TELETYPEWRITER SERVICE MANUAL

CONTENTS

TELETYPEWRITER SERVICE MANUAL

1. GENERAL

1.01 This section is reissued to add descriptive information and technical data for 33 Teletypewriter Sets. Since this is a general revision of the section, marginal arrows ordinarily used to indicate changes have been omitted.

1.02 These critical mechanical adjustments are those that experience has shown to contribute most to trouble-free mechanical operation of teletypewriter apparatus. These adjustments are usually associated with a group of other connected and related adjustments. The verification of the critical adjustment can be an indicator of the connected and related adjustments.

1.03 Experience has shown that teletypewriter assemblies with the critical adjustments specified in this section meeting the requirements will be in acceptable operating condition for trouble-free service. Each servicing visit to a teletypewriter in the field should include the necessary checks to assure that the apparatus meets the critical adjustment standards.

1.04 The service benefits from maintaining these standards are:

(a) On a servicing visit, a quick check will disclose whether adjustments are required and the apparatus can easily be maintained at the acceptable trouble-free standard.

(b) On a trouble visit, the repairman is assured that the apparatus has been meeting the adjustment standards. Disclosure of an adjustment out of limits usually results in quick analysis and pinpointing the mechanical defect.

1.05 This information is assembled from Bell System Practices and Teletype Corporation Bulletins now authorized for use. This Section does not replace authorized Bell System Practices in the field. It is intended to supplement them and provide teletypewriter servicemen with a basic standard from which to work.

1.06 From time to time, the American Company may issue standard Bell System Practice change notices specifying revisions in teletypewriter adjustments already incorporated in Section 570-001-901MS. When this occurs, the revised requirements shall be considered as superseding the requirements in Section 570-001-901MS. The latter will eventually be brought into agreement with the change notes.

2. USE OF CRITICAL ADJUSTMENTS

2.01 This Section provides critical adjustments for teletypewriter assemblies for the following work forces:

(a) For the Western Electric Company teletypewriter shop personnel in preparing rebuilt, reconditioned, and completely assembled teletypewriters where authorized by the Telephone Company. An exception is to be made in the case of the receiving and sending distortion requirements specified in Section 570-001-901MS. These requirements shall not apply to Western

Electric Company operations since test procedures presently in use are adequate.

(b) For Telephone Company Installation personnel where teletypewriter assemblies are received from Western Electric Company shops where the critical adjustment program is not in effect. In this case the installer will check and adjust where necessary to assure that the teletypewriter assembly meets the critical adjustment standards.

(c) For Telephone Company servicing personnel charged with maintaining teletypewriter machines. The teletypewriter serviceman should check critical adjustments and adjust where necessary to keep the teletypewriter in a trouble-free condition.

(d) For Telephone Company repair personnel in locating trouble and mechanical defects in the mechanical portion of the assembly. Checking of critical adjustments will result in a quick analysis and locating of the machine defects causing malfunctions.

2.02 The critical adjustment charts should be used as follows:

(a) The critical adjustment charts applying to the teletypewriter assembly to be checked should be selected from the index of the General section. The adjustment charts are provided with large tabs appropriately designated.

(b) In most cases the first sheet behind the tabs will be an illustration of the component being checked. The second sheet will be a block diagram check list. In checking the critical adjustments the order established in the block diagrams should be followed.

(c) The requirements for critical adjustments should be carefully followed in checking the adjustments. Complete details of checking the adjustment are contained on each adjustment chart.

(d) When a critical adjustment does not meet the requirements, the Bell System Practice describing the adjustment should be used in adjusting. Each chart has listed the appropriate Section numbers for making adjustments.

3. RECEIVING ORIENTATION AND SENDING DISTORTION TESTS

3.01 This section prescribes tests made locally at test centers; at servicing centers; and tests made over lines, loops, or legs between test centers; and at teletypewriter stations. The testing method consists of:

1. Measuring the distortion of signals produced by the station transmitting apparatus.

2. Determining the tolerances of the station receiving apparatus to distorted or undistorted signals.

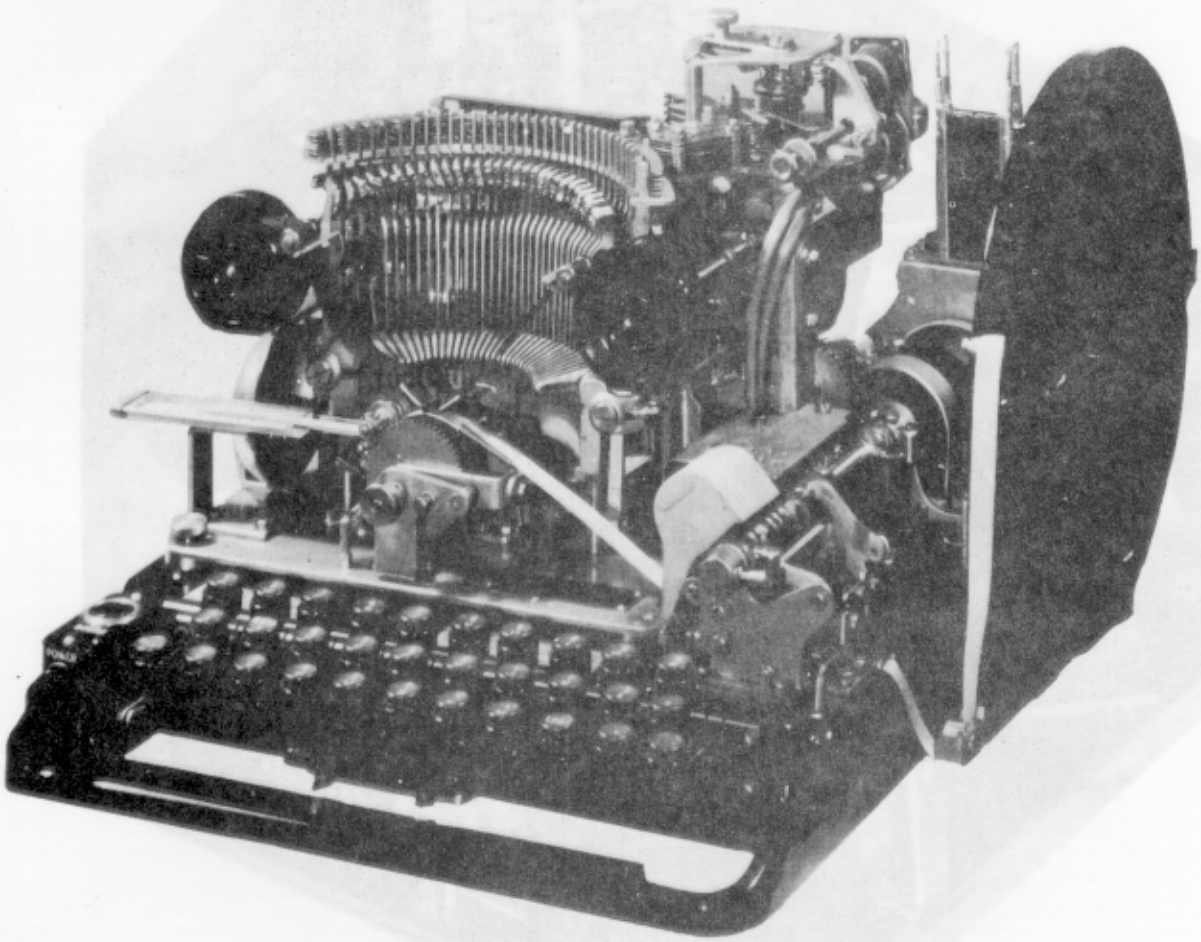
3.02 Check Test Receiving - Receiving apparatus should receive at least two complete lines of undistorted signals (the quick brown fox, etc.) without errors, with a selector range of at least 80 points. If distorted signals are available, and they are biased 20% both marking and spacing, the selector range should be approximately 40 points depending on the coefficient of the circuit.

3.03 Readjust Test Receiving - Make tests as prescribed in check test. Observe high and low selector range scale readings and set the range scale at optimum point. For example, the orientation range scale setting midway between the upper limit found with

20% marking bias and the lower limit found with 20% spacing bias would be the optimum point for the range scale setting for normal signals.

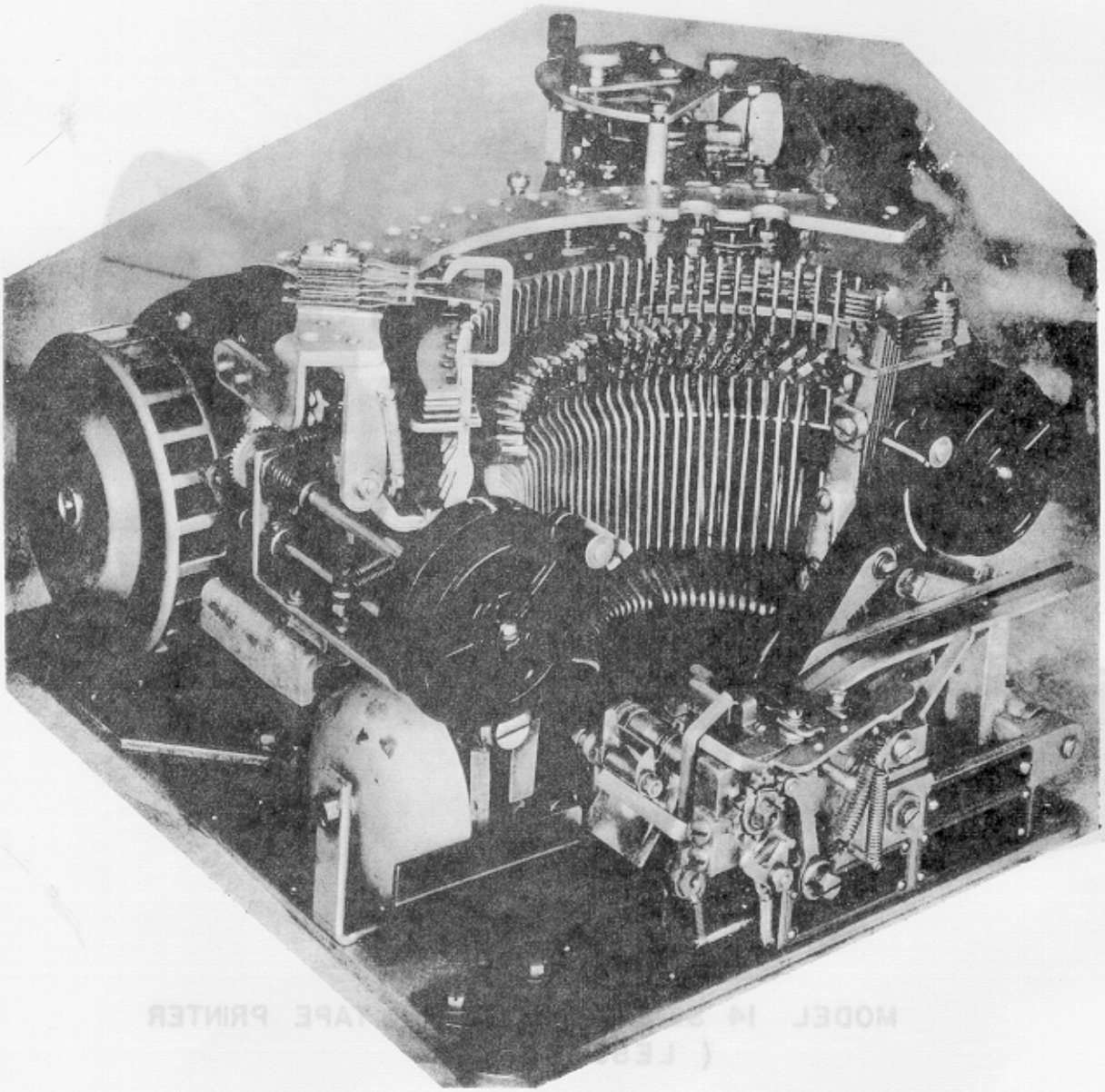
3.04 Check Test Sending - Requirements as specified in Bell System Practice Section 570-006-500 should be applied whenever equipment has been serviced, reconditioned, repaired, or inspected--also when changes have been made that affect transmission in the settings or adjustments of the station equipment or the line or loop connecting circuits. When checking sending signals into a "local" or "test" condition, and measuring them with a 164 C-() telegraph transmission measuring set, or equivalent, the maximum allowable distortion from a keyboard is 8% and from transmitter-distributors 5%. When sending to a test center, the maximum allowable distortion will vary depending on the coefficient of the circuit or the type of Data set used. This is determined by the test center.

3.05 Readjust Test Sending - With the teletypewriter conditioned to be in the "test" or "local" mode and measuring signals with a 164 C-() or equivalent, the maximum allowable distortion from keyboards is 7% and from transmitter - distributors 4%. When sending to test centers, these readings shall be obtained from the testboardman.

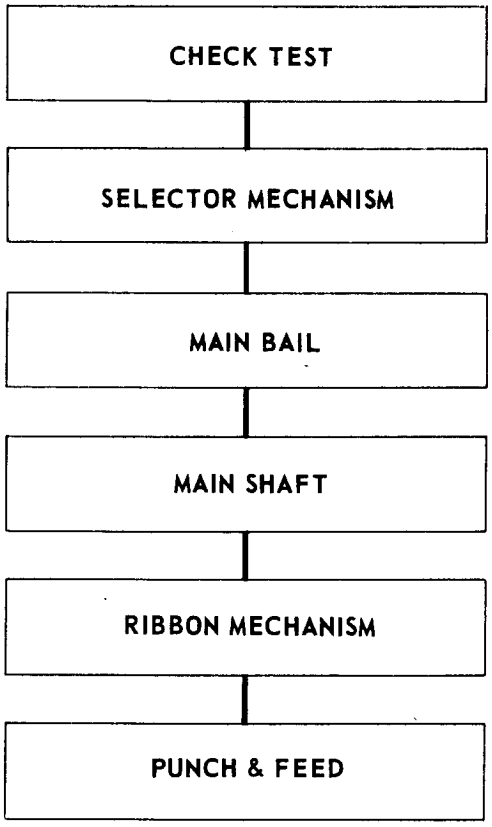


MODEL 14 SENDING— RECEIVING TAPE PRINTER
(LESS COVER)

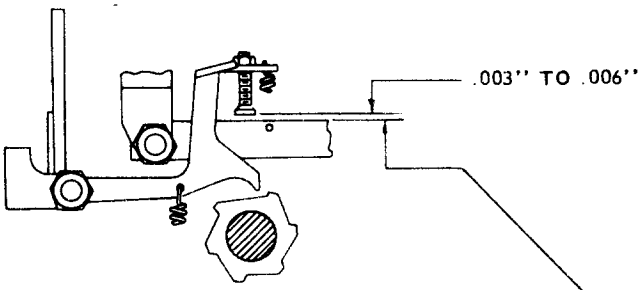
14 TYPE TYPING REPERFORATOR



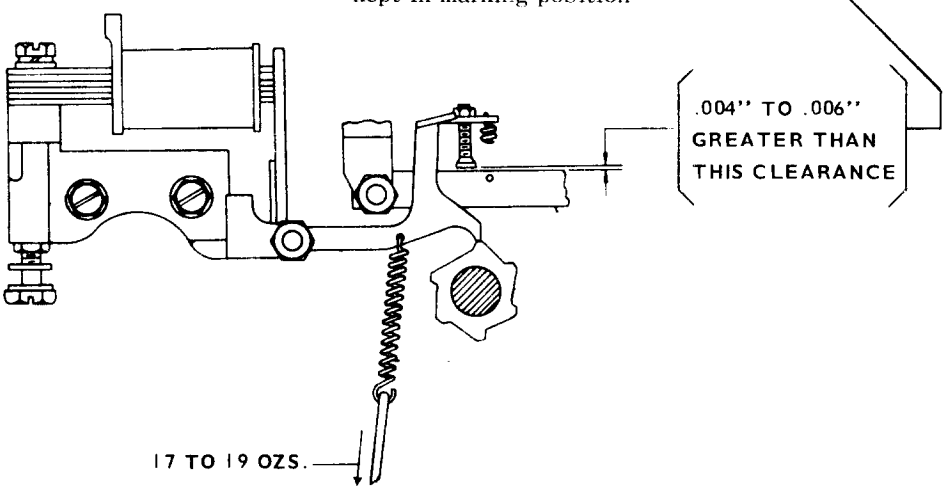
14 REPERFORATOR

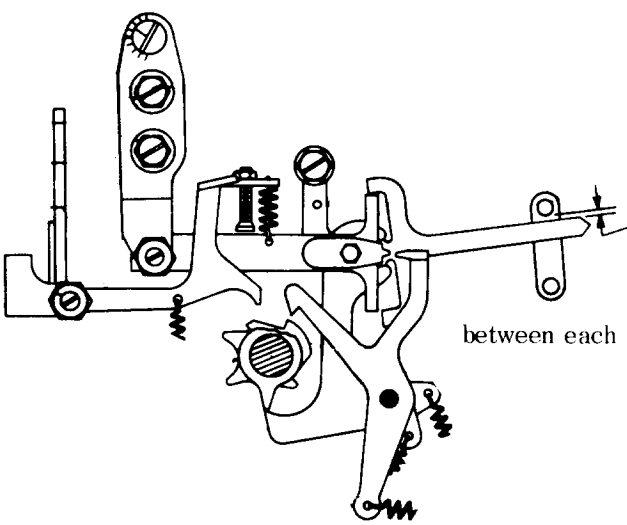


SELECTOR

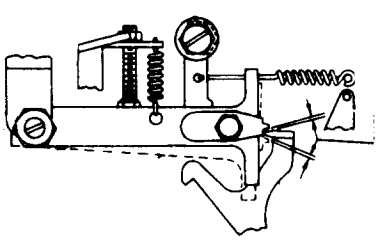


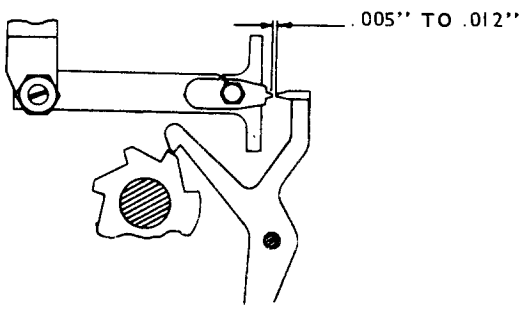
the selector arm should be
kept in marking position





between each sword and either stop post

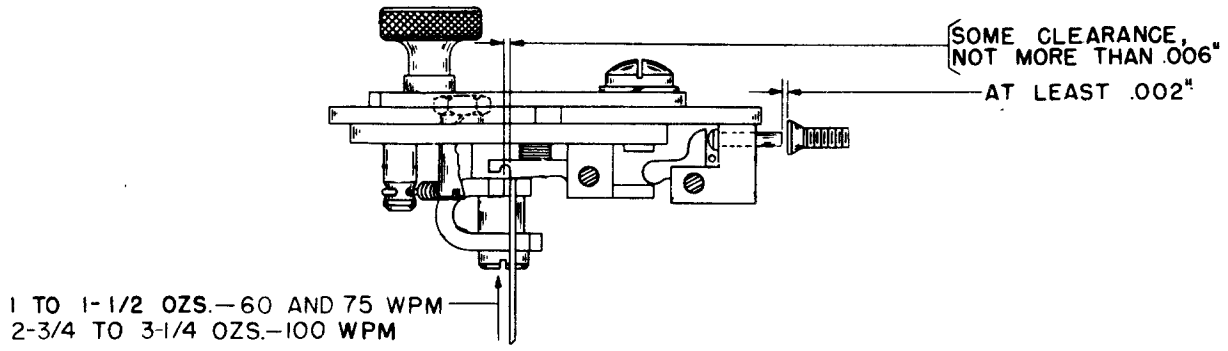




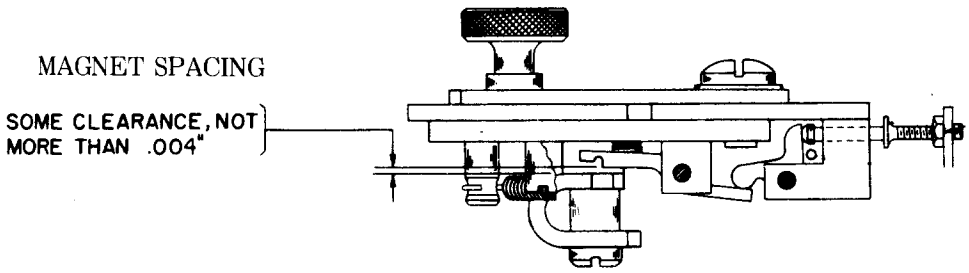
To Adjust:
B. S. P. 572–006–700

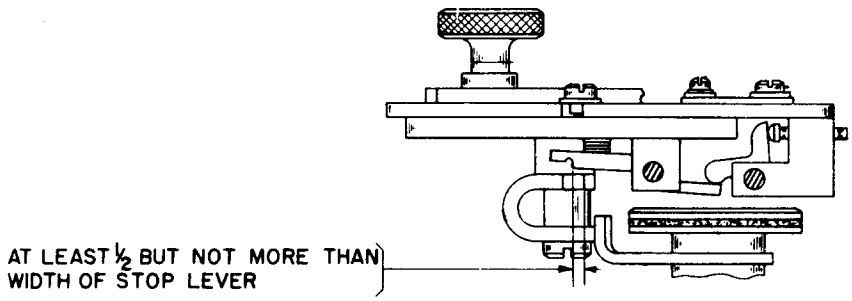
SELECTOR RANGE FINDER ASSEMBLY

MAGNET MARKING



MAGNET SPACING

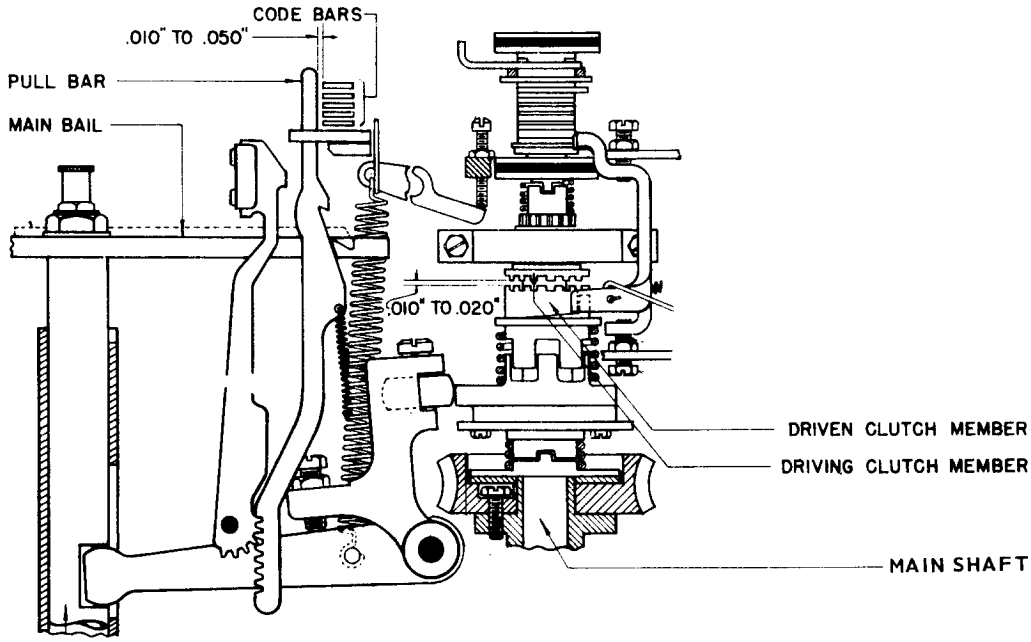




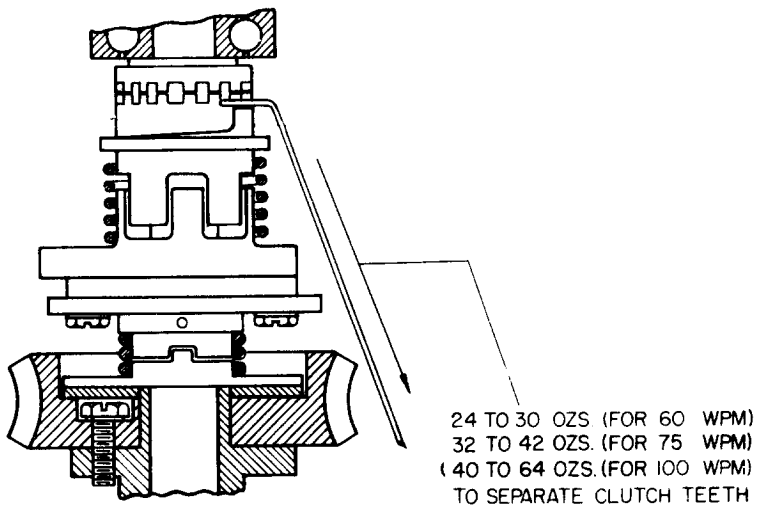
With the selector magnet armature in the spacing position, rotate the selector cam sleeve until the stop arm moves the stop lever to its maximum travel beyond the step of the trip latch. The overtravel of the step lever beyond the trip latch is at least half but not more than the width of the stop lever. This should be checked with the range indicator set at 0, 60, and 120 on the range scale.

To Adjust:
B.S.P. 572-006-700

MAIN BAIL

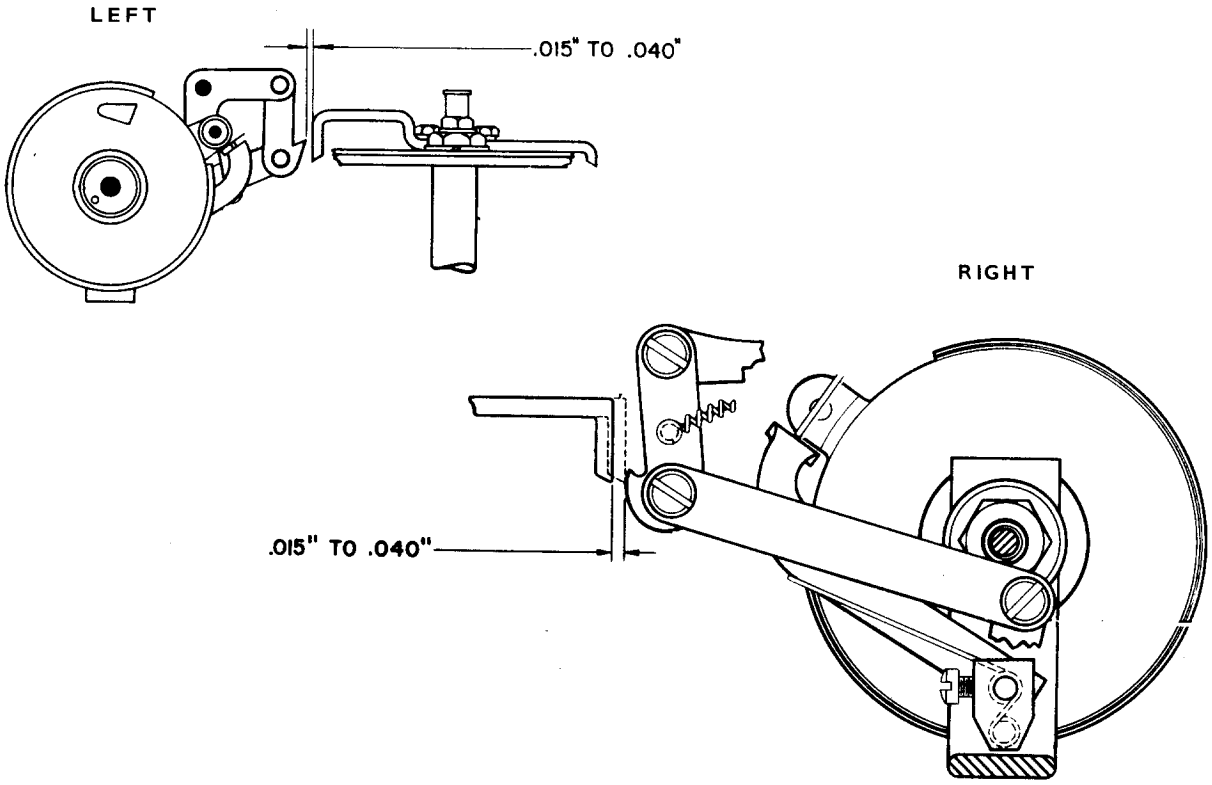


MAIN SHAFT CLUTCH SPRING

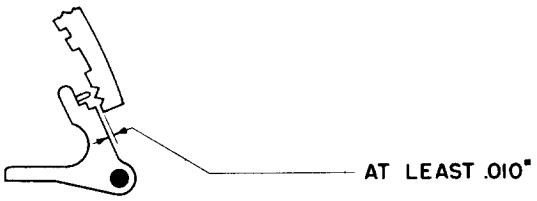


To Adjust:
B. S. P. 572–105–700

RIGHT AND LEFT RIBBON REVERSE

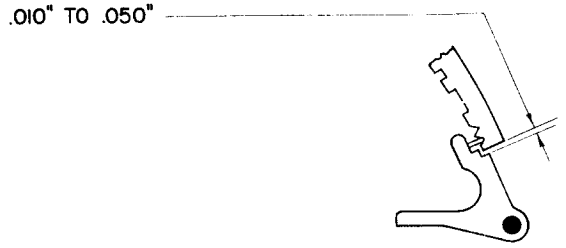


CODE BAR BELL CRANKS



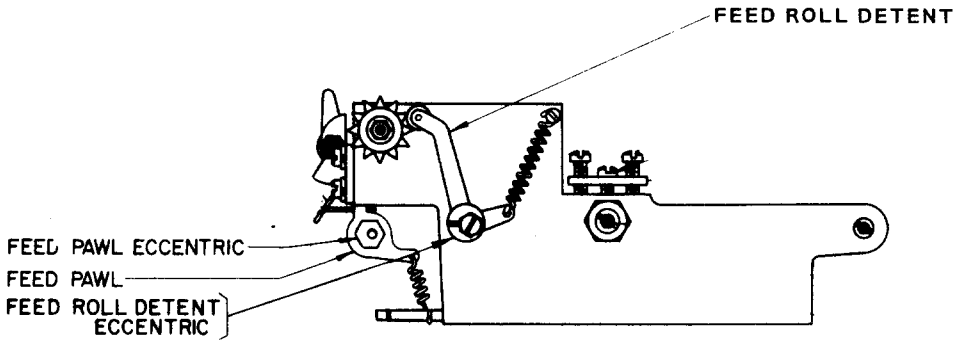
With the code bars positioned for LETTERS selection and the main bail cam roller on the high part of its cam.

With the code bars positioned for BLANK selection and the locking lever resting against the code bars,



To Adjust:
B. S. P. 572-105-700

FEED PAWL ECCENTRIC



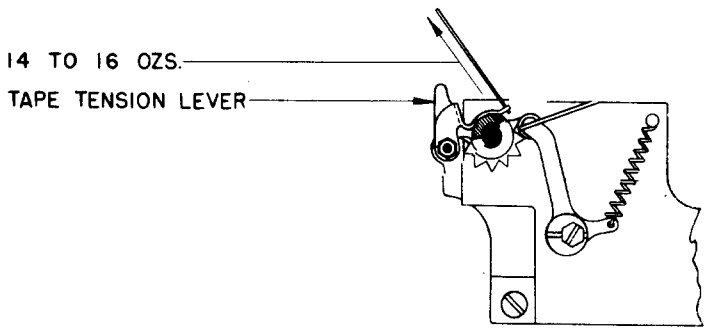
With the punch arm cam roller on the low part of its cam, the feed pawl should rest in the bottom of the notch which is just below the horizontal center line of the feed roll.

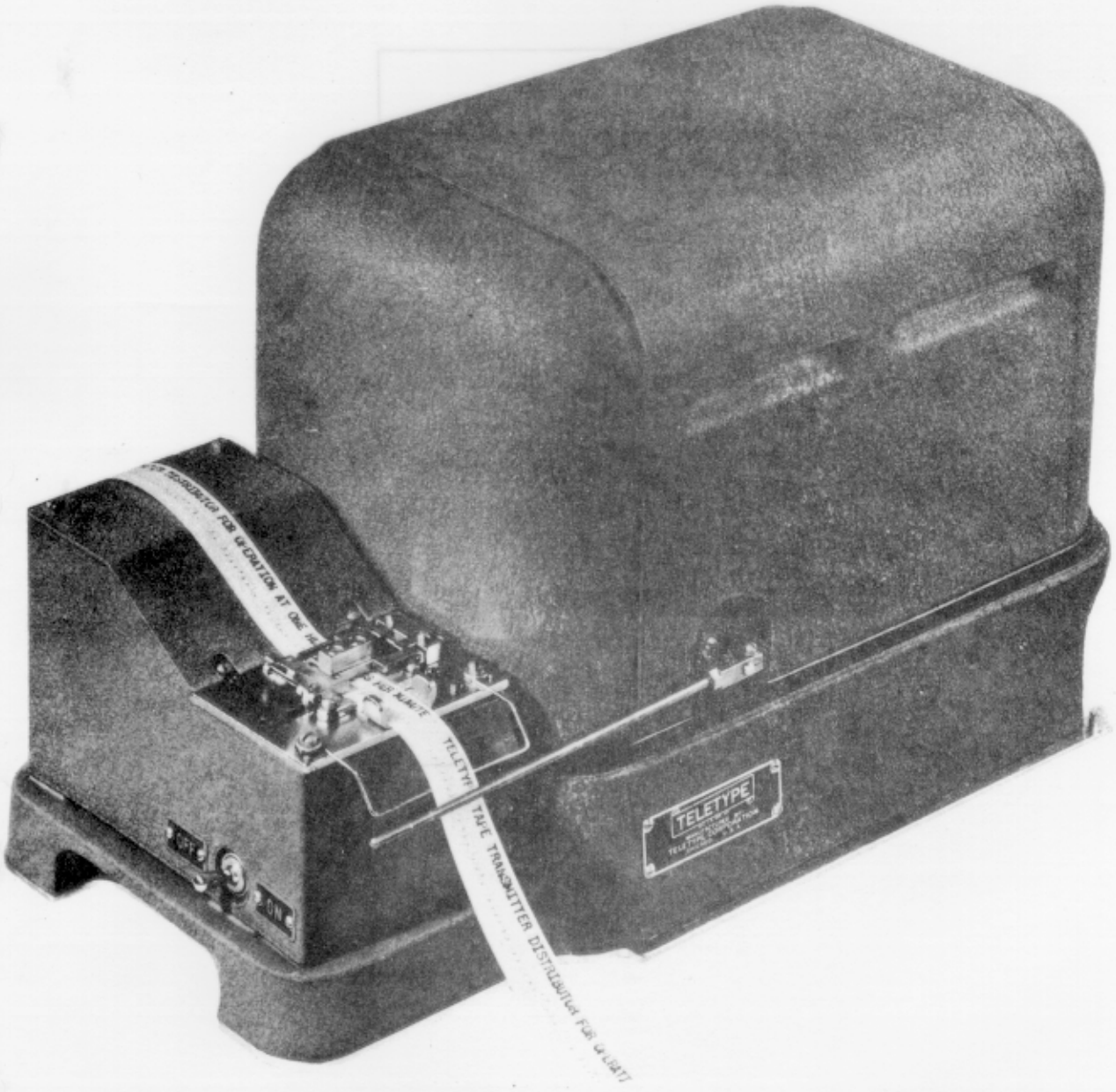
GAUGING TAPE

Perforations in tape should be evenly spaced, 10 to the inch, with an allowable variation of $\pm$ 0.007" in a 4" length.

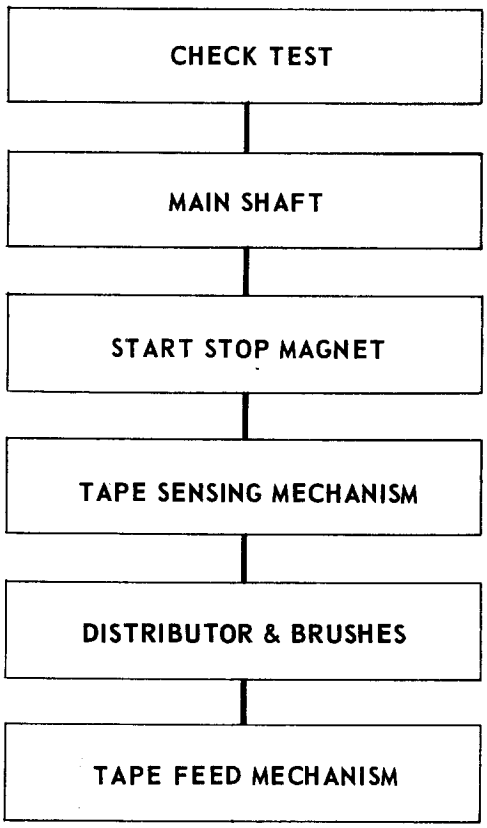
(a) To check, perforate a series of nine Blanks, and one LTRS combination seven or eight times, bend back the lids of all No. 3 code holes, place the tape on top of a TP95960 gauge.

TAPE TENSION LEVER



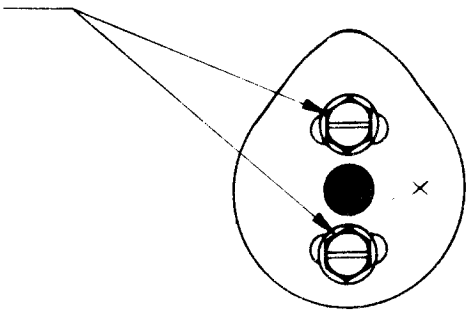

TELETYPE

14 TRANSMITER DISTRIBUTOR

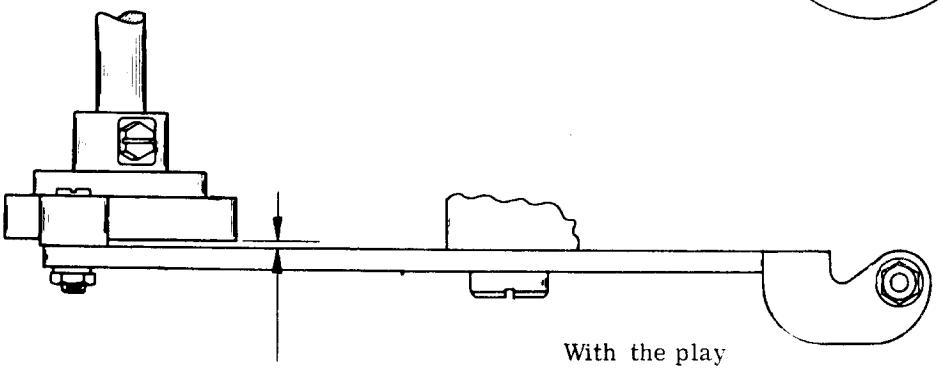


MAIN SHAFT

The trailing edge of the carbon brush should be on an oblique angle to the leading edge of the STOP segment. The trailing inside corner of the carbon brush should be 1/32" to 1/16" from the leading edge of the STOP segment,

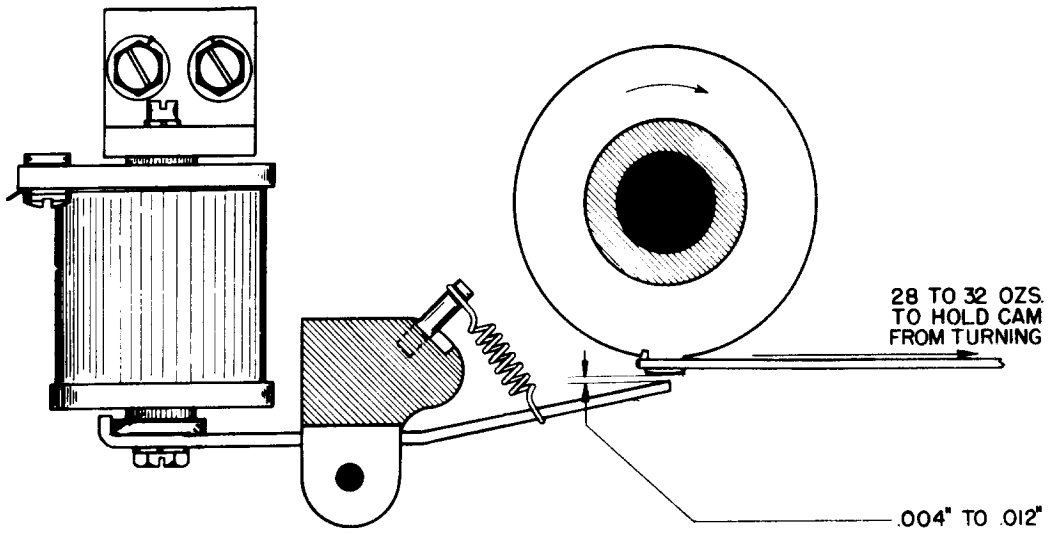


The operating cam should be positioned so that the No. 5 Transmitter Contact Tongue leaves the lower (MARKING) contact screw when the distributor brush is on the STOP



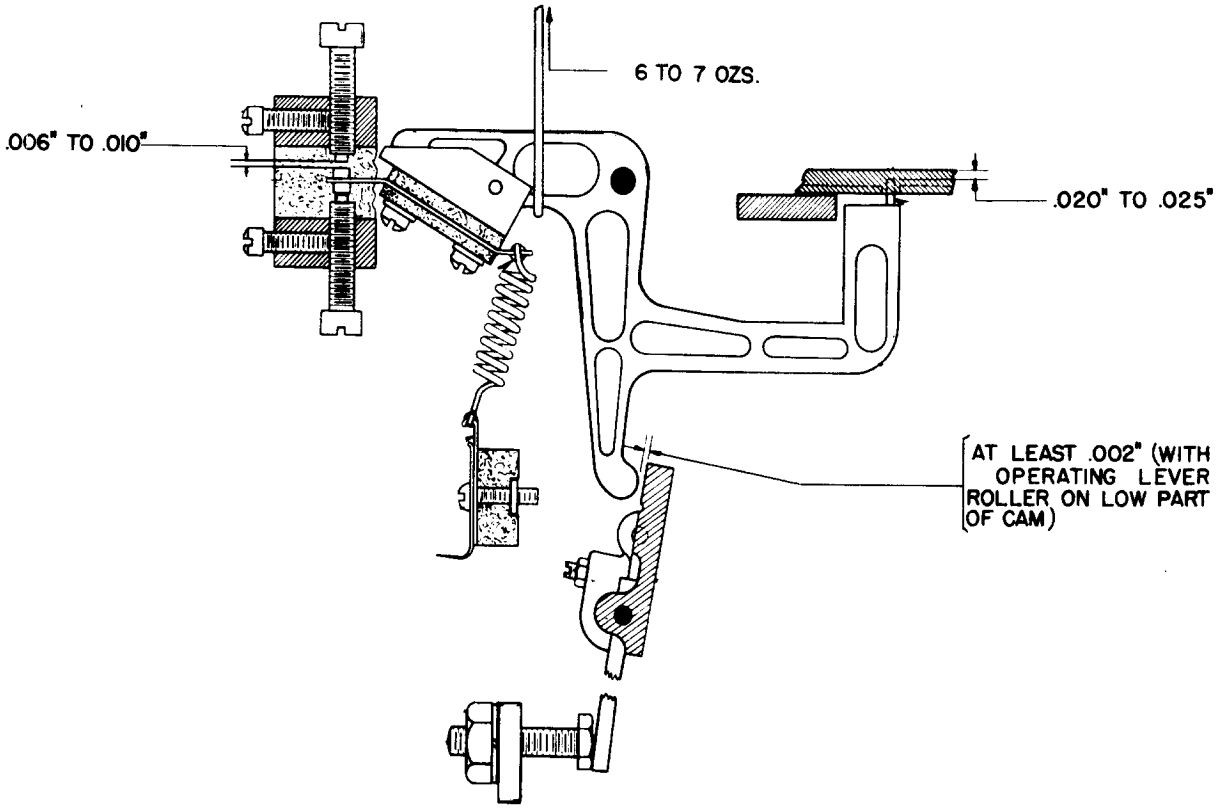
With the play in the operating lever taken up in a direction to make the clearance a maximum, this clearance should not exceed .040".

TAPE STOP MAGNET

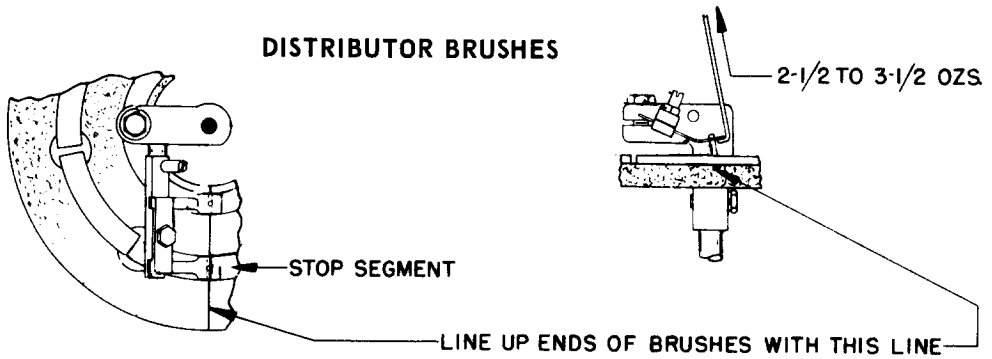


To Adjust:
B. S. P. 572-103-700

TAPE SENSING MECHANISM

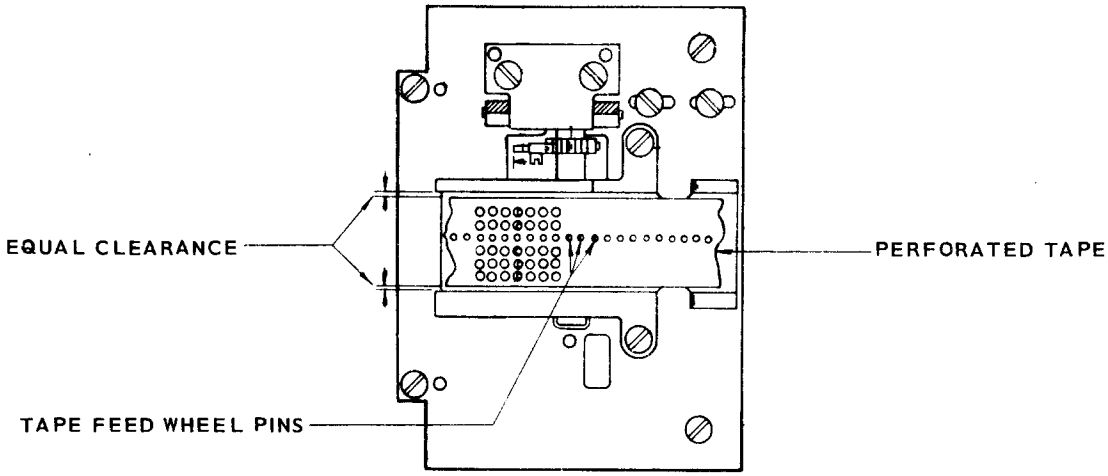


DISTRIBUTOR BRUSHES



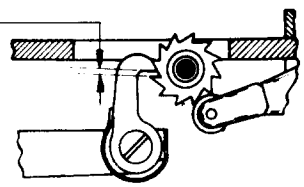
To Adjust:
B. S. P. 572-103-700

TAPE FEED MECHANISM

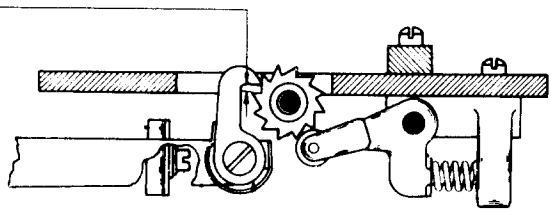


When the play of the tape on the feed wheel is taken up toward the left, the tape pin farthest to the right should just clear the right edge of its associated code hole.

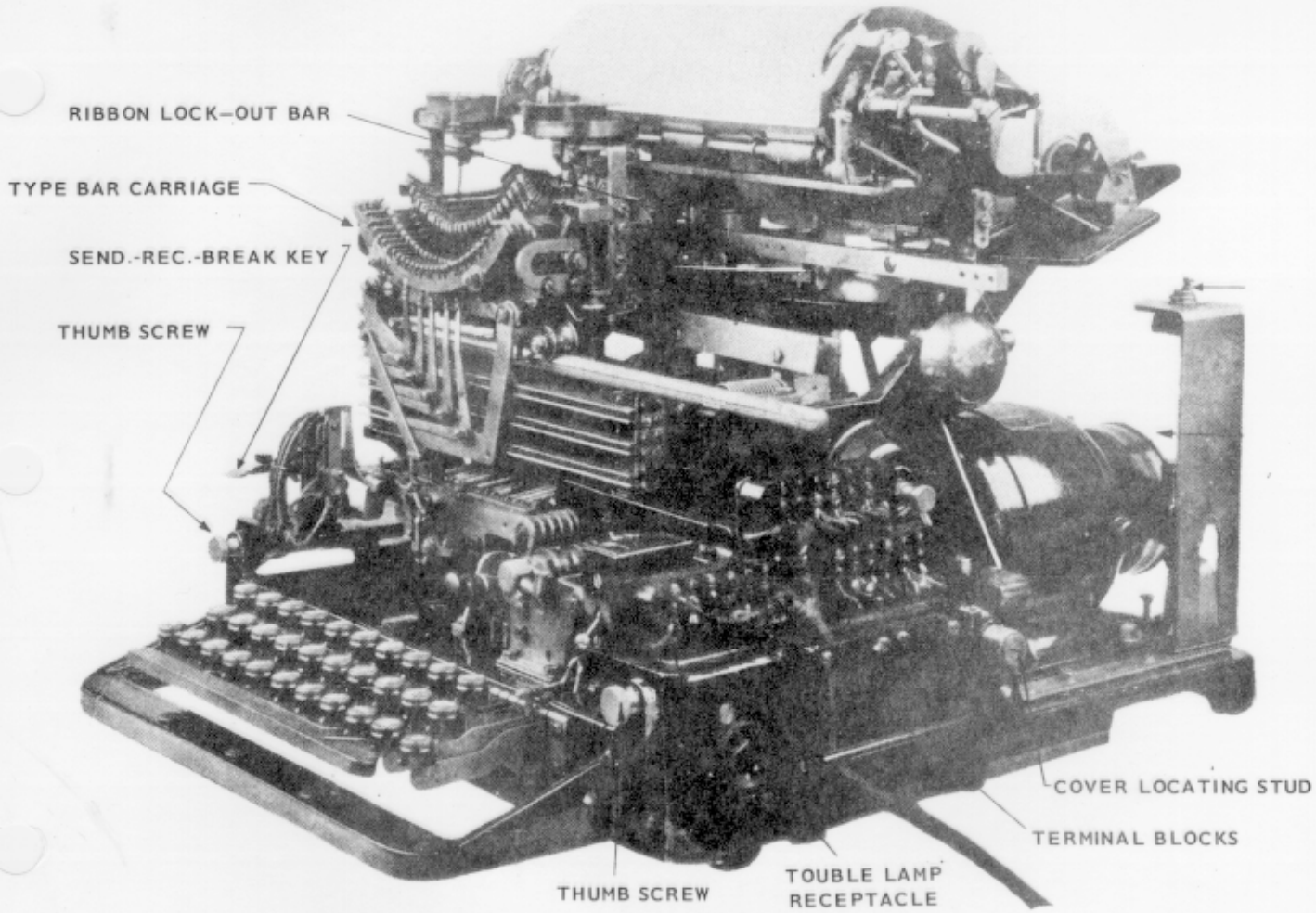
When the operating-lever roller is on the highest part of its cam and the detent roller rests between two teeth on the feed-wheel ratchet, there should be come clearance, not over .010", between the face of a tooth on the ratchet wheel and the face of the feed pawl.

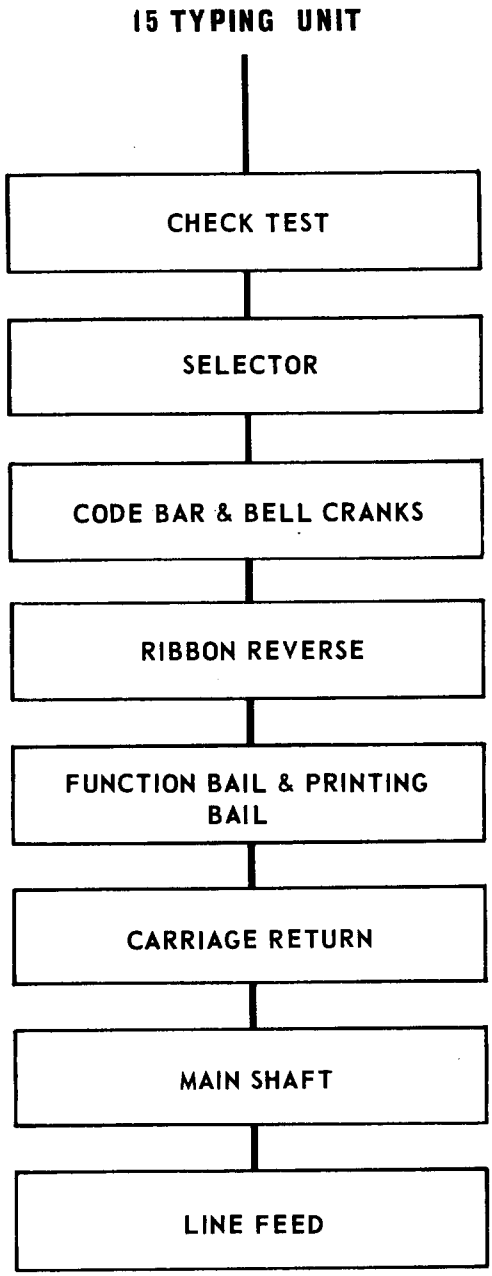


With the operating-lever roller on the low part of the operating cam and the detent roller resting in the notch between two teeth of the feed wheel ratchet, there should be .050" to .070" clearance between the face of feed pawl and the face of the first tooth above the horizontal center line of the feed-wheel ratchet. The feed lever should be in contact with the blocking surface of the feed lever stop.



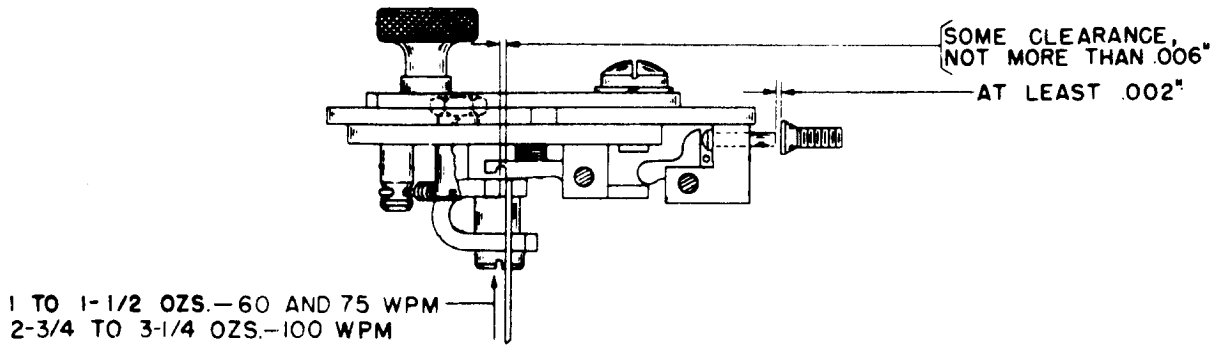
To Adjust:
B. S. P. 572-103-700


RIBBON LOCK–OUT BAR
TYPE BAR CARRIAGE
SEND.-REC.-BREAK KEY
THUMB SCREW
COVER LOCATING STUD
TERMINAL BLOCKS
THUMB SCREW
TOUBLE LAMP RECEPTACLE

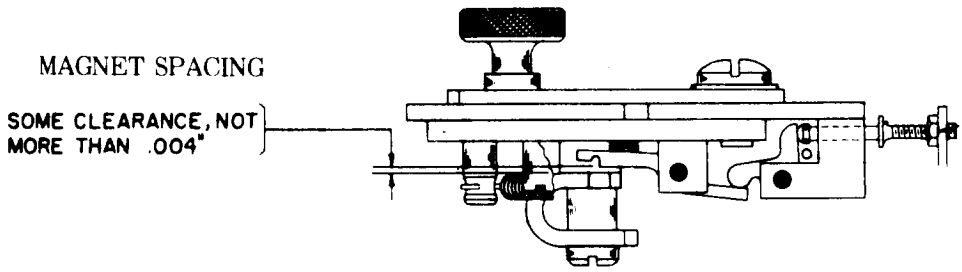

15 TYPING UNIT
CHECK TEST
SELECTOR
CODE BAR & BELL CRANKS
RIBBON REVERSE
FUNCTION BAIL & PRINTING BAIL
CARRIAGE RETURN
MAIN SHAFT
LINE FEED

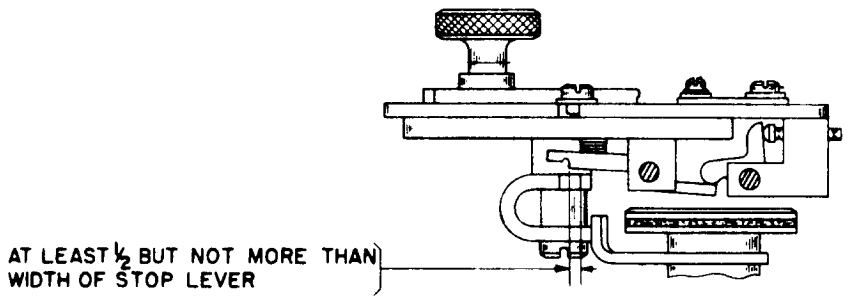
SELECTOR RANGE FINDER ASSEMBLY

MAGNET MARKING

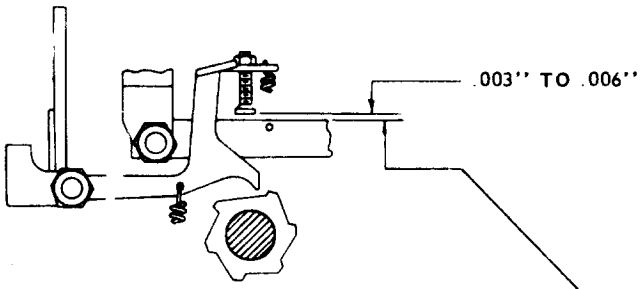


MAGNET SPACING

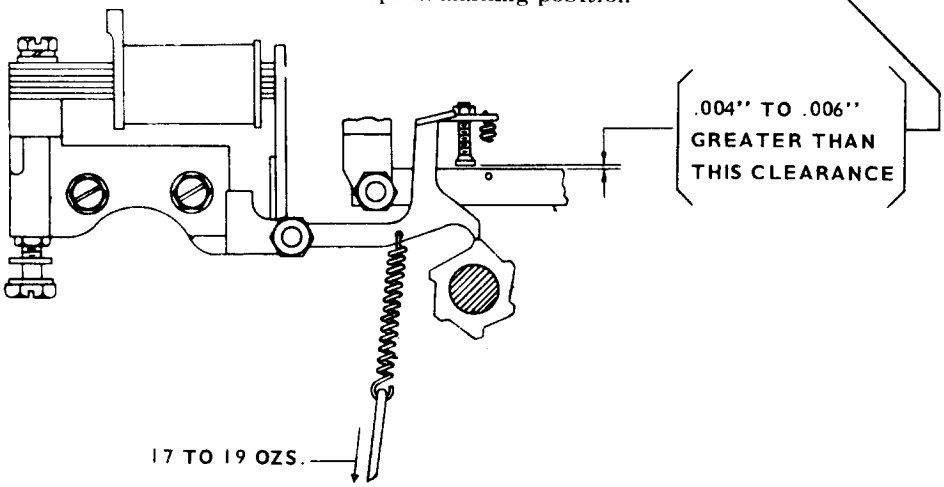


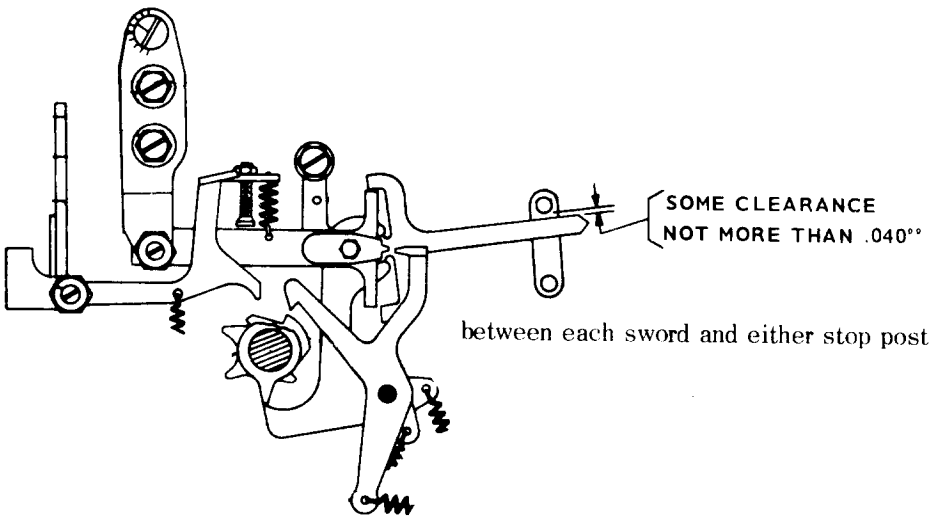


With the selector magnet armature in the spacing position, rotate the selector cam sleeve until the stop arm moves the stop lever to its maximum travel beyond the step of the trip latch. The overtravel of the step lever beyond the trip latch is at least half but not more than the width of the stop lever. This should be checked with the range indicator set at 0, 60, and 120 on the range scale.

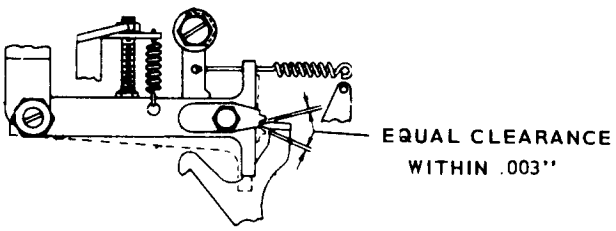


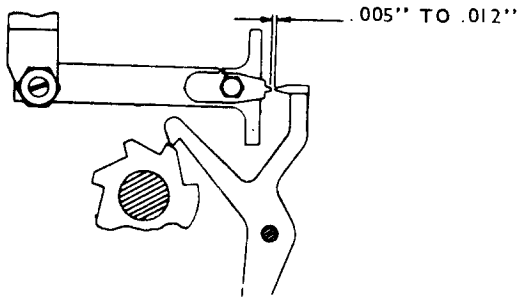
the selector arm should be kept in marking position





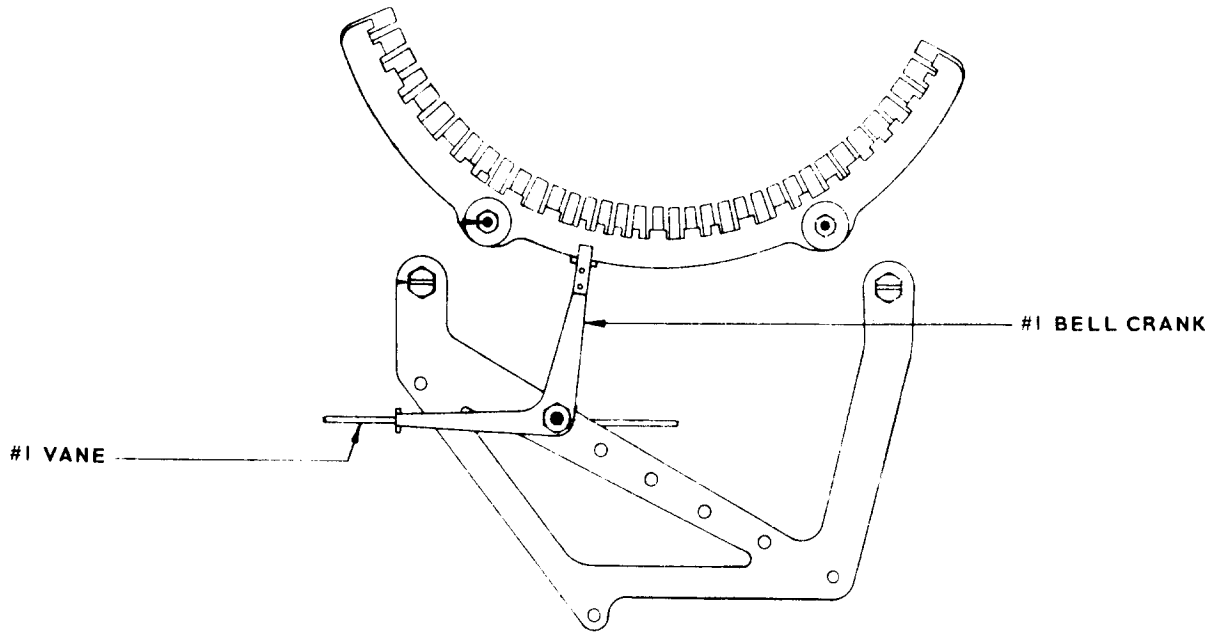
between each sword and either stop post

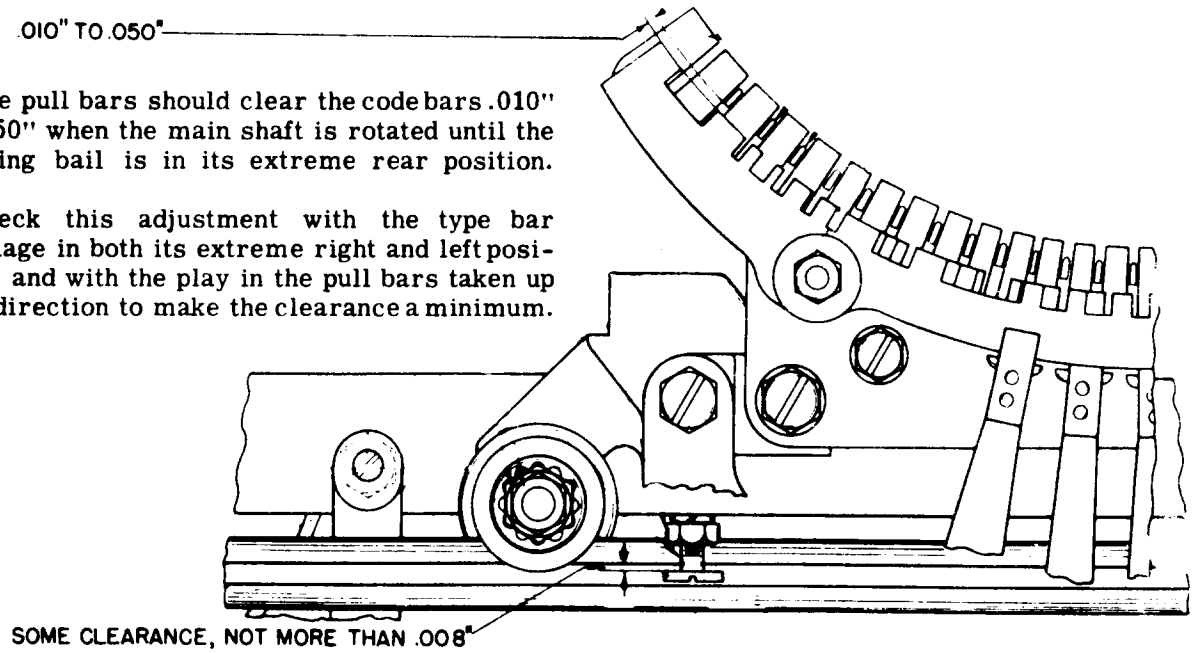




CODE BARS AND CODE BAR BELL CRANKS

Code bars should rest firmly against the marking and spacing stops when the vanes are in their respective marking and spacing positions. Make sure that the upper ends of the bell cranks do not engage the code bars deeply enough to bind.



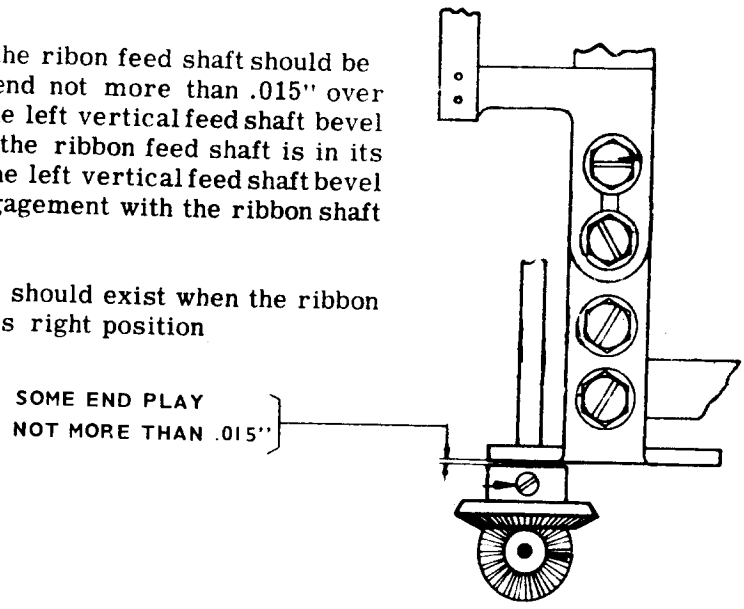


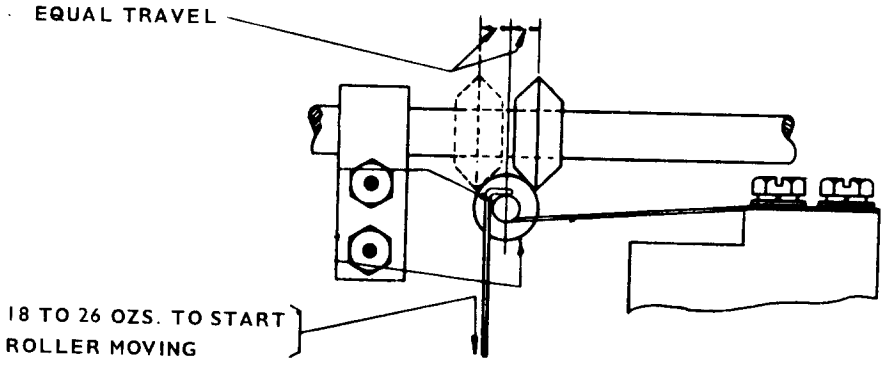
The pull bars should clear the code bars .010" to .050" when the main shaft is rotated until the printing bail is in its extreme rear position.

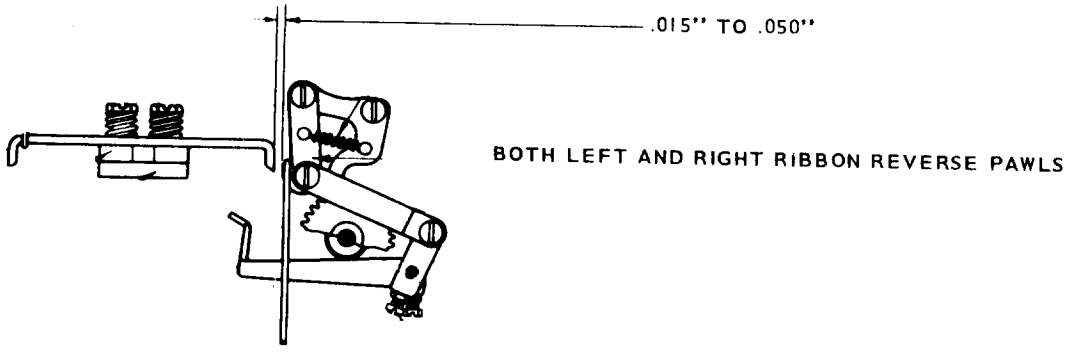
Check this adjustment with the type bar carriage in both its extreme right and left positions and with the play in the pull bars taken up in a direction to make the clearance a minimum.

The left end of the ribon feed shaft should be flush with or extend not more than .015" over the inner end of the left vertical feed shaft bevel gear teeth, when the ribbon feed shaft is in its left position and the left vertical feed shaft bevel gear is held in engagement with the ribbon shaft gear.

A like condition should exist when the ribbon feed shaft is in its right position

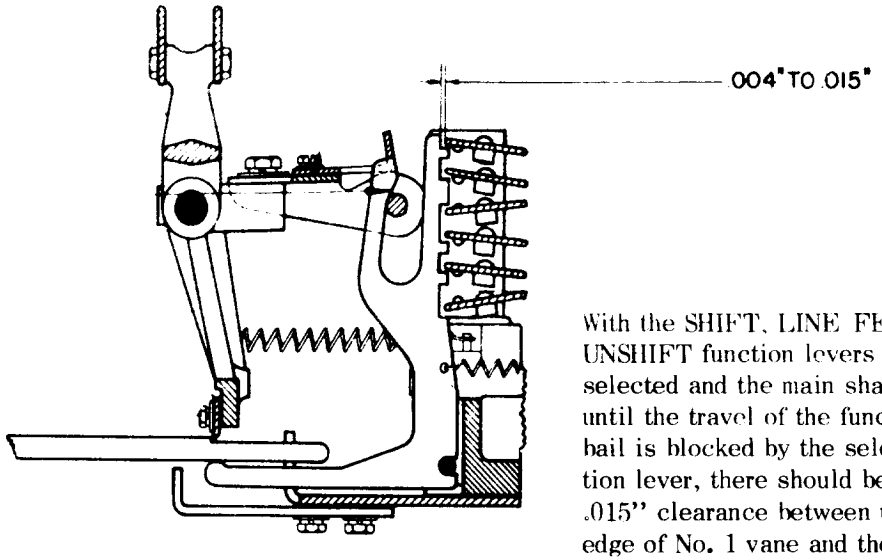




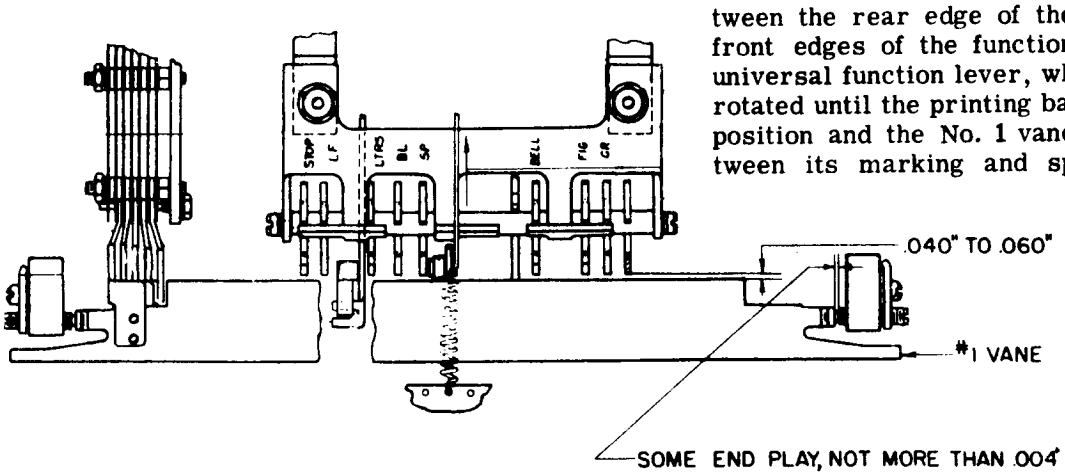


To Adjust:
B. S. P. 572-202-700

FUNCTION LEVER BAIL AND PRINTING BAIL



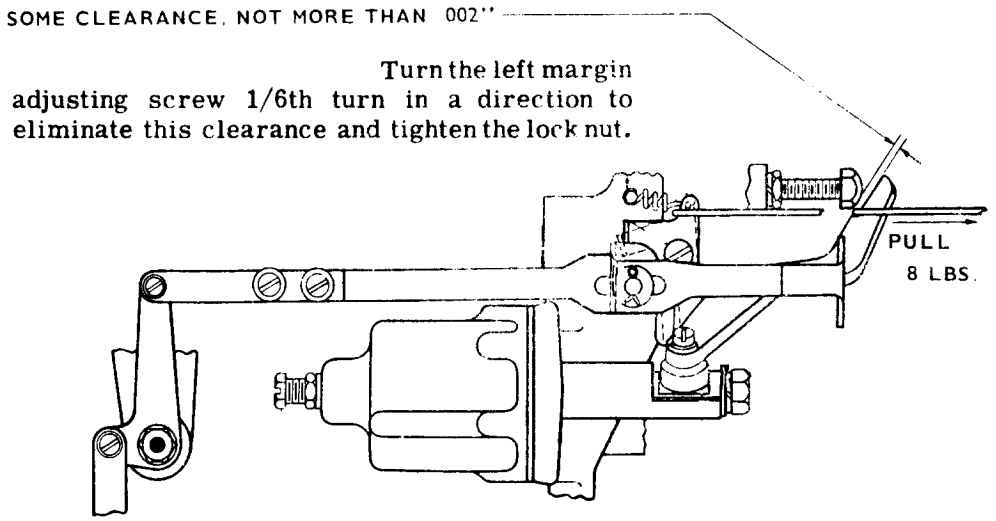
With the SHIFT, LINE FEED, AND UNSHIFT function levers alternately selected and the main shaft rotated until the travel of the function lever bail is blocked by the selected function lever, there should be .004" to .015" clearance between the rear edge of No. 1 vane and the bottom of a notch in the selected function lever.



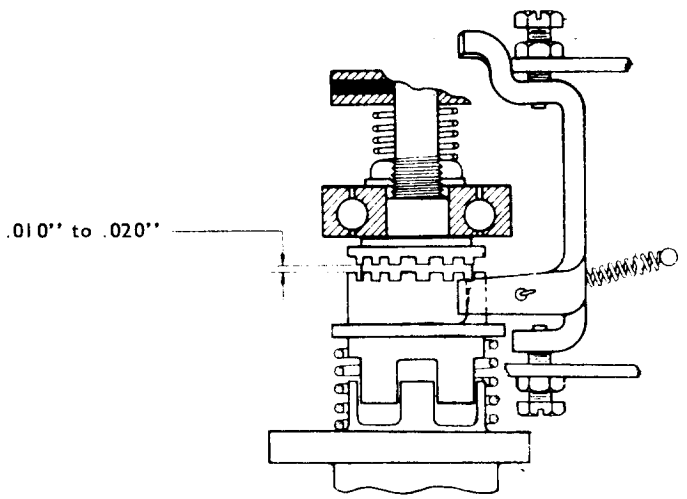
There should be .040" to .060" clearance between the rear edge of the No. 1 vane and the front edges of the function levers, except the universal function lever, when the main shaft is rotated until the printing bail is in its rearmost position and the No. 1 vane is held midway between its marking and spacing positions.

To Adjust:
B.S.P. 572-202-700

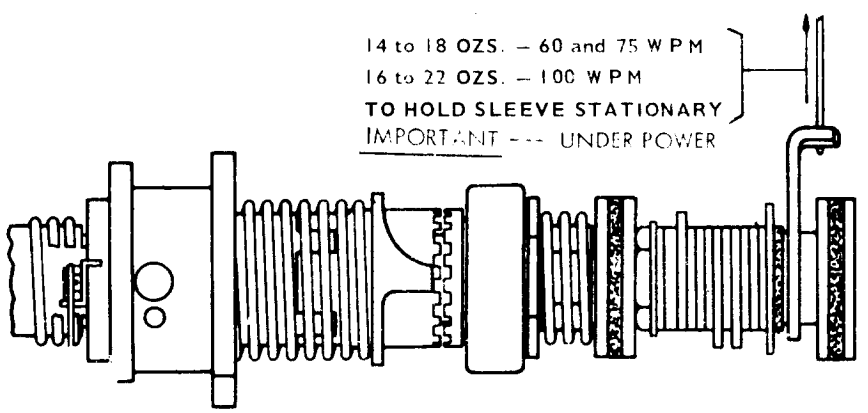
CARRIAGE RETURN AND LEFT MARGIN



Turn the left margin adjusting screw 1/6th turn in a direction to eliminate this clearance and tighten the lock nut.



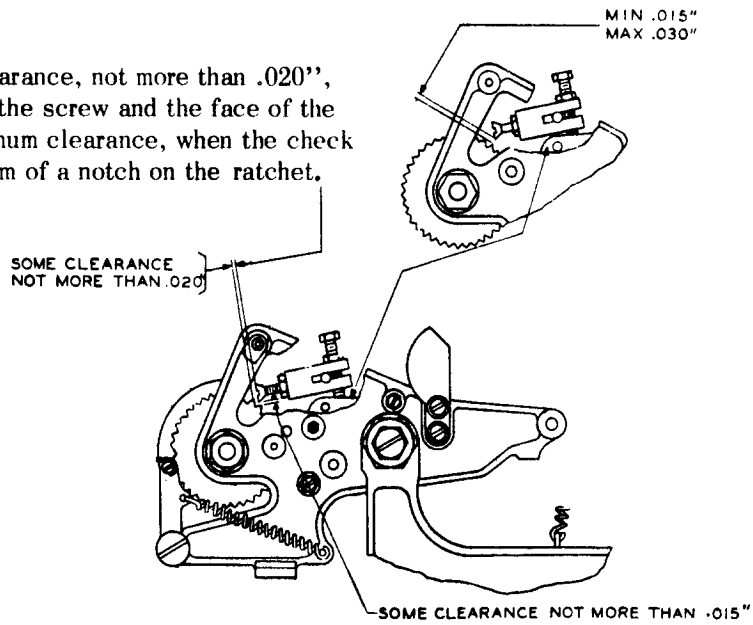
MAIN SHAFT

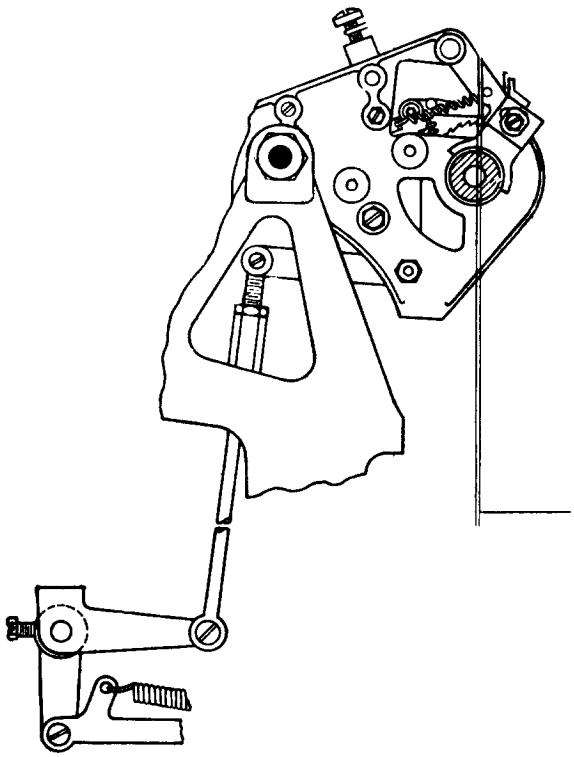


To Adjust:
B.S.P. 572–202–700

There should be .015" to .030" clearance between the line feed check screw and each tooth on the detent ratchet, when the platen is rotated.

There should be come clearance, not more than .020", between the front face of the screw and the face of the tooth at the point of minimum clearance, when the check screw is held in the bottom of a notch on the ratchet.

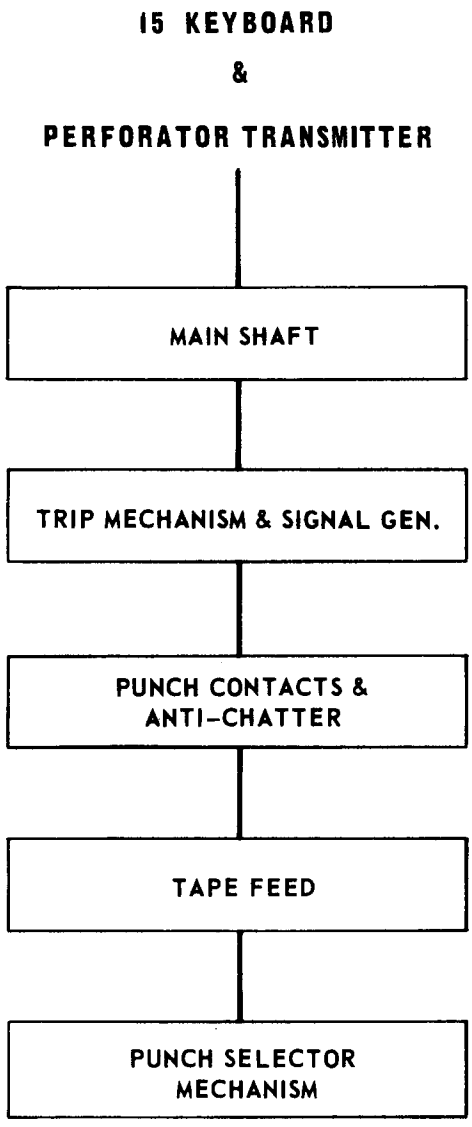


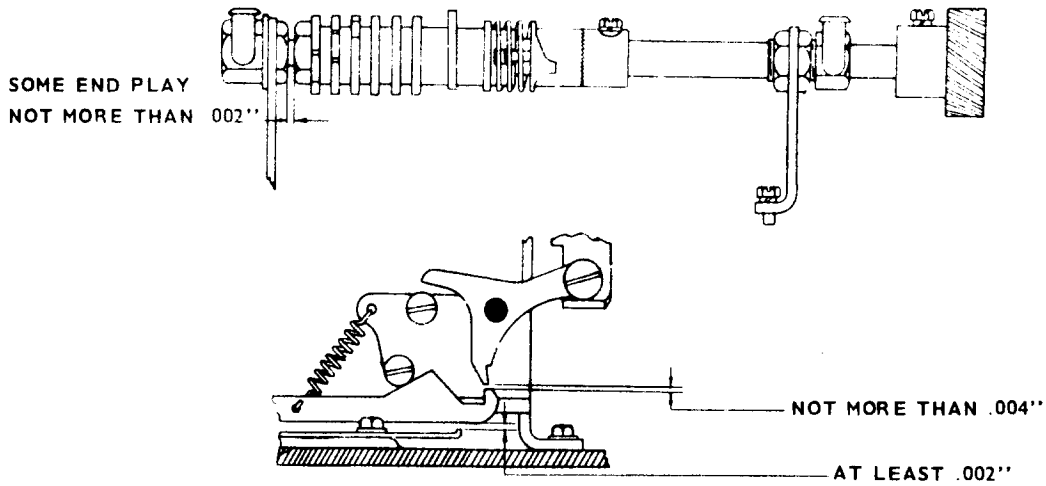


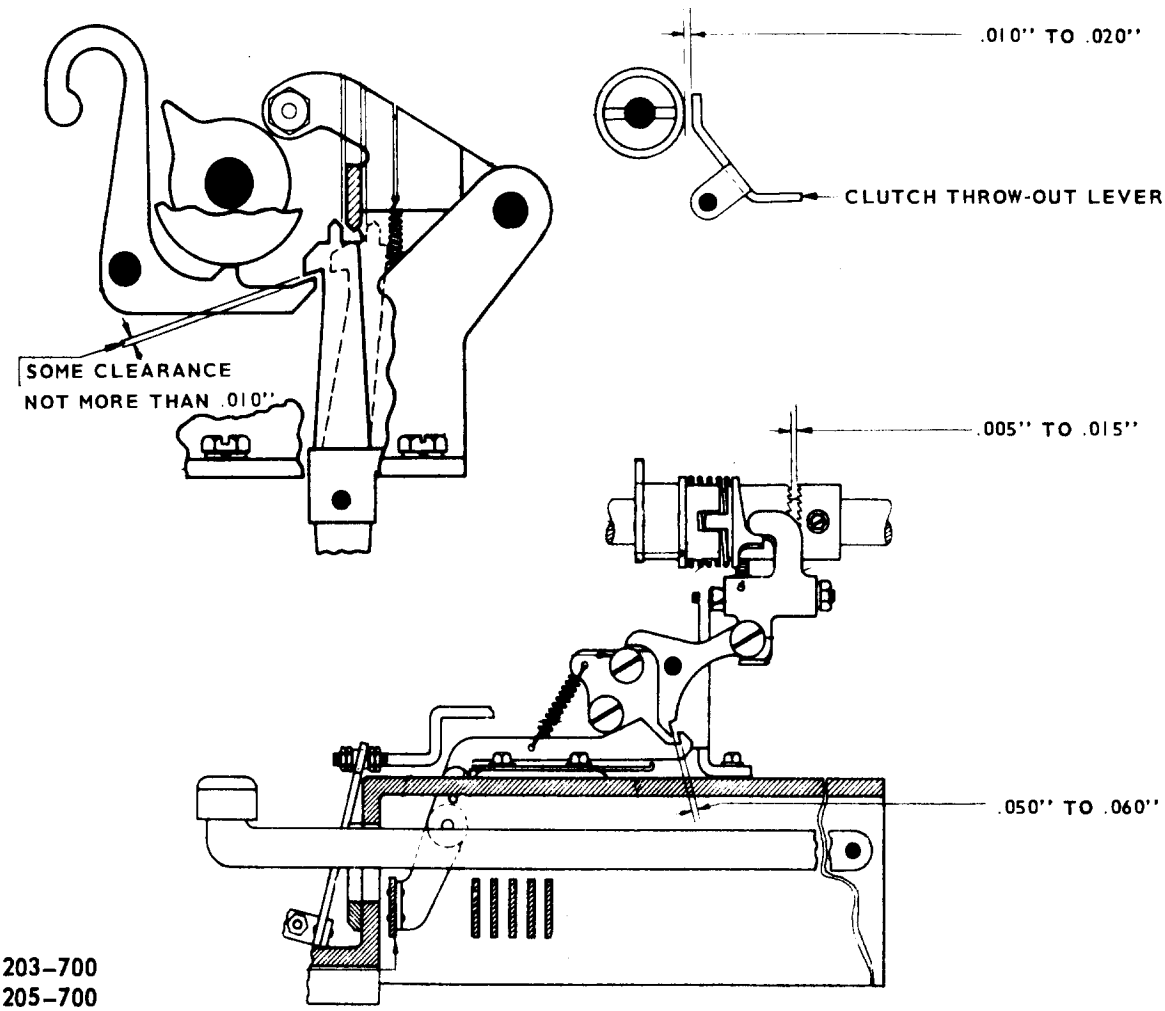
With the single-double line feed lever in the SINGLE line feed position, select the LINE FEED combination and rotate the main shaft.

Until the line feed push bar is being stripped from the function bail blade the feed pawl is still in engagement with a ratchet tooth to such an extent that there is no clearance or not more than .002".

To Adjust:
B. S. P. 572-202-700


15 KEYBOARD
&
PERFORATOR TRANSMITTER
MAIN SHAFT
TRIP MECHANISM & SIGNAL GEN.
PUNCH CONTACTS &
ANTI-CHATTER
TAPE FEED
PUNCH SELECTOR
MECHANISM

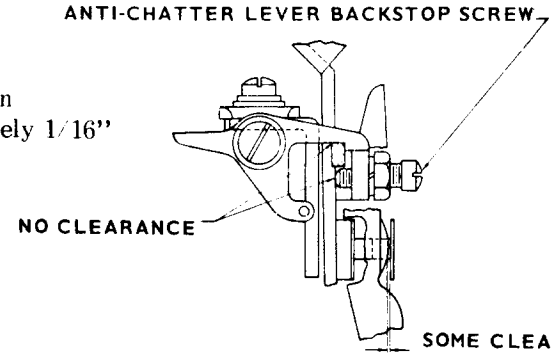




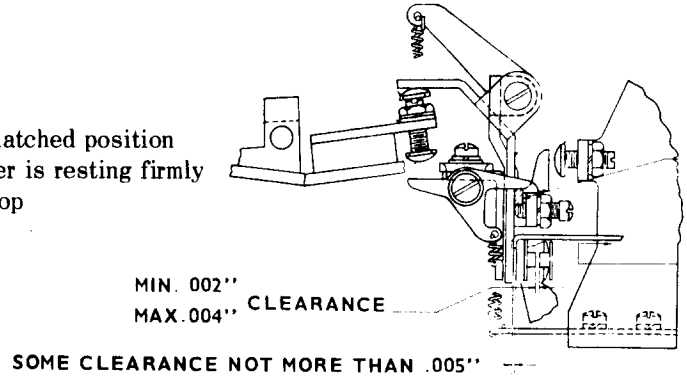
To Adjust:
B.S.P. 572-203-700
B.S.P. 572-205-700

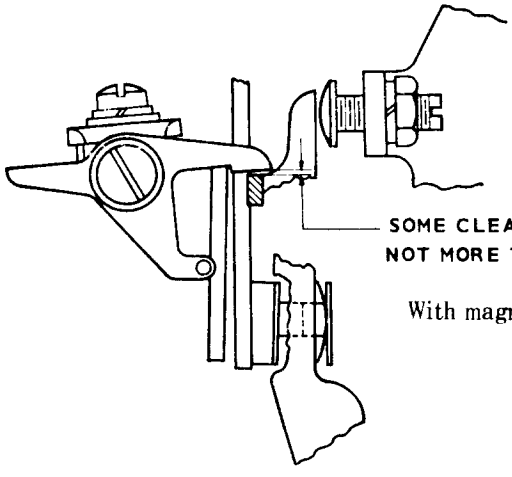
PUNCH CONTACT

Contact operating lever is held in its latched position and the armature is lifted off its left stop approximately 1/16"



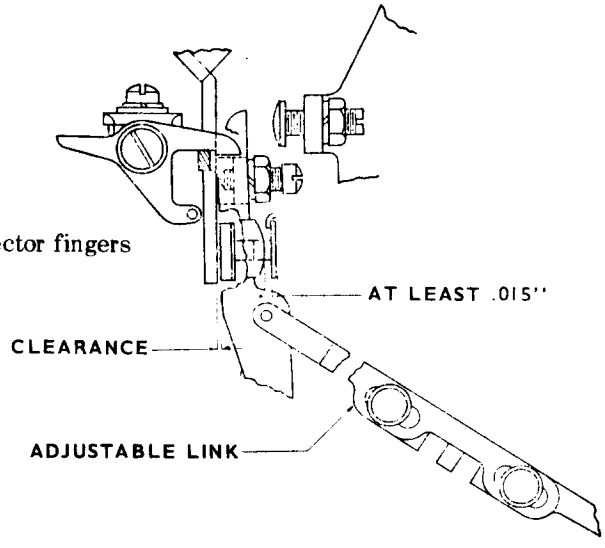
Contact operating lever in its latched position the punch-magnet armature lever is resting firmly against its left (unoperated) stop





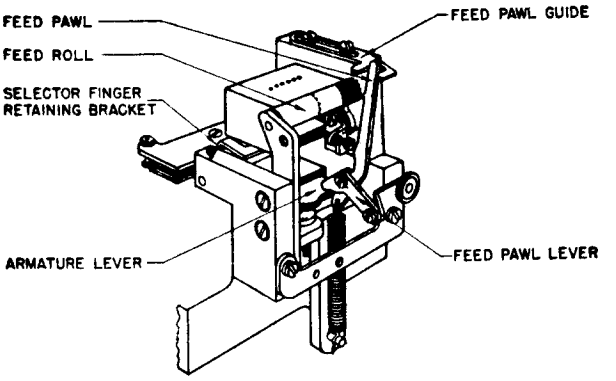
With magnet energized

Contact points should close when all punch-selector fingers just cover the full face of the punch pins.



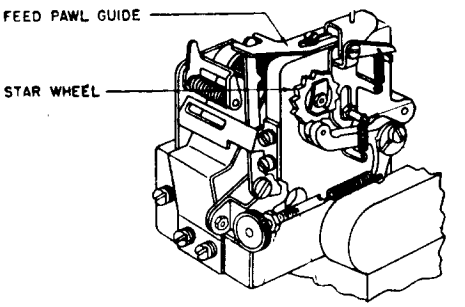
To Adjust:
B. S. P. 572-205-700

TAPE FEED MECHANISM



When the armature lever is firmly against its left stop, the tip of the tooth on the feed-pawl clears the tip of the teeth on the feed-roll by Min .005", Max .015".

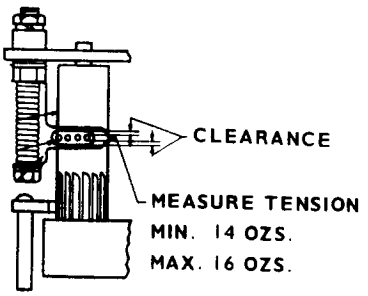
Feed-pawl should clear by Max .005" the teeth of the feed-roll while the armature is in its fully operated position.



Perforations in tape should be evenly spaced, 10 to the inch with an allowable variation of ± .007" in a 4" length.

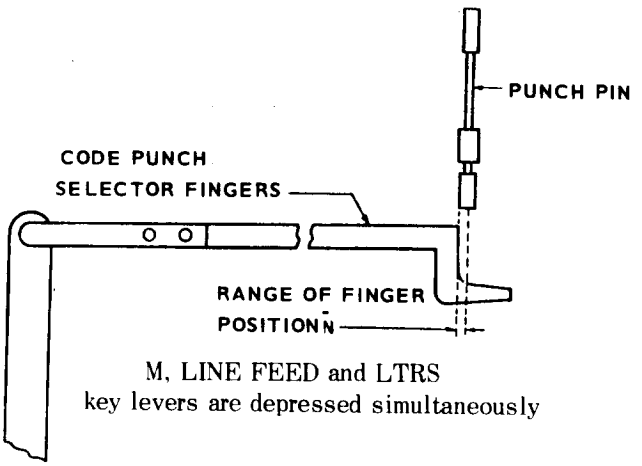
To check, perforate a series of nine Blank and one LTRS combinations seven or eight times, place the tape on top of a TP95960 gauge, then hold tape and gauge up to a light background and align a No. 3 code hole in the tape with the hole 1-1/2 inches from the left end of the gauge. Gauge holes should be visible through all No. 3 code holes to the right of the point of alignment and the code hole above the large hole at the right end of the gauge should fall entirely within the circumference of the gauge hole.

TAPE TENSION LEVER

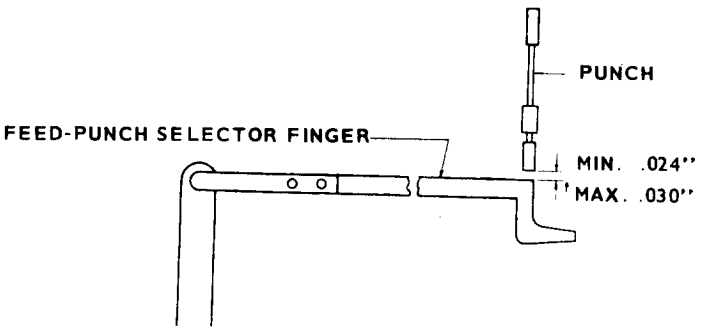


Pulling perpendicularly to a plane passing through center of tension lever stud and the end of the lever.

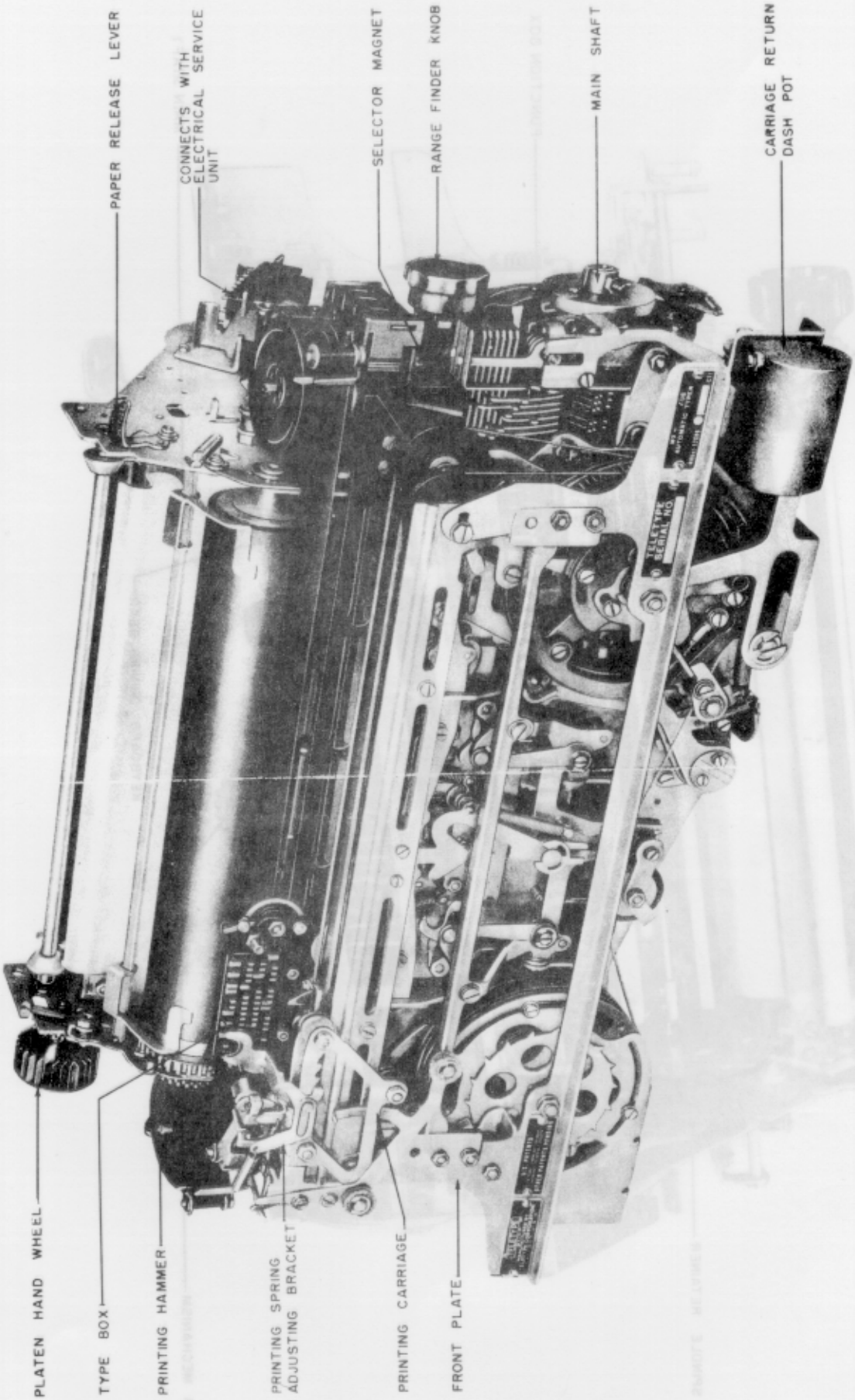
PUNCH SELECTOR FINGER ALIGNMENT



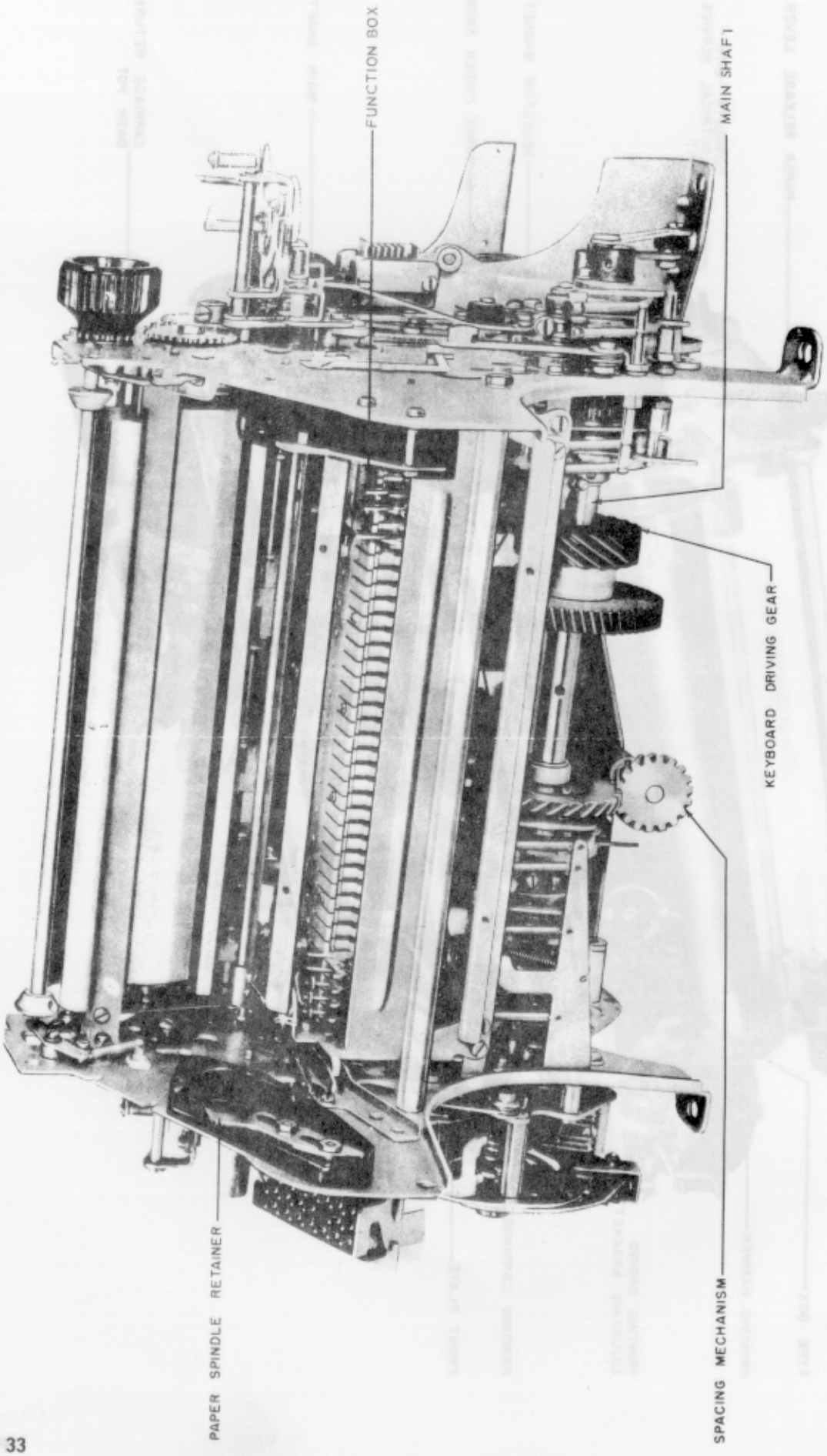
M, LINE FEED and LTRS
key levers are depressed simultaneously



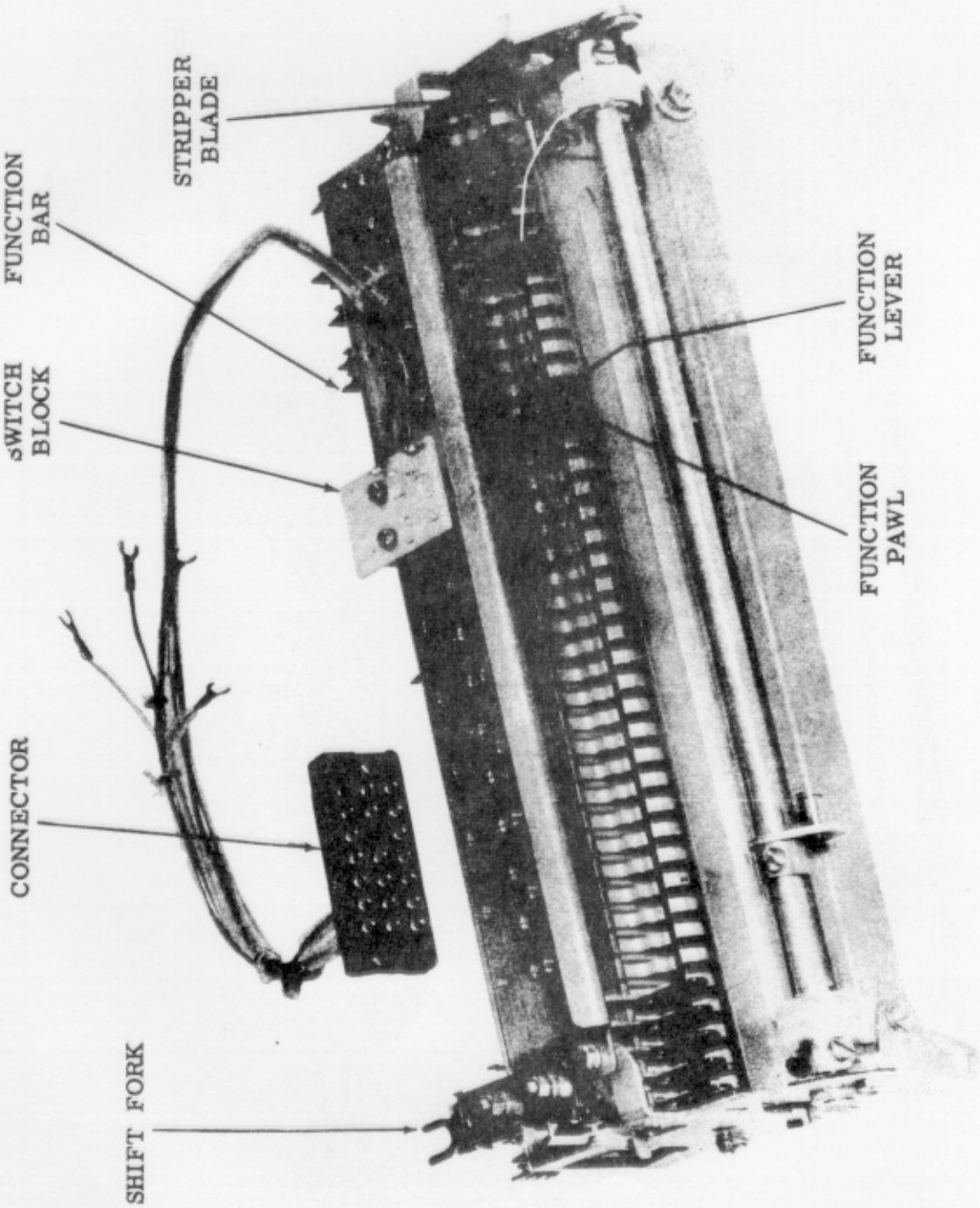
To Adjust:
B. S. P. 572–205–700


PAPER RELEASE LEVER
CONNECTS WITH ELECTRICAL SERVICE UNIT
SELECTOR MAGNET
RANGE FINDER KNOB
MAIN SHAFT
CARRIAGE RETURN DASH POT
PLATEN HAND WHEEL
TYPE BOX
PRINTING HAMMER
PRINTING SPRING ADJUSTING BRACKET
PRINTING CARRIAGE
FRONT PLATE

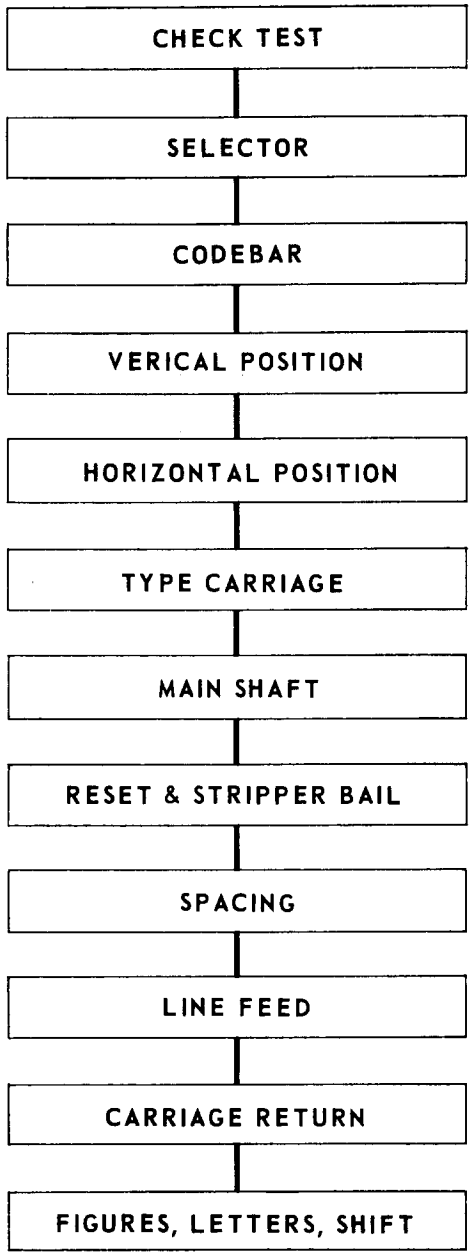
28 TYPE TYPING UNIT, REAR VIEW



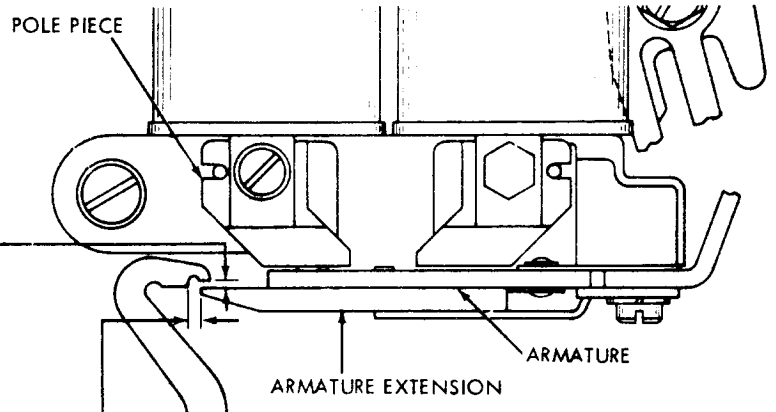
Stunt Box Rear View



28 & 35 TYPING UNIT



SELECTOR MECHANISM



(2) REQUIREMENT
SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. SOME CLEARANCE BETWEEN UPPER SURFACE OF ARMATURE EXTENSION AND LOWER SURFACE OF SPACING LOCK LEVER WHEN LOCK LEVER IS HELD DOWNWARD.
MAX. 0.003 INCH

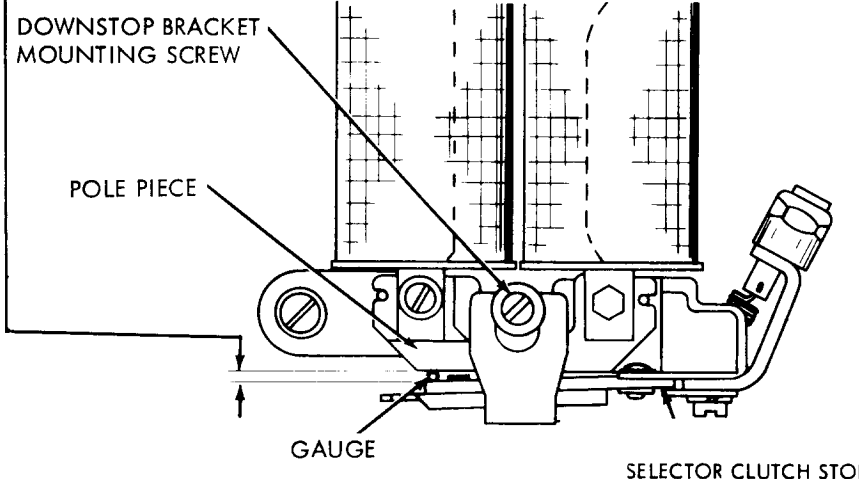
SELECTOR MAGNET BRACKET

(1) REQUIREMENT
SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SHOULDER ON SPACING LOCK LEVER.
MIN. 0.020 INCH
MAX. 0.035 INCH

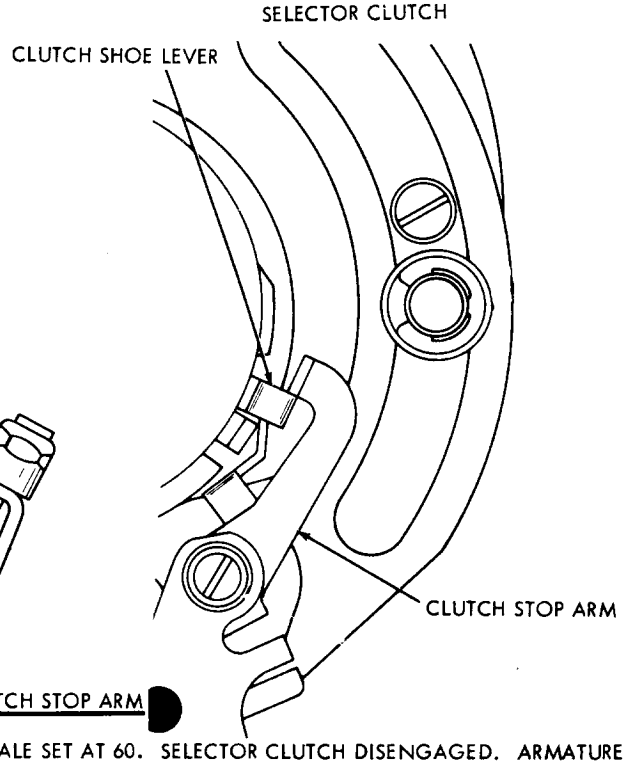
Type 35 ONLY

SELECTOR ARMATURE DOWNSTOP

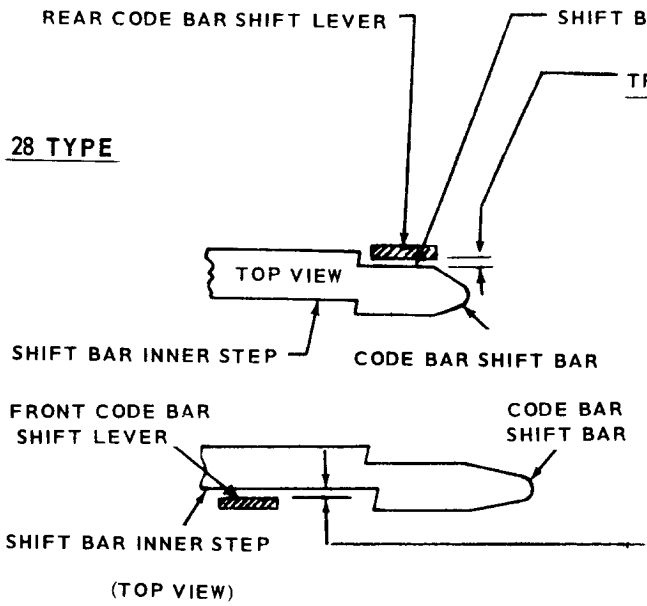
REQUIREMENT
— MAGNET DE-ENERGIZED. LOCK LEVERS ON HIGH PART OF CAM. WITH ARMATURE RESTING AGAINST DOWNSTOP
MIN. 0.025 INCH --- MAX. 0.030 INCH
CLEARANCE BETWEEN END OF ARMATURE AND LEFT EDGE OF LEFT POLE PIECE.



To Adjust:
35 Type – B. S. P. 574–220–700
28 Type – B. S. P. 573–115–700



SELECTOR CLUTCH STOP ARM
REQUIREMENT
RANGE SCALE SET AT 60. SELECTOR CLUTCH DISENGAGED. ARMATURE IN MARKING POSITION. CLUTCH STOP ARM SHOULD ENGAGE CLUTCH SHOE LEVER BY APPROXIMATELY FULL THICKNESS OF SHOE LEVER.

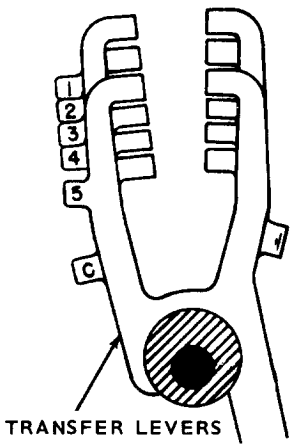


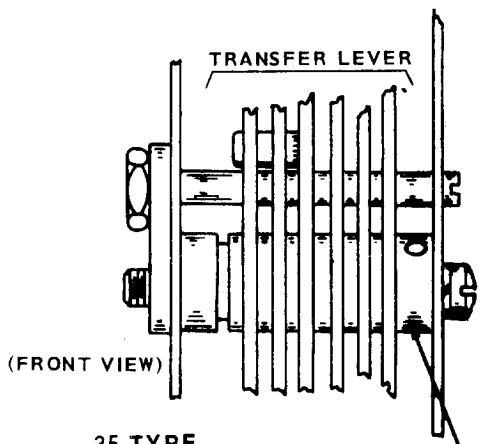
28 TYPE

REQUIREMENT
PUSH LEVERS POSITIONED FOR MARK. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN UPPERMOST POSITION. CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND CODE BAR SHIFT BAR FARTHEST FROM REAR CODE BAR SHIFT LEVER
MIN. 0.010 INCH
MAX. 0.025 INCH
WHEN PLAY OF SHIFT BAR IS TAKEN UP FOR MAXIMUM CLEARANCE

INTERMEDIATE ARM BACKSTOP BRACKET

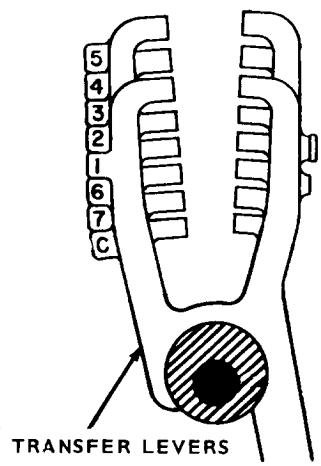
REQUIREMENT
PUSH LEVERS SPACING ALL CODE BAR SHIFT BARS TO THE RIGHT. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN LOWERMOST POSITION. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND INNER STEP OF CODE BAR SHIFT BAR FARTHEST FROM FRONT CODE BAR SHIFT LEVER.
MIN. 0.010 INCH
MAX. 0.025 INCH
WHEN PLAY IN PARTS IS TAKEN UP FOR MAXIMUM CLEARANCE.

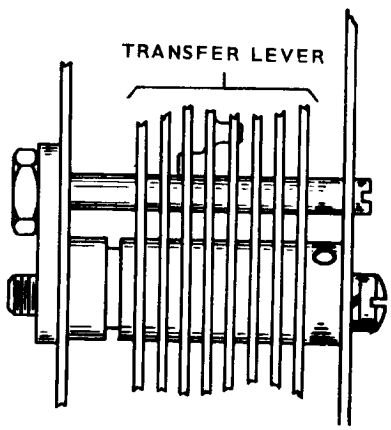




35 TYPE

ECCENTRIC BUSHING





NOTE
ONE OR MORE CODEBAR SHIFT BARS CAN TOUGH CODE BAR SHIFT LEVERS.

To Adjust:
35 Type – B. S. P. 574–220–700
28 Type – B. S. P. 573–115–700

TYPING UNIT, CODE BAR SHIFT MECHANISM

CODE BAR SHIFT LEVER LINK BRACKET

REQUIREMENT

MOTION OF FRONT AND REAR CODE BAR SHIFT LEVERS SHOULD BE EQUALIZED WITH RESPECT TO CODE BAR TRAVEL.

TO CHECK (FRONT)

SELECT BLANK COMBINATION AND ROTATE MAINSHAFT UNTIL CODE BAR SHIFT LEVER LINK REACHES HIGHEST TRAVEL. TAKE UP PLAY FOR MAXIMUM CLEARANCE. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR

MIN. 0.002 INCH

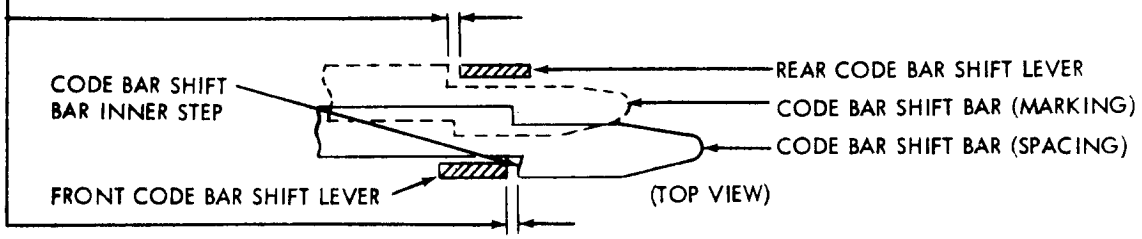
MAX. 0.025 INCH

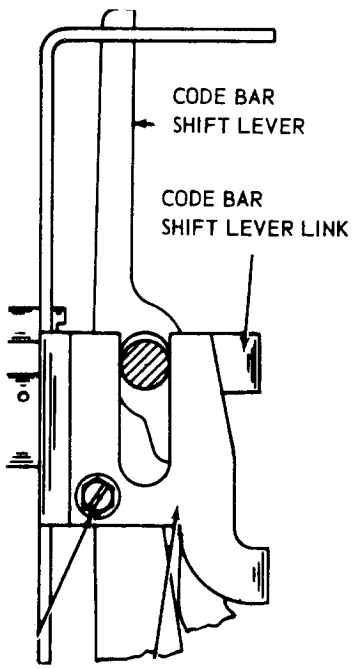
TO CHECK (REAR)

SELECT LETTERS COMBINATION. CHECK CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR IN SAME WAY.

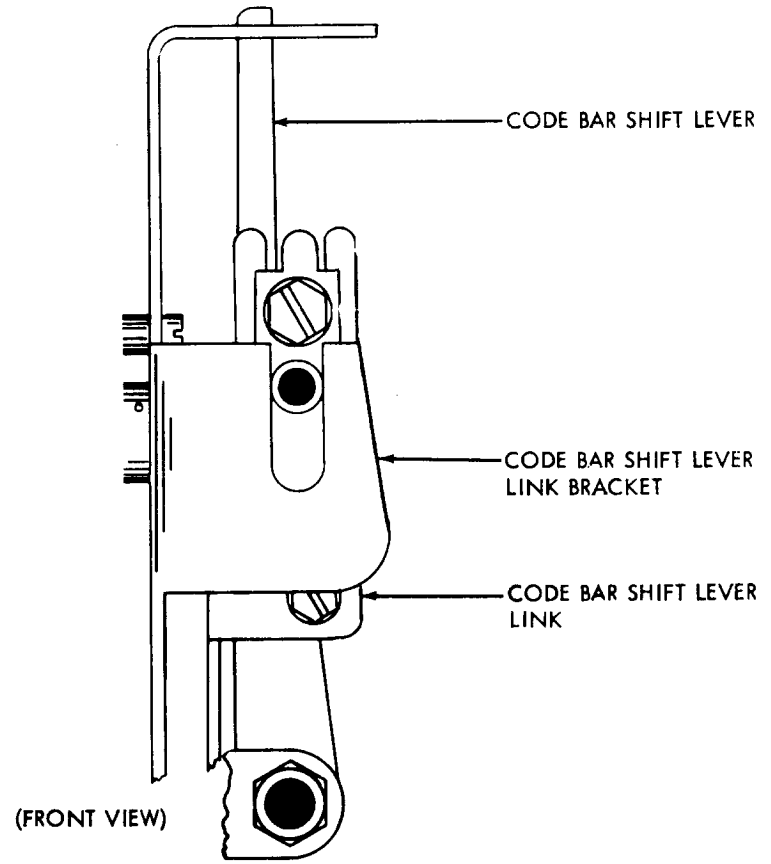
MIN. 0.002 INCH

MAX. 0.025 INCH



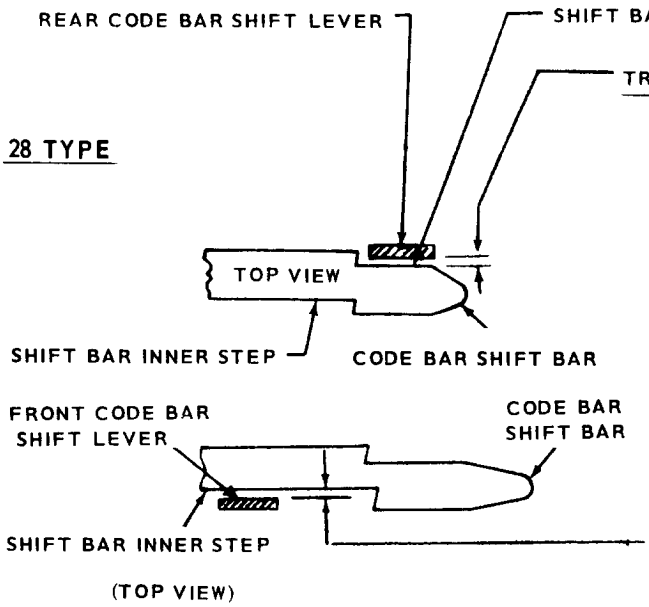


EARLIER DESIGN



(FRONT VIEW)

To Adjust
Type 28 – 573-115-700
Type 35 – 574-220-700

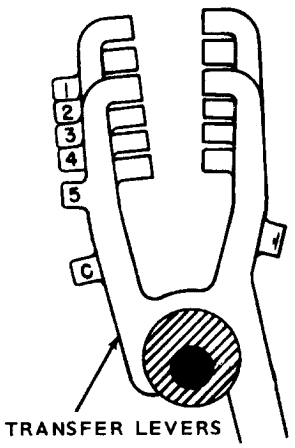


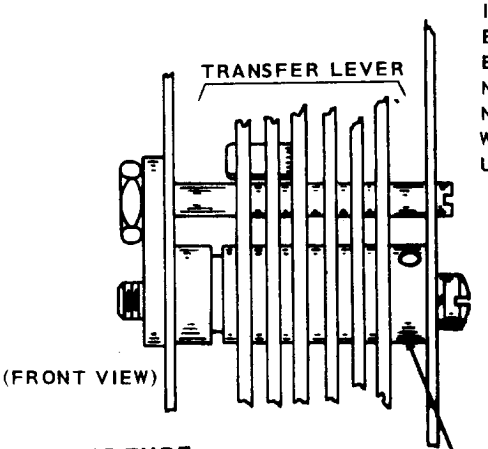
28 TYPE

REQUIREMENT
PUSH LEVERS POSITIONED FOR MARK. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN UPPERMOST POSITION. CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND CODE BAR SHIFT BAR FARTHEST FROM REAR CODE BAR SHIFT LEVER
MIN. 0.010 INCH
MAX. 0.025 INCH
WHEN PLAY OF SHIFT BAR IS TAKEN UP FOR MAXIMUM CLEARANCE

INTERMEDIATE ARM BACKSTOP BRACKET

REQUIREMENT
PUSH LEVERS SPACING ALL CODE BAR SHIFT BARS TO THE RIGHT. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN LOWERMOST POSITION. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND INNER STEP OF CODE BAR SHIFT BAR FARTHEST FROM FRONT CODE BAR SHIFT LEVER.
MIN. 0.010 INCH
MAX. 0.025 INCH
WHEN PLAY IN PARTS IS TAKEN UP FOR MAXIMUM CLEARANCE.

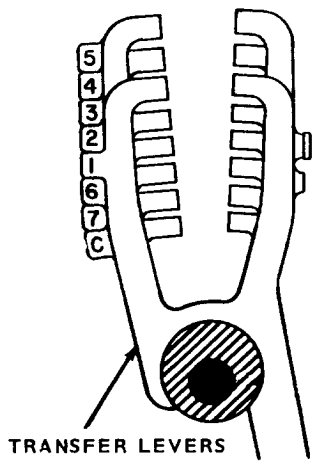


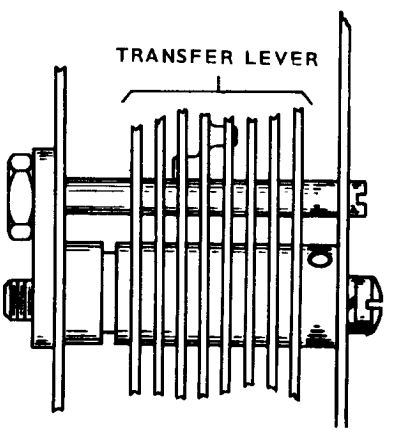


35 TYPE

ECCENTRIC BUSHING

NOTE
ONE OR MORE CODEBAR SHIFT BARS CAN TOUGH CODE BAR SHIFT LEVERS.





To Adjust:
35 Type – B. S. P. 574–220–700
28 Type – B. S. P. 573–115–700

TYPING UNIT, CODE BAR SHIFT MECHANISM

CODE BAR SHIFT LEVER LINK BRACKET

REQUIREMENT

MOTION OF FRONT AND REAR CODE BAR SHIFT LEVERS SHOULD BE EQUALIZED WITH RESPECT TO CODE BAR TRAVEL.

TO CHECK (FRONT)

SELECT BLANK COMBINATION AND ROTATE MAINSHAFT UNTIL CODE BAR SHIFT LEVER LINK REACHES HIGHEST TRAVEL. TAKE UP PLAY FOR MAXIMUM CLEARANCE. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR

MIN. 0.002 INCH

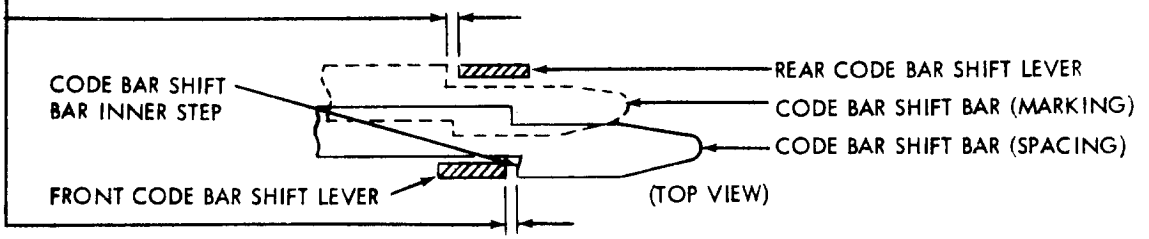
MAX. 0.025 INCH

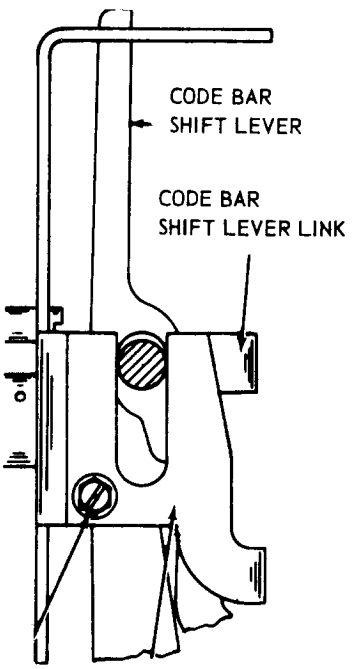
TO CHECK (REAR)

SELECT LETTERS COMBINATION. CHECK CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND SHOULDER ON NEAREST CODE BAR SHIFT BAR IN SAME WAY.

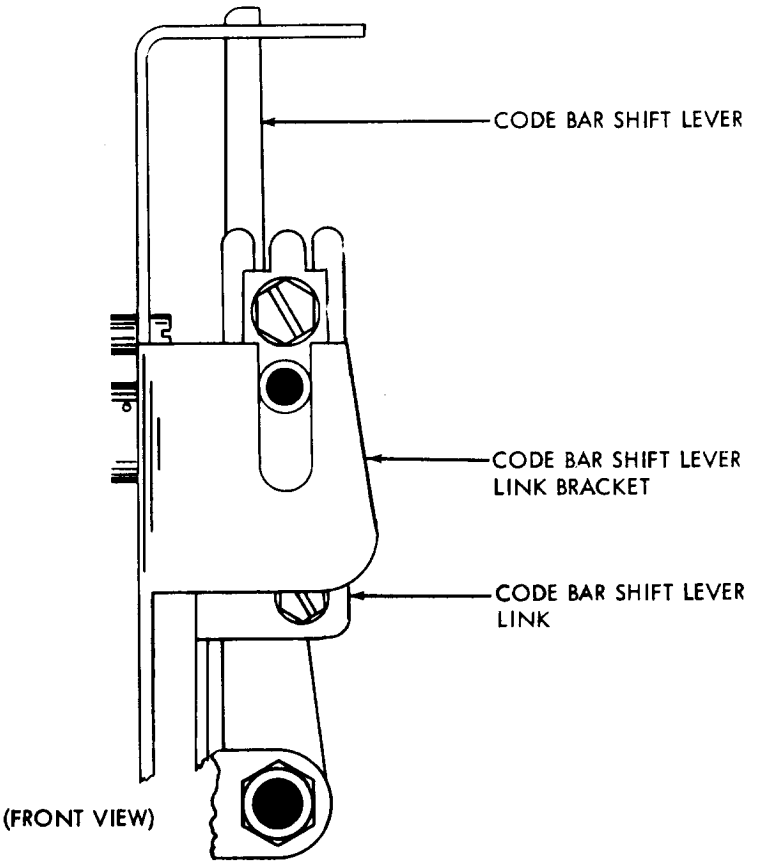
MIN. 0.002 INCH

MAX. 0.025 INCH





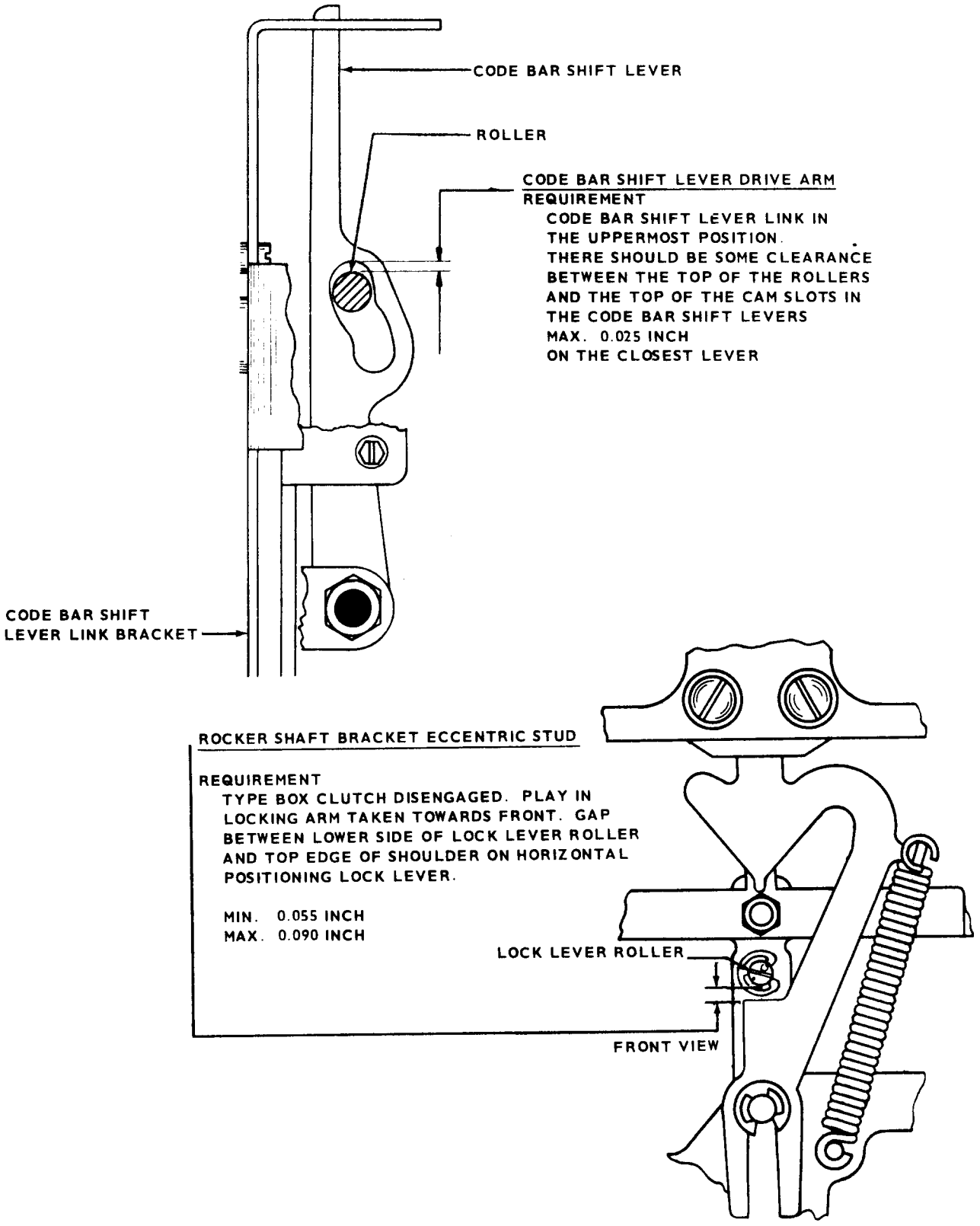
EARLIER DESIGN



(FRONT VIEW)

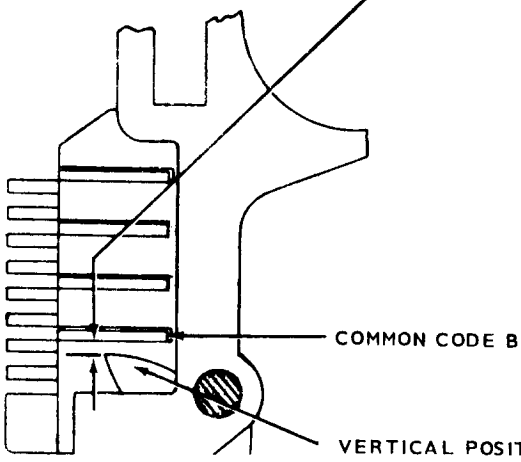
To Adjust
Type 28 – 573–115–700
Type 35 – 574–220–700

TYPING UNIT, CODE BAR SHIFT MECHANISM



To Adjust:
Type 28 – 573–115–700
Type 35 – 574–220–700

TYPING UNIT, VERTICAL POSITIONING MECHANISM, RIGHT SIDE

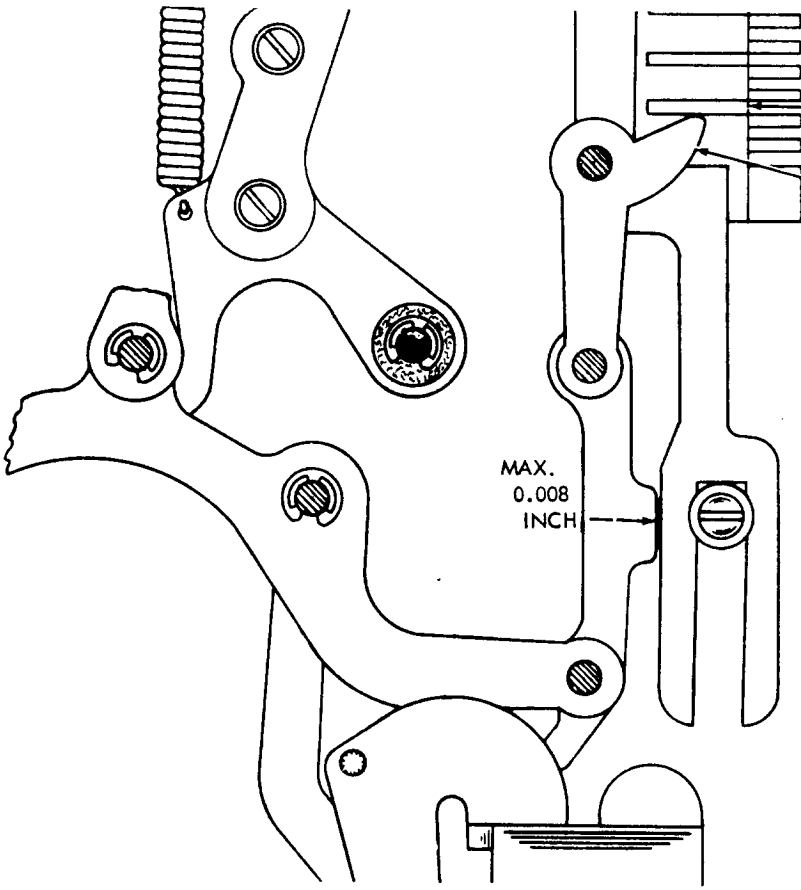


REQUIREMENT
TYPE BOX CLUTCH DISENGAGED, COMMON CODE BAR IN SPACING POSITION. PLAY TAKEN UP BY PRESSING DOWNWARD ON COMMON CODE BAR AT GUIDE BLOCK.

MIN 0.030 INCH
MAX 0.050 INCH

CLEARANCE BETWEEN THE TOE OF VERTICAL POSITIONING LEVER AND THE BOTTOM OF THE COMMON CODE BAR WHEN PLAY IS TAKEN UP TO MAKE CLEARANCE A MINIMUM.

TYPING UNIT, VERTICAL POSITIONING MECHANISM, LEFT SIDE



LEFT VERTICAL POSITIONING

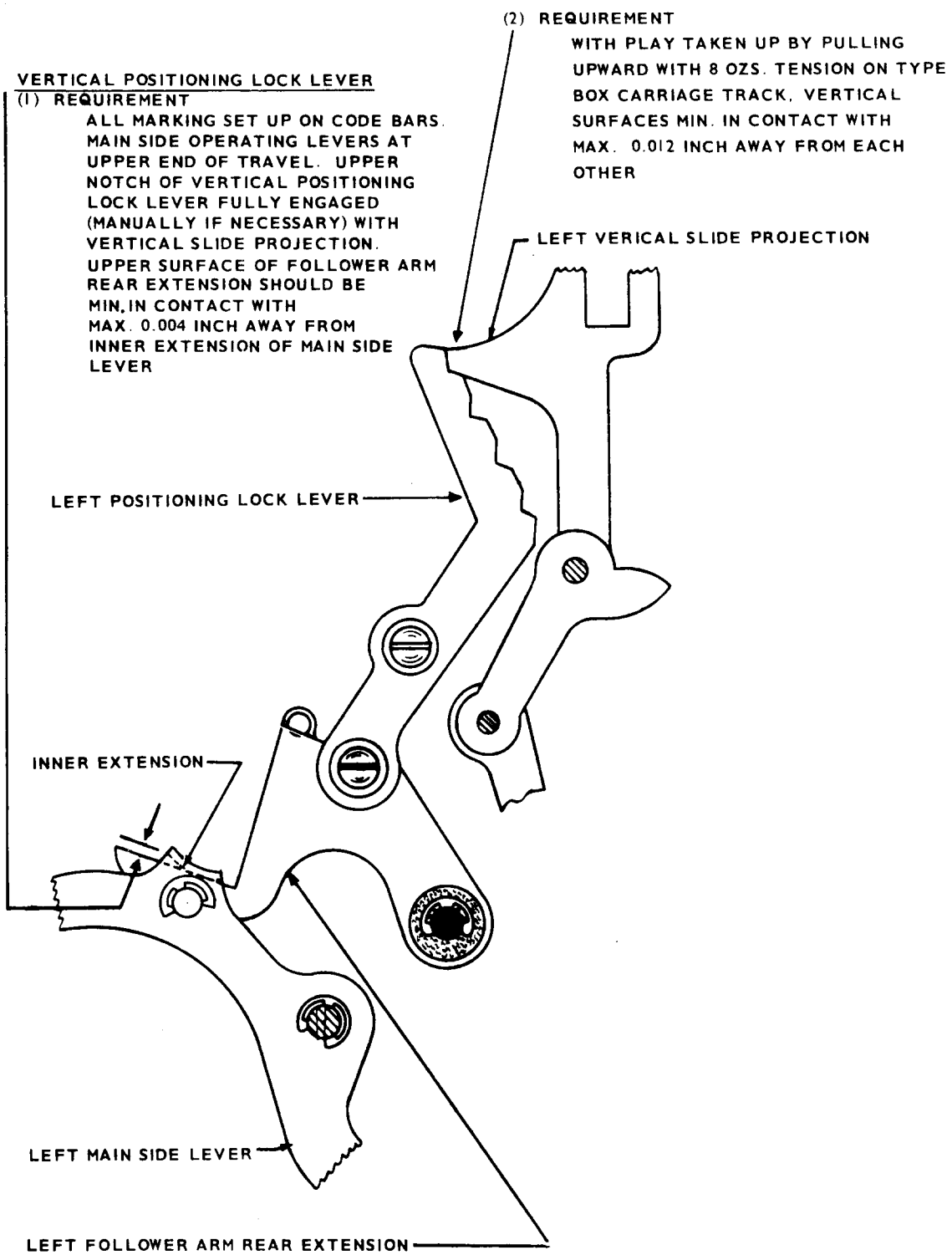
REQUIREMENT
RIGHT AND LEFT VERTICAL POSITIONING LEVERS SHOULD BUCKLE EQUALLY WITHIN 0.006 INCH

TO CHECK
COMMON CODE BAR IN SPACING POSITION. TRIP TYPE BOX CLUTCH. ROTATE MAIN SHAFT UNTIL RIGHT VERTICAL POSITIONING LEVER TOE TOUCHES COMMON CODE BAR, BUCKLING ITS LOWER LINK 0.008 INCH (MAXIMUM) LEFT VERTICAL POSITIONING LEVER TOE SHOULD TOUCH COMMON CODE BAR, BUCKLING ITS LOWER LINK EQUALLY WITHIN 0.006 INCH

To Adjust:
Type 28 – 573–115–700
Type 35 – 574–220–700

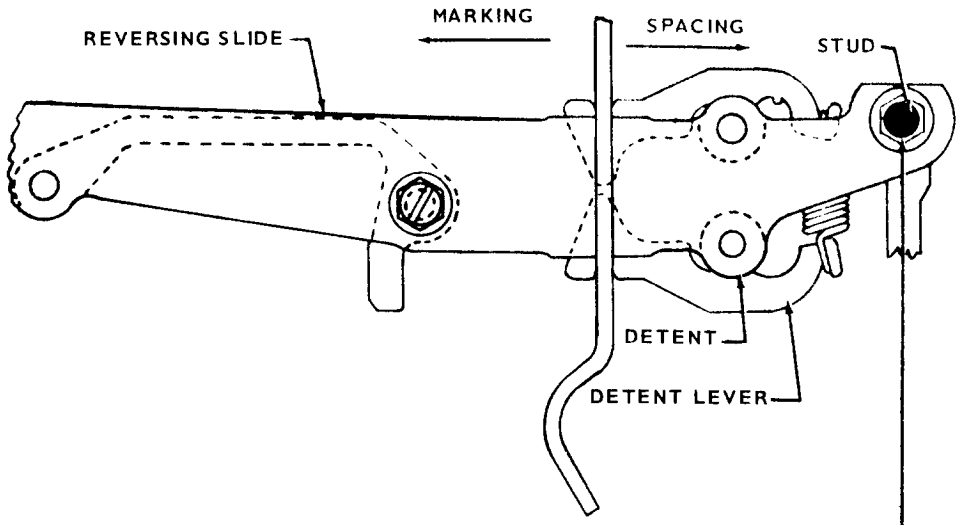
TYPING UNIT, VERTICAL POSITIONING MECHANISM, LEFT SIDE VIEW

BOTH LEFT AND RIGHT SIDE



To Adjust:
Type 28 – 573–115–700
Type 35–574–220–700

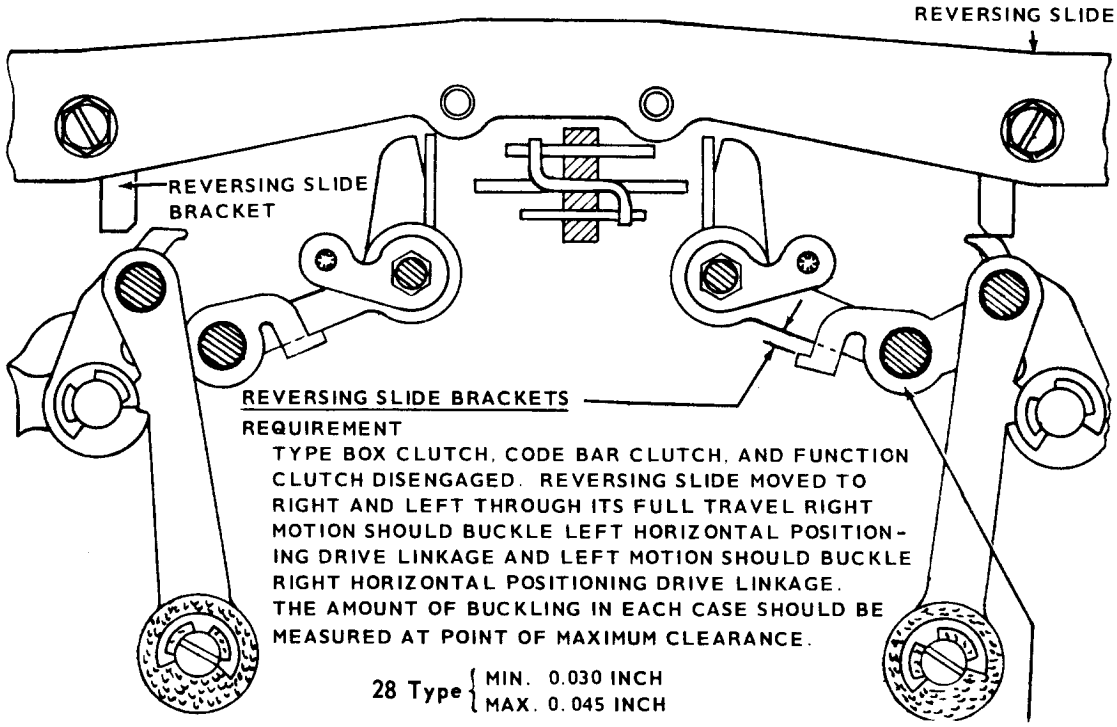
TYPING UNIT, HORIZONTAL MOTION REVERSING MECHANISM FRONT VIEW



REVERSING SLIDE ADJUSTING STUD

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED.
WITH NO. 3 CODE BAR IN SPACING POSITION (RIGHT), THE REVERSING SLIDE DETENT ROLLERS SHOULD BE FULLY SEATED IN THE RIGHT-HAND NOTCHES OF THE DETENT LEVER.
WITH NO. 3 CODE BAR IN MARKING POSITION (LEFT), THE REVERSING SLIDE DETENT ROLLERS SHOULD BE FULLY SEATED IN THE LEFT-HAND NOTCHES OF THE DETENT LEVER.



REVERSING SLIDE BRACKETS

REQUIREMENT

TYPE BOX CLUTCH, CODE BAR CLUTCH, AND FUNCTION CLUTCH DISENGAGED. REVERSING SLIDE MOVED TO RIGHT AND LEFT THROUGH ITS FULL TRAVEL RIGHT MOTION SHOULD BUCKLE LEFT HORIZONTAL POSITIONING DRIVE LINKAGE AND LEFT MOTION SHOULD BUCKLE RIGHT HORIZONTAL POSITIONING DRIVE LINKAGE. THE AMOUNT OF BUCKLING IN EACH CASE SHOULD BE MEASURED AT POINT OF MAXIMUM CLEARANCE.

28 Type { MIN. 0.030 INCH
MAX. 0.045 INCH

35 Type { MIN. 0.030 INCH
MAX. 0.050 INCH

To Adjust:
Type 28 – 573–115–700
Type 35 – 574–220–700

TYPING UNIT, HORIZONTAL POSITIONING DRIVE MECHANISM, FRONT VIEW

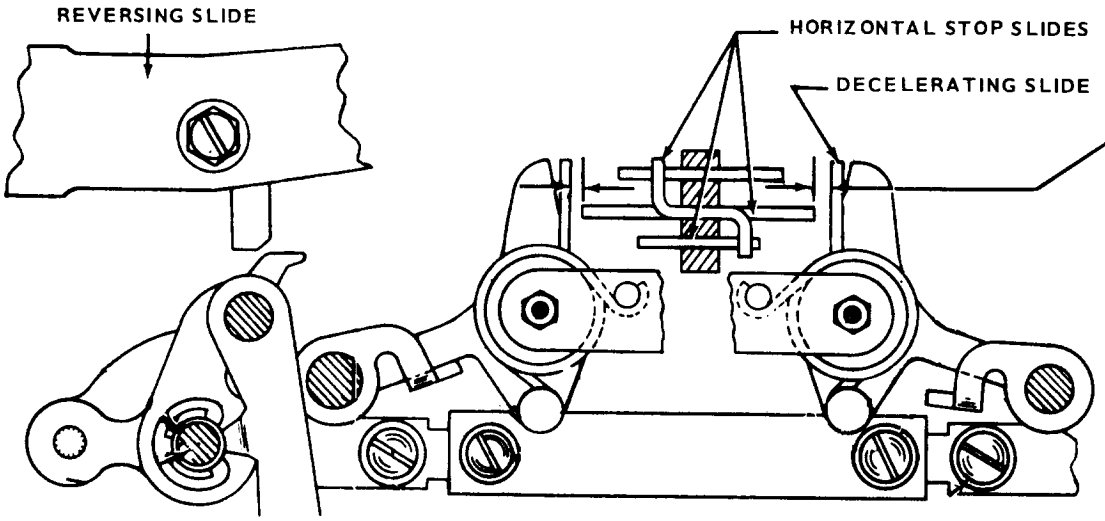
HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

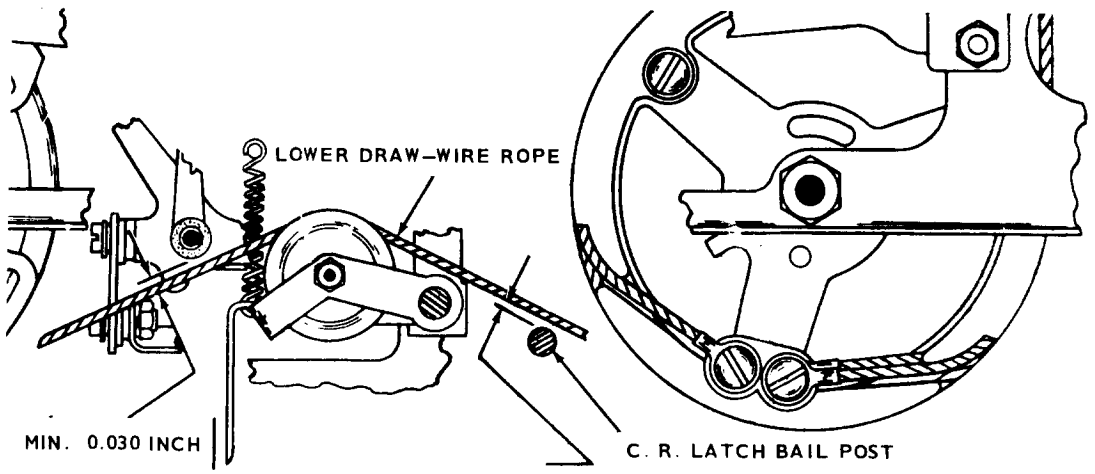
TYPE BOX CLUTCH DISENGAGED.
CODE BARS IN SPACING (RIGHT).
CLEARANCE BETWEEN EACH SIDE OF CENTER HORIZONTAL STOP SLIDE AND DECELERATING SLIDES, ON SIDE WHERE KNEE LINK IS STRAIGHT SHOULD BE EQUAL (WITHIN 0.008 INCH)

MIN. 0.015 INCH
MAX. 0.040 INCH } ← 28 Type

MIN. 0.090 INCH
MAX. 0.110 INCH } ← 35 Type



CHECK THE LINKAGE FOR FREENESS THROUGHOUT A COMPLETE CYCLE. THE TYPE BOX CLUTCH DISK SHOULD HAVE SOME MOVEMENT IN THE NORMAL DIRECTION OF ROTATION IN THE STOP POSITION.



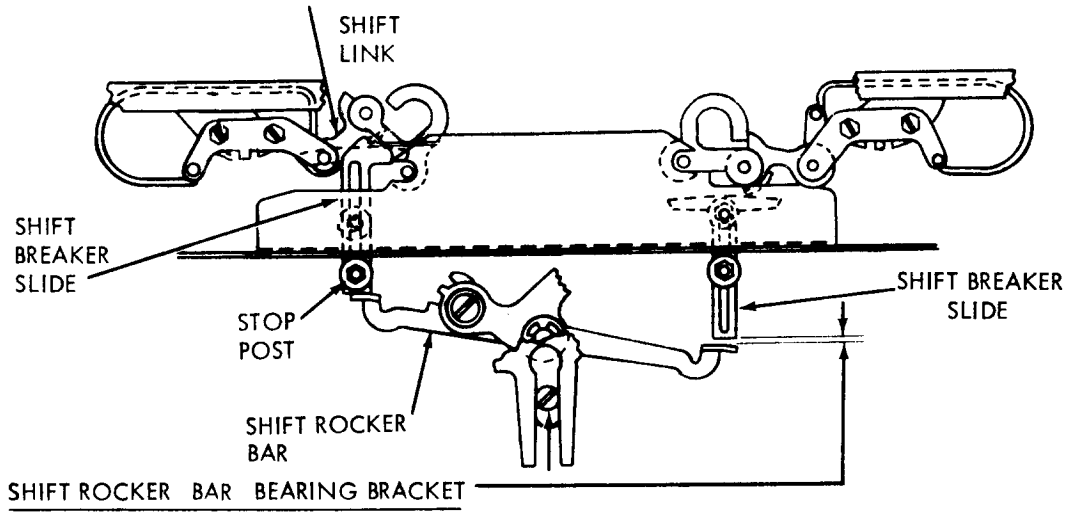
CARRIAGE DRAW-WIRE ROPE

REQUIREMENT

CLEARANCE BETWEEN LOWER DRAW WIRE ROPE AND CARRIAGE RETURN LATCH BAIL POST SHOULD BE AT LEAST 0.006 INCH. WITH THE HORIZONTAL POSITIONING MECHANISM IN ITS LOWEST POSITION, CLEARANCE BETWEEN THE LOWER DRAW WIRE ROPE AND THE LEFT HORIZONTAL POSITIONING DRIVE LINKAGE SHOULD BE MIN. 0.030 INCH.

To Adjust:
Type 28 – 573-115-700
Type 35 – 574-220-700

HORIZONTAL POSITIONING DRIVE MECHANISM
35 TYPE ONLY



SHIFT ROCKER BAR BEARING BRACKET

CODE BAR AND TYPE BOX CLUTCHES DISENGAGED. CLEARANCE BETWEEN SHIFT ROCKER BAR AND LOWER END OF LEFT SHIFT BREAKER SLIDE
MIN. 0.050 INCH
MAX. 0.070 INCH
CHECK RIGHT SIDE IN SIMILAR MANNER.

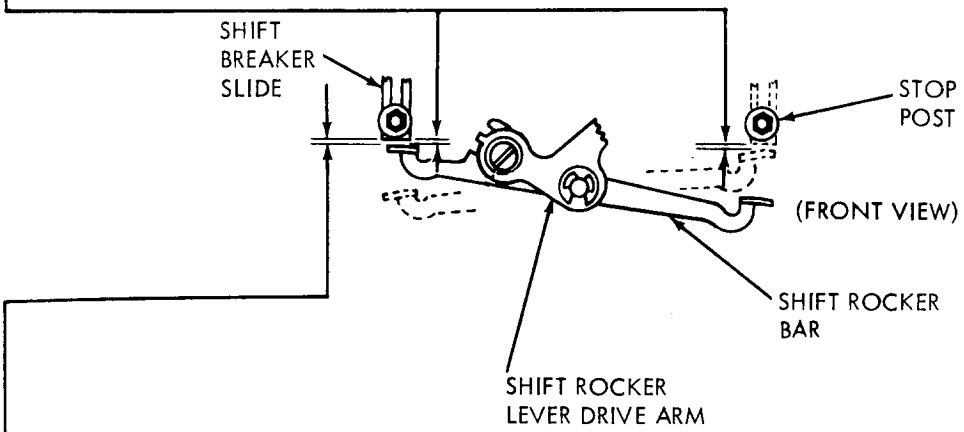
TO CHECK

RAISE RIGHT END OF SHIFT ROCKER BAR TO UPPERMOST POSITION, HOLDING RIGHT SHIFT BREAKER SLIDE AGAINST STOP. MAKE SURE LEFT SHIFT LINK IS STRAIGHT, AND HOLD LEFT SHIFT BREAKER SLIDE AGAINST SHIFT LINK PAD.

SHIFT ROCKER LEVER

REQUIREMENT

WITH ALTERNATE LEFT AND RIGHT SHIFT SELECTION MADE, AND BAIL-ARM ASSEMBLY ROLLER ON HIGH PART OF CAM. CLEARANCE BETWEEN RAISED END OF SHIFT ROCKER BAR AND LOWER END OF ASSOCIATED SHIFT BREAKER SLIDE, WHEN SLIDE IS HELD AGAINST STOP, SHOULD BE EQUAL WITHIN 0.010 INCH WITH CLEARANCE ON OPPOSITE SIDE WHEN THAT SIDE IS SELECTED.



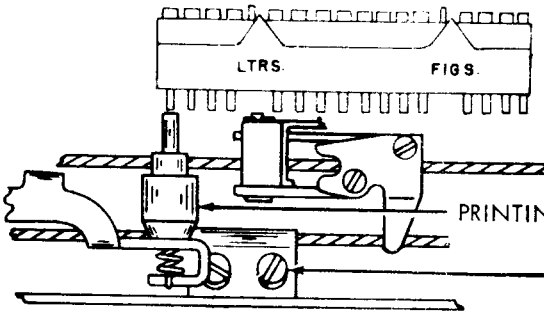
SHIFT DRIVE PAWL OPERATING BAIL

REQUIREMENT

WITH SHIFT DRIVE PAWL OPERATING BAIL CAM FOLLOWER ON HIGH DWELL OF CAM, CLEARANCE BETWEEN SHIFT ROCKER BAR AND LOWER END OF RAISED SHIFT BREAKER SLIDE
MIN. SOME
MAX. 0.015 INCH
WHEN SLIDE IS HELD AGAINST STOP.

To Adjust:
Type 35 – B. S. P. 574–220–700

TYPING UNIT, PRINTING CARRIAGE



PRINTING CARRIAGE POSITION **28 TYPE ONLY**

REQUIREMENT

TYPE BOX IN LETTERS POSITION. M TYPE PALLET SELECTED. TYPE BOX IN PRINTING POSITION. M TYPE PALLET SHOULD BE APPROXIMATELY IN CENTER OF PRINTING HAMMER WHEN HAMMER IS JUST TOUCHING M TYPE PALLET. TAKE UP PLAY IN TYPE BOX CARRIAGE IN EACH DIRECTION AND SET HAMMER IN CENTER OF PLAY.

35 TYPE ONLY

PRINTING HAMMER STOP BRACKET

REQUIREMENT

PRINTING HAMMER IN UPPER LEFT TYPE BOX POSITION. PRINTING TRACK IN ITS MAXIMUM DOWNWARD POSITION. PRINTING HAMMER STOP BRACKET HELD TOWARD THE PLATEN WITH 8 OZS. OF PRESSURE. CLEARANCE BETWEEN PRINTING HAMMER AND UPPER LEFT TYPE PALLET

MIN. 0.005 INCH
MAX. 0.035 INCH

CHECK AT BOTH ENDS OF PLATEN.

PRINTING CARRIAGE POSITION **35 TYPE ONLY**

REQUIREMENT

TYPE BOX IN LTRS. POSITION AND PRINTING CARRIAGE AT APPROXIMATE MID-POINT OF TRACK. SET UP COMBINATION TO POSITION PRINT HAMMER IN UPPER LEFT CORNER OF TYPE BOX. ROTATE PRINTER SHAFT SO TYPE BOX IS IN PRINTING POSITION. PROPER TYPE PALLET SHOULD BE APPROXIMATELY IN CENTER OF PRINTING HAMMER AND JUST TOUCHING TYPE PALLET.

28 TYPE ONLY

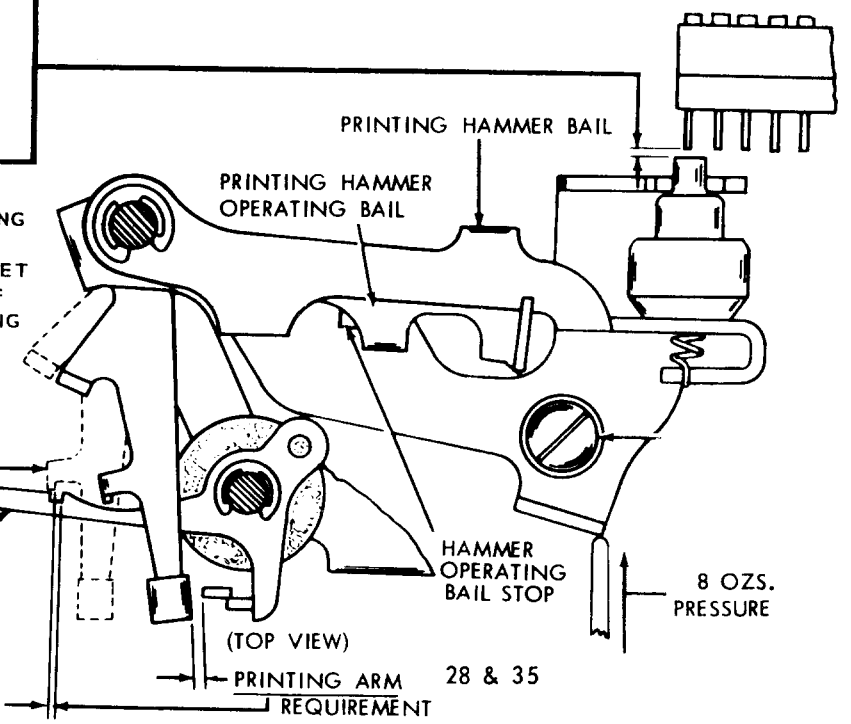
PRINTING HAMMER STOP BRACKET

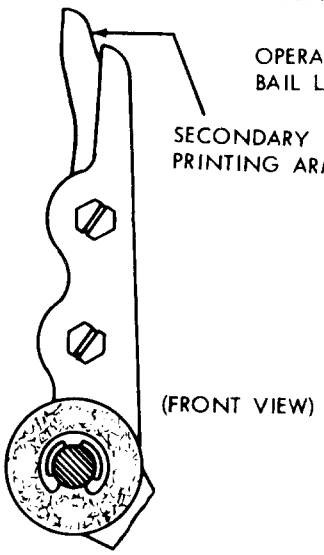
REQUIREMENT

TYPE BOX IN POSITION TO PRINT M PRINTING TRACK IN ITS MAXIMUM DOWNWARD POSITION. PRINTING HAMMER STOP BRACKET HELD TOWARD THE PLATEN WITH 8 OZS. OF PRESSURE. CLEARANCE BETWEEN PRINTING HAMMER AND M TYPE PALLET

MIN. 0.005 INCH
MAX. 0.035 INCH

CHECK AT BOTH ENDS OF PLATEN.





PRINTING ARM **28 & 35**

REQUIREMENT

PRINTING TRACK IN MAXIMUM DOWNWARD POSITION.
PRINTING HAMMER OPERATING BAIL AGAINST ITS STOP.
SOME CLEARANCE BETWEEN SECONDARY PRINTING ARM AND FORWARD EXTENSION OF HAMMER OPERATING BAIL.
MAX. 0.015 INCH
WHEN PRINTING ARM SLIDE IS HELD DOWNWARD OVER EACH PRINTING TRACK MOUNTING SCREW FOR MAXIMUM CLEARANCE.
REQUIREMENT
PRINTING TRACK IN UPPERMOST POSITION. LATCHING EXTENSION OF PRINTING HAMMER OPERATING BAIL SHOULD OVERTRAVEL LATCHING SURFACE OF OPERATING BAIL LATCH BY MIN. 0.006 INCH
CHECK RIGHT AND LEFT POSITIONS

To Adjust:
28 Type – B. S. P. 573–115–700
35 Type – B. S. P. 574–220–700

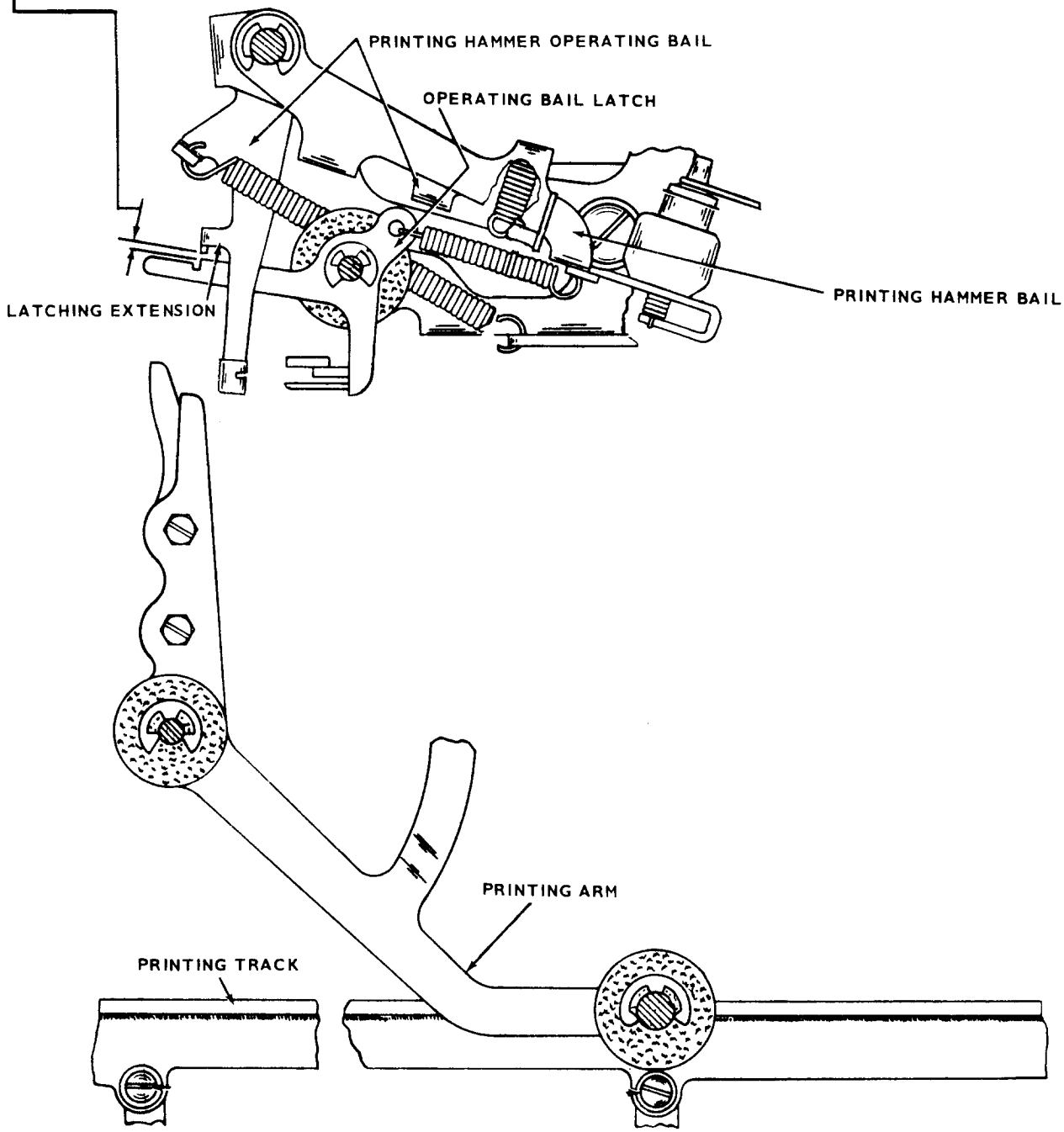
TYPING UNIT, PRINTING MECHANISM

PRINTING TRACK

REQUIREMENT

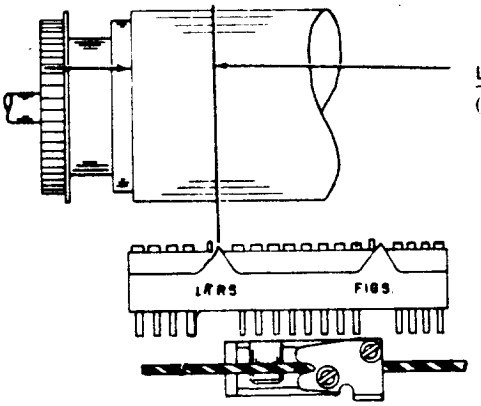
PRINTING TRACK IN ITS EXTREME DOWNWARD POSITION. BLANK SELECTION PRINTING HAMMER OPERATING BAIL LATCHING EXTENSION HELD WITH LEFT FACE IN LINE WITH THE LATCH SHOULDER. PRINTING ARM SLIDE POSITIONED ALTERNATELY OVER EACH TRACK MOUNTING SCREW. PRINTING BAIL RESET EACH TIME. CLEARANCE BETWEEN LATCHING EXTENSION AND OPERATING BAIL LATCH SHOULD BE

MIN. 0.015 INCH
MAX. 0.040 INCH



To Adjust:
Type 28 – 573–115–700
Type 35 – 574–220–700

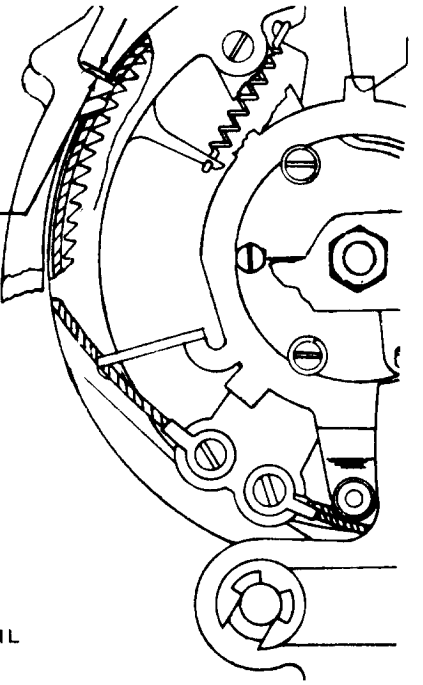
TYPING UNIT, CARRIAGE RETURN MECHANISM



LEFT MARGIN

(1) REQUIREMENT (72 CHARACTER LINE)
TYPE BOX CLUTCH DISENGAGED SPACING DRUM IN RETURNED POSITION TYPE BOX SHIFTED TO LETTERS POSITION.
CLEARANCE BETWEEN LEFT EDGE OF PLATEN AND LETTERS PRINT INDICATOR.

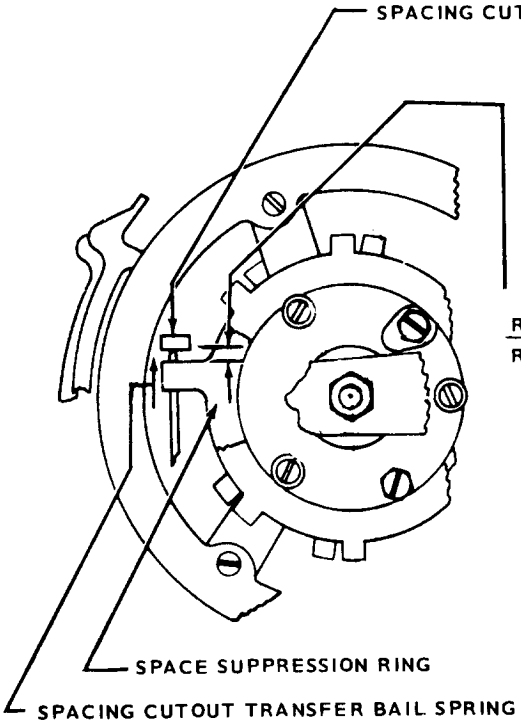
MIN. 15 16 INCH MAX. 1-1/16 INCH



(2) REQUIREMENT
SPACING CLUTCH DISENGAGED. FRONT SPACING FEED PAWL FARTHEST ADVANCED. SPACING DRUM FULLY RETURNED. PLAY IN SPACING SHAFT GEAR TAKEN UP CLOCKWISE.
CLEARANCE BETWEEN PAWL AND SHOULDER OF RATCHET WHEEL TOOTH IMMEDIATELY AHEAD
MIN. 0.002 INCH
MAX. 0.015 INCH

(3) REQUIREMENT
REAR PAWL, WHEN FARTHEST ADVANCED, SHOULD REST AT BOTTOM OF INDENTATION BETWEEN RATCHET WHEEL TEETH.

TYPING UNIT, SPACE SUPPRESSION



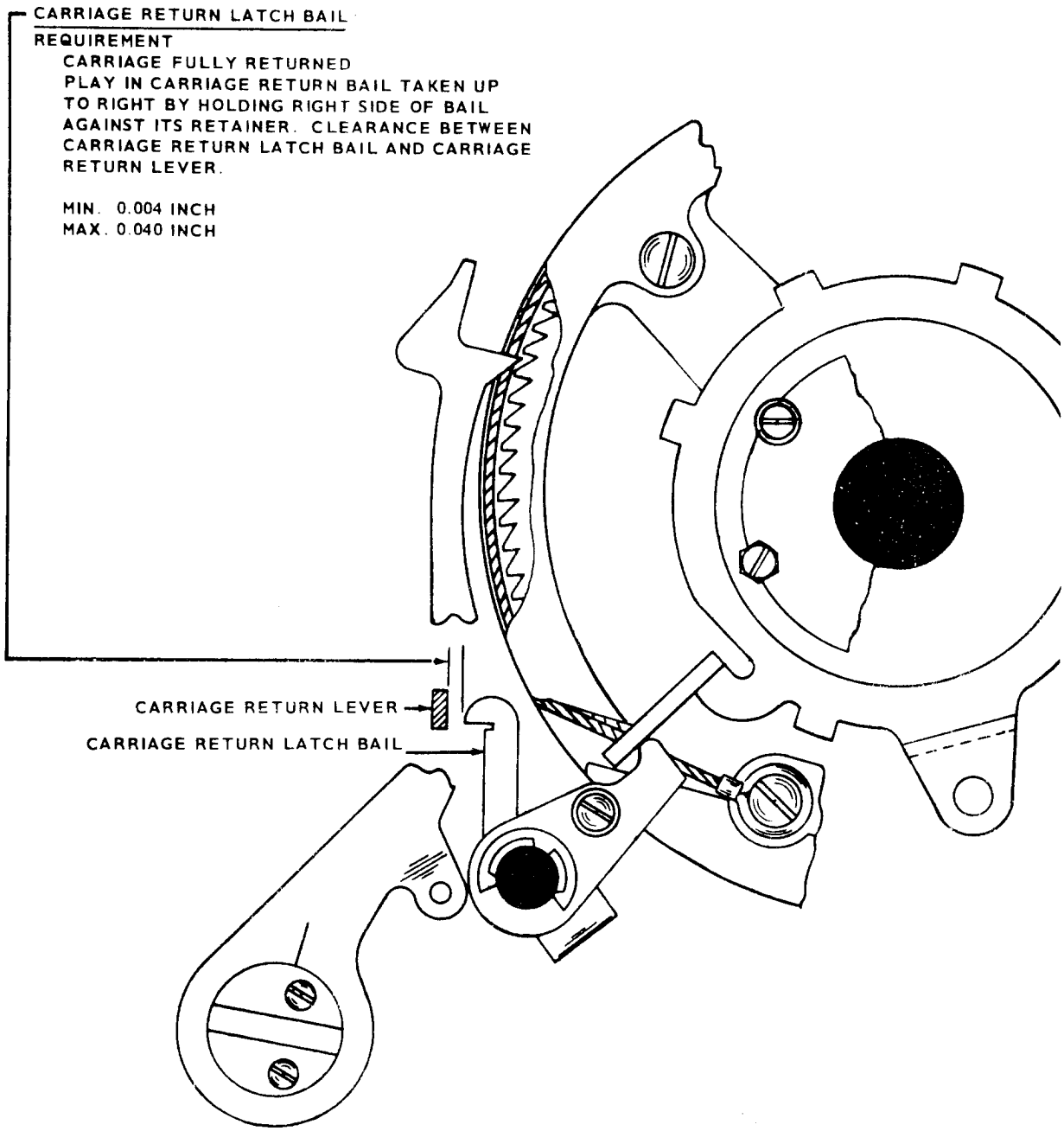
RIGHT MARGIN

REQUIREMENT

TYPE BOX CLUTCH DISENGAGED. CARRIAGE IN POSITION TO PRINT CHARACTER ON WHICH SPACING CUTOUT IS TO OCCUR. FRONT FEED PAWL FARTHEST ADVANCED. SPACING CUTOUT TRANSFER BAIL HELD IN ITS UPPERMOST POSITION. ON UNITS HAVING TWO PIECE SPACING CUTOUT BAIL PUSH THE CUTOUT BAIL TOWARDS REAR OF UNIT THROUGH HOLE IN FRONT PLATE. CLEARANCE BETWEEN EXTENSION ON SPACE SUPPRESSION RING AND TRANSFER BAIL
MIN. 0.006 INCH – – – MAX. 0.025 INCH

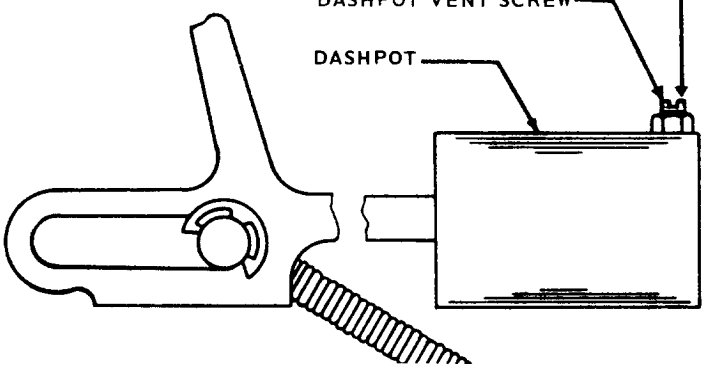
To Adjust:
Type 28 – B. S. P. 573–115–700
Type 35 – B. S. P. 574–220–700

TYPING UNIT, CARRIAGE RETURN MECHANISM, FRONT VIEW



To Adjust:
Type 28 – B. S. P. – 573–115–700
Type 35 – B. S. P. 574–220–700

TYPING UNIT, DASHPOT



DASHPOT VENT SCREW

REQUIREMENT

TYPE BOX CARRIAGE SHOULD RETURN FROM ANY LENGTH OF LINE WITHOUT BOUNCING.

TO CHECK

PRINTER OPERATED AT ANY SPEED FROM AUTOMATIC TRANSMISSION WITH ON CR AND ONE LF SIGNAL BETWEEN LINES. FIRST CHARACTER EACH LINE SHOULD BE PRINTED IN SAME LOCATION AS IF UNIT WAS MANUALLY OPERATED SLOWLY.

TYPING UNIT, CARRIAGE RETURN

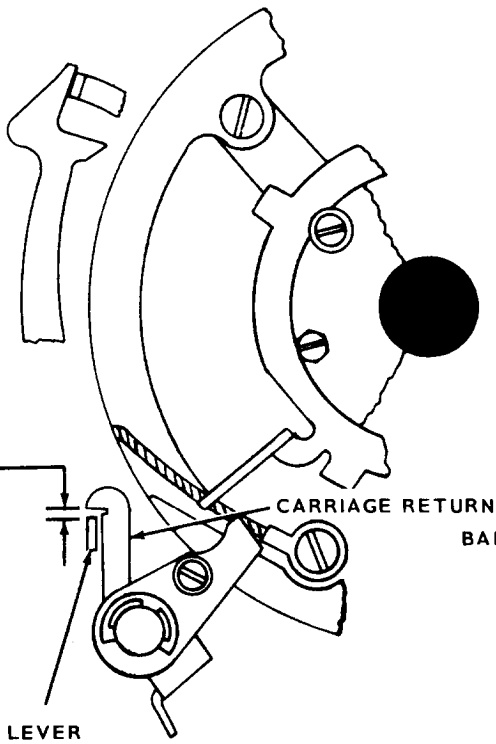
CARRIAGE RETURN LEVER

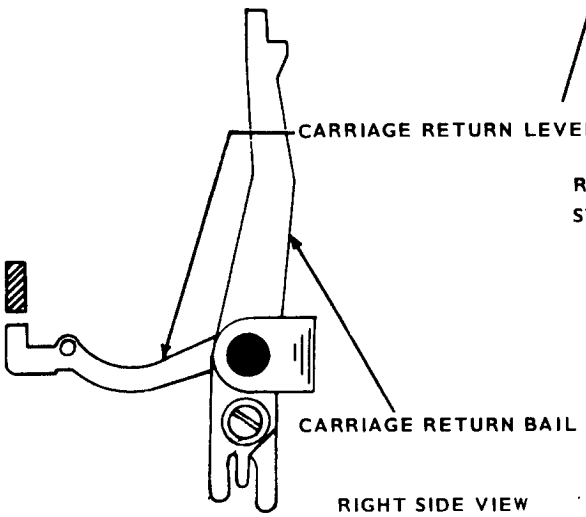
REQUIREMENT (UNITS EQUIPPED WITH ONE-STOP FUNCTION CLUTCH)

CARRIAGE RETURN FUNCTION SET UP ON ON SELECTOR. MAIN SHAFT ROTATED UNTIL FUNCTION CLUTCH STOP LUG IS TOWARD BOTTOM OF UNIT. CARRIAGE RETURN FUNCTION PAWL HOOKED OVER ITS FUNCTION BAR. SPACING DRUM HELD SO THAT CARRIAGE RETURN LATCH BAIL IS LATCHED.

CLEARANCE BETWEEN LATCH BAIL AND CARRIAGE RETURN LEVER.

MIN. 0.006 INCH – – – MAX. 0.035 INCH





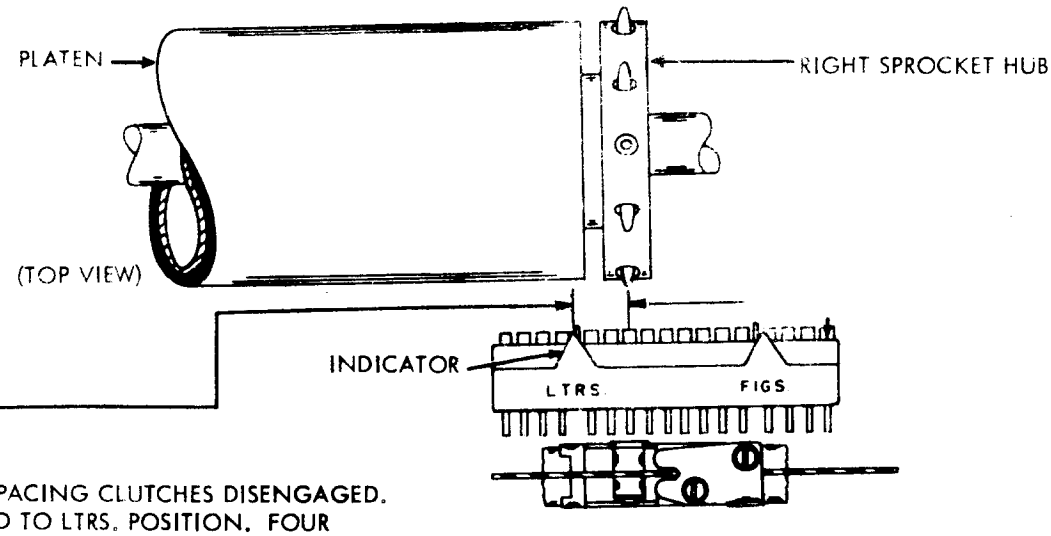
RIGHT SIDE VIEW

REQUIREMENT (UNITS EQUIPPED WITH TWO-STOP FUNCTION CLUTCH)

SAME EXCEPT MAIN SHAFT SHOULD BE ROTATED UNTIL FUNCTION CLUTCH IS DISENGAGED IN STOP POSITION THAT RESULTS IN LEAST CLEARANCE.

To Adjust:
Type 28 – B. S. P. 573–115–700
Type 35 – B. S. P. 574–220–700

PLATEN AND PRINTING MECHANISM (SPROCKET FEED)

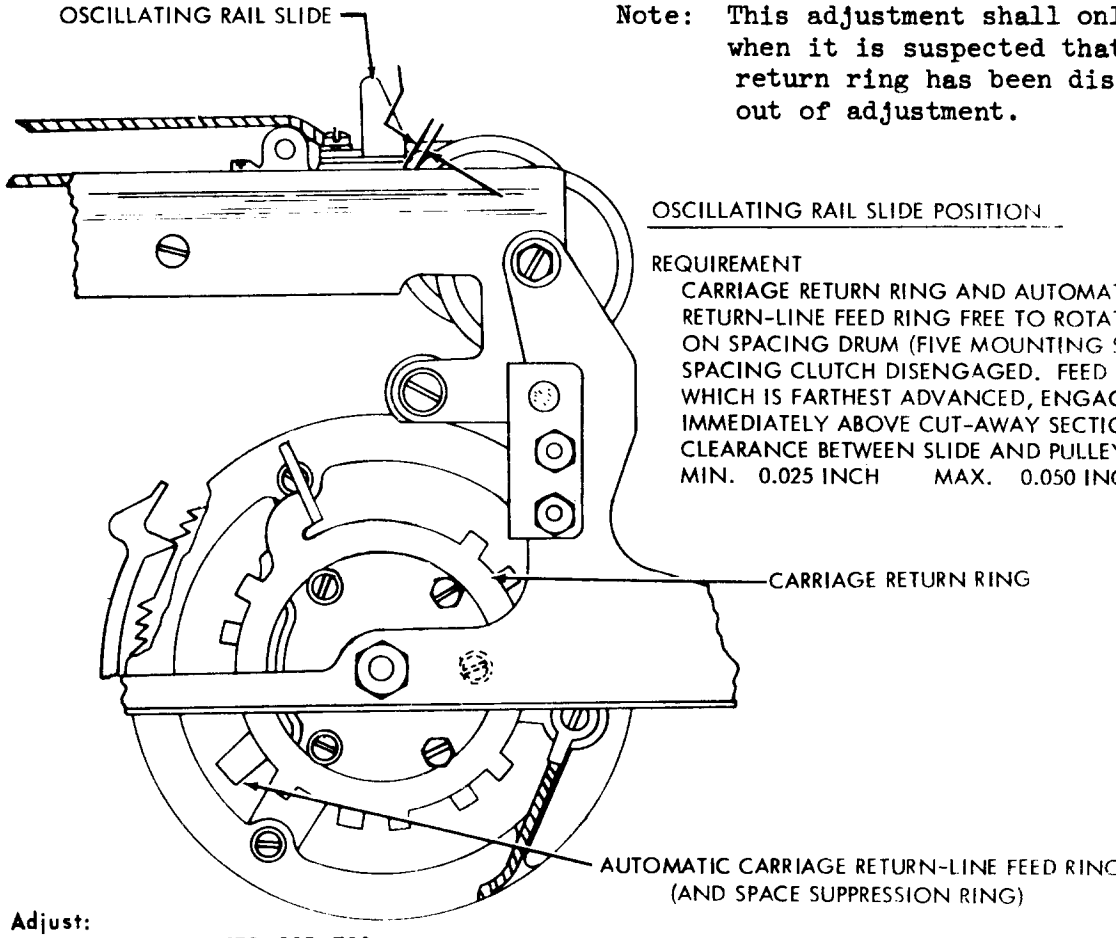


TYPE BOX POSITION

REQUIREMENT

TYPE BOX AND SPACING CLUTCHES DISENGAGED. TYPE BOX SHIFTED TO LTRS. POSITION. FOUR MOUNTING SCREWS LOOSENED SO THAT SPACE SUPPRESSION RING, OR AUTOMATIC CARRIAGE RETURN LINE FEED RING, IS FREE TO ROTATE ON DRUM. CLEARANCE BETWEEN LTRS. PRINT INDICATOR AND CENTER LINE OF SPROCKET PINS IN RIGHT HUB:
MIN. 5/16 INCH
MAX. 7/16 INCH

Note: This adjustment shall only be checked when it is suspected that the carriage return ring has been disturbed or is out of adjustment.



OSCILLATING RAIL SLIDE POSITION

REQUIREMENT
CARRIAGE RETURN RING AND AUTOMATIC CARRIAGE RETURN-LINE FEED RING FREE TO ROTATE ON SPACING DRUM (FIVE MOUNTING SCREWS LOOSENED.) SPACING CLUTCH DISENGAGED. FEED PAWL, WHICH IS FARTHEST ADVANCED, ENGAGING TOOTH IMMEDIATELY ABOVE CUT-AWAY SECTION OF RATCHET.
CLEARANCE BETWEEN SLIDE AND PULLEY
MIN. 0.025 INCH MAX. 0.050 INCH

To Adjust:
Type 28 – B. S. P. – 573-115-700
Type 35 – B. S. P. – 574-220-700

TYPING UNIT, FUNCTION PAWL STRIPPER

STRIPPER BLADE DRIVE CAM POSITION

REQUIREMENT

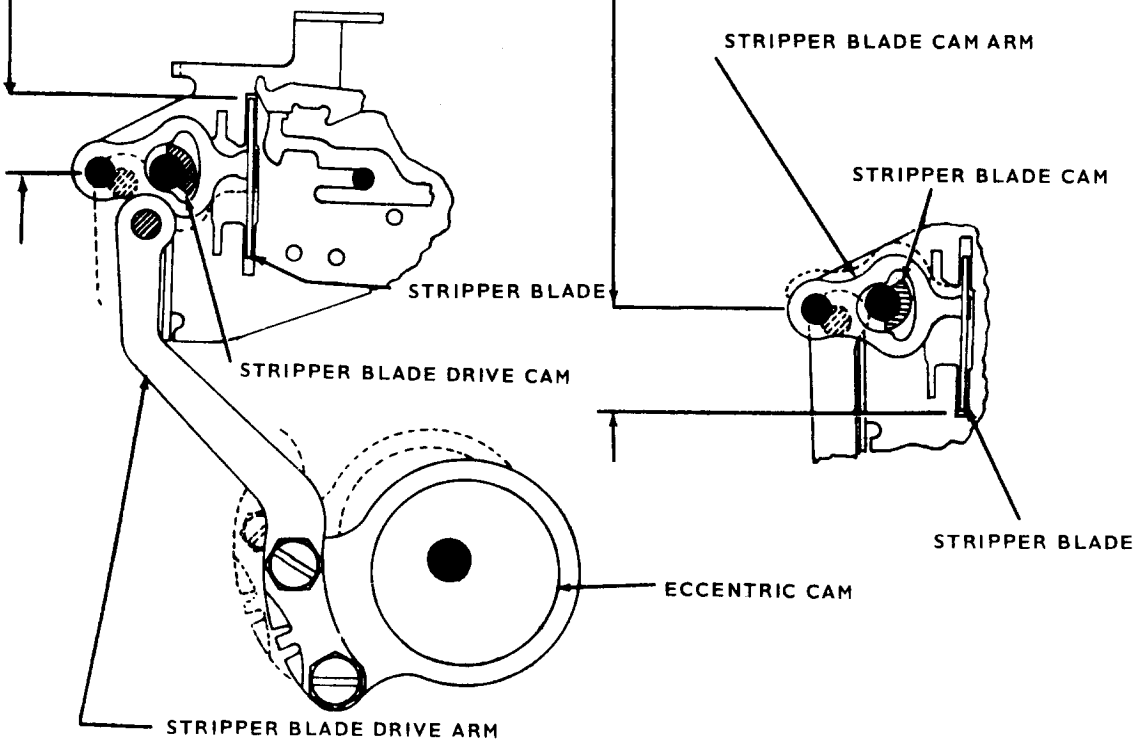
STRIPPER BLADE DRIVE CAM SHOULD MOVE EACH STRIPPER BLADE CAM ARM AN EQUAL DISTANCE ABOVE AND BELOW CENTER LINE OF ITS PIVOT (GAUGE BY EYE)

A. UPWARD DIRECTION

B. DOWNWARD DIRECTION

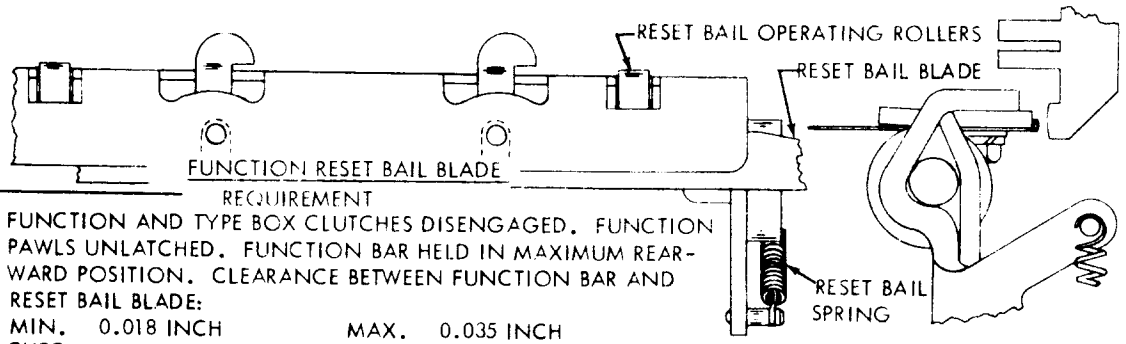
TO CHECK

WITH FUNCTION CLUTCH DISENGAGED OBSERVE ENGAGEMENT OF STRIPPER BLADE DRIVE CAM (UPPER PEAK) WITH STRIPPER BLADE CAM ARM. THEN ROTATE CLUTCH TO TURN CAM TO ITS EXTREME DOWNWARD POSITION AND OBSERVE ENGAGEMENT OF LOWER CAM PEAK.



To Adjust:
Type 28 – B. S. P. – 573–115–700
Type 35 – B. S. P. – 574–220–700

RESET BAIL



REQUIREMENT

FUNCTION AND TYPE BOX CLUTCHES DISENGAGED. FUNCTION PAWLS UNLATCHED. FUNCTION BAR HELD IN MAXIMUM REARWARD POSITION. CLEARANCE BETWEEN FUNCTION BAR AND RESET BAIL BLADE:

MIN. 0.018 INCH MAX. 0.035 INCH

TO CHECK

MEASURE CLEARANCE AT BARS LOCATED IN STUNT BOX SLOTS 1, 4, 11, 18, 23, 33, 38 AND 41. IF THERE IS NO BAR IN A DESIGNATED SLOT, USE NEAREST BAR. IF THERE IS A BAR ON EACH SIDE OF A DESIGNATED VACANT SLOT, USE BAR IN HIGHEST NUMBERED SLOT. (NOTE: FACING REAR OF UNIT, SLOTS ARE NUMBERED FROM LEFT TO RIGHT).

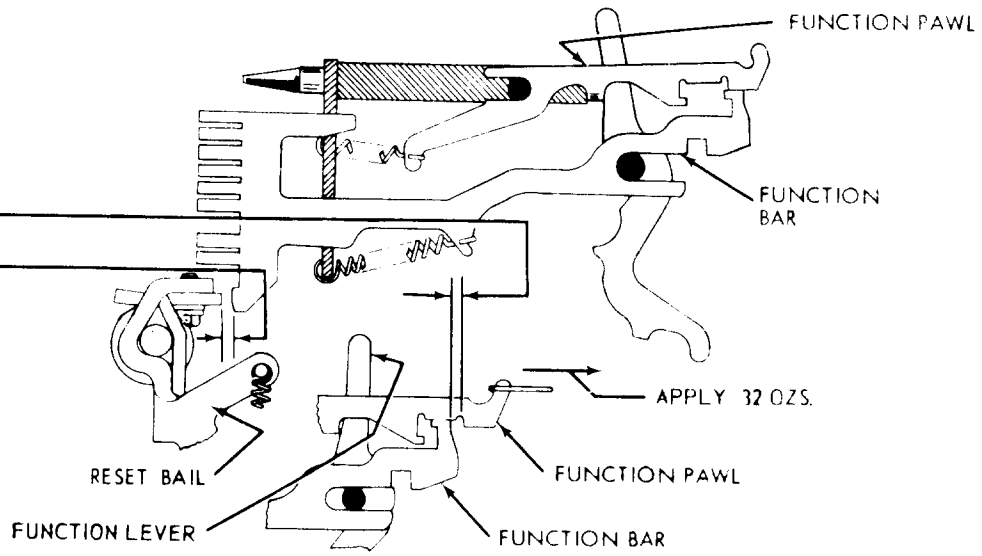
REQUIREMENT

FUNCTION PAWL SHOULD OVER TRAVEL FUNCTION BAR BY A MIN. OF 0.002 INCH

TO CHECK

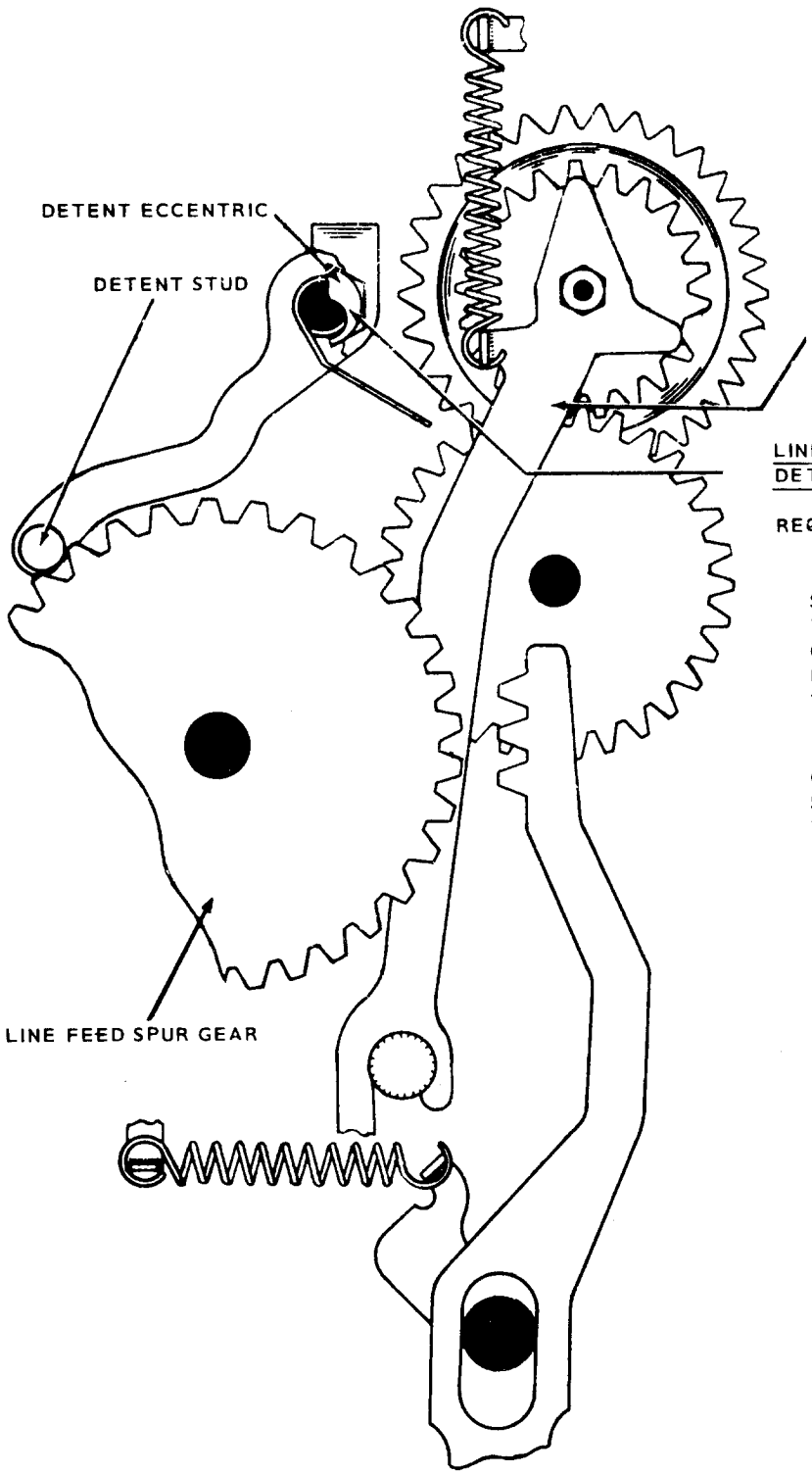
POSITION FUNCTION CLUTCH SO THAT LUG ON CLUTCH DISK IS TOWARD BOTTOM OF UNIT. STRIP OFF ANY SELECTED FUNCTION PAWLS. HOLD FUNCTION LEVER IN MAXIMUM REARWARD POSITION (DO NOT PUT OVER 2 LBS. OF TENSION ON LEVER) AND HOLD FUNCTION PAWL TO REAR WITH A TENSION OF 32 OZS. (AS LOAD ON RESET BAIL AFFECTS OVER TRAVEL, DO NOT LATCH MORE THAN ONE PAWL AT A TIME). MEASURE CLEARANCE. REPEAT FOR EACH FUNCTION PAWL ON STUNT BOX.

NOTE: THIS APPLIES TO SINGLE FUNCTION SLOTS ONLY.



To Adjust:
Type 28 – B. S. P. – 573–115–700
Type 35 – B. S. P. – 574–220–700

TYPING UNIT, LINE FEED MECHANISM, RIGHT SIDE

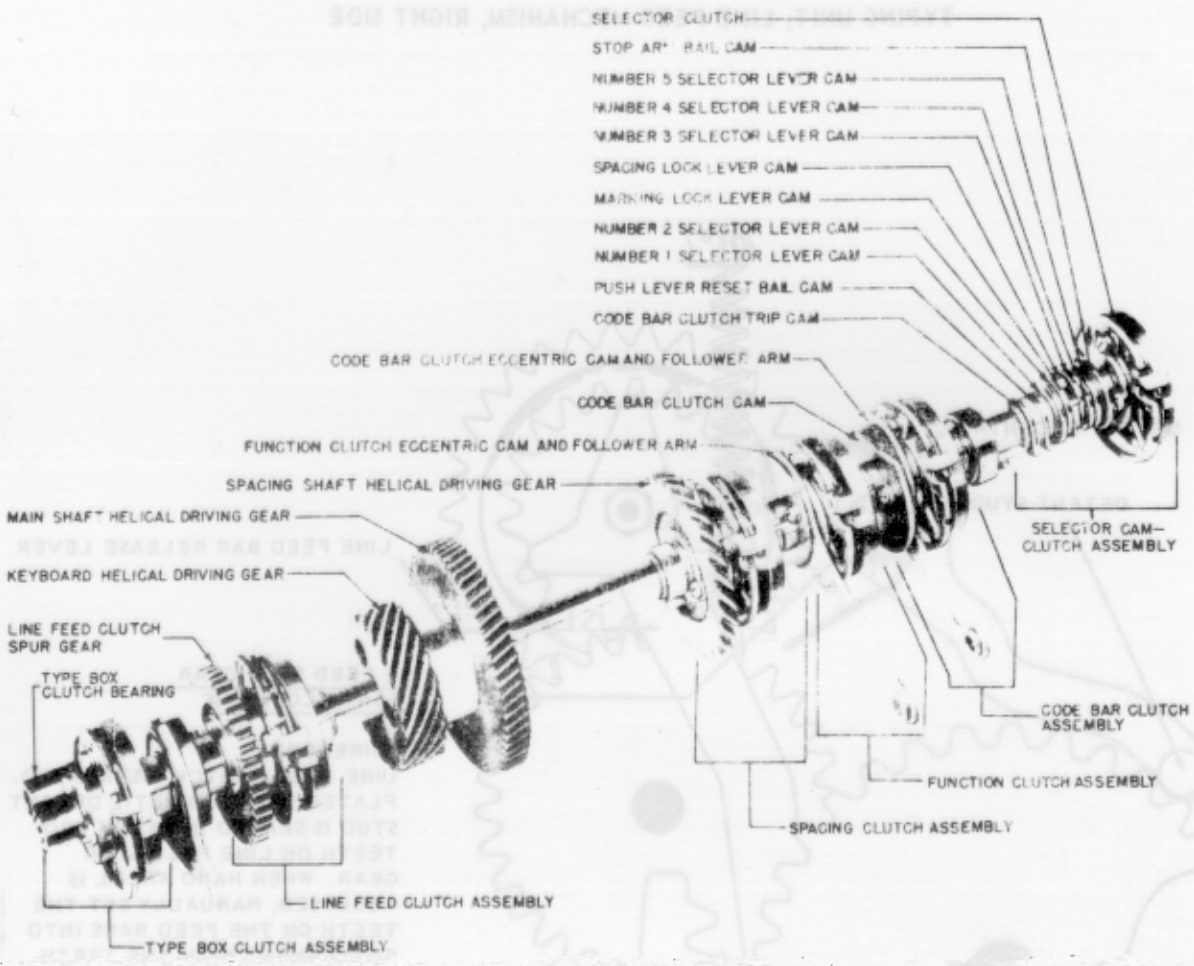


REQUIREMENT

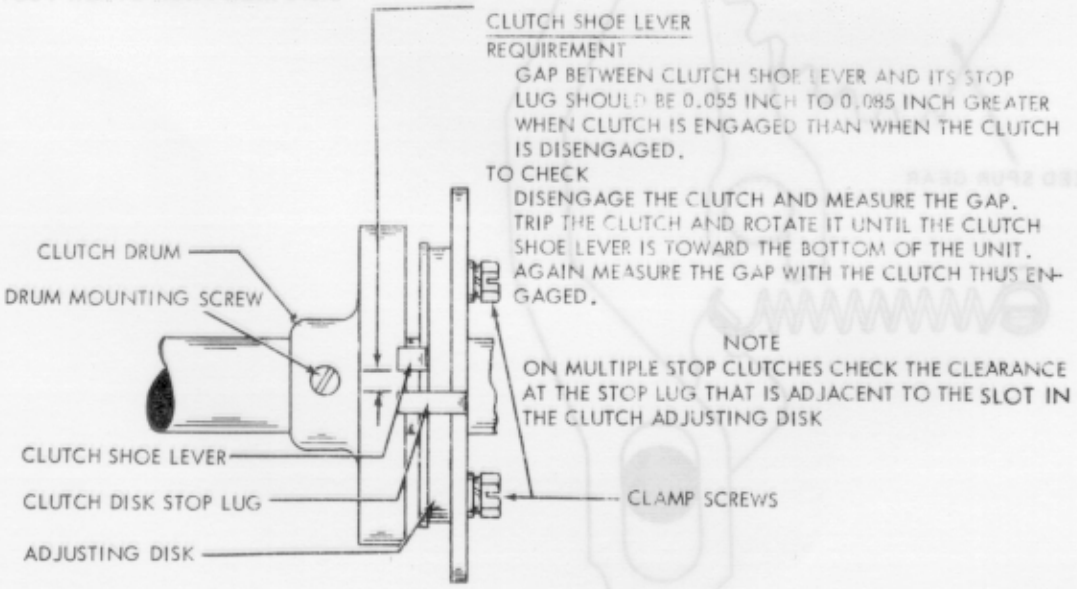
LINE FEED CLUTCH DISENGAGED. PLATEN ROTATED UNTIL DETENT STUD IS SEATED BETWEEN TWO TEETH ON LINE FEED SPUR GEAR. WHEN HAND WHEEL IS RELEASED, MANUALLY SET THE TEETH ON THE FEED BARS INTO ENGAGEMENT WITH THE TEETH ON THE LINE FEED SPUR GEAR. THE DETENT STUD SHOULD CONTACT ONE GEAR TOOTH AND BE NOT MORE THAN 0.010 INCH FROM OTHER TOOTH.

To Adjust:
Type 28 – B. S. P. – 573–115–700
Type 35 – B. S. P. – 574–220–700

TYPING UNIT MAIN SHAFT



TYPING UNIT, CLUTCH SHOE MECHANISM (ALL CLUTCHES)



To Adjust:
Type 28 – B. S. P. 573–115–700
Type 35 – B. S. P. 574–220–700

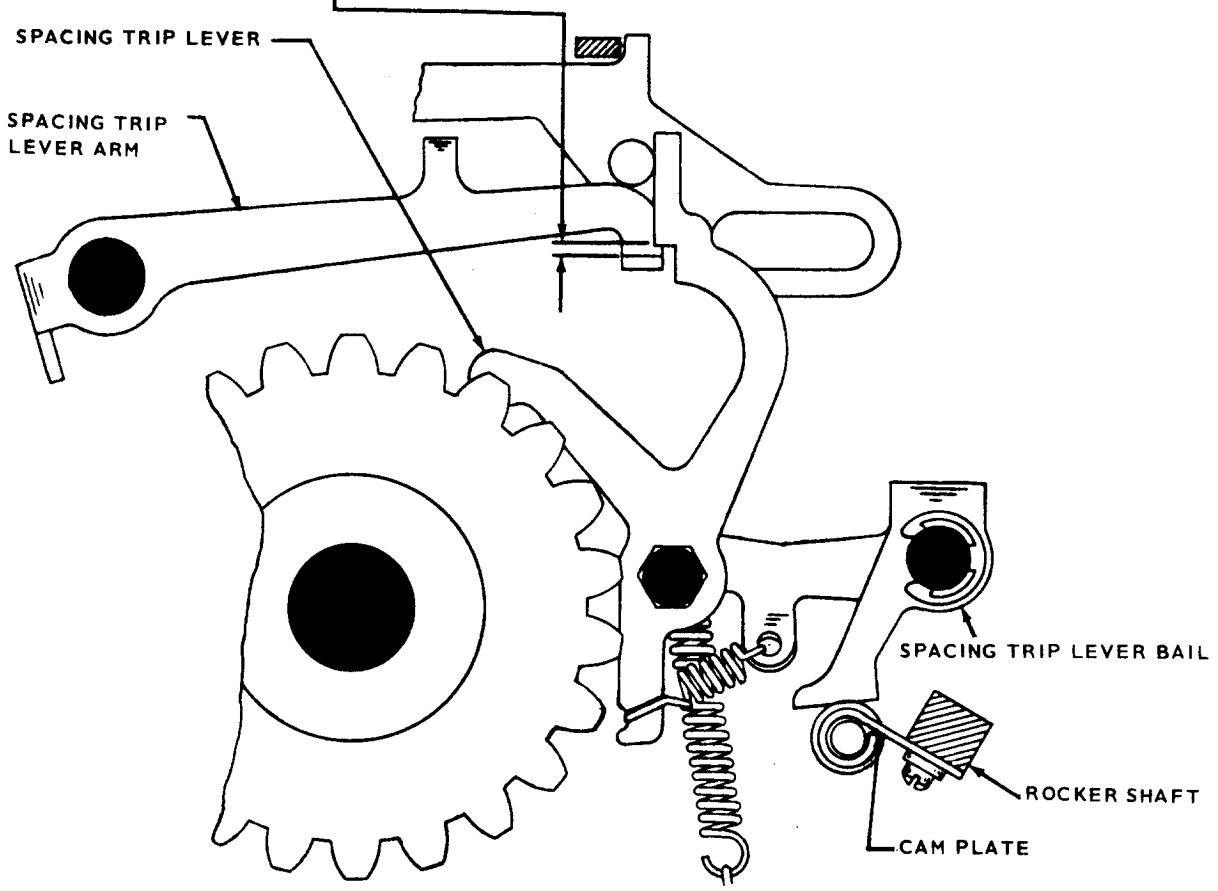
TYPING UNIT, SPACING MECHANISM

SPACING TRIP LEVER BAIL CAM PLATE

REQUIREMENT

SPACING TRIP LEVER ARM IN UPWARD POSITION. TYPE BOX CLUTCH ROTATED THROUGH APPROXIMATELY ONE-HALF OF ITS CYCLE. ALL FUNCTION PAWLS DISENGAGED FROM FUNCTION BAR. CLEARANCE BETWEEN TOP SURFACE OF TRIP LEVER ARM EXTENSION AND SPACING TRIP LEVER SHOULDER.

MIN. 0.010 INCH
MAX. 0.040 INCH



To Adjust:
Type 28 – B. S. P. – 573–115–700
Type 35 – B. S. P. – 574–220–700

TYPING UNIT, SHIFT CODE BAR OPERATING MECHANISM

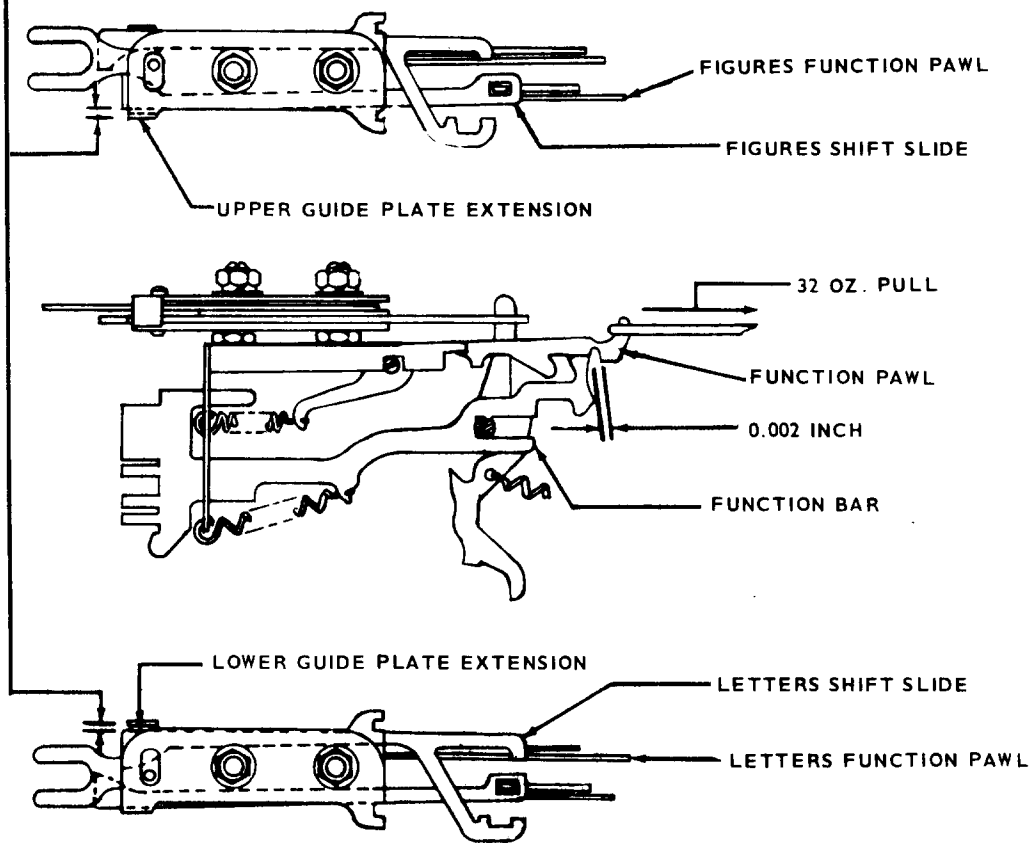
28 TYPE ONLY

FIGS – LTRS SHIFT CODE BAR OPERATING MECHANISM

(1) REQUIREMENT
WITH FUNCTION CLUTCH ROTATED UNTIL CLUTCH DISK STOP LUG IS TOWARD BOTTOM OF UNIT, HOOK FIGURES FUNCTION PAWL OVER THE END OF THE FUNCTION BAR. CLEARANCE BETWEEN UPPER GUIDE PLATE EXTENSION AND SHIFT SLIDE.
MAX. 0.020 WHEN PLAY IS TAKEN UP FOR MAXIMUM.

(2) REQUIREMENT
WITH 32 OZ. PULL APPLIED TO FUNCTION PAWL THERE SHOULD BE
MIN. 0.002 INCH
BETWEEN SHOULDER OF FIGURES FUNCTION PAWL AND FACE OF FUNCTION BAR.

(3) REQUIREMENT
REPEAT REQUIREMENT (1) & (2) FOR THE LETTERS FUNCTION PAWL. CHECK MAX. CLEARANCE BETWEEN LOWER GUIDE PLATE EXTENSION AND SHIFT SLIDE. CHECK MIN. CLEARANCE BETWEEN SHOULDER OF LETTER FUNCTION PAWL AND FACE OF FUNCTION BAR.



To Adjust:
Type 28 – B. S. P. 573–115–700

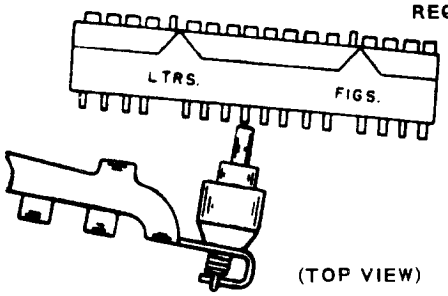
TYPING UNIT, SHIFT MECHANISM

28 TYPE ONLY

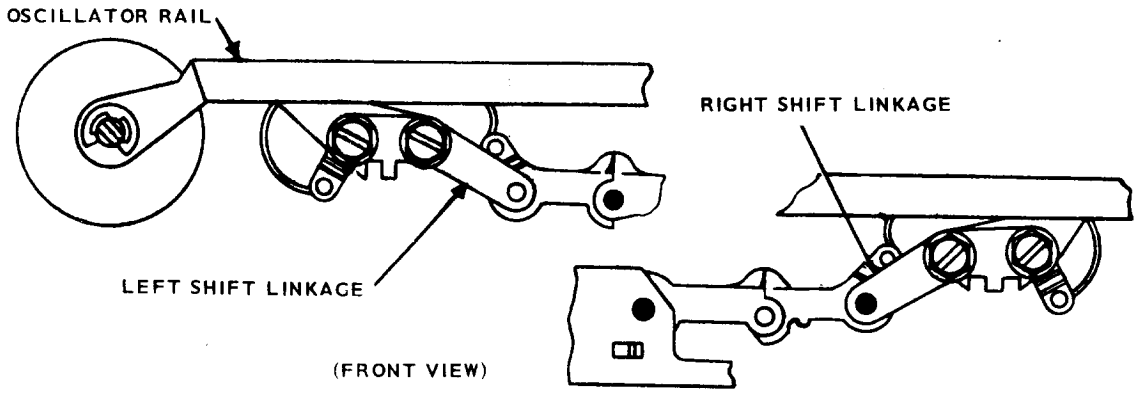
SHIFT LINKAGE

REQUIREMENT

CARRIAGE NEAR MIDPOINT OF PLATEN. TYPE BOX IN POSITION TO PRINT LETTER "O". MANUALLY BUCKLE RIGHT SHIFT LINKAGE. SHIFT TYPE BOX TO LEFT. FIGURE "9" TYPE PALLET SHOULD BE APPROXIMATELY IN CENTER OF PRINT HAMMER WHEN HAMMER IS JUST TOUCHING "9" TYPE PALLET.



(TOP VIEW)



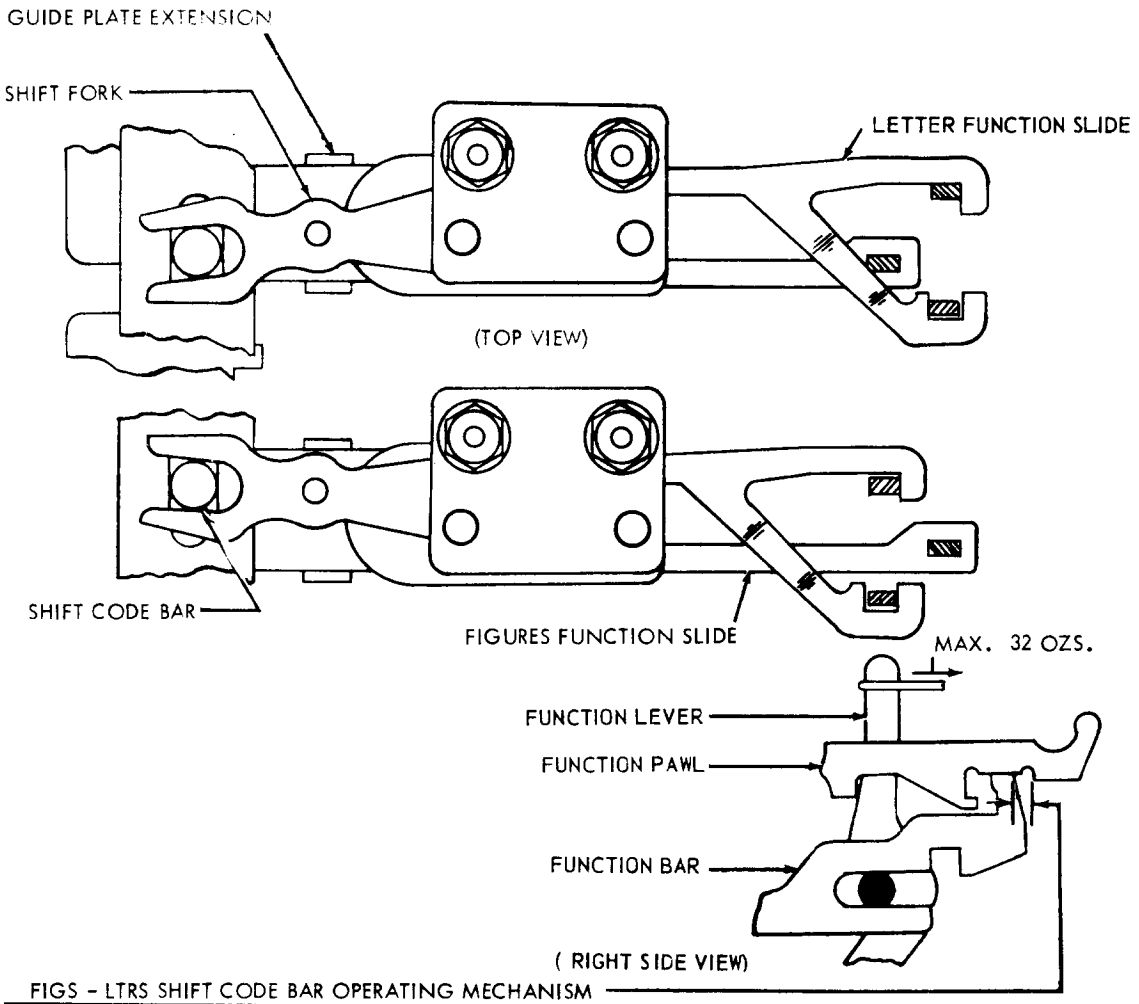
(FRONT VIEW)

To Adjust:
Type 28 – B. S. P. – 573–115–700

TYPING UNIT, SHIFT MECHANISM

28 TYPE ONLY

NOTE: 1. THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH NON-ADJUSTABLE GUIDE PLATES



FIGS - LTRS SHIFT CODE BAR OPERATING MECHANISM

REQUIREMENT: (FOR TWO STOP FUNCTION CLUTCH)

DISENGAGE FUNCTION CLUTCH AT POSITION GIVING LEAST CLEARANCE. ROTATE TYPE BOX CLUTCH 1/2 REVOLUTION. HOLD FIGURES FUNCTION LEVER IN REARWARD POSITION WITH TENSION OF 32 OZS.

CLEARANCE BETWEEN THE FUNCTION PAWL SHOULDER AND FACE OF FUNCTION BAR

MIN. 0.002 INCH

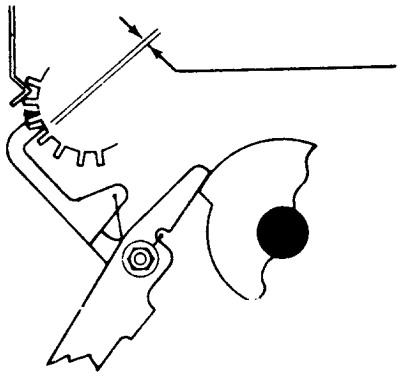
MAX. 0.015 INCH

WHEN PLAY IN PAWL IS TAKEN FOR MAXIMUM CLEARANCE.

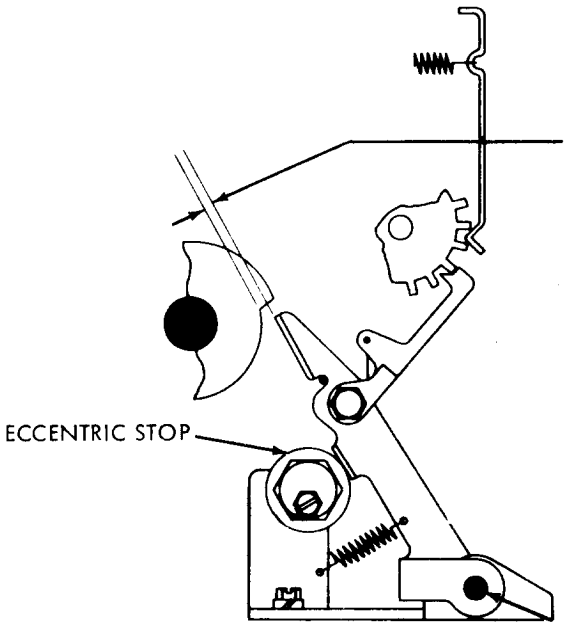
DISENGAGE FIGURES FUNCTION PAWL.CHECK LETTERS FUNCTION PAWL IN SAME MANNER.

To Adjust:
Type 28 – B. S. P. 573–115–700

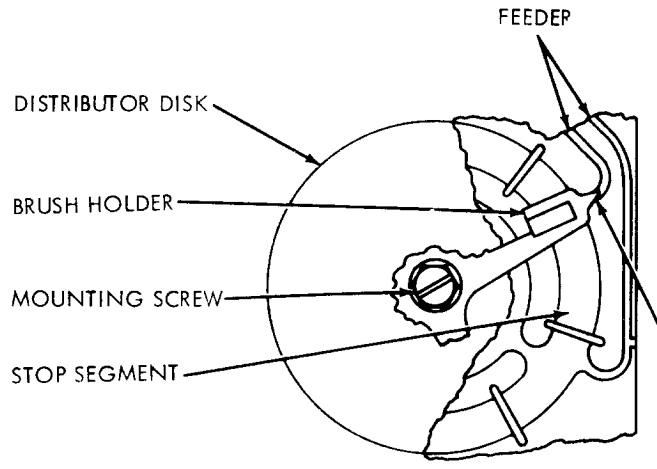
35 ANSWER - BACK ASSEMBLY



FEED PAWL
REQUIREMENT
ANSWER-BACK IN STOP POSITION, CLEARANCE BETWEEN FEED PAWL ENGAGING SURFACE AND TOOTH ON CODE DRUM
MIN. 0.005 INCH
MAX. 0.015 INCH



ECCENTRIC STOP POSITION
REQUIREMENT
WITH FEED BAIL IN LOWEST POSITION OF ITS TRAVEL OPPOSITE LOW PART OF ITS CAM RESTING ON ECCENTRIC STOP, CLEARANCE BETWEEN FEED CAM AND FEED BAIL
MIN. 0.075 INCH
MAX. 0.095 INCH

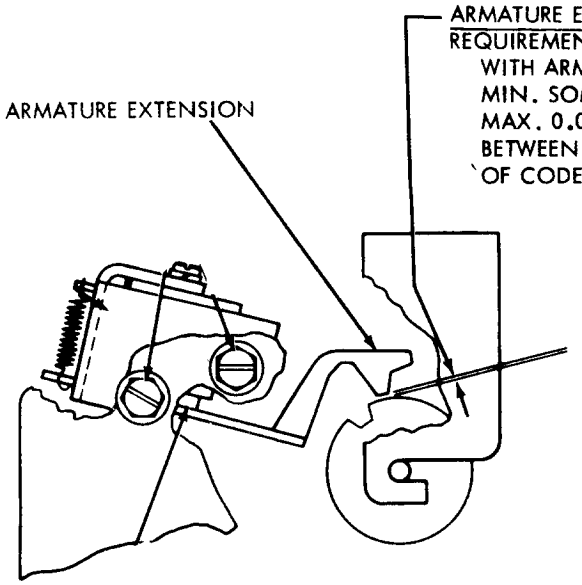


DISTRIBUTOR BRUSH HOLDER
REQUIREMENT
WITH ANSWER-BACK IN STOP POSITION, THE POINTER ON THE BRUSH HOLDER SHOULD POINT TO THE FEEDER OF THE STOP SEGMENT.

CAUTION
DO NOT TURN BRUSH HOLDER COUNTERCLOCKWISE. DAMAGE TO BRUSHES MAY RESULT.

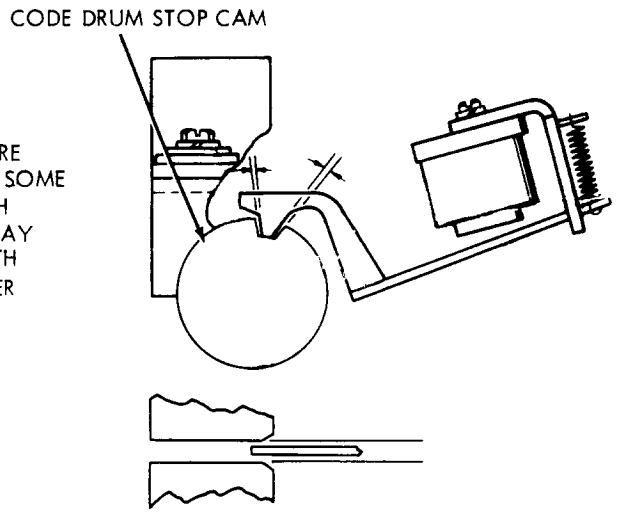
To Adjust:
35 Type B. S. P. 574–235–700

35 ANSWER-BACK ASSEMBLY



CONTACT BLOCK POSITION
REQUIREMENT

ANSWER-BACK IN STOP POSITION, THE ARMATURE MUST FALL INTO THE STOP INDENT FREELY WITH SOME CLEARANCE BETWEEN THE EXTENSION AND EACH SIDE OF THE STOP INDENT. THE SIDE TO SIDE PLAY OF THE ARMATURE MUST BE LIMITED BY THE WIDTH OF THE GROOVE IN THE CONTACT BLOCK RATHER THAN THE EDGES OF THE YOKE.



CODING ANSWER-BACK DRUM

The drum should be coded as follows:

SUP-CR-LF-RO, and then the 12 character company identification followed by CR-LF-XON. For example,

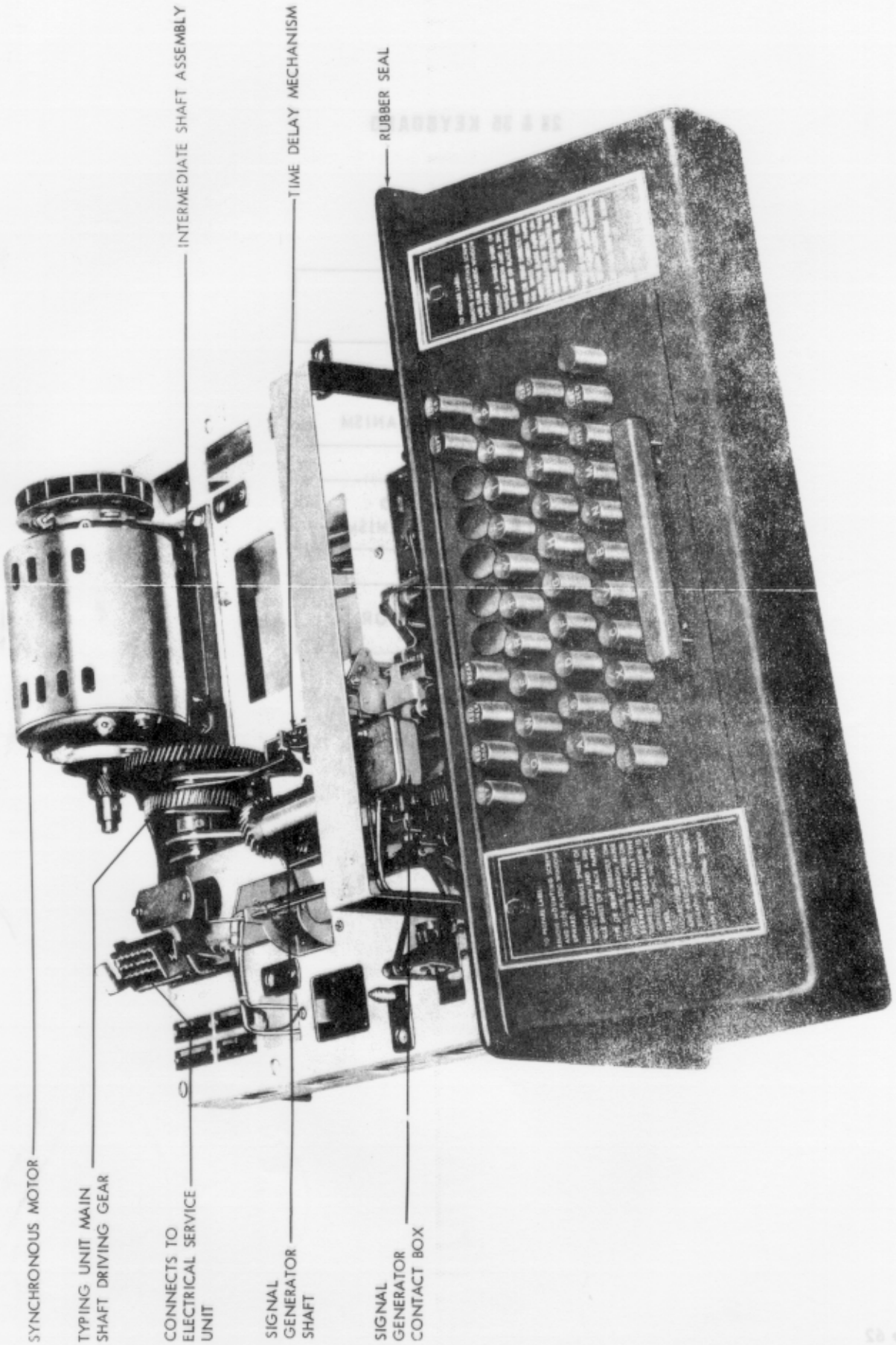
SUP-CR-LF-RO,

ROBERTS AMES - CR-LF-XON-SUP-SUP

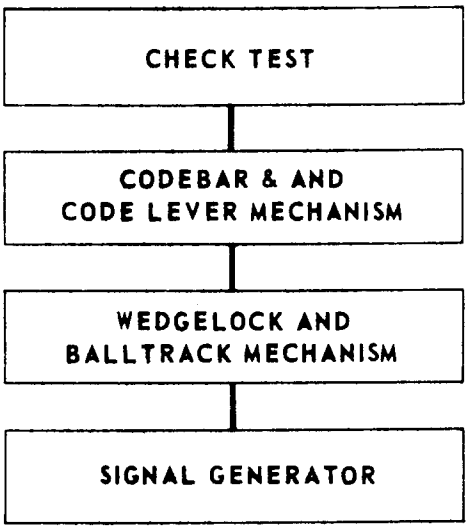
Company City

If the station identifier is less than 12 characters in length, then the remaining positions must be filled up with the SUPPRESSION character.

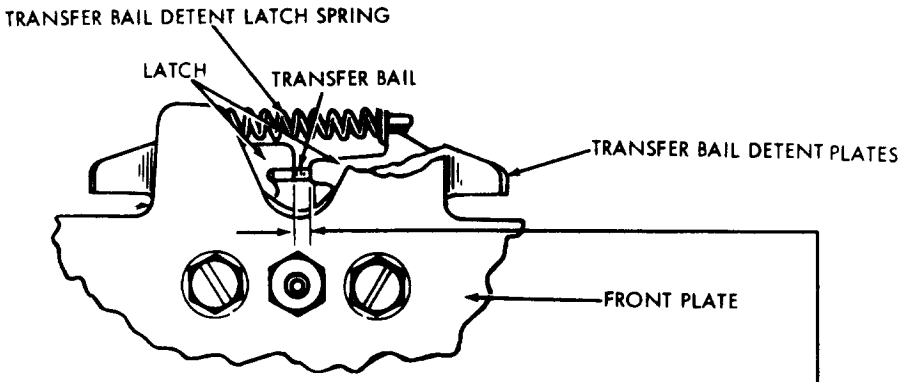
To Adjust:
35 Type – B. S. P. 574-235-700


SYNCHRONOUS MOTOR
TYPING UNIT MAIN SHAFT DRIVING GEAR
CONNECTS TO ELECTRICAL SERVICE UNIT
SIGNAL GENERATOR SHAFT
SIGNAL GENERATOR CONTACT BOX
INTERMEDIATE SHAFT ASSEMBLY
TIME DELAY MECHANISM
RUBBER SEAL

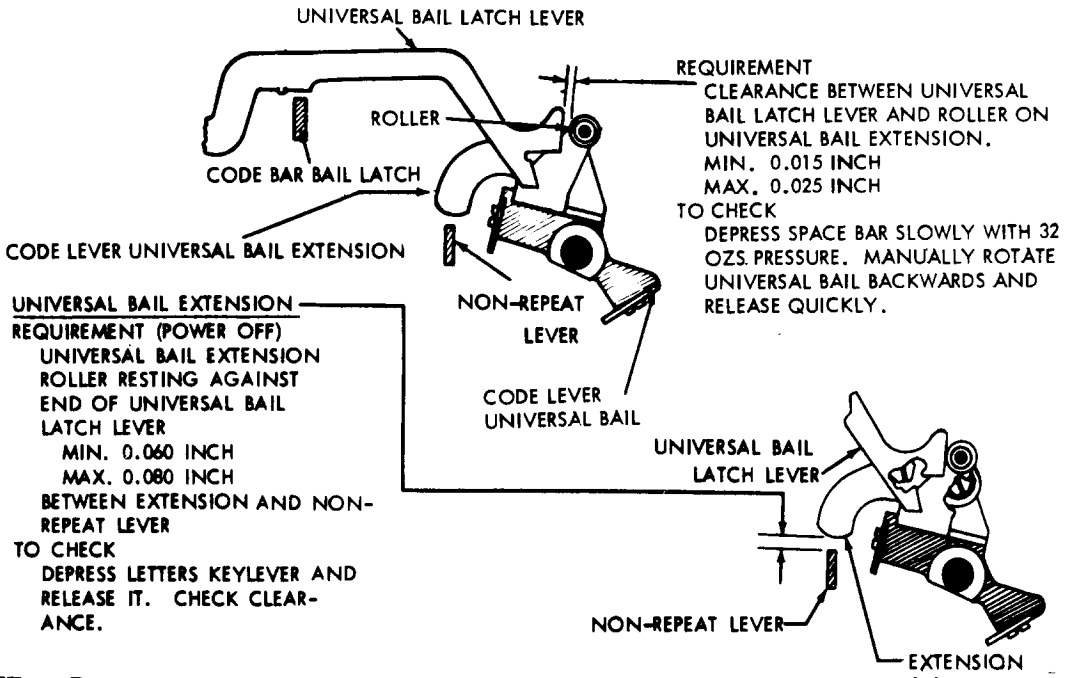
28 & 35 KEYBOARD



CONTACT BOX MECHANISM



TRANSFER BAIL DETENT PLATE
REQUIREMENT
EQUAL L. H. AND R. H. CLEARANCE WITHIN .002



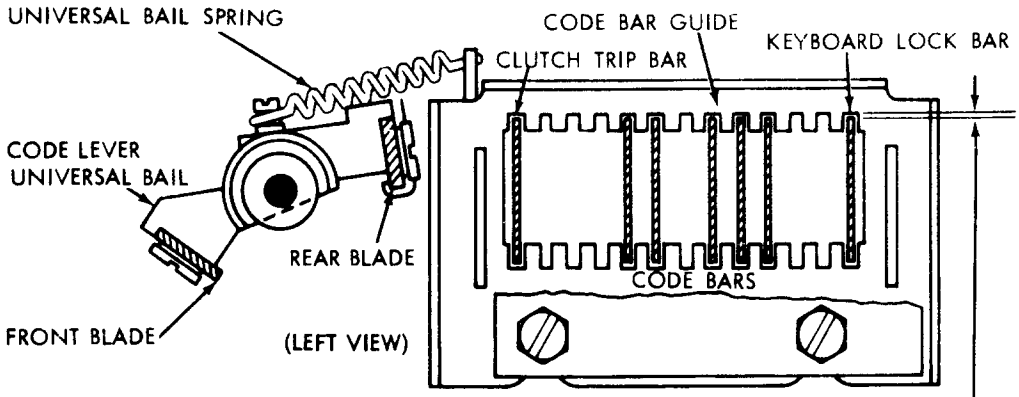
REQUIREMENT
CLEARANCE BETWEEN UNIVERSAL BAIL LATCH LEVER AND ROLLER ON UNIVERSAL BAIL EXTENSION.
MIN. 0.015 INCH
MAX. 0.025 INCH
TO CHECK
DEPRESS SPACE BAR SLOWLY WITH 32 OZS. PRESSURE. MANUALLY ROTATE UNIVERSAL BAIL BACKWARDS AND RELEASE QUICKLY.

UNIVERSAL BAIL EXTENSION
REQUIREMENT (POWER OFF)
UNIVERSAL BAIL EXTENSION ROLLER RESTING AGAINST END OF UNIVERSAL BAIL LATCH LEVER
MIN. 0.060 INCH
MAX. 0.080 INCH
BETWEEN EXTENSION AND NON-REPEAT LEVER
TO CHECK
DEPRESS LETTERS KEYLEVER AND RELEASE IT. CHECK CLEARANCE.

NOTE: Remove spring on repeat space mechanism prior to checking adjustment when unit has repeat on space mechanism.

To Adjust:
28 Type KSR B. S. P. 573-116-700
" ASR B. S. P. 573-117-700
35 Type KSR B. S. P. 574-221-700
" ASR B. S. P. 574-222-700

CODE BAR AND CODE LEVER MECHANISM



CODE BAR GUIDE CLEARANCE

REQUIREMENT

28 Type MIN. SOME CLEARANCE
MAX. 0.010 INCH

35 Type MIN. SOME CLEARANCE
MAX. 0.006 INCH

BETWEEN CODE BAR GUIDE AND ALL CODE BARS. CHECK BOTH ENDS OF CODE BARS. ALL CODE BARS SHOULD MOVE FREELY WITHOUT BIND.

Check the following only when keyboard touch problems are encountered.

WEDGELOCK AND BALL TRACK MECHANISM

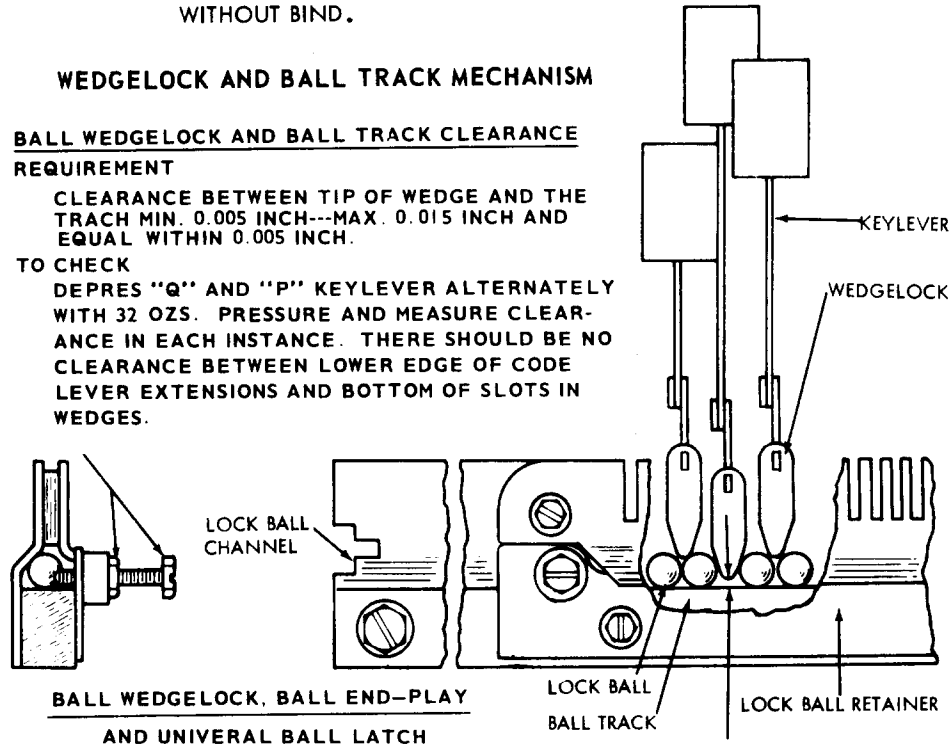
BALL WEDGELOCK AND BALL TRACK CLEARANCE

REQUIREMENT

CLEARANCE BETWEEN TIP OF WEDGE AND THE TRACH MIN. 0.005 INCH---MAX. 0.015 INCH AND EQUAL WITHIN 0.005 INCH.

TO CHECK

DEPRES "Q" AND "P" KEYLEVER ALTERNATELY WITH 32 OZS. PRESSURE AND MEASURE CLEARANCE IN EACH INSTANCE. THERE SHOULD BE NO CLEARANCE BETWEEN LOWER EDGE OF CODE LEVER EXTENSIONS AND BOTTOM OF SLOTS IN WEDGES.



BALL WEDGELOCK, BALL END-PLAY AND UNIVERAL BALL LATCH

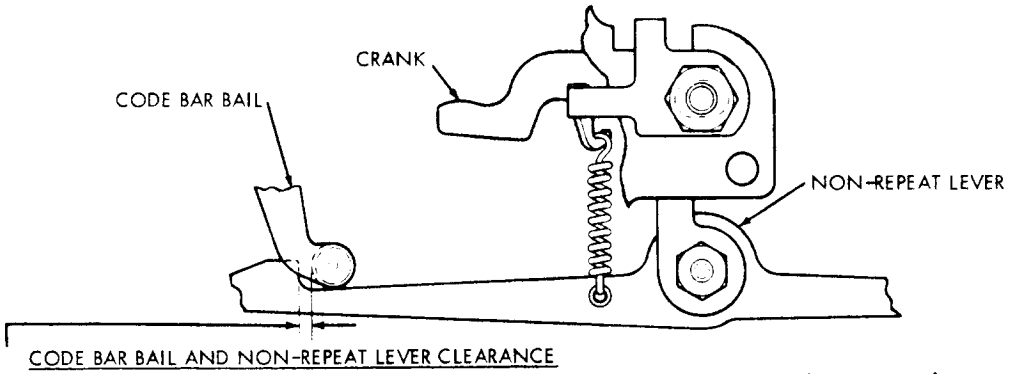
REQUIREMENT (UNDER POWER)

1. TRIP-OFF PRESSURE OF ANY CENTER ROW KEY SHOULD BE MIN. 2 OZS.---MAX. 5 OZS.
2. APPLY 5-½ OZS. PRESSURE PERPENDICULAR TO "A" KEY, DEPRESS EACH KEY IN THIRD ROW. THE "A" KEY SHOULD TRIP EACH TIME A KEY IS RELEASED.
3. REPEAT 2 WITH THE 5-½ OZS. PRESSURE ON "CAR. RET." KEY.
4. THE CLUTCH SHOULD NOT TRIP WHEN TWO KEYS ARE DEPRESSED SIMULTANEOUSLY.
5. APPLY 4-½ OZS. TO "SPACE BAR", DEPRESS "CAR. RET." KEY AND LIFT FINGER FROM KEY HORIZONTALLY. THE "SPACE BAR" SHOULD TRIP EACH TIME "CAR. RET." IS RELEASED.
   NOTE --- IF UNIT IS EQUIPPED FOR REPEAT-SPACE OPERATION, DISREGARD MULTIPLE SPACE OPERATIONS.

To Adjust:

28- KSR B. S. P. 573-116-700
35- KSR B. S. P. 574-221-700
28- ASR B. S. P. 573-117-700
35- ASR B. S. P. 574-222-700

CODE BAR BAIL AND NON-REPEAT LEVER MECHANISMS



(FRONT VIEW)

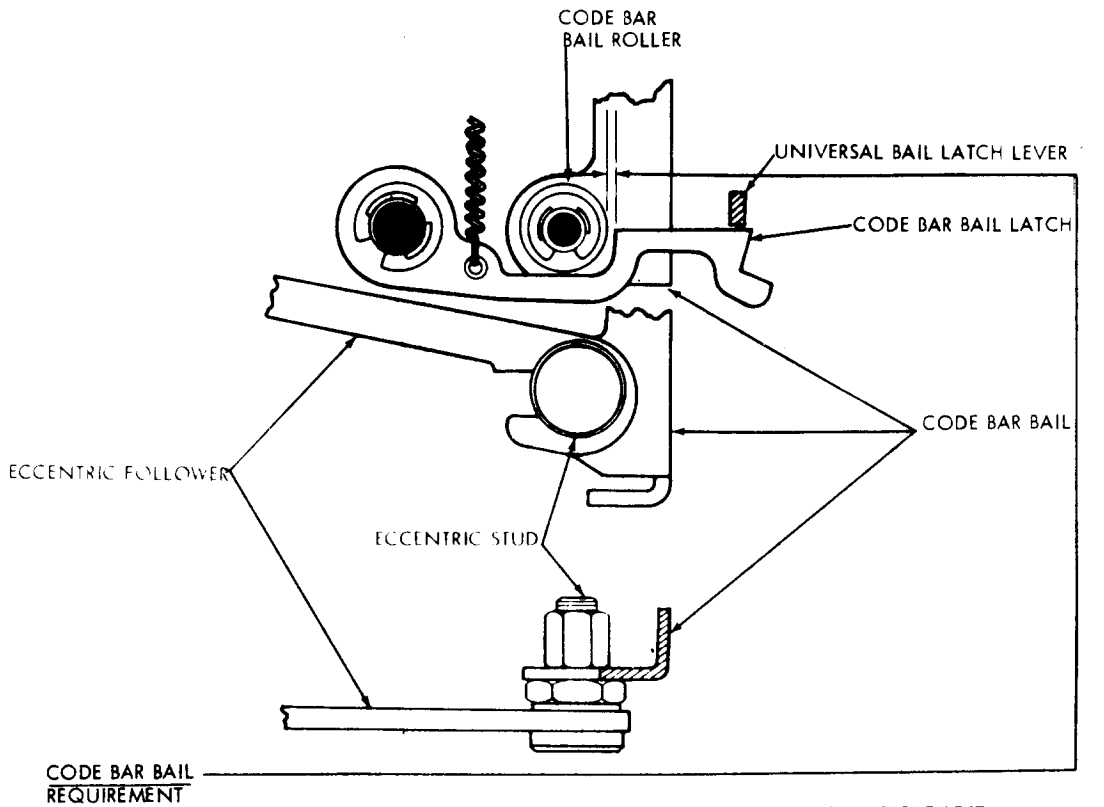
CODE BAR BAIL AND NON-REPEAT LEVER CLEARANCE

REQUIREMENT

MECHANISM IN INITIAL TRIP-OFF POSITION, ANY KEY DEPRESSED, NO POWER.

28 Type MIN 0.010 INCH, MAX.0.020 INCH **35 Type** MIN. SOME, MAX.0.010 INCH

BETWEEN ROLLER OF CODE BAR BAIL AND NON-REPEAT LEVER PICK-UP STEP.



CODE BAR BAIL

REQUIREMENT

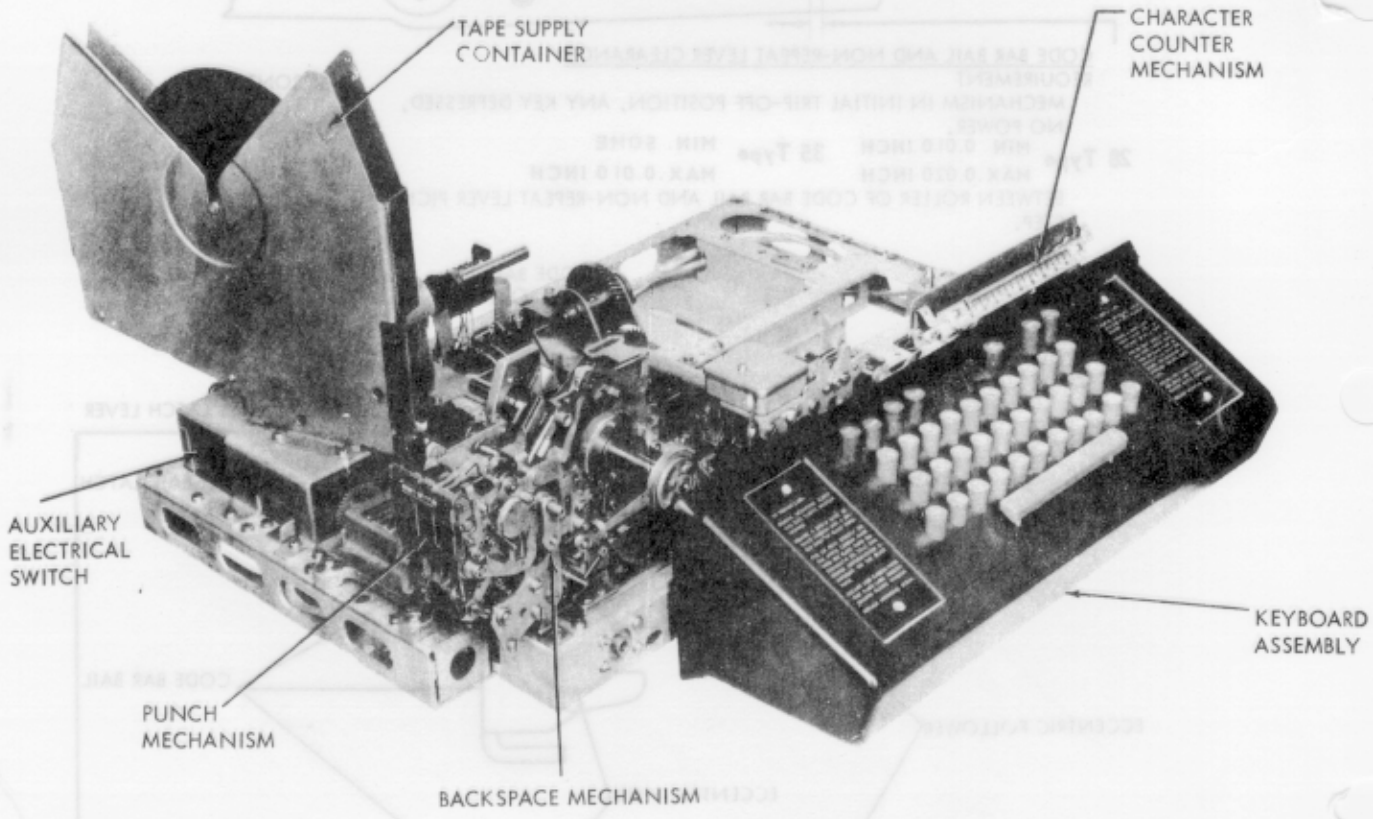
CAM ECCENTRIC AND ARM WHICH HOLD THE BAIL IN EXTREME RESET POSITION TO THE LEFT.

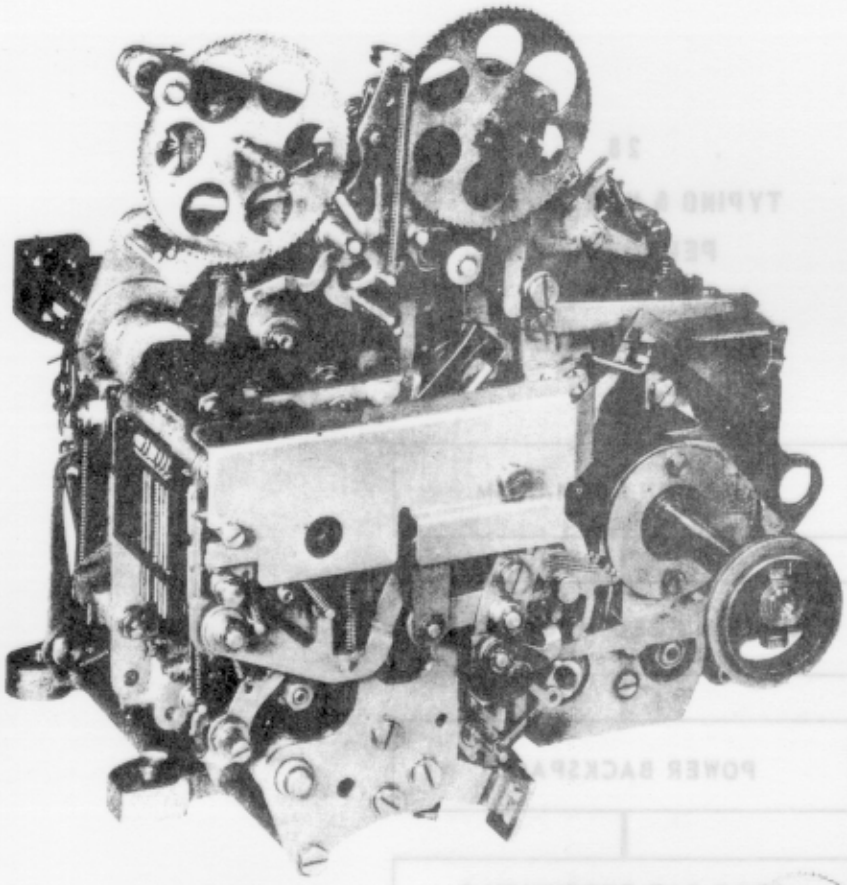
28 Type MIN. 0.004 INCH, MAX. 0.012 INCH **35 Type** MIN. SOME, MAX. 0.006 INCH

BETWEEN CODE BAR BAIL ROLLER AND CODE BAR BAIL LATCH

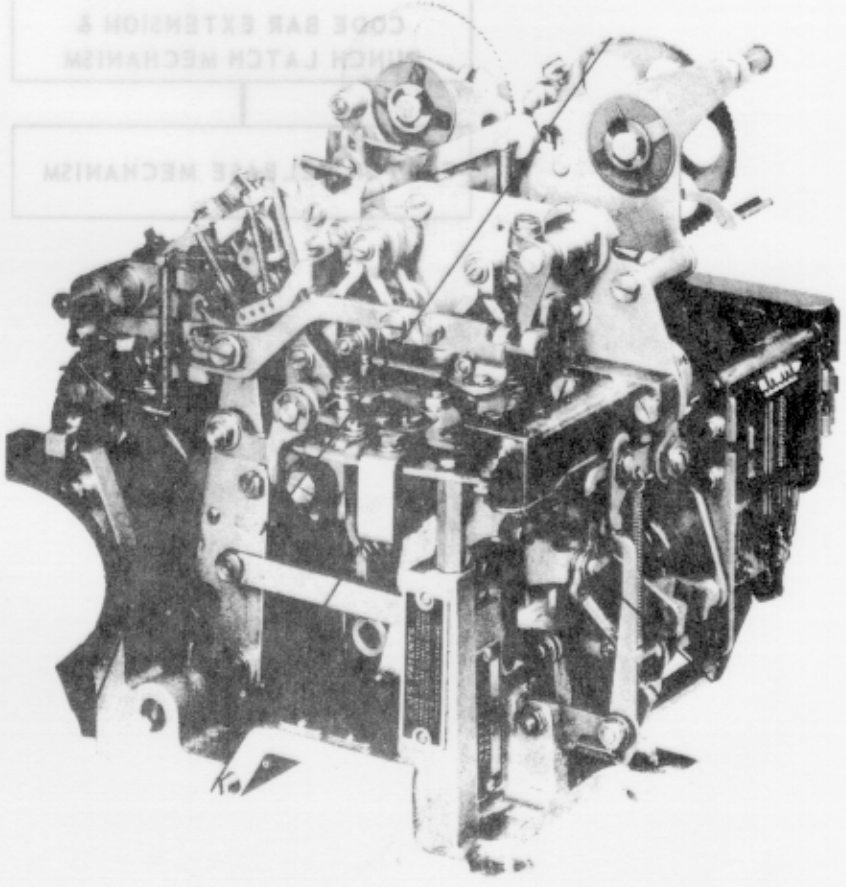
To Adjust:

28-KSR B. S. P. 573-116-700
35-KSR B. S. P. 574-221-700
28-ASR B. S. P. 573-117-700
35-ASR B. S. P. 574-222-700


TAPE SUPPLY CONTAINER
CHARACTER COUNTER MECHANISM
AUXILIARY ELECTRICAL SWITCH
KEYBOARD ASSEMBLY
PUNCH MECHANISM
BACKSPACE MECHANISM



FRONT VIEW

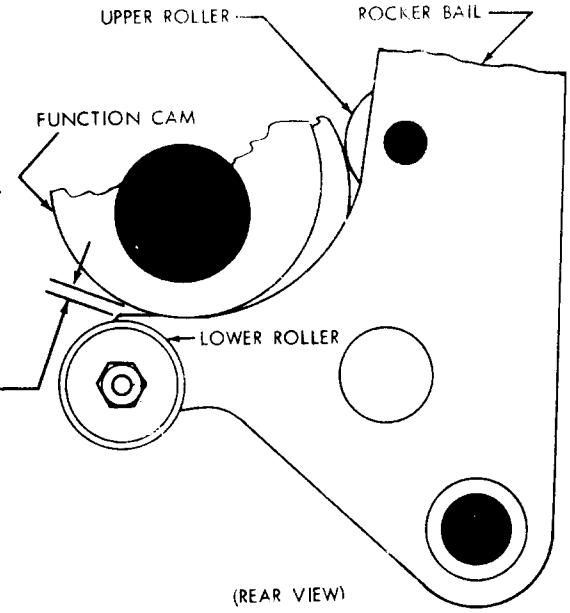


REAR VIEW

FUNCTION MECHANISM

28 TYPE ONLY

ROCKER BAIL
REQUIREMENT
WITH ROCKER BAIL POSITIONED TO ITS EXTREME LEFT AND UPPER ROLLER IN CONTACT WITH FUNCTION CAM:
MIN. SOME -----MAX. 0.004 INCH
CLEARANCE BETWEEN CAM AND LOWER ROLLER AT POINT OF LEAST CLEARANCE.



(REAR VIEW)

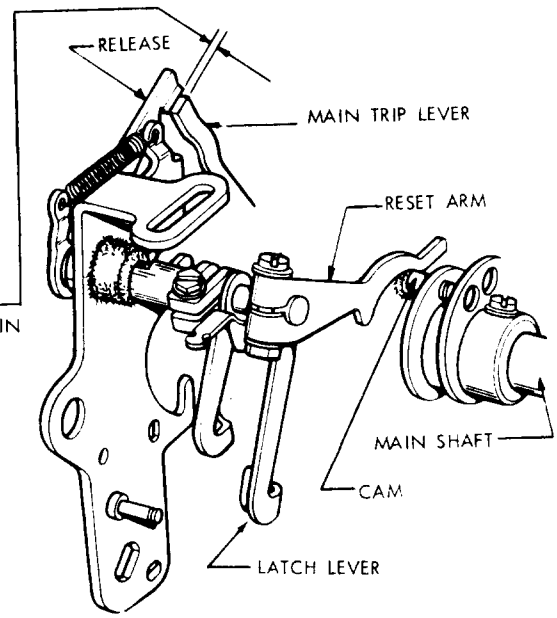
RESET ARM

TO CHECK
TRIP FUNCTION CLUTCH AND POSITION MAIN SHAFT SO THAT RESET ARM IS HELD IN ITS HIGHEST POSITION BY CAM

REQUIREMENT
(1) CLEARANCE BETWEEN RELEASE AND MAIN TRIP LEVER.

	NON-TYPING PERFORATOR	TYPING PERFORATOR
MIN.	0.005 INCH	0.005 INCH
MAX.	0.025 INCH	0.030 INCH

(2) LATCH LEVER END PLAY:
MIN. SOME
MAX. 0.010 INCH

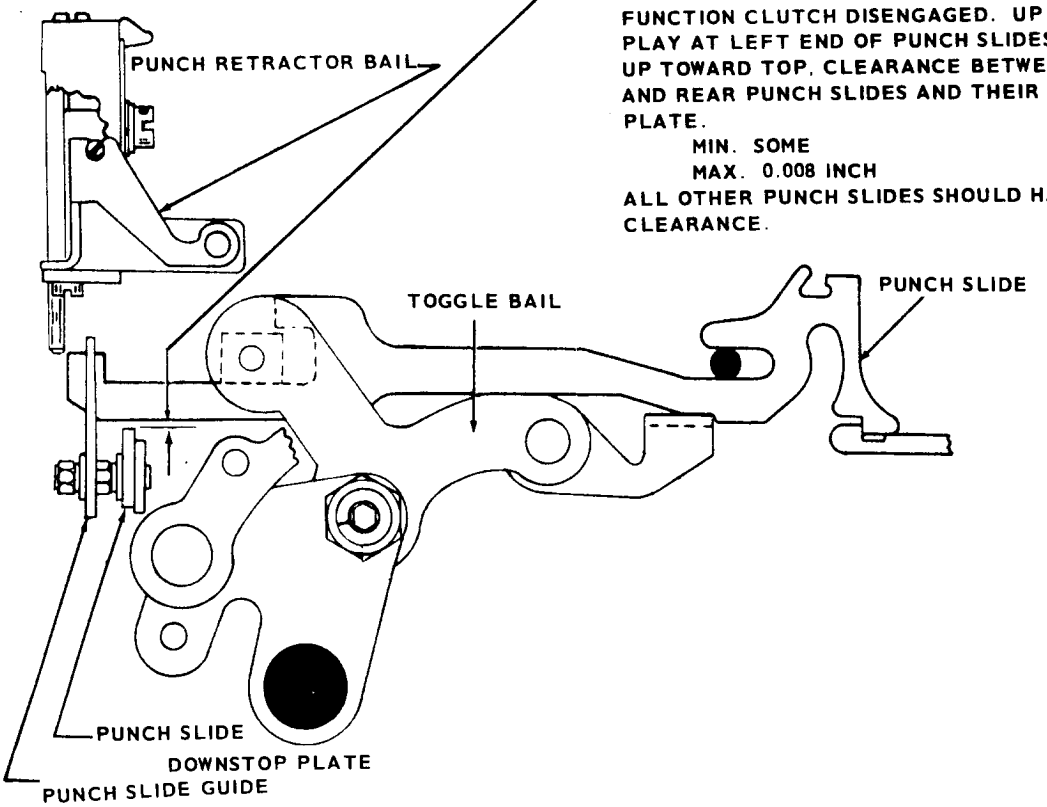


(RIGHT SIDE VIEW)

To Adjust:
B. S. P. 573-117-700

PERFORATOR MECHANISM FOR CHADLESS TAPE

28 TYPE ONLY



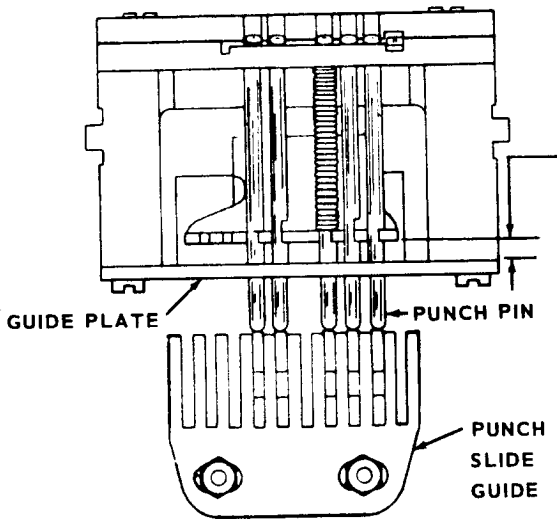
PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

FUNCTION CLUTCH DISENGAGED. UP AND DOWN PLAY AT LEFT END OF PUNCH SLIDES TAKEN UP TOWARD TOP, CLEARANCE BETWEEN FRONT AND REAR PUNCH SLIDES AND THEIR DOWNSTOP PLATE.

MIN. SOME
MAX. 0.008 INCH

ALL OTHER PUNCH SLIDES SHOULD HAVE SOME CLEARANCE.



PUNCH PIN PENETRATION

REQUIREMENT

LETTERS MANUALLY SELECTED, CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE, CLEARANCE BETWEEN THE UPPER EDGE OF SLIDE HAVING THE MOST CLEARANCE AND THE LOWER SIDE OF THE PUNCH HOLDER

MIN. 0.025 INCH
MAX. 0.035 INCH

PUNCH SLIDE GUIDE POSITION

REQUIREMENT

LETTERS SELECTED, FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL THE PUNCH SLIDES JUST TOUCH THE PUNCH PINS. THE PUNCH SLIDES SHOULD ALIGN CENTRALLY WITH THEIR RESPECTIVE PUNCH PINS (GAUGED BY EYE).

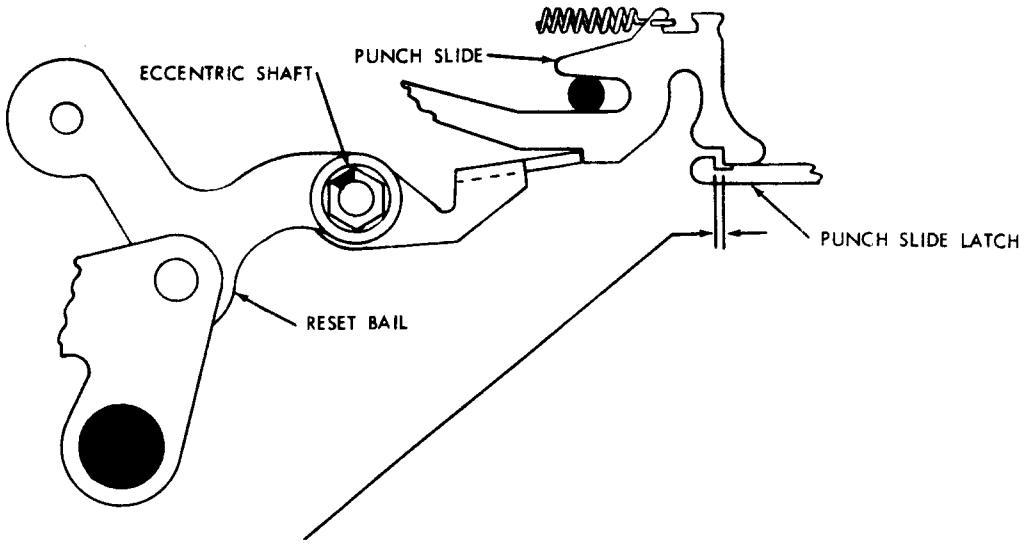
To Adjust:

28 Type B. S. P. 573-118-700

35 Type B. S. P. 573-119-700

PUNCH MECHANISM

28 TYPE ONLY



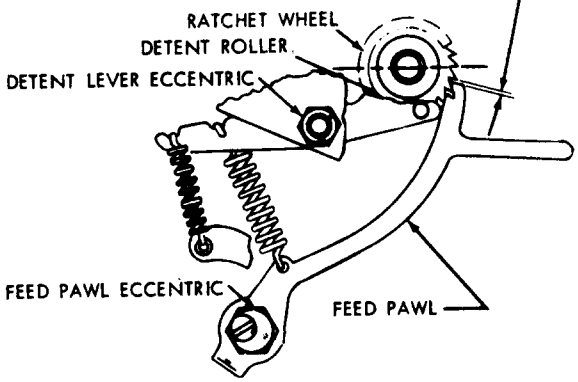
PUNCH SLIDE RESET BAIL

REQUIREMENT

FUNCTION CLUTCH DISENGAGED AND LATCHED. CLEARANCE AT PUNCH SLIDE LATCH CLOSEST TO PUNCH SLIDE:

(A) FOR NON-TYPING PERFORATOR ONLY
MIN. 0.015 INCH
MAX. 0.025 INCH

(B) FOR TYPING PERFORATOR ONLY
MIN. 0.005 INCH
MAX. 0.015 INCH



FEED PAWL

REQUIREMENT

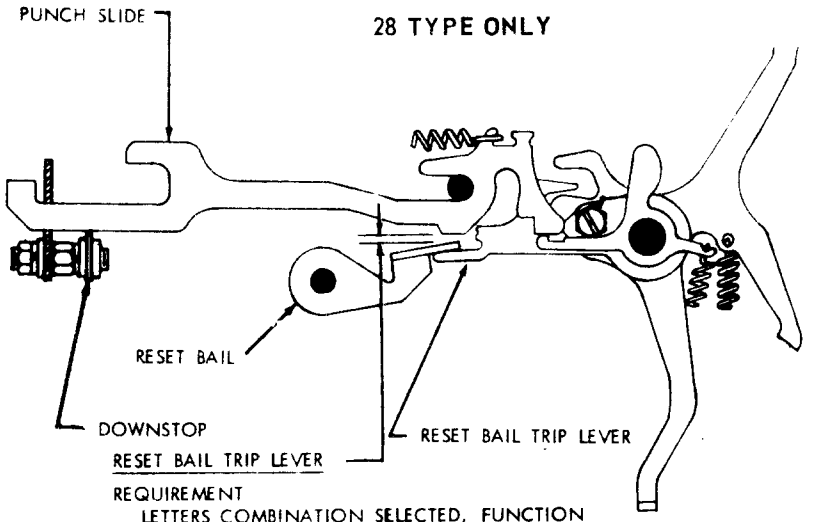
FUNCTION CLUTCH DISENGAGED, INDENTATION IN DETENT LEVER ECCENTRIC AT RIGHT ANGLE TO LEVER, DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, HIGH PART OF FEED PAWL ECCENTRIC TO THE RIGHT OF ITS LOCK SCREW, THE FEED PAWL SHOULD ENGAGE THE FIRST TOOTH BELOW A HORIZONTAL CENTER LINE THROUGH THE RATCHET WHEEL WITH

NO PERCEPTIBLE CLEARANCE

To Adjust
B. S. P. 573-117-700

PUNCH SLIDE TRIP MECHANISM

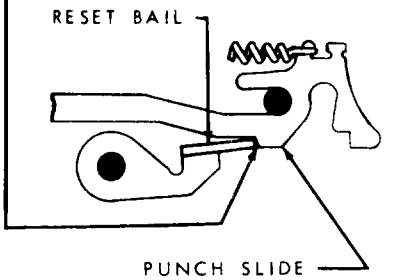
28 TYPE ONLY



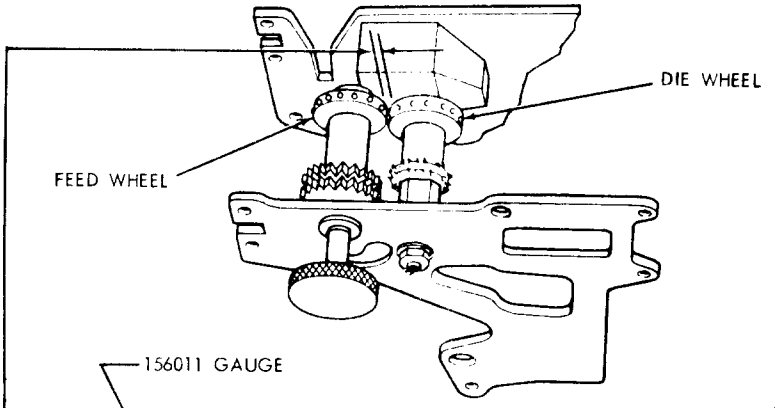
REQUIREMENT
LETTERS COMBINATION SELECTED, FUNCTION CLUTCH TRIPPED, PUNCH SLIDES AGAINST THEIR DOWNSTOP.

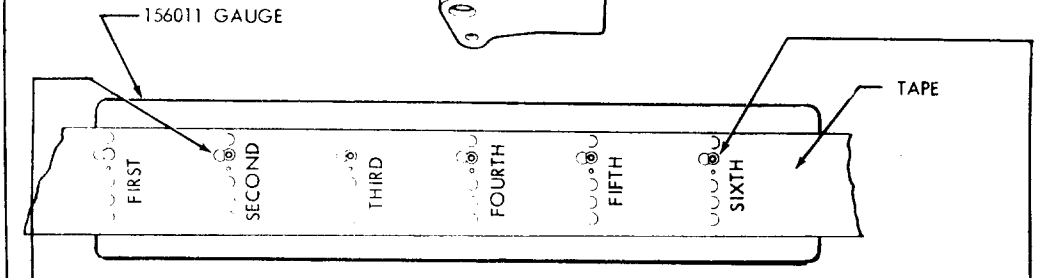
CLEARANCE BETWEEN LOWER EDGE OF SLIDE AND UPPER EDGE OF RESET BAIL
MIN. SOME
MAX. 0.007 INCH
WHEN PLAY IS TAKEN UP FOR MINIMUM

REQUIREMENT
CLUTCH DISENGAGED AND LATCHED. PUNCH SLIDE RESET BAIL SHOULD FULLY ENGAGE THE NOTCHES IN THE PUNCH SLIDES.



PUNCH UNIT RESET AND FEEDING MACHANISM





TO CHECK
PERFORATE IN ORDER SIX SEQUENCES MADE UP OF NINE BLANK CODE COMBINATIONS FOLLOWED BY A LETTERS COMBINATION. OPEN CHADS SO THAT CODE HOLES ARE VISIBLE. PLACE TAPE OVER SMOOTH SIDE OF 156011 TAPE GAUGE SO THAT FIRST NO. 2 CODE HOLE IS CONCENTRIC WITH FIRST (0.072 INCH) HOLE IN GAUGE.

REQUIREMENT
SECOND THROUGH FIFTH HOLE IN GAUGE VISIBLE THROUGH NO. 2 CODE HOLES IN TAPE. CIRCULAR PORTION OF SIXTH NO. 2 CODE HOLE ENTIRELY WITHIN CORRESPONDING (0.086 INCH) HOLE IN GAUGE.

REQUIREMENT
WITH TAPE SHOE HELD AWAY FROM FEED WHEEL, FEED PAWL AND DETENT DISENGAGED AND TAPE REMOVED, FEED WHEEL SHOULD ROTATE FREELY.

MIN. 0.002 INCH MAX 0.004 INCH.

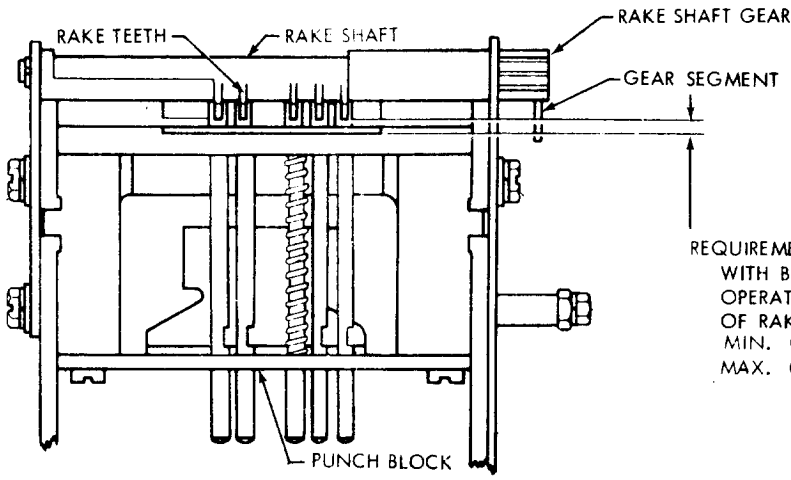
WITH TAPE REMOVED, WHEEL-DIE CLEARANCE IS A MIN. OF 0.002 INCH.

To Adjust:
B. S. P. 573-117-700

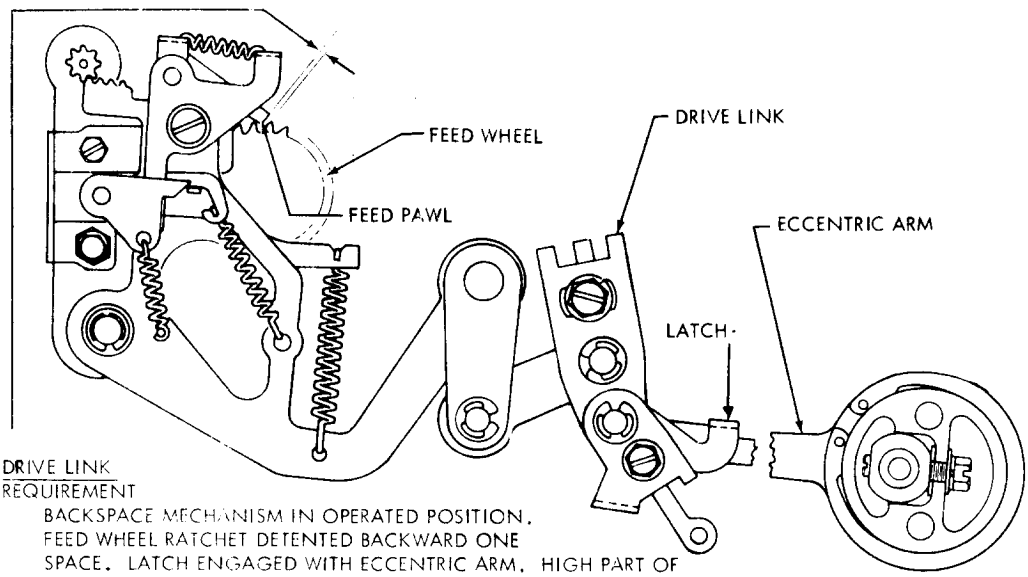
POWER-DRIVE BACKSPACE MECHANISM

28 TYPE ONLY

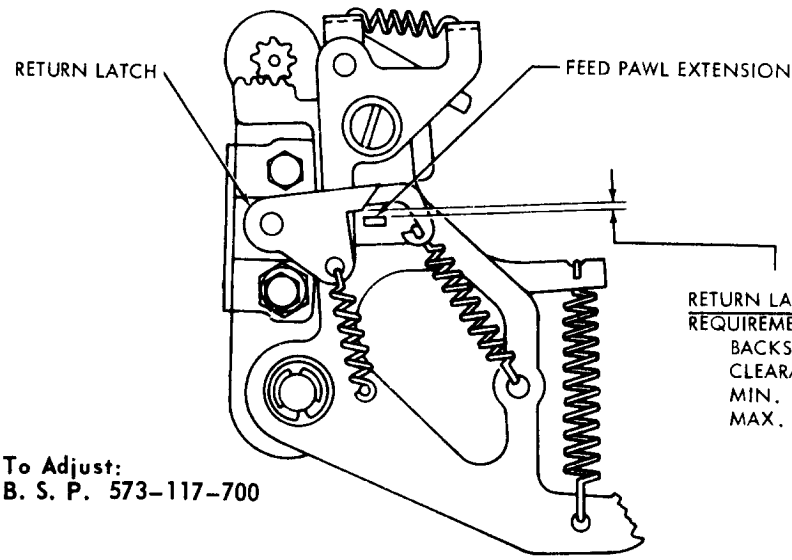
(LEFT SIDE VIEW)



REQUIREMENT
WITH BELLCRANK SPRING UNHOOKED AND RAKE IN OPERATED POSITION, CLEARANCE BETWEEN BOTTOM OF RAKE TEETH AND LOWER SURFACE OF TAPE SLOT:
MIN. 0.007 INCH
MAX. 0.011 INCH (CHECK AT NO.1 & 5 PINS.)



DRIVE LINK
REQUIREMENT
BACKSPACE MECHANISM IN OPERATED POSITION. FEED WHEEL RATCHET DETENTED BACKWARD ONE SPACE. LATCH ENGAGED WITH ECCENTRIC ARM. HIGH PART OF ECCENTRIC TO THE RIGHT. CLEARANCE BETWEEN FEED PAWL AND FEED WHEEL RATCHET TOOTH CHECKED AT EACH 10 DEGREES.
MIN.-SOME---MAX. 0.003 INCH

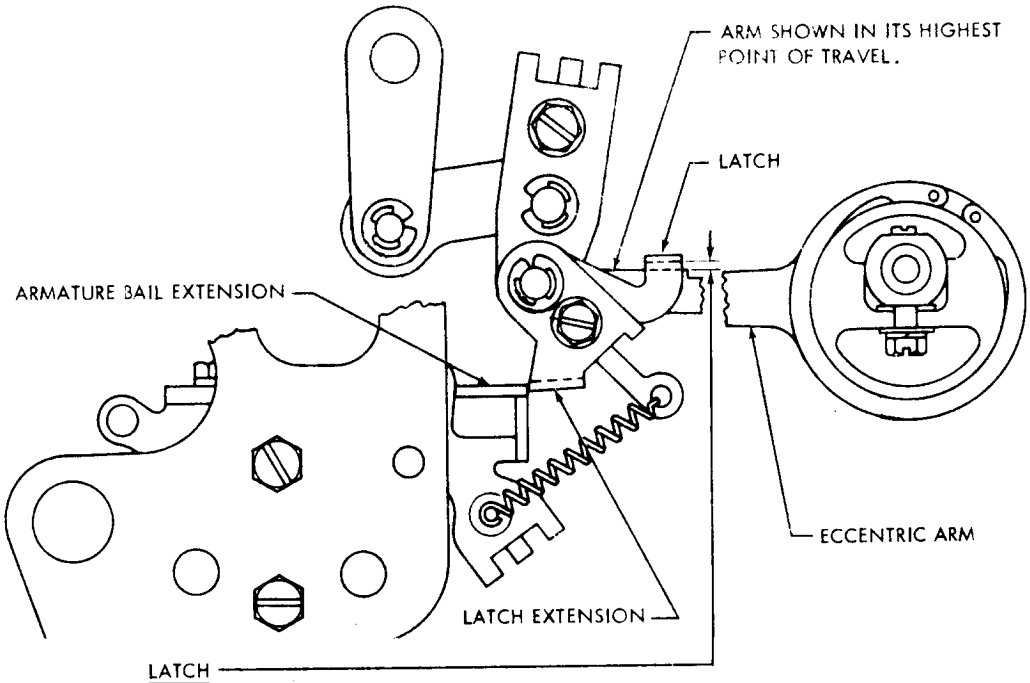


RETURN LATCH
REQUIREMENT
BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN RETURN LATCH AND FEED PAWL EXTENSION
MIN. 0.004 INCH
MAX. 0.020 INCH

To Adjust:
B. S. P. 573-117-700

POWER-DRIVE BACKSPACE MECHANISM

28 TYPE ONLY



LATCH REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. ARMATURE OFF POLE FACE (DE-ENERGIZED). LATCH EXTENSION AGAINST END OF ARMATURE BAIL EXTENSION. ECCENTRIC ARM AT ITS CLOSEST POINT TO UNDERSIDE OF LATCH. CLEARANCE BETWEEN LATCH AND ECCENTRIC ARM.

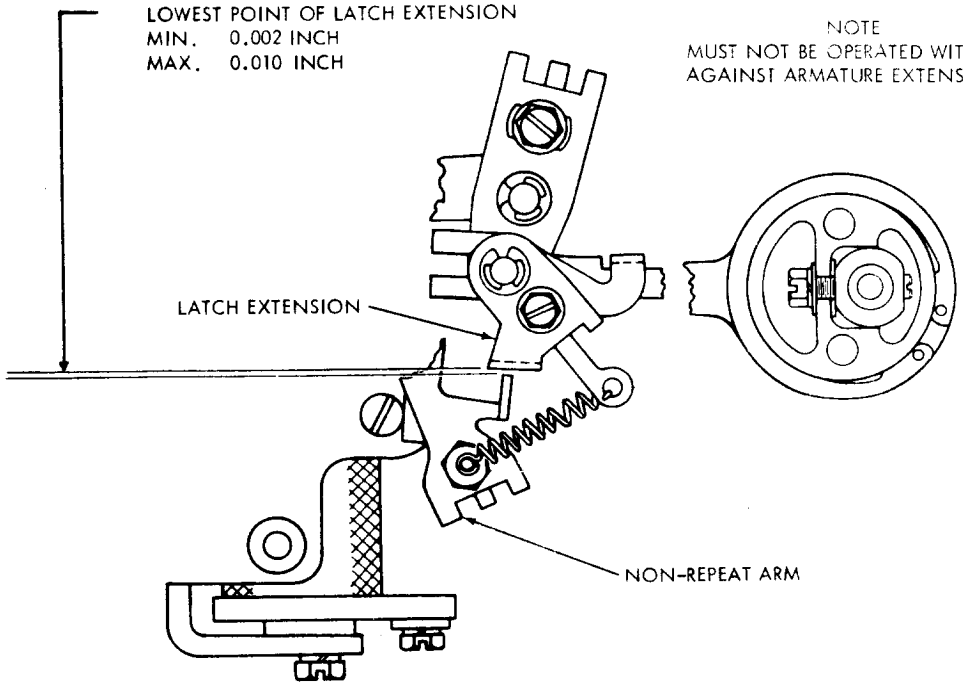
MIN. 0.005 INCH
MAX. 0.025 INCH

NON-REPEAT ARM REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN TOP SURFACE OF NON-REPEAT ARM AND LOWEST POINT OF LATCH EXTENSION

MIN. 0.002 INCH
MAX. 0.010 INCH

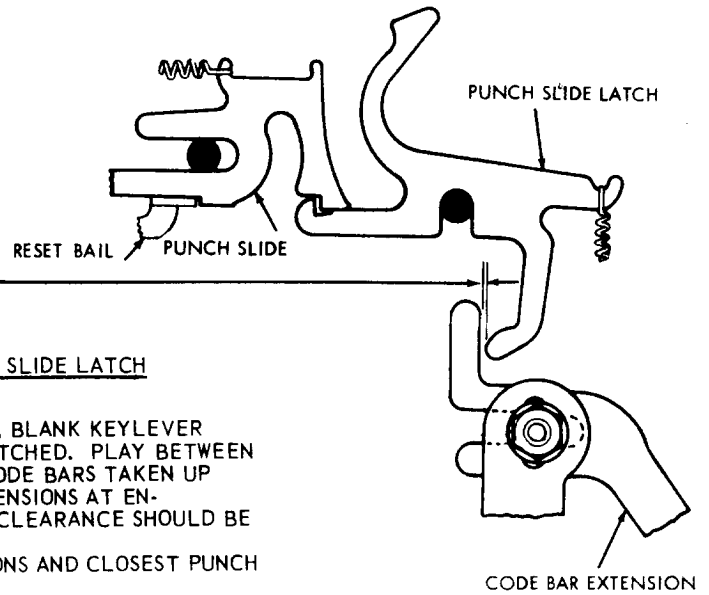
NOTE
MUST NOT BE OPERATED WITH LATCH AGAINST ARMATURE EXTENSION



To Adjust:
B. S. P. 573-117-700

CODE BAR EXTENSION AND PUNCH LATCH MECHANISMS

28 TYPE ONLY



CODE BAR EXTENSION AND PUNCH SLIDE LATCH
(1) REQUIREMENT

CONTROL KNOB IN T POSITION, BLANK KEYLEVER DEPRESSED. PUNCH SLIDE LATCHED. PLAY BETWEEN CODE BAR EXTENSIONS AND CODE BARS TAKEN UP BY MOVING AND HOLDING EXTENSIONS AT ENGAGEMENT WITH CODE BARS. CLEARANCE SHOULD BE
MIN. SOME---MAX. 0.010 INCH
BETWEEN CODE BAR EXTENSIONS AND CLOSEST PUNCH SLIDE LATCH.

(2) REQUIREMENT
LTRS KEYLEVER DEPRESSED. CODE BAR EXTENSIONS SHOULD ROTATE PUNCH SLIDE LATCHES TO RELEASE ALL PUNCH SLIDES.

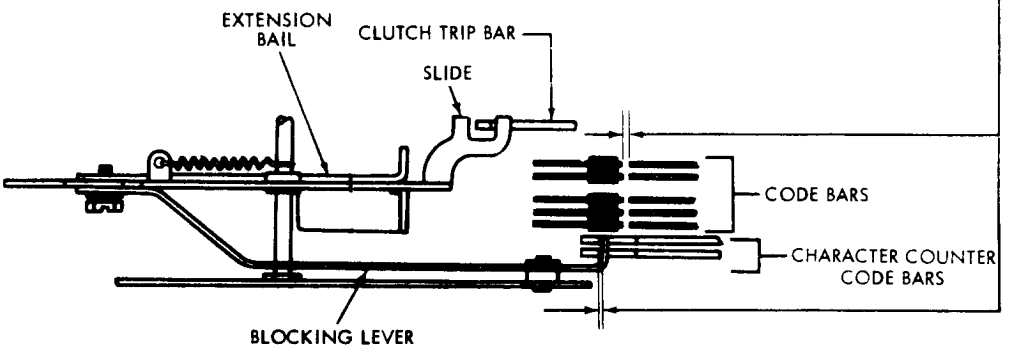
CODE BAR EXTENSION AND DETENT LEVER MECHANISMS

CODE BAR EXTENSION BLOCKING ASSEMBLY
REQUIREMENT

SELECTOR SWITCH IN K POSITION. CODE BAR EXTENSIONS AND CHARACTER COUNTER BARS SHOULD NOT OPERATE WHEN LTRS KEYLEVER IS OPERATED.

(1) CLEARANCE BETWEEN RIGHT END AT CODE BAR EXTENSIONS AND CODE BARS.
MIN. SOME
MAX. 0.015 INCH

(2) CLEARANCE BETWEEN BLOCKING LEVER AND SIDE OF NOTCH IN CHARACTER COUNTER CODE BARS. BAR WITH CLOSEST GAP
MIN. SOME
MAX. 0.008 INCH

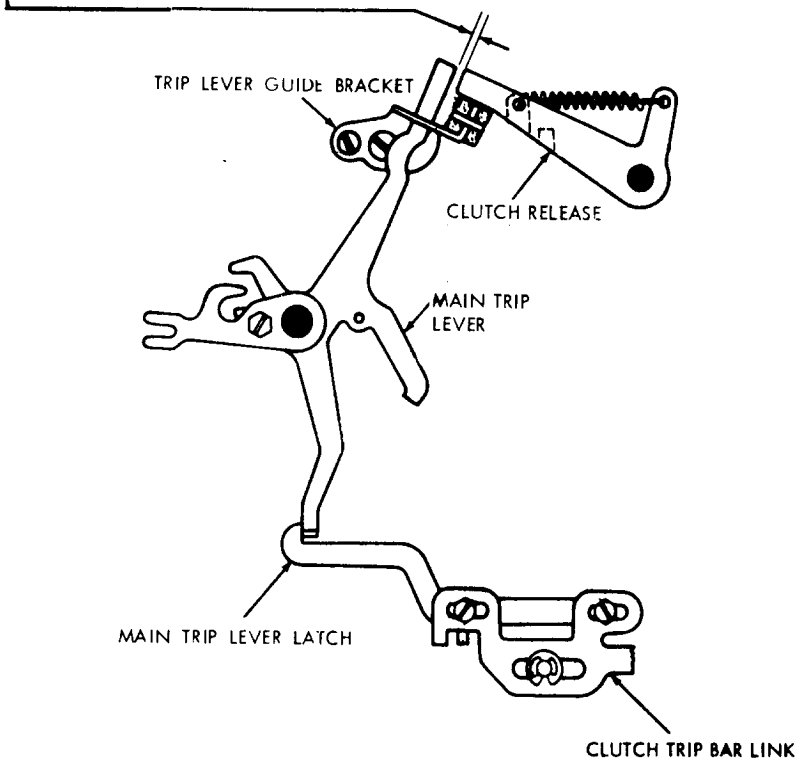


To Adjust:
B. S. P. 573–117–700

PERFORATOR CLUTCH RELEASE MECHANISM

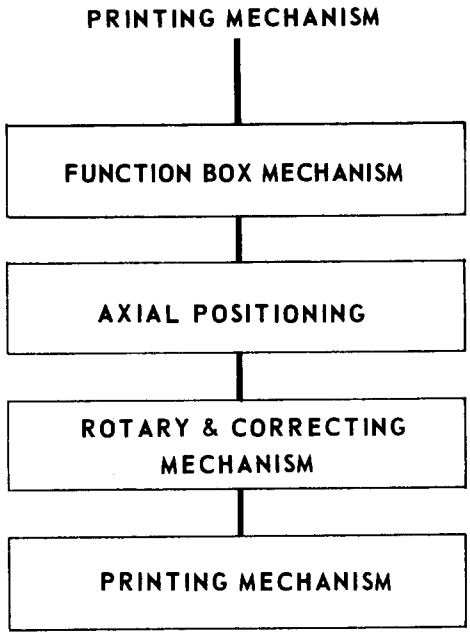
28 TYPE ONLY

PERFORATOR CLUTCH RELEASE TRIP
REQUIREMENT
PERFORATOR CLUTCH SHOULD TRIP CONSISTENTLY IN T AND K-T POSITIONS WHEN BLANK AND REPEAT KEYLEVERS ARE DEPRESSED SIMULTANEOUSLY.
WHEN THE CONTROL KNOB IS TURNED FROM K POSITION TO K-T POSITION, THE PERFORATOR CLUTCH SHOULD TRIP WHEN THE FIRST KEYLEVER IS DEPRESSED.
CLEARANCE BETWEEN MAIN TRIP LEVER AND CLUTCH RELEASE
MIN. 0.015 INCH
MAX. 0.025 INCH



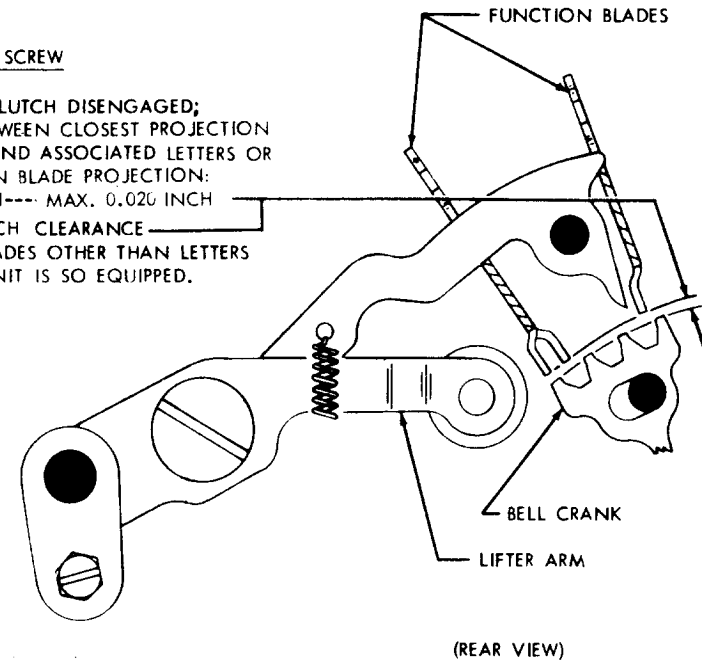
To Adjust:
B. S. P. 573-117-700

28 TYPING PERFORATOR



FUNCTION BOX MECHANISM

28 TYPE ONLY



(REAR VIEW)

LIFTER ARM ECCENTRIC SCREW

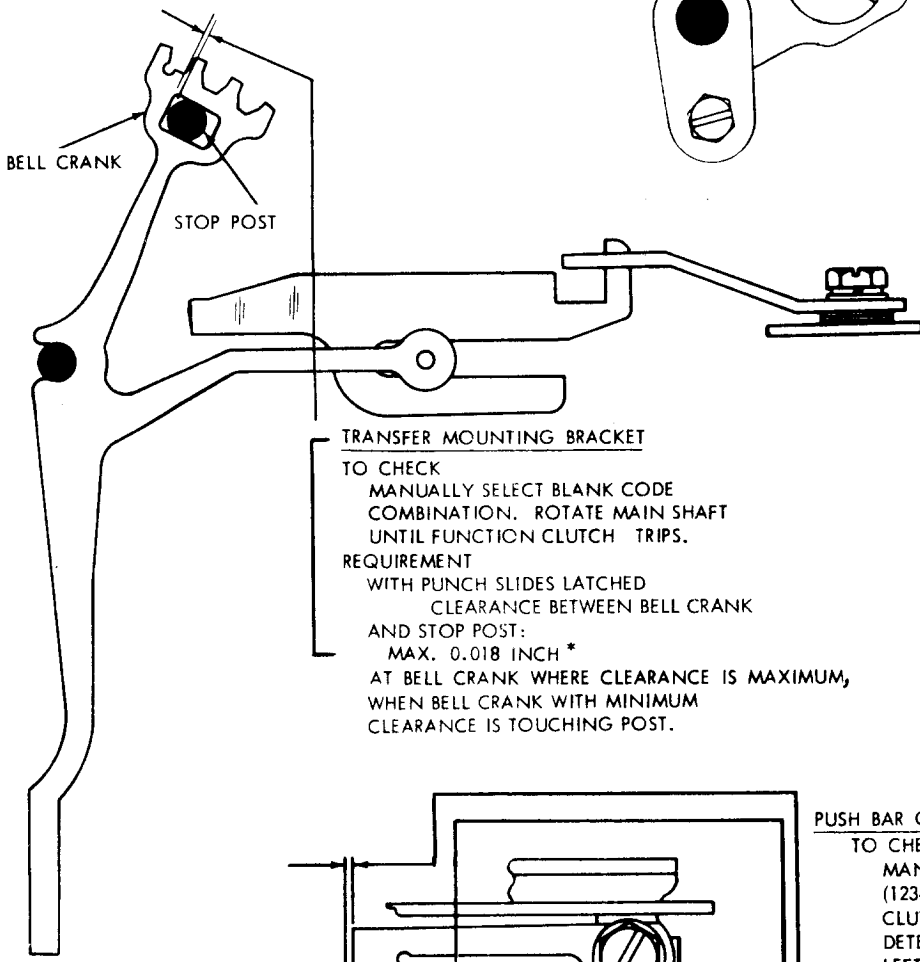
REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED;

(1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LETTERS OR FIGURES FUNCTION BLADE PROJECTION:
MIN. 0.008 INCH---- MAX. 0.020 INCH

(2) MIN. 0.005 INCH CLEARANCE FOR FUNCTION BLADES OTHER THAN LETTERS AND FIGURES IF UNIT IS SO EQUIPPED.

TRANSFER MECHANISM



TRANSFER MOUNTING BRACKET

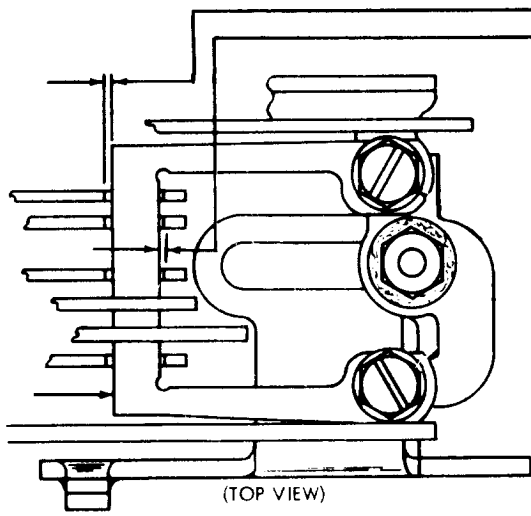
TO CHECK

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

REQUIREMENT

WITH PUNCH SLIDES LATCHED
CLEARANCE BETWEEN BELL CRANK AND STOP POST:
MAX. 0.018 INCH *
AT BELL CRANK WHERE CLEARANCE IS MAXIMUM, WHEN BELL CRANK WITH MINIMUM CLEARANCE IS TOUCHING POST.

FUNCTION MECHANISM



(TOP VIEW)

PUSH BAR OPERATING BLADE

TO CHECK

MANUALLY SELECT LETTERS CODE COMBINATION (12345). ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. MANUALLY SEAT PUSH BARS IN DETENTED POSITION. IN BAR WHICH IS NEAREST LEFT EDGE OF BLADE, TAKE UP PLAY TO LEFT AND REAR, AND THEN RELEASE.

(1) REQUIREMENT

CLEARANCE BETWEEN BAR AND LEFT EDGE OF BLADE:
MIN. 0.015 INCH------MAX. 0.025 INCH

(2) REQUIREMENT

SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND PUSH BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

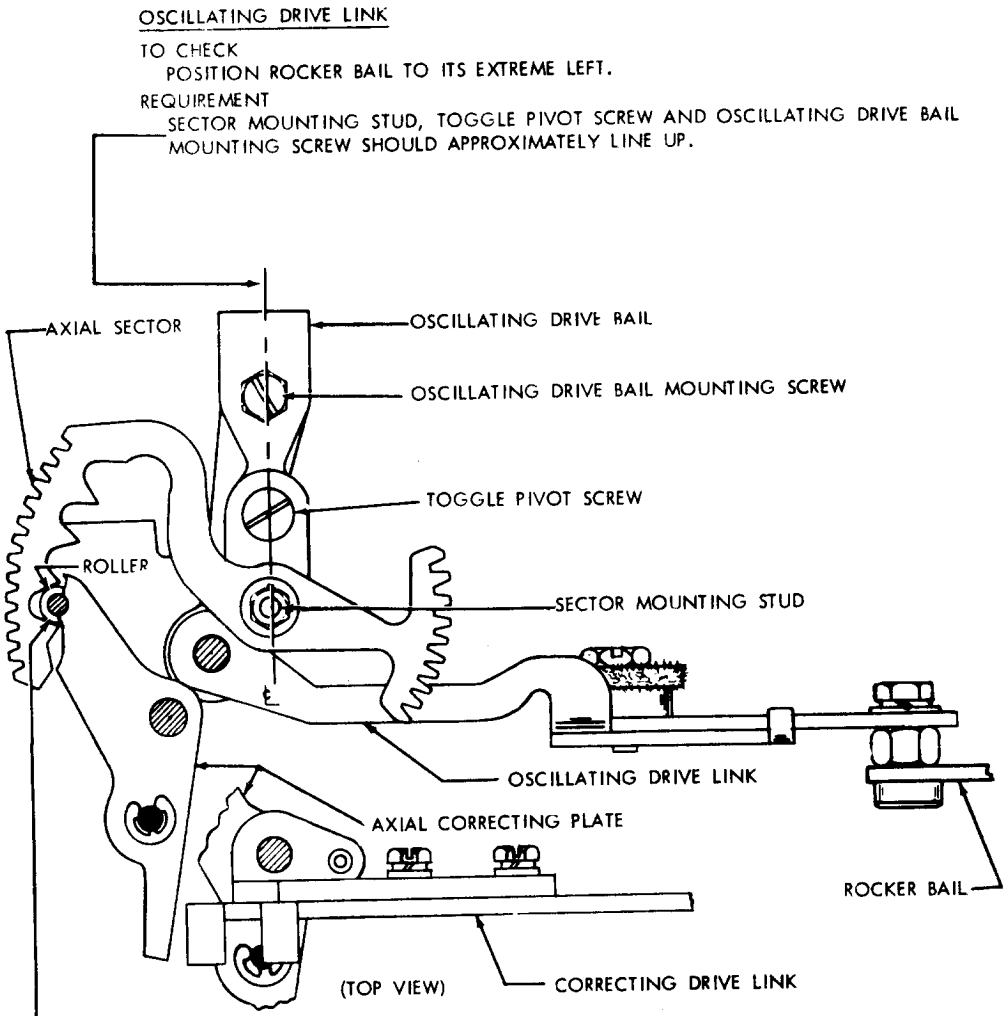
(3) REQUIREMENT

WITH UNIT IN STOP POSITION, SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

To Adjust:
B. S. P. 573-117-700

AXIAL POSITIONING

28 TYPE ONLY



To Adjust:
B. S. P. 573-117-700

CORRECTING MECHANISM

28 TYPE ONLY

(1) TO CHECK

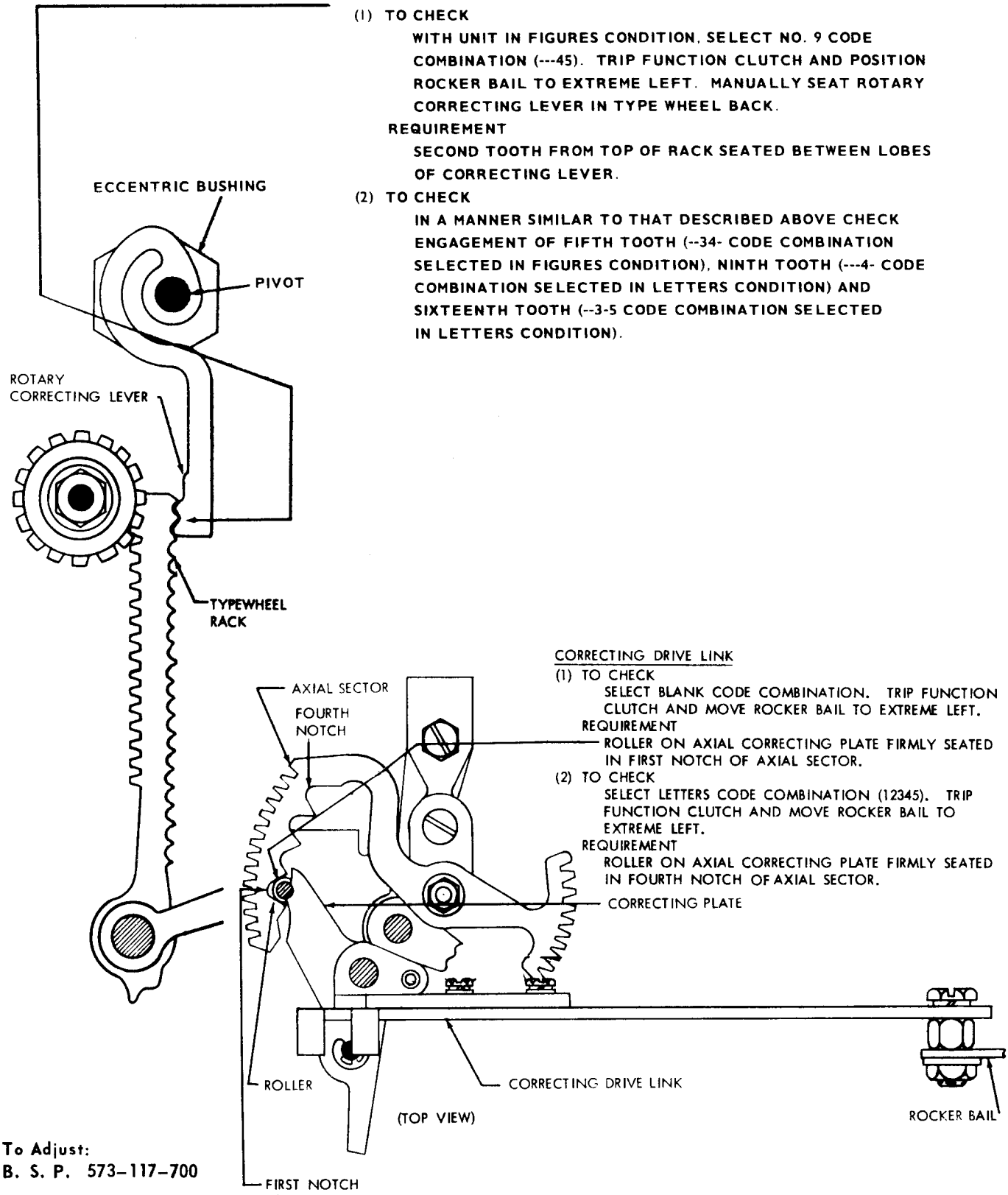
WITH UNIT IN FIGURES CONDITION, SELECT NO. 9 CODE COMBINATION (---45). TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT ROTARY CORRECTING LEVER IN TYPE WHEEL BACK.

REQUIREMENT

SECOND TOOTH FROM TOP OF RACK SEATED BETWEEN LOBES OF CORRECTING LEVER.

(2) TO CHECK

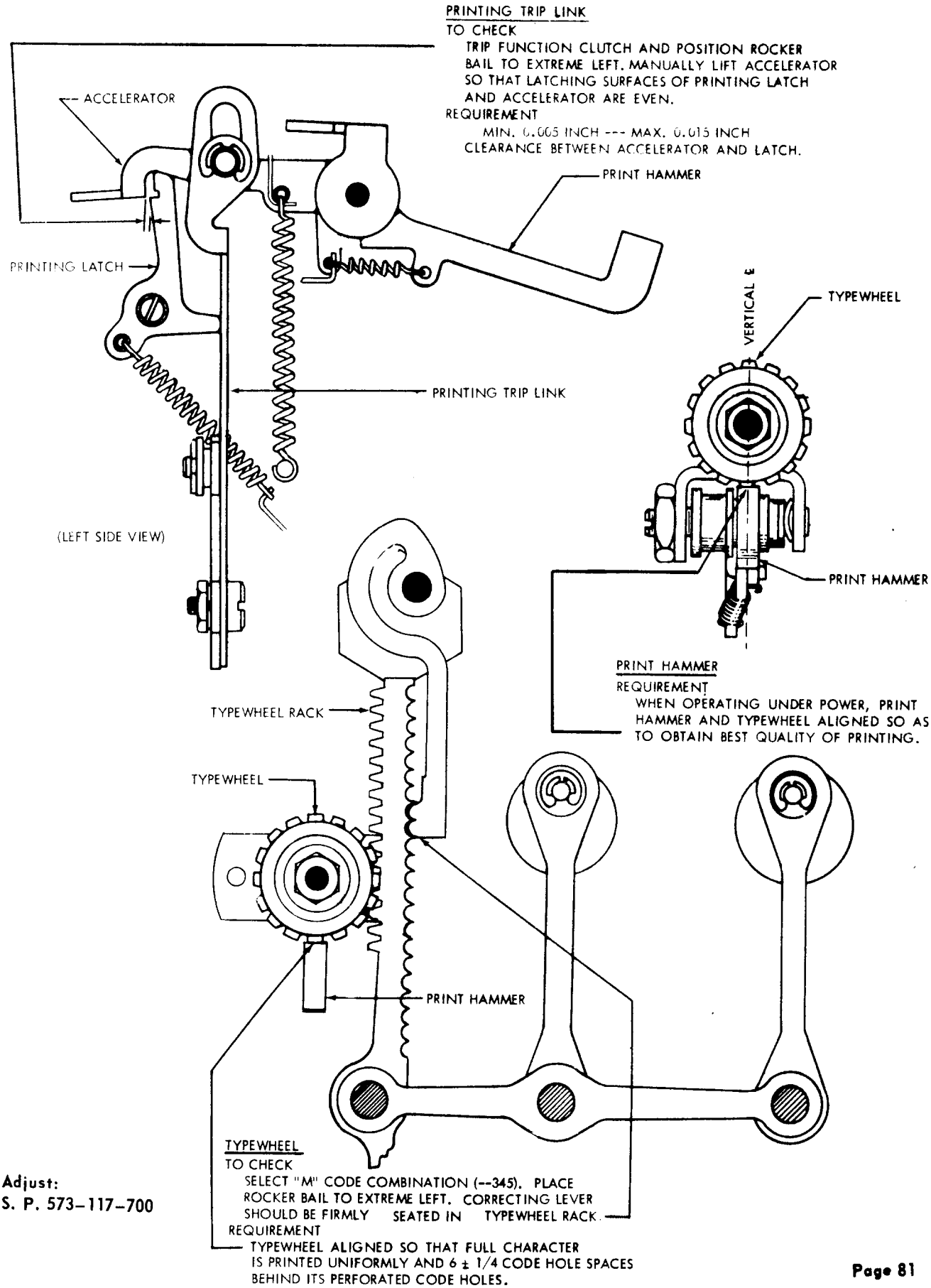
IN A MANNER SIMILAR TO THAT DESCRIBED ABOVE CHECK ENGAGEMENT OF FIFTH TOOTH (--34- CODE COMBINATION SELECTED IN FIGURES CONDITION), NINTH TOOTH (---4- CODE COMBINATION SELECTED IN LETTERS CONDITION) AND SIXTEENTH TOOTH (--3-5 CODE COMBINATION SELECTED IN LETTERS CONDITION).



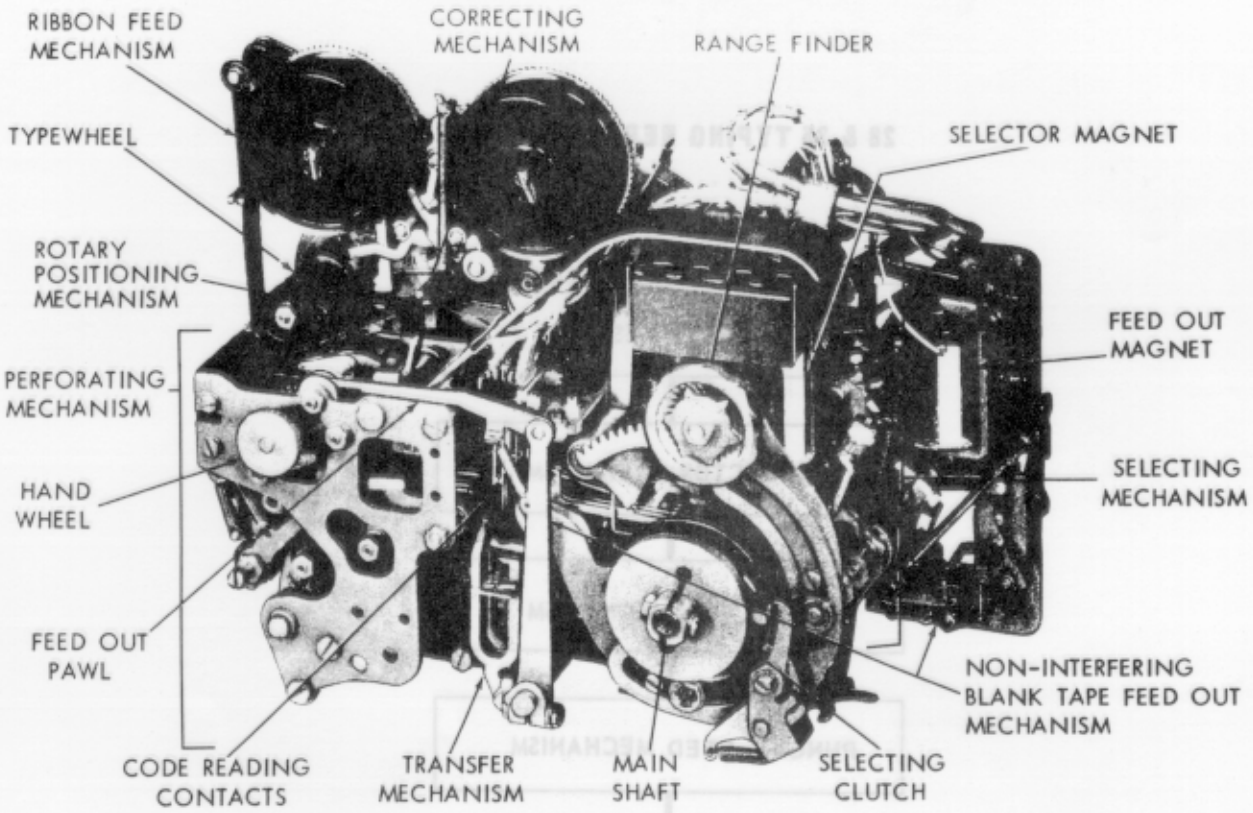
To Adjust:
B. S. P. 573-117-700

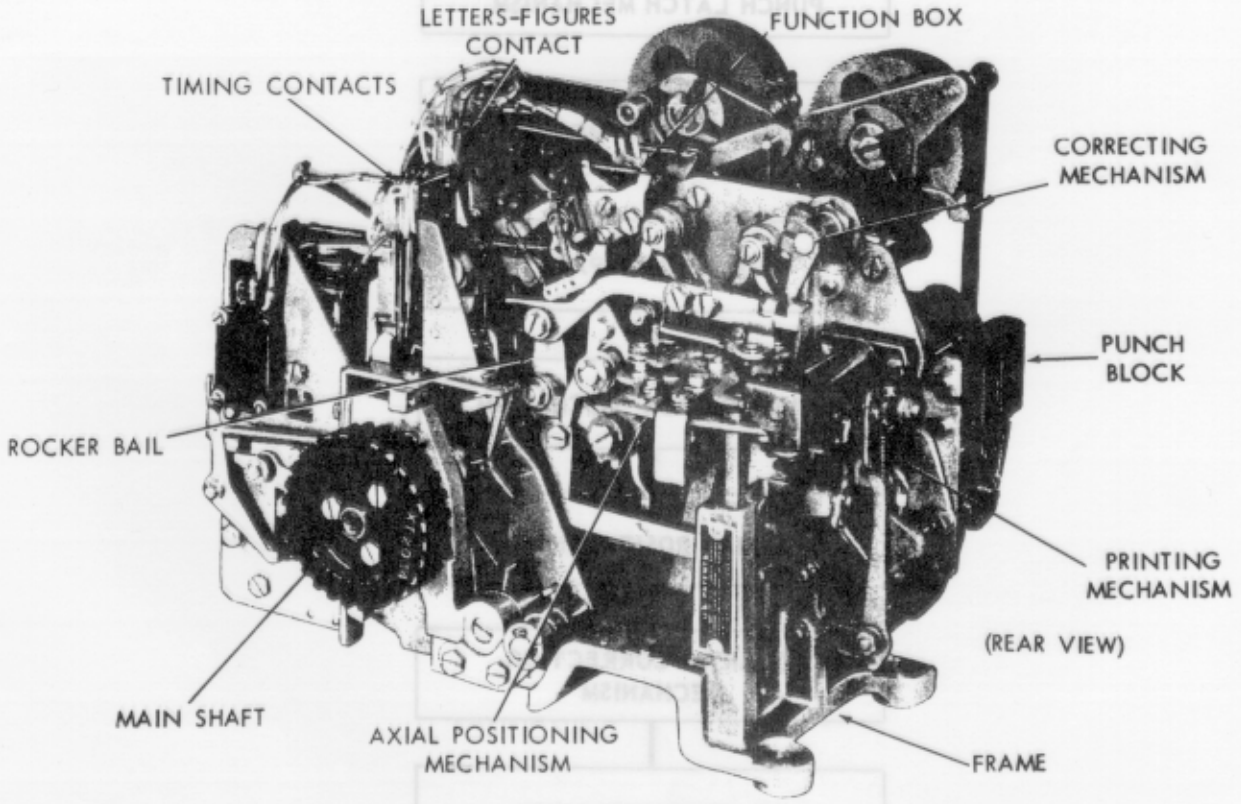
PRINTING MECHANISM

28 TYPE ONLY



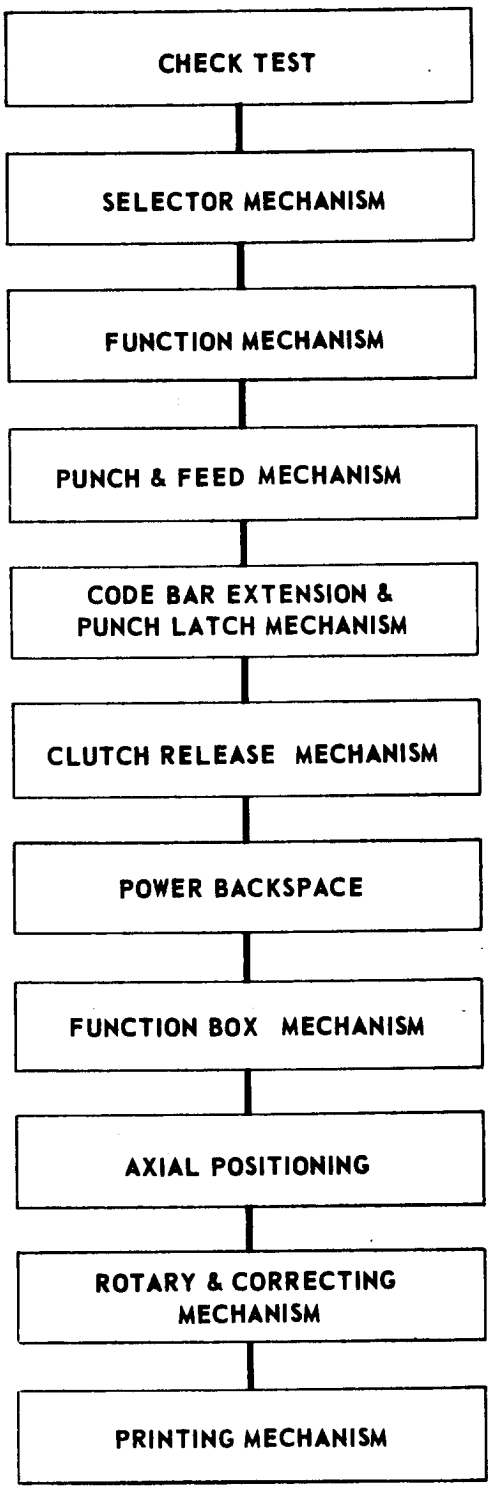
To Adjust:
B. S. P. 573–117–700

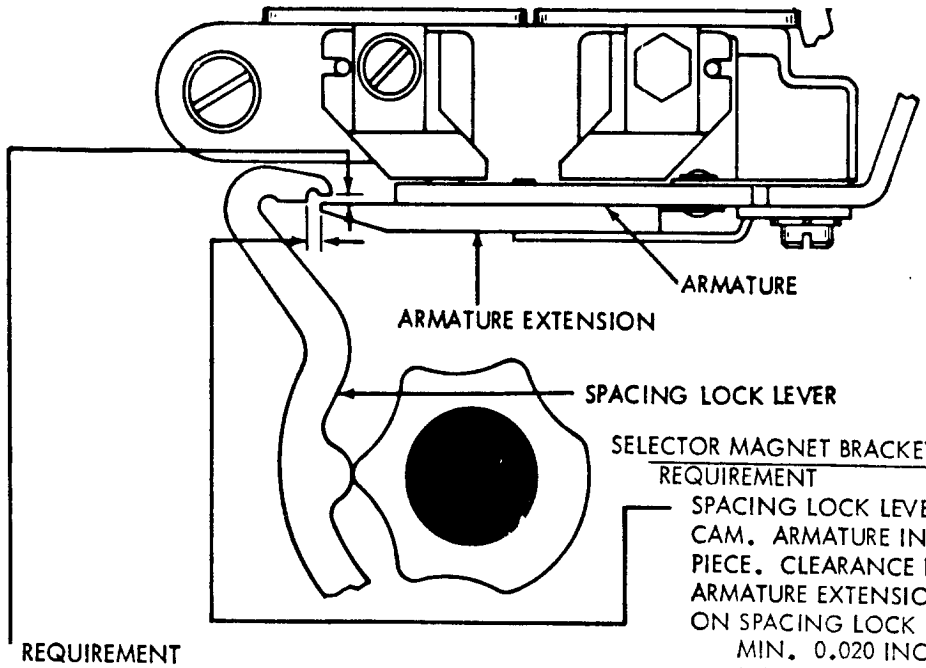

RIBBON FEED MECHANISM
CORRECTING MECHANISM
RANGE FINDER
TYPEWHEEL
SELECTOR MAGNET
ROTARY POSITIONING MECHANISM
FEED OUT MAGNET
PERFORATING MECHANISM
SELECTING MECHANISM
HAND WHEEL
FEED OUT PAWL
NON-INTERFERING BLANK TAPE FEED OUT MECHANISM
CODE READING CONTACTS
TRANSFER MECHANISM
MAIN SHAFT
SELECTING CLUTCH


LETTERS-FIGURES CONTACT
FUNCTION BOX
TIMING CONTACTS
CORRECTING MECHANISM
PUNCH BLOCK
ROCKER BAIL
PRINTING MECHANISM
(REAR VIEW)
MAIN SHAFT
AXIAL POSITIONING MECHANISM
FRAME

(REAR VIEW)

28 & 35 TYPING REPERFORATOR



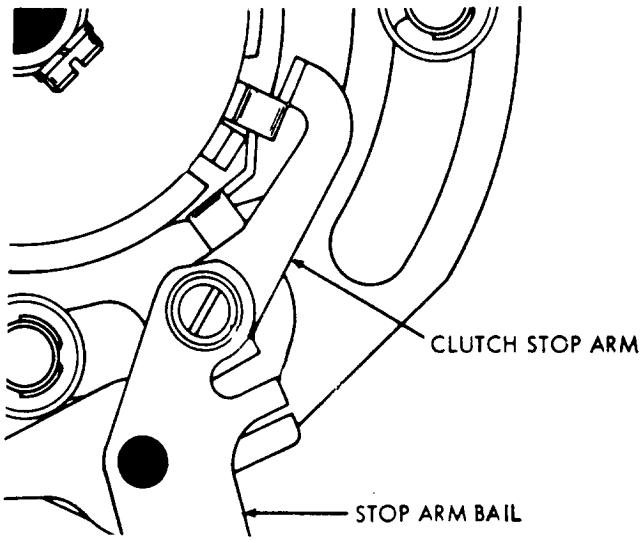


REQUIREMENT

SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE EXTENSION AND SHOULDER ON SPACING LOCK LEVER
MIN. 0.020 INCH
MAX. 0.035 INCH

REQUIREMENT

SPACING LOCK LEVER ON HIGH PART OF CAM. ARMATURE IN CONTACT WITH POLE PIECE. SOME CLEARANCE BETWEEN UPPER SURFACE OF ARMATURE EXTENSION AND LOWER SURFACE OF SPACING LOCK LEVER WHEN LOCK LEVER IS HELD DOWNWARD.
MAX. 0.003 INCH

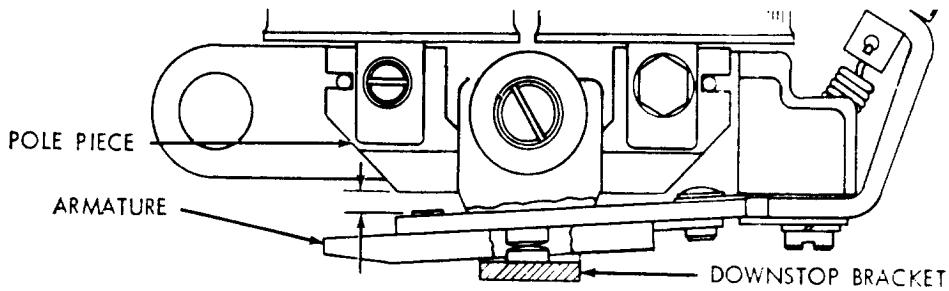


SELECTOR CLUTCH STOP ARM

REQUIREMENT

RANGE SCALE SET AT 60. SELECTOR CLUTCH DISENGAGED. ARMATURE IN MARKING POSITION. CLUTCH STOP ARM SHOULD ENGAGE CLUTCH SHOE LEVER BY APPROXIMATELY FULL THICKNESS OF SHOE LEVER.

35 ONLY



To Adjust:

TYPING

28 Type B. S. P. 573–118–700
35 Type B. S. P. 574–233–700

NON TYPING

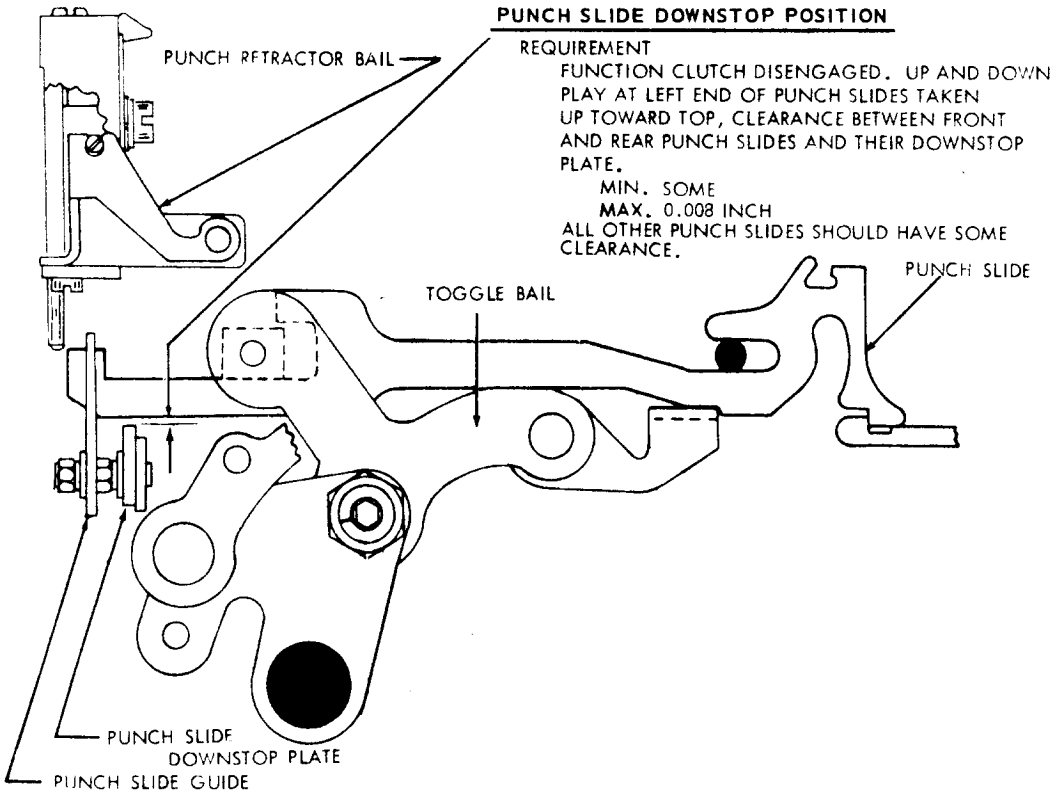
28 Type B. S. P. 573–119–700
35 Type B. S. P. 574–224–700

SELECTOR ARMATURE DOWNSTOP BRACKET

REQUIREMENT

REMOVE OIL SHIELD. WITH MAGNET DE-ENERGIZED, LOCK LEVERS ON HIGH PART OF THEIR CAM, AND ARMATURE RESTING AGAINST ITS DOWNSTOP, CLEARANCE BETWEEN END OF ARMATURE AND LEFT EDGE OF LEFT POLE PIECE
MIN. 0.025 INCH MAX. 0.030 INCH.

28 TYPE ONLY



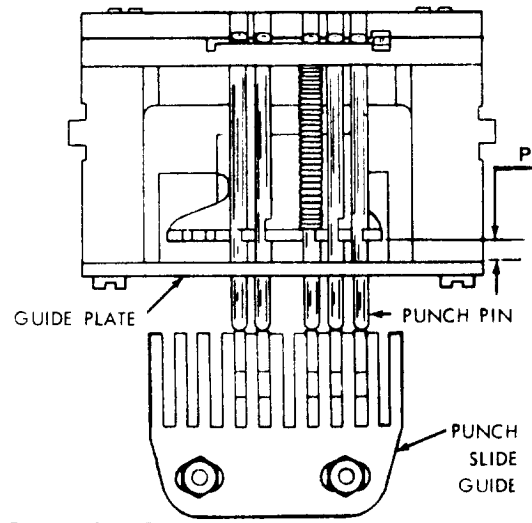
PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

FUNCTION CLUTCH DISENGAGED. UP AND DOWN PLAY AT LEFT END OF PUNCH SLIDES TAKEN UP TOWARD TOP, CLEARANCE BETWEEN FRONT AND REAR PUNCH SLIDES AND THEIR DOWNSTOP PLATE.

MIN. SOME
MAX. 0.008 INCH

ALL OTHER PUNCH SLIDES SHOULD HAVE SOME CLEARANCE.



PUNCH PIN PENETRATION

REQUIREMENT

LETTERS MANUALLY SELECTED, CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO THE DIE PLATE, CLEARANCE BETWEEN LOWER EDGE OF PUNCH RETRACTOR BAIL AND UPPER SIDE OF GUIDE PLATE (MEASURED AT LEFT EDGE OF PUNCH PINS WHERE CLEARANCE IS LEAST).

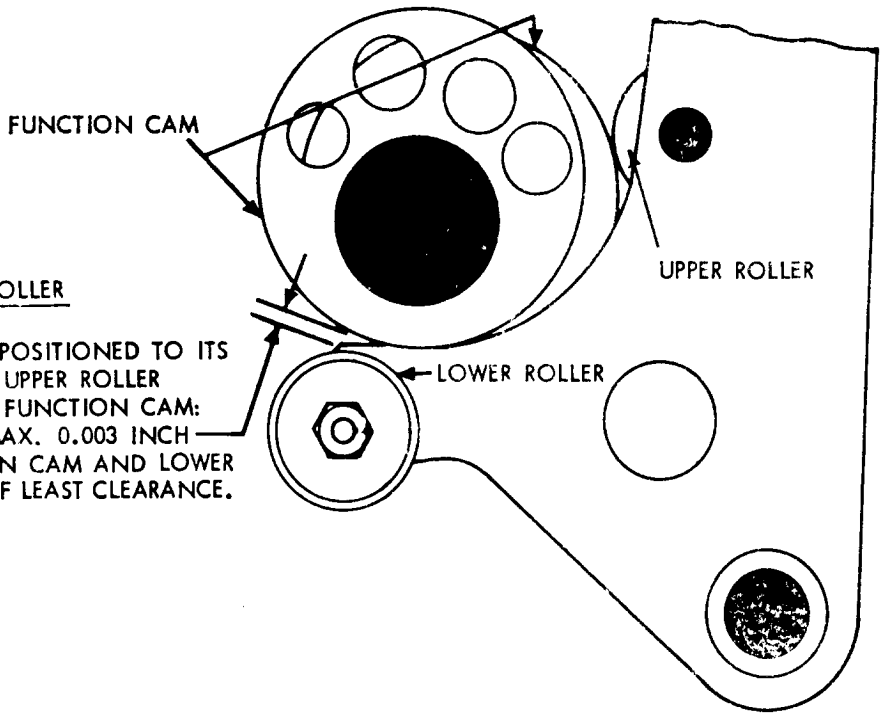
MIN. 0.060 INCH
MAX. 0.075 INCH

PUNCH SLIDE GUIDE POSITION

REQUIREMENT

LETTERS SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL THE PUNCH SLIDES JUST TOUCH THE PUNCH PINS. THE PUNCH SLIDES SHOULD ALIGN CENTRALLY WITH THEIR RESPECTIVE PUNCH PINS (GAUGED BY EYE).

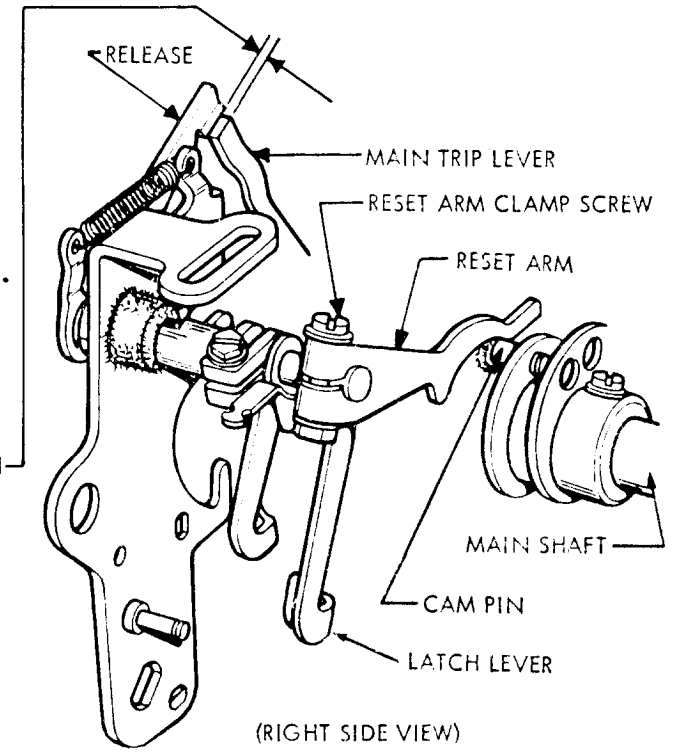
To Adjust:
B. S. P. 573-117-700



ROCKER BAIL LOWER ROLLER

REQUIREMENT

WITH ROCKER BAIL POSITIONED TO ITS EXTREME LEFT AND UPPER ROLLER IN CONTACT WITH FUNCTION CAM:
MIN. SOME----MAX. 0.003 INCH
CLEARANCE BETWEEN CAM AND LOWER ROLLER AT POINT OF LEAST CLEARANCE.



(RIGHT SIDE VIEW)

RESET ARM

TO CHECK

TRIP FUNCTION CLUTCH AND POSITION MAIN SHAFT SO THAT RESET ARM IS HELD IN ITS HIGHEST POSITION BY CAM PIN.

REQUIREMENT

(1) CLEARANCE BETWEEN RELEASE AND MAIN TRIP LEVER:
MIN. 0.010 INCH----MAX. 0.030 INCH

(2) LATCH LEVER END PLAY:
MIN. SOME----MAX. 0.010 INCH

To Adjust:

TYPING

28 Type B. S. P. 573-118-700
35 Type B. S. P. 574-233-700

NON TYPING

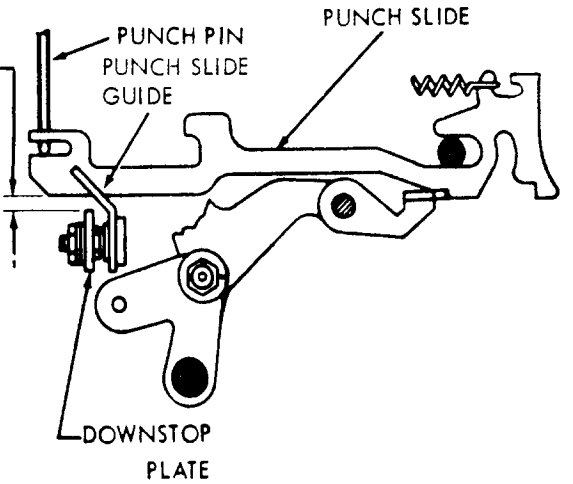
28 Type B. S. P. 573-119-700
35 Type B. S. P. 574-224-700

PUNCH MECHANISM
35 TYPE ONLY

PUNCH SLIDE DOWNSTOP POSITION

REQUIREMENT

FUNCTION CLUTCH DISENGAGED AND LATCHED PLAY IN THE PUNCH SLIDES TAKEN UP TOWARD THE TOP, CLEARANCE BETWEEN EACH PUNCH SLIDE AND THE DOWNSTOP PLATE
MIN. SOME
MAX. 0.008 INCH

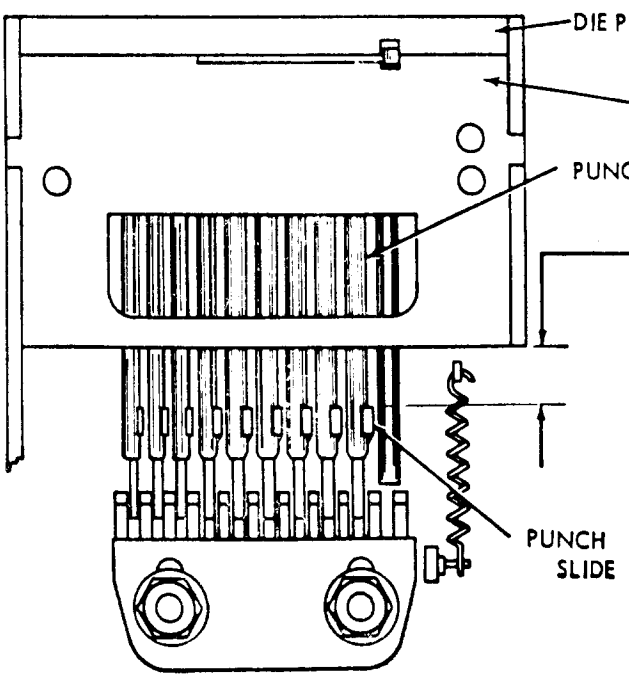


PUNCH SLIDE GUIDE

REQUIREMENT

THE PUNCH SLIDES SHOULD ALIGN WITH THEIR CORRESPONDING PUNCH PINS AND BE FREE OF BINDS AFTER TIGHTENING THE GUIDE MOUNTING STUDS. EACH PUNCH SLIDE SHOULD RETURN FREELY AFTER BEING PUSHED IN NOT MORE THAN 1/16 INCH.

NOTE: MEASURE CLEARANCE ADJACENT TO THE NO. 1 AND NO. 8 PUNCH PIN.



PUNCH PIN PENETRATION

REQUIREMENT

RUBOUT SELECTED. FUNCTION CLUTCH ENGAGED AND ROTATED UNTIL PUNCH PINS HAVE TRAVELED MAXIMUM DISTANCE INTO DIE PLATE. CLEARANCE BETWEEN UPPER EDGE OF EACH SLIDE AND LOWER SIDE OF PUNCH HOLDER (MEASURE ADJACENT TO #1 and #8 PUNCH PIN)
MIN. 0.025 INCH
MAX. 0.035 INCH

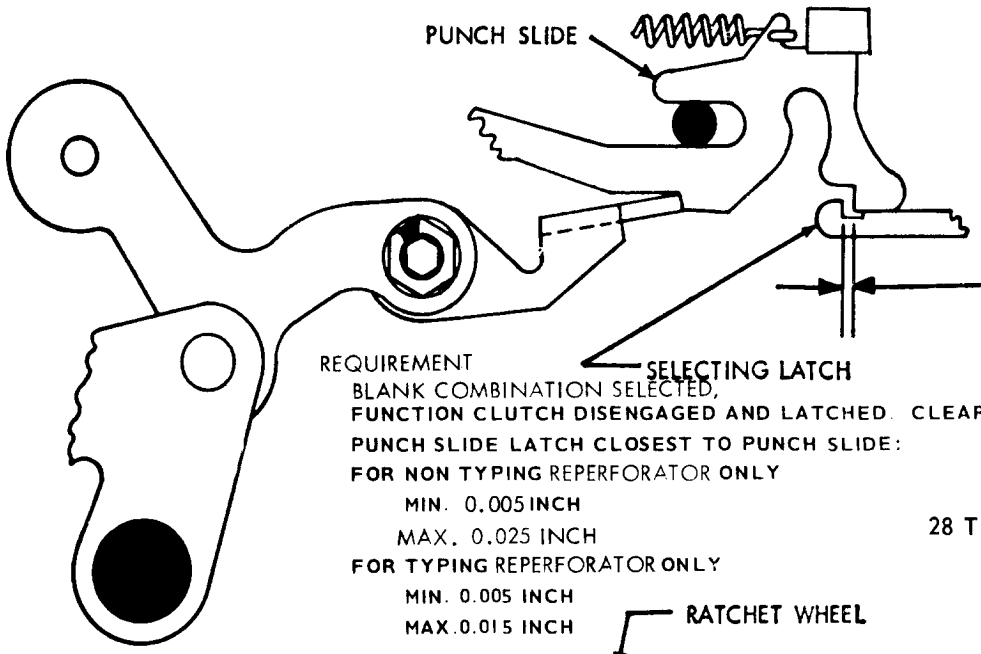
To Adjust:
TYPING
B. S. P. 574-233-700
NON TYPING
B. S. P. 574-224-700

PUNCH SLIDE RESET BAIL

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED SELECT A BLANK COMBINATION MIN. 0.015 INCH---MAX. 0.025 INCH BETWEEN PUNCH SLIDE AND PUNCH SLIDE LATCH.

35 TYPE ONLY



REQUIREMENT

BLANK COMBINATION SELECTED, FUNCTION CLUTCH DISENGAGED AND LATCHED. CLEARANCE AT PUNCH SLIDE LATCH CLOSEST TO PUNCH SLIDE:

FOR NON TYPING REPERFORATOR ONLY

MIN. 0.005 INCH

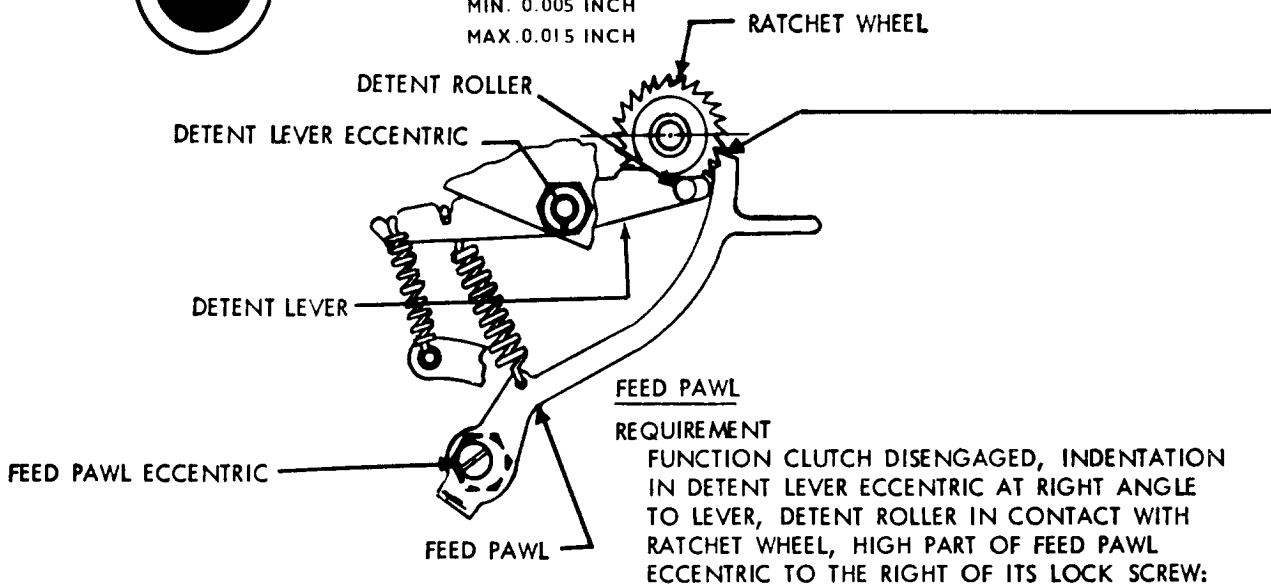
MAX. 0.025 INCH

FOR TYPING REPERFORATOR ONLY

MIN. 0.005 INCH

MAX. 0.015 INCH

28 TYPE ONLY



FEED PAWL

REQUIREMENT

FUNCTION CLUTCH DISENGAGED, INDENTATION IN DETENT LEVER ECCENTRIC AT RIGHT ANGLE TO LEVER, DETENT ROLLER IN CONTACT WITH RATCHET WHEEL, HIGH PART OF FEED PAWL ECCENTRIC TO THE RIGHT OF ITS LOCK SCREW: THE FEED PAWL SHOULD ENGAGE THE FIRST TOOTH BELOW A HORIZONTAL CENTERLINE THROUGH THE RATCHET WHEEL WITH NO PERCEPTIBLE CLEARANCE.

To Adjust:

TYPING

28 Type B. S. P. 573–118–700

35 Type B. S. P. 574–233–700

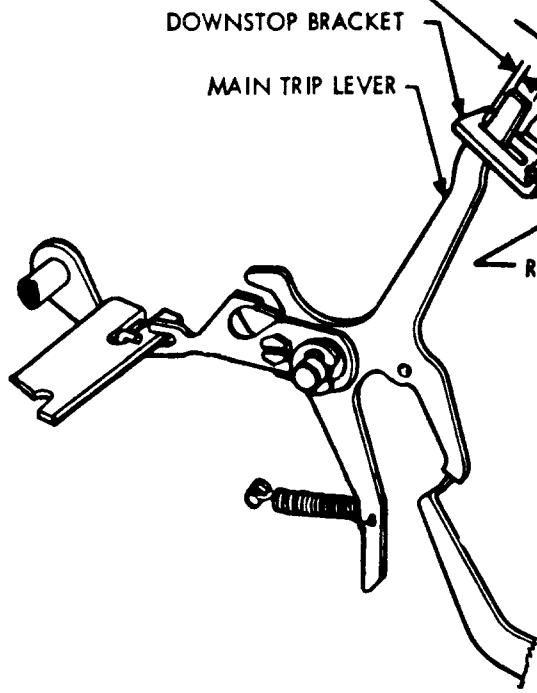
NON TYPING

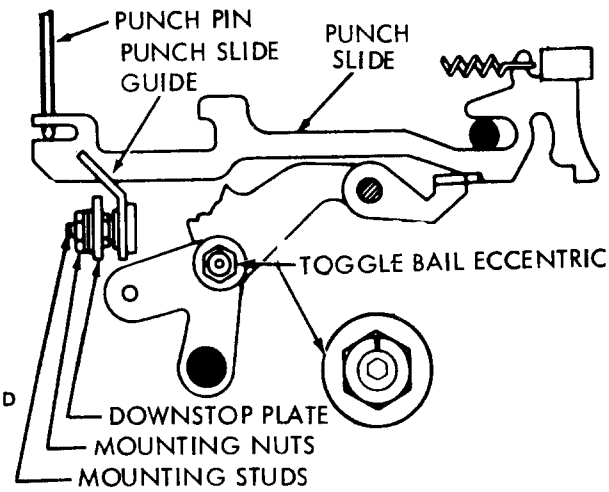
28 Type B. S. P. 573–119–700

35 Type B. S. P. 574–224–700

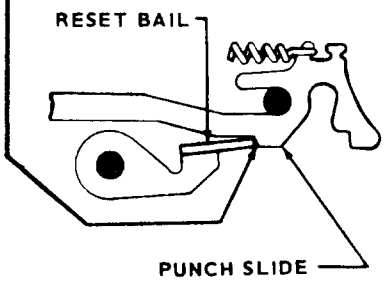
FUNCTION CLUTCH TRIP MECHANISM

FOLLOWER LEVER
REQUIREMENT
WITH FOLLOWER LEVER ON HIGH PART OF CAM:
CLEARANCE BETWEEN RELEASE AND MAIN TRIP LEVER:
MIN. 0.010 INCH --- MAX. 0.030 INCH
SOME CLEARANCE BETWEEN MAIN TRIP LEVER AND DOWNSTOP BRACKET.





REQUIREMENT
CLUTCH DISENGAGED AND LATCHED PUNCH SLIDE RESET BAIL SHOULD FULLY ENGAGE THE NOTCHES IN THE PUNCH SLIDES.



RESET BAIL TRIP LEVER
REQUIREMENT

(1) MANUALLY SELECT AN ALL SPACING COMBINATION. MANUALLY ROTATE RESET BAIL TRIP LEVER. THE PUNCH SLIDE RESET BAIL SHALL TRIP BEFORE THE FUNCTION CLUTCH IS TRIPPED.

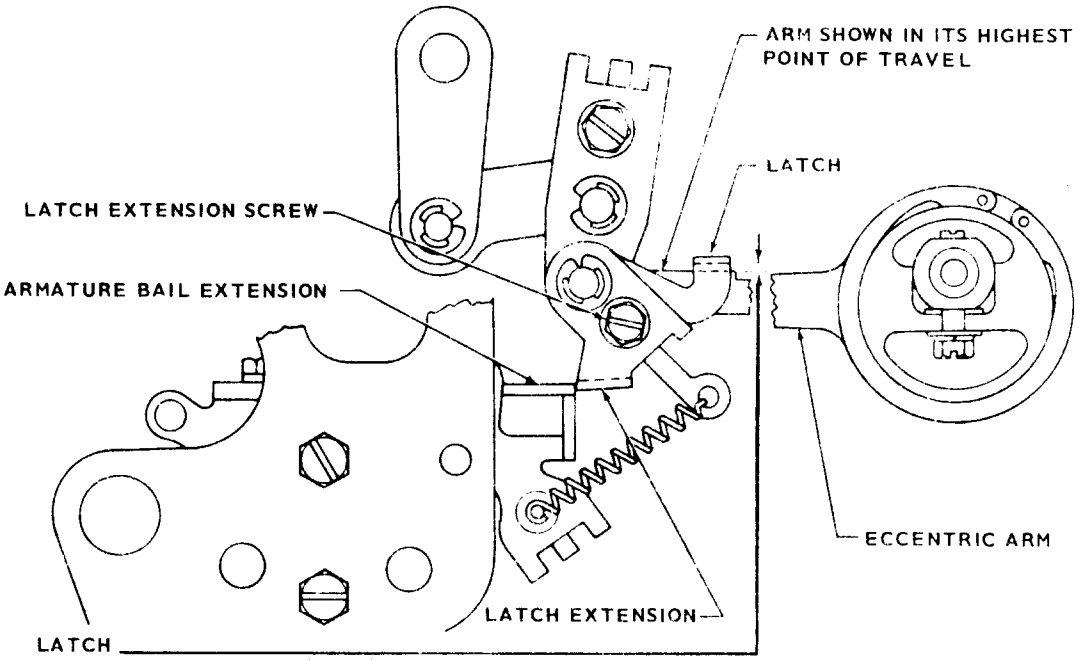
(2) WITH FUNCTION AND SELECTOR CLUTCHES DISENGAGED AND LATCHED, THE PUNCH SLIDE RESET BAIL SHALL FULLY ENGAGE THE PUNCH SLIDE LATCHING SURFACE WHEN PLAY IN PARTS IS TAKEN UP IN DIRECTION TO MAKE THE ENGAGEMENT THE LEAST.

TO ADJUST

(1) WITH TRIP LEVER EXTENSION LOCK SCREW FRICTION TIGHT AND DELETE (RUBOUT) COMBINATION SELECTED, POSITION RESET BAIL AGAINST PUNCH SLIDES. TAKE UP PLAY BETWEEN RESET BAIL AND TRIP LEVER IN A COUNTER CLOCKWISE DIRECTION. POSITION TRIP LEVER BY MEANS OF ITS PRY POINT.

(2) RECHECK REQUIREMENT (1) ABOVE AND REFINE ADJUSTMENT IF NECESSARY.

To Adjust:
TYPING
28 Type B. S. P. 573-118-700
35 Type B. S. P. 574-233-700
NON TYPING
28 Type B. S. P. 573-119-700
35 Type B. S. P. 574-224-700



REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. ARMATURE OFF POLE FACE (DE-ENERGIZED). LATCH EXTENSION AGAINST END OF ARMATURE BAIL EXTENSION. ECCENTRIC ARM AT ITS CLOSEST POINT TO UNDERSIDE OF LATCH. CLEARANCE BETWEEN LATCH AND ECCENTRIC ARM

MIN. 0.005 INCH

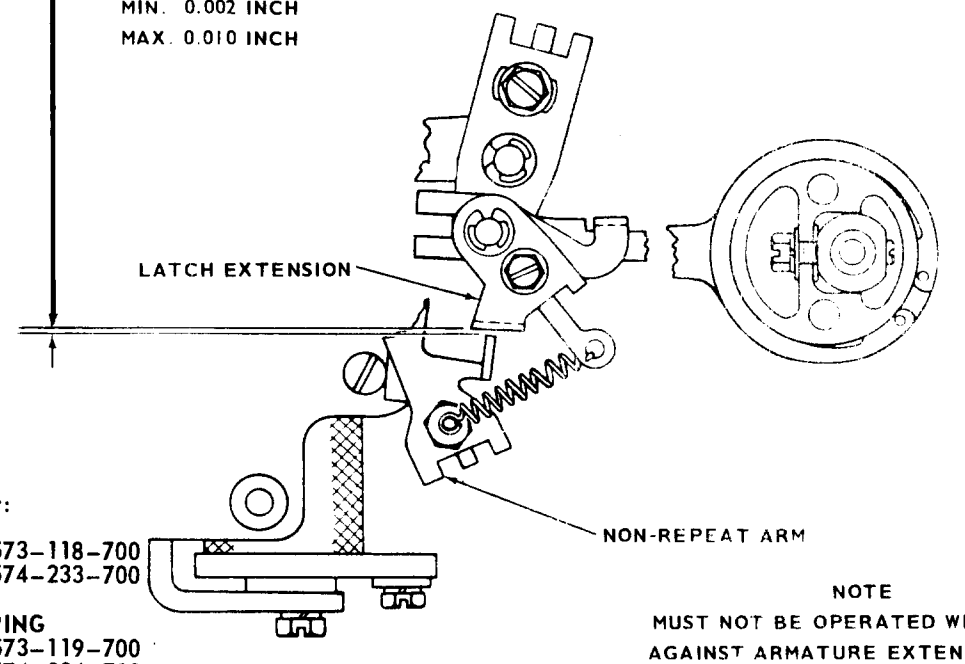
MAX. 0.025 INCH

NON-REPEAT ARM REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN TOP SURFACE OF NON-REPEAT ARM AND LOWEST POINT OF LATCH EXTENSION

MIN. 0.002 INCH

MAX. 0.010 INCH



To Adjust:

TYPING

28 Type B. S. P. 573-118-700

35 Type B. S. P. 574-233-700

NON TYPING

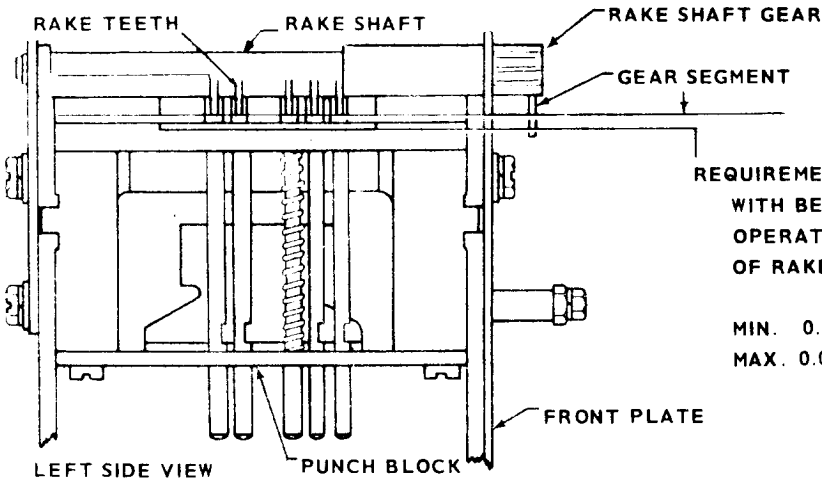
28 Type B. S. P. 573-119-700

35 Type B. S. P. 574-224-700

NOTE

MUST NOT BE OPERATED WITH LATCH AGAINST ARMATURE EXTENSION

POWER-DRIVE BACKSPACE MECHANISM

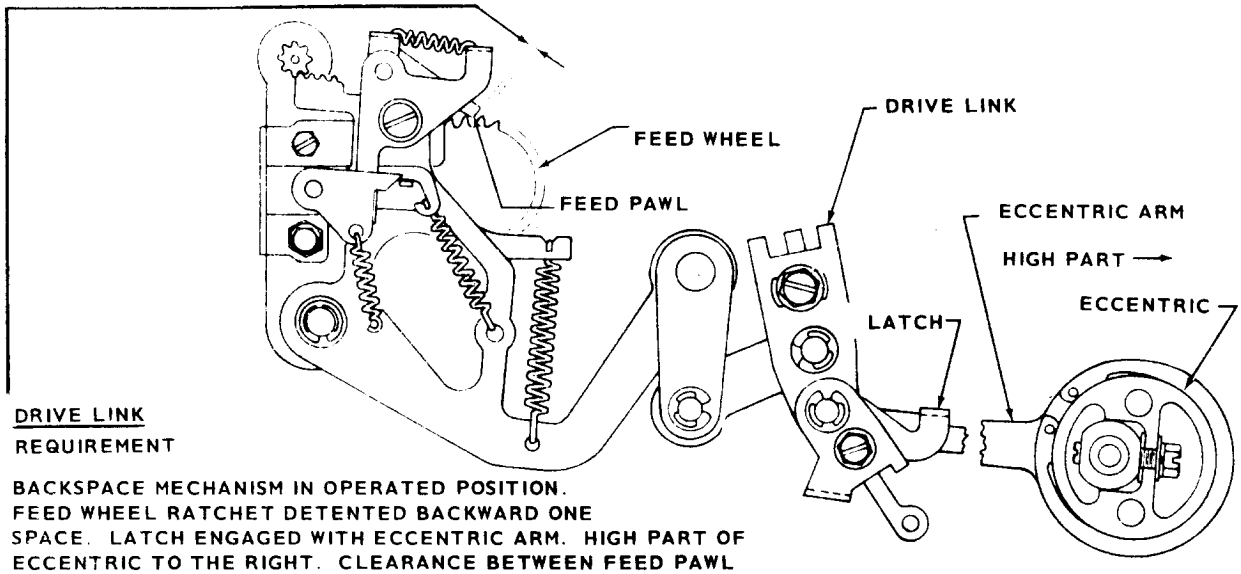


28 TYPE ONLY

REQUIREMENT

WITH BELLCRANK SPRING UNHOOKED AND RAKE IN OPERATED POSITION, CLEARANCE BETWEEN BOTTOM OF RAKE TEETH AND LOWER SURFACE OF TAPE SLOT.

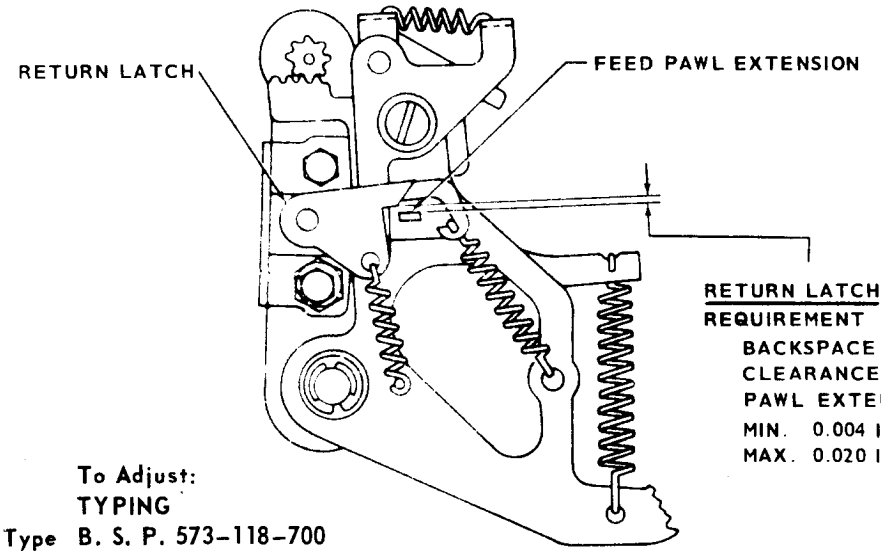
MIN. 0.007 INCH
MAX. 0.011 INCH (CHECK AT NO. 1 & 5 PINS)



DRIVE LINK
REQUIREMENT

BACKSPACE MECHANISM IN OPERATED POSITION. FEED WHEEL RATCHET DETENTED BACKWARD ONE SPACE. LATCH ENGAGED WITH ECCENTRIC ARM. HIGH PART OF ECCENTRIC TO THE RIGHT. CLEARANCE BETWEEN FEED PAWL AND FEED WHEEL RATCHET TOOTH

CHECKED AT EACH 10 DEGREES.
MIN. SOME – – – MAX. 0.003 INCH



28 TYPE ONLY

RETURN LATCH
REQUIREMENT

BACKSPACE MECHANISM IN UNOPERATED POSITION. CLEARANCE BETWEEN RETURN LATCH AND FEED PAWL EXTENSION

MIN. 0.004 INCH
MAX. 0.020 INCH

To Adjust:

TYPING

28 Type B. S. P. 573–118–700
35 Type B. S. P. 574–233–700

NON TYPING

28 Type B. S. P. 573–119–700
35 Type B. S. P. 574–224–700

35 TYPE

ROTARY CORRECTING LEVER

(1) TO CHECK

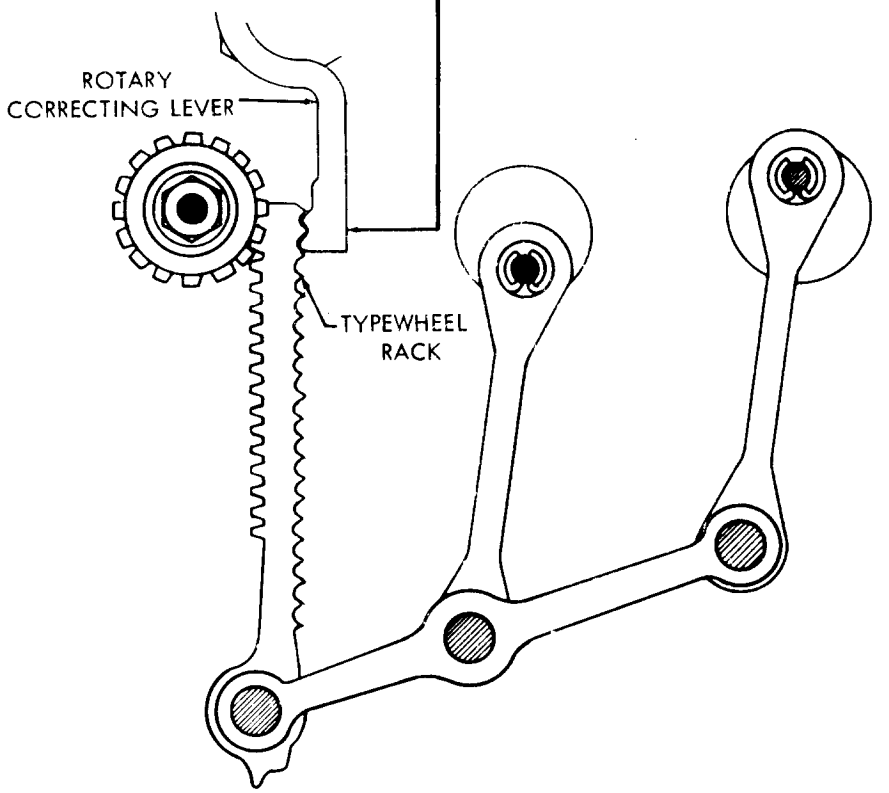
SELECT "X" CODE COMBINATION (---45-78). TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY SEAT ROTARY CORRECTING LEVER IN TYPEWHEEL RACK.

REQUIREMENT

SECOND TOOTH FROM TOP OF RACK SEATED BETWEEN LOBES OF CORRECTING LEVER.

(2) TO CHECK

IN A MANNER SIMILAR TO THAT DESCRIBED ABOVE, CHECK ENGAGEMENT OF FIFTH TOOTH (--34--78), NINTH TOOTH (---4---8) AND SIXTEENTH TOOTH (--3-5--8).



28 TYPE

ROTARY CORRECTING LEVER

(1) TO CHECK

WITH UNIT IN FIGURES CONDITION, SELECT NO. 9 CODE COMBINATION (---45). TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT MANUALLY SEAT ROTARY CORRECTING LEVER IN TYPE WHEEL RACK.

REQUIREMENT

SECOND TOOTH FROM TOP OF RACK SEATED BETWEEN LOBES OF CORRECTING LEVER.

(2) TO CHECK

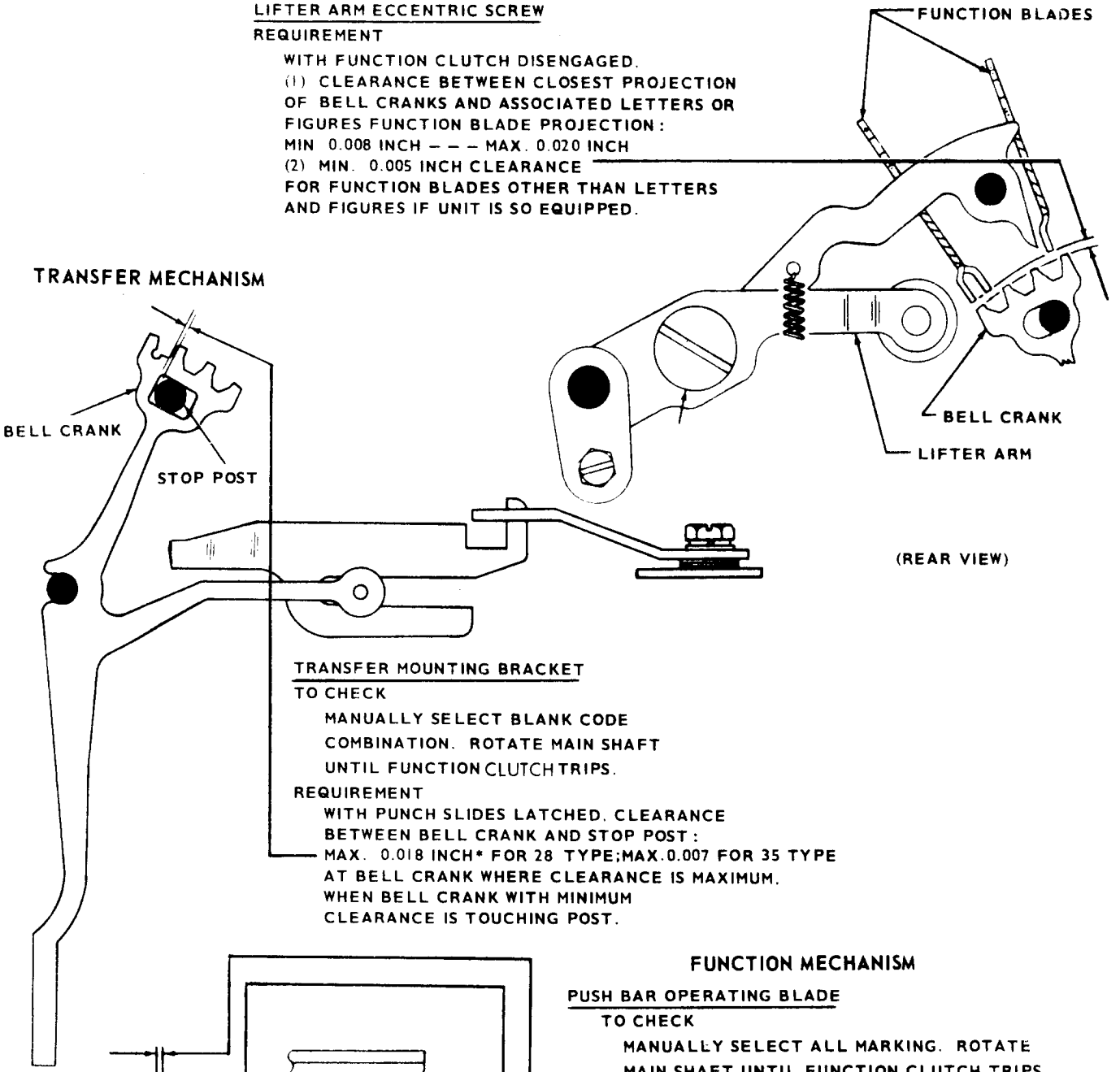
IN A MANNER SIMILAR TO THAT DESCRIBED ABOVE CHECK ENGAGEMENT OF FIFTH TOOTH (--34-) CODE COMBINATION SELECTED IN FIGURES CONDITION), NINTH TOOTH (---4- CODE COMBINATION SELECTED IN LETTERS CONDITION) AND SIXTEENTH TOOTH (--3-5 CODE COMBINATION SELECTED IN LETTERS CONDITION).

To Adjust:

28 Type B. S. P. 573-118-700

35 Type B. S. P. 574-233-700

FUNCTION BOX MECHANISM



LIFTER ARM ECCENTRIC SCREW

REQUIREMENT

WITH FUNCTION CLUTCH DISENGAGED.
(1) CLEARANCE BETWEEN CLOSEST PROJECTION OF BELL CRANKS AND ASSOCIATED LETTERS OR FIGURES FUNCTION BLADE PROJECTION:
MIN 0.008 INCH – – – MAX. 0.020 INCH
(2) MIN. 0.005 INCH CLEARANCE FOR FUNCTION BLADES OTHER THAN LETTERS AND FIGURES IF UNIT IS SO EQUIPPED.

TRANSFER MECHANISM

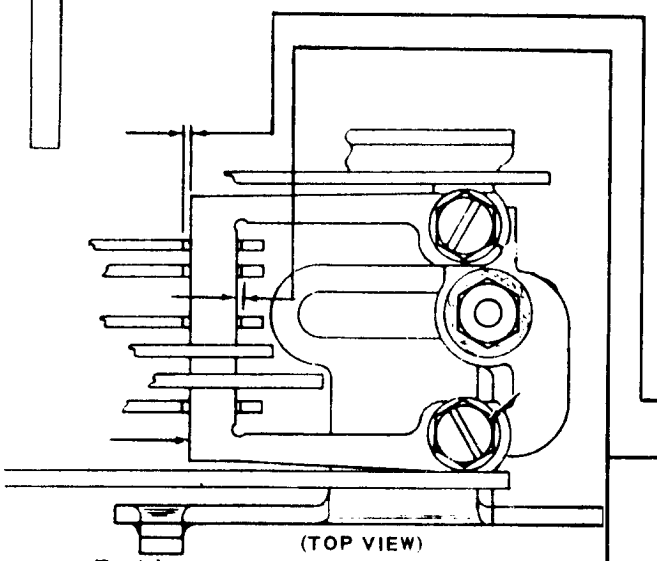
TRANSFER MOUNTING BRACKET

TO CHECK

MANUALLY SELECT BLANK CODE COMBINATION. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS.

REQUIREMENT

WITH PUNCH SLIDES LATCHED, CLEARANCE BETWEEN BELL CRANK AND STOP POST:
MAX. 0.018 INCH* FOR 28 TYPE; MAX. 0.007 FOR 35 TYPE AT BELL CRANK WHERE CLEARANCE IS MAXIMUM. WHEN BELL CRANK WITH MINIMUM CLEARANCE IS TOUCHING POST.



FUNCTION MECHANISM

PUSH BAR OPERATING BLADE

TO CHECK

MANUALLY SELECT ALL MARKING. ROTATE MAIN SHAFT UNTIL FUNCTION CLUTCH TRIPS. MANUALLY SEAT PUSH BARS IN DETENTED POSITION. IN BAR WHICH IS NEAREST LEFT EDGE OF BLADE, TAKE UP PLAY TO LEFT AND REAR AND THEN RELEASE.

(1) REQUIREMENT

CLEARANCE BETWEEN BAR AND LEFT EDGE OF BLADE:

MIN. 0.015 INCH - - - - -MAX. 0.030 INCH

(2) REQUIREMENT

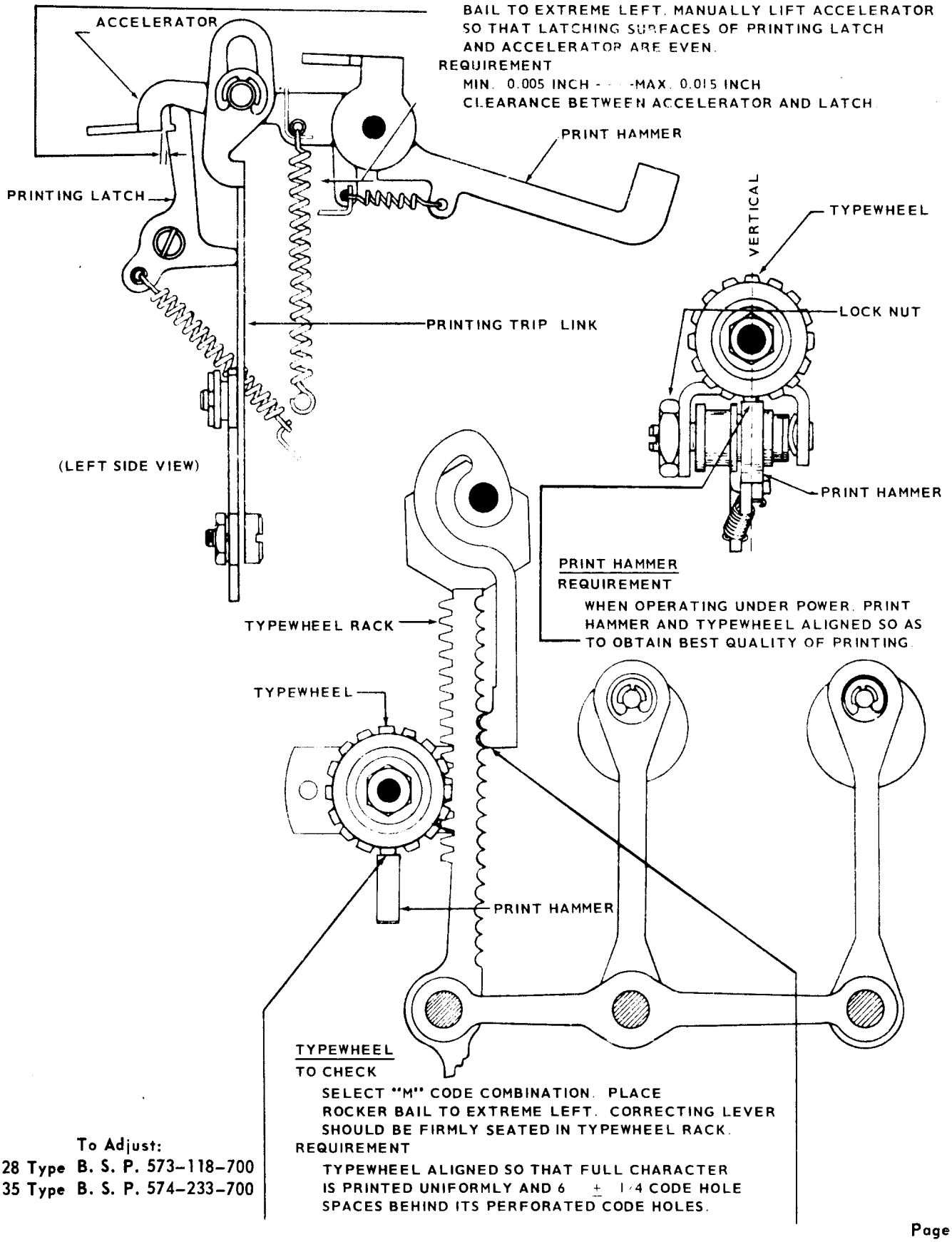
SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND PUSH BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

(3) REQUIREMENT

WITH UNIT IN STOP POSITION, SOME CLEARANCE BETWEEN RIGHT EDGE OF BLADE AND BARS WHEN PLAY IN BARS HAS BEEN TAKEN UP TO RIGHT AND RELEASED.

To Adjust:

28 Type B. S. P. 573–118–700
35 Type B. S. P. 574–233–700



PRINTING TRIP LINK

TO CHECK

TRIP FUNCTION CLUTCH AND POSITION ROCKER BAIL TO EXTREME LEFT. MANUALLY LIFT ACCELERATOR SO THAT LATCHING SURFACES OF PRINTING LATCH AND ACCELERATOR ARE EVEN.

REQUIREMENT

MIN. 0.005 INCH - - -MAX. 0.015 INCH CLEARANCE BETWEEN ACCELERATOR AND LATCH.

PRINT HAMMER

REQUIREMENT

WHEN OPERATING UNDER POWER, PRINT HAMMER AND TYPEWHEEL ALIGNED SO AS TO OBTAIN BEST QUALITY OF PRINTING.

TYPEWHEEL

TO CHECK

SELECT "M" CODE COMBINATION. PLACE ROCKER BAIL TO EXTREME LEFT. CORRECTING LEVER SHOULD BE FIRMLY SEATED IN TYPEWHEEL RACK.

REQUIREMENT

TYPEWHEEL ALIGNED SO THAT FULL CHARACTER IS PRINTED UNIFORMLY AND 6 ± 1/4 CODE HOLE SPACES BEHIND ITS PERFORATED CODE HOLES.

To Adjust:

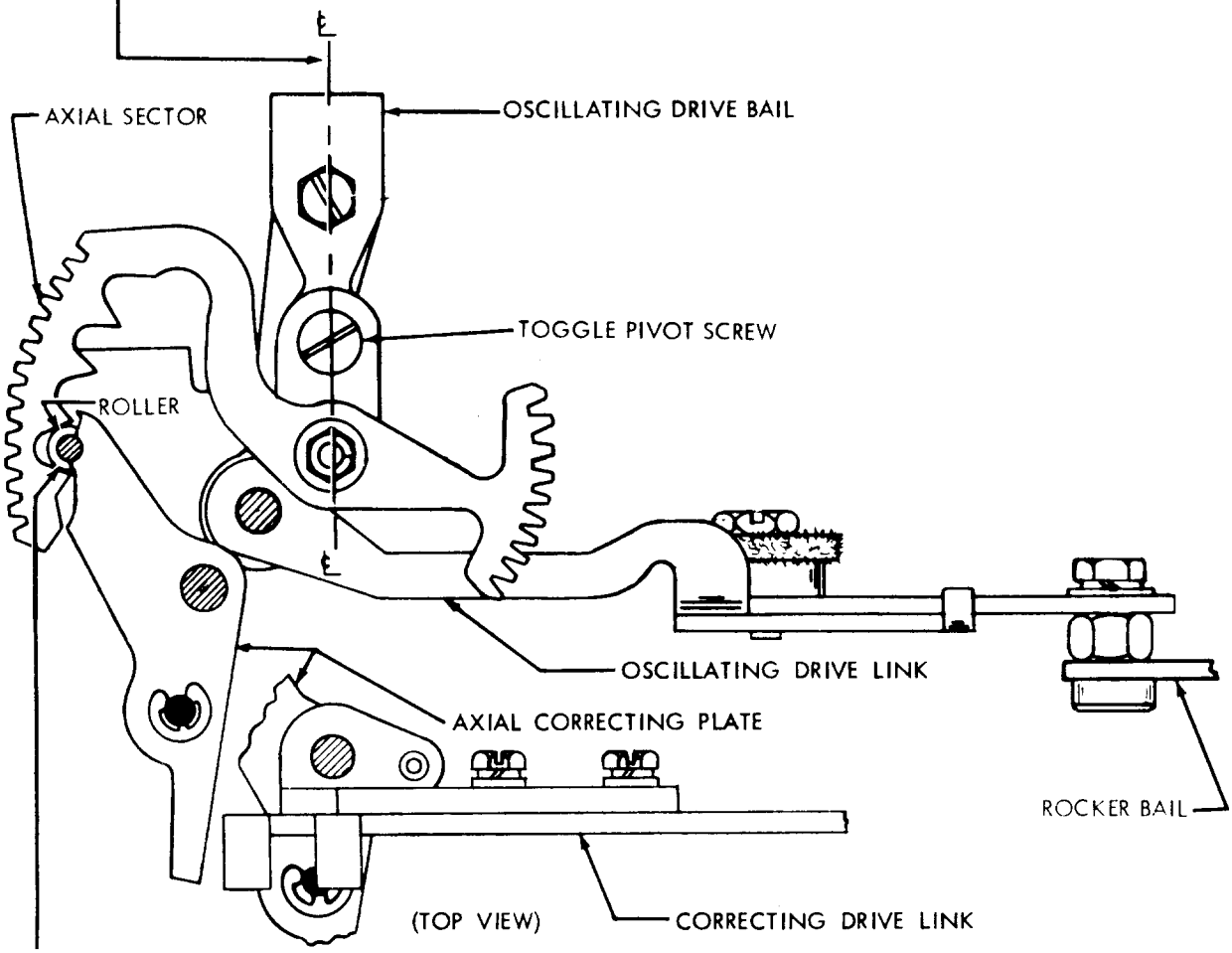
28 Type B. S. P. 573-118-700

35 Type B. S. P. 574-233-700

OSCILLATING DRIVE LINK

TO CHECK
POSITION ROCKER BAIL TO ITS EXTREME LEFT.

REQUIREMENT
SECTOR MOUNTING STUD, TOGGLE PIVOT SCREW AND OSCILLATING DRIVE BAIL MOUNTING SCREW SHOULD APPROXIMATELY LINE UP.



CORRECTING DRIVE LINK

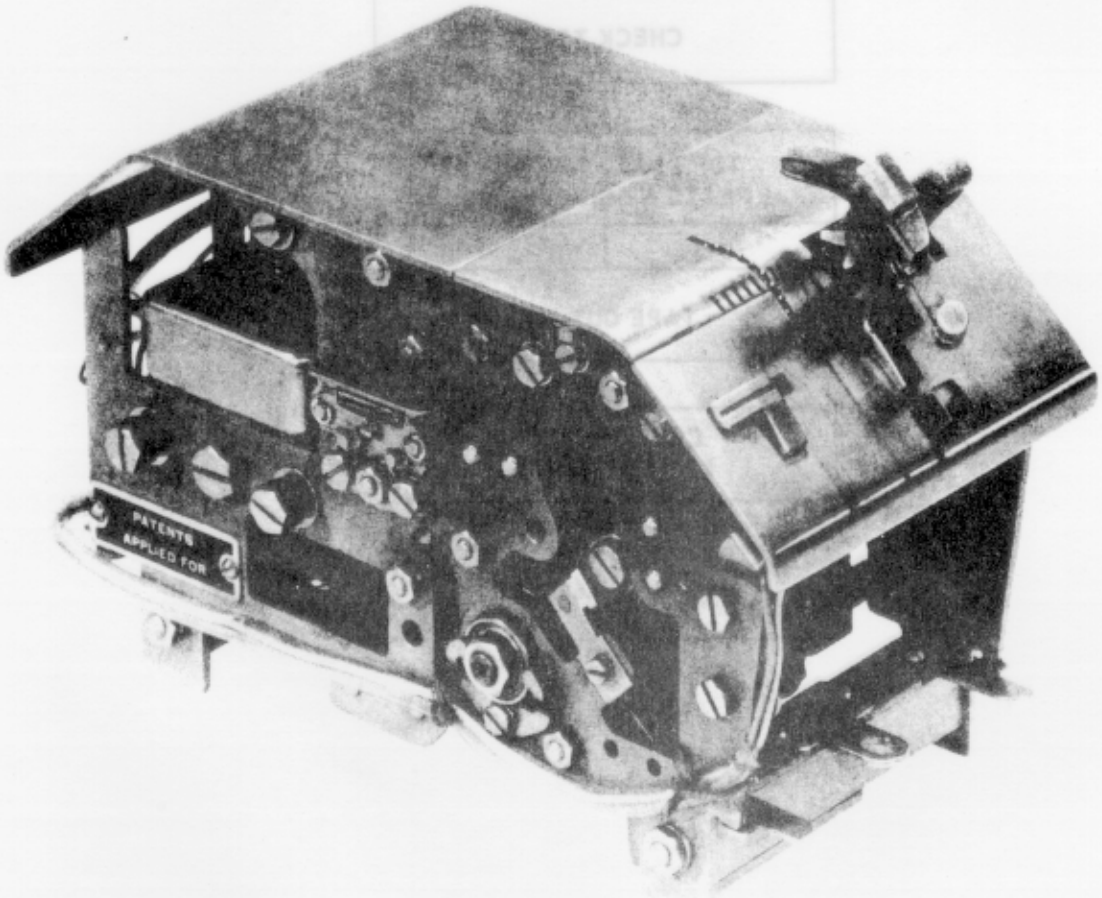
TO CHECK
SELECT ALL SPACING. TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.

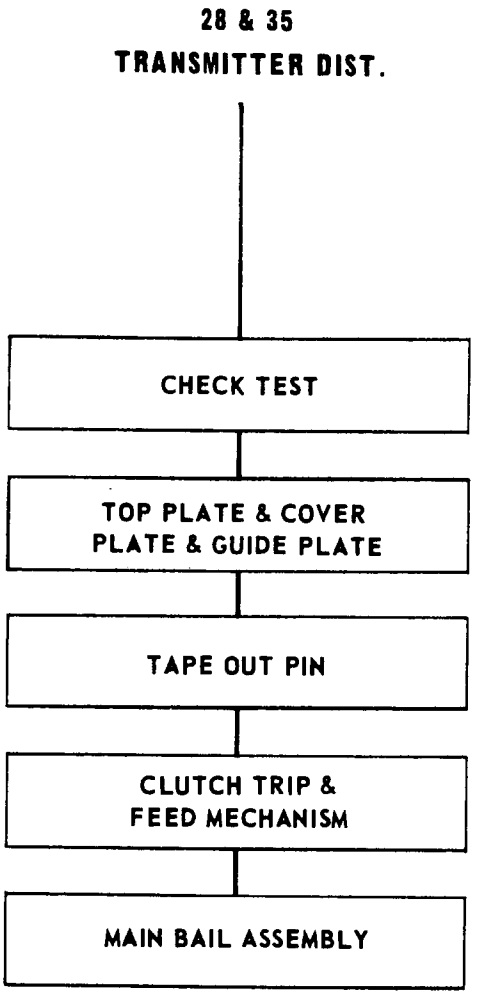
REQUIREMENT
ROLLER ON AXIAL CORRECTING PLATE FIRMLY SEATED IN FIRST NOTCH OF AXIAL SECTOR.

TO CHECK
SELECT ALL MARKING. TRIP FUNCTION CLUTCH AND MOVE ROCKER BAIL TO EXTREME LEFT.

REQUIREMENT
ROLLER ON AXIAL CORRECTING PLATE FIRMLY SEATED IN FOURTH NOTCH OF AXIAL SECTOR.

To Adjust:
28 Type B. S. P. 573-118-700
35 Type B. S. P. 574-233-700


PATENTS
APPLIED FOR


28 & 35
TRANSMITTER DIST.
CHECK TEST
TOP PLATE & COVER
PLATE & GUIDE PLATE
TAPE OUT PIN
CLUTCH TRIP &
FEED MECHANISM
MAIN BAIL ASSEMBLY

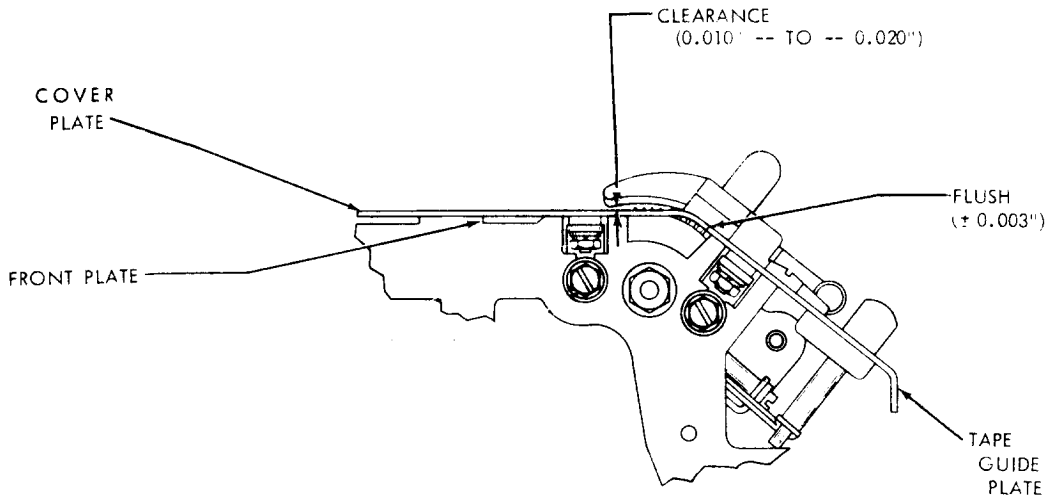
TOP PLATE AND COVER PLATE MOUNTING

REQUIREMENTS ----

1. MATING EDGE OF TOP PLATE SHOULD BE FLUSH TO 0.003 INCH UNDER FLUSH EDGE OF TAPE GUIDE PLATE (WITHIN AREA OF TAPE LID) WHEN PLATE ENGAGES AT LEAST 3 PROJECTIONS

2. FEEDWHEEL SLOT SHOULD ALIGN WITH SLOT IN TAPE GUIDE PLATE SO THAT FEED WHEEL ROTATES FREELY WITH DETENTS AND FEED PAWL DISENGAGED (FREEWHEELING)

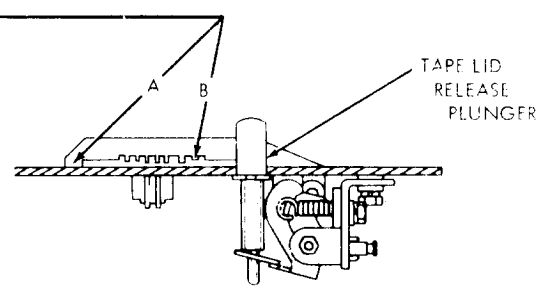
3. CLEARANCE BETWEEN PROJECTION OF TAPE LID AND TOP PLATE (TAPE LID LATCHED) MIN. 0.010 IN. --- MAX. 0 020 AT CURVED PORTION: MIN. 0.010 --- MAX. 0.025 AT FLAT PORTION.



TAPE LID ASSEMBLY

TAPE LID FRONT BEARING SURFACE SHOULD TOUCH TAPE GUIDE PLATE. CLEARANCE MEASURED AT FIN OF TAPE LID WHICH IS IN LINE WITH REAR TAPE GUIDE
MIN. 0.010 INCH – – – – MAX. 0.018 INCH
NOTE I - - WHEN BOTH PLATES ARE ASSEMBLED ON UNIT, LEFT EDGE OF LID MAY TOUCH TOP PLATE AND SOME CHANGE IN THIS CLEARANCE MAY BE EXPECTED.

RELEASE PLUNGER SHOULD HAVE SOME END PLAY WHEN LID IS LATCHED AGAINST TAPE GUIDE PLATE.



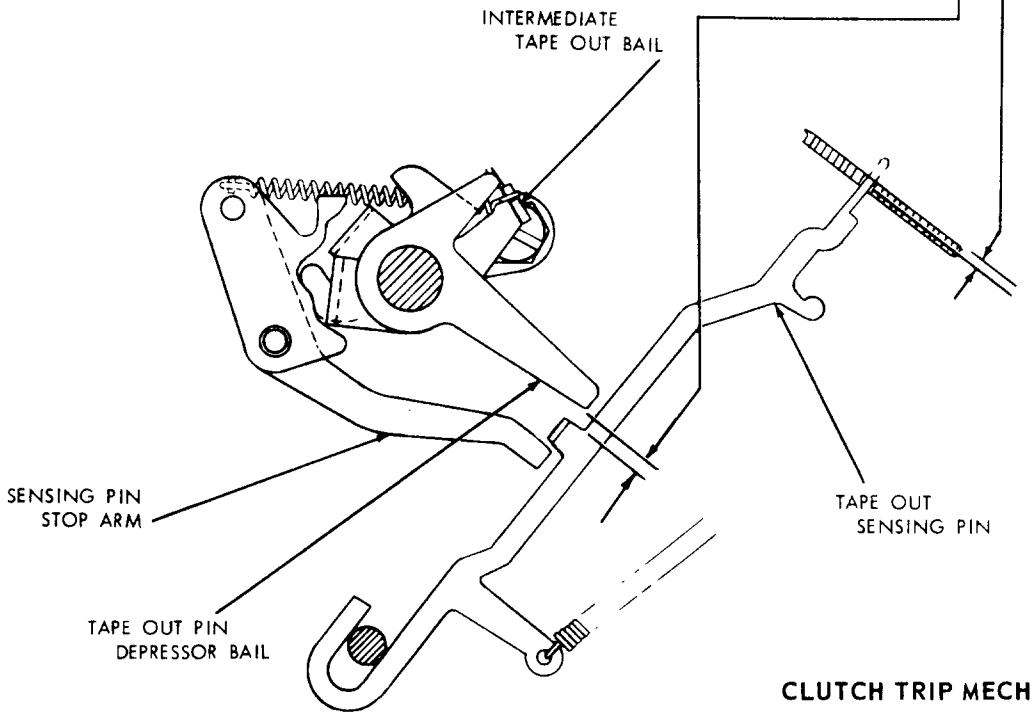
To Adjust:

28 Type B. S. P. 573–127–703
35 Type B. S. P. 574–225–700

TAPE OUT SENSING PIN

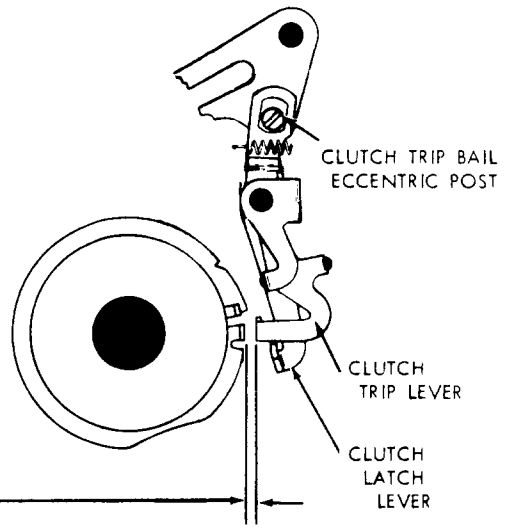
REQUIREMENTS
WITH START-STOP LEVER IN FREE WHEELING OR STOP POSITION, TIP OF TAPE OUT PIN SHOULD BE FLUSH ——— TO ——— 0.010 INCH BELOW TOP SURFACE OF TAPE GUIDE PLATE.

WITH START-STOP LEVER IN RUN POSITION, CLEARANCE AS SHOWN SHOULD BE AT LEAST 0.055 INCH.

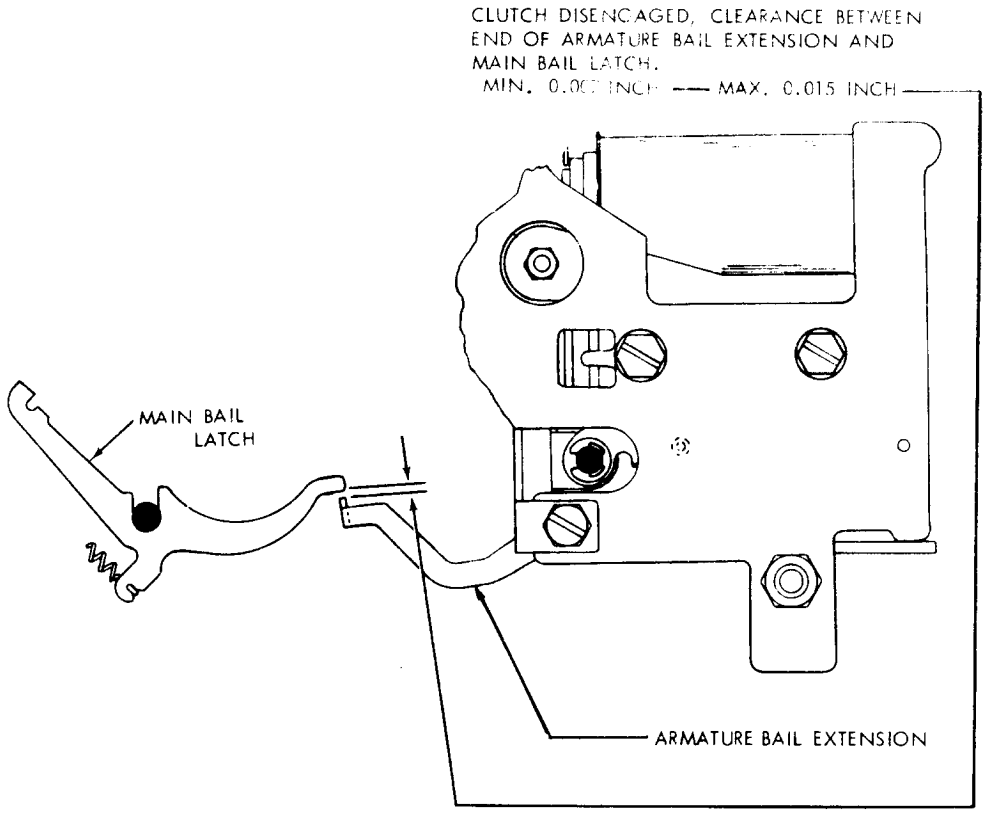


CLUTCH TRIP MECHANISM

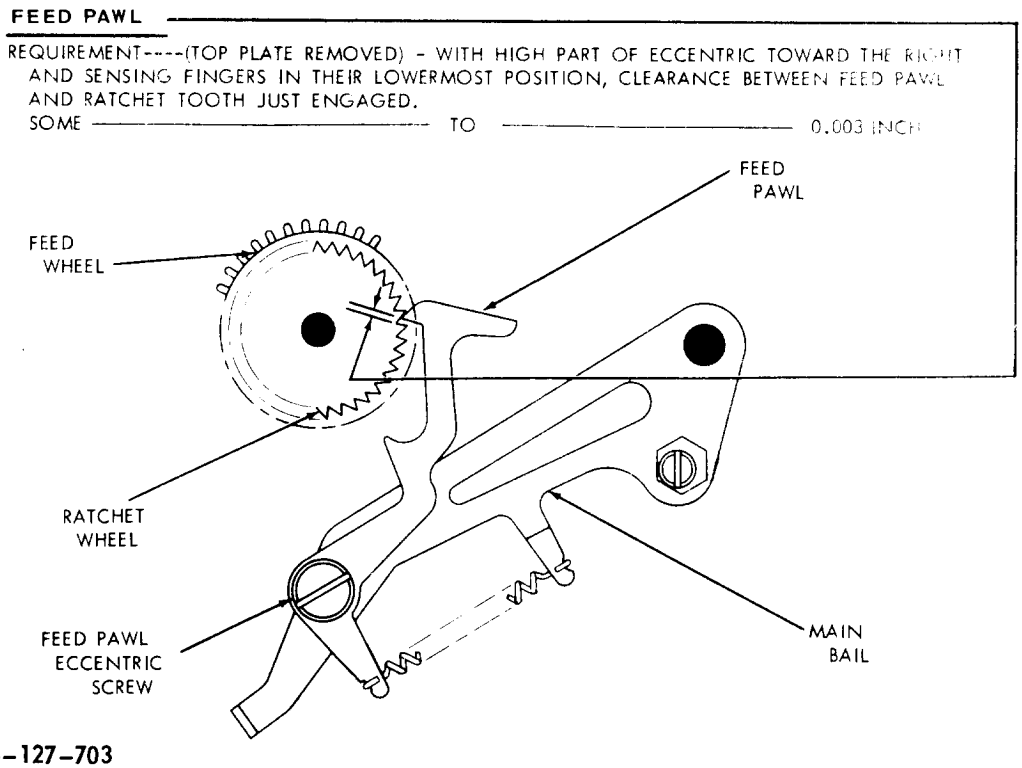
CLUTCH TRIP LEVER
REQUIREMENTS--(REMOVE COVER PLATE)
WITH CLUTCH DISK STOP LUG OPPOSITE CLUTCH TRIP LEVER, CLEARANCE BETWEEN INNER SURFACE OF LUG AND LEVER PLAY TAKEN UP TO MAKE CLEARANCE MAX.
MIN. 0.012 INCH——— MAX. 0.025 INCH



To Adjust:
28 Type B. S. P. 573–127–703
35 Type B. S. P. 574–225–700



FEED PAWL MECHANISM



To Adjust:

28 Type B. S. P. 573–127–703
35 Type B. S. P. 574–225–700

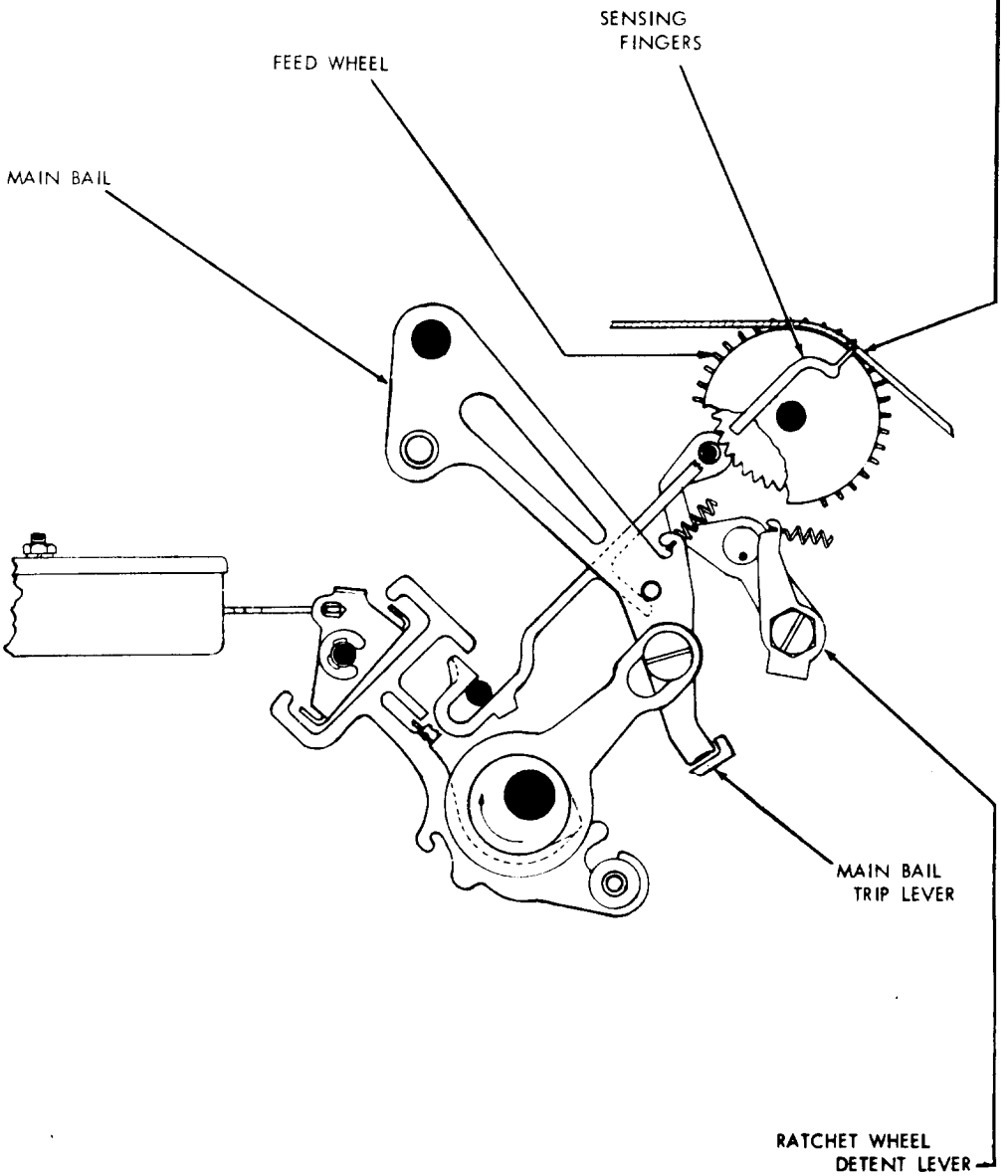
MAIN BAIL ASSEMBLY

MAIN BAIL

REQUIREMENT----(TOP PLATE REPLACED) WITH CODE SENSING PINS IN LOWER-MOST POSITION, CLEARANCE BETWEEN TIP OF HIGHEST SENSING PIN AND TOP SURFACE OF TAPE GUIDE PLATE. MIN. 0.010 INCH — MAX. 0.020 INCH

MAIN BAIL TRIP LEVER

REQUIREMENT----(TOP PLATE REPLACED) - WITH CLUTCH DISENGAGED AND MAINSHAFT IN ITS STOP POSITION, TIP OF HIGHEST SENSING FINGER SHOULD BE FLUSH TO 0.005 INCH BELOW TOP SURFACE OF TAPE GUIDE PLATE.



To Adjust:

28 Type B. S. P. 573-127-703

35 Type B. S. P. 574-225-700