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## 1. GENERAL

1.01 This section is reissued to include paper jam alarm and to add recent engineering changes. Since this is a general revision, marginal arrows are omitted.
1.02 The adjustments in this section are divided into basic units, variable features, and earlier design mechanisms. The basic units consist of the friction feed and sprocket feed typing units; the adjustments are sub-divided into major mechanisms most of which are common to both units. All other mechanisms which are of an optional nature to create variations of the 28 typing unit, appear under variable features. When applicable, earlier design mechanisms for the basic units and variable features are cross referenced in their adjustment text.

Note: Remove power from unit before making adjustments.

1.03 The adjustments for the basic units are arranged in a sequence that would be followed if a complete readjustment were undertaken. After an adjustment has been completed, be sure to tighten any nuts or screws that may have been loosened to facilitate the adjustment. If a part that is mounted on shims is to be removed, the number of shims used at each mounting screw should be noted so that the same shim pile up can be replaced when the part is remounted.

1.04 The spring tensions given in this section are indicated values and should be checked with proper spring scales in the position indicated. The adjusting illustrations, in addition to indicating the adjusting tolerances, positions of moving parts, and spring tensions, also show the angle at which the scale should be applied when measuring spring tensions.

1.05 Tools and spring scales required to perform the adjustments are not supplied as part of the equipment but are listed separately in Section 570-005-800TC.

1.06 References made to left or right, up or down, and front or rear apply to the typing unit in its normal operating position as viewed by the operator facing the unit.

1.07 Where instructions call for the removal of parts or subassemblies, refer to appropriate section, covering Disassembly and Reassembly.

UNMOUNTED POSITIONS OF TYPING UNIT

1.08 The typing unit may be safely placed in any one of three positions for servicing:

(1) In an upright position, and resting on all four feet.

(2) Tilted backward, and resting on the two rear feet and rear points of side frames.

(3) Bottom upwards, and resting on two upper points on each side frame.

In addition, the typing unit may be placed on either end by using the TP159358 modification kit (not supplied with the unit).

OPERATING CONDITIONS OF CLUTCHES

1.09 When a requirement calls for a clutch to be disengaged, the clutch shoe lever must be fully latched so that the clutch shoes are disengaged from the clutch drum. To become fully latched the trip lever must engage the clutch shoe lever, and the clutch disc must rotate far enough to permit the latch lever to fall into the notch on the clutch disc. The disengaged condition is illustrated in the upper figure of Par. 2.21. When engaged, the clutch shoe lever is unlatched and the clutch shoes are wedged against the clutch drum.

Note 1: When rotating the main shaft of the typing unit by hand, the clutches do not fully disengage upon reaching their stop positions. In order to relieve the drag on the clutches and permit the main shaft to rotate freely, apply pressure to the stop lug on each clutch disc with a screwdriver until each latch lever falls into its notch on its clutch disc. Thus each internal expansion clutch becomes fully disengaged. This procedure should be followed before placing the typing unit on the base and switching on the power.

Note 2: After a few weeks (300 to 500 hours) of operation of a new unit, the unit should be relubricated to make sure all operating points have been properly lubricated.

Note 3: Recheck all clutch gaps to insure that the parts, after seating themselves, have not caused the clutch gaps to open up. Reset if necessary. Standard readjustment periods are to be maintained thereafter.

MANUAL SELECTION OF CHARACTERS OR FUNCTIONS

1.10 To manually operate the typing unit while removed from the keyboard or base, hold the selector magnet armature (Par. 2.01) against the pole pieces with an armature clip. Rotate the main shaft in a counterclockwise direction (handwheel listed in Section 570-005-800TC) to bring all clutches to their disengaged position.
Note: The armature clip is attached to the armature by carefully inserting the flat formed end of the clip over the top of the armature and between the pole pieces, and hooking the extruded projection under the edge of the armature. The top end of the clip should then be hooked over the top of the selector coil terminal (bakelite) guard. The spring tension of the clip will hold the armature in the marking (attracted) position.

1.11 Fully disengage all clutches as described in the note following Par. 1.09. Release the armature momentarily to permit the selector clutch to engage. Turn the main shaft slowly until the no. 5 selector lever has just moved to the peak of its cam. Strip from the selector levers all push levers which are spacing in the code combination that is being selected. It should be noted that selector levers (Par. 2.12) move in succession, starting with the inner (no. 1). Continue to rotate the main shaft until all operations initiated by the selector mechanism clear the typing unit.

VARIABLE FEATURES

1.12 In addition to the basic unit adjustments, covered in Part 2, adjustments for a number of variable features appear in Part 3. Where adjustments of these variable features affect the adjustment sequence, cross reference information has been included in Part 2. Variable feature adjustments which do not affect the adjusting sequence, may be done at any time during the adjusting procedure.

EARLIER DESIGN MECHANISMS

1.13 Parts 2 and 3 contain illustrations and adjusting procedures for mechanisms currently being manufactured. Illustrations and adjusting procedures for mechanisms of earlier design are located in Part 4. Where a new mechanism has replaced a mechanism of earlier design, reference has been made in Parts 2 and 3 to the corresponding mechanism in Part 4.

COMPLETE ADJUSTMENT OF TYPING UNIT

1.14 When making a complete adjustment of the typing unit, the following conditioning operations should be performed to prevent damage:

(a) Loosen the clamp screw on the code bar shift lever drive arm (Par. 2.15).

(b) Move the right and left vertical positioning lever eccentric studs (Par. 2.28 and 2.29) in the rocker shaft brackets to their lowest position.

(c) Loosen the two bearing stud mounting screws and two connecting strip clamp screws in the horizontal positioning drive linkage (Par. 2.35).

(d) Loosen the clamp screws and move the reversing slide brackets to their uppermost position (Par. 2.34).

(e) Loosen the function reset bail blade mounting screws (Par. 2.32).

(f) For units equipped with two-stop function clutches: Loosen the shoulder bushings on each function stripper blade arm and move stripper blade and arms to their lowest positions (Par. 4.18).

(g) Loosen the carriage return lever clamp screw (Par. 2.40).

(h) Loosen the clamp screws in the oscillating rail slide (Par. 2.30).

(i) Loosen the reversing slide adjusting stud (Par. 2.34).

(j) Loosen the clamp nuts on the shift code bar guide plates (Par. 2.33).
2. BASIC UNITS

2.01 Selector Mechanism

Note 1: To facilitate making the following adjustments, remove range finder and selector magnet assemblies. To insure better operation, pull a piece of KS bond paper between armature and pole pieces to remove any oil or foreign matter that may be present. Make certain that no lint or pieces of paper remain between pole pieces and armature.

(Right Side View)

Note 2: This requirement need not be made nor checked if selector magnet bracket and receiving margin requirements are met.

(1) Requirement (Armature Clamp Strip)
- Clearance between armature clamp strip and casting at their closest point
  Min 0.010 inch

(2) Requirement (Armature Alignment)
- Outer edge of armature should be flush within 0.015 inch with outer edge of both pole pieces.

(3) Requirement (Armature Backstop Alignment (Early Design) TP152424 Only)
- Clearance between sides of backstop and sides of armature extension
  Min 0.010 inch

To Adjust
Position armature spring adjusting nut to hold armature firmly against pivot edge of casting. Then position armature and backstop with mounting screws loosened. Tighten screws.
2.02 Selector Mechanism (continued)

SELECTOR ARMATURE

Note: These requirements need not be made nor checked if the selector magnet bracket and receiving margin requirements are met.

(Right Side View)  (LATEST DESIGN)

(1) Requirement
Clearance
Min 0.010 inch
between armature clamp strip and magnet bracket casting.

(2) Requirement
Outer edge of armature should be flush within 0.015 inch with outer edge of pole pieces.

(Left Side View)

(3) Requirement
Start lever shall drop freely into armature extension slot.

To Adjust
Position armature spring adjusting nut to hold armature firmly against pivot edge of casting. Position armature with mounting screws loosened. Tighten screws.

SELECTOR ARMATURE DOWNSTOP (Preliminary)

Requirement
With magnet de-energized, locklevers 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 0.030 inch—Max 0.035 inch.

To Adjust
Position downstop with mounting screw loosened. Tighten screw.
CAUTION: BEFORE PROCEEDING WITH THE SELECTOR ARMATURE SPRING ADJUSTMENT, THE TYPE OF ARMATURE (ONE ANTIFREEZE BUTTON OR TWO ANTIFREEZE BUTTONS) MUST BE KNOWN. EXCESSIVE TENSION ON, OR THE MISHANDLING OF A TWO BUTTON ARMATURE CAN DAMAGE THE THIN LEAF SPRING ATTACHED TO THE PIVOT END. IF REMOVAL FOR EXAMINATION IS NECESSARY, DISASSEMBLE AS FOLLOWS:

1. DISCONNECT ARMATURE SPRING.
2. REMOVE ARMATURE MOUNTING SCREWS.
3. WITHDRAW ARMATURE FROM SELECTOR.

REASSEMBLE AND RECHECK THE FOLLOWING ADJUSTMENTS:

- SELECTOR ARMATURE (2.01, 2.02)
- SELECTOR ARMATURE DOWNSTOP BRACKET (2.06)
- SELECTOR MAGNET BRACKET (2.05)

**SELECTOR ARMATURE SPRING (For Units With Single Anti-Freeze Button on Selector Armature)**

Requirement (Preliminary)

With start lever, marking and spacing locklevers on high part of their cams, hook scale under end of armature extension (hold as nearly vertical as possible). It should require

(a) Min 1-1/2 oz---Max 2 oz for 20 MA operation
(b) Min 2-1/2 oz---Max 3 oz for 60 MA operation

to pull armature to marking position.

To Adjust

Position adjusting nut.

Requirement (Final)

Refer to SELECTOR RECEIVING MARGIN (2.11)

Note: Spring tensions shown on this page permit operation of printer prior to measurement of receiving margins. Refine spring tension for maximum selector performance with unit connected to specific circuit in which it is to function (operating at desired speed and line current). See 2.11.
2.04 Selector Mechanism (continued)

SELECTOR ARMATURE SPRING (For Units With Two Anti-Freeze Buttons on Selector Armature)

(1) Requirement (Preliminary)
With start lever, marking and spacing lock levers on high part of their cams, hook scale under end of armature extension (hold as nearly vertical as possible). It should require

<table>
<thead>
<tr>
<th>0.020 amperes</th>
<th>0.060 amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 grams</td>
<td>21 grams</td>
</tr>
</tbody>
</table>

to pull rear button against its pole piece.

To Adjust
Position adjusting nut.

Note 1: This spring tension can be adjusted for maximum selector performance only when the printer is connected to the specific circuit over which it is to operate under service conditions. Since there are several operating speeds and since circuits vary widely, it is impossible to adjust the spring for maximum performance at the factory. The foregoing spring tension requirement is given to permit operation prior to measurement of receiving margins. Readjustment made to obtain satisfactory receiving margin should not be disturbed in order to meet the requirements of this adjustment. The final spring tension should be held as close as possible to the values given above — consistent with good receiving margins.

(2) Requirement (Final)
When a distortion test set is available, refine selector armature spring adjustment to meet selector receiving margin (2.11).

Note 2: With selector magnets energized, front anti-freeze button must be in contact with its magnet core.
NOTE
THE APPROPRIATE PRELIMINARY SELECTOR ARMATURE SPRING TENSION (PAR. 2.03, 2.04) ADJUSTMENT MUST BE MADE PRIOR TO THE SELECTOR MAGNET BRACKET ADJUSTMENT.

SELECTOR MAGNET BRACKET

(1) REQUIREMENT—SPACING LOCK LEVER ON EACH HIGH PART OF CAM. MAGNETS ENERGIZED AND 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

TO ADJUST — LOOSEN TWO MAGNET BRACKET MOUNTING SCREWS AND ADJUSTING LINK CLAMP SCREW. POSITION MAGNET BRACKET BY MEANS OF ADJUSTING LINK AND TIGHTEN LINK CLAMP SCREW ONLY.

(2) REQUIREMENT—SPACING LOCK LEVER ON EACH 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. MIN. 0.003 INCH

TO ADJUST — POSITION UPPER END OF MAGNET BRACKET. TIGHTEN TWO MAGNET BRACKET MOUNTING SCREWS. RECHECK REQUIREMENT (1).
2.06 Selector Mechanism (continued)

**SELECTOR ARMATURE DOWNSTOP (FINAL)**

**Requirement**
Magnet de-energized. Locklevers on low part of their cams
Min 0.005 inch---Max 0.015 inch clearance between top of armature extension and bottom of spacing locklever.

**To Adjust**
Refine SELECTOR ARMATURE DOWNSTOP (PRELIMINARY) (2.02).
2.07 Selector Mechanism (Cont.)

MARKING LOCK LEVER SPRING

REQUIREMENT — LETTERS COMBINATION SELECTED, ROTATE MAIN SHAFT UNTIL SELECTOR CLUTCH IS DISENGAGED. SCALE APPLIED TO LOWER EXTENSION OF LOCK LEVER

MIN. 1-1/2 OZS. ------- MAX. 3 OZS.

TO START MARKING LOCK LEVER MOVING.

(RIGHT SIDE VIEW)

MARKING LOCK LEVER

MARKING LOCK LEVER SPRING

START LEVER SPRING

REQUIREMENT --- WITH LATCH LEVER SPRING UNHOOKED, STOP ARM BAIL IN THE INDENT OF ITS CAM AND RANGE SCALE SET AT 60, IT SHOULD REQUIRE MIN. 2-1/2 OZS. ------- MAX. 4-1/2 OZS.

TO START STOP ARM MOVING.

(RIGHT SIDE VIEW)

NOTE FOR EARLIER DESIGN
SEE PAR. 4.01.
2.08 Selector Mechanism (Cont.)

SELECTOR LEVER

SELECTOR PUSH LEVER SPRING
REQUIREMENT
PUSH LEVER IN SPACING POSITION
MIN. 3/4 OZ.
MAX. 1-1/2 OZS.
TO MOVE PUSH LEVER FROM SELECTOR LEVER. CHECK FIVE SPRINGS.

SELECTOR LEVER SPRING
REQUIREMENT
PLACE UNIT UPSIDE DOWN.
RESET BAIL ON PEAK OF ITS CAM.
MIN. 1-1/4 OZS.
MAX. 2-1/2 OZS.
TO START EACH LEVER MOVING.
CHECK FIVE SPRINGS. IF NECESSARY,
UNHOOK START LEVER SPRING TO CHECK
NO. 4 SELECTOR LEVER SPRING.

CAM-CLUTCH ASSEMBLY

SELECTOR CLUTCH DRUM
REQUIREMENT
CLUTCH LATCHED IN STOP POSITION. CAM-
CLUTCH ASSEMBLY SHOULD HAVE SOME END PLAY
MAX. 0.010 INCH

TO ADJUST
POSITION CLUTCH DRUM WITH MOUNTING
SCREW LOOSENED. TIGHTEN SCREW.
2.09 Selector Mechanism (Cont.)

**SECTION 573-115-700TC**

- **PUSH LEVER RESET BAIL**
  - **SPRING**
  - **SPACING LOCK LEVER**
  - **LATCH LEVER SPRING**

**A. PUSH LEVER RESET BAIL SPRING REQUIREMENT**
Push lever reset bail on low part of cam and 32 oz. scale applied to reset bail. Min. 4 ozs., Max. 8 ozs. to move bail from cam.

**B. SELECTOR CLUTCH LATCH LEVER SPRING REQUIREMENT**
Latch resting on low part of its cam disk. Min. 2 ozs., Max. 3-1/2 ozs. to start latch moving.

**C. SPACING LOCK LEVER SPRING REQUIREMENT**
Selector armature released and spacing lock lever on low part of its cam. Spring scale applied to lower end of spacing lock lever. Min. 3 ozs., Max. 6 ozs. to move spacing lock lever from its pivot shaft.
2.10 Selector Mechanism (Cont.)

NOTE: REPLACE RANGE FINDER AND SELECTOR MAGNET ASSEMBLY

(A) RANGE FINDER KNOB PHASING REQUIREMENT
WITH RANGE FINDER KNOB TURNED TO EITHER END OF RACK, ZERO MARK ON SCALE SHOULD BE WITHIN 3 POINTS OF Scribed LINE ON RANGE FINDER PLATE.
TO ADJUST
REMOVE MOUNTING NUT, DISENGAGE KNOB FROM RACK AND POSITION KNOB. RE-ENGAGE KNOB WITH RACK AND REPLACE MOUNTING NUT.

(B) 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.
TO ADJUST
POSITION STOP ARM ON STOP ARM BAIL WITH CLAMP SCREW LOOSENEO. TIGHTEN SCREW.
2.11 Selector Mechanism (continued)

Note: Armature with two anti-freeze buttons, front button must contact its core when magnets are energized.

Requirement (For Units Employing Armature With One Anti-Freeze Button)
When a signal distortion test is used for determining the receiving margins of the selector, and where the condition of the components is equivalent to that of new equipment, the range and distortion tolerances below should be met.

Requirement (For Units Employing Armature With Two Anti-Freeze Buttons)
When a distortion test set is available, the selector armature spring tension should be refined, if necessary, to meet the selector receiving margins. The front anti-freeze button must contact the magnet core when the magnet coils are energized.

Note 1: (For Bell Service Only) When checking units with single button armature, signal line should be shunted by a switchboard simulator. Simulator should not be used with units employing the two-button armature.

Note 2: Separate 50 or 75 baud tests are not required. Units geared for 75 baud are tested with the usual 74.2 baud 600 OPM 7.42 unit signals.

**SELECTOR MARGIN MINIMUM REQUIREMENTS**

<table>
<thead>
<tr>
<th>CURRENT</th>
<th>SPEED WPM</th>
<th>POINTS RANGE (ZERO DISTORTION)</th>
<th>PERCENT MARKING AND SPACING BIAS TOLERATED</th>
<th>END DISTORTION TOLERATED (SCALE SET AT BIAS OPTIMUM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.060 amp (windings parallel)</td>
<td>60 75 100 50 + 75 baud</td>
<td>72</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>0.020 amp (windings series)</td>
<td>60 75</td>
<td>72</td>
<td>40</td>
<td>35</td>
</tr>
</tbody>
</table>

To Adjust
Refine the **SELECTOR ARMATURE SPRING** (See 2.04 and 2.05).

**RECEIVING MARGIN FOR DUAL SPEED OPERATION (60 and 100 wpm)**

Requirement
With range scale set at common optimum setting for dual speed operation, the page printer should accept signals with 35% bias and end distortion when operated at 60 or 100 wpm.

To Adjust
1. Bias selector between limits of 0% to -7% internal bias at 100 wpm. (Do not readjust for 60 wpm).
2. Obtain receiving margins at 60 and 100 wpm.
3. Calculate common optimum bias setting as follows:
   \[ O_c = \frac{UMB_{100} + LSB_{60}}{2} \]
   WHERE
   - \( O_c \) = common optimum bias setting
   - \( UMB_{100} \) = upper orient limit marking bias at 100 wpm
   - \( LSB_{60} \) = lower orient limit spacing bias at 60 wpm
2.12 Codebar Mechanism

TRANSFER LEVER ECCENTRIC REQUIREMENT
PUSH LEVERS POSITION FOR E OR LF OR LETTERS. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN UPPERMOST POSITION, CLEARANCE BETWEEN REAR CODE BAR SHIFT LEVER AND CODE BAR SHIFT BAR FARDEST 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.

TO ADJUST
ROTATE ECCENTRIC BUSHING WITH CLAMP SCREW LOOSENED. TIGHTEN SCREW. HIGH PART OF ECCENTRIC SHOULD BE ABOVE HORIZONTAL CENTER LINE
NOTE: ONE OR MORE CODE BAR SHIFT BARS CAN TOUCH CODE BAR SHIFT LEVERS.
2.14 Selector Mechanism (Cont.)

(B)

SELECTOR CAM LUBRICATOR

REQUIREMENT

THE LUBRICATOR TUBE SHOULD CLEAR THE HIGH PART OF THE LOCK LEVER CAM

MIN. 0.020 INCH

THE HIGH PART OF THE SELECTOR LEVER CAMS SHOULD TOUCH THE LUBRICATOR WICK, BUT SHOULD

NOT RAISE IT MORE THAN 1/32 INCH.

NOTE: THERE SHOULD BE SOME CLEARANCE BETWEEN THE MARKING

LOCK LEVER SPRING AND THE RESERVOIR.

TO ADJUST

POSITION THE LUBRICATOR BRACKET WITH ITS MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.
2.15 Codebar Mechanism (Cont.)

TRANSFER LEVERS

CODE BAR SHIFT LEVER

ROLLER

CODE BAR SHIFT LEVER DRIVE ARM

REQUIREMENT
CODE BAR SHIFT LEVER LINK IN THE UPPERMOST POSITION.
THERE SHOULD BE SOME CLEARANCE BETWEEN THE TOP OF THE ROLLERS
AND THE TOP OF THE CAM SLOTS IN THE CODE BAR SHIFT LEVERS
MAX. 0.025 INCH
ON THE CLOSEST LEVER.

TO ADJUST
LOosen THE CLAMP SCREW. POSITION
THE CODE BAR SHIFT LEVER DRIVE ARM
ON ITS SHAFT TO MEET THE REQUIREMENT
AND TO PROVIDE SOME END PLAY, NOT
MORE THAN 0.006 INCH. TIGHTEN SCREW.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.03

CODE BAR SHIFT LEVER LINK BRACKET

CODE BAR SHIFT LEVER LINK

CODE BAR SHIFT LEVER DRIVE ARM

CLAMP SCREW

(FRONT VIEW)

(RIGHT SIDE VIEW)
2.16 Codebar Mechanism (Cont.)

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 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 NEAREST CODE BAR SHIFT BAR IN SAME WAY.
MIN. 0.002 INCH
MAX. 0.025 INCH

TO ADJUST
POSITION ADJUSTING PLATES (FRONT AND REAR) WITH CLAMP SCREWS LOOSENED. TIGHTEN SCREWS.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.04
2. 17 Main Shaft and Trip Shaft Mechanisms

**CLUTCH LATCH LEVER SPRING (EXCEPT SELECTOR)**

**REQUIREMENT**
Clutch turned to stop position but with latch lever not latched.
Min. 5 ozs.
Max. 7-1/4 ozs.
To move latch lever from lug. This requirement applies to code bar clutch, function clutch, spacing clutch, line feed clutch, and type box clutch.

**SELCTOR CLUTCH CAM**

**TRIP SHAFT LEVER SPRING**

(RIGHT SIDE VIEW)

**TRIP SHAFT LEVER**

**CLAMP SCREW**

**CODE BAR CLUTCH**

**CODE BAR CLUTCH LATCH LEVER SPRING**

**CODE BAR CLUTCH LATCH LEVER**

**STOP LUG**

(REAR VIEW)

**CODE BAR CLUTCH TRIP LEVER**

**TRIP LEVER**

(LEFT SIDE VIEW)

**CODE BAR CLUTCH TRIP LEVER**

**REQUIREMENT**
Selector clutch and code bar clutch disengaged. Code bar clutch trip lever should engage clutch shoe lever by full thickness of shoe lever and have some end play.
Max. 0.006 inch
To adjust position trip lever on its shaft with clamp screw loosened. Tighten screw.

**TRIP SHAFT LEVER SPRING**

**REQUIREMENT**
Trip shaft lever on low part of cam. Code bar clutch engaged. Rotate 1/4 turn.
Min. 1 oz.
Max. 2 ozs.
To start lever moving.
SECTION 573-115-700TC

2.18 Main Shaft and Trip Shaft Mechanisms (Cont.)

(CLUTCH TRIP LEVER)

(REAR VIEW)

(CLUTCH SHOE LEVER)

(LEFT SIDE VIEW)

(CLUTCH)

(REQUIREMENT)

BAR CLUTCH AND FUNCTION CLUTCH DISENGAGED. FUNCTION CLUTCH TRIP LEVER SHOULD ENGAGE CLUTCH SHOE LEVER BY FULL THICKNESS OF SHOE LEVER. (CHECK AT LUG WITH LEAST BITE ON TWO STOP CLUTCHES).

TO ADJUST POSITION TRIP LEVER ON ITS SHAFT WITH CLAMP SCREW LOOSENED, LETTING SHAFT HAVE END PLAY. TIGHTEN SCREW. MIN. SOME MAX. 0.006 INCH

(Code Bar Clutch Cam Follower Spring)

(REQUIREMENT)

CAM FOLLOWER ROLLER ON THE LOW PART OF CAM. THE SPRING UNHOOKED FROM SPRING BRACKET.

MIN. 20 OZS.

MAX. 24 OZS.

TO PULL SPRING TO INSTALLED LENGTH.
2.19 Main Shaft and Trip Shaft Mechanisms (Cont.)

(A) CLUTCH TRIP SHAFT SET COLLARS

(1) REQUIREMENT

SPACING CUT-OUT LEVER SHOULD HAVE SIDE PLAY

MIN. SOMEn
MAX. 0.008 INCH

TO ADJUST

POSITION SPACING CUT-OUT LEVER
SET COLLAR. TIGHTEN SCREW.

NOTE: FOR EARLIER DESIGN
SEE PAR. 4.05.

(2) REQUIREMENT

APPROXIMATE ALIGNMENT OF
RIGHT END OF STOP EXTENSIONS
ON TRIP LEVER AND SHOE LEVER.

TO ADJUST

POSITION LINE FEED CLUTCH
TRIP LEVER SET COLLAR.

(3) REQUIREMENT

LINE FEED CLUTCH LATCH LEVER
SHOULD HAVE SIDE PLAY.

MIN. SOMEn
MAX. 0.008 INCH

TO ADJUST

POSITION LINE FEED CLUTCH
LATCH LEVER SET COLLAR.
TIGHTEN SCREW.
SECTION 573-115-700TC

2.20 Main Shaft and Trip Shaft Mechanisms (Cont.)

**SPACING CLUTCH TRIP LEVER**

**REQUIREMENT**

Clearance between trip lever and clutch drum should be 0.018 to 0.035 inch less than clearance between shoe lever and drum at stop showing greatest clearance. There should be some overbite on all stop lugs. Gauge by eye.

**TO CHECK**

Disengage the clutch. Trip clutch trip lever and rotate main shaft until trip lever is over the shoe lever. Take up play of shoe lever inward by snapping the trip lever over the shoe lever. Check clearance between shoe lever and drum at each stop position. With the trip lever at the stop position which yields greatest clearance, rotate main shaft slowly until the trip lever just falls off the stop lug. Check clearance between trip lever and drum.

**TO ADJUST**

Position the trip lever by means of its clamp screw. Tighten screw.

**NOTE:** For earlier design see par. 4.06.

**CLUTCH TRIP LEVER SPRING**

**REQUIREMENT**

Clutch engaged and rotated until trip lever rests on stop lug

<table>
<thead>
<tr>
<th>Clutch</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spacing</td>
<td>11 ozs.</td>
<td>16 ozs.</td>
</tr>
<tr>
<td>Line feed</td>
<td>9 ozs.</td>
<td>12 ozs.</td>
</tr>
<tr>
<td>Type box</td>
<td>5 ozs.</td>
<td>7-1/4 ozs.</td>
</tr>
</tbody>
</table>

To move lever away from stop lug.

---

**Page 26**
2.21 Main Shaft and Trip Shaft Mechanisms (Cont.)

(A) TYPE BOX CLUTCH TRIP LEVER ECCENTRIC POST

**Requirement**
- Type box clutch disengaged. Trip lever should engage the clutch shoe lever by the full thickness of the shoe lever.
- To adjust position the trip lever eccentric post, tighten nut.

(C) LINE FEED CLUTCH TRIP LEVER ADJUSTING SCREW

**Requirement**
- Line feed function slide arm in rear position.
- Clutch trip lever against its eccentric post.
- Trip arm held against its function slide arm.
- Some clearance between the end of the trip lever adjusting screw and the trip arm. MAX. 0.006 inch
- To adjust position the adjusting screw, tighten nut.

(B) LINE FEED CLUTCH TRIP LEVER ECCENTRIC POST

**Requirement**
- Clearance between trip lever and clutch drum should be 0.018 to 0.035 inch less than clearance between shoe lever and drum at stop which shows greatest clearance. There should be some overbite on all three stop lugs as gauged by eye.
- To check:
  1. Disengage the clutch. Trip clutch trip lever and rotate main shaft until trip lever is over the shoe lever. Take up play of shoe lever inward by snapping the trip lever over the shoe lever. Check clearance between shoe lever and drum at each stop position. With trip lever at the stop position which yields greatest clearance, rotate main shaft slowly until the trip lever just falls off the stop lug. Check clearance between trip lever and drum.
- To adjust:
  1. Back off trip lever adjusting screw and position trip lever eccentric stop post. Tighten nut.
2.22 Main Shaft and Trip Shaft Mechanisms (Cont.)

**SECTION 573-115-700TC**

**TYPE BOX CLUTCH TRIP LEVER**

1. **Requirement**
   - Clutch Trip Shaft Cam Follower Roller (see PAR. 2.18) on Lowest Surface of Cam (Located on Code Bar Clutch).
   - Clearance between Inner Face of Type Box Clutch Trip Lever and the Clutch Disc Stop Lug.
   - Min. 0.025
   - Max. 0.045

To adjust:
- Loosen Clamp Screw and Position Stop, Tighten Screw.

2. **Requirement**
   - When Positioning the Trip Arm determine that the Latch Lever has some Side Play
   - Max. 0.008 Inch

To adjust:
- Position the Clutch Trip Arm on its Shaft with the Clamp Screw loosened, Tighten Screw.

**CLUTCH SHOE LEVER**

**Requirement**
- Gap between Clutch Shoe Lever and Its Stop Lug should be 0.055 Inch to 0.085 Inch greater when Clutch is Engaged than when the Clutch is Disengaged.

To check:
- Disengage the Clutch and Measure the Gap, Trip the Clutch and Rotate it until the Clutch Shoe Lever is Toward the Bottom of the Unit, Again Measure the Gap with the Clutch thus Engaged.

**TO ADJUST**
- Loosen the Two Clamp Screws on the Clutch Disc. Engage a Wrench or Screwdriver on the Lug of the Adjusting Disc and Rotate the Disc. Tighten Screws.

(LEFT SIDE VIEW)
2.23 Main Shaft and Trip Shaft Mechanisms (Cont.)

**CLUTCH SHOE LEVER SPRING REQUIREMENT**

<table>
<thead>
<tr>
<th>Type</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE-STOP CLUTCHES</td>
<td>15 OZS.</td>
<td>20 OZS.</td>
</tr>
<tr>
<td>MULTIPLE-STOP CLUTCHES</td>
<td>16 OZS.</td>
<td>22 OZS.</td>
</tr>
</tbody>
</table>

**CLUTCH DRUM POSITION (EXCEPT SELECTOR) REQUIREMENT**

- Clutch shoe lever held disengaged: Clutch should have some end play
  - Maximum: 0.015 inch

To adjust position each drum and spacing clutch set collar with mounting screws loosened, tighten screws.

**NOTE**

In order to check this spring tension, it is necessary to remove the clutch from the main shaft. Therefore, it should not be checked unless there is good reason to believe that it does not meet its requirement.

**CLUTCH DRUM REMOVED, SPRING SCALE APPLIED TO PRIMARY SHOE AT A TANGENT TO THE FRICTION SURFACE.**

<table>
<thead>
<tr>
<th>Type</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE-STOP CLUTCHES</td>
<td>3 OZS.</td>
<td>5 OZS.</td>
</tr>
</tbody>
</table>

To start the primary shoe moving away from secondary shoe at point of contact.
2.24 Spacing Mechanism

(B) **Spacing Gear Phasing Requirement**
Spacing Clutch Disengaged. Index line on the spacing pawl should be as near as possible to the center of the two lines on the pawl retaining washer.

To adjust, remove the mounting screw from the spacing shaft gear. Hold the pawls in alignment and engage the spacing shaft gear with the clutch gear at a point where the spacing shaft gear mounting screw hole is in line with the tapped hole in the spacing shaft and insert the mounting screw. Tighten screw.

(A) **Spacing Gear Clearance Requirement**
Carriage fully returned, minimum backlash of spacing gears without bind.

To adjust, insert shims between the spacing shaft bearing and front plate at upper mounting screw to increase clearance and at lower mounting screw to decrease backlash. Tighten screw.
2.25 Line Feed and Platen Mechanism

LINE FEED CLUTCH PHASING REQUIREMENT
LINE FEED CLUTCH DISENGAGED, BOTH LINE-FEED BARS SHOULD ENGAGE TEETH OF LINE FEED SPUR GEAR.
TO ADJUST
LOosen ASSEMBLY BEARING POST, RE-MESH LINE FEED ECCENTRIC SPUR GEAR WITH CLUTCH GEAR, TIGHTEN POST.

LINE FEED BARS ENGAGED
LINE FEED SPUR GEAR
BEARING POST
(RIGHT SIDE VIEW)

LINE FEED ECCENTRIC SPUR GEAR

2.26 Positioning Mechanism
INNER BEARING RACE
MOUNTING SCREWS

ECCENTRIC BEARING
ASSEMBLY BEARING POST
LEFT SIDE FRAME

ROCKER SHAFT LEFT BRACKET REQUIREMENT
ROCKER SHAFT LEFT BRACKET FIRMLY SEATED AGAINST INNER BEARING RACE.
TO ADJUST
HOLD ROCKER SHAFT IN EXTREME LEFT POSITION AND POSITION THE BRACKET AGAINST THE INNER BEARING RACE WITH MOUNTING SCREWS LOOSENED, TIGHTEN SCREWS.

ROCKER SHAFT LEFT BRACKET
(RIGHT SIDE VIEW)

ROCKER SHAFT
BALL BEARING
LEFT SIDE FRAME
SECTION 573-115-700TC

2.27 Positioning Mechanism (Cont.)

ROCKER SHAFT BRACKET ECCENTRIC STUD

(1) REQUIREMENT — WITH TYPE BOX CLUTCH DIENGAGED AND PLAY IN LOCKING ARM TAKEN UP TOWARD FRONT, GAP BETWEEN LOWER SIDE OF LOCK LEVER ROLLER AND TOP EDGE OF SHOULDER ON HORIZONTAL POSITIONING LOCK LEVER SHOULD BE:

MIN. 0.055 INCH

MAX. 0.090 INCH

(2) REQUIREMENT — MAKE SURE THAT ROCKER SHAFT DRIVE LINK IS FREE IN ITS BEARINGS (NOT UNDER LOAD) WHEN CLUTCH IS IN (a) ITS STOP POSITION; (b) WHEN IT IS ROTATED 180 DEGREES FROM STOP POSITION.

TO ADJUST — (1) POSITION ECCENTRIC STUD IN LOWER END OF ROCKER-SHAFT LEFT BRACKET. TIGHTEN NUT. KEEP HIGH PART OF ECCENTRIC (MARKED WITH DOT) BELOW CENTER LINE OF DRIVE LINK. (2) MAKE SURE THAT STUD IS FREE IN TYPE BOX CLUTCH BEARING AT POSITIONS (a) AND (b) ABOVE (NO PUSHER OR PULLING FORCE ON DRIVE LINK). CHECK MANUALLY BY MOVING LINK TOWARD LEFT SIDE FRAME AND THEN IN REVERSE DIRECTION.

NOTE — ANY CHANGE IN THIS ADJUSTMENT WILL REQUIRE THAT THE FOLLOWING RELATED ADJUSTMENTS BE RECHECKED: HORIZONTAL POSITIONING DRIVE LINKAGE (PAR. 2.35) RIGHT VERTICAL POSITIONING LEVER ECCENTRIC STUD (PAR. 2.28), LEFT VERTICAL POSITIONING LEVER ECCENTRIC STUD (PAR. 2.29) VERTICAL POSITIONING LOCK LEVER (PAR. 2.36), RIBBON FEED LEVER BRACKET (PAR. 2.53), FUNCTION STRIPPER BLADE ARMS (PAR. 4.18), SPACING TRIP LEVER BAIL CAM PLATE (PAR. 2.31), REVERSING SLIDE BRACKETS (PAR. 2.34) AND RIBBON REVERSE SPUR GEAR (PAR. 2.52) PRINTING TRACK (PAR. 2.49) AND PRINTING ARM (PAR. 2.50).
2.28 Positioning Mechanism (Cont.)

**RIGHT VERTICAL POSITIONING LEVER**

**ECCENTRIC STUD**

**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.

TO ADJUST

POSITION THE ECCENTRIC STUD IN THE RIGHT ROCKER SHAFT BRACKET, POSITION HIGH PART OF ECCENTRIC (MARKED WITH DOT) TOWARD THE REAR. THE HIGH PART OF THE ECCENTRIC CAN ALSO BE IDENTIFIED BY THE EXPOSED PORTION OF THE FLAT SURFACE OF THE VERTICAL POSITIONING LINK. TIGHTEN NUT.

**VERTICAL POSITIONING LEVER SPRING**

**REQUIREMENT**

VERTICAL POSITIONING LEVER TOES (RIGHT AND LEFT) IN CONTACT WITH THE SUPPRESSION CODE BAR, LEVERS NOT BUCKLED.

- MIN. 4 OZS.
- MAX. 12 OZS.

TO MOVE THE LINK EXTENSION AWAY FROM THE VERTICAL POSITIONING LEVER.

CHECK BOTH RIGHT AND LEFT SPRINGS.
SECTION 573-115-700TC

2.29 Positioning Mechanism (Cont.)

VERTICAL POSITIONING LOCK LEVER
SPRING

REQUIREMENT
TYPE BOX CLUTCH DISENGAGED
MIN. 5 OZS.
MAX. 8 OZS.
TO START LOCK LEVER MOVING,
CHECK RIGHT AND LEFT SPRINGS.

LEFT VERTICAL POSITIONING LOCK LEVER

LEFT VERTICAL POSITIONING LEVER

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

COMMON CODE BAR

VERTICAL POSITIONING
LEVER TOE

LEFT VERTICAL POSITIONING
LEVER ECCENTRIC STUD

REQUIREMENT

TO CHECK
COMMON CODE BAR IN SPACING
POSITION. TRIP TYPE BOX
CLUTCH. ROTATE MAIN
SHAFT UNTIL RIGHT VER-
TICAL 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
POSITION ECCENTRIC STUD
ON ROCKER SHAFT LEFT
BRACKET INNER ARM, POSI-
TION HIGH PART OF CAM
(MARKED WITH DOT) TOWARD
REAR. TIGHTEN NUT.
2.30 Spacing Mechanism (Cont.)

NOTE: CHECK RELATED ADJUSTMENTS, PARS. 2.43, 2.44, AND 2.47, IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

Oscillating Rail Slide Position

**Requirement**

Carriage Return Ring and Automatic Carriage Return-Line Feed Ring free in maximum counterclockwise position on Spacing Drum, 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 position slide on wire rope with clamp screws loosened. Tighten screws.

NOTE: For earlier design see Par. 4.07.

---

Oscillating Rail Slide

Clamp Screw

Pulley Wire Rope

Ratchet

Mounting Screws

Carriage Return Ring

(Front View)

Spacing Drum

Automatic Carriage Return-Line Feed Ring (And Space Suppression Ring)

Spacing Feed Pawl

Spacing Feed Pawl Spring Bracket

Spacing Feed Pawl Spring

Requirement

Each spacing pawl in least advanced position resting against ratchet wheel. Each spring unhooked from bracket

Min. 2-1/2 ozs.

Max. 6 oz.

To pull springs to installed length.

**Note:** On units equipped for 5 or 6 spaces per inch this tension should be

Min. 7-1/2 ozs.

Max. 11 ozs.

To pull springs to installed length, check the other spacing pawl spring in the same manner.
2.31 Spacing Mechanism (Cont.)

(A) 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 position cam plate on rocker shaft with mounting screws loosened, position forward edge of cam plate parallel to shaft. Tighten screws.

(B) SPACING TRIP LEVER SPRING

Requirement:
- Type box clutch disengaged.
  - Min. 2-1/2 ozs.
  - Max. 5 ozs.
- To start lever moving.

(C) SPACING TRIP LEVER BAIL SPRING

Requirement:
- Spacing trip lever bail against stop, spacing trip lever bail spring unhooked.
  - Min. 8 ozs.
  - Max. 12 ozs.
- To pull spring to installed length.
2.32 Function Mechanism

(B) FUNCTION RESET BAIL SPRING --- WITH TYPING UNIT INVERTED, HOLD #1 CODE BAR IN ITS MARKING POSITION SO THAT NO FUNCTION BAR IS SELECTED. ROTATE MAIN SHAFT UNTIL FUNCTION RESET BAIL SPRINGS ARE IN THEIR MINIMUM LENGTH POSITION. HOOK A 32 OZ. SCALE (BETWEEN CLUTCH TRIP SHAFT AND SPACE SUPPRESSOR BAIL) ON FRONT EDGE OF RESET BAIL (AT MIDDLE OF BAIL) AND PULL REARWARD.

MIN. 10 OZS. --------------------- MAX. 22 OZS. (TO START BAIL MOVING).

(A) FUNCTION RESET BAIL BLADE (FOR UNITS WITH 2-STOP FUNCTION CLUTCH SEE PAR. 4.09)

(1) REQUIREMENT --- WITH ALL CLUTCHES DISENGAGED, TRIP CODE BAR CLUTCH AND TURN MAIN SHAFT UNTIL CODE-BAR CLUTCH TRIP LEVER JUST TOUCHES ITS STOP LUG. UNLATCH ALL FUNCTION PAWLS FROM THEIR FUNCTION BARS. HOLD RESPECTIVE FUNCTION BAR IN ITS EXTREME REARWARD POSITION WITH SPRING HOOK; CLEARANCE BETWEEN FUNCTION BAR AND RESET BAIL BLADE SHOULD BE

MIN. 0.018 INCH --------------------- MAX. 0.035 INCH

TO CHECK --- MEASURE CLEARANCE AT BARS IN STUNT BOX SLOTS, NO'S 1, 4, 11, 18, 23, 33, 38 AND 41. IF A DESIGNATED SLOT IS VACANT, USE NEAREST BAR OR SELECT BAR WITH HIGHEST NUMBERED SLOT WHEN A BAR IS LOCATED ON BOTH SIDES OF VACANT SLOT. (VIEW SLOTS FROM REAR, NUMBERING FROM LEFT TO RIGHT).

TO ADJUST --- POSITION BLADE ON RESET BAIL WITH ITS MOUNTING SCREWS FRICTION TIGHT. TIGHTEN SCREWS.

(2) REQUIREMENT --- EACH FUNCTION PAWL SHOULD OVER TRAVEL ITS FUNCTION BAR BY AT LEAST 0.002 INCH WITH INDICATED TENSIONS APPLIED. CHECK PAWLS ONE AT-A-TIME AT SLOT NO'S. USED ABOVE.

TO CHECK --- IF CARRIAGE RETURN LEVER ADJUSTMENT HAS NOT BEEN MADE, LOOSEN ITS CLAMP SCREW. LATCH FUNCTION PAWLS BY LOWERING STRIPPER BLADE; TRIP CODE BAR CLUTCH AND POSITION ITS RELEASE LEVER AS IN (1) ABOVE. STRIP OFF ANY FUNCTIONS WHICH MAY HAVE BEEN SELECTED.

TO ADJUST --- REFINE REQUIREMENT (1) ABOVE, HOLDING THE READJUSTMENT WITHIN LIMITS

MIN. 0.018 INCH --------------------- MAX. 0.035 INCH

SECTION 573-115-700TC

2.33 Function Mechanism (Cont.)

NOTE 1. FOR UNITS WITH ADJUSTABLE GUIDE PLATES AND ONE-STOP FUNCTION CLUTCHES, PROCEED AS SPECIFIED.

NOTE 2. FOR UNITS WITH ADJUSTABLE GUIDE PLATES AND TWO-STOP FUNCTION CLUTCHES, CHANGE FIRST SENTENCE IN REQUIREMENT (1) TO "DISENGAGE FUNCTION CLUTCH AT STOP GIVING LEAST CLEARANCE." THEN PROCEED AS SPECIFIED.

FIGS - LTRS SHIFT CODE BAR OPERATING MECHANISM

(1) REQUIREMENT
WITH FUNCTION CLUTCH ROTATED UNTIL CLUTCH DISC 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.

NOTE 3: THERE SHOULD BE SOME CLEARANCE BETWEEN THE UNOPERATED SHIFT SLIDE AND ITS GUIDE PLATE, WHEN THE SHIFT SLIDE HAS REACHED ITS POSITION OF MAXIMUM TRAVEL.

TO ADJUST POSITION UPPER AND/OR LOWER GUIDE PLATE BY THE ADJUSTING SLOT WITH THE CLAMP NUTS LOOSENED. TIGHTEN NUTS.

NOTE 4: FOR EARLIER DESIGN SEE PAR. 4.08.
2.34 Positioning Mechanism (Cont.)

(A) REVERSING SLIDE DETENT SPRING REQUIREMENT
SLIDE IN LEFT HAND POSITION. SCALE HOOKED IN UPPER RIGHT HAND DETENT NOTCH
MIN. 2 OZS.
MAX. 4-1/2 OZS.
TO START DETENT MOVING

(B) 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.
TO ADJUST
POSITION THE REVERSING SLIDE STUD IN ITS ELONGATED HOLE WITH ITS MOUNTING NUT LOOSENED. TIGHTEN NUT.

(C) REVERSING SLIDE BRACKETS REQUIREMENT
TYPE BOX CLUTCH, CODE BAR CLUTCH, AND FUNCTION CLUTCH DISENGAGED.
REVERSING SLIDEMOVED 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 MIN. 0.030 INCH MAX. 0.050 INCH MEASURED AT POINT OF MAXIMUM CLEARANCE

LEFT HORIZONTAL POSITIONING DRIVE LINK

TO ADJUST
POSITION EACH REVERSING SLIDE BRACKET WITH ITS CLAMP SCREW LOOSENED. TIGHTEN SCREW.

RIGHT HORIZONTAL POSITIONING DRIVE LINKAGE
NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS WITH LATER DESIGNED DRIVE LINKAGE AND TORSION SPRINGS. FOR EARLIER DESIGN SEE PAR. 4.10 AND 4.11.

**HORIZONTAL POSITIONING DRIVE LINKAGE REQUIREMENT**

- **Type Box Clutch Disengaged.**
- **Code Bars 4 and 5 to 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)

<table>
<thead>
<tr>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.090 inch</td>
<td>0.110 inch</td>
</tr>
</tbody>
</table>

To adjust

Loosen bearing stud mounting screws and connecting strip mounting screws friction tight. Position one or both bearing studs on the connecting strip to provide 0.095 inch to 0.105 inch between the center horizontal slide and the decelerating slide on the side where the link is not buckled. Tighten the two inner mounting screws.

Change position of reversing slide and check opposite clearance. Equalize by shifting both studs and connecting strip as a unit. Hold the drive linkage hub against the lower vertical link of the drive linkage. Tighten the two outer bearing stud mounting screws. Check the linkage for freedom throughout a complete cycle.

The type box clutch disc should have some movement in the normal direction of rotation in the stop position.

**NOTE:** FOR EARLIER DESIGN SEE PAR. 4.10
2.36 Positioning Mechanism (Cont.)

**VERTICAL POSITIONING LOCK LEVER**

(1) **Requirement**
Letters combination set up on code bars. Main side operating levers at upper end of travel. Upper notch of vertical positioning lock lever fully engaged (manually if necessary) with vertical slide projection. Upper surface of follower arm rear extension should be min. in contact with max. 0.004 inch away from inner extension of main side lever.

(2) **Requirement**
With play taken up by pulling upward with 8 ozs. tension on type box carriage track, vertical surfaces min. in contact with max. 0.012 inch away from each other to adjust position right and left vertical positioning lock levers with clamp screws loosened. Tighten screws.

*LEFT VERTICAL POSITIONING LOCK LEVER*

*LEFT VERTICAL SLIDE PROJECTION*

*CLAMP SCREWS*

*INNER EXTENSION*

*LEFT MAIN SIDE LEVER*

*LEFT FOLLOWER ARM REAR EXTENSION*
2.37 Spacing Mechanism (cont.)

**LOWER DRAW-WIRE ROPE PULLEY BAIL SPRING REQUIREMENT**

- Spring unhooked from pulley bail, bail extension resting on opening in front plate.
- MIN. 18 OZS.
- MAX. 22 OZS.
- To pull spring to position length.

**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**

- Advance printing carriage to extreme right hand position. Rotate type box clutch 1/2 revolution. Loosen rope clamp screw one turn only. Position pulley bearing studs, with their mounting screws loosened, to meet requirement. Check that cable has moved around its equalizing clamp so that rear cable has slightly greater tension than front cable, gauged by feel. Tighten the clamp screw.
2.38 Spacing Mechanism (continued)

CARRIAGE RETURN SPRING

Requirement
Pull required to start spring drum moving
Min 3-1/2 lb—Max 4-1/4 lb

To Check
Spacing drum in its returned position.
Printing track in lower position. Remove lower cable roller spring. Hold spacing pawl, buffer slide and carriage return latch to prevent interference with spacing drum.

To Adjust
Spring drum nut loosened. Rotate spring drum ratchet wheel to increase tension. Operate escapement lever to decrease tension. Tighten nut.

Note: At altitudes higher than 2000 feet above sea level keep spring tension to the minimum.

SPACING FEED PAWL RELEASE LINK SPRING

Requirement
Min 1/2 oz—Max 2-1/2 oz
to start spring stretching.
2.39 Spacing Mechanism (Cont.)

(A) CARRIAGE RETURN LATCH BAIL

REQUIREMENT
CARRIAGE FULLY RETURNED (SEE PAR. 2.43)
PLAY IN CARRIAGE RETURN BAIL TAKEN UP
TO RIGHT BY HOLDING RIGHT SIDE OF BAIL
AGAINST ITS RETAINER. CLEARANCE BETWEEN
CARRIAGE RETURN LATCH BAIL AND CARRIAGE
RETURN LEVER.
MIN. 0.004 INCH
MAX. 0.040 INCH
TO ADJUST
POSITION LATCH BAIL PLATE WITH CLAMP
SCREW LOOSENED. TIGHTEN SCREW.

(b) CARRIAGE RETURN LATCH
BAIL SPRING
REQUIREMENT
SPACING DRUM FULLY RETURNED
MIN. 3 OZS.
MAX. 4-1/2 OZS.
TO START LATCH BAIL MOVING
2.40 Spacing Mechanism (Cont.)

FUNCTION PAWL

CARRIAGE RETURN FUNCTION BAR

UNSHIFT ON SPACE

(LIGHT SIDE VIEW)

RIGHT SIDE FRAME

(FRONT VIEW)

CARRIAGE RETURN LEVER

REQUIREMENT (UNITS EQUIPPED WITH ONE-STOP FUNCTION CLUTCH)

CARRIAGE RETURN FUNCTION SET UP 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

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

POSITION CARRIAGE RETURN LEVER ON CARRIAGE RETURN BAIL WITH CLAMP SCREW LOOSENED. TIGHTEN SCREW.
SECTION 573-115-700TC

2.41 Spacing Mechanism (Cont.)

Transfer Slide Spring Requirement

Transfer slide in extreme left position.
Spring unhooked.
Min. 3-1/2 OZS.
Max. 4-1/2 OZS.
To pull spring to installed length.

Dash Pot 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 one CR and one LF signal between lines, first character of each line should be printed in same location as if unit was manually operated slowly.
To adjust turn down vent screw until slight pneumatic bounce is perceptible, back off screw until effect disappears.
For dashpots with one vent hole: then back screw off one full turn, tighten nut.
For dashpots with two vent holes: then back screw off 1/4 turn, tighten nut.

Note: at altitudes higher than 2000 FT. above sea level, it may also be necessary to reduce the carriage return spring requirement (par. 2.38) towards the minimum.

2.42 Function Mechanism (Cont.)

Keyboard Lock Levers Slide Arm

Keyboard Lock Lever Spring (if unit is equipped) Requirement (Unit upside down)
Scale applied to bell crank
Min. 1/2 OZ.
Max. 1-1/2 OZS.
To start keyboard lock lever moving

Keyboard Lock Lever
2.43 Spacing Mechanism (Cont.)

1. When adjustments on this page are made, check related requirements in paras. 2.30, 2.44, and 2.47.

2. For sprocket feed printer requirements refer to adjustments in paras. 2.71 through 2.75.

3. Left margin may be varied as required from zero to one inch. Maximum range of adjustment for mechanisms with standard (10 characters-per-inch) spacing is as follows:
   (a) Friction feed platen - 85 characters
   (b) Sprocket feed platen - 74 characters

4. Printing carriage position requirement refer to standard adjustment --- par. 2.47

5. For early design refer to par. 4.12.

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**NOTES**

1. When adjustments on this page are made, check related requirements in paras. 2.30, 2.44, and 2.47.

2. For sprocket feed printer requirements refer to adjustments in paras. 2.71 through 2.75.

3. Left margin may be varied as required from zero to one inch. Maximum range of adjustment for mechanisms with standard (10 characters-per-inch) spacing is as follows:
   (a) Friction feed platen - 85 characters
   (b) Sprocket feed platen - 74 characters

4. Printing carriage position requirement refer to standard adjustment --- par. 2.47

5. For early design refer to par. 4.12.

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**AUTOMATIC CR/LF BELL CRANK SPRING REQUIREMENT --- (FOR UNITS SO EQUIPPED).**

With function clutch disengaged, min. 2-1/2 ozs. --- max. 7 ozs. to move the bell crank.

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**LEFT MARGIN REQUIREMENTS --- (72 CHARACTER TYPICAL LINE).**

(1) With type box clutch disengaged, spacing drum in its return position and type box shifted to letters position; clearance between left edge of platen and letters print indicator. (See note 3).
   Min. 15/16 inch --- Max. 1-1/16 inch.
   To adjust --- position stop arm of spacing drum* with its clamp screws loosened. Tighten screws.

(2) With spacing clutch disengaged, front spacing feed pawl farthest advanced, spacing drum fully returned (dash pot plunger depressed fully) play in spacing shaft gear (par. 2.24) taken up in clockwise direction; clearance between pawl and shoulder of ratchet wheel tooth immediately ahead.
   Min. Some --- Max. 0.008 inch

(3) The rear pawl, when farthest advanced, should drop into indentation between ratchet wheel teeth and should bottom firmly in notch.

To adjust --- refine requirement (1) above.

*Shift type box to ltrs. position, return print carriage to its left position and loosen carriage return ring mounting screws (4). Hold carriage return ring in its counter-clockwise position, and position type box so that its ltrs. indicator aligns with required margin. Tighten mounting screws.
NOTE: CHECK RELATED ADJUSTMENTS, PARS. 2.30, 2.43 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.13
2.45 Positioning Mechanism (Cont.)

DECELERATING SLIDE SPRING

REQUIREMENT

PRINTING BAIL IN DOWNWARD POSITION, PRINTING CARRIAGE AND DECELERATING SLIDE ASSEMBLY IN RIGHT HAND POSITION.

MIN. 1/2 OZ.
MAX. 1-1/2 OZS.

TO START THE SLIDE MOVING.
WITH THE PRINTING CARRIAGE AND DECELERATING SLIDE IN THEIR LEFT HAND POSITION.
CHECK THE LEFT HAND DECELERATING SLIDE SPRING

NOTE: FOR EARLIER DESIGN SEE PAR. 4.13
2.46 Printing Mechanism

**PRINTING CARRIAGE LOWER ROLLER**

**REQUIREMENT**

CARRIAGE WIRE ROPE CLAMP SCREWS LOOSENED, PLAY OF CARRIAGE ON TRACK-MIN. WITHOUT BIND, THROUGHOUT TRACK'S FULL LENGTH TO ADJUST (ECCENTRIC BUSHING) POSITION LOWER ROLLER WITH SCREW NUT LOOSENED, KEEP HIGH PART OF ECCENTRIC (CHAMFERED CORNER) TOWARD THE RIGHT. TIGHTEN NUT.

TO ADJUST (SLIDING SCREW) POSITION LOWER ROLLER WITH MOUNTING SCREW LOOSENED, TIGHTEN SCREW.

**TYPE BOX CARRIAGE ROLLER ARM SPRING**

**REQUIREMENT**

MIN. 28 OZS.
MAX. 36 OZS.
TO START UPPER ROLLER, NEAREST TYPE BOX LATCH, MOVING AWAY FROM CARRIAGE TRACK.

**NOTE:** FOR EARLIER DESIGN SEE PAR. 4.14

--- TYPE BOX

PRINTING CARRIAGE POSITION REQUIREMENT
TYPE BOX IN LETTERS POSITION. M TYPE PALLET SELECTED. CARRIAGE AT APPROXIMATE MIDPOINT OF PLATEN. 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.

TO ADJUST
POSITION PRINTING CARRIAGE ON WIRE ROPE WITH CLAMP SCREWS LOOSENED. TIGHTEN SCREWS.

--- PERIOD TYPE PALLET

PRINTING HAMMER BEARING STUD REQUIREMENT
TYPE BOX AT MIDPOINT OF PLATEN AND IN POSITION TO PRINT PERIOD. PRINTING HAMMER IN CONTACT WITH TYPE PALLET AND PRESSED DOWNWARD AT BEARING POST. FACE OF HAMMER SHOULD BE FULLY ON END OF TYPE PALLET.

TO ADJUST
ADD OR REMOVE SHIMS BETWEEN SHOULDER ON BEARING POST AND STOP BRACKET. TIGHTEN NUT.
2. 48 Positioning Mechanism (Cont.)

(A) **SHIFT LINKAGE REQUIREMENT**

CARRIAGE NEAR MIDPOINT OF PLATEN. TYPE BOX IN POSITION TO PRINT LETTER "0". 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.

TO ADJUST POSITION LEFT SHIFT LINKAGE ON OSCILLATOR RAIL WITH TWO CLAMP SCREWS LOOSENED. TIGHTEN SCREWS TO RECHECK SHIFT ALTERNATELY FROM "W" TO "2". TAKE UP PLAY IN EACH DIRECTION. REFINED ADJUSTMENT IF NECESSARY.

NOTE: FOR SHIFT MECHANISMS WITH TORSION SPRINGS SEE PAR. 4.15

(B) **SHIFT LINKAGE SPRING REQUIREMENT**

LINK IN STRAIGHT POSITION MIN. 6 OZS.
MAX. 14 OZS.
TO START EACH LINK MOVING.

NOTE: FOR SHIFT MECHANISMS WITH TORSION SPRINGS SEE PAR. 4.15
2.49 Printing Mechanism (Cont.)

(A) PRINTING TRACK

REQUIREMENT
PRINTING TRACK IN ITS EXTREME DOWNWARD POSITION. BLANK SELECTION IN FIGURES. 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
POSITION THE PRINTING TRACK UP OR DOWN WITH ITS MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.

(B) PRINTING HAMMER PLUNGER SPRING

REQUIREMENT
MIN. 3 OZS.
MAX. 5-3/4 OZS.
TO START PLUNGER MOVING.

(C) PRINTING HAMMER OPERATING BAIL

SPRING (NOT AS ILLUSTRATED)

REQUIREMENT
OPERATING BAIL LATCHED.
SPRING ADJUSTING BRACKET IN LEFT-HAND NOTCH. HAMMER YIELD SPRING UNHOOKED.
MIN. 10 OZS.
MAX. 13 OZS.
TO START BAIL MOVING.

(D) PRINTING HAMMER YIELD SPRING

REQUIREMENT
PRINTING HAMMER OPERATING BAIL AGAINST ITS STOP.
MIN. 1 OZ.
MAX. 2-1/2 OZS.
TO START HAMMER BAIL MOVING (HORIZONTAL POSITION).

(E) PRINTING HAMMER OPERATING BAIL LATCH

SPRING (NOT AS ILLUSTRATED)

REQUIREMENT
PRINTING TRACK IN ITS EXTREME UPWARD POSITION.
MIN. 3 OZS.
MAX. 4-1/2 OZS.
TO START LATCH MOVING.
2.50 Printing Mechanism (Cont.)

PRINTING HAMMER STOP BRACKET

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

MIN. 0.005 INCH
MAX. 0.050 INCH

AT ANY POINT ALONG THE ENTIRE LENGTH OF THE PLATEN,
TO ADJUST --- POSITION STOP BRACKET BY MEANS OF ITS MOUNTING SCREW, TIGHTEN SCREWS.

NOTE 1
THE PRINTING ARM ADJUSTMENT SHOULD ALWAYS BE MADE WITH THE PRINTING HAMMER OPERATING BAIL SPRING BRACKET IN THE NO. 1 POSITION. POSITIONS NO. 2 AND 3 ARE TO BE USED ONLY FOR MAKING MULTIPLE COPIES.

TYPE PALLET SPRING

REQUIREMENT
TYPE BOX REMOVED FROM THE UNIT, 8 OZS. SCALE APPLIED VERTICALLY TO THE END OF THE PALLET SHANK.
MIN. 1/4 OZS.
MAX. 3/4 OZS.
TO START PALLET MOVING.

8 OZS. PRESSURE

NOTE 2
FOR EARLIER DESIGN SEE PAR. 4.16
2.51 Printing Mechanism (Cont.)

NOTE 1: THIS ADJUSTMENT APPLIES ONLY TO UNITS SO EQUIPPED AND SHOULD BE MADE WITH THE TYPEBOX IN ITS UPPER POSITION.

NOTE 2: RECHECK PRINTING STOP BRACKET ADJUSTMENT PAR. 2.50, AND READJUST IF NECESSARY.

NOTE 3: SOME TYPING UNITS ARE EQUIPPED WITH A RIBBON GUIDE WHICH HAS A TYPE BOX RETAINING CLIP WITH A LIMITED YIELD. IN CASES WHERE IT IS NECESSARY TO BACK THE ADJUSTING SCREW OUT TO PROVIDE HEAVIER PRINTING AT THE TOP OF A CHARACTER, IT MAY BE NECESSARY TO BEND THE SPRING CLIP ON THE RIBBON GUIDE TOWARD THE FRONT SO THAT THE TAB AT THE BOTTOM OF THE TYPE BOX IS HELD AGAINST THE HEAD OF THE ADJUSTING SCREW.
2.52 Printing Mechanism (Cont.)

CHECK THE TWO COLOR RIBBON REQUIREMENTS PARS. 3.44 AND 3.45 ON UNITS SO EQUIPPED.

RIBBON REVERSING LEVER - RIGHT
(RIGHT SIDE VIEW)

RIBBON REVERSING LEVER - LEFT
(LEFT SIDE VIEW)

(A) RIBBON REVERSE SPUR GEAR
REQUIREMENT
WHEN RIGHT REVERSING LEVER IS IN MAXIMUM DOWNWARD POSITION, THE LEFT REVERSING LEVER SHOULD BE IN ITS MAXIMUM UPWARD POSITION.

TO ADJUST
LOOSEN THE SET SCREWS IN THE DETENT CAM, LOOSEN THE LEFT SPUR GEAR NUT. SECURELY TIGHTEN THE RIGHT SPUR GEAR NUT. MOVE THE RIGHT REVERSING LEVER TO ITS MAXIMUM DOWNWARD POSITION AND HOLD LEFT REVERSING LEVER IN ITS MAXIMUM UPWARD POSITION. THEN TIGHTEN THE LEFT SPUR GEAR NUT.

NOTE 1: ROTATE TYPE BOX CLUTCH 1/2 TURN AND MOVE RIGHT REVERSING LEVER UNDER THE SEGMENT. THERE SHOULD BE SOME CLEARANCE BETWEEN SEGMENT AND THE LEVER. REFINE ADJ. IF NECESSARY.

(B) RIBBON REVERSE DETENT
REQUIREMENT
RIBBON REVERSE DETENT LINK BUCKLED IN ITS DOWNWARD POSITION, CLEARANCE BETWEEN DETENT LINK AND DETENT LEVER.
MIN. SOME --- MAX. 0.055 INCH
WHEN PLAY IN THE LEVER IS TAKEN UP LIGHTLY TOWARD THE RIGHT SIDE OF THE PRINTER.

TO ADJUST
HOLD LEFT RIBBON REVERSING LEVER IN ITS DOWNWARD POSITION, POSITION DETENT LINK, AND TIGHTEN THE UPPER SET SCREW IN THE HUB OF THE DETENT LINK. BUCKLE THE DETENT LINK UPWARD AND TIGHTEN LOWER SET SCREW.

NOTE 2: FOR EARLIER DESIGN SEE PAR. 4.17.

(C) RIBBON REVERSE DETENT LEVER SPRING
(IF UNIT IS EQUIPPED)
REQUIREMENT
DETENT LINK BUCKLED IN UPWARD POSITION
MIN. 10 OZS.
MAX. 18 OZS.
TO START DETENT LEVER MOVING TOWARD REAR.
2.53 Printing Mechanism (Cont.)

RIBBON FEED LEVER BRACKET

(1) REQUIREMENT (LEFT-HAND MECHANISM)
LEFT REVERSING LEVER IN UPWARD POSITION.
RIBBON MECHANISM IN UPPER POSITION.
RATCHET WHEEL HELD AGAINST THE DETENT LEVER.
CLEARANCE BETWEEN THE FRONT FACE OF THE
FEED LEVER AND THE SHOULDER OF A TOOTH
ON THE RATCHET WHEEL.
MIN. 0.015 INCH
MAX. 0.035 INCH
TO ADJUST
POSITION THE FEED LEVER BRACKET WITH ITS
MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.

(2) REQUIREMENT (RIGHT-HAND MECHANISM)
RIGHT REVERSING LEVER AND RIBBON
MECHANISM IN UPWARD POSITION.
ADJUST FEED LEVER BRACKET IN THE
SAME MANNER

NOTE 1:
ROTATE THE MAIN SHAFT. THE
RATCHET WHEEL SHOULD STEP ONE
TOOTH ONLY WITH EACH OPERATION.

NOTE 2:
ON UNITS WITH TWO COLOR RIBBON,
POSITION THE FEED LEVER BRACKET TO
THE UPPER FORWARD POSITION TO MEET
THE MAXIMUM REQUIREMENT.

REFER TO PARS. 3.44 AND 3.45
FOR TWO COLOR RIBBON MECHANISM

RIBBON RATCHET WHEEL FRICION
SPRING

REQUIREMENT
FEED LEVERS DISENGAGED.
MIN. 3 OZS.
MAX. 8-1/2 OZS.
TO START THE RATCHET WHEEL MOVING.

*TWO COLOR RIBBON REQUIREMENT
MIN. 3 OZS. MAX. 4 OZS.
TO START RATCHET WHEEL MOVING.

NOTE 3: IF MINIMUM REQUIREMENT OF SHORT LEVER IS
NOT MET, PULL LOWER END OF TORSION
SPRING TO REAR.
2.54 Printing Mechanism (Cont.)

**RIBBON LEVER SPRING**

**REQUIREMENT**

MIN. 1-1/2 OZS.
MAX. 3 OZS.
TO START THE LEVER MOVING. CHECK BOTH RIGHT AND LEFT SPRINGS

**RIBBON TENSION SPRING**

**REQUIREMENT**

RIBBON RATCHET WHEEL POSITIONED SO THAT EACH DRIVING PIN IS TOWARD THE OUTSIDE OF THE SPOOL SHAFT.
MIN. 3 OZS.
MAX. 5-1/2 OZS.
TO START SPOOL SHAFT MOVING.
NOTE: REFER TO BULLETIN 11498 FOR INSTRUCTIONS ON CODING THE UNCODED FUNCTION BAR.

(A) FUNCTION LEVER SPRING

NOTE: IF A FUNCTION LEVER OPERATES A CONTACT OR A SLIDE, HOLD OFF THE CONTACT OR SLIDE WHEN CHECKING THE SPRING TENSION.

REQUIREMENT
FUNCTION LEVER IN UNOPERATED POSITION.
SUPPRESSION BAIL HELD FORWARD.

STANDARD
OPERATES TWO CONTACTS
MIN. 1-1/2 OZS.
MAX. 2-3/4 OZS.

FUNCTION LEVER SPRING

FUNCTION PAWL SPRING

 FUNCTION PAWL

REAR END OF FUNCTION PAWL RESTING ON FUNCTION BAR
ONE STOP FUNCTION CLUTCH UNITS:
MIN. 3 OZS.
MAX. 5 OZS.
TWO STOP FUNCTION CLUTCH UNITS:
MIN. 7 OZS.
MAX. 10-1/2 OZS.
TO START FUNCTION BAR MOVING.
CHECK EACH SPRING.

FUNCTION PAWL SPRING

FUNCTION PAWL

FUNCTION BAR SPRING

FUNCTION BAR

FUNCTION LEVER

FUNCTION LEVER SPRING

SUPPRESSION BAIL

FUNCTION BAR SPRING

FUNCTION BAR SPRING

FUNCTION CLUTCH DISENGAGED.
FUNCTION PAWL HELD AWAY.
MIN. 2-1/2 OZS.
MAX. 3-1/2 OZS.
TO START FUNCTION BAR MOVING.

CAUTION: SEVERE WEAR TO THE POINT OF OPERATIONAL FAILURE WILL RESULT IF THE TELETYPEWRITER IS OPERATED WITHOUT EACH FUNCTION PAWL HAVING EITHER A RELATED FUNCTION BAR OR, WHERE A FUNCTION BAR IS MISSING, A RELATED FUNCTION PAWL CLIP TO HOLD THE FUNCTION PAWL AWAY FROM THE STRIPPER BLADE.
STUNT BOX CLIP (For Units Equipped With Clips Only)

1) Requirement (Right-Hand Position)
The clip should not prevent the associated function pawl from engaging its function bar.

To Adjust
- Position the clip to its extreme right-hand position.
- Tighten screw.

2) Requirement (Center Position)
The clip should hold function pawl out of engagement with its function bar but should not interfere with function lever.

To Adjust
- Position clip with its mounting screw loosened.
- Tighten screw.

3) Requirement (Left-Hand Position)
The clip should hold function pawl upward out of engagement with its function bar. It should also hold top end of function lever in its rear position.

To Adjust
- Position clip to its extreme left-hand position.
- Tighten screw.
2.57 Line Feed and Platen Mechanism (Cont.)

(B) **PLATEN DETENT BAIL SPRING**

**REQUIREMENT**
- DETENT SEATED BETWEEN TWO TEETH ON LINE FEED SPUR GEAR.
- MIN. 16 OZS.
- MAX. 32 OZS.

TO START DETENT BAIL MOVING.

**DETENT ECCENTRIC**

**DETENT STUD**

(C) **LINE FEED BAR RELEASE LEVER SPRING**

**REQUIREMENT**
- MIN. 3 OZS.
- MAX. 8 OZS.

TO START LEVER MOVING.

ON LP68
- MIN. 8 OZS.
- MAX. 12 OZS.

**HAND WHEEL**

**LINE FEED BAR RELEASE LEVER**

(A) **LINE FEED SPUR GEAR DETENT ECCENTRIC**

**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.
- ROTATE THE DETENT ECCENTRIC WITH ITS MOUNTING SCREW LOOSENED. KEEP HIGH PART OF ECCENTRIC UPWARD. TIGHTEN SCREW.

(D) **LINE FEED BAR BELL CRANK SPRING**

**REQUIREMENT**
- LEFT-HAND LINE FEED BAR IN REAR POSITION.
- FRICTION FEED SPROCKET FEED
  - MIN. 19 OZS. 28 OZS.
  - MAX. 24 OZS. 38 OZS.

TO START BAR MOVING.
2.58 Function Mechanism (Cont.)

**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**

WITH STRIPPER BLADE DRIVE ARM MOUNTING SCREWS LOOSENED, EQUALIZE THE OVERTRAVEL OF EACH CAM PEAK. TIGHTEN SCREWS.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.18
2.59 Spacing Mechanism (Cont.)

SPACING SUPPRESSION BAIL SPRING

REQUIREMENT
SPACING SUPPRESSION BAIL IN REAR POSITION. SCALE APPLIED NEAR CENTER OF HORIZONTAL PORTION OF BAIL.
MIN. 1/2 OZ.
MAX. 1-1/2 OZS.
TO START BAIL MOVING.

2.60 Line Feed and Platen Mechanism (Cont.)

LINE FEED STRIPPER BAIL SPRING

REQUIREMENT
LINE FEED CLUTCH DISENGAGED.
SCALE HOOKED UNDER LINE FEED STRIPPER BAIL.
MIN. 1/2 OZ.
MAX. 2 OZS.
TO START STRIPPER BAIL MOVING UPWARD.

EARLY DESIGN
REFER TO PAR. 2.61 FOR LATER DESIGN
SECTION 573-115-700TC

2.61 Line Feed and Platen Mechanism (Cont.)

SINGLE-DOUBLE LINE FEED LEVER

FUNCTION BAR

(RIGHT REAR VIEW)

SINGLE-DOUBLE LINE FEED STRIPPER BAIL ASSEMBLY SPRINGS

(1) REQUIREMENT

LINE FEED CLUTCH DISENGAGED AND SINGLE - DOUBLE LINE FEED LEVER IN SINGLE LINE FEED POSITION.

MIN. 1/2 OZ.

MAX. 2 OZS.

TO START STRIPPER BAIL ARM MOVING UPWARD.

(2) REQUIREMENT

LINE FEED CLUTCH DISENGAGED AND SINGLE - DOUBLE LINE FEED LEVER IN SINGLE LINE FEED POSITION

MIN. 1/2 OZ.

MAX. 2 OZS.

TO START STRIPPER BAIL ARM MOVING TO LEFT AS SHOWN.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.20
RIGHT MARGIN WITH
AUTOMATIC CARRIAGE RETURN - LINE FEED RING
REQUIREMENT (ON UNITS SO EQUIPPED)

TYPE BOX CLUTCH DISENGAGED. CARRIAGE
POSITIONED TWO SPACES BEFORE CHARACTER
ON WHICH AUTOMATIC CARRIAGE RETURN-LINE
FEED IS TO OCCUR. FRONT FEED PAWL FARTHEST
ADVANCED.

CLEARANCE BETWEEN EXTENSION ON RING
AND AUTOMATIC CARRIAGE RETURN-LINE FEED
BELL CRANK.
MIN. 0.040 INCH --- MAX. 0.055 INCH

TO ADJUST
POSITION RING WITH FOUR INDICATED
MOUNTING SCREWS LOOSENED.

SPACING CUT-OUT TRANSFER BAIL SPRING
SEE PAR. 2.44.

NOTE: FOR ADJUSTMENT ON EARLIER MODELS SEE PAR. 4.19
2.63 Positioning Mechanism (Cont.)

HORIZONTAL STOP SLIDE SPRING

(FRONT TOP VIEW)

HORIZONTAL STOP SLIDE SPRING

REQUIREMENT
CODE BARS IN MARKING POSITION (LEFT)
TYPE BOX CLUTCH ROTATED 1/4 TURN FROM ITS STOP POSITION
HORIZONTAL MOTION DECELERATING SLIDES (PAR. 2.35) HELD AWAY FROM HORIZONTAL STOP SLIDES
MIN. 1/2 OZ., MAX. 1-1/2 OZS. FOR UPPER AND LOWER SLIDES
MIN. 1-3/4 OZS., MAX. 3 OZS. FOR MIDDLE SLIDE
TO START SLIDE MOVING.
NOTE: WHEN CHECKING UPPER AND LOWER SLIDES, HOLD MIDDLE SLIDE 1/32 INCH FORWARD.

2.64 Line Feed and Platen Mechanism (Cont.)

PAPER STRAIGHTENER COLLAR - LEFT

PAPER STRAIGHTENER COLLAR - RIGHT

PAPER STRAIGHTENER SHAFT

(PAPER STRAIGHTENER LEVER SPRING)

REQUIREMENT
MIN. 1-1/2 OZS., MAX. 4 OZS.
TO START THE LEVER MOVING.

(PAPER STRAIGHTENER LEVER)

NOTE: FOR SPROCKET FEED MECHANISM SEE PAR. 2.75

Page 66
2.65 Line Feed and Platen Mechanism (Cont.)

**Paper Finger Shaft**

**Paper Finger**

**Requirement**

The pressure end of the paper fingers should overlap the paper from 3/8 inch to 1/2 inch.

To adjust, position the paper fingers by sliding them on their shaft.

**Paper Finger Spring**

**Requirement**

Pull upward on right paper finger to start left paper finger moving from platen.

Min. 3 OZS.
Max. 6 OZS.

**Note:** For sprocket feed mechanism see Par. 2.73

**Paper Finger – Right**

**Paper Finger Spring**

**(Right Side View)**

**Platen**

**Pressure Roller**

**Pressure Roller Lever Spring**

**Requirement**

Min. 28 OZS.
Max. 36 OZS.
To start each center lever moving, alternately.

**Paper Pressure Bail Spring**

**Requirement**

Scale hooked over pressure bail at each end of platen.

Min. 7 OZS.
Max. 20 OZS.
To move pressure bail from platen.
2.66 Function Mechanism (Cont.)

WIRE SPRING TYPE LUG

STANDARD LUG

(RIGHT SIDE VIEW)

NOTE: FOR EARLIER DESIGN SEE PAR. 4.21 AND 4.22

FUNCTION CONTACT SPRING

REQUIREMENT

CONTACT CLOSED
MIN. 1 OZ.
MAX. 2 OZS.
TO OPEN SWITCH CONTACT

FUNCTION LEVER (UNOPERATED)

FUNCTION LEVER (OPERATED)

TOP PLATE

CONTACT PLATE

(RIGHT SIDE VIEW)

NOTE: IF THE SWITCHES ARE REMOVED FROM THE STUNT BOX, THE FOLLOWING REQUIREMENTS APPLY:

(1) PROVIDE AT LEAST 0.006 INCH CLEARANCE BETWEEN THE CONTACT ARM AND THE VERTICAL PORTION OF THE CONTACT CLIP. IF THE SWITCH HAS CONTACTS FRONT AND REAR, THIS CLEARANCE APPLIES TO BOTH FRONT AND REAR. TO OBTAIN THIS CLEARANCE, POSITION THE CONTACT PLATE BEFORE TIGHTENING THE CONTACT PLATE SCREWS. THE CONTACT MUST BE MADE BEFORE THE FUNCTION LEVER TOUCHES THE TOP PLATE.

(2) ON SWITCHES WITH CONTACTS FRONT AND REAR, CHECK TO SEE THAT THERE IS A GAP OF 0.008 TO 0.028 INCH BETWEEN THE FORMED-OVER END OF THE FRONT CONTACT CLIP AND THE BOTTOM OF THE CONTACT ARM WHEN THE REAR CONTACT IS CLOSED.
UNSHIFT-ON-SPACE FUNCTION PAWL

(1) Requirement
To prevent unshift-on-space function, provide clearance between lower edge of the unshift-on-space function pawl and its function bar
Min 0.015 inch---Max 0.060 inch

To Adjust
Loosen locknut and turn disabling screw in. Tighten locknut.

(2) Requirement
To restore unshift-on-space function, back off screw so that pawl fully engages function bar. Then continue to turn screw out one to three turns. Tighten locknut.
SECTION 573-115-700TC

2.68 Codebar Mechanism (Cont.)

**CODE BAR DETENT REQUIREMENT**

FRONT PLATE REMOVED. ALL CLUTCHES DISENGAGED. SUPPRESSION AND SHIFT CODE BARS SHOULD DETENT EQUALLY (GAUGED BY EYE)

TO ADJUST

EQUALIZE THE DETENTING OF THE CODE BARS BY ADDING OR REMOVING SHIMS BETWEEN THE CASTING AND THE CODE BAR BRACKET. TIGHTEN SCREWS.

**NOTE**

UNLESS THERE IS REASON TO BELIEVE THAT THESE SPRINGS ARE CAUSING OPERATING FAILURE DO NOT CHECK THIS REQUIREMENT.

**REQUIREMENT**

CODE BAR DETENT BRACKET CAREFULLY REMOVED AND CODE BARS REMOVED FROM DETENT BRACKET. SCALE APPLIED TO DETENT BALL AND PULLED IN DIRECTION OF BALL TRAVEL

MIN. 1-1/2 OZS.
MAX. 3-1/2 OZS.

TO START BALL MOVING AGAINST COMPRESSION OF SPRING. CHECK EACH BALL

**CODE BAR YIELD SPRING (IF SO EQUIPPED)**

**REQUIREMENT**

SELECTOR CLUTCH, CODE BAR CLUTCH, AND TYPE BOX CLUTCH DISENGAGED. NO. 1 CODE BAR IN SPACING POSITION

MIN. 14 OZS.
MAX. 23 OZS.

TO START CODE BAR SHIFT BAR PIVOT MOVING AWAY FROM CODE BAR. CHECK NO. 2 AND COMMON CODE BAR SHIFT BAR IN THE SAME MANNER.
2.69 Spacing Mechanism (Cont.)

NOTE: FOR EARLIER DESIGN SEE PAR. 4.23

MARGIN INDICATOR LAMP
REQUIREMENT
OPERATING UNDER POWER, THE LAMP SHOULD LIGHT ON THE DESIRED CHARACTER.

TO ADJUST
SET THE TYPE BOX CARRIAGE TO PRINT THE DESIRED CHARACTER AND POSITION THE CAM DISC COUNTERCLOCKWISE ON THE SPRING DRUM WITH ITS THREE MOUNTING SCREWS LOOSENED SO THAT THE SWITCH JUST OPENS. IF A LINE SHORTER THAN 72 CHARACTERS IS REQUIRED, IT MAY BE NECESSARY TO REMOVE THE CAM DISC SCREWS AND INSERT THEM IN ADJACENT SLOTS IN THE DISC. IF THE RANGE OF ROTATION IN ONE SLOT IS NOT ENOUGH, TIGHTEN SCREWS.
2.70 Positioning Mechanism (continued)

**TYPEBOX POSITION**

**Requirement**
Typebox and spacing clutches disengaged. Typebox shifted to letters position. Four mounting screws loosened so that space suppression ring, or automatic carriage return line feed ring, is free to rotate on drum. (Units equipped with limited adjustment spacing drum: spacing cut out and automatic carriage return line feed arms in maximum counterclockwise position. Farthest advanced feed pawl engaged with tooth above drum cut-away section.)

Clearance between letters print indicator and center line of sprocket pins in right hub:

- Min 5/16 inch
- Max 7/16 inch

**To Adjust**

Loosen two typebox clamp screws and two printing carriage clamp screws. Position typebox. Tighten typebox clamp screws. Do not tighten printing carriage clamp screws until printing carriage position (2.47) adjustment is made.
2.71 Line Feed and Platen Mechanism (Con't)

(A) LEFT MARGIN REQUIREMENT

1. TYPE BOX CLUTCH DISENGAGED, SPACING DRUM FULLY RETURNED, AND TYPE BOX SHIFTED TO LETTERS POSITION: CLEARANCE BETWEEN CENTER OF LETTERS PRINT INDICATOR ON TYPE BOX AND CENTER LINE OF SPROCKET PINS AT LEFT HUB SHOULD BE:
   MIN. 5/16 INCH —— MAX. 7/16 INCH
   TO ADJUST --- POSITION CARRELCE RETURN RING WITH ITS MOUNTING SCREWS LOOSENED.

2. SPACING CLUTCH DISENGAGED, FRONT SPACING FEED PAWL IN ITS FARTHEST ADVANCED POSITION, SPACING DRUM FULLY RETURNED, AND PLAY IN SPACING GEAR (PAR. 2.24) TAKEN UP-CLOCKWISE: CLEARANCE BETWEEN PAWL AND SHOULDER OF RATCHET WHEEL TOOTH IMMEDIATELY AHEAD:
   MIN. SOME —— MAX. 0.008 INCH
   TO ADJUST --- REFINE REQUIREMENT (1) ABOVE

3. THE REAR PAWL WHEN FARTHEST ADVANCED SHOULD DROP INTO THE INDENTATION BETWEEN RATCHET WHEEL TEETH AND SHOULD BOTTOM FIRMLY IN NOTCH.

(B) PRINTING HAMMER STOP BRACKET

1. FOR UNITS WITH THICK TYPEBOX AND DUMMY TYPE PALLETS USE CORRESPONDING STANDARD ADJUSTMENT EXCEPT CLEARANCE BETWEEN PRINTING HAMMER AND DUMMY TYPE PALLETS SHOULD BE
   MIN. SOME --- MAX. 0.020 INCH

2. FOR UNITS WITH THIN TYPEBOX - NO DUMMY TYPE PALLETS, USE CORRESPONDING STANDARD ADJUSTMENT.

3. CERTAIN MULTIPLE FORM UNITS WILL REQUIRE A REFINEMENT OF STANDARD ADJUSTMENT FOR THE STOP BRACKET TO
   MIN. 0.005 INCH --- MAX. 0.015 INCH

(C) RIGHT MARGIN

1. FOR UNITS WITH LIMITED ADJUSTMENT SPACING DRUM, USE CORRESPONDING STANDARD ADJUSTMENT.

2. FOR UNITS WITH UNIVERSAL SPACING DRUM, USE CORRESPONDING STANDARD ADJUSTMENT.

(D) PRINTING CARRIAGE POSITION

USE PAR. 2.47

(E) TYPE BOX ALIGNMENT

USE PAR. 2.51

FOLLOWING THIS ADJUSTMENT, ALL SCREWS SHOULD BE TIGHTENED.
2.72 Line Feed and Platen Mechanism (Con't)

(A) Line Feed Spur Gear Detent Eccentric

Use Par. 2.57

(B) Printed Line Requirement

The bottom of the printed line should be 1/32 inch ± 1/64 inch (plus a multiple of 1/6 inch if required) above a horizontal line drawn even with the bottom edge of any sprocket hole. To adjust, loosen screws and position left sprocket. If other than standard paper is used, it may be necessary to make a variation in this adjustment. Tighten screws.

Note: The printed line adjustment is a field adjustment.

(C) Platen End Play Requirement

Line feed pawls disengaged. Platen shaft should have some end play max. 0.010 inch. To adjust, position platen spur gear with clamp screw loosened. Tighten screw.

(D) Sprocket Pin Separation Requirement

(1) With single sheet of sprocket feed paper placed on the platen the sprocket pins should be centrally located in the feed holes of the paper.

(2) Printed line should be parallel to a line drawn perpendicular to edge of paper within plus or minus 1/32 inch. To adjust, position right sprocket with clamp screw loosened. Tighten screw.

CLAMP SCREW

(RIGHT SIDE SPROCKET)

CLAMP SCREW

(LEFT SIDE SPROCKET)
2.73 Line Feed and Platen Mechanism (Con't)

1. Requirement

SPROCKET PIN SHOULD BE CENTRALLY LOCATED IN THE PAPER FINGER OR GUIDE BRACKET SLOT.

2. Requirement*

THE GAP BETWEEN THE PLATEN AND THE PAPER FINGER OR GUIDE BRACKET SHOULD BE STAPLED MULTIPLE COPY MIN. 0.050 INCH MAX. 0.105 INCH

SINGLE COPY OR UNSTAPLED MULTIPLE COPY

0.020 INCH

0.060 INCH

TO ADJUST WITH PAPER FINGER OR GUIDE BRACKET ASSEMBLY IN LATCHED POSITION, LOOSEN BOTH CLAMP SCREWS, POSITION ASSEMBLY HORIZONTALLY TO MEET REQUIREMENT (1). ROTATE ASSEMBLY TO MEET REQUIREMENT (2).

3. Requirement (Not Illustrated)

MIN. 0.035 INCH BETWEEN LEADING EDGE OF PAPER FINGER OR GUIDE BRACKET AND RIBBON GUIDE. BOTH RIGHT AND LEFT PAPER FINGERS MUST BE PARALLEL TO THE SAME PRINTED LINE AS GAUGED BY EYE.

TO ADJUST SELECT LETTERS COMBINATION AND ROTATE TYPE BOX CLUTCH 1/2 REVOLUTION. POSITION PAPER FINGERS BY MEANS OF ELONGATED MOUNTING HOLES. AFTER TIGHTENING THE SCREWS RECHECK THESE REQUIREMENTS.

*NOTE --- A MINIMUM CLEARANCE THAT WILL PASS STATIONERY FREELY IS DESIRED. THIS MINIMUM VALUE IS DEPENDENT UPON TYPE OF PAPER, NUMBER OF COPIES, STAPLING ETC.
2.74 Line Feed and Platen Mechanism (Cont.)

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**SPROCKET PIN SPRING**

**REQUIREMENT**

MIN. 6 OZS.
MAX. 8 OZS.

TO START DEPRESSING THE PIN.

---

**MOUNTING SCREW**

---

**PAPER GUIDE**

---

**SPROCKET PIN SPRING**

**REQUIREMENT**

MIN. 6 OZS.
MAX. 8 OZS.

TO START DEPRESSING THE PIN.

---

**THE CLEARANCE BETWEEN THE PLATEN AND THE FRONT EDGE OF THE PAPER GUIDE SHOULD BE**

**SINGLE COPY OR UNSTAPLED**

MULTIPLE COPY

MIN. 0.050 INCH 0.020 INCH
MAX. 0.105 INCH 0.060 INCH

TO ADJUST POSITION THE GUIDE WITH ITS REAR MOUNTING SCREWS LOOSENED.
TIGHTEN SCREWS.

---

**NOTE — A MINIMUM CLEARANCE THAT WILL PASS STATIONERY FREELY IS DESIRED. THIS MINIMUM VALUE IS DEPENDENT UPON TYPE OF PAPER, NUMBER OF COPIES, STAPLING ETC.**

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**RIBBON REVERSE SPUR GEAR**

USE PAR. 2.52

---

**RIBBON REVERSE DETENT**

USE PAR. 2.52

---

**LINE FEED BAR BELL CRANK SPRING**

USE PAR. 2.57 EXCEPT
MIN. 28 OZS.
MAX. 38 OZS.
TO START BAR MOVING.
2.75 Line Feed and Platen Mechanism (Con’t)

(A) **PAPER FINGER OR GUIDE BRACKET SHAFT SPRING**

**REQUIREMENT**
- MIN. 6 OZS.
- MAX. 10 OZS.

TO MOVE PAPER FINGER OR GUIDE BRACKET AGAINST THE PLATEN.

(B) **PAPER FINGER OR GUIDE BRACKET LATCH SPRING**

**REQUIREMENT**
- PAPER FINGER OR GUIDE BRACKET AGAINST PLATEN
- MIN. 8 OZS.
- MAX. 12 OZS.

TO START LATCH MOVING.

**NOTE**

SPROCKET FEED MECHANISM WITH RETRACTABLE PINS

**PAPER FINGER LOCKING ARM SPRING**

**REQUIREMENT**

- MIN 1 OZ --- MAX 1-1/2 OZS

TO MOVE ARM AWAY FROM PLATEN

**PLATEN DETENT BAIL SPRING**

USE PAR. 2.57
3. VARIABLE FEATURES

3.01 Horizontal Tabulator Mechanism

NOTE: FOR EARLIER DESIGN SEE PARS. 4.24 THROUGH 4.29.

TRIP LEVER ARM

SPACING CLUTCH STOP LEVER

REQUIREMENT
SPACING CLUTCH DISENGAGED. TRIP LEVER ARM AND INTERMEDIATE BAIL IN THEIR UPWARD POSITION. THE OUTER SURFACE OF THE TRIP LEVER SHOULD BE FLUSH WITH THE OUTER SURFACE OF THE SHOE LEVER OR UNDER FLUSH TO .010 INCH. CHECK AT STOP LUG WITH LEAST BITE.

TO ADJUST WITH ADJUSTING SCREW FRICITION TIGHT POSITION SPACING CLUTCH STOP LEVER. TIGHTEN SCREW.

NOTE IF THIS ADJUSTMENT IS CHANGED, CHECK THE LATCH BAIL ADJUSTING PLATE - PAR. 3.03

SPACING CLUTCH

CLUTCH STOP LEVER SPRING

REQUIREMENT
SPACING CLUTCH ENGAGED. ROTATE CLUTCH UNTIL STOP LEVER RESTS ON STOP LUG.

MIN. 11-1/4 OZS.
MAX. 14-1/4 OZS.
TO MOVE STOP LEVER AWAY FROM STOP LUG.
3.02 Horizontal Tabulator Mechanism (Con’t)

OPERATING LEVER EXTENSION LINK

NOTE

PRIOR TO THIS ADJUSTMENT CHECK THE FUNCTION RESET BAIL BLADE ADJUSTMENT.

REQUIREMENT

ON UNITS WITH TWO-STOP FUNCTION CLUTCHES, FUNCTION CLUTCH DISENGAGED, TYPE BOX CLUTCH ROTATED 1/2 REVOLUTION PAST STOP POSITION, ON UNITS WITH ONE-STOP FUNCTION CLUTCH, ROTATE FUNCTION CLUTCH UNTIL FUNCTION PAWL STRIPPER BLADE IS IN ITS LOWER POSITION AND THE FUNCTION RESET BAIL ROLLER IS ON THE HIGH PART OF ITS CAM. HORIZONTAL TABULATOR FUNCTION PAWL PULLED TO REAR UNTIL LATCHED ON ITS FUNCTION BAR. CLEARANCE BETWEEN FRONT END OF OPERATING LEVER EXTENSION LINK AND BLOCKING SURFACE OF BLOCKING LEVER MIN. 0.015 INCH --- MAX. 0.035 INCH

TO ADJUST

POSITION EXTENSION LINK ON OPERATING LEVER WITH MOUNTING STUD FRICTION TIGHT. TIGHTEN STUD.

NOTE: WHEN PULLING FUNCTION PAWL TO THE REAR, IF THE OPERATING LEVER CAM ARM SHOULD BE STRIPPED OFF THE TABULATOR SLIDE ARM BEFORE THE FUNCTION PAWL IS LATCHED ON THE FUNCTION BAR, TEMPORARILY DISABLE CAM PLATE STRIPPER BAIL ARM BY LOOSENING ITS ADJUSTING SCREW.

(LEFT SIDE VIEW)

OPERATING LEVER EXTENSION LINK SPRING

REQUIREMENT

TRIP ARM LATCH LEVER SPRING UNHOOKED. OPERATING LEVER IN OPERATED POSITION WITH EXTENSION LINK AGAINST BLOCKING LEVER MIN. 8-3/4 OZS. --- MAX. 10-3/4 OZS. TO START LINK MOVING.

NOTE

ON UNITS EQUIPPED WITH TRANSMITTER CONTROL CONTACT, HOLD CONTACT SPRING AWAY FROM STUD WHEN MEASURING TENSION.

OPERATING LEVER ADJUSTING PLATE

REQUIREMENT

OPERATING LEVER IN UNOPERATED POSITION. TAKE UP PLAY IN EXTENSION LINK AND BLOCKING LEVER TO MINIMIZE CLEARANCE. CLEARANCE BETWEEN FRONT END OF EXTENSION LINK AND LOWER PROJECTION OF BLOCKING LEVER MIN. 0.020 INCH --- MAX. 0.045 INCH

TO ADJUST

POSITION ADJUSTING PLATE ON BRACKET WITH MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.

NOTE

IF OPERATING LEVER EXTENSION LINK OR OPERATING LEVER ADJUSTING PLATE ADJUSTMENT IS CHANGED ON UNITS EQUIPPED WITH TRANSMITTER CONTROL CONTACT, CHECK CONTROL CONTACT GAP (PAR. 3.10) AND REMAKE IF NECESSARY.
**SECTION 573-115-700TC**

**3.03 Horizontal Tabulator Mechanism (Con't)**

**Requirement**

**TRIP LEVER ARM LATCH BAIL**

- OPERATING LEVER UNOPERATED.
- TRIP LEVER ARM UP. CLEARANCE BETWEEN THE TRIP LEVER ARM AND THE TRIP LEVER ARM LATCH BAIL MIN. 0.020 INCH --- MAX. 0.040 INCH.

**TO ADJUST**

POSITION LATCH BAIL ADJUSTING SCREW WITH ITS LOCK NUT LOOSENED. TIGHTEN LOCK NUT.

**Requirement**

**LATCH BAIL SPRING**

- OPERATING LEVER UNOPERATED.
- MIN. 2-1/2 OZS. --- MAX. 4-1/2 OZS.

**TO START LATCH BAIL MOVING.**

**Requirement**

**INTERMEDIATE BAIL SPRING**

- STOP ARM AND INTERMEDIATE BAIL IN UNOPERATED POSITION.
- MIN. 1-1/2 OZS. --- MAX. 3-1/2 OZS.

**TO PULL SPRING TO INSTALLED LENGTH.**

**Requirement**

**LATCH BAIL ADJUSTING PLATE**

- OPERATING LEVER EXTENSION LINK POSITIONED TO REAR AND LATCHED ON BLOCKING LEVER. LATCH BAIL IN FULLY LATCHED POSITION. SPACING TRIP LEVER DISENGAGED FROM INTERMEDIATE BAIL BY PUSHING FORWARD ON SPACE SUPPRESSION BAIL. CLEARANCE BETWEEN CLUTCH STOP ARM AND CLUTCH SHOE LEVER MIN. SOME --- MAX. 0.008 INCH.

**TO ADJUST**

POSITION LATCH BAIL ADJUSTING PLATE WITH MOUNTING SCREWS LOOSENED. CHECK AT THE CLUTCH SHOE LEVER WITH THE LEAST CLEARANCE. TIGHTEN SCREWS.
HORIZONTAL TABULATOR SLIDE ARM SPRING

REQUIREMENT
OPERATING LEVER IN OPERATED POSITION.
SLIDE ARM IN UNOPERATED POSITION.
MIN. 1-1/2 OZ.
MAX. 4-1/2 OZ.
TO START SLIDE ARM MOVING.

STRIPPER BAIL ARM

STRIPPER BAIL ARM SCREW

CAM PLATE STRIPPER BAIL

REQUIREMENT
OPERATING LEVER AND TABULATOR SLIDE ARM IN UNOPERATED POSITIONS.
SPACING CLUTCH ROTATED UNTIL HIGH PART OF RESTORING CAM IS OPPOSITE STRIPPER BAIL. CLEARANCE BETWEEN RESTORING CAM AND STRIPPER BAIL.
MIN. 0.010 INCH
MAX. 0.025 INCH
TO ADJUST
POSITION STRIPPER BAIL PLATE ON STRIPPER BAIL WITH STRIPPER BAIL ARM SCREW FRICITION TIGHT. TIGHTEN SCREW.

TRANSFER BAIL EXTENSION ARM

SPACING CUT-OUT TRANSFER BAIL

SET COLLAR

ADJUSTING SCREW

SPACING CUT-OUT TRANSFER BAIL

SET COLLAR

REQUIREMENT
TRANSFER BAIL SHOULD HAVE SOME END PLAY.
MAX. 0.008 INCH
TO ADJUST
POSITION SET COLLAR WITH SCREW LOOSENED. TIGHTEN SCREW.
SECTION 573-115-700TC

3.05 Horizontal Tabulator Mechanism (Cont.)

**SPACE SUPPRESSION BY-PASS SPRING**

**REQUIREMENT**
- MIN. 20 OZS.
- MAX. 26 OZS.
- TO START BAIL EXTENSION PAWL MOVING

**SPACING CUT-OUT TRANSFER BAIL**

**BAIL EXTENSION ARM**

**SPACE SUPPRESSION BY-PASS SPRING**

**SPACING CUT-OUT LEVER**

**BAIL EXTENSION ARM**

**SPACE SUPPRESSION BY-PASS SPRING**

**RIGHT MARGIN**

**REQUIREMENT**

CLEARANCE BETWEEN SPACING CUT-OUT LEVER ON SPACING DRUM AND BAIL EXTENSION ARM

MIN. 0.006 INCH

MAX. 0.025 INCH

**TO CHECK**

PLACE TYPE BOX IN POSITION TO PRINT CHARACTER ON WHICH SPACING CUT-OUT IS DESIRED. PULL FORWARD ON PART OF TRANSFER BAIL EXTENDING BELOW MOUNTING SHAFT UNTIL BAIL IS IN FULLY OPERATED POSITION. GAGE CLEARANCE.

**TO ADJUST**

POSITION CUT-OUT LEVER WITH CLAMP SCREW LOOSENED, TIGHTEN SCREW.

**NOTE**

FOUR SCREWS MUST BE LOOSENED TO ADJUST CIRCULAR CUT-OUT LEVERS. DO NOT LOOSEN HEX. HEAD SCREW THAT CLAMPS FRONT RING.

(RIGHT SIDE VIEW)
3.06 Horizontal Tabulator Mechanism (Con't)

NOTE:

BEFORE MAKING THIS ADJUSTMENT, CHECK LEFT MARGIN (PAR. 2.43) AND SPACING GEAR PHASING (PAR. 2.24) ADJUSTMENTS.

PURPOSE

TO SELECT TABULATOR STOP TO BE USED AS REFERENCE IN MAKING FINAL TABULATOR PAWL HORIZONTAL AND VERTICAL ADJUSTMENTS.

PROCEDURE

(1) BEGINNING WITH 15TH SLOT COUNTERCLOCKWISE FROM ROLLER ON TABULATOR RING, PLACE TABULATOR STOPS APPROXIMATELY AN EQUAL NUMBER OF SLOTS APART AROUND REMAINING SLOTTED PERIPHERY OF RING CORRESPONDING TO LENGTH OF PRINTED LINE.

(2) TO MOVE STOPS, HOOK SMALL SPRING HOOK IN HOLE AND PULL OUT RADIALY FROM DRUM. HOLDING STOP AWAY FROM DRUM, SLIDE IT ON GARTER SPRING TO DESIRED LOCATION AND INSERT IN SLOT. SPACING DRUM MAY HAVE TO BE ROTATED TO MAKE SOME SLOTS ACCESSIBLE. CAUTION: MAKE SURE ALL STOPS ARE FIRMLY SEATED AND NOT TURNED SIDEWAYS. DO NOT USE PLIERS TO MOVE STOPS.

(3) DISENGAGE ALL CLUTCHES SO FRONT SPACING FEED PAWL IS IN LOWER POSITION. PLACE PAWL ADJUSTING PLATE AT CENTER OF HORIZONTAL AND VERTICAL ADJUSTMENT: TO ADJUST VERTICALLY, LOOSEN BOTH MOUNTING SCREWS; TO ADJUST HORIZONTALLY, LOOSEN ONLY LEFT SCREW. HORIZONTAL ADJUSTMENT SHOULD BE MADE AFTER VERTICAL. DISENGAGE SPACING FEED PAWLS AND ALLOW DRUM TO ROTATE TO EXTREME COUNTERCLOCKWISE POSITION. KEEPING SPACING CLUTCH DISENGAGED, MANUALLY ADVANCE DRUM UNTIL FIRST STOP IS IMMEDIATELY TO LEFT OF PAWL. POSITION ADJUSTING PLATE HORIZONTALLY SO THAT STOP IS ALIGNED WITH LEFT EDGE OF PAWL SHOULDER.

(4) PLACE BLOCKING LEVER AND OPERATING LEVER SLIDE ARM IN UNBLOCKED POSITION. DISENGAGE FEED PAWLS AND LET DRUM ROTATE TWO SPACES COUNTERCLOCKWISE. BOTH FEED PAWLS SHOULD BE FULLY ENGAGED. BLOCK EXTENSION LINK WITH BLOCKING LEVER, GAUGE AND NOTE CLEARANCE BETWEEN STOP AND SLOPE ON PAWL.

(5) ROTATE DRUM CLOCKWISE UNTIL NEXT STOP IS JUST TO LEFT OF PAWL. REPEAT PROCEDURE DESCRIBED IN PARAGRAPH (4) FOR THIS STOP. REPEAT PROCEDURE FOR REMAINING STOPS, NOTING EACH CLEARANCE.

(6) STOP WITH MAXIMUM CLEARANCE SHOULD BE USED AS REFERENCE IN MAKING FINAL HORIZONTAL AND VERTICAL PAWL ADJUSTMENTS.
3.07 Horizontal Tabulator Mechanism (Cont.)

**TABULATOR PAWL - VERTICAL (FINAL)**

**TO CHECK**
- Position spacing drum such that reference tabulator stop, as determined by preliminary tabulator pawl adjustment (Par. 3.06), is opposite shoulder on pawl. Block extension link with blocking lever.

**REQUIREMENT**
- Clearance between pawl and stop:
  - Min. 0.055 inch
  - Max. 0.075 inch

**TO ADJUST**
- Position pawl adjusting plate with both mounting screws loosened. Tighten right screw only, using wrench to prevent bushing from turning.

---

**PAWL ADJUSTING PLATE**

**BLOCKING LEVER**

**EXTENSION LINK**

**MOUNTING SCREWS**

**TABULATOR PAWL SPRING**

**REQUIREMENT**
- Min. 3 ozs.
- Max. 5 ozs.

**TO START PAWL MOVING.**

**BLOCKING LEVER RETURN SPRING**

**REQUIREMENT**
- Min. 2-1/2 ozs.
- Max. 4-1/2 ozs.

**TO START BLOCKING LEVER MOVING.**
3.08 Horizontal Tabulator Mechanism (Cont.)

To check:

1. Disengage all clutches so that front spacing feed pawl is in lower position (as shown in Par. 3.06). Position spacing drum so that reference tabulator stop, as determined in preliminary tabulator pawl adjustment (Par. 3.06), is immediately to left of pawl. Operating lever slide arm should be forward in unblocked position. Disengage feed pawls and allow drum to rotate one space counterclockwise. Both feed pawls should be fully engaged. Move extension link to rear to blocked position.

2. Trip spacing clutch stop lever and slowly rotate main shaft until blocking lever is just tripped. Take up play in spacing shaft toward rear.

Requirement:

Some portion of clutch disc stop lug should be aligned with rear surface of spacing shaft gear.

To adjust:

Repeat procedure set forth in paragraph (1) above. Trip spacing clutch and rotate shaft until middle of stop lug is in line with rear surface of gear. If blocking lever tripped too soon, with left mounting screw loosened, position pawl adjusting plate to left until extension link can be blocked. Slowly move plate to right until blocking lever just trips. When adjusting trip-off point, care should be taken that blocking lever is cammed down by stop and not manually moved out of blocked position. Recheck requirement.

Note:

After obtaining trip-off point, continue rotating main shaft until spacing clutch is disengaged. Pawl should be to right of stop. When extension link is moved to rear, blocking lever should move to blocked position. If tip of pawl should rest on end of stop, readjust plate to right so that clearance between pawl and stop is:

- Min. 0.003 inch
- Max. 0.008 inch

Tighten screw.
3.09 Horizontal Tabulator Mechanism (Cont.)

**TABULATOR STOP SETTINGS**

**NOTE 1:**
For instructions on how to move tabulator stops, see tabulator pawl preliminary adjustment. Par. 3.06 (2)

(1) COLUMNAR TABULATOR STOPS

Place carriage in position to print first character in column. Place stop in slot immediately to left of pawl. To facilitate inserting stops, mark desired slot and rotate drum to more accessible position. For settings near left margin, count number of spacing operations from left margin and place stop corresponding number of slots counterclockwise from roller.

**NOTE 2:** When printing forms, check stop settings in relation to columns. Corresponding stops on all machines on a circuit must be the same number of slots from left margin.

(2) RIGHT MARGIN TABULATOR STOP (WITH WIDE SHELF)

**NOTE 3:** Before making this adjustment, check right margin and tabulator pawl adjustments.

Position printing carriage at right margin (spacing cutout operated). Insert stop with wide shelf in slot immediately to left of pawl. Shelf should extend to right so that pawl rests on it.
3.10 Horizontal Tabulator Mechanism (continued)

Note: The following two horizontal tabulator mechanism adjustments should be checked before making the transmitter control adjustments shown below.

1. Operating lever extension link (3.02)
2. Operating lever adjusting plate (3.02)

If either of the above adjustments are changed, the transmitter control adjustments should be rechecked.

TRANSMITTER CONTROL CONTACT SPRING

Requirement
Operating lever in unoperated position.
Min 3-1/2 oz---Max 4-1/2 oz
to just open contacts.

To Adjust
Bend the long contact spring.

Note 1: To facilitate bending contact spring, the contact bracket assembly may be removed from its mounting plate and taken partially out of typing unit. Loosen mounting screw, pivot contact bracket toward rear until it is clear of screw, slide bracket to left off pin in upper end of bracket mounting plate and lift switch out to a more accessible position. Install contact bracket assembly in reverse procedure after adjusting spring tension. Tighten screw.

LONG CONTACT SPRING

PIVOT
CONTACT ASSEMBLY BRACKET
BRACKET MOUNTING SCREW

TRANSMITTER CONTROL CONTACT GAP

Requirement
Operating lever extension link pulled to rear until blocked by blocking lever. Clearance between contacts
Min 0.010 inch---Max 0.020 inch

To Adjust
Position contact assembly bracket with mounting screw loosened. The bracket pivots about a pin at upper end of bracket.

Note 2: If there is not enough slack in switch cable assembly to permit access to mounting screw, loosen ties along cable and reposition cable to obtain a slight amount of slack at switch end.
3.11 Page Feed-Out Mechanism

(A) **Page Feed-Out Gear Play**

**Requirement**
Barely perceptible backlash.

To adjust position gear pivot post with nut loosened, tighten nut.

(B) **Mounting Bracket**

**Requirement**
Clearance between blocking arm and page feed-out slide.
Min. 0.002 inch
Max. 0.015 inch

To check, select feed-out sequence code bar clutch disengaged, take up play in blocking arm and feed-out slide to make clearance minimum.

To adjust, position lower portion of mounting bracket with mounting screws loosened, tighten screws.

(C) **Blocking Arm**

See Par. 3.12, switch operating arm.

(D) **Indexing Disc**

**Requirement**
Clearance between highest numbered index plate and bail
Min. 0.020 inch
Max. 0.040 inch

To check, line feed clutch disengaged, index plate adjacent to bail, take up play between gears to make clearance minimum.

To adjust, disengage gear from idler, turn handwheel clockwise until index plate just operates bail, engage first tooth on idler, position indexing disc with three mounting screws loosened, tighten screws.

Note: If page feed-out gear has uneven number of teeth, rotate platen until head of screw in platen spur gear is up and platen is detented, then proceed with adjustment.

(E) **Switch Operating Arm (Used Only with Transmitter Control)**

**Requirement**
Blocking arm in position to block slide, clearance
Min. 0.005 inch
Max. 0.005 inch

To adjust, position switch with two mounting screws loosened, tighten screws.

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3.12 Page Feed-Out Mechanism (Cont.)

(F) POINTER

REQUIREMENT
LINE FEED CLUTCH DISENGAGED.
INDEX PLATE ADJACENT TO BAIL
AS SHOWN IN PAR. 3.11. POINTER
SHOULD LINE UP WITH NOTCH IN
INDEXING DISC AND CLEAR DISC BY
APPROXIMATELY 1/16 INCH.

TO ADJUST
POSITION POINTER WITH MOUNTING
SCREWS LOOSENED. TIGHTEN SCREWS.

INDEXING DISC
INDEX PLATE

NOTCH
MOUNTING SCREW
POINTER
BAIL
ADJUSTABLE ARM
ADJUSTABLE ARM MOUNTING SCREWS

(C) BLOCKING ARM

REQUIREMENT
BAIL ON PEAK OF INDEX
PLATE. CLEARANCE
MIN. 0.005 INCH
MAX. 0.045 INCH

TO ADJUST
POSITION ADJUSTABLE ARM
WITH MOUNTING SCREWS
LOOSENED. TIGHTEN SCREWS.

NOTE
IF REQUIREMENT CANNOT
BE MET FOR EACH PLATE,
REPOSITION PLATE WITH
MOUNTING SCREW LOOSENED.

(H) BLOCKING ARM SPRING

REQUIREMENT
BLOCKING ARM IN UNBLOCKED
POSITION.
MIN. 3 OZS.
MAX. 5 OZS.

TO PULL SPRING TO OPERATING
LENGTH.

Page 89
3.13  Selective Calling Mechanism

**TYPEBOX CLUTCH TRIP LEVER** (Selective — Calling Units With or Without Off Line Shift Solenoid)

Clearance between typebox clutch trip lever and clutch disc stop lug should be

Min 0.040 inch — Max 0.055 inch

See (2.22).

**PRINT SUPPRESSOR CODEBAR SPRING**

Requirement

Suppressor codebar to left

Min 4-1/2 oz — Max 7-1/2 oz

to start codebar moving. Codebar should be free of binds.

**OFF LINE SHIFT SOLENOID**

(Front View)

Note 1: To check requirements (A, B, and D), set function clutch in stop position and all codebars to the right.

(A) **CODEBAR SHIFT MECHANISM**

(1) Requirement

With function clutch in stop position, latch function lever (shift mech.) on its lower releasing latch. Notch in supp. codebar should align with notches in other codebars when all codebars are shifted to the right.

To Adjust

Position upper or lower guideplate (2.33) with its clamp nuts loosened. Tighten nuts.

(2) Requirement

Repeat for each stunt case codebar shift mechanism.

Note: Position the associated guideplate so that the movement of the fork is not restricted within the range of adjustment.

(D) **OFF LINE SHIFT SOLENOID BRACKET ASSEMBLY** (Off Line Only)

Requirement

Notch in suppression codebar should align with notches in other codebars when all codebars are shifted to the right.

To Adjust

Position the solenoid bracket assembly with its mounting screws loosened. Tighten screws.

(C) **TYPEBOX CLUTCH SUPPRESSION ARM**

See (3.14)

(B) **CONDITION CODE (ZERO) CODEBAR SHIFT MECHANISM**

Requirement

With function clutch in stop position, latch function lever (shift mech.). The notch in condition code (zero) codebar should align with notches in other codebars when all codebars are shifted to the right.

To Adjust

Position the upper or lower guideplate (2.33) with its clamp nuts loosened. Tighten nuts.

Note 2: Position the associated guideplate so that the movement of the fork is not restricted.
3.14 Selective Calling Mechanism (Con't)

(C) TYPE BOX CLUTCH SUPPRESSION ARM (WITH OR WITHOUT SOLENOID SHIFT)

REQUIREMENT
SUPPRESSION ARM IN BLOCKING POSITION. SHAFT ROTATED UNTIL THE FUNCTION CLUTCH SHOE LEVER IS OPPOSITE THE FUNCTION CLUTCH TRIP LEVER.
1. AT LEAST 0.003 INCH CLEARANCE BETWEEN TRIP ARM EXTENSION AND CLUTCH TRIP LEVER.
2. AT LEAST 0.006 INCH CLEARANCE BETWEEN THE FUNCTION CLUTCH SHOE LEVER AND FUNCTION CLUTCH TRIP LEVER.

TO ADJUST POSITION SUPPRESSION ARM WITH ITS MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.

OFF LINE STUNT SHIFT SOLENOID SPRING REQUIREMENT
WITH SOLENOID UNOPERATED. MIN. 2 OZS. MAX. 4.5/2 OZS.
TO PULL SPRING TO ITS INSTALLED LENGTH.

1. LATCH FUNCTION LEVER OF ANY STUNT CASE CODE BAR SHIFT MECHANISM AND ROTATE MAIN SHAFT UNTIL LOWER SURFACE OF THE SUPPRESSION ARM IS ALIGNED (APPROX) WITH BOTTOM SURFACE OF BLOCKING BAIL EXTENSION. CLEARANCE BETWEEN SUPPRESSION ARM AND BLOCKING BAIL EXTENSION, WITH PLAY TAKEN UP TO PRODUCE MINIMUM CLEARANCE.

MIN. 0.008 INCH 
MAX. 0.055 INCH

TO ADJUST POSITION EXTENSION WITH ITS MOUNTING SCREW LOOSENED. TIGHTEN SCREW. REFINE THE ADJUSTMENT IF NECESSARY, AND RECHECK EACH SHIFT MECHANISM.

2. REFINE THE STUNT CASE CODE BAR SHIFT MECHANISM ADJUSTMENT OF ANY SHIFT MECHANISM THAT DOES NOT MEET THE ABOVE REQUIREMENT.
SECTION 573-115-700TC

3.15 Selective Calling Mechanism (Cont.)

LINE FEED (Stunt Case) FUNCTION BAR

AUTOMATIC CARRIAGE RETURN - LINE FEED BLOCKING SLIDE

CONDITION CODE SHIFT FORK SPRING

REQUIREMENT

WITH CONDITION CODE SHIFT IN ITS UNOPERATED POSITION.
MIN. 1 OZ.
MAX. 3 OZS.
TO PULL SPRING TO ITS INSTALLED POSITION.

AUTOMATIC CARRIAGE RETURN FUNCTION BAR

BLOCKING SLIDE SPRING

GUIDE PLATE

LOWER GUIDE PLATE

AUTOMATIC CARRIAGE RETURN - LINE FEED BLOCKING SLIDE SPRING

REQUIREMENT

WITH CONDITION CODE SHIFT FORK IN ITS UNOPERATED POSITION.
MIN. 1 OZ.
MAX. 3 OZS.
TO PULL SPRING TO ITS INSTALLED POSITION
3.16 Local Backspace Mechanism

**CAMMING BAIL STOP ARM**

(1) Requirement (Preliminary)
Spacing clutch disengaged, front feed pawl in lower position, backspace bail held operated, clutch tripped and main shaft rotated until the front and rear feed pawl teeth are in line. Clearance between pawl and the tooth on the spacing drum ratchet wheel

Min 0.015 inch --- Max 0.035 inch

To Adjust
Position the adjusting plate on the intermediate arm in the center of its adjusting range. Then position the camming bail stop arm with its mounting screw friction tight to meet the requirement. Tighten screw.

(2) Requirement (Final)
Min some clearance between feed pawl teeth and ratchet throughout travel of carriage from left to right. Refine above adjustment.

**CAMMING BAIL SPRING**

Requirement
Min 1 oz --- Max 2 1/4 oz
to start bail moving.
SECTION 573-115-700TC

3.17 Reverse Line Feed Mechanism

**REVERSE LINE FEED SLIDE LINK SPRING REQUIREMENT**

SLIDE LINK RESTING ON ITS STOP BRACKET, LINE FEED CLUTCH DISENGAGED.

- **MIN.** 1-1/2 OZS.
- **MAX.** 3-1/2 OZS.

TO FULL SPRING TO INSTALLED LENGTH.

**REVERSE LINE FEED SLIDE LINK STOP BRACKET REQUIREMENT**

WHEN THE LINE FEED BAR IS NEAREST THE SLIDE LINK STOP BRACKET DURING A FORWARD LINE FEED OPERATION, THERE SHOULD BE A MINIMUM OF 0.045 INCH CLEARANCE BETWEEN TOP SURFACE OF SLIDE LINK AND LOWER EDGE OF CLOSEST LINE FEED BAR.

TO ADJUST POSITION THE SLIDE LINK STOP BRACKET WITH ITS MOUNTING SCREWS LOOSENED, TIGHTEN SCREWS.
3.18 Reverse Line Feed Mechanism (Cont.)

**LINE FEED CLUTCH SPUR GEAR REQUIREMENT**

Line feed clutch disengaged, slide link raised upward so as to fully engage the end of the lower line feed bar, slide held forward by its spring clearance between slide link and lower line feed bar.

MIN. 0.005 INCH
MAX. 0.040 INCH

To adjust:

Set line feed clutch spur gear at center of adjusting range disengage line feed clutch, loosen eccentric assembly bearing post. Mesh the two gears so that the forward edges of the lower ends of the line feed bars are in line with each other within 0.040 inch. Rotate the line feed clutch spur gear relative to its mounting plate with the gear mounting screws loosened. Check both bars for the required clearance at each stop position of the clutch. Tighten screws.
3.19 Reverse Line Feed Mechanism (Cont.)

**(B)** PLATEN DETENT BAIL SPRING

**REQUIREMENT**

DETENT SEATED BETWEEN TWO TEETH ON LINE FEED SPUR GEAR.
MIN. 16 OZS.
MAX. 32 OZS.
TO START DETENT BAIL MOVING.

**REQUIREMENT**

DETENT ECCENTRIC

**DETENT STUD**

**HAND WHEEL**

**LINE FEED BAR RELEASE LEVER**

**SPRING**

**MIN. 3 OZS.**
**MAX. 8 OZS.**
TO START LEVER MOVING.

**(A)** LINE FEED SPUR GEAR DETENT ECCENTRIC

**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 0.006 INCH FROM THE OTHER TOOTH.

TO ADJUST

ROTATE THE DETENT ECCENTRIC WITH ITS MOUNTING SCREWS LOOSENED. KEEP HIGH PART OF ECCENTRIC UPWARD, TIGHTEN SCREWS.

**(C)** LINE FEED BAR RELEASE LEVER SPRING

**REQUIREMENT**

MIN. 3 OZS.
MAX. 8 OZS.
TO START LEVER MOVING.
3.20 Reverse Line Feed Mechanism (Cont.)

LINE FEED BAR SPRINGS

REQUIREMENT
LINE FEED BAR ENGAGED WITH PLATEN GEAR.
MIN. 2-1/2 OZS.
MAX. 5 OZS.
TO PULL EACH SPRING TO INSTALLED LENGTH.

(REAR RIGHT VIEW)
3.21 Reverse Line Feed Mechanism (Cont.)

LINE FEED BAR BELL CRANK SPRING

REQUIREMENT
LINE FEED BAR IN REAR POSITION
SLIDE LINK UNOPERATED. LINE FEED
BAR SPRINGS IN PLACE.
MIN. 19 OZS.
MAX. 24 OZS.
TO START LINE FEED BAR MOVING.

BAR BELL CRANK SPRING
BAR BELL CRANK
LINE FEED BAR SPRING
LINE FEED BAR

(REAR RIGHT VIEW)

3.22 Answer-Back Mechanism (Switched Circuit Network)

"FIGURES" STUNT BOX CONTACT
(STUNT BOX SLOT 32)

REQUIREMENT
CLEARANCE BETWEEN CONTACT INSULATOR
AND FUNCTION LEVER SHOULD BE
MIN. SOME --- MAX. 0.010 INCH
TO CHECK
STUNT BOX MOUNTED ON TYPING UNIT AND
"LETTERS" COMBINATION MANUALLY SET UP
ON TYPING UNIT SELECTOR. ROTATE TYPING
UNIT MAIN SHAFT UNTIL FUNCTION LEVER IS
IN EXTREME FORWARD POSITION TOWARD
CONTACT INSULATOR.
TO ADJUST
WITH CONTACT MOUNTING SCREWS LOOSENED, ADD OR REMOVE SHIMS AS REQUIRED.
TIGHTEN SCREWS.
3.23 Print Suppression Mechanism

- **Zero Code Bar Shift Mechanism**
  - **Requirement (1)**
    - Function clutch rotated until function bars are in extreme rear position. Line feed function pawl hooked over its function bar and then stripped. The notch in the zero code bar should line up vertically with the notches in the 4, 1, 5, 2, 3 code bars but may be out of alignment.
    - Maximum: 0.010 inch in the marking direction.
  - **Requirement (2)**
    - Maximum: 0.002 inch clearance between guide plate extension and slide.
  - To adjust position the guide plate by its lower adjusting slot with its clamp nuts loosened, tighten nuts.

- **Suppression Code Bar Mechanism**
  - **Requirement (1)**
    - Function bars in rear position. Call directing function pawl hooked over its function bar and stripped. Notch in suppression code bar should line up vertically with notches in 4, 1, 5, 2, 3 code bars but may be out of alignment.
    - Maximum: 0.010 inch in the marking direction.
  - **Requirement (2)**
    - Maximum: 0.002 inch clearance between guide plate extension and slide.
  - To adjust position the guide plate by its lower adjusting slot with its clamp nuts loosened, tighten nuts.
  - **Requirement (3)**
    - There should be some clearance between the rear end of the function bar and the face of the notch on the function pawl when the line feed function pawl and call directing function pawl are alternately hooked over their respective function bar.

Refine the two adjustments above if necessary.
3.24 Continuous Spacing Mechanism

**Solenoid Plunger Spring Requirement**

Solenoid de-energized, spring unhooked

Min. 1-1/2 ozs.
Max. 3 ozs.
To pull spring to position length.

**Function Clutch Trip Lever Requirement**

With the solenoid de-energized and
the function clutch disengaged, the
function clutch trip lever should en-
gage the clutch shoe lever by the full
thickness of the shoe lever (check at
lug with least bite on two stop
clutches).

To adjust
position the solenoid mounting plate
with its mounting screws loosened,
tighten screws. In positioning the
plate move each end equally to avoid
binds in the solenoid plunger and
function clutch trip lever.
3.25 Continuous Spacing Mechanism (Cont.)

**Suppression Bail Adjusting Bracket Requirement**

- Function clutch rotated until suppression bail is in extreme forward position. CR and LF.
- Function slide arms manually pushed forward until the CR and LF levers are tripped.
- Slide arms resting back against their slide arm brackets. Clearance between projection on CR slide arm and guide bar.
  - Min. 0.070 inch --- Max. 0.095 inch

**To Adjust**

- Position the connecting link on the adjusting bracket with its clamp screw loosened.
- Recheck after tightening screw. On two-stop clutches, check with clutch in each position.

**Function**

- Reset bail operating spring requirement
  - Function reset bail in forward position.
  - Min. 2-1/4 lbs. --- Max. 3-1/2 lbs.
  - To start bail moving.

**Carriage Return Lever Requirement**

- Clearance between carriage return latch bail and carriage return lever (Par. 2.40) should be:
  - Min. 0.006 inch --- Max. 0.040 inch

**To Check**

- Printing carriage in returned position. Trip function clutch and rotate main shaft until suppression bail is in extreme forward position. Locate spacing drum so that carriage return latch bail resets against carriage return lever extension.

**To Adjust**

- Position CR lever on CR latch bail with clamp screw loosened. Tighten screw.

**Note**

Before making the following adjustment check the carriage return lever adjustment. With the stunt box removed, the standard adjusting procedure cannot be followed. Refer to Par. 2.40 and use the following procedure.

**Carriage Return Lever Requirement**

- Clearance between carriage return latch bail and carriage return lever (Par. 2.40) should be:
  - Min. 0.006 inch --- Max. 0.040 inch

**To Check**

- Printing carriage in returned position. Trip function clutch and rotate main shaft until suppression bail is in extreme forward position. Locate spacing drum so that carriage return latch bail resets against carriage return lever extension.
3.26 Paper-Out Alarm Mechanism

(A) SWITCH'POSITION

Requirement --- Horizontal axis of switch shall lie in a plane parallel to the switch bracket when the switch is moved toward upper limit of its travel in the mounting holes.

To adjust --- with its mounting screws (2) loosened, position and align the switch. Tighten screws.

(C) SWITCH BRACKET SPRING

Requirement --- With spring scale applied at the top switch bracket operating lever near spring hook, it shall require min. 11 ozs. --- max. 13 ozs.

To move switch bracket clear of switch plunger (gage by eye)

(B) SWITCH OPERATING LEVER

Requirement --- With paper roll removed, upper surface of switch bracket operating lever shall lie in a plane that is parallel with under side of hexagonal paper spindle and rest approximately 1/4 inch from the spindle.

To adjust --- loosen screw that secure the switch assembly mounting bracket and position the assembly upward or downward. Tighten screw.
3.27 Vertical Tabulation and Transmitter Distributor Control Mechanism

(C) PAGE FEED-OUT GEAR PLAY

Requirement
Barely perceptible backlash between idler gear and feed-out gear.

To Adjust
Position gear pivot post with nut loosened. Tighten nut.

Note: Gears should mesh accurately when checked at 3 equal distances around circumference of gear.

(D) BLOCKING LEVER

See 3.28

(E) INDEXING DISC

Requirement
Clearance between index plate and pawl should be
Min 0.015 inch—Max 0.040 inch

To Check
Line feed clutch disengaged. Index plate adjacent to pawl. Slack in gears taken up to make gap a minimum.

To Adjust
Pull feed-out gear out of engagement with idler gear. Turn feed-out gear handwheel clockwise until index plate just operates the pawl, then engage first tooth on idler. Position indexing disc with three mounting screws loosened. Tighten screws.

(A) VERTICAL TABULATOR SLIDE RETAINER (On Units So Equipped)

Requirement
Clearance between vertical tab slide and retaining edge of retainer should be
Min some—Max 0.012 inch

To Adjust
Position retainer forward and locate it up or down with mounting screws loosened. Tighten screws.

(B) MOUNTING BRACKET

(1) Requirement
Clearance between feed-out blocking lever (inner lever) and feed-out slide
Min some—Max 0.020 inch

To Check
Select upper case "Z", hold stripper blade and rotate main shaft until page feed-out slide is in its most forward position. Take up play in page feed-out blocking lever to make clearance a minimum.

(2) Requirement
Clearance between vertical tab slide and vertical tab blocking lever (outer lever)
Min 0.002 inch

To Check
Select upper case "J" and rotate main shaft until vertical tab slide is in its most forward position. Take up play in vertical tab blocking lever to make clearance a minimum.

To Adjust
Position lower portion of mounting bracket with mounting screws loosened. Tighten screws.
3.28 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

(H) **POINTER**

**REQUIREMENT**
LINE FEED CLUTCH DISENGAGED. INDEX PLATE ADJACENT TO PAWL. POINTER SHOULD LINE UP WITH NOTCH IN INDEXING DISC AND CLEAR ANY INDEX PLATE BY APPROXIMATELY 1/16 INCH.

TO ADJUST
POSITION POINTER ON SIDE FRAME WITH ITS MOUNTING SCREW LOOSENED. TIGHTEN SCREW.

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(I) **PAGE FEED-OUT INDEX PLATE POSITION**
SEE PAR. 3.31

(J) **TABULATION INDEX PLATE POSITION**
SEE PAR. 3.30

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(F) **SWITCH CONTACT PRESSURE**
TRANSMITTER CONTROL ONLY

**REQUIREMENT**
CONTACTS CLOSED
MIN. 2 OZS. --- MAX. 3 OZS.
TO MOVE CONTACT SWINGER AWAY FROM ITS MATING CONTACT.
TO ADJUST --- BEND SWINGER

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(G) **TRANSFER TYPE CONTACTS**
SEE PAR. 3.29 AND 3.30

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(D) **BLOCKING LEVER**

**REQUIREMENT**
CLEARANCE BETWEEN BOTTOM OF BLOCKING LEVER AND TOP OF SLIDE WHEN PAWL IS ON PEAK OF INDEX PLATE SHOULD BE
MIN. 0.005 INCH --- MAX. 0.045 INCH

TO ADJUST
TRIP LINE FEED CLUTCH. ROTATE MAIN SHAFT UNTIL PAWL IS ON PEAK OF INDEX PLATE.
POSITION ADJUSTABLE ARM WITH MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.
MAKE ADJUSTMENT FOR EACH BLOCKING LEVER.
3.29 Vertical Tabulation and Transmitter Distributor Control Mechanism (continued)

**VERTICAL TAB BLOCKING LEVER (Outer)**

**PAGE FEED-OUT**

**BLOCKING LEVER (Inner)**

**VERTICAL TAB SLIDE**

**PAGE FEED-OUT SLIDE**

**FUNCTION ARM GUIDE BAR**

**SWITCH ASSEMBLY MOUNTING SCREWS**

**RETAINER**

**BLOCKING LEVERS**

(Left Side View)

**TRANSMITTER CONTROL SWITCH** (Transfer Type)

**TRANSMITTER CONTROL SWITCH** (Transmitter Control Only)

(1) **Requirement** (For Transfer Type Contacts)

With normally closed (lower) contacts closed, clearance between insulated extension of swinger and lobes of feed-out and vertical tabulator blocking lever shall be

Min: some clearance

Max: 0.005 inch

**To Check**

Rotate main shaft until feed-out and vertical tabulator blocking levers are unoperated (blocking levers resting on slides).

**To Adjust**

With transmitter control switch mounting screws loosened, position the contact assembly. Tighten screws.

(2) **Requirement**

With the normally open (upper) contacts closed

(a) Lobe of feed-out blocking lever (inner lever) shall fully engage insulated extension of contact swinger.

(b) The feed-out blocking lever shall rest firmly on the function arm guide bar (internal — check by lifting lever lightly at contact end) and also separate normally open contact spring from its stiffener as the upper contact closes.

**To Check**

Select feed-out code combination, rotate main shaft until feed-out slide is in its extreme forward position and feed-out blocking lever drops behind its slide to close normally opened contacts.

**To Adjust**

With contact pile-up mounting screws loosened, position the assembly. Tighten screws.

(3) **Requirement**

With the normally open (upper) contacts closed

(a) Lobe of vertical tabulator blocking lever (outer) shall fully engage the insulated extension of the swinger.

(b) The vertical tabulator blocking lever shall rest firmly on the function arm guide bar (internal — check by lifting lever lightly at contact end) and also separate normally open contact spring from its stiffener as upper contact closes.

**To Check**

Select vertical tabulator combination and proceed as in item **To Check** of Requirement (2) above.
3.30 Vertical Tabulation and Transmitter Distributor Control Mechanism (continued)

(J) TABULATION INDEX PLATE POSITION

Requirement
With requirement (1) met, line feed platen to desired first line of printing in that form.

To Position
Place tabulation index plate to align with pointer on side of printer. Install additional tab index plates at succeeding desired printing lines within the form. When tabulation at a given point is not needed, rotate tab index plates (1/4 turn) on their sides.

(K) BLOCKING LEVER SPRING*

Requirement
With spring unhooked and blocking lever on top of slide
- Min 9 oz---Max 11 oz
  to pull respective spring to position length.

*Blocking lever springs used with transfer type switch (3.31)
- Min 12 oz---Max 13-1/2 oz

(G) TRANSMITTER CONTROL SWITCH
(Transmitter Control Only)

(1) Requirement (For Single-Contact Type Control)
With transmitter control contacts closed, there should be some clearance between insulated extension of swinger and lobe of feed-out and vertical tabulator blocking levers.

To Check
Rotate main shaft until feed-out and vertical tabulator blocking levers are unoperated (resting on top of slides).

To Adjust
Position the contact assembly with its mounting screws loosened. Tighten screws.

(2) Requirement
With transmitter control contacts opened by feed-out blocking lever, clearance between switch contacts shall be
- Min 0.010 inch---Max 0.020 inch

To Check
Select feed-out code combination. Rotate main shaft until feed-out slide is in its extreme forward position and feed-out blocking lever drops behind its slide to open contacts.

To Adjust
Refine requirement (1).

(3) Requirement
With control contacts opened by vertical tabulator blocking lever, clearance between switch contacts should be
- Min 0.010 inch---Max 0.020 inch

To Check
Select vertical tabulator code combination. Rotate main shaft until vertical tab slide is in its extreme forward position and vertical tabulator blocking lever drops behind its slide.

To Adjust
Refine requirement (1).
3.31 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

(1) PAGE FEED-OUT INDEX PLATE POSITION

REQUIREMENT —— PLACE AN INDEX PLATE IN THE NUMBERED SLOTS ON DISC CORRESPONDING TO LENGTH OF PAGE FORM TO BE USED. SYNCHRONIZE PAGE FEED-OUT WITH A FORM BY POSITIONING FORM SO THAT TYPING UNIT WILL PRINT IN FIRST TYPING LINE OF THE FORM.

WHEN TYPING UNIT IS IN STOP POSITION, TOP OF RIBBON GUIDE SHOULD ALIGN WITH BOTTOM OF PRINTING LINE.

TO POSITION —— WITH PAGE FORM IN DESIRED POSITION, DISENGAGE PAGE FEED-OUT GEAR FROM ITS IDLER GEAR. ROTATE FEED-OUT GEAR UNTIL NOTCH IN INDEXING DISC ALIGNS WITH POINTER ON SIDE OF PRINTER, RE-ENGAGE GEARS.

SWITCH CONTACTS (TRANSMITTER CONTROL ONLY)

REQUIREMENTS —— FOR TRANSFER TYPE CONTROL SWITCH

1. WITH NORMALLY CLOSED (LOWER) CONTACTS CLOSED, LIFT SWINGER FREE OF MATING CONTACT. IT SHALL REQUIRE A MINIMUM OF 30 GRAMS TO MOVE LOWER CONTACT SPRING AWAY FROM ITS STIFFENER.

TO ADJUST — FORM THE LOWER CONTACT SPRING BY BENDING.

2. WITH LOWER CONTACT CLOSED

MIN 30 GRAMS —— MAX 45 GRAMS

TO MOVE SWINGER FROM ITS MATING CONTACTS.

TO ADJUST — FORM THE SWINGER BY BENDING.

3. WITH LOWER CONTACT CLOSED

(a) GAP BETWEEN UPPER CONTACT AND MATING CONTACT OF SWINGER

MIN 0.008 INCH —— MAX 0.015 INCH

TO ADJUST — POSITION STIFFENER OF NORMALLY CLOSED CONTACT.

(b) WITH A GAP OF 0.008 TO 0.015 INCH, IT SHALL REQUIRE

MIN 25 GRAMS —— MAX 35 GRAMS

TO PULL UPPER CONTACT AWAY FROM ITS STIFFENER

TO ADJUST — FORM THE UPPER CONTACT SPRING BY BENDING.

RECHECK REQUIREMENT (a).
3.32 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

(L) **LINE FEED CLUTCH TRIP LEVER SPRING**  
SEE PAR. 2.20

(M) **TABULATOR BAIL SPRING**  
REQUIREMENT  
MIN. 3 OZS.  
MAX. 8 OZS.  
TO PULL BAIL AWAY FROM ITS BACKSTOP LEVER.

(O) **STUNT BOX SWITCH SPRING**  
SEE PAR. 2.66

(N) **FORM-OUT PAWL SPRING**  
REQUIREMENT  
MIN. 3 OZS.  
MAX. 8 OZS.  
TO PULL THE PAWL AWAY FROM ITS BACKSTOP LEVER.
3.33 Universal Contact (Selector) Mechanism

(A) CONTACT MOUNTING BRACKET

Requirement
The drive arm linkage should be vertically aligned to prevent binds.

To Adjust
Position the contact mounting bracket with its mounting screws loosened. Tighten screws.

(B) CONTACT BLOCK

Requirement
The contact faces should be in a vertical straight line.

To Adjust
Loosen two contact mounting screws. Press contact block toward rear of typing unit firmly against screws and tighten screws.

(C) CONTACT DRIVE ARM POSITION

Requirement
The contacts should open equally within 0.010 inch.

To Check
Rotate codebar clutch until it is disengaged and latched in stop position. Measure gap between upper contacts. Trip codebar clutch and rotate 180 degrees or until lower contact gap reaches its maximum opening. Measure the gap.

To Adjust
Position contact drive arm with its clamp screw loosened. Tighten screw.

(D) CONTACT ARM SPRING

Requirement
With shoulder screw which connects contact arm to drive link removed and spring scale applied vertically upward or downward
- Min 2 oz --- Max 5 oz
to open either contact.
3.34 Universal Contact (Stunt Box) Mechanism

**Note 1:** These adjustments should be made with contact bracket assembly removed.

**Note 2:** If contact screws are disturbed to obtain a requirement, they must be retightened and all preceding requirements rechecked.

**CAUTION:** IF IT IS NECESSARY TO INCREASE CONTACT SPRING TENSIONS, IT IS ADVISABLE TO REMOVE CONTACT SPRING TO INCREASE ITS CURVATURE. AVOID DAMAGE TO CONTACT SPRINGS WHEN ADJUSTING STIFFENERS IN ASSEMBLY.

(A) **CONTACT**

(1) Requirement
Contact springs and stiffeners mounted vertically and contact points in alignment (gauge by eye).

To Adjust
Position contact springs and stiffeners with assembly screws loosened. Tighten screws.

(2) Requirement
Stiffeners should be parallel with contact brackets.

To Adjust
Form stiffener.

(3) Requirement
Contact springs should rest against their stiffeners throughout their width.

To Adjust
Bend top formed section of stiffener. If necessary, bend contact springs.

(B) **NORMALLY OPEN CONTACT GAP**

Requirement
With the normally closed contacts closed, the normally open contact should be open
Min 0.020 inch---Max 0.025 inch

To Adjust
Bend stiffener.

(C) **CONTACT SPRING** (Two Springs)

Requirement
Min 2 oz---Max 3 oz—to move each contact spring away from its stiffener, with the swinger held away.

To Adjust
Remove and form the spring.

(D) **SWINGER SPRING**

Requirement
Min 4 oz---Max 6 oz—to move swinger from normally closed contact.

To Adjust
Bend swinger.
Universal Contact (Stunt Box) Mechanism (continued)

TRIP CAM

REQUIREMENT
WITH STRIPPER BAIL SHAFT DRIVE LINK
AT ITS LOWEST POINT, THE CLEARANCE
BETWEEN THE LATCH LEVER AND THE LATCH
CAM SHOULD BE
MIN 0.003 INCH

TO ADJUST
ROTATE THE TRIP CAM WITH ITS MOUNTING
SCREW LOOSENED. TIGHTEN SCREW.
NOTE: AS A CHECK TO SEE THAT THE TRIP CAM IS
NOT INSTALLED 180° OUT OF PLACE, THE MAIN
SHAFT SHOULD BE ROTATED SO THAT THE STRIPPER
SHAFT DRIVE LINK MOVES DOWNWARD.

LATCH LEVER SPRING

REQUIREMENT
WITH LATCH LEVER RESTING ON HIGH PART
OF TRIP CAM
MIN 1/2 OZ
MAX 2 OZ
TO MOVE LATCH LEVER AWAY FROM TRIP CAM.
NOTE: THE FOLLOWING ADJUSTMENTS ARE TO BE MADE WITH THE CONTACT ASSEMBLY INSTALLED ON THE STUNT BOX

CONTACT BRACKET AND DRIVE CAM

1. REQUIREMENT
   WITH DRIVE LINK IN ITS UPPERMOST POSITION, CLEARANCE BETWEEN TOP OF LATCH LEVER AND LATCH CAM
   MIN 0.003 INCH
   MAX 0.008 INCH

2. REQUIREMENT
   WITH THE MAIN SHAFT ROTATED ON UNTIL THE CLEARANCE IN REQUIREMENT 1. IS CLOSED AND THE LATCH CAM RESTS FIRMLY ON THE LATCH LEVER. CLEARANCE BETWEEN THE NORMALLY OPEN CONTACT SPRING AND THE UPPER END OF ITS STIFFENER
   MIN 0.005 INCH
   MAX 0.010 INCH

TO ADJUST REPOSITION THE CONTACT BRACKET, AND, IF NECESSARY, THE DRIVE CAM. TIGHTEN SCREWS.
3.37 Universal Contact (Stunt Box) Mechanism (continued)

GENERAL APPLICATION TIMING — FINAL (USING DISTORTION TEST SET OR SIMILAR EQUIPMENT)

CONTACT BRACKET AND DRIVE CAM POSITION

Requirement
The normally open universal contacts should close within ±5 milliseconds of the closure of the normally open stunt box contact.

To Adjust
Refine the drive cam (and if necessary, the bracket) (3.36) adjustment by rotating the drive cam within the specified limits.

TRIP CAM

Requirement
The normally open universal contacts should open within -5 ±0 milliseconds of the opening of the normally open stunt box contact.

To Adjust
Refine the trip cam (3.35) adjustment by rotating the trip cam on its shaft within the specified limits. Tighten screw.

SPECIAL APPLICATION TIMING (USING DISTORTION TEST SET OR SIMILAR EQUIPMENT)

A. NORMALLY CLOSED CONTACTS (100 WPM FOR 83B2 SWITCHING SYSTEM)

1. The normally closed contacts should close within 50 to 80 divisions after the start of the stop pulse.
2. The normally open contact should close prior to the end of the no. 3 pulse.
3. The normally open contacts should remain closed for at least 238 divisions (100 wpm DXD with 742 scale divisions).

Note: The relation between the normally closed universal contact marking pulse and the stop impulse of the received signal varies with the range scale setting of the unit.
3.38 Universal Contact (Stunt Box) Mechanism (continued)

B. NORMALLY CLOSED CONTACTS (100 WPM USED IN DELTA AND UNITED AIRLINES SYSTEM)

WHEN NORMALLY OPEN CONTACTS ARE NOT Used, THE NORMALLY CLOSED CONTACTS SHOULD REMAIN OPEN FOR 53.88 MILLISECONDS OR 400 + 15 DISTORTION TEST SET DIVISIONS.

TO ADJUST

REFINE THE DRIVE CAM (3.36), TRIP CAM (3.35) AND, IF NECESSARY, THE BRACKET POSITIONS TO MEET THE TIMING REQUIREMENTS. TIGHTEN SCREWS.

NOTE 1:

THE NORMAL 0.003 TO 0.008 INCH OVERTRAVEL OF THE LATCH CAM OVER THE LATCH LEVER WITH THE DRIVE LINK IN ITS UPPERMOST POSITION MUST BE INCREASED IN ORDER TO DECREASE NORMALLY CLOSED CONTACT GAP IN THE LATCHED POSITION OF THE LATCH CAM. THIS PREVENTS THE CONTACT FROM BOUNCING WHEN THE LATCH LEVER IS RELEASED.

NOTE 2:

WITH THE LATCH CAM IN ITS LATCHED POSITION, THERE SHOULD BE 0.015 INCH MINIMUM CONTACT GAP BETWEEN THE NORMALLY CLOSED CONTACTS.

GENERAL REQUIREMENTS AFTER TIMING ADJUSTMENTS

NOTE: IT IS VERY IMPORTANT THAT THE FOLLOWING REQUIREMENTS BE MET

A. WITH THE DRIVE LINK IN ITS UPPERMOST POSITION:

1. THE LATCH CAM SHALL NOT OVERTRAVEL OR HANG UP ON THE SWINGER INSULATOR.

2. THERE SHALL BE AT LEAST 0.003 INCH CLEARANCE BETWEEN THE LATCHING SURFACE OF THE LATCH CAM AND THE LATCHING SURFACE OF THE LATCH LEVER.

3. THE CLEARANCE BETWEEN THE NORMALLY OPEN CONTACT SPRING AND ITS STIFFENER SHALL NOT EXCEED 0.025 INCH.

B. WITH THE DRIVE LINK IN ITS LOWERMOST POSITION:

1. THE TOP OF THE SWINGER INSULATOR MUST CLEAR THE CUT-OUT SECTION OF THE LATCH CAM.

2. THERE SHALL BE AT LEAST 0.003 INCH CLEARANCE BETWEEN THE FRONT EDGE OF THE LATCH LEVER LATCHING SURFACE AND THE HIGH PART OF THE LATCH CAM.

C. WITH THE LATCH CAM IN ITS LATCHED POSITION, THERE SHALL BE AT LEAST 0.005 INCH CLEARANCE BETWEEN THE NORMALLY OPEN CONTACT SPRING AND THE UPPER END OF ITS STIFFENER.

D. THE LATCHING SURFACE OF THE LATCH LEVER SHALL COVER THE WIDTH OF THE TRIP CAM AND LATCH CAM.
3.39 Form Alignment Switch Mechanism

(A) **FORM FEED-OUT ADJUSTMENT**
See (3.11 and 3.12).

(B) **FORM ALIGNMENT SWITCH (Remove Power From Switch)**

---

**Requirement**
Switch should be operated when switch lever is within 0.010 inch of bottom of notch in form-out disc and should not be operated when lever is on outer edge of disc.

(1) To Check
Rotate disc until lever falls into notch. Place 0.010 inch feeler gauge beneath lever. Lift lever and allow it to come to rest on gauge. Switch should be operated.

(2) To Check
Rotate disc until lever rests on outer edge. Switch should not be operated.

To Adjust
Position switch, at pry points, with its mounting screws loosened. Tighten screws.

---

(C) **FORM ALIGNMENT SWITCH SPRING**

**Requirement**
Min 6 oz---Max 8 oz to move the lever from outer-edge of disc.

To Check
Switch operating lever on outer edge of disc (not in notch as shown).
3.40 DC Magnet Operated Print Suppression Mechanism

(D) ARMATURE EXTENSION OVERTRAVEL

(1) Requirement
Overtravel of armature extension should be
Min 0.010 inch---Max 0.015 inch

(2) Requirement
There should be no clearance between blocking surface of armature extension and bottom surface of suppression arm.

To Check (Requirements (1) and (2))
Suppression arm blocked by blocking bail extension. Hold armature against pole face of magnet.

(3) Requirement
Rotate blocking bail extension. It should slide under the suppression arm with no perceptible clearance.

To Check (Requirement (3))
Suppression arm blocked by armature extension.

To Adjust
Pivot magnet bracket, up or down and to the front or rear, with its mounting screws loosened, using an eccentric adjusting tool. Tighten screws. Press armature extension firmly against bottom of suppression arm. If necessary, add or remove shims between suppression arm and typebox clutch trip arm. Recheck (B) and (C).

Note: KEEP POLE FACE FREE OF OIL AND GREASE.

(A) TYPEBOX CLUTCH TRIP LEVER
See (2.22) and refine requirement to
Min 0.040 inch---Max 0.055 inch

(B) TYPEBOX CLUTCH SUPPRESSION ARM
See (3.14)

(C) BLOCKING BAIL
See (3.14)

(F) BLOCKING BAIL EXTENSION CLEARANCE

Requirement
There should be no interference between armature extension and blocking bail extension.

To Adjust
Refine above adjustments as necessary.

(E) ARMATURE EXTENSION CLEARANCE

Requirement
Clearance between end of armature extension and suppression arm should be
Min 0.012 inch---Max 0.030 inch

To Check
Armature released.

To Adjust
Position armature with armature stop screw. Tighten nut. Recheck (D).
3.41 Print Suppression and Offline Stunt Shift Control Mechanism

(A) SUPPRESSION CODE BAR POSITION

REQUIREMENT
NOTCHES IN SUPPRESSION CODE BAR SHOULD ALIGN WITH NOTCHES IN OTHER CODE BARS. VIEW FROM REAR OF UNIT ABOVE STUNT BOX, GAUGE BY EYE.

TO CHECK
ENERGIZE THE PRINT SUPPRESSION MAGNET AND PLACE ALL CODE BARS IN SPACING POSITION.

TO ADJUST
OPERATE MAGNET ARMATURE MANUALLY OR ELECTRICALLY. PLACE ALL CODE BARS IN SPACING POSITION. PIVOT THE ARMATURE EXTENSION IN ITS ELONGATED MOUNTING HOLE WITH THE MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.

(B) TYPE BOX CLUTCH TRIP LEVER
SEE PAR. 2.22 AND REFINE REQUIREMENT TO
MIN. 0.040 INCH
MAX. 0.055 INCH

(C) TYPE BOX CLUTCH SUPPRESSION ARM
SEE PAR. 3.14

(D) BLOCKING BAIL
SEE PAR. 3.14

NOTE: KEEP POLE FACE FREE OF OIL AND GREASE.
3.42 Letters-Figures Codebar Shift Magnet Mechanism

(A) SHIFT MAGNET YOKE
   Requirement
   Clearance between armature and end of heelpiece should be
   Min some—Max 0.003 inch

To Check
   Magnet armature held against core. Check clearance across end of heelpiece.

To Adjust
   Position yoke with its clamp screw loosened.

Note: Keep pole face free of oil and grease.

(B) SHIFT MAGNET ARMATURE
   (1) Requirement
   Clearance between armature and transfer lever should be
   Min some—Max 0.005 inch

To Check
   Magnet armature attracted. Shift codebar in full marking position.

To Adjust
   Position magnet forward or backward with bracket mounting screws loosened. Tighten screws.

(2) Requirement
   Clearance between armature and transfer lever should be
   Min some—Max 0.010 inch

To Check
   Magnet armature unoperated. Shift codebar in full spacing position.

To Adjust
   Position armature backstop screw with locknut loosened. Tighten nut.

(C) SHIFT MAGNET ARMATURE RETURN SPRING
   Requirement
   Min 1 oz—Max 3 oz to pull spring to installed length.

(D) SHIFT CODEBAR RETURN SPRING
   Requirement
   Min 3 oz—Max 7 oz to start codebar moving.

To Check
   Trip typebox clutch, rotate main shaft until printing track is in lowest position.

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3.43 Form Feed-Out Mechanism

FORM FEED-OUT TORSION SPRING
REQUIREMENT *
MIN. 1/8 OZ.
MAX. 1-1/4 OZ.
TO START BAIL MOVING TOWARDS REAR OF UNIT.
TO CHECK
DISENGAGE LINE FEED CLUTCH TRIP LEVER.

*RECEIVE ONLY UNITS
MIN. 2 OZS
MAX. 6 OZS
3.44 Two Color Ribbon Mechanism

See Notes 1 through 5 on following page.

(A) RIBBON MAGNET HINGE BRACKET (Left and Right) (Preliminary)

Requirement
- Magnet energized or in attracted position, armature on pole piece. Clearance between armature and pole piece should be not more than 0.005 inch.

To Adjust
Position hinge bracket with mounting screws loosened. Tighten screws.

(B) RIBBON MAGNET BRACKET (Left and Right) (Preliminary)

Requirement
- Adjusting screw in lowest position, all clutches disengaged, position ribbon magnet bracket as follows:
  1. Hold magnet armature stop lever against magnet core, lever should be parallel to oscillating lever top surface and engage the oscillating lever by at least 1/2 of the stop lever thickness. Gauge by eye.
  2. Stop lever held against magnet core. Clearance between stop lever and oscillating lever should be
     - Min 0.005 inch—Max 0.020 inch with play taken up toward front of unit.

To Adjust
Loosen and position ribbon magnet bracket to meet above requirements.

(C) RIBBON MAGNET HINGE BRACKET (Left and Right) (Final)

Requirement
- Magnet de-energized or in released position, rotate main shaft until oscillating lever is fully under stop lever. Clearance between oscillating lever and stop lever should be
  - Min 0.020 inch—Max 0.040 inch

To Adjust
Position stop lever adjusting screw with locknut loosened. Tighten nut.

(End View)
OPERATIONAL REQUIREMENT - RIBBON MAGNET BRACKET (FINAL) (SEE PRECEDING FIGURE)
PRINTER OPERATING AT 60, 75, OR 100 WPM, TEST BEING PRINTED.

REQUIREMENT
PRINTS RED WHEN RIBBON MAGNETS ARE ENERGIZED.
TO ADJUST
TURN LEFT AND RIGHT RIBBON BRACKET ROLLER BAIL ADJUSTING SCREWS
1/2 TURN UP. REFINE RIBBON AND RIBBON HINGE BRACKET ADJUSTMENTS.
REPEAT ABOVE PROCEDURE IF BLACK IS PRINTED.

RIBBON ROLLER BAIL SPRING (LEFT AND RIGHT) (SEE PRECEDING FIGURE)
REQUIREMENT
ALL CLUTCHES DISENGAGED, ADJUSTING SCREW IN LOWEST POSITION
MIN. 4 OZS. --- MAX. 6 OZS.
TO START LIFTER BAIL MOVING.

NOTES
REFER TO RELATED REQUIREMENTS
1. VERTICAL POSITION LOCK LEVER EXTENSION - PAR. 2.36
2. RIBBON REVERSE SPUR GEAR - PAR. 2.52
3. RIBBON REVERSE DETENT - PAR. 2.52
4. RIBBON FEED LEVER BRACKET - PAR. 2.53
5. RIBBON RATCHET WHEEL FRICTION SPRING - PAR. 2.53
(MIN 3-1/3 OZS --- MAX 4-1/2 OZS).

RIBBON REVERSING LEVER SPRING (LEFT AND RIGHT)
REQUIREMENT
MIN. 1/2 OZ --- MAX. 1-1/2 OZS.
TO START LEVER MOVING.

RIBBON GUIDE LEVER SPRING (LEFT AND RIGHT)
REQUIREMENT
MIN. 1 OZ --- MAX. 2 OZS
TO START LEVER MOVING.
Note: Before proceeding with WIRE BAIL adjustment, loosen switch plate mounting screws and rotate switch and latch to a position where they do not interfere with bail. Position the spring post by means of set collar so that spring has some initial tension. Spring post should be approximately $30^\circ$ from vertical (see 3.47).

**WIRE BAIL**

**Requirement**
- Wire bail should rest on paper fingers approximately in radius of fingers. Wire bail should touch at least one finger with not more than Max 0.015 inch clearance between other finger and wire bail.

**To Adjust**
- Bend wire bail to meet requirement.

Note: Make sure there is no bind in the bail after making adjustment.
SWITCH POSITION

Requirement
With wire bail held against paper fingers and operating lever latched behind operating bail, there should be
Min 0.035 inch --- Max 0.065 inch
between top of bail and bottom of step in lever. Lever should depress switch plungers sufficiently to operate switches.

To Adjust
Loosen screws and position switch plate. Tighten screws.
3.48 Paper Jam Alarm (Sprocket Feed) (continued)

(Right Front View)

**BAIL SPRING**

(1) Requirement

It should require

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

to lift bail high enough to release operating lever and operate switches when scale is hooked to center of bail and pulled vertically.

(2) Requirement

Position collar laterally to provide

Min some---Max 0.006

doplay for bail.

**To Adjust**

Loosen setscrew. Position collar to meet requirements. Tighten setscrew.

---

**Notes**

1. With play of bail taken to right, left side of bail should clear left paper finger arm. Refine left **PAPER FINGER (SPROCKET FEED)** (2.73) adjustment if necessary.

2. With typing unit installed in its cabinet, lift bail to its maximum upward position, there should be some clearance between bail and operating lever.

3. **BAIL SPRING** adjustments may be refined to make mechanism more or less sensitive to paper buckling.
4. EARLIER DESIGN MECHANISMS
BASIC UNITS
4.01 SELECTOR MECHANISM

NOTE: BAIL LEVER GUIDE ADJUSTMENT APPLIES ONLY TO UNITS EQUIPPED WITH ADJUSTABLE GUIDES

START LEVER SPRING REQUIREMENT
LATCH LEVER SPRING UNHOOKED. STOP ARM BAIL IN INDENT OF ITS CAM. RANGE SCALE SET AT 60 MIN. 2-1/2 OZS. MAX. 4-1/2 OZS. TO START THE STOP ARM MOVING.

START LEVER (EXTENSION)
START LEVER SPRING
STOP ARM BAIL
CLUTCH STOP ARM
BAIL LEVER GUIDE
RANGE FINDER PLATE
MOUNTING NUT
START LEVER

BAIL LEVER GUIDE REQUIREMENT
SOME CLEARANCE BETWEEN EACH SIDE OF GUIDE FORK AND EXTENSION OF START LEVER THROUGHOUT ITS TRAVEL.

TO ADJUST POSITION BAIL LEVER GUIDE WITH MOUNTING NUT LOOSENED. TIGHTEN NUT.
SELECTOR ARMATURE
FOR REQUIREMENTS (1) AND (2) SEE PAR. 2.01 UNDER BASIC UNITS

(3) REQUIREMENT (ARMATURE BACKSTOP ALIGNMENT)
CLEARANCE BETWEEN SIDES OF BACKSTOP
AND SIDES OF ARMATURE EXTENSION.
MIN. 0.010 INCH

TO ADJUST
1. POSITION ARMATURE SPRING ADJUSTING NUT TO HOLD
ARMATURE FIRMLY AGAINST PIVOT EDGE OF CASTING.
2. POSITION ARMATURE AND BACKSTOP WITH
MOUNTING SCREWS LOOSENED. TIGHTEN SCREWS.
4.03 Codebar Mechanism

CODE BAR SHIFT LEVER DRIVE ARM

REQUIREMENT
CODE BAR SHIFT LEVER LINK IN THE UPPERMOST POSITION, THERE SHOULD BE SOME CLEARANCE BETWEEN THE TOP OF THE ROLLERS AND THE TOP OF THE CAM SLOTS IN THE CODE BAR SHIFT LEVERS MAX. 0.025 INCH ON THE CLOSEST LEVER.

TO ADJUST
LOOSEN THE CLAMP SCREW, POSITION THE CODE BAR SHIFT LEVER DRIVE ARM ON ITS SHAFT TO MEET THE REQUIREMENT AND TO PROVIDE SOME END PLAY, NOT MORE THAN 0.006 INCH. TIGHTEN SCREW.
CODE BAR SHIFT LEVER LINK GUIDE 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 MAIN SHAFT 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 OF CODE BAR SHIFT BAR IN SAME WAY.
MIN. 0.002 INCH---MAX. 0.025 INCH

TO ADJUST
POSITION CODE BAR SHIFT LEVER LINK GUIDE BRACKET BY MEANS OF MOUNTING SCREWS (3). TIGHTEN SCREWS.
4.05 Main Shaft and Trip Shaft Mechanisms

(A) CLUTCH TRIP SHAFT SET COLLARS

(1) Requirement
Spacing clutch latch lever should have side play
Min some---Max 0.008 inch

To Adjust
Position spacing clutch latch lever set collar. Tighten screw.

(2) Requirement
Approximate alignment of right end of stop extensions on trip lever and shoe lever.

To Adjust
Position line feed clutch trip lever set collar. Tighten screw.

(3) Requirement
Line feed clutch latch lever should have side play
Min some---Max 0.008 inch

To Adjust
Position line feed clutch latch lever set collar. Tighten screw.

Note: Antideflection plate adjustment applies only to units so equipped.

(B) ANTIDEFLECTION PLATE

Requirement
With typing unit upside down and function, spacing, line feed, and typebox clutches latched disengaged
Min 1 lb---Max 5 lb

To adjust shaft away from antideflection plate.

To Adjust
Position plate with mounting screws loosened. Tighten screws.
SECTION 573-115-700TC

4.06 Main Shaft and Trip Shaft Mechanisms (Cont.)

**SPACING CLUTCH TRIP LEVER REQUIREMENT**

Spacing and Type Box Clutches Disengaged Trip Lever Arm in Upward Position.

For units without U-shaped Line Feed Clutch Trip Lever:

- Spacing Clutch Trip Lever should be flush or underflush by 1/2 thickness of shoe lever with outer surface of shoe lever.

For units with U-shaped Line Feed Clutch Trip Lever:

- Spacing Clutch Trip Lever should engage shoe lever by full thickness of shoe lever.
- Check at stop lug with least bite.

To adjust:

- Use adjusting screw to position spacing clutch trip arm, tighten nut.

**CLUTCH TRIP LEVER SPRING REQUIREMENT**

Clutch engaged and rotated until trip lever rests on stop lug.

<table>
<thead>
<tr>
<th>Clutch</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPACING</td>
<td>11 OZS.</td>
<td>16 OZS.</td>
</tr>
<tr>
<td>LINE FEED</td>
<td>9 OZS.</td>
<td>12 OZS.</td>
</tr>
<tr>
<td>TYPE BOX</td>
<td>5 OZS.</td>
<td>7-1/4 OZS.</td>
</tr>
</tbody>
</table>

To move lever away from stop lug.
4.07 Spacing Mechanism

NOTE: CHECK RELATED ADJUSTMENTS, PARS.4.12,4.13,2.47, IF THE FOLLOWING
ADJUSTMENTS ARE REMADE.

OSCILLATING RAIL SLIDE POSITION
REQUIREMENT
SPACING CUTOUT LEVER AND AUTO-
MATIC CR-LF ARM IN MAXIMUM
COUNTERCLOCKWISE POSITION
ON SPACING DRUM. SPACING
CLUTCH DISENGAGED. FARthest
ADVANCED SPACING PAWL EN-
GAGED WITH TOOTH JUST ABOVE
CUT-AWAY SECTION IN RAT-
CHET WHEEL. RIGHT END OF
OSCILLATING RAIL SLIDE SHOULd
CLEAR PULLEY.
MIN. 0.025 INCH---MAX. 0.050 INCH
TO ADJUST
POSITION SLIDE ON WIRE ROPE
WITH CLAMP SCREWS LOOSENED.
TIGHTEN SCREWS.

OSCILLATING RAIL SLIDE
WIRE ROPE CLAMP SCREW
WIRE ROPE
PULLEY
AUTOMATIC CARRIAGE RETURN ARM
SPACING PAWL
RATCHET WHEEL
SPACING CUTOUT LEVER
STOP ARM

(FRONT VIEW)

SPACING FEED PAWL SPRING
REQUIREMENT
EACH SPACING PAWL IN LEAST
ADVANCED POSITION, RESTING
AGAINST RATCHET WHEEL. EACH SPRING
UNHOOKED FROM BRACKET
MIN. 2-1/2 OZS.---MAX. 4 OZS.
TO PULL SPRINGS TO INSTALLED
LENGTH.

NOTE:
ON UNITS EQUIPPED FOR 6 SPACES
PER INCH, THIS TENSION SHOULD BE
MIN. 8 OZS.---MAX. 10 OZS.
TO PULL SPRINGS TO INSTALLED
LENGTH.
SECTION 573-115-700TC

4.08 Function Mechanism

NOTE 1. THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH NON-ADJUSTABLE GUIDE PLATES
NOTE 2. FOR UNITS WITH ADJUSTABLE GUIDE PLATES SEE PAR. 2.32.

GUIDE PLATE EXTENSION

GUIDE PLATE

MOUNTING NUTS

LETTERS FUNCTION SLIDE

TOP VIEW

GUIDE PLATE MOUNTING NUTS

SHIFT FORK

01

~!0

(TOP VIEW)

FIGURES FUNCTION SLIDE

FIGURES FUNCTION SLIDE

FUNCTION LEVER

FUNCTION PAWL

FUNCTION BAR

(RIGHT SIDE VIEW)

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

Position shift assembly with clamp nuts loosened. Take up play in mounting holes to rear. Tighten nuts.

Caution: Manually operate letters and figures Function lever alternately. Levers should be free of binds.
4.09 Function Mechanism (continued)

Note 1: This adjustment applies only to units with a two stop function clutch.

Note 2: For units with a one stop function clutch see (2.33).

**FUNCTION RESET BAIL BLADE**

(1) Requirement

Function clutch disengaged at stop position giving least clearance. Typebox clutch disengaged. All function pawls unlatched from their function bars. 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.

To Adjust

Position blade on reset bail with blade mounting screws friction tight. Tighten screws.

(2) Requirement

Typebox clutch rotated 1/2 revolution, function lever held in rearmost position with 2 lbs maximum tension. Latch associated pawl only one at a time. With 32 oz tension applied to function pawl, it should overtravel its bar

Min 0.002 inch

To Adjust

Refine requirement (1).
4.10 Positioning Mechanism

NOTE 1: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS WITH EARLIER DESIGN DRIVE LINKAGE AND TENSION SPRINGS.

NOTE 2: THE LOOPS OF THIS SPRING ARE OFF-SET FROM CENTER IN THE SAME DIRECTION. THE SPRING MUST BE HOOKED ON ITS ANCHORS SO THAT THE SIDE OF THE SPRING ON WHICH THE LOOPS ARE LOCATED, IS TOWARD THE REAR OF THE MACHINE. WHEN REMOVING EITHER SPRING EXERCISE CARE TO AVOID KINKS IN LOOPS.

HORIZONTAL POSITIONING DRIVE LINKAGE SPRING REQUIREMENT
- SPRING UNHOOKED FROM ITS POST
- LINKAGE IN ITS UNBUCKLED POSITION
- MIN. 14 OZS. — MAX. 18 OZS.
- TO PULL SPRING TO INSTALLED LENGTH

HORIZONTAL POSITIONING DRIVE LINKAGE - VERTICAL LINK

REVERSING SLIDE
BEARING STUD
DRIVE LINKAGE HUB
HORIZONTAL STOP SLIDES
DECELERATING SLIDE
CONNECTING STRIP
CONNECTING STRIP MOUNTING SCREWS
BEARING STUD MOUNTING SCREWS
HORIZONTAL POSITIONING DRIVE LINKAGE - VERTICAL LINK

HORIZONTAL POSITIONING DRIVE LINKAGE REQUIREMENT
- TYPE BOX CLUTCH DISENGAGED
- CODE BARS 4 AND 5 TO 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 0.005 INCH)
- MIN. 0.015 INCH — MAX. 0.040 INCH

TO ADJUST
- LOOSEN BEARING STUD MOUNTING SCREWS AND CONNECTING STRIP MOUNTING SCREWS FRICTION TIGHT
- POSITION ONE OR BOTH BEARING STUDS ON THE CONNECTING STRIP TO PROVIDE 0.025 INCH TO 0.035 INCH BETWEEN THE CENTER HORIZONTAL SLIDE AND THE DECELERATING SLIDE ON THE SIDE WHERE THE LINKAGE IS NOT BUCKLED
- TIGHTEN THE TWO INNER MOUNTING SCREWS, CHANGE POSITION OF REVERSING SLIDE AND CHECK OPPOSITE CLEARANCE, EQUALIZE BY SHIFTING BOTH STUDS AND CONNECTING STRIP AS A UNIT
- HOLD THE DRIVE LINKAGE HUB AGAINST THE LOWER VERTICAL LINK OF THE DRIVE LINKAGE
- TIGHTEN THE TWO OUTER BEARING STUD MOUNTING SCREWS
- 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

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4.11 Positioning Mechanism (Cont.)

NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS WITH EARLIER DESIGNED DRIVE LINKAGE AND TORSION SPRINGS.

HORIZONTAL POSITIONING DRIVE LINKAGE REQUIREMENT
- TYPE BOX CLUTCH DISENGAGED.
- CODE BARS 4 AND 5 TO 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

TO ADJUST
- LOOSEN BEARING STUD MOUNTING SCREWS AND CONNECTING STRIP MOUNTING SCREWS FRICITION TIGHT. POSITION ONE OR BOTH BEARING STUDS ON THE CONNECTING STRIP TO PROVIDE 0.025 INCH TO 0.035 INCH BETWEEN THE CENTER HORIZONTAL SLIDE AND THE DECELERATING SLIDE ON THE SIDE WHERE THE LINKAGE IS NOT BUCKLED. TIGHTEN THE TWO INNER MOUNTING SCREWS.
- CHANGE POSITION OF REVERSING SLIDE AND CHECK OPPOSITE CLEARANCE. EQUALIZE BY SHIFTING BOTH STUDS AND CONNECTING STRIP AS A UNIT. HOLD THE DRIVE LINKAGE HUB AGAINST THE LOWER VERTICAL LINK OF THE DRIVE LINKAGE. TIGHTEN THE TWO OUTER BEARING STUD MOUNTING SCREWS. CHECK THE LINKAGE FOR FREEDOM THROUGHOUT A COMPLETE CYCLE.

THE TYPE BOX CLUTCH DISK SHOULD HAVE SOME MOVEMENT IN THE NORMAL DIRECTION OF ROTATION IN THE STOP POSITION.
NOTE 1: CHECK RELATED ADJUSTMENTS, PAR. 4.07, 4.13 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

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4.12 Spacing Mechanism (Cont.)

NOTE 1: CHECK RELATED ADJUSTMENTS, PAR. 4.07, 4.13 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

![Diagram of Spacing Mechanism](image)

4.12 Spacing Mechanism (Cont.)

**NOTE 1:** CHECK RELATED ADJUSTMENTS, PAR. 4.07, 4.13 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

**PLATEN**

**TYPE BOX**

**INDICATOR**

**LTRS.**

**FIGS.**

**WIRE ROPE**

**CLAMP SCREW**

**OSCILLATING RAIL SLIDE**

**LEFT MARGIN**

FOR SPROCKET FEED UNITS SEE PAR. 2.71)

(1) REQUIREMENT (FOR 72 CHARACTER LINE)

TYPE BOX CLUTCH DISENGAGED. SPACING DRUM IN RETURNED POSITION.

TYPE BOX SHIFTED TO THE LETTERS POSITION. CENTER OF THE LETTERS

PRINT INDICATOR ON THE TYPE BOX SHOULD BE

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

FROM THE LEFT EDGE OF THE PLATEN.

(2) REQUIREMENT

SPACING CLUTCH DISENGAGED. FRONT SPACING FEED PAWL FARDEST ADVANCED.

SPACING DRUM FULLY RETURNED. PLAY IN SPACING SHAFT GEAR PAR. 2.24 TAKEN UP CLOCKWISE.

CLEARANCE BETWEEN PAWL AND SHOULDER OF RATCHET WHEEL TOOTH IMMEDIATELY AHEAD OF PAWL WHEN FARDEST ADVANCED.

MIN. 0.002 INCH --- MAX. 0.015 INCH

(3) REQUIREMENT

REAR PAWL, WHEN FARDEST ADVANCED, SHOULD REST AT BOTTOM OF INDENTATION BETWEEN RATCHET WHEEL TEETH.

TO ADJUST POSITION STOP ARM ON SPACING DRUM WITH MOUNTING SCREWS LOOSENED.

TIGHTEN SCREWS.

(A) PRINTING CARRIAGE POSITION

(USE STANDARD ADJUSTMENT PAR. 2.47)

**NOTE 2:** FOR OTHER LENGTHS OF LINE, RANGING FROM 65 TO 85 CHARACTERS THE MARGIN CAN BE VARIED AS REQUIRED.

**NOTE 3:** THIS VIEW SHOWS THE SPACING DRUM FULLY RETURNED.

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4.13 Spacing Mechanism (Cont.)

NOTE: CHECK RELATED ADJUSTMENTS, PARS. 4.07, 2.38 AND 2.47, IF THE FOLLOWING ADJUSTMENT ARE REMADE.

RIGHT MARGIN REQUIREMENT (OPERATING ON BASE)
TYPE BOX CARRIAGE IN POSITION TO PRINT CHARACTER ON WHICH SPACING CUTOUT IS DESIRED.
FRONT SPACING PAWL FARDEST ADVANCED. CLEARANCE BETWEEN UPPER EDGE OF SPACING CUTOUT LEVER AND CUTOUT TRANSFER BAIL WHEN SPACING CUTOUT TRANSFER BAIL IS HELD IN ITS EXTREME UPPER POSITION
MIN. 0.006 INCH --- MAX. 0.025 INCH
TO ADJUST POSITION THE CUTOUT LEVER WITH ITS CLAMP SCREW LOOSENED.
TIGHTEN SCREW.

SPACING CUTOUT LEVER
SPACING CUTOUT TRANSFER BAIL SPRING
MIN. 1 OZ. --- MAX. 3-1/2 OZS.
TO START BAIL MOVING.

DECELERATING SLIDE
DECELERATING SLIDE BELL CRANK (PART OF DECELERATING SLIDE)
DECELERATING SLIDE BELL CRANK SPRING
MIN. 3/4 OZ. --- MAX. 1-3/4 OZS.
TO START BELL CRANK MOVING.
CHECK RIGHT AND LEFT SPRINGS.
4. 14 Printing Mechanism

- **Type Box Carriage Roller Requirement**
  - Minimum vertical play without bind in Type Box carriage.
  - To check, move carriage to right end of track, place in upper position, remove drive link. Check throughout entire travel of carriage.
  - To adjust position lower roller arm with clamp screw loosened. Tighten screw.

4. 15 Positioning Mechanism (Cont.)

- **Note:** For shift mechanisms with torsion springs

  - Oscillator rail
  - Clamp screws
  - Left shift linkage

- **Shift Linkage Spring Requirement**
  - Link in straight position.
  - Min. 7 ozs.
  - Max. 16 ozs.
  - To start each link moving.
4.16 Printing Mechanism (Cont.)

(A) PRINTING HAMMER STOP BRACKET

(FOR THICK TYPE BOX WITH DUMMY PALLETS)

REQUIREMENT

TYPE BOX IN BLANK OR CR POSITION (WHICHEVER DOES NOT PRINT) AND NEAR CENTER OF PLATEN. PRINTING TRACK IN ITS DOWNWARD POSITION. PRINTING HAMMER HELD AGAINST ITS STOP WITH 8 OZS. OF PRESSURE. CLEARANCE BETWEEN PRINTING HAMMER AND DUMMY TYPE PALLET

FRICITION FEED

MIN. 0.008 INCH

MAX. 0.020 INCH

TO ADJUST

POSITION THE STOP BRACKET WITH ITS MOUNTING SCREW AND THE PRINTING HAMMER BAIL PIVOT STUD LOOSENED, TIGHTEN SCREW AND NUT.

(FOR SPROCKET FEED UNITS, SEE PAR. 2.71)

(C) TYPE PALLET SPRING

REQUIREMENT

TYPE BOX REMOVED FROM THE UNIT. 8 OZ. SCALE APPLIED VERTICALLY TO THE END OF THE PALLET SHANK.

MIN. 1/4 OZ.

MAX. 3/4 OZ.

TO START PALLET MOVING

NOTE

THE PRINTING ARM ADJUSTMENT SHOULD ALWAYS BE MADE WITH THE PRINTING HAMMER OPERATING BAIL SPRING BRACKET (PAR. 2.38) IN THE NO. 1 POSITION. POSITIONS NO. 2 AND NO. 3 ARE TO BE USED ONLY FOR MAKING MULTIPLE COPIES.

(TOP VIEW)

(B) PRINTING ARM

(1) 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.

(2) REQUIREMENT

PRINTING TRACK IN UPPERMOST POSITION. LATCHING EXTENSION OF PRINTING HAMMER OPERATING BAIL SHOULD OVER-TRAVEL LATCHING SURFACE OF OPERATING BAIL LATCH BY MIN. 0.006 INCH

CHECK RIGHT AND LEFT POSITION TO ADJUST

POSITION SECONDARY PRINTING ARM WITH CLAMP SCREWS LOOSENED. TIGHTEN SCREWS.
SECTION 573-115-700TC

4.17 Printing Mechanism (Cont.)

(A) RIBBON REVERSE SPUR GEAR

REQUIREMENT

WHEN RIGHT REVERSING LEVER IS IN MAXIMUM DOWNWARD POSITION, THE LEFT REVERSING LEVER SHOULD BE IN ITS MAXIMUM UPWARD POSITION.

TO ADJUST

LOOSEN THE SET SCREWS IN THE DETENT CAM. LOOSEN THE LEFT SPUR GEAR NUT. SECURELY TIGHTEN THE RIGHT SPUR GEAR NUT. MOVE THE RIGHT REVERSING LEVER TO ITS MAXIMUM DOWNWARD POSITION AND HOLD LEFT REVERSING LEVER IN ITS MAXIMUM UPWARD POSITION. THEN TIGHTEN THE LEFT SPUR GEAR NUT.

(B) RIBBON REVERSE DETENT

REQUIREMENT

DETENT SEATED APPROXIMATELY EQUAL IN UPPER AND LOWER POSITIONS OF DETENT CAM

TO ADJUST

POSITION CAM ON SHAFT WITH SET SCREWS LOOSENED. LET LEFT END OF DETENT STUD BE APPROXIMATELY FLUSH WITH LEFT FACE OF CAM (PLAY IN DETENT TAKEN TO RIGHT OF PRINTER) TIGHTEN SCREWS.

(C) RIBBON REVERSE DETENT LEVER SPRING

REQUIREMENT

DETENT SEATED IN NOTCH OF CAM.
RIGHT RIBBON REVERSING LEVER HELD DOWNWARD.
MIN. 6-1/2 OZS. -- MAX. 9 OZS.
TO START THE DETENT LEVER MOVING.
4.18 Function Mechanism (continued)

**FUNCTION STRIPPER BLADE ARMS**

**Requirement**

Typebox clutch and function clutch disengaged. Left line feed function pawl held in its rear position and resting on upper edge of stripper blade. Clearance between upper edge of function bar and lower surface of notched section of function pawl

- Min 0.055 inch
- Max 0.065 inch

The letters function pawl near the opposite end of the stripper blade should have the same clearance.

**To Adjust**

Position shoulder bushing at lower end of right and left stripper blade arm with the locknut loosened. Tighten nut.

Note 1: When checking this adjustment single-double line feed lever must be in double line feed position.

**AUTOMATIC CARRIAGE RETURN AND LINE FEED ARM**

**Requirement (Operating on Base)**

Carriage in position to print two spaces before the last desired characters, and front spacing pawl farthest advanced. Clearance between leading end of automatic carriage return arm and bellcrank

- Min 0.040 inch
- Max 0.055 inch

**To Adjust**

Position automatic carriage return arm with mounting screws loosened. Tighten screw.

Note 2: Range of adjustment is from 65th to 85th characters.

Note 3: For units equipped with universal spacing drum, see (2.62).
4.20 Line Feed Mechanism and Platen Mechanism

NOTE: THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH A TWO-STOP FUNCTION CLUTCH

SINGLE-DOUBLE LINE FEED LEVER

Requirement

SINGLE-DOUBLE LINE FEED LEVER IN SINGLE LINE FEED POSITION, LINE FEED COMBINATION SET UP. MAIN SHAFT ROTATED UNTIL THE LINE FEED FUNCTION PAWL STRIPPER IS IN CONTACT WITH THE LINE FEED FUNCTION PAWL, THE PAWL SHOULD OVERLAP THE STRIPPER BY MIN. 1/2 THE PAWL THICKNESS WHEN THE PLAY IN THE PAWL IS TAKEN UP IN A DIRECTION TO MAKE THE OVERLAP MINIMUM.

To Adjust

POSITION THE LEVER ADJUSTING SCREW TIGHTEN SCREW.
4.21 Function Mechanism (Cont.)

BELL OR MOTOR STOP FUNCTION CONTACT

(1) REQUIREMENT
FUNCTION LEVER AS SHOWN
CONTACT GAP
MIN. 0.010 INCH
MAX. 0.020 INCH
TO ADJUST
BEND THE LOWER CONTACT SPRING.

(2) REQUIREMENT
FUNCTION LEVER AS SHOWN
MIN. 1-1/2 OZS.
MAX. 1-3/4 OZS.
TO ADJUST
BEND THE UPPER CONTACT SPRING.

(3) REQUIREMENT
RECHECK REQUIREMENT (1)
SECTION 573-115-700TC

4.22 Function Mechanism (Cont.)

CAUTION: CARE SHOULD BE EXERCISED IN SOLDERING TO CONTACT SPRINGS SINCE EXCESSIVE HEAT WILL ANNEAL THE SPRINGS.

FUNCTION CONTACT SPRING REQUIREMENT
CONTACT CLOSED
MIN. 1 OZ.
MAX. 2 OZS.
TO OPEN SWITCH CONTACT

FUNCTION LEVER (UNOPERATED)

FUNCTION LEVER (OPERATED)
4.23 Spacing Mechanism (Cont.)

Operating under power, the lamp should light on the desired character.

To adjust:
- Set the type box carriage to print the desired character and position the cam disc counterclockwise on the spring drum with its three mounting screws loosened so that the switch just opens.
- If a line shorter than 72 characters is required, it may be necessary to remove the cam disc screws and insert them in adjacent slots of the disc, if the range of rotation in one slot is not enough. Tighten screws.
SECTION 573-115-700TC

VARIABLE FEATURES

4.24 Horizontal Tabulator Mechanism

(A) OPERATING LEVER SLIDE ARM

NOTE
PRIOR TO THIS ADJUSTMENT CHECK FUNCTION RESET BAIL BLADE ADJUSTMENT (PAR. 4.09)

REQUIREMENT
ON UNITS WITH TWO-STOP FUNCTION CLUTCHES, FUNCTION CLUTCH DISENGAGED. TYPE BOX CLUTCH ROTATED 1/2 REVOLUTION PAST STOP POSITION. ON UNITS WITH ONE-STOP FUNCTION CLUTCH, ROTATE CLUTCH UNTIL FUNCTION PAWL STRIPPER BLADE IS IN ITS LOWER POSITION AND THE FUNCTION RESET BAIL ROLLER IS ON THE HIGH PART OF CAM. HORIZONTAL TABULATOR FUNCTION PAWL PULLED TO REAR AND LATCHED OVER FUNCTION BAR. CLEARANCE
MIN. 0.015 INCH
MAX. 0.035 INCH

TO ADJUST
POSITION SLIDE ARM ON OPERATING LEVER WITH MOUNTING STUD FRICITION TIGHT. TIGHTEN STUD.

(C) OPERATING LEVER EXTENSION LINK SPRING

REQUIREMENT
TRIP ARM LATCH BAIL SPRING UNHOOKED. OPERATING LEVER IN OPERATED POSITION. SLIDE ARM AGAINST BLOCKING LINK.
MIN. 8-3/4 OZS.
MAX. 10-3/4 OZS.
TO START LINK MOVING.

(B) OPERATING LEVER ADJUSTING PLATE

REQUIREMENT
OPERATING LEVER IN UNOPERATED POSITION. CLEARANCE
MIN. 0.070 INCH
MAX. 0.085 INCH

TO ADJUST
POSITION ADJUSTING PLATE ON BRACKET WITH MOUNTING SCREWS LOOSE. TIGHTEN SCREWS.

(D) TABULATOR SHAFT SPRING (TORSION)

NOTE
FOR LOCATION OF SPRING SEE PAR. 4.27

REQUIREMENT
OPERATING LEVER IN UNOPERATED POSITION. (AS IN LOWER FIGURE)
MIN. 1-1/2 OZS.
MAX. 3-1/2 OZS.
TO START SLIDE ARM MOVING.
4.25 Horizontal Tabulator Mechanism (Cont.)

**TRIP ARM LATCH BAIL**

**REQUIREMENT**
- **OPERATING LEVER UNOPERATED.**
- **SPACING TRIP ARM UP.**
- **CLEARANCE**
  - **MIN. 0.020 INCH**
  - **MAX. 0.040 INCH**

To adjust position latch bail adjusting screw, tighten lock nut.

**SPACING TRIP ARM**

**OPERATING LEVER**

**LATCH BAIL SPRING**

**LATCH BAIL ADJUSTING PLATE**

**REQUIREMENT**
- **SPACING CLUTCH AND TYPE BOX.**
- **CLUTCH DISENGAGED.**
- **OPERATING LEVER SLIDE ARM TO REAR AND LATCHED ON BLOCKING ARM.**
- **LATCH BAIL IN FULLY LATCHED POSITION.**
- **SPACING TRIP ARM DOWN AND BEARING UP AGAINST LATCHING SURFACE OF LATCH BAIL.**
- **CLEARANCE**
  - **MIN. SOME**
  - **MAX. 0.008 INCH**

To adjust position latch bail adjusting plate with mounting screw friction tight. Tighten screw.
4.26 Horizontal Tabulator Mechanism (Cont.)

(C) **HORIZONTAL TABULATOR SLIDE**

**ARM SPRING**

**REQUIREMENT**

**OPERATING LEVER IN**

**OPERATED POSITION.**

**SLIDE ARM IN UNOPERATED POSITION.**

**MIN. 1 OZ.**

**MAX. 4 OZS.**

**TO START SLIDE ARM MOVING.**

(D) **OPERATING LEVER CAM**

**PLATE SPRING**

**REQUIREMENT**

**OPERATING LEVER IN UNOPERATED POSITION.**

**HORIZONTAL TABULATOR FUNCTION PAWL UNLATCHED.**

**MIN. 4 OZS.**

**MAX. 9 OZS.**

**TO START STRIPPER BAIL ARM MOVING.**

(A) **CAM PLATE STRIPPER BAIL**

**REQUIREMENT**

**OPERATING LEVER AND TABULATOR SLIDE ARM IN UNOPERATED POSITIONS.**

**SPACING CLUTCH ROTATED UNTIL HIGH PART OF SPACING CAM IS OPPOSITE CAM ARM FOLLOWER BAIL.**

**CLEARANCE**

**MIN. 0.010 INCH**

**MAX. 0.025 INCH**

**TO ADJUST POSITION STRIPPER BAIL ARM ON CAM ARM FOLLOWER BAIL WITH STRIPPER BAIL ARM SCREW FRICITION TIGHT.**

**TIGHTEN SCREW.**

(B) **SPACING CUTOUT TRANSFER BAIL**

**SET COLLAR**

**REQUIREMENT**

**TRANSFER BAIL SHOULD HAVE SOME END PLAY.**

**MAX. 0.008 INCH.**

**TO ADJUST POSITION SET COLLAR WITH ADJUSTING SCREW LOOSENED.**

**TIGHTEN SCREW.**
4.27 Horizontal Tabulator Mechanism (Cont.)

(A) RIGHT MARGIN

REQUIREMENT
CLEARANCE
MIN. 0.006 INCH---MAX. 0.025 INCH

TO CHECK
PLACE TYPE BOX IN POSITION TO PRINT
CHARACTER ON WHICH SPACING CUTOUT
IS DESIRED. PULL FORWARD ON PART OF
TRANSFER BAIL EXTENDING BELOW MOUNTING
SHAFT UNTIL BAIL IS IN FULLY OPERATED
POSITION. GAUGE CLEARANCE.

TO ADJUST
POSITION CUTOUT LEVER WITH CLAMP
SCREW LOOSENED. (FOR LOCATION OF
CLAMP SCREW SEE PAR. 4.13)

NOTE 1: FOUR SCREWS MUST BE
LOOSENED TO ADJUST
CIRCULAR CUTOUT LEVERS.

(B) SPACE SUPPRESSION BY-PASS SPRING

REQUIREMENT
MIN. 20 OZS.
MAX. 26 OZS.
TO START ARM MOVING.

(C) TABULATOR SHAFT MOUNTING BRACKETS

REQUIREMENT
LEVER SLIDE ARM TO REAR SO THAT
BLOCKING ARM AND TABULATOR STOP
ARE IN EXTREME UPPER POSITION.
CLEARANCE
MIN. 0.050 INCH---MAX. 0.065 INCH
CLEARANCE MEASURED NEAR LEFT AND
RIGHT END OF SHAFT EQUAL WITHIN
0.007 INCH.

TO ADJUST
POSITION MOUNTING BRACKETS WITH
MOUNTING SCREWS LOOSENED.
NOTE 2: MAKE SURE THAT SHAFT IS
FREE OF BINDS.

(D) TABULATOR PAWL SPRING

REQUIREMENT
MIN. 1-3/4 OZS.
MAX. 3 OZS.
TO PULL SPRING TO INSTALLED LENGTH.
SECTION 573-115-700TC

4.28 Horizontal Tabulator Mechanism (Cont.)

NOTE --- PRIOR TO THIS ADJUSTMENT, CHECK THE FOLLOWING: OSCILLATING RAIL SLIDE (PAR. 2.30), PRINTING CARRIAGE POSITION (PAR. 2.47) AND PRINTING CARRIAGE LOWER ROLLER (PAR. 2.46).

REQUIREMENT (UNITS WITH FRICTION FEED PLATENS)
SPACING CLUTCH disengaged. SPACING PAWL, WHICH IS FARTHEST ADVANCED, ENGAGING TOOTH IMMEDIATELY ABOVE CUTAWAY SECTION OF RATCHET. TABULATOR PAWL RIDING UP ON FIXED STOP. HIGH PART OF ECCENTRIC TOWARD FORK OF MOUNTING ARM. CLEARANCE MIN. 0.070 INCH MAX. 0.090 INCH

REQUIREMENT (UNITS WITH SPROCKET FEED PLATENS)
HIGH PART OF ECCENTRIC TOWARD LOWER ROLLER MOUNTING SCREW.

TO ADJUST
POSITION ECCENTRIC. TIGHTEN NUT.
TABULATOR STOP SETTING (NOT ILLUSTRATED)

RIGHT MARGIN TABULATOR STOP (WITH WIDE SHELF)

NOTE: PRIOR TO THIS ADJUSTMENT, CHECK THE FOLLOWING: RIGHT MARGIN (PAR. 4.27) AND PAWL MOUNTING ARM OPERATING RANGE (PAR. 4.28 AND 4.29).

POSITION PRINTING CARRIAGE AT RIGHT MARGIN (SPACING CUTOUT OPERATED). INSERT STOP WITH WIDE SHELF IN SLOT IMMEDIATELY TO LEFT OF TABULATOR PAWL.

COLUMNAR TABULATOR STOPS

PLACE CARRIAGE IN POSITION TO PRINT FIRST CHARACTER IN COLUMN. INSERT STOP IN SLOT IMMEDIATELY TO LEFT OF TABULATOR PAWL. STORE EXTRA STOPS IN SLOTS BEYOND PRINTING LINE AT EITHER END OF SHAFT.

NOTE: - WHEN PRINTING FORMS, CHECK STOP SETTINGS WITH RELATION TO COLUMNS. CORRESPONDING STOPS ON ALL MACHINES CONNECTED IN A CIRCUIT MUST BE THE SAME NUMBER OF SPACING OPERATIONS FROM LEFT MARGIN.

TO DETERMINE MAXIMUM LIMIT. . . (A) SET FIVE TABULATOR STOPS AS SHOWN IN FIGURE. (B) POSITION PAWL IMMEDIATELY TO RIGHT OF STOP NO. 1. (C) POSITION ECCENTRIC TO SET CLEARANCE APPROXIMATELY 0.030 INCH. (NOTE — MEASURE ALL CLEARANCES AT STOP NO. 1 WITH PLAY TAKEN UP IN CARRIAGE TO REDUCE GAP TO MINIMUM) (D) MARK COLUMN LOCATION BY PRINTING A CHARACTER ON PAPER. (E) POSITION PAWL IMMEDIATELY TO RIGHT OF STOP NO. 2. AND MARK COLUMN LOCATION AS IN STEP (D). (F) REPEAT STEP (E) FOR OTHER THREE STOPS. (G) GRADUALLY INCREASE CLEARANCE UNTIL CARRIAGE STOPS ONE SPACE BEFORE ANY COLUMN WHILE RECEIVING FIGURES G LETTERS X FROM TRANSMITTER DISTRIBUTOR. (NOTE — IF UNIT IS NOT EQUIPPED WITH XD CONTROL, PUT FILL-IN CHARACTERS OF LETTERS OR FIGURES IN TAPE TO DELAY PRINTING UNTIL CARRIAGE COMPLETES TRAVEL.) (H) DECREASE CLEARANCE UNTIL TEN LINES OF TABULAR OPERATION CAN BE MADE WITHOUT ERROR. (I) GAUGE AND RECORD VALUES OF CLEARANCE. (2) GAGE ALL CLEARANCES WITH FRONT FEED PAWL FARDEST ADVANCED.

TO DETERMINE MINIMUM LIMITS. . . (A) REPEAT STEPS (B) AND (C) ABOVE. (B) GRADUALLY DECREASE CLEARANCE UNTIL CARRIAGE STOPS ONE SPACE AFTER ANY COLUMN. (C) INCREASE CLEARANCE UNTIL TEN LINES OF TABULAR OPERATION CAN BE MADE WITHOUT ERROR. (1) GAUGE AND RECORD VALUE OF CLEARANCE.

TO ADJUST

IF MINIMUM LIMIT IS POSITIVE, ADD IT TO MAXIMUM LIMIT AND DIVIDE THE SUM BY TWO. SET RESULTANT AMOUNT AS MIDPOINT OF RANGE. IF MINIMUM LIMIT IS ZERO OR LESS, DIVIDE MAXIMUM LIMIT BY TWO AND SET THIS AMOUNT AS MIDPOINT OF RANGE. THE DIFFERENCES BETWEEN LIMITS NORMALLY IS NOT LESS THAN 0.045 INCH. TIGHTEN NUT.
4.30 Paper-Out Alarm Mechanism

**BELLS CRANK FOLLOWER SPRING REQUIREMENT**

Spring scale applied to bell crank follower where it makes contact with paper roll:
- **MIN.** 2 ozs.
- **MAX.** 3 ozs.

To start bell crank moving.

**LEFT SIDE FRAME**

**BELL CRANK FOLLOWER**

**FOLLOWER SPRING**

**MOUNTING SCREWS**

**SWITCH**

**PAPER SPINDLE**

(Rear Left View)

**BELL CRANK FOLLOWER REQUIREMENT**

The bell crank follower should be approximately 1/4 inch from a flat side of the paper spindle.

To adjust position the switch with its mounting screws loosened, tighten screws.