

IBM

ELECTRIC TYPEWRITERS MODELS C4 and C5 Executive

CUSTOMER ENGINEERING REFERENCE MANUAL Mechanical Principles and Adjustments

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ELECTRIC TYPEWRITERS

MODELS C4 and C5

(Serial 2,001,000 and above)

FEATURES COMMON TO MODELS C1 and B4

Several mechanisms of the Executive Typewriter Model C4 are common to either the Standard Model C1 and/or the Executive Model B4 with floating interposers. These mechanisms are listed below and will not be repeated in this section.

Case and Cover Sections
Keylevers, Letter Cams, Typebars
Resilient-Keyboard Control
Margin Reset
Margin Release
Paper Feed
Decelerator
Backspace
Ribbon, Fabric
Shift

CARRIAGE and RAILS

The Model C4 typewriter uses the Model C1 carriage. The rails are similar to the Model B4 but have been redesigned to incorporate the decelerator and other Model C1 improvements.

Removal

1. Remove the rear cover.
2. Remove the three interposer-bellcrank links and their springs.
3. Remove the interposer-bellcrank guide-comb.
4. Disconnect the tab operating link.
5. Disconnect the expander link, at the rear.
6. Unhook the escapement trip link.
7. Disconnect the backspace operating link at the bellcrank.
8. Disconnect the clutch unlatching link.
9. Remove the margin-reset lever assembly.
10. Disconnect the carriage tension-tape at the carriage.
11. Disconnect the carriage-return tape at the carriage.
12. Remove the four rail mounting screws and position the carriage at the extreme right.
13. Lift the carriage straight up while rotating it slightly to the right. Watch the interposer bellcranks carefully so as to avoid interference with other parts.

Adjustments

Refer to Model B1, Rail Adjustments.

SELECTION and ESCAPEMENT

The Model C4 selection and escapement mechanisms are the "Floating" interposer style with the escapement pawls arranged in numerical order. These mechanisms are functionally unchanged from the Model B4; however, the removal procedure and adjustment sequence have been altered because of the redesigned rear rail.

Removal

INTERPOSERS

The interposer cage assembly may be removed from the left rail-brace after first removing the carriage and rails as an assembly.

PAWL BLOCK ASSEMBLY

1. Remove the rear case and both carriage end-covers.
2. Remove the tab rack and margin rack.
3. Disconnect the pawl-aligning link, pawl-release link, and clutch-unlatching link.
4. Disconnect the pawl-aligning-lever spring.
5. Disconnect the tab check-lever spring.
6. Disconnect the tab latch spring.
7. Remove the spring from the escapement-pawl stop-strap to the interposer cage.
8. Remove the margin-control bellcrank.
9. Block the carriage to prevent movement and remove the two pawl-block mounting screws. The assembly may then be removed from the rear of the machine.

Adjustments

1. **BAIL SHAFT LINK.** Refer to Model B4, Selection Adjustment 2.
2. **SELECTOR - BAR - SUPPORT MOUNTING-PLATES.** Refer to Model B4, Selection, Adjustment 3.
3. **SELECTOR-BAR GUIDE-COMB.** Refer to Model B4, Selection, Adjustment 4.
4. **LOWER INTERPOSER - BELLCRANK GUIDE-BRACKET.** Refer to Model B4, Selection, Adjustment 5.
5. **INTERPOSER TO PAWL CLEARANCE.** Refer to Model B4, Floating Interposers, Adjustment 1.
6. **INTERPOSER VERTICALNESS.** Refer to Model B4, Floating Interposers, Adjustment 2.

7. **EXPANDER BELLCRANK.** Refer to Model B4, Floating Interposers, Adjustment 3.
8. **EXPANDER BELLCRANK ARM.** Refer to Model B4, Floating Interposers, Adjustment 4.
9. **TRIP LINK.** Refer to Model B4, Floating Interposers, Adjustment 5.

GROUPING

The grouping mechanism is identical with the late Model B4 machines. The adjustment procedure is altered due to the new tab mechanism.

Adjustments

1. **TAB LATCH ECCENTRIC.** Refer to Model C1, Tabulation, Adjustment 5.
2. **INTERMEDIATE PAWL-RELEASE LEVER.** Refer to Model B4, Grouping, Adjustment 2.
3. **PAWL CLEARANCE.** Refer to Model B4, Grouping, Adjustment 3.
4. **PAWL-RELEASE LEVER.** Form the angular tip at the left end of the pawl-release lever so that there is a clearance of .001" to .005" between the angular tip and the tab lever with the parts in their rest positions (Figure 1).

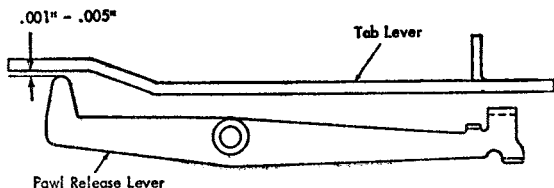


Figure 1. Pawl Release Lever

5. **GROUPING CONE.** Refer to Model B4, Grouping, Adjustment 4.
6. **GROUPING LEVER.** Refer to Model B4, Grouping, Adjustment 5.
7. **GROUPING LATCH MOUNTING STUD.** Refer to Model B4, Grouping, Adjustment 6.
8. **GROUPING LATCH ADJUSTING PLATE.** Refer to Model B4, Grouping, Adjustment 7a.

TABULATION

Model C4 executive tabulation varies from the Model C1 standard only in the area of the pawl-release-lever. This lever extends beyond its fulcrum point to the end of the tab-lever providing a smoother pawl release operation (Figure 2).

The same tab-lever is used on all pitch machines.

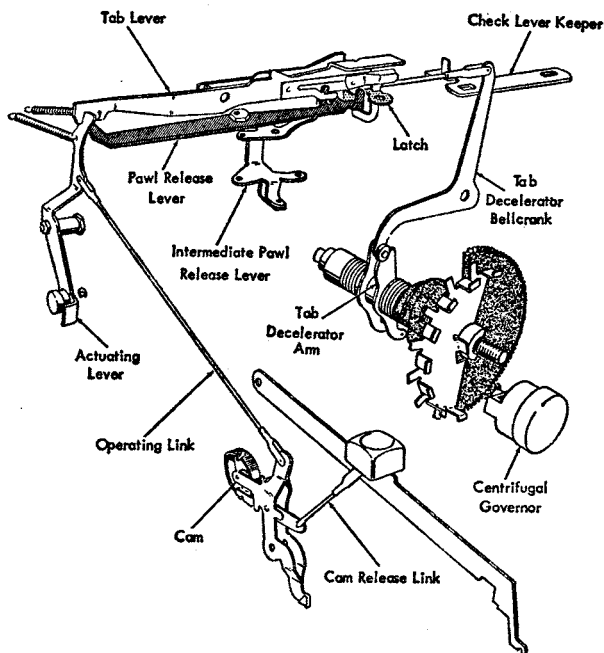


Figure 2. Tabulation

Adjustment

1. **TAB-LEVER PIVOT-STUD.** Refer to Model B4, Tabulation, Adjustment 1.
2. **CAM CLEARANCE.** Refer to Model C1, Space Bar, Adjustment 1.
3. **CAM RELEASE LINK.** Place the link in the lower hole of the release lever and the rear keylever-hole. Adjust the clevis to trip the cam when the keylever is depressed $\frac{1}{2}$ to $\frac{3}{4}$ of its downward travel.
4. **TAB RACK.** The tab rack must be carefully adjusted to satisfy three conditions:
 - A. **LEFT TO RIGHT.** With the carriage resting on the 1 or 5 escapement pawl, adjust the tab rack left or right until the tip of the tab check-lever is in line with the working surface of a set tab stop. The tab

check-lever must be held in its extreme left position when observing this adjustment (Figure 3).

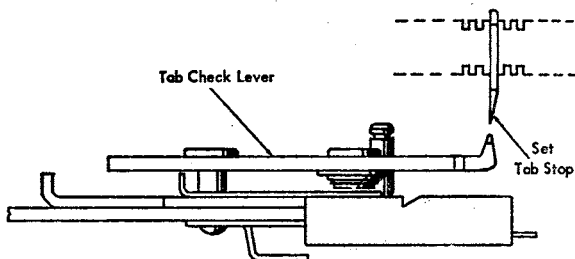


Figure 3. Tab Adjustment 4A

- B. PARALLEL TO RAILS.** Refer to Model C1, Tabulation, Adjustment 4B.
- C. PARALLEL TO CHECK LEVER.** Refer to Model C1, Tabulation, Adjustment 4C.
- 5. TAB LATCH ECCENTRIC.** Refer to Model C1, Tabulation, Adjustment 5.
- 6. TAB LATCH EXTENSION.** Refer to Model C1, Tabulation, Adjustment 6.
- 7. TAB CHECK-LEVER KEEPER.** Refer to Model C1, Tabulation, Adjustment 7.
- 8. OPERATING LINK.** Refer to Model C1, Tabulation, Adjustment 8.
- 9. TAB LEVER EXTENSION.** Refer to Model C1, Tabulation, Adjustment 9.
- 10. PAWL RELEASE LEVER.** Refer to Model B4, Grouping, Adjustment 3, and Model C4, Grouping, Adjustment 4.
- 11. DECELERATOR LINK.** Refer to Model C1, Tabulation, Adjustment 11.
- 12. CENTRIFUGAL GOVERNOR.** Refer to Model B1, Tabulation, Adjustment 10a.
- 13. TAB SET and TAB CLEAR.** Refer to Model B1, Tabulation, Adjustment 11, 12, 13, and 14.

CARRIAGE RETURN

The Model C4 carriage return employs the decelerator and improved clutch latch used on the Model C1 (Figure 4).

A simplified linkage permits the escapement pawls to remain in the escapement rack during repeat line spacing at the left margin. The pawl-release link ex-

tends from the clutch-latch bellcrank to the intermediate pawl-release bellcrank, that is riveted to the intermediate-pawl-release lever. This bellcrank extends toward the rear and engages a lug on the margin-control bellcrank. With the margin-control bellcrank in its rest position a pull on the pawl-release link rotates the intermediate-pawl-release lever assembly causing pawl release.

When the carriage is at the left margin the margin-control bellcrank is in its operated position. A pull on the pawl-release link at this time will rotate the intermediate-pawl-release bellcrank about its mounting rivet without operating the intermediate-pawl-release lever or causing pawl release.

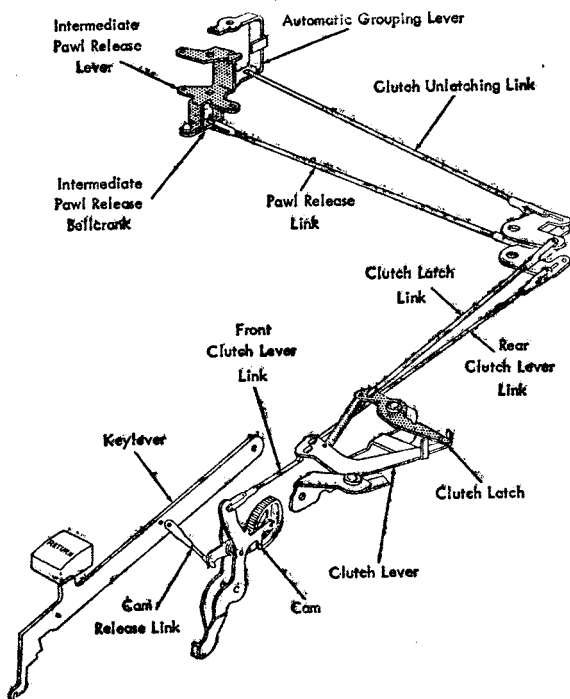


Figure 4. Carriage Return Mechanism Adjustments

1. CAM CLEARANCE. Refer to Model C1, Space Bar, Adjustment 1.

2. **CAM RELEASE LINK.** Refer to Model C1, Carriage Return, Adjustment 2.
3. **FRONT CLUTCH LEVER LINK.** Refer to Model C1, Carriage Return, Adjustment 3.
4. **REAR CLUTCH LEVER LINK.** Refer to Model C1, Carriage Return, Adjustment 4.
5. **CLUTCH LATCH LINK.** Adjust the link so that with the clutch unlatched the slot in the bellcrank is parallel to the rear rail.
6. **MARGIN CONTROL PLATE.** Refer to Model B4, Carriage Return, Adjustment 7.
7. **CLUTCH UNLATCHING LINK.** Refer to Model C1, Carriage Return, Adjustment 6.
8. **MARGIN CONTROL BELLCRANK STOP.** Position the eccentric washer so that the intermediate-pawl-release bellcrank engages the ear on the margin control bellcrank by the thickness of its own metal. The carriage should be away from the left margin when checking this adjustment (Figure 5).

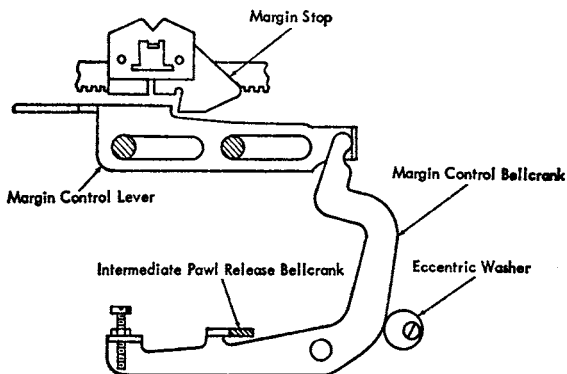


Figure 5. Margin Control Bellcrank Stop

9. **PAWL RELEASE LINK.** Refer to Model B4, Carriage Return, Adjustment 9.
10. **MARGIN RACK.** Refer to Model B4, Carriage Return, Adjustment 10.
11. **CLUTCH PLATE CLEARANCE.** Refer to Model B1, Carriage Return, Adjustment 18.
12. **COMPRESSION SPRING.** Refer to Model C1, Carriage Return, Adjustment 12.
13. **MARGIN CONTROL DECELERATOR SCREW.** Refer to Model C1, Carriage Return, Adjustment 13.

14. CARRIAGE RETURN TAB INTERLOCK. Refer to Model B4, Carriage Return, Adjustment 6.

SPACEBAR

The Model C4 spacebar mechanism is the same as that used on the Model B4. The three unit spacebar incorporates the repeat/non-repeat mechanism.

Adjustments

1. **CAM CLEARANCE.** Refer to Model C1, Spacebar, Adjustment 1.
2. **CAM RELEASE LINK.** Adjust the cam-release link so that the cam will repeat when the spring loaded plunger is depressed $\frac{1}{16}$ ".
3. **STOP BRACKET.** Adjust the three-unit spacebar stop bracket to allow the cam to reset just before the keylever contacts the stop bracket.
4. **THREE-UNIT SPACEBAR INTERPOSER LINK.** Refer to Model B4, Spacebar, Adjustment 3.
5. **ACTUATING LEVER LINK.** Refer to Model B4, Spacebar, Adjustment 4.
6. **OPERATING LINK.** Refer to Model B4, Spacebar, Adjustment 5.

PROPORTIONAL CARBON RIBBON FEED

The proportional carbon-ribbon feed employed on the Model C4 typewriter is a combination of the Model C1 carbon-ribbon mechanism and the proportional carbon-ribbon feed selector-mechanism used on the Model B4 machines.

Adjustments

1. Refer to Model C1, Carbon Ribbon mechanism for the supply and take-up spool adjustments.
2. Refer to Model B4, Proportional Carbon Ribbon, Adjustments 8 through 12 for the selector mechanism.