32 KEYBOARD
ADJUSTMENTS

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1.03 The adjustments appear in a sequence that should be followed when a complete readjustment of the keyboard is made. No adjustment should be made without completely understanding the procedure. Therefore, read the entire procedure before making an adjustment.

Note: Disconnect power from keyboard before making any adjustment.

1.04 References to left, right, and front (Figure 3) are made viewing the keyboard from its normal operating position.

1.05 When a procedure calls for using pry points to make an adjustment, place a screwdriver between the points and pry as directed.

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. Note that some adjustments affect other adjustments. For example, see the DISTRIBUTOR TRIP LINKAGE (KBA-7) adjustment. Note that this adjustment affects the TRIP LEVER ENGAGEMENT (KBA-8) adjustment in Section 574-172-700TC. If the former adjustment is changed, check the latter adjustment.

1.08 The spring tensions specified are indications, not exact values. Therefore, to obtain reliable readings, measure spring tensions with spring scales placed in the positions shown on 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. Any springs that are indirectly measured should be replaced.

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one at a time, with the requirement checked each time a spring is replaced.

**Note 1:** The alphanumeric coding system is not used for spring adjustments.

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

1.09 With the keyboard and typing unit assembled on the subbase, adjustment procedures may specify that the typing unit be placed into the stop position. It is in the stop position when the selector armature is attracted (forward) and all clutches are disengaged. Furthermore, the keyboard will be latched (universal lever down and blocked from moving upward).

**Note:** The keyboard is tripped when the universal lever is up (unlatched).

1.10 To place the typing unit in the stop position hold the selector armature attracted (forward). Manually rotate the main shaft clockwise (as viewed from the left) until all clutches are in a stop position. Fully disengage all 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 latch lever 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.

**Note 1:** A stop position is where a shoe release 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 where the control lever is fully detented into the answer-back drum.

1.11 A clutch becomes engaged when a trip lever moves away from its shoe release lever. When moved up, a trip lever no longer holds a shoe release lever in its stop position. When the shoe release lever and stop-lug on the clutch disc move apart, the clutch shoes wedge against the drum to permit the shaft and the clutch assembly to turn together.
2. BASIC UNIT

2.01 Universal Link

Note: Remove keyboard and call control unit from subbase. For removal instructions, refer to Section 574-160-702TC.

![Diagram of Universal Link (KBA-1)]

**UNIVERSAL LINK (KBA-1)**

Requirement

Min 0.089 inch — Max 0.103 inch
between universal link and frame when universal lever is latched.

To Adjust

Place screwdriver through opening in front of frame and bend tab.
2.02 Contact Wires

**CONTACT WIRES — MARKING (KBA-2)**

To Check
Push universal lever down until latched by latchlever. Place T-levers down in marking position. Take up play of contact block in downward direction and release. Take up play of each contact wire in upward direction and release.

Requirement
Min 0.012 inch — Max 0.027 inch between the no. 1 contact wire (first reset-bail actuated contact wire from front of keyboard) and its associated terminal.
Min 0.018 inch — Max 0.032 inch between remaining marking contact wires and their associated terminals.

To Adjust
Bend contact wire with TP185829 bending tool at position shown.

**CONTACT WIRES — SPACING (KBA-3)**

To Check
Push universal lever down until latched by latchlever. Place T-levers up in spacing position. Trip keyboard by depressing universal codebar. Take up play of T-levers against universal lever and release. Take up play of contact block in downward direction and release. Take up play of each contact wire in upward direction and release.

Requirement
Min 0.020 inch — Max 0.040 inch between terminal and each contact wire previously adjusted in KBA-2.

To Adjust
Bend contact wire with TP185829 bending tool at position shown.

Note: Adjustment KBA-2 affects adjustment KBA-3.
2.03 Contact Block Spring and Contact Wire Spring

CONTACT BLOCK SPRING

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

*Note:* Check both front and rear contact block springs.

CONTACT WIRE SPRING

To Check
Latch universal lever. Place T-levers down
to marking position. Depress universal codebar.

Requirement
Min 3/4 oz — Max 1-1/4 oz
to start each contact wire moving away
from terminal.
2.04 Spacebar Spring and Keylever Spring

**SPACEBAR SPRING**

To Check
Latch universal lever. Depress spacebar and then release.

Requirement
Min 5 grams — Max 25 grams to start spacebar moving.

**KEYLEVER SPRING**

To Check
Latch universal lever. Depress any keytop and release.

Requirement
Min 5 grams — Max 30 grams to start selected keytop moving.

Note: Check each keylever spring.
2.05 HERE IS, BREAK, and REPT Keylever Springs

"BREAK" KEYLEVER SPRING

Requirement
Min 12 oz — Max 18 oz
to start keytop moving.

"HERE IS" KEYLEVER SPRING

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

"REPT" KEYLEVER SPRING

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

2.06 Reset Bail Spring

RESET BAIL SPRING

To Check
Latch universal lever. Depress LTRS keytop.

Requirement
Min 1-1/4 oz — Max 2-1/2 oz
to start reset bail moving.
2.07 LTRS-FIGS Detent Spring and Universal Link Spring

"LTRS-FIGS" DETENT SPRING

Note: This adjustment applies only to 4-row 5-level keyboards.

Requirement
With LTRS-FIGS T-lever either up in LTRS condition or down in FIGS condition
Min 1-1/2 oz — Max 3 oz
1-1/2 oz to 3 oz

to start detent wire spring moving away from LTRS-FIGS T-lever.

UNIVERSAL LINK SPRING

To Check
Latch universal lever. Trip keyboard by depressing universal codebar.

Requirement
Min 1/2 oz — Max 1-1/4 oz
1/2 oz to 1-1/4 oz
to start universal link moving.
2.06 Nonrepeat Lever Spring

Note: Remove keyboard cover. For disassembly instructions, refer to Section 574-171-702TC.

NONREPEAT LEVER SPRING

Requirement
Min 1/4 oz — Max 3/4 oz
to start nonrepeat lever moving with universal lever latched.

2.09 Universal Lever Spring

UNIVERSAL LEVER SPRING

To Check
Remove H-plate. Latch universal lever.

Requirement
Min 1/2 oz — Max 1-1/2 oz
to start universal lever moving while holding reset bail away from universal lever.

Note: Replace keyboard cover. For reassembly instructions, refer to Section 574-171-702TC.
2.10 Distributor Trip Linkage

DISTRIBUTOR TRIP LINKAGE — Method 1 (KBA-7)

Note 1: Use only Method 1 (2.10), or Method 2 (2.11). Do not intermix. Method 1 is preferred.

Note 2: Replace keyboard, H-plate, and call control unit onto subbase. For replacement instructions, refer to Section 574-160-702TC.

To Check
Place typing unit in stop position. Engage distributor clutch. From front of keyboard, latch universal lever. Attach gauge TP186308 to front of keyboard frame. Rotate distributor shaft until its cam post (late design) or cam roller (early design) is on high part of keyboard trip lever camming surface.

Requirement
Top edge of universal lever (now in lowest position) should be within thickness of lower tab of gauge as seen by eye.

To Adjust
Loosen clamp screw. Using pry points, position adjusting bracket until requirement is met. Tighten clamp screw.

Related Adjustment
Affects
TRIP LEVER ENGAGEMENT (KBA-8) in Section 574-172-700TC.
2.11 Distributor Trip Linkage (continued)

**DISTRIBUTOR TRIP LINKAGE — Method 2 (KBA-7)**

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

**To Check**
Place typing unit in stop position. Engage distributor clutch. Rotate distributor shaft until keyboard trip lever is on 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. Using pry points, position adjusting bracket until requirement is met. Tighten clamp screw.

**Related Adjustment**
Affects
- **TRIP LEVER ENGAGEMENT (KBA-8)** in Section 574-172-700TC.

![Diagram of Distributor Trip Linkage](image-url)
2.12 Latchlever Spring

LATCHLEVER SPRING

To Check
Place typing unit in stop position. Engage distributor clutch. Rotate main shaft until keyboard trip lever reaches its lowest point.

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

(Front View)