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<td>149</td>
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1. GENERAL

1.01 This section is reissued: to incorporate adjusting information for the Selector Armature Downstop, and the Selector Armature Vertical Adjustment; to rearrange the text matter and assembly grouping to conform to the new
standard format. 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 subdivided 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.

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 Teletype Bulletin 1124B.

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: 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.

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 Bulletin 1124B) 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

TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER AND SELECTION MAGNET ASSEMBLIES. TO INSURE BETTER OPERATION, PULL A PIECE OF KS BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OF PAPER REMAIN BETWEEN THE POLE PIECES AND ARMATURE.

![Diagram of the selector mechanism showing the armature, clamp strip, adjusting nut, pivot edge, and other components.]

**Requirement**

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armature Mounting Screws</td>
<td>Clearance between armature clamp strip and casting.</td>
<td>0.025 inch</td>
<td>0.045 inch</td>
</tr>
<tr>
<td>Armature Alignment</td>
<td>Outer edge of armature should be flush within 0.015 inch with outer edge of pole pieces.</td>
<td></td>
<td></td>
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</tbody>
</table>
NOTE
THE APPROPRIATE PRELIMINARY SELECTOR
ARMATURE SPRING TENSION ADJUSTMENT MUST
BE MADE PRIOR TO THE SELECTOR MAGNET BRACKET
ADJUSTMENT.

SELECTOR MAGNET BRACKET (MAGNETS ENERGIZED)
(1) REQUIREMENT — SPACING LOCK LEVER ON EACH HIGH PART OF CAM. ARMATURE
IN CONTACT WITH POLE PIECE. CLEARANCE BETWEEN END OF ARMATURE
EXTENSION AND SHOULD 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.
MAX. 0.003 INCH
TO ADJUST --- POSITION UPPER END OF MAGNET BRACKET. TIGHTEN TWO
MAGNET BRACKET MOUNTING SCREWS. RECHECK REQUIREMENT (1).
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 MISHANDLEING 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
- SELECTOR ARMATURE DOWNSTOP BRACKET
- SELECTOR MAGNET BRACKET

SELECTOR MAGNET BRACKET - VERTICAL ADJUSTMENT

(3) REQUIREMENT
- MARKING LOCK LEVER ON LOW PART OF CAM. ARMATURE IN CONTACT WITH FRONT POLE PIECE (MAGNET ENERGIZED). THERE SHOULD BE SOME CLEARANCE BETWEEN LOWER SURFACE OF ARMATURE EXTENSION AND UPPER SURFACE OF MARKING LOCK LEVER. GAUGE BY EYE.

To adjust with MOUNTING SCREW LOOSENED POSITION UPPER END OF MAGNET BRACKET BY MEANS OF PRY POINT, RECHECK REQUIREMENTS (1) AND (2).
2.04 Selector Mechanism (Cont.)

SELECTOR ARMATURE SPRING (500 MA SELECTOR COILS)
REFER TO PAR. 2.05 USING THE FOLLOWING:

SINGLE BUTTON ARMATURE
500 MA; MIN 4-1/2 OZS --- MAX 5-1/2 OZS

DOUBLE BUTTON ARMATURE
500 MA; APPROXIMATELY --- 1-1/8 OZ
TO PULL REAR BUTTON AGAINST ITS POLE PIECE
SECTION 573-115-700

2.05 Selector Mechanism (Cont.)

SELECTOR ARMATURE SPRING (FOR UNITS WITH SINGLE ANTI-FREEZE BUTTON ON SELECTOR ARMATURE)

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

(a) MIN. 1-1/2 OZS. ------------------------------ MAX. 2 OZS., FOR 20 MA OPERATION.
(b) MIN. 2-1/2 OZS. ------------------------------ MAX. 3 OZS., FOR 60 MA OPERATION.

TO PULL ARMATURE TO MARKING POSITION.

TO ADJUST --- POSITION ADJUSTING NUT.

REQUIREMENT --- (FINAL) REFER TO SELECTOR RECEIVING MARGIN PAR. 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 PAR. 2.11.

SELECTOR ARMATURE SPRING (FOR UNITS WITH TWO ANTI-FREEZE BUTTONS ON SELECTOR ARMATURE)

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

0.020 AMPERES 0.030 AMPERES 0.060 AMPERES
14 GRAMS 18 GRAMS 21 GRAMS

TO PULL REAR BUTTON AGAINST ITS POLE PIECE

TO ADJUST --- POSITION ADJUSTING NUT.

REQUIREMENT --- (FINAL) WHEN A DISTORTION TEST SET IS AVAILABLE, REFINE SELECTOR ARMATURE SPRING ADJUSTMENT TO MEET SELECTOR RECEIVING MARGIN PAR. 2.11. NOTE --- WITH SELECTOR MAGNETS ENERGIZED, FRONT ANTI-FREEZE BUTTON MUST BE IN CONTACT WITH ITS MAGNET CORE.
NOTE
TO FACILITATE MAKING THE FOLLOWING ADJUSTMENTS, REMOVE THE RANGE FINDER ASSEMBLY AND SELECTOR MAGNET ASSEMBLY. TO INSURE BETTER OPERATION, PULL A PIECE OF BOND PAPER BETWEEN THE ARMATURE AND THE POLE PIECES TO REMOVE ANY OIL OR FOREIGN MATTER THAT MAY BE PRESENT. MAKE CERTAIN THAT NO LINT OR PIECES OF PAPER REMAIN BETWEEN THE POLE PIECES AND THE ARMATURE.

NOTE
THESE REQUIREMENTS NEED NOT BE MADE NOR CHECKED IF THE SELECTOR MAGNET BRACKET AND RECEIVING MARGIN REQUIREMENTS ARE MET.

(1) REQUIREMENT
CLEARANCE
MIN. 0.025 INCH
MAX. 0.045 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.

(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.

SELECTOR ARMATURE DOWNSTOP BRACKET

REQUIREMENT
REMOVE OIL SHIELD. WITH MAGNET DE-ENERGIZED, LOCK LEVERS ON HIGH PART OF THEIR CAM, AND ARMATURE RESTING AGAINST ITS DOWNSTOP, CLEARANCE BETWEEN END OF ARMATURE AND LEFT EDGE OF LEFT POLE PIECE
MIN. 0.025 INCH MAX. 0.030 INCH.
TO ADJUST
POSITION DOWNSTOP BRACKET WITH MOUNTING SCREW LOOSENED, REPLACE OIL SHIELD AND CHECK OIL SHIELD ADJUSTMENT.
MARKING LOCK LEVER SPRING

REQUIREMENT --- LETTERS COMBINATION SELECTED, ROTATE MAIN SHAFT UNTIL SELECTOR CLUTCH IS DIENGAGED.
SCALE APPLIED TO LOWER EXTENSION OF LOCK LEVER
MIN. 1-1/2 OZS. ------------ MAX. 3 OZS.
TO START MARKING LOCK LEVER MOVING.

NOTE FOR BELL SERVICE ONLY
WHEN CHECKING UNITS WITH SINGLE BUTTON ARMATURE, SIGNAL LINE SHALL BE SHUNTED BY A TWX SWITCHBOARD SIMULATOR. SIMULATOR SHALL NOT BE USED WITH UNITS EMPLOYING THE TWO BUTTON ARMATURE.

MARKING LOCK 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.

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

**SELECTOR LEVER**

**SELECTION 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.

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

**SELECTION 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.
2.09  Selector Mechanism (Cont.)

(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 DIENGAGED, 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 LOOSENED.
NOTE
ARMATURE WITH TWO ANTI-FREEZE BUTTONS, FRONT BUTTON MUST CONTACT ITS CORE WHEN MAGNETS ARE ENERGIZED

RANGE SCALE

SELECTOR RECEIVING MARGIN

REQUIREMENT (FOR UNITS EMPLOYING ARMATURE WITH ONE ANTI-FREEZE BUTTON) WHEN A SIGNAL DISTORTION TEST SET 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.

SELECTOR RECEIVING 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</td>
<td>72</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.020 AMP. (WINDINGS SERIES)</td>
<td>60</td>
<td>72</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TO ADJUST: REFINethe SELECTOR ARMATURE SPRING (SEE PAR. 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: 
   \[ O_c = \frac{\text{UMB}_{100} + \text{LSB}_{60}}{2} \]
   WHERE
   \( \text{UMB}_{100} \) = UPPER ORIENT LIMIT MARKING BIAS AT 100 WPM
   \( \text{LSB}_{60} \) = LOWER ORIENT LIMIT SPACING BIAS AT 60 WPM

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2. 12 Codebar Mechanism

REAR CODE BAR SHIFT LEVER

COMMON TRANSFER LEVER SPRING

REQUIREMENT

TRANSFER LEVER IN SPACING POSITION

SCALE APPLIED NEAR UPPER END OF

COMMON TRANSFER LEVER.

MIN. 1/2 OZ.

MAX. 1-1/4 OZS.

TO START LEVER MOVING

TOP VIEW

CODE BAR SHIFT BAR

TRANSFER LEVER OUTER STEP

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 FARthest FROM REAR CODE BAR

SHIFT LEVER

MIN. 0.010 INCH

MAX. 0.025 INCH

WHEN PLAY OF SHIFT BAR IS

TAKEN UP FOR MAXIMUM CLEARANCE.

TO ADJUST

ROTATE ECCENTRIC BUSHING WITH

CLAMP SCREW LOOSENED.

HIGH PART OF ECCENTRIC SHOULD

BE ABOVE HORIZONTAL CENTER LINE

NOTE

ONE OR MORE CODEBAR SHIFT

BARS CAN TOUCH CODE BAR

SHIFT LEVERS.

TRANSFER LEVERS

TRANSFER LEVER ECCENTRIC BUSHING

(BACK VIEW)

TRANSFER LEVER SPRING

REQUIREMENT

TRANSFER LEVER HELD IN SPACING POSITION

MIN. 1-1/2 OZ.

MAX. 2-1/2 OZS.

TO START INTERMEDIATE ARM MOVING.

PUSH LEVER (SELECTED)

INTERMEDIATE ARM

SELECTOR LEVER

BUSHING CLAMP SCREW

ECCENTRIC BUSHING

COMMON TRANSFER LEVER SPRING

(RIGHT SIDE VIEW)

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2.13 Codebar Mechanism (Cont.)

INTERMEDIATE ARM BACKSTOP BRACKET

REQUIREMENT
PUSH LEVERS NOT SELECTED. ALL CODE BAR SHIFT BARS TO THE RIGHT. SELECTOR CLUTCH DISENGAGED. CODE BAR SHIFT LEVER LINK IN LOWERMOST POSITION. CLEARANCE BETWEEN FRONT CODE BAR SHIFT LEVER AND INNER STEP OF CODE BAR SHIFT BAR FARTHEST FROM FRONT CODE BAR SHIFT LEVER
MIN. 0.010 INCH
MAX. 0.025 INCH
WHEN PLAY IN PARTS IS TAKEN UP FOR MAXIMUM CLEARANCE.
TO ADJUST POSITION BACKSTOP BRACKET WITH ITS TWO CLAMP SCREWS LOOSENED.

2.14 Selector Mechanism (Cont.)

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.
CODE BAR SHIFT LEVER DRIVE ARM

REQUIREMENT
CODE BAR SHIFT LEVER LINK IN
THE UPERMOST 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.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.03
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 shoulder on nearest code bar shift bar
  - Min. 0.002 inch
  - Max. 0.025 inch

**TO CHECK (REAR)**
- Select letters combination. Check clearance between rear code bar shift lever and shoulder on nearest code bar shift bar in same way.
  - Min. 0.002 inch
  - Max. 0.025 inch

**TO ADJUST**
- Position adjusting plates (front and rear) with clamp screws loosened.

---

**DIAGRAMS**

- Code bar shift bar inner step
- Rear code bar shift lever
- Code bar shift bar (marking)
- Code bar shift bar (spacing)
- Front code bar shift lever (top view)

---

**TRANSFER LEVERS**

- Code bar shift lever
- Adjusting plate
- Clamp screw
- Code bar shift lever link
- Code bar shift lever link bracket

---

**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.

**SELECTOR CLUTCH CAM**

**CODE BAR CLUTCH LATCH LEVER**

**STOP LUG**

**(REAR VIEW)**

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

**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.

**TRIP SHAFT LEVER SPRING**

**(RIGHT SIDE VIEW)**

**TRIP SHAFT LEVER SPRING**

**TRIP SHAFT LEVER**

**CODE BAR CLUTCH**

**CLAMP SCREW**

**CODE BAR CLUTCH**

**LATCH LEVER SPRING**

**STOP LUG**

**(REAR VIEW)**

**TRIP LEVER**

**(LEFT SIDE VIEW)**

**CODE BAR CLUTCH TRIP LEVER**

**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 573-115-700

2.18 Main Shaft and Trip Shaft Mechanisms (Cont.)

CM FOLLOWER ARM

CLAMP SCREW

CLUTCH TRIP LEVER

FUNCTION CLUTCH

CLUTCH SHOE LEVER

FUNCTION CLUTCH TRIP LEVER

REQUIREMENT

CODE 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

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.
(A) CLUTCH TRIP SHAFT SET COLLARS

(1) REQUIREMENT

SPACING CUT-OUT LEVER SHOULD HAVE SIDE PLAY

MIN. SOME
MAX. 0.008 INCH

TO ADJUST
POSITION SPACING CUT-OUT LEVER SET COLLAR

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. SOME
MAX. 0.008 INCH

TO ADJUST
POSITION LINE FEED CLUTCH LATCH LEVER SET COLLAR.
SECTION 573-115-700

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 SNAP-BING 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.

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.
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.

(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.

(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 OVERTURE ON ALL THREE STOP LUGS AS GAUGED 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 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

BACK OFF TRIP LEVER ADJUSTING SCREW AND POSITION TRIP LEVER ECCENTRIC STOP POST.
SECTION 573-115-700

2.22 Main Shaft and Trip Shaft Mechanisms (Cont.)

CLUTCH TRIP ARM

CLUTCH DRUM

CLUTCH DISK STOP LUG

CLUTCH SHOE LEVER

CLUTCH TRIP LEVER

CLUTCH TRIP LEVER ECCENTRIC POST

CLAMP SCREWS

DRUM MOUNTING SCREW

ADJUSTING DISK

CLAMP SCREWS

TYPE BOX CLUTCH TRIP LEVER

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 DISK STOP LUG.

MIN. 0.025

MAX. 0.045

TO ADJUST LOOSEN CLAMP SCREW AND POSITION STOP.

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.

CLUTCH SHOE LEVER

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.

NOTE ON MULTIPLE STOP CLUTCHES CHECK THE CLEARANCE AT THE STOP LUG THAT IS ADJACENT TO THE FORM IN THE CLUTCH ADJUSTING DISK.

TO ADJUST LOOSEN THE TWO CLAMP SCREWS ON THE CLUTCH DISK. ENGAGE A WRENCH OR SCREWDRIVER ON THE LUG OF THE ADJUSTING DISK AND ROTATE THE DISK.
2.23 Main Shaft and Trip Shaft Mechanisms (Cont.)

**CLUTCH SHOE LEVER SPRING REQUIREMENT**

CLUTCH ENGAGED. HOLD CAM DISK TO PREVENT TURNING. SPRING SCALE PULLED AT TANGENT TO CLUTCH.

- **MIN. 15 OZS.**
- **MAX. 20 OZS.** ONE-STOP CLUTCHES

- **MIN. 16 OZS.**
- **MAX. 22 OZS.** MULTIPLE-STOP CLUTCHES

TO MOVE THE SHOE LEVER IN CONTACT WITH THE STOP LUG.

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

CLUTCH SHOE LEVER HELD DISENGAGED. CLUTCH SHOULD HAVE SOME END PLAY MAX. 0.015 INCH TO ADJUST POSITION EACH DRUM AND SPACING CLUTCH SET COLLAR WITH MOUNTING SCREWS LOOSENED.

**CLUTCH SHOE SPRING REQUIREMENT**

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.**
  - **MIN. 3 OZS.**
  - **MAX. 5 OZS.**

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.

(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.
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.

**Positioning Mechanism**

- Inner Bearing Race:
  - Mounting Screws

To adjust:
- Hold Rocker Shaft in extreme left position and position the bracket against the inner bearing race with mounting screws loosened.
SECTION 573-115-700
2.27 Positioning Mechanism (Cont.)
ROCKER SHAFT BRACKET ECCENTRIC STUD

(1) REQUIREMENT --- WITH TYPE BOX CLUTCH DISENGAGED 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. 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 PUSHING 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. 2.32) PRINTING TRACK (PAR. 2.49) AND PRINTING ARM (PAR. 2.50).

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![Diagram of Positioning Mechanism](image-url)
2.28 Positioning Mechanism (Cont.)

**SUPPRESSION BAR**

*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**


**VERTICAL POSITIONING LEVER TOE**

**RIGHT VERTICAL POSITIONING LEVER**

**COMMON CODE BAR**

**#1 CODE BAR**

**#2 CODE BAR**

**VERITCAL 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.

**LINK EXTENSION**

**ROCKER SHAFT**

**ROCKER SHAFT BRACKET**

**FLAT SURFACE**

**ECCENTRIC STUD**

**VERTICAL POSITIONING LINK**
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**

- **COMMON CODE BAR**

- **VERTICAL POSITIONING LEVER TOE**

- **LEFT VERTICAL POSITIONING LEVER ECCENTRIC STUD**
  - **REQUIREMENT**
    - RIGHT AND LEFT VERTICAL POSITIONING LEVERS SHOULD BUCKLE EQUALLY WITHIN 0.006 INCH
    - TO CHECK COMMON CODE BAR IN SPACING POSITION. TRIP TYPE BOX CLUTCH. ROTATE MAIN SHAFT UNTIL RIGHT VERTICAL POSITIONING LEVER TOE TOUCHES COMMON CODE BAR, BUCKLING ITS LOWER LINK 0.008 INCH (MAXIMUM)
    - LEFT VERTICAL POSITIONING LEVER TOE SHOULD TOUCH COMMON CODE BAR, BUCKLING ITS LOWER LINK EQUALLY WITHIN 0.006 INCH
    - TO ADJUST POSITION ECCENTRIC STUD ON ROCKER SHAFT LEFT BRACKET INNER ARM. POSITION HIGH PART OF CAM (MARKED WITH DOT) TOWARD REAR.
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 TO ROTATE ON SPACING DRUM (FIVE MOUNTING SCREWS LOOSENED). SPACING CLUTCH DISENGAGED. FEED PAWL, WHICH IS FARTHEST ADVANCED, ENGAGING TOOTH IMMEDIATELY ABOVE CUT-AWAY SECTION OF RATCHET. CLEARANCE BETWEEN SLIDE AND PULLEY TO ADJUST MIN. 0.025 INCH—MAX. 0.050 INCH
POSITION SLIDE ON WIRE ROPE WITH CLAMP SCREWS LOOSENED.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.07.

OSCILLATING RAIL SLIDE

CLAMP SCREW

PULLEY WIRE ROPE

RATCHET

MOUNTING SCREWS

CARRIAGE RETURN RING

SPACING DRUM

AUTOMATIC CARRIAGE RETURN-LINE FEED RING (AND SPACE SUPPRESSION RING)

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 573-115-700
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.

(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

**TOP VIEW**

RESET BAIL BLADE ASSEMBLY

RESET BAIL BLADE MOUNTING SCREWS

RESET BAIL SPRING

**LEFT SIDE VIEW**

FUNCTION PAWL

FUNCTION BAR

FUNCTION LEVER

RESET BAIL

RESET BAIL BLADE MOUNTING SCREWS

**LEFT SIDE PARTIAL VIEW**

FUNCTION PAWL

FUNCTION BAR

FUNCTION LEVER

RESET BAIL SPRING

(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 SHOE-RELEASE LEVER JUST TOUCHES ITS STOP LEVER. 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.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 FRICITION TIGHT.

(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.5. 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

NOTE: IF THE FUNCTION RESET BAIL BLADE IS REPOSITIONED, CHECK THE ADJUSTMENT OF THE FIGS-LTRS SHIFT CODE BAR OPERATING MECHANISM FOLLOWING.
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 DISK STOP LUG IS TOWARD BOTTOM OF UNIT, HOOK FIGURES FUNCTION PAWL OVER THE END OF THE FUNCTION BAR. CLEARANCE BETWEEN UPPER GUIDE PLATE EXTENSION AND SHIFT SLIDE. MAX. 0.020 WHEN PLAY IS TAKEN UP FOR MAXIMUM.

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

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

NOTE: 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.

NOTE: 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.

(C) REVERSING SLIDE BRACKETS
REQUIREMENT
TYPE BOX CLUTCH, CODE BAR CLUTCH, AND FUNCTION CLUTCH DISENGAGED.
REVERSING SLIDE MOVED TO RIGHT AND LEFT THROUGH ITS FULL TRAVEL RIGHT MOTION SHOULD BUCKLE LEFT HORIZONTAL POSITIONING DRIVE LINKAGE AND LEFT MOTION SHOULD BUCKLE RIGHT HORIZONTAL POSITIONING DRIVE LINKAGE. THE AMOUNT OF BUCKLING IN EACH CASE SHOULD BE MIN. 0.030 INCH MAX. 0.050 INCH MEASURED AT POINT OF MAXIMUM CLEARANCE.

TO ADJUST
POSITION EACH REVERSING SLIDE BRACKET WITH THEIR CLAMP SCREWS LOOSENED.
NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH 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. 0.090 INCH
  - MAX. 0.110 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 0.095 INCH TO 0.105 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.

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.
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, gaged by feel. Tighten the clamp screw.
2.38 Spacing Mechanism (Cont.)

CARRIAGE RETURN SPRING

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

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.

SPACING FEED PAWL RELEASE LINK SPRING REQUIREMENT

Min. 1/2 oz.
Max. 2-1/2 ozs.
To start spring stretching.

SPRING DRUM NUT

SPRING DRUM RATCHET WHEEL

SPRING DRUM

SPACING FEED PAWL

RELEASE LINK

TRANSFER SLIDE

PRINTING CARRIAGE

ESCAPEMENT LEVER

PRINTING HAMMER

OPERATING BAIL

SPRING BRACKET

Page 43
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.

(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

(LEFT SIDE VIEW)

(RIGHT SIDE FRAME

(REAR 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

FEED PAWL
FEED PAWL RELEASE LINK
SPACING DRUM

CARRIAGE RETURN LATCH BAIL

CARRIAGE RETURN LEVER

CLAMP SCREW

RIGHT SIDE VIEW

REQUIREMENT (UNITS EQUIPPED WITH TWO-STOP FUNCTION CLUTCH)
SAME EXCEPT MAIN SHAFT SHOULD BE ROTATED UNTIL FUNCTION CLUTCH IS DISENGAGED IN STOP POSITION THAT RESULTS IN LEAST CLEARANCE.
TO ADJUST POSITION CARRIAGE RETURN LEVER ON CARRIAGE RETURN BAIL WITH CLAMP SCREW LOOSENED.
SECTION 573-115-700

2.41 Spacing Mechanism (Cont.)

**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.

**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.

2.42 Function Mechanism (Cont.)

**KEYBOARD LOCK LEVER SPRING REQUIREMENT (IF UNIT IS EQUIPPED)**

Scale applied to bell crank

- Min. 1/2 oz.
- Max. 1-1/2 ozs.

To start keyboard lock lever moving
2.43 Spacing Mechanism (Cont.)

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.
(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 COUNTER-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.

NOTES
1. WHEN ADJUSTMENTS ON THIS PAGE ARE MADE CHECK RELATED REQUIREMENTS IN PARS. 2.30, 2.44, AND 2.47.
2. FOR SPROCKET FEED PRINTER REQUIREMENTS REFER TO ADJUSTMENTS IN PARS. 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.

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.
NOTE: CHECK RELATED ADJUSTMENTS, PARS. 2.30, 2.43 AND 2.47 IF THE FOLLOWING ADJUSTMENTS ARE REMADE.

RIGHT MARGIN

REQUIREMENT

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

TO ADJUST

POSITION SPACE SUPPRESSION RING WITH FOUR INDICATED MOUNTING SCREWS LOOSENED.

NOTE

(1) RANGE OF ADJUSTMENT IS FROM 0 TO 85 CHARACTERS.

(2) ON UNITS EQUIPPED WITH AUTOMATIC CARRIAGE RETURN – LINE FEED RING, THIS ADJUSTMENT IS NOT APPLICABLE. (SEE PAR. 2.62)

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.
- To adjust (sliding screw) position lower roller with mounting screw loosened.

NOTE: FOR EARLIER DESIGN SEE PAR. 4.14
2.47 Printing Mechanism (Cont.)


(printing mechanism diagram)

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

(printing mechanism diagram)

TO ADJUST
ADD OR REMOVE SHIMS BETWEEN SHOULDER ON BEARING POST AND STOP BRACKET
SECTION 573-115-700

2.48 Positioning Mechanism (Cont.)

(A) **SHIFT LINKAGE REQUIREMENT**

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

TO ADJUST POSITION LEFT SHIFT LINKAGE ON OSCILLATOR RAIL WITH TWO CLAMP SCREWS LOOSENED.

TO RECHECK SHIFT ALTERNATELY FROM "W" TO "2". TAKE UP PLAY IN EACH DIRECTION. REFINE ADJUSTMENT IF NECESSARY.

(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. HOLD CLEARANCE TO MAXIMUM.

(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. 0.035 INCH
AT ANY POINT ALONG THE ENTIRE
LENGTH OF THE PLATEN.
TO ADJUST --- POSITION STOP BRACKET
BY MEANS OF ITS TWO MOUNTING SCREWS.

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.

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.

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

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

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

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

TYPE BOX ALIGNMENT
REQUIREMENT
PRINTED IMPRESSION OF CHARACTERS AT TOP AND AT BOTTOM SHOULD BE EQUAL. (GAUGE VISUALLY)

TO ADJUST
LOOSEN NUT. OPERATE PRINTER UNDER POWER. REPEAT CHARACTERS E AND Z. TURN ADJUSTING SCREW IN OR OUT (IN STEPS OF 1/4 TURN) TO MEET REQUIREMENT. TIGHTEN NUT.

ADJUSTING SCREW

TYPE BOX ADJUSTING PLATE

TYPE BOX CARRIAGE

TYPE BOX

RETAINING CLIP

ADJUSTING SCREW

NUT

TYPE BOX ADJUSTING PLATE

TYPE BOX CARRIAGE

FRONT VIEW

LEFT SIDE VIEW

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

(A) RIBBON REVERSE SPUR GEAR

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: 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

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: 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.

RIBBON REVERSING LEVER-LEFT

FEED LEVER BRACKET

LONG FEED LEVER SPRING

RIBBON FEED LEVER SPRING

REQUIREMENT
RIBBON FEED LEVERS IN UPPERMOST POSITION.
FOR LONG LEVER: PUSH DOWNWARD NEAR ITS SPRING.
FOR SHORT LEVER: PUSH DOWNWARD AT POINT NEAR LONG LEVER SPRING.
MIN. 3/4 OZ.
MAX. 2 OZS.
TO START FEED LEVERS MOVING.
MEASURE ALL FOUR PAWLS.

NOTE: IF MINIMUM REQUIREMENT OF SHORT LEVER IS NOT MET, PULL LOWER END OF TORSION SPRING TO REAR.

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

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

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

RIBBON RATCHET WHEEL SPRING

REQUIREMENT
FEED LEVERS DISENGAGED.
MIN. 3 OZS.
MAX. 7-1/2 OZS.
TO START THE RATCHET WHEEL MOVING.

*TWO COLOR RIBBON REQUIREMENT
MIN. 3 OZS.—MAX. 4 OZS.
TO START RATCHET WHEEL MOVING.
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 lever with stud that operates two contacts
- Min. 1-1/2 ozs.
- Max. 2 ozs.
- 2 ozs.
- 3-1/2 ozs.
To start function lever moving, check each spring.

(b) FUNCTION PAWL SPRING

requirement
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 pawl moving, check each spring.

(c) FUNCTION BAR SPRING

requirement
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.
2.56  Function Mechanism (Cont.)

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

(2) REQUIREMENT (CENTER POSITION)
  THE CLIP SHOULD HOLD THE FUNCTION PAWL OUT OF ENGAGEMENT WITH ITS FUNCTION BAR BUT SHOULD NOT INTERFERE WITH THE FUNCTION LEVER.
  TO ADJUST
  POSITION THE CLIP WITH ITS MOUNTING SCREW LOOSENED.

(3) REQUIREMENT (LEFT-HAND POSITION)
  THE CLIP SHOULD HOLD THE FUNCTION PAWL UPWARD OUT OF ENGAGEMENT WITH ITS FUNCTION BAR. IT SHOULD ALSO HOLD THE TOP END OF THE FUNCTION LEVER IN ITS REAR POSITION.
  TO ADJUST
  POSITION THE CLIP TO ITS EXTREME LEFT-HAND POSITION.
2.57 Line Feed and Platen Mechanism (Cont.)

**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.

**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.

**LINE FEED BAR RELEASE LEVER**

**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.

**LINE FEED BAR BELL CRANK SPRING**

**REQUIREMENT**

Left-hand line feed bar in rear position.

Friction feed
Min. 19 ozs.
Max. 24 ozs.
To start bar moving.

Sprocket feed
Min. 28 ozs.
Max. 38 ozs.
SECTION 573-115-700

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.

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**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

LINE FEED STRIPPER BAIL SPRING
STRIPPER BAIL
LINE FEED CLUTCH
2.61 Line Feed and Platen Mechanism (Cont.)

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**SINGLE-DOUBLE LINE FEED LEVER**

**FUNCTION BAR**

**STRIPPER BLADE**

**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.

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**NOTE:** For earlier design see Par. 4.20

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2.62 Spacing Mechanism (Cont.)

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.

AUTOMATIC CARRIAGE RETURN-LINE
FEED RING

FEED PAWL

AUTOMATIC CARRIAGE RETURN-LINE
FEED BELL CRANK

MOUNTING SCREWS

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

NOTE
RANGE OF LINE ADJUSTMENT IS FROM
0 TO 85 CHARACTERS

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

**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**

**REQUIREMENT**
- Left collar space
  - Min. 9/32 inch
  - Max. 21/64 inch
  - From the left shoulder on the paper straightener shaft.
- Right collar spaced.
  - Min. 1/16 inch
  - Max. 5/64 inch
  - From the right shoulder.

To adjust position collars on shaft with set screws loosened.

**PAPER STRAIGHTENER LEVER SPRING**

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

To start the lever moving.

Note: For sprocket feed mechanism see par. 2.75.
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
2.66 Function Mechanism (Cont.)

WIRE SPRING TYPE LUG

STANDARD LUG

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

TOP PLATE

CONTACT PLATE

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 THE LOWER EDGE OF THE UNSHIFT-ON-SPACE FUNCTION PAWL AND ITS FUNCTION BAR.

MIN. 0.015 INCH
MAX. 0.060 INCH

TO ADJUST
LOosen THE LOCK NUT AND TURN THE DISABLING SCREW IN.

(2) REQUIREMENT
TO RESTORE THE UNSHIFT-ON-SPACE FUNCTION, BACK OFF THE SCREW SO THAT PAWL FULLY ENGAGES THE FUNCTION BAR. THEN CONTINUE TO TURN THE SCREW OUT ONE TO THREE TURNS.
SECTION 573-115-700

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.

CODE BAR DETENT BRACKET

SHIMS

CODE BAR

SUP
4
1
5
2
3
COM.
0
5

(FRONT VIEW)

CODE BAR GUIDE BRACKET

SHIMS

DETENT BALL

(TOP CROSS SECTION)

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 DISK 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 DISK SCREWS AND INSERT THEM IN ADJACENT SLOTS IN THE DISK, IF THE RANGE OF ROTATION IN ONE SLOT IS NOT ENOUGH.
SECTION 573-115-700

2.70 Positioning Mechanism (Cont.)

TYPE BOX POSITION

REQUIREMENT

TYPE BOX AND SPACING CLUTCHES DISENGAGED.
TYPE BOX 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 COUNTER-CLOCKWISE POSITION. SEE PAR. 4.07) 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 TYPE BOX CLAMP SCREWS AND TWO PRINTING CARRIAGE CLAMP SCREWS. POSITION TYPE BOX. TIGHTEN TYPE BOX CLAMP SCREWS. DO NOT TIGHTEN PRINTING CARRIAGE CLAMP SCREWS UNTIL PRINTING CARRIAGE POSITION ADJUSTMENT IS MADE.
(A) LEFT MARGIN

(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 CARRIAGE 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

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

TO ADJUST --- REFINE REQUIREMENT (1) ABOVE

(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 PALLET 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.
NOTE: SPUR GEAR AND LEFT PLaten RETAINER
MUST BE REMOVED TO MAKE PRINTED
LINE 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.

(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.

Page 74
2.73 Line Feed and Platen Mechanism (Con't)

PAPER FINGER OR GUIDE BRACKET

(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
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 REVO-
LUTION. 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.
SECTION 573-115-700

2.74 Line Feed and Platen Mechanism (Cont.)

**SPROCKET PIN SPRING**

**REQUIREMENT**

MIN. 6 OZS.

MAX. 8 OZS.

TO START DEPRESSING THE PIN.

---

**PAPER GUIDE**

**REQUIREMENT**

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

**STAPLED** SINGLE COPY OR UNSTAPLED

**MULTIPLE COPY**

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>MIN.</th>
<th>MAX.</th>
</tr>
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<tbody>
<tr>
<td>SINGLE COPY</td>
<td>0.050 INCH</td>
<td>0.105 INCH</td>
</tr>
<tr>
<td>MULTIPLE COPY</td>
<td>0.020 INCH</td>
<td>0.060 INCH</td>
</tr>
</tbody>
</table>

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

*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.

---

**C) RIBBON REVERSE SPUR GEAR**

USE PAR. 2.52

**D) RIBBON REVERSE DETENT**

USE PAR. 2.52

**E) 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 --- IT SHALL REQUIRE
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 TRIP 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
USE ADJUSTING SCREW TO POSITION SPACING CLUTCH TRIP LEVER.

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

CLUTCH TRIP LEVER SPRING

REQUIREMENT
SPACING CLUTCH ENGAGED. ROTATE CLUTCH UNTIL TRIP LEVER RESTS ON STOP LUG.
MIN. 11 OZS.
MAX. 16 OZS.
TO MOVE TRIP LEVER AWAY FROM STOP LUG.
3.02 Horizontal Tabulator Mechanism (Con't)

**OPERATING LEVER SLIDE ARM**

**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 slide arm and blocking surface of blocking lever

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
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<tbody>
<tr>
<td>0.015</td>
<td>0.035</td>
</tr>
</tbody>
</table>

To adjust position slide arm on operating lever with mounting stud friction tight.

**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 the stripper bail arm by loosening its adjusting screw.

![Diagram](LEFT VIEW)

**OPERATING LEVER SLIDE ARM SPRING**

**REQUIREMENT**
- Trip lever arm latch bail spring unhooked, operating lever in operated position with slide arm 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 slide arm and blocking lever to minimize clearance. Clearance between front end of slide arm and lower projection of blocking lever

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
</tr>
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<tbody>
<tr>
<td>0.020</td>
<td>0.045</td>
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</table>

To adjust position adjusting plate on bracket with mounting screws loosened.

**NOTE**
- If operating lever slide arm or operating lever adjusting plate adjustment is changed on units equipped with transmitter control contact, check control contact gap and remake if necessary.
3.03 Horizontal Tabulator Mechanism (Con't)

**TRIP LEVER ARM LATCH BAIL**

- **Requirement**
  - 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.

**LATCH BAIL SPRING**

**INTERMEDIATE BAIL SPRING**

- **Requirement**
  - Trip lever arm and intermediate bail in unoperated position.
  - Min. 1-1/2 ozs. — Max. 3-1/2 ozs.
  
  To pull spring to installed length.

**SPACE SUPPRESSION BAIL**

**INTERMEDIATE BAIL**

(LEFT VIEW)

**CLUTCH SHOE LEVER**

**CLUTCH TRIP LEVER**

**OPERATING LEVER**

**LATCH BAIL ADJUSTING PLATE**

- **Requirement**
  - Operating lever slide arm positioned to rear and latched on blocking lever. Trip lever arm latch bail in fully latched position.
  - Spacing trip lever disengaged from intermediate bail by pushing forward on space suppression bail. Clearance between clutch trip lever 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.

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3.04 Horizontal Tabulator Mechanism (Cont.)

**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.

**Operating Lever Cam Arm Spring**
- **Requirement**
  - Operating lever in unoperated position. Horizontal tabulator function pawl unlatched.
  - Min. 4 ozs.
  - Max. 9 ozs.
- To start stripper bail moving.

**Stripper Bail Arm**
- **Stripper Bail Arm Screw**
- **Stripper Bail**

**Operating Lever Cam Arm Spring**
- **Requirement**
  - Operating lever in unoperated position. Horizontal tabulator function pawl unlatched.
  - Min. 4 ozs.
  - Max. 9 ozs.
- To start stripper bail moving.

**Cam Arm Stripper Bail**
- **Requirement**
  - Operating lever and tabulator slide arm in unoperated positions. Spacing clutch rotated until high part of spacing cam is opposite stripper bail. Clearance between spacing cam and stripper bail.
  - Min. 0.010 inch
  - Max. 0.025 inch
- To adjust position stripper bail arm on stripper bail with stripper bail arm screw friction tight.

**Operative Lever Cam Arm Spring**
- **Operative Lever**
- **Operating Lever Cam Arm**
- **Spacing Cam**
- **Stripper Bail Arm**
- **Stripper Bail Arm Screw**

**Spacing Cut-Out Transfer Bail**
- **Set Collar**
- **Adjusting Screw**

**Transfer Bail Extension Arm**
- **Top View**
- **Bottom View**

**Operative Lever**
- **Cam Arm Transfer Bail**
- **Set Collar**
- **Adjusting Screw**
- **Spacing Cut-Out Transfer Bail**

**Operative Lever Cam Arm Spring**
- **Operative Lever Cam Arm**
- **Horizontal Tabulator Slide Arm**

**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.
SECTION 573-115-700

3.05 Horizontal Tabulator Mechanism (Cont.)

**SPACE SUPPRESSION BY-PASS SPRING**

**REQUIREMENT**

**MIN. 20 OZS.**
**MAX. 26 OZS.**

TO START BAIL EXTENSION MOVING

**SPACING CUT-OUT TRANSFER BAIL**

**BAIL EXTENSION ARM**

**SPACING CUT-OUT LEVER ON SPACING DRUM**

**SPACE SUPPRESSION BY-PASS SPRING**

(RIGHT SIDE VIEW)

**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.

**NOTE**

FOUR SCREWS MUST BE LOOSENED TO ADJUST CIRCULAR CUT-OUT LEVERS. DO NOT LOOSEN HEX. HEAD SCREW THAT CLAMPS FRONT RING.
3.06 Horizontal Tabulator Mechanism (Con't)

**SPACING DRUM**

**TABULATOR STOP**

**SPACING PAWLS**

**OPERATING LEVER SLIDE ARM**

**MOUNTING SCREWS**

**PAWL ADJUSTING PLATE**

**BLOCKING LEVER**

**GARTER SPRING**

**SPRING HOOK**

**TABULATOR RING**

**TABULATOR PAWL**

**ROLLER**

**NOTE:**
BEFORE MAKING THIS ADJUSTMENT, CHECK LEFT MARGIN AND SPACING GEAR PHASING 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 PERRIPHERY 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 SLIDE ARM WITH BLOCKING LEVER. GAGE AND NOTE CLEARANCE BETWEEN STOP AND SLOPE ON PAWL.

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

6. STOP WITH MAXIMUM CLEARANCE SHOULD BE USED AS REFERENCE IN MAKING FINAL HORIZONTAL AND VERTICAL PAWL ADJUSTMENTS.
SECTION 573-115-700

3.07 Horizontal Tabulator Mechanism (Cont.)

TABULATOR PAWL - VERTICAL (FINAL)

TO CHECK
POSITION SPACING DRUM SUCH THAT REFERENCE
TABULATOR STOP, AS DETERMINED BY PRELIMI-
NARY TABULATOR PAWL ADJUSTMENT (PAR. 3.06), IS
OPPOSITE SHOULDER ON PAWL. BLOCK OPERATING
LEVER SLIDE ARM 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.

OPERATING LEVER SLIDE ARM

BLOCKING LEVER

(TRING VIEW)

TABULATOR PAWL SPRING
REQUIREMENT
MIN. 3 OZS. MAX. 5 OZS.
TO START PAWL MOVING.

BLOCKING LEVER SPRING
TO CHECK
HOLD OPERATING LEVER SLIDE
ARM TO THE REAR.
REQUIREMENT
MIN. 2-1/2 OZS. MAX. 4-1/2 OZS.
TO START BLOCKING LEVER MOVING.
3.08 Horizontal Tabulator Mechanism (Cont.)

**TABULATOR PAWL - HORIZONTAL (FINAL)**

**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 slide arm 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 disk 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 slide arm 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 by accident. 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 slide arm 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
- Max. 0.008
3.09 Horizontal Tabulator Mechanism (Cont.)

**TABULATOR STOP SETTINGS**

**NOTE:**
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: 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: 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 (Cont.)

NOTE

THE FOLLOWING TWO HORIZONTAL TABULATOR MECHANISM ADJUSTMENTS SHOULD BE CHECKED BEFORE MAKING THE TRANSMITTER CONTROL ADJUSTMENTS SHOWN BELOW.

1. OPERATING LEVER SLIDE ARM (PAR. 3.02)
2. OPERATING LEVER ADJUSTING PLATE (PAR. 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 OZS.
MAX. 4-1/2 OZS.

TO JUST OPEN CONTACTS.

TO ADJUST

BEND THE LONG CONTACT SPRING

PIVOT
LONG CONTACT SPRING
CONTACT ASSEMBLY BRACKET
BRACKET MOUNTING SCREW

TRANSMITTER CONTROL CONTACT GAP

REQUIREMENT

OPERATING LEVER SLIDE ARM PULLED TO REAR UNTIL BLOCKED BY BLOCKING LEVER. CLEARANCE BETWEEN CONTACTS

MIN. 0.010 INCH
MAX. 0.020 INCH

TO ADJUST
POSITION THE CONTACT ASSEMBLY BRACKET WITH THE MOUNTING SCREW LOOSENED. THE BRACKET PIVOTS ABOUT A PIN AT THE UPPER END OF THE BRACKET.
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.

(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.

(C) **BLOCKING ARM**

SEE PAR. 3.12
SWITCH OPERATING ARM

(D) **INDEXING DISK**

**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 DISK WITH THREE MOUNTING SCREWS LOOSENED.

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. SOME
MAX. 0.005 INCH

TO ADJUST
POSITION SWITCH WITH TWO MOUNTING SCREWS LOOSENED.
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 DISK AND CLEAR DISK BY
APPROXIMATELY 1/16 INCH.

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

(BAIL)

INDEX PLATE

NOTCH

INDEXING DISK

INDEX PLATE

MOUNTING SCREW

POINTER

ADJUSTABLE ARM

ADJUSTABLE ARM MOUNTING SCREWS

MOUNTING SCREW

BLOCKING ARM SPRING

(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.

**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.
3.13 Selective Calling Mechanism

TYPE BOX CLUTCH TRIP LEVER
(SELECTIVE - CALLING UNITS WITH OR WITHOUT
OFF-LINE SHIFT SOLENOID)
CLEARANCE BETWEEN TYPE BOX CLUTCH TRIP
LEVER AND CLUTCH DISK STOP LUG SHOULD BE
MIN. 0.040 INCH --- MAX. 0.055 INCH
SEE PAR. 2.22.

PRINT SUPPRESSOR CODE BAR SPRING
REQUIREMENT
SUPPRESSOR CODE BAR TO LEFT,
MIN. 4-1/2 OZS. --- MAX. 7-1/2 OZS.
TO START CODE BAR MOVING. CODE
BAR SHOULD BE FREE OF BINDS.

OFF LINE SHIFT SOLENOID

NOTE: TO CHECK REQUIREMENTS (A, B, AND D), SET
FUNCTION CLUTCH IN STOP POSITION AND
ALL CODE BARS TO THE RIGHT.

(A) CODE BAR SHIFT MECHANISM
REQUIREMENTS
1. WITH FUNCTION CLUTCH IN STOP POSITION, LATCH FUNCTION LEVER (SHIFT MECH.)
ON ITS LOWER RELEASING LATCH. NOTCH IN SUPP. CODE BAR SHOULD ALIGN WITH
NOTCHES IN OTHER CODE BARS WHEN ALL CODE BARS ARE SHIFTED TO THE RIGHT.
TO ADJUST
POSITION UPPER OR LOWER GUIDE PLATE (PAR. 2.33) WITH ITS CLAMP NUTS LOOSENED.
2. REPEAT FOR EACH STUNT CASE CODE BAR SHIFT MECHANISM.
NOTE --- POSITION THE ASSOCIATED GUIDE PLATE 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 CODE BAR SHOULD ALIGN
WITH NOTCHES IN OTHER CODE BARS WHEN ALL
CODE BARS ARE SHIFTED TO THE RIGHT.
TO ADJUST
POSITION THE SOLENOID BRACKET ASSEMBLY WITH
ITS MOUNTING SCREWS LOOSENED.

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

(B) CONDITION CODE (ZERO) CODE BAR SHIFT MECHANISM
REQUIREMENT
WITH FUNCTION CLUTCH IN STOP POSITION, LATCH FUNCTION LEVER (SHIFT
MECH.), THE NOTCH IN CONDITION CODE (ZERO) CODE BAR SHOULD ALIGN
WITH NOTCHES IN OTHER CODE BARS WHEN ALL CODE BARS ARE SHIFTED TO THE
RIGHT.
TO ADJUST
POSITION THE UPPER OR LOWER GUIDE PLATE (PAR. 2.33) WITH ITS CLAMP NUTS
LOOSENED.
NOTE --- POSITION THE ASSOCIATED GUIDE PLATE 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.

OFF LINE STUNT SHIFT SOLENOID SPRING
REQUIREMENT
WITH SOLENOID UNOPERATED.
MIN. 2 OZS. MAX. 4-1/2 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, 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 573-115-700

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.

- BLOCKING SLIDE SPRING
- GUIDE PLATE
- LOWER GUIDE PLATE
- CONDITION CODE SHIFT FORK

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

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3.16 Local Back Space Mechanism

- CAMMING BAIL STOP ARM
- SPACING FEED PAWL
- SPACING DRUM
- INTERMEDIATE ARM
- ADJUSTING PLATE
- STOP ARM MOUNTING SCREW
- BACK SPACE BAIL
- BACK SPACE CAMMING BAIL
- CAMMING BAIL SPRING

SPACING FEED PAWL----SPACING DRUM----INTERMEDIATE ARM----ADJUSTING PLATE----STOP ARM----MOUNTING SCREW

CAMMING BAIL STOP ARM

SPACING FEED PAWL

SPACING DRUM

INTERMEDIATE ARM

ADJUSTING PLATE

STOP ARM MOUNTING SCREW

CAMMING BAIL STOP ARM

SPACING ECCENTRIC ASSEMBLY

BACK SPACE BAIL

BACK SPACE CAMMING BAIL

CAMMING BAIL SPRING

SPACING CLUTCH DISENGAGED, FRONT FEED PAWL IN LOWER POSITION, BACK SPACE BAIL HELD OPERATED, CLUTCH TRIPPED AND MAIN SHAFT ROTATED UNTIL THE FRONT FEED PAWL TOOTH IS OPPOSITE THE PEAK OF THE FIRST SPACING DRUM TOOTH THAT MOVES DOWN PAST THE PAWL TOOTH. CLEARANCE BETWEEN PAWL TOOTH AND THE TOOTH ON THE SPACING DRUM RATCHET WHEEL.

MIN. 0.020 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 FRICITION TIGHT TO MEET THE REQUIREMENT.

MIN. 1 OZ.
MAX. 2 1/4 OZS.
TO START BAIL MOVING.
SECTION 573-115-700

3.17 Reverse Line Feed Mechanism

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.

Reverse line feed slide link stop bracket requirement:

- Slide link resting on its stop bracket,
- Line feed clutch disengaged,
- Min. 1-1/2 ozs.,
- Max. 3-1/2 ozs.,
- To pull spring to installed length.

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 pull spring to installed length.
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.
3.19 Reverse Line Feed Mechanism (Cont.)

**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.

**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.
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.
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

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 TYING UNIT AND "LETTERS" COMBINATION MANUALLY SET UP ON TYING UNIT SELECTOR.
- ROTATE TYING 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.
3.23 Print Suppression Mechanism

**Zero Code Bar Shift Mechanism**

1. **Requirement**
   - 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 max. 0.010 inch in the marking direction.
   - Requirement max. 0.002 inch clearance between guide plate extension and slide.

2. **Requirement**
   - To adjust position the guide plate by its lower adjusting slot with its clamp nuts loosened.

**Suppression Code Bar Mechanism**

1. **Requirement**
   - 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 max. 0.010 inch in the marking direction.

2. **Requirement**
   - Max. 0.002 inch clearance between guide plate extension and slide.

3. **Requirement**
   - To adjust position the guide plate by its lower adjusting slot with its clamp nuts loosened.

- 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.
SECTION 573-115-700

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
TO ADJUST POSITION THE SOLENOID MOUNTING PLATE WITH ITS MOUNTING SCREWS LOOSENED, IN POSITIONING THE PLATE MOVE EACH END EQUALLY TO AVOID BOUNDS 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.

**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:
- Print 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.
SECTION 573-115-700

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) LOOSENEO, POSITION AND ALIGN THE SWITCH.

(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. 18 OZS.

TO MOVE SWITCH BRACKET CLEAR OF SWITCH PLUNGER (GAUGE 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.
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.

**NOTE:** GEARS SHOULD MESH ACCURATELY WHEN CHECKED AT 3 EQUAL DISTANCES AROUND CIRCUMFERENCE OF GEAR.

(D) BLOCKING LEVER

SEE PAR. 3.28

(E) INDEXING DISK

**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 HAND WHEEL CLOCKWISE UNTIL INDEX PLATE JUST OPERATES THE PAWL, THEN ENGAGE FIRST TOOTH ON IDLER, POSITION INDEXING DISK ON IDLER.

(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

**TO ADJUST**
POSITION RETAINER FORWARD AND LO-CATE IT UP OR DOWN WITH MOUNTING SCREWS LOOSENED.

(B) MOUNTING BRACKET

**REQUIREMENT**

1. CLEARANCE BETWEEN FEED-OUT BLOCKING LEVER (INNER LEVER) AND FEED-OUT SLIDE MIN. SOME---MAX. 0.020 INCH

**TO CHECK**
SELECT UPPER CASE "Z" 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. 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.
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 DISK AND CLEAR ANY INDEX PLATE BY APPROXIMATELY 1/16 INCH.
TO ADJUST
POSITION POINTER ON SIDE FRAME WITH ITS MOUNTING SCREW LOOSENED.

(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

(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. MAKE ADJUSTMENT FOR EACH BLOCKING LEVER.

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

(J) **TABULATION INDEX PLATE POSITION**
SEE PAR. 3.30
3. 29 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

TRANSMITTER CONTROL SWITCH (TRANSFER TYPE)

**TRANSMITTER CONTROL SWITCH (TRANSMITTER CONTROL ONLY)**

**REQUIREMENTS --- FOR TRANSFER TYPE CONTACTS**

1. 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 \[ \text{MIN. SOME CLEARANCE} \] \[ \text{MAX. 0.005 INCH} \]

   **TO CHECK ---** ROTATE MAINSHAFT 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.

2. 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 THE 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.

3. 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 (Cont.)

**TABULATION INDEX PLATE POSITION**

Requirement --- With Requirement (I) 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.

**BLOCKING LEVER SPRING**

Requirement --- With spring unhooked and blocking lever on top of slide. MIN. 9 OZS. --- MAX. 11 OZS. TO PULL RESPECTIVE SPRING TO POSITION LENGTH.

*Blocking lever springs used with transfer type switch (Par. 3.31) MIN 12 OZS --- MAX 13-1/2 OZS

**TRANSMITTER CONTROL SWITCH** (TRANSMITTER CONTROL ONLY)

Requirements --- For single-contact type control

1. 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.

2. 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 NO. 1 ABOVE.

3. 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 NO. 1 ABOVE.

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3. 31 Vertical Tabulation and Transmitter Distributor Control Mechanism (Cont.)

(I) PAGE FEED-OUT INDEX PLATE POSITION
REQUIREMENT --- PLACE AN INDEX PLATE IN THE NUMBERED SLOTS ON DISK 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 DISK 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.

(B) CONTACT BLOCK

**REQUIREMENT**

The contact faces should be in a vertical straight line.

**TO ADJUST**

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

(C) CONTACT DRIVE ARM POSITION

**REQUIREMENT**

The contacts should open equally within 0.010 inch.

**TO CHECK**

Rotate code bar clutch until it is disengaged and latched in stop position. Measure gap between upper contacts. Trip code bar 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.

(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 ozs., max. 5 ozs.

**TO OPEN EITHER CONTACT.**
3. 34 Universal Contact (Stunt Box) Mechanism

NOTE: 1. THESE ADJUSTMENTS SHOULD BE MADE WITH THE 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 THE CONTACT SPRING TENSIONS, IT IS ADVISABLE TO REMOVE THE CONTACT SPRING TO INCREASE ITS CURVATURE. AVOID DAMAGE TO CONTACT SPRINGS WHEN ADJUSTING THE STIFFENERS IN THE ASSEMBLY.

(A) CONTACT

1. REQUIREMENT
   - CONTACT SPRINGS AND STIFFENERS MOUNTED VERTICALLY AND CONTACT POINTS IN ALIGNMENT (GAUGE BY EYE).
   - TO ADJUST
     - POSITION THE CONTACT SPRINGS AND STIFFENERS WITH ASSEMBLY SCREWS LOOSENED.

2. REQUIREMENT
   - STIFFENERS SHOULD BE PARALLEL WITH THE CONTACT BRACKETS.
   - TO ADJUST
     - FORM THE 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
3. 35 Universal Contact (Stunt Box) Mechanism (continued)

**LATCH LEVER SPRING**
- **REQUIREMENT**: With latch lever resting on high part of trip cam
  - **MIN**: 1/2 OZ
  - **MAX**: 2 OZ

**LATCH LEVER SPRING**
- **REQUIREMENT**: With latch lever resting on high part of trip cam
  - **MIN**: 1/2 OZ
  - **MAX**: 2 OZ

**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.
  - 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.
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.
3.37 Universal Contact (Stunt Box) Mechanism (continued)

GENERAL APPLICATION TIMING - FINAL (USING DXD 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) 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 ADJUSTMENT BY ROTATING THE TRIP CAM ON ITS SHAFT WITHIN
THE SPECIFIED LIMITS.

SPECIAL ADJUSTMENTS (FOR 100 WPM)

NOTE: TO PREVENT EXCESSIVE FLEXING OF THE SWINGER, THE NORMALLY OPEN CONTACT SPRING
STIFFENER MUST BE BENT TO HOLD THE SPRING AWAY FROM THE SWINGER WITH THE DRIVE LINK
IN ITS UPPERMOST POSITION.

NORMALLY OPEN CONTACT GAP (100 WPM)

REQUIREMENT
WITH THE SWINGER RESTING AGAINST THE NORMALLY CLOSED CONTACT THE GAP SHOULD BE
MIN 0.075 INCH
MAX 0.085 INCH

TO ADJUST
BEND THE CONTACT SPRING STIFFENER.

CONTACT BRACKET AND DRIVE CAM POSITION (100 WPM)

REQUIREMENT
WITH THE LATCH CAM IN ITS FULLY LATCHED POSITION
MIN 0.015 INCH
MAX 0.025 INCH

BETWEEN THE NORMALLY OPEN CONTACT SPRING AND ITS STIFFENER.

TO ADJUST
POSITION THE DRIVE CAM AND/OR, IF NECESSARY, THE CONTACT BRACKET.

SPECIAL APPLICATION TIMING (USING DXD 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 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.
B. NORMALLY CLOSED CONTACTS (100 WPM USED IN DELTA AND UNITED AIRLINES SYSTEM)

WHEN THE NORMALLY OPEN CONTACTS ARE NOT USED, THE NORMALLY CLOSED CONTACTS SHOULD REMAIN OPEN FOR 53.88 MILLISECONDS OR 400 ± 15 DXD DIVISIONS.

TO ADJUST
REFINE THE DRIVE CAM, TRIP CAM AND, IF NECESSARY, THE BRACKET POSITIONS TO MEET THE TIMING REQUIREMENTS.

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 PARS. 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 DISK AND SHOULD NOT BE OPERATED WHEN LEVER IS ON OUTER EDGE OF DISK.

TO CHECK

1. ROTATE DISK UNTIL LEVER FALLS INTO NOTCH. PLACE 0.010 INCH FEELER GAGE BENEATH LEVER. LIFT LEVER AND ALLOW IT TO COME TO REST ON GAGE. SWITCH SHOULD BE OPERATED.

2. ROTATE DISK UNTIL LEVER RESTS ON OUTER EDGE. SWITCH SHOULD NOT BE OPERATED.

TO ADJUST

POSITION SWITCH, AT PRY POINTS, WITH ITS MOUNTING SCREWS LOOSENED.
SECTION 573-115-700

3.40 DC Magnet Operated Print Suppression Mechanism

(D) ARMATURE EXTENSION OVERTRAVEL

REQUIREMENT

1. OVERTRAVEL OF ARMATURE EXTENSION SHOULD BE MIN. 0.010 INCH -- MAX. 0.015 INCH

2. 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. 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. PRESS ARMATURE EXTENSION FIRMLY AGAINST BOTTOM OF SUPPRESSION ARM. IF NECESSARY, ADD OR REMOVE SHIMS BETWEEN SUPPRESSION ARM AND TYPE BOX CLUTCH TRIP ARM. RECHECK (B) AND (C).

(A) TYPE BOX CLUTCH TRIP LEVER

SEE PAR. 2.22 AND REFINE REQUIREMENT TO MIN. 0.040 INCH -- MAX. 0.055 INCH

(B) TYPE BOX CLUTCH SUPPRESSION ARM

SEE PAR. 3.14

(C) BLOCKING BAIL

SEE PAR. 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. 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. GAGE 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.

(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

(E) PRINT SUPPRESSION MAGNET ARMATURE RETURN SPRING

REQUIREMENT
MIN. 7 OZS.
MAX. 10-1/2 OZS.

TO START MAGNET ARMATURE MOVING TOWARD CORE

TO CHECK
PRINT SUPPRESSION MAGNET UNOPERATED

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.

(B) SHIFT MAGNET ARMATURE
REQUIREMENT
1. CLEARANCE BETWEEN ARMATURE AND TRANSFER LEVER SHOULD BE MIN. SOME --- MAX. 0.005 INCH
TO CHECK MAGNET ARMATURE ATTRACTED. SHIFT CODE BAR IN FULL MARKING POSITION.
TO ADJUST POSITION MAGNET FORWARD OR BACKWARD WITH BRACKET MOUNTING SCREWS LOOSENED.
2. CLEARANCE BETWEEN ARMATURE AND TRANSFER LEVER SHOULD BE MIN. SOME --- MAX. 0.010 INCH
TO CHECK MAGNET ARMATURE UNOPERATED. SHIFT CODE BAR IN FULL SPACING POSITION.
TO ADJUST POSITION ARMATURE BACKSTOP SCREW WITH LOCK NUT LOOSENED.

(C) SHIFT MAGNET ARMATURE RETURN SPRING
REQUIREMENT
MIN. 1 OZ. --- MAX. 3 OZS.
TO PULL SPRING TO INSTALLED LENGTH

(D) SHIFT CODE BAR RETURN SPRING
REQUIREMENT
MIN. 3 OZS. --- MAX. 7 OZS.
TO START CODE BAR MOVING TO CHECK TRIP TYPE BOX CLUTCH, ROTATE MAIN SHAFT UNTIL PRINTING TRACK IS IN LOWEST POSITION

NOTE: KEEP POLE FACE FREE OF OIL AND GREASE.
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
SECTION 573-115-700

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 .005 INCH.
TO ADJUST --- POSITION HINGE BRACKET WITH MOUNTING SCREWS LOOSED.

(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 LOCK NUT LOOSENED.

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3.45 Two Color Ribbon Mechanism

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 MAGNET BRACKET

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.
SECTION 573-115-700

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.

SELECTOR MAGNET

MOUNTING NUT

RANGE FINDER PLATE

STOP ARM BAIL

START LEVER (EXTENSION)

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.

(RIGHT SIDE VIEW)
4.02 Selector Mechanism

SELECTOR ARMATURE
FOR REQUIREMENTS (1) AND (2) SEE PAR. 2.01 UNDER BASIC UNITS

ARMATURE BACKSTOP

ARMATURE EXTENSION

MOUNTING SCREWS

(BOTTOM VIEW)

(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.
CODE BAR SHIFT LEVER LINK IN THE UPPERMOST POSITION.
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.
4.04 Codebar Mechanism (Cont.)

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).
SECTION 573-115-700
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.

SPACING CLUTCH LATCH LEVER SET COLLAR

TRIP SHAFT

TRIP LEVER

MAIN SHAFT

SHOE LEVER

SPACING CLUTCH

MOUNTING SCREWS

NOTE: ANTI-DEFLECTION PLATE ADJUSTMENT APPLIES ONLY TO UNITS SO EQUIPPED.

(B) ANTI-DEFLECTION PLATE
REQUIREMENT
WITH TYPING UNIT UPSIDE DOWN AND FUNCTION, SPACING, LINE FEED, AND TYPE BOX CLUTCHES LATCHED DISENGAGED.
MIN. 1 LB.
MAX. 5 LBS.
TO PULL TRIP SHAFT AWAY FROM ANTIDEFLECTION PLATE
TO ADJUST
POSITION PLATE WITH MOUNTING SCREWS LOOSENED.
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.

To adjust:
- Use adjusting screw to position spacing clutch trip arm.

**SPACING 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
- WIRE ROPE CLAMP SCREW
- WIRE ROPE
- PULLEY
- AUTOMATIC CARRIAGE RETURN ARM
- SPACING PAWL
- RATCHET WHEEL
- SPACING CUTOUT LEVER
- STOP ARM

**OSCILLATING RAIL SLIDE POSITION REQUIREMENT**

SPACING CUTOUT LEVER AND AUTOMATIC CR-LF ARM IN MAXIMUM COUNTERCLOCKWISE POSITION ON SPACING DRUM. SPACING CLUTCH DISENGAGED. FARDEST ADVANCED SPACING PAWL ENGAGED WITH TOOTH JUST ABOVE CUT-AWAY SECTION IN RATCHET 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.

**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.
4.08 Function Mechanism

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

GUIDE PLATE EXTENSION

MOUNTING NUTS

LETTERS FUNCTION SLIDE

(TOP VIEW)

GUIDE PLATE

SHIFT FORK

FIGURES FUNCTION SLIDE

(MAX. 32 OZS.)

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 SCREWS LOOSENED. TAKE UP PLAY IN
MOUNTING HOLES TO REAR

CAUTION: MANUALLY OPERATE LETTERS AND FIGURES FUNCTION LEVER ALTERNATELY
LEVERS SHOULD BE FREE OF BINDS.
4.09 Function Mechanism (Cont.)

NOTE: 1. THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH A TWO STOP FUNCTION CLUTCH.
      2. FOR UNITS WITH A ONE STOP FUNCTION CLUTCH SEE PAR. 2.33.

RES手工 BAIL BLADE

REQUIREMENT

FUNCTION CLUTCH: DISENGAGED AT STOP POSITION GIVING LEAST CLEARANCE. TYPE
BOX 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.

FUNCTION PAWL

REQUIREMENT

TYPE BOX 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 OZS. TENSION APPLIED TO FUNCTION PAWL, IT SHOULD OVERTRAVEL
ITS BAR
MIN. 0.002 INCH

TO ADJUST
REFINE REQUIREMENT (1).
4.10 Positioning Mechanism

NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TENSION SPRINGS.

NOTE: 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 STOP SLIDES**

**DECELERATING SLIDE**

**REVERSING SLIDE**

**CONNECTING STRIP**

**CONNECTING STRIP MOUNTING SCREWS**

**BEARING STUD MOUNTING SCREWS**

**BEARING STUD**

**DRIVE LINKAGE HUB**

**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. 0.020 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.
NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TORSION SPRINGS.

HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TORSION SPRINGS.

HORIZONTAL POSITIONING DRIVE LINKAGE

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REQUIREMENT

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HORIZONTAL POSITIONING DRIVE LINKAGE

REQUIREMENT

NOTE: THESE ADJUSTMENTS APPLY ONLY TO HORIZONTAL POSITIONING DRIVE MECHANISMS EQUIPPED WITH TORSION SPRINGS.
4.12 Spacing Mechanism (Cont.)

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

(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 FARthest 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
MIN. 0.002 INCH---MAX. 0.015 INCH

(3) REQUIREMENT
REAR PAWL, WHEN FARthest ADVANCED,
SHOULD REST AT BOTTOM OF INDENTA-
TION BETWEEN RATCHET WHEEL
TEETH. TO ADJUST
POSITION STOP ARM ON SPACING DRUM
WITH MOUNTING SCREWS LOOSENED.

(A) PRINTING CARRIAGE POSITION
(USE STANDARD ADJUSTMENT PAR. 2.47)

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

NOTE
THIS VIEW SHOWS THE SPACING DRUM FULLY RETURNED.
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

SPACING CUTOUT 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.

SPACING CUTOUT LEVER

SPACING CUTOUT TRANSFER BAIL SPRING REQUIREMENT

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 REQUIREMENT

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.

4.15 Positioning Mechanism (Cont.)

NOTE: FOR SHIFT MECHANISMS WITH TORSION SPRINGS

LEFT SHIFT LINKAGE

(RIGHT VIEW)

SHIFT LINKAGE SPRING

RIGHT SHIFT LINKAGE

SHIFT LINKAGE SPRING

REQUIREMENT
LINK IN STRAIGHT POSITION,
MIN. 7 OZS.
MAX. 16 OZS.
TO START EACH LINK MOVING.
SECTION 573-115-700
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

FRICTION 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.

(FOR SPROCKET FEED UNITS, SEE PAR. 2.71)

(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.

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.

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4.17 Printing Mechanism (Cont.)

**RIBBON REVERSING LEVER - RIGHT**

**RIBBON REVERSING LEVER - LEFT**

(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 LEVER SPRING

**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)
4.18 Function Mechanism (Cont.)

FUNCTION STRIPPER BLADE ARMS

REQUIRED

TYPE BOX CLUTCH AND FUNCTION CLUTCH DISENGAGED. LEFT LINE FEED FUNCTION PAWL HELD IN ITS REAR POSITION AND RESTING ON THE UPPER EDGE OF THE 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 THE SHOULDER BUSHING AT THE LOWER END OF THE RIGHT AND LEFT STRIPPER BLADE ARM WITH THE LOCK NUT LOOSENED.

NOTE
WHEN CHECKING THIS ADJUSTMENT SINGLE-DOUBLE LINE FEED LEVER MUST BE IN DOUBLE LINE FEED POSITION.

4.19 Spacing Mechanism (Cont.)

AUTOMATIC CARRIAGE RETURN AND LINE FEED ARM

REQUIRED (OPERATING ON BASE)
CARRIAGE IN POSITION TO PRINT TWO SPACES BEFORE THE LAST DESIRED CHARACTERS, AND FRONT SPACING PAWL FARDEST ADVANCED. CLEARANCE BETWEEN LEADING END OF AUTOMATIC CARRIAGE RETURN ARM AND BELL CRANK.

MIN. 0.040 INCH
MAX. 0.055 INCH

TO ADJUST
POSITION AUTOMATIC CARRIAGE RETURN ARM WITH MOUNTING SCREWS LOOSENED.

NOTE
RANGE OF ADJUSTMENT IS FROM 65TH TO 85TH CHARACTERS.

NOTE
FOR UNITS EQUIPPED WITH UNIVERSAL SPACING DRUM, SEE PAR. 2.62.
NOTE: THIS ADJUSTMENT APPLIES ONLY TO UNITS WITH A TWO-STOP FUNCTION CLUTCH

**SINGLE-DOUBELINE FEED LEVER**

**REQUIREMENT**

SINGLE-DOUBELINE 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.
SECTION 573-115-700

4.21 Function Mechanism (Cont.)

LOWER ELECTRICAL CONTACT

FUNCTION LEVER

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 ELECTRICAL CONTACT.

(2) REQUIREMENT
FUNCTION LEVER AS SHOWN
MIN. 1-1/4 OZS.
MAX. 1-3/4 OZS.

TO ADJUST
BEND THE UPPER ELECTRICAL CONTACT

(3) REQUIREMENT
RECHECK REQUIREMENT (1)
4.22 Function Mechanism (Cont.)

**FUNCTION CONTACT SPRING**

**requirement**

CONTACT CLOSED

- MIN. 1 OZ.
- MAX. 2 OZ.

TO OPEN SWITCH CONTACT

**FUNCTION LEVER (UNOPERATED)**

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

**FUNCTION LEVER (OPERATED)**

**FUNCTION CONTACT SPRING**

**requirement**

CONTACT CLOSED

- MIN. 1 OZ.
- MAX. 2 OZ.

TO OPEN SWITCH CONTACT
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 disk 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 disk screws and insert them in adjacent slots of the disk, if the range of rotation in one slot is not enough.
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. 0.020 INCH
MAX. 0.030 INCH

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

(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.

(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. 0.025 INCH
  - MAX. 0.035 INCH

**TO ADJUST**
- POSITION LATCH BAIL ADJUSTING SCREW. TIGHTEN LOCK NUT.

**SPACING TRIP ARM**

**LATCH BAIL SPRING**

**OPERATING LEVER**

**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. 0.005 INCH
  - MAX. 0.008 INCH

**TO ADJUST**
- POSITION LATCH BAIL ADJUSTING PLATE WITH MOUNTING SCREW FRICTION TIGHT.
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 FRICTION TIGHT.

(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.
SECTION 573-115-700

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: 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.

(D) TABULATOR PAWL SPRING

REQUIREMENT
MIN. 1-3/4 OZS.
MAX. 3 OZS.
TO PULL SPRING TO INSTALLED LENGTH.

(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: MAKE SURE SHAFT IS FREE OF BINDS.
4.28 Horizontal Tabulator Mechanism (Cont.)

**ECCENTRIC**

**LOWER ROLLER MOUNTING SCREW**

**PAWL MOUNTING ARM**

**TABULATOR PAWL**

**FIXED TABULATOR STOP NEAR RIGHT END OF SHAFT**

**SPACING PAWL**

**RATCHET**

**PAWL MOUNTING ARM OPERATING RANGE (PRELIMINARY)**

*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.
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 FARthest 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. (I) 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.

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.
4.30 Paper-Out Alarm Mechanism

**BELL 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**

**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.