

32 AND 33 TAPE READER

ADJUSTMENTS

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1. GENERAL

1.01 This section is issued to provide adjustment and maintenance information for the 32 and 33 tape reader and to present the information as a separate section. All information included in this section applies equally well to 5- and 8- level tape readers except where noted.

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.

Note: The configuration of an illustration or line drawing does not necessarily indicate that it and its associated text are exclusively applicable to a particular tape reader.

Required tools, not supplied with 32 or 33 Teletypewriter Sets, are listed in the appropriate maintenance tools publication.

1.03 The sequence in which the adjustments appear is that which should be followed when a complete readjustment of the tape reader 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.

1.04 References to "left," "right," "front," "rear," etc consider the tape reader to be viewed from a position where the feed wheel faces up and the lid latch is located to the viewer's right. Orientation references to the clutch trip area consider the armature extension to be facing up with the contact bracket pry points located to the viewer's right.

REPLACING PAGE ADDENDUM

Filing Instructions

1. Remove from the section the pages numbered the same as those attached to this sheet.
2. Insert the attached pages into the section in their place.
3. Place this sheet ahead of Page 1 of the section.

32 AND 33 TAPE READER

ADJUSTMENTS

1. GENERAL

1.001 This addendum supplements Section 574-124-700, Issue 1. The attached page must be inserted into the section in accordance with the filing instructions above.

1.002 This addendum is issued to make changes in text. Changes and additions are indicated by arrows in the margins.

Attached:
Page 13, dated February 1965, revised
Page 14, dated February 1965, revised

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

1.06 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.

1.07 If parts are removed from the tape reader 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.

1.08 Related adjustments are listed with some of the adjustment text and are primarily intended to aid in trouble shooting the equipment. As an example, suppose that in searching

for a trouble it is discovered that the BLOCKING PAWL (Tape Reader Area) adjustment does not meet its requirement. Under "Related Adjustment," it is indicated that this adjustment is affected by the DETENT LEVER (Tape Reader Area) and FEED PAWL (Tape Reader Area) adjustment. Check these to see if either is the cause of the trouble. Also, note that certain adjustments affect other adjustments. For example, see the DETENT LEVER (Tape Reader Area) adjustment. Note that this adjustment affects the FEED PAWL (Tape Reader Area) and BLOCK PAWL (Tape Reader Area) adjustments. If the former adjustment is changed, check the latter adjustment.

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

TAPE READER AREA

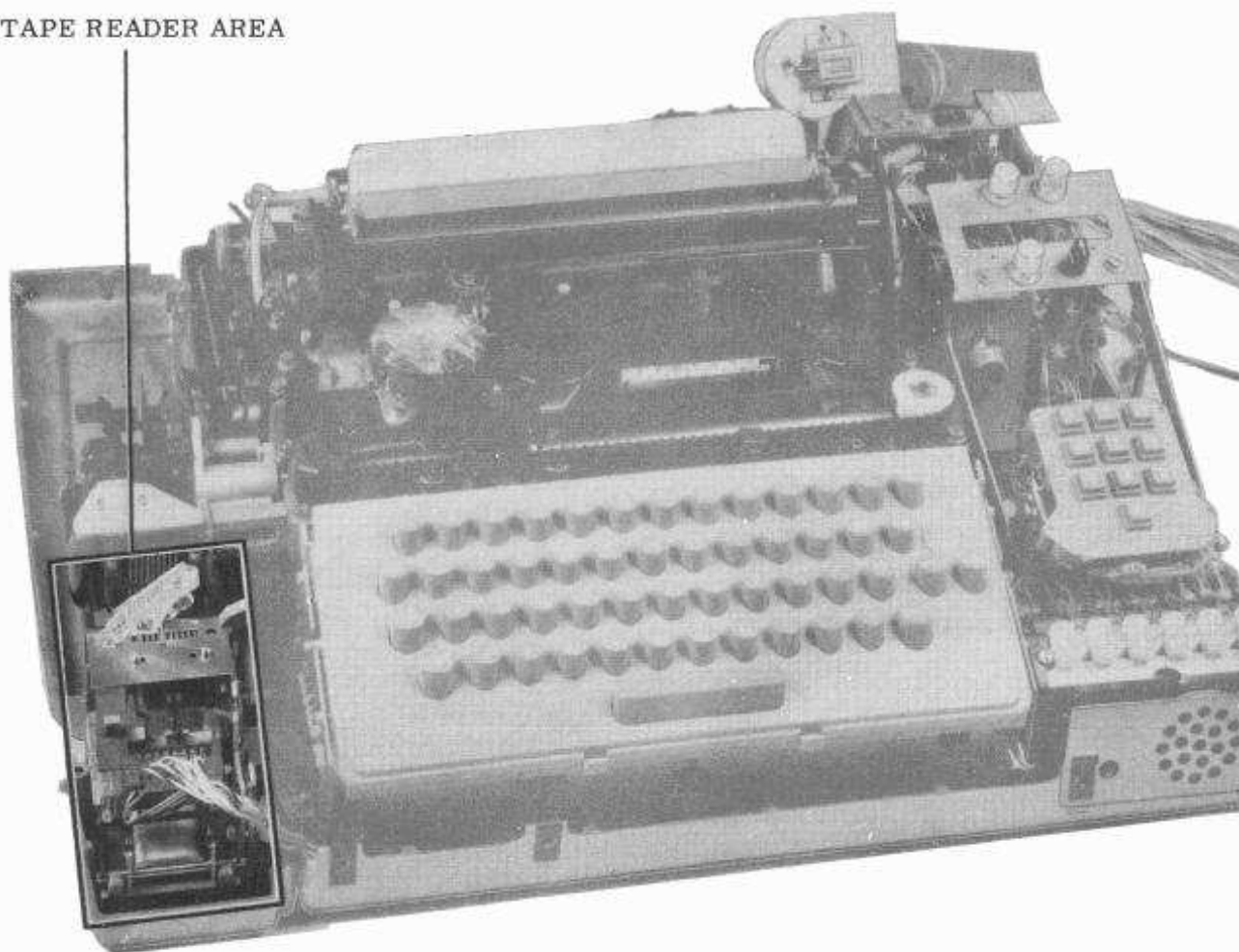


Figure 1 — Tape Reader Area

spring scales placed in the positions shown on pertinent line drawings. Springs that do not meet their requirements shall be replaced by new ones. Only those springs that directly affect the operation of the tape reader 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 1: Use spring scales which are recommended by the manufacturer of 32 and 33 Teletypewriter Sets and found in the appropriate maintenance tools publication.

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

1.10 Certain adjustments specify that an armature is to be in its attracted position prior to checking a requirement. This refers to an armature's position when it is magnetically attracted to its magnet core. When an armature is to be in its attracted position while making an adjustment, place it there manually.

CAUTION: THE TAPE READER FEED MAGNET OPERATES UNDER HIGH VOLTAGE. PRECAUTIONARY MEASURES SHALL BE TAKEN WHENEVER POWER TO THE TAPE READER IS TURNED ON. HIGH VOLTAGE FROM THE POWER PACK WILL CONTINUE UNTIL APPROXIMATELY 10 SECONDS AFTER THE TAPE READER HAS BEEN DISCONNECTED.

1.11 After paper tape has been removed from the tape reader to facilitate the making of adjustment(s) and/or it is necessary to

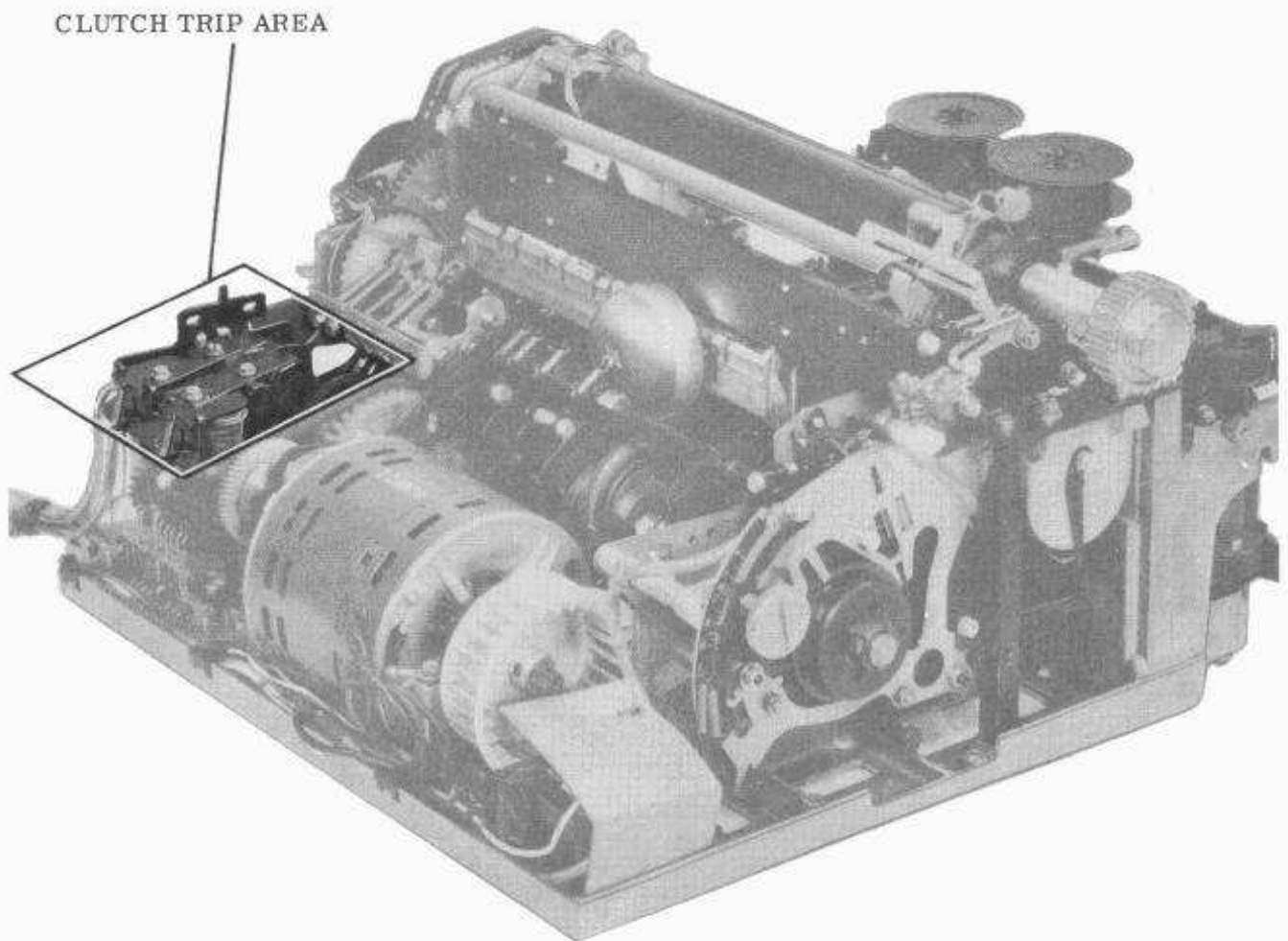


Figure 2 — Clutch Trip Area (Without Reader Feed Magnet Contact Assembly)

insert into the tape reader the paper tape originating from the tape punch, allow enough slack in the paper tape between the tape punch and the tape reader so that the tape reader tape lid can be easily closed.

Note: The FREE position of the control lever is used to facilitate the insertion and/or removal of paper tape from the tape reader. However, do not place the control lever directly into the FREE position while the tape reader is operating under power. Place the control lever into the STOP position and wait until after the tape reader has stopped before moving the control lever beyond the STOP position and into the FREE position.

1.12 All adjustments in the "clutch trip area" shall be started with the typing unit 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.

1.13 To place the typing unit in the stop condition, hold the selector armature in its attracted (frontward) position. Rotate the main shaft clockwise (as viewed from the left) until all clutches are in a stop position. Fully disengage all of the clutches as instructed in 1.14 below.

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 answer-back drum is in its home position, which is the position where the control lever is fully detented into the indent on the answer-back drum.

1.14 When disengaged, a clutch is latched so that a shoe lever is held in its stop position by a trip lever while a corresponding latch-lever is seated in a notch of the clutch disc. This allows the clutch shoes to release their tensions on the clutch drum. With all clutches disengaged, the main shaft will turn freely without any clutch shoes dragging.

Note: If the shaft is turned by hand, a clutch will not fully disengage upon reaching a stop position. Where an adjustment procedure requires disengagement, rotate the clutch to a stop position, apply a screwdriver to the associated stop-lug, and push the clutch disc in

the normal direction of main shaft rotation until the corresponding latch-lever seats in its clutch disc notch.

1.15 A clutch is engaged when a trip lever is moved up so that it no longer holds a shoe lever in its stop position. When this action occurs, the shoe lever and a stop-lug on the clutch disc move apart, and the clutch shoes wedge against the drum, so that when the shaft is turned, the clutch will turn in unison with it.

1.16 There are two areas in which tape reader adjustments and spring tensions are found. As aids in locating the areas, Figures 1 and 2 are provided. They indicate the areas as follows:

Area	Figure
Clutch trip	2
Tape reader	1

1.17 General Maintenance Principles:

- Lubrication instructions and intervals are given in the appropriate lubrication sections.
- To maintain the operational effectiveness of the equipment, it is recommended that certain parts be replaced at intervals based upon the speed and operating hours, as indicated below:

Operating Speed (Words per Minute)	Recommended Maintenance Overhaul Interval (Operating Hours*)	Estimated Service Life (Operating Hours*)
60 or 66	2500	7500
100	1500	4500

*Typing Unit Operating Hours

The parts are available in overhaul maintenance kits listed in the appropriate parts publications.

2. BASIC UNIT

2.01 Clutch Trip Area

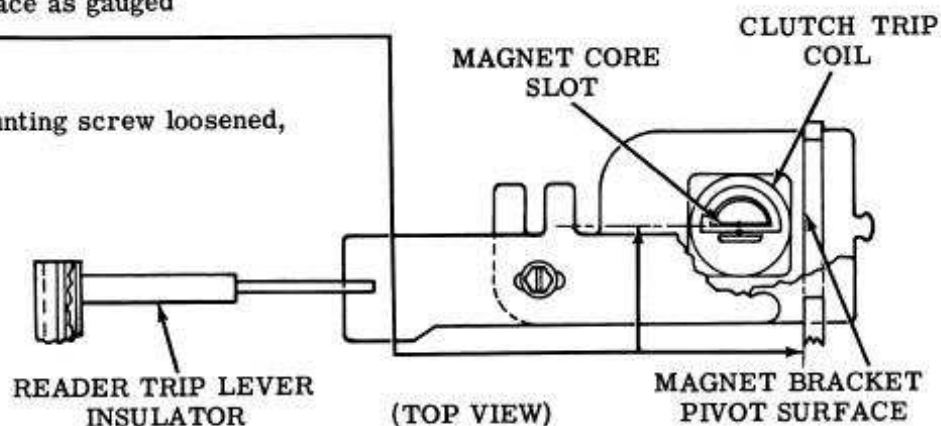
MAGNET CORE

Requirement

Magnet core slot to be perpendicular to magnet bracket pivot surface as gauged by eye.

To Adjust

With clutch trip coil mounting screw loosened, position clutch trip coil.



TRIP MAGNET

Requirement

Magnet bracket to be positioned as far forward and to the left on base casting post as possible.

To Adjust

Position magnet bracket with three mounting screws loosened.

Related Adjustments

Affects

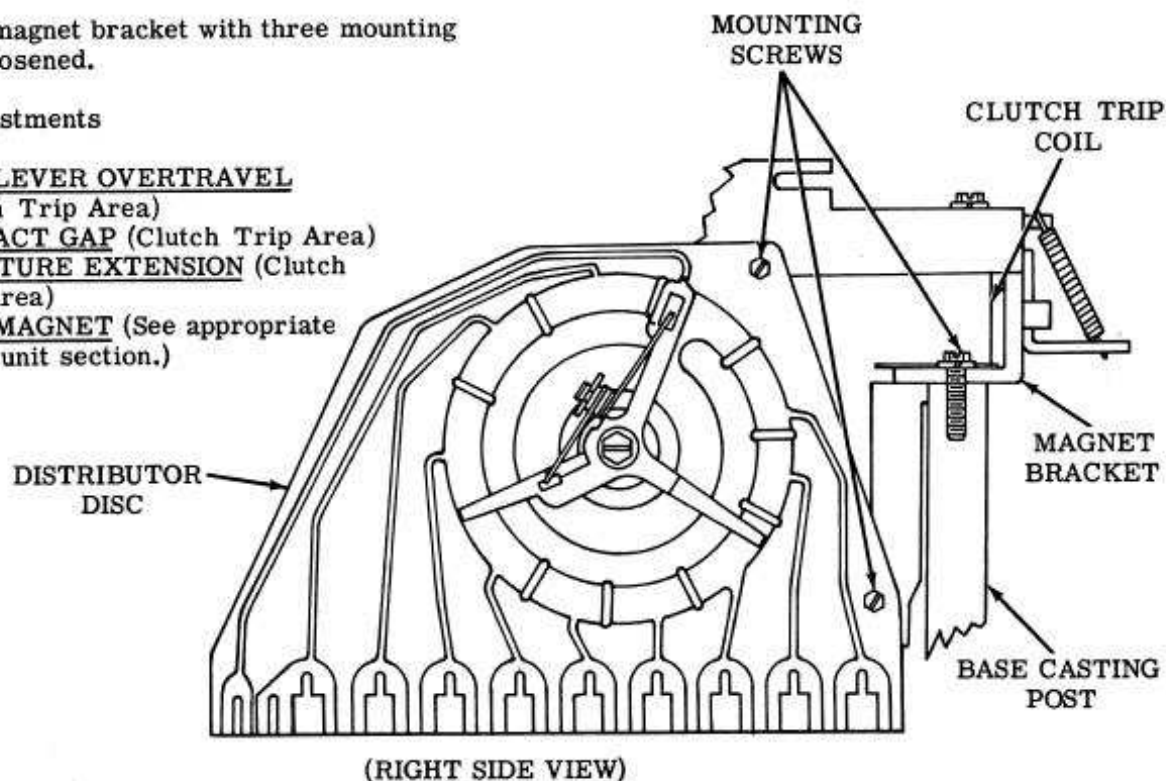
TRIP LEVER OVERTRAVEL

(Clutch Trip Area)

CONTACT GAP (Clutch Trip Area)

ARMATURE EXTENSION (Clutch Trip Area)

TRIP MAGNET (See appropriate typing unit section.)



2.02 Clutch Trip Area (continued)

TRIP LEVER OVERTRAVEL

To Check

Trip distributor clutch by momentarily holding armature in its attracted position. Rotate main shaft until cam roller is on high part of reader trip lever cam. Take up play in the armature toward the rear and release. Position the reader trip lever to the center of the armature extension.

Requirement

Min 0.010 inch --- Max 0.018 inch
between the end of armature extension and
latching surface of reader trip lever.

To Adjust

With armature extension mounting screw
loosened friction tight, position armature
extension using pry point.

Related Adjustment

Affects

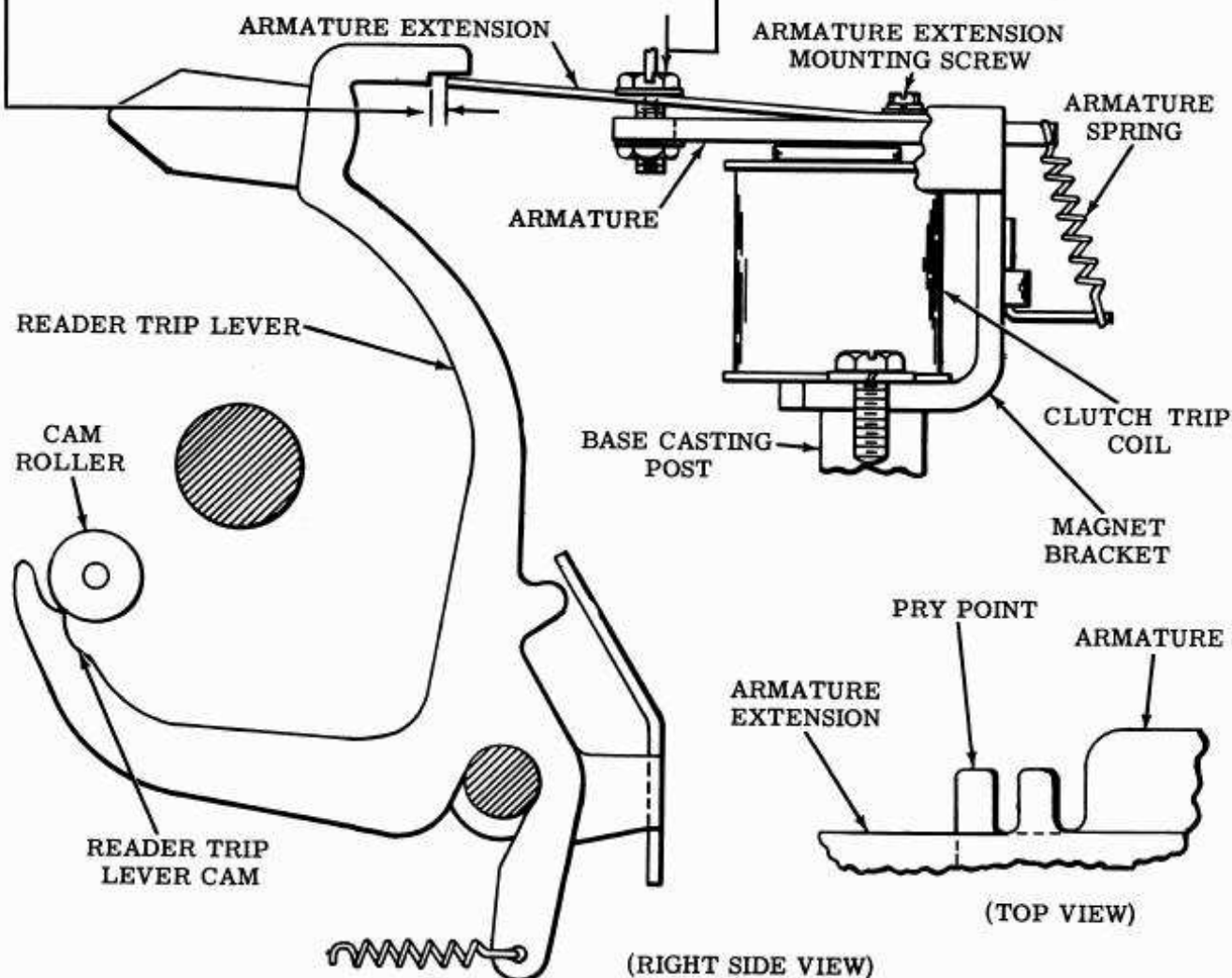
CONTACT GAP (Clutch Trip Area)

TRIP MAGNET ARMATURE SPRING

Requirement

With armature in its unattracted po-
sition and cam roller on high part of
reader trip lever cam

Min 2 oz --- Max 4 oz
to start armature moving.



2.03 Clutch Trip Area (continued)

ARMATURE EXTENSION**To Check**

Place typing unit in stop condition. Hold armature in attracted position and rotate main shaft until a clearance of

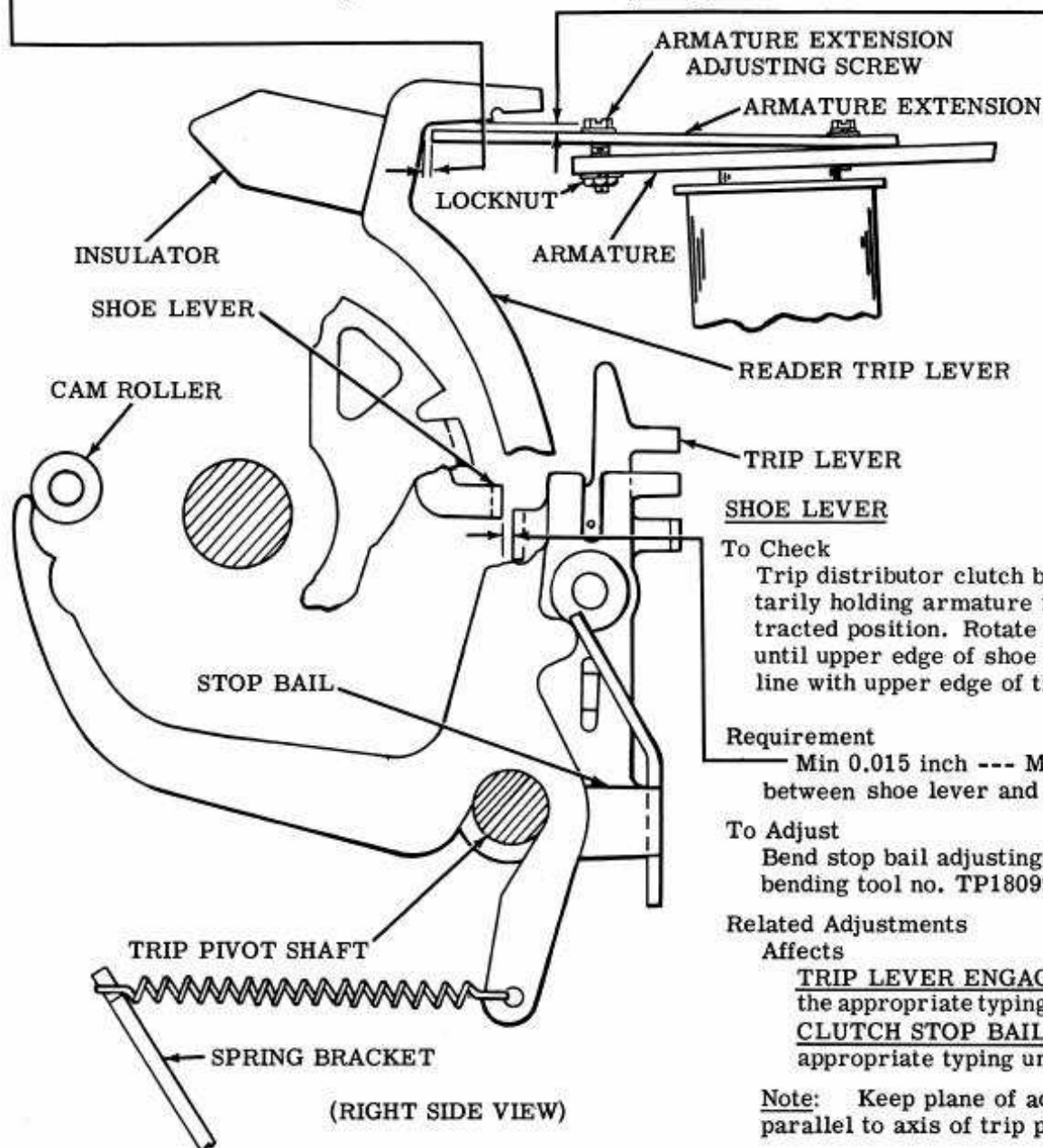
Min Some --- Max 0.040 inch
exists between end of armature extension and reader trip lever.

Requirement

Min Some --- Max 0.010 inch
between the armature extension and reader trip lever at its closest point.

To Adjust

With armature extension adjusting screw and locknut loosened, position armature extension using armature extension adjusting screw.

SHOE LEVER**To Check**

Trip distributor clutch by momentarily holding armature in its attracted position. Rotate main shaft until upper edge of shoe lever is in line with upper edge of trip lever.

Requirement

Min 0.015 inch --- Max 0.035 inch
between shoe lever and trip lever.

To Adjust

Bend stop bail adjusting tab with bending tool no. TP180993.

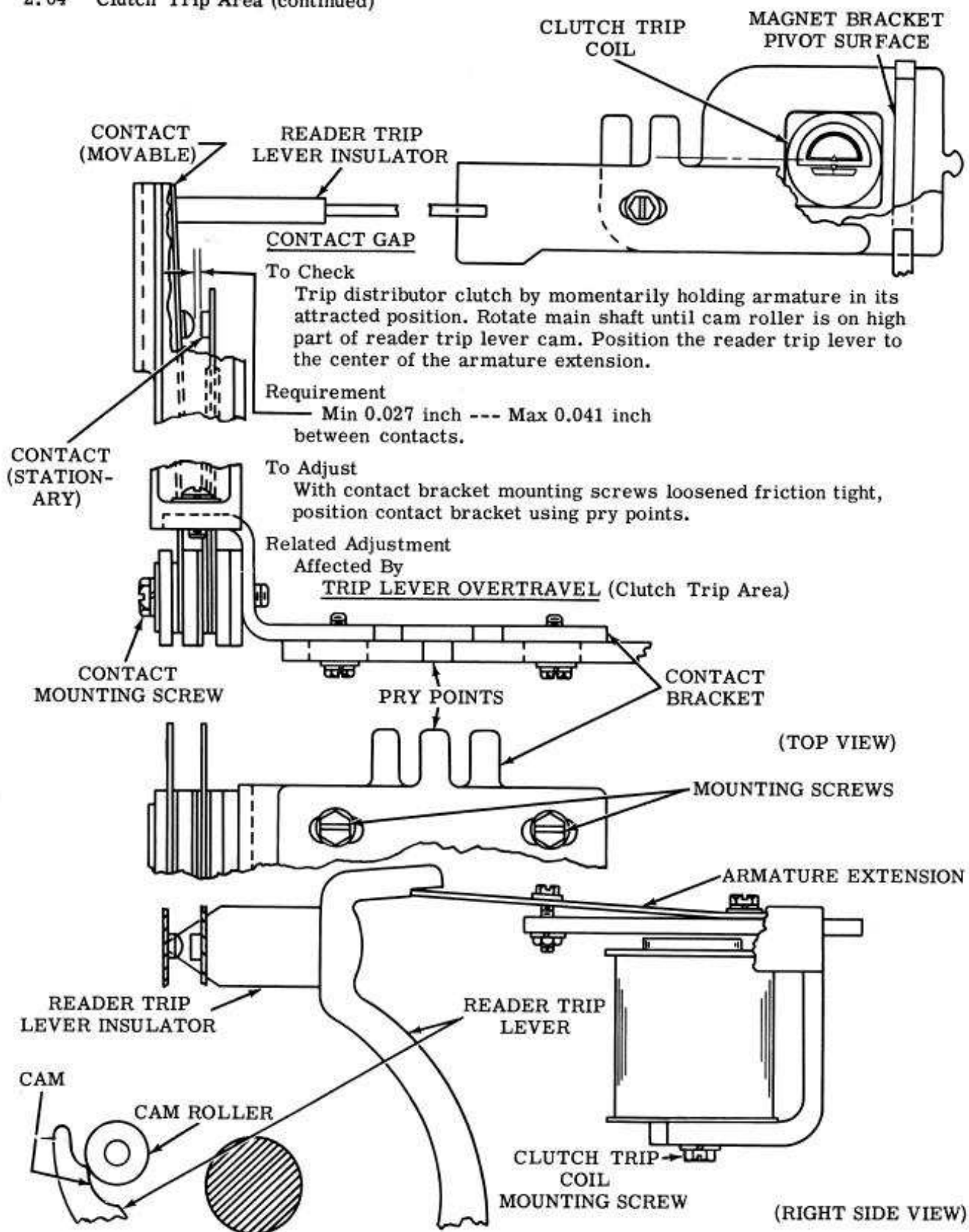
Related Adjustments**Affects**

TRIP LEVER ENGAGEMENT (See the appropriate typing unit section.)

CLUTCH STOP BAIL (See the appropriate typing unit section.)

Note: Keep plane of adjusting tab parallel to axis of trip pivot shaft.

2.04 Clutch Trip Area (continued)



2.05 Clutch Trip Area (continued)

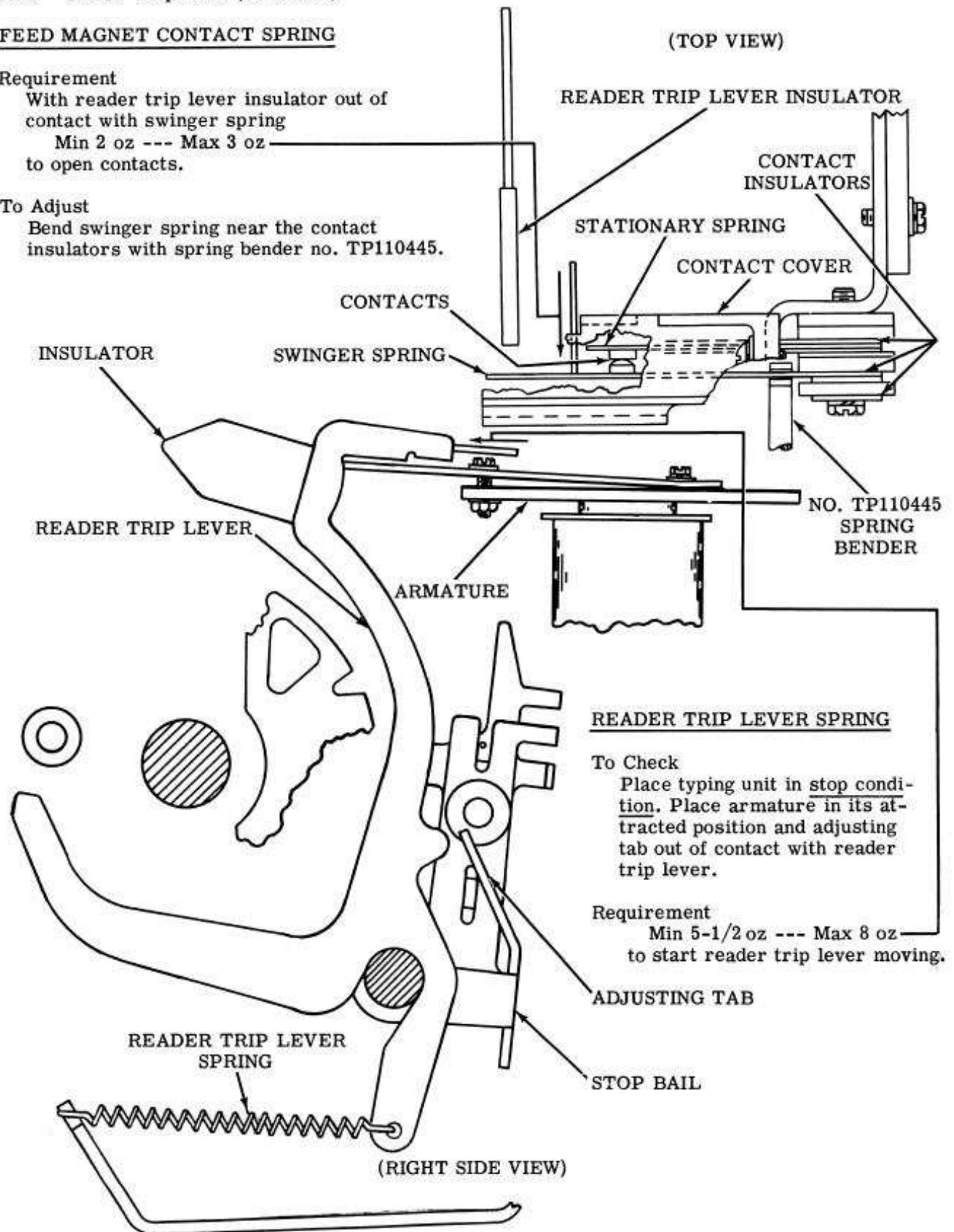
FEED MAGNET CONTACT SPRINGRequirement

With reader trip lever insulator out of contact with swinger spring

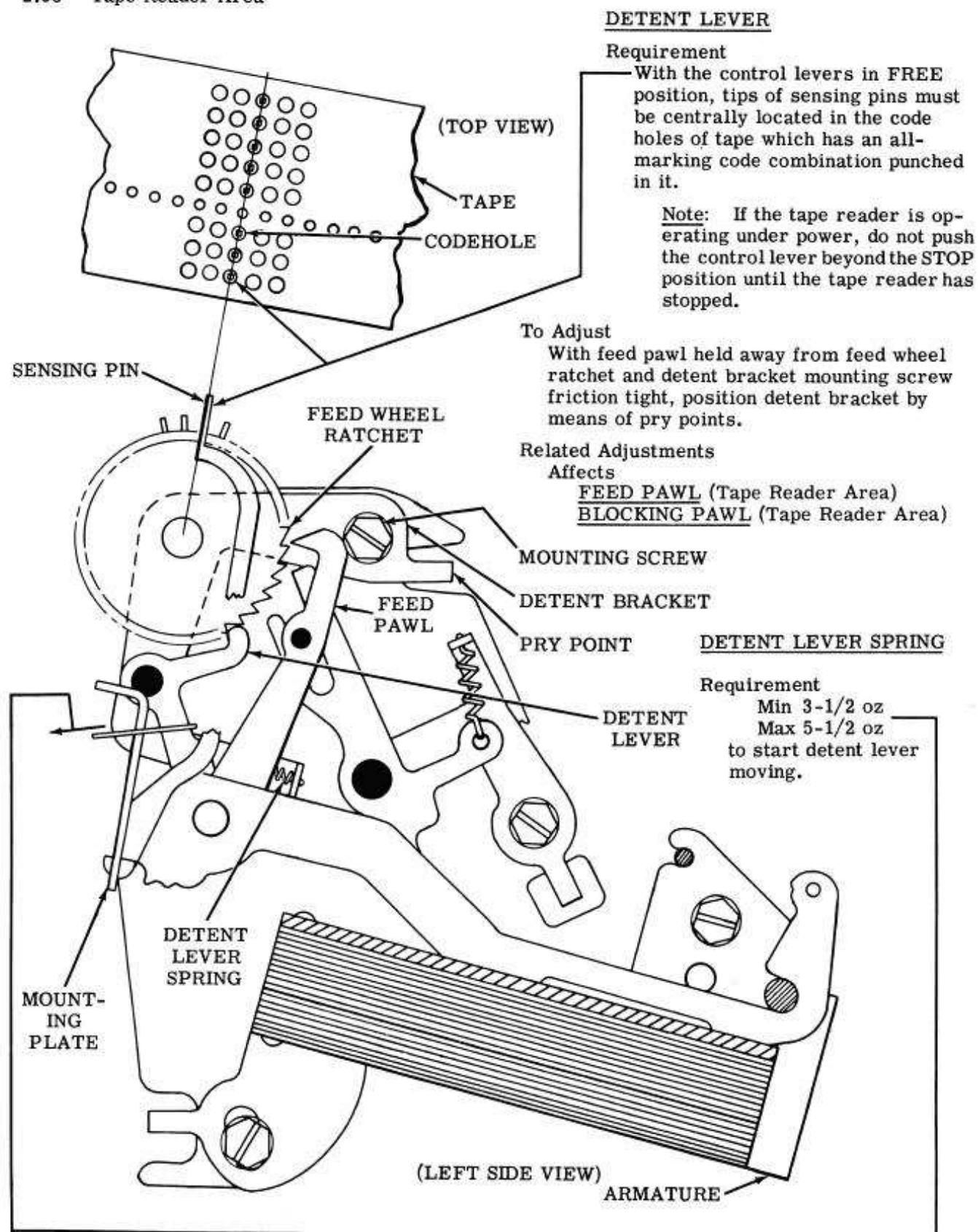
Min 2 oz --- Max 3 oz
to open contacts.

To Adjust

Bend swinger spring near the contact insulators with spring bender no. TP110445.



2.06 Tape Reader Area



2.07 Tape Reader Area (continued)

FEED PAWL (Adjustment with Gauge No. TP183103)

To Check

Place armature in unattracted position. Visually check to see if there is some clearance between the blocking pawl and ratchet tooth. If not, provide clearance. See BLOCK PAWL (Tape Reader Area) adjustment.

UPSTOP SPRING

Requirement

With armature spring post removed from its slot in magnet bracket
Min 14 oz --- Max 20 oz
to start upstop bushing moving.

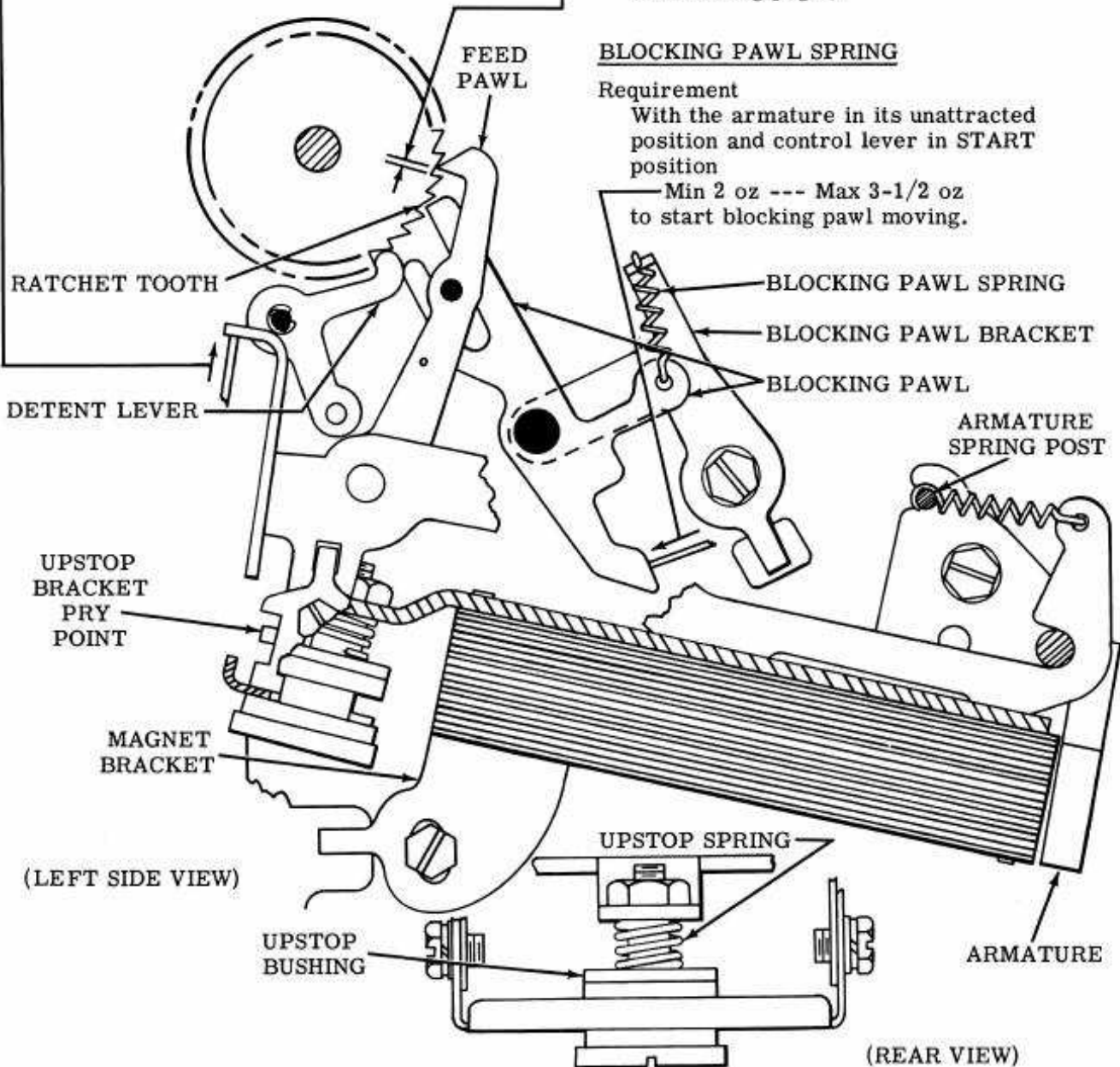
Requirement

Min Same --- Max 0.008 inch
between the feed pawl and ratchet tooth
with a total of five ratchet teeth between
the feed pawl and detent lever. (Continued
on following page.)

BLOCKING PAWL SPRING

Requirement

With the armature in its unattracted
position and control lever in START
position
Min 2 oz --- Max 3-1/2 oz
to start blocking pawl moving.



2.08 Tape Reader Area (continued)

FEED PAWL (Continued from preceding page.)

To Adjust

- (1) With armature in attracted position and two upstop bracket mounting screws friction tight, insert gauge no. TP183103 between upstop bracket and shoulder of upstop shoulder screw. Position upstop bracket so that it lies flat on gauge. Tighten upstop bracket mounting screws.
- (2) With armature in unattracted position and three magnet bracket mounting screws friction tight, position magnet bracket by means of pry point. Tighten magnet bracket mounting screws.

Note: For tape readers with vibration damper plate TP183136, tighten magnet bracket mounting screws "A" and "B" first. Then, rotate the vibration dampener plate until the upper finger presses firmly on contact block extension. Finally, tighten magnet bracket mounting screw "C."

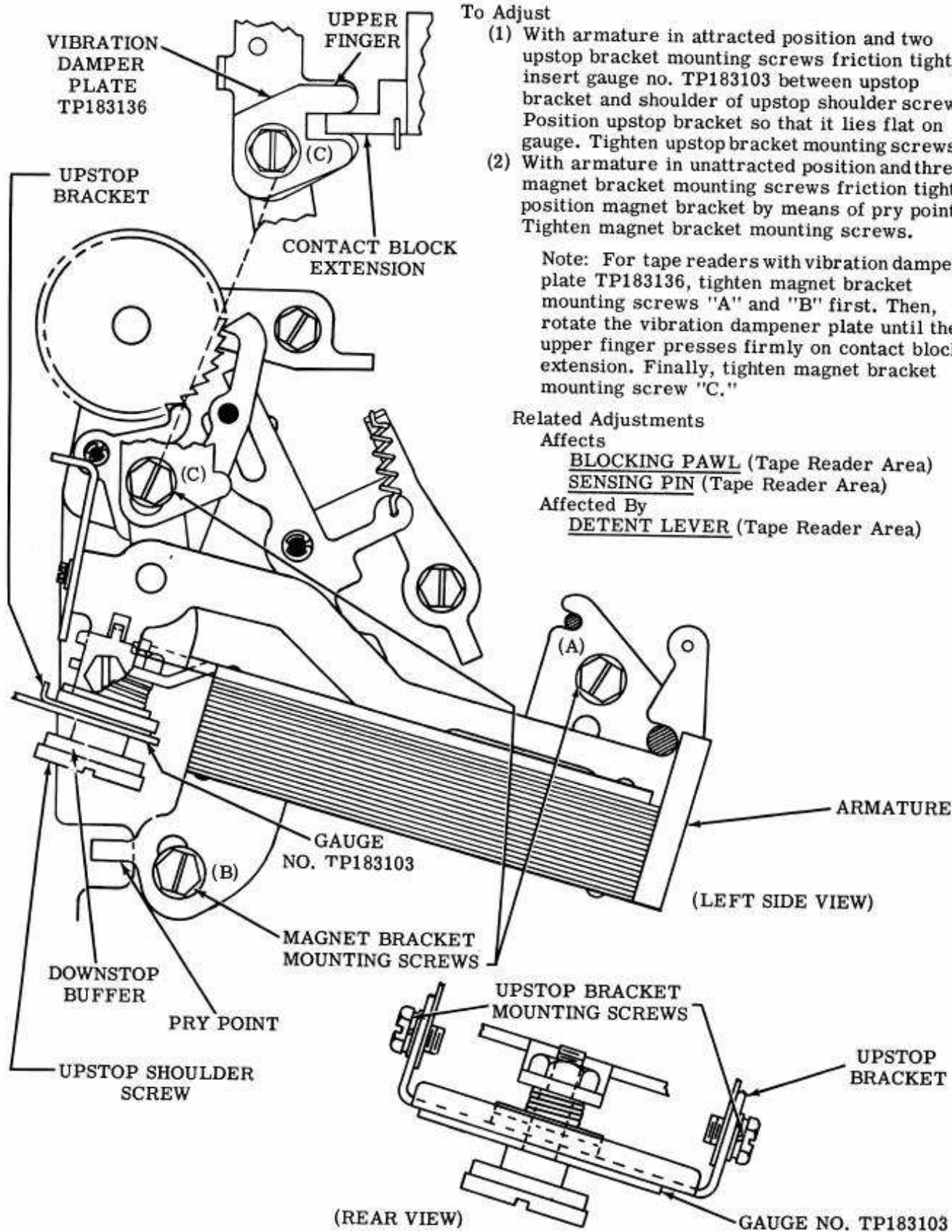
Related Adjustments

Affects

BLOCKING PAWL (Tape Reader Area)
SENSING PIN (Tape Reader Area)

Affected By

DETENT LEVER (Tape Reader Area)



2.09 Tape Reader Area (continued)

FEED PAWL (Adjustment without Gauge
No. TP183103)

(1) To Check

Place armature in attracted position and loosen two upstop bracket mounting screws so that the upstop bracket does not limit the feed pawl motion.

Requirement

Min 0.035 inch --- Max 0.045 inch between feed pawl and ratchet tooth and a total of six ratchet teeth between feed pawl and detent lever.

To Adjust

With three magnet bracket mounting screws loosened friction tight, position magnet bracket using pry point.

(2) To Check

→ Place armature in unattracted position. Visually check to see if there is some clearance between the blocking pawl and ratchet tooth. If not, provide clearance. See BLOCKING PAWL (Tape Reader Area) adjustment. Place upstop bracket flat against downstop buffer.

Requirement

Min Some --- Max 0.008 inch between feed pawl and ratchet tooth.

To Adjust

With two upstop bracket mounting screws loosened friction tight, position upstop bracket using upstop bracket pry point.

(3) To Check

Place armature in attracted position.

Requirement

Min 0.025 inch --- Max 0.035 inch between feed pawl and ratchet tooth.

To Adjust

With three magnet bracket mounting screws loosened friction tight, position magnet bracket using pry point.

Note: For tape readers with vibration damper plate TP183136, tighten magnet bracket mounting screws "A" and "B" first. Then, rotate the vibration damper plate until the upper finger presses firmly on contact block extension. Finally tighten magnet bracket mounting screw "C."

Recheck "Requirement" in "(2) To Check" above.

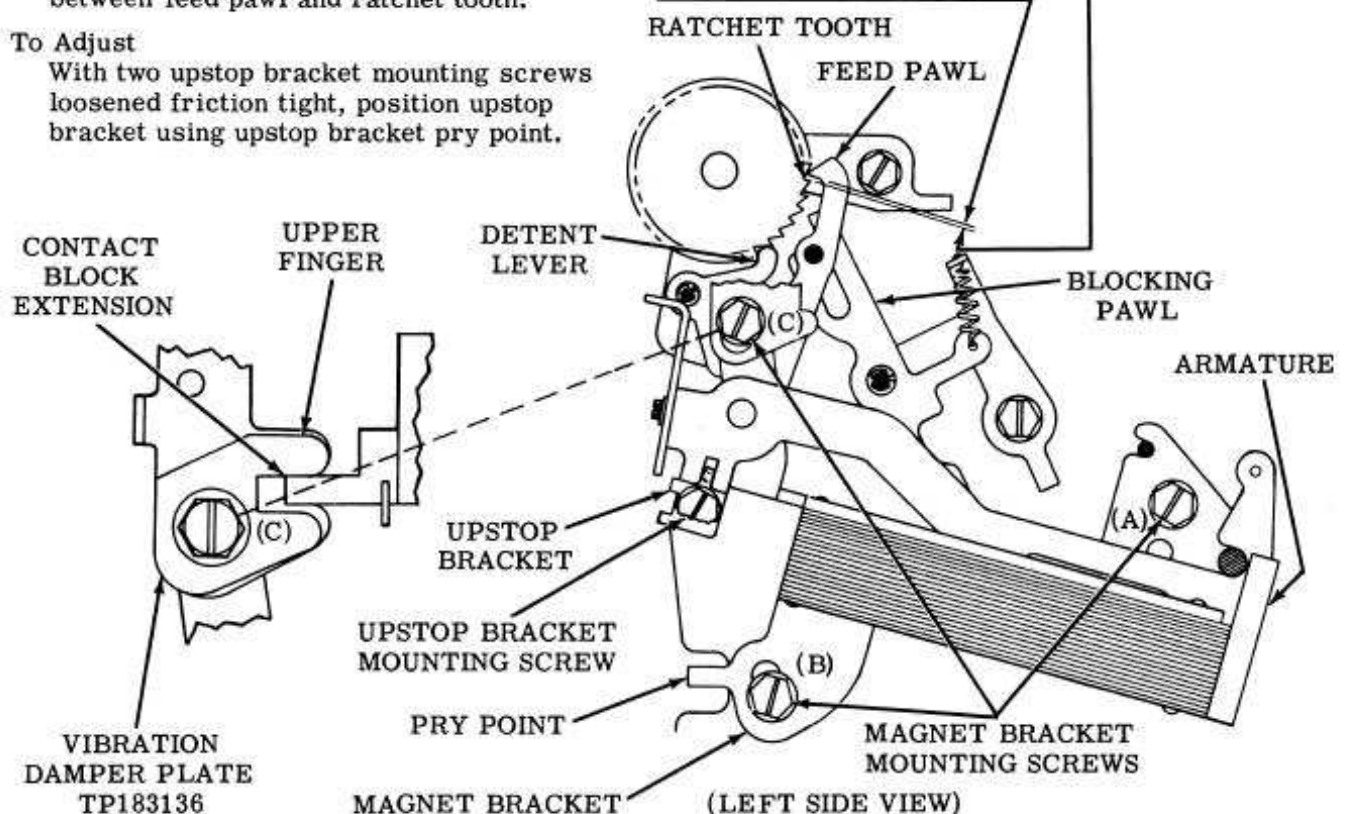
Related Adjustments

Affects

BLOCKING PAWL (Tape Reader Area)
SENSING PIN (Tape Reader Area)

Affected By

TRIP LEVER OVERTRAVEL (Tape Reader Area)



2.10 Tape Reader Area (continued)

BLOCKING PAWL

To Check

→ Place armature in unattracted position. Check to see that there is some clearance between feed pawl and ratchet tooth. If not, provide clearance. See FEED PAWL (Tape Reader Area) adjustment.

Requirement

Min Some --- Max 0.010 inch
between blocking pawl and ratchet tooth.

Note: When a tape winder is used

Min Some --- Max 0.003 inch
between blocking pawl and ratchet.

To Adjust

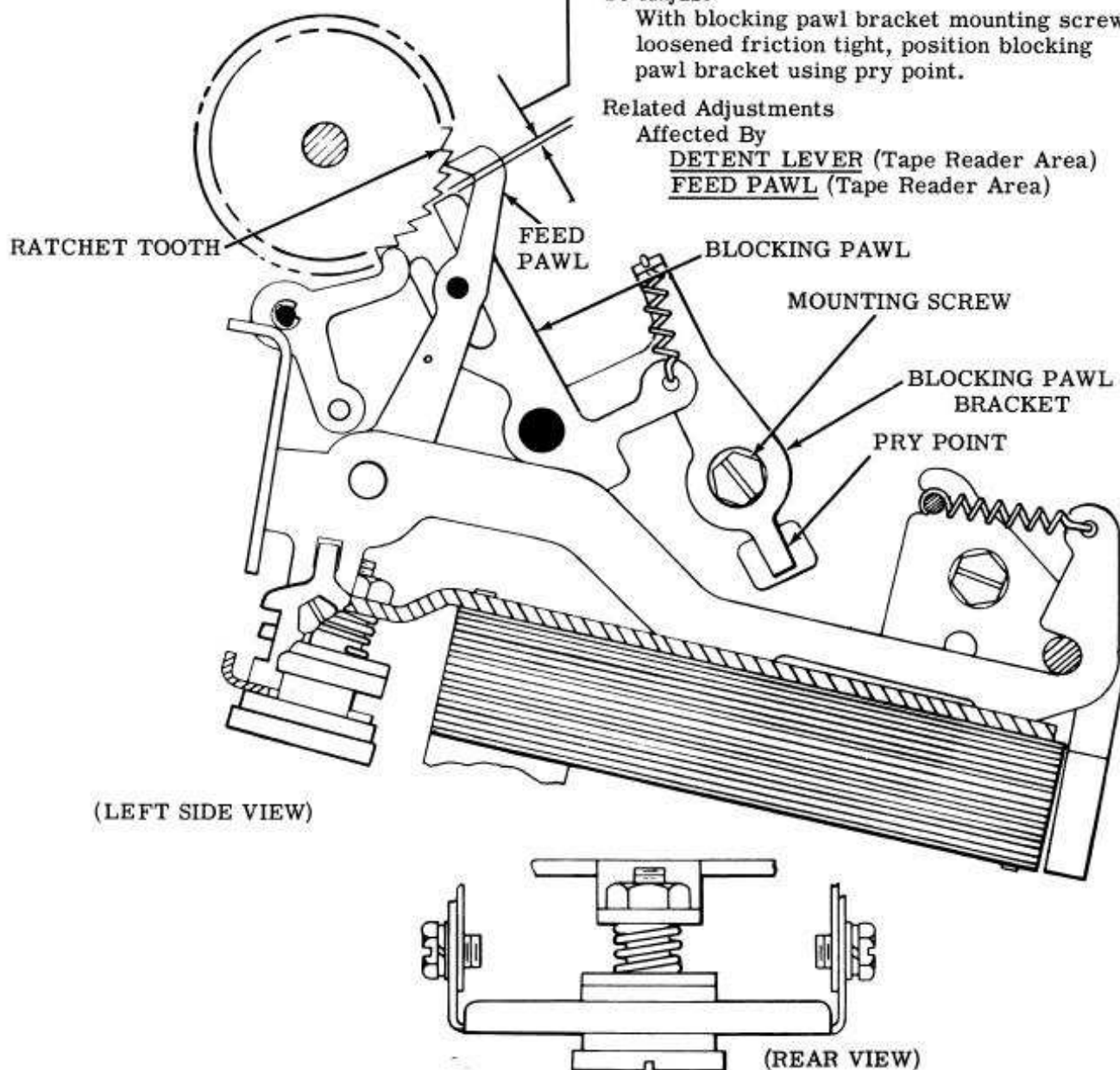
With blocking pawl bracket mounting screw loosened friction tight, position blocking pawl bracket using pry point.

Related Adjustments

Affected By

DETENT LEVER (Tape Reader Area)

FEED PAWL (Tape Reader Area)

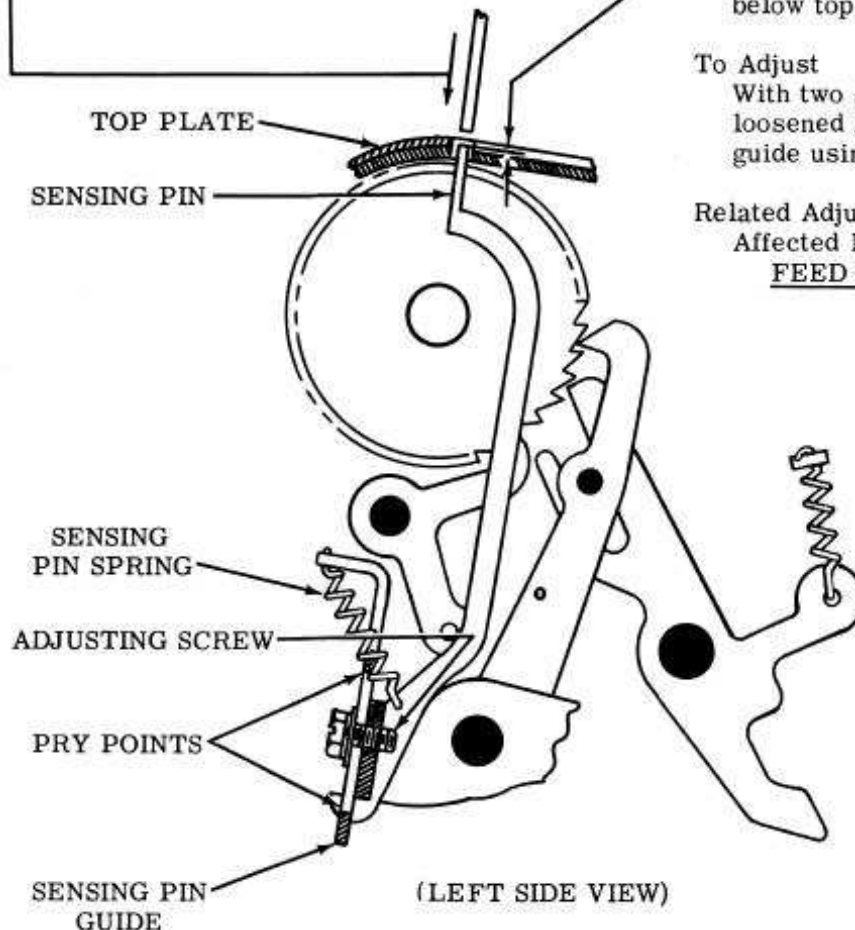


2.11 Tape Reader Area (continued)

SENSING PIN SPRING

Requirement

With armature in its attracted position
Min 1-1/2 oz --- Max 2-3/4 oz
to position sensing pin flush with top plate.

SENSING PIN

Requirement

With armature in unattracted position, the
tip of all sensing pins shall be
Min Flush --- Max 0.015 inch
below top surface of top plate.

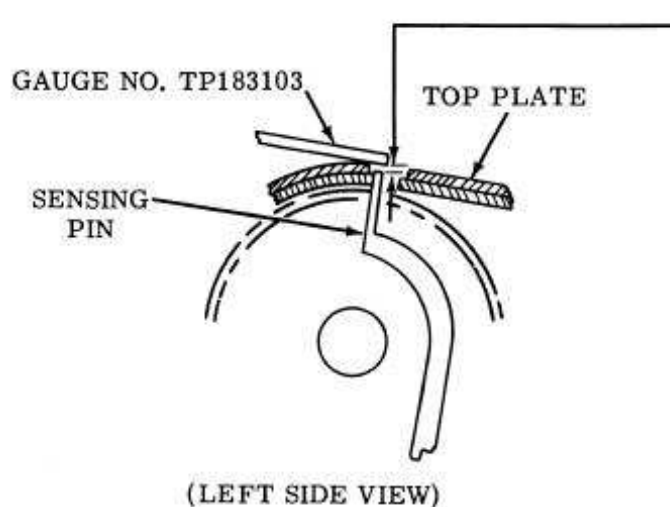
To Adjust

With two sensing pin guide adjusting screws
loosened friction tight, position sensing pin
guide using pry points.

Related Adjustment

Affected By

FEED PAWL (Tape Reader Area)



Note: This adjustment may be made by using the thin-slotted end of gauge no. TP183103. To check the above minimum requirement (Flush), hold the gauge flat against the top plate in back of the sensing pins and move it forward against sensing pins. If any sensing pin is deflected by the gauge, then the above minimum requirement is not met. The sensing pin guide must be lowered. To check the above maximum requirement (0.015 inch), hold the gauge directly above the sensing pins and measure the clearance. Adjust, if necessary, as indicated above.

2.12 Tape Reader Area (continued)

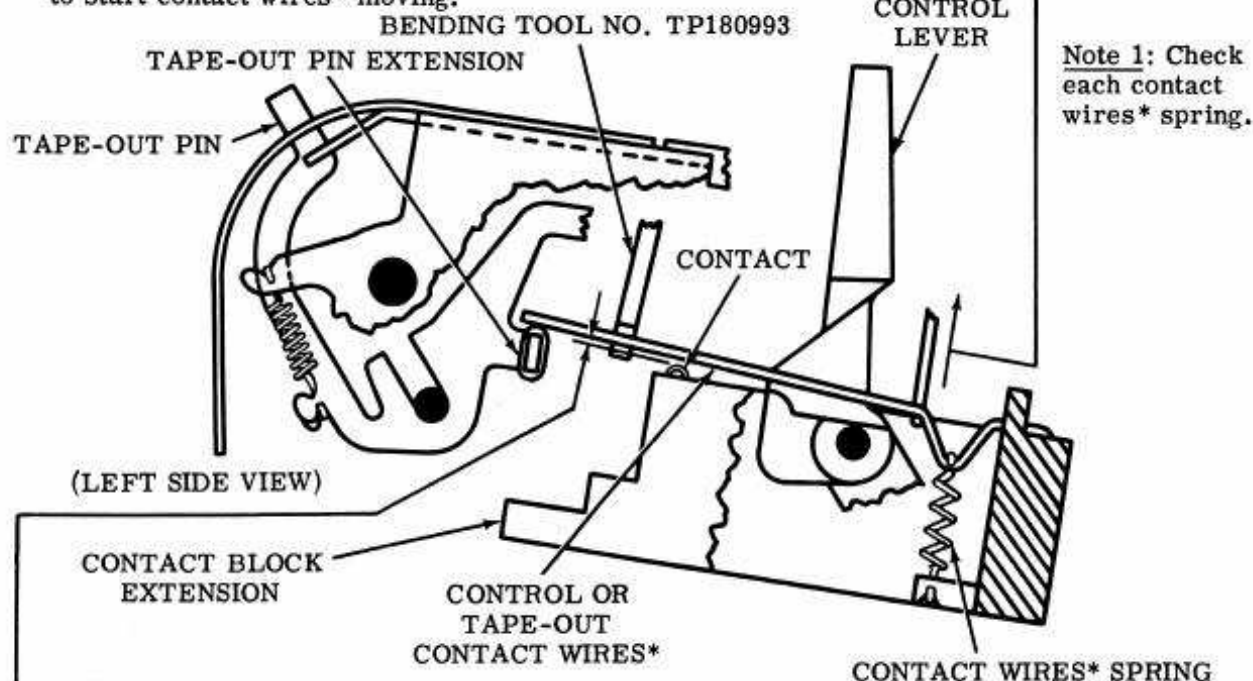
CONTACT WIRES* SPRING

To Check

Place control lever in START position and fully depress tape-out pin.

Requirement

Min 1-1/4 oz --- Max 2-1/4 oz
to start contact wires* moving.



CONTROL (OR TAPE-OUT) CONTACT WIRES*

Requirement

With tape-out pin in its fully up position,
Min 0.015 inch --- Max 0.025 inch
between control (or tape-out) contact
wires* and contact.

Note 2: For tape readers without automatic
reader control: Place the control lever in
START position.

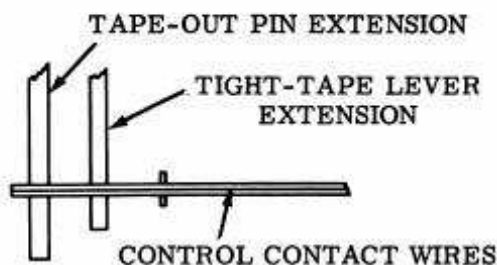
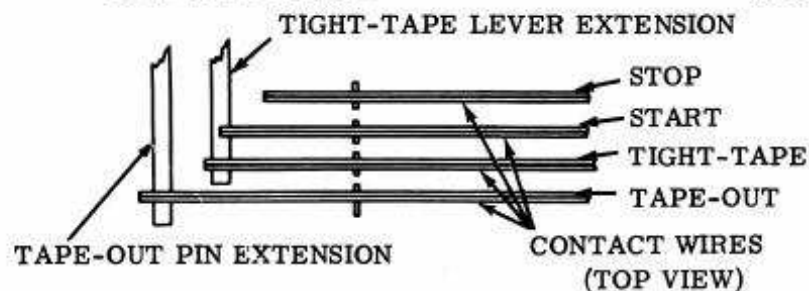
To Adjust

Bend control (or tape-out) contact wires* between the contact and the tape-out pin
extension with bending tool no. TP180993.

*Note 3: The location of the contact wires is shown below:

TAPE READERS WITH AUTOMATIC
READER CONTROL

TAPE READERS WITHOUT AUTOMATIC
READER CONTROL



2.13 Tape Reader Area (continued)

Note: The following adjustment applies only to tape readers with automatic reader control.

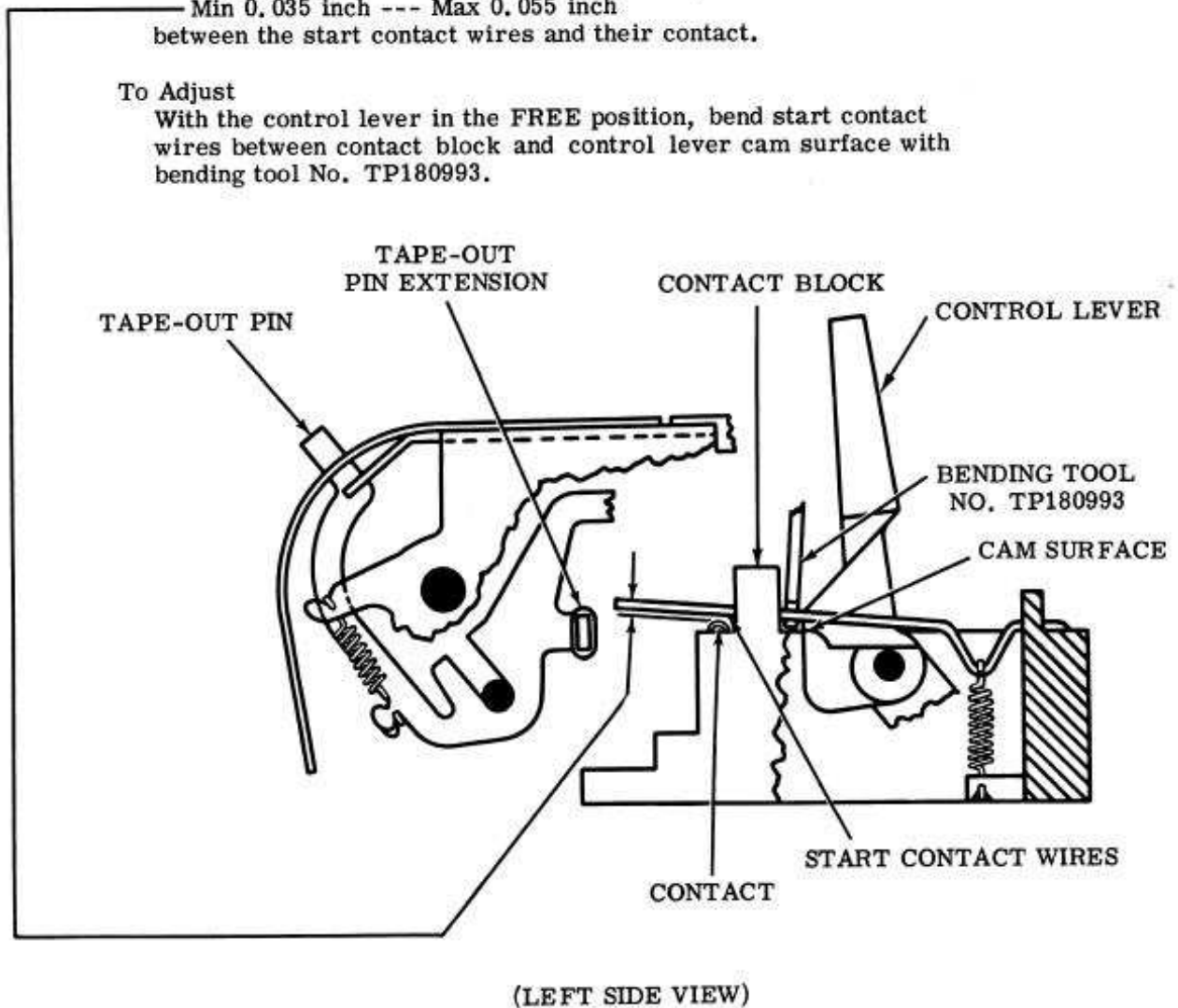
START CONTACT WIRESRequirement

With the control lever in the neutral position (resting in a position midway between START and STOP positions)

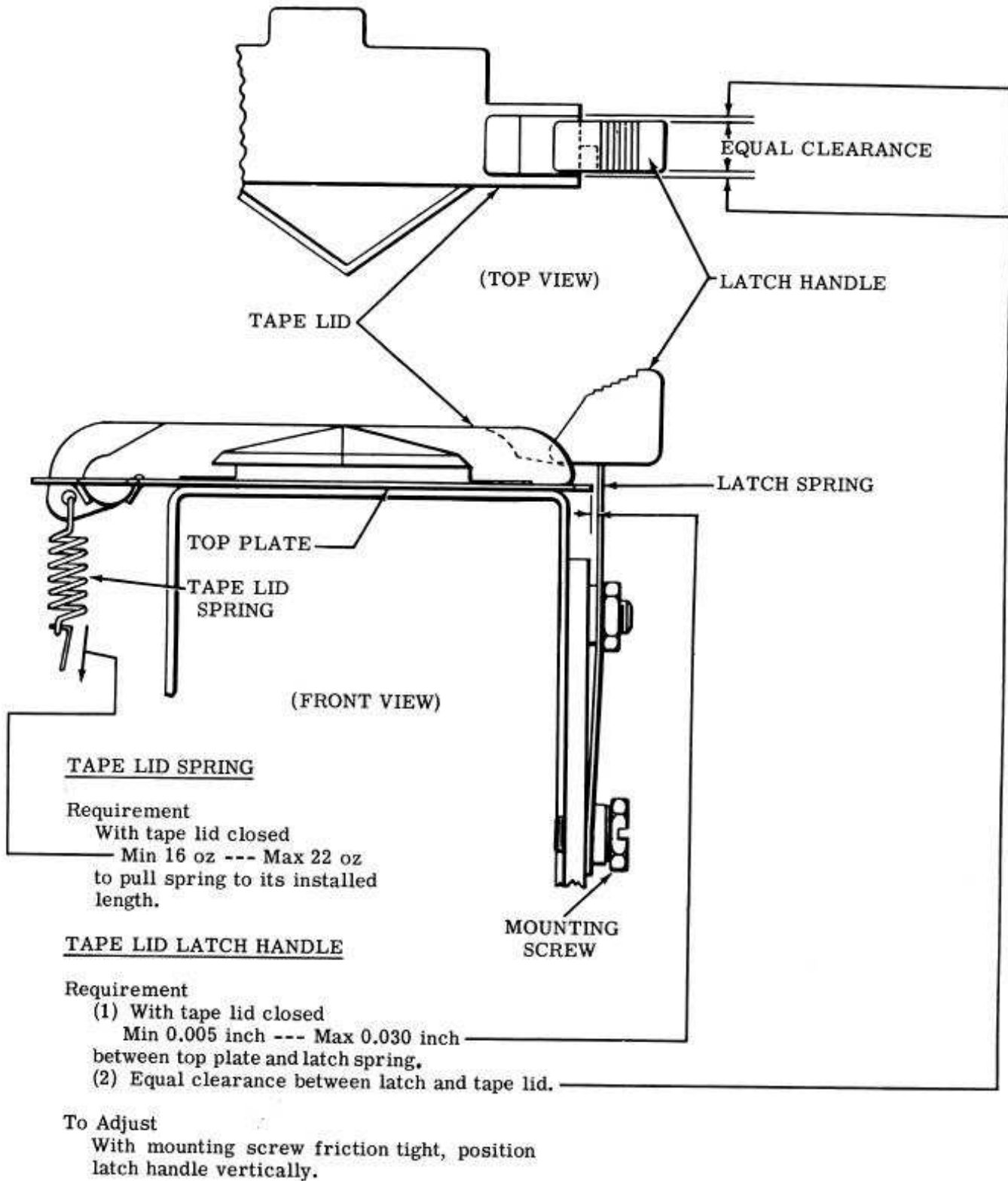
Min 0.035 inch --- Max 0.055 inch
between the start contact wires and their contact.

To Adjust

With the control lever in the FREE position, bend start contact wires between contact block and control lever cam surface with bending tool No. TP180993.



2.14 Tape Reader Area (continued)



2.15 Tape Reader Area (continued)

TIGHT-TAPE LEVER SPRING

Requirement

With the tape lid closed

Min 1 oz --- Max 2-1/4 oz
to start tight-tape lever moving.CONTROL DETENT SPRING

Requirement

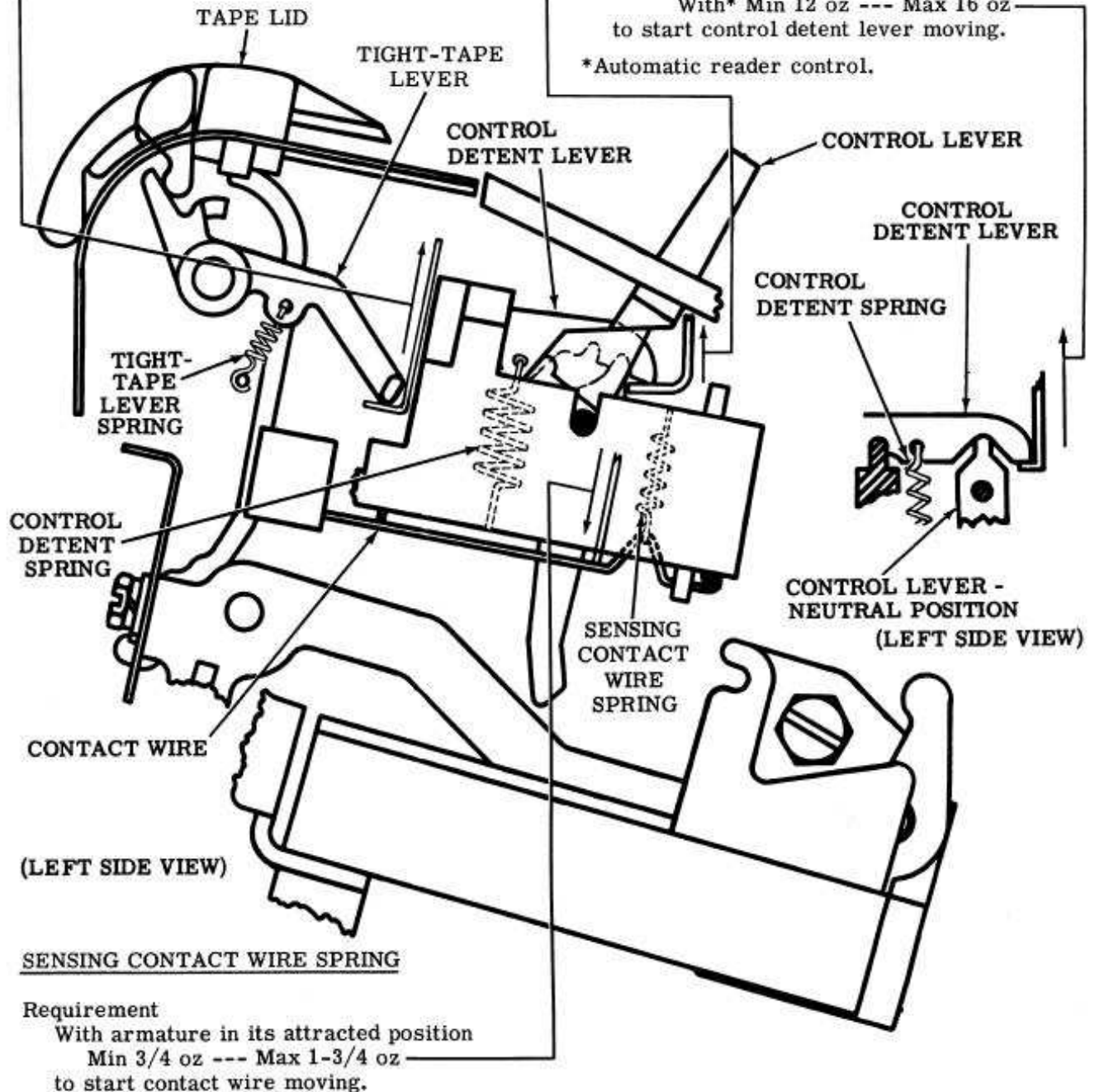
Place control lever in STOP position,

Note: For tape readers with automatic reader control, place the control lever in the neutral position.

Without* Min 5 oz --- Max 9 oz

With* Min 12 oz --- Max 16 oz
to start control detent lever moving.

*Automatic reader control.



2.16 Tape Reader Area (continued)

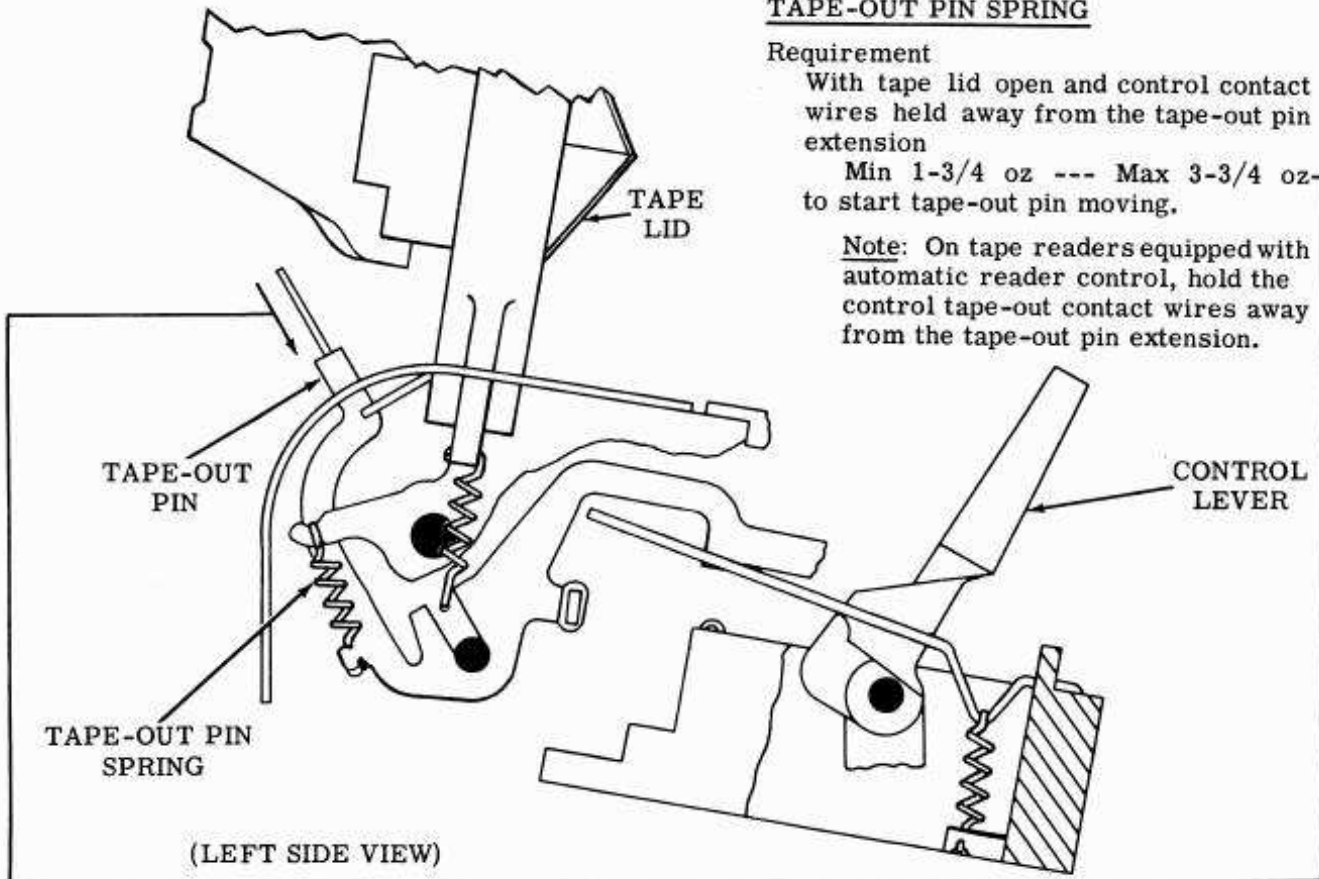
TAPE-OUT PIN SPRING

Requirement

With tape lid open and control contact wires held away from the tape-out pin extension

Min 1-3/4 oz --- Max 3-3/4 oz to start tape-out pin moving.

Note: On tape readers equipped with automatic reader control, hold the control tape-out contact wires away from the tape-out pin extension.

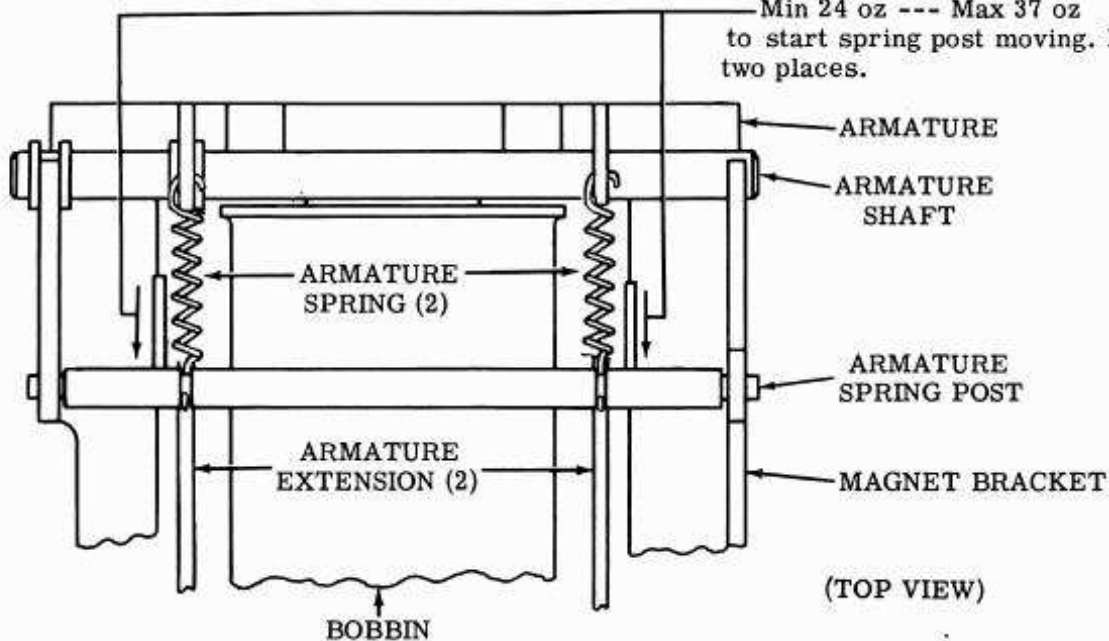


ARMATURE SPRING

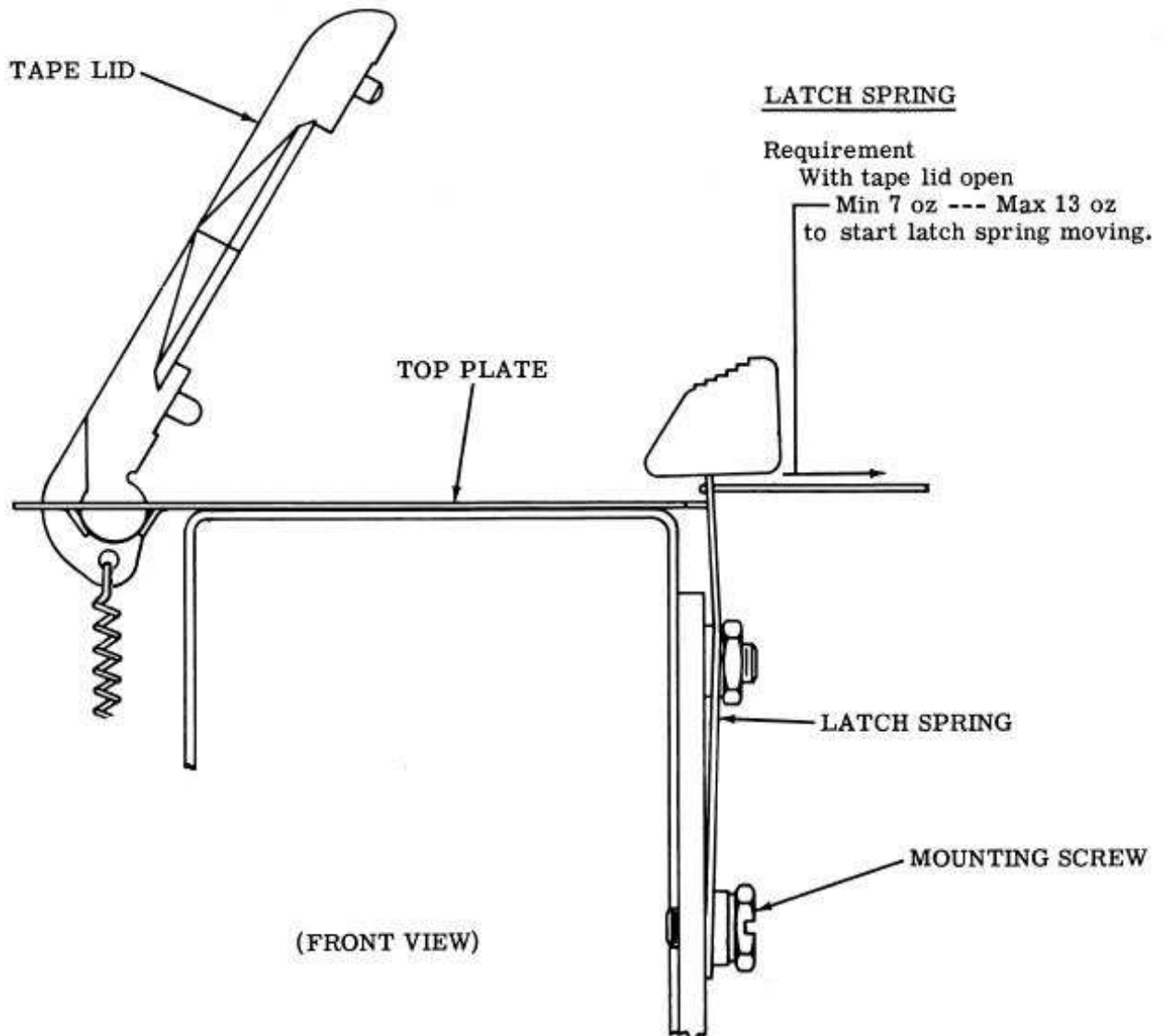
Requirement

With armature in its unattracted position

Min 24 oz --- Max 37 oz to start spring post moving. Measure at two places.



2.17 Tape Reader Area (continued)



2.18 Tape Reader Area (continued)

Note: The following adjustment applies to tape readers with early design bases.

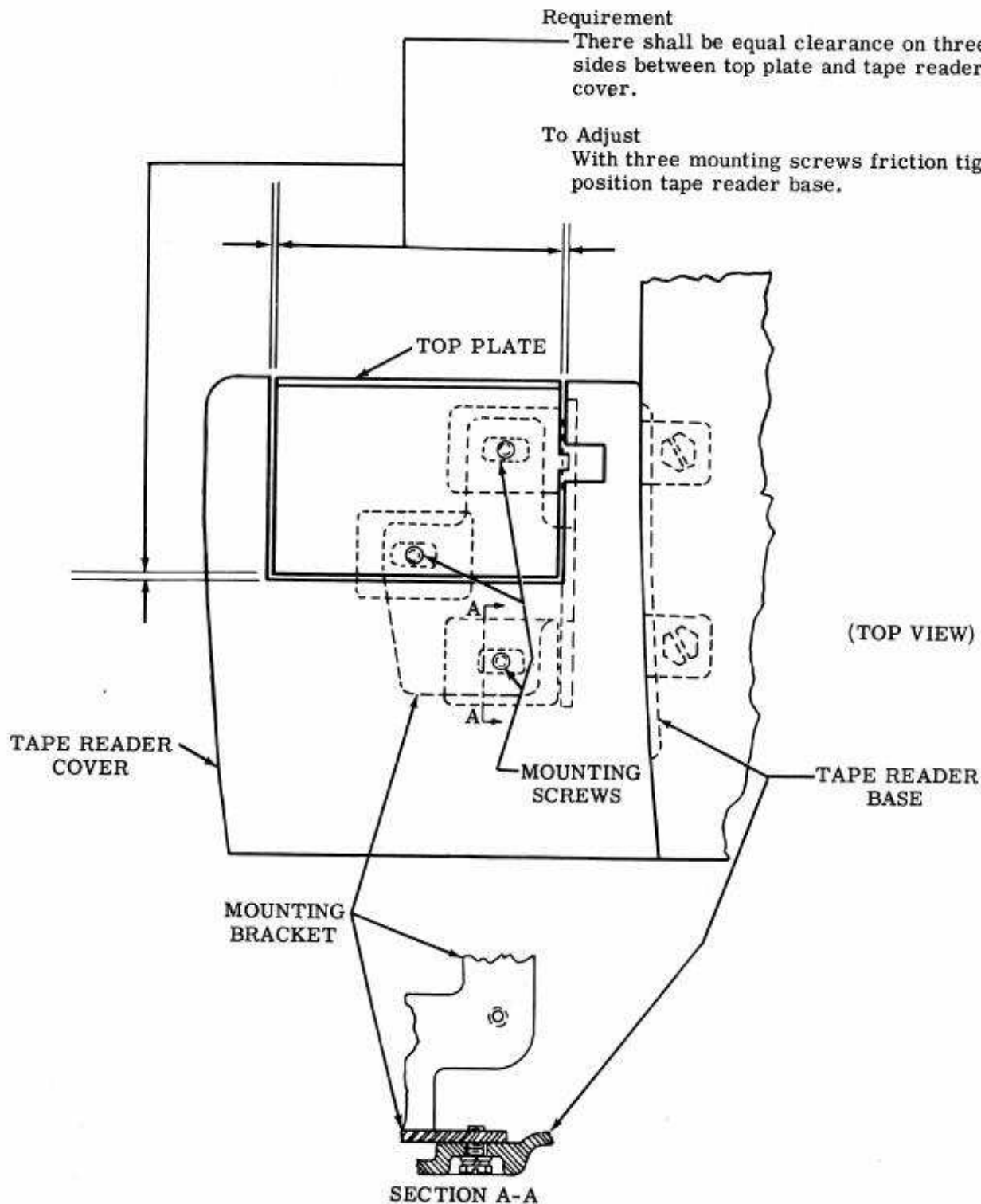
READER MOUNTING BRACKET (Early Design)

Requirement

There shall be equal clearance on three sides between top plate and tape reader cover.

To Adjust

With three mounting screws friction tight, position tape reader base.



2.19 Tape Reader Area (continued)

Note: The following adjustment applies to tape readers with late design bases.

READER MOUNTING BRACKET (Late Design)Requirement

- (1) Top plate to be
Min Flush --- Max 0.030 inch
below cover.
- (2) Equal clearance between top plate and tape reader cover on three sides.

To Adjust

With four adjusting screws and a locking screw loosened and mounting bracket lying flat on tape reader base, position tape reader. Run two adjusting screws (X) up until requirement is approximately met. Tighten locking screw friction tight. Run two adjusting screws (Y) up until requirement is approximately met. Refine all four adjusting screws. Tighten locking screw (L).

