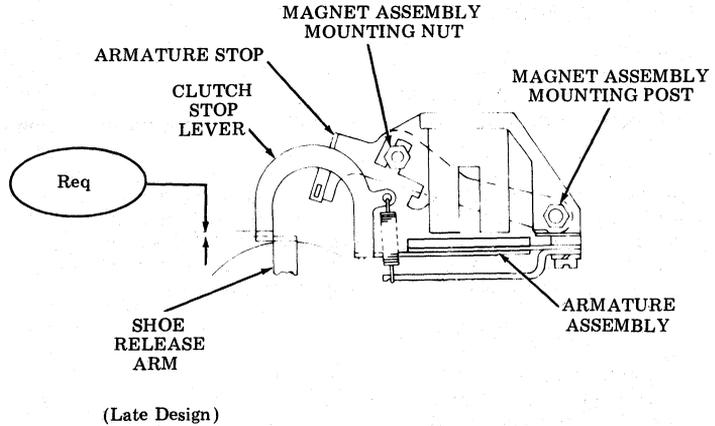
**To Adjust (Early Design)**

Loosen magnet assembly post and mounting screw friction tight. Position magnet assembly to meet requirement using the pry points. Tighten mounting screw and mounting post.



**To Adjust (Late Design)**

Loosen magnet assembly mounting nut and armature stop lever mounting screw friction tight. Position armature stop lever so that the clutch stop lever meets the requirement. Tighten armature stop lever mounting screw and nut securely. Check the other 5 clutch positions.



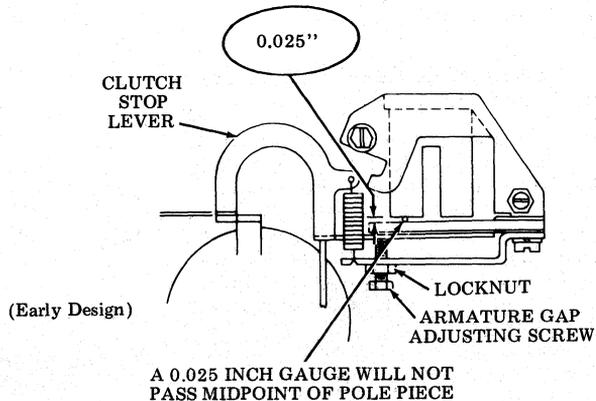
**LINE FEED ARMATURE GAP**  
(Early and Late Design)

**Requirement**

A 0.025 inch gauge shall enter the armature and magnet core measured in line with the outer surface of the magnet core but will not pass beyond the midpoint of the pole face.

**To Adjust (Early Design)**

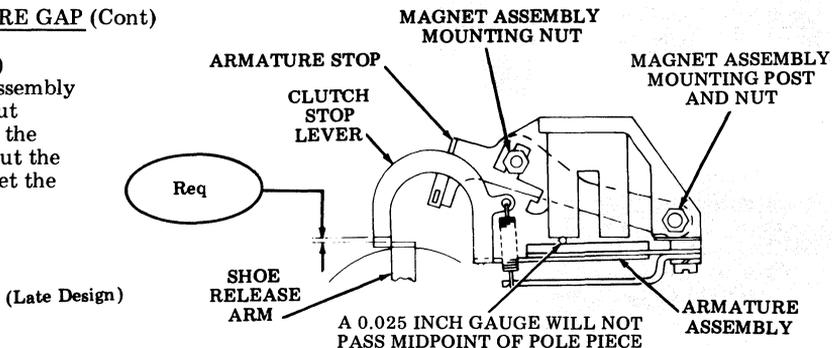
With locknut loosened, make the adjustment using the adjusting screw. Tighten locknut.



LINE FEED ARMATURE GAP (Cont)

**To Adjust (Late Design)**

Loosen the magnet assembly mounting post and nut friction tight. Rotate the magnet assembly about the mounting post to meet the requirement.



LINE FEED BAR ECCENTRIC AND DRIVE BELT TENSION

(Late Design)

**Requirement (A)**

Feed bars should be parallel to each other as gauged by eye.

**To Check**

Manually energize line feed magnet and rotate line feed clutch sprocket. Latch line feed clutch. Requirement (A) is considered met if the center line of feed bar eccentric alignment hole is in line with rear surface of line feed bar (or top surface of line feed bar on forms access printer).

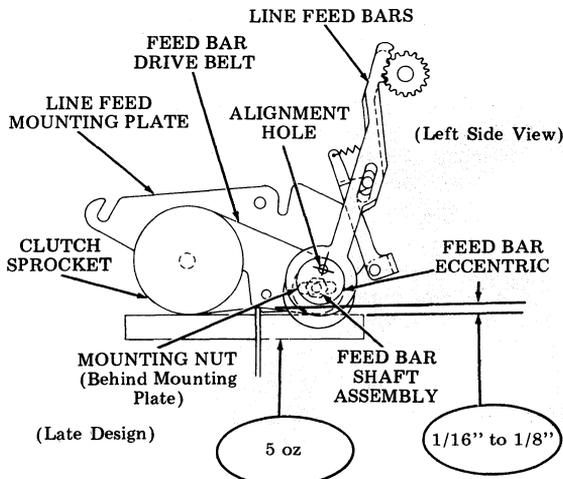
**Requirement (B)**

With a force of 5 ounces applied perpendicular to drive belt approximately midway along its free length, the belt should deflect

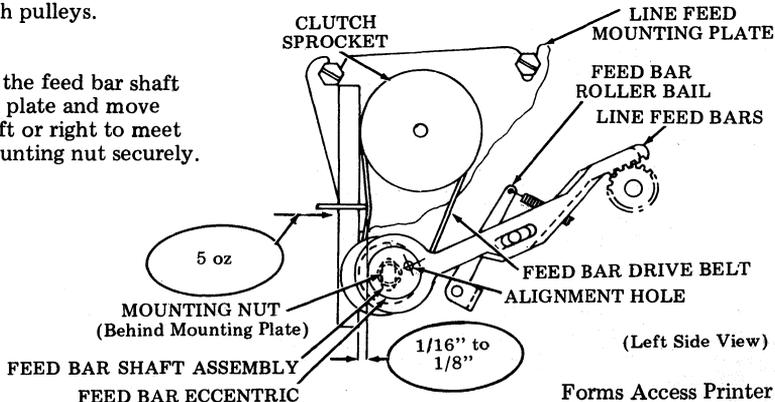
Min 1/16 inch --- Max 1/8 inch from a line tangent to both pulleys.

**To Adjust**

Loosen the nut mounting the feed bar shaft assembly to the mounting plate and move feed bar shaft assembly left or right to meet requirements. Tighten mounting nut securely.



80-Column Friction or Tractor Feed or 132-Column Tractor Feed Printer



Forms Access Printer

### LINE FEED BAR ECCENTRIC AND DRIVE BELT TENSION (Cont)

(Early Design)

#### Requirement (1)

Feed bar eccentric adjusting screws should be positioned at right angles to line feed bar rear surface as gauged by eye.

#### To Check (1)

Manually energize line feed magnet and rotate line feed clutch sprocket. Latch line feed clutch.

#### To Adjust (1)

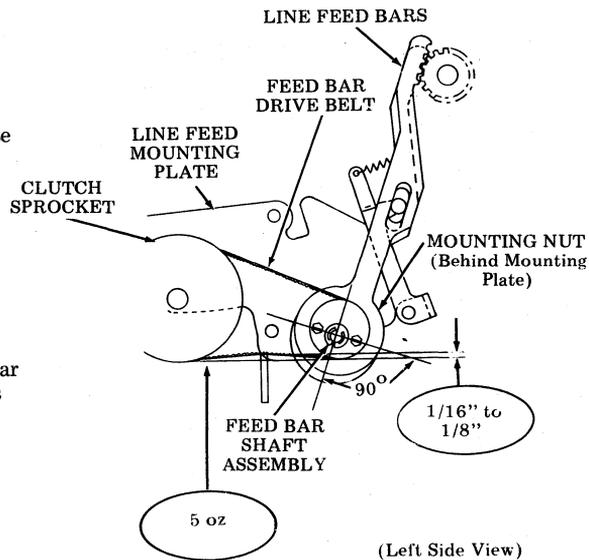
Loosen feed bar eccentric adjusting screws. Rotate eccentrics to meet requirement. Tighten adjusting screws.

#### Requirement (2)

With a force of 5 ounces applied perpendicular to drive belt approximately midway along its free length, the belt should deflect  
Min 1/16 inch --- Max 1/8 inch  
from a line tangent to both pulleys.

#### To Adjust (2)

Remove circuit card. Loosen mounting nut. Position feed bar shaft assembly to meet requirement. Tighten mounting nut.



(Early Design)

### LOW PAPER SWITCH

(Friction Feed Printer — Under Power)

#### Requirement

The switch adjusting plate should be positioned in the center of the adjusting range. This position will give a low paper indication with approximately

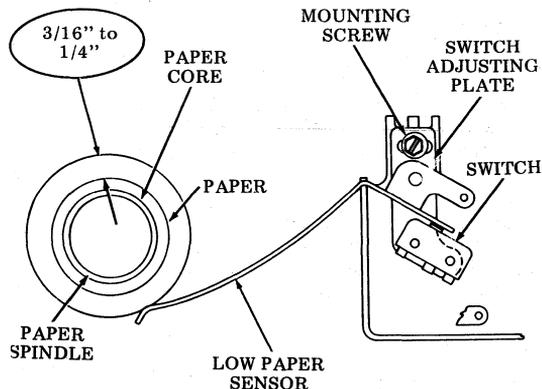
Min 3/16 inch --- Max 1/4 inch  
of paper remaining on the roll. Remove cover to provide access to the low paper switch.

#### To Check

Remove paper spindle. Place a roll of paper which has between 3/16 inch and 1/4 inch of paper remaining on the roll. Plug in ac power cord. The low paper lamp shall light.

#### To Adjust

Loosen mounting screws that secure the switch adjusting plate, friction tight. Position plate to meet requirement. Tighten mounting screws.



(Left Side View)

**MASK**

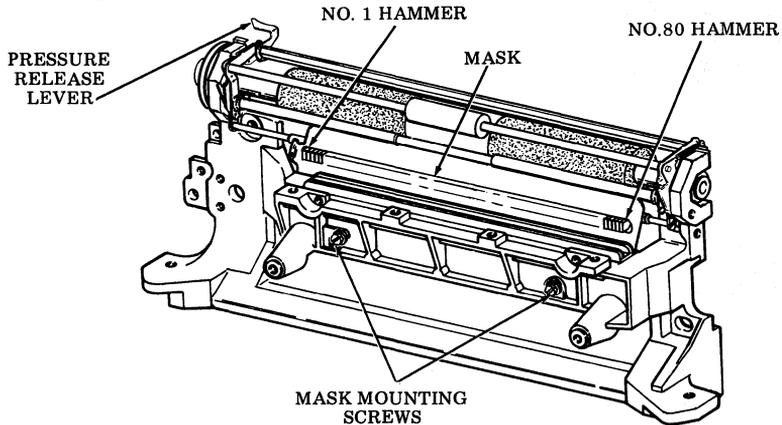
(40P102 Friction Feed Printer Only)

**Requirement**

There shall be some clearance between the top and bottom edges of the mask slot and the top and bottom of the No. 1 and No. 80 hammers.

**To Adjust**

Pull pressure release lever forward. Loosen two mask mounting screws friction tight. Position mask to meet requirement. Tighten screws.

**LEFT RIBBON BRACKET**

(Friction Feed Only)

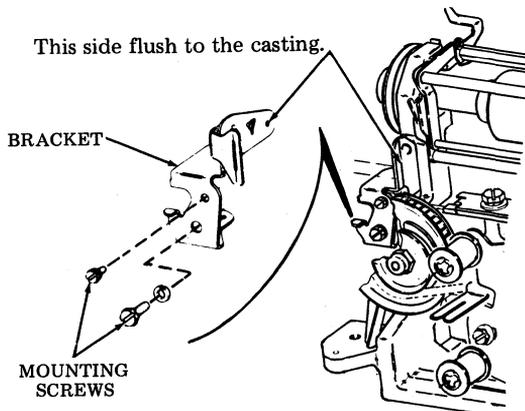
*Note:* This adjustment does not apply to late design units equipped with "black" bracket.

**Requirement**

The right surface of the bracket shall be flush to the casting.

**To Adjust**

Loosen bracket mounting screws. Position bracket to meet requirement. Tighten screws.



PAPER-OUT SWITCH (Early and Late Design)  
(80-Column Tractor Feed Printer)

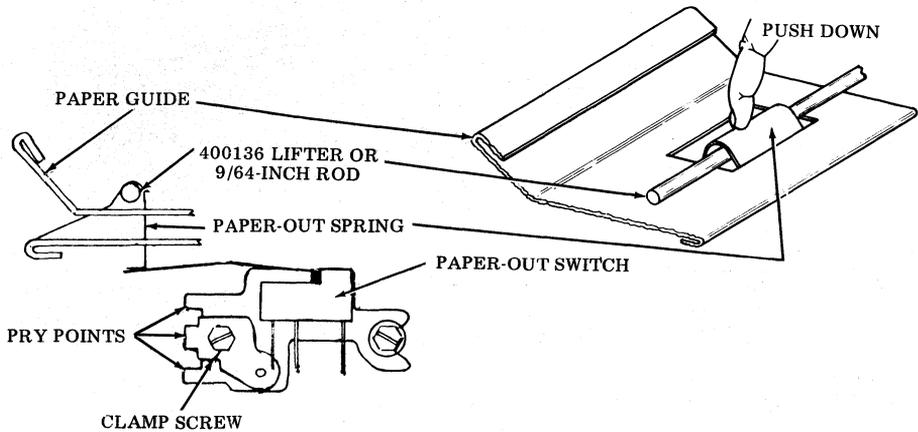
(Early Design)

Requirement

With a 9/64-inch rod or 400136 lifter inserted in loop of paper-out spring, the paper-out switch should operate when loop is pressed toward paper guide and should operate in the other direction when spring is allowed to return. Determine by ear (clicking noise) or by placing the leads of an ohmmeter across pins 10 and 11 of connector J-3. The ohmmeter should give a closed circuit reading before pressing spring down, and open after releasing.

To Adjust

With clamp screw friction tight, position switch to meet requirement, using pry points. Tighten clamp screw.



(Early Design)

**PAPER-OUT SWITCH** (Early and Late Design) (Cont)  
(80-Column Tractor Feed Printer)

(Late Design)

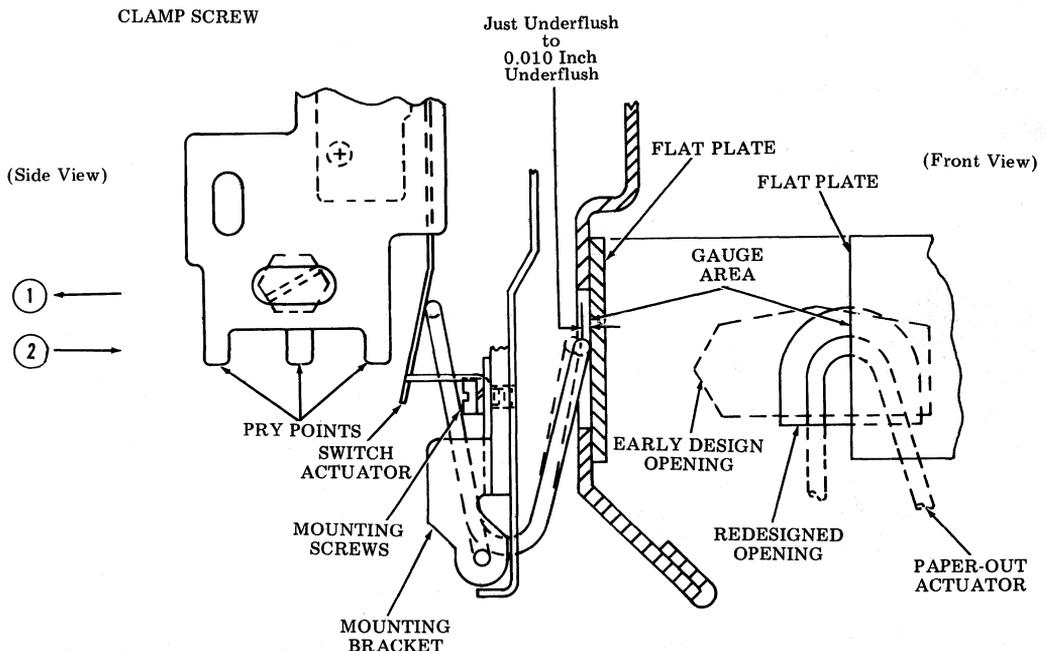
**Requirement**

With a flat plate positioned over the opening in the paper guide and the paper-out actuator biased against the flat plate, a test lamp should be ON or an ohmmeter should indicate a closed circuit. Passing a 0.010 inch flat gauge between the actuator and the flat plate should cause the lamp to go OFF or an ohmmeter to indicate an open circuit.

**Note:** When the 0.010 inch flat gauge and the flat plate are removed and the flat plate is again positioned over the paper guide opening, the lamp should be ON or an ohmmeter should indicate a closed circuit.

**To Adjust**

Place a lamp or ohmmeter across pins 1 and 3 of connector J114 on 40P150 through 40P153 printers or across pins 7 and 10 of connector P109 on 40P154 printer. With the clamp screw friction tight and a flat plate over the paper guide opening, move the switch in the direction indicated by ① ← until the end of adjustment range is reached. Position the 0.010 inch gauge between the actuator and the flat plate and move the switch in the direction indicated by ② → until lamp goes OFF or ohmmeter indicates an open circuit. Tighten clamp screw and recheck requirement.



**PAPER-OUT SWITCH (Early and Late Design)**  
 (132-Column Tractor Feed Printer)

(Early Design)

**Requirement**

The paper-out switch should trip when paper-out switch arm is positioned

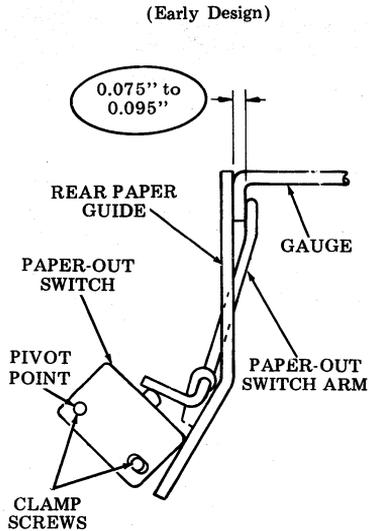
Min 0.075 inch --- Max 0.095 inch from rear paper guide.

**To Check**

Place a gauge between end of paper-out switch arm and rear paper guide. The switch should trip before arm contacts 0.075-inch gauge and should not trip when lightly held against a 0.095-inch gauge.

**To Adjust**

Loosen two switch clamp screws friction tight. Position switch about its pivot point to meet requirement. Tighten clamp screws.



(Late Design)

(1) **Requirement**

The paper-out switch should trip when the paper-out switch arm is positioned

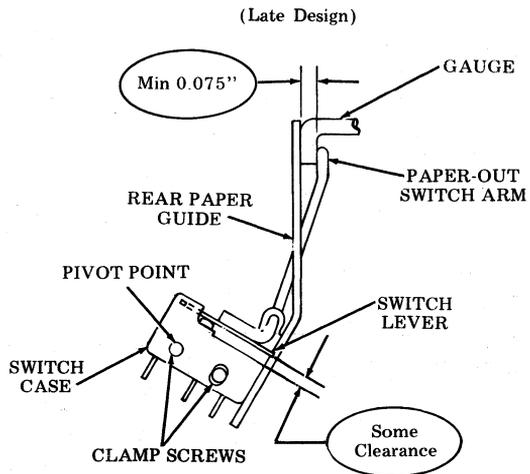
Min 0.075 inch from the rear paper guide.

(2) **Requirement**

With the paper-out switch arm touching the rear paper guide there should be some clearance between the switch case and the switch lever.

**To Measure**

Place a 0.075 inch gauge between the end of the paper-out switch arm and the rear paper guide. The switch should trip before the arm contacts the gauge. Remove the gauge and position the lever against the rear paper guides while checking for some clearance between the switch case and the switch lever.



**To Adjust**

Loosen the two switch clamp screws friction tight. Position the switch about its pivot point to meet these requirements. Tighten the clamp screws.

**PAPER-OUT SWITCH** (Forms Access Printer)**Requirement**

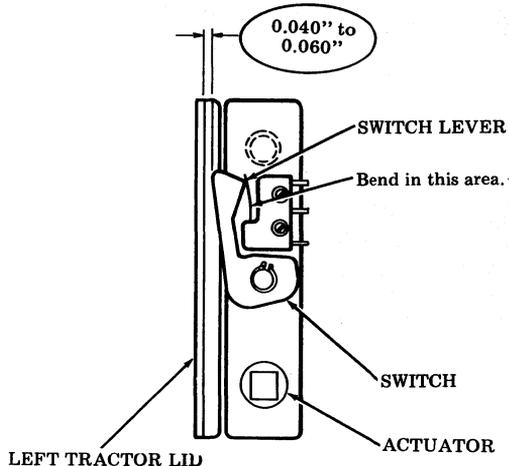
With the left tractor lid closed, under its own spring load, the "NC" contact will make the transition to an "open" condition when the switch-actuator is

Min 0.040 inch --- Max 0.060 inch  
from the tractor lid.

*Note:* The transition point may be determined by the "clicking noise" or by checking the continuity across pins 1 and 4 of connector J104.

**To Adjust**

Bend switch lever in an area between the lever pivot and actuator contact, to meet requirement.

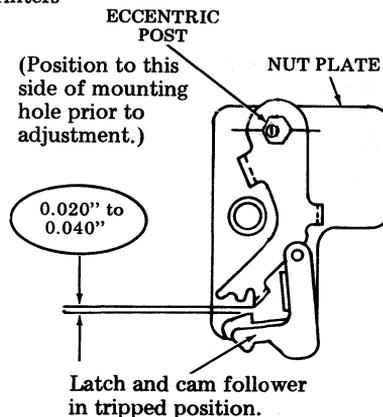
**PAPER JAM ALARM** (For 80- or 132-column tractor feed printers equipped with paper jam alarm mechanism)**Requirement**

There should be

Min 0.020 inch---Max 0.040 inch  
between the top of the latch and bottom of the actuator when the cam follower is in the trip position.

**To Adjust**

Loosen the eccentric post mounting nut friction tight. Rotate eccentric to meet requirement. Tighten mounting nut.



PAPER GUIDE POSITIONING (40P101 Friction Feed Printer)  
(Early and Interim Design)

*Note:* This adjustment does not apply to late design 40P101 printer equipped with a 400377 front casting assembly.

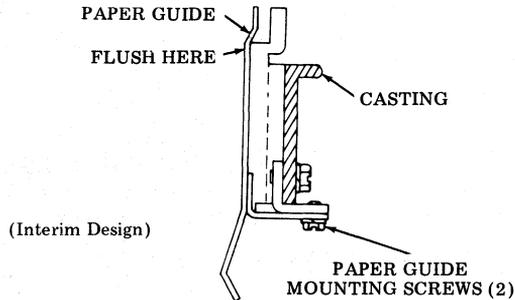
Requirement (Interim Design)

The paper guide should be flush against the upper part of the casting at both right and left sides.

To Adjust

Remove type carrier and ribbon. Loosen the two mounting screws, position guide against the casting, and tighten screws.

*Note:* (Interim Design and Early Design) This is a manufacturing adjustment and should not be disturbed unless the printer paper guide has been disassembled.

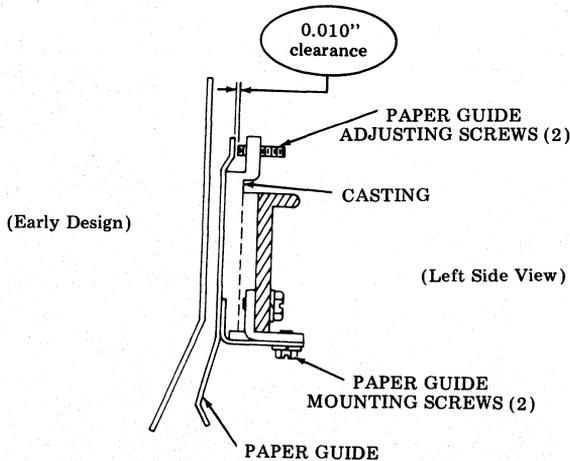


Requirement (Early Design)

There should be  
Min some --- Max 0.010 inch  
clearance between paper guide and paper guide adjusting screw.

To Adjust

Remove type carrier and ribbon. Position paper guide adjusting screws to meet requirement.



**MOTOR FAN SPACING (Early and Late Design)**

(Early Design)

For motors without thermal overload switch:

Requirement

There shall be  
 1/4 inch ---  $\pm 1/32$  inch  
 between motor bearing housing and fan hub when  
 the shaft endplay is taken up to make this gap a  
 minimum.

(Late Design)

For motors with thermal overload switch:

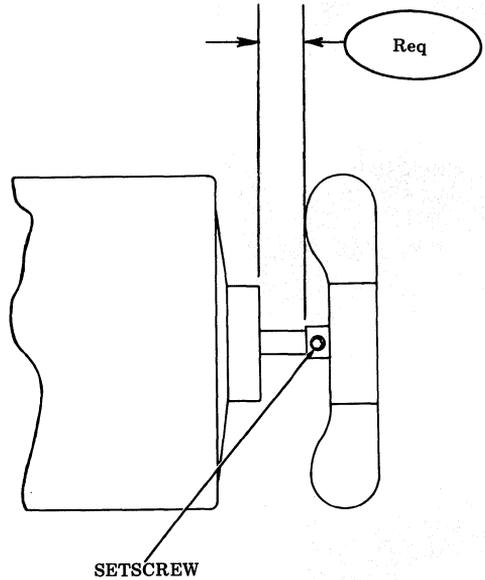
Requirement

There shall be  
 15/32 inch ---  $\pm 1/32$  inch  
 between motor bearing housing and fan hub when  
 the shaft endplay is taken up to make this gap a  
 minimum.

To Adjust

With setscrew loose, push fan in or out to meet  
 requirement. Tighten setscrew.

*Note:* Early design motors (those without a thermal  
 overload switch button) have the fan spaced at 7/16  
 inch with the use of a 7/16 inch spacer.



**IMPELLER SHAFT SENSOR GAP**

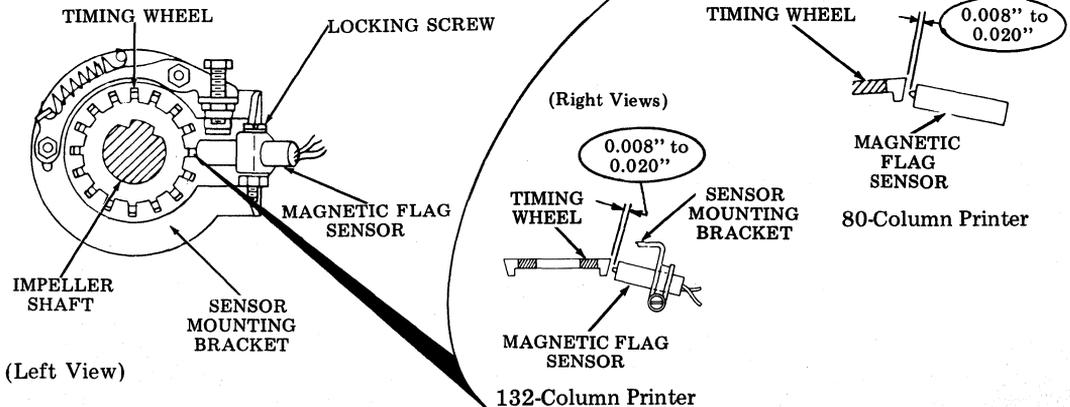
Requirement

Min 0.008 inch --- Max 0.020 inch  
 between teeth of timing wheel and sensor pole  
 piece.

To Adjust

Loosen locking screw. Adjust gap to meet require-  
 ment. Tighten locking screw.

*Note:* It is preferable to use non-  
 magnetic gauges to check requirement.  
 Steel gauges are attracted by the sensor  
 magnet making it difficult to gauge  
 the adjustment.



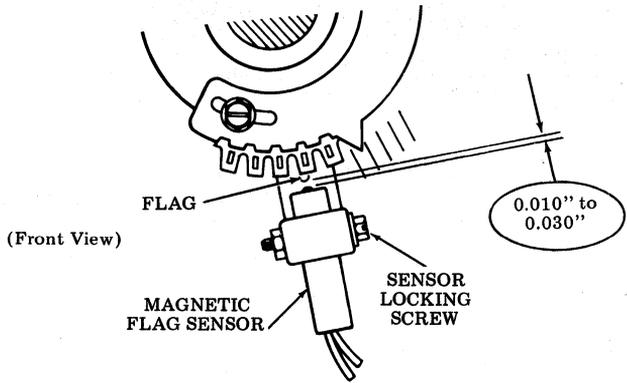
FLAG SENSOR GAP

**Requirement**

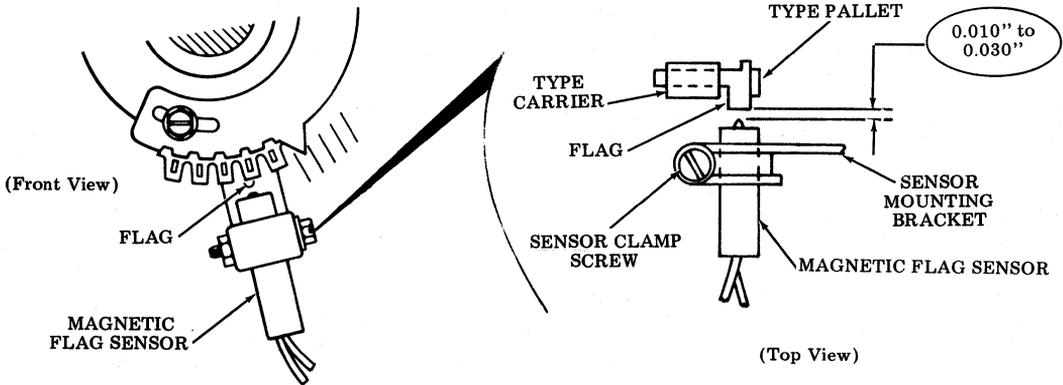
There should be  
Min 0.010 inch  
clearance between the closest flag and  
the magnetic sensor pole piece and  
Max 0.030 inch  
clearance between any flag and the  
magnetic sensor.

**To Adjust**

Loosen sensor locking screw. Adjust  
gap to meet requirement. Tighten  
locking screw.



80-Column Friction, Tractor, or Forms Access Printer



132-Column Printer

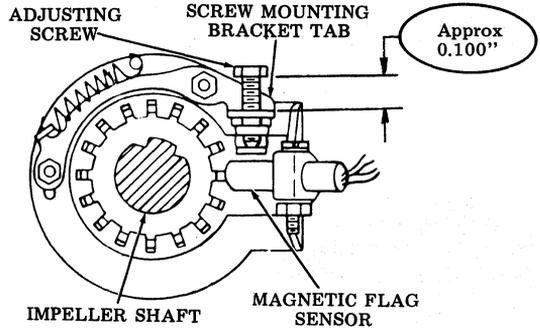
*Note:* It is preferable to use non-magnetic gauges to check requirement. Steel gauges are attracted by the sensor magnet making it difficult to gauge the adjustment.

**IMPELLER SHAFT SENSOR** (Preliminary)**Requirement**

There shall be a gap of approximately 0.100 inch between the bottom of the adjusting screw head and the top of the sensor mounting bracket tab.

**To Adjust**

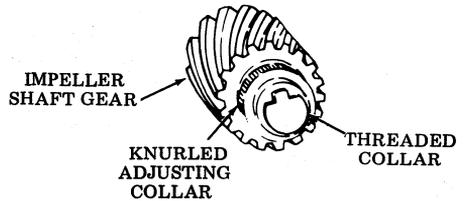
Turn adjusting screw to meet requirement.

**IMPELLER SHAFT TO CARRIER PHASING** (Preliminary)**Requirement**

Right edge of knurled adjusting collar to be flush with step on threaded collar.

**To Adjust**

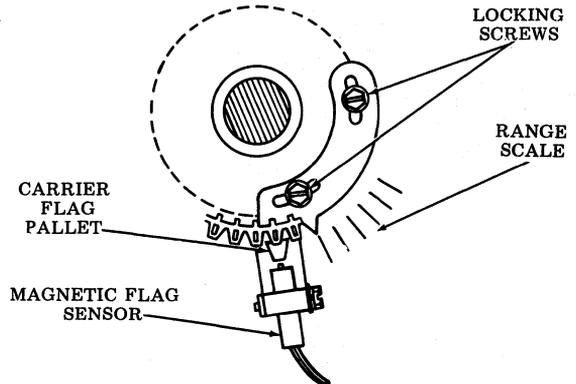
Rotate knurled collar while pushing impeller shaft gear to the left.

**FLAG SENSOR** (Preliminary)**Requirement**

Indicator to be at midpoint of the range scale.

**To Adjust**

With the two locking screws loosened, adjust magnetic flag sensor to midrange.



**Note:** The final range adjustments require the printer be operated in the Test mode and be printing a legible font identification symbol in some columns. The IMPELLER SHAFT TO CARRIER PHASING (Preliminary) and FLAG SENSOR (Preliminary) adjustments may have to be readjusted to gain this level of operation as follows:

- Step (1): Operate the test switch to determine if printer will operate. If no printing, or a character other than the font identification symbol occurs, reposition the flag sensor left or right until the font identification symbol or a portion of it is printed.
- Step (2): Refine the IMPELLER SHAFT TO CARRIER PHASING adjustment to obtain a legible font identification symbol.

INSTALLATION OF 408765 ADJUSTING GAUGES FOR BACKUP BAR TO CARRIER TRACK ADJUSTMENT (132-Column or Forms Access Printer)

- ① Remove ribbon.
- ② Remove tear bar assembly (forms access printer only).  
Remove type carrier.

BACKUP BAR TO CARRIER TRACK  
(132-Column or Forms Access Printer)

*Note:* This is a manufacturing adjustment and should not be disturbed unless carrier track channel has been replaced or disassembled.

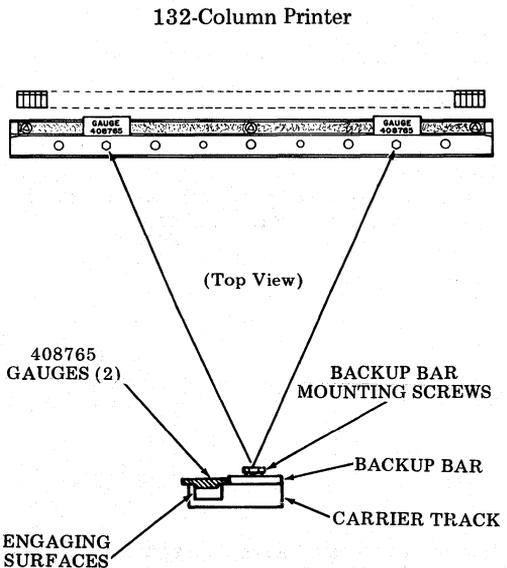
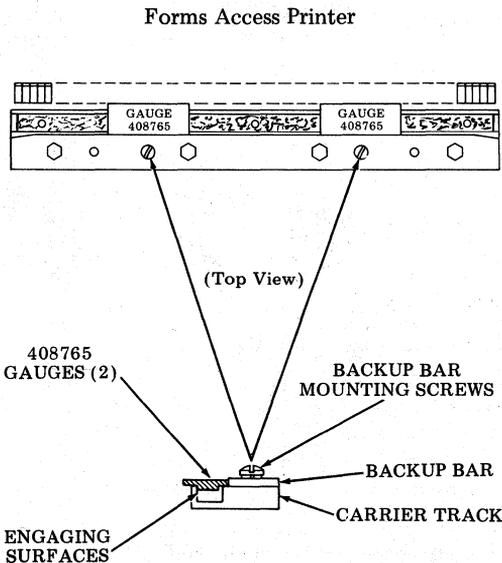
**Requirement**

The backup bar should just touch engaging surfaces of 408765 gauges two of which are positioned adjacent to backup bar mounting screws.

**To Adjust**

With the two backup bar mounting screws friction tight, and the two 408765 gauges in place on carrier track channel, apply finger pressure to backup bar to lightly contact gauges with engaging surfaces. Hold in this position and tighten the two backup bar mounting screws.

*Note:* On 132 column printer, the column indicator must be removed to make the adjustments.

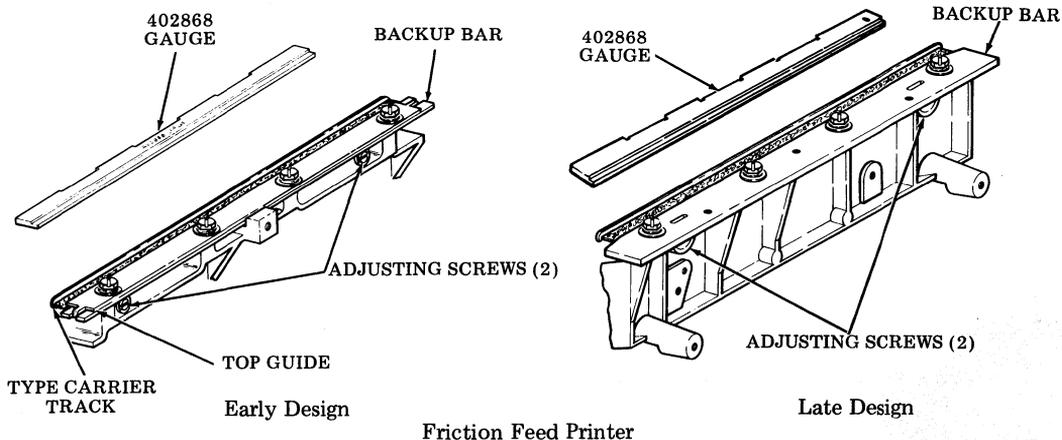


*Note:* If the BACKUP BAR TO CARRIER TRACK adjustment is made, the BACKUP BAR (Final Under Power), LEFT and RIGHT CARRIER SPROCKETS and RIBBON GUIDES adjustments must also be made.

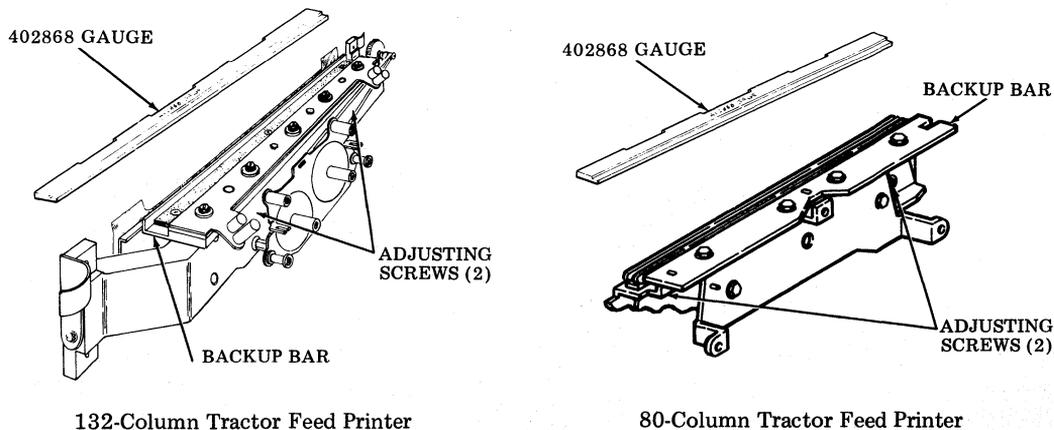
## INSTALLATION OF 402868 ADJUSTING GAUGE FOR BACKUP BAR ADJUSTMENT (80-Column Friction or Tractor Feed or 132-Column Tractor Feed)

**Note:** For optimum print quality and maximum ribbon life the unit should be adjusted after being at room ambient of 65 to 85 degrees Fahrenheit with all power off for at least three hours.

- Remove type carrier.
- Remove old ribbon and install a new ribbon.
- On units equipped with late design print hammer bumper (black and red), insert a single sheet of paper. On units equipped with early design print hammer bumper (black), insert four (4) thicknesses of single-ply paper without carbons.
- Insert 402868 adjusting gauge on type carrier track with front edge against backup bar. On 80-column printer, position gauge so it is centered in relation to no. 1 and no. 80 print hammers. On 132-column printer, position gauge first at the left end, then at the right end of the carrier track.



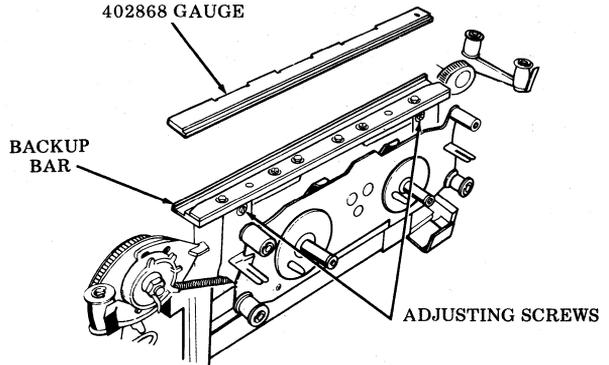
**Note:** On 80-column tractor feed printer or late design friction feed printer, carrier top guide must be removed to install 402868 gauge.



**INSTALLATION OF 402868 ADJUSTING GAUGE FOR BACKUP BAR ADJUSTMENT** (Cont)  
(Forms Access Printer)

*Note:* For optimum print quality and maximum ribbon life the unit should be adjusted after being at room ambient of 65 to 85 degrees Fahrenheit with all power off for at least three hours.

- Remove old ribbon.
- Remove tear bar assembly.
- Remove type carrier.
- Install new ribbon and insert single-ply paper.
- Insert 402868 gauge on type carrier track against backup bar.

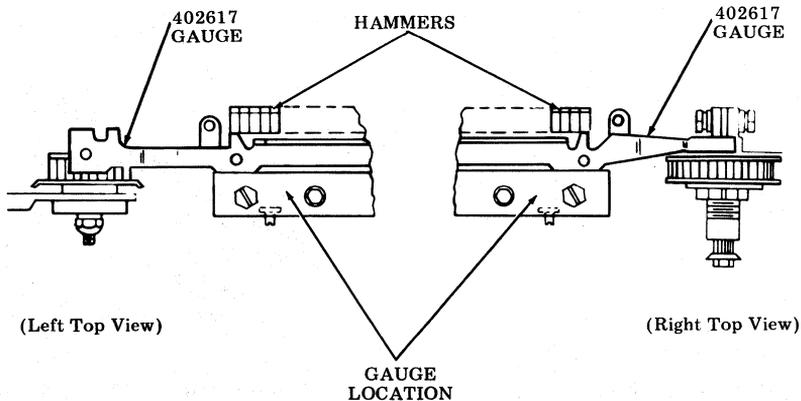


40P253 Forms Access Printer

**INSTALLATION OF 402617 ADJUSTING GAUGE** (Forms Access Printer)

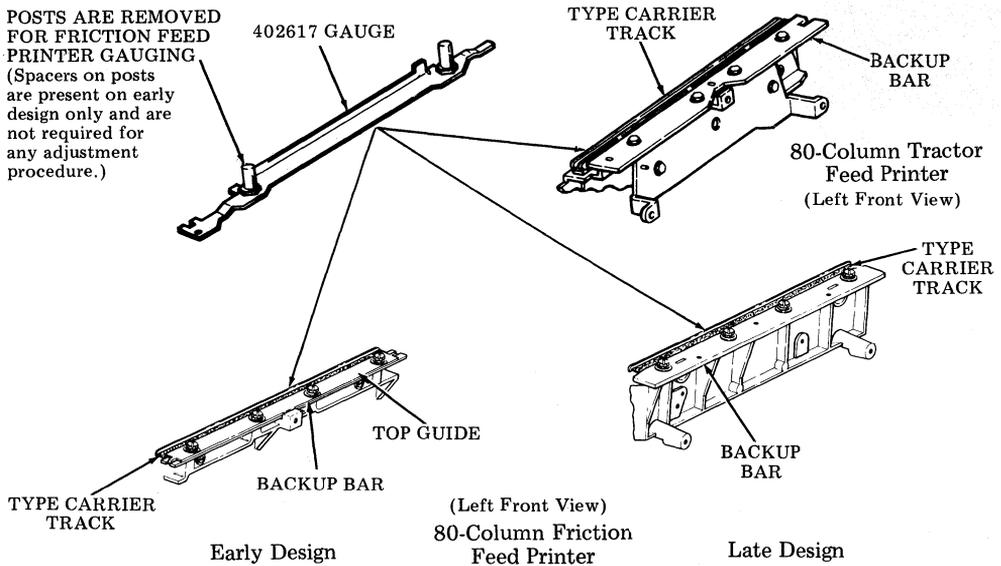
*Note:* If using early design 402617 gauge (with spacers assembled on the posts) the spacers must be removed.

- With ac power off, remove paper and ribbon.
  - Remove tear bar assembly.
  - Remove type carrier.
- Insert 402617 gauge on type carrier track with front edge against backup bar. Position gauge so protrusions at rear line up with no. 1 and no. 80 print hammers.



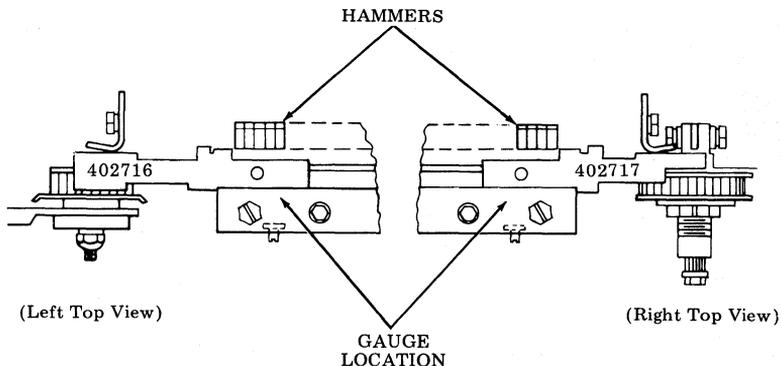
INSTALLATION OF 402617 ADJUSTING GAUGE (Cont) (80-Column Friction or Tractor)

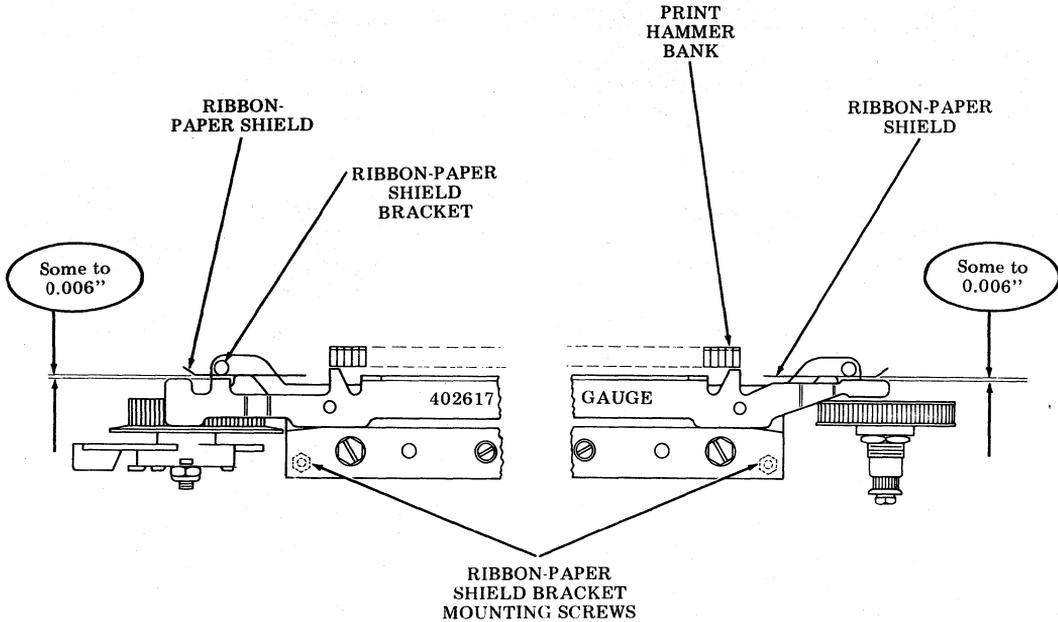
- ① With ac power off, remove paper and ribbon.
- With type carrier removed, insert 402617 gauge on type carrier track with front edge against backup bar. Position gauge so protrusions at rear line up with no. 1 and no. 80 print hammers.



INSTALLATION OF 402716 AND 402717 GAUGES (132-Column Tractor Feed Printer)

- ① With ac power off, remove paper and ribbon.
- ② Remove type carrier per instructions on cover.
- ③ Position 402716 (left) and 402717 (right) gauges on top of track and against backup bar.





**RIBBON GUIDE**

(40P253 Forms Access Printer)

**Requirement**

With the 402617 gauge held against the backup bar of the carrier track assembly there should be  
Min Some --- Max 0.006 inch  
between the gauge points and the ribbon-paper shield.

Install 402617 gauge. See Page 24.

**To Adjust**

With the ribbon-paper shield bracket mounting screws friction tight, position the shield bracket to meet requirement. Tighten two mounting screws.

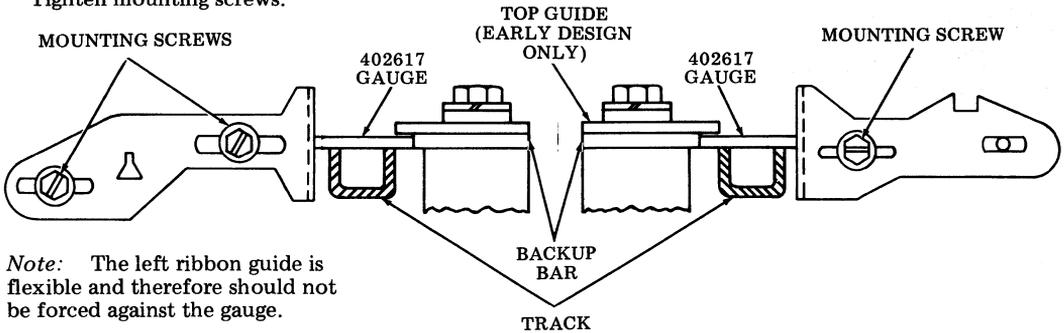
**RIBBON GUIDE (Preliminary)**  
**(Friction Feed Printer)**

**Requirement**

The right and left ribbon guides should just touch the adjusting gauge.

**To Adjust**

Loosen left and right ribbon guide mounting screws friction tight. With gauge held by hand against the backup bar, push right and left ribbon guides by hand into contact with the adjusting gauge. Tighten mounting screws.



*Note:* The left ribbon guide is flexible and therefore should not be forced against the gauge.

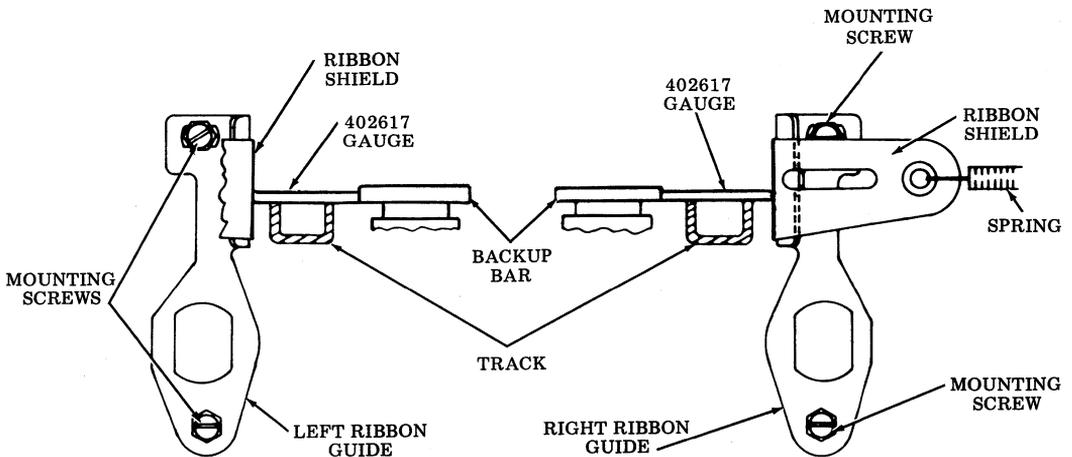
**RIBBON GUIDE (Preliminary)**  
**(80-Column Tractor Feed Printer)**

**Requirement**

The right and left ribbon guides should hold the ribbon shield against the adjusting gauge at the point of contact.

**To Adjust**

With mounting screws friction tight, push right and left ribbon guides and ribbon shield into contact with the adjusting gauge. Tighten mounting screws.



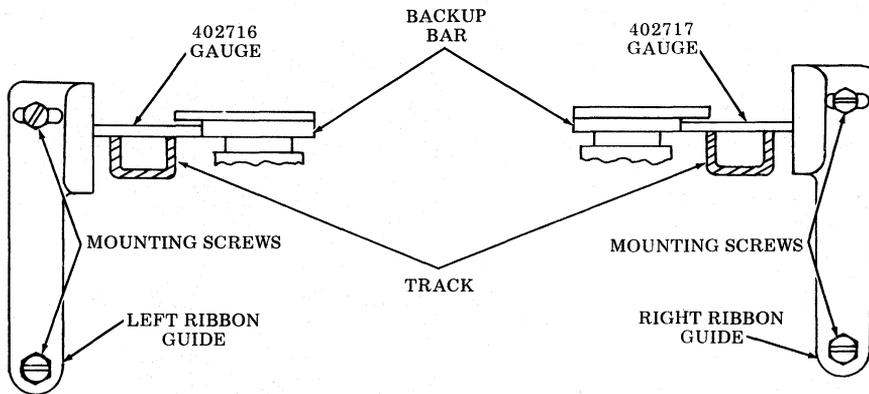
RIBBON GUIDE (Preliminary) (Cont)  
(132-Column Tractor Feed Printer)

Requirement

The left and right ribbon guides should just touch the 402716 and 402717 adjusting gauges.

To Adjust

Loosen ribbon guide mounting screws friction tight. Position the 402716 and 402717 gauges against the backup bar and position the ribbon guides against the gauge surface. Tighten the ribbon guide mounting screws.

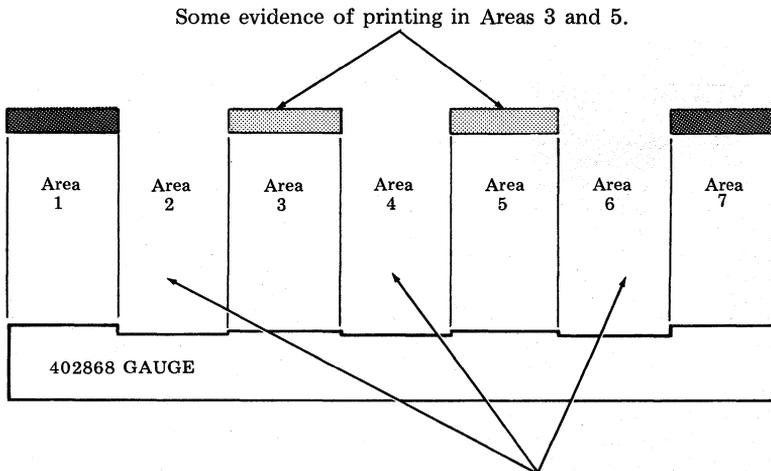
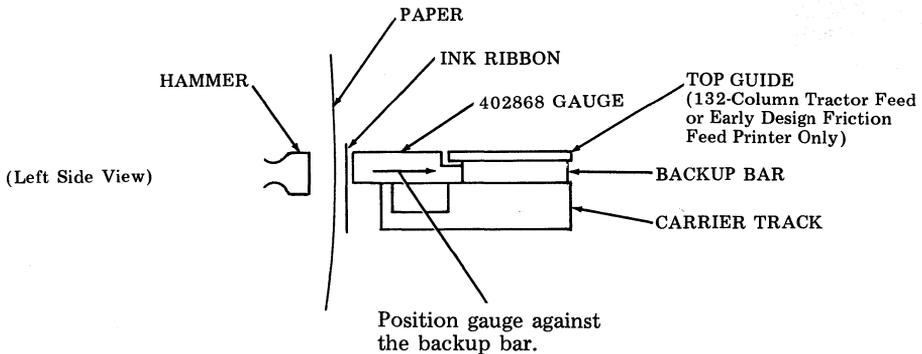


**BACKUP BAR** (Final—Under Power)

**Requirement**

The overall printing density shall be uniform and acceptable across the full width of the page. If the whole character is present and legible, some variation in density is allowed, provided the density variation is not consistently repeated.

*Note:* When the unit is properly adjusted for acceptable density, adequate ribbon life will also be achieved; however, if the printer is adjusted for darker density levels, ribbon life will be proportionately reduced.

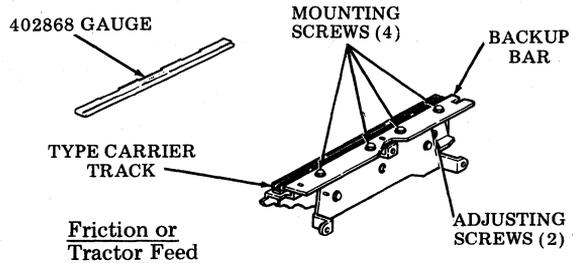


On 80-column or forms access units: No visible printing in Areas 2, 4, and 6.

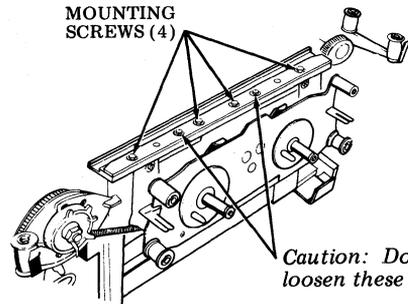
On 132-column units: No visible printing in Areas 2 and 4 with gauge positioned at left end of track or Areas 6 and 4 with gauge positioned at right end of track. Occasional light marks permissible in Areas 6 and 2 when gauge is at left and right ends, respectively.

**BACKUP BAR** (Final — Under Power) (Cont)**To Adjust**

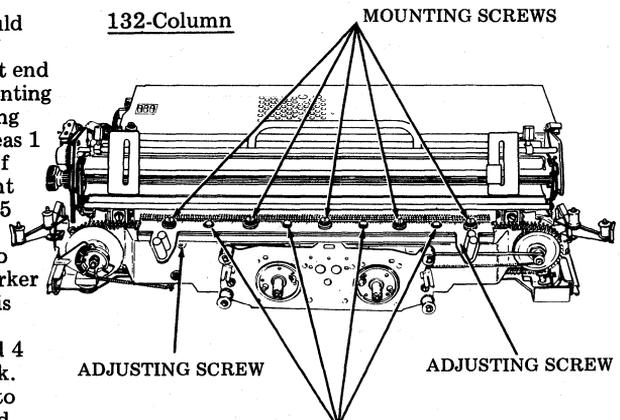
With unit turned on, hold 402868 gauge firmly against backup bar. Place printer test switch in ON position and pass a steel object over flag sensor to initiate hammer firing.



**On 80-Column or Forms Access Units:** Loosen four (4) mounting screws friction tight and turn two (2) adjusting screws until some printing occurs in only Areas 1 and 7. From this point turn both left and right adjusting screws clockwise until Areas 3 and 5 show evidence of some printing but not necessarily in all columns. This also applies to Areas 1 and 7 where printing will become darker but still may have blank spaces. No printing is permitted in Areas 2, 4 and 6. Tighten four (4) mounting screws.

**Forms Access**

**On 132-Column Units:** Printed pattern should be noted with gauge positioned at left end of track and again with gauge positioned at right end of track. Loosen five (5) track assembly mounting screws friction tight and turn two (2) adjusting screws until some printing occurs in only Areas 1 and 7 when gauge is positioned at each end of track. From this point turn both left and right adjusting screws clockwise until Areas 3 and 5 show evidence of some printing, but not necessarily in all columns. This also applies to Areas 1 and 7 where printing will become darker but still may have blank spaces. No printing is permitted in Areas 2 and 4 when gauge is positioned at left end of track or Areas 6 and 4 when gauge is positioned at right end of track. Due to relative length of gauge with respect to 132-column page and tolerances of associated piece parts, it is permissible to observe occasional light marks in Areas 6 and 2 when gauge is at the left and right ends, respectively. Tighten five (5) track assembly screws.



*Caution: Do not loosen these screws.*

**BACKUP BAR** (Final -- Under Power) (Cont)**To Check**

Install the type carrier. Insert a single sheet of paper and with a random test, check the copy density for conformance to the requirement.

On units equipped with early design print hammer bumper (black), if printed copy is not satisfactory, repeat the adjustment using three (3) thicknesses of paper and recheck copy for density with the type carrier and a single sheet of paper installed. If further density is required (in isolated cases), the printer may be adjusted using two (2) or one (1) thickness of paper.

*Note 1:* Each time the BACKUP BAR (final) adjustment is made, the following adjustments must also be made:

**LEFT AND RIGHT CARRIER SPROCKETS**  
**RIBBON GUIDES** (Final) (See Note 2.)

*Note 2:* On the forms access printer, the ribbon guide adjustment need not be remade unless the carrier track channel has been replaced or disassembled.

LEFT CARRIER SPROCKET (80-Column Friction, Tractor Feed, or Forms Access Printers)

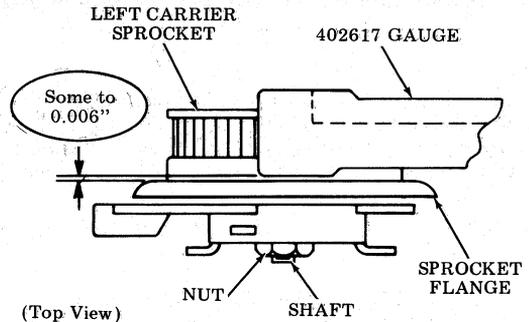
**Requirement**

Rear surface of sprocket flange should clear adjusting gauge by  
 Min some --- Max 0.006 inch.

Install 402617 gauge. See Pages 24 or 25.

**To Check**

Rotate carrier release lever clockwise until rear rim of sprocket just touches bottom of gauge.  
 Take up play in sprocket assembly evenly to rear of printer.



**To Adjust** (Tractor Feed, 40P102 and Late Design 40P101 Friction Feed, and 40P253 Forms Access)  
 Position the sprocket by turning nut at front of sprocket to meet requirement.

**To Adjust** (Early Design 40P101 Friction Feed only)

Position sprocket by turning nut at front of sprocket to meet requirement while holding shaft with an Allen wrench.

(132-Column Printers)

**Requirement**

The rear surface of the sprocket flange should clear the adjusting gauge by  
 Min some --- Max 0.006 inch  
 at its closest point when sprocket is in its normal operating position.

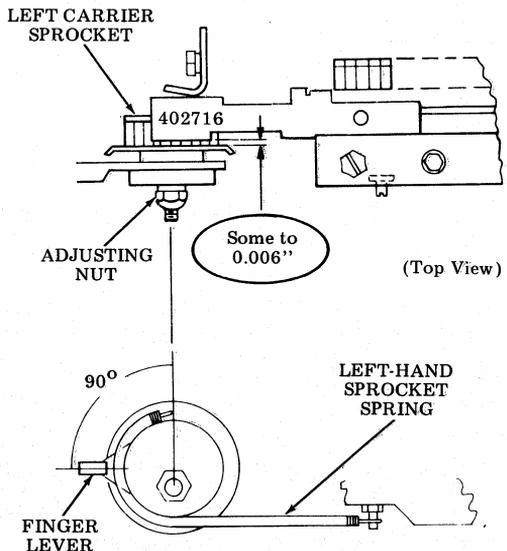
Install 402716 gauge. See Page 25.

**To Check**

Rotate carrier release lever clockwise until rear rim of sprocket just touches bottom of gauge.  
 Take up play in sprocket assembly evenly to rear of printer.

**To Adjust**

Position 402716 gauge against backup bar. While holding the finger lever of sprocket hub parallel to track assembly and rotating the sprocket, turn adjusting nut clockwise until base of sprocket flange just contacts the gauge at its closest point. Turn adjusting nut back counterclockwise some to 45 degrees. This is equivalent to some to 0.004 inch.



**RIGHT CARRIER SPROCKET** (80-Column Friction, Tractor Feed, or Forms Access Printers)

**Requirement**

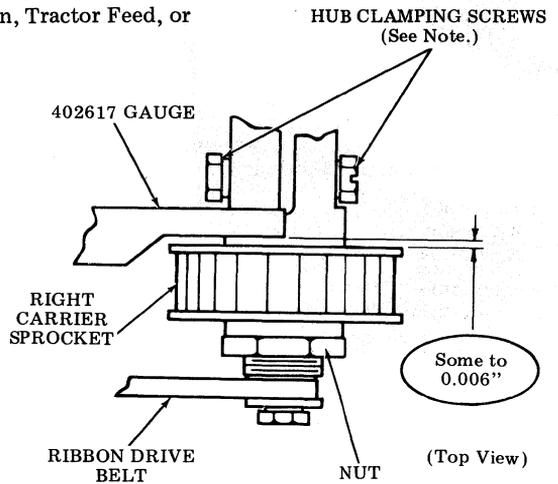
Rear surface of sprocket should clear adjusting gauge by

Min some --- Max 0.006 inch.

**To Adjust**

Loosen two hub clamping screws (or one screw and one nut if so equipped). Turn nut at front of sprocket to meet requirement. Tighten hub clamping screws (or screw and nut).

*Note:* Some printers have one hub clamping screw and one hub clamping nut instead of two hub clamping screws.



**(132-Column Printers)**

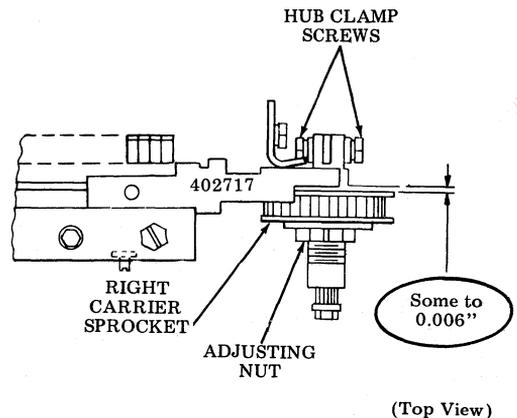
**Requirement**

The rear surface of right carrier sprocket flange should clear gauge by

Min some --- Max 0.006 inch  
at its closest point.

**To Adjust**

Position 402717 gauge against backup bar. Turn adjusting nut clockwise until rear surface of sprocket flange just contacts the gauge. Turn adjusting nut back counterclockwise some to 45 degrees. This is equivalent to some to 0.004 inch. Tighten hub clamp screws securely.



**RIBBON GUIDE (Final)**  
(Friction Feed Printer)

**Requirement (1)**

There should be

Min 0.010 inch clearance

between ribbon guides and the face of a flag pallet on carriers having three fonts and the face of a font identification pallet on carriers having two fonts.

**To Adjust**

Loosen ribbon guide mounting screws friction tight. Position guide to meet requirement. Tighten mounting screws. Repeat the procedure with the other ribbon guide.

**Requirement (2)**

There should be

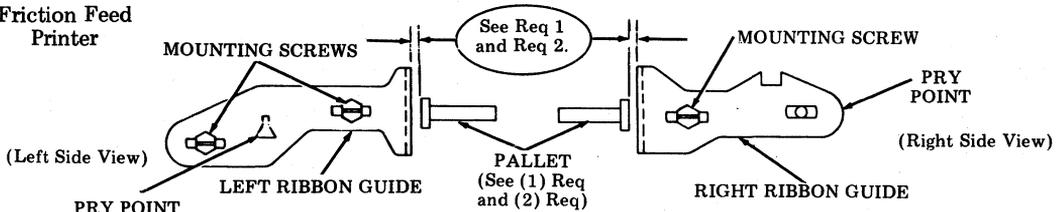
Min 0.006 inch clearance

between the ribbon guides and all pallet faces.

**To Adjust**

Seat pallets against the rear surface of the front flange of the left sprocket.

**Friction Feed Printer**



**RIBBON GUIDE (Final)**

(80-Column Tractor Feed Printer)

**Requirement (1)**

There should be

Min 0.010 inch clearance

between the ribbon shield where it contacts the ribbon guides and the face of a flag pallet on carriers having three fonts and the face of a font identification pallet on carriers having two fonts.

**To Adjust**

Loosen ribbon guide mounting screws friction tight. Position guide to meet requirement. Tighten mounting screws. Repeat procedure with other ribbon guide.

**Requirement (2)**

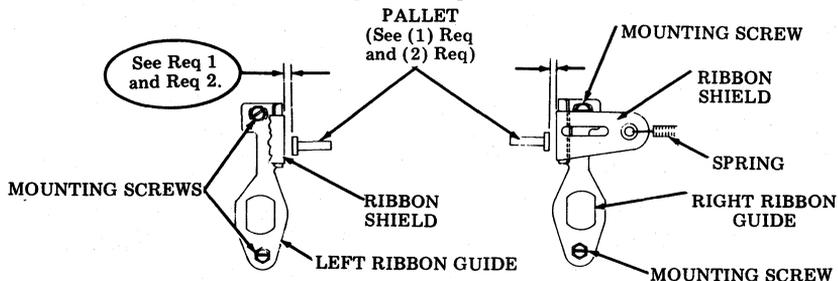
There should be

Min 0.006 inch clearance

between the ribbon shield where it contacts the ribbon guides and all pallet faces.

**To Adjust**

Seat pallets against rear surface of front flange of left sprocket.



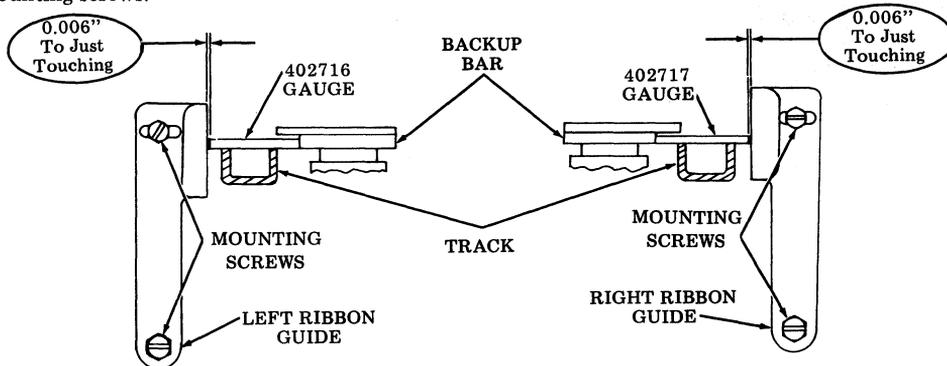
**RIBBON GUIDE (Final) (Cont)**  
**(132-Column Tractor Feed Printer)**

**Requirement (A)**

The left and right ribbon guides should be 0.006 inch to just touching the 402716 and 402717 adjusting gauges.

**To Adjust**

Loosen ribbon guide mounting screws friction tight. Position the 402716 and 402717 gauges against the backup bar and position the ribbon guides against the gauge surface. Tighten the ribbon guide mounting screws.



**Note:** The following requirement is a final functional check to assure adequate clearance between type pallets and ribbon guides and is made with a type carrier installed. Too much clearance between pallets and ribbon guides may cause ribbon smudge on the paper, making it difficult to make the PAPER POSITIONER adjustment.

**Requirement (B)**

There shall be a minimum of 0.010 inch clearance between the closest pallet and the ribbon guides.

**To Check**

Seat all pallets against the rear surface of the front flange of the left sprocket. Position a 0.010 flat gauge against the ribbon guide and rotate the type carrier one complete revolution by turning impeller gear by hand clockwise. Repeat the procedure with the other ribbon guide.

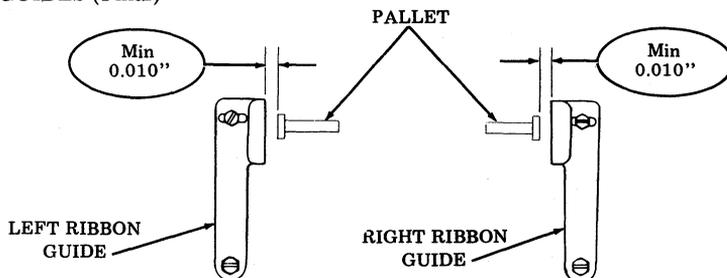
**To Adjust**

Recheck the following adjustments:

BACKUP BAR (Final)

LEFT AND RIGHT CARRIER SPROCKETS

RIBBON GUIDES (Final)



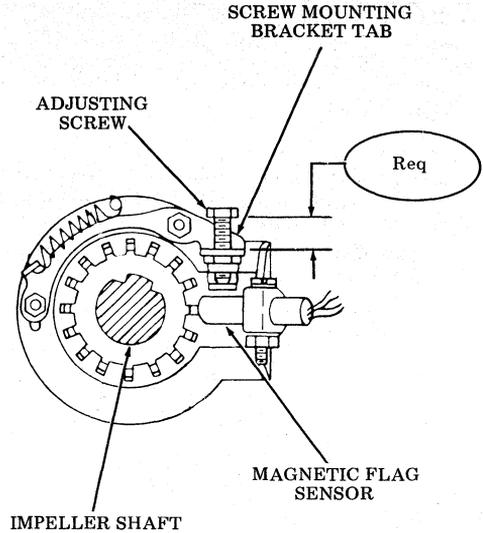
IMPELLER SHAFT SENSOR (Final – Under Power)

**Requirement**

The impeller sensor is to be positioned 2-3/4 clockwise turns from a point where any further counterclockwise motion of the adjusting screw would cause a column or columns not to print.

**To Adjust**

- Step (A) With the unit in the Test position and printing the font identification symbol, turn impeller sensor adjusting screw (with a nut driver) COUNTERCLOCKWISE through a range where all columns print (approximately 5 to 10 turns) until a column or columns does not print.
- Step (B) Slowly turn the adjusting screw CLOCKWISE just until all columns print for at least ten lines.
- Step (C) Turn the adjusting screw CLOCKWISE an additional 2-3/4 turns.



*Note 1:* If while performing Step (A), a printing speed hesitation occurs before an individual column fails to print, reposition the flag sensor slightly to the right to enable printing to continue while completing the adjustment. See FLAG SENSOR ADJUSTMENT (Final).

*Note 2:* The impeller shaft sensor is adjusted at the factory using equipment and techniques not available in the field. This adjustment should not be disturbed unless the unit has been disassembled, the printer logic card replaced, or there is sufficient reason to believe the sensor is not adjusted properly.

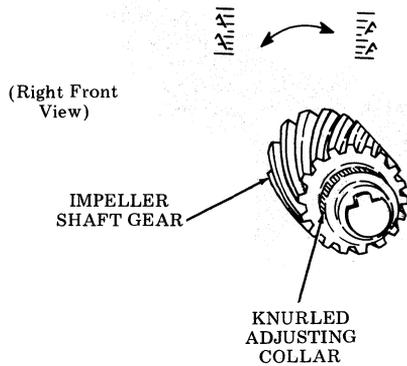
**IMPELLER SHAFT TO CARRIER PHASING (Final – Under Power)**

**Requirement**  
Printed characters must be printed fully from left to right.

**To Adjust**  
Print some font identification characters using test switch. Turn printer off, disconnect ac power. If right portion of character is missing, turn knurled adjusting collar clockwise while holding impeller shaft gear away from collar.

If left portion of character is missing, turn knurled adjusting collar counterclockwise while holding impeller gear away from collar. Turn ac power on and repeat test to make sure requirement is met.

When multicopies are used, phasing should be adjusted to minimize clipping on the last copy with no clipping on the original.



Tractor Feed Printer and Friction Feed Printer

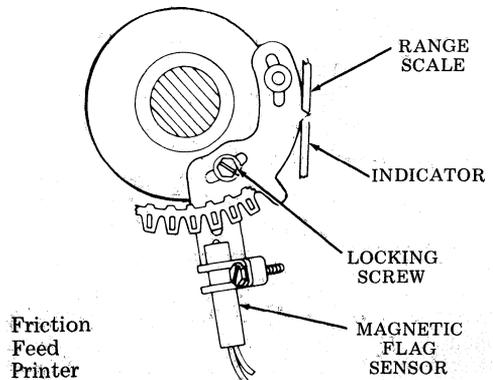
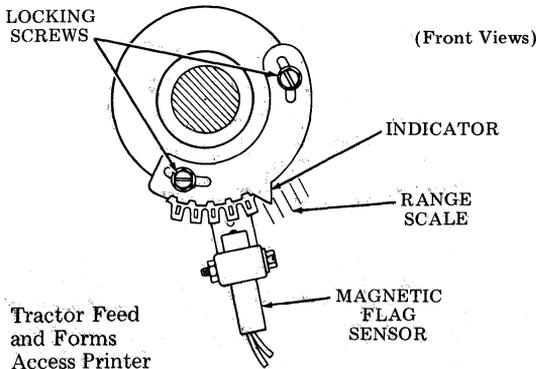
**Note:** If the IMPELLER SHAFT TO CARRIER PHASING adjustment is readjusted by a substantial amount, the flag sensor position may have to be readjusted. See FLAG SENSOR (Final).

**FLAG SENSOR (Final -- Under Power)**

**Requirement**  
Flag sensor must be in approximately the midpoint between failure points of its range.

**To Check**  
Print some font identification characters using the test switch.

**To Adjust**  
Loosen locking screw(s) friction tight. While printing font identification symbol, slowly move the flag sensor to the left until a different character or no character is printing. Note reading on the range scale. Slowly move the flag sensor to the right until a different character or no character is printing. Note reading on the range scale. Position the flag sensor midway between the two failure points. Turn the printer off and tighten locking screw(s).



**PAPER POSITIONER (Under Power)**  
 (80-Column Friction, Tractor Feed, or 132-Column Tractor Feed)

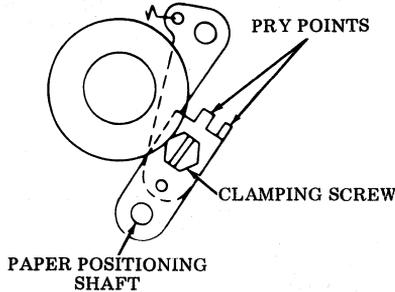
**Requirement (A)**

The paper should be positioned as close to ribbon as possible without causing printed copy to become illegible due to ribbon smudging after a one minute printer idle period.

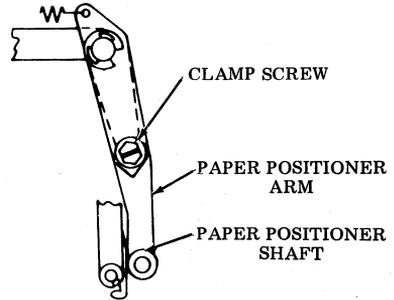
**Requirement (B)**

There should be no smudge when printing a text message (not the font identification symbol).

Friction Feed Printer



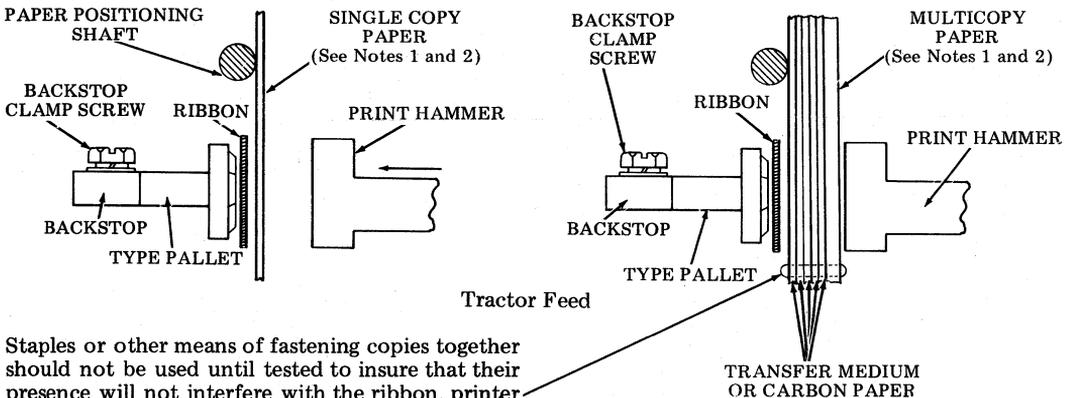
Tractor Feed Printer



*Note 1:* These requirements do not apply when printing within two lines of a fold of fanfold paper.

**To Adjust**

Loosen clamp screws on left and right paper positioner arms and adjust arms to just eliminate marking on either side of paper. Paper should remain as close as possible to ribbon without marking to minimize impact noise and vertical misalignment. Tighten clamp screws.



Staples or other means of fastening copies together should not be used until tested to insure that their presence will not interfere with the ribbon, printer hammers, or type pallets.

*Note 2:* Tractor Feed Printers Only — The factory final adjustment is made with a standard original plus three copies paper on the 132-column printer and with a standard original plus five copies paper on 80-column printer. Upon installation a refinement of this adjustment may be necessary dictated by the actual paper weight and number of copies being used.

**PALLET TO RIBBON-PAPER SHIELD CLEARANCE**  
 (Forms Access Printer)

**Requirement**

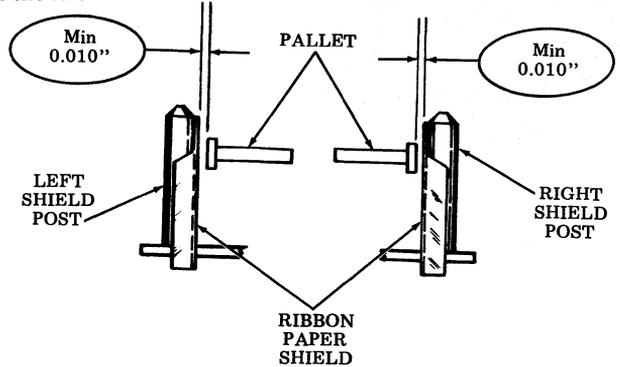
With the type carrier installed and rotated a minimum of two revolutions, there should be a minimum of 0.006 inch clearance between all pallet faces and the ribbon-paper shield when measured at the left and right shield posts.

**To Check**

Position a 0.006 flat gauge against the ribbon-paper shield at the shield post and rotate the type carrier one complete revolution by turning impeller gear by hand clockwise. Repeat the procedure at the other shield post.

**To Adjust**

Check that all pallets are seated per **TYPE CARRIER PALLET ALIGNMENT**. Recheck the following adjustments:  
**RIBBON GUIDE**  
**LEFT CARRIER SPROCKET**  
**RIGHT CARRIER SPROCKET**



**TEAR BAR (Preliminary)**  
 (40P253 Forms Access Printer)

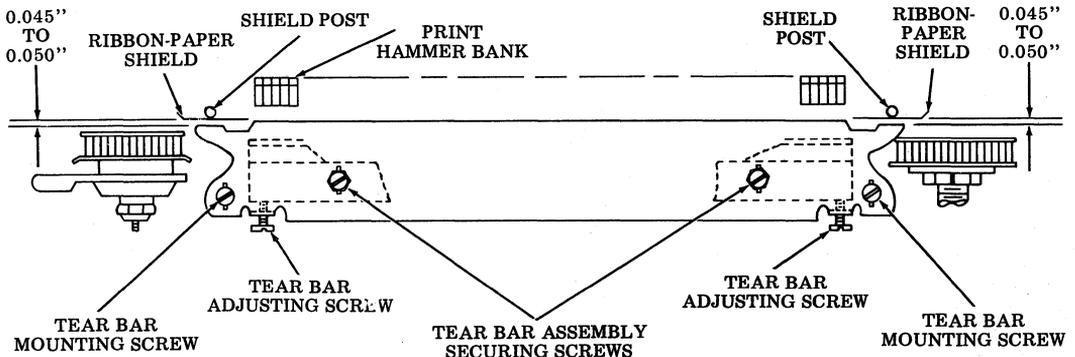
**Requirement**

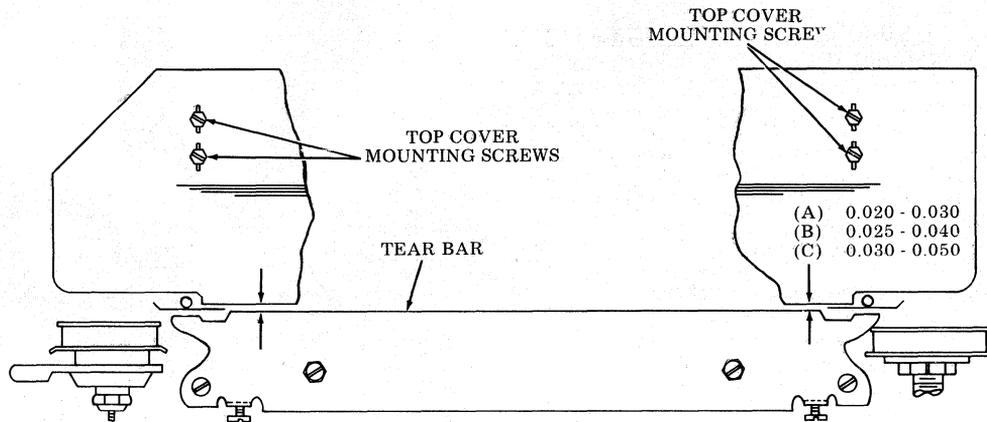
There should be a gap of  
 Min 0.045 inch --- Max 0.050 inch  
 between ribbon paper shield and tear bar.

**To Adjust**

The tear bar mounting screws (2) and tear bar assembly securing screws (2) should be friction tight and the tear bar adjusting screws turned counterclockwise to make the measured gap less than the requirement. Turn tear bar adjusting screws clockwise until a 0.045 inch gauge just passes freely. Tighten four mounting screws.

*Note:* If the printer is utilized in a ribbonless application, the gap between the ribbon paper shield and tear bar should be Min 0.075 inch --- Max 0.080 inch and the adjustment is considered final.





*Note:* Tear bar adjusting screws should not be disturbed. See **TEAR BAR AND TOP COVER (Final)** adjustment.

**TOP COVER (Preliminary)**  
(Forms Access Printer)

**Requirement**

The gap requirement between the top cover and tear bar is determined by the thickness of the forms stock used, as follows:

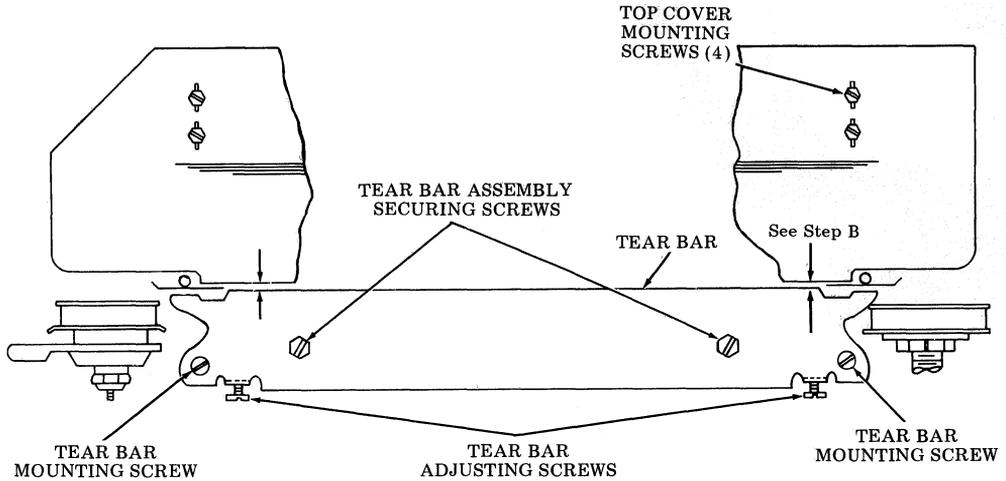
- (A) If form thickness is 0.005 inch to 0.010 inch, gap should be  
Min 0.020 inch --- Max 0.030 inch
- (B) If form thickness is 0.010 inch to 0.018 inch, gap should be  
Min 0.025 inch --- Max 0.040 inch
- (C) If form thickness is 0.018 inch to 0.025 inch, gap should be  
Min 0.030 inch --- Max 0.050 inch

**To Adjust**

With the top cover mounting screws (4) friction tight, position the top cover to meet required gap (per form thickness used) when measured near ends of tear bar. Tighten the top cover mounting screws and recheck gap.

*Note 1:* Printer is factory adjusted to meet Requirement (A).

*Note 2:* If the printer is utilized in a ribbonless application, this adjustment is considered final.



**TEAR BAR AND TOP COVER (Final)**  
(Forms Access)

**Requirement**

The printed character in a line of copy should not become illegible due to ink being deposited on the paper when printer is running idle for one minute.

**To Adjust**

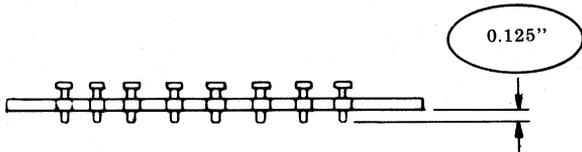
- Step (A)** With printer power off, loosen tear bar mounting screws (2) and tear bar assembly securing screws (2). Reduce the gap between tear bar and top cover by turning adjusting screws counterclockwise in increments of 1/6 turn (one flat of hex), but not more than three, while applying finger pressure on tear bar to reduce gap. Tighten the tear bar assembly securing screws (2) after each increment and recheck requirement. When requirement is met, tighten tear bar mounting screws (2).
- Step (B)** Reposition the top cover to provide applicable top cover to tear bar gap, dependent on thickness of forms stock used. See **TOP COVER (Preliminary)** requirement. Tighten the top cover mounting screws (4) and recheck gap.

**Note:** When refinement of these adjustments is required, some increase in audible noise and a lessening of print density may occur.

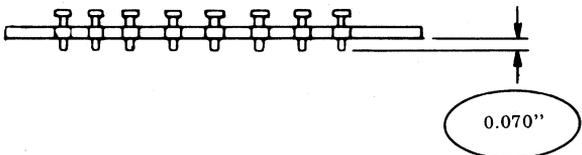
TYPE CARRIER PALLET ALIGNMENT

Requirement

The pallet location in the carrier shall be  
0.125 inch -- 80-column printer  
0.070 inch -- 132-column printer  
from the stem end to the rear surface of the carrier.



80-Column Printer



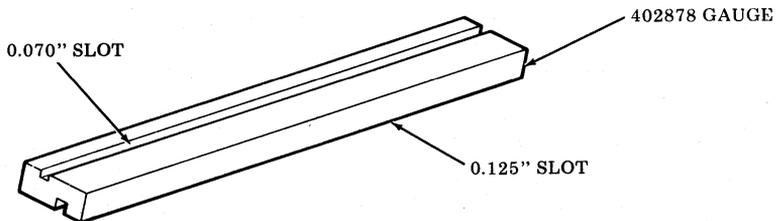
132-Column Printer

To Adjust

Move all pallets from position No. 1 to position No. 2.



Place type carrier into proper slot on the 402878 gauge. Seat all pallets into bottom of channel.



FORM-OUT CONTACT GAP (Preliminary) (Tractor Feed and Forms Access Printers)**Requirement**

With form-out contacts fully open, gap between contacts should be  
Min 0.020 inch --- Max 0.030 inch.

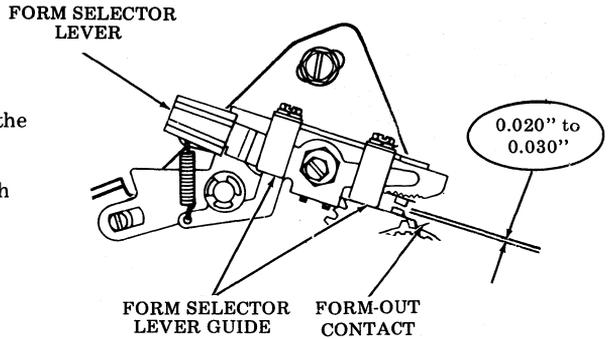
**To Check**

Depress the form selector lever.

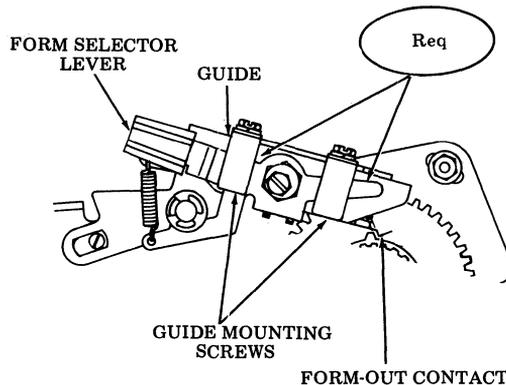
**To Adjust**

Form contact spring to meet requirement.

*Note:* This contact is manufactured within the requirement and will remain so unless one or both contact springs have been deformed. If adjustment is required, adjust the spring which shows sign of such deformation.

FORM SELECTOR LEVER GUIDE (Tractor Feed and Forms Access Printers)**Requirement**

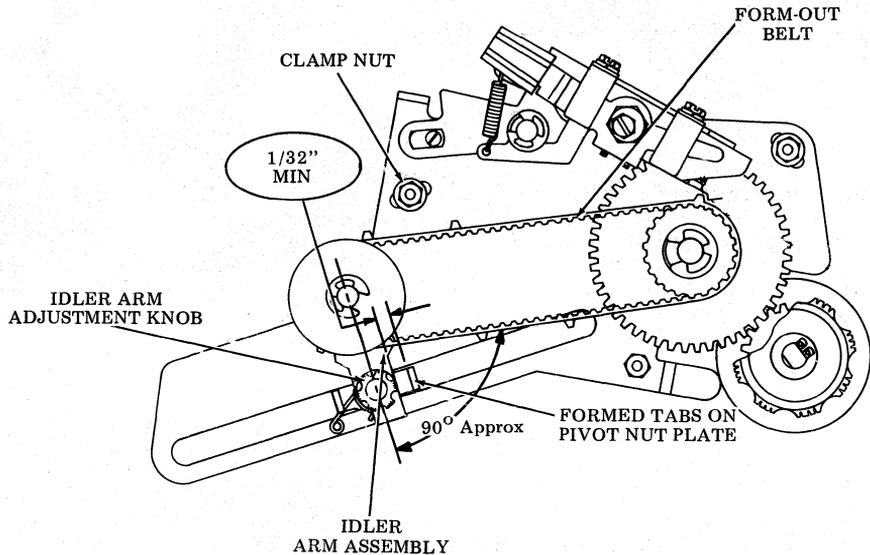
There should be up to 0.005 inch clearance between guide and form selector lever and selector lever must operate freely.

**To Check**

Form selector biased toward contact housing and selector lever operated through its entire range of motion.

**To Adjust**

Loosen the guide mounting screw friction tight and position guide to meet requirement. Tighten mounting screws.



FORM-OUT BELT IDLER ARM (Tractor Feed and Forms Access Printers)

- Position form-out belt against respective sprocket flanges.

Requirement (A)

The centerline of the idler arm assembly should be positioned approximately 90 degrees to the flat (straight portion between sprockets) of the belt.

Requirement (B)

There should be a minimum of 1/32 inch between the right edge of the idler arm assembly and the formed tab on the pivot nut plate.

To Adjust

Loosen idler arm adjustment knob friction tight. With belt engaged in both sprockets and against the flanges of each sprocket, move the adjusting nut along elongated slot until requirements are met. Tighten knob.

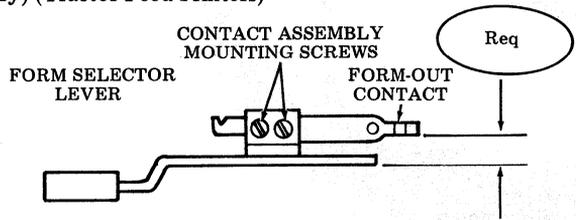
*Note:* With the 402850 white belt it may not be possible to meet requirement (A) because of length of slot. The requirement will be considered met when the nut has been positioned against the left end of slot.

**FORM-OUT CONTACT LATERAL (Preliminary) (Tractor Feed Printers)**  
(Early Design Only)

**Requirement**

Form-out contact assembly should be positioned on form selector lever such that the form-out contact tip is

Min 0.215 inch --- Max 0.231 inch  
from outside surface of the form selector lever.



**To Adjust**

Loosen two contact assembly mounting screws and position contact to meet requirement. Tighten mounting screws.

**Note 1:** This adjustment must be made before form selector lever is assembled to contact housing bracket.

**Note 2:** Factory Adjusted — Should not normally require adjustment unless contact assembly has been removed.

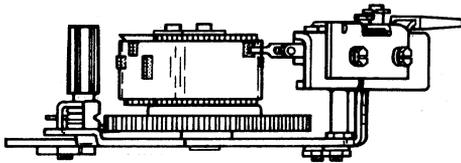
**FORM-OUT CONTACT LATERAL (Final) (Tractor Feed and Forms Access Printers)**  
(Early Design and Late Design)

**Requirement (A)**

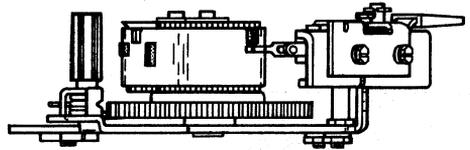
The contact should be centered (as gauged by eye) on the short cam lobes.

**Requirement (B)**

The form-out contact must not touch the adjacent cam lobes when in positions 3 and 4.



Req A



Req B

**To Check (A)**

With the form-out belt positioned against the flange of the form-out drive gear and in position No. 4.

**To Check (B)**

Rotate form-out gear.

**To Adjust (Early Design)**

Disassemble and refine FORM-OUT CONTACT LATERAL (Preliminary).

**To Adjust (Late Design)**

Loosen the two contact assembly mounting screws and position contact to meet requirements. Tighten mounting screws.

Late Design  
(Screw Accessibility)



**FORM-OUT GEAR BACKLASH (Tractor Feed and Forms Access Printers)**

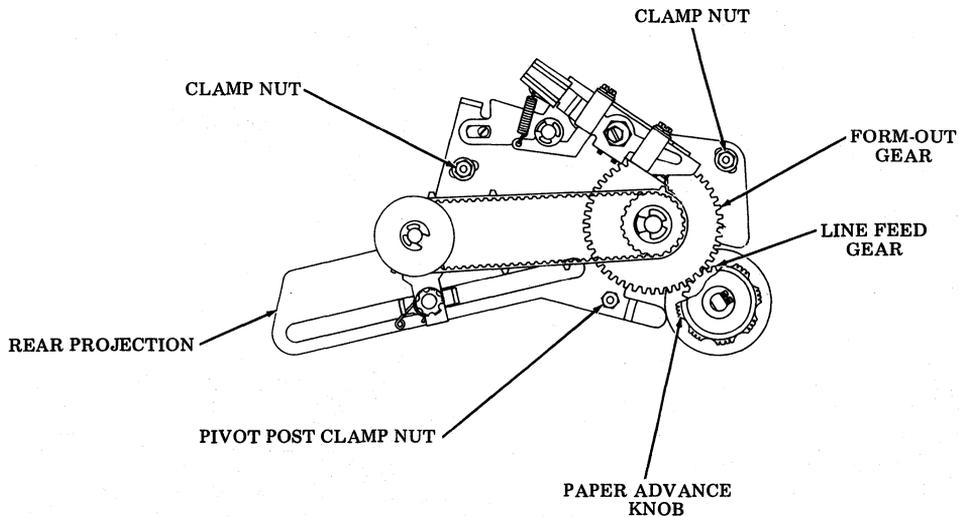
**Requirement**

There should be a barely perceptible backlash between the form-out gear and line feed gear, checked at three positions of the form-out gear approximately 120 degrees apart. (While holding paper advance knob stationary, rotate form-out gear.)

*Note:* Disengage feed pawls to check form-out gear 120 degrees apart.

**To Adjust**

With clamp nuts friction tight (3 places), move form-out mechanism by its rear projection to meet requirement. Tighten clamp nuts.

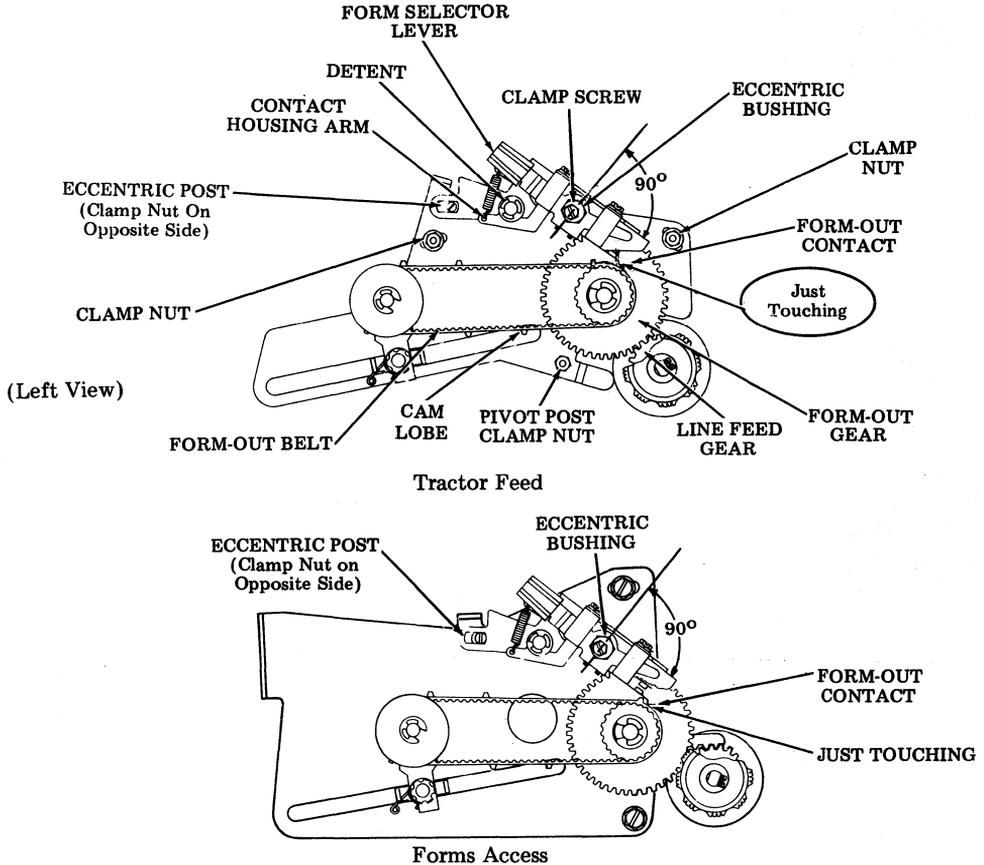


**FORM-OUT CONTACT TO BELT SPACING** (Preliminary) (Tractor Feed and Forms Access Printers)**Requirement**

The high side of the eccentric bushing shall be positioned approximately 90 degrees to the form-out contact arm as shown.

**To Adjust**

Loosen the eccentric bushing clamp screw and position the eccentric to meet requirement.

**Requirement**

With the form selector lever seated in the No. 4 position detent groove, the form-out contact shall be just touching the form-out belt.

**To Adjust**

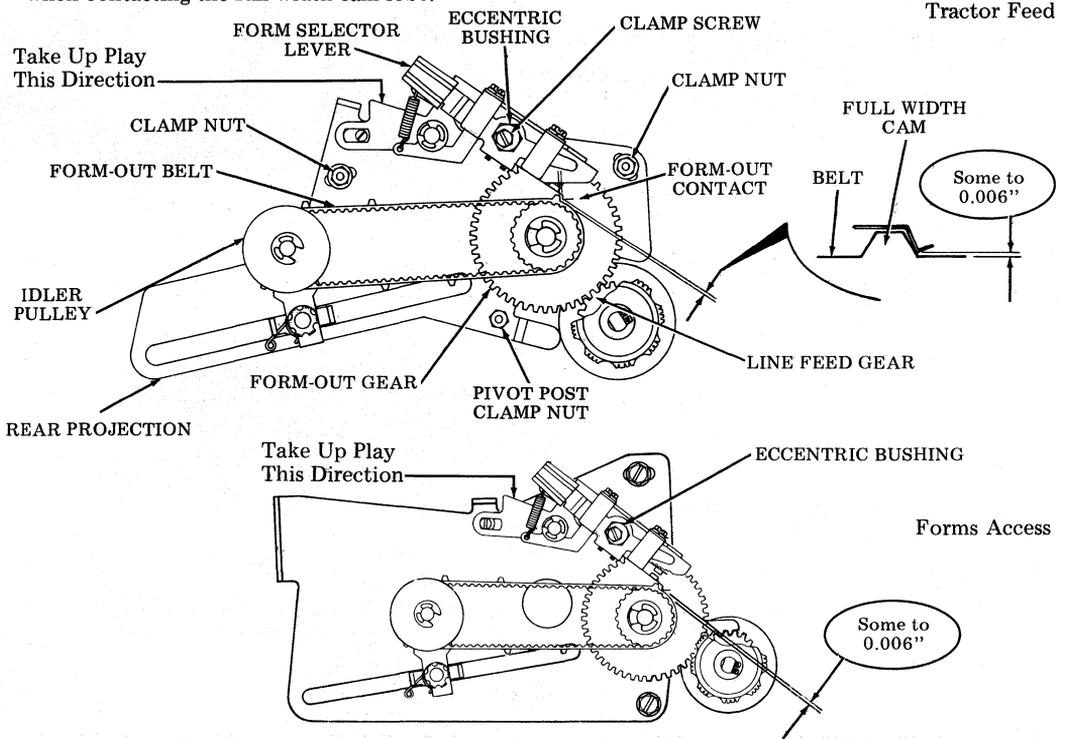
Loosen the eccentric post clamp nut friction tight and position the eccentric post to meet requirement.

*Note:* Keep eccentric post toward right side of slot.

**FORM-OUT CONTACT TO BELT SPACING (Final) (Tractor Feed and Forms Access Printers)**

**Requirement (A)**

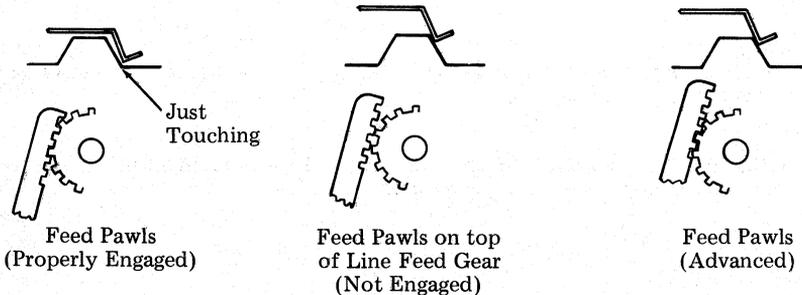
The contact shall have started to rise off the surface of the belt by  
 Min some --- Max 0.006 inch  
 when contacting the full width cam lobe.



**To Check**

- Latch the line feed clutch.
- Position form selector lever in the fourth detent position.
- Move line feed pawls out of engagement with line feed gear.
- Rotate paper advance knob until the slope of the contact just touches the long cam.
- Reengage line feed pawls. (See examples below.)
- Reengage paper advance knob.

**Examples**



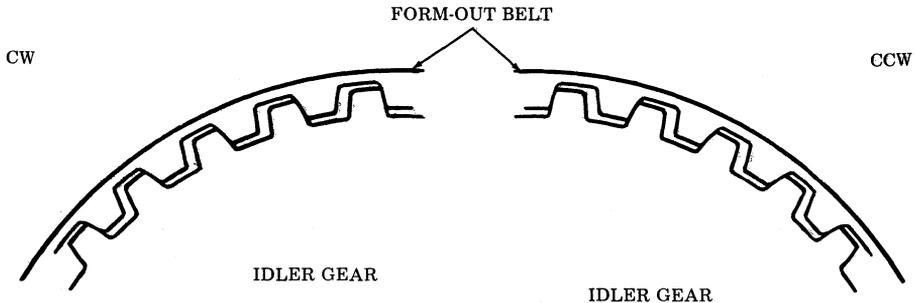
FORM-OUT CONTACT TO BELT SPACING (Final) (Tractor Feed and Forms Access Printers) (Cont)

## To Check (Cont)

The some to 0.006 inch clearance adjustment will be considered met when the following conditions are present:

When the form-out belt idler pulley is rotated CCW with a force sufficient to take up the form-out gear and the form-out belt teeth to pulley backlash and then released, the contact tip touches the surface of the belt.

When the form-out belt idler pulley is rotated CW with a force sufficient to take up the form-out gear and the form-out belt teeth to pulley backlash and then released, the contact tip is raised off the surface of the belt by the form-out cam.



## To Adjust

With eccentric bushing clamp screw friction tight, rotate eccentric bushing to position form-out contact left or right to meet Requirement (A). Tighten Eccentric bushing clamp screw.

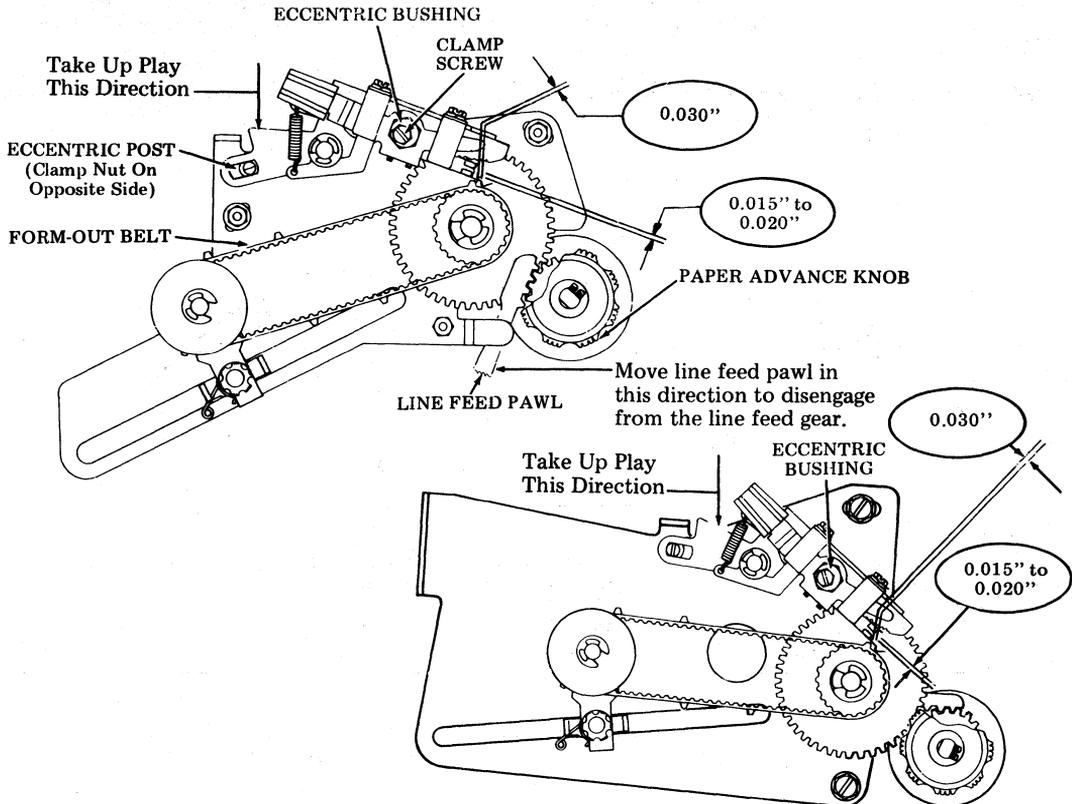
*Note:* Perform form-out contact phasing Requirement (C). This step must be performed to properly phase the form-out mechanism.

**FORM-OUT CONTACT TO BELT SPACING (Final) (Tractor Feed and Forms Access Printers) (Cont)****Requirement (B)**

The contact point gap shall be

Min 0.015 inch --- Max 0.020 inch

with the contact touching the form-out belt surface at a point the equivalent of 1/2 line feed space on the belt to the right of the full cam lobe, approximately 0.030 inch.

**To Check**

Move the line feed pawls out of engagement with the line feed gear and rotate paper advance knob to position form-out belt wide cam lobe approximately 0.030 inch to left of form-out contact "V", as gauged by eye.

**To Adjust**

Loosen the eccentric post clamp nut friction tight. Using very light pressure take up the play of the contact housing against eccentric post and rotate the eccentric post to move contact up or down to meet Requirement (B). Keep eccentric post toward the right side of slot. Tighten eccentric post clamp nut.

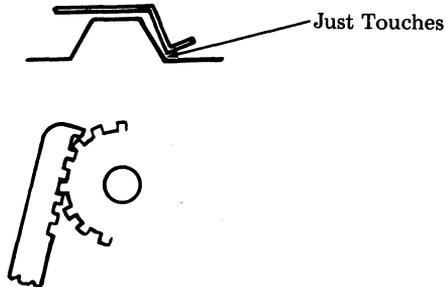
**Note 1:** Perform form-out contact phasing Requirement (C). This step must be performed to properly phase the form-out mechanism.

**Note 2:** If at any time the line feed gear is rotated with the line feed pawls disengaged, as when replacing the line feed, form-out or paper handling assemblies, the form-out mechanism must be properly phased (Note 1).

**FORM-OUT CONTACT TO BELT SPACING** (Final) — Tractor Feed and Forms Access Printers (Cont)**Requirement (C) (Form-Out Contact Phasing)**

“V” part of contacts should be positioned in center of long cam as gauged by eye.

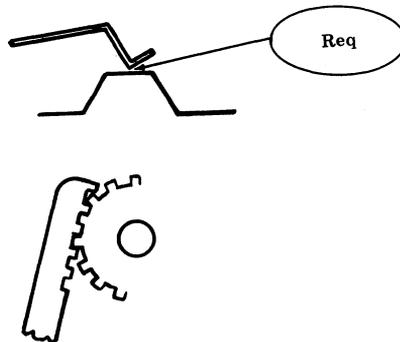
- Latch the line feed clutch.
- Position form selector lever in the fourth detent position.
- Move feed pawls out of engagement with the line feed gear.
- Rotate paper advance knob until the slope part of the contact just touches the long cam.



- Reengage the line feed pawls.
- Reengage paper advance knob.

**To Check**

- (1) Manually energize line feed magnet.
- (2) Rotate line feed clutch.
- (3) Latch line feed clutch.



To Adjust, Recheck Form-Out Contact to Belt Spacing (Final) Requirements (A) and (B).

**TRACTOR PHASING** (Tractor Feed and Forms Access Printers)

**Requirement**

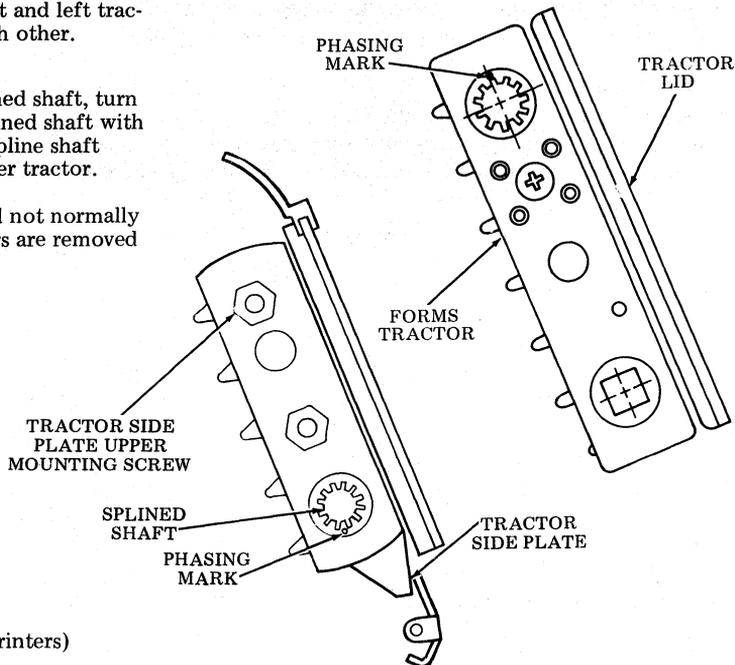
The phasing marks on the right and left tractors should be in line with each other.

**To Adjust**

Remove left tractor from splined shaft, turn tractor, and reassemble on splined shaft with its phasing mark at the same spline shaft groove as phasing mark of other tractor.

*Note:* Factory adjusted; should not normally require adjustment unless tractors are removed or replaced.

Forms Access Printer



Tractor Feed Printer

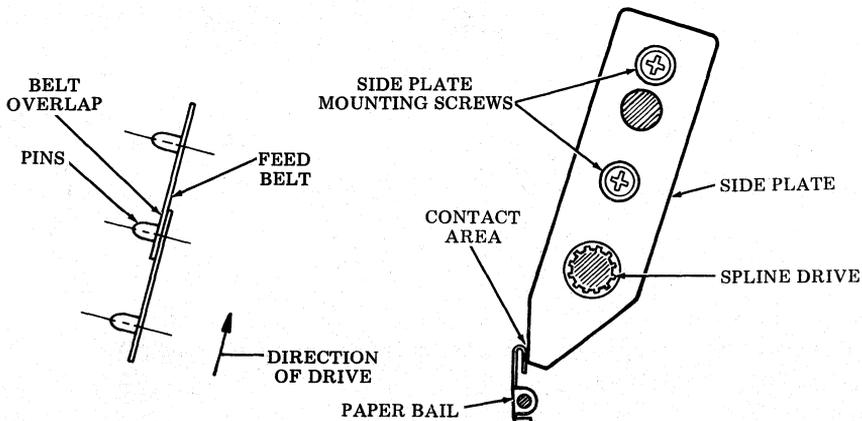
**TRACTOR LID** (Tractor Feed Printers)

**Requirement**

The upper paper guide should contact the side plate of both right and left tractors.

**To Adjust**

Loosen tractor side plate upper mounting screws friction tight. Position left-hand tractor side plate approximately in the center of its adjustment range and tighten its mounting screws. Position right-hand tractor side plate to meet requirement. Tighten right-hand tractor mounting screw.

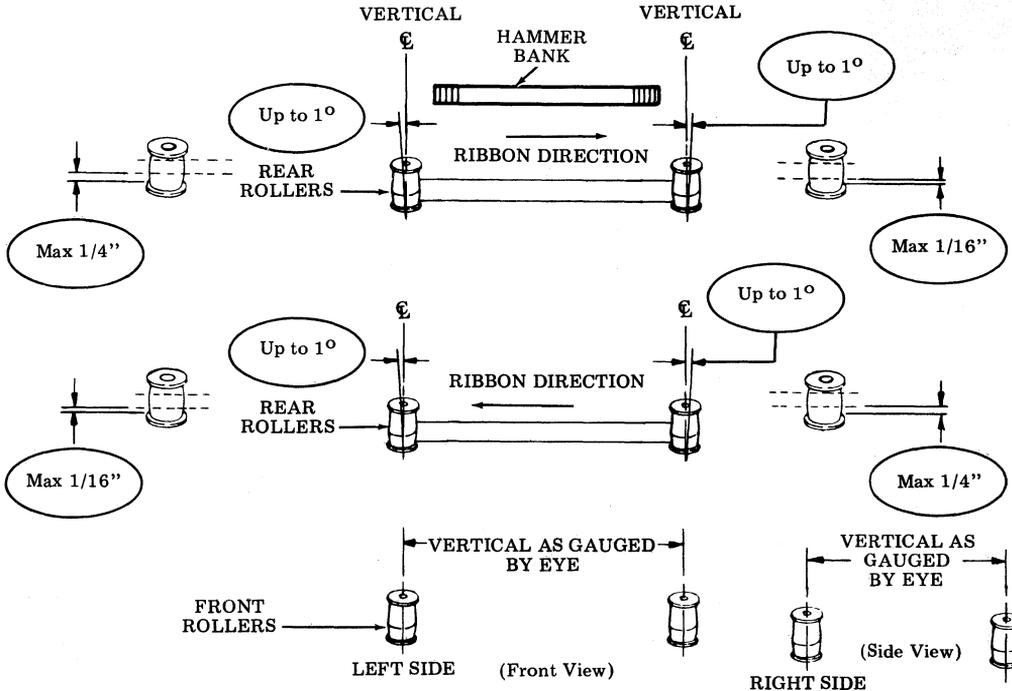


**RIBBON TRACKING** (For Tractor Feed Printers equipped with new ribbon tracking parts but not equipped with reinker mechanism)

*Note:* This adjustment does not apply to 40P253 Forms Access Printer.

**Requirement**

If a new ribbon does not track as described, the roller posts should be checked for squareness. The posts carrying the front roller must be vertical (in reference to the ribbon guide top plate) as gauged by eye. The posts carrying the rear rollers must be vertical in the front to rear direction and the right roller should lean towards the right by a slight amount (less than  $1^\circ$ ) and the left roller should lean towards the left by a slight amount (less than  $1^\circ$ ).



**To Check**

Using a new ribbon and with unit running, check position of ribbon on the rear rollers of the right and left ribbon guide arms as follows:

If ribbon is being wound on the right-hand spool, the ribbon should ride against lower flange of the right roller; however, it should not ride either so low as to cause a permanent curl to form in the ribbon or higher than  $1/16$  inch above the lower flange. For left roller, the ribbon should ride with no curl to  $1/4$  inch above lower flange.

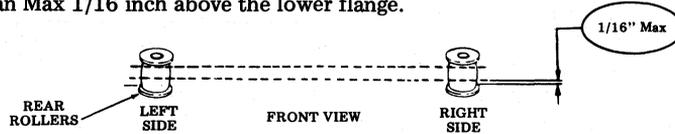
If ribbon is being wound on the left-hand spool, the ribbon should ride against lower flange of the left roller; however, it should not ride either so low as to cause a permanent curl to form in the ribbon or, higher than  $1/16$  inch above lower flange. For right roller, the ribbon should ride with no curl to  $1/4$  inch above lower flange.

If rollers do not meet requirement or ribbon is not tracking properly, the vertical alignment of the roller posts may be refined. To lower ribbon track, increase the amount the rear rollers lean outwards (the right roller to the right and the left roller to the left). To raise ribbon track, do the opposite. Caution must be used not to overadjust. A  $1/4$ -inch spin-tight socket wrench will slip over roller post and can be used for adjusting.

**RIBBON TRACKING** (For 80- or 132-Column Tractor Feed Printers equipped with reinker mechanism and for 40P253 Forms Access Printer)

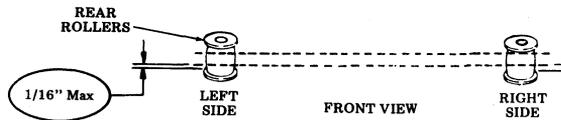
**Requirement**

With the ribbon tracking in its lowest position on the right hand roller, ribbon moving in either direction, the ribbon should not ride so low as to cause a curl to form on the lower flange of the roller or any higher than Max 1/16 inch above the lower flange.



**Requirement**

With the ribbon tracking in its lowest position on the left hand roller, ribbon moving in either direction, the ribbon should not ride so low as to cause a curl to form on the lower flange of the roller or any higher than Max 1/16 inch above the lower flange.

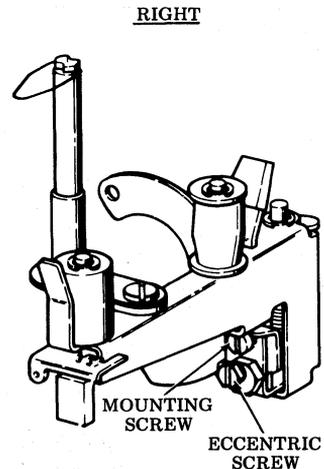
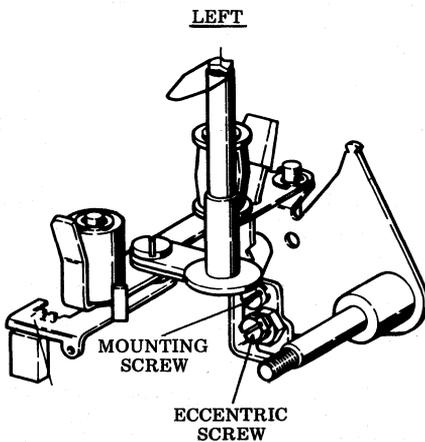


**To Check**

Using a new ribbon and the unit running, check the position of the ribbon on the rear rollers of the right and left ribbon guide arms as the ribbon moves towards the right and then as it moves towards the left. See that the ribbon is tracking properly in both directions; if not, refine the adjustment. Tighten the right and left adjusting bracket mounting screws and eccentric clamp screws.

**To Adjust**

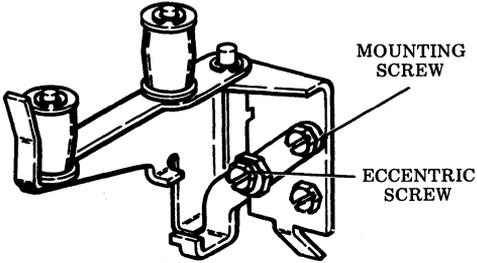
If the new ribbon does not track per this requirement, loosen the right and left adjusting bracket mounting screws and eccentric clamp screws. If the ribbon is tracking high on the right hand roller, rotate the high point on the eccentric toward the left. If it is tracking low, move the high point on the eccentric towards the right. If the ribbon is tracking high on the left hand roller, rotate the high point on the eccentric towards the right. If it is tracking low, move the high point on the eccentric towards the left.



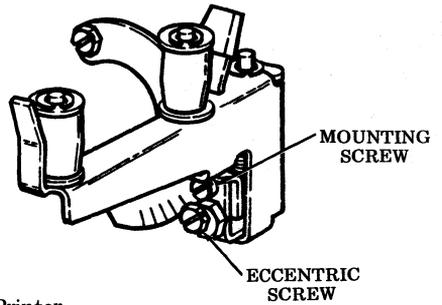
Printer With Reinker Mechanism

**RIBBON TRACKING** (For 80- or 132-Column Tractor Feed Printers equipped with reinker mechanism and for 40P253 Forms Access Printer) (Cont)

LEFT

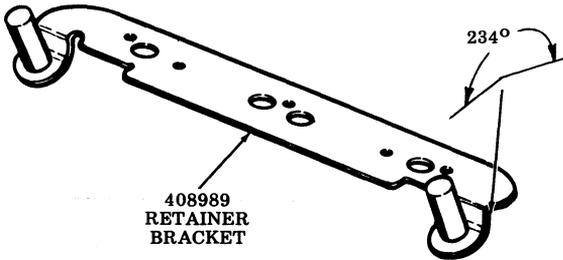


RIGHT

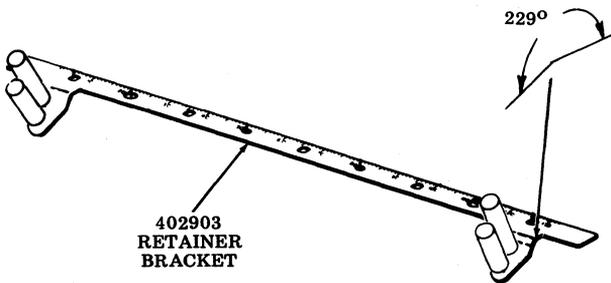
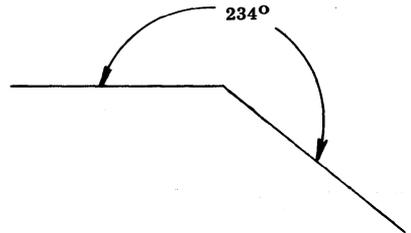


40P253 Forms Access Printer

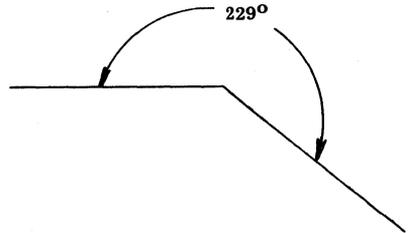
*Note:* On units equipped with reinker mechanism, if the ribbon cannot be made to track properly, check and see that the posts on the ribbon feed mechanism are square and that the retainer bracket (408989 on 80-column or 402903 on 132-column) has the correct angle for the guide posts. The correct angle between the top surface of the bracket and the top surface of the two ears, used to mount the ribbon guide posts, should be approximately 234 degrees on 80-column printer or 229 degrees on 132-column printer.



80-Column Printer



132-Column Printer



POWER SUPPLY VOLTAGE

Requirement

Voltage reading should be -24 V dc  $\pm$  1%.

Tractor Feed Printers

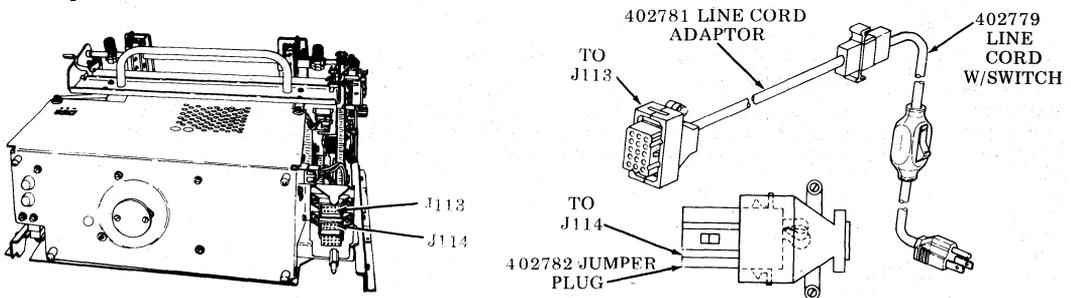
CABLE AND PLUG CONNECTIONS

Remove printer logic circuit card.

Plug the 402779 line cord with switch into the 402781 line cord adaptor. Plug the 402781 adaptor into J113 connector, the top rack and panel connector located on the left rear side of the printer.

With the switch on the 402779 line cord in the OFF position, plug the line cord into a three-prong grounded power source.

Plug the 402782 jumper plug into J114 connector, located immediately below J113 on the left rear side of the printer.



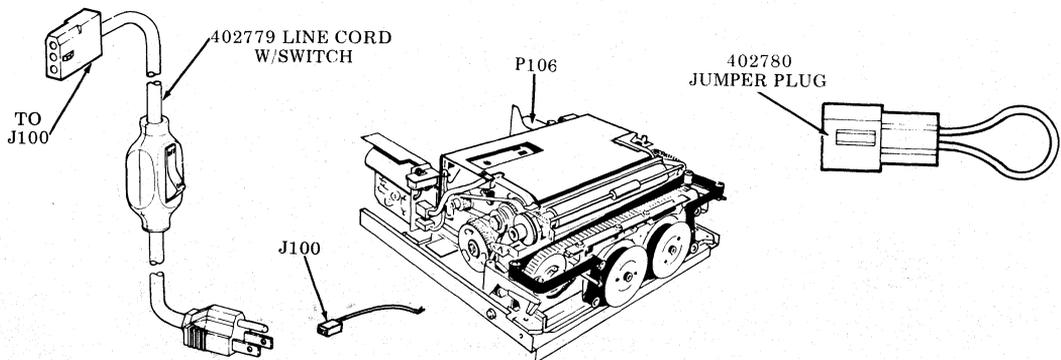
Friction Feed Printers

CABLE AND PLUG CONNECTIONS

Remove printer logic circuit card.

Plug the 402779 line cord with switch into the ac power connector (3-pin connector), J100, located at the left rear side of the printer. Verify that the switch is in the OFF position. Plug the other end of the 402779 line cord with switch into a three-prong grounded power source.

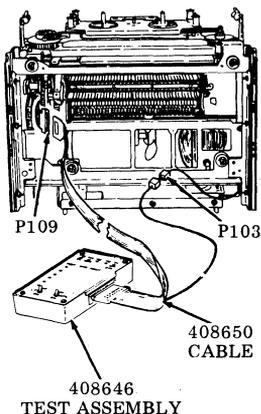
Plug the 402780 jumper plug into P106 located at the right rear top side of the printer.



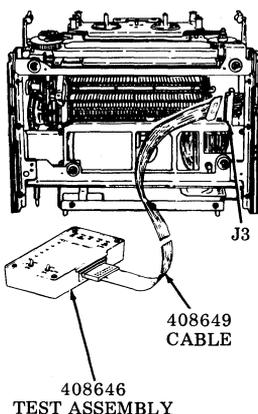
**POWER SUPPLY VOLTAGE (Cont)**

Connect applicable test cable (shown below) to the 408646 test assembly.

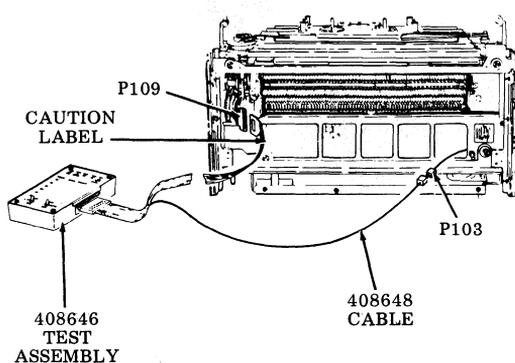
40P154 and 40P253  
80-Column Tractor Feed



Friction and 40P151  
and 40P153 Tractor  
Feed 80-Column



Tractor Feed  
132-Column



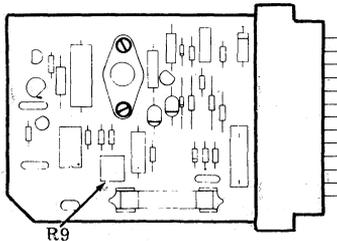
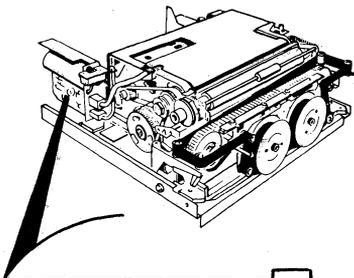
*Caution: Observe caution label on 408648, 408649, or 408650 when connecting plug.*

**To Check**

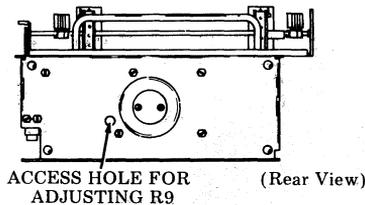
With a volt-ohmmeter, check  $-24\text{ V dc} \pm 1\%$  between TP1 and TP3 on the 408646 test assembly. Operate 402779 line cord with switch to ON.

**To Adjust**

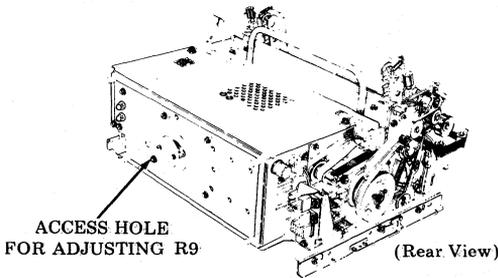
If voltage is outside the required limits, adjust R9 resistor on voltage regulator circuit card.



80-Column Friction Feed



80-Column Tractor Feed

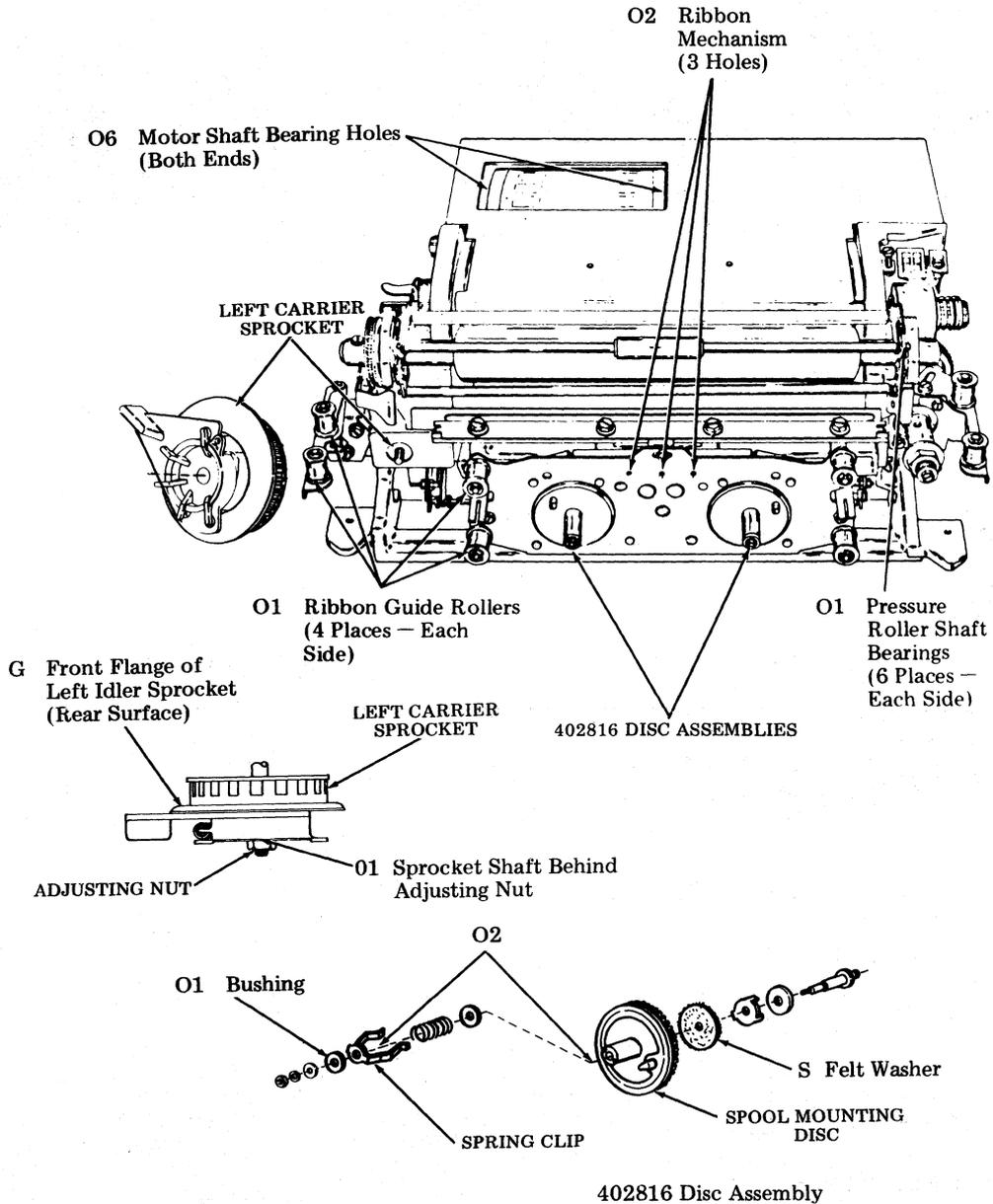


132-Column Tractor Feed

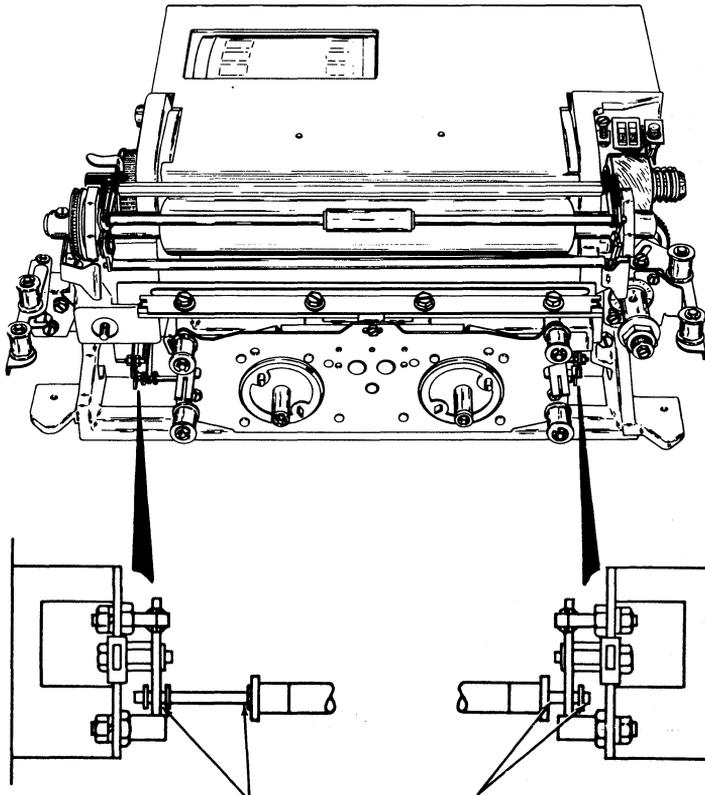
3. LUBRICATION

3.01 Friction Feed Printers

LUBRICATION — FRONT AND TOP

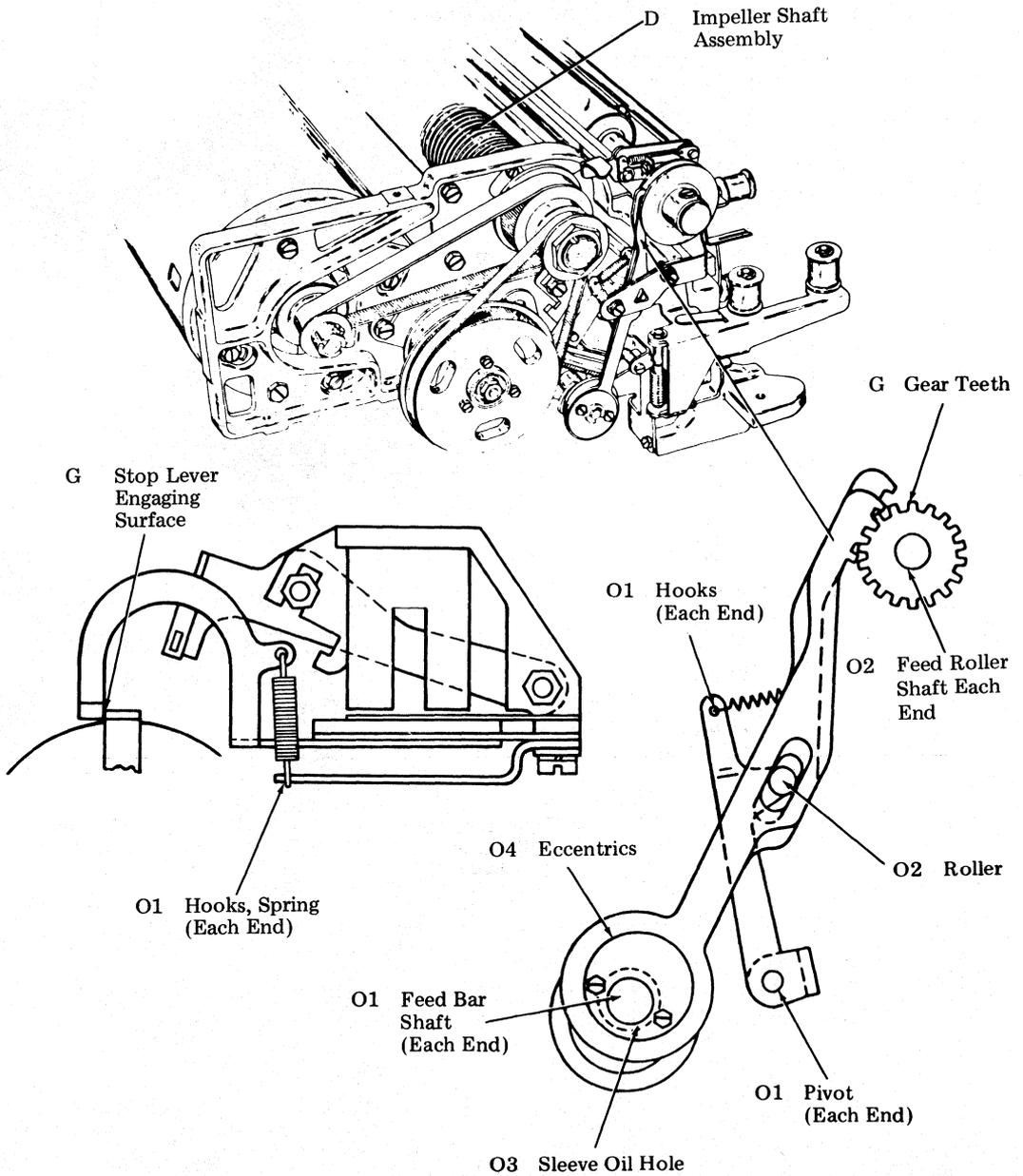


LUBRICATION -- FRONT.

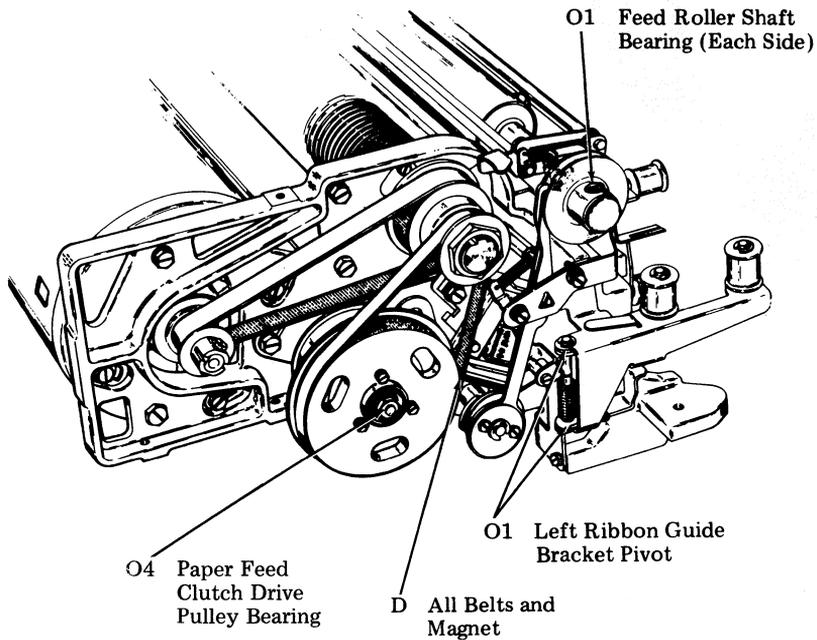


01 Paper Tensioner  
Roller Bearings  
and Pivots

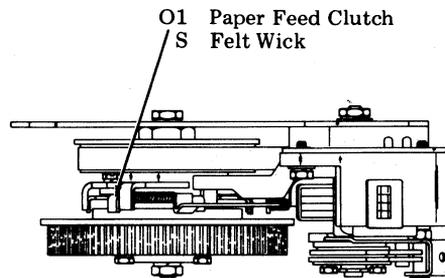
LUBRICATION — LEFT SIDE



## LUBRICATION — LEFT SIDE (Cont)



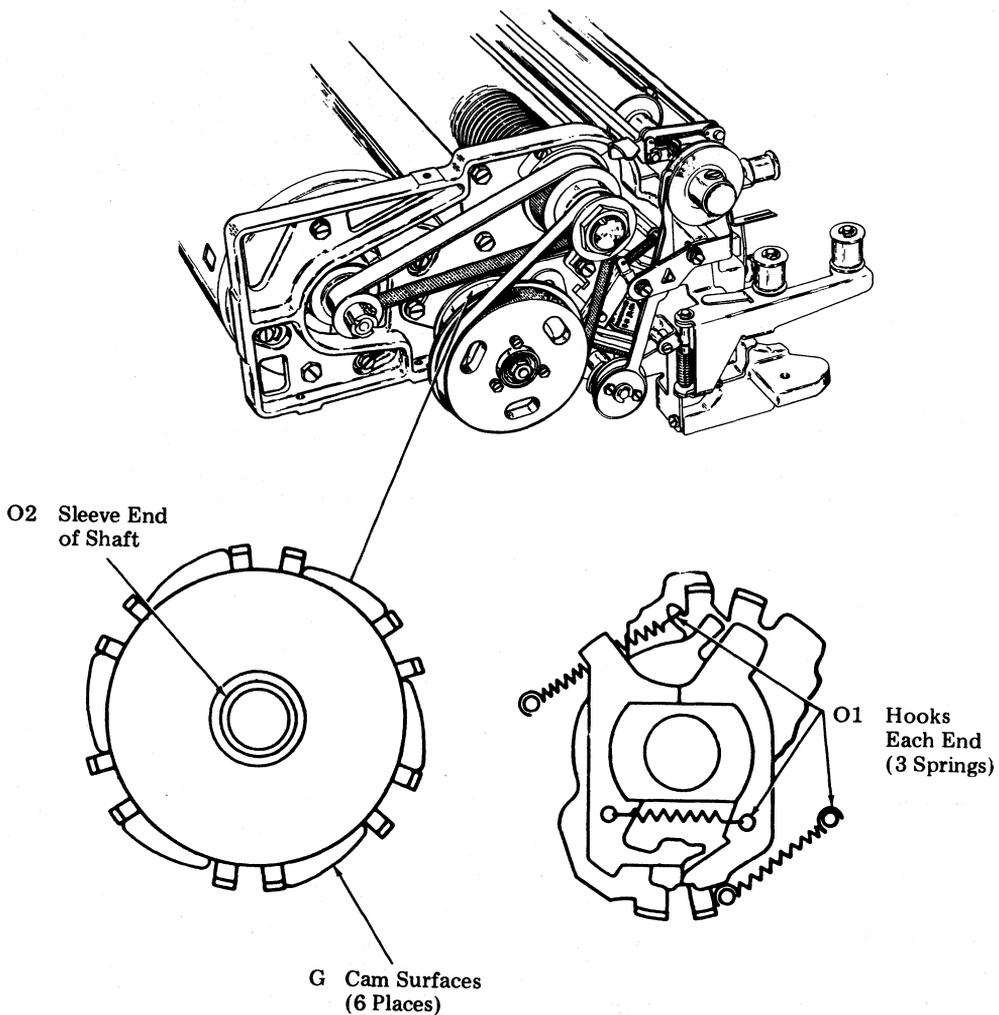
*Caution: Do not overlubricate paper feed clutch and pulley bearing. Overlubrication of these parts will cause oil to be thrown on the circuit card.*



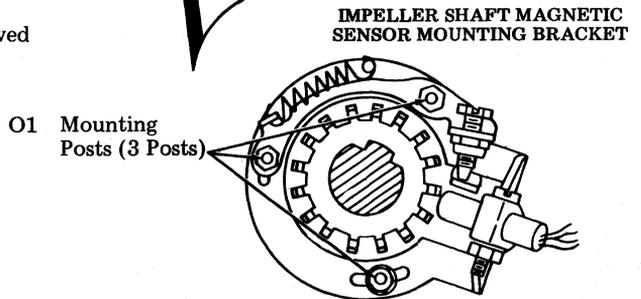
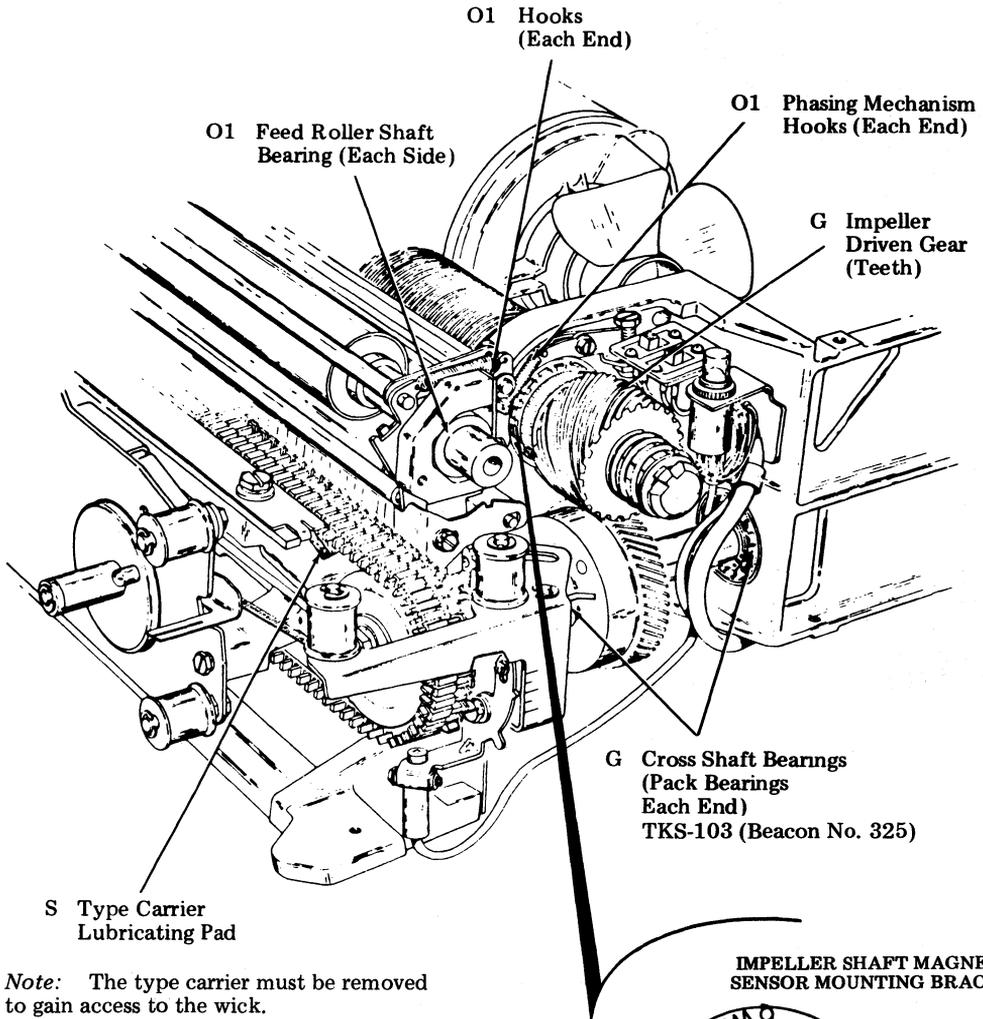
(Top View)

LUBRICATION — LEFT SIDE (Cont)

Note: Lubrication for these parts is done at the time of disassembly or extensive overhaul, refer to Section 582-210-702.



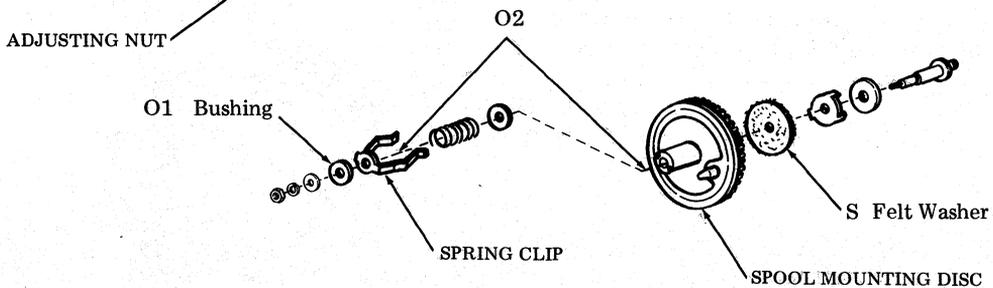
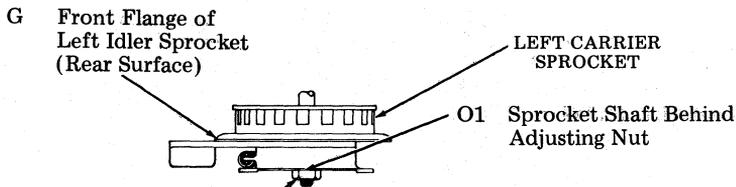
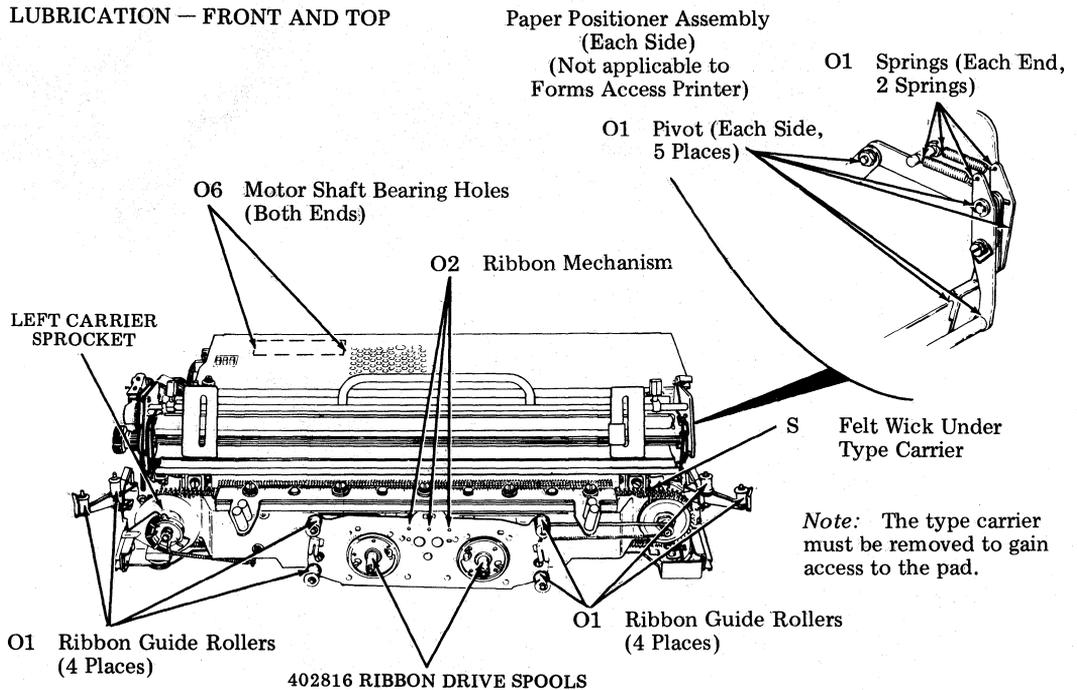
LUBRICATION -- RIGHT SIDE



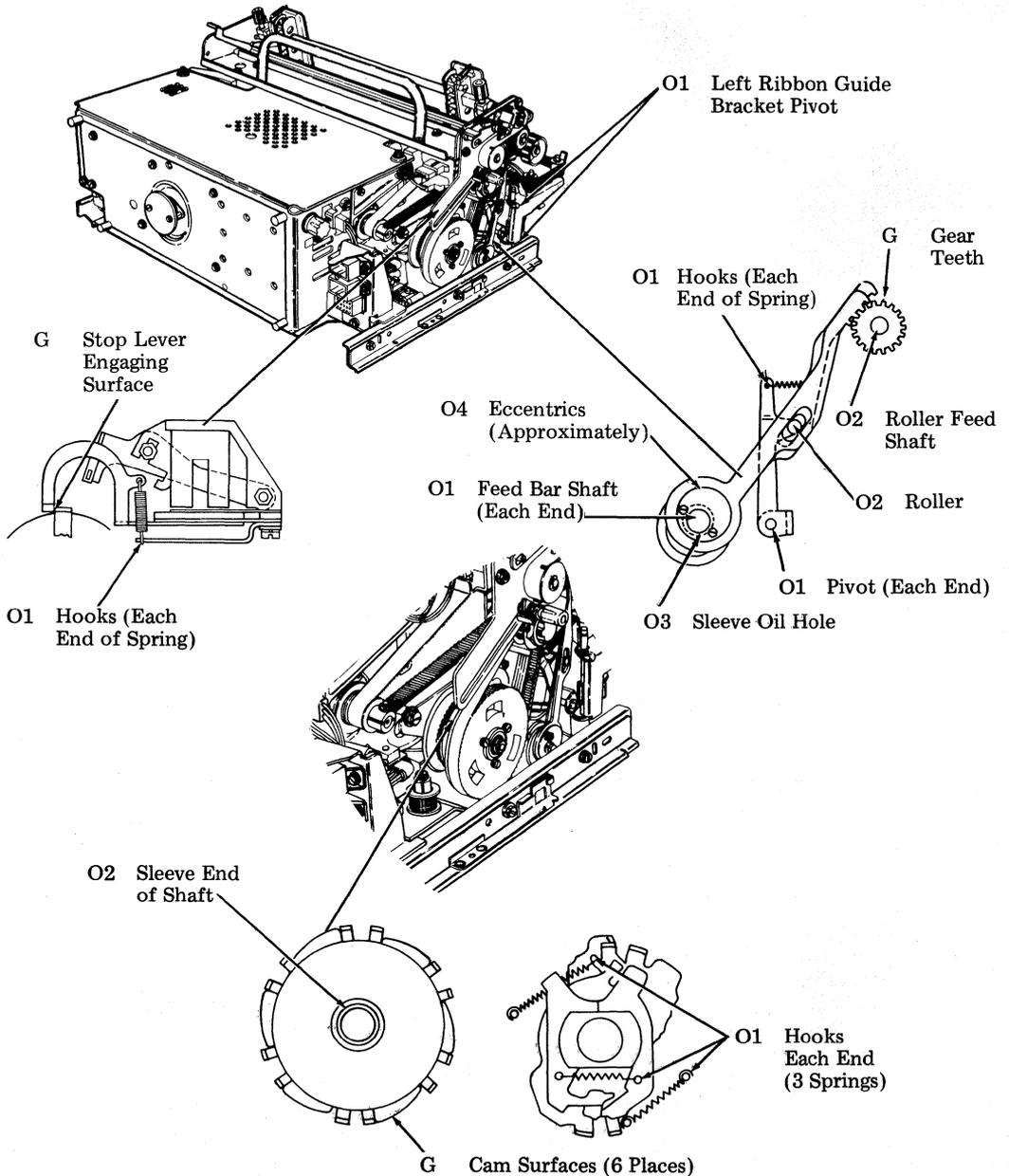
3.02 Tractor Feed Printers (80- or 132-Column or Forms Access)

*Note:* Lubrication points for 80- or 132-Column or Forms Access Tractor Feed Printer are the same unless otherwise specified.

LUBRICATION — FRONT AND TOP

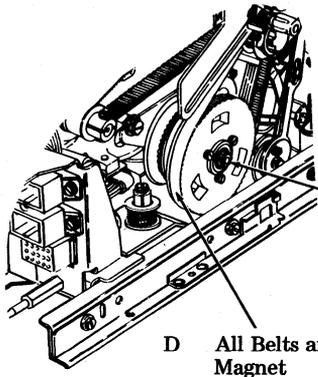


LUBRICATION — LEFT SIDE OF PRINTER



*Note:* Lubrication for these parts is done at the time of disassembly or extensive overhaul, refer to Section 582-210-702.

LUBRICATION — LEFT SIDE OF PRINTER (Cont)

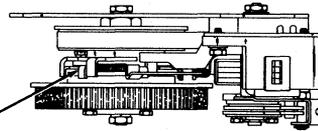


D All Belts and Magnet

O4 Paper Feed Clutch Drive Pulley Bearing

*Caution: Do not overlubricate paper feed clutch and pulley bearing. Overlubrication of these parts will cause oil to be thrown on the circuit card.*

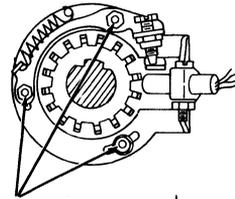
(Top View)



O1 Paper Feed Clutch  
S Felt Wick

LUBRICATION — RIGHT SIDE OF PRINTER

Impeller Shaft Magnetic Sensor Mounting Bracket



D Impeller Shaft Assembly

O1 Mounting Posts (3 Posts)

O1 Phasing Mechanism Hooks (Each End)

G Impeller Driven Gear Teeth

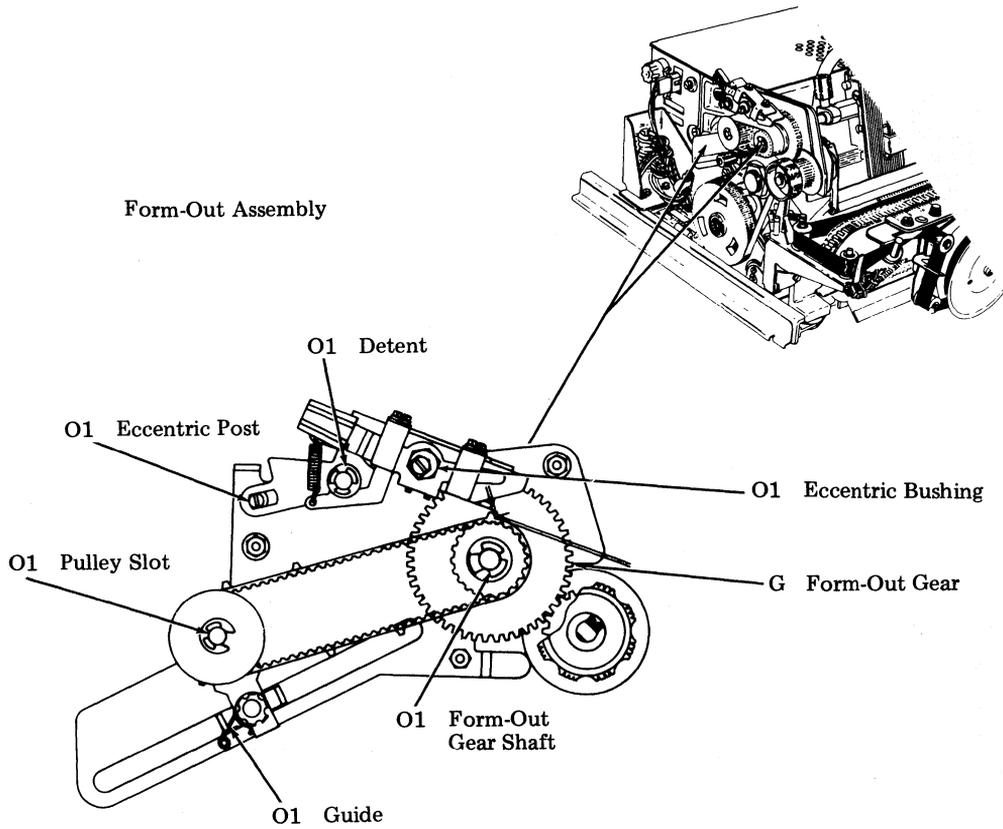
*Note: Type carrier must be removed to gain access to the wick.*

G Shaft Bearings (Pack Bearings, Each End)  
TKS-103  
(Beacon No. 325)

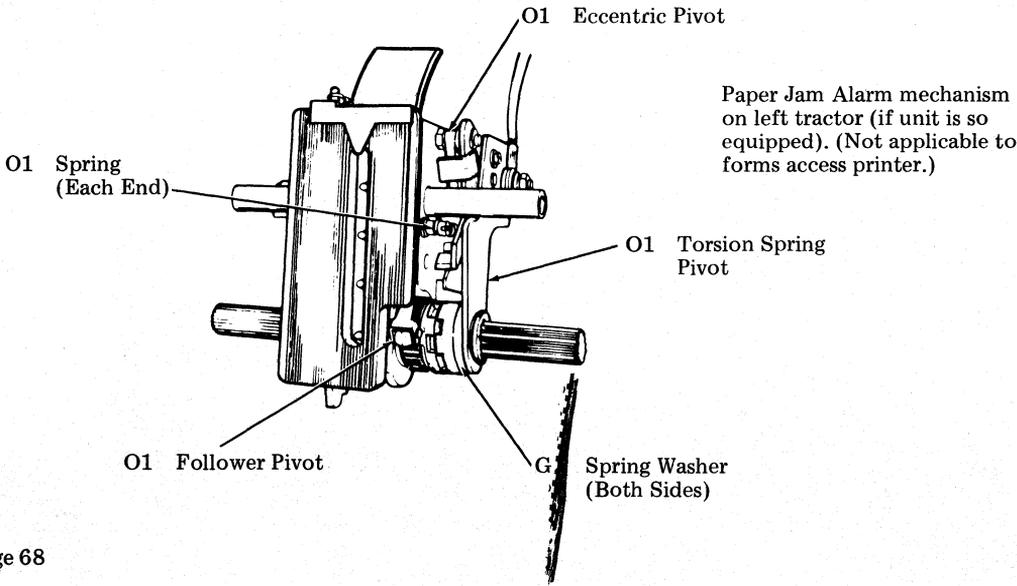
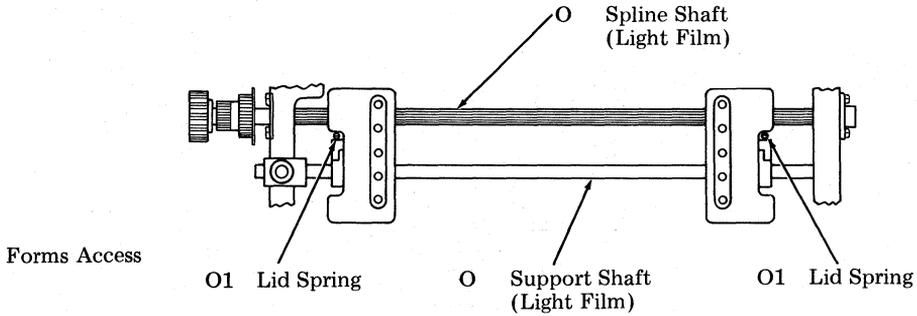
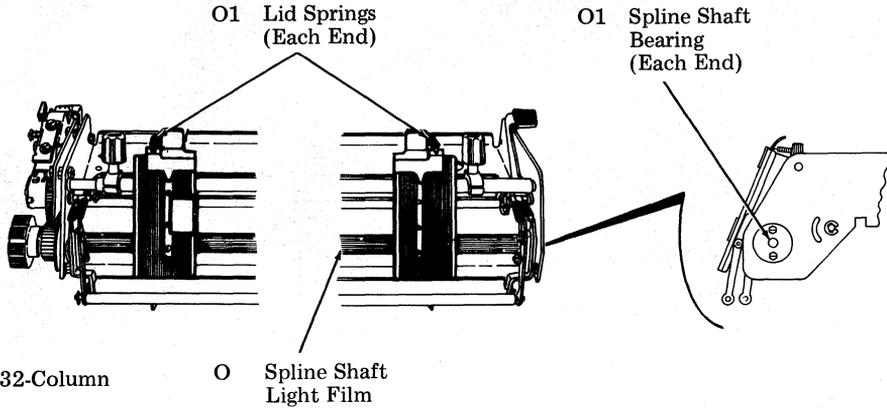
S Carrier Lubricating Pad

O1 Right Ribbon Guide Bracket

LUBRICATION -- FORM-OUT ASSEMBLY



LUBRICATION — TRACTOR MECHANISM



LUBRICATION — LEFT AND RIGHT ARM ASSEMBLIES

Reinker Mechanism on left and right arm assemblies (if unit is so equipped). (Not applicable to forms access printer.)

