37 KEYBOARD UNIT

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section provides adjustment procedures for the late design, 11-contact 37 keyboard unit (Figure 1). It is reissued to incorporate minor engineering changes and comments received on Issue 1. Since only a limited distribution was made on Issue 1, marginal arrows have been omitted. For similar information on early design, 28-contact units, refer to Section 574-321-700TC.

1.02 Each adjustment or mechanical requirement is associated with a basic mechanism of the keyboard unit. Both the basic mechanisms and subordinate adjustments are indexed in the table of contents. The basic mechanisms are identified in Figures 2 and 3.

1.03 The adjustments of the basic mechanisms are arranged in a sequence that should be followed if a complete readjustment of a mechanism is undertaken. No single adjustment should be undertaken without first completely understanding the procedure and knowing the requirements. Therefore read a procedure all the way through before making an adjustment. If one adjustment is changed, related adjustments should be checked.

Note: Unless otherwise specified, perform adjustments with the typing unit removed. For instructions on removing typing unit, see Section 574-301-702TC.

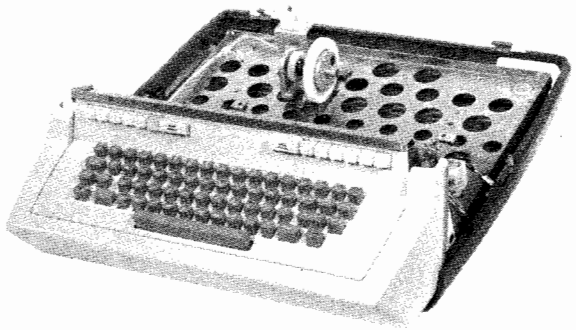


Figure 1 - Keyboard Unit

1.04 In each adjustment the location of clearances, position of parts, and point and angle of scale applications are illustrated by line drawings. Requirements and procedures are set forth in the several texts that accompany the line drawings. Tools necessary to maintain this equipment are illustrated in Section 570-005-800TC.

1.05 References made to the right or left and front or rear apply to the keyboard unit in its normal operating position as viewed by the operator facing the unit (Figure 1).

1.06 When parts are removed to facilitate the making of an adjustment and subsequently replaced, check any adjustment which may have been affected by such removal and replacement of parts.

1.07 Unless specifically stated otherwise, make screws or nuts friction tight to make an adjustment and tighten them securely once the adjustment has been made.

1.08 When a procedure calls for using pry points or slots to make an adjustment, place a screwdriver between the points or in the slots and pry parts in the proper direction.

1.09 The spring tensions specified in this section are indications, not exact values. Therefore, to obtain reliable readings, it is important that spring tensions be measured by spring scales placed in the positions shown on pertinent line drawings. Springs that do not meet their requirements should be replaced by new ones. Only those springs that directly affect the operation of the keyboard are measured, however, others may be measured indirectly in the process. If, at first, the spring tension requirement cannot be met, replace the indicated spring being directly measured. Then, if the requirement is not met, any springs that are indirectly measured in the procedure shall be replaced, one at a time, with the performance of requirement checks each time a spring is replaced.

Note: Use only spring scales found in Maintenance Tool Section 570-005-800TC.

1.10 When cleaning plastic parts such as the cover of the keyboard mechanism, use soap or detergent and water. Do not use solvents containing alcohol or chlorinated ingredients.

CAUTION: WHEN THE KEYBOARD UNIT IS FUNCTIONALLY UTILIZED, REMOVE POWER FROM EQUIPMENT BEFORE MAKING ANY ADJUSTMENTS.

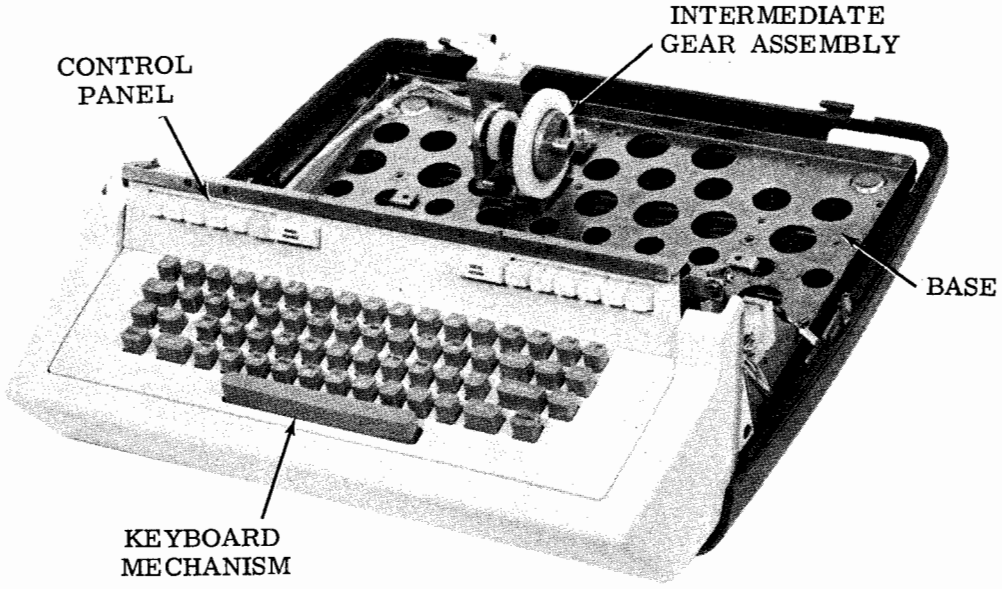


Figure 2 - Keyboard Unit, Right Front View

OPERATING CONDITION OF CLUTCHES

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

Note: When rotating the main shaft of the reset mechanism by hand, the clutch may not fully disengage upon reaching the stop positions. In order to relieve the drag on the clutch drums and to permit the main shaft to rotate freely, apply pressure to the stop lug on the clutch disc with a screwdriver until the latch lever falls into its notch on the clutch disc. Thus, the internal expansion clutch becomes fully disengaged. This procedure should be followed before reassembling set.

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

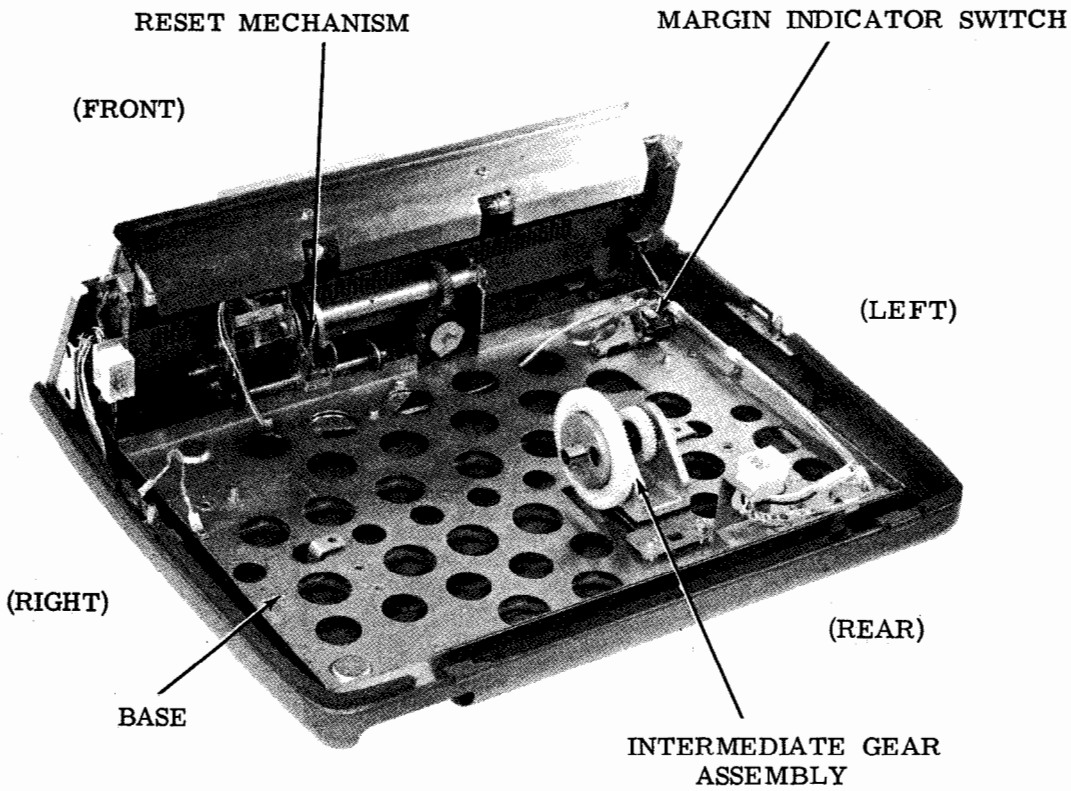


Figure 3 - Keyboard Unit, Right Rear View

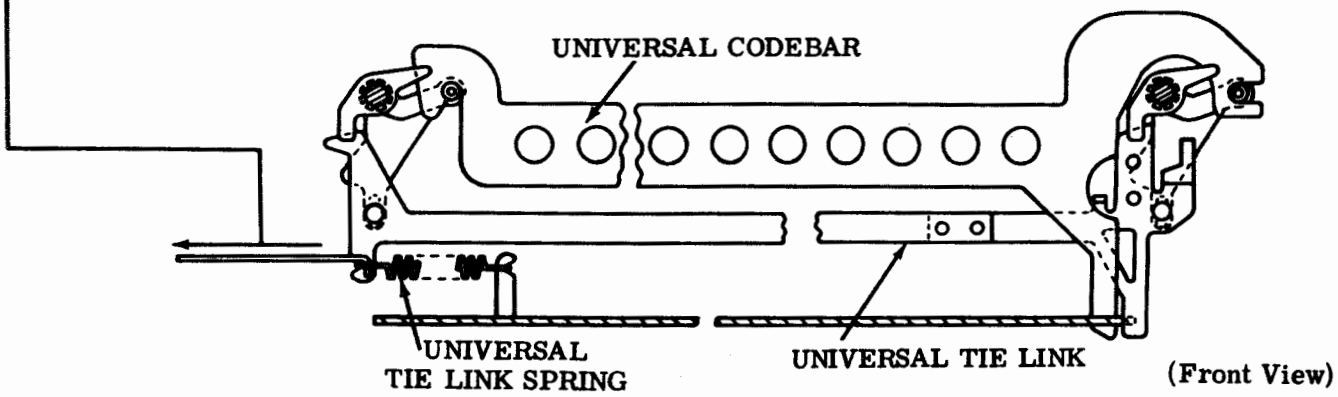
2. BASIC UNIT

2.01 Keyboard Mechanism

UNIVERSAL TIE LINK SPRING

To Check
Unhook spring from tie link. Depress any primary key to normal downstop position.

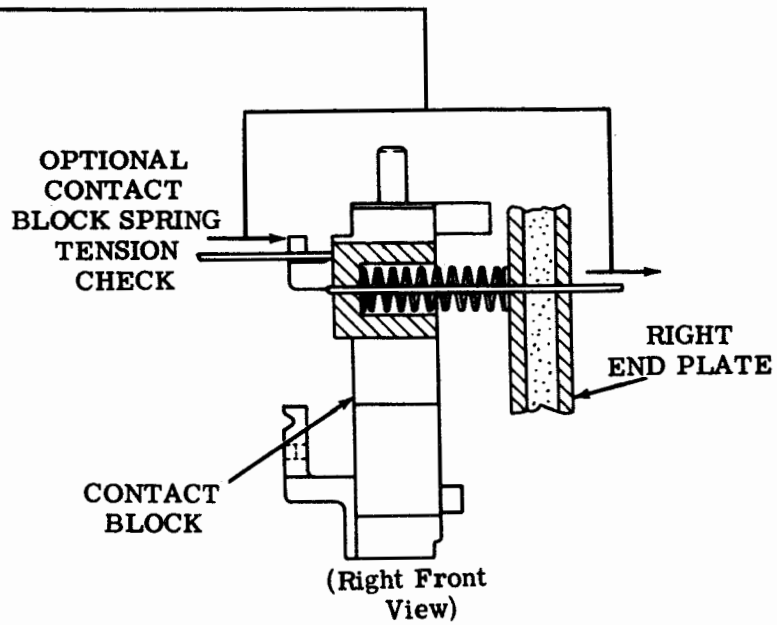
Requirement
Min 3/4 oz---Max 7/8 oz
to extend spring to operating length.



CONTACT BLOCK SPRING

To Check
Remove T-lever guide.

Requirement
Min 18 oz---Max 64 oz
at each spring location
to start contact block moving.

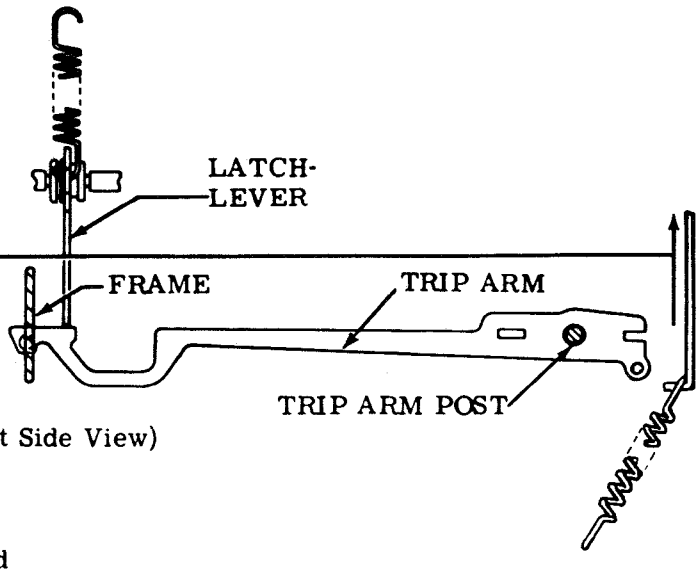


2.02 Keyboard Mechanism (continued)

TRIP ARM SPRING

To Check
Keyboard in latched position.

Requirement
Min 7 oz---Max 8 oz
to extend spring to installed position.



(Right Side View)

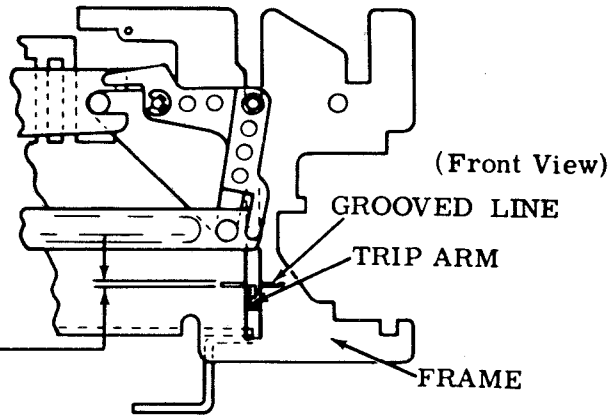
TRIP ARM

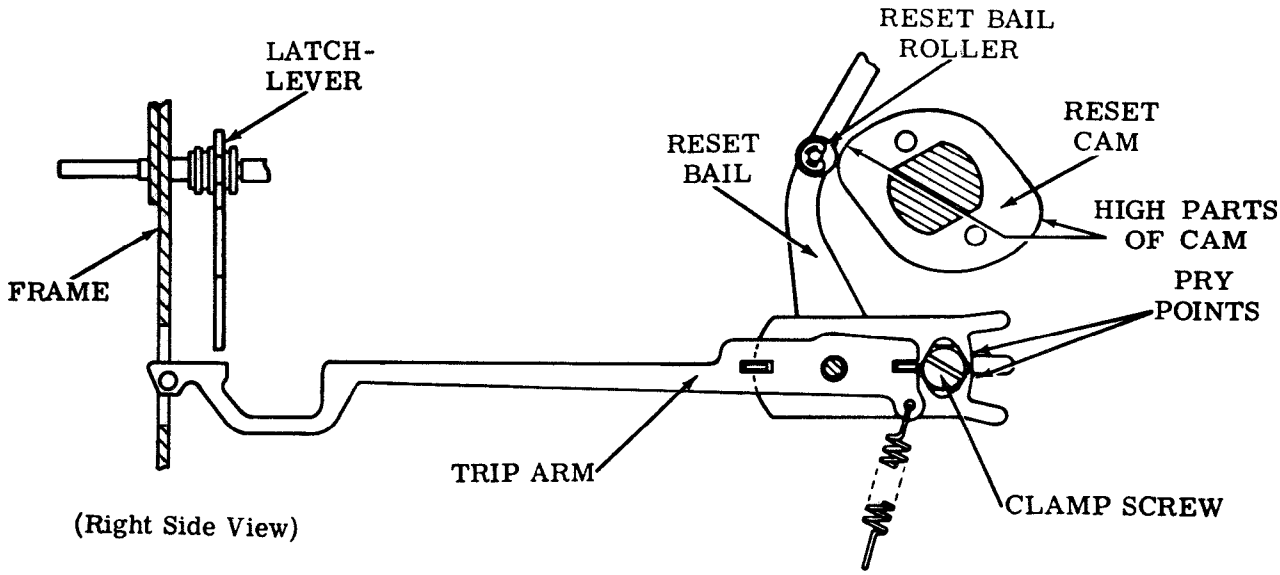
Note: The typing unit must be assembled on the base to make the trip arm adjustment.

To Check
Engage clutch (trip keyboard). Rotate shaft until reset bail roller is on high part of reset cam. Check at both high parts of reset cam.

Requirement
Top surface of trip arm within width of grooved line on front of keyboard frame.

To Adjust
Loosen clamp screw friction tight. Insert screwdriver between pry points and position trip arm to meet requirement. Tighten clamp screw.





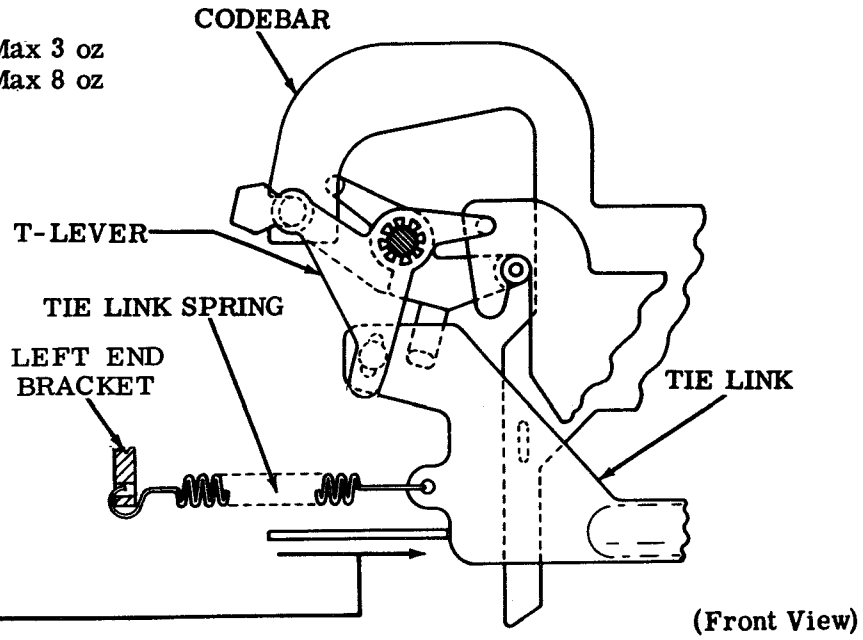
(Right Side View)

2.03 Keyboard Mechanism (continued)

SHIFT AND CONTROL TIE LINK SPRINGS

To Check
Keyboard in unshift position.

Requirement
Shift Tie Link: Min 2 oz---Max 3 oz
Control Tie Link: Min 6 oz---Max 8 oz
to start tie link moving.

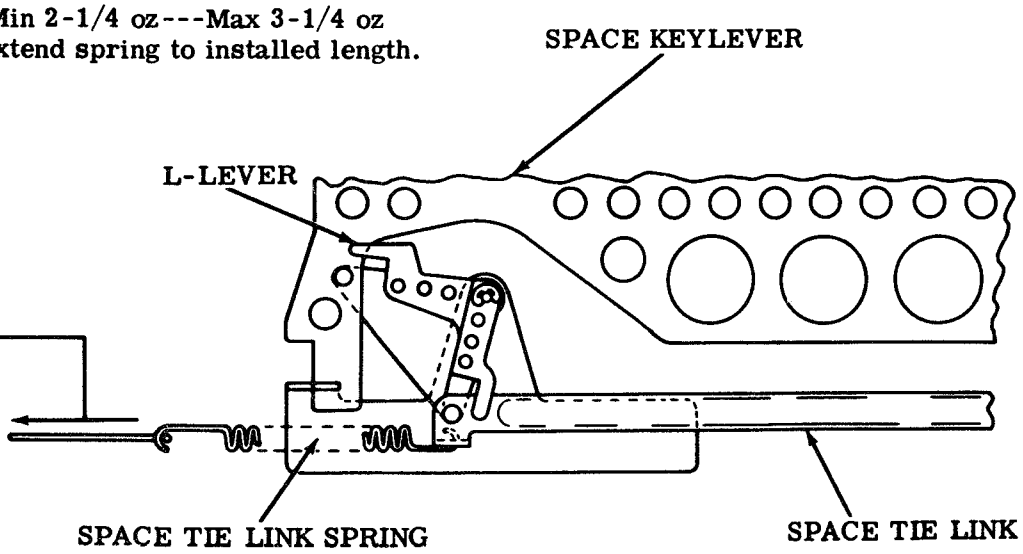


(Front View)

SPACE TIE LINK SPRING

To Check
Unhook spring from frame.

Requirement
Min 2-1/4 oz---Max 3-1/4 oz
to extend spring to installed length.



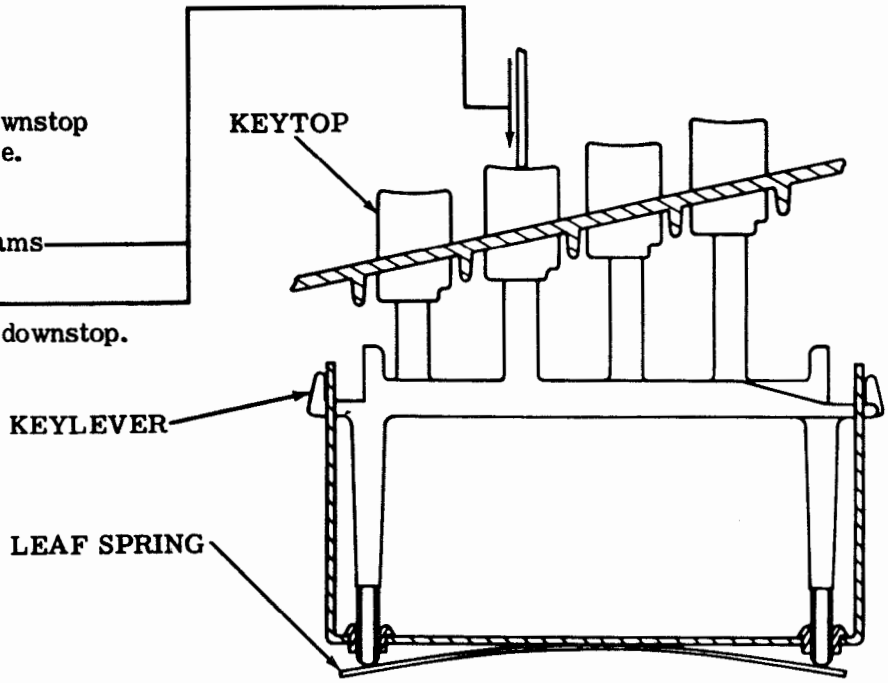
(Front View)

2.04 Keyboard Mechanism (continued)

KEYLEVER LEAF SPRING

To Check
Depress keylever to normal downstop position (nonrepeat) and release.

Requirement
Min 13 grams---Max 25 grams to start keylever moving.
Max 7 oz to depress keylever to normal downstop.



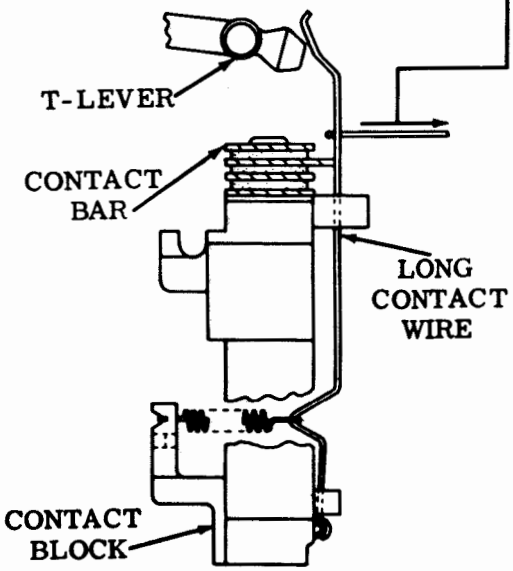
(Right Side View)

CONTACT WIRE SPRING

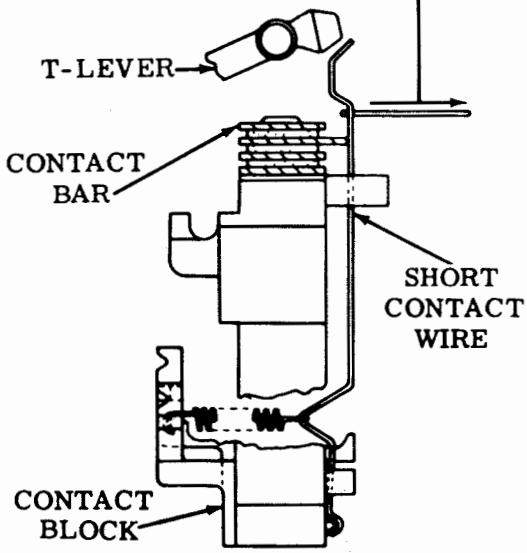
To Check
Remove T-lever guide, check contact wire when closed.

CAUTION: CONTACT WIRES ARE NOT TO BE ADJUSTED.

Requirement
Min 8 grams---Max 12 grams to start short contact wire moving.
Min 10 grams---Max 14 grams to start long contact wire moving.



(Front View)



(Front View)

2.05 Keyboard Mechanism (continued)

LATCH LEVER SPRING

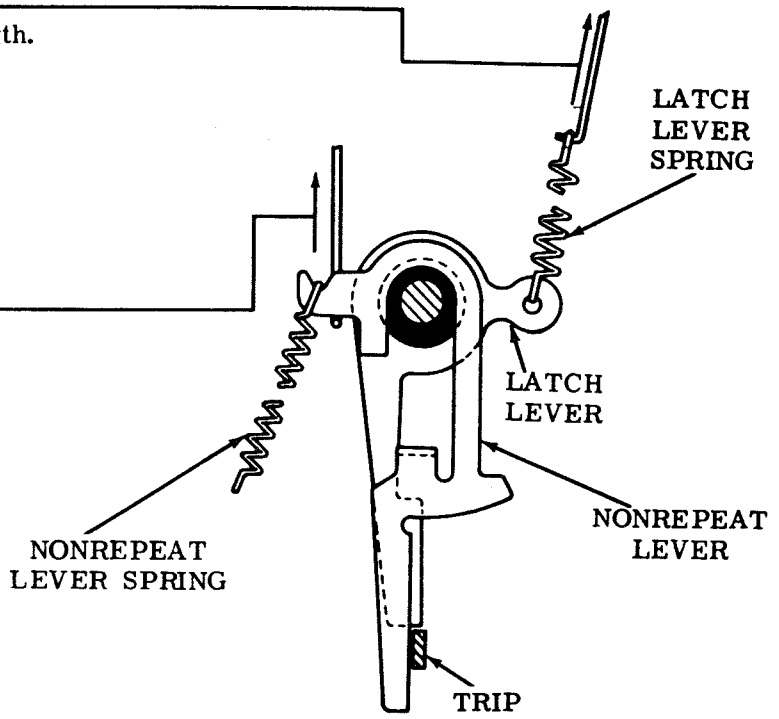
To Check
Unhook latch lever spring. Hold trip arm in overtravel position.

Requirement
Min 1/2 oz---Max 3/4 oz to extend spring to installed length.

NONREPEAT LEVER SPRING

To Check
Latch lever moved away from nonrepeat lever.

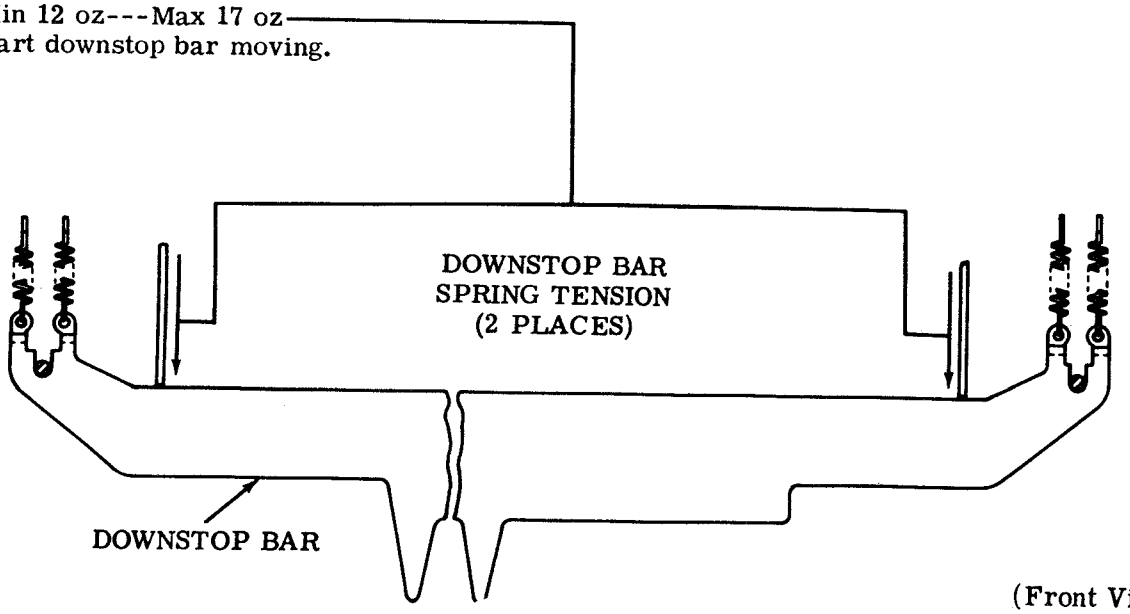
Requirement
Min 1/2 oz---Max 5/8 oz to start nonrepeat lever moving.



(Front View)

REPEAT DOWNSTOP BAR SPRING

Requirement
Min 12 oz---Max 17 oz to start downstop bar moving.



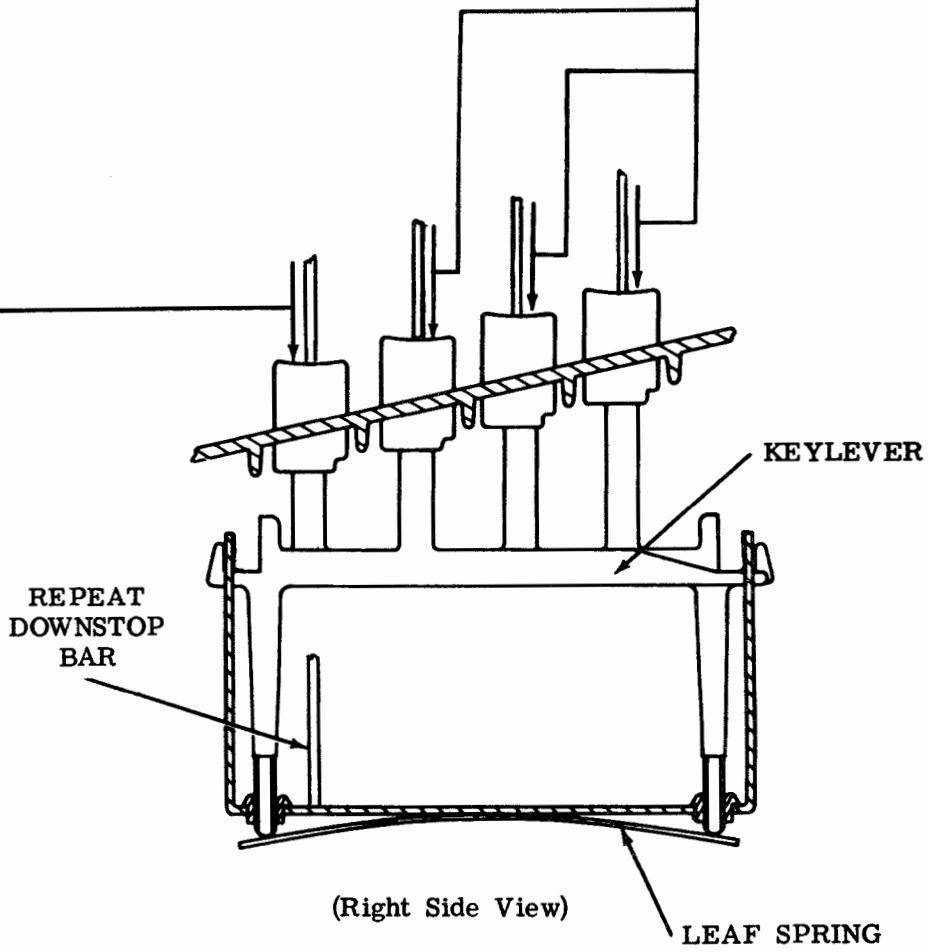
(Front View)

2.06 Keyboard Mechanism (continued)

CODEBAR BIND CHECK

To Check
Hold trip arm in overtravel position.

Requirement
Max 7 oz to depress, to normal downstop position, the following keylevers (in sequence): O (letter), 0 (figure), and LINE SPACE.



(Right Side View)

REPEAT FORCE CHECK

To Check
Depress any repeatable key past the normal downstop position.

Requirement
Min 12-1/2---Max 54 oz to trip keyboard.

2.07 Reset Mechanism

DRIVEN GEAR BACKLASH

To Check
Hold driving gear stationary.

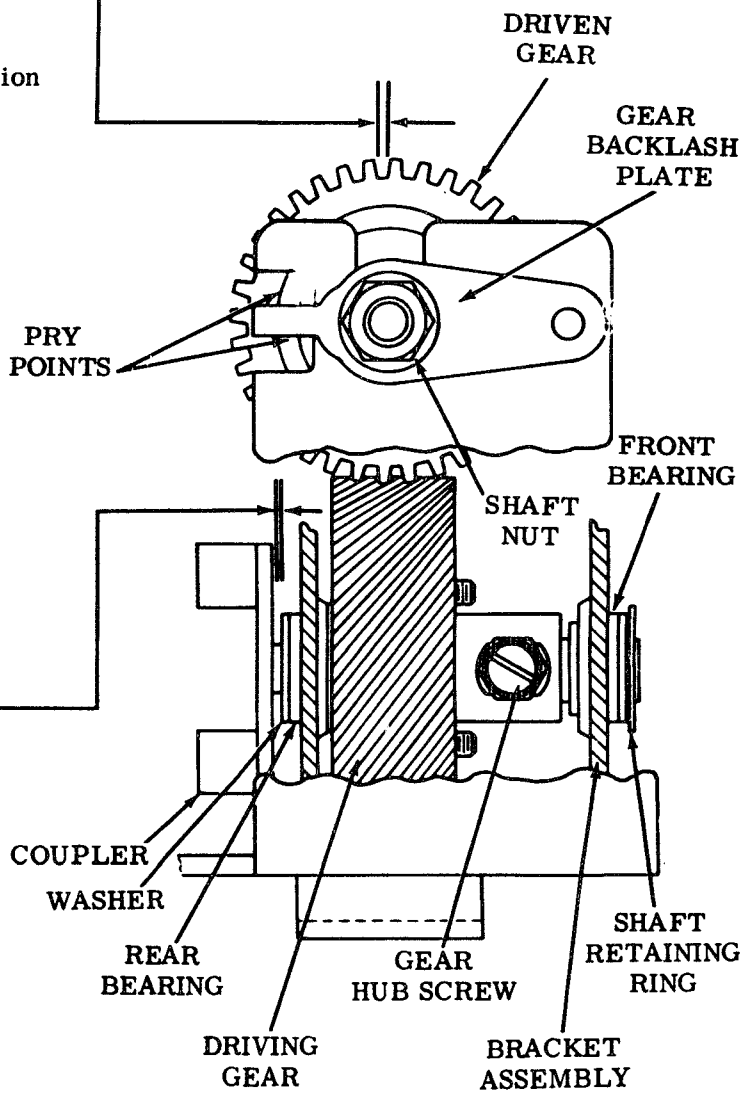
Requirement
Min some---Max 0.030 inch play between driving gear and driven gear (measured at periphery of driven gear tooth where play is at a minimum).

To Adjust
Loosen shaft nut to friction tight. Insert screwdriver between pry points and position gear backlash plate to meet requirement. Tighten shaft nut.

DRIVEN COUPLER ENDPLAY

Requirement
Min some---Max 0.037 inch between driven coupler and washer.

To Adjust
Remove gear hub screw and shaft retaining ring. Remove driven coupler and shaft from bracket assembly and bearings. Add or remove, as required, washers between driven coupler and rear bearing to meet requirement. Reassemble, replace retaining ring, and tighten screw.



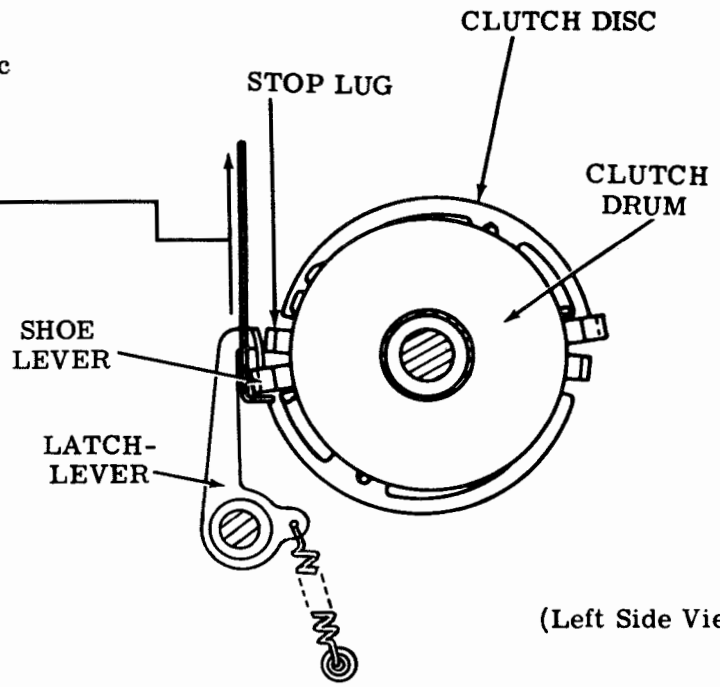
(Left Side View)

2.08 Reset Mechanism (continued)

SHOE LEVER SPRING

To Check
Engage the clutch. Hold the trip lever away from shoe lever while checking requirement. Also hold the clutch disc to prevent its turning while checking requirement.

Requirement
Min 7 oz---Max 9 oz to pull shoe lever into contact with stop lug.



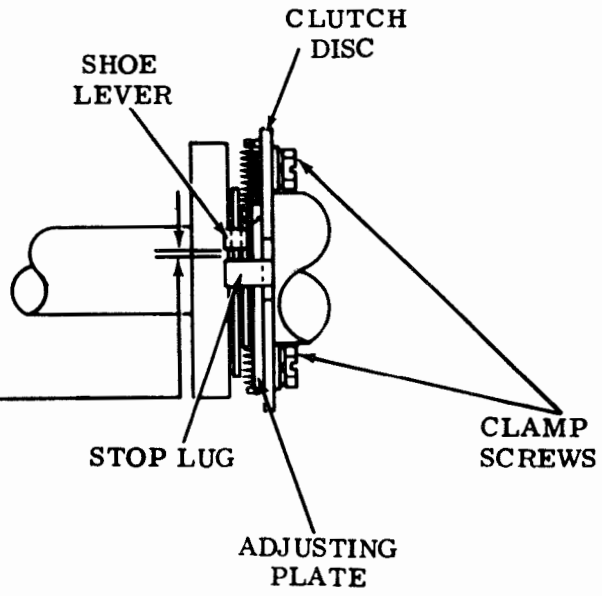
(Left Side View)

SHOE LEVER

To Check
Engage clutch and momentarily place 32 ounces of tension on shoe lever. Measure gap between shoe lever and stop lug. Disengage (latch) clutch and remeasure.

Requirement
Min 0.055 inch---Max 0.085 inch greater gap when clutch is engaged (shoe lever unlatched) than when disengaged.

To Adjust
Loosen clamp screws friction tight. Hold clutch disc and engage a screwdriver or wrench onto lug on adjusting plate. Rotate adjusting plate into position to meet requirement. Tighten clamp screws.



(Rear View)

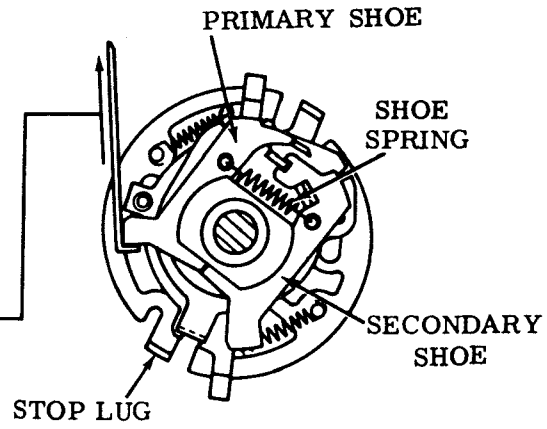
2.09 Reset Mechanism (continued)

SHOE SPRING

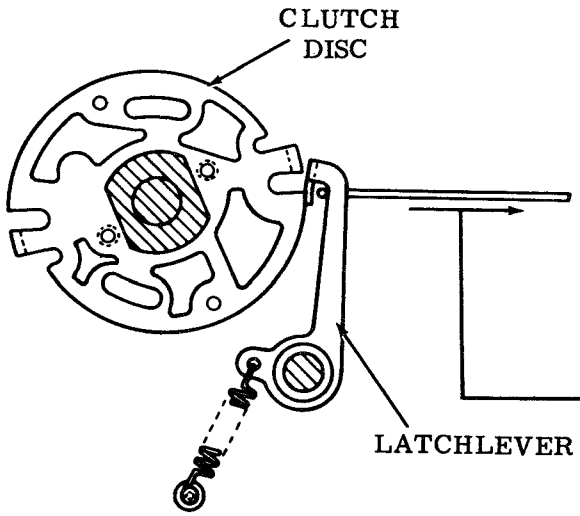
Note: To check shoe spring tension, it is necessary to remove the clutch drum. It therefore should not be checked unless there is good reason to believe that it does not meet requirements. Refer to appropriate section for disassembly and reassembly procedures.

To Check
Remove clutch disc and shoe assembly from clutch drum.

Requirement
Min 3 oz---Max 5 oz to start primary shoe moving.



(Internal View Left Side)



(Right Side View)

LATCHLEVER SPRING

To Check
Disengage clutch. Manually unlatch latchlever from clutch disc.

Requirement
Min 1/2 oz---Max 2-1/4 oz to start latchlever moving.

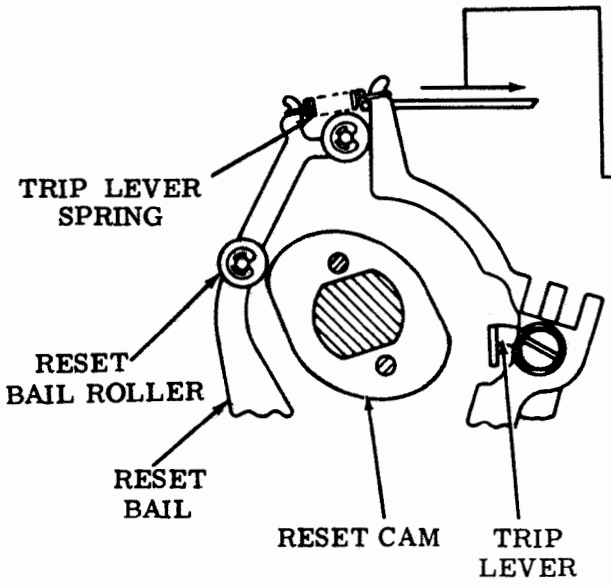
2.10 Reset Mechanism (continued)

Note: Typing unit must be removed to measure spring tensions.

TRIP LEVER SPRING

To Check
Engage clutch and rotate shaft until reset bail roller is on high part of reset cam.

Requirement
Min 2-1/2 oz---Max 4-3/4 oz to start trip lever moving.

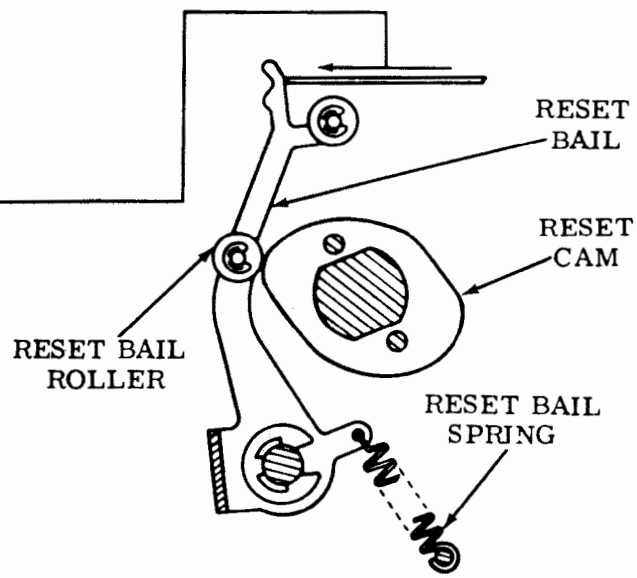


(Right Side View)

RESET BAIL SPRING

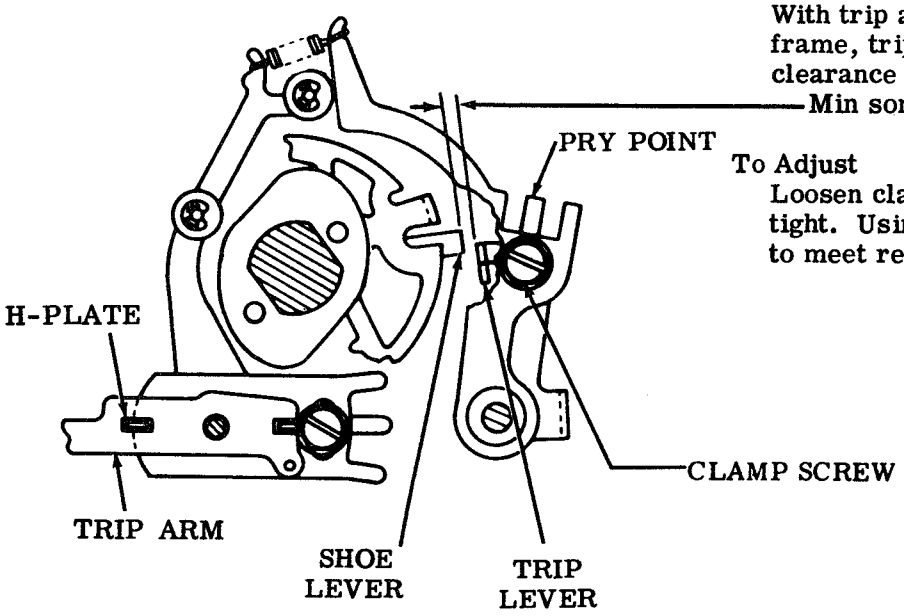
To Check
Remove H-plate. Unhook stop arm spring. Rotate shaft until reset bail roller is on high part of cam.

Requirement
Min 1 oz---Max 1-1/2 oz to start reset bail moving.



(Right Side View)

2.11 Reset Mechanism (continued)



(Right Side View)

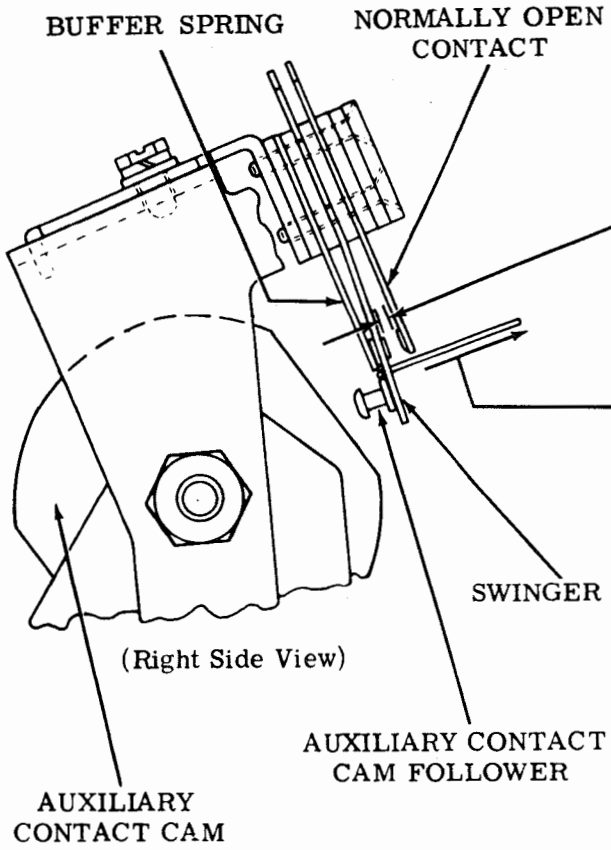
TRIP LEVER

To Check
Trip keyboard.

Requirement
With trip arm at top of slot in keyboard frame, trip lever and shoe lever clearance should be
Min some---Max 0.025 inch

To Adjust
Loosen clamp screw on trip lever friction tight. Using pry point, position trip lever to meet requirement. Tighten clamp screw.

2.12 Reset Mechanism (continued)



AUXILIARY CONTACT (UNOPERATED)

To Check
Auxiliary contact cam follower free from auxiliary contact cam.

(1) Requirement
Min 0.010 inch---Max 0.016 inch between swinger contact and normally open contact.

To Adjust
Bend normally open contact.

(2) Requirement
Min 20 grams---Max 35 grams to start swinger contact moving.

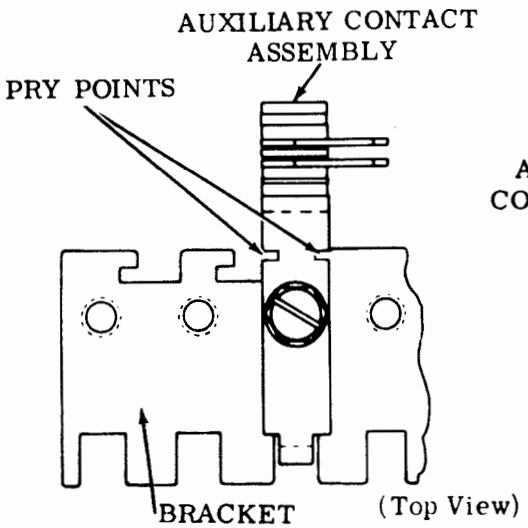
To Adjust
Bend swinger.

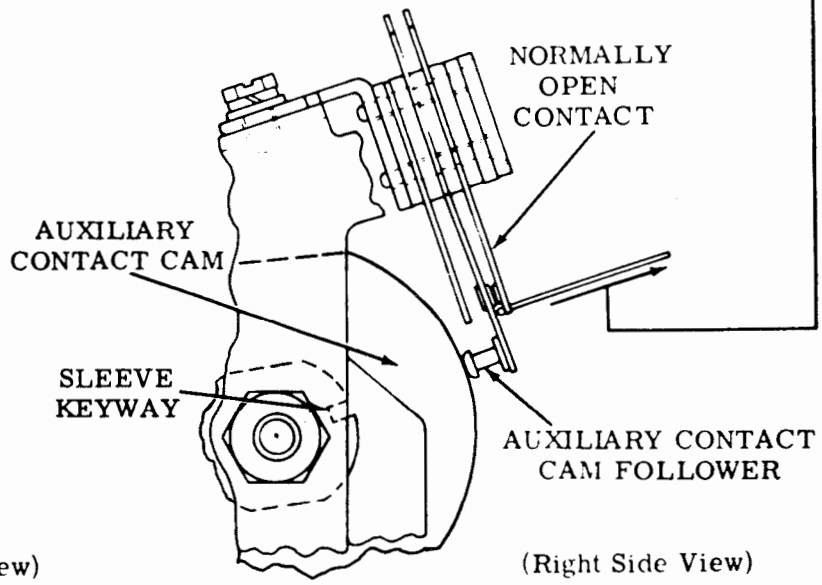
AUXILIARY CONTACT (OPERATED)

To Check
Position auxiliary contact cam follower on high part of auxiliary contact cam with sleeve keyway in line with contact cam follower.

Requirement
Min 30 grams---Max 45 grams to start normally open contact moving.

To Adjust
Loosen clamp screw friction tight. Insert screwdriver between pry points and position auxiliary contact assembly to meet requirement. Tighten clamp screw.





2.13 Control Panel Mechanism

There are no adjustments required for the control panel itself. However, some installation type adjustments are required when the typing unit cover and pan are mated with the typing unit. These adjustments are given in Section 574-326-703TC, 37 Typing Unit Cover and Pan.

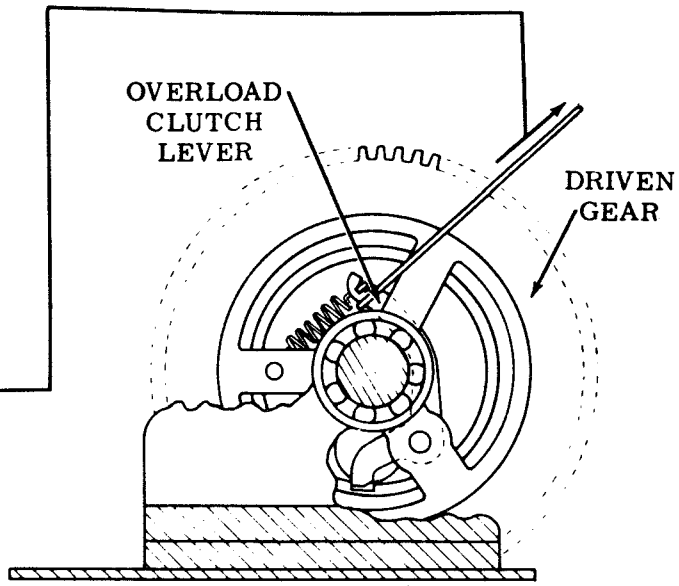
2.14 Base Mechanisms

INTERMEDIATE GEAR ASSEMBLY OVERLOAD CLUTCH SPRING

Note: Typing unit must be removed to check the overload clutch spring tension.

To Check
Overload clutch lever in notch. Manually block driven gear to prevent its rotation.

Requirement
Min 40 oz---Max 64 oz to start overload clutch lever moving. Lever must not jump from notch at less than 64 ounces.

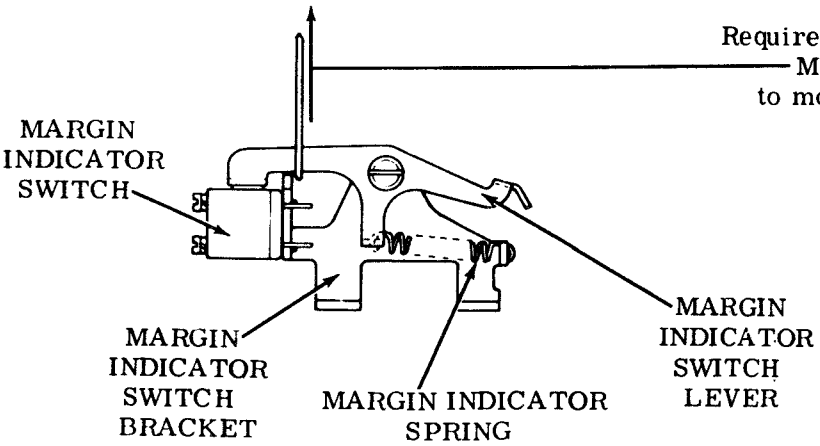


(Left Side View)

MARGIN INDICATOR SWITCH SPRING

To Check
Remove typing unit.

Requirement
Min 7 oz---Max 11 oz to move lever free of pin.



(Front View)

2.15 Base Mechanisms (continued)

Note: These adjustments are installation or reassembly type adjustments and are required only when keyboard unit, typing unit, and motor unit are mated.

INTERMEDIATE DRIVING GEAR TO TYPING UNIT

Requirement

There should be a perceptible amount of backlash between typing unit driven gear and intermediate driving gear at the highest point of intermediate gear.

To Adjust

Loosen five motor unit mounting screws and rotate motor unit away from intermediate gear assembly. Loosen three intermediate gear bracket screws friction tight. Position entire intermediate gear assembly using adjusting slot at rear of bracket until perceptible amount of backlash exists. Tighten three intermediate gear bracket screws.

INTERMEDIATE DRIVEN GEAR TO MOTOR UNIT

To Check

Hold intermediate driven gear and rotate motor unit fan.

Requirement

There should be a perceptible amount of backlash between motor unit pinion gear and intermediate driven gear at the highest point of intermediate gear.

To Adjust

With five motor unit mounting screws holding motor mounting plate friction tight, move motor unit away or toward intermediate gear until a perceptible amount of backlash exists. Tighten screws.