## 28 Teletypewriter Cabinets - For KSR and RO Sets

### Adjustments

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1. GENERAL

1.01 This section provides instructions for adjusting the 28 teletypewriter cabinets designed to house the Keyboard Send-Receive and the Receive-Only teletypewriters.

1.02 In this issue, cabinets for the Automatic Send-Receive Sets have been removed. Wall-mounted cabinets for housing single 28 KSR or RO sets have been added, multiple page printer cabinets for housing three or four printer sets have also been added. Since this is a general
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revision, marginal arrows ordinarily used to indicate changes and additions have been omitted.

1.03 Most cabinet adjustments are initial adjustments that are made at the factory and do not require routine adjusting unless mounting screws have become loosened or parts have been removed and replaced. Adjustments most likely to need checking or remaking are outlined and illustrated herein. The figures show the adjusting tolerances, positions of moving parts, and spring tensions. Where an illustration shows interrelated parts, the sequence that should be followed in checking the requirements and making the adjustments shown is indicated by the letters (A), (B), (C), etc.
2. ADJUSTMENTS

LAC — 28B through 28E and 28J Teletypewriter Cabinets

2.01 Dome

(A) DOME

(1) Requirement
The dome should be centered on the cabinet from right to left and placed
Min 3/16 inch---Max 1/4 inch from the front edge of the cabinet.

To Adjust
Position the dome with the six nuts which secure the dome hinges to the dome loosened. Tighten the nuts.

(2) Requirement
There should be a light-proof seal at the rear of the dome between the rubber gasket and the top edge of the cabinet.

To Adjust
Position the dome downward with the six nuts, which secure the dome hinges to the cabinet, loosened. Tighten the nuts.

(B) DOME CATCH

(1) Requirement
The dome should latch securely with a light-proof seal at the front of the dome between the rubber gasket and the top edge of the cabinet.

(2) Requirement
The dome catch should unlatch when the catch button is depressed no deeper than the outer surface of the dome.

To Adjust
Bend the two dome catches.

(C) SMALL DOOR CATCH

(1) Requirement
The small door should securely latch.

(2) Requirement
When the door is released from its catch it should spring open at least 1/2 inch.

To Adjust
Bend the small door catch. Recheck rear of door to make certain it is flush with or slightly above the dome.
(A) SMALL DOOR

Requirement
The small door should be centered from right to left. It should be positioned so as to provide a light tight seal between the rubber gasket and the ledge of the dome at all points.

To Adjust
Loosen the two nuts that secure detent bracket to dome bracket. Loosen the two nuts that secure detent arm to hinge extension. Loosen the four nuts that secure door hinges to dome bracket. Push hinges against dome bracket and tighten the four nuts that secure hinges to dome bracket. If the above requirements cannot be met, loosen the four nuts that fasten the door hinge to hinge extension. Position door flush with or slightly above dome so that the above requirements are met. Tighten the four nuts.

(B) DETENT ARM AND DETENT BRACKET

Requirement
With the dome closed, the small door should spring open at least 1/2 inch when released from its catch. The small door should remain in its detented position when the dome is opened into its fully raised position.

To Adjust
Position the detent arm and the detent bracket by means of their elongated mounting holes. Tighten the four nuts. If necessary reposition the detent arm. Recheck all nuts for tightness.

(C) SMALL DOOR STOP ARM

Requirement
Stop arm should be free of binds when door is opened or closed.

To Adjust
Loosen the stop arm bracket mounting screws. Close the door. Disconnect the torsion spring. Align stop arm for freeness and tighten mounting screws with door closed. Replace torsion spring.

(D) COUNTERBALANCE

Requirement
The dome should remain in its maximum open position and not close unless moved manually.

To Adjust
Turn the spring adjusting screw. (See Par. 2.01.)
2.03 Copyholder, Copy Lamp

(A) COPYHOLDER

Requirement
There should be sufficient tension on the line guide to hold copy in place and to prevent the line guide from slipping down its shaft. Line guide should be parallel to copyholder tray.

To Adjust
Remove the mounting screws or nuts from the line guide shaft and turn the shaft. Remount the shaft and tighten screws or nuts. Bend line guide to make it parallel to copyholder.

(B) WINDOW AND PAPER GUIDE (For cabinets housing friction feed typing units)

(1) Requirement
When the small door is opened or closed, the window should clear paper guide by 1/16 inch.

Note: 0.080 to 0.110 inch on skin tight cabinet. (See Par. 2.16.)

To Adjust
Position window with its retainer screws loosened. Check to see that gasket is between glass and metal surface.

(2) Requirement
With small door closed, the bottom edge of the paper guide should be
Min 7/64 inch—Max 9/64 inch below bottom surface of window.

To Adjust
Position the paper guide with its mounting screws loosened.

(C) INDICATOR LAMP

Requirement
Clearance between indicator lamp and lens — approximately 1/16 inch.

To Adjust
Position lamp holder on its bracket with mounting screws loosened.

(D) COPY LAMP

Requirement
Clearance between copy lamp and cover approximately 1/16 inch.

To Adjust
Position lamp holder on its bracket with its mounting nut loosened. (On skin tight cabinets, rotate shield for desired illumination.)
2.04 Form Guide

Note: The following four adjustments are for cabinets housing sprocket feed typing units.

FRONT FORM GUIDE

Requirement
With typing unit in cabinet and large and small doors latched, clearance between the lower edge of the front form guide and the platen should be
Min 3/64 inch---Max 5/64 inch

To Adjust
Loosen the form guide mounting screws. Press the paper guide against the platen, then raise the form guide parallel to the platen.

REAR FORM GUIDE

Requirement
With a sheet of sprocket feed paper placed in the form guide and pushed to the right (rear view) against the guide bracket, the clearance between the left edge of the paper and the guide post should be
Min 3/64 inch---Max 5/64 inch

To Adjust
Position the guide post with its mounting nut loosened.
2.05 Form Guide (continued)

Requirement
Small door open and positioned so that clearance between front form guide and window is at minimum clearance.
Min 0.060 inch---Max. 0.080 inch

To Adjust
Position window with four window retainer mounting screws loosened.

Note: If stapled paper is used, staples should pass freely through slot. If they do not, increase clearance as required.
2.06 Signal Bell and Cradle

(A) ARMATURE SPRING TENSION

Requirement

Min 1/2 oz Max 1 oz

to push the armature against the core (vertically).

(B) REMOTE SIGNAL BELL

Requirement

Armature held against the magnet core. Clearance between the armature ball and the bell

Min 0.020 inch Max 0.035 inch

To Adjust

Bend the armature extension just below the armature spring.

(C) CRADLE

Requirement

Top of hinge bracket parallel to top of hinge bar.

To Adjust

Turn stop screw with locknut loosened.

STOP SCREW

LOCKNUT

HINGE BRACKET

HINGE BAR

ARMATURE BALL

ARMATURE SPRING

ARMATURE

BELL
2.07 End-Of-Form Alarm Mechanism and Low-Paper and Paper-Out Switch Assembly

END-OF-FORM LEVER

Requirement
End-of-form lever should move freely between typing unit and paper guide on the cabinet. Check with dome closed and small door open.

To Adjust
Position end-of-form lever forward or backward with its clamp screws loosened and up or down with end-of-form assembly mounting screws loosened.

LOW-PAPER AND PAPER-OUT SPRING

Requirement
Min 1/4 oz---Max 1-1/2 oz to pull the low-paper and paper-out levers up to point where switches operate.
2.08 Off-Set Copyholder Mounting Screws

(A) Pivot Arm and Line Guide

(1) Requirement
There should be sufficient tension on the pivot arm to hold it in the desired position.

To Adjust
Tighten the bearing plate mounting screws.
(6) Requirement
There should be sufficient tension on the line guide to prevent it from slipping down its pivot arm.

To Adjust
Remove the lower bearing plate. Remove the screw from the bottom of the pivot arm. Slip the line guide off the pivot arm. Rotate the bushing in the line guide to increase the tension of the torsion spring. Reassemble.

(B) Copyholder Bracket and Top Bracket Alignment on Table Mounted Cabinet (Not Illustrated)

Requirement
With lower bracket in forward position, the hole in the top bracket should align with the top hole in copyholder bracket.

To Adjust
Position lower bracket along its elongated mounting holes by means of its two nuts.

2.09 Directory Holder (TWX)

Directory Holder (Table Cabinet)

Requirement
The directory holder should fit snugly against the wall of the cabinet.

To Adjust
Loosen the four bottom inner set of nuts which secure the shock mounts and the holder. Push the holder against the wall of the cabinet and tighten the nuts.
Note: Rest cabinet on a level floor when making the following adjustments.

(A) **PRINTER COVERS**

1. **Requirement**
   - Generally, all gaps around the covers should be equal within ± 1/16 inch.

2. **Requirement**
   - With covers closed, clearance between top edge of covers and bottom edge of adjacent covers should be approximately 1/16 inch. Covers must not touch when being opened.

3. **Requirement**
   - With covers closed, side clearance between covers and adjacent covers should be approximately equal.

**To Adjust**
- Position the covers with their hinge nuts friction tight.

   Note: Clearance between lower edge of bottom cover and center cross brace should be Max 1/4 inch.

   To Adjust
   - Refine (2) above with larger gap beginning at top cover.
2.11 Printer Cover continued

(A) **TOP AND MIDDLE PRINTER COVER DEPTH**

**Requirement**
With printer covers in closed position, their left and right outer surfaces should be flush with or no more than 1/16 inch below left and right flanges of cabinet shell.

**To Adjust**
Position printer covers with their respective four hinge bracket mounting screws friction tight.

(B) **PAPER GUIDE**

**Requirement**
Bottom edge of paper guide should be flush with bottom surface of window.

**To Adjust**
Position paper guide with three mounting screws loosened.

(C) **WINDOW**

**Requirement**
Clearance between paper and paper guide when closing the paper access door should be
Min 1/16 inch

**To Adjust**
Position window with four window retainer screws loosened. Make sure gasket is between glass window and metal surface.
2.12 Cover Latches

**PRINTER COVER LATCHES**

(1) Requirement
   With cover in closed position, bolts should touch striker plates.

(2) Requirement
   Bolts should engage striker plates by a minimum of 1/16 inch.

***To Adjust***

(1) With cover open and striker plate mounting screws friction tight, move striker plates toward front of cabinet. Close cover and open paper access door. Position striker plates to meet (1) above. Close paper access door. Carefully move printer cover thumbscrews toward each other and open printer cover. Tighten striker plate mounting screws.

(2) Close cover and open paper access door. Remove cover thumbscrews and their lockwashers from extensions. With their locknuts loose, rotate extensions to move bolts right or left as required. Align tapped hole in extension with hole in cover. Replace thumbscrews and lockwashers. Tighten extension locknuts.
2.13 Shelf Slide Stops

(A) SLIDE STOPS

(1) Requirement
With each printer unit in rearmost position, center of typing unit platen should be in line with front edge, plus or minus 1/16 inch, of printer cover above it for the upper two typing units.

(2) Requirement
Center of platen of bottom typing unit should be in line with front edge of cover above it within 1/16 inch forward - 3/16 inch rearward.

To Adjust
(1), (2): Open cover and loosen slide mounting screws friction tight. Position slide, base and typing unit to meet requirement.

Note: This adjustment affects carriage return and line feed lever adjustments. Therefore, if slide stops are readjusted, carriage return and line feed levers should also be re-adjusted.

(B) CARRIAGE RETURN AND LINE FEED LEVERS

Requirement (each printer cover)
With printer cover closed
Min 3/32 inch---Max 5/32 inch clearance between head of lever adjusting screw and rear surface of keylever mounting bracket.

To Adjust
Depress keylever assembly and rotate it 90 degrees. Remove keylever assembly and keylever spring. Close cover and turn lever adjusting screw, accessible through hole in cover, to meet requirement.
2.14 Paper Winder

(PAPER SPINDLE CYLINDER REGULATING BUSHING)

To control the tension of the cylinder on the right hub, position regulating bushing to the right or left with its set screw loosened.

(PAPER SPINDLE SHAFT ENDPLAY)

Requirement
Clearance between shoulder of shaft and friction drive assembly should be 1/32 inch. Left end of shaft should touch wick in friction drive assembly.

To Adjust
Position bearing bracket by means of elongated mounting holes.

(FRICTION CLUTCH TORQUE)

Requirement
After running paper winder ten minutes with cylinder held stationary it should require
Min 5 ozs---Max 7 ozs
to hold cylinder stationary against rotation by driven pulley.

To Adjust
Position capstan nut with locknut loosened.

(WINDER ASSEMBLY)

Requirement
Equal clearance between edges of paper and spindle flanges.

To Adjust
Thread paper around platen of typing unit. Grasp edges of paper as it comes around top of platen roller and align them with edges of paper being fed into platen. Pull top free edge of paper so there is no slack and lock paper on platen. Feed paper manually until it can be threaded onto winder cylinder. Move winder assembly with its mounting screws loosened to get equal clearance between both edges of paper and spindle flanges.
2.15  Paper Winder continued

(A)  PULLEY ALIGNMENT

Requirement
Projected plane of each pulley should be in line with each other and parallel to side frame.

To Adjust
Loosen driver pulley adjusting screw. Move in or out to meet requirement. Tighten screw.

(B)  BEARING BRACKET ADJUSTMENT

Note: The intermediate gear bracket adjustment should be made before making this adjustment. See appropriate section covering adjustments for keyboard and base.

Requirement
Bearing bracket should be position so that center line of intermediate shaft extension will coincide with center line of intermediate shaft in both horizontal and vertical planes.

To Adjust
1. Horizontal - Loosen mounting bracket screws to friction tight. Loosen set screws in flexible coupling and slide coupling toward pulley end of shaft so opposite end of shaft is visible. Position bracket to align shaft extension with intermediate shaft on keyboard base.

LPC (Skintight) — 28A Teletypewriter Cabinets

2.16 Dome

(A) **DOME CENTERING**

1. Requirement
   The dome should be centered from side to side on the cabinet.

2. Requirement
   Front edge of dome should fit flush to front edge of cabinet.

To Adjust
   Position the dome with the six dome hinge nuts loosened.

(B) **SMALL DOOR**

1. Requirement
   Door should be flush with to 3/32 inch above dome.

2. Requirement
   Door should be parallel to dome within 3/32 inch.

To Adjust
   Position door with the four hinge extension nuts loosened.

For the following adjustments see Par. 2.03.

(C) **PAPER GUIDE**

*(D) **WINDOW** (Also see Par. 2.03)

Requirement
   As small door is opened, it should clear projection on rear lid by
   Min 0.005 inch—Max 0.015 inch

To Adjust
   Position the window with its mounting screws (4) loosened.

(E) **INDICATOR AND COPY LAMPS**

(F) **COPYHOLDER**
2.17 Hinge Mount

WALL MOUNTED PRINTER CABINET

Requirement
With keyboard (or receiving-only base), printer and motor unit installed, the hinge shall be perpendicular to side plate - gauge by eye. Check both sides.

To Adjust
Position right and/or left hinge upward or downward with its mounting screws loosened.

Note: See Par. 2.21 for the path of the paper supply.
2.18 Keytop Guide Plate

**KEYTOP GUIDE PLATE COVER (SEND-RECEIVE UNIT)**

**Requirement**
With cover installed, clearance between keytop guide plate and its cover
Min 0.090 inch—Max 0.125 inch

**To Adjust**
With nuts that secure cover mounting bar loosened, lower screws and eccentric clamp screws loosened, position eccentric.

**KEYTOP COVER (RECEIVE-ONLY UNIT)**

**Requirement**
With cover in place, power switch shall be centrally located in its cover opening.

**To Adjust**
With nuts that secure cover mounting bar loosened, lower screws and eccentric clamp screws loosened, position eccentric.
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2.19 Keytop Guide Plate continued

KEYTOP GUIDE AND COVER (SEND-RECEIVE UNITS)

(1) Requirement
With cover in place, clearance between rear edge of keytop guide and lip of cover
Min 0.090 inch—Max 0.0125 inch

(2) Requirement
Clearance should be approximately equal at each end.

(1) To Adjust
With nut which secures large central mount loosened, position upper support bar.

(2) To Adjust
With four bolts that secure lower support bar loosened, position lower support bar.

POWER SWITCH

Requirement
With cover panel in place, surface of switch toggle lever (1) in ON position
(2) in OFF position should be flush with top surface of cover (gauge by eye).

To Adjust
With cover removed, position switch with its adjusting screws loosened.

Note: Should additional adjustment be needed, loosen bolts securing large central mounting bracket, and position upper bar.
2.20 Carriage Return, Line Feed, Break Lever and Door Hinge

(A) CARRIAGE RETURN/LINE FEED/ AND BREAK LEVER (RECEIVE-ONLY UNIT)

Requirement
With cover in place, clearance between top surface of respective lever adjusting screw and outer surface of cover
Min 7/8 inch—Max 15/16 inch

To Adjust
Remove each keylever assembly (3) from cover (see Par. 2.18). Then replace cover and position each adjusting screw through hole in cover (slot in screw should be horizontal after adjusting).

(B) WINDOW DOOR HINGE MOUNTS

Requirement
Window door should lie flat on right and left supporting edge of cabinet (gauge by eye).

To Adjust
With hinge mounting nuts (2) loosened, position the door.

(C) LOWER DOOR HINGE MOUNTS

Requirement
Door should lie flat against cover.

To Adjust
With each hinge mounting nut (2) loosened, position the door.

(D) LOWER DOOR LATCHES

Requirement
Door should latch firmly and lie flat against cover.

To Adjust
With magnetic latch mounting screws loosened, position the latch.

SMALL COPYHOLDER (WITH LINE GUIDE)
Requirement—Refer to Par. 2.03.
2.21 Window and Paper Guide

**WINDOW**

Requirement
With small door closed, parallel clearance between paper guide and edge of window
Min 0.080 inch—Max 0.110 inch

To Adjust
With window clamp mounting screws loosened (4), position the window.

**PAPER GUIDE**

Requirement
With typing unit in place, large and small doors latched, clearance between paper guide and platen
Min 3/64 inch—Max 5/64 inch

To Adjust
With paper guide mounting screws loosened, position guide parallel to platen.

**COPY LAMPS**

Requirement
With cover and light shield in place, clearance between lamp assembly and cover should be at least 1/16 inch.

To Adjust
Bend the bracket.

**PATH OF PAPER**

Requirement
With cover and light shield in place, clearance between lamp assembly and cover should be at least 1/16 inch.

To Adjust
Bend the bracket.