TELETYPESETTER®

BULLETIN 6B

ADJUSTMENTS and LUBRICATION for the STANDARD OPERATING UNIT

FAIRCHILD
GRAPHIC EQUIPMENT FAIRCHILD DRIVE, PLAINVIEW, L. I., NEW YORK

TELETYPESETTER®

BULLETIN 6B

ADJUSTMENTS and LUBRICATION for the STANDARD OPERATING UNIT



DIVISION OF
FAIRCHILD CAMERA AND INSTRUMENT CORP

Copyright 1955 by Fairchild Camera and Instrument Corp.
Copyright in all countries participating in International Convention and Pan American Conventions. All rights reserved including rights of translations into all languages.

Printed in U.S.A.

INTRODUCTION

The maintenance of Teletypesetter equipment requires a certain amount of mechanical ability and, therefore, should only be attempted by personnel who have this ability.

Fairchild Graphic Equipment maintains a school for the purpose of training our customers' personnel in the maintenance of Teletypesetter equipment and it is strongly recommended that all personnel assigned to the maintenance of Teletypesetter equipment attend the complete course; there is no tuition charge for this service.

This Bulletin is meant to supplement, not to replace, the maintenance training which is available at the Teletypesetter school.

Page

1. GENERAL DESCRIPTION ..... D

2. ADJUSTMENTS

a. GENERAL ..... E

b. INSTRUCTIONS

(1) Removing Operating Unit From Linecasting Machine ..... E
(2) Removing Selecting Assembly 5
(3) Replacing Selecting Assembly 12
(4) Mounting Operating Unit On Linecasting Machine 23

c. OPERATING UNIT

Auxiliary Keylever Guide Comb 24
Clutch Magnet Unit 21a
Clutch Magnet Coil 21a
Code Bar Extension Detent 17
Code Bar Extension Guide 6
Code Bar Guides 1
Contact Pin Guide 13a
Delay Feed Pawl Operating Lever 20
Delay Push Bail Adjusting Screw 20
Delivery Slide Arm Follower 31
Delivery Slide Fork 28
Delivery Slide Fork Floating Lever Eccentric 28
Drive Shaft Bearing 5
Drive Shaft Collar 5
Drive Shaft Gear Play 5
Elevator Arm Shaft End Nuts 26
Elevator Bell Crank Latching Link Backstop Screw 9
Elevator Bell Crank Latch Bracket 9
Elevator Cam Roller Casting Adjusting Screw 26
Elevator Clutch Reset Lever Adjusting Screw 11
Elevator Handle Clamp Screw 26
Elevator Safety Latch Stop Screw 31
Feed Wheel Detent 15
Escapement Cam Detent 22
Escapement Lever 22
Escapement Lever Bracket 22
Keylever Bell Crank 25
Keylever Bell Crank Stop 4
Lateral Rail Cap 30
Lateral Rail Stop Screw 30
Lock Slide Wedge 24
Lower Rail Push Bar Lever Screw 29
Operating Lever Adjusting Screw 22

	Page
Operating Rod	25
Operating Unit Position	23
Pulley Shaft Bearing	8
Ratchet Bearing Bracket	19
Retaining Lid Latch Wearing Strip	13
Retaining Lid Plate	15
Safety Latch	31
Selector and Elevator Shaft Clutch	8
Selector and Elevator Shaft End Play	7
Selecting Assembly	17
Selector Clutch Reset Link Eccentric	10
Selector Clutch Throwout Lever Adjusting Screw	10
Selector Lever Bail Adjusting Screw	16
Selector Trip Arm Extension	26
Shift Latch	4
Shift Lever Adjusting Screw	3
Spreader Cam Shaft Bearing	2
Spreader Cam Shaft Timing	12
Stop Rail	12
Tape Feed Lever Adjusting Screw	18
Tape Feed Lever Blocking Extension	21
Tape Feed Stop Bail Arm	14
Tape Guide	15
Tape Out Contact	13a
Tape Space	15
Tight Tape Switch	21a
Time Delay	21
Timing Hub Position	19
Top Plate	15
Top Plate Guide Nut	15
Top Plate Upstop Screw	14
Transfer Bail Adjusting Screw	17
Transfer Bail Eccentric Shaft	16
Upper Rail Push Bar Lever Screw	29
Vertical Link	30

3. SPRING TENSIONS

Code Bar Extension Detent	6
Delay Feed Pawl	20
Delay Retaining Pawl	19
Delivery Slide Bar	28
Elevator Bell Crank	13

Page

Elevator Bell Crank Latch 9
Elevator Clutch Throwout Lever Latch 11
Elevator Counterbalance 28
Elevator Safety 27
Escapement Cam Detent 22
Escapement Lever 25
Feed Wheel Detent 14
Keylever Bell Crank 1
Lateral Rail 30
Lateral Rail Manual Lever Detent 29
Lower Push Bar 1
Operating Bail Roller Arm 2
Safety Latch 31
Selector and Elevator Clutch 11
Selector and Elevator Clutch Detent 13
Selector and Elevator Clutch Throwout Lever 11
Selector Clutch Release Bail 10
Selector Lever Bail 18
Selector Lever Bail Yield 18
Selector Lever 18
Selector Trip Arm Detent 27
Shift Latch 3
Shift Lever 3
Stop Arm 21
Tape Feed Lever 18
Tape Feed Lever Extension 21
Tape Feed Pawl 13
Tape Feed Stop Bail 14
Top Plate 14
Transfer Bail 17
Transfer Bail Yield 17
Upper and Lower Rail Push Bar Lever 4
Upper Push Bar 1
Vertical Link 29
Yield Lever 3

d. FUNCTIONAL GROUPING AND RELATED ADJUSTMENTS 32

4. LUBRICATION

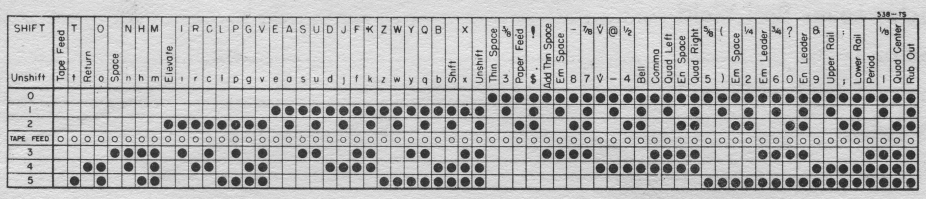
Standard Operating Unit ..... 33 & 34
Special Features ..... 35 & 36

1. GENERAL DESCRIPTION

The Teletypesetter Operating Unit is a device arranged to provide automatic operation of the linecasting machine. An adapter keyboard, assembling elevator and linkages are required for mounting the Operating Unit on the linecasting machine. Six-unit fully perforated tape is the medium of control; however, the linecasting machine may be manually operated from its keyboard by moving the manual control handle on the Operating Unit to its vertical position.

It is the function of the Operating Unit to "sense" the code combinations in the prepared tape and translate them into mechanical actions for automatic operation of the linecasting machine. Each time the tape advances, six pins rise against the tape. Depending on the code combination, pins will pass through the holes in the tape while others will be blocked. The pattern of the pins sets up a mechanical code combination, actuating levers for automatic operation of the linecasting machine.

The code combinations for the various functions and characters are shown in the figure below.



Tape Code Chart. (For Add-Thin Space Operation.)

2. ADJUSTMENTS

a. GENERAL

The sequence in which the following adjustments are arranged takes into consideration the normal approach to the mechanism and the fact that a change in one adjustment may affect others. Adjustments, should not be disturbed unnecessarily. After performing any adjustment check related adjustments.

NOTE: In all the figures of this Bulletin, fixed pivot points are designated by solid black circles. A cycle refers to the sequence of movements of associated mechanisms during one complete revolution of the selector shaft. In the following text, the terms, left, right, front, rear, upper, and lower, refer to the normal position of the Operating Unit as viewed from the front, when installed on the linecasting machine.

b. INSTRUCTIONS

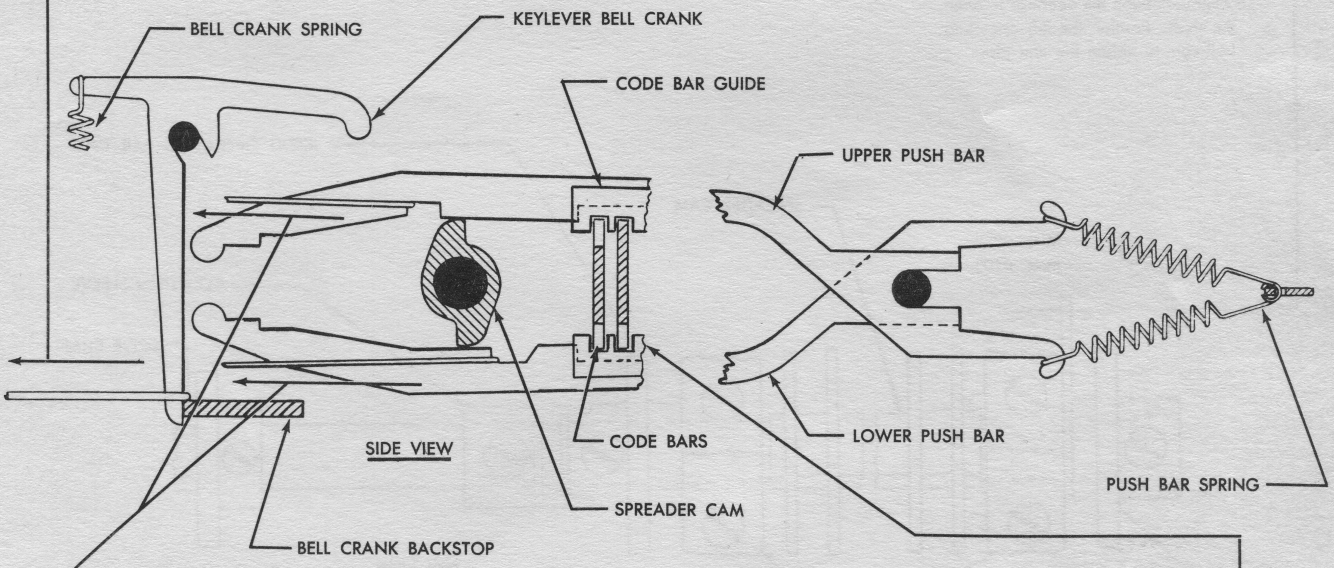
When it is necessary to remove the Operating Unit from the linecasting machine for servicing, proceed as follows:

Remove the driving belt from the pulley (Page 8)
Remove the top bell crank cover and the top right end cover.
Back off the knurled clamping screw mounted on the keyboard base casting. (Page 23)
Remove the pilot screw on each hanger. (Page 23)
Remove the Operating Unit from the linecasting machine.

KEYLEVER BELL CRANK SPRING TENSION

Requirement—Bell crank resting against its backstop.

Min. 4 ozs.—Max. 6 ozs. to start bell crank moving. Check each bell crank.



Note—To facilitate checking first four requirements, remove the following:

1. Left and right hanger.
2. Coupling sleeve mounting screw (Page 2—disengaging sleeve from right operating bail cam).
3. Push bar and bell crank assemblies (note number of shims removed from each side of casting and reassemble in same manner).

UPPER PUSH BAR SPRING TENSION

Requirement—Spreader cam vertical.

Min. 8½ ozs.—Max. 12 ozs. to start upper push bar moving. Check each bar.

LOWER PUSH BAR SPRING TENSION

Requirement—Spreader cam vertical.

Min. 12½ ozs.—Max. 16 ozs. to start lower push bar moving. Check each bar.

CODE BAR GUIDES

Requirement—With spreader cam vertical. Code bars should move freely in guide and should drop of their own weight when code bar assembly is held in vertical position.

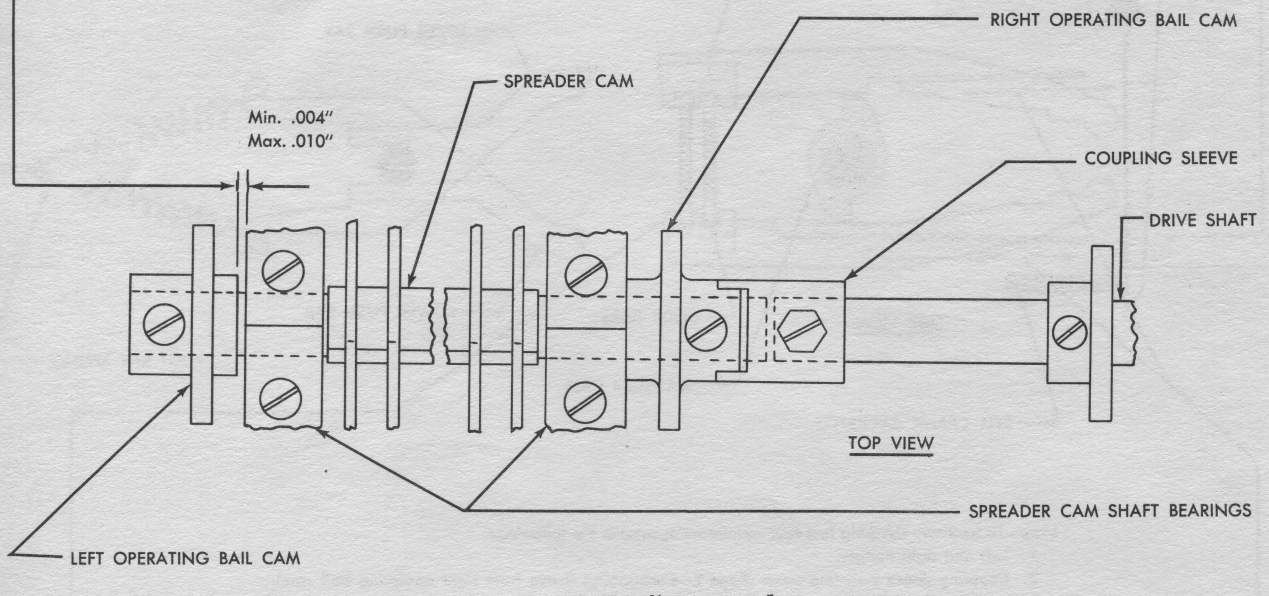
To adjust—Position code bar guides.

SPREADER CAM SHAFT BEARING

Requirement — Rotate spreader cam through a complete revolution with operating bail roller arm springs (lower fig.) removed. Shaft should turn without binding and have some end play.

Min. .004 inch—Max. .010 inch.

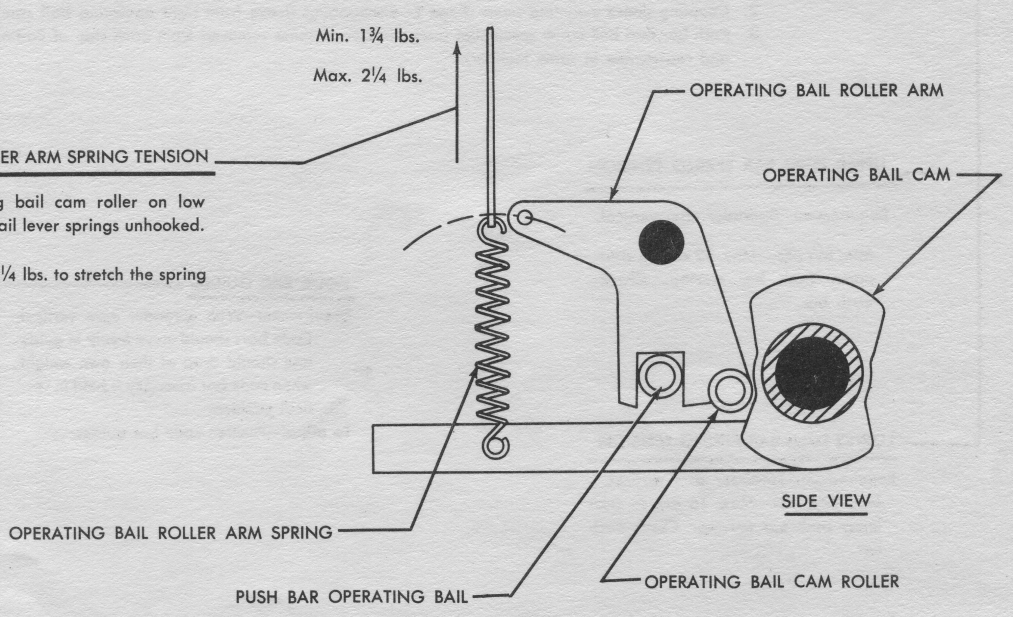
To adjust—Position the bearings to align the shaft. Position the left operating bail cam to obtain the end play.



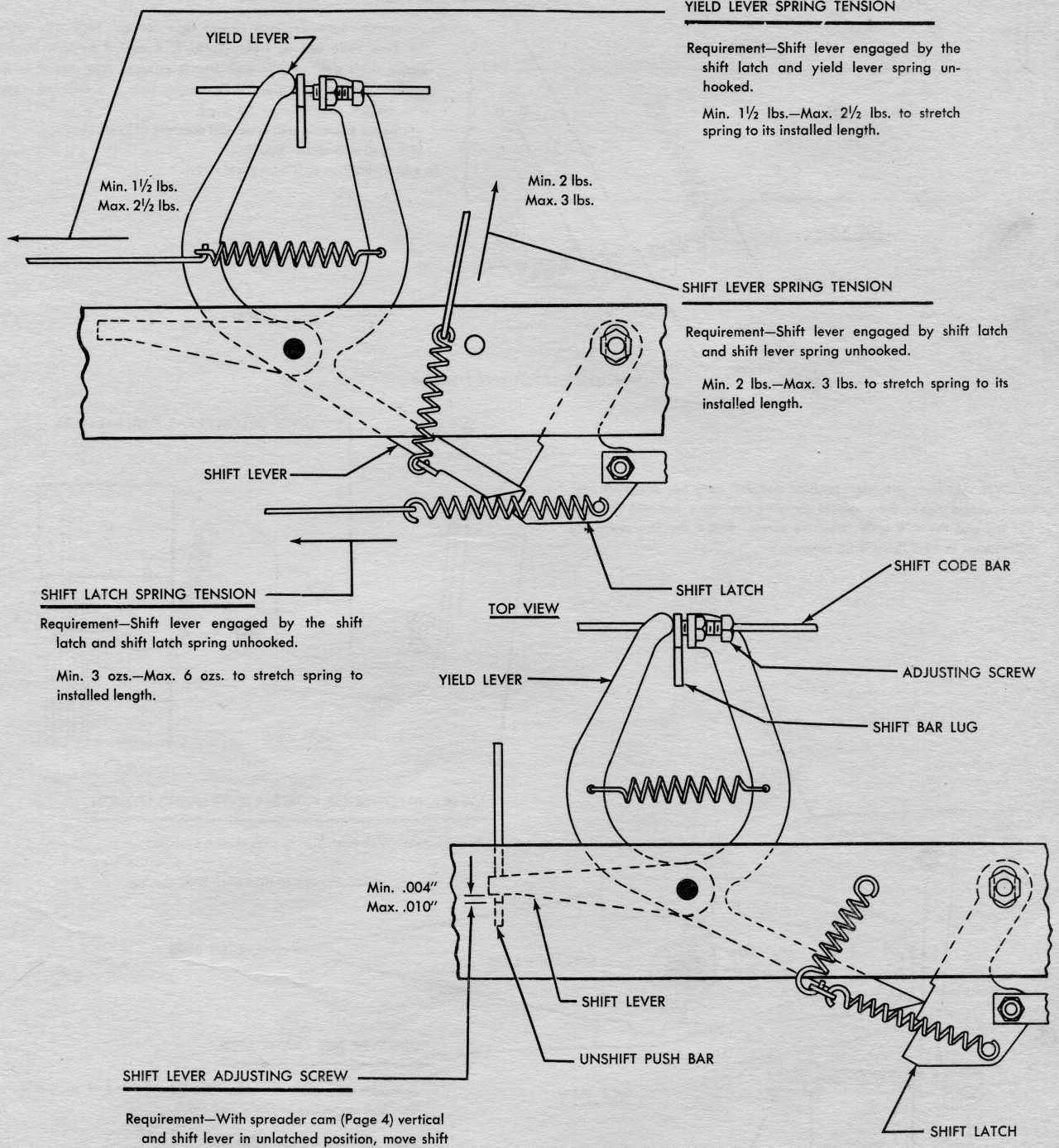
OPERATING BAIL ROLLER ARM SPRING TENSION

Requirement—Operating bail cam roller on low part of its cam and bail lever springs unhooked.

Min. 1¾ lbs.—Max. 2¼ lbs. to stretch the spring to its installed length.



Note—The following five requirements may be checked with the left base plate removed.



YIELD LEVER SPRING TENSION

Requirement—Shift lever engaged by the shift latch and yield lever spring unhooked.

Min. 1½ lbs.—Max. 2½ lbs. to stretch spring to its installed length.

SHIFT LEVER SPRING TENSION

Requirement—Shift lever engaged by shift latch and shift lever spring unhooked.

Min. 2 lbs.—Max. 3 lbs. to stretch spring to its installed length.

SHIFT LATCH SPRING TENSION

Requirement—Shift lever engaged by the shift latch and shift latch spring unhooked.

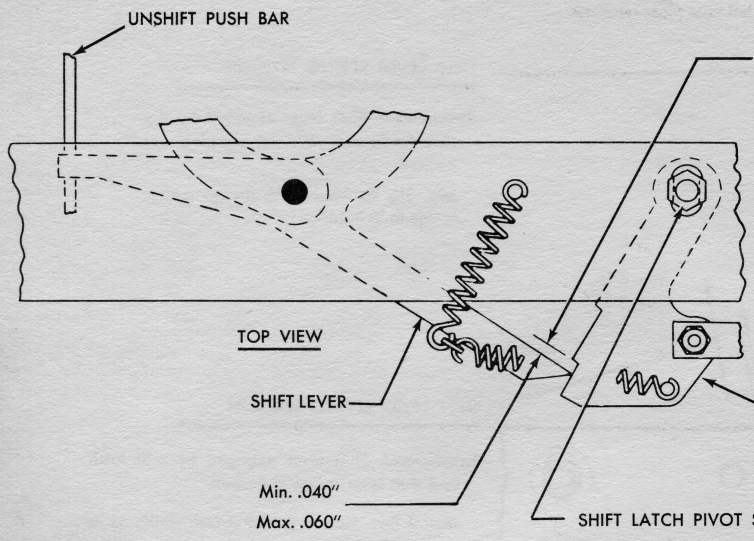
Min. 3 ozs.—Max. 6 ozs. to stretch spring to installed length.

SHIFT LEVER ADJUSTING SCREW

Requirement—With spreader cam (Page 4) vertical and shift lever in unlatched position, move shift code bar to shift position (extreme left). Clearance between shift lever and projection on unshift push bar.

Min. .004 inch—Max. .010 inch.

To adjust—Position shift lever by means of its adjusting screw.



SHIFT LATCH

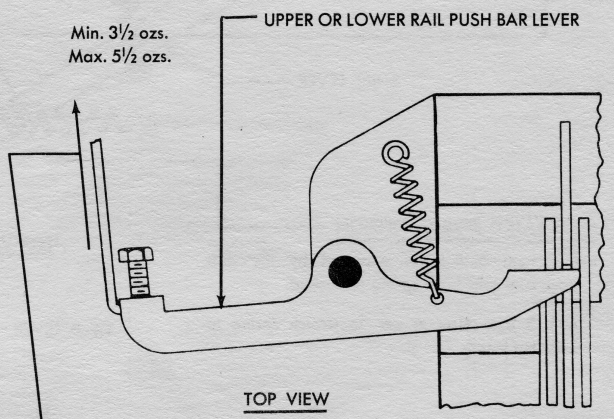
Requirement—Spreader cam (lower fig.) vertical. Manually move the Zero code bar to right—1, 2, 3, 4 and 5 to left. Rotate pulley shaft until unshift push bar is selected and moved to its extreme forward position. If Operating Unit is assembled, tape with unshift coding must be used.

Clearance between shift lever and shoulder of latch.

Min. .040 inch—Max. .060 inch

To adjust—Position shift latch pivot screw.

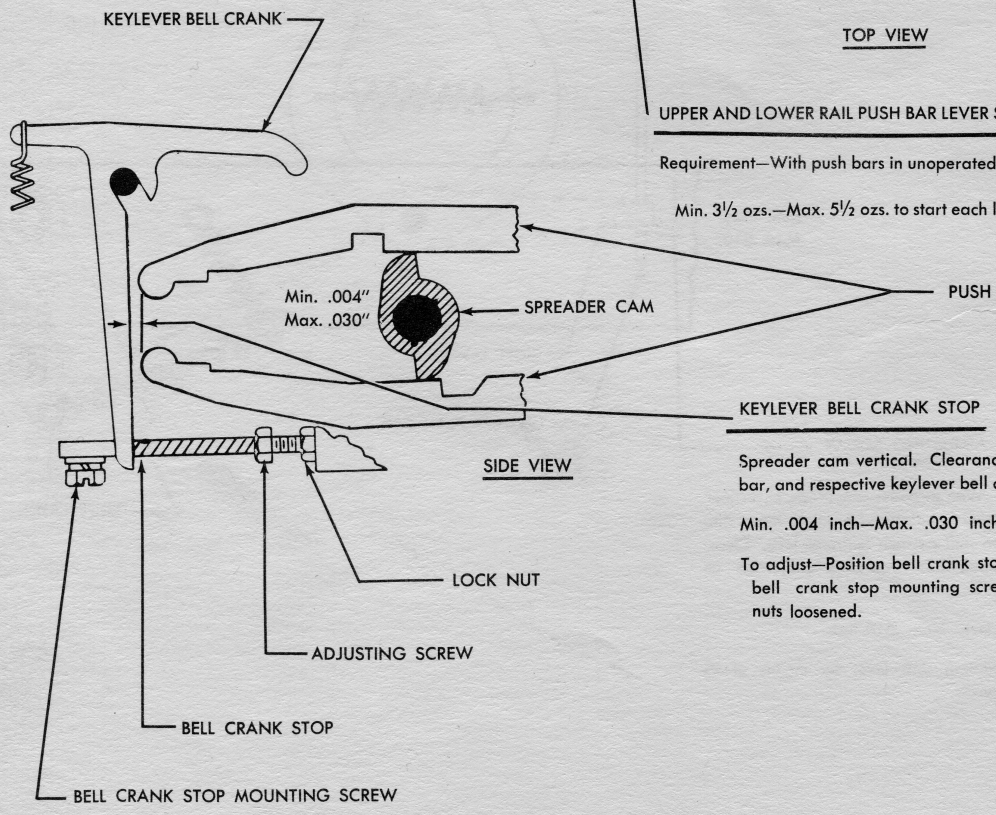
Note—With shift lever in latched position and shift code bar in unshift position (extreme right), there should be some clearance between the shift bar lug and the shift lever adjusting screw. Refine the two preceding adjustments in case there is no clearance.



UPPER AND LOWER RAIL PUSH BAR LEVER SPRING TENSION

Requirement—With push bars in unoperated position.

Min. 3½ ozs.—Max. 5½ ozs. to start each lever moving.



Spreader cam vertical. Clearance between end of each push bar, and respective keylever bell crank.

Min. .004 inch—Max. .030 inch.

To adjust—Position bell crank stop by its adjusting screws with bell crank stop mounting screws and adjusting screw lock nuts loosened.

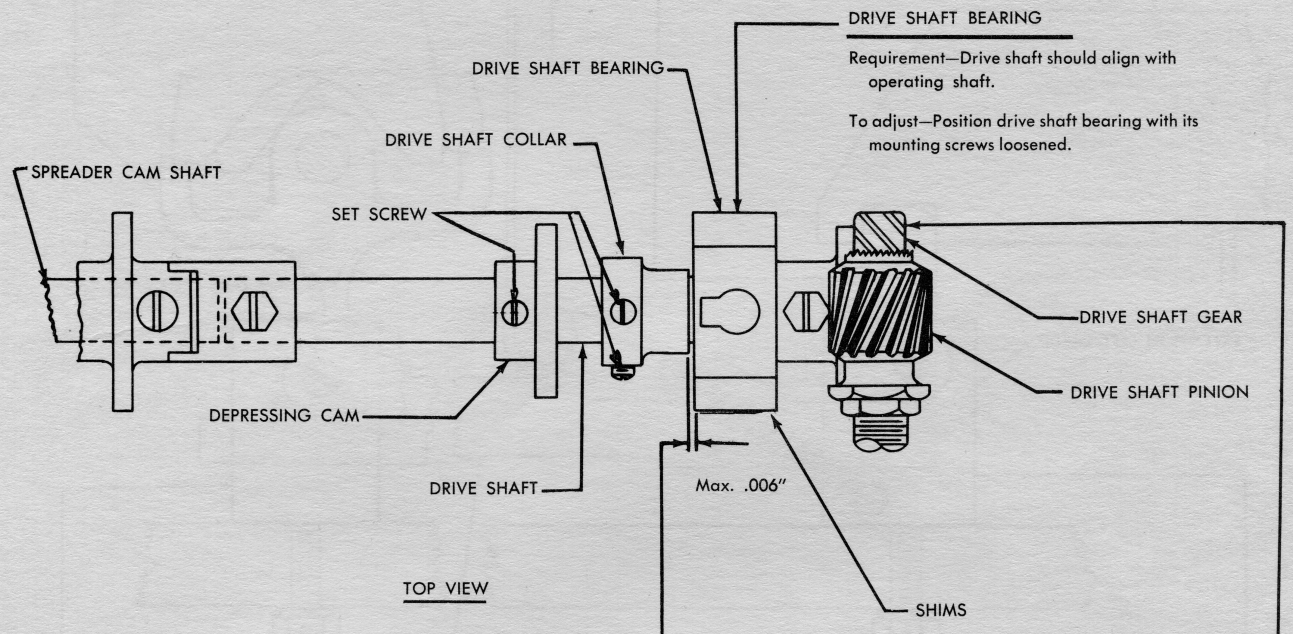
(2) INSTRUCTIONS FOR REMOVING THE SELECTING ASSEMBLY

Remove the assembly only for servicing. To facilitate replacement and alignment of selecting assembly, make sure that rear stop rail and eccentric stop are not loosened and are flush against selector assembly.

Procedure—

With no tape in tape guide, rotate pulley shaft until selector shaft is 180 degrees (approx.) from its stop position. Remove three selecting assembly mounting screws and front stop rail. Raise the transfer bail (manually) as high as possible. Then raise selecting assembly until its base plate mounting screws clear the base casting. Slide selecting assembly forward and to right as it is removed from Operating Unit.

Note—Parts associated with the mechanical tape stop mechanism are not shown in conjunction with the shaft or clutch assemblies that follow directly. Figures and requirements for this feature are arranged in the sequence of adjustment.



TOP VIEW

DRIVE SHAFT BEARING

Requirement—Drive shaft should align with operating shaft.

To adjust—Position drive shaft bearing with its mounting screws loosened.

DRIVE SHAFT COLLAR

Requirement—Drive shaft should have some end play.
Max. .006 inch.

To adjust—Position drive shaft collar with its set screws loosened.

DRIVE SHAFT GEAR PLAY

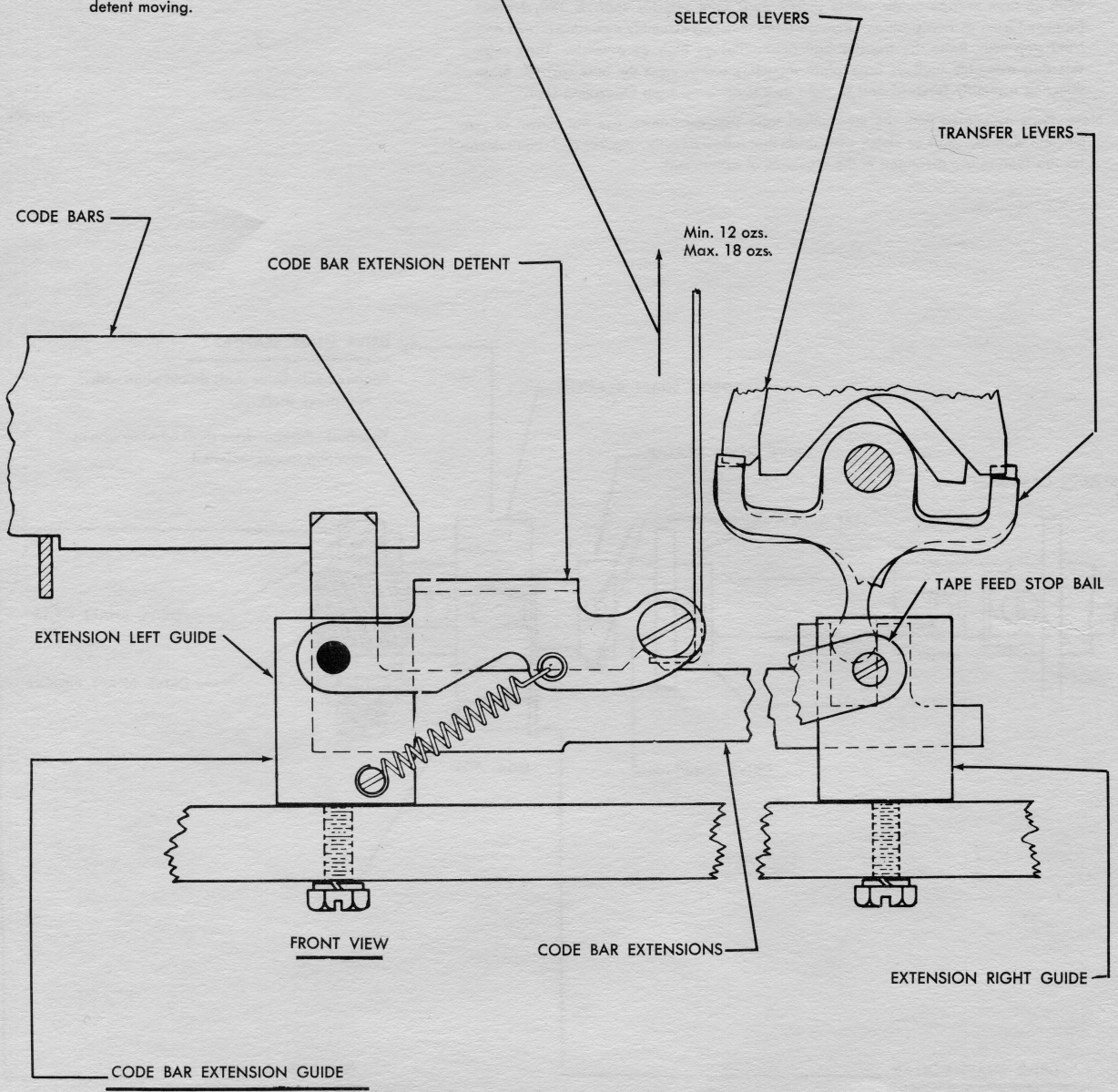
Requirement — Minimum play, without binding, between drive shaft gear and pinion for complete revolution of drive shaft gear.

To adjust—Add or remove shims between drive shaft bearing and the base. Recheck drive shaft bearing adjustment.

CODE BAR EXTENSION DETENT SPRING TENSION

Requirement — With scale hooked under Roller Retaining Post.

Min. 12 ozs.—Max. 18 ozs. to start detent moving.



Requirement—Code bars and transfer levers should align with code bar extensions and move freely without binding.

To check—Hold code bar extension detent and tape feed stop bail away from the extensions, move spreader cam (Page 4) vertical and unhook transfer bail spring (Page 12). Code bars and extensions should drop of their own weight when left end of Operating Unit is raised to a vertical position.

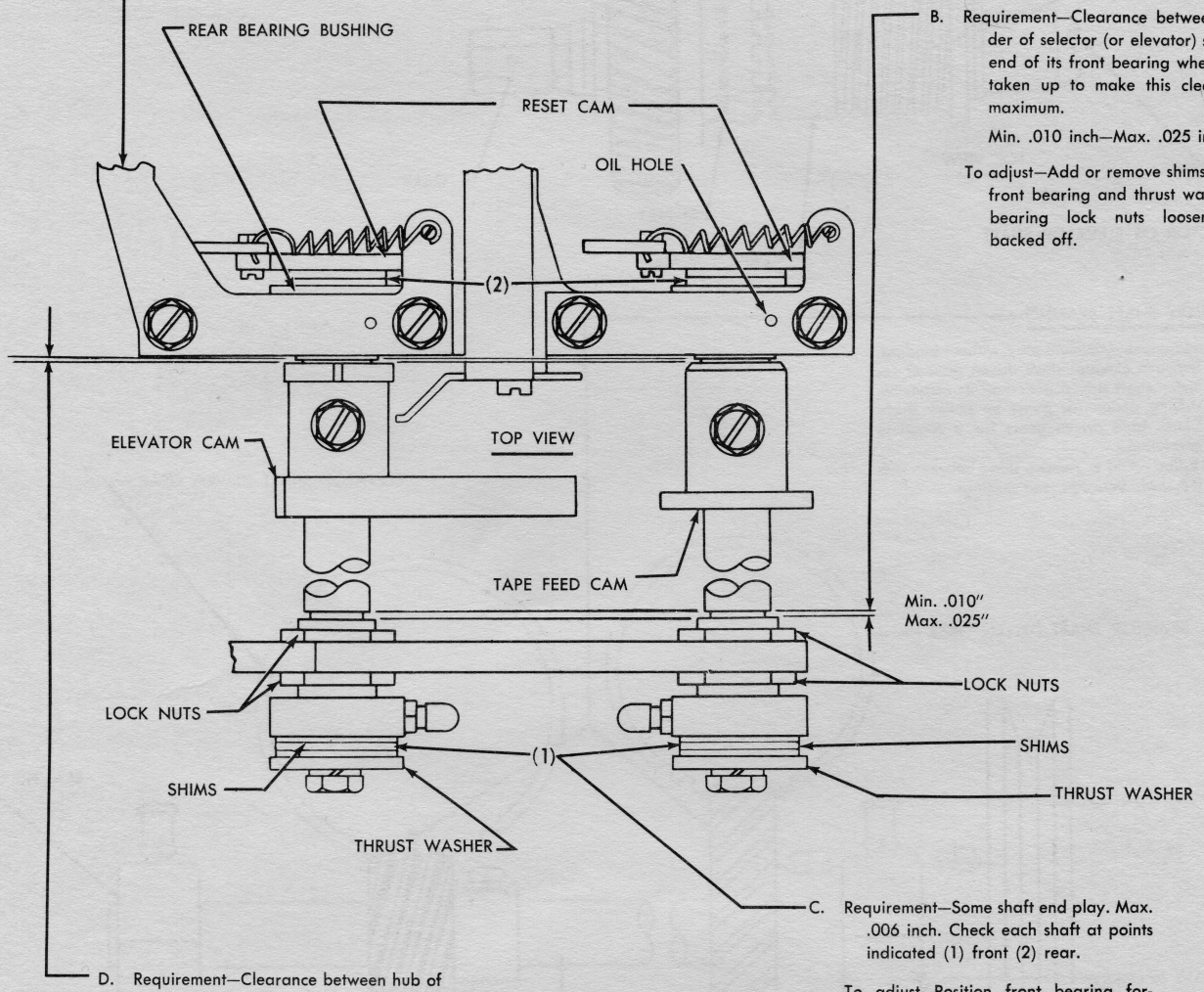
To adjust—Position code bar extension guide with mounting screws loosened.

Caution—If either shaft rear bearing bushing is removed, reassemble so that pin engages its guide pin hole.

SELECTOR AND ELEVATOR SHAFT END PLAY

A. Requirement—Selector and elevator shafts should turn freely.

To adjust—Align front and rear bearing brackets with their mounting screws loosened.



B. Requirement—Clearance between shoulder of selector (or elevator) shaft and end of its front bearing when play is taken up to make this clearance a maximum.

Min. .010 inch—Max. .025 inch.

To adjust—Add or remove shims between front bearing and thrust washer with bearing lock nuts loosened and backed off.

C. Requirement—Some shaft end play. Max. .006 inch. Check each shaft at points indicated (1) front (2) rear.

To adjust—Position front bearing forward or to rear and tighten lock nuts.

D. Requirement—Clearance between hub of tape feed (or elevator) cam and end of rear bearing bushing.
Min. .010 inch—Max. .030 inch.

To adjust—Position cam and tighten its mounting screws.

Note: When selector (or elevator) shaft is in stop position, heads of screws mounting the cams should be on top.

CLUTCH SPRING TENSION

Requirement—(Page 11)

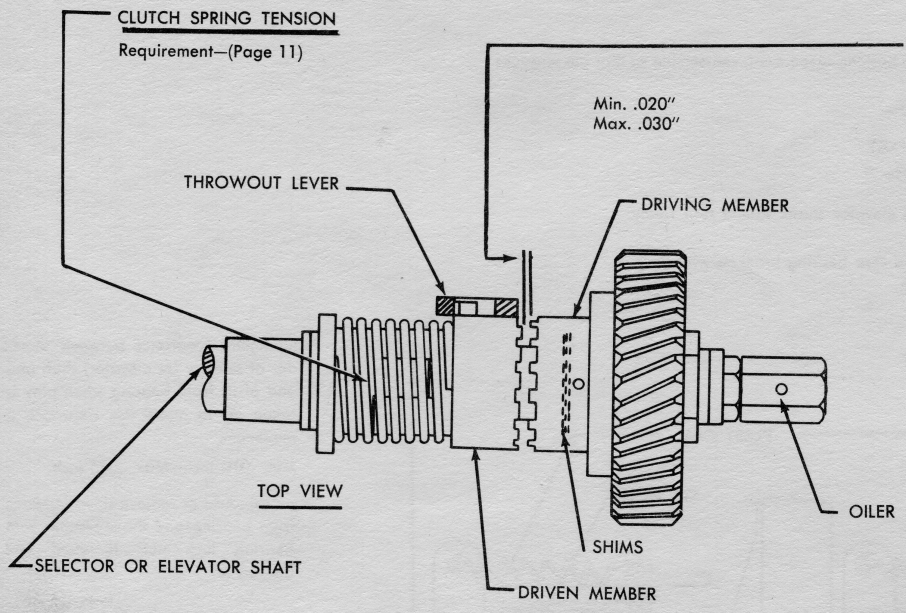
SELECTOR AND ELEVATOR SHAFT CLUTCH

Requirement—Clearance between teeth of driving and driven member of both clutches.

Min. .020 inch—Max. .030 inch.

To check—Selector (or elevator) shaft fully disengaged and gear play taken up in direction for minimum clearance.

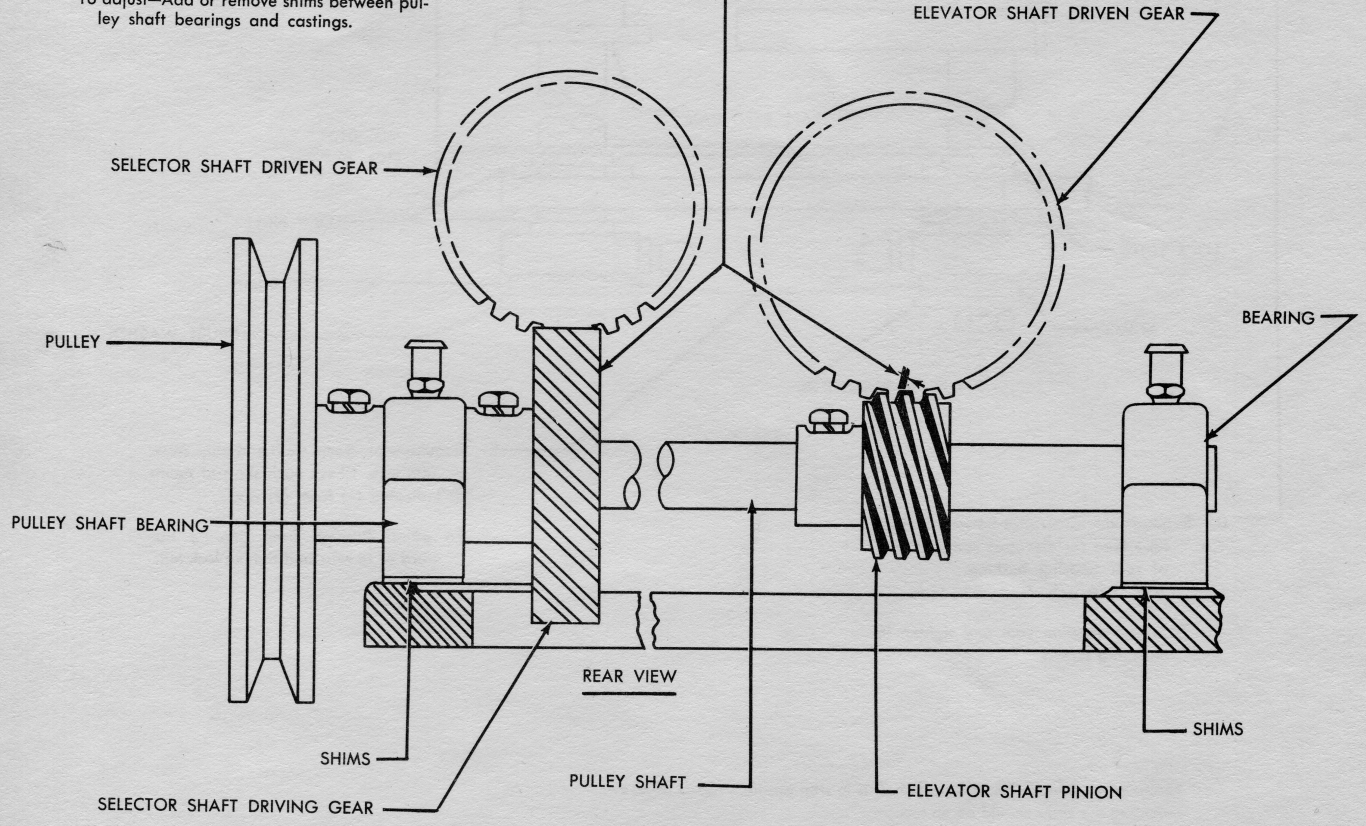
To adjust—Add or remove shims between the driving clutch member and its respective bushing. Align oil holes in bushing with those of driving member.



PULLEY SHAFT BEARING

Requirement—Minimum play, without binding, between elevator shaft driven gear or selector shaft driven gear and its respective driving pinion (or gear) on pulley shaft. Check both driven gears for a complete revolution.

To adjust—Add or remove shims between pulley shaft bearings and castings.

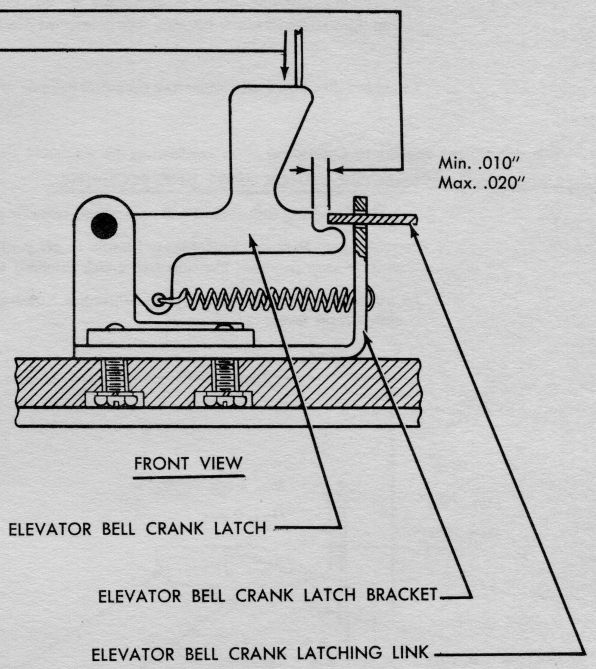


ELEVATOR BELL CRANK LATCH BRACKET

Requirement—Insert tape with elevator combination in tape guide (if selector assembly is removed, move No. 2 code bar and block bar to left with other code bars to right and spreader cam—Page 1 vertical.) Rotate pulley shaft until operating bail roller is on center of high part of cam, clearance between elevator bell crank latching link and elevator bell crank latch.

Min. .010 inch—Max. .020 inch.

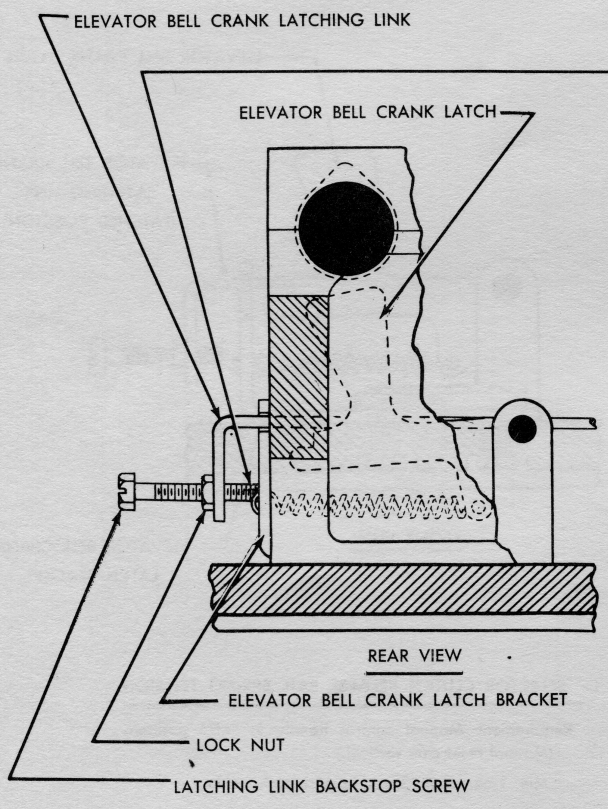
To adjust—Position elevator bell crank latch bracket with its mounting screws loosened.



ELEVATOR BELL CRANK LATCH SPRING TENSION

Requirement—Same as above

Min. 1 oz.—Max. 3 ozs. to start latch moving.



ELEVATOR BELL CRANK LATCHING LINK BACKSTOP SCREW

Note—Checking adjustment will necessitate remaking it.

Requirement—Elevator and selector shafts in stop position. Elevator bell crank latching link in unlatched position—extreme left.

To adjust—With lock nut loosened, turn latching link backstop screw in or out until it just touches elevator bell crank latch bracket. Then advance screw one quarter turn.

A. **SELECTOR CLUTCH RESET LINK ECCENTRIC**

Note: Checking adjustment will necessitate remaking it. Remove pulley for better access to eccentric.

Requirement—Manual control lever handle in "off" position (reset cam vertical). Selector and elevator shafts in stop position. Elevator bell crank latching link in latched position,

To adjust—Position clutch reset link eccentric (screw) so that the reset cam roller just touches the clutch reset lever.

This adjustment applies to Operating Units containing the electrical clutch magnet.

SELECTOR CLUTCH RESET LINK ECCENTRIC

Note: Checking adjustment will necessitate remaking it. Remove pulley for better access to eccentric.

Requirement—Manual control lever handle in off position (reset cam vertical). Selector and elevator shaft in stop position. Elevator bell crank latching link in latched position.

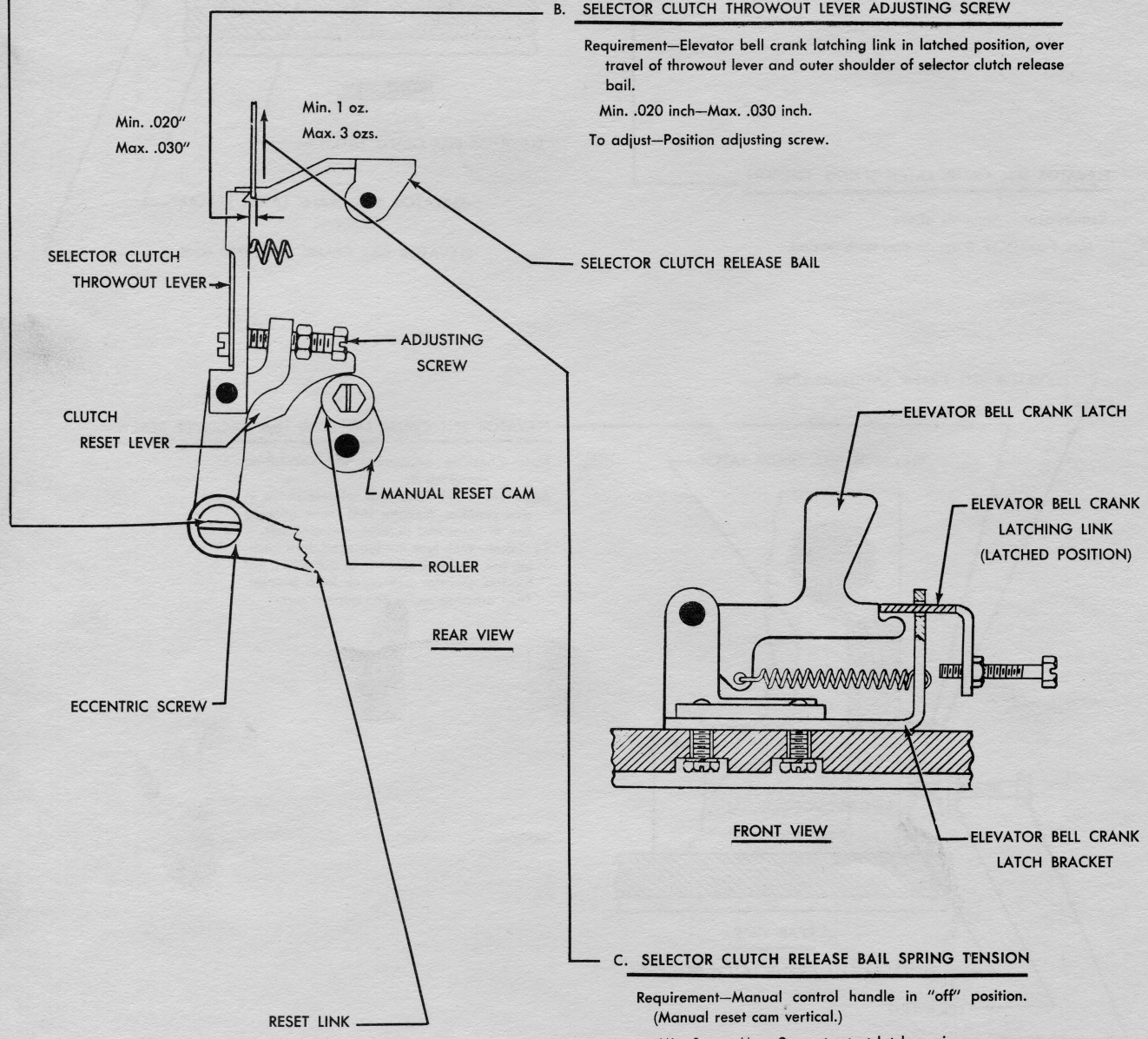
To adjust—Position clutch reset link eccentric bushing so that the reset cam roller just touches the clutch reset lever.

B. **SELECTOR CLUTCH THROWOUT LEVER ADJUSTING SCREW**

Requirement—Elevator bell crank latching link in latched position, over travel of throwout lever and outer shoulder of selector clutch release bail.

Min. .020 inch—Max. .030 inch.

To adjust—Position adjusting screw.



C. **SELECTOR CLUTCH RELEASE BAIL SPRING TENSION**

Requirement—Manual control handle in "off" position. (Manual reset cam vertical.)

Min. 1 oz.—Max. 3 ozs. to start latch moving.

ELEVATOR CLUTCH RESET LEVER ADJUSTING SCREW

Requirement—Elevator clutch reset lever roller on high part of cam. Overtravel of throwout lever and outer shoulder of throwout lever latch.

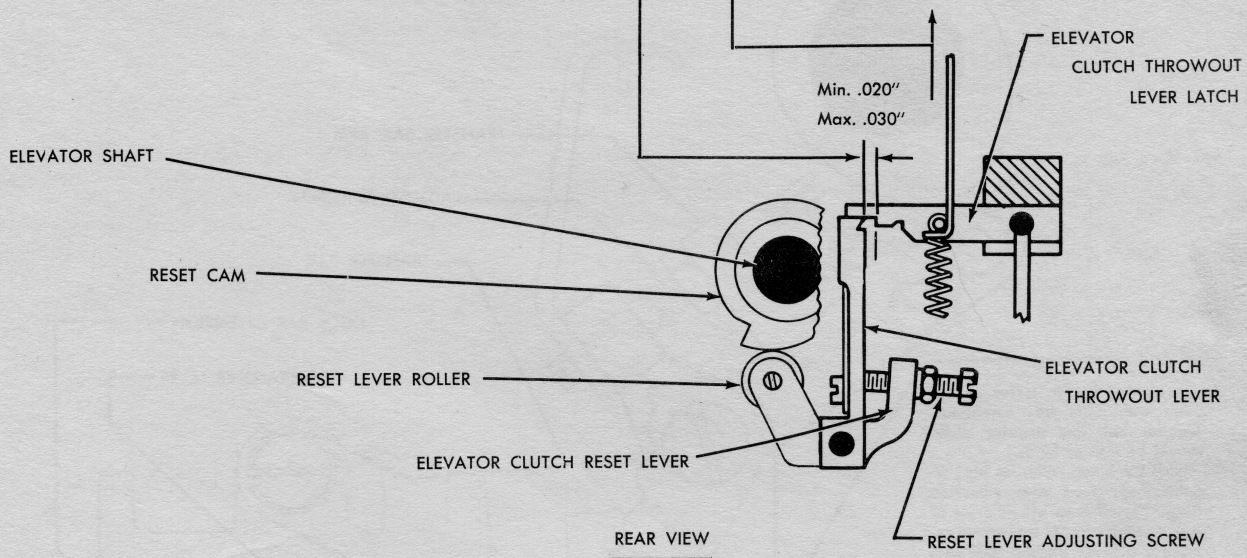
Min. .020 inch—Max. .030 inch.

To adjust—Position reset lever adjusting screw.

ELEVATOR CLUTCH THROWOUT LEVER LATCH SPRING TENSION

Requirement—Elevator clutch reset lever roller on high part of its cam.

Min. 8 ozs.—Max. 12 ozs. to start latch moving.

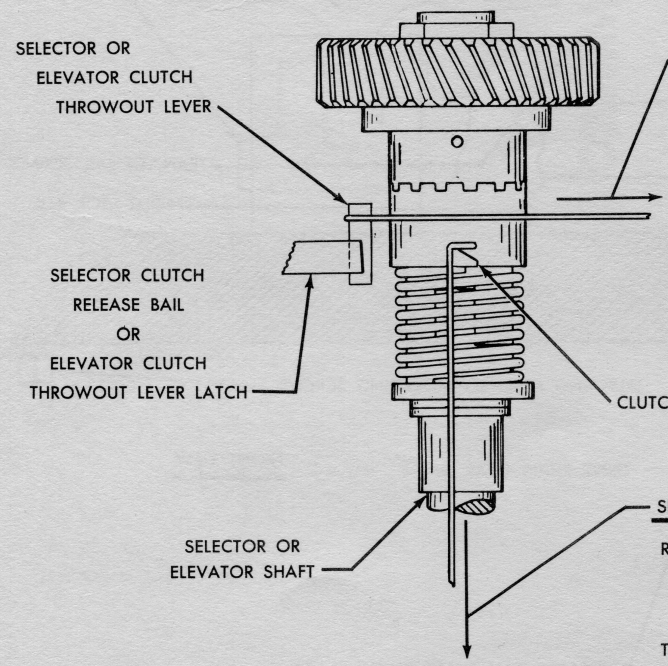


REAR VIEW

SELECTOR AND ELEVATOR CLUTCH THROWOUT LEVER SPRING TENSION

Requirement—Rotate selector and elevator shafts so that stop lug on driven clutch member is on top. Relatch throwout lever.

Min. 1½ lbs.—Max. 2½ lbs. to start lever moving.



SELECTOR AND ELEVATOR CLUTCH SPRING TENSION

Requirement—Clutch teeth fully engaged and clutch stop lug at top.

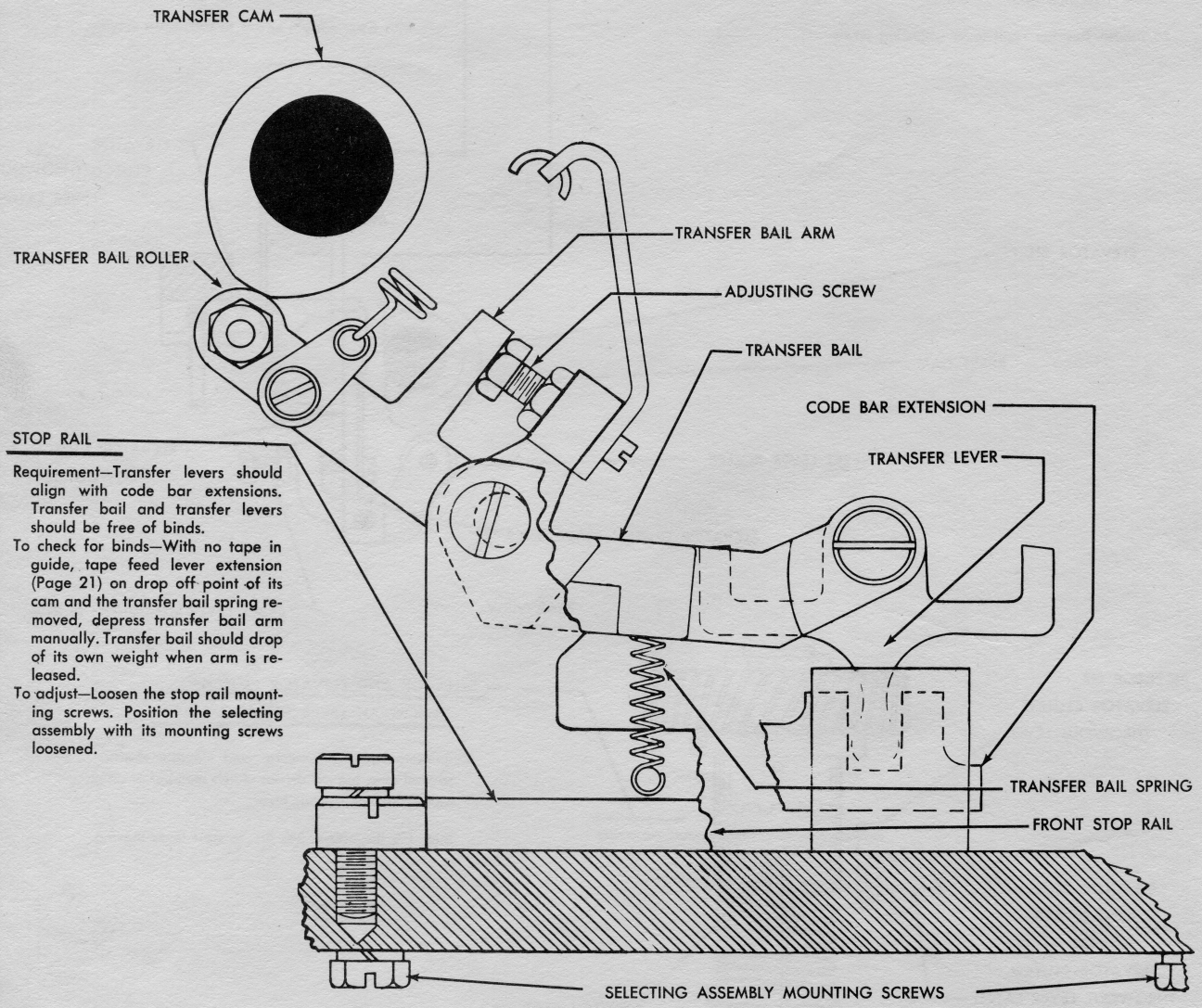
Min. 2½ lbs.—Max. 5 lbs. to just separate clutch teeth.

To check—Determine point of minimum tension by disengaging clutch, rotating driving gear a few degrees and repeating test. Replace spring if weak.

TOP VIEW

(3) INSTRUCTIONS FOR REPLACING THE SELECTING ASSEMBLY

With spreader cam vertical, move all code bars and extensions to their extreme left position. Rotate selector shaft 180 degrees (approx.) from its stop position. With delay feed pawl and retaining pawl (Page 19) disengaged from their respective ratchets, hold the transfer bail (manually) in its operated position and replace the selecting assembly. Mount the front stop rail and replace the (3) mounting screws.

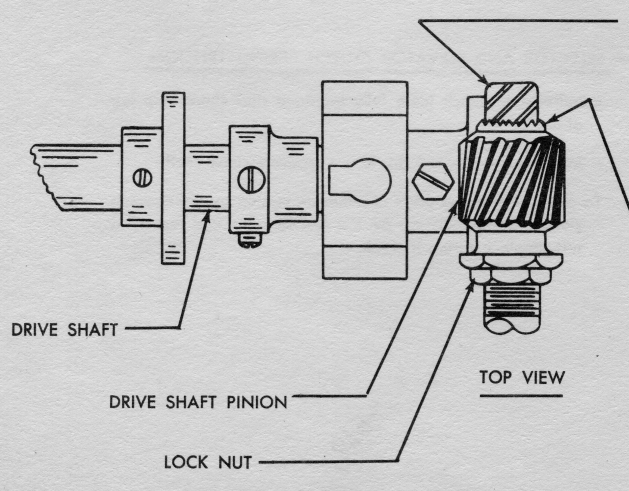


STOP RAIL

Requirement—Transfer levers should align with code bar extensions. Transfer bail and transfer levers should be free of binds.

To check for binds—With no tape in guide, tape feed lever extension (Page 21) on drop off point of its cam and the transfer bail spring removed, depress transfer bail arm manually. Transfer bail should drop of its own weight when arm is released.

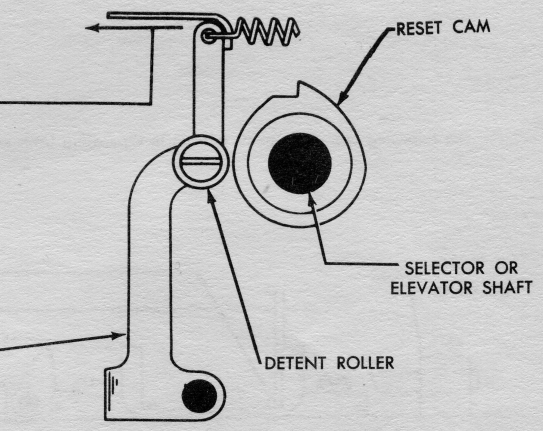
To adjust—Loosen the stop rail mounting screws. Position the selecting assembly with its mounting screws loosened.



SPREADER CAM SHAFT TIMING

Requirement—With transfer bail roller on middle of high part of its cam, push bars (Page 4) should just drop off high part of spreader cam.

To adjust—Position drive shaft pinion with its lock nuts loosened. Recheck adjustment after lock nuts are tightened.

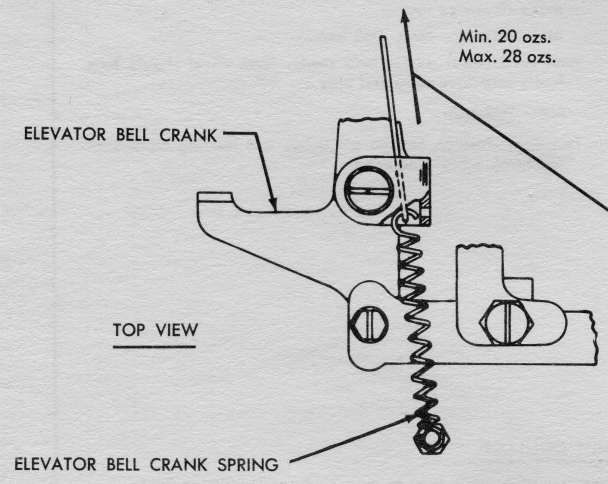


FRONT VIEW

SELECTOR AND ELEVATOR CLUTCH DETENT SPRING TENSION

Requirement—Selector (or elevator) clutch detent roller on lowest part of reset cam.

Min. 22 ozs.—Max. 32 ozs. to start each detent moving.

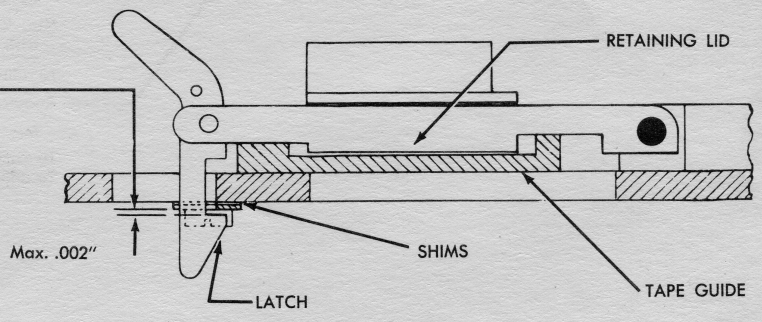


TOP VIEW

ELEVATOR BELL CRANK SPRING TENSION

Requirement—Elevator bell crank spring unhooked.

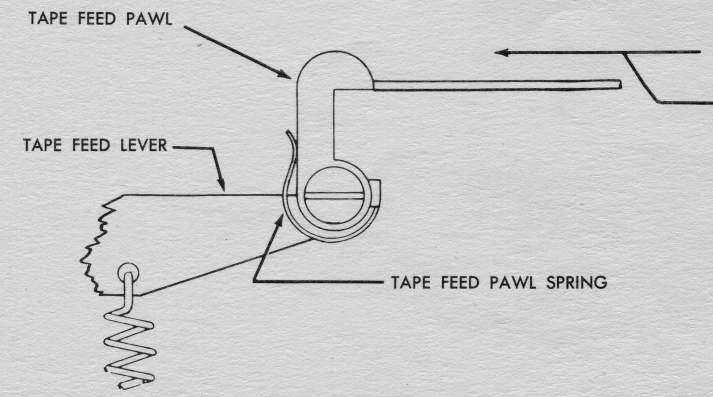
Min. 20 ozs.—Max. 28 ozs. to stretch spring to installed length.



RETAINING LID LATCH WEARING STRIP

Requirement—With retaining lid in latched position, there should be some clearance between latch and wearing strip, but not more than .002 inch.
To adjust—Add or remove shims.

FRONT VIEW



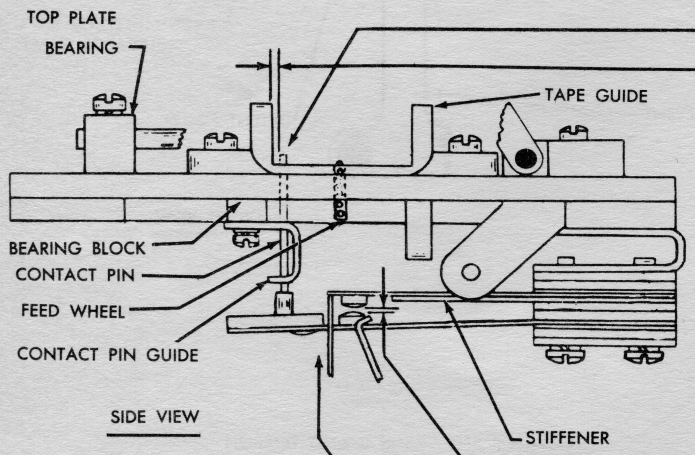
TAPE FEED PAWL SPRING TENSION

Requirement—Push end of 8 oz. scale applied to right edge of tape feed pawl.

Min. 2 ozs.—Max. 3 ozs. to move feed pawl to vertical positions.

To adjust—Turn spring right or left with bearing screw loosened.

The following two adjustments pertain to Operating Units equipped with tape-out contacts.



CONTACT PIN GUIDE

Requirement—Clearance between tape-out contact push pin and shoulder of guide plate when side play is taken up to make clearance min.

Min. .050 inch—Max. .060 inch.

With feed wheel detent held away, feed wheel should turn freely and have some end play.

Max. .002 inch.

To adjust—Position contact pin guide and bearing block with mounting screws loosened.

TAPE-OUT CONTACT

Requirement—With blank tape in tape guide and retaining lid closed, contact gap.

Min. .008 inch—Max. .012 inch.

To adjust—Position stiffener

Requirement—With tape removed from tape guide, using 8 oz. scale push in line with pin.

Min. ¼ oz.—Max. ½ oz. to bring top of contact pin flush with top surface of tape guide.

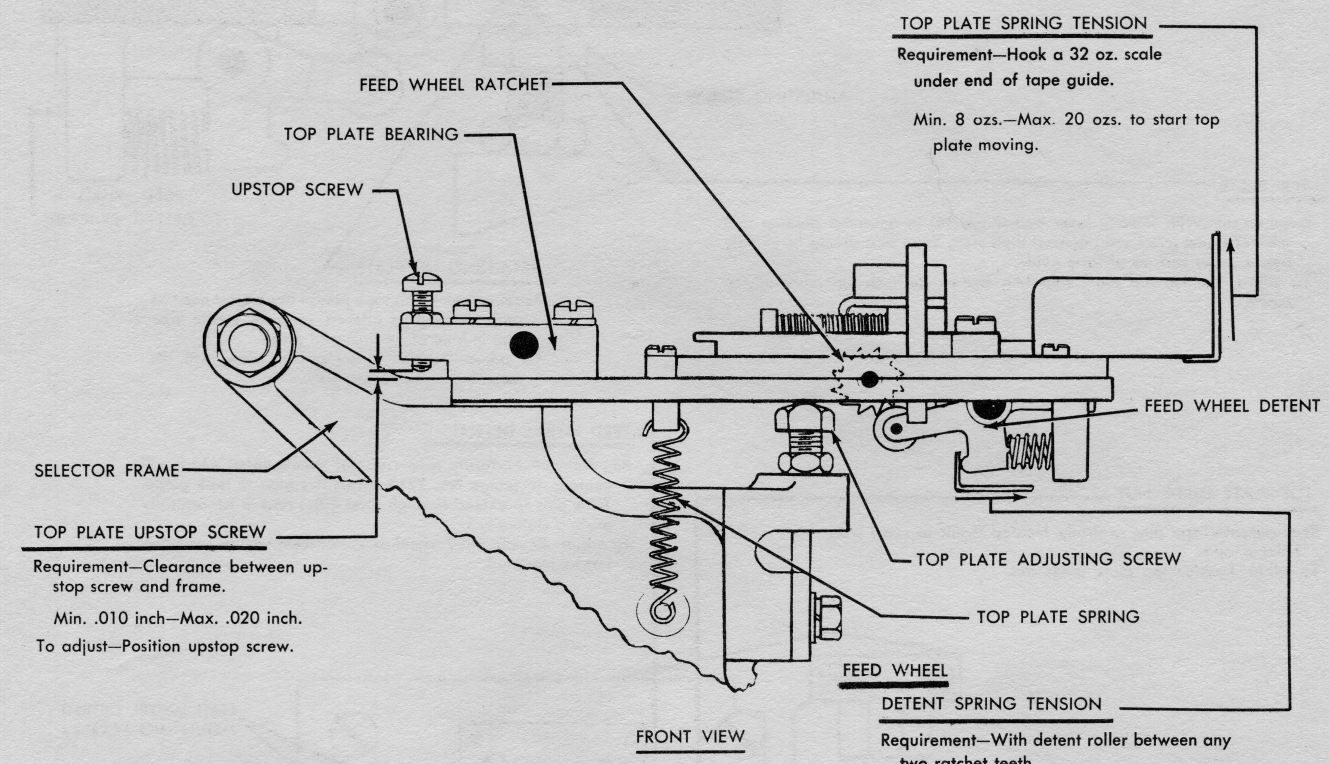
To adjust—Bend lower spring.

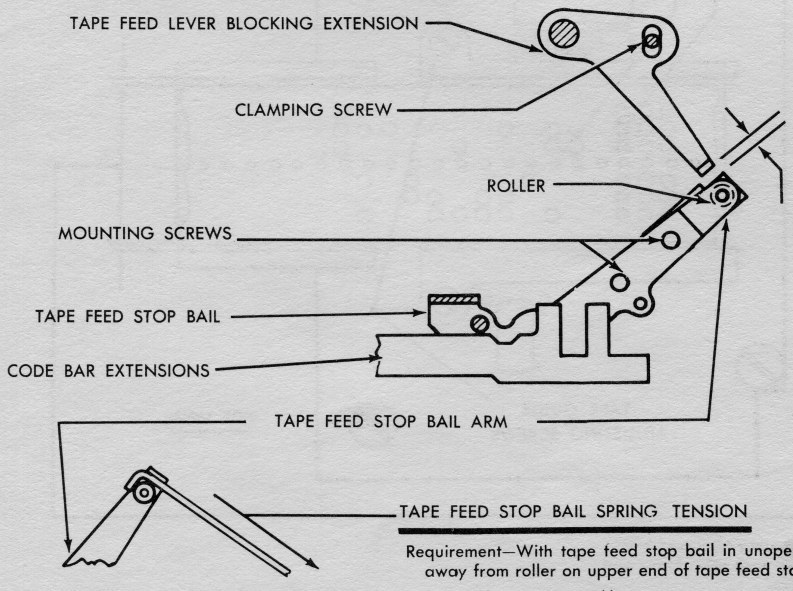
Requirement—With blank tape in tape guide.

Min. 1½ ozs. Max. 2½ ozs.

To start upper spring moving from its stiffener.
To adjust—Bend upper spring at its mounting.

Note—
(1) When replacing top plate, guide the feed pawl into position, hook both top plate springs and mount both bearings.
(2) Early Operating Units may not be equipped with the following components: Top plate bearing upstop screw; Tape feed delay mechanism; and tape feed detent with projection for spring scale hook (old style requires spring tension of 15 to 18 ozs. in place of 12 to 15 ozs.).





TAPE FEED STOP BAIL SPRING TENSION

Requirement—With tape feed stop bail in unoperated position, hold delay feed pawl (Page 19) away from roller on upper end of tape feed stop bail arm.

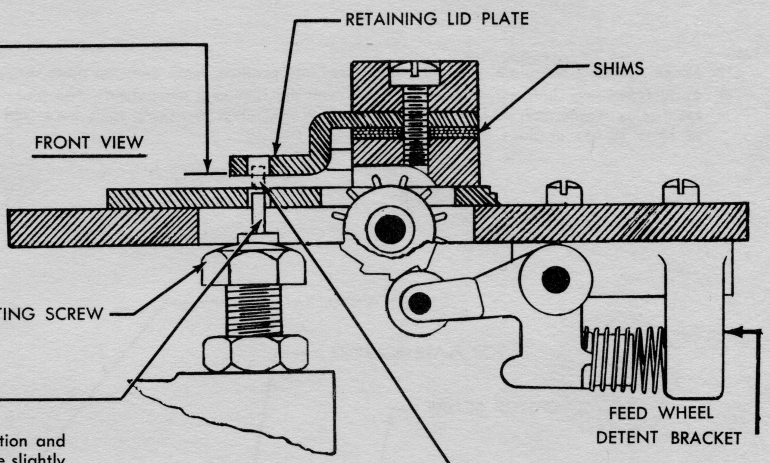
Min. 3½ ozs.—Max. 6½ ozs. to start tape feed stop bail arm moving.

TAPE SPACE

Requirement—Retaining lid in latched position clearance between plate and tape guide.

Min. .006 inch—Max. .008 inch.

To adjust—Add or remove shims.



TOP PLATE

Requirement—With selector lever bail (Page 16) in operated position and selector levers (clockwise) against their stop. Tape pins should be slightly below upper surface of tape guide.
To adjust—Position top plate adjusting screws. Recheck top plate upstop screw.

RETAINING LID PLATE

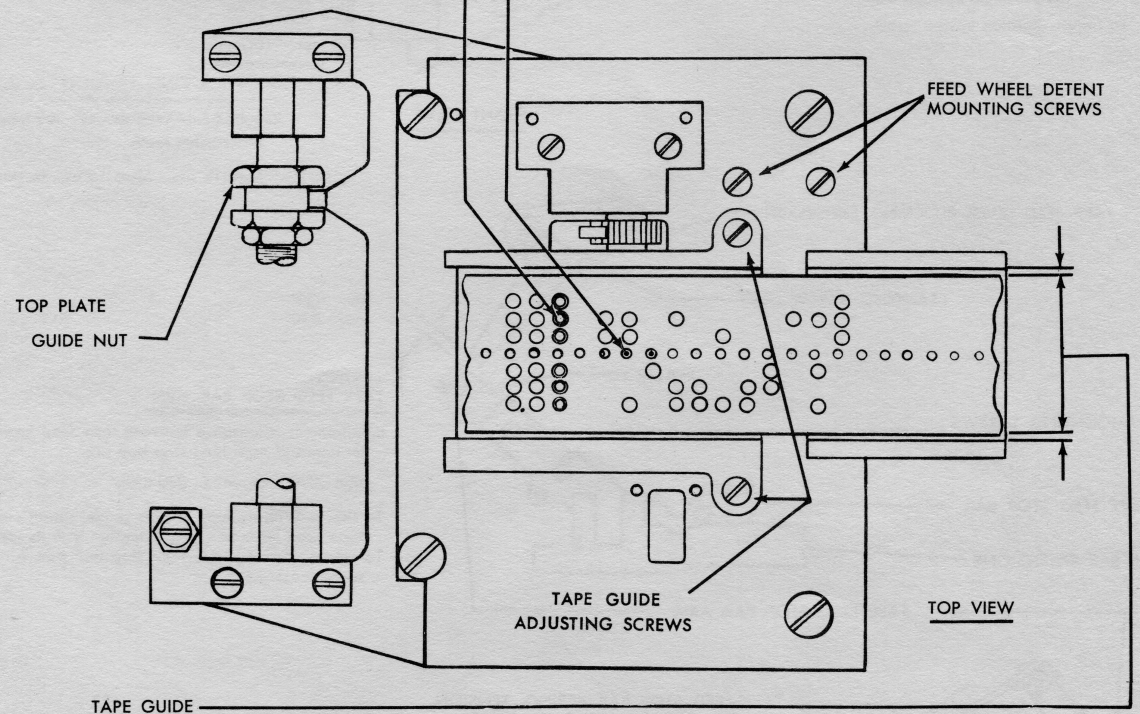
Requirement—With tape pins in uppermost position and retaining lid latched, centrally locate tape pins in hole of retaining lid plate.
To adjust—Position retaining lid plate with its mounting screws loosened.

FEED WHEEL DETENT

Requirement—Perforate tape (rub-out combination) which will conform to gauge No. 2215. Insert this tape in tape guide. Tape pins to extend through tape holes and to be centrally located (laterally.)
To adjust—Position feed wheel detent bracket with its mounting screws loosened.

TOP PLATE GUIDE NUT

Requirement—Tape pins centrally located (front to rear) with holes in tape.
To adjust—Position top plate guide nut.

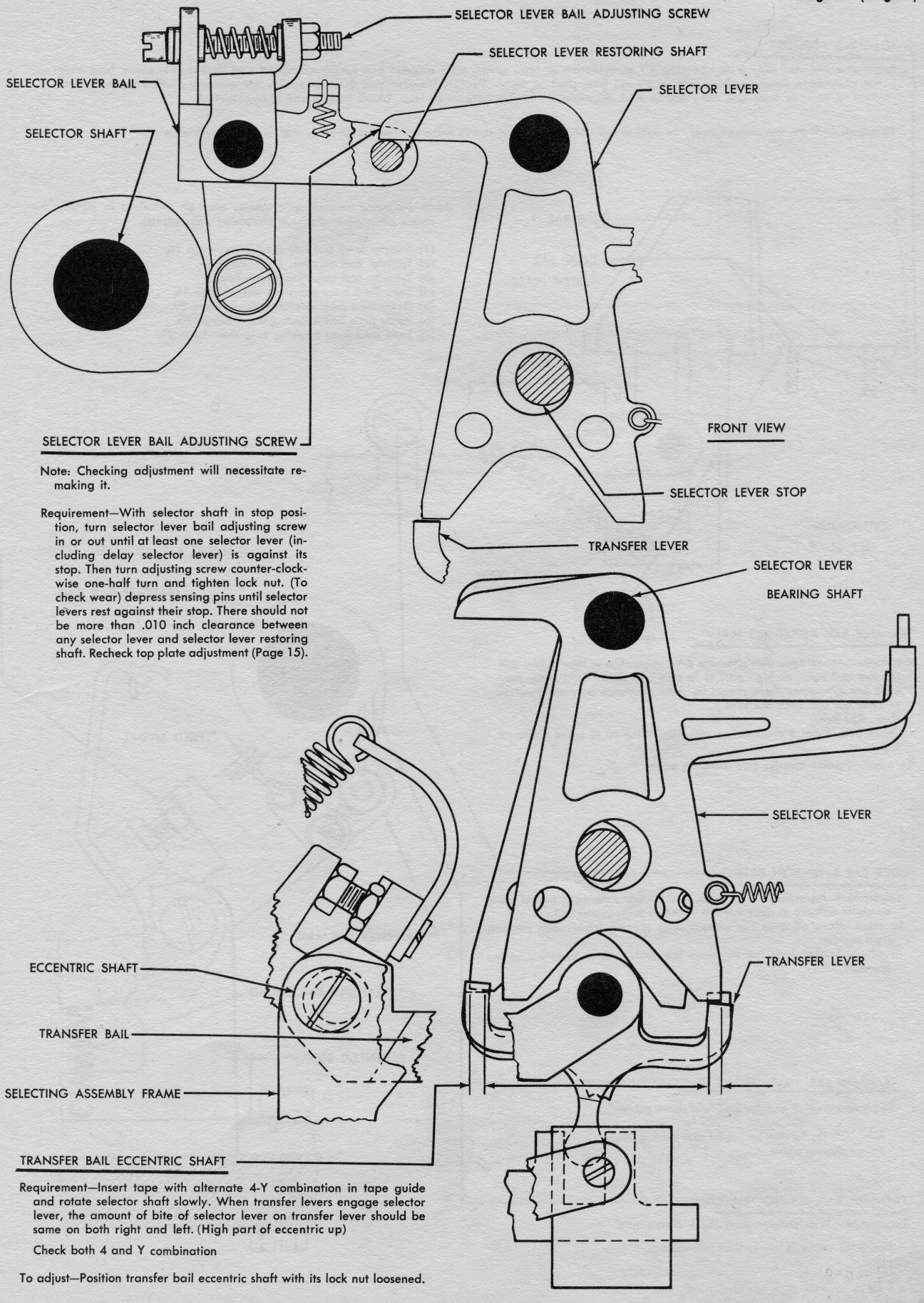


TAPE GUIDE

Requirement—With feed wheel pins engaging tape feed holes,, there should be equal clearance between each side of tape and guide.

To adjust—Position tape guide with its mounting screw loosened.

Note: Tape pins should not strike sides of slot in tape guide.



Note: Checking adjustment will necessitate remaking it.

Requirement—With selector shaft in stop position, turn selector lever bail adjusting screw in or out until at least one selector lever (including delay selector lever) is against its stop. Then turn adjusting screw counter-clockwise one-half turn and tighten lock nut. (To check wear) depress sensing pins until selector levers rest against their stop. There should not be more than .010 inch clearance between any selector lever and selector lever restoring shaft. Recheck top plate adjustment (Page 15).

Requirement—Insert tape with alternate 4-Y combination in tape guide and rotate selector shaft slowly. When transfer levers engage selector lever, the amount of bite of selector lever on transfer lever should be same on both right and left. (High part of eccentric up)

Check both 4 and Y combination

To adjust—Position transfer bail eccentric shaft with its lock nut loosened.

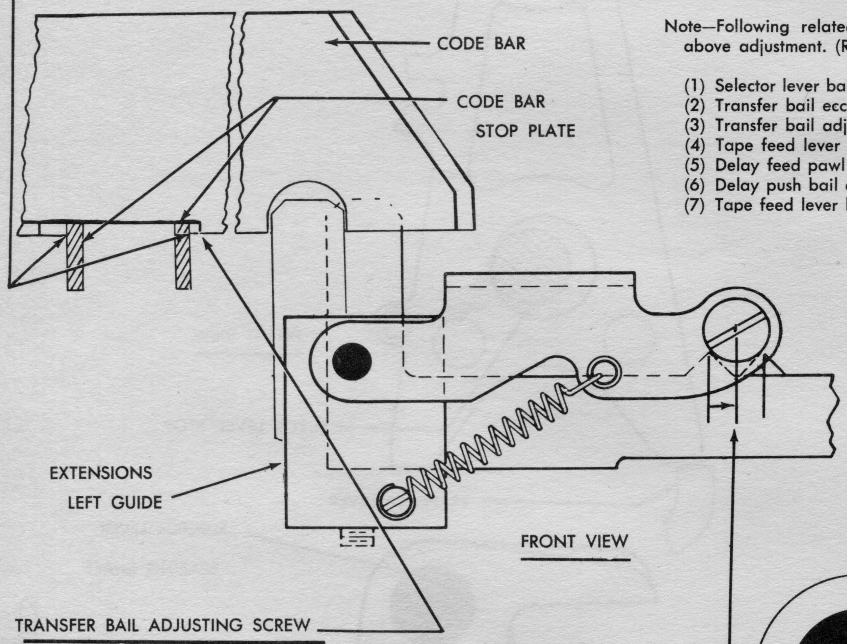
SELECTING ASSEMBLY

Requirement—Insert tape with alternate 4-Y combination in tape guide, with transfer bail spring unhooked and detent held away from code bar extensions. Rotate pulley shaft until code bars start to move. Depress transfer bail arm (manually, use extreme caution not to stretch yield spring). At least one code bar in each direction should be against its stop. Check both 4 and Y combination.

To adjust—Shift the selecting assembly to right or left with its mounting screws loosened and the eccentric stop moved away from plate.

Note—Following related requirements may be disturbed in making the above adjustment. (Recheck completed adjustments):

(1) Selector lever bail adjusting screw—Page 16.
(2) Transfer bail eccentric shaft—Page 16.
(3) Transfer bail adjusting screw—Page 17.
(4) Tape feed lever adjusting screw—Page 18.
(5) Delay feed pawl operating lever—Page 20.
(6) Delay push bail adjusting screw—Page 20.
(7) Tape feed lever blocking extension—Page 21.



FRONT VIEW

TRANSFER BAIL ADJUSTING SCREW

Requirement—Insert tape with alternate 4-Y combination in tape guide, with transfer bail roller on high part of its cam and detent held away from code bar extensions. there should be some clearance between shoulder on code bar and code bar stop.
Max. .030 inch.
Check both 4 and Y combination with play taken up to make clearance maximum.

To adjust—Position transfer bail adjusting screw.

CODE BAR EXTENSION DETENT

Requirement—Projection on top edge of code bar extensions should move an equal distance to right and left of detent roller center line.

To check—Move all code bar extensions to spacing (right) then marking (left) position.

To adjust—Position code bar extension left guide with its mounting screws loosened.

TRANSFER BAIL YIELD SPRING TENSION

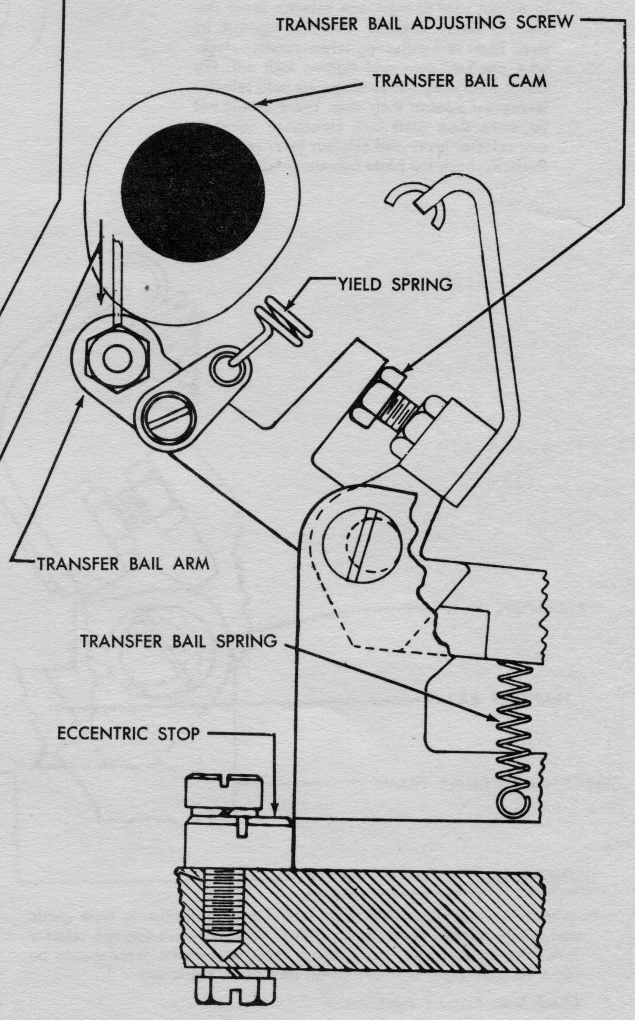
Requirement—With transfer bail held down manually.

Min. 10½ lbs. to start bail roller arm moving away from adjusting screw.

TRANSFER BAIL SPRING TENSION

Requirement—With selector shaft clutch disengaged.

Min. 3 lbs.—Max. 5 lbs. to start bail moving.



SELECTOR LEVER BAIL YIELD SPRING TENSION

Requirements—Selector levers bail roller on low part of cam.

Selector lever spring unhooked.

Min. 5½ lbs.—Max. 7½ lbs. to start bail moving.
Replace spring.

SELECTOR LEVER BAIL SPRING TENSION

Requirements—Selector lever bail roller on low part of cam.
Tape pins held down.

Min. 20 ozs.—Max. 28 ozs. to start bail moving.

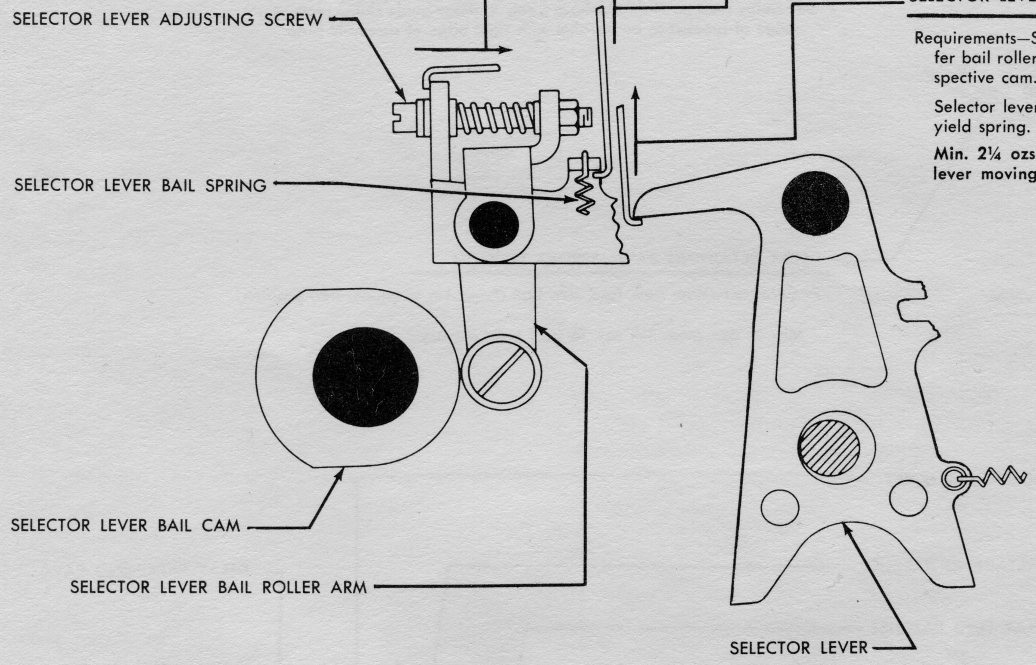
Min. 5½ lbs.
Max. 7½ lbs.

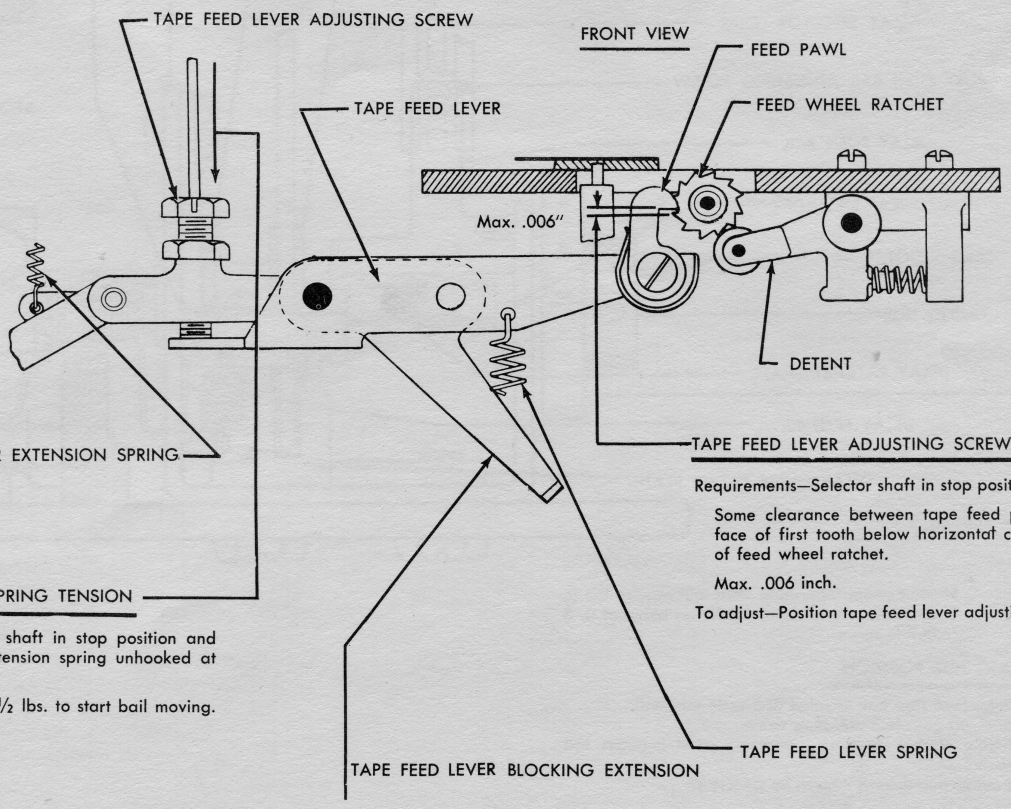
SELECTOR LEVER SPRING TENSION

Requirements—Selector lever bail roller and transfer bail roller (Page 12) on low part of their respective cam.

Selector lever bail held down to fully compress yield spring.

Min. 2¼ ozs.—Max. 3¼ ozs. to start selector lever moving.





TAPE FEED LEVER ADJUSTING SCREW

Requirements—Selector shaft in stop position.

Some clearance between tape feed pawl and face of first tooth below horizontat center line of feed wheel ratchet.

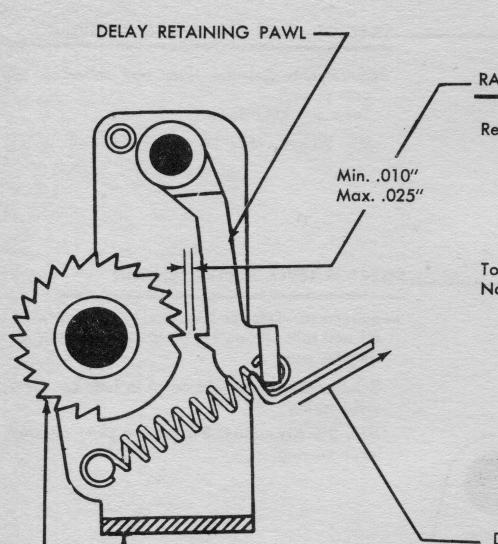
Max. .006 inch.

To adjust—Position tape feed lever adjusting screw.

TAPE FEED LEVER SPRING TENSION

Requirement—Selector shaft in stop position and tape feed lever extension spring unhooked at upper end.

Min. 3 lbs.—Max. 4½ lbs. to start bail moving.
Rehook spring.



FRONT VIEW

RATCHET BEARING BRACKET

Requirement—With no tape in tape guide and tape feed stop bail in unoperated position.

(1) Delay push bail adjusting screw (lower fig.) should align with delay selector lever.

(2) Clearance between delay retaining pawl and delay retaining ratchet.

Min. .010 inch—Max. .025 inch.

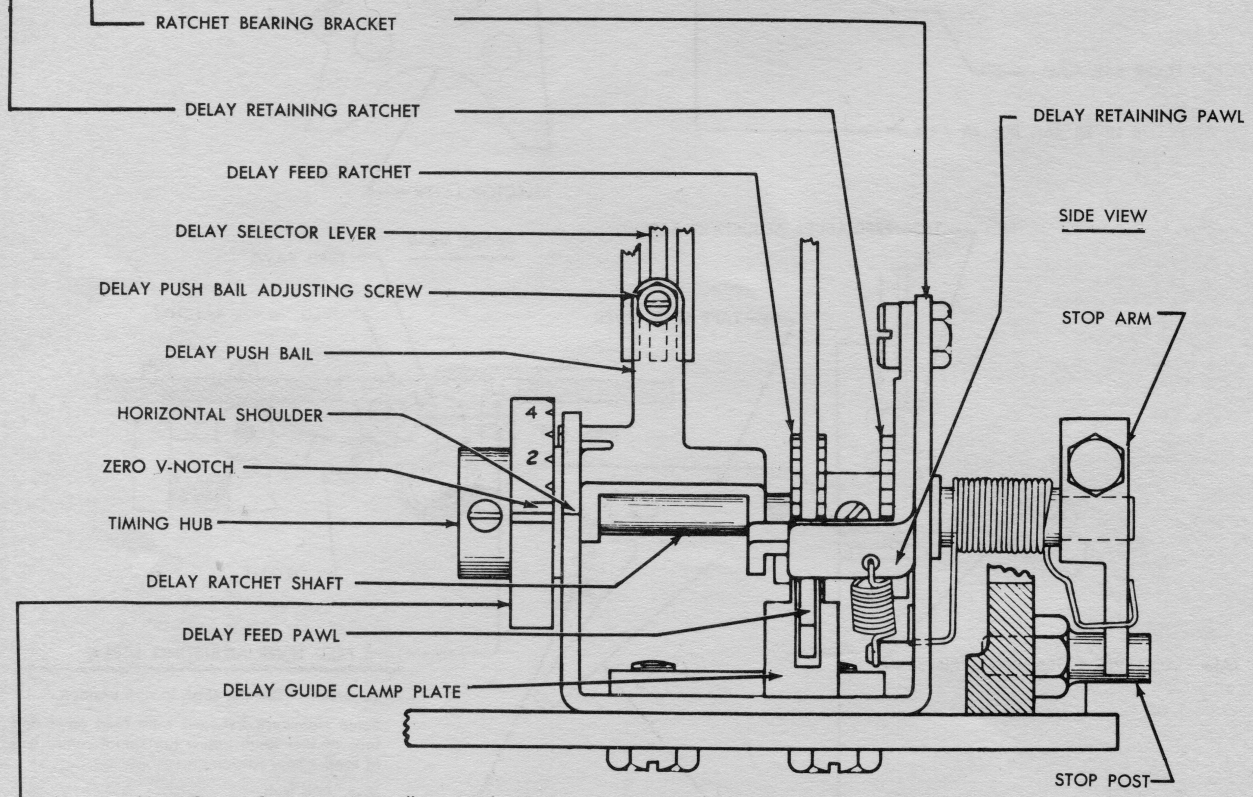
To adjust—Position the bracket with its mounting screws loosened.

Note—Delay feed pawl should move freely in delay guide clamp plate. Right edge of bracket to be parallel with right edge of assembly base.

DELAY RETAINING PAWL SPRING TENSION

Requirement—With tape feed stop bail (Page 14) in unoperated position,

Min. ½ oz.—Max. 1¼ ozs. to start pawl moving.



Note—Certain Operating Units will require the 0, 1, 4, 5, (upper rail) combination in place of 0, 3 (add-thin space).

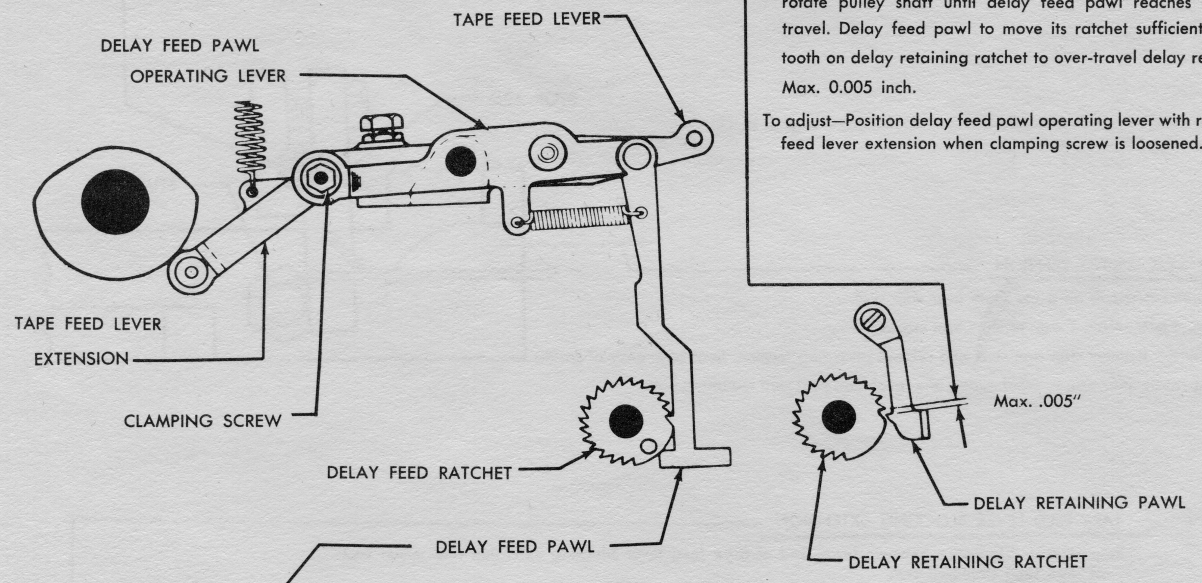
TIMING HUB POSITION

1. Tape feed stop bail selected (0-3 code selected).
2. Back off push bail adjusting screw.
3. Rotate ratchet shaft until retaining pawl engages last tooth.
4. Position hub to zero V notch by set screw.

DELAY FEED PAWL OPERATING LEVER

Requirement—Insert tape with 0, 3 combination in tape guide and rotate pulley shaft until delay feed pawl reaches its uppermost travel. Delay feed pawl to move its ratchet sufficiently to cause a tooth on delay retaining ratchet to over-travel delay retaining pawl. Max. 0.005 inch.

To adjust—Position delay feed pawl operating lever with respect to tape feed lever extension when clamping screw is loosened.

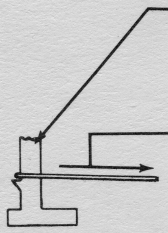


FRONT VIEW

DELAY FEED PAWL SPRING TENSION

Requirement—Delay control bail in unoperated position. Hold delay retaining pawl away from delay feed pawl

Min. 1 oz.—Max. 2 ozs. to start pawl moving.

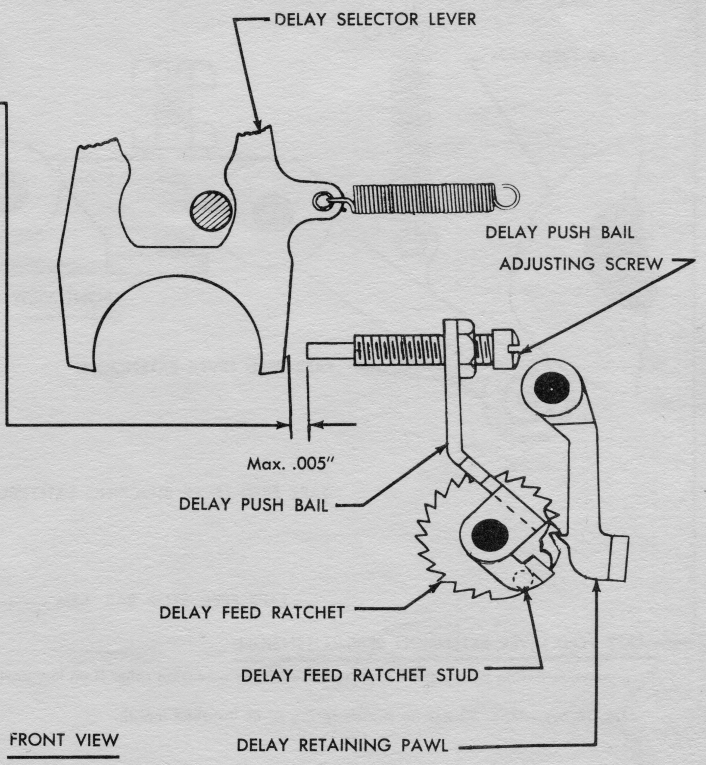


DELAY PUSH BAIL ADJUSTING SCREW

Requirement—Insert tape with 0, 3 (add-thin space) in tape guide. Rotate pulley shaft until delay retaining pawl engages the last tooth on ratchet and delay feed pawl just reaches its uppermost travel.
Hold delay selector lever to left against its stop and delay push bail against delay feed ratchet stud. (Transfer levers should not interfere with delay selector lever.)
Some clearance between delay selector lever and delay push bail adjusting screw.

Max. .005 inch.

To adjust—Position delay adjusting screw.



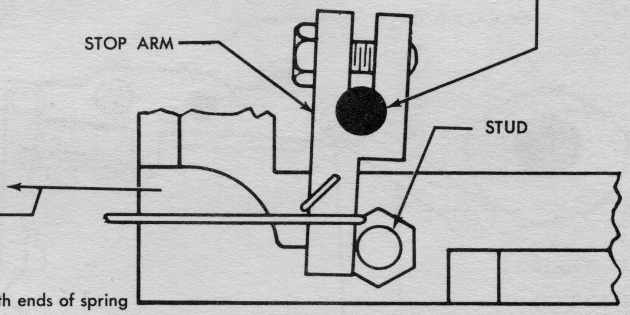
FRONT VIEW

Note—Certain Operating Units will require the 0, 1, 4, 5 (upper rail) combination in place of 0, 3 (add-thin space).

TIME DELAY ADJUSTMENT

Requirement—With delay mechanism unoperated, center the notch on timing hub (representing required delay operations) opposite horizontal shoulder of delay bracket (Page 19).
To adjust—Position timing hub with its stop arm clamping screw loosened and the stop arm against its stop post.

Note—A time delay equivalent to one or more operations (range 0 to 18) of the Operating Unit may be set up.



STOP ARM SPRING TENSION

Requirement—Hook an 8 oz. scale over stop arm.

Min. 4 ozs.—Max. 7 ozs. to start arm moving.

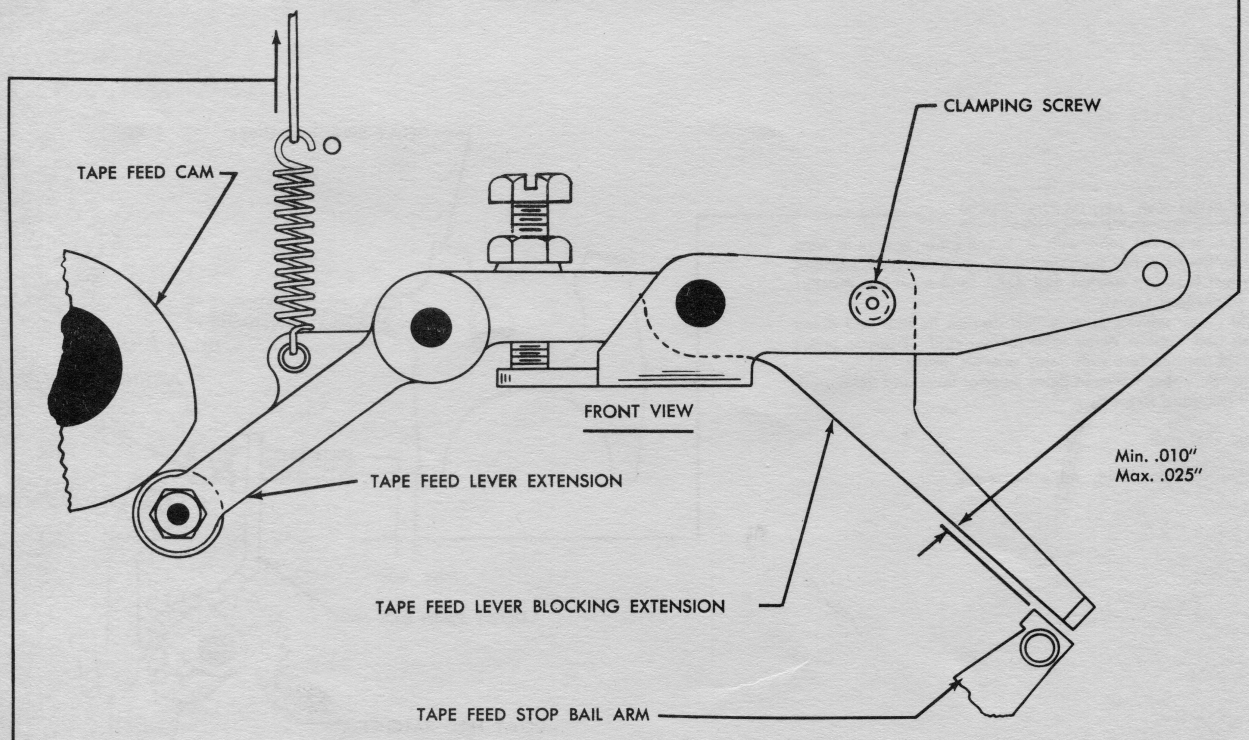
To adjust— Remove stop arm stud and release all spring tension. Seat both ends of spring and rotate stop arm to wind spring one revolution past stud mounting hole.

TAPE FEED LEVER BLOCKING EXTENSION

Requirement—Clearance between lower end of tape feed lever blocking extension and upper end of tape feed stop bail arm.

Min. .010 inch—Max. .025 inch.

To check—With tape feed stop bail roller (Page 14) in notches of code bar extensions and pulley shaft rotated until the tape feed pawl reaches its uppermost travel.
To adjust—Position tape feed lever blocking extension with its clamping screws loosened.



TAPE FEED LEVER EXTENSION SPRING TENSION

Requirement—Rotate pulley shaft until tape feed lever extension roller is on low part of its cam.

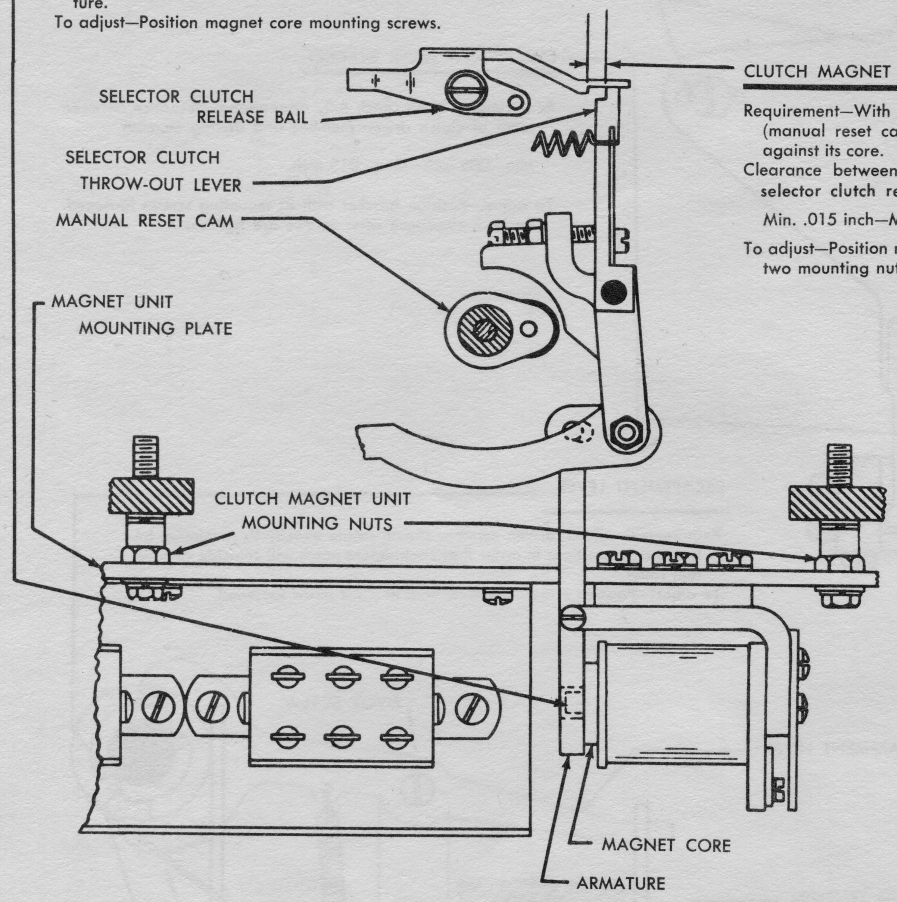
Min. 16 ozs.—Max. 32 ozs. to stretch spring to its installed length.

The following three adjustments pertain to Operating Units equipped with the electrical clutch magnet.

CLUTCH MAGNET COIL

Requirements—Magnet armature held against its cores. Projection on core centrally located with respect to holes in armature.

To adjust—Position magnet core mounting screws.



FRONT VIEW

CLUTCH MAGNET UNIT MOUNTING PLATE

Requirement—With manual control lever in its on position (manual reset cam horizontal) and magnet armature held against its core.

Clearance between clutch throw-out lever and shoulder on selector clutch release bail.

Min. .015 inch—Max. .035 inch.

To adjust—Position magnet unit mounting plate on its posts with two mounting nuts friction tight.

TIGHT TAPE SWITCH ASSEMBLY

Requirement—

(1) Major axis of tape arm slot parallel with plane of tape guide.

To adjust—Position tight tape arm with its lock nut loosened.

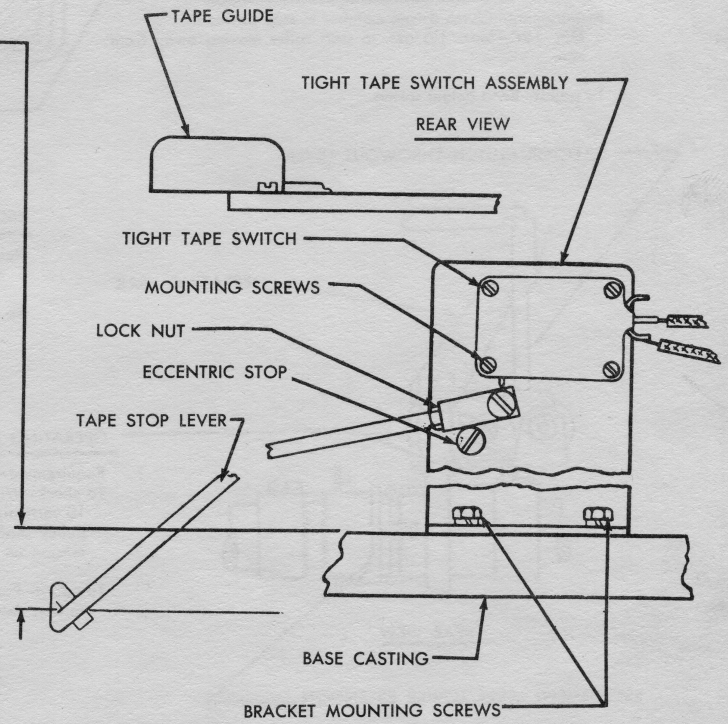
(2) Tape arm position—major axis of tape slot below top of base casting.

Min. ½ inch—Max. 1 inch.

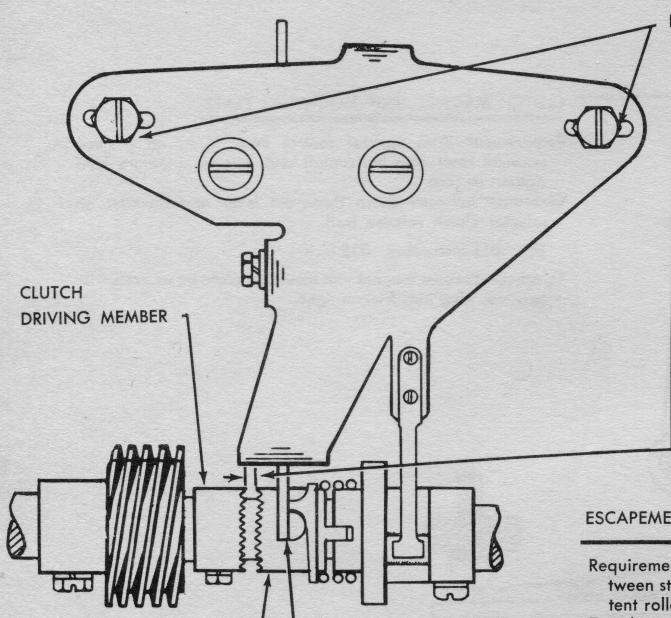
To adjust—Position eccentric stop with its mounting nut loosened.

(3) As tape arm is raised from its bottom position, switch contacts should close. On its downward travel, contacts should open when tape arm slot is level with, to ½ inch above top of base.

To adjust—Position switch with its mounting screws loosened.



Note—Requirements on this page apply only to Operating Units with the mechanical tape stop mechanism.



ESCAPEMENT LEVER BRACKET

Requirement—With clutch fully disengaged, clearance between teeth of clutch driven member and driving member

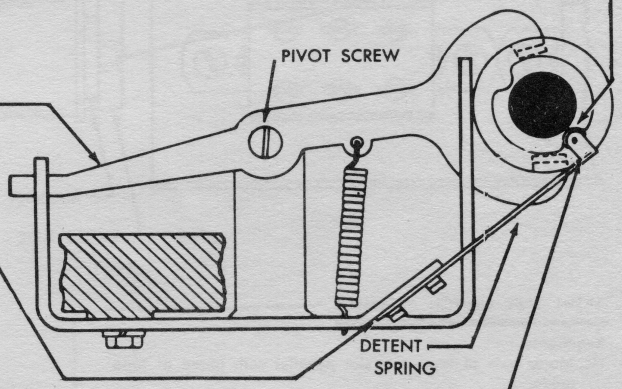
Min. .005 inch—Max. .015 inch.

To adjust—Position bracket with its mounting screws loosened. Recheck clearance after screws are tightened.

ESCAPEMENT LEVER

Requirement—Clutch driven member should rotate exactly ½ revolution between stop positions in order that each detent notch will coincide with detent roller

To adjust—Position esapement lever with its pivot screw loosened.



ESCAPEMENT CAM DETENT SPRING TENSION

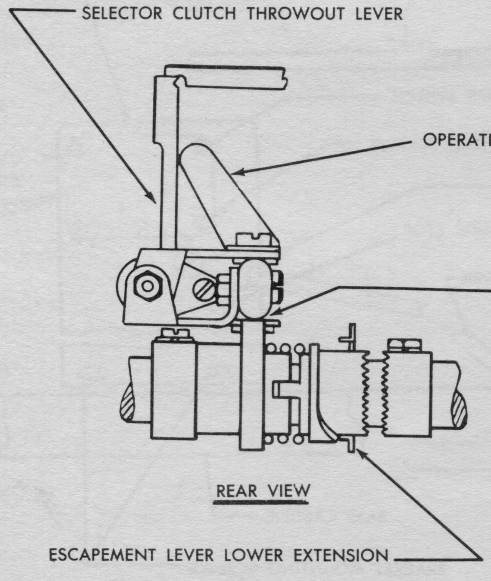
Requirement—Clutch driven member in stop position.
Min. 1oz.—Max. 1½ ozs. to start roller moving away from cam.

To adjust—Bend detent spring.

ESCAPEMENT CAM DETENT

Requirement—With detent roller seated in detent notch, clutch driven member should be fully disengaged. Check both stops.

To adjust—Position detent with its mounting screws loosened.



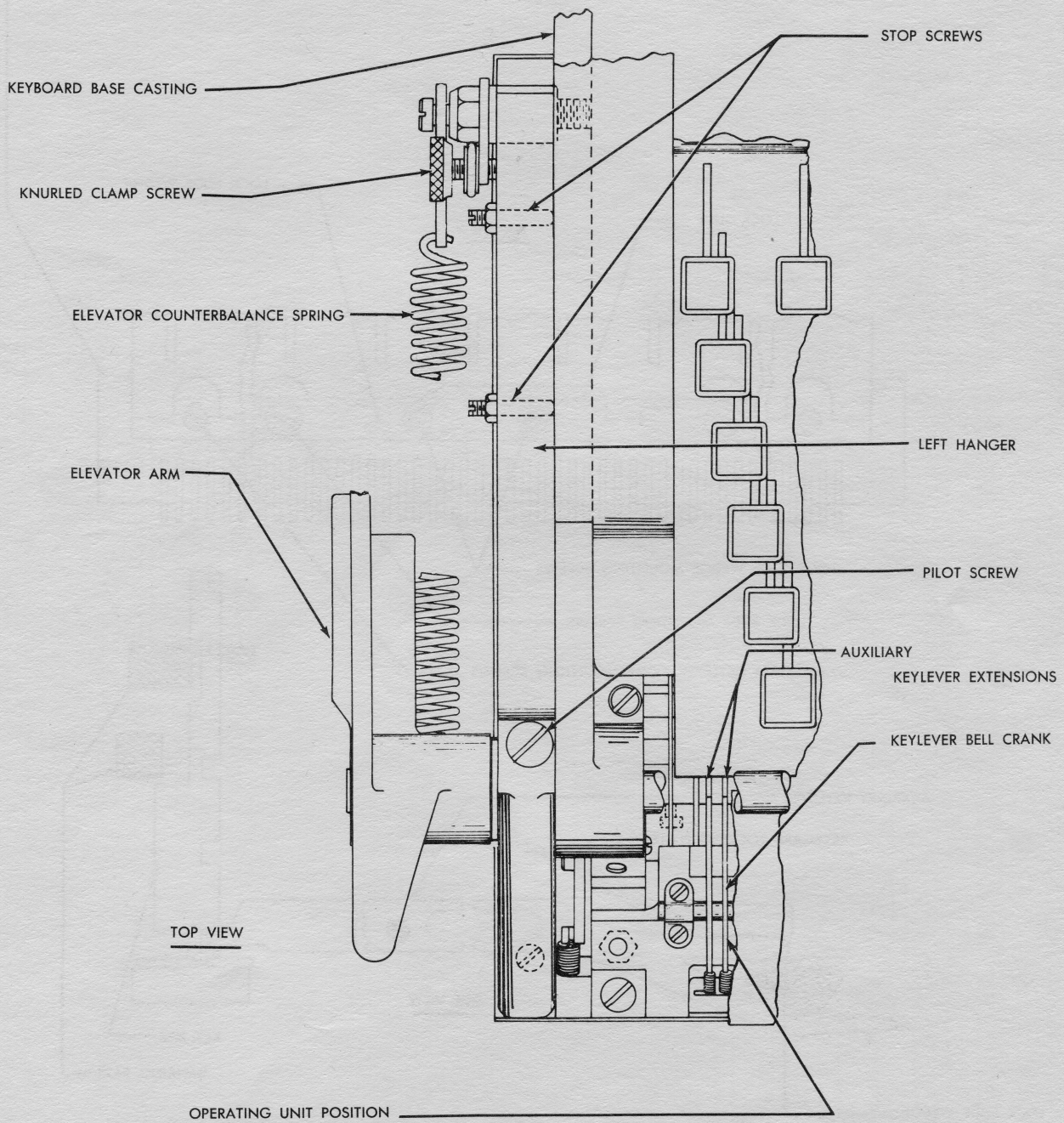
OPERATING LEVER ADJUSTING SCREW

Requirement—Cam follower bail roller should rest on high part of its cam.
To check—With manual control handle in its "off" position (reset cam Page 10 vertical) and operating rod (Page 25) in its uppermost position, rotate pulley shaft until clutch driven member is fully disengaged by lower extension on escapement lever.

To adjust—Position operating lever adjusting screw with its lock nut loosened so that extension on operating bail just touches clutch throwout lever.

(4) MOUNT THE OPERATING UNIT ON THE SLUG LINECASTING MACHINE AS FOLLOWS:

Remove two hanger pilot screws from Operating Unit.
Back off knurled clamp screw mounted on keyboard base casting and two stop screws projecting from left or right hanger.
Raise assembling elevator to its mid-position where it will be supported by elevator latch.
Place both arms under Operating Unit, supporting it on the hands and forearms. Position Operating Unit under keyboard so that openings in hangers will align with hanger guides and slide in place. Insert hanger pilot screws.

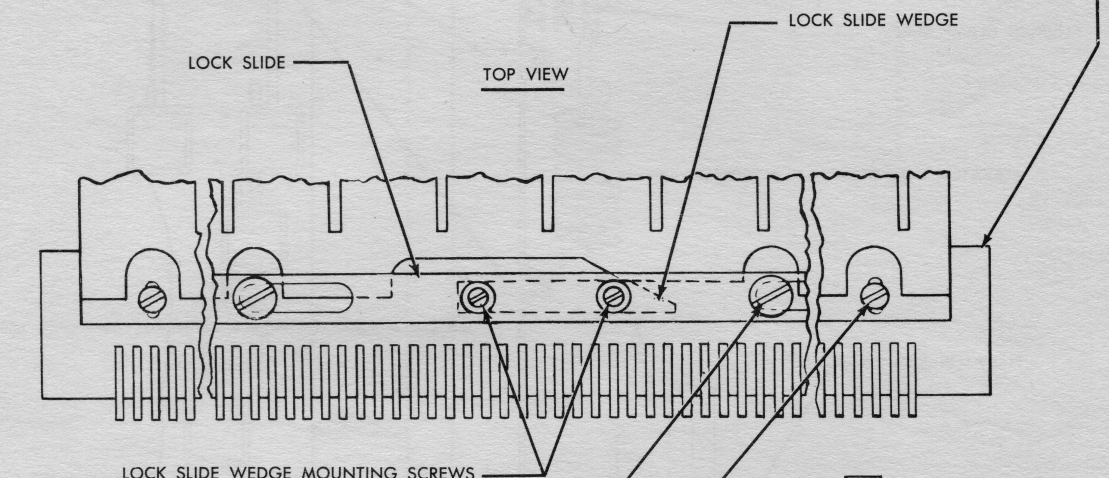


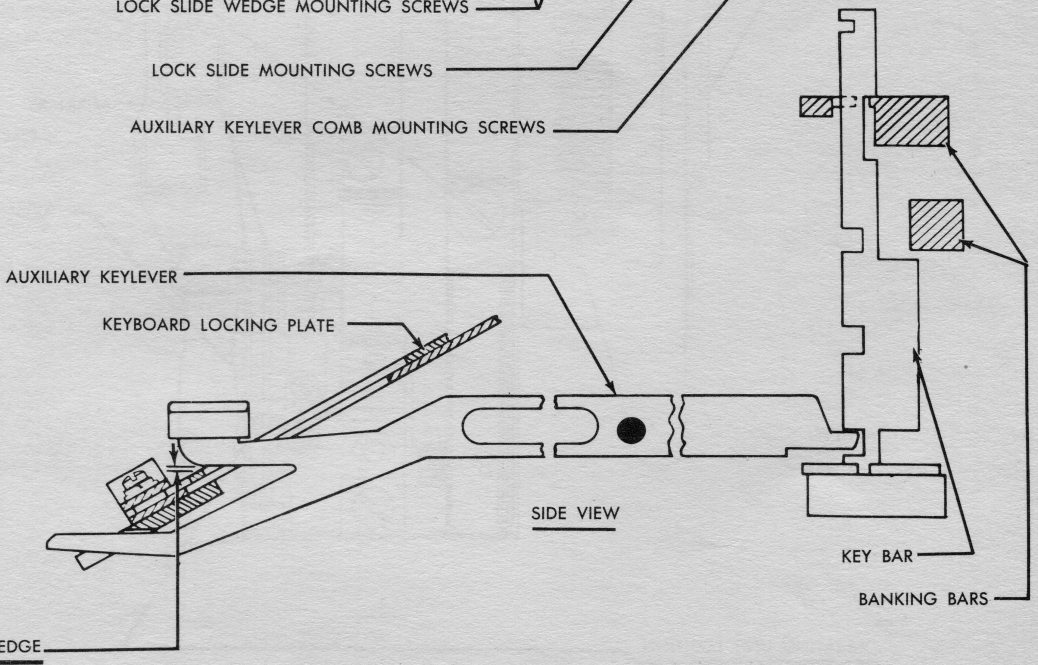
Requirement—Keylever bell cranks should align with auxiliary keylever extensions.
To adjust—Position Operating Unit by its stop screws and clamp screw. If necessary reposition the hangers.

Following two adjustments apply only to Operating Units installed on Linotype machines.

AUXILIARY KEYLEVER GUIDE COMB

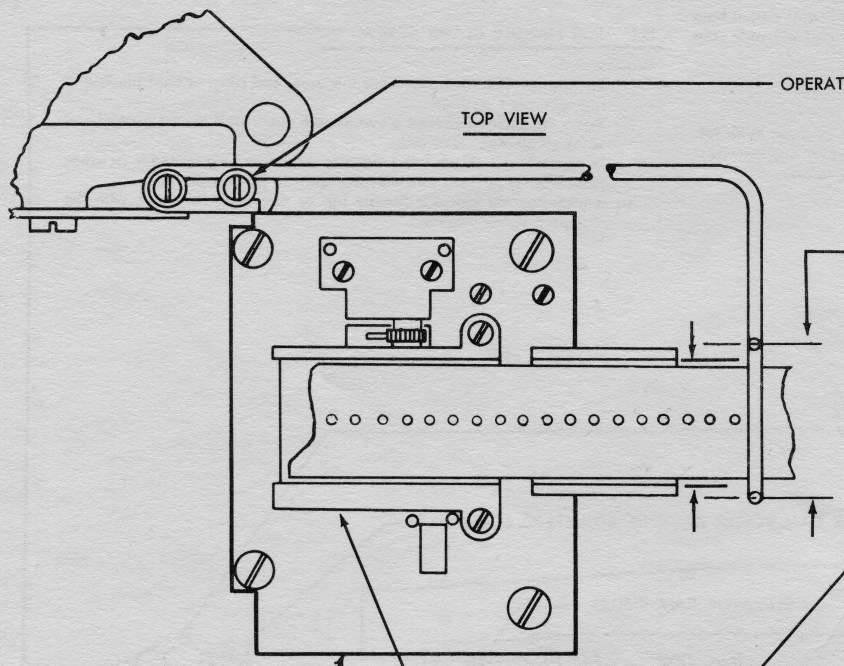
Requirement—With lock slide moved to left and any keylever depressed, corresponding key bar should be stopped in its upward travel by banking bar. Releasing keylever should allow corresponding key bar to fully return and rest on banking bar.
To check—Remove front and rear cam frames from linecasting machine.
To adjust—Move right end of lock slide wedge to its lowest position with its mounting screws loosened. Tighten cam mounting screws and position keylever guide comb with its mounting screws and lock slide mounting screws loosened.



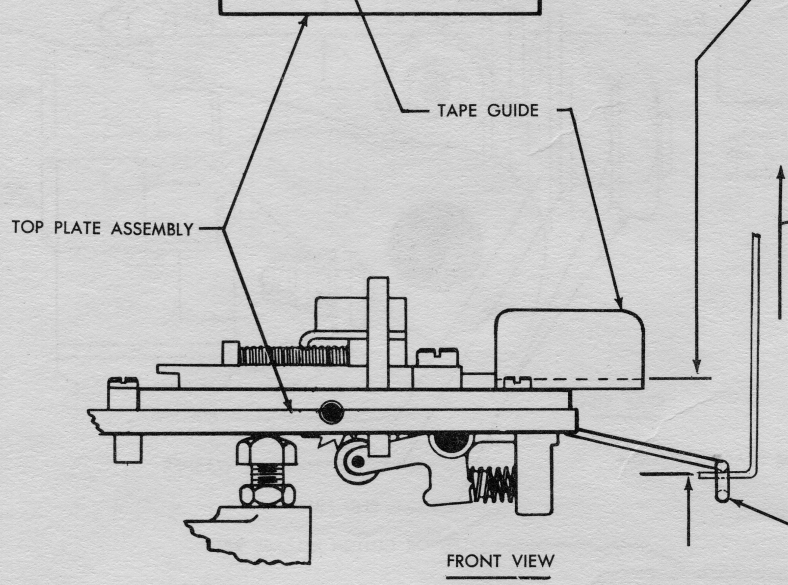


Requirement—Lock slide in its right position. Some clearance between bottom edge of keylevers and bottom edge of slots in keyboard locking plate.
Max. .040 inch.
To adjust—Position lock slide wedge in lock slide with mounting screws loosened.

Note—Following two requirements apply only to Operating Units with the mechanical tape stop feature.

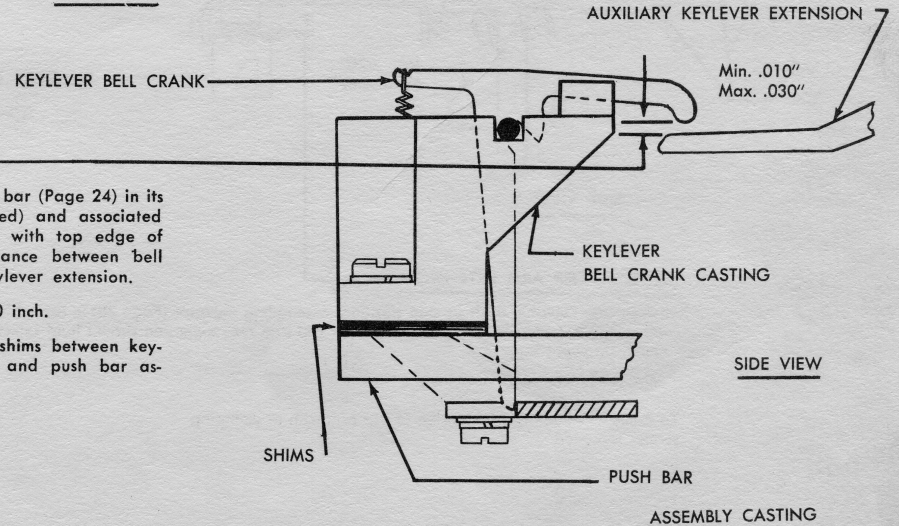


Requirement—
(1) Tape loop of operating rod should be centrally located with respect to slot in tape guide.
To adjust—Position rod with its mounting screws loosened.
(2) With Operating Unit installed on linecasting machine and operating under power, tape loop should be ½ to ¾ inch below top surface of tape guide.
To check—Pull tape loop to its uppermost position by maintaining a 2 oz. tension on spring scale.
To adjust—Position operating rod by bending.



Requirement—With pulley shaft rotating under power.

Min. ¾ oz.—Max. 1½ ozs. to just release clutch driven member (Page 22.)



KEYLEVER BELL CRANK

Requirement—With any key bar (Page 24) in its lower position (unoperated) and associated keylever held in contact with top edge of notch in key bar, clearance between bell crank and associated keylever extension.

Min. .010 inch—Max. .030 inch.

To adjust—Add or remove shims between keylever bell crank casting and push bar assembly casting.

ELEVATOR CAM ROLLER CASTING ADJUSTING SCREW

Requirement—When trip arm is raised so as to engage its lowest detent hole with detent plunger, clearance between trip arm lug and elevator cam roller casting.

Min. .020 inch—Max. .030 inch.

To adjust—Loosen elevator clamp screw to free handle on its shaft. With sufficient tension on safety spring (Page 27) to hold elevator casting screw against elevator handle casting, position the adjusting screw.

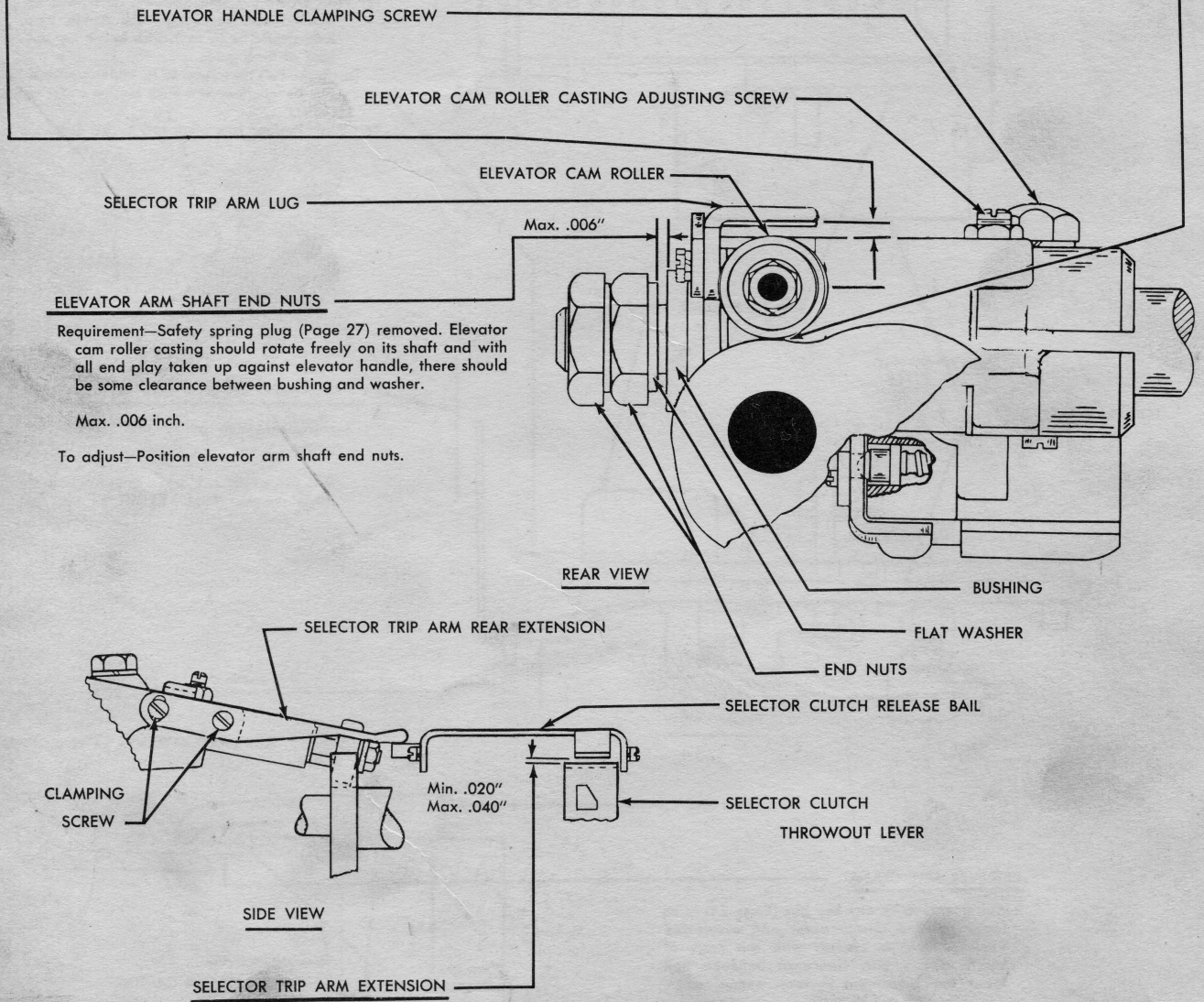
ELEVATOR HANDLE CLAMP SCREW

Requirement—

(1) Elevator arm shaft should have minimum end play without binding in any operated position.

(2) Some clearance between elevator cam roller and lowest part of elevator cam—Max. .010 inch.
To check No. 2—Assembling elevator should be fully seated in its lower (assembling) position and elevator shaft in its stop position.

To adjust—Position elevator handle (up or down) on its shaft, with the clamping screw loosened.



ELEVATOR ARM SHAFT END NUTS

Requirement—Safety spring plug (Page 27) removed. Elevator cam roller casting should rotate freely on its shaft and with all end play taken up against elevator handle, there should be some clearance between bushing and washer.

Max. .006 inch.

To adjust—Position elevator arm shaft end nuts.

REAR VIEW

SIDE VIEW

SELECTOR TRIP ARM EXTENSION

Requirement—Elevator shaft in stop position, assembling elevator (Page 28) in assembling position and selector trip arm (front extension) detented in lowest hole. Selector trip arm rear extension should hold selector clutch release bail clear of selector clutch throwout lever.

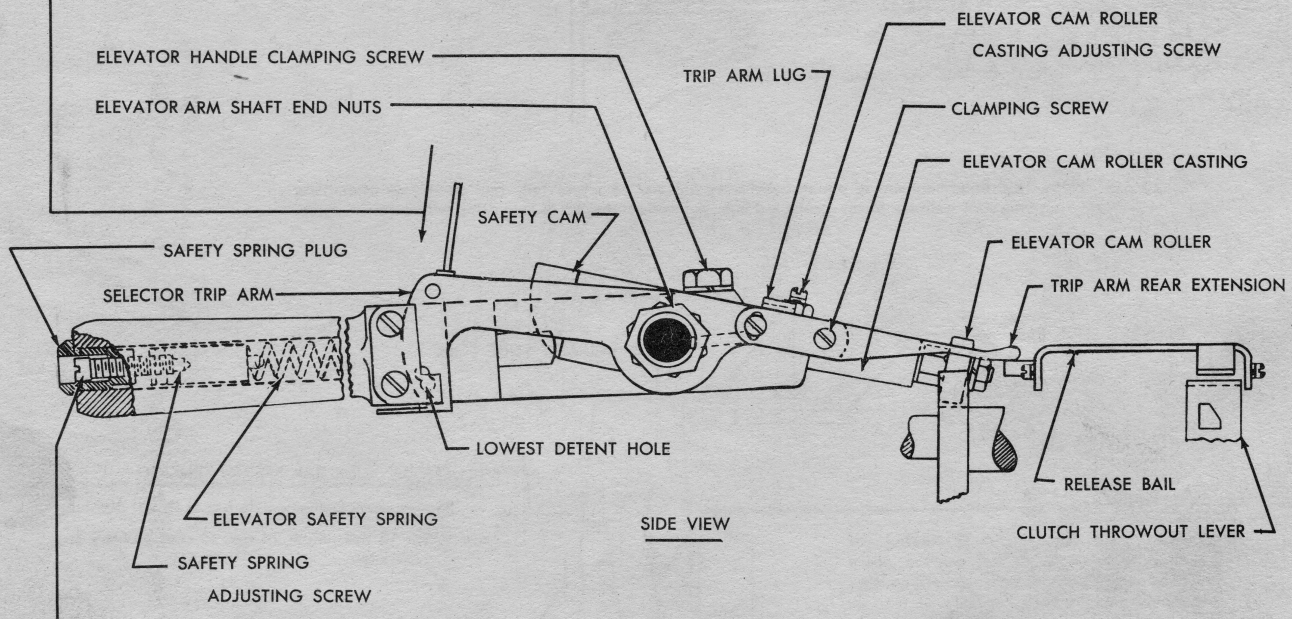
Min. .020 inch—Max. .040 inch.

To adjust—Position rear extension of trip arm with its clamping screws loosened.

SELECTOR TRIP ARM DETENT SPRING TENSION

Requirement—With elevator shaft in stop position, move selector trip arm so that detent plunger engages lowest hole. Hold selector clutch release bail away from rear extension of selector trip arm.

Min. 3½ lbs.—Max. 6 lbs. to start the selector trip arm moving.



SIDE VIEW

Note: Replace driving belt

(1) Checking the following adjustment will necessitate remaking it. If this adjustment must be remade, the linecasting machine should be properly conditioned to receive blank lines—lines containing neither matrices or space bands.

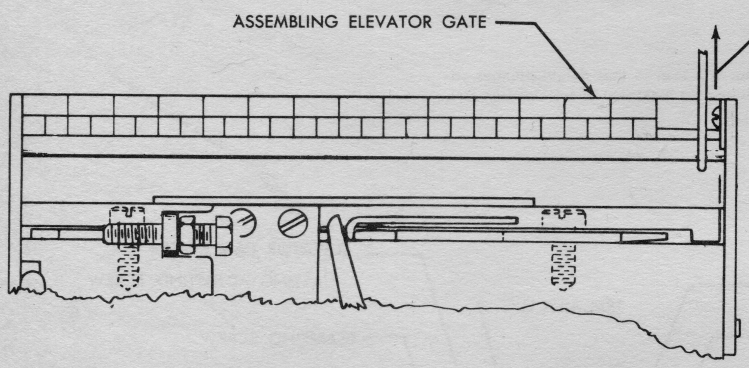
(2) On early Operating Units (adjusting screw flush with outer surface of safety spring plug), turn adjusting screw to right to decrease spring tension.

ELEVATOR SAFETY SPRING TENSION

Requirement—Position safety spring adjusting screw for minimum tension (to left) so that elevator just fails to release transfer delivery slide. Then slowly increase spring tension one-quarter turn at a time until elevator just releases the transfer delivery slide. Test as outlined below and give adjusting screw one turn additional in direction last rotated.

To check—Insert tape with series of elevate combinations (No. 2 code) in tape guide. Single elevator signals may be sent by turning manual control lever clockwise to start position and quickly returning it to stop position. Test after each change in adjustment of the screw. After spring is adjusted check tension. With 12 lb. scale hooked on elevator front plate and pulled downward.

Min. 3½ lbs.—Max. 4½ lbs. to prevent elevator from rising when elevator signal is sent. Elevator should start to rise against a 3 lb. pull.



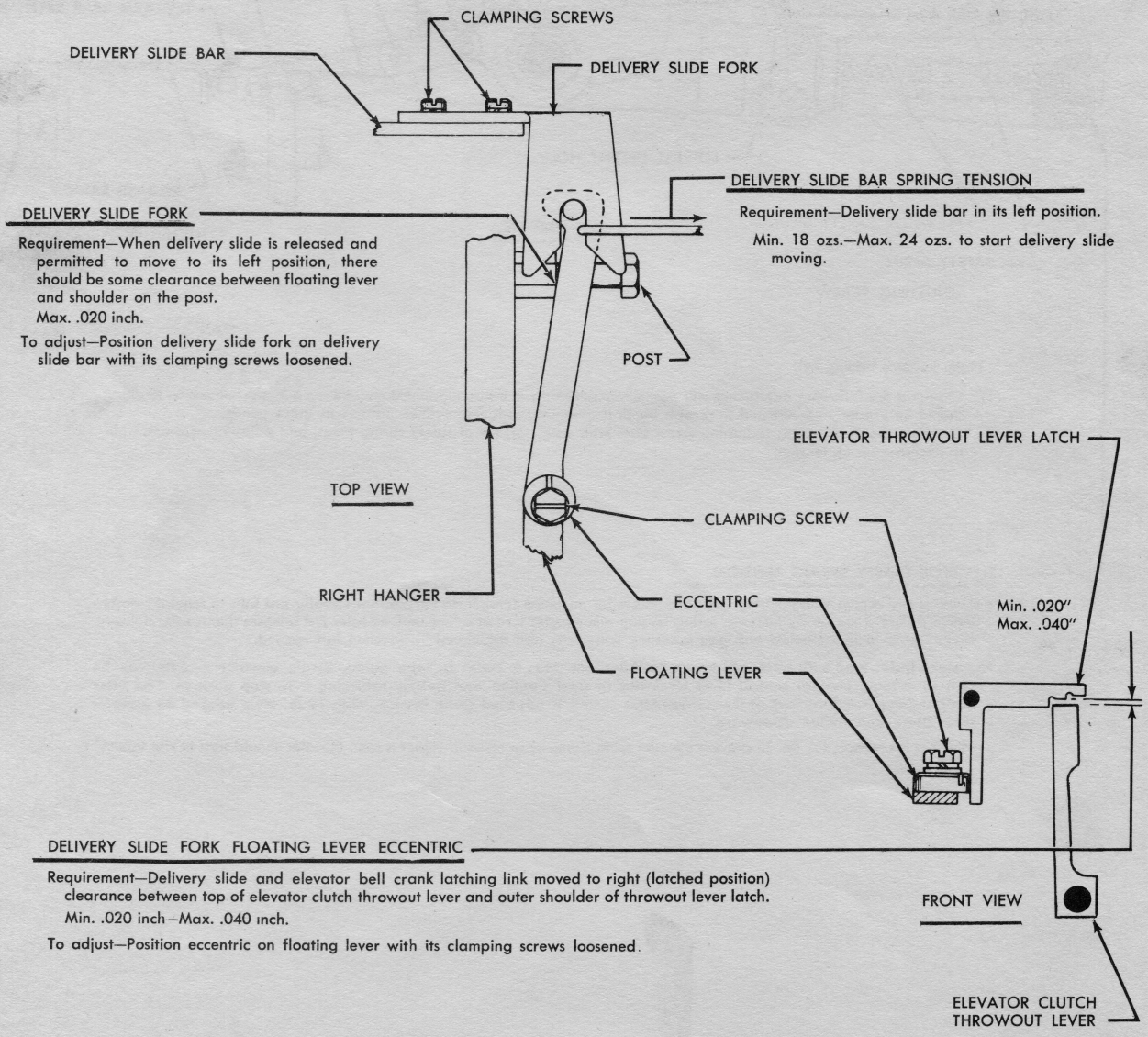
ELEVATOR COUNTERBALANCE SPRING TENSION

Requirement—Hook a 32 oz. scale beneath gate.

Min. 12 ozs.—Max. 20 ozs. to start assembling elevator moving.

To adjust—Remove loop end of counterbalance spring from elevator arm projection (Page 23) and place in next hole (toward shoulder screw for increased tension).

Note: This adjustment should permit assembling elevator to return fully and quickly to assembling position after delivery of an assembled line, but without striking its lower stop with excessive force.



DELIVERY SLIDE FORK

Requirement—When delivery slide is released and permitted to move to its left position, there should be some clearance between floating lever and shoulder on the post.

Max. .020 inch.

To adjust—Position delivery slide fork on delivery slide bar with its clamping screws loosened.

DELIVERY SLIDE BAR SPRING TENSION

Requirement—Delivery slide bar in its left position.

Min. 18 ozs.—Max. 24 ozs. to start delivery slide moving.

DELIVERY SLIDE FORK FLOATING LEVER ECCENTRIC

Requirement—Delivery slide and elevator bell crank latching link moved to right (latched position) clearance between top of elevator clutch throwout lever and outer shoulder of throwout lever latch.

Min. .020 inch—Max. .040 inch.

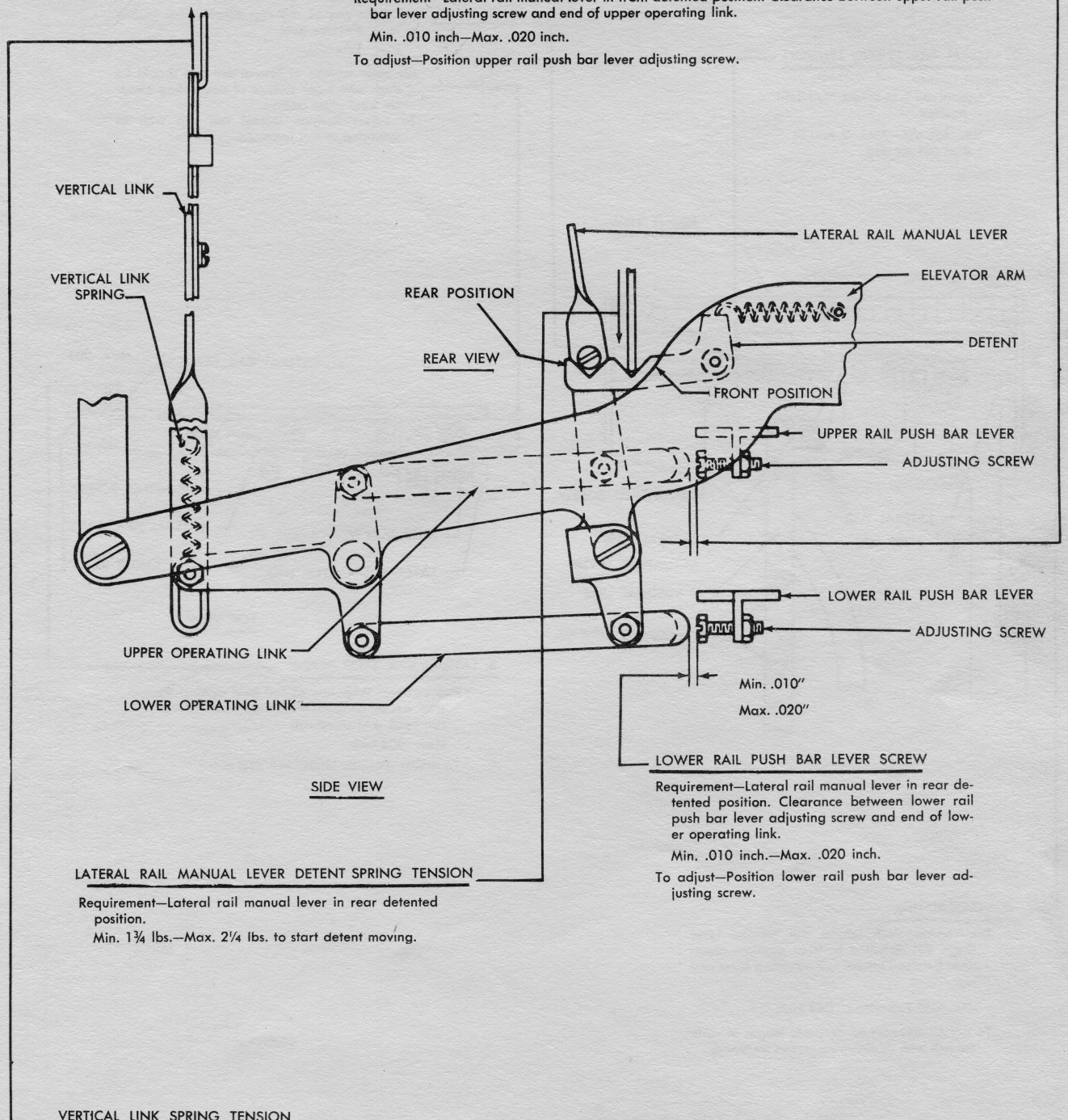
To adjust—Position eccentric on floating lever with its clamping screws loosened.

UPPER RAIL PUSH BAR LEVER SCREW

Requirement—Lateral rail manual lever in front detented position. Clearance between upper rail push bar lever adjusting screw and end of upper operating link.

Min. .010 inch—Max. .020 inch.

To adjust—Position upper rail push bar lever adjusting screw.



SIDE VIEW

LOWER RAIL PUSH BAR LEVER SCREW

Requirement—Lateral rail manual lever in rear detented position. Clearance between lower rail push bar lever adjusting screw and end of lower operating link.

Min. .010 inch.—Max. .020 inch.

To adjust—Position lower rail push bar lever adjusting screw.

LATERAL RAIL MANUAL LEVER DETENT SPRING TENSION

Requirement—Lateral rail manual lever in rear detented position.

Min. 1¾ lbs.—Max. 2¼ lbs. to start detent moving.

VERTICAL LINK SPRING TENSION

Requirement—Detach upper end of vertical link from lateral rail actuating lever (Page 30).

Min. 4½ lbs.—Max. 5½ lbs. to start link moving.

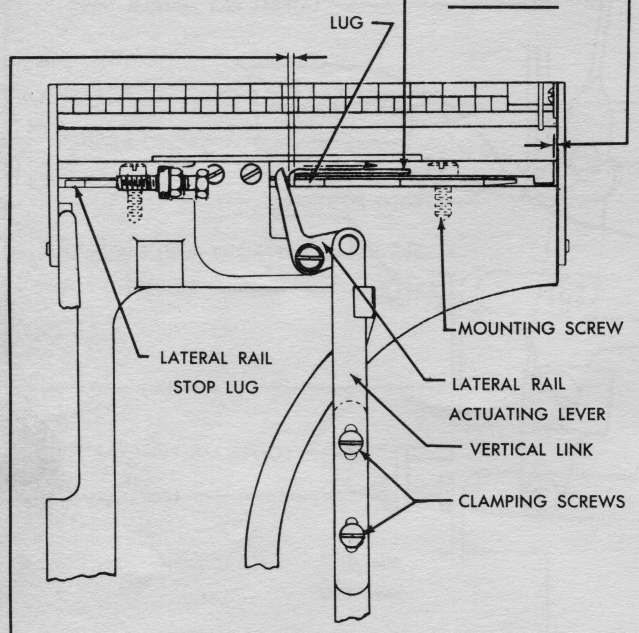
A. LATERAL RAIL CAP

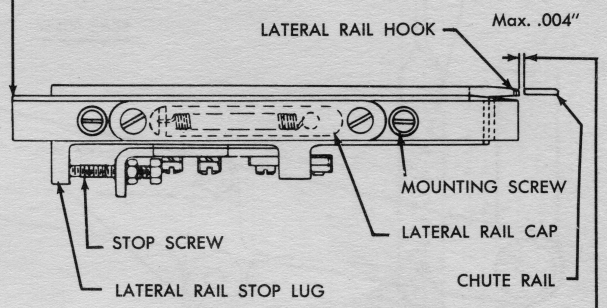
Requirement—
(1) Right end of rail cap should clear assembling elevator gate.
Max. .004 inch.
(2) Inner surface of lateral rail cap should be flush with inner surface of assembling elevator front plate casting.
To adjust—Position lateral rail cap with its mounting screws loosened.

D. LATERAL RAIL SPRING TENSION

Requirement—
Lateral rail in its unoperated (left) position.
Min. 1½ ozs.—Max. 2 ozs. to start rail moving.

FRONT VIEW





TOP VIEW

B. LATERAL RAIL STOP SCREW

Requirement—With lateral rail held against its stop screw, some clearance between lateral rail hook and chute rail.
Max. .004 inch.
To adjust—Position lateral rail stop screw.

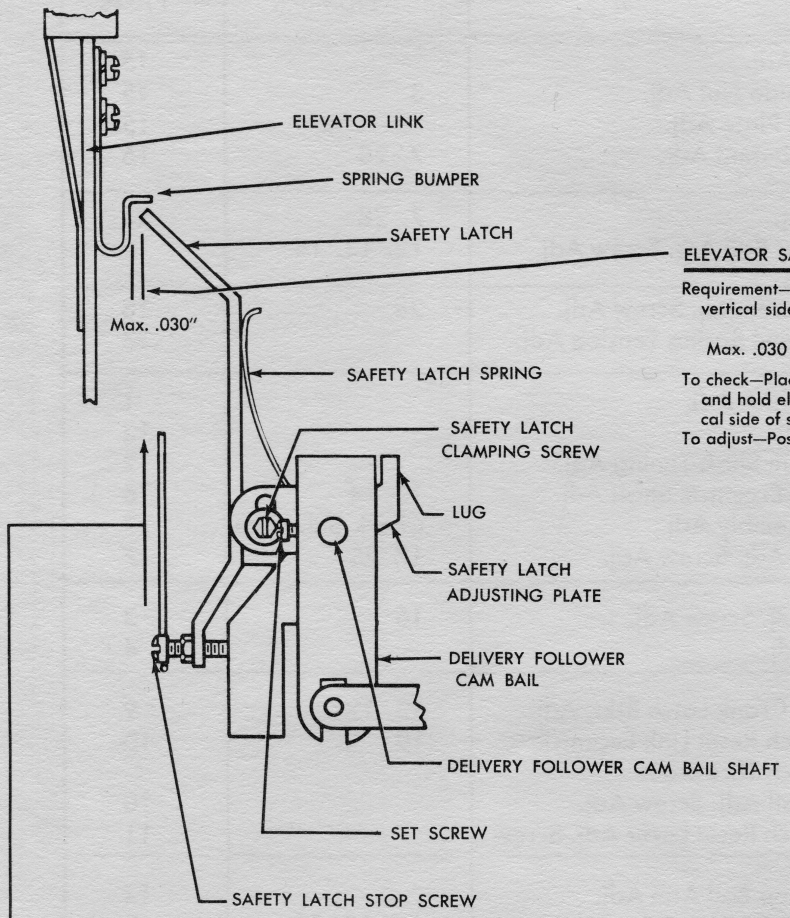
C. VERTICAL LINK

Requirement—With lateral rail manual lever (Page 29) detented in front position, clearance between lateral rail actuating lever and lug.
Min. .020 inch—Max. .040 inch.
To adjust—Increase or decrease length of vertical link with its clamping screws loosened.

Note: Lateral rail stop lug should rest firmly against stop screw, with lateral rail lever detented in rear position.

DELIVERY SLIDE ARM FOLLOWER

Requirement—Elevator shaft in stop position. Move delivery slide (linecasting machine) to its left position and elevator bell crank latching link (Page 10) to its latched (right) position. As the delivery slide is moved slowly to the right, elevator clutch throwout lever (Page 28) should be released when delivery slide is 2¼" to 1¾ " from its right stop.
To adjust—Position delivery slide arm follower with its clamping screws loosened.



ELEVATOR SAFETY LATCH STOP SCREW

Requirement—Some clearance between upper left edge of safety latch and vertical side of spring bumper (directly below stopping shoulder)

Max. .030 inch.

To check—Place delivery slide of the line casting machine in its right position and hold elevator so that upper left edge of safety latch is opposite vertical side of spring bumper below shoulder but not touching spring bumper.
To adjust—Position safety latch stop screw.

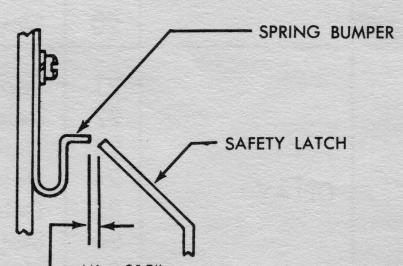
SAFETY LATCH SPRING TENSION

Requirement—With elevator in its assembling position.

Min. 3 ozs.—Max. 5 ozs. to start safety latch moving.

To adjust—Bow safety latch spring to left and downward with delivery follower cam bail shaft set screw loosened.

FRONT VIEW



SAFETY LATCH

Requirement—Clearance between upper left edge of safety latch and tip of spring bumper.

Min. .015 inch—Max. .030 inch.

To check—Place delivery slide in left position and hold so that tip of spring bumper is opposite safety latch.
To adjust—Position safety latch with its clamping screws loosened.

D. FUNCTIONAL GROUPING AND RELATED ADJUSTMENTS

FUNCTION	NO.	ADJUSTMENT	RELATED ADJUSTMENT NUMBER	BULLETIN PAGE
TAPE ALIGNMENT	1	Tape Guide Adj.		15
	2	Top Plate Guide Nut Adj.	3	15
	3	Retaining Lid Plate Adj.		15
	4	Feed Wheel Detent Adj.	7, 28	15
SENSING PIN HEIGHT	5	Top Plate Adj.	7, 28	15
	6	Selector Lever Bail Adj. Screw Adj.	12, 13, 14	16
TAPE FEED	7	Tape Feed Lever Adj. Screw Adj.	28	18
	8	Tape Feed Pawl Spring Tension Adj.		13
TRANSFER	9	Code Bar Guides Adj.		1
	10	Stop Rails Adj.		12
	11	Spreader Cam Shaft Timing Adj.		12
	12	Transfer Bail Eccentric Shaft Adj.	13, 14	16
	13	Selecting Assembly Adj.	Check Bul. Note	17
	14	Transfer Bail Adj. Screw Adj.	17, 25	17
SHIFT and UNSHIFT	15	Shift Lever Adj. Screw Adj.	16	3
	16	Shift Latch Adj.		4
ELEVATE	17	Elevator Bell Crank Latch Brkt. Adj.	18, 19	9
	18	Selector Clutch Reset Link Eccentric	19	10
	19	Selector Clutch Throw-out Lever Bail Adj. Screw Adj.		10
	20	Elevator Clutch Reset Lever Adj. Screw		11
DELAY	21	Tape Feed Stop Bail Arm Adj.		14
	22	Delay Ratchet Bearing Brkt. Adj.	24, 25, 28	19
	23	Timing Hub Position	27	19
	24	Delay Feed Pawl Operating Lever Adj.	25	20
	25	Delay Push Bail Adj. Screw Adj.		20
	26	Stop Arm Spring Adj.	27	21
	27	Time Delay Adj.		21
	28	Tape Feed Lever Blocking Ext. Adj.		21

LUBRICATION CHART

GENERA

Unless otherw
cated (1 to 52
places listed l

Oil both loops
2½ pounds.

Apply grease
2½ pounds or

Cams—apply
Gears—apply

INSTRUC
THE STA

For best opera
cleaned and lubric
lubricate individual

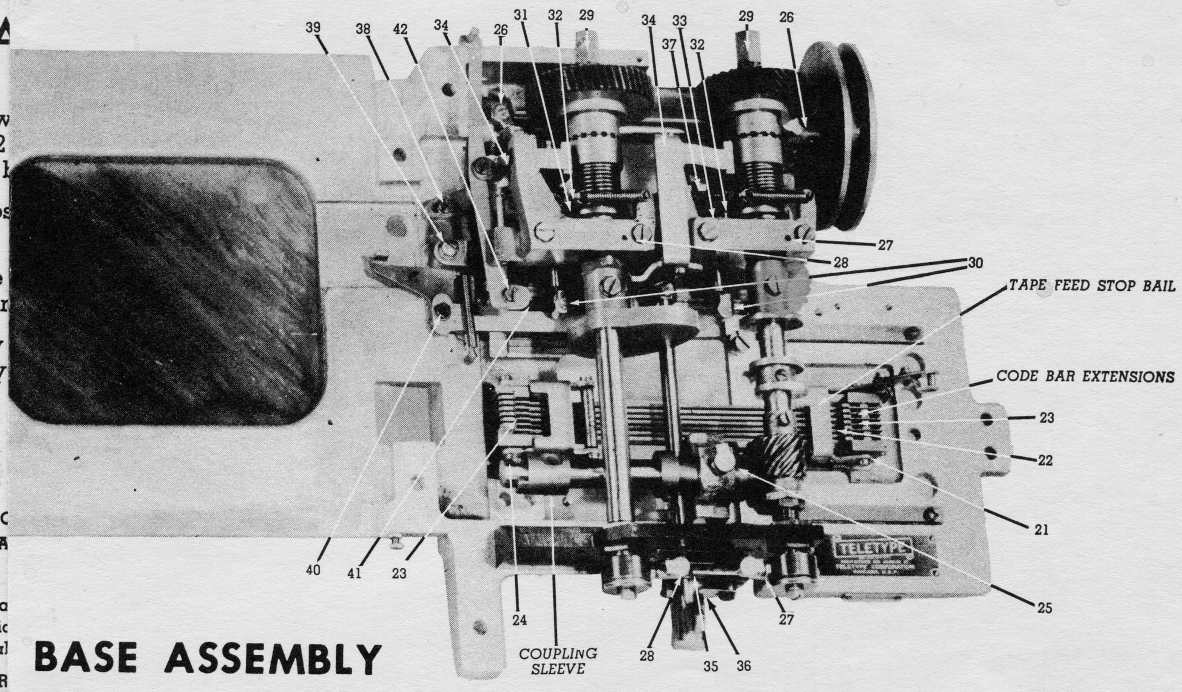
(R

1. Remove Op
2. Remove Op
3. Remove Se
   Remov
   front guide s.
   from the co
   sition. Man
   holding tra ining nuts and fill
   selecting a
   casting. Mc 3 or each.
   ating Unit. ng.
4. Remove th
   remove bel
   of the shim
   sembly, an
   placing the
5. Remove the
   push bar a
6. Remove rig
7. Remove th
   slide coupl
8. Replace pu
9. Remove sp
10. Remove ret
11. Remove co

The individual
oil removed. Carbo
may be used for cle

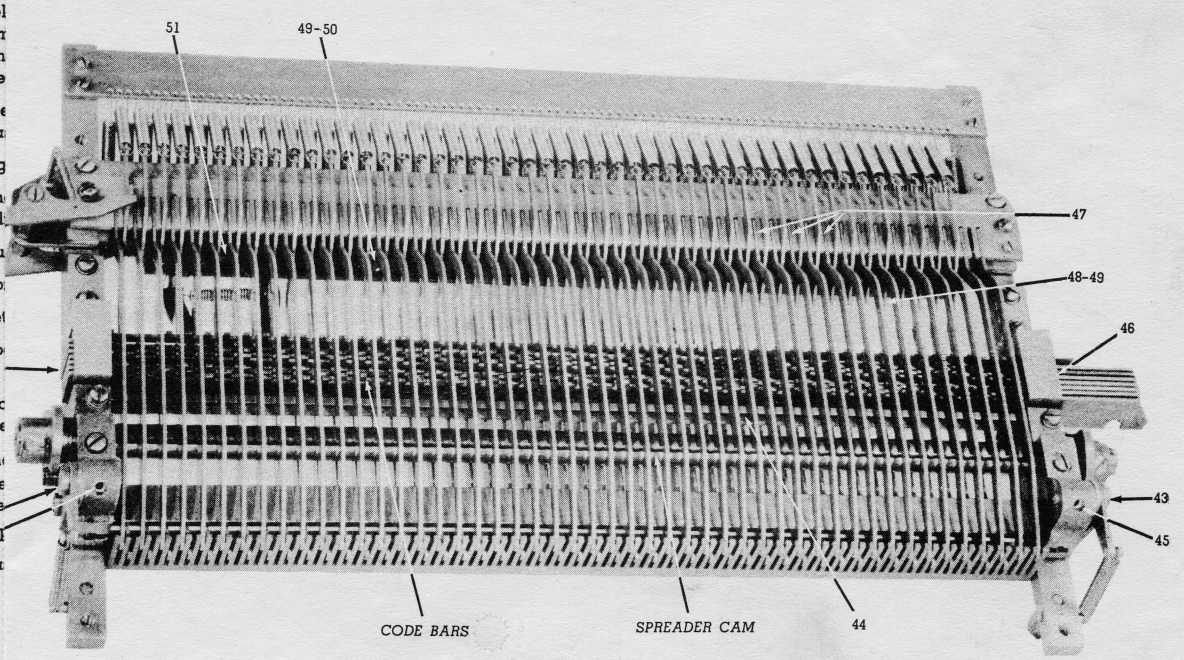
An atomizer m
requiring complete
use on all Teletype

KS-7470 Oil, I
KS-7471 Grea



BASE ASSEMBLY

32. Clutch detent levers bearings.
33. Clutch detent levers cam roller bearings.
34. Clutch throw-out lever latches bearing screws—two places on each.
35. Manual tape feed control shaft bearings—two.
36. Manual tape feed control detent plunger.
37. Manual tape feed cam roller bearing.
38. Selector clutch throw-out lever bail link bearings—two.
39. Elevator bell crank pivot screw.
40. Elevator bell crank latching link pivot screw and guide.
41. Elevator bell crank latch pivot screw.
42. Floating lever pivot screw.



Printed in U.S.A.

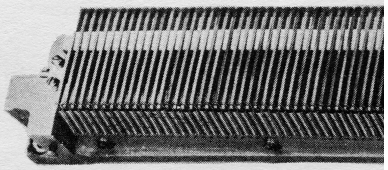
GENERAL LUBRICATION SPECIFICATIONS

Unless otherwise specified, one or two drops of oil at each of the places indicated (1 to 52 inclusive) will be sufficient. Use oil for lubrication at all of the places listed below, except where the use of grease is specified.

Oil both loops of all helical springs that exert a nominal tension of less than 2½ pounds.

Apply grease to both loops of all helical springs that exert a nominal tension of 2½ pounds or more.

Cams—apply thin film of grease.
Gears—apply thin film of grease.



52. Key lever bell cranks—with oil.

INSTRUCTIONS FOR CLEANING AND LUBRICATING THE STANDARD TELETYPESETTER OPERATING UNIT

For best operating results, the Operating Unit should be thoroughly cleaned and lubricated approximately every two months. To clean and lubricate individual assemblies the following procedure is recommended:

(Refer to Bulletin 51B for location of parts.)

1. Remove Operating Unit covers.
2. Remove Operating Unit from linecasting machine.
3. Remove Selecting Assembly as follows:

   Remove the three selecting assembly mounting screws. Remove front guide rail. Rotate spreader cam until push bars are moved away from the code bars, manually move code bars to their extreme left position. Manually raise transfer bail (89065) as high as possible. While holding transfer bail in this position, raise selecting assembly until selecting assembly base plate mounting screws clear Operating Unit casting. Move selecting assembly to right and remove it from Operating Unit.
4. Remove the two screws (8185) that mount bell crank assembly and remove bell crank assembly. (Care should be taken not to lose any of the shims that are located under each end of the bell crank assembly, and to replace these shims as originally installed when replacing the bell crank assembly.)
5. Remove the four screws (8185) from bottom of base casting that mount push bar assembly. (Do not remove assembly at this time.)
6. Remove right and left hand hangers.
7. Remove the screw (6745) that mounts coupling sleeve (85463), and slide coupling sleeve out of engagement.
8. Replace push bar assembly by lifting upward.
9. Remove spring (72468) from tape feed stop bail.
10. Remove retainer (85400) from extension guide (86804).
11. Remove code bar extensions.

The individual parts and assemblies should be cleaned and the excessive oil removed. Carbon Tetrachloride or other non-inflammable cleaning fluid may be used for cleaning.

An atomizer may be used to spray a light film of oil on springs or parts requiring complete lubrication. The following lubricants are suggested for use on all Teletypesetter equipment:

KS-7470 Oil, Part No. 88970-1 Qt.; Part No. 88971-1 Gal.

KS-7471 Grease, Part No. 88973-1 Lb.

After cleaning and lubricating the assemblies of the Operating Unit, the procedure for re-assembling the Operating Unit is as follows:

1. Replace code bar extensions. The arrangement for the extension is as follows:

Position	*Add-Thin Space*	*No Add-Thin Space*
0	M	M
1	S	M
2	S	MS
BB	M	M
3	MS	S
4	S	M
5	S	M

Note: The number five position is toward the front of the unit and zero position to the back when facing Operating Unit.

2. Replace retainer (85400). Be sure that retainer is positioned high enough so that code bar extensions do not bind on retainer.
3. Replace tape feed stop bail spring (72468).
4. Replace push bar assembly on base casting so that code bars are located over each associated code bar extension.
5. Engage coupling sleeve (85463) with right hand operating bail cam, and replace screw (6745).
6. Replace the four screws (8185) that mount push bar assembly to base casting.
7. Replace right and left hand hangers.
8. Replace bell crank assembly and shims.
9. Replace Selecting Assembly as follows:

   Rotate operating shaft until push bars are on high part of spreader cam. Move code bars to their extreme left hand position. Manually hold transfer bail in its operated position and replace selecting assembly. Hold assembly against eccentric stop (79561) and rear guide rail and replace the three selecting assembly mounting screws. Hold front rail against selecting assembly and replace front rail mounting screws.

CHECK THE FOLLOWING ADJUSTMENT:

Delay Bracket Adjustment (Bulletin 6, Page 17).

With no tape in the selecting assembly, rotate pulley shaft until delay control bail (tape feed stop bail) is in its unoperated position. The delay push bail adjusting screw should line up with the delay selector lever, and there should be .010" to .025" clearance between the delay retaining pawl and the delay retaining ratchet. To adjust, position delay bracket forward or backward, by means of its elongated mounting holes to meet first requirement, and at the same time to the right or left to obtain the required clearance.

10. Mount Operating Unit on linecasting machine.
11. Replace covers.

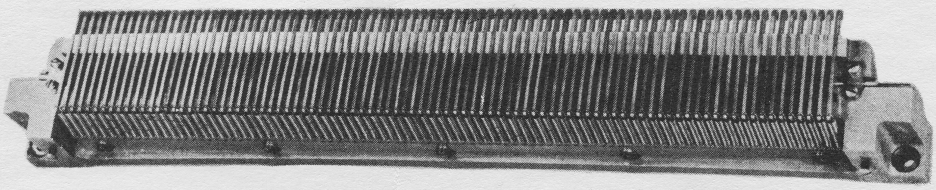
FICATIONS

ch of the places indi-
rication at all of the
pecified.

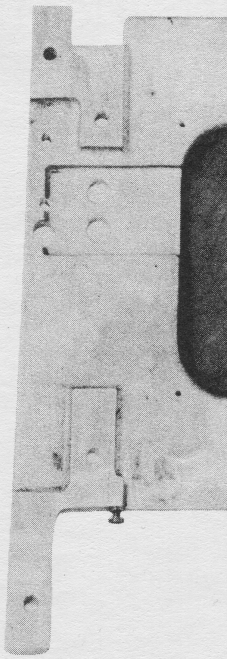
l tension of less than

a nominal tension of

BELLCRANK ASSEMBLY



52. Key lever bell cranks—remove and wipe with cloth dampened slightly with oil.



21. Delay
22. Delay
23. Code b
24. Code b
25. Operati
26. Driving
27. Selecto
28. Elevato
29. Elevato shafts
30. Clutch
31. Elevato

SELECTING ASSEMBLY

After cleaning and lubricating the assemblies of the Operating Unit, the procedure for re-assembling the Operating Unit is as follows:

1. Replace code bar extensions. The arrangement for the extension is as follows:

Position	*Add-Thin Space*	*No Add-Thin Space*
0	M	M
1	S	M
2	S	MS
BB	M	M
3	MS	S
4	S	M
5	S	M

Note: The number five position is toward the front of the unit and zero position to the back when facing Operating Unit.

2. Replace retainer (85400). Be sure that retainer is positioned high enough so that code bar extensions do not bind on retainer.
3. Replace tape feed stop bail spring (72468).
4. Replace push bar assembly on base casting so that code bars are located over each associated code bar extension.
5. Engage coupling sleeve (85463) with right hand operating bail cam, and replace screw (6745).
6. Replace the four screws (8185) that mount push bar assembly to base casting.
7. Replace right and left hand hangers.
8. Replace bell crank assembly and shims.
9. Replace Selecting Assembly as follows:

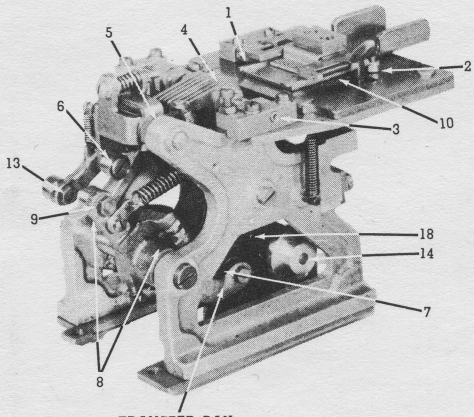
   Rotate operating shaft until push bars are on high part of spreader cam. Move code bars to their extreme left hand position. Manually hold transfer bail in its operated position and replace selecting assembly. Hold assembly against eccentric stop (79561) and rear guide rail and replace the three selecting assembly mounting screws. Hold front rail against selecting assembly and replace front rail mounting screws.

CHECK THE FOLLOWING ADJUSTMENT:

Delay Bracket Adjustment (Bulletin 6, Page 17).

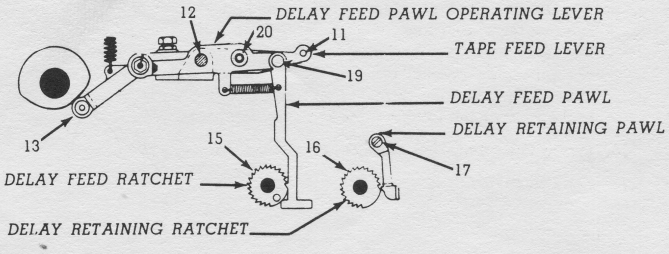
With no tape in the selecting assembly, rotate pulley shaft until delay control bail (tape feed stop bail) is in its unoperated position. The delay push bail adjusting screw should line up with the delay selector lever, and there should be .010" to .025" clearance between the delay retaining pawl and the delay retaining ratchet. To adjust, position delay bracket forward or backward, by means of its elongated mounting holes to meet first requirement, and at the same time to the right or left to obtain the required clearance.

10. Mount Operating Unit on linecasting machine.
11. Replace covers.



TRANSFER BAIL

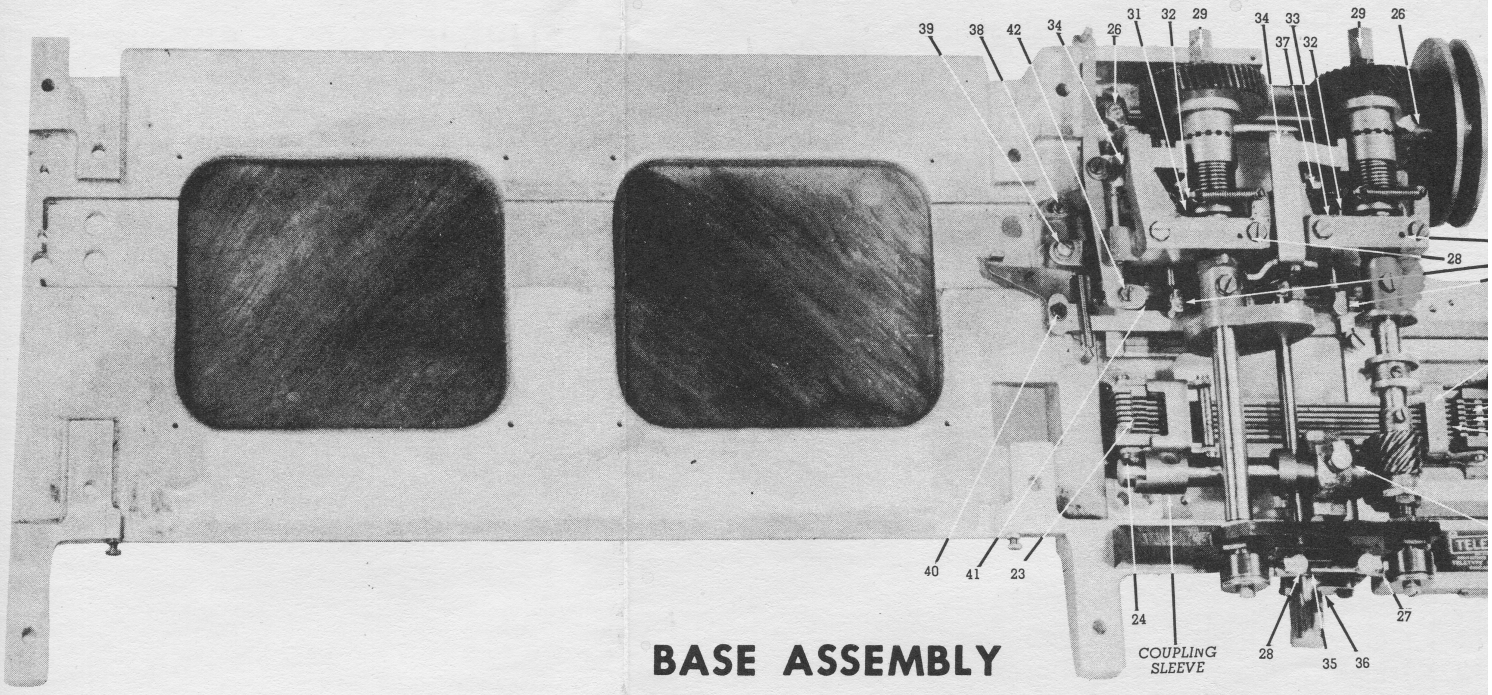
1. Tape retaining lid bearing—two places.
2. Tape retaining lid latch.
3. Top plate bearings—two.
4. Selector levers bearing shaft—six places.
5. Selector levers bail—two places.
6. Selector levers bail cam roller bearing.
7. "T" transfer levers bearing shaft—six places.
8. Transfer bail bearings—two oil holes.
9. Transfer bail cam roller bearing.
10. Tape feed roll bearings—two.
11. Tape feed pawl bearings.
12. Tape feed lever bearings.
13. Feed pawl cam follower arm roller bearing.
14. Delay ratchet shaft bearing.
15. Delay feed ratchet—oil teeth sparingly.
16. Delay retaining ratchet—oil teeth sparingly.
17. Delay retaining pawl bearing.
18. Delay push bail bearings.
19. Delay feed pawl bearing.
20. Delay feed pawl operating lever bearings.



PUSHBA

43. Push bar operati
44. Spreader cam—
45. Spreader cam be
46. Code bars at gui
47. Push bars—oil s
48. Shift bell crank
49. Shift link pivot s
50. Shift latch pivot
51. Yield and shift le

LUBRICATION CH

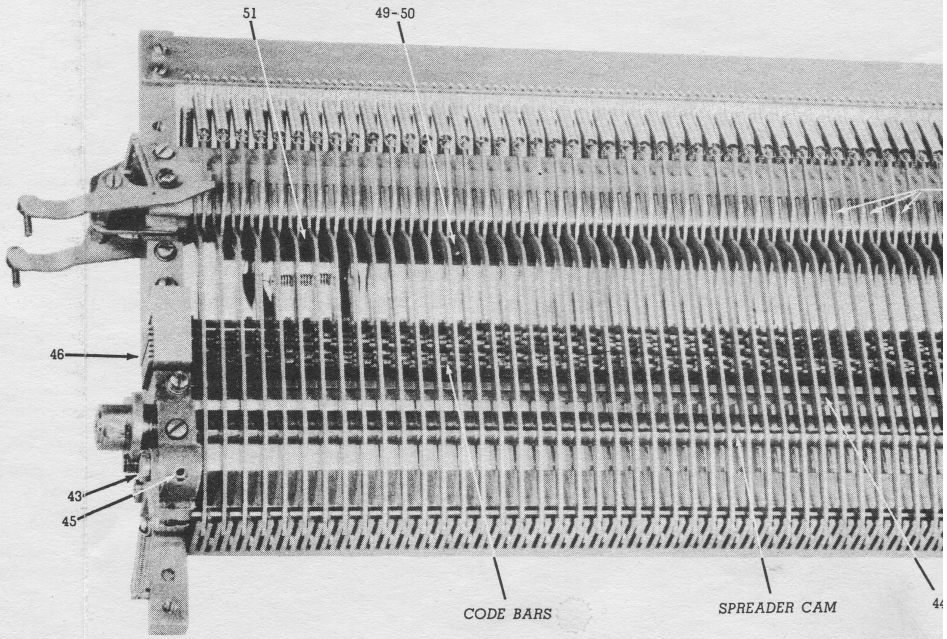


BASE ASSEMBLY

21. Delay bail bearings.
22. Delay bail rollers.
23. Code bar links at guide blocks.
24. Code bar links detent—four pivot screws.
25. Operating shaft right end bearing—fill oil cup.
26. Driving shaft (pulley shaft) bearings—fill two oil cups.
27. Selector shaft bearings—fill oil cup and hole.
28. Elevator shaft bearings—fill oil cup and hole.
29. Elevator and selector shaft clutches—remove oil retaining nuts and fill shafts with oil.
30. Clutch throw-out lever shafts—fill oil cups at front ends of each.
31. Elevator clutch throw-out lever reset cam roller bearing.
32. Clutch detent levers bearings.
33. Clutch detent levers cam roller bearings.
34. Clutch throw-out lever latches bearing screws—two places on
35. Manual tape feed control shaft bearings—two.
36. Manual tape feed control detent plunger.
37. Manual tape feed cam roller bearing.
38. Selector clutch throw-out lever bail link bearings—two.
39. Elevator bell crank pivot screw.
40. Elevator bell crank latching link pivot screw and guide.
41. Elevator bell crank latch pivot screw.
42. Floating lever pivot screw.

PUSHBAR ASSEMBLY

43. Push bar operating bail levers pivot screws—two.
44. Spreader cam—saturate oiler felt with oil.
45. Spreader cam bearings—fill two oil holes.
46. Code bars at guide blocks.
47. Push bars—oil sparingly at fulcrum rod.
48. Shift bell crank pivot screw.
49. Shift link pivot screws—two.
50. Shift latch pivot screw.
51. Yield and shift levers pivot screw.



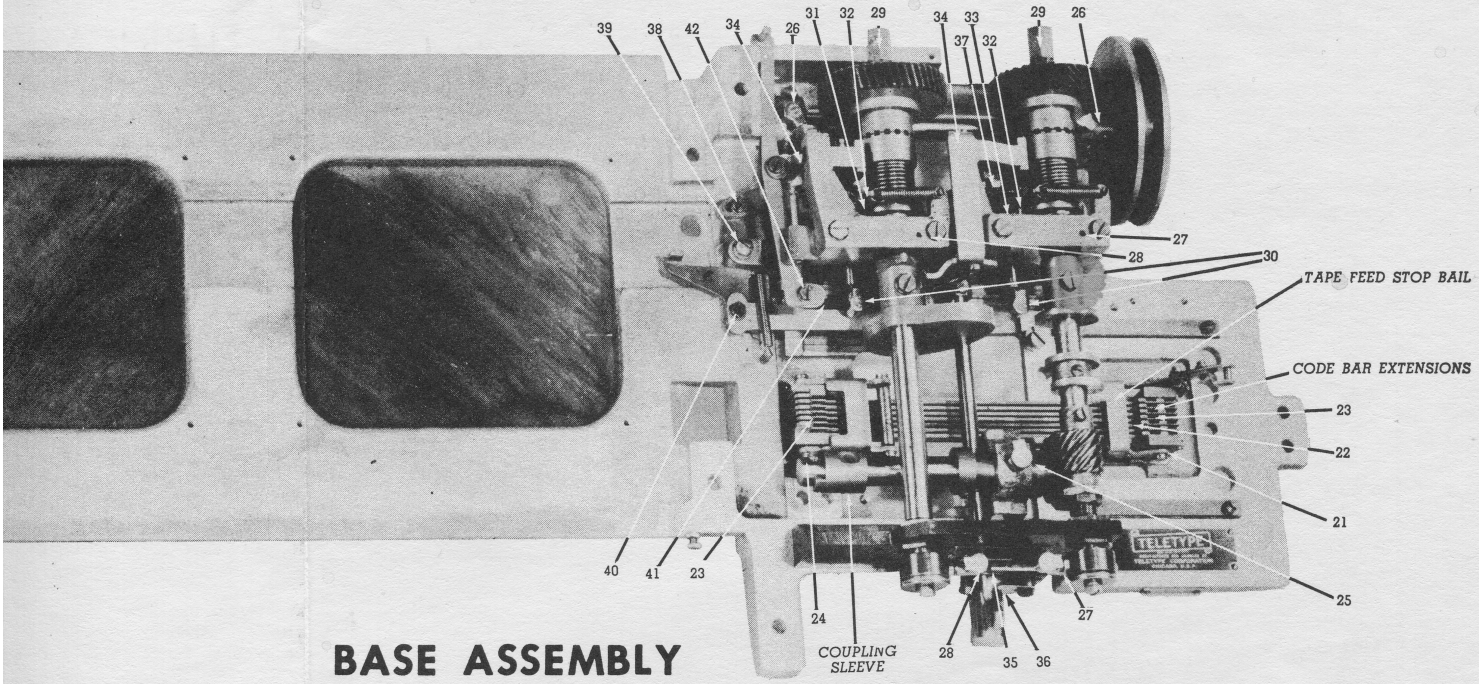
G LEVER

D LEVER

ED PAWL

TAINING PAWL

LUBRICATION CHART



BASE ASSEMBLY

ıgs.
.
guide blocks.
etent—four pivot screws.
ıght end bearing—fill oil cup.
lley shaft) bearings—fill two oil cups.
rrings—fill oil cup and hole.
rrings—fill oil cup and hole.
ector shaft clutches—remove oil retaining nuts and fill

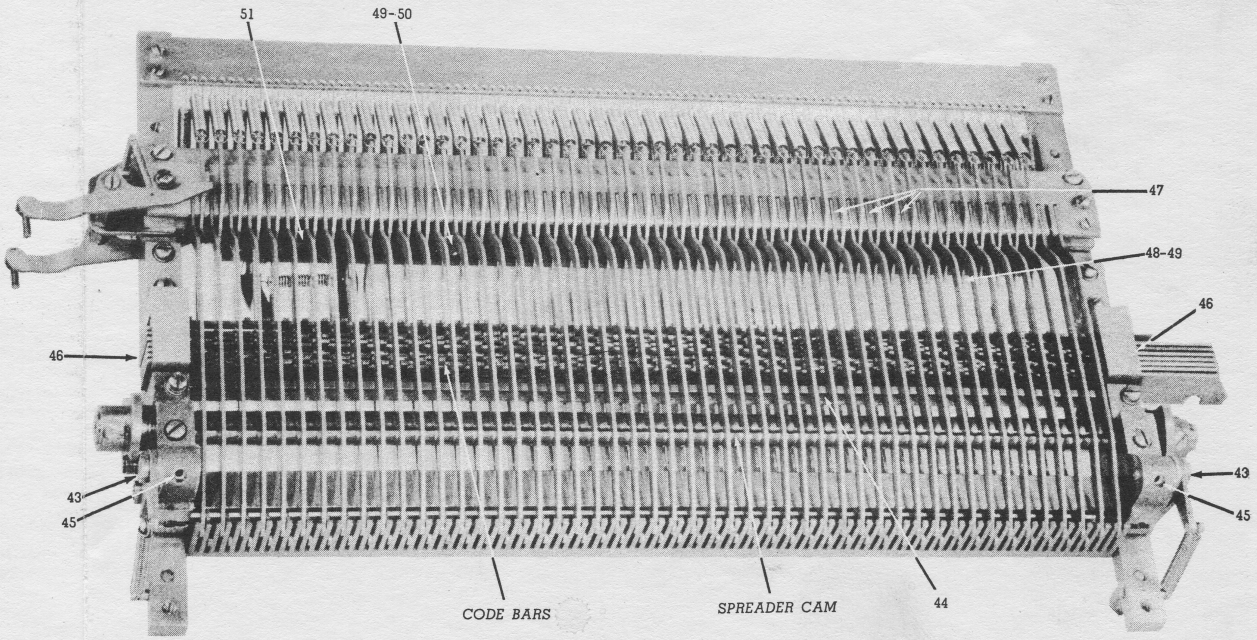
lever shafts—fill oil cups at front ends of each.
hrow-out lever reset cam roller bearing.

32. Clutch detent levers bearings.
33. Clutch detent levers cam roller bearings.
34. Clutch throw-out lever latches bearing screws—two places on each.
35. Manual tape feed control shaft bearings—two.
36. Manual tape feed control detent plunger.
37. Manual tape feed cam roller bearing.
38. Selector clutch throw-out lever bail link bearings—two.
39. Elevator bell crank pivot screw.
40. Elevator bell crank latching link pivot screw and guide.
41. Elevator bell crank latch pivot screw.
42. Floating lever pivot screw.

ASSEMBLY

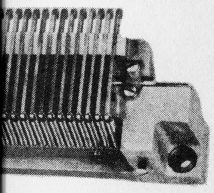
evers pivot screws—two.
iler felt with oil.
ill two oil holes.
.
ıt fulcrum rod.
w.
vo.

t screw.



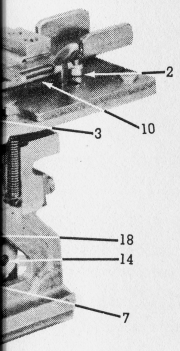
Printed in U.S.A.

LUBRICATION CHART



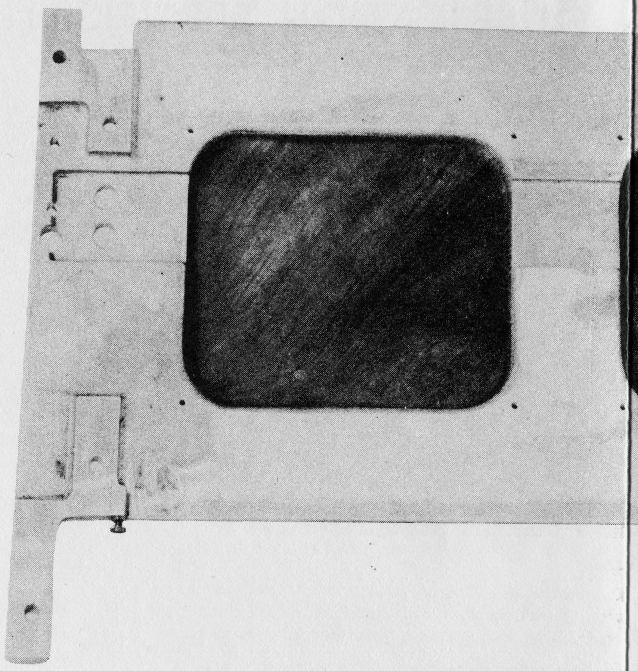
ed slightly

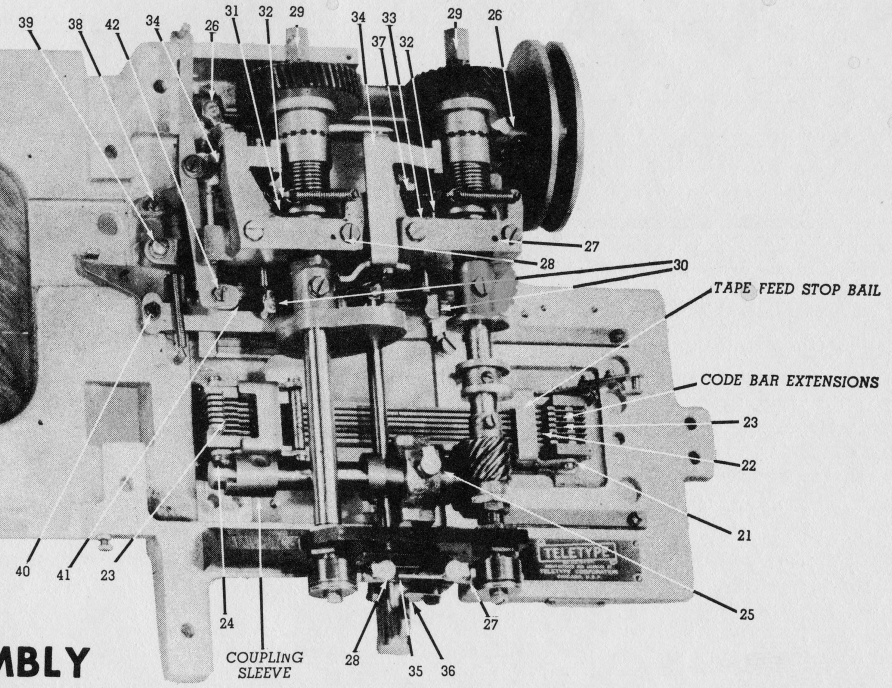
SSEMBLY



two places.

t—six places.
aces.
ler bearing.
shaft—six places.
oil holes.
ring.

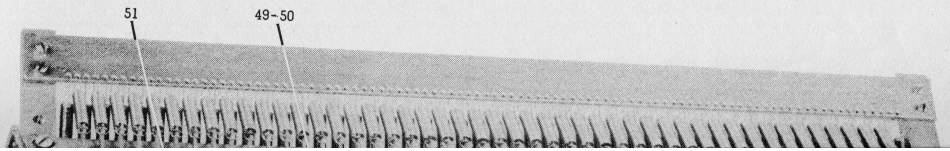




BASE ASSEMBLY

21. Delay bail bearings.
22. Delay bail rollers.
23. Code bar links at guide blocks.
24. Code bar links detent—four pivot screws.
25. Operating shaft right end bearing—fill oil cup.
26. Driving shaft (pulley shaft) bearings—fill two oil cups.
27. Selector shaft bearings—fill oil cup and hole.
28. Elevator shaft bearings—fill oil cup and hole.
29. Elevator and selector shaft clutches—remove oil retaining nuts and fill shafts with oil.
30. Clutch throw-out lever shafts—fill oil cups at front ends of each.
31. Elevator clutch throw-out lever reset cam roller bearing.
32. Clutch detent levers bearings.
33. Clutch detent levers cam roller bearings.
34. Clutch throw-out lever latches bearing screws—two places on each.
35. Manual tape feed control shaft bearings—two.
36. Manual tape feed control detent plunger.
37. Manual tape feed cam roller bearing.
38. Selector clutch throw-out lever bail link bearings—two.
39. Elevator bell crank pivot screw.
40. Elevator bell crank latching link pivot screw and guide.
41. Elevator bell crank latch pivot screw.
42. Floating lever pivot screw.

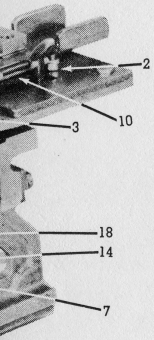
PUSHBAR ASSEMBLY



43. Push bar operating bail levers pivot screws—two.

slightly

SEMBLY



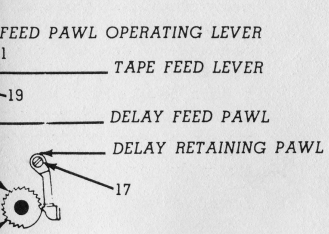
wo places.

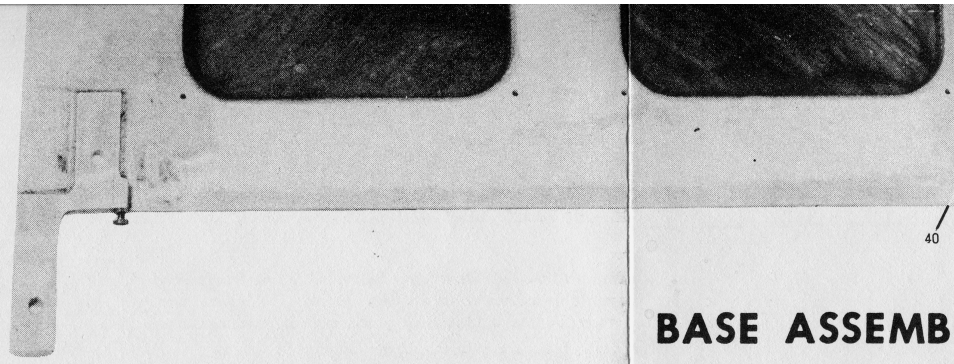
–six places.
ces.
r bearing.
haft—six places.
oil holes.
ing.

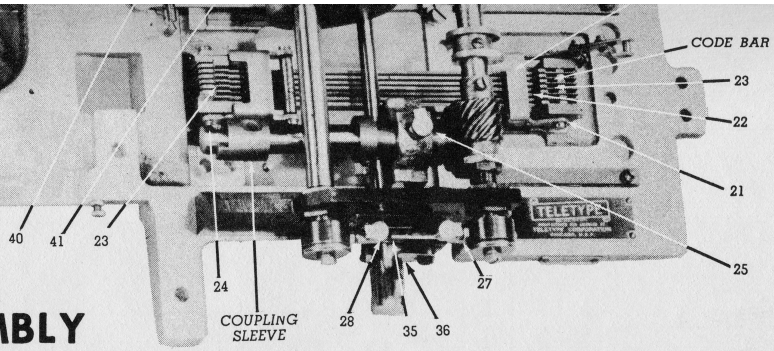
roller bearing.

sparingly.
eeth sparingly.

ver bearings.





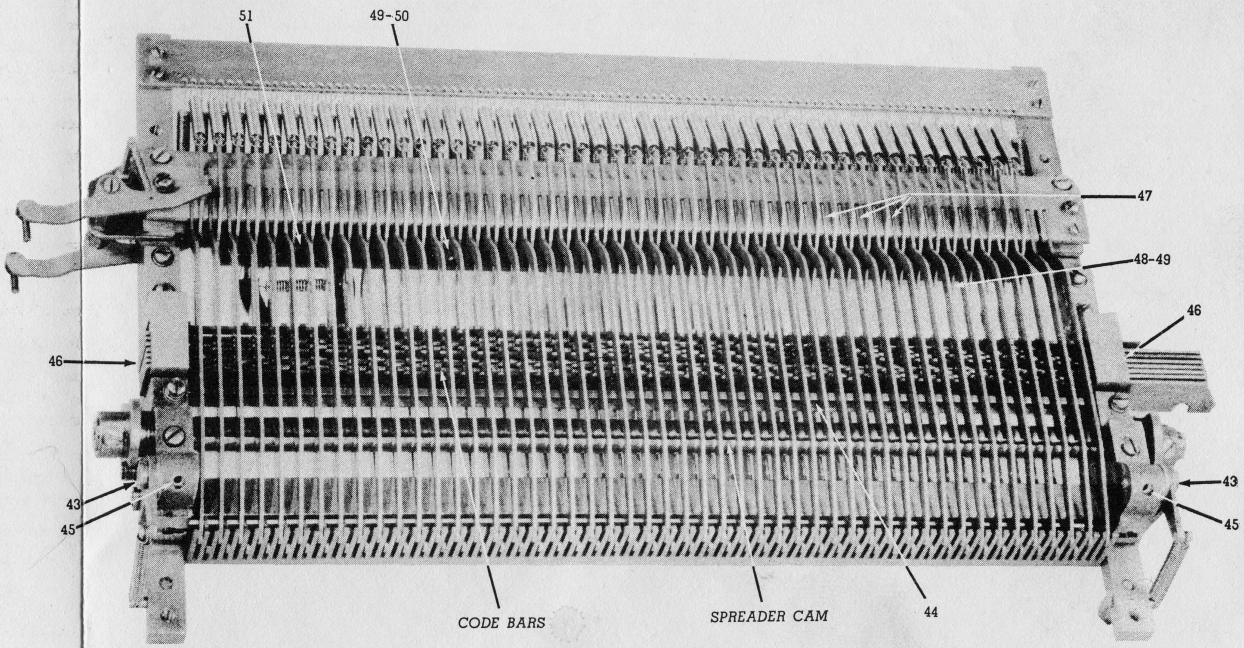


BASE ASSEMBLY

21. Delay bail bearings.
22. Delay bail rollers.
23. Code bar links at guide blocks.
24. Code bar links detent—four pivot screws.
25. Operating shaft right end bearing—fill oil cup.
26. Driving shaft (pulley shaft) bearings—fill two oil cups.
27. Selector shaft bearings—fill oil cup and hole.
28. Elevator shaft bearings—fill oil cup and hole.
29. Elevator and selector shaft clutches—remove oil retaining nuts and fill shafts with oil.
30. Clutch throw-out lever shafts—fill oil cups at front ends of each.
31. Elevator clutch throw-out lever reset cam roller bearing.
32. Clutch detent levers bearings.
33. Clutch detent levers cam roller bearings.
34. Clutch throw-out lever latches bearing screws—two places on each.
35. Manual tape feed control shaft bearings—two.
36. Manual tape feed control detent plunger.
37. Manual tape feed cam roller bearing.
38. Selector clutch throw-out lever bail link bearings—two.
39. Elevator bell crank pivot screw.
40. Elevator bell crank latching link pivot screw and guide.
41. Elevator bell crank latch pivot screw.
42. Floating lever pivot screw.

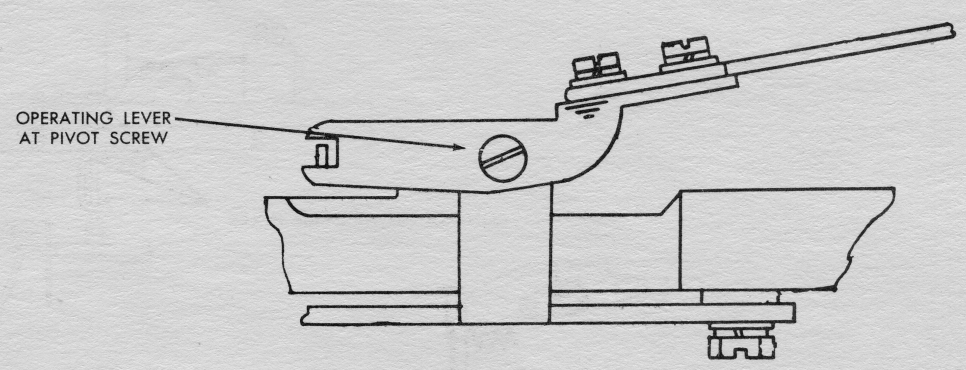
PUSHBAR ASSEMBLY

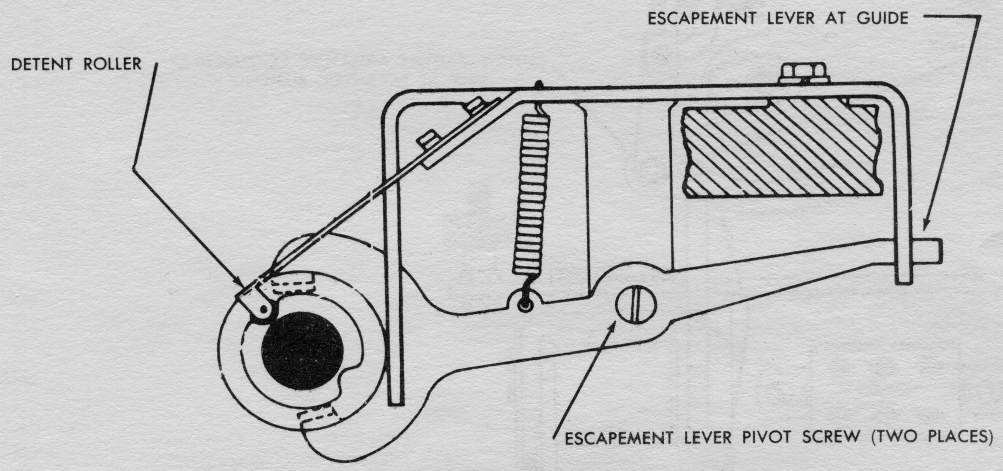
43. Push bar operating bail levers pivot screws—two.
44. Spreader cam—saturate oiler felt with oil.
45. Spreader cam bearings—fill two oil holes.
46. Code bars at guide blocks.
47. Push bars—oil sparingly at fulcrum rod.
48. Shift bell crank pivot screw.
49. Shift link pivot screws—two.
50. Shift latch pivot screw.
51. Yield and shift levers pivot screw.

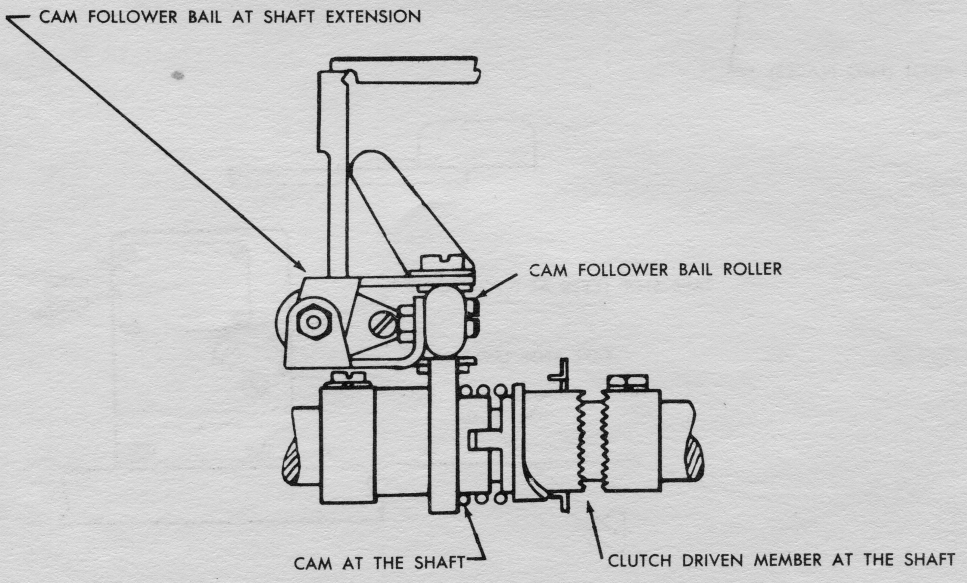


Printed in U.S.A.

ADDITIONAL LUBRICATION FOR OPERATING UNITS THAT CONTAIN THE MECHANICAL TAPE STOP SET OF PARTS.







ADDITIONAL LUBRICATION FOR OPERATING UNITS THAT CONTAIN SPECIAL FEATURES FOR OPERATION OF THE TIGHT TAPE, END OF TAPE, AND ELECTRICAL CLUTCH MAGNET

