33 KEYBOARD

ADJUSTMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section provides adjustment information for 33 keyboards which are mechanically reset by an H-plate and the distributor trip linkage shown in 2.16 and 2.17. It is reissued to provide specific references to related sections and to make a few minor changes. Marginal arrows indicate the changes.

Note: Adjustment information for solenoid reset keyboards is found in Section 574-121-703TC.

1.02 In the adjustments covered in this section, 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 33 Teletypewriter Sets are shown in Maintenance Tools Section 570-005-800TC.

1.03 The sequence in which the adjustments appear is that which should be followed when a complete readjustment of the keyboard 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 or checking a spring tension.

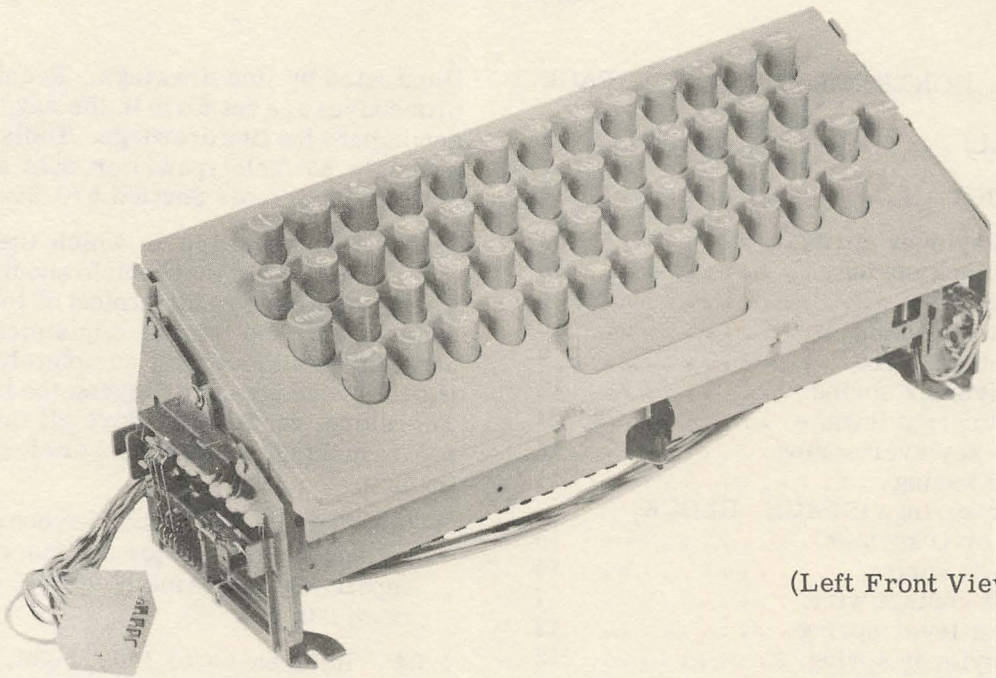
Note: Disconnect the keyboard from any voltage source prior to inspection, minor repair, extensive maintenance, or a complete readjustment.

1.04 References to left, right, front, rear, etc consider the keyboard to be viewed from a position where the spacebar (Figure 3) faces up and the contact mechanism is located to the viewer's right.

1.05 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.

1.06 When the keyboard is removed from the subbase to facilitate the making of an adjustment and subsequently replaced, recheck any adjustments that may have been affected. Also, if parts are removed from the keyboard to facilitate the making of an adjustment, be sure that they are subsequently replaced. Recheck any adjustment that may have been affected by the removal of parts.

1.07 Related adjustments are listed with some of the adjustment texts and are primarily intended to aid in troubleshooting the equipment. As an example, suppose that in searching for a trouble it is discovered that Part (2) of CONTACT WIRES adjustment does not meet its requirement. Under Related Adjustment it is indicated that Part (2) of this adjustment is affected by Part (1). Check Part (1) to see if it is the basic



(Left Front View)

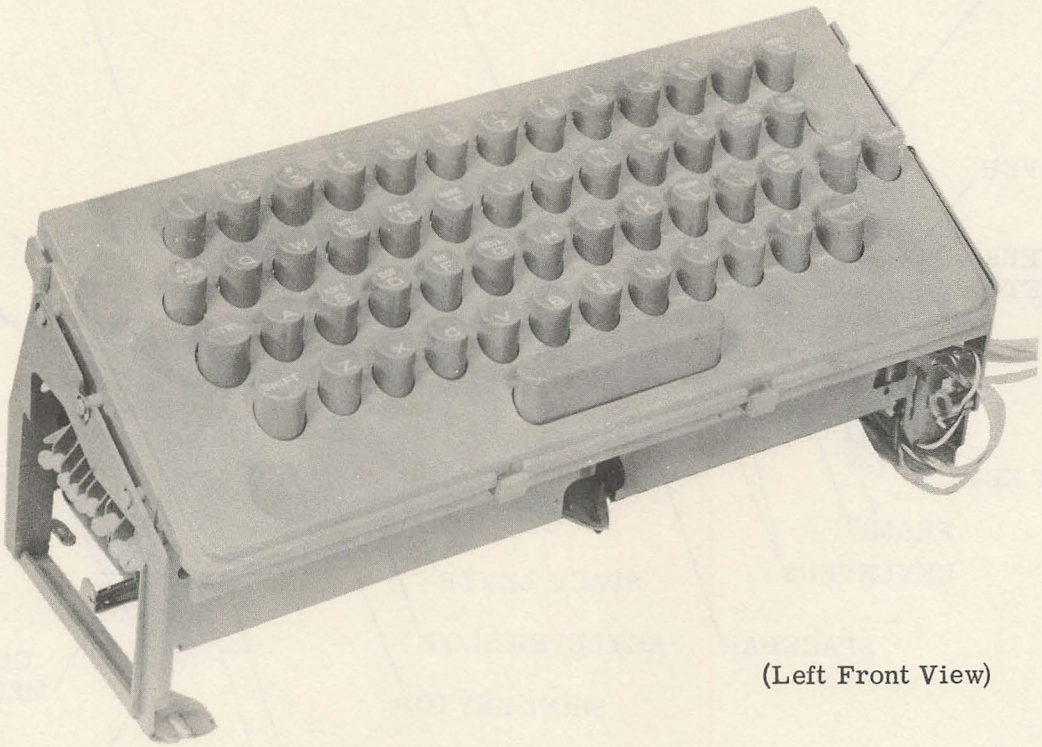
Figure 1 - 33 Keyboard (Parity)

cause of the trouble. Also, note that certain adjustments affect other adjustments. For example, see the DISTRIBUTOR TRIP LINKAGE adjustment. Note that this adjustment affects the TRIP LEVER ENGAGEMENT adjustment. (See Section 574-122-700TC.) If the former adjustment is changed, check the latter adjustment.

1.08 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 should be replaced, one at a time, with the performance of requirement checks each time a spring is replaced.

Note 1: Use only spring scales which are recommended by the manufacturer. These spring scales are listed in Maintenance Tools Section 570-005-800TC.

Note 2: The spring tensions may be checked in any sequence.



(Left Front View)

Figure 2 - 33 Keyboard (Nonparity)

1.09 With the keyboard and typing unit assembled together on the subbase, adjustment procedures may specify that the typing unit be placed in the stop condition. It is in the stop condition when the selector armature is in its attracted (frontward) position and all clutches are disengaged. Furthermore, when the typing unit is in the stop condition the keyboard will be latched --- universal lever down and blocked from upward movement by an associated latchlever.

Note: The keyboard is tripped when the universal lever is in its up position.

1.10 To place the typing unit in the stop condition, hold the selector armature in its attracted (frontward) position. Manually rotate the main shaft clockwise (as viewed from the left) until all clutches are in a stop position. Fully disengage all of the clutches by positioning a screwdriver to the associated stop-lug. Push the clutch disc in the normal direction of main shaft rotation until the corresponding latchlever seats in its clutch disc notch. This permits the clutch shoes to release their tensions on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any dragging of the clutch shoes.

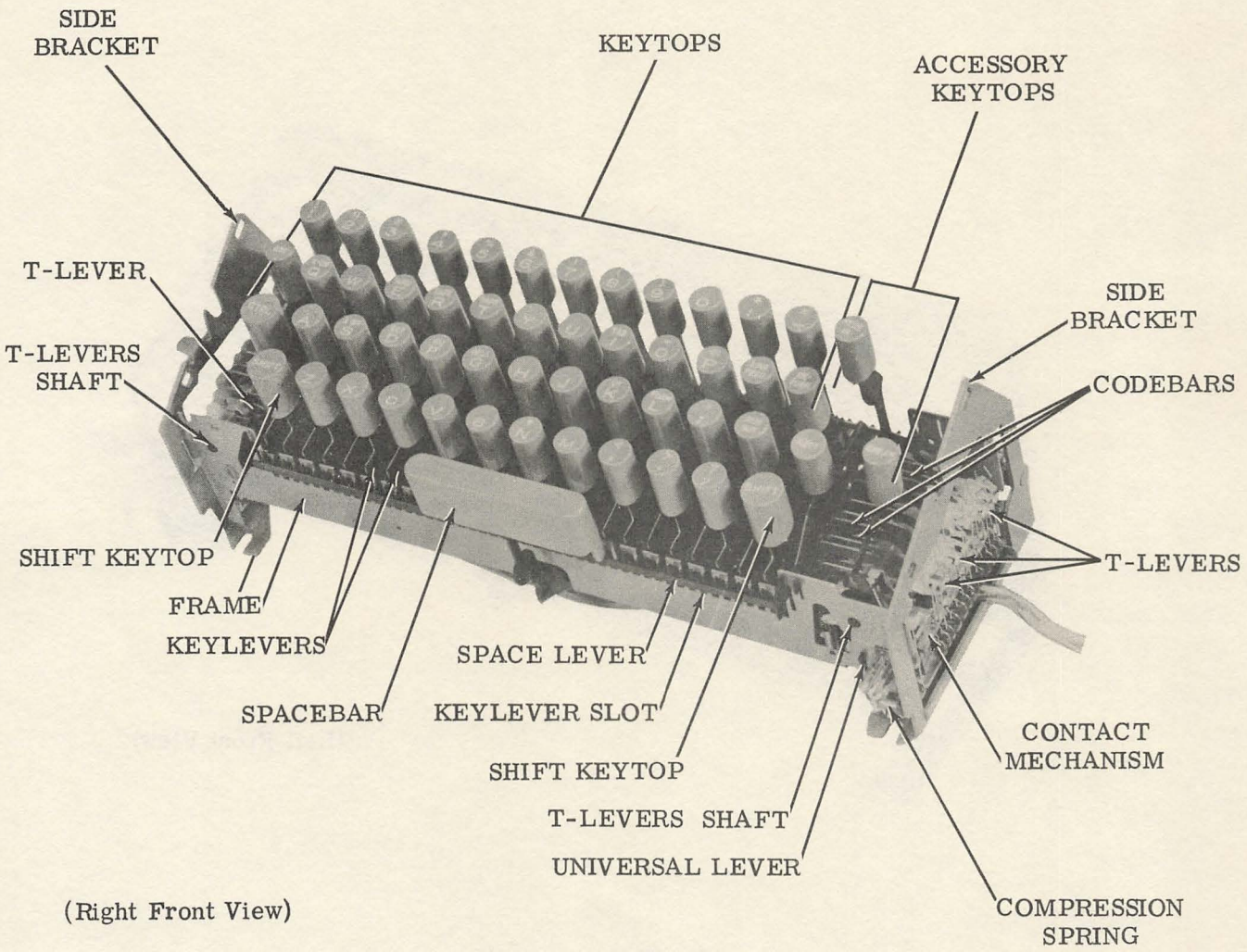


Figure 3 - Keyboard (Cover Removed)

Note 1: A stop position is that position where a shoe lever contacts a trip lever.

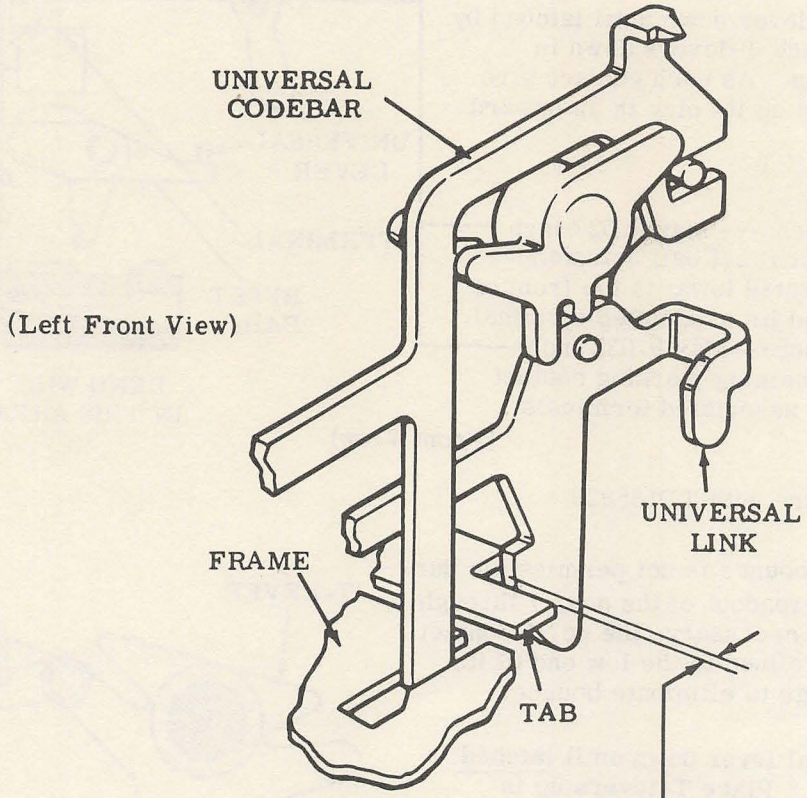
Note 2: The distributor clutch will not disengage unless the keyboard is latched and the answer-back drum is in its home position. The answer-back home position is the position where the control lever is fully detented into the indent on the answer-back drum.

1.11 A clutch is tripped by moving a trip lever up and away from contact with a shoe lever. When moved up, a trip lever no longer holds a shoe lever in its stop position. When the clutch is tripped, the shoe lever and a stop-lug on the clutch disc move apart, and the clutch becomes engaged. The clutch shoes wedge against the drum so that when the shaft is turned the clutch assembly will turn in unison with it.

2. BASIC UNIT

2.01 Universal Link

Note: Remove keyboard and call control unit from subbase to facilitate the making of the following adjustments. For disassembly instructions, refer to Section 574-121-702TC.



UNIVERSAL LINK

To Check
Push universal lever down until latched by latchlever.

Requirement
Min 0.089 inch---Max 0.103 inch between universal link and frame.

To Adjust
Place screwdriver through opening in front of frame and bend tab.

2.02 Contact Wires

CONTACT WIRES

Note: Part (1) of this adjustment applies to contact wires actuated by the reset bail (contact block slots B through O). Part (2) applies to contact wires which have two camming surfaces and are operated by a T-lever and the reset bail.

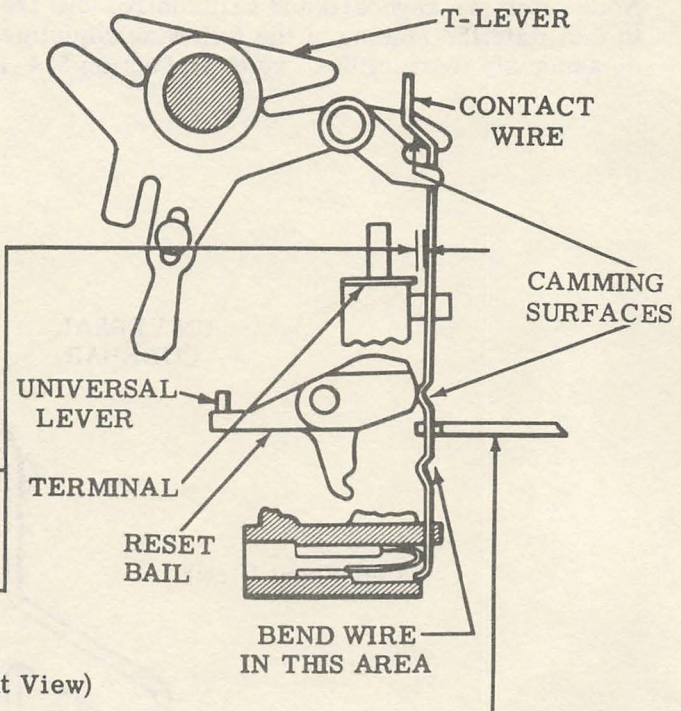
(1) To Check

Push universal lever down until latched by latchlever. Place T-levers down in marking position. As each contact wire is checked, take up its play in an upward direction.

Requirement

Min 0.012 inch --- Max 0.027 inch between the first reset bail actuated contact wire located towards the front of the keyboard and its associated terminal.

Min 0.018 inch---Max 0.032 inch between the remaining marking contact wires and their associated terminals.



(Front View)

To Adjust

Bend contact wire with TP185829 bending tool.

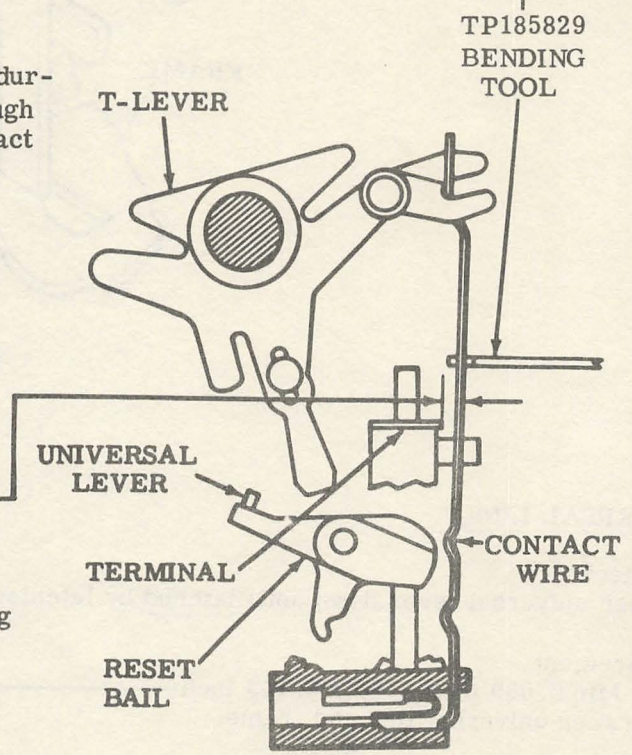
Note: Contact bounce is not permissible during distributor readout of the nos. 1 through 8 code bits. If necessary, the no. 1 contact gap should be refined to the low end of its adjustment range to eliminate bounce.

(2) To Check

Push universal lever down until latched by latchlever. Place T-levers up in spacing position. Trip keyboard by depressing universal codebar. As each contact wire is checked, take up its play in an upward direction.

Requirement

Min 0.020 inch---Max 0.040 inch between terminal and each contact wire.



(Front View)

To Adjust

Bend contact wire with TP185829 bending tool as shown.

Related Adjustment Affected by

Part (2) of this adjustment is affected by Part (1).

2.03 Contact Wires (continued)

LEFT SHIFT CONTACT WIRE

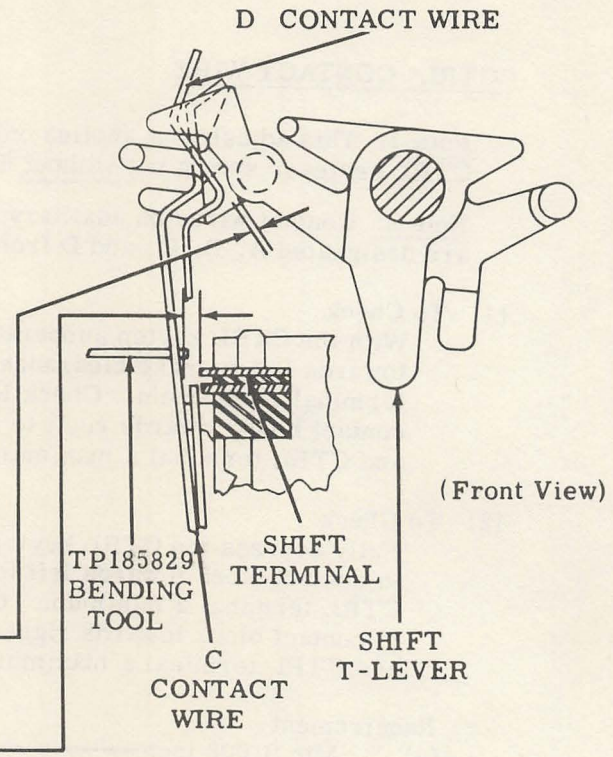
Note 1: This adjustment applies only to parity keyboards equipped with a TP180076 T-lever at right side of SHIFT codebar mechanism.

Note 2: Contact wires on auxiliary contact block on left side of parity keyboards are designated A, B, C, and D from rear to front.

(1) To Check
Push universal lever down, until latched by latchlever. Trip keyboard by depressing universal codebar. Insert a 0.090 inch gauge diagonally into third keylever (SHIFT) slot in frame from left. Depress left SHIFT keylever until it bottoms on top of gauge.

Requirement
(a) Min some clearance between D contact wire and camming surface of its associated T-lever.

(b) Min 0.020 inch---Max 0.055 inch between C contact wire and SHIFT terminal.



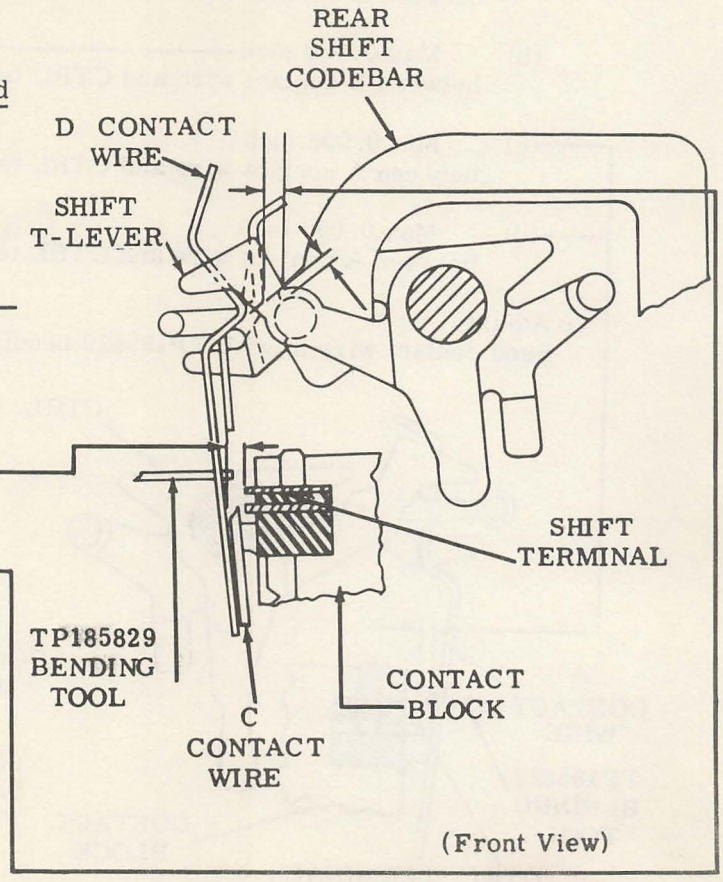
(2) To Check
Push universal lever down until latched by latchlever. Hold right SHIFT keylever fully depressed. Trip keyboard by depressing universal codebar. Release SHIFT keylever. Lightly take up play in contact block towards right.

Requirement
(a) Min 0.004 inch between C contact wire and camming surface of SHIFT T-lever with all contact block play lightly taken up toward right.

(b) Min 0.015 inch between D contact wire and SHIFT terminal.

(c) Min 0.025 inch between C contact wire and rear SHIFT codebar at closest point of travel.

To Adjust
Bend contact wire(s) using TP185829 bending tool.



2.04 Contact Wires (continued)

"CTRL" CONTACT WIRE

Note 1: This adjustment applies only to parity keyboards equipped with TP185780 CTRL keylever spring but without TP186049 blocking lever and TP186051 tie link.

Note 2: Contact wires on auxiliary contact block on left side of parity keyboards are designated A, B, C, and D from rear to front.

(1) To Check
With the CTRL keytop unoperated, lightly take up play in contact block towards left to make clearance between the B contact wire and CTRL terminal a minimum. Check Requirement (a). Lightly take up play in contact block towards right to make clearance between B contact wire and CTRL terminal a maximum. Check Requirement (b).

(2) To Check
Fully depress the CTRL keytop and hold it depressed. Lightly take up play in contact block towards left to make clearance between the A contact wire and CTRL terminal a minimum. Check Requirement (c). Lightly take up play in contact block towards right to make clearance between A contact wire and CTRL terminal a maximum. Check Requirement (d).

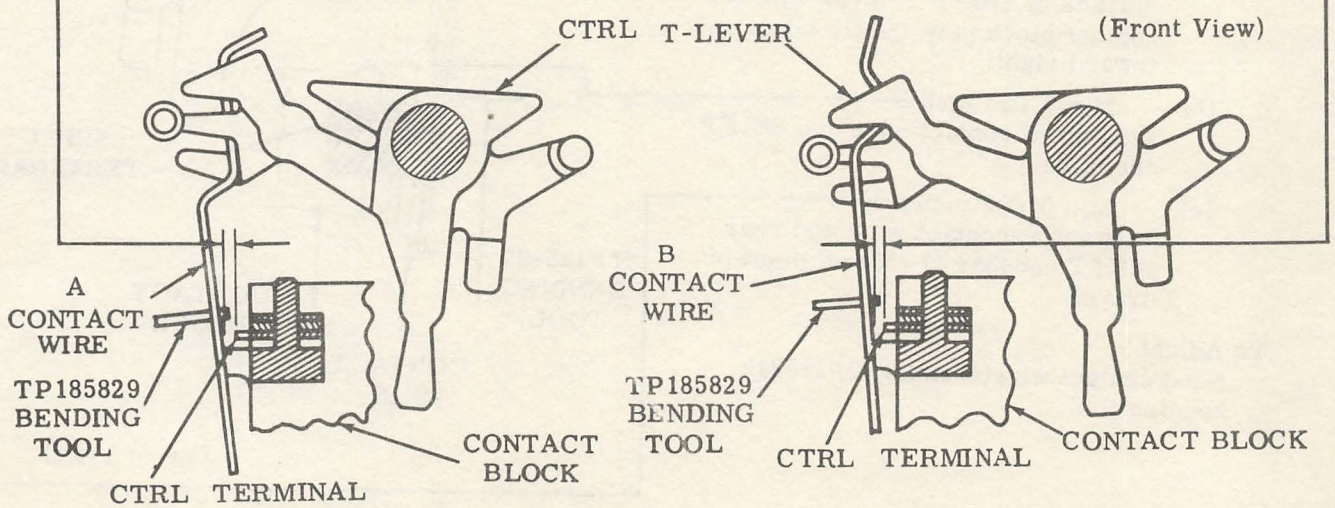
Requirement
(a) Min 0.008 inch between B contact wire and CTRL terminal.

(b) Max 0.050 inch between B contact wire and CTRL terminal.

(c) Min 0.008 inch between A contact wire and CTRL terminal.

(d) Max 0.050 inch between A contact wire and CTRL terminal.

To Adjust
Bend contact wire(s) with TP185829 bending tool as shown.



2.05 Contact Wires (continued)

"CTRL" CONTACT WIRE

Note 1: This adjustment applies only to parity keyboards equipped with TP185780 CTRL key-lever spring and with TP186049 blocking lever and TP186051 tie link.

Note 2: Contact wires on auxiliary contact block on left side of parity keyboards are designated A, B, C, and D from rear to front.

(1) To Check

Fully depress the CTRL keytop and hold it depressed. Trip keyboard by depressing the "Q" keytop. Release both keytops and manually reset the keyboard. Lightly take up all play in contact block towards the left.

Requirement

Min 0.023 inch---Max 0.035 inch between B contact wire and CTRL terminal.

(2) To Check

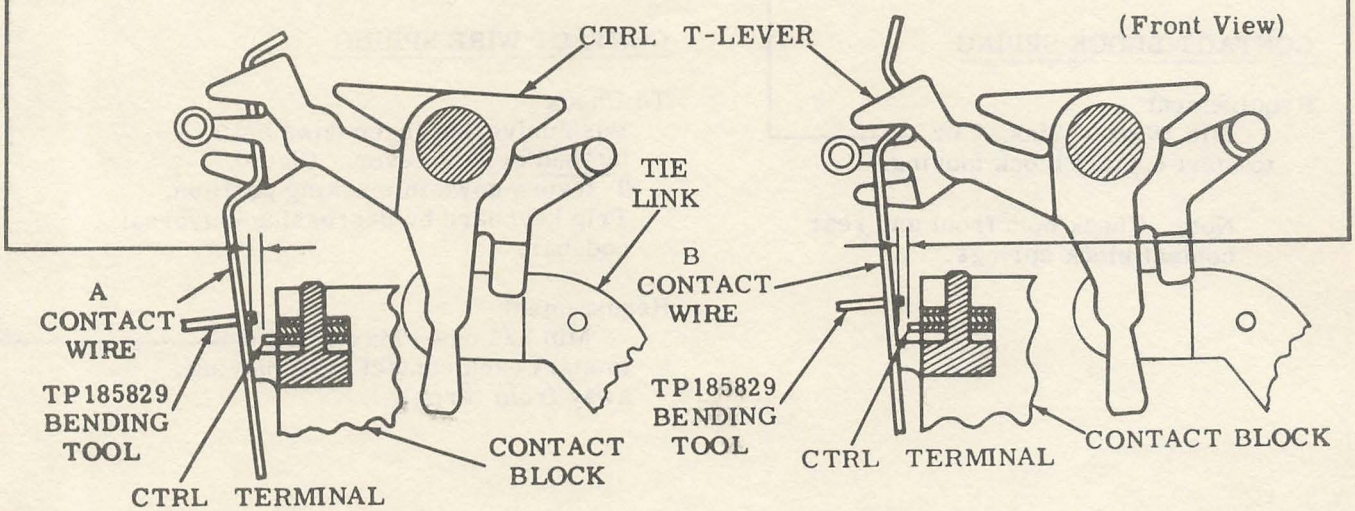
Fully depress the CTRL keytop and then trip the keyboard. Release the CTRL keytop. Lightly take up all play in contact block towards the left.

Requirement

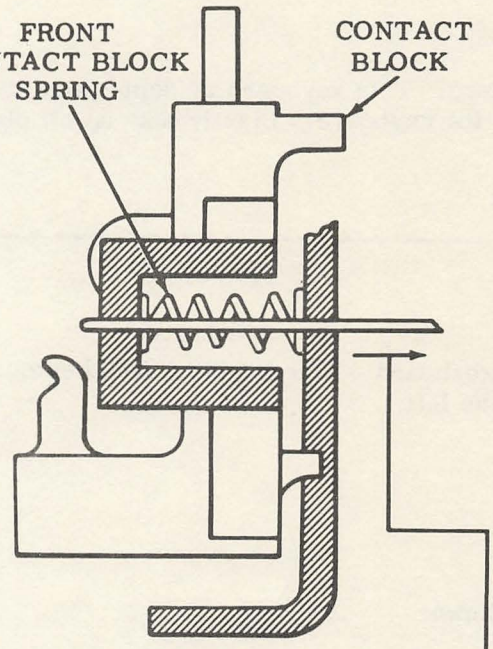
Min 0.015 inch---Max 0.030 inch between A contact wire and CTRL terminal.

To Adjust

Bend contact wire(s) with TP185829 bending tool as shown.



2.06 Contact Block Spring and Contact Wire Spring

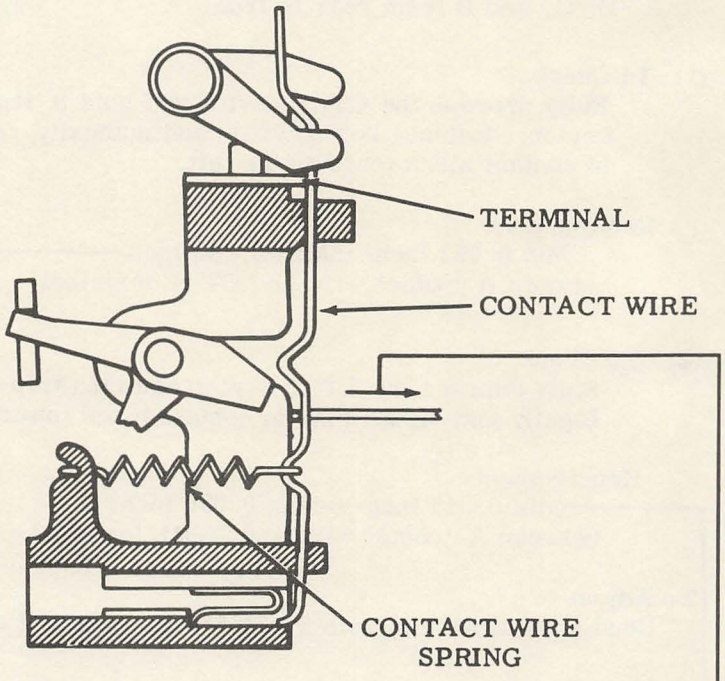


(Front View)

CONTACT BLOCK SPRING

Requirement
Min 18 oz---Max 42 oz
to start contact block moving.

Note: Check both front and rear contact block springs.



(Front View)

CONTACT WIRE SPRING

To Check
Push universal lever down until latched by latchlever. Place T-levers down in marking position. Trip keyboard by depressing universal codebar.

Requirement
Min 3/4 oz---Max 1-1/4 oz
to start each contact wire moving away from terminal.

2.07 Spacebar Spring and Keylever Spring

Note: The SPACEBAR SPRING and KEYLEVER SPRING adjustments do not apply to keylever springs associated with the SPACE, BLOCK, hyphen, or O keytops found on numeric-type keyboards.

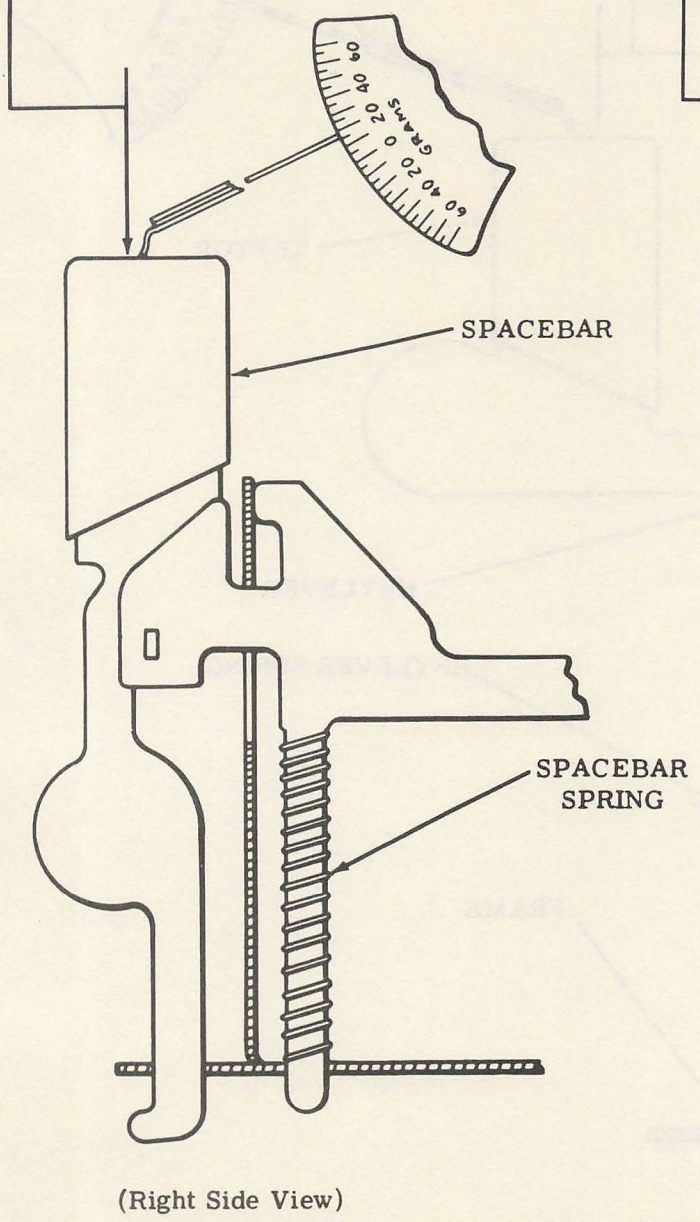
SPACEBAR SPRING

To Check

Push universal lever down until latched by latchlever. Depress spacebar and then release.

Requirement

Min 5 grams---Max 25 grams to start spacebar moving.



(Right Side View)

KEYLEVER SPRING

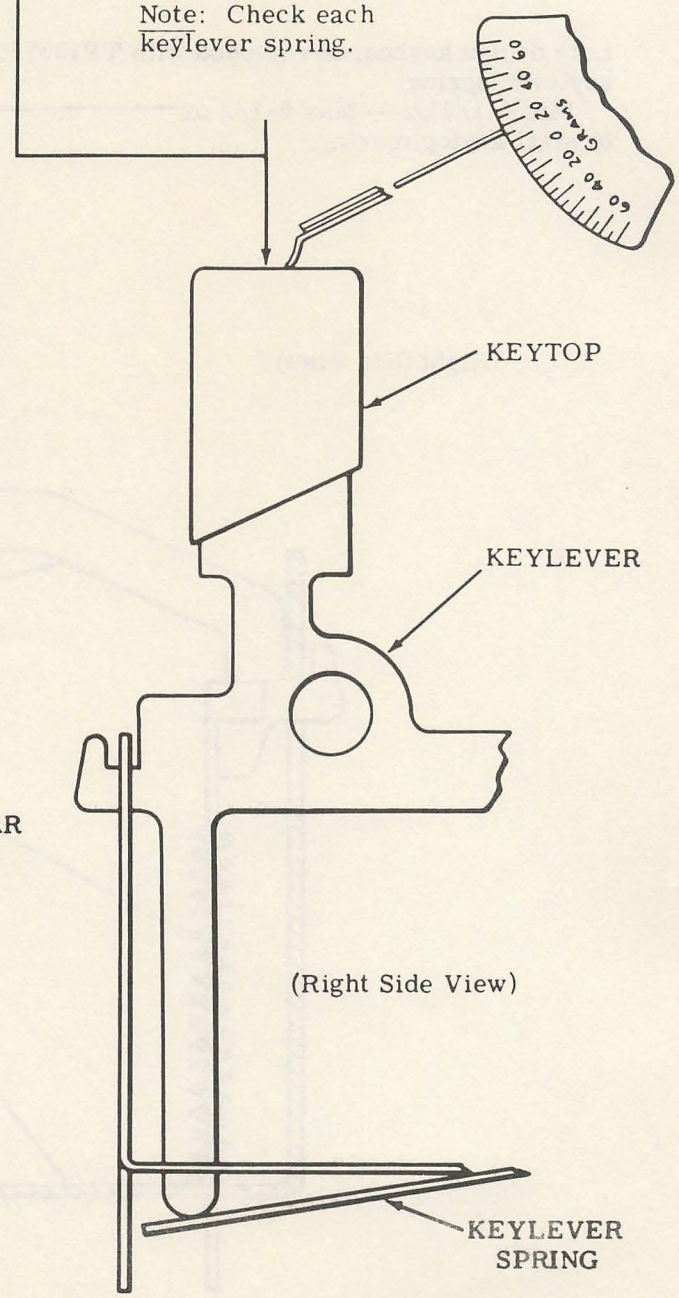
To Check

Push universal lever down until latched by latchlever. Select any keytop and depress. Release keytop.

Requirement

Min 5 grams---Max 30 grams to start selected keytop moving.

Note: Check each keylever spring.



(Right Side View)

2.08 HERE IS, BREAK, CTRL, and REPT Keylever Springs

"BREAK" KEYLEVER SPRING

Requirement
Min 4-1/2 oz---Max 10 oz
to start keytop moving.

"HERE IS" KEYLEVER SPRING

Requirement
Min 18 grams---Max 35 grams
to start keytop moving.

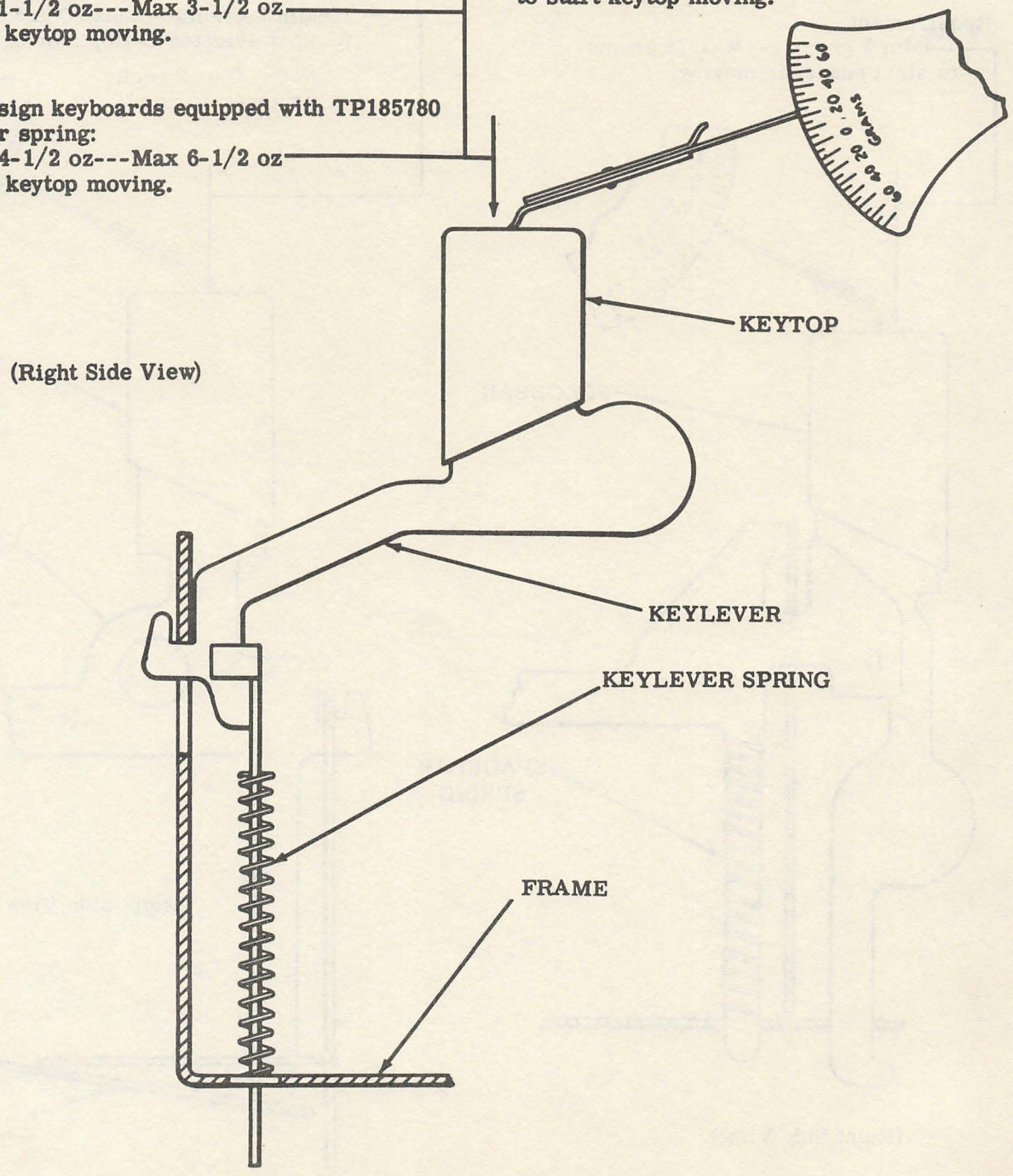
"CTRL" KEYLEVER SPRING

Requirement
Early design keyboards equipped with TP180102 keylever spring:
Min 1-1/2 oz---Max 3-1/2 oz
to start keytop moving.

Late design keyboards equipped with TP185780 keylever spring:
Min 4-1/2 oz---Max 6-1/2 oz
to start keytop moving.

"REPT" KEYLEVER SPRING

Requirement
Min 15 grams---Max 30 grams
to start keytop moving.



(Right Side View)

2.09 SPACE, BLOCK, Hyphen, or O Keylever Springs

KEYLEVER SPRINGS (SPACE, BLOCK, HYPHEN, O KEYTOPS)

Note 1: This adjustment applies only to keylever springs associated with SPACE, BLOCK, hyphen, or O keytops found on numeric-type keyboards.

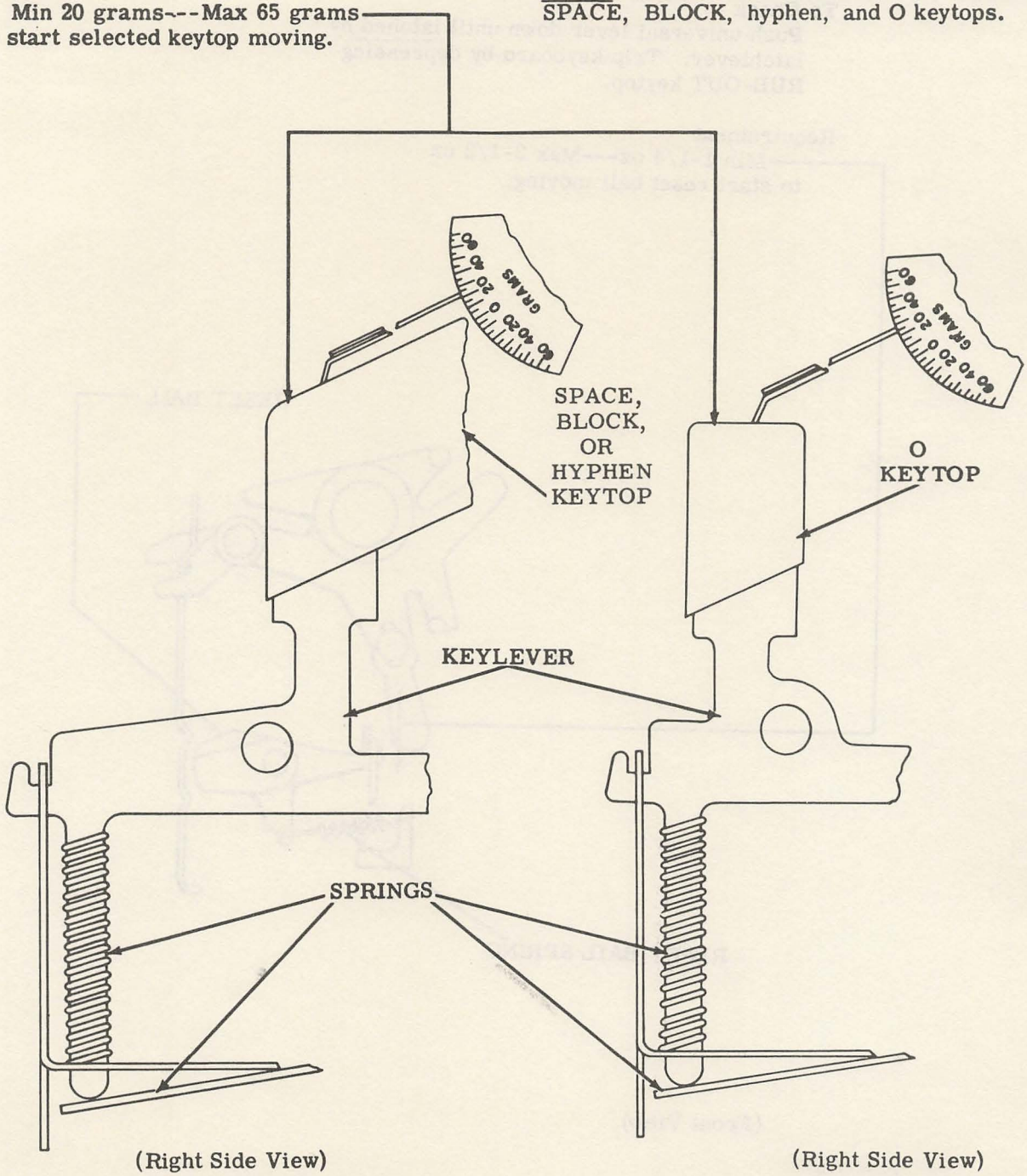
To Check

Push universal lever down until latched by latchlever. Depress either the SPACE, BLOCK, hyphen, or O keytop. Release selected keytop.

Requirement

Min 20 grams---Max 65 grams to start selected keytop moving.

Note 2: Repeat above procedure for each of the SPACE, BLOCK, hyphen, and O keytops.



2. 10 Reset Bail Spring

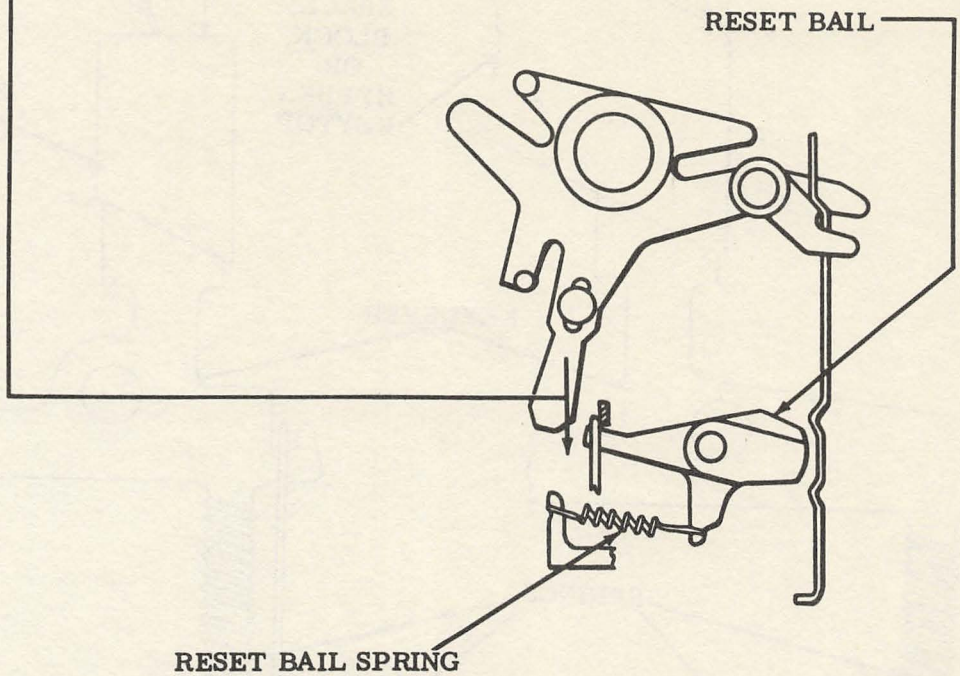
RESET BAIL SPRING

To Check

Push universal lever down until latched by latchlever. Trip keyboard by depressing RUB-OUT keytop.

Requirement

Min 1-1/4 oz---Max 2-1/2 oz to start reset bail moving.



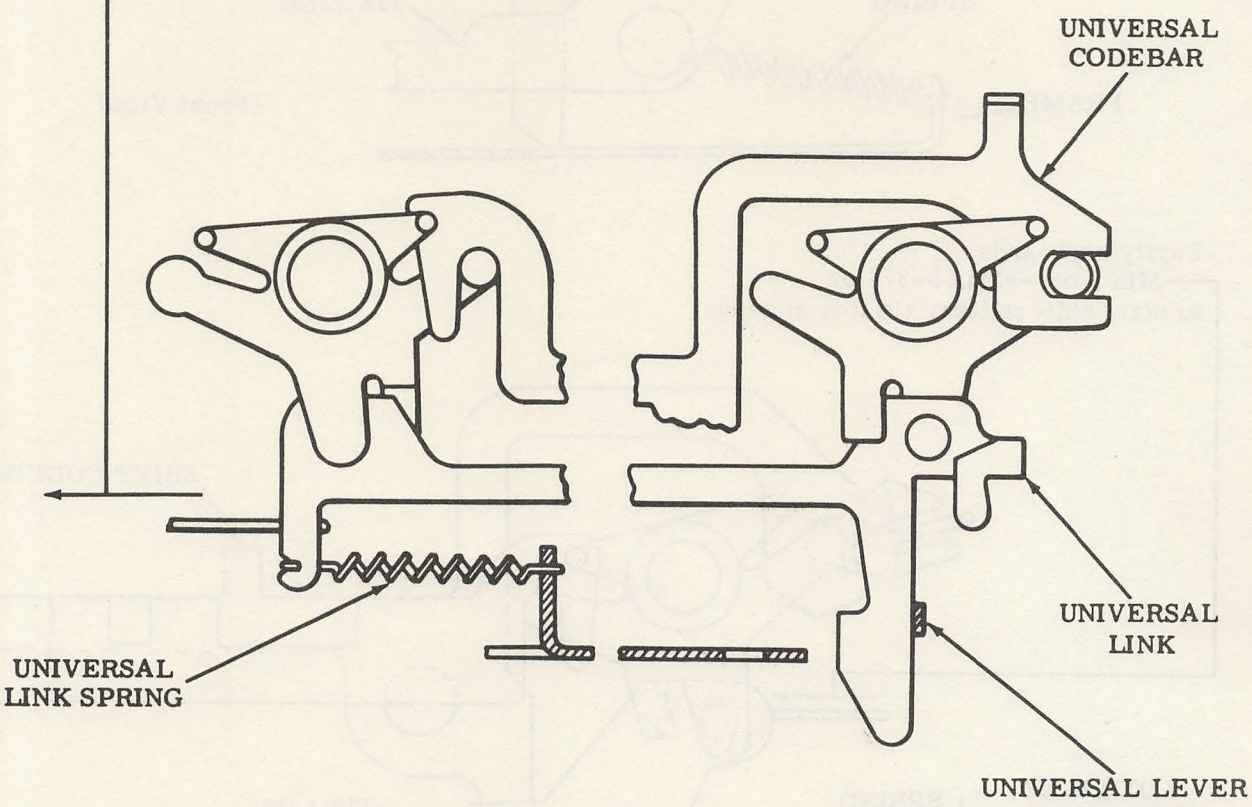
(Front View)

2.11 Universal Link Spring

UNIVERSAL LINK SPRING

To Check
Push universal lever down until latched by latchlever. Trip keyboard by depressing universal codebar.

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



(Front View)

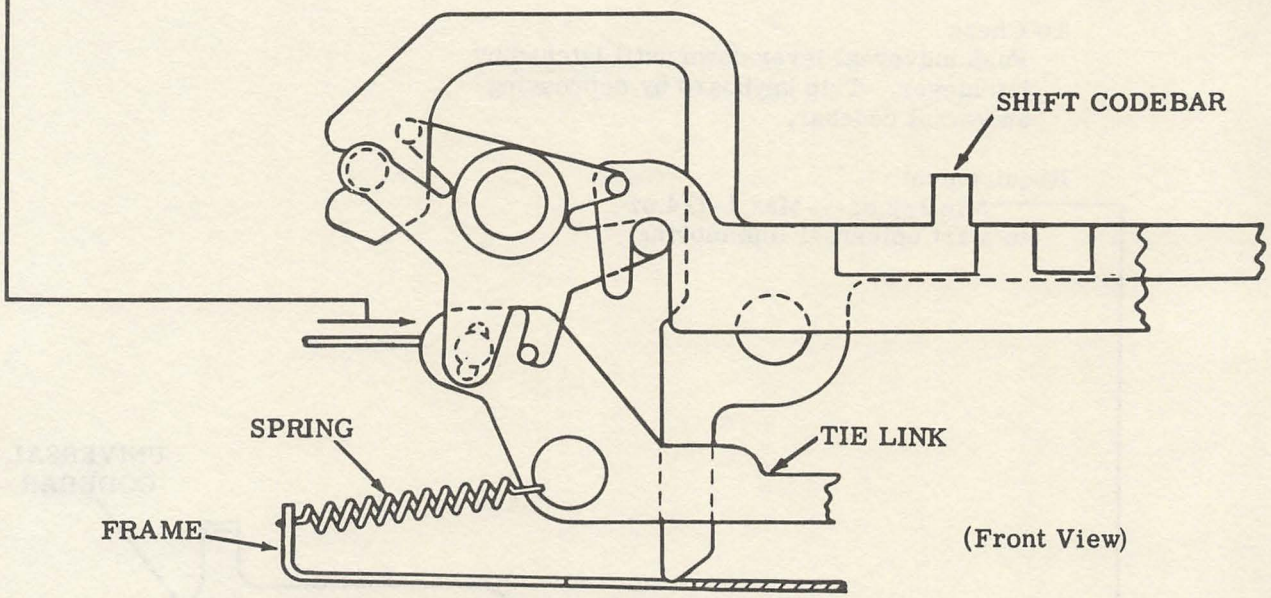
2. 12 Shift Codebar Spring

SHIFT CODEBAR SPRING

Requirement

Nonparity keyboards.

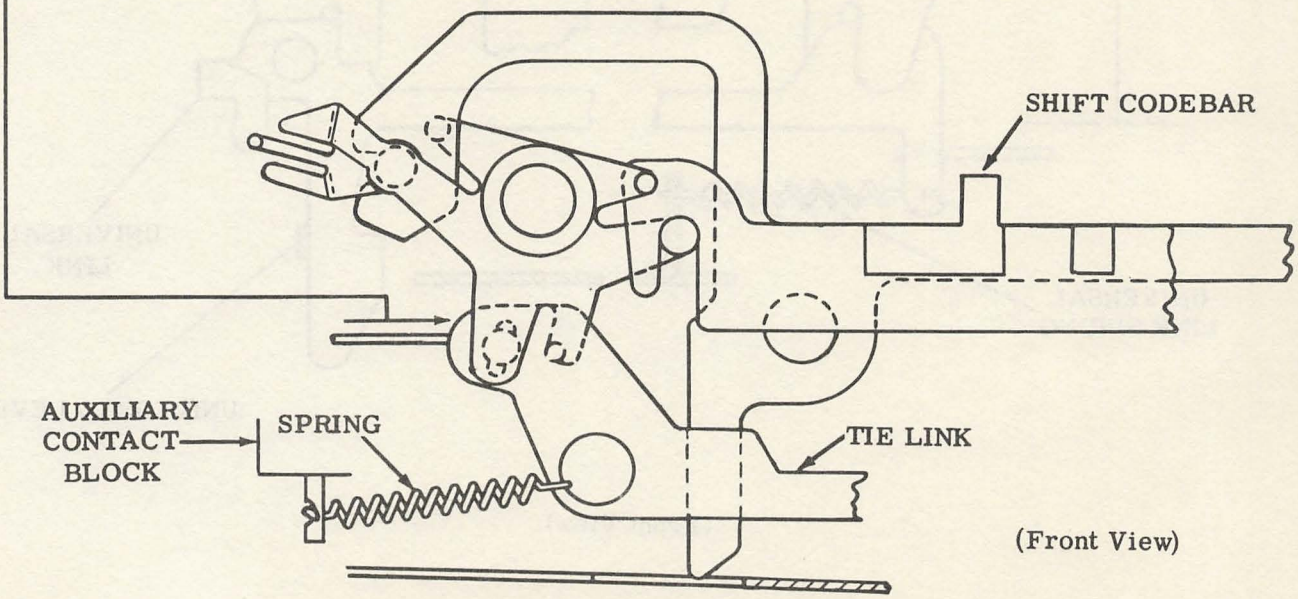
—Min 1-1/4 oz---Max 2-1/2 oz
to start shift codebar tie link moving.



(Front View)

Parity keyboards:

—Min 2 oz---Max 3-3/4 oz
to start shift codebar tie link moving.



(Front View)

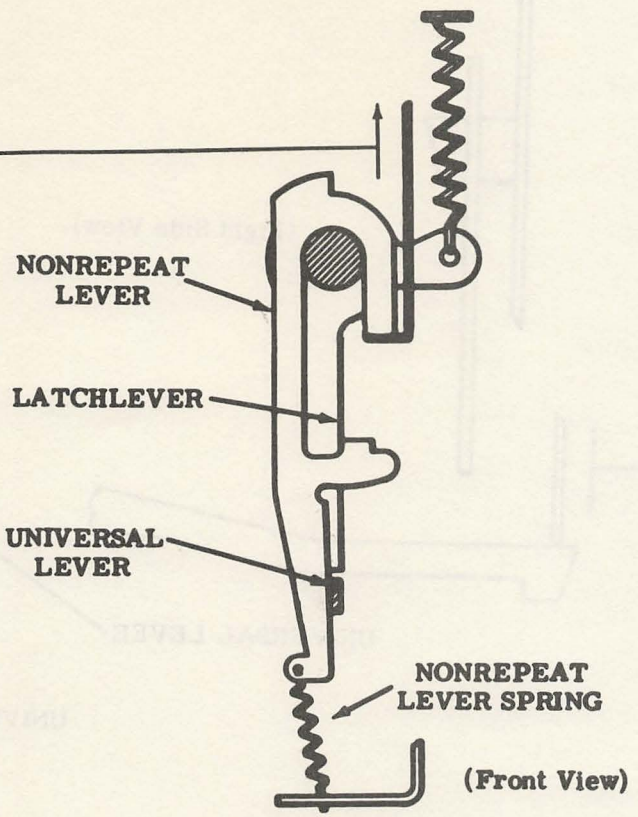
2.13 Nonrepeat Lever Spring

Note: Remove keyboard cover. For disassembly instructions, see Section 574-121-702TC.

NONREPEAT LEVER SPRING

To Check
Push universal lever down until latched by latchlever.

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

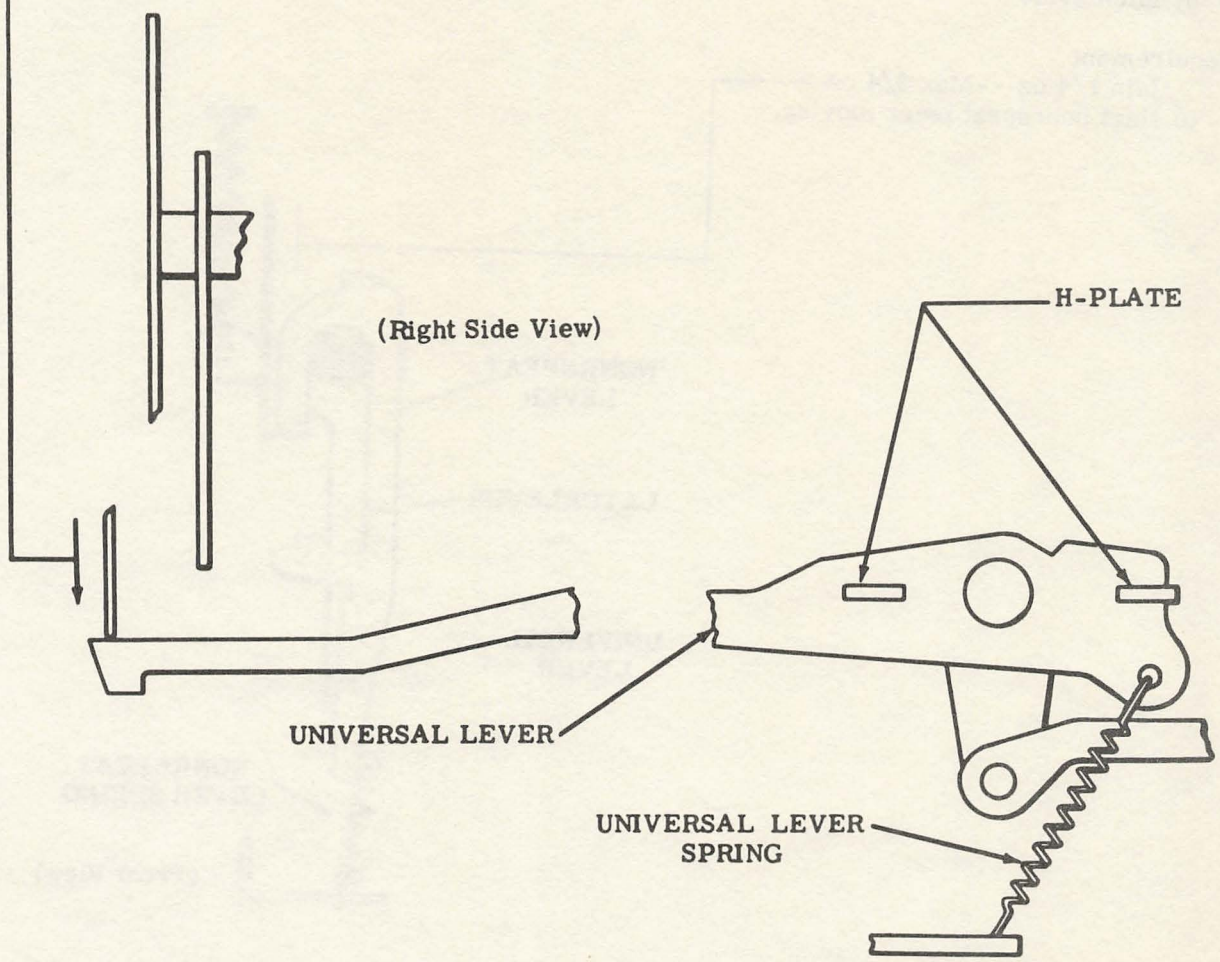


2.14 Universal Lever Spring

UNIVERSAL LEVER SPRING

To Check
Push universal lever down until latched by by latchlever. Hold reset bail away from universal lever.

Requirement
Min 1/2 oz---Max 1-1/2 oz
to start universal lever moving.



Note: Replace keyboard cover and reassemble keyboard (including H-plate) onto subbase. For reassembly instructions, see Section 574-100-702TC.

2.15 Latchlever Spring

LATCHLEVER SPRING

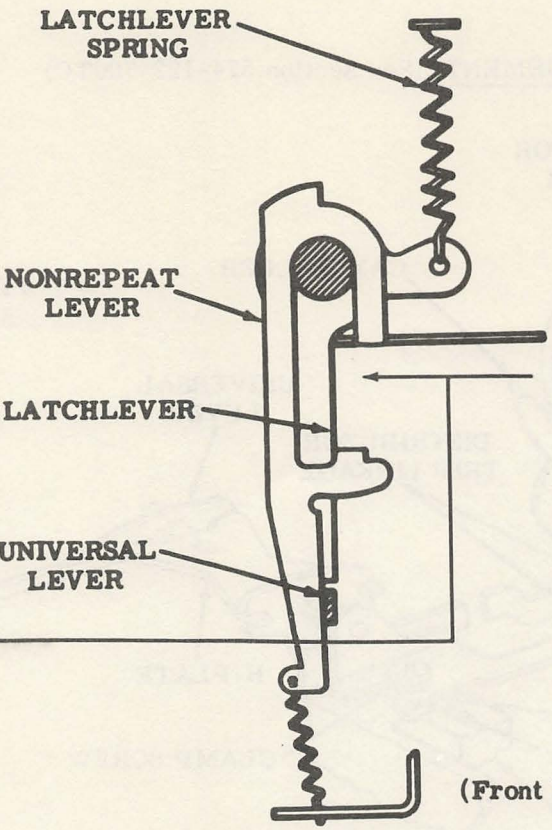
To Check

Place typing unit in stop condition. Trip distributor clutch and rotate main shaft until keyboard follower lever is moved by cam roller to its lowest point.

Requirement

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

Note: Replace call control unit onto subbase. For reassembly instructions, see Section 574-100-702TC.



(Front View)

2.16 Distributor Trip Linkage

Note: When making or checking this adjustment use either Method 1 or Method 2 (2.17). Do not intermix methods.

DISTRIBUTOR TRIP LINKAGE - Method 1
(Using the TP186308 keyboard adjusting gauge)

To Check

Place the typing unit in stop condition. Depress DELETE key to trip distributor clutch. From the front of the keyboard, manually push the universal lever down to its latched position. Place the TP186308 gauge on front of keyboard frame. Rotate distributor shaft until its cam post (LATE DESIGN) or cam roller (EARLY DESIGN) is on the high part of the cam follower lever camming surface.

Requirement

The top edge of the universal lever, which is now in the lowest position, should be within the thickness of the gauge's lower tab as gauged by eye.

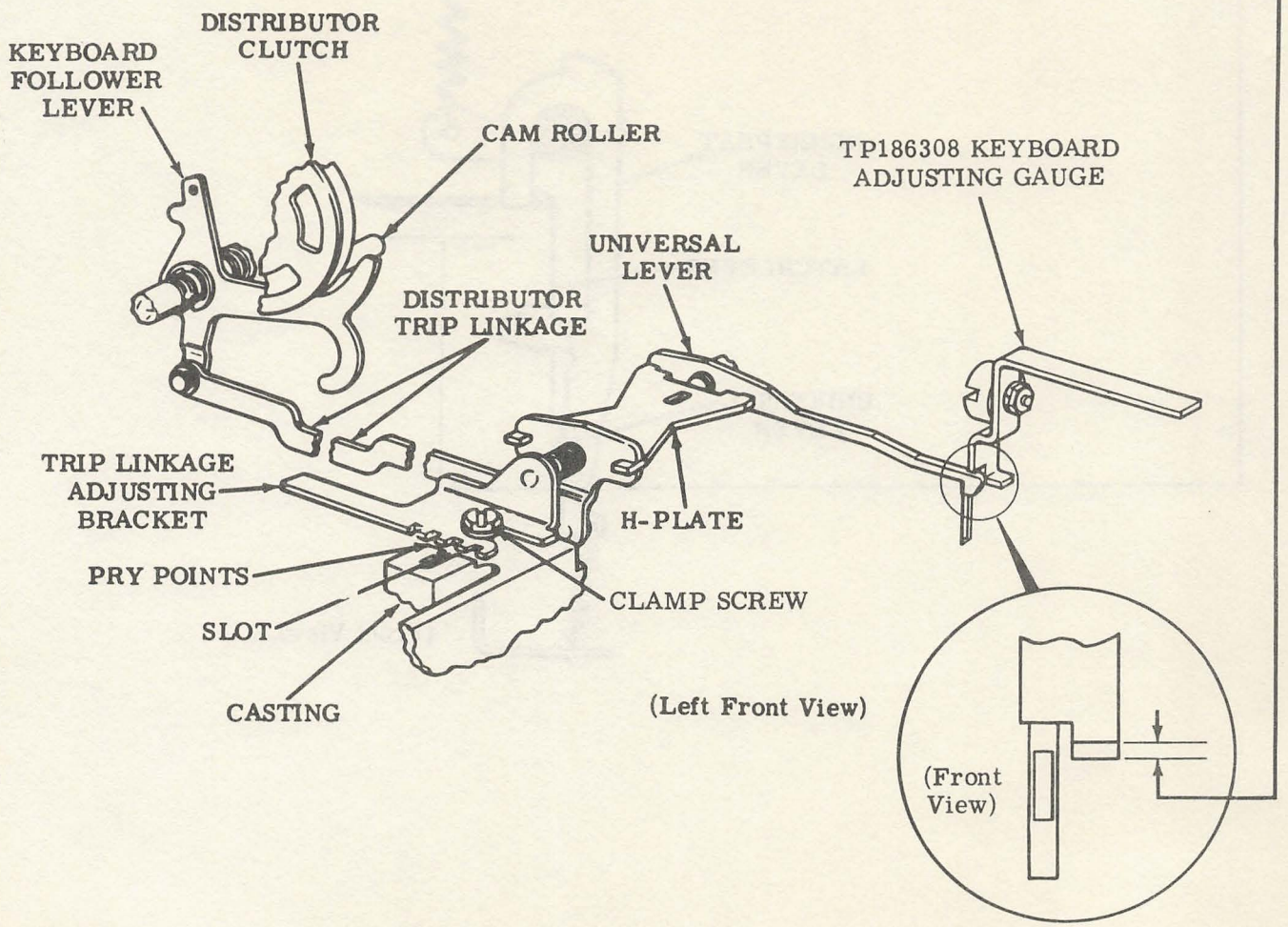
To Adjust

Loosen clamp screw friction tight. Using pry points and slot in casting position trip linkage adjusting bracket until requirement is met. Tighten clamp screw.

Related Adjustment

Affects

TRIP LEVER ENGAGEMENT (See Section 574-122-700TC)



2.17 Distributor Trip Linkage (continued)

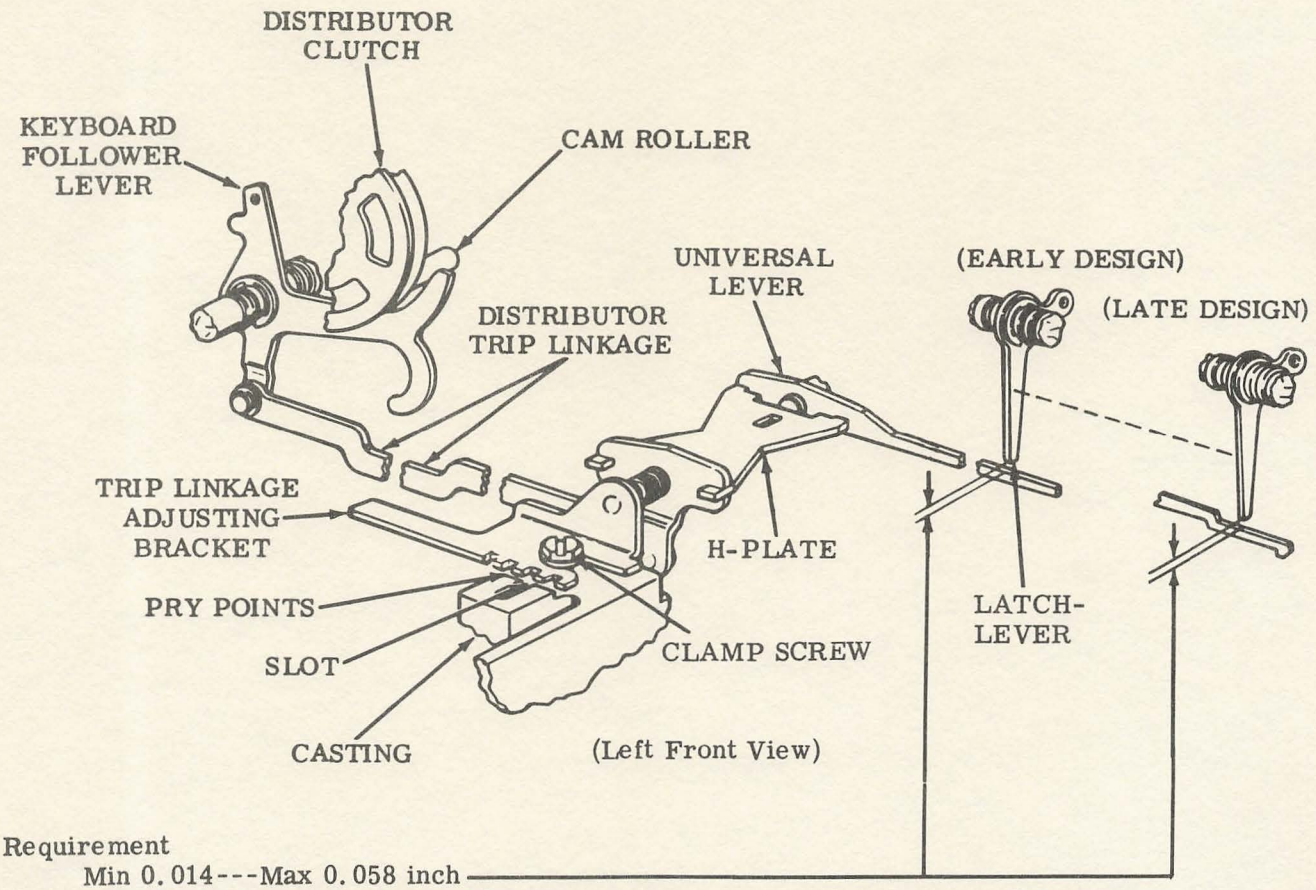
DISTRIBUTOR TRIP LINKAGE - Method 2
(Not using the TP186308 keyboard adjusting gauge)

Note 1: When making or checking this adjustment use either Method 1 (2.16) or Method 2. Do not intermix methods.

Note 2: The requirement applies to early and late design keyboards having the TP180086, TP182240, or TP185766 universal lever.

To Check

Place the typing unit in stop condition. Depress the DELETE key to trip the distrubutor clutch. Rotate the distributor shaft until the keyboard follower lever is on the high part of its cam. Push against reset bail spring anchor with just enough force to slightly move the reset bail, then release.



Requirement

Min 0.014---Max 0.058 inch between latchlever and universal lever.

To Adjust

Loosen clamp screw friction tight. Using pry points and slot in casting, position trip linkage adjusting bracket until requirement is met. Tighten clamp screw.

Related Adjustment

Affects

TRIP LEVER ENGAGEMENT (See Section 574-122-700TC)