PENTAX
SPOTMATIC

Reprinted November 1975

NATIONAL CAMERA
TECHNICAL TRAINING DIVISION
2000 W. Union Avenue • Englewood, Colorado 80110

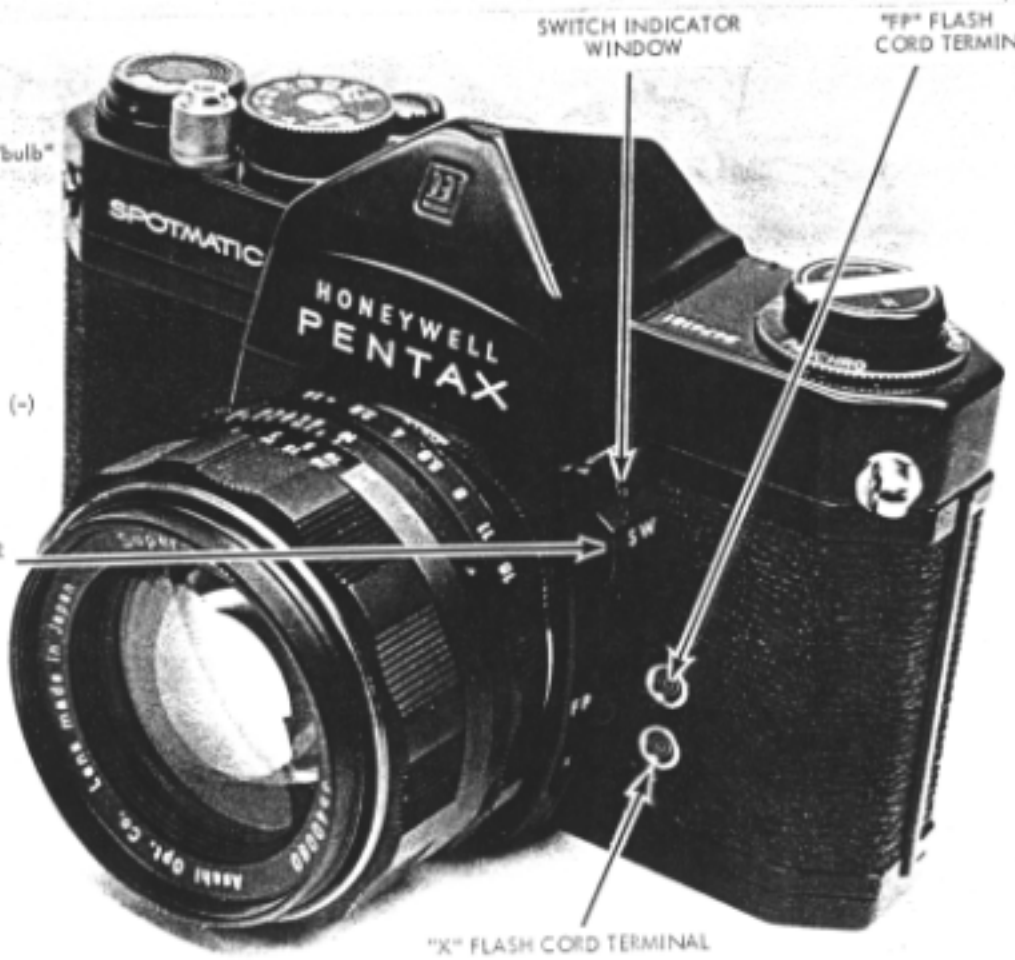

WIND LEVER
SPEED KNOB
REWIND KNOB
RELEASE BUTTON
SPOTMATIC
HONEYWELL
PENTAX
1
DELAYED-ACTION
COCKING LEVER

BATTERY TEST:

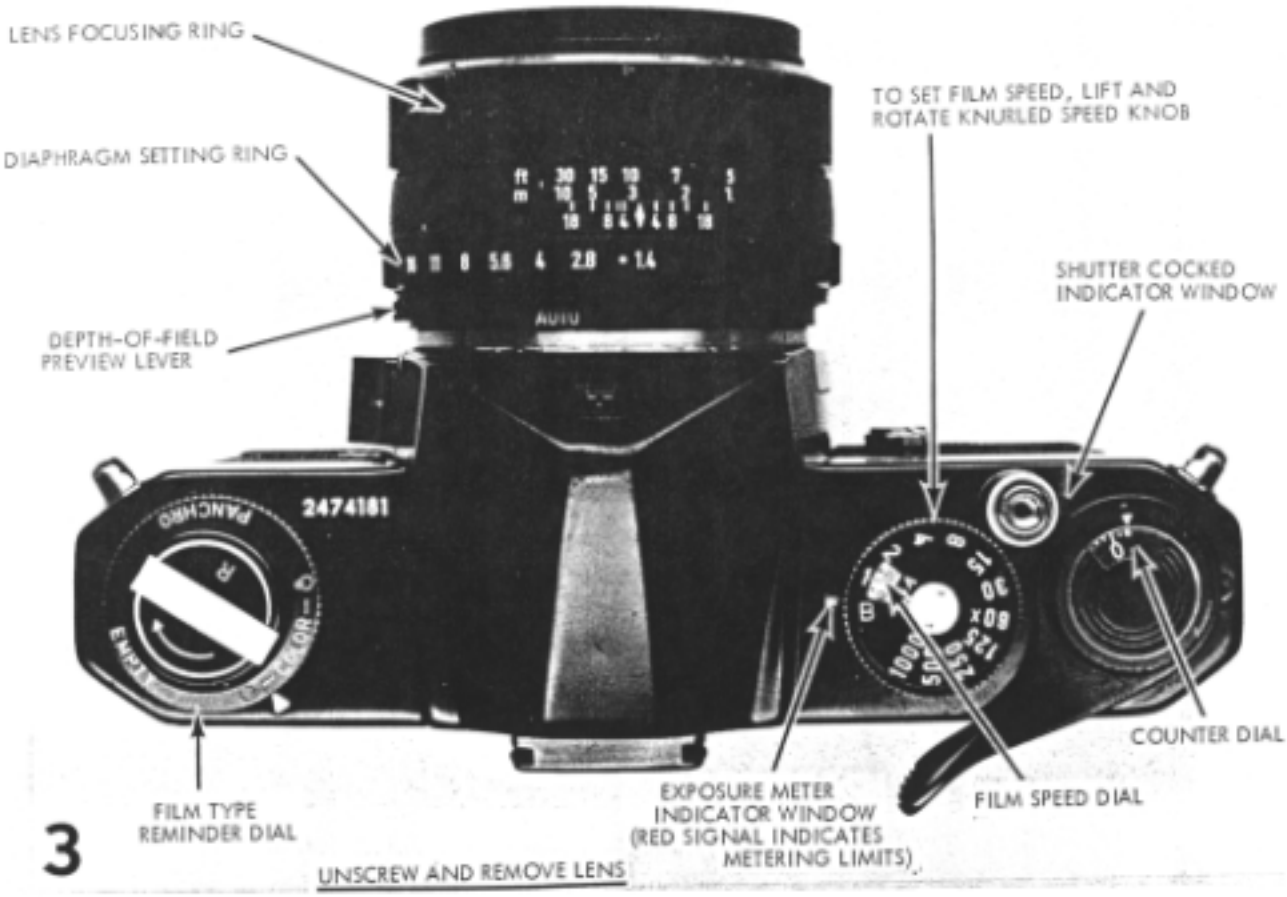
Set: ASA 100 and "bulb" on speed knob (see illustration #3)

Push exposure meter on/off switch up to energize meter.

If battery is good, exposure meter needle will jump to "underexposure" (-) position.



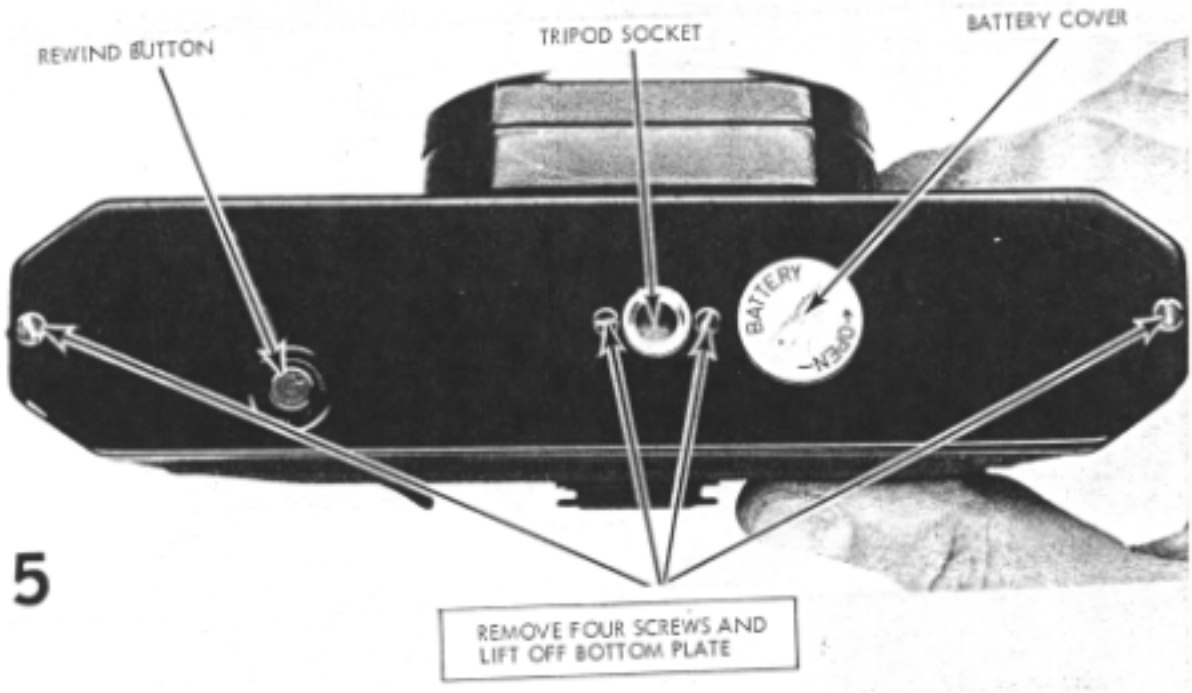
2



3 UNSCREW AND REMOVE LENS

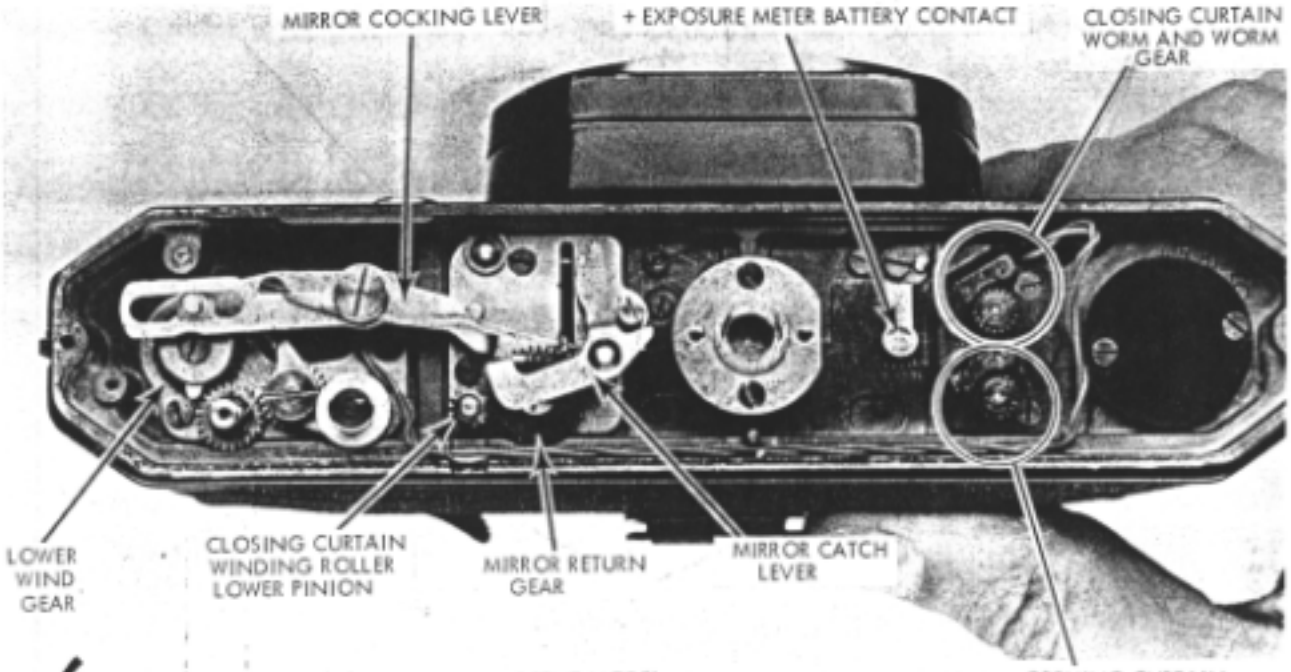

DELAYED-ACTION
RELEASE BUTTON
HONEYWELL
PENTAX
SPOTMATIC
DIAPHRAGM
CLOSING BAR

4

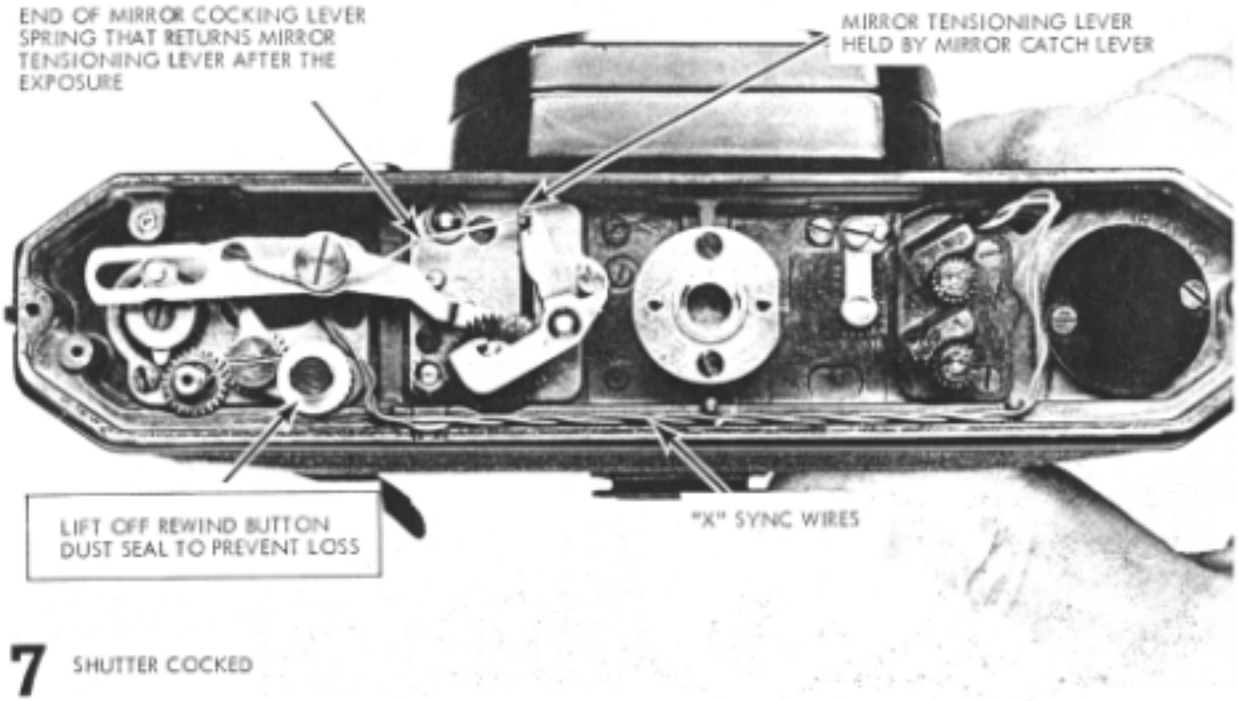


5

REMOVE FOUR SCREWS AND
LIFT OFF BOTTOM PLATE



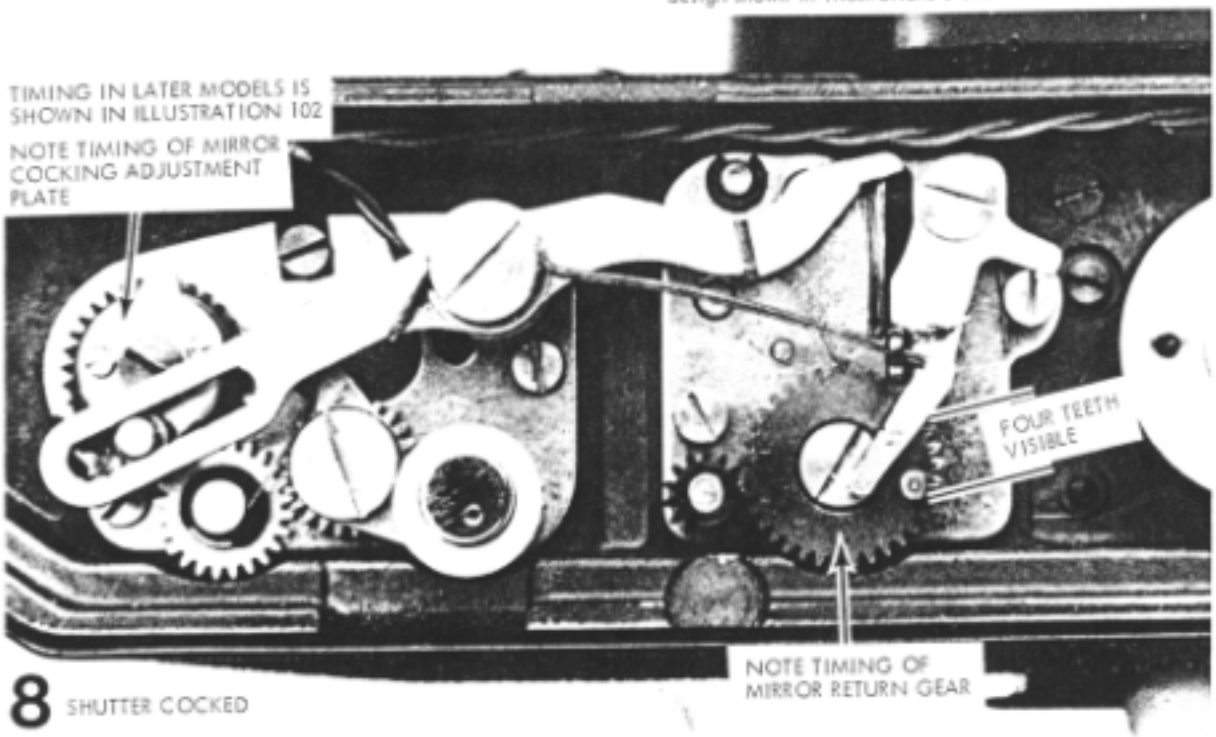
6 SHUTTER RELEASED — RECENT MODEL



7 SHUTTER COCKED

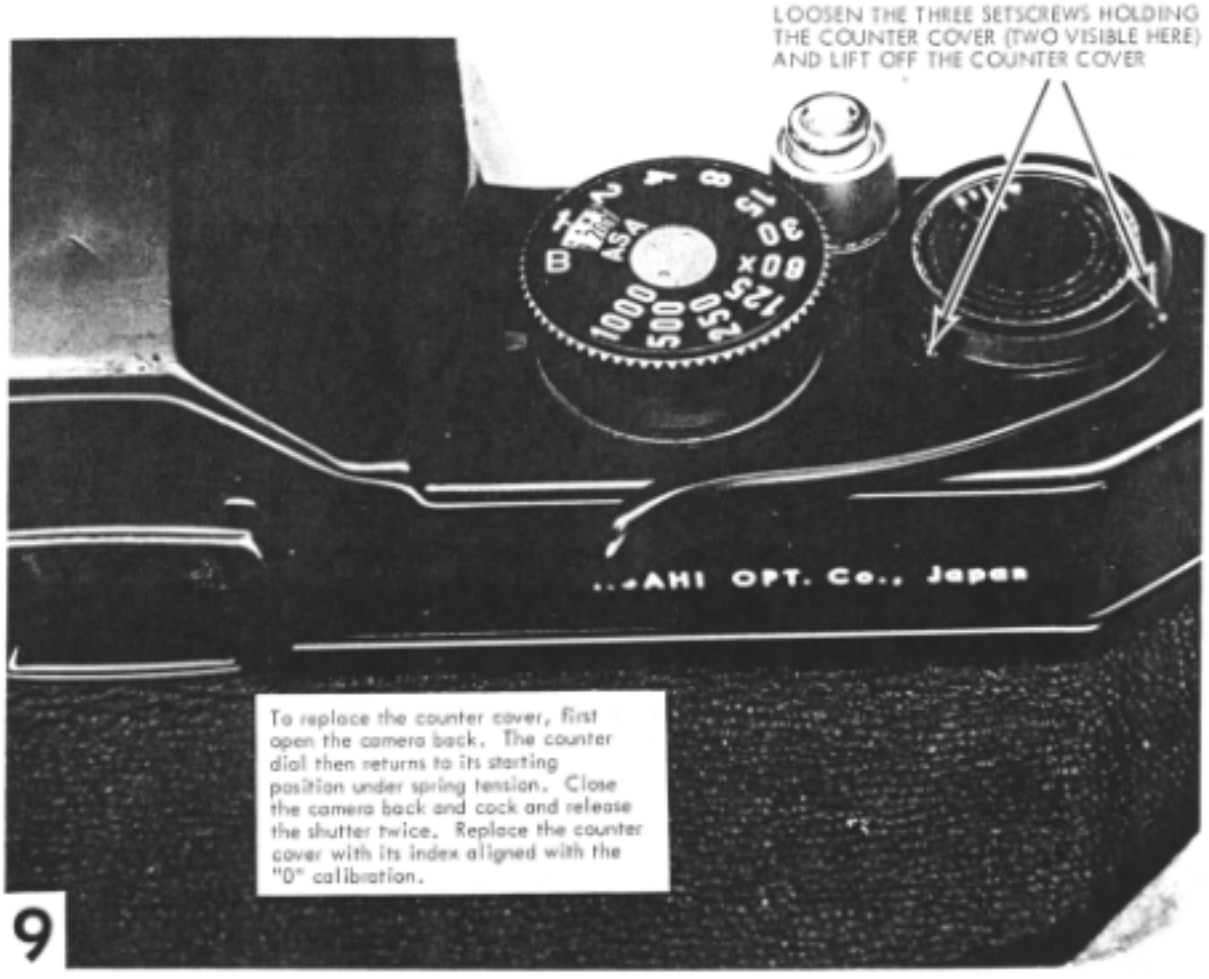
EARLY MODEL

The mirror cocking lever drives the mirror tensioning lever toward the rear of the camera during the cocking cycle -- just opposite to the cocking direction in the design shown in Illustrations 6 and 7.



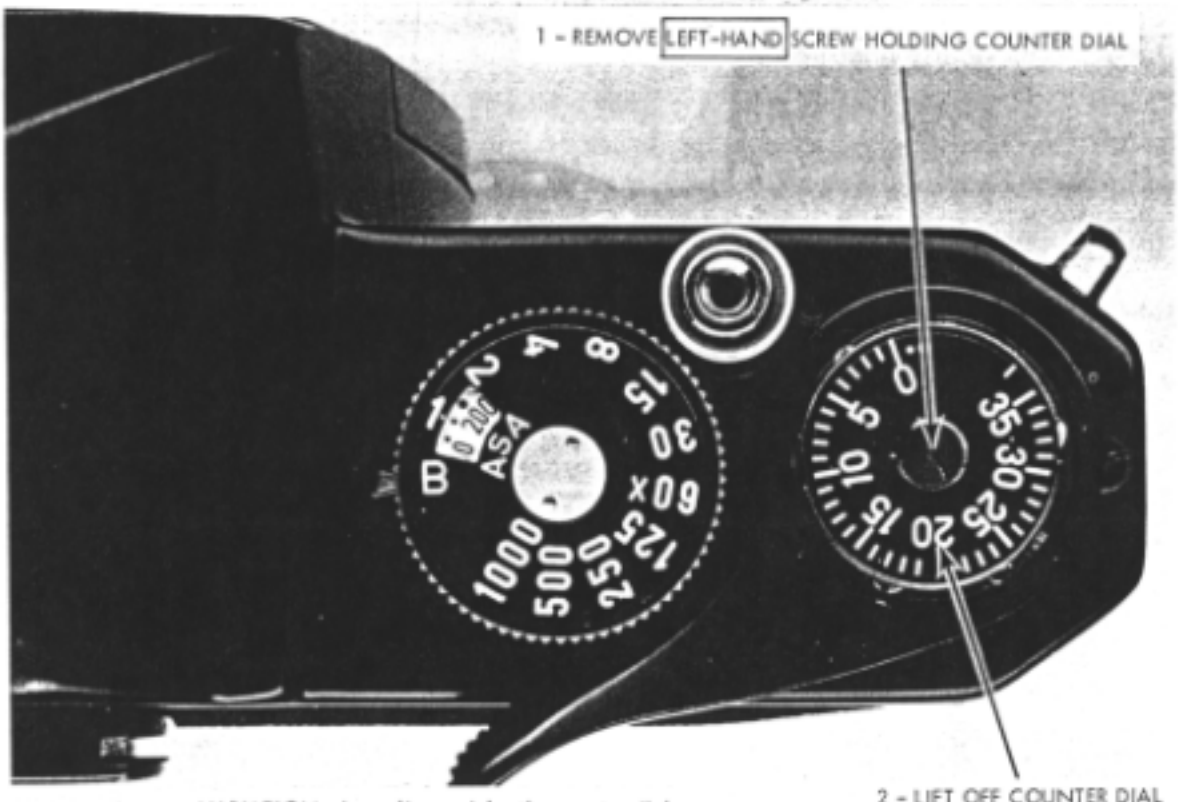
8 SHUTTER COCKED

TIMING OF MIRROR RETURN GEAR IN LATER MODELS IS SHOWN IN ILLUSTRATION 44

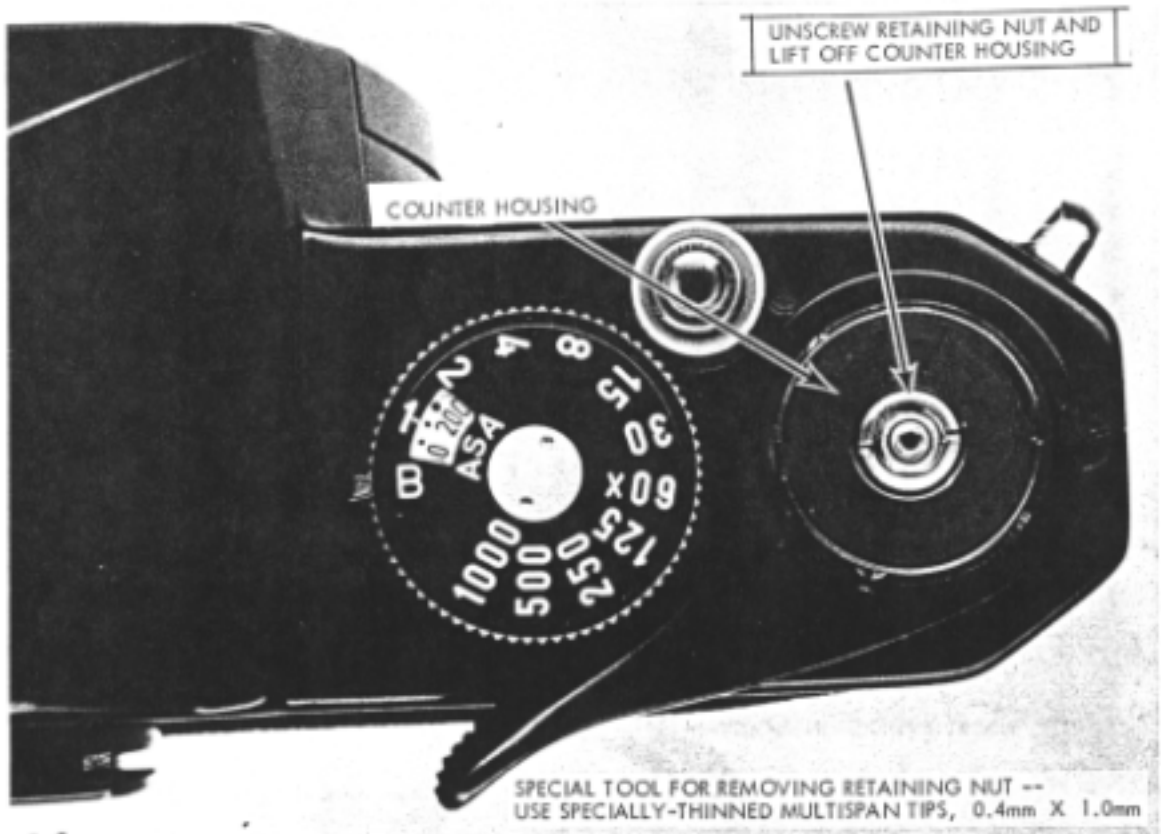


To replace the counter cover, first open the camera back. The counter dial then returns to its starting position under spring tension. Close the camera back and cock and release the shutter twice. Replace the counter cover with its index aligned with the "0" calibration.

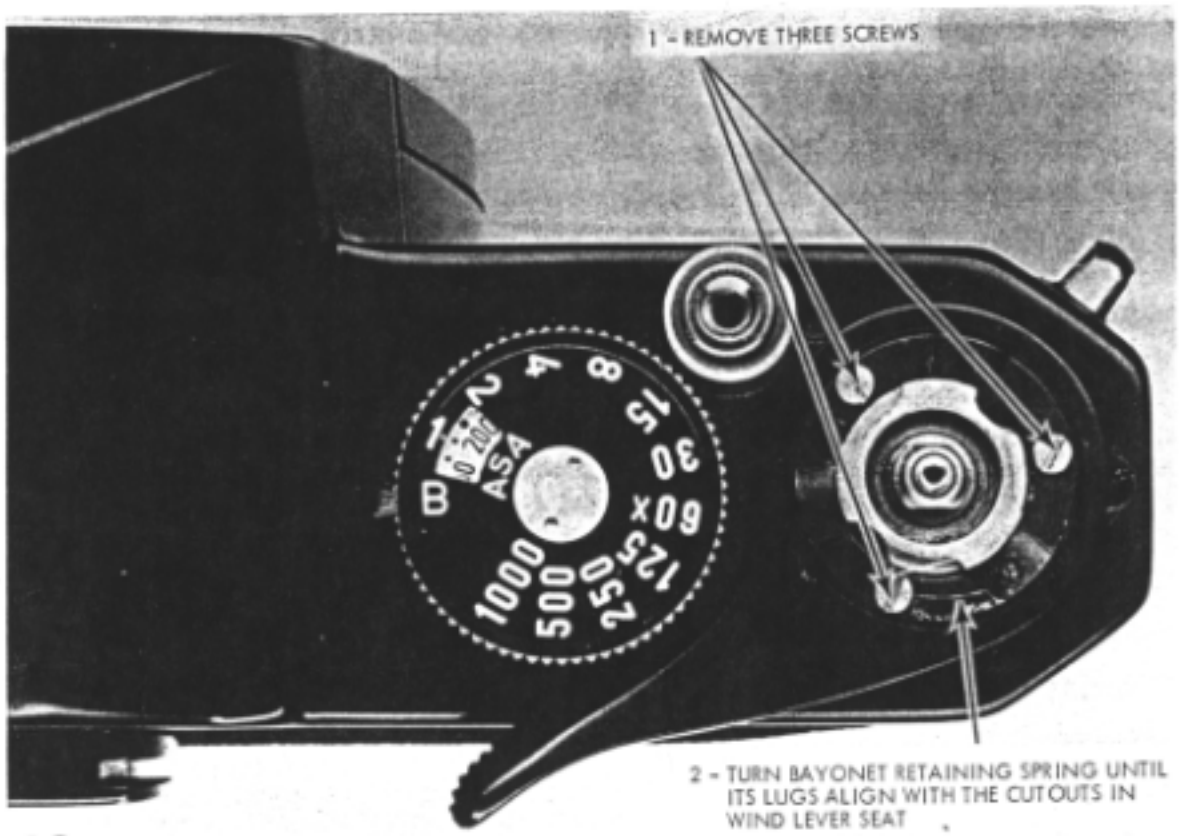
9



VARIATION: In earlier models, the counter dial return spring is underneath the counter dial - - - the spring unwinds when you lift off the counter dial. In later models, such as the camera shown, the spring acts internally on the counter shaft -- the spring remains inside the wind lever shaft assembly.

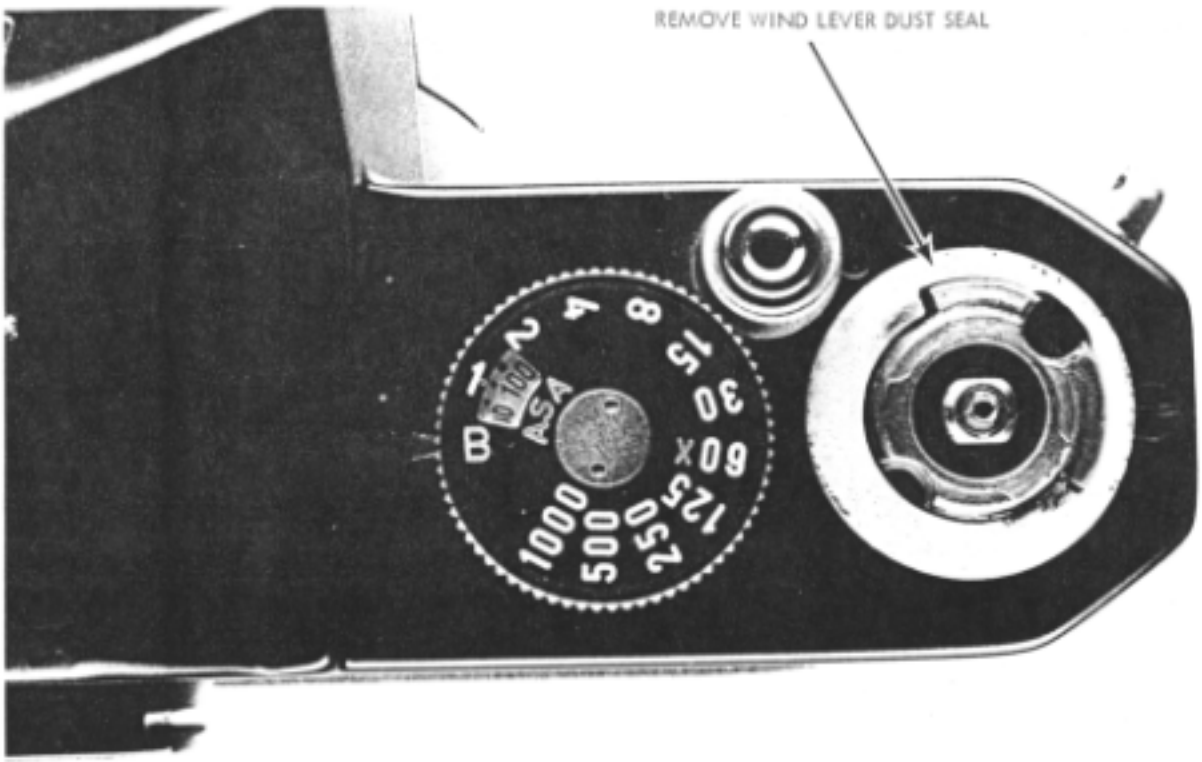


SPECIAL TOOL FOR REMOVING RETAINING NUT --
USE SPECIALLY-THINNED MULTISPAN TIPS, 0.4mm X 1.0mm

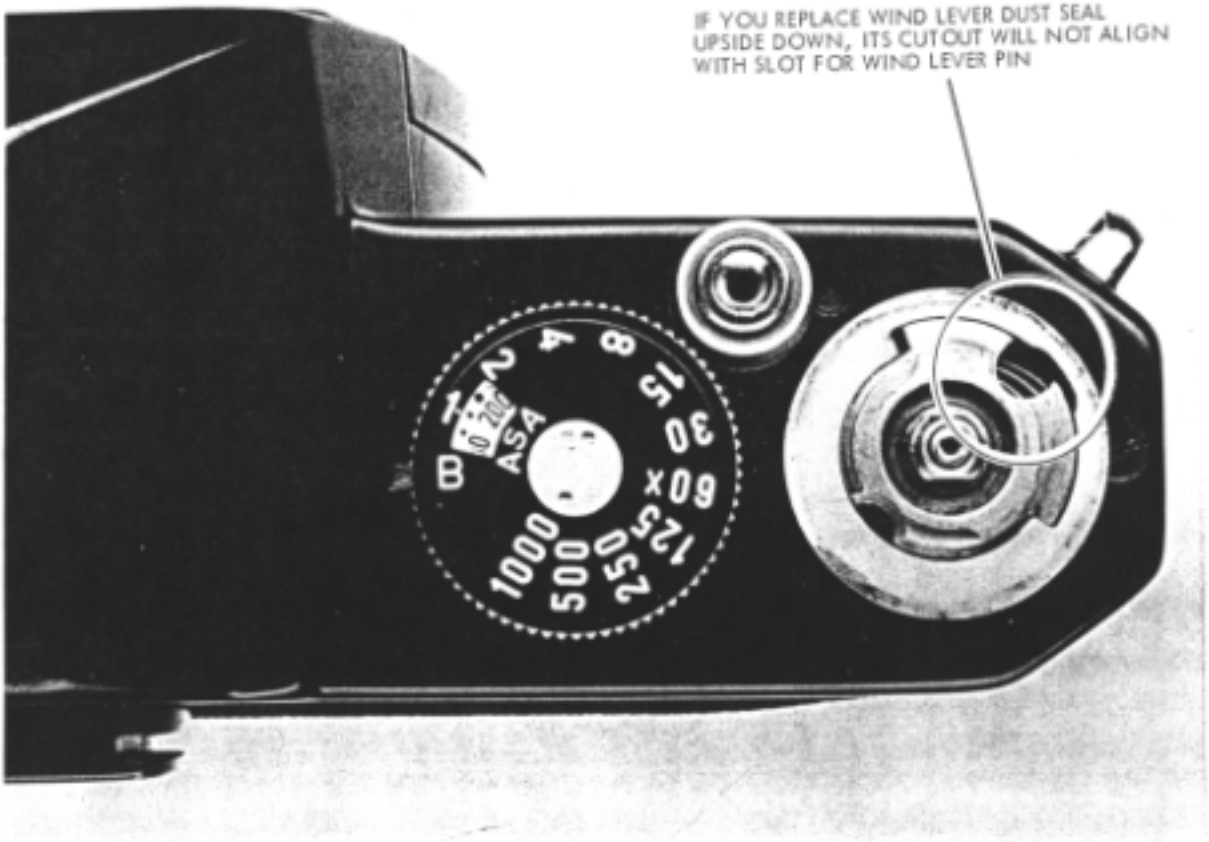


2 - TURN BAYONET RETAINING SPRING UNTIL ITS LUGS ALIGN WITH THE CUTOUTS IN WIND LEVER SEAT

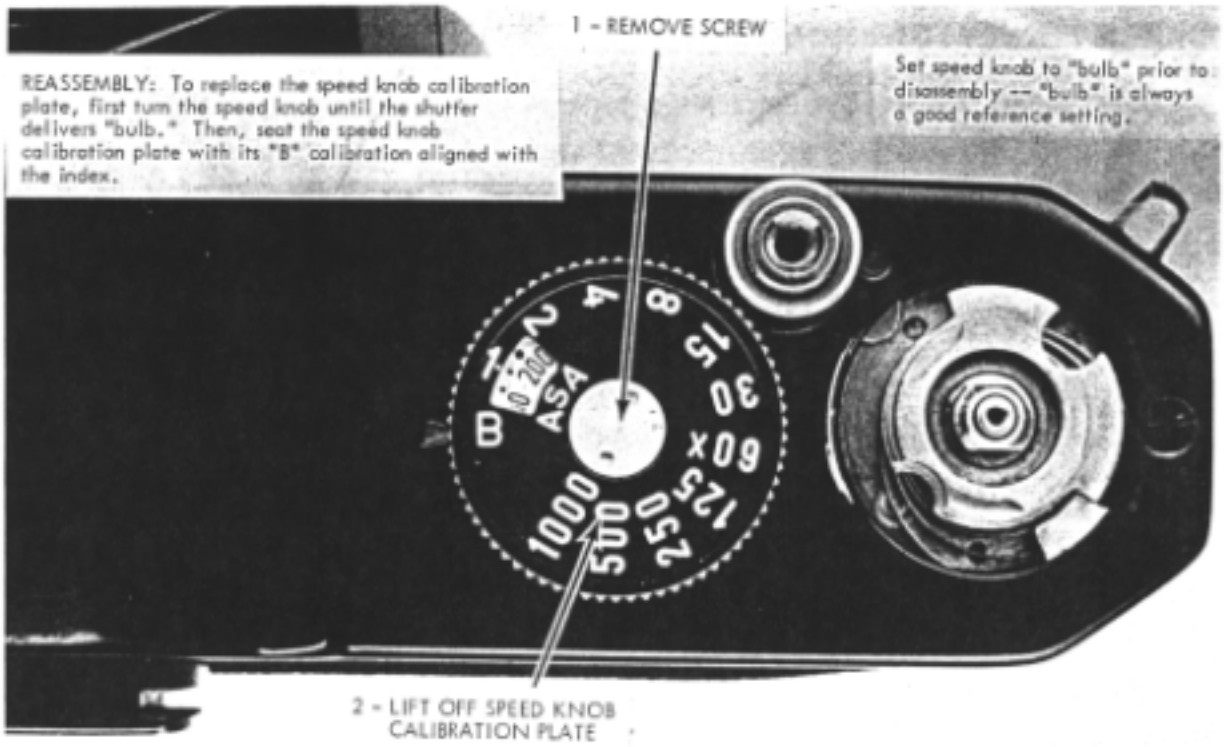
3 - LIFT OFF BAYONET RETAINING SPRING AND WIND LEVER


REMOVE WIND LEVER DUST SEAL
B 1 2 4 8 15 30 60X 125 250 500 1000
ASA

13

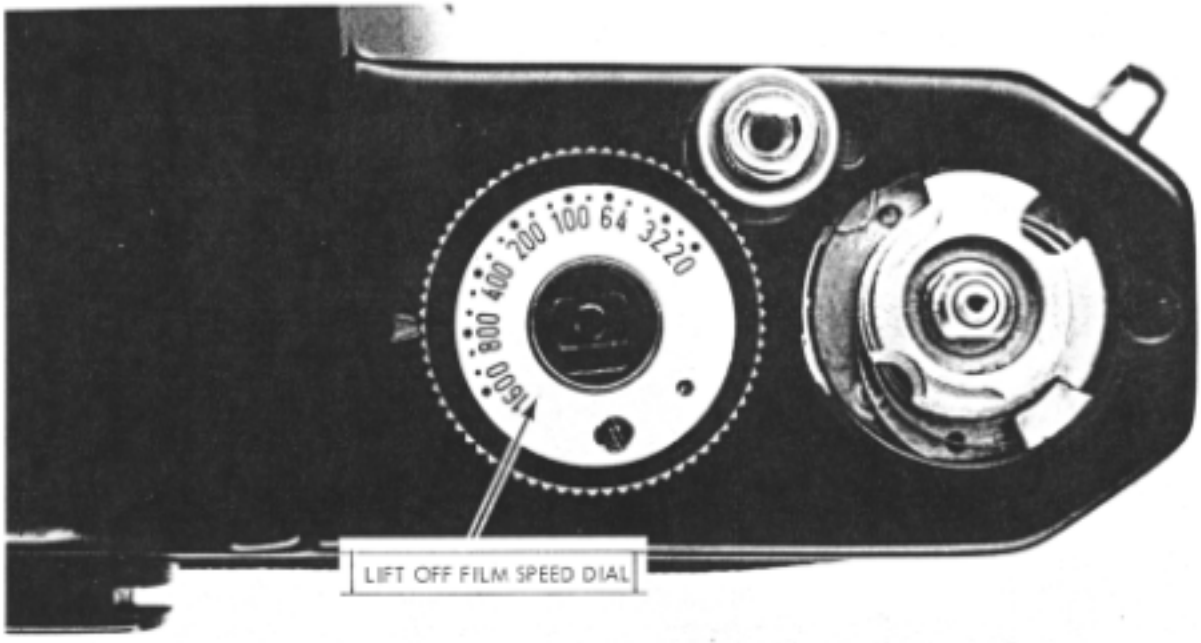

IF YOU REPLACE WIND LEVER DUST SEAL UPSIDE DOWN, ITS CUTOUT WILL NOT ALIGN WITH SLOT FOR WIND LEVER PIN
B 1 2 4 8 15 30 60X 125 250 500 1000
ASA

13-A



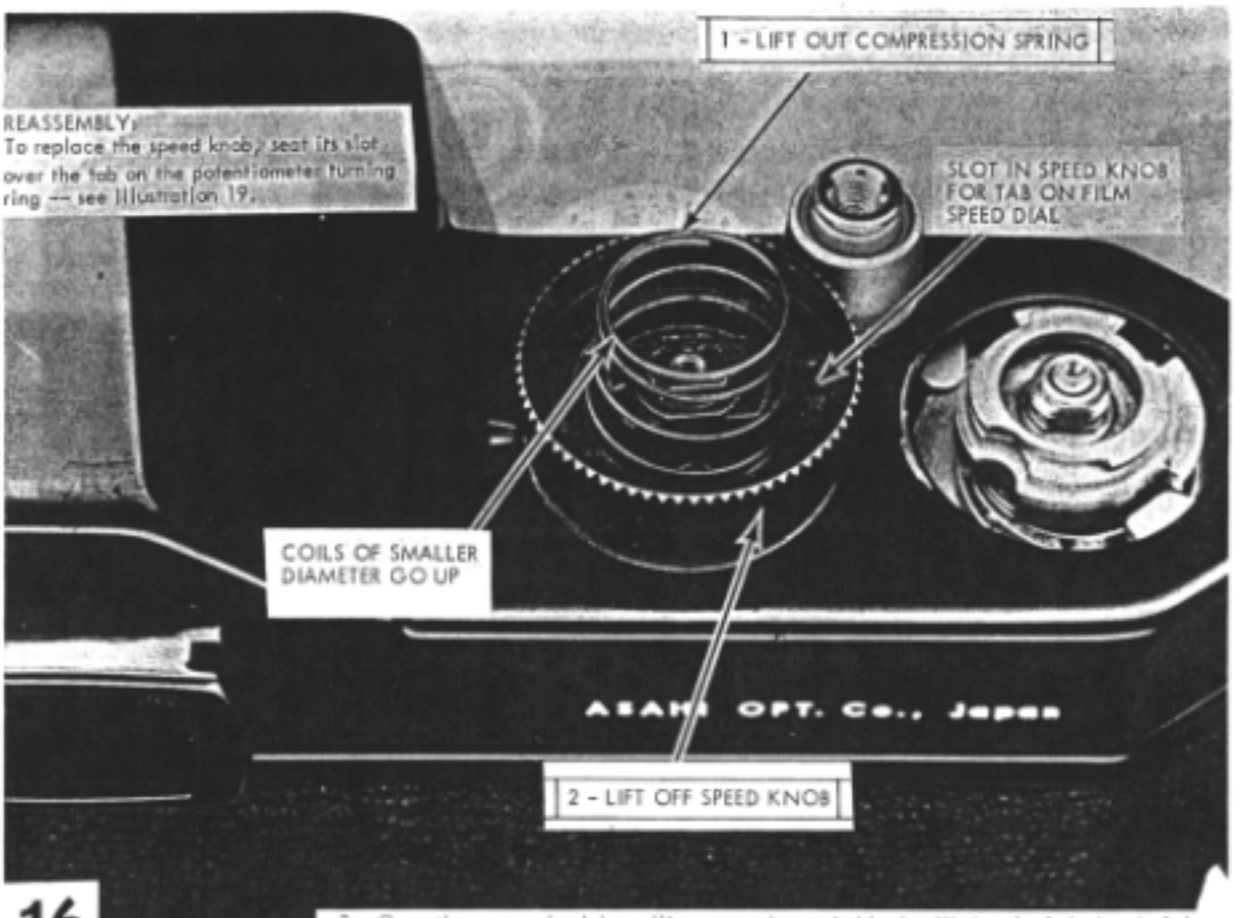
14

CAUTION: The compression spring for the speed knob (illustration 16) pushes the speed knob calibration plate up as you remove the screw.



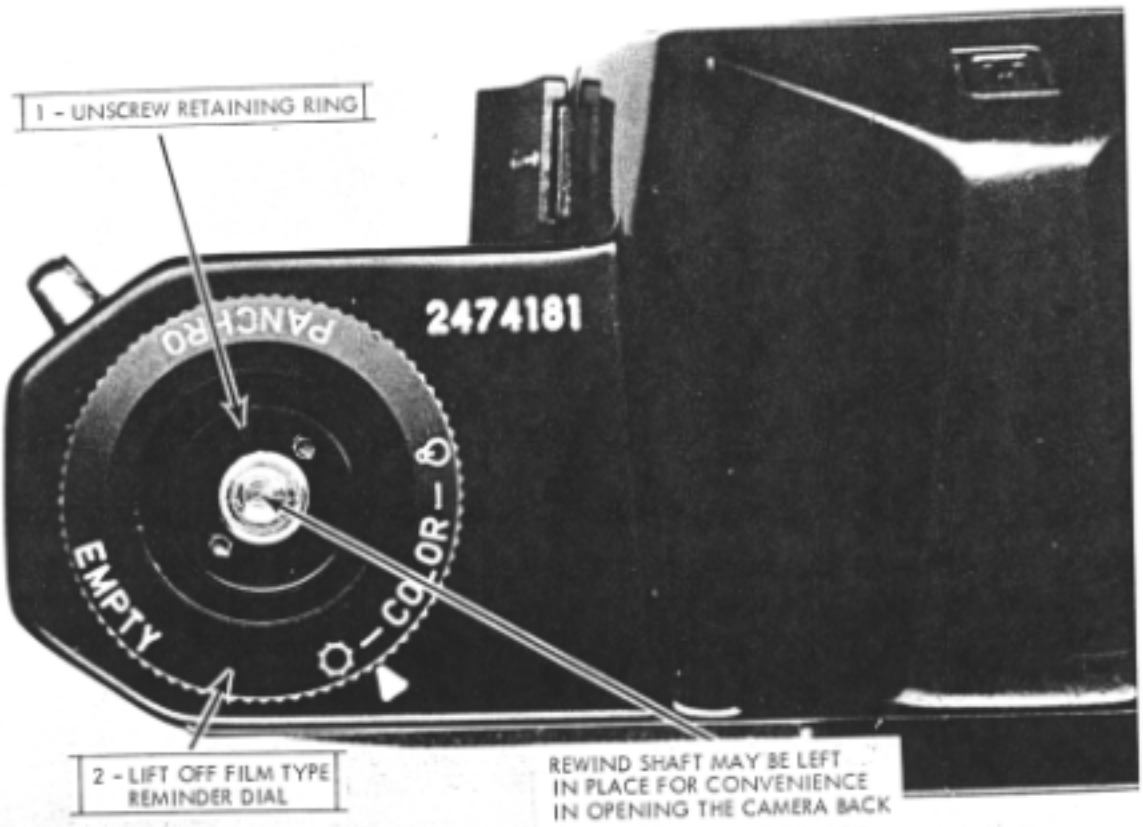
15

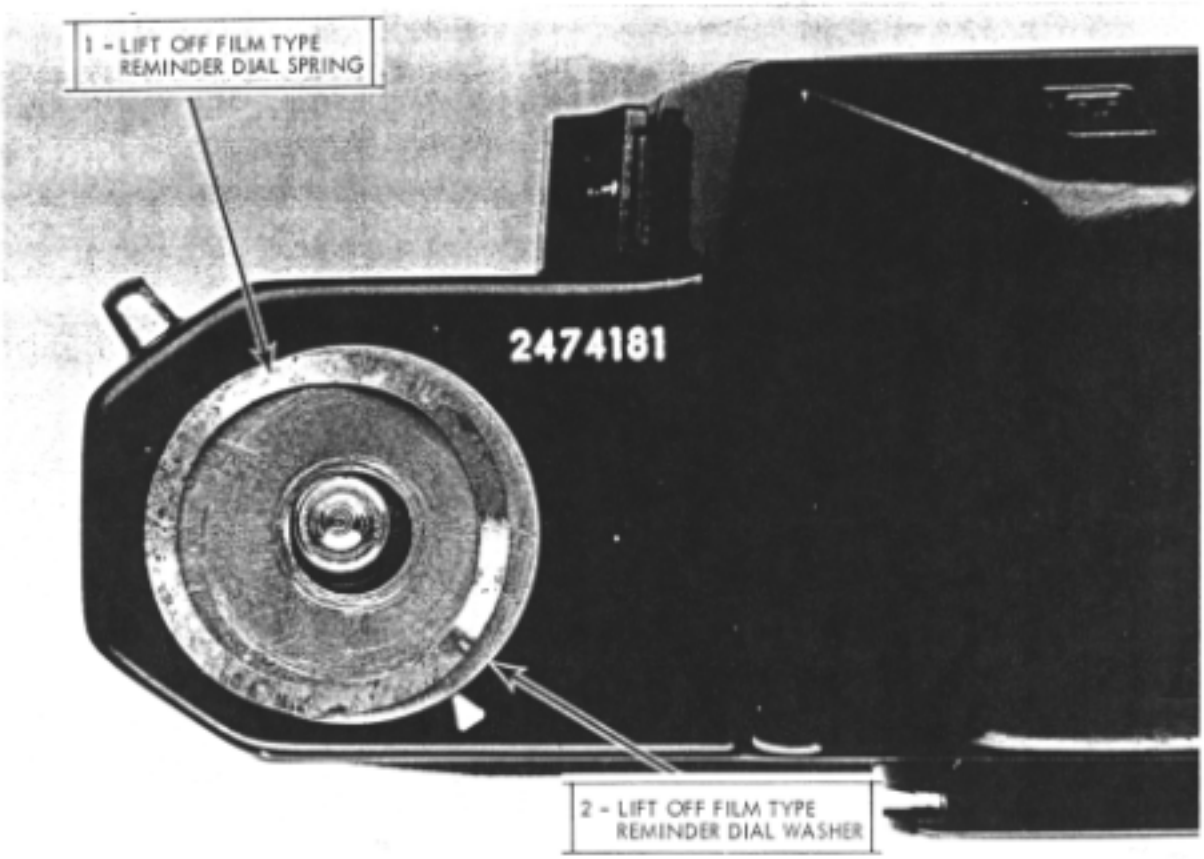
REASSEMBLY: Make certain the tab on the underside of the film speed dial passes into the slot in the speed knob -- see Illustration 16.

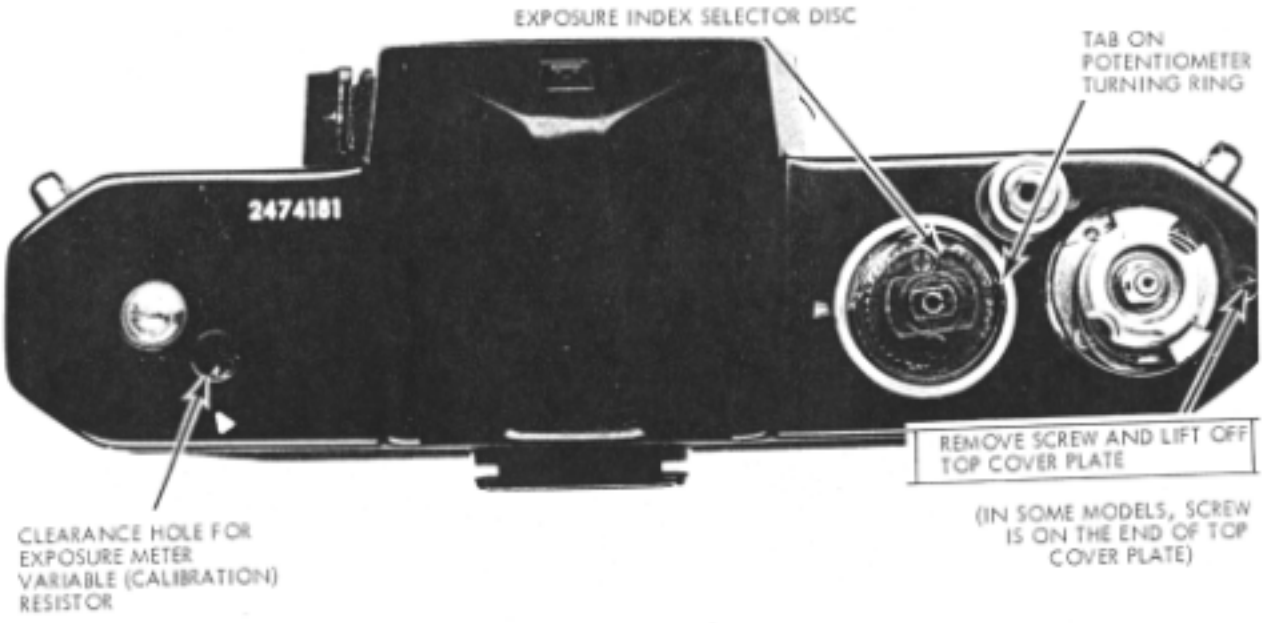


16

3 - Open the camera back by pulling up on the rewind knob. Wedge the forked end of the rewind shaft with the handle-end of your tweezers and unscrew the rewind knob.

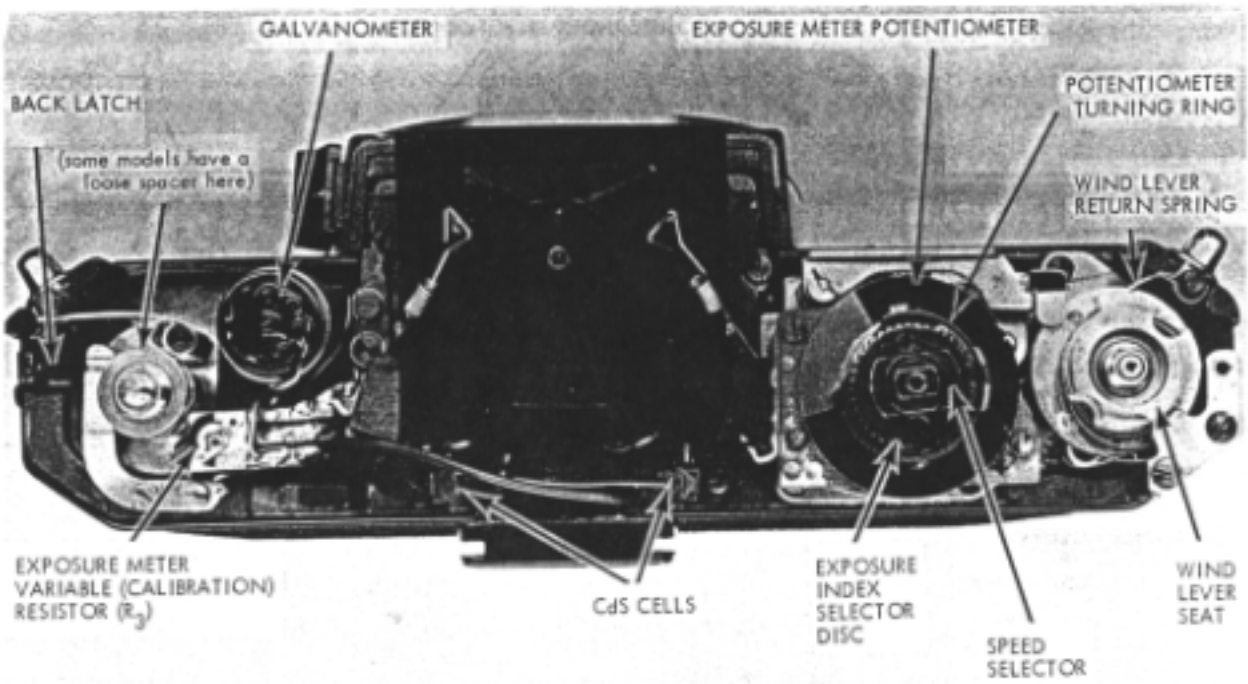

1 - UNSCREW RETAINING RING
2474181
PANCHRO
EMPTY
COLOR
2 - LIFT OFF FILM TYPE REMINDER DIAL
REWIND SHAFT MAY BE LEFT IN PLACE FOR CONVENIENCE IN OPENING THE CAMERA BACK

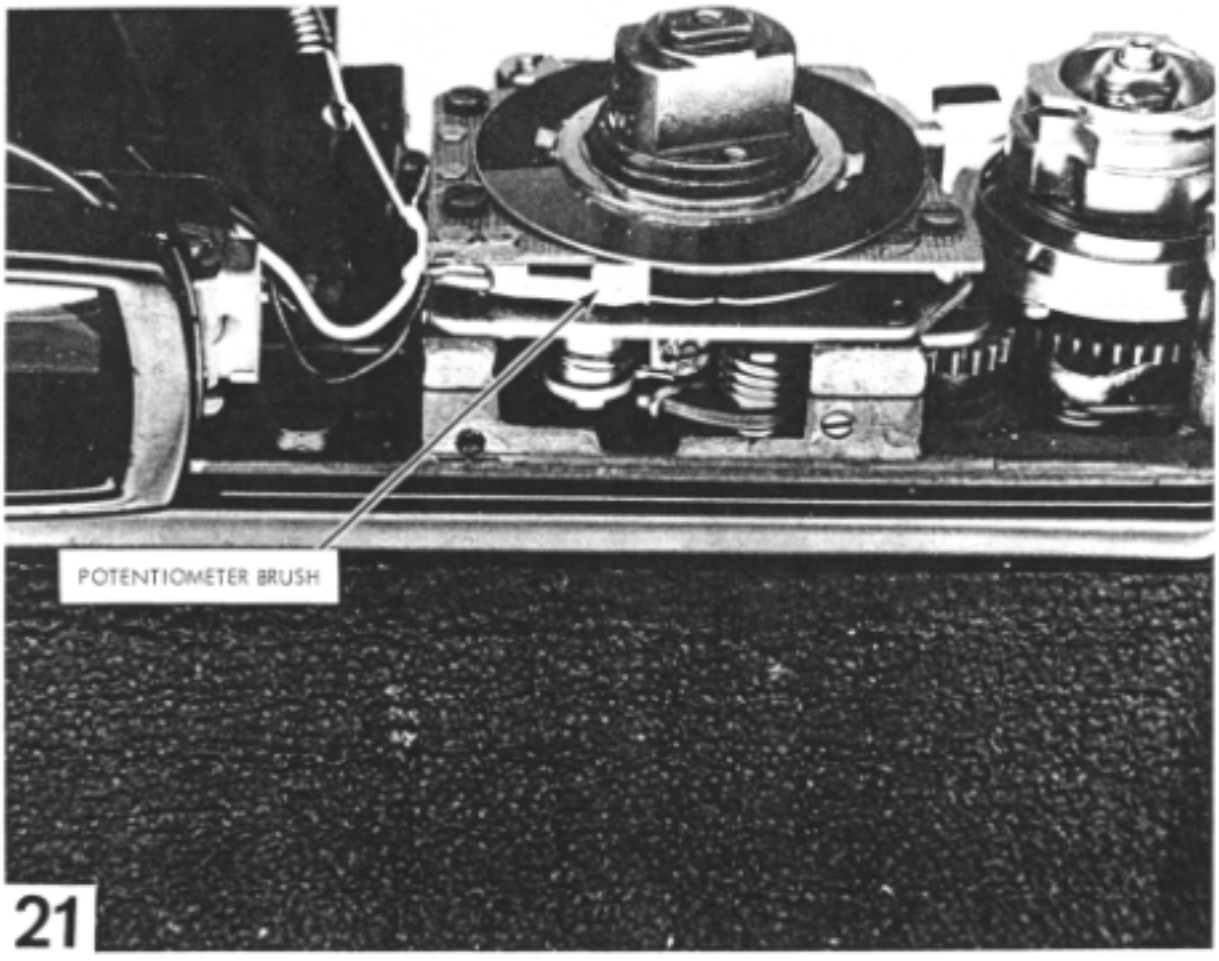

1 - LIFT OFF FILM TYPE
REMINDER DIAL SPRING
2474181
2 - LIFT OFF FILM TYPE
REMINDER DIAL WASHER



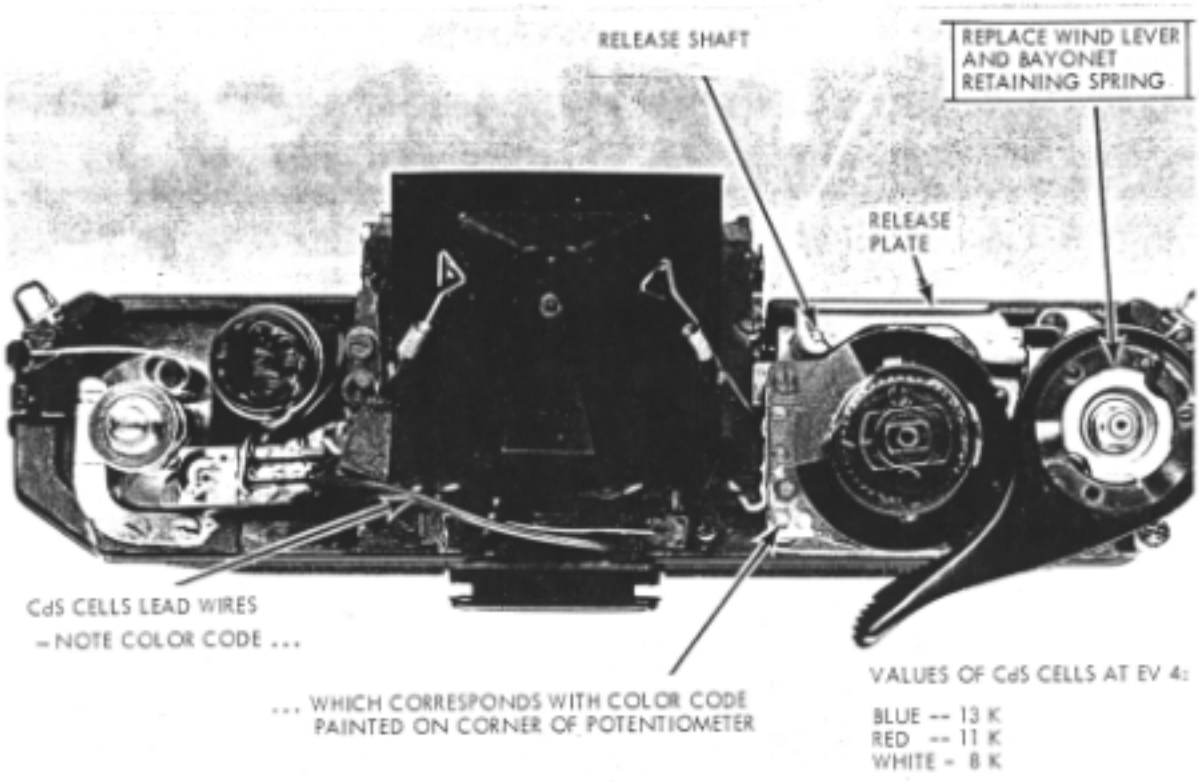
19

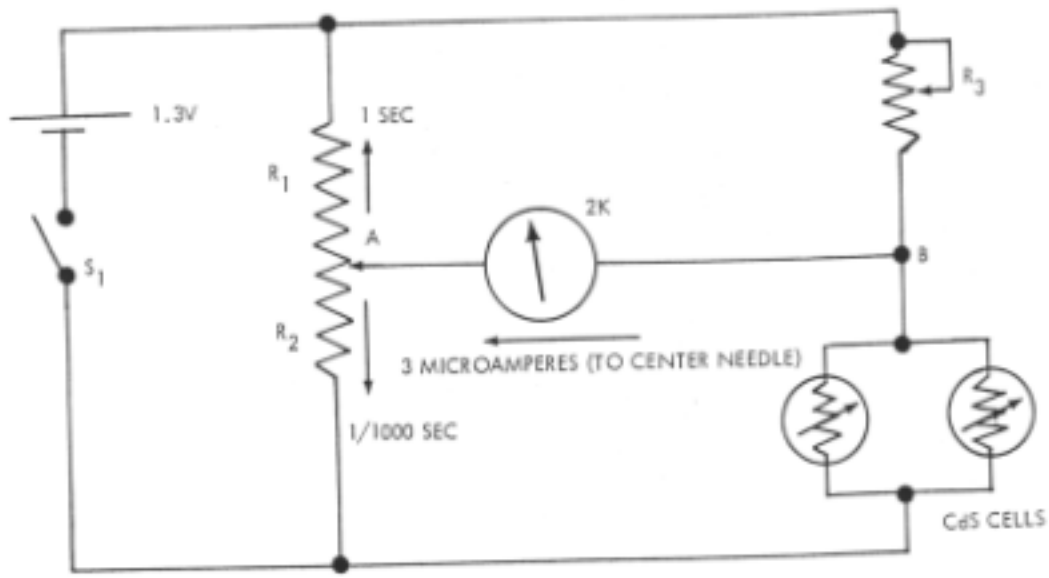
NOTE: The cable release pin (inside the release button) is loose once you remove the top cover plate.


GALVANOMETER
EXPOSURE METER POTENTIOMETER
BACK LATCH
(some models have a loose spacer here)
POTENTIOMETER TURNING RING
WIND LEVER RETURN SPRING
EXPOSURE METER VARIABLE (CALIBRATION) RESISTOR (R_3)
CdS CELLS
EXPOSURE INDEX SELECTOR DISC
SPEED SELECTOR
WIND LEVER SEAT

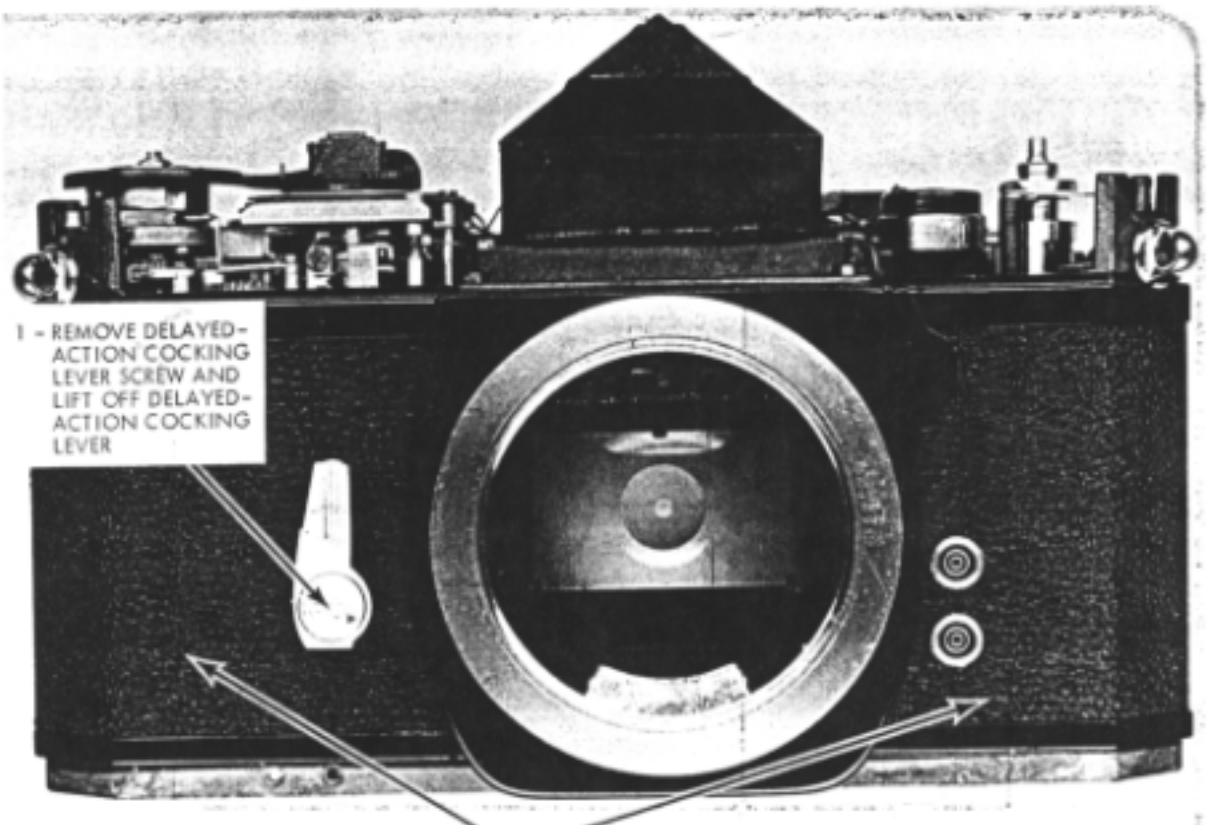


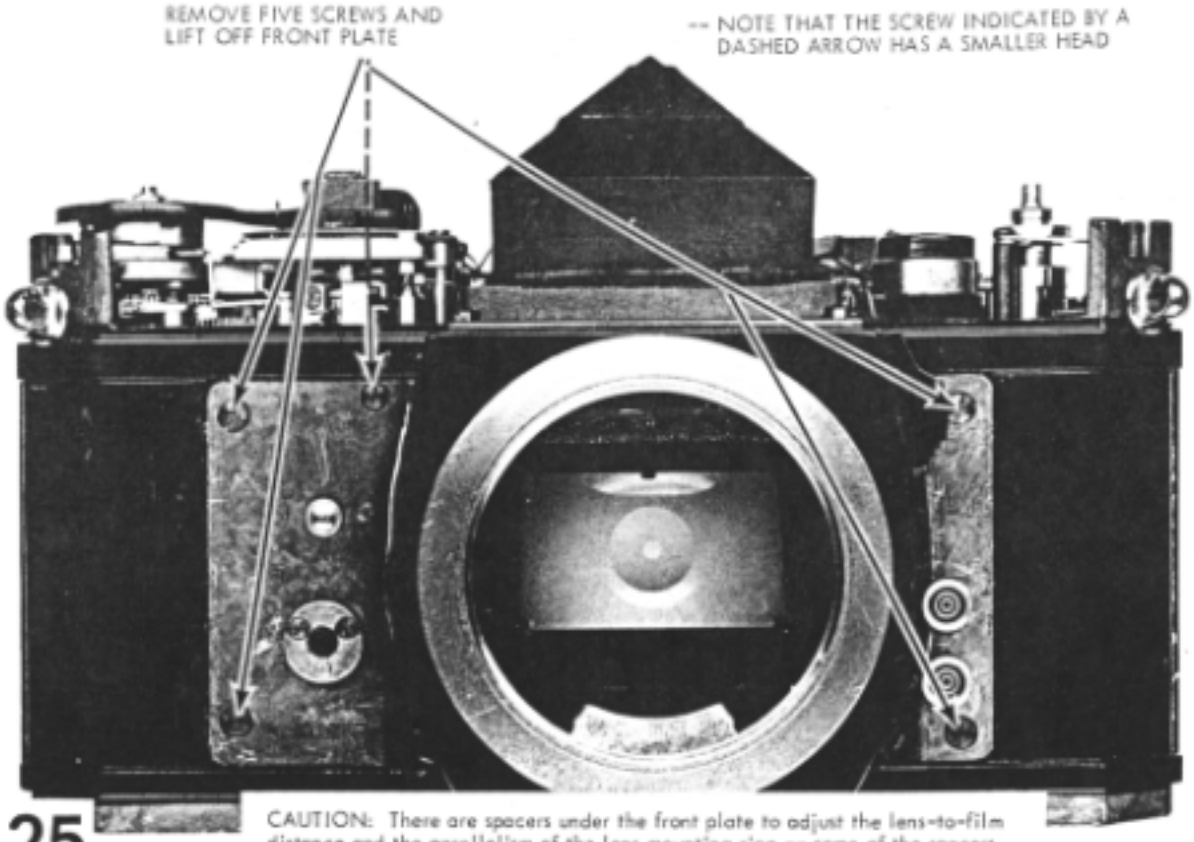
21


RELEASE SHAFT
REPLACE WIND LEVER AND BAYONET RETAINING SPRING
RELEASE PLATE
CdS CELLS LEAD WIRES - NOTE COLOR CODE ...
... WHICH CORRESPONDS WITH COLOR CODE PAINTED ON CORNER OF POTENTIOMETER
VALUES OF CdS CELLS AT EV 4:
BLUE -- 13 K
RED -- 11 K
WHITE - 8 K


1.3V
1 SEC
R_1
A
2K
R_3
B
S_1
R_2
3 MICROAMPERES (TO CENTER NEEDLE)
1/1000 SEC
CdS CELLS

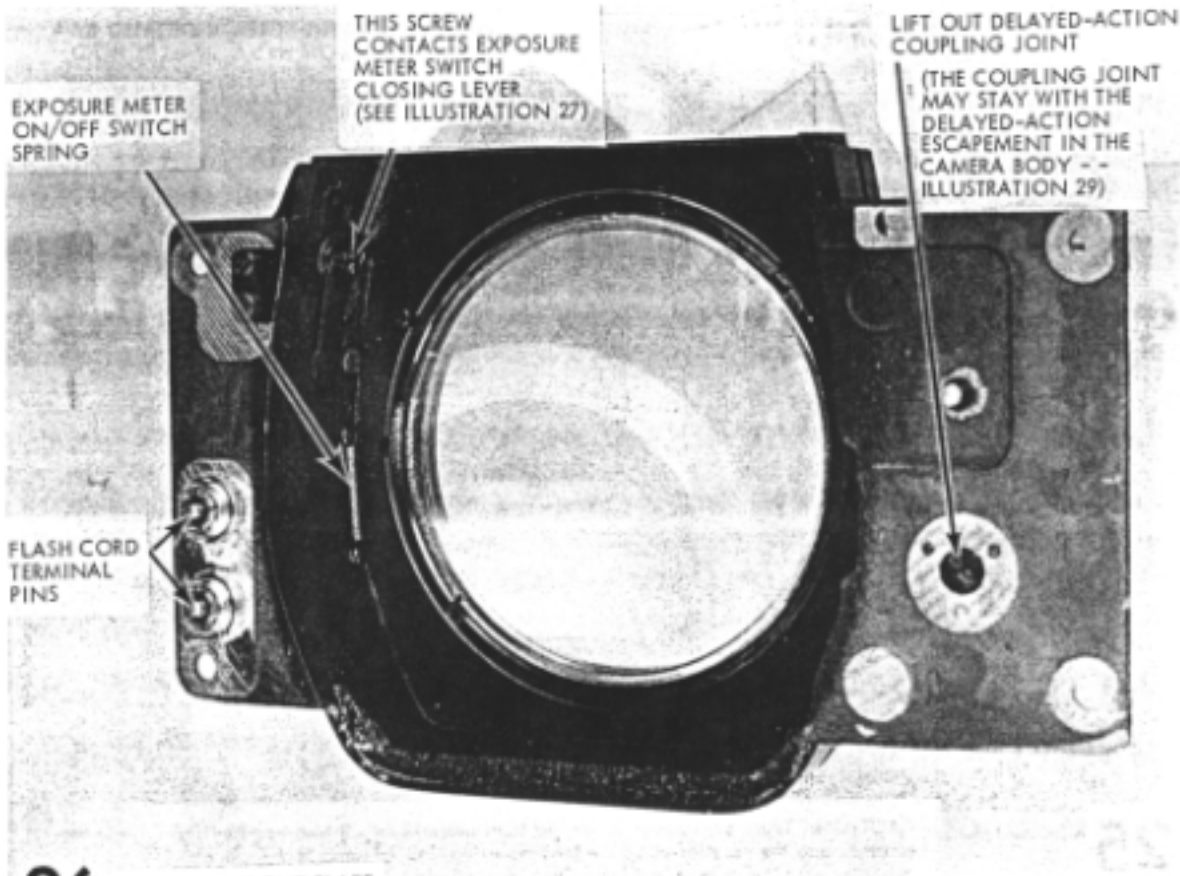
23


1 - REMOVE DELAYED-ACTION COCKING LEVER SCREW AND LIFT OFF DELAYED-ACTION COCKING LEVER
2 - PEEL BACK (OR REMOVE) RIGHT AND LEFT FRONT LEATHERETTE

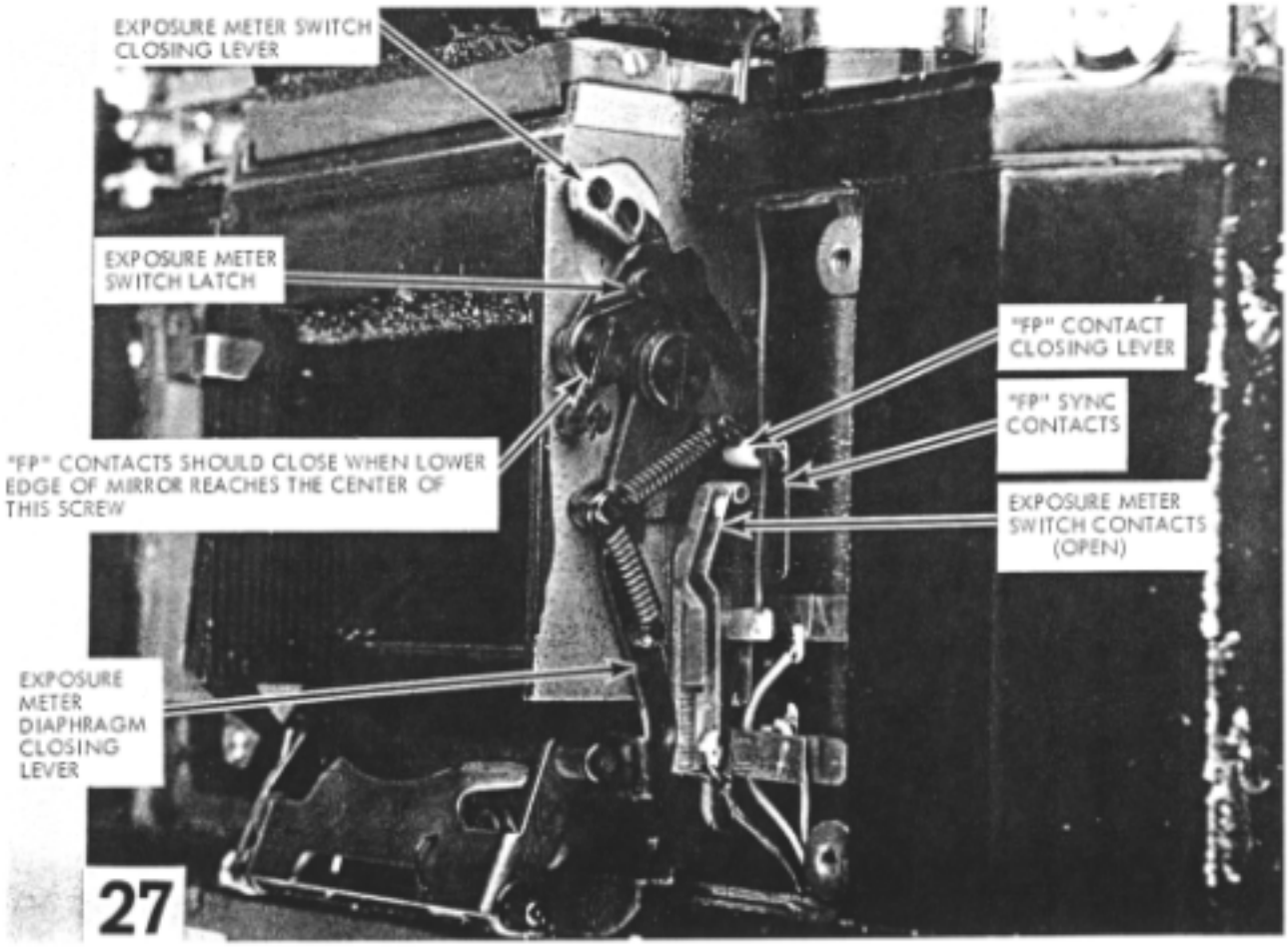


CAUTION: There are spacers under the front plate to adjust the lens-to-film distance and the parallelism of the lens mounting ring -- some of the spacers may stay with the camera body and some may adhere to the front plate. The spacers, at the screw positions, vary in size and position according to the individual camera -- be sure to return the spacers to their proper positions.

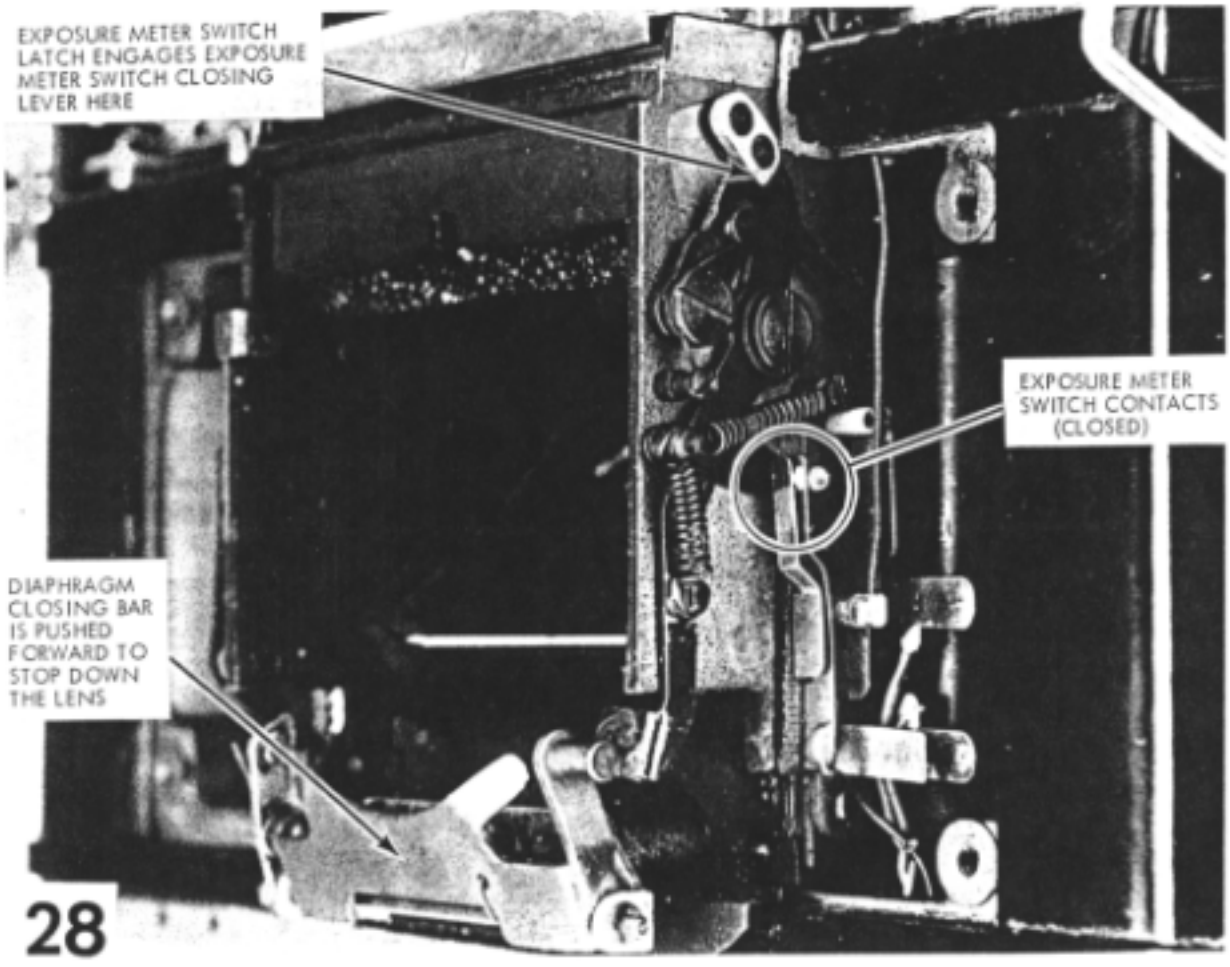
Before removing the front plate, you can precheck the alignment to verify the correct spacers. Make appropriate notes for correcting the spacers if desirable.



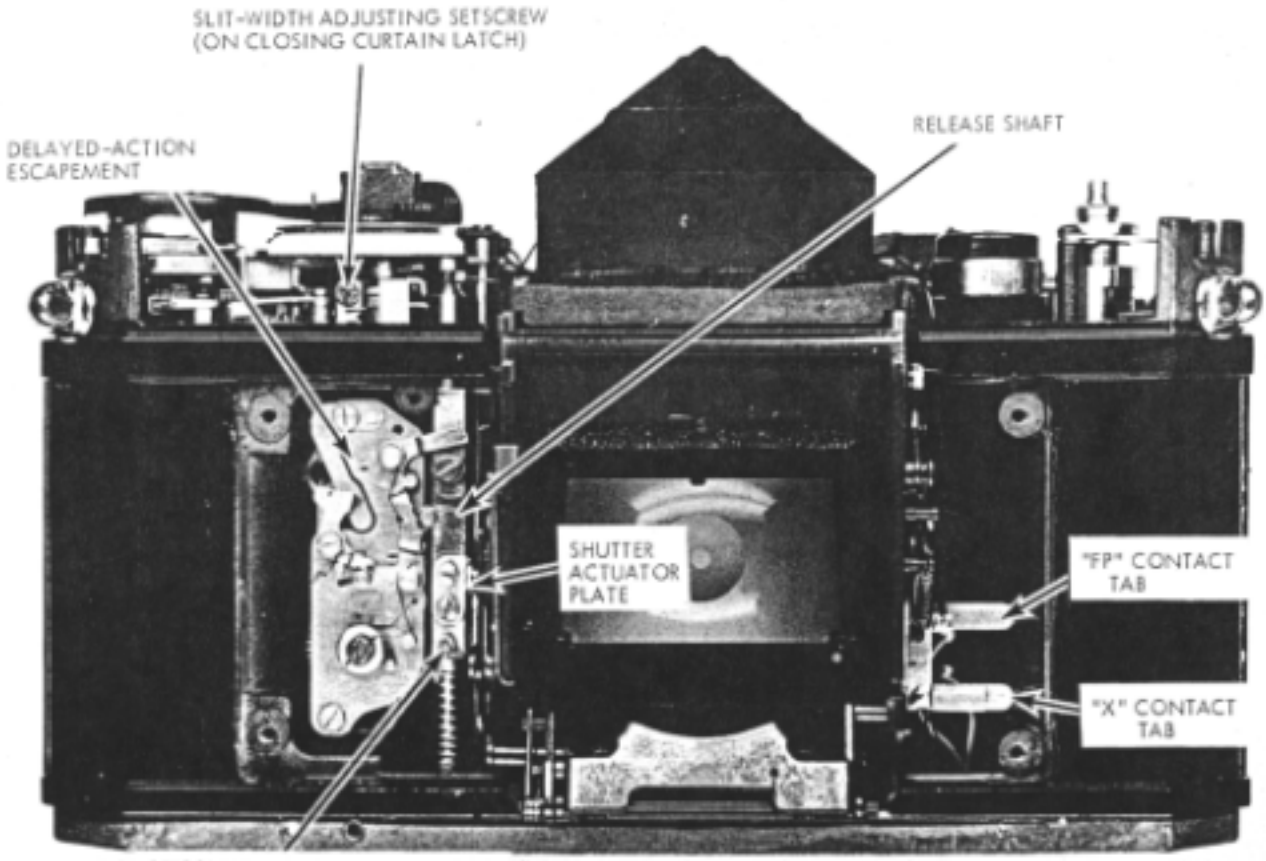
26 INSIDE OF FRONT PLATE


EXPOSURE METER SWITCH CLOSING LEVER
EXPOSURE METER SWITCH LATCH
"FP" CONTACTS SHOULD CLOSE WHEN LOWER EDGE OF MIRROR REACHES THE CENTER OF THIS SCREW
EXPOSURE METER DIAPHRAGM CLOSING LEVER
"FP" CONTACT CLOSING LEVER
"FP" SYNC CONTACTS
EXPOSURE METER SWITCH CONTACTS (OPEN)

27


EXPOSURE METER SWITCH LATCH ENGAGES EXPOSURE METER SWITCH CLOSING LEVER HERE
EXPOSURE METER SWITCH CONTACTS (CLOSED)
DIAPHRAGM CLOSING BAR IS PUSHED FORWARD TO STOP DOWN THE LENS

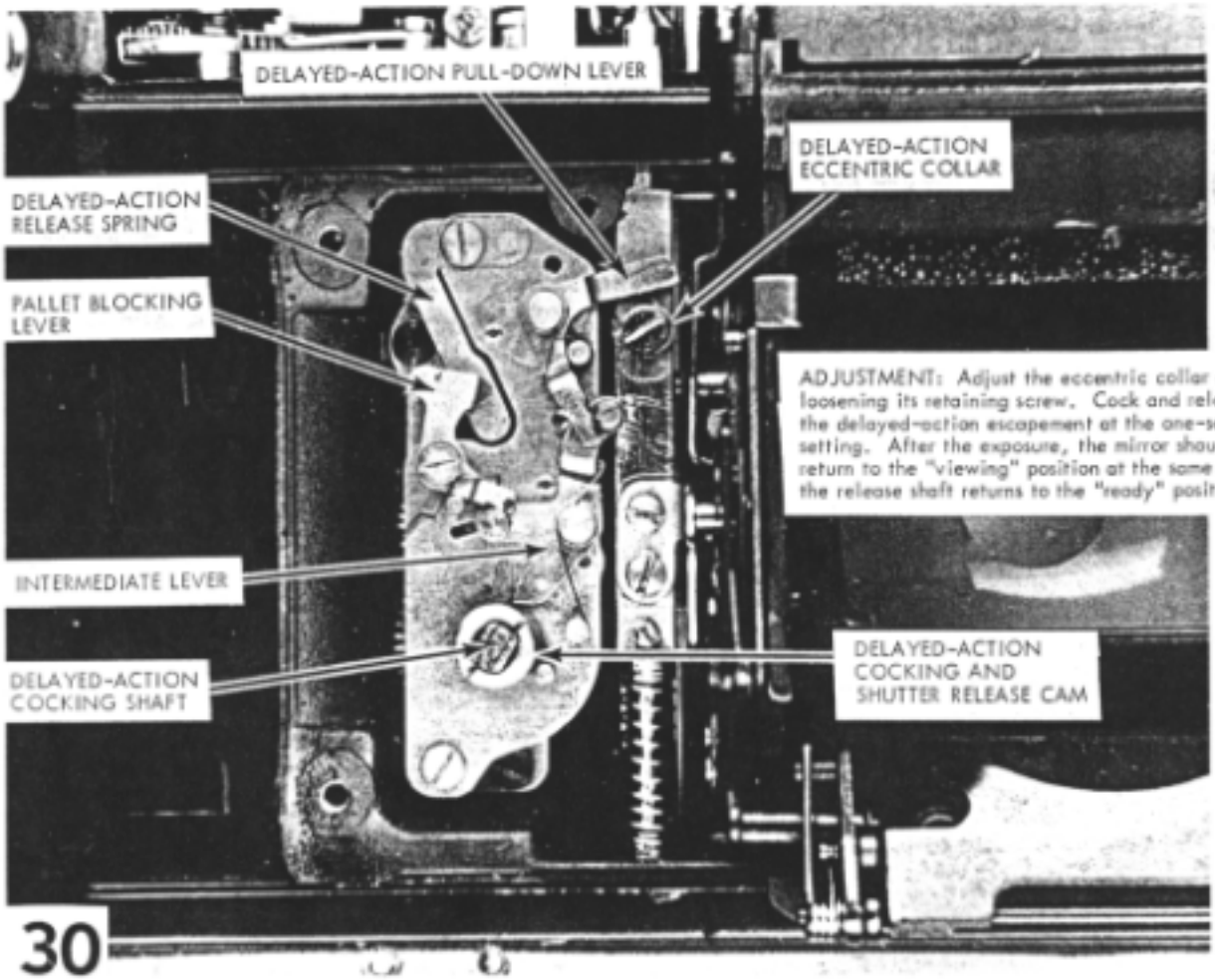
28



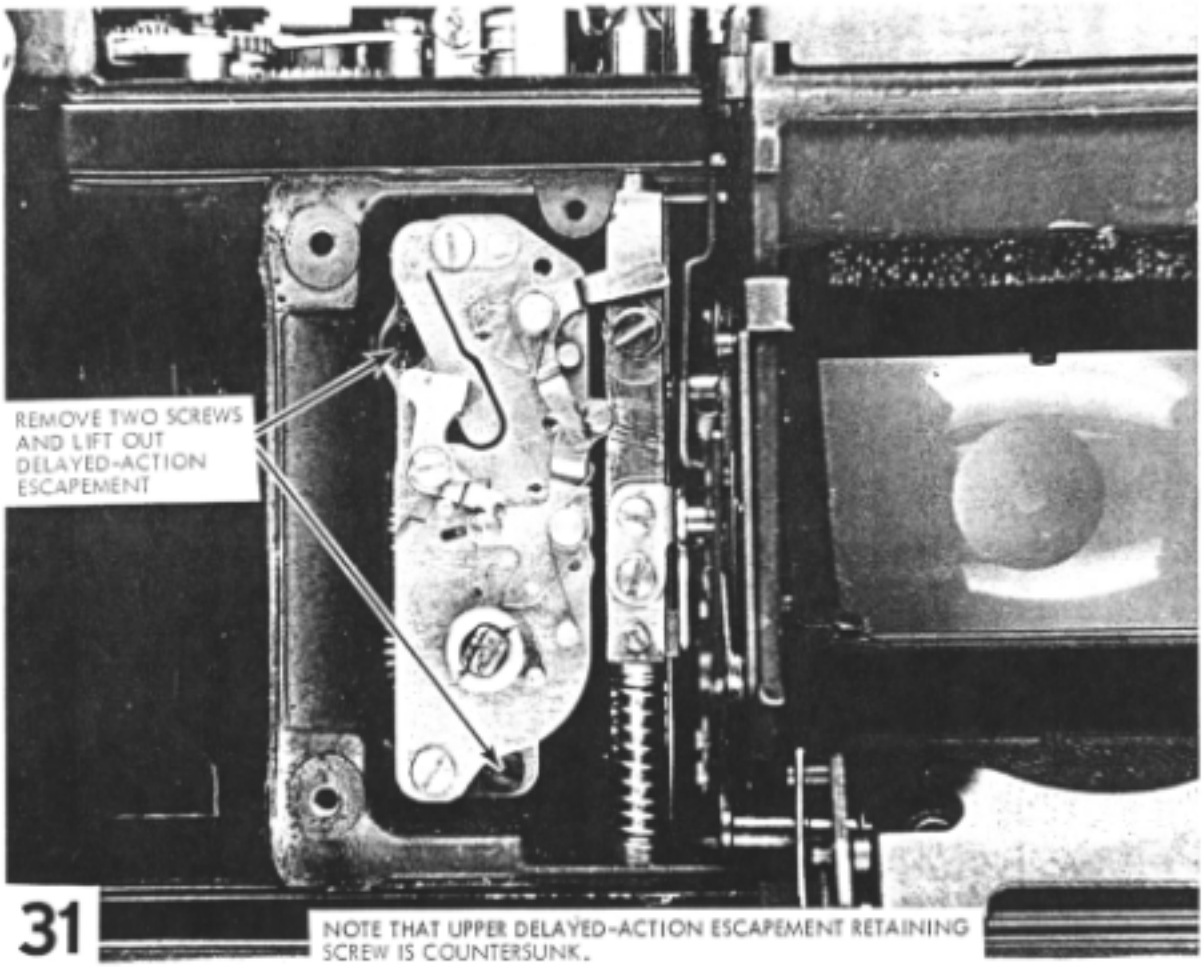
29

SETSCREW ADJUSTMENT
FOR RELEASE STROKE
OVERTRAVEL
(ADJUST FOR 0.3MM OVERTRAVEL
AFTER THE MIRROR RELEASES)

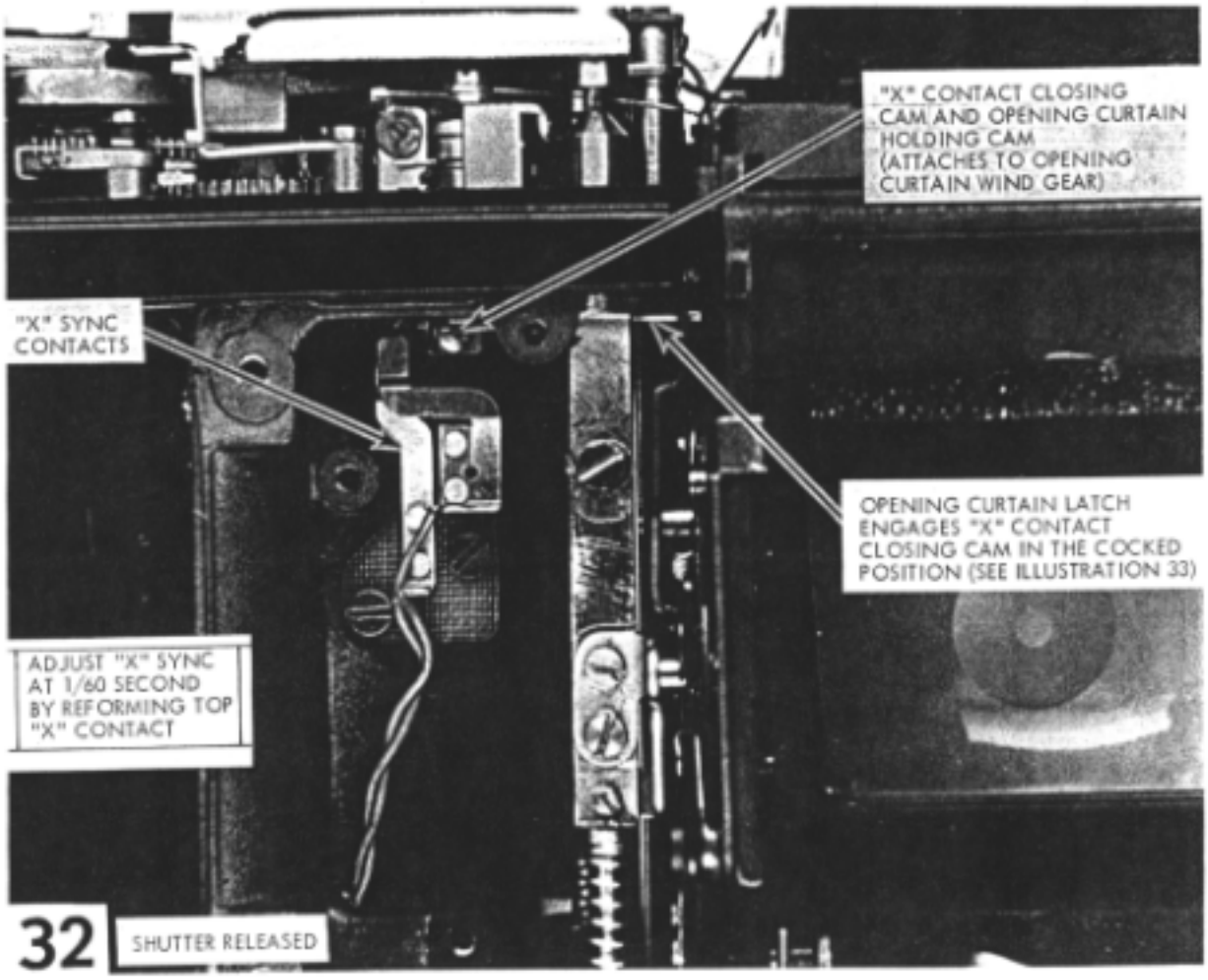
VARIATION: In earlier models, the overtravel adjustment is made by shifting the position of the shutter actuator plate.



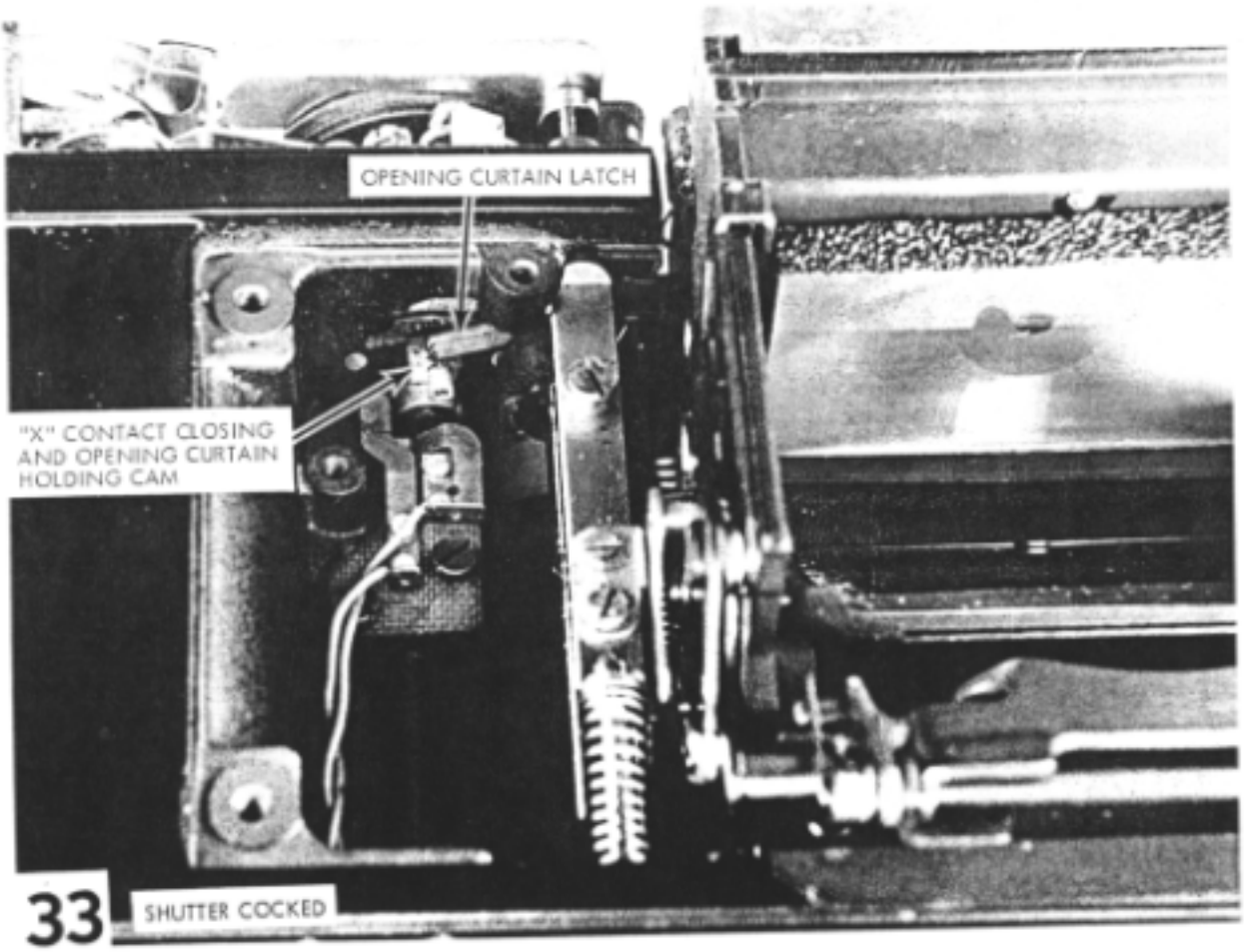
ADJUSTMENT: Adjust the eccentric collar after loosening its retaining screw. Cock and release the delayed-action escapement at the one-second setting. After the exposure, the mirror should return to the "viewing" position at the same time the release shaft returns to the "ready" position.



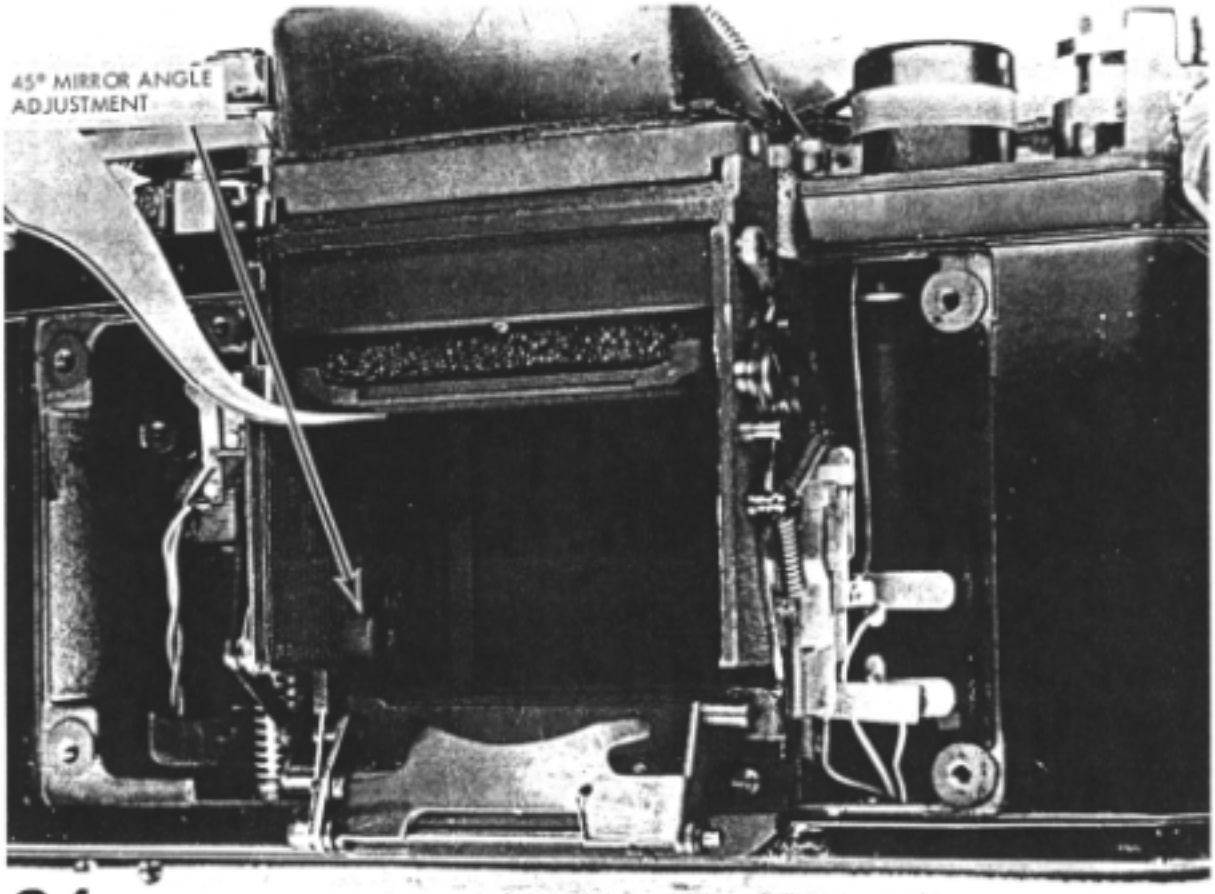
31 NOTE THAT UPPER DELAYED-ACTION ESCAPEMENT RETAINING SCREW IS COUNTERSUNK.



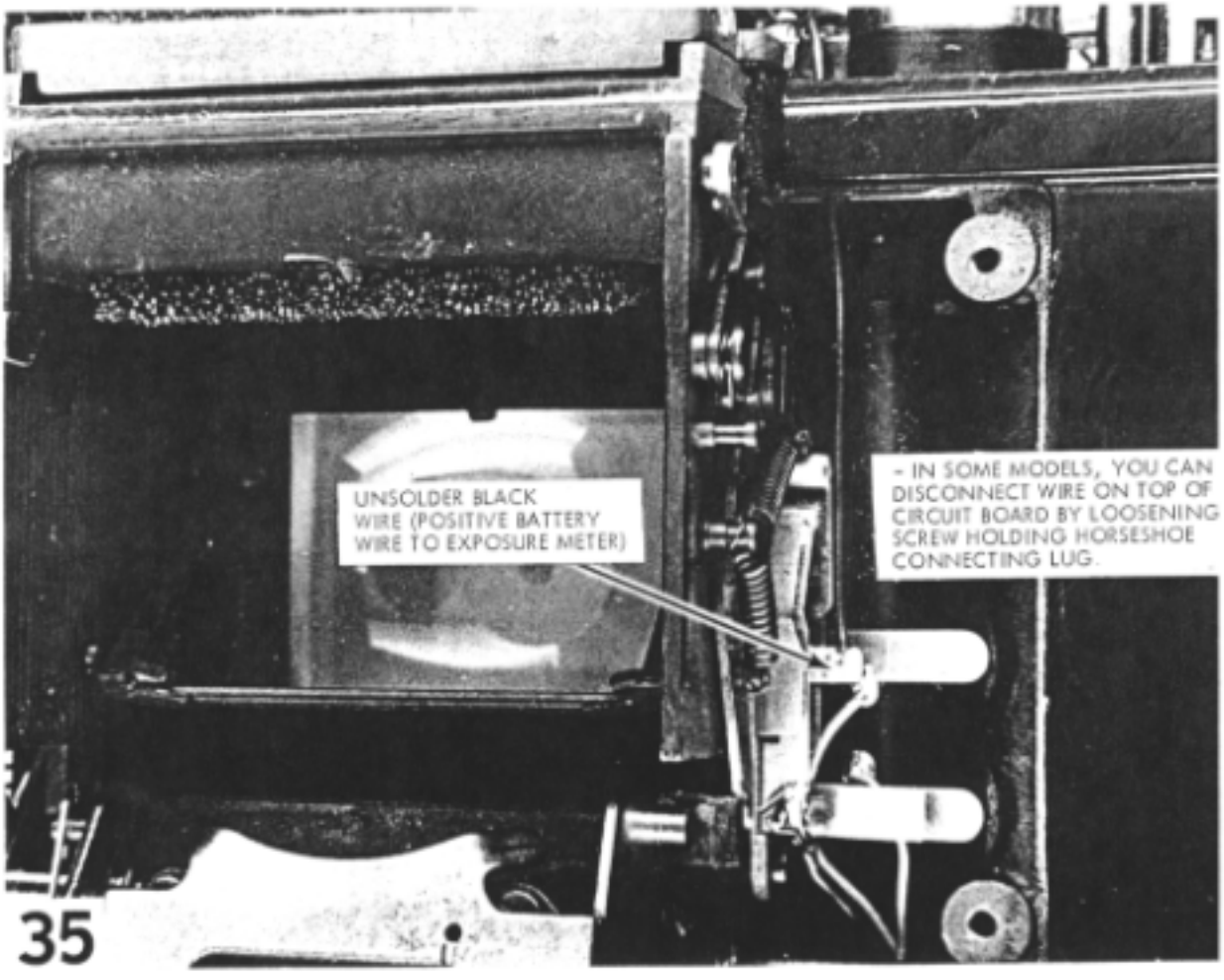
32 SHUTTER RELEASED



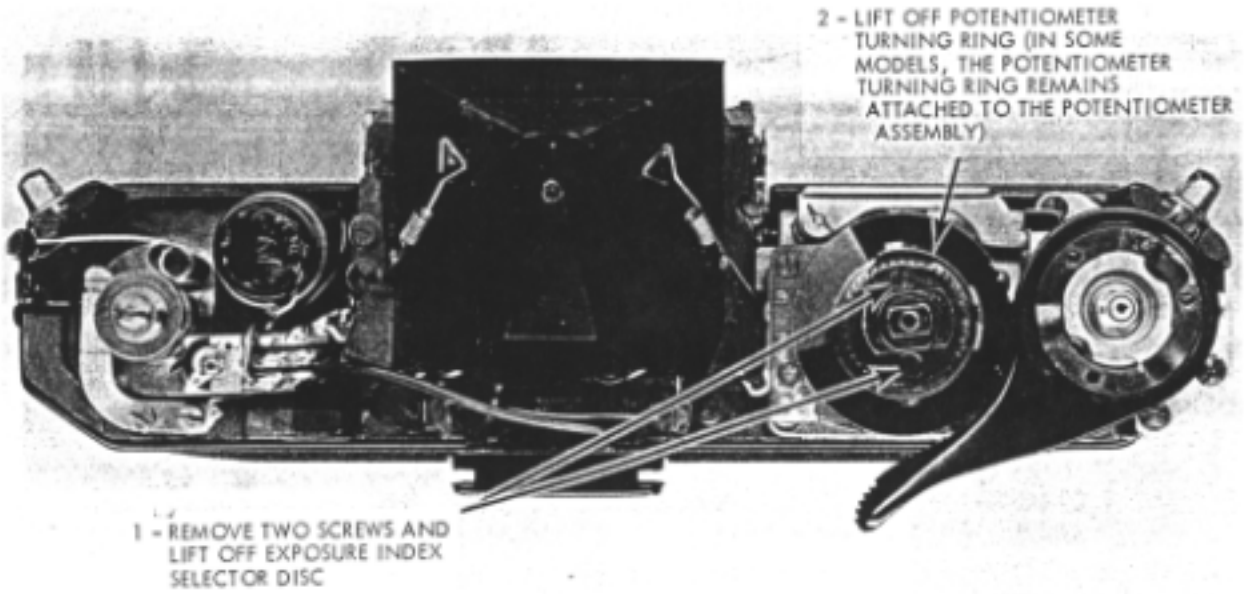
33 SHUTTER COCKED



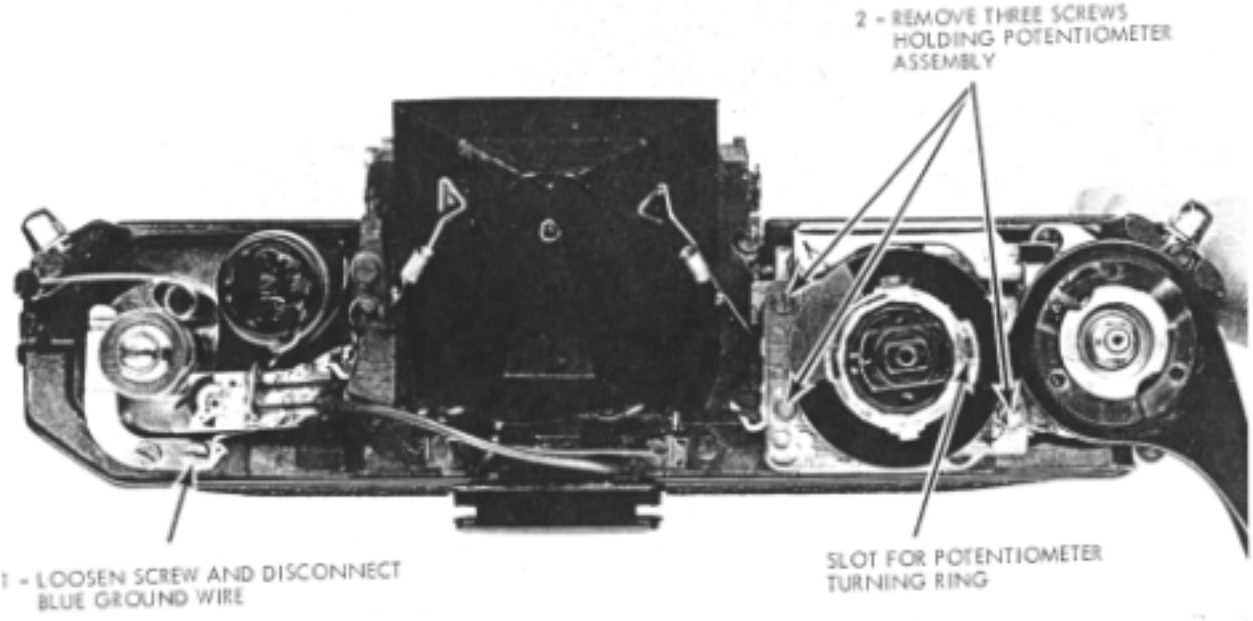
34

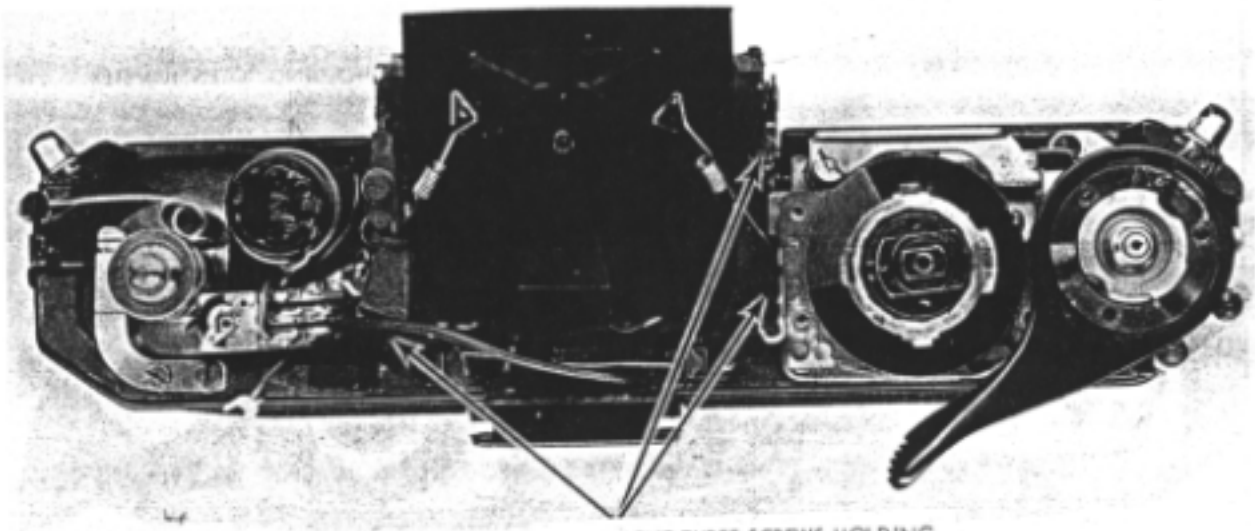

UNSOLDER BLACK WIRE (POSITIVE BATTERY WIRE TO EXPOSURE METER)
- IN SOME MODELS, YOU CAN DISCONNECT WIRE ON TOP OF CIRCUIT BOARD BY LOOSENING SCREW HOLDING HORSESHOE CONNECTING LUG.

35



REASSEMBLY: The shorter tab on the potentiometer turning ring passes into the slot in the potentiometer -- see Illustration 37. With the speed selector set to "bulb," replace the exposure index selector disc (countersunk screw holes facing up) with its teeth facing the pentaprism.

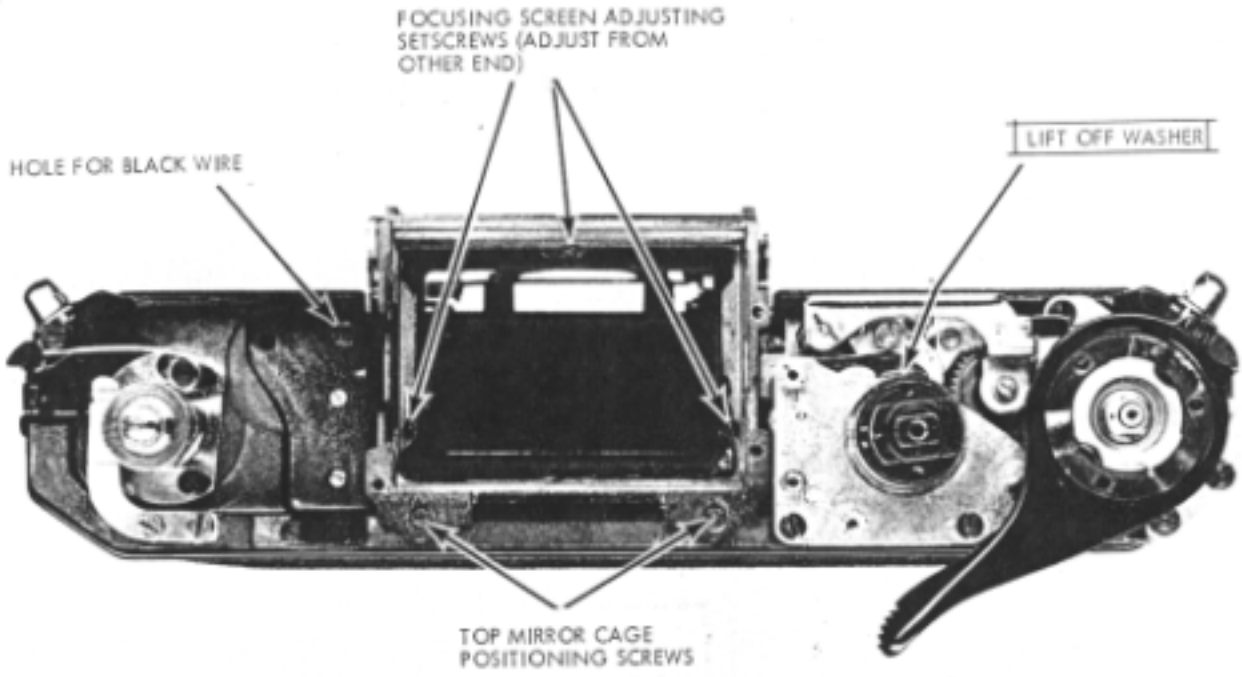

2 - REMOVE THREE SCREWS HOLDING POTENTIOMETER ASSEMBLY
1 - LOOSEN SCREW AND DISCONNECT BLUE GROUND WIRE
SLOT FOR POTENTIOMETER TURNING RING



1 - REMOVE THREE SCREWS HOLDING FINDER ASSEMBLY

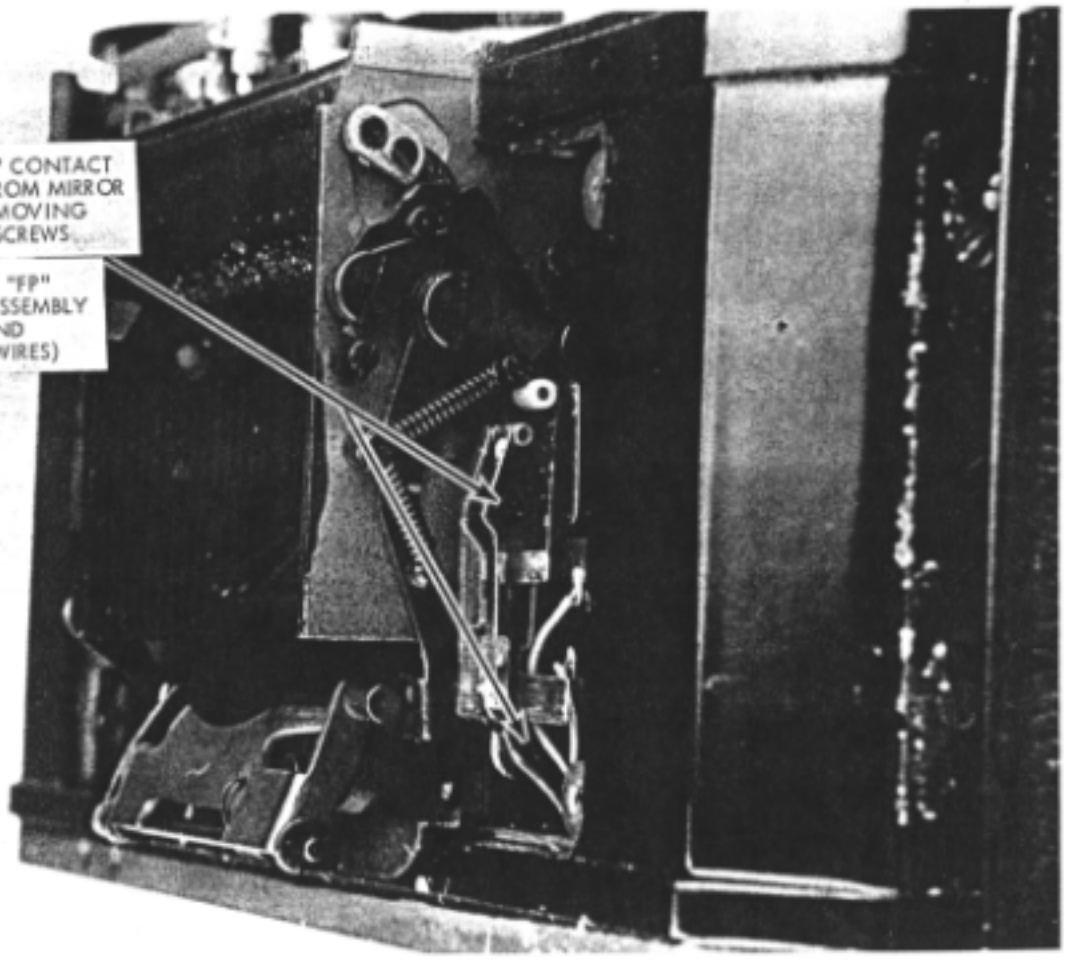
2 - LIFT OFF FINDER AND EXPOSURE METER AS ONE UNIT

38 COCKING LEVER MAY BE MOVED SLIGHTLY TO FACILITATE

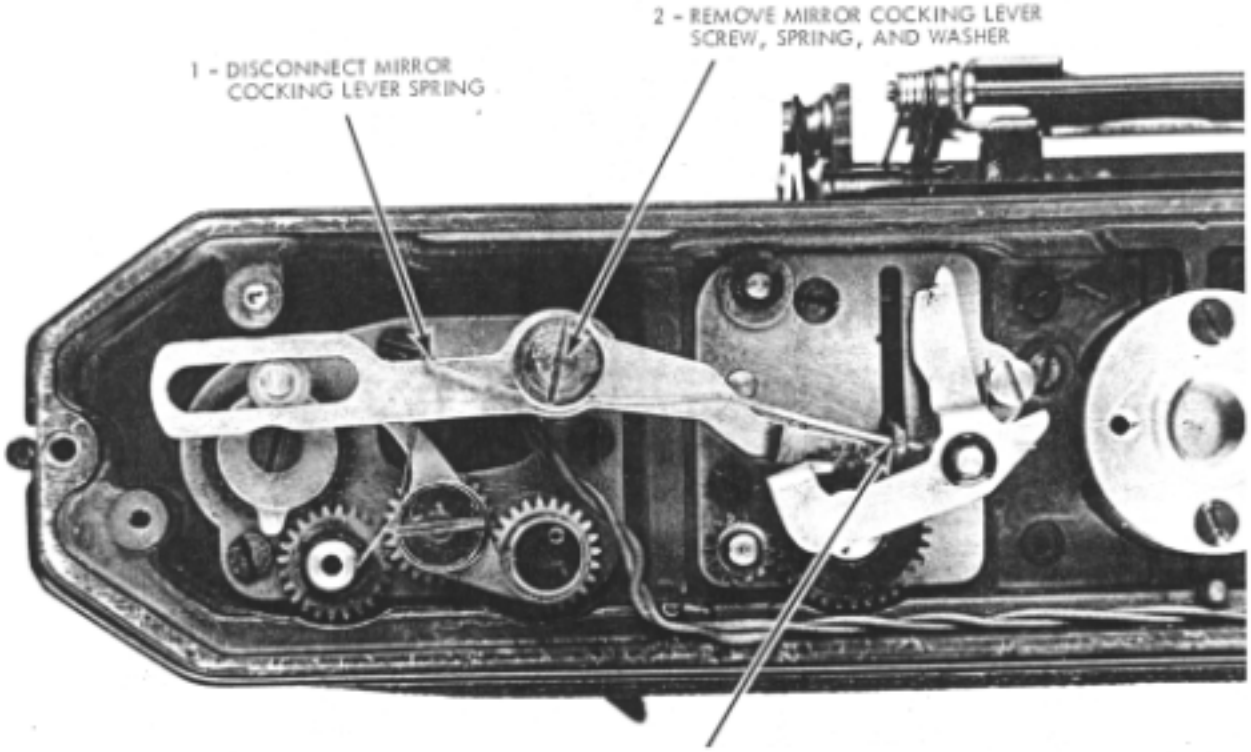


39

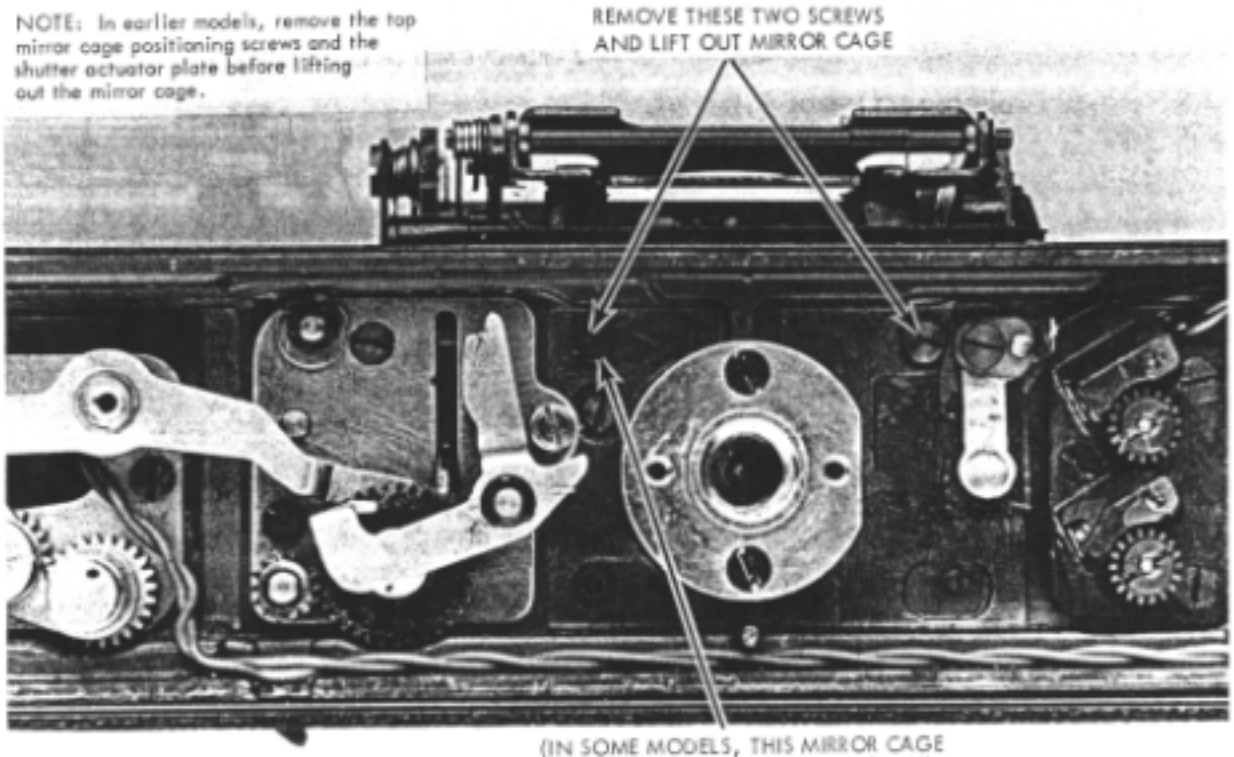
ADJUSTMENT: Adjust the focusing screen with the camera fully assembled -- remove only the lens. Reaching through the lens opening with a long screwdriver, turn the setscrews IN (to raise the focusing screen) or OUT (to lower the focusing screen). The three setscrews allow you to adjust the focus at the edges -- as well as at the center -- of the focusing screen.

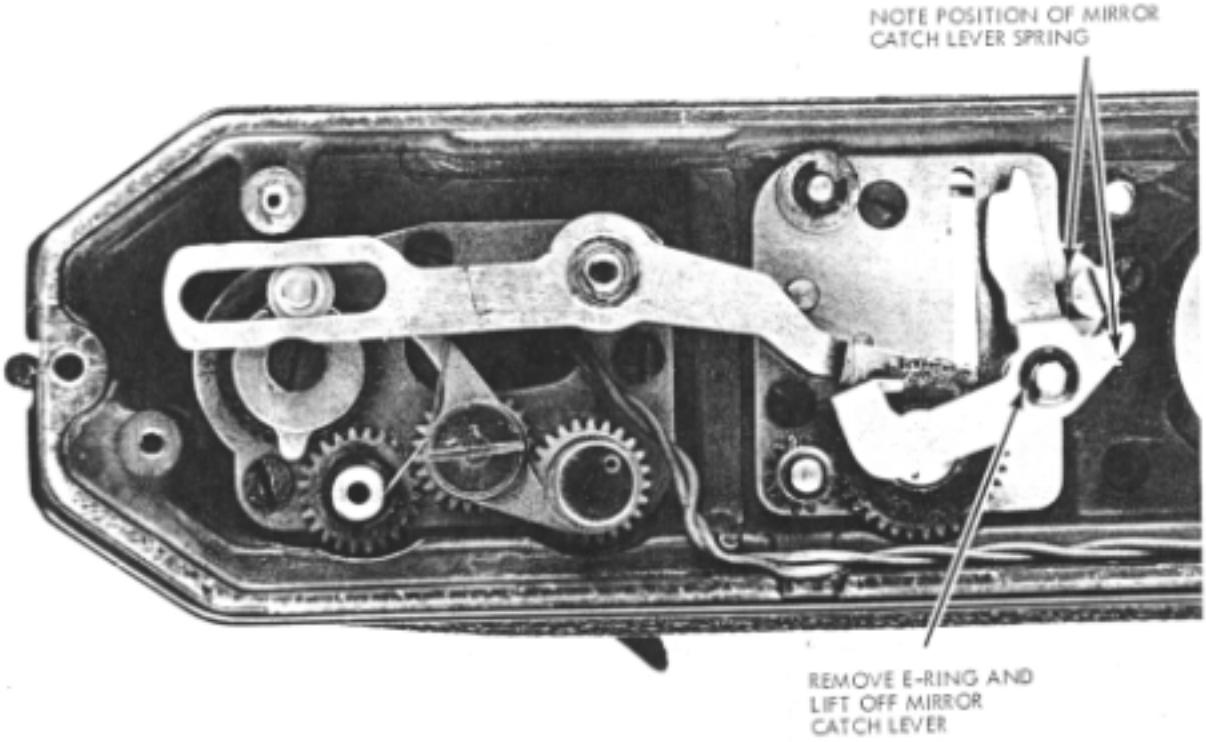

DETACH "FP" CONTACT ASSEMBLY FROM MIRROR CAGE BY REMOVING THESE TWO SCREWS
(OR - LEAVE "FP" CONTACT ASSEMBLY IN PLACE AND UNSOLDER WIRES)

40

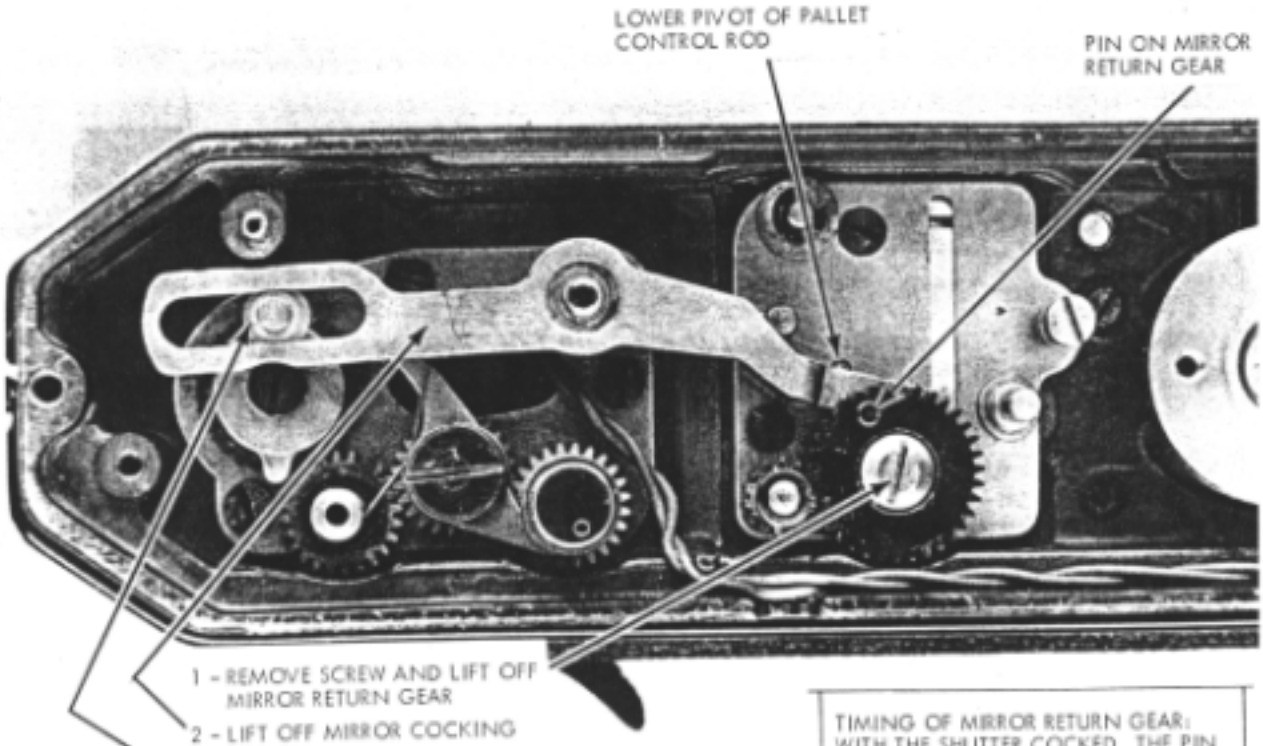

1 - DISCONNECT MIRROR COCKING LEVER SPRING
2 - REMOVE MIRROR COCKING LEVER SCREW, SPRING, AND WASHER
NOTE THAT MIRROR COCKING LEVER SPRING PASSES THROUGH HOLE IN MIRROR TENSIONING LEVER

NOTE: In earlier models, remove the top mirror cage positioning screws and the shutter actuator plate before lifting out the mirror cage.



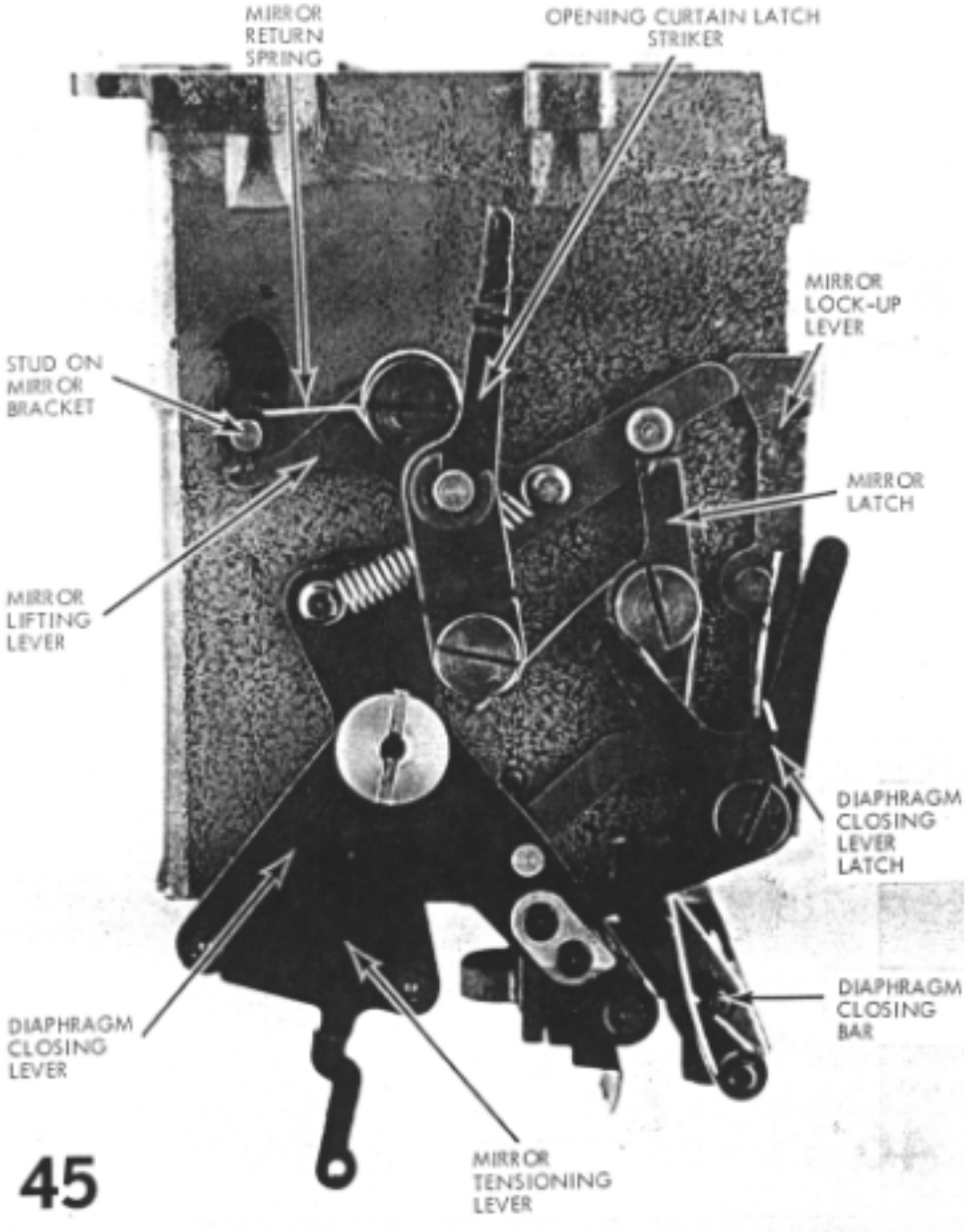

NOTE POSITION OF MIRROR
CATCH LEVER SPRING
REMOVE E-RING AND
LIFT OFF MIRROR
CATCH LEVER

43

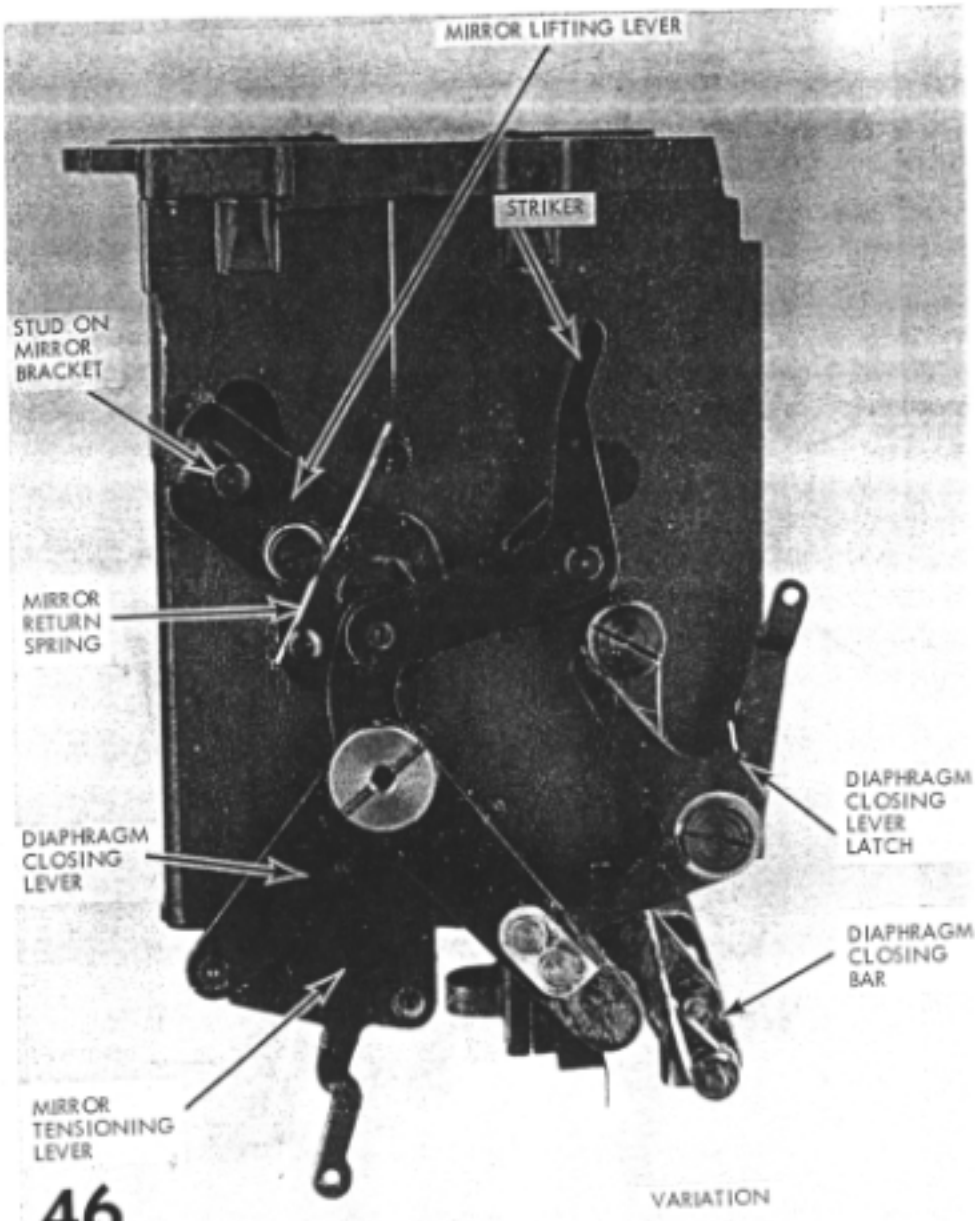


TIMING OF MIRROR RETURN GEAR: WITH THE SHUTTER COCKED, THE PIN ON THE MIRROR RETURN GEAR POINTS TO THE LOWER PIVOT OF THE PALLET CONTROL ROD.

44 SHUTTER COCKED

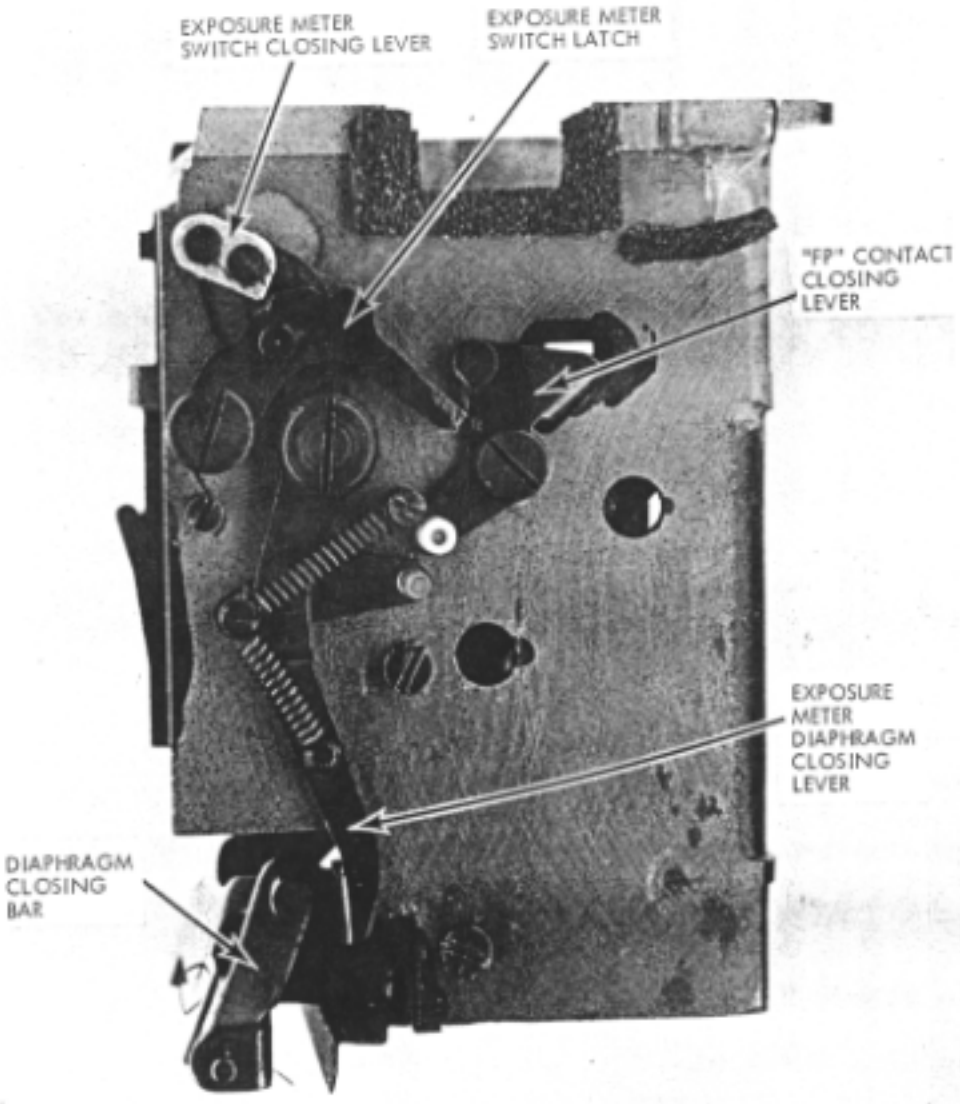

MIRROR RETURN SPRING
OPENING CURTAIN LATCH STRIKER
MIRROR LOCK-UP LEVER
STUD ON MIRROR BRACKET
MIRROR LATCH
MIRROR LIFTING LEVER
DIAPHRAGM CLOSING LEVER LATCH
DIAPHRAGM CLOSING BAR
DIAPHRAGM CLOSING LEVER
MIRROR TENSIONING LEVER

45

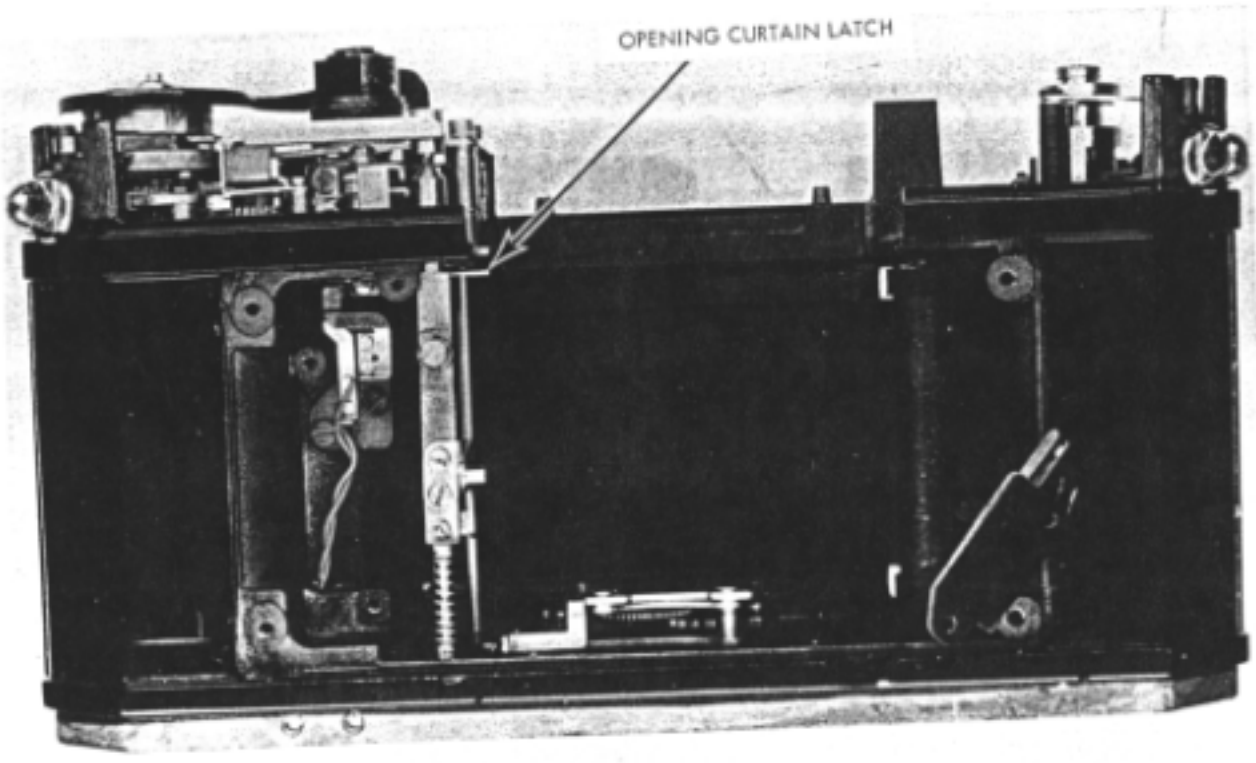


46

VARIATION

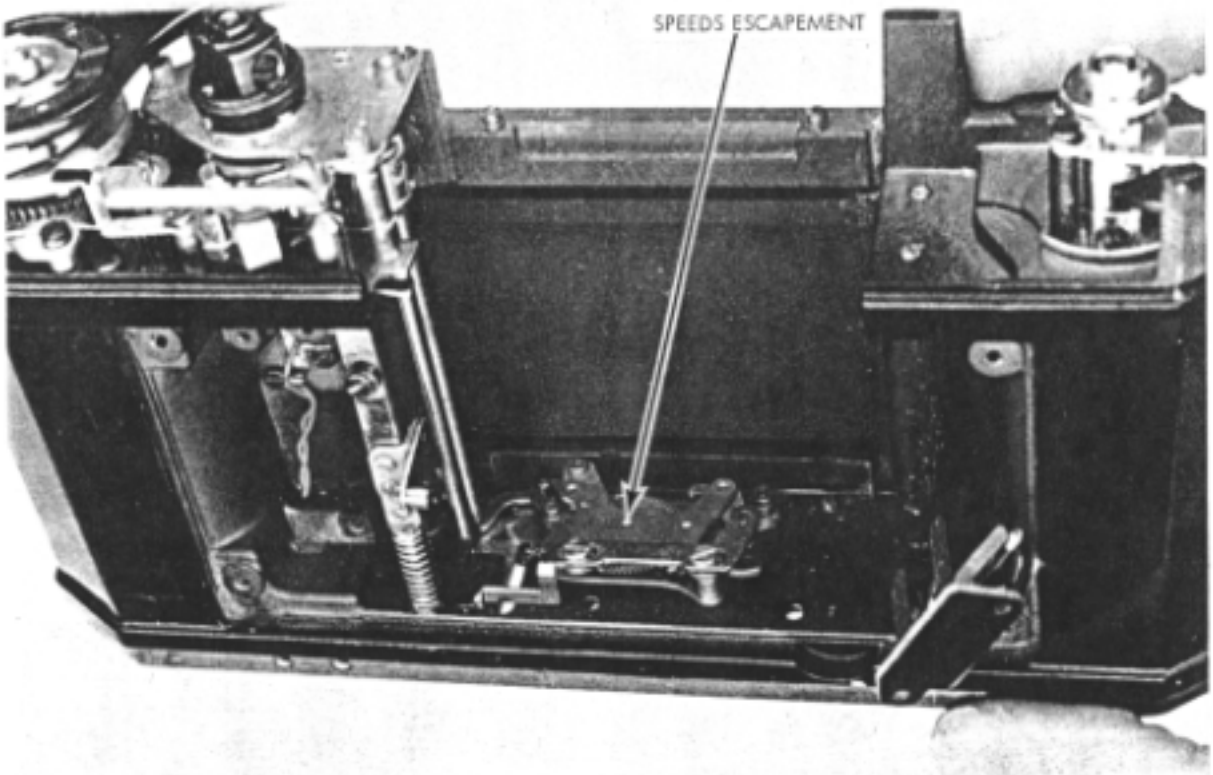

EXPOSURE METER
SWITCH CLOSING LEVER
EXPOSURE METER
SWITCH LATCH
"FP" CONTACT
CLOSING
LEVER
EXPOSURE
METER
DIAPHRAGM
CLOSING
LEVER
DIAPHRAGM
CLOSING
BAR

47

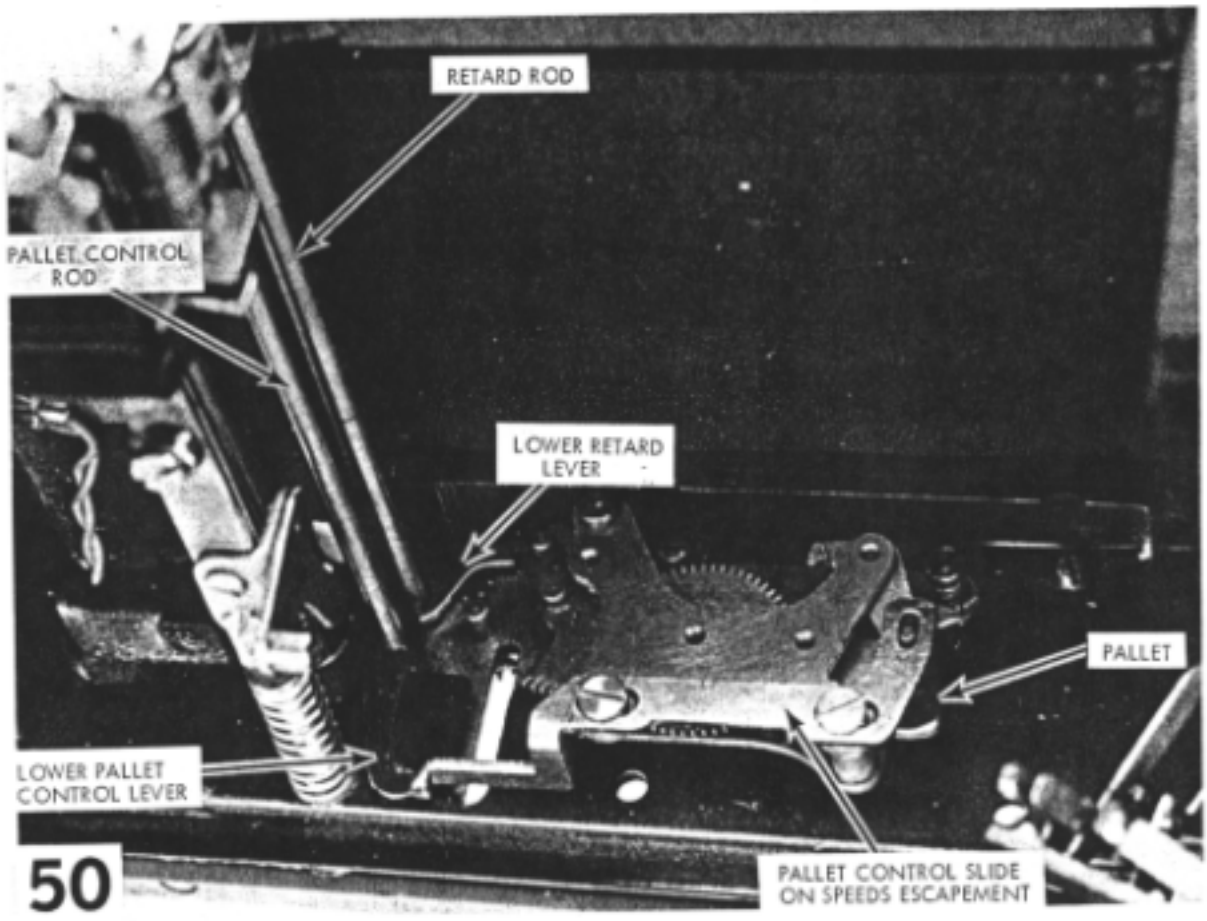


To operate shutter:

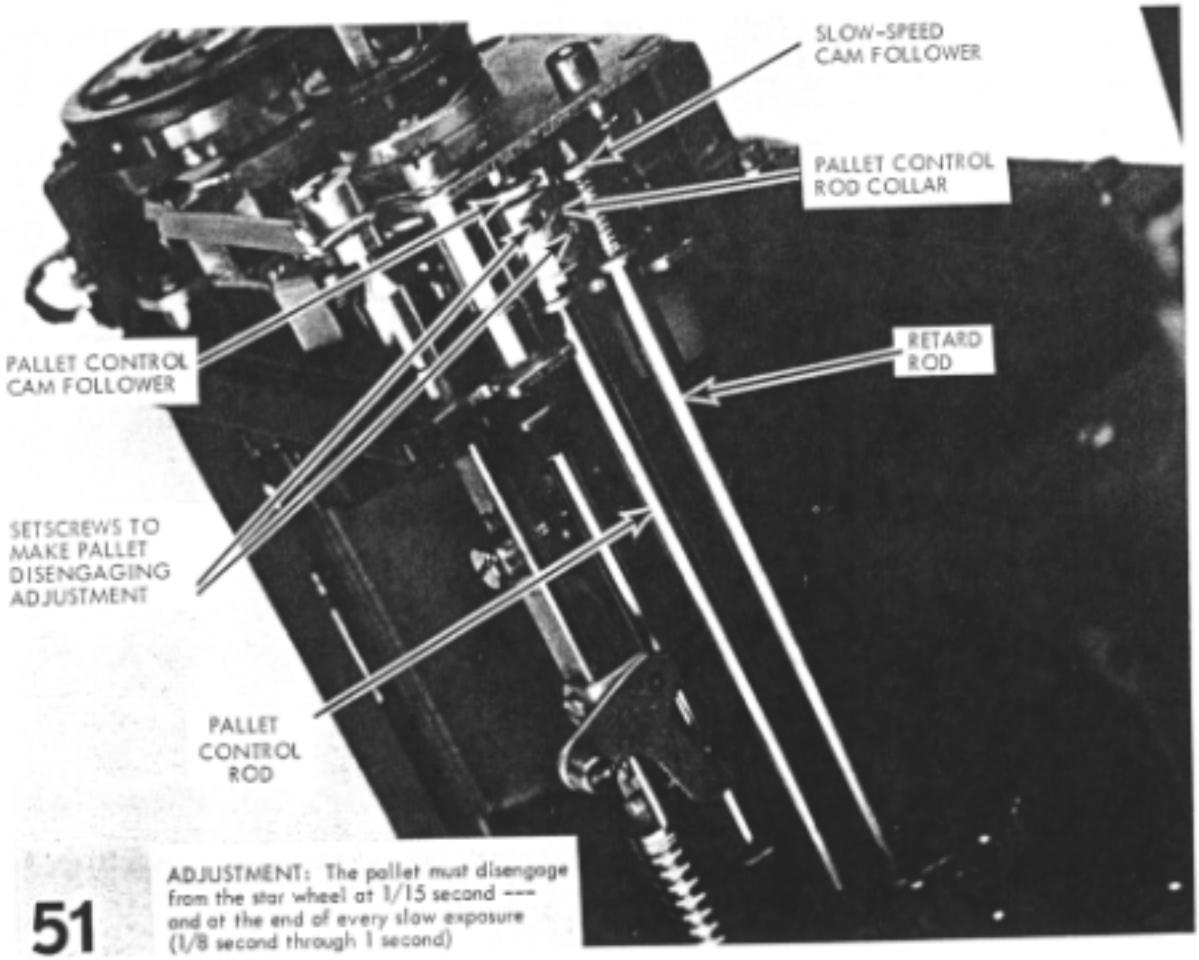
- cock the shutter -- note the curtain overlap during the cocking cycle
- hold down the release shaft and push the opening curtain latch toward the back of the camera



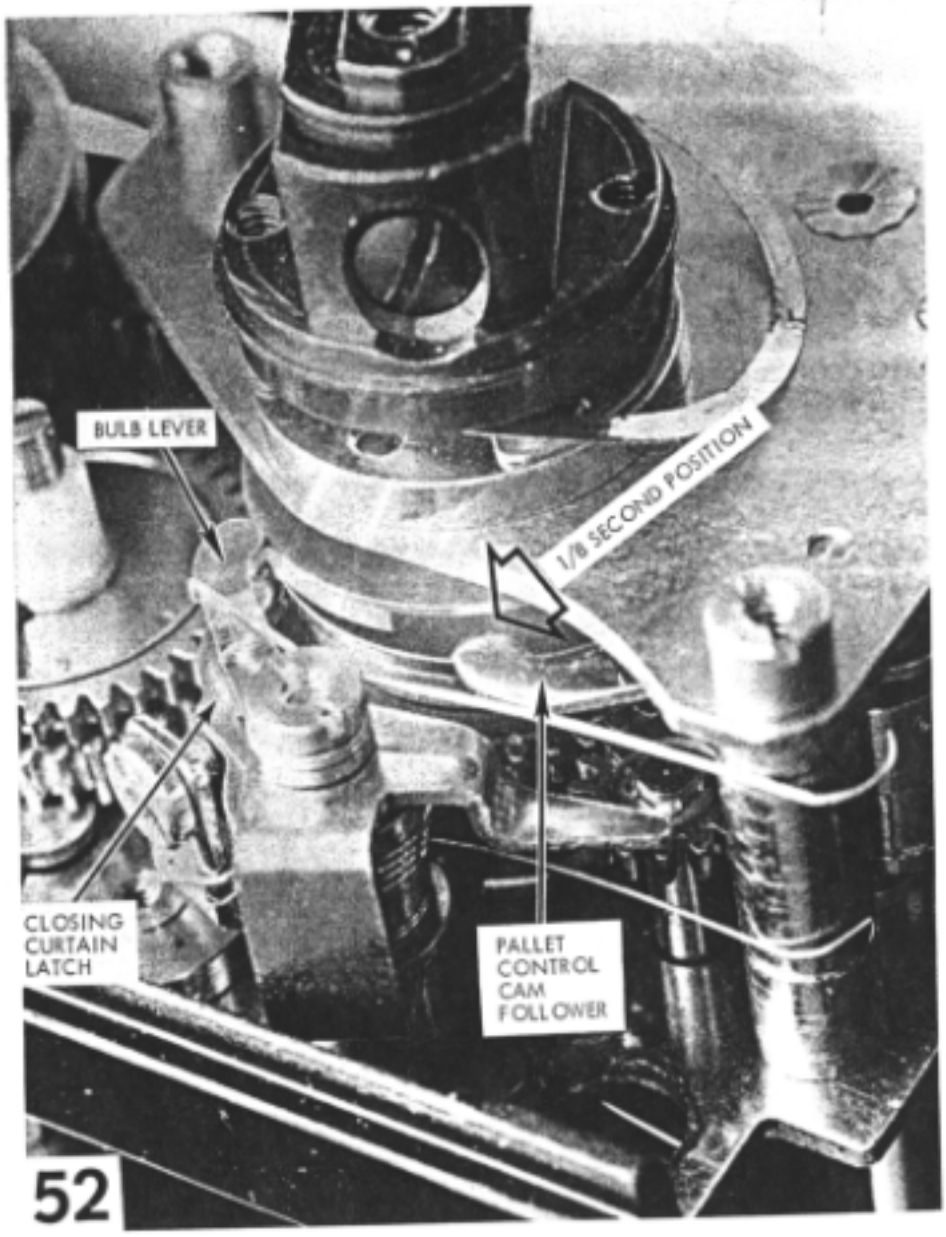
49


RETARD ROD
PALLET CONTROL ROD
LOWER RETARD LEVER
PALLET
LOWER PALLET CONTROL LEVER
PALLET CONTROL SLIDE ON SPEEDS ESCAPEMENT

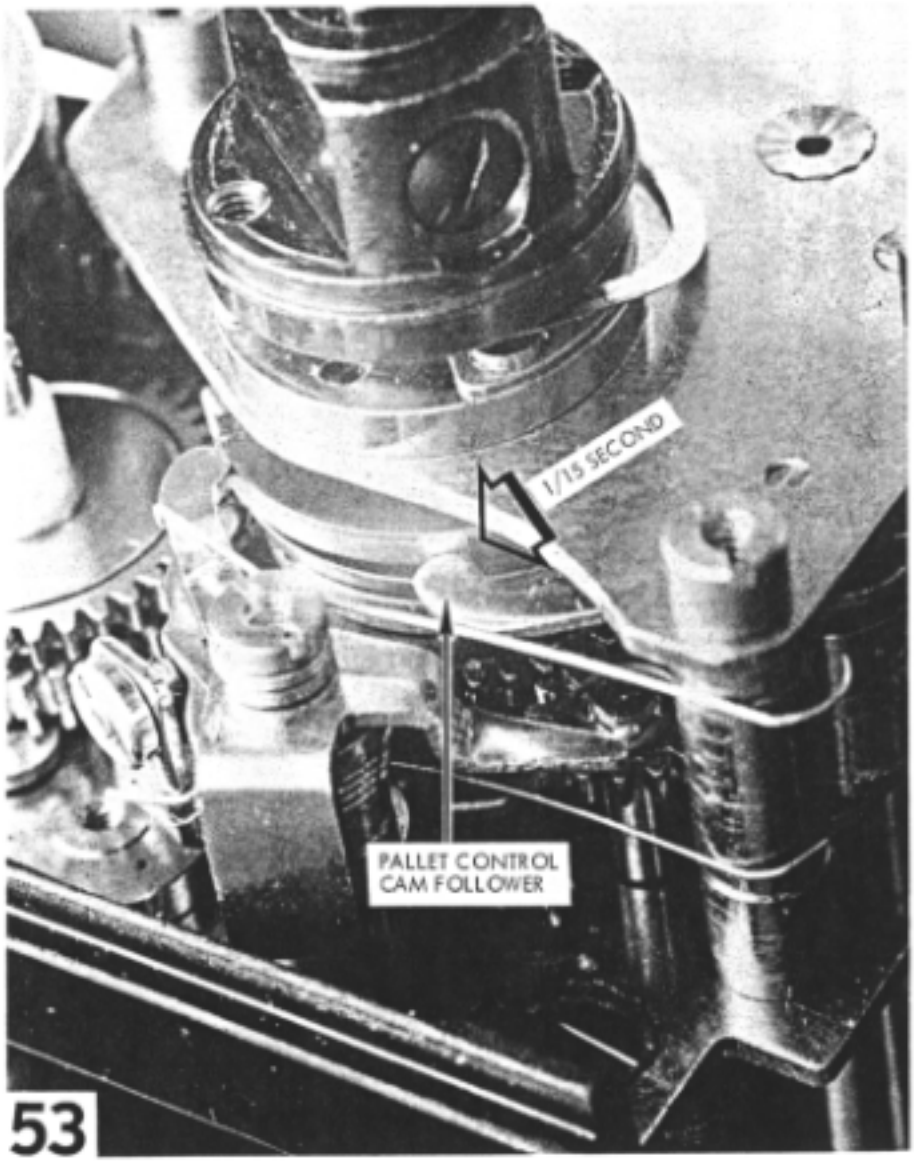
50



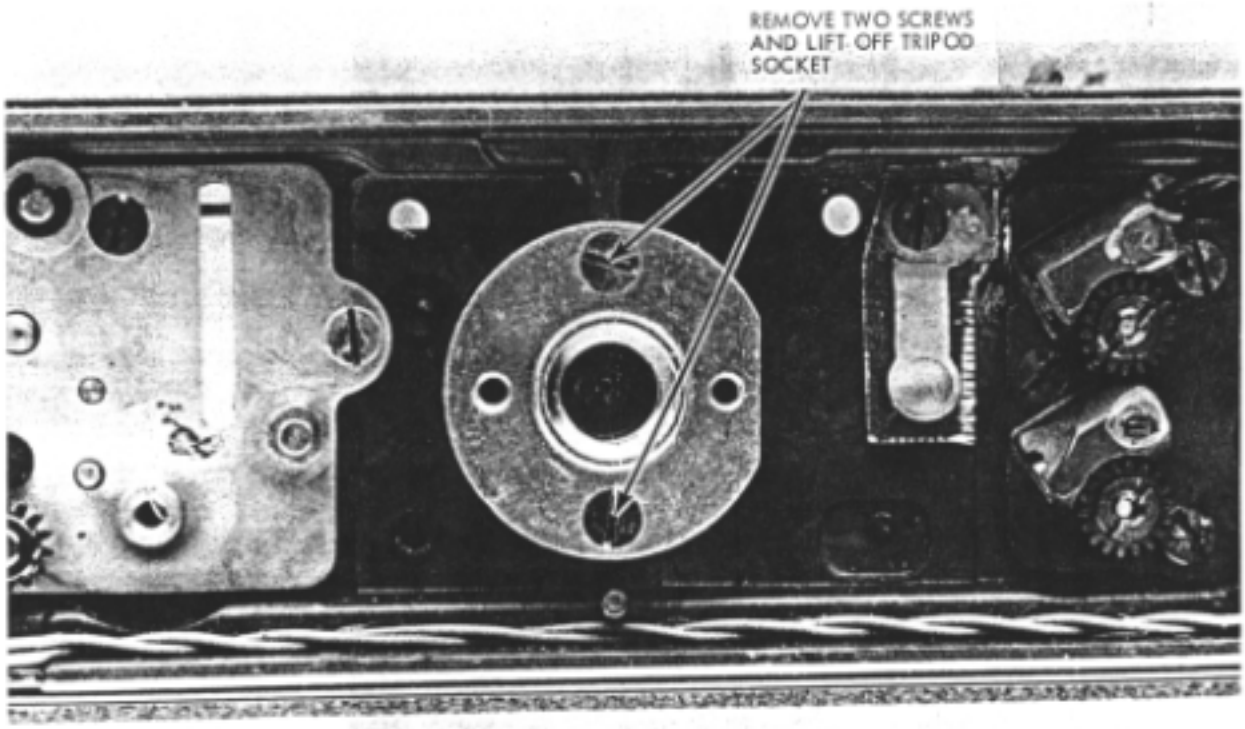
51 ADJUSTMENT: The pallet must disengage from the star wheel at 1/15 second --- and at the end of every slow exposure (1/8 second through 1 second)

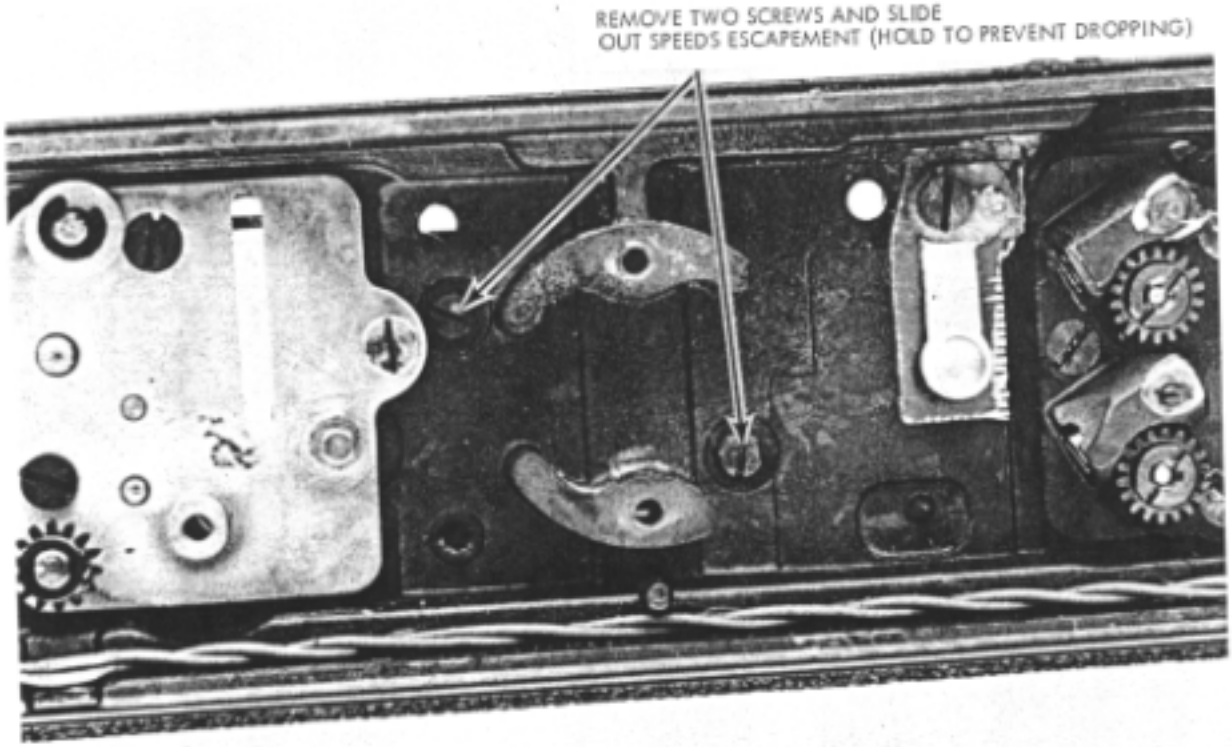

BULB LEVER
1/8 SECOND POSITION
CLOSING CURTAIN LATCH
PALLET CONTROL CAM FOLLOWER

52

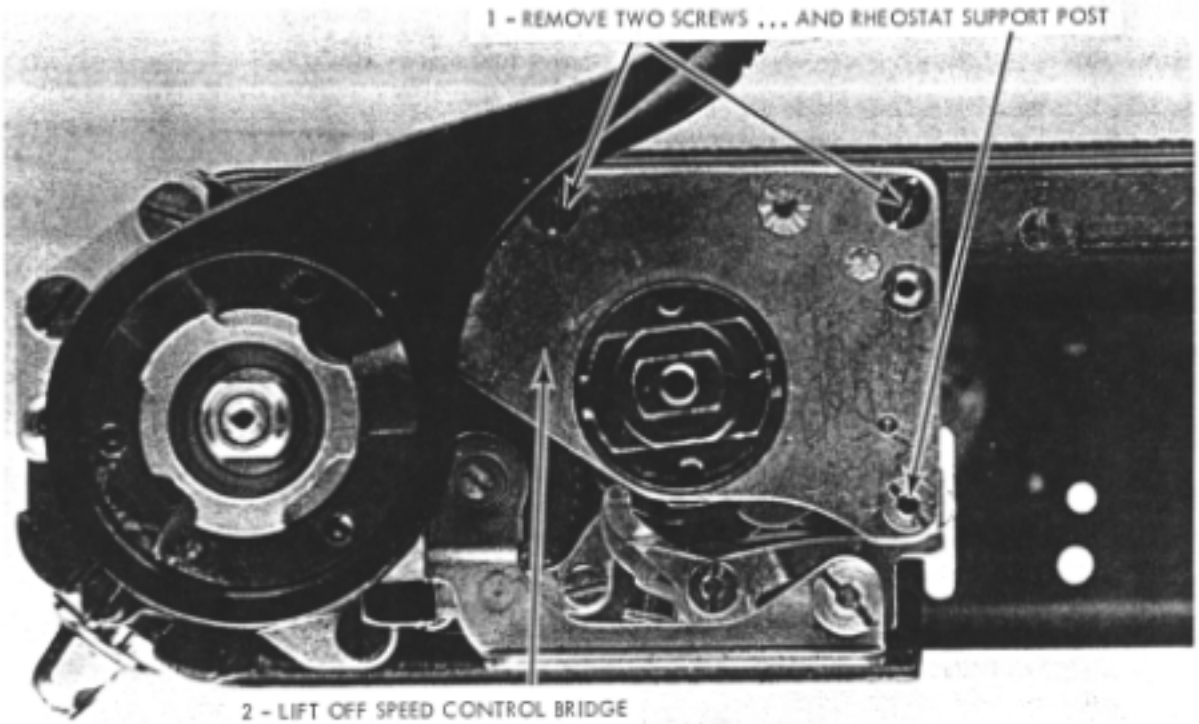


53


REMOVE TWO SCREWS
AND LIFT OFF TRIPOD
SOCKET

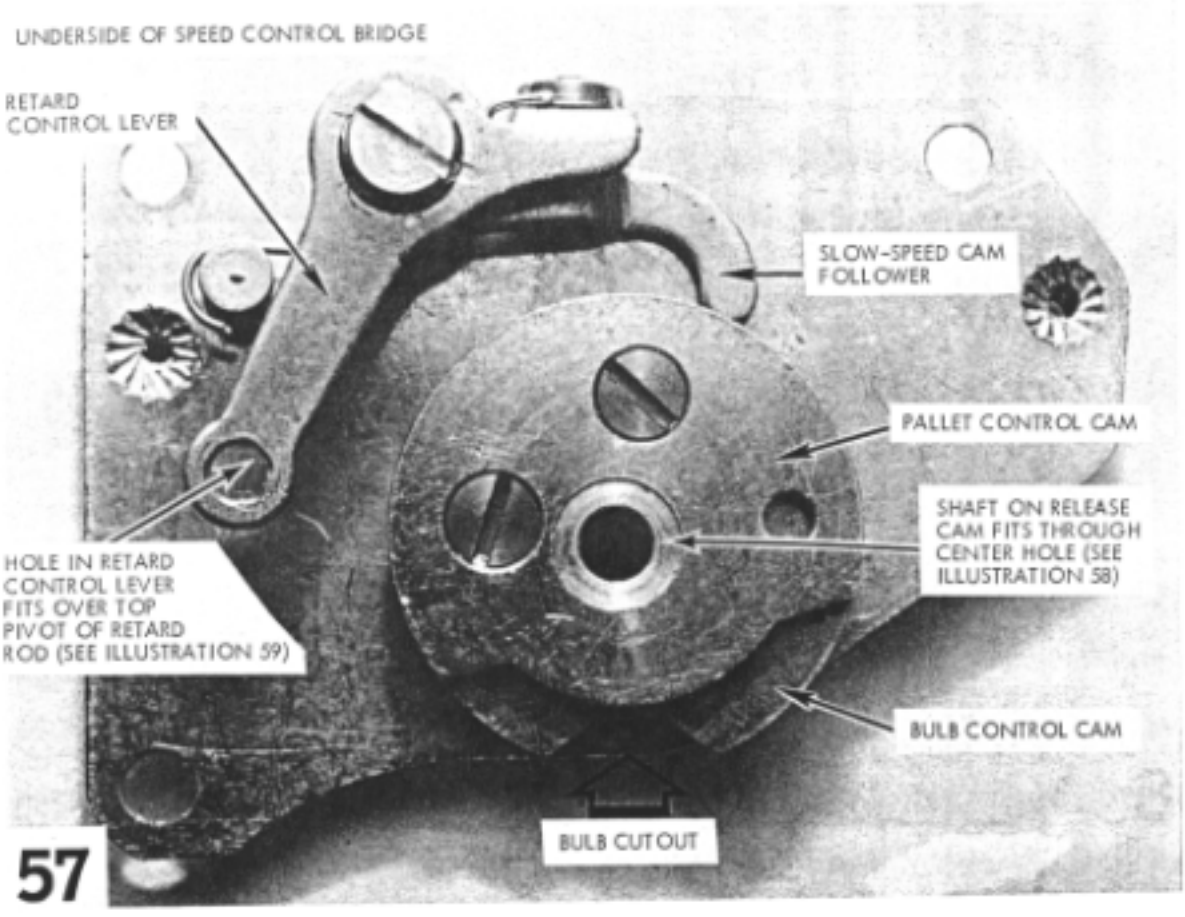

REMOVE TWO SCREWS AND SLIDE
OUT SPEEDS ESCAPEMENT (HOLD TO PREVENT DROPPING)

55

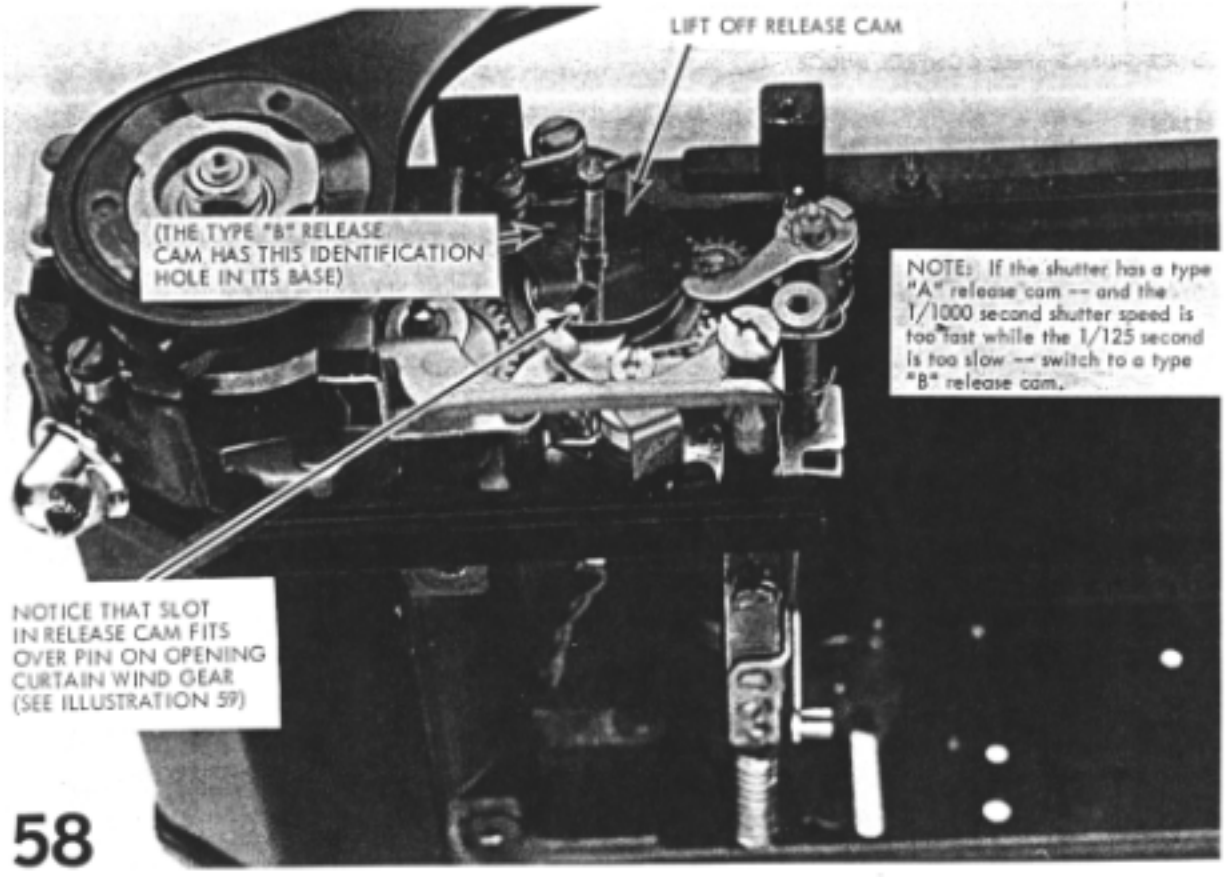


CAUTION: Keep the camera upright as you remove the speed control bridge. Three parts are loose once the speed control bridge is lifted from the camera body. These are: the release cam, ILLUSTRATION 58, the spring on top of the retard rod, ILLUSTRATION 59, and the pallet control cam follower, ILLUSTRATION 59.

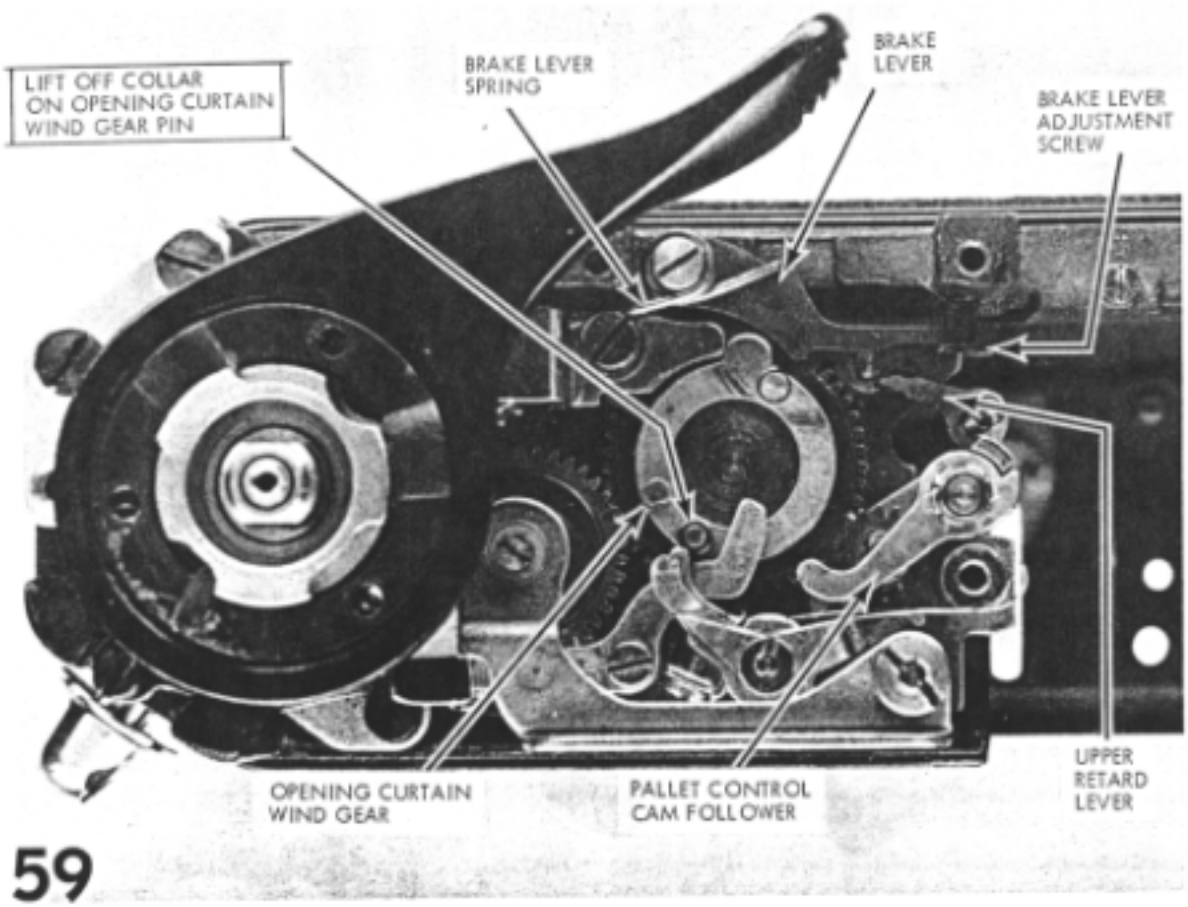
UNDERSIDE OF SPEED CONTROL BRIDGE



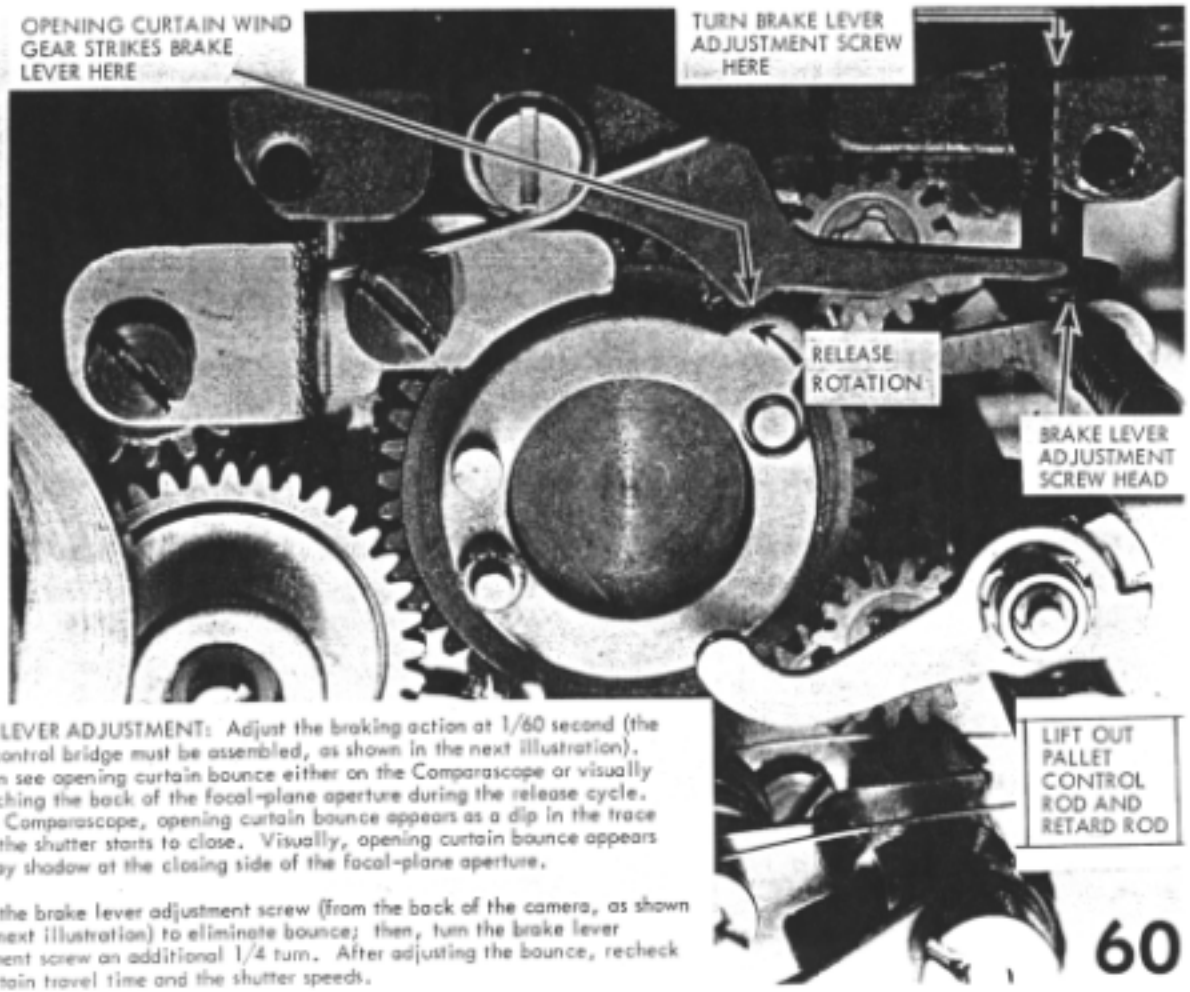
57


LIFT OFF RELEASE CAM
(THE TYPE "B" RELEASE CAM HAS THIS IDENTIFICATION HOLE IN ITS BASE)
NOTE: If the shutter has a type "A" release cam -- and the 1/1000 second shutter speed is too fast while the 1/125 second is too slow -- switch to a type "B" release cam.
NOTICE THAT SLOT IN RELEASE CAM FITS OVER PIN ON OPENING CURTAIN WIND GEAR (SEE ILLUSTRATION 59)

58

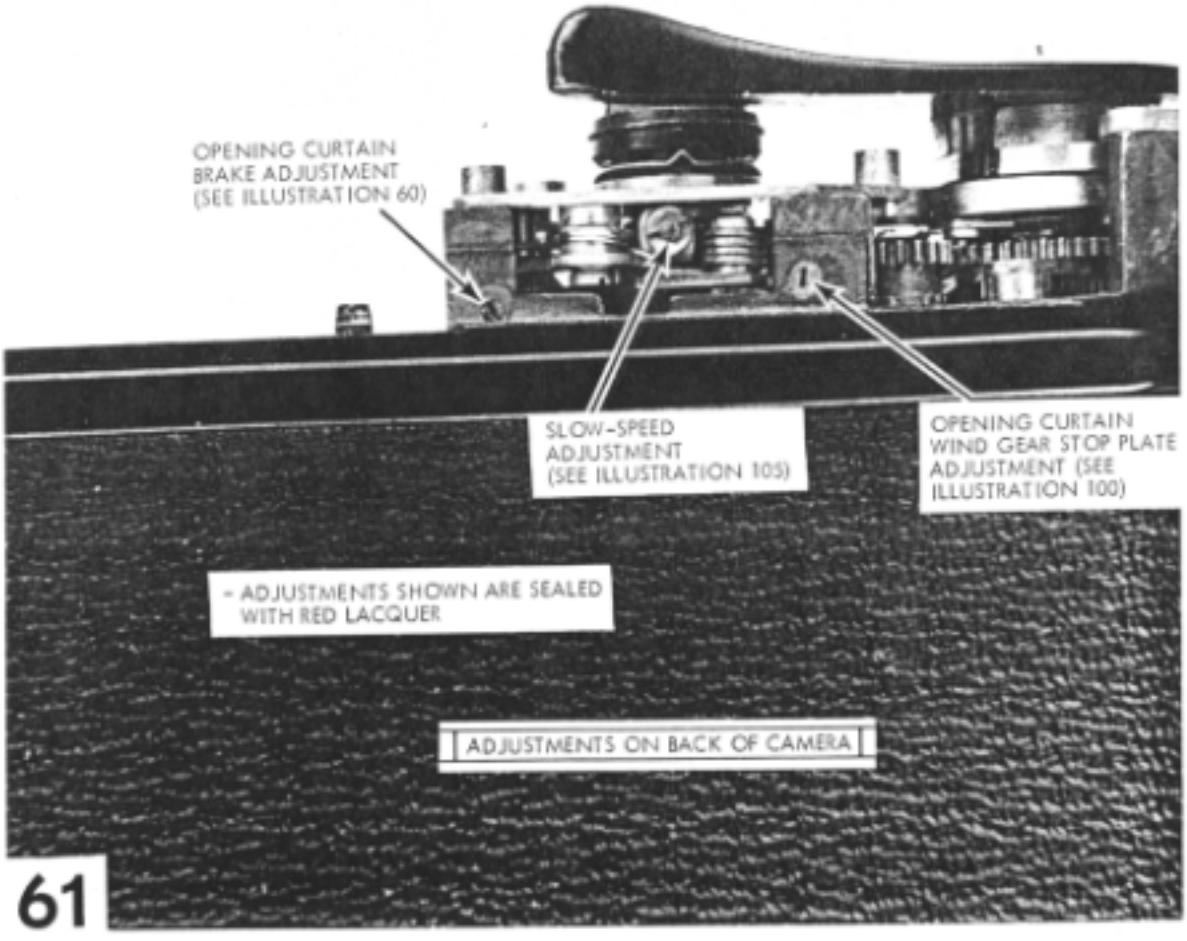

LIFT OFF COLLAR
ON OPENING CURTAIN
WIND GEAR PIN
BRAKE LEVER
SPRING
BRAKE
LEVER
BRAKE LEVER
ADJUSTMENT
SCREW
OPENING CURTAIN
WIND GEAR
PALLET CONTROL
CAM FOLLOWER
UPPER
RETARD
LEVER

59

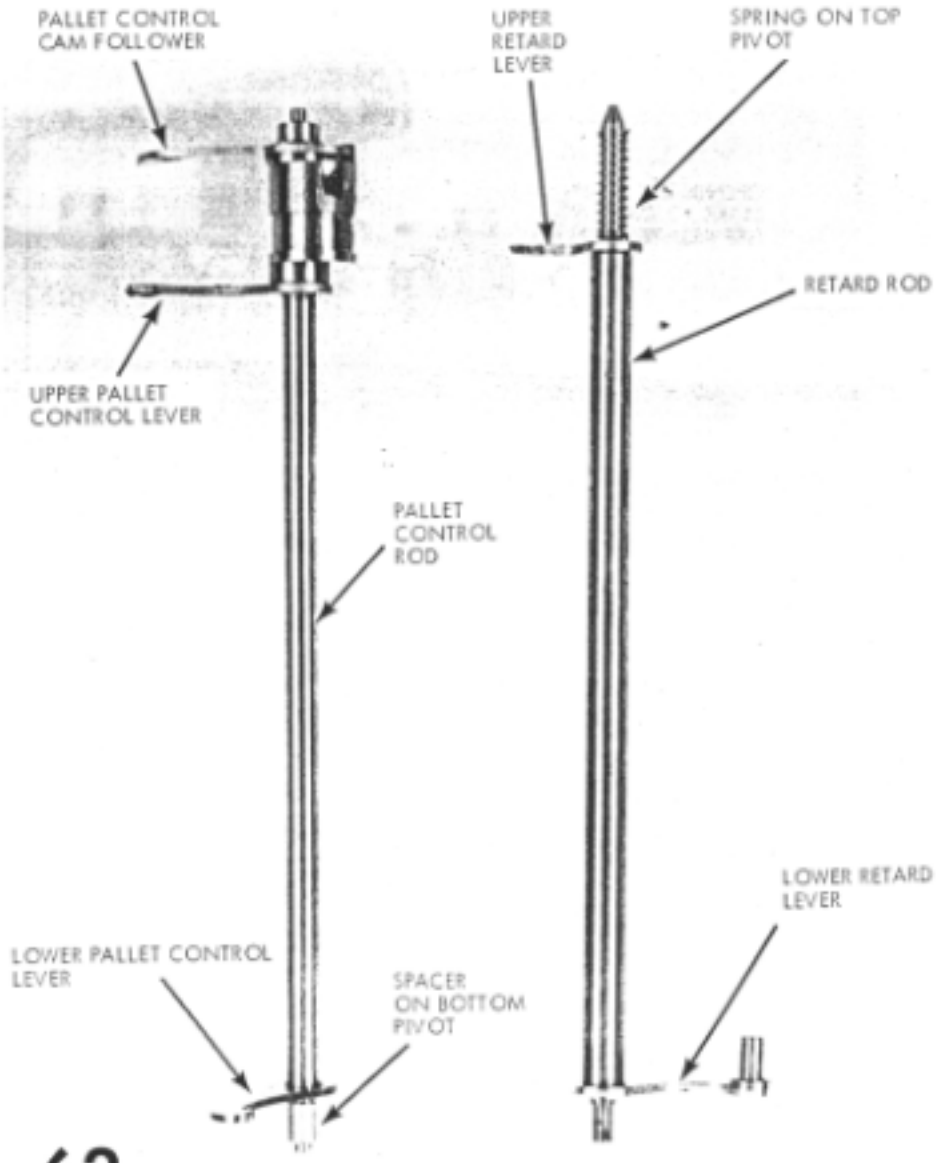


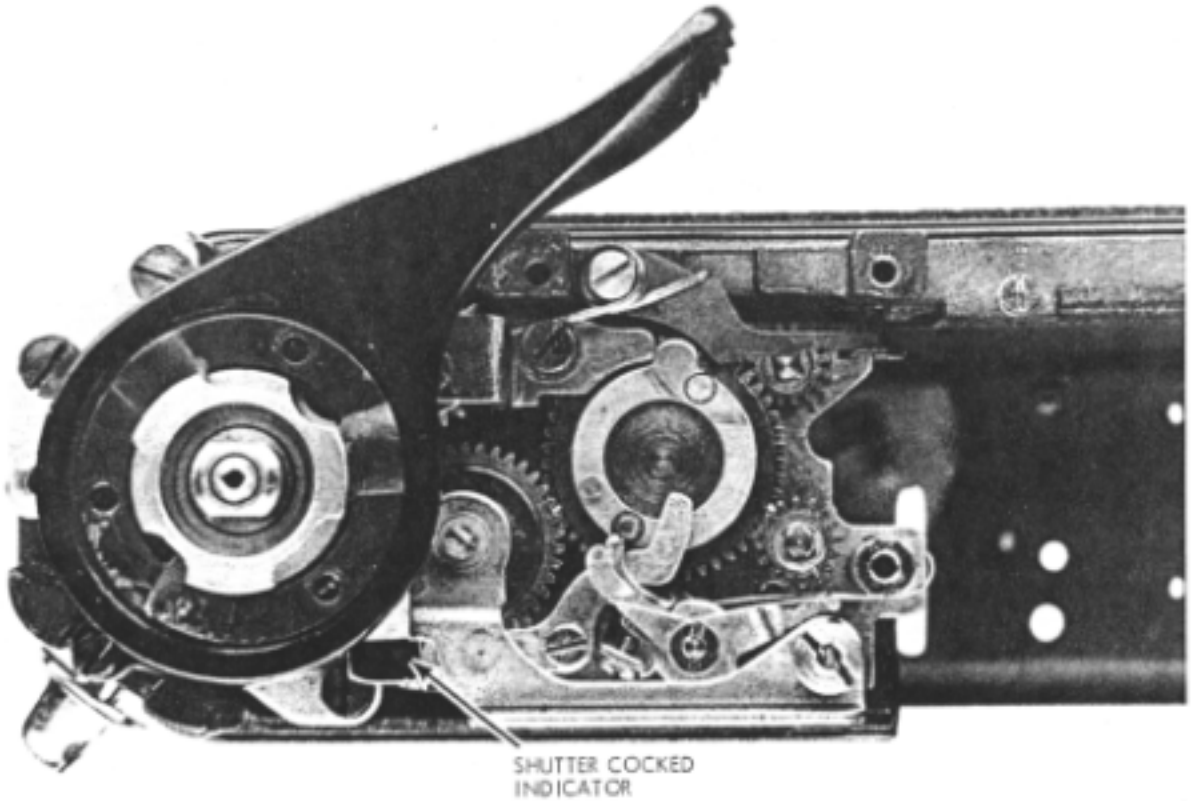
BRAKE LEVER ADJUSTMENT: Adjust the braking action at 1/60 second (the speed control bridge must be assembled, as shown in the next illustration). You can see opening curtain bounce either on the Comparascope or visually by watching the back of the focal-plane aperture during the release cycle. On the Comparascope, opening curtain bounce appears as a dip in the trace before the shutter starts to close. Visually, opening curtain bounce appears as a gray shadow at the closing side of the focal-plane aperture.

Adjust the brake lever adjustment screw (from the back of the camera, as shown in the next illustration) to eliminate bounce; then, turn the brake lever adjustment screw an additional 1/4 turn. After adjusting the bounce, recheck the curtain travel time and the shutter speeds.

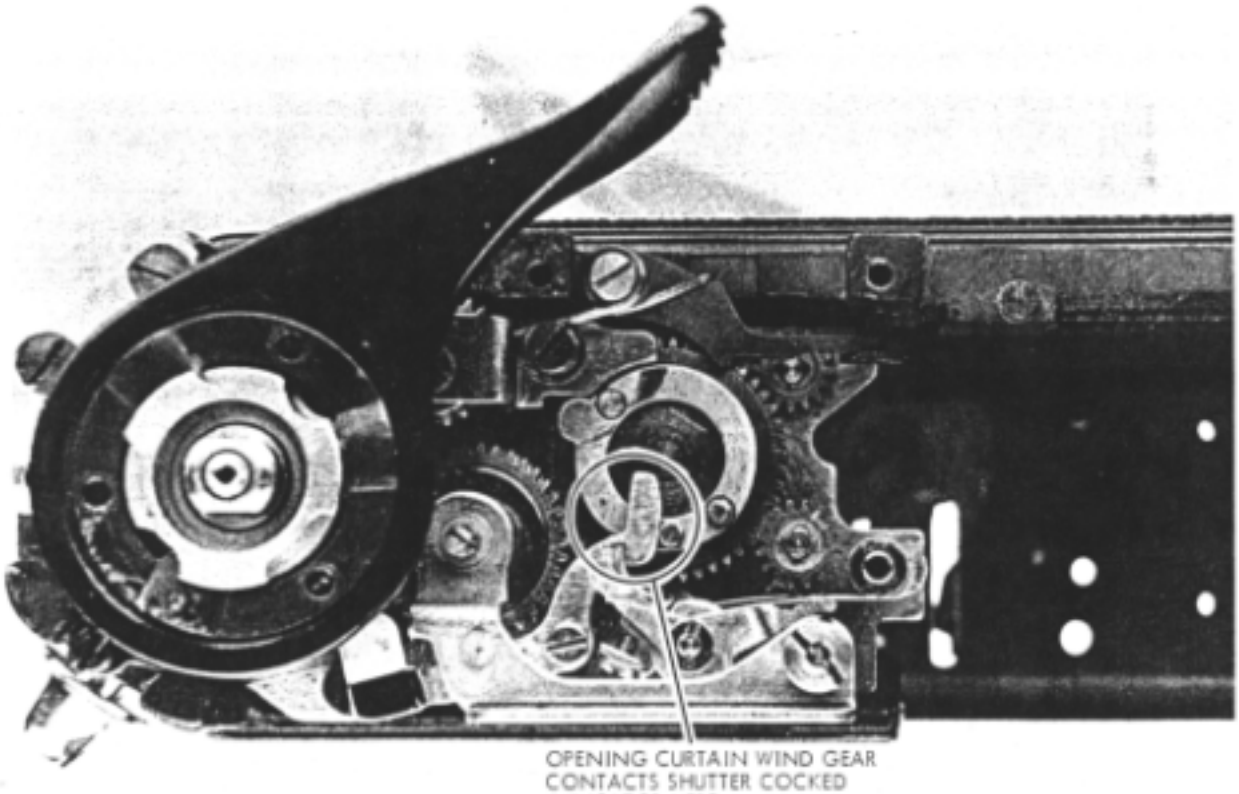

OPENING CURTAIN BRAKE ADJUSTMENT (SEE ILLUSTRATION 60)
SLOW-SPEED ADJUSTMENT (SEE ILLUSTRATION 105)
OPENING CURTAIN WIND GEAR STOP PLATE ADJUSTMENT (SEE ILLUSTRATION 100)
- ADJUSTMENTS SHOWN ARE SEALED WITH RED LACQUER
ADJUSTMENTS ON BACK OF CAMERA

61


PALLET CONTROL CAM FOLLOWER
UPPER PALLET CONTROL LEVER
PALLET CONTROL ROD
LOWER PALLET CONTROL LEVER
SPACER ON BOTTOM PIVOT
UPPER RETARD LEVER
SPRING ON TOP PIVOT
RETARD ROD
LOWER RETARD LEVER



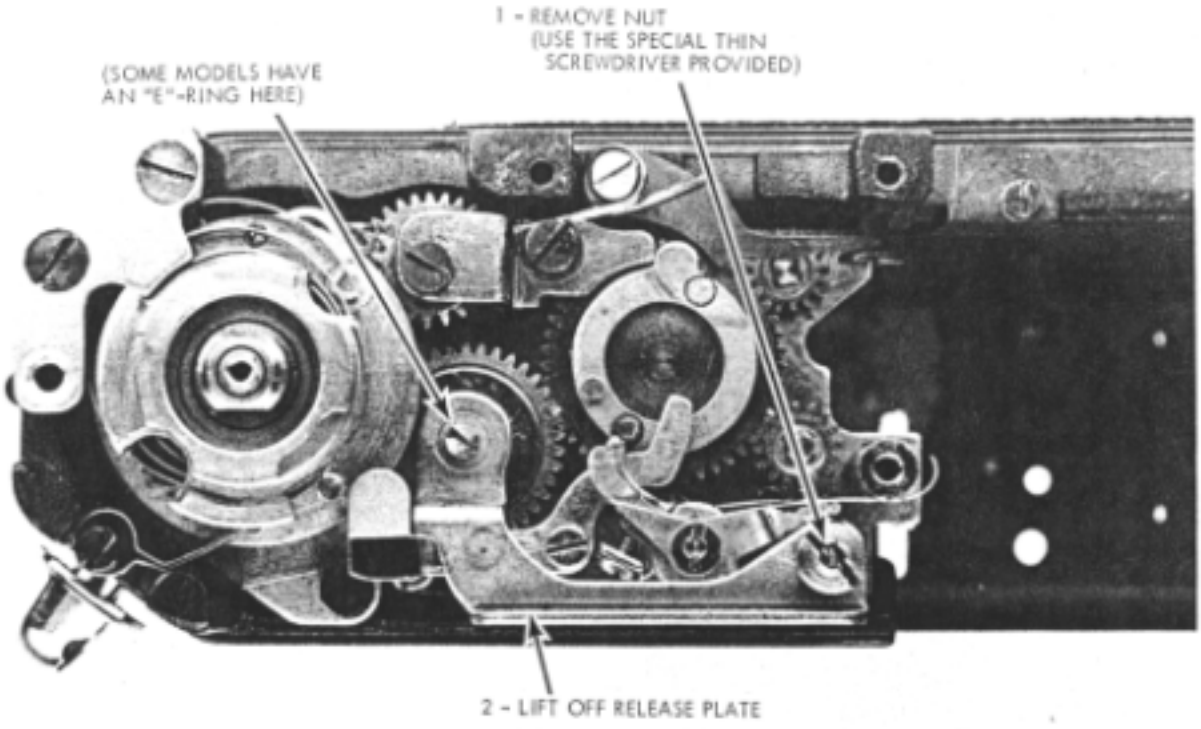
63 SHUTTER RELEASED



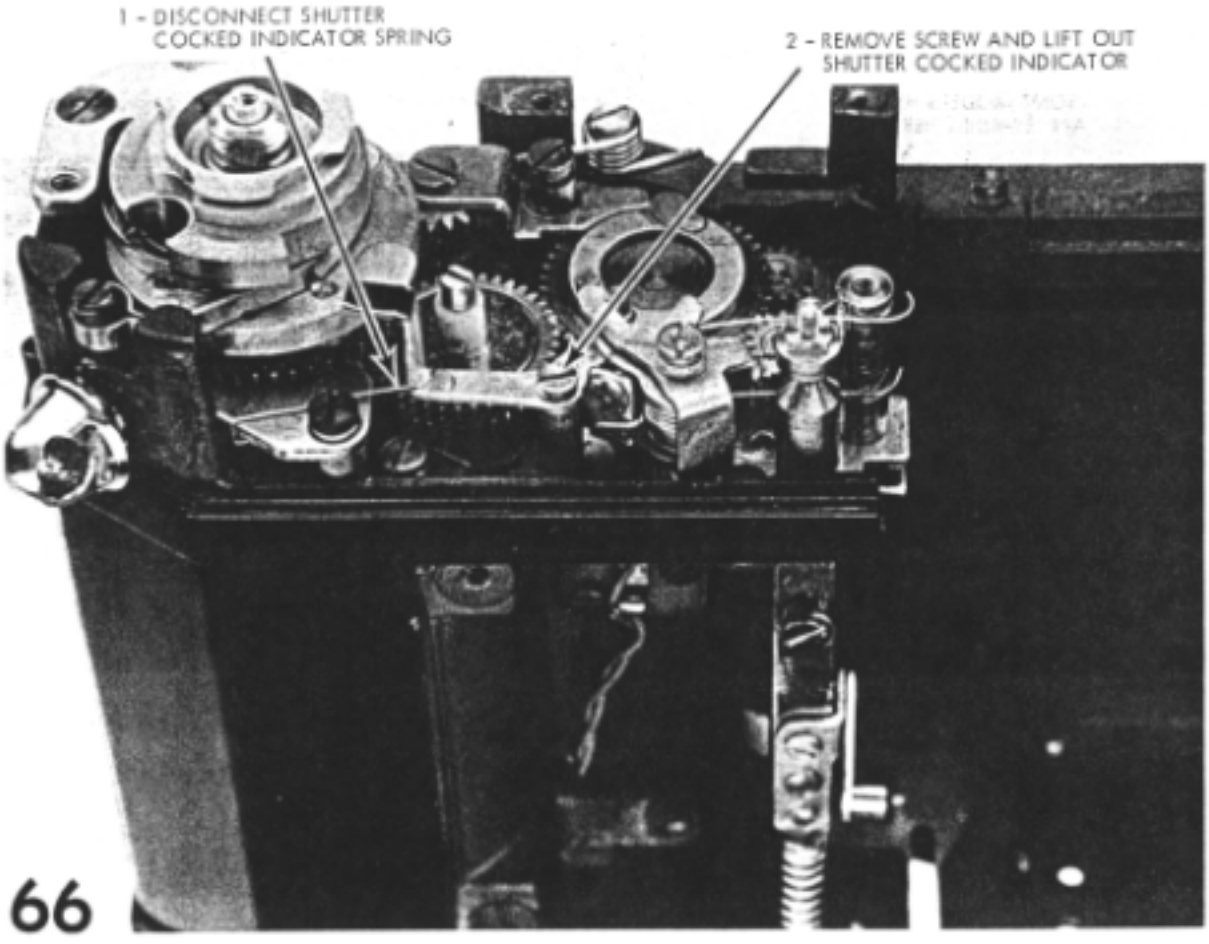
OPENING CURTAIN WIND GEAR
CONTACTS SHUTTER COCKED
INDICATOR HERE

1 - RELEASE SHUTTER
2 - REMOVE WIND LEVER

64 SHUTTER COCKED

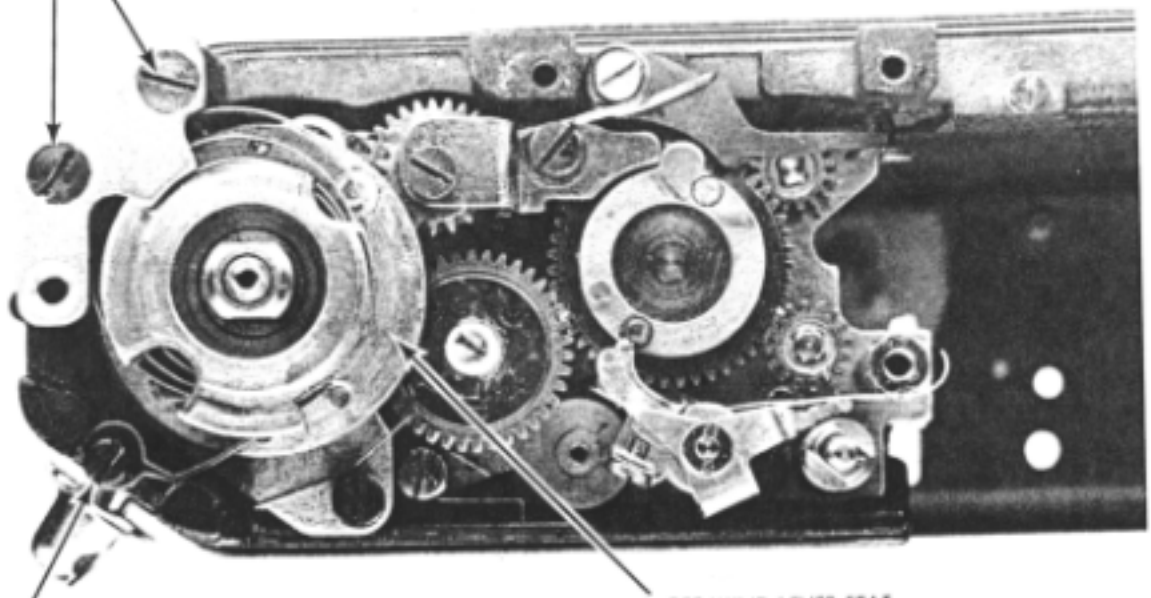

1 - REMOVE NUT
(USE THE SPECIAL THIN
SCREWDRIVER PROVIDED)
(SOME MODELS HAVE
AN "E"-RING HERE)
2 - LIFT OFF RELEASE PLATE

65


1 - DISCONNECT SHUTTER
COCKED INDICATOR SPRING
2 - REMOVE SCREW AND LIFT OUT
SHUTTER COCKED INDICATOR

66

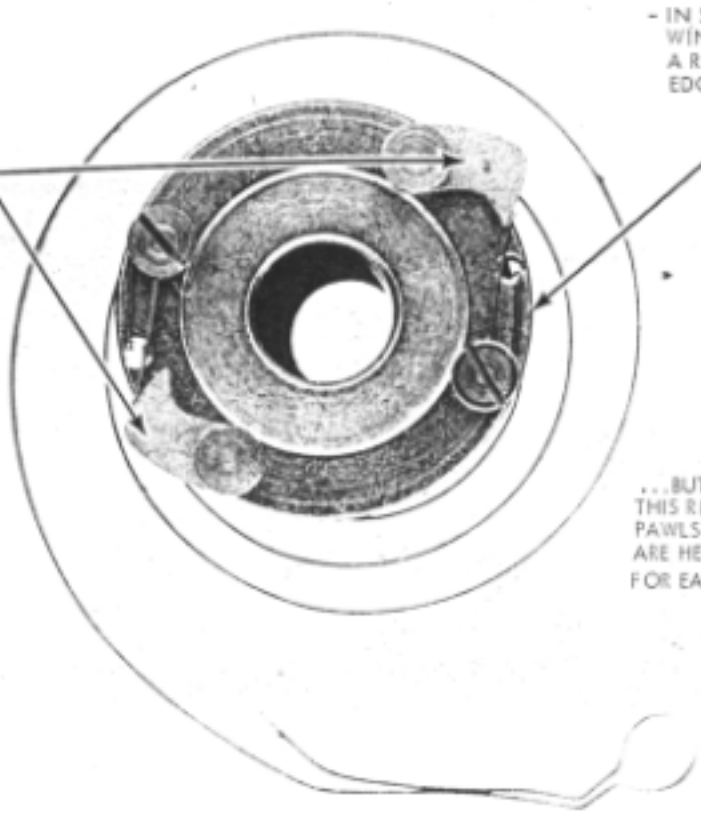
1 - REMOVE SCREWS AND LIFT OFF WIND LEVER SEAT STOP PLATE

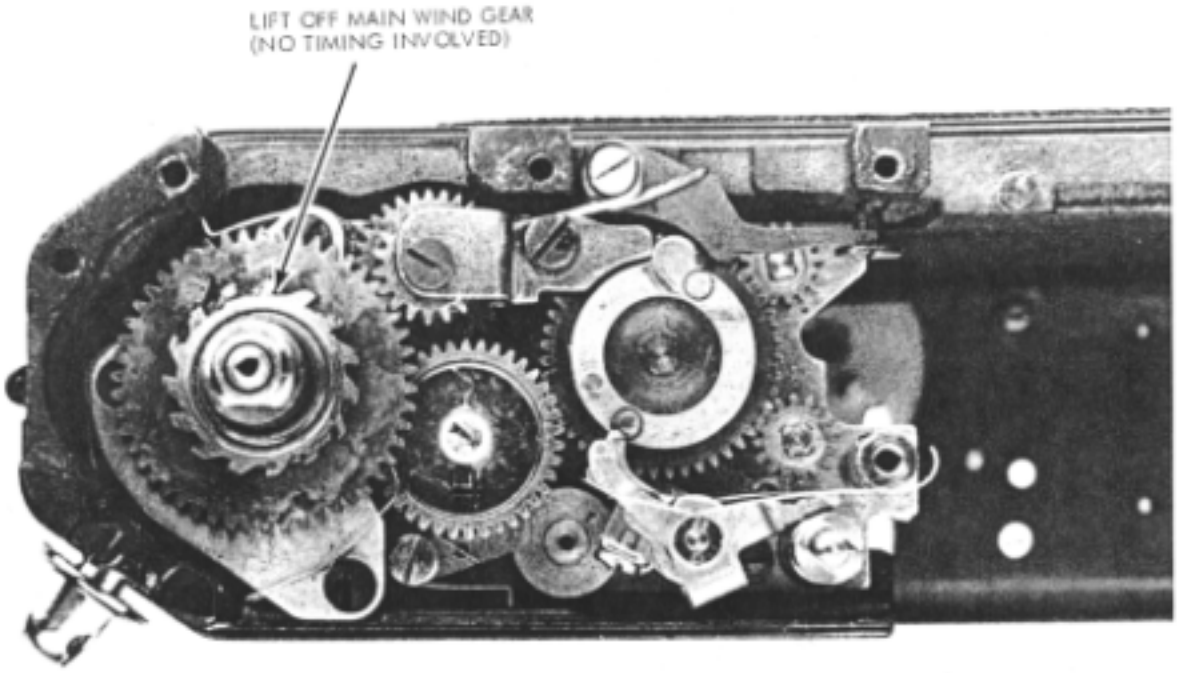


2 - DISCONNECT WIND LEVER RETURN SPRING ... WHILE LIFTING OFF WIND LEVER SEAT

CAUTION: There is initial tension on the wind lever return spring. Once you remove the wind lever seat stop plate, you will lose this initial tension. There are approximately 3 1/2 turns of initial tension on the spring which can be replaced during reassembly.

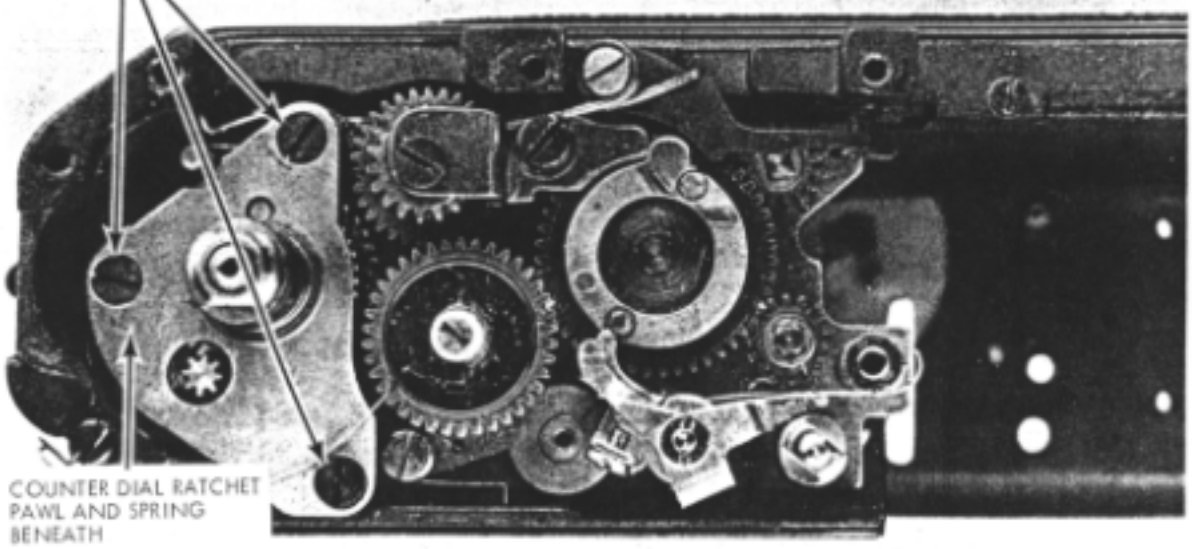
UNDERSIDE OF WIND LEVER SEAT





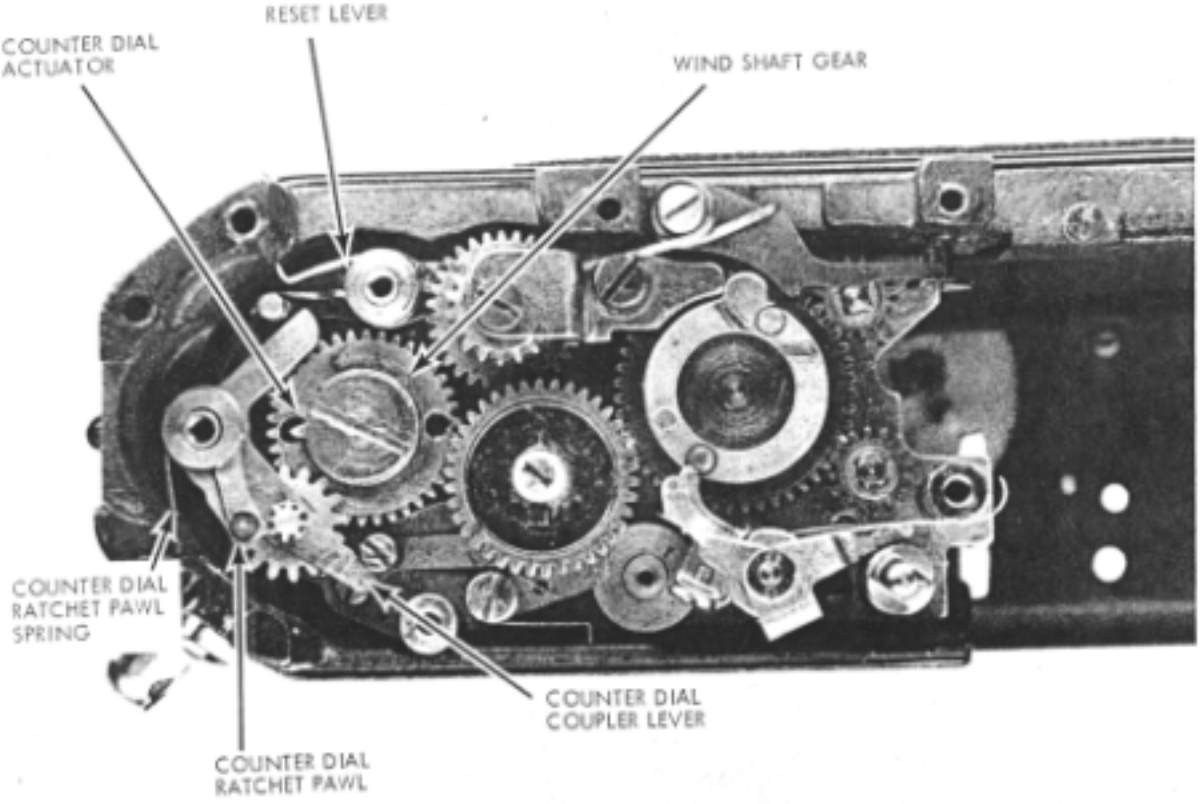
69

REMOVE THREE SCREWS AND LIFT OFF WIND LEVER SHAFT ASSEMBLY

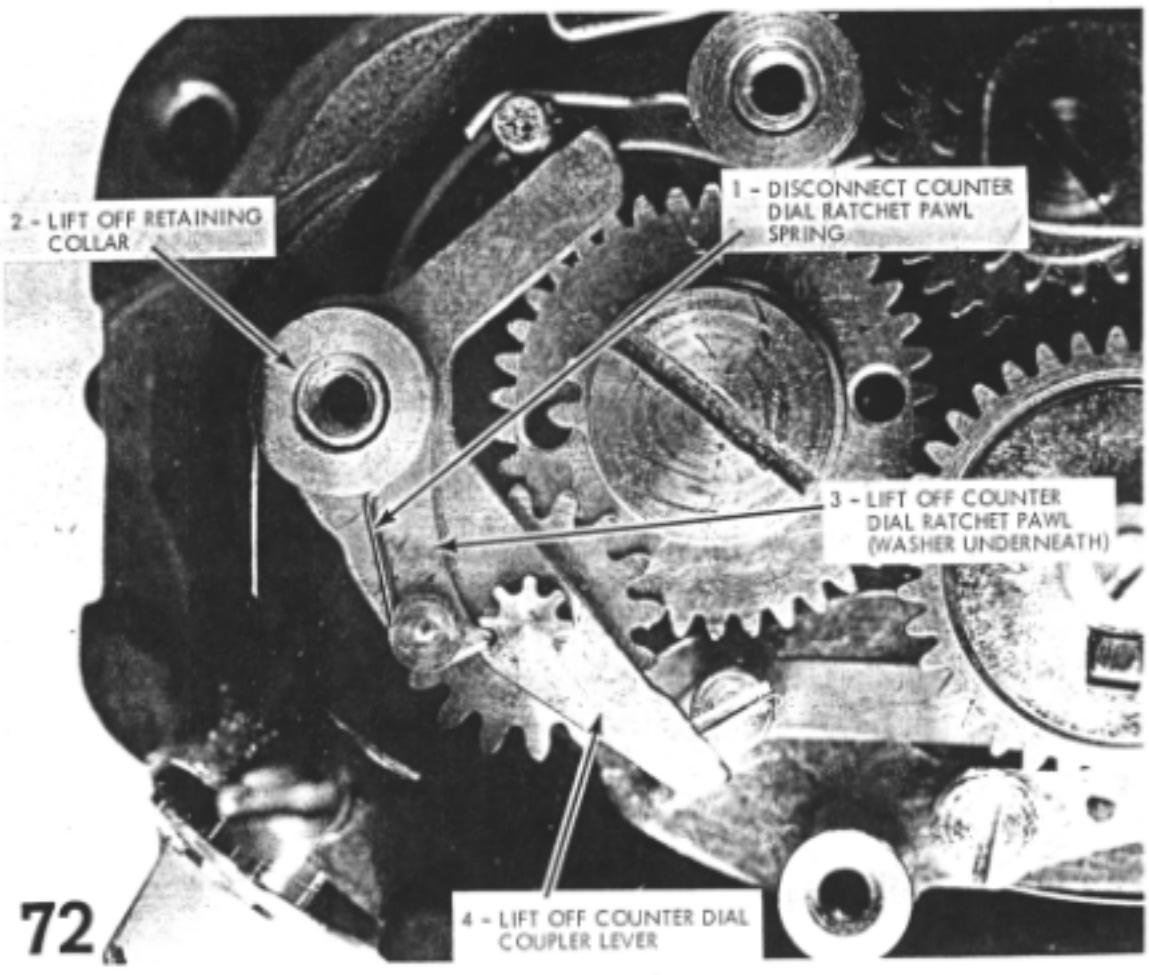


COUNTER DIAL RATCHET PAWL AND SPRING BENEATH

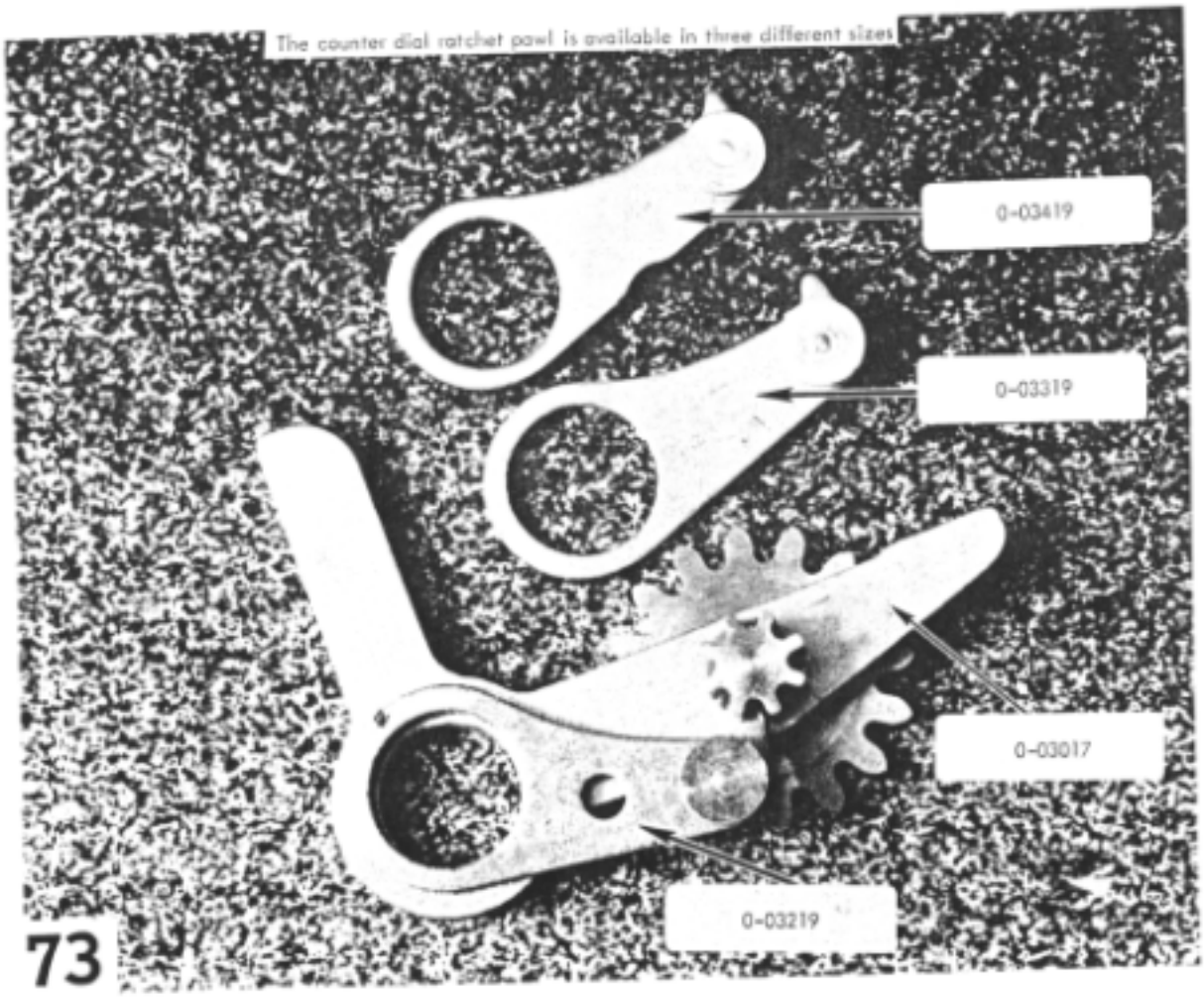
RETAINER MAY LIFT WITH WIND LEVER SHAFT ASSEMBLY

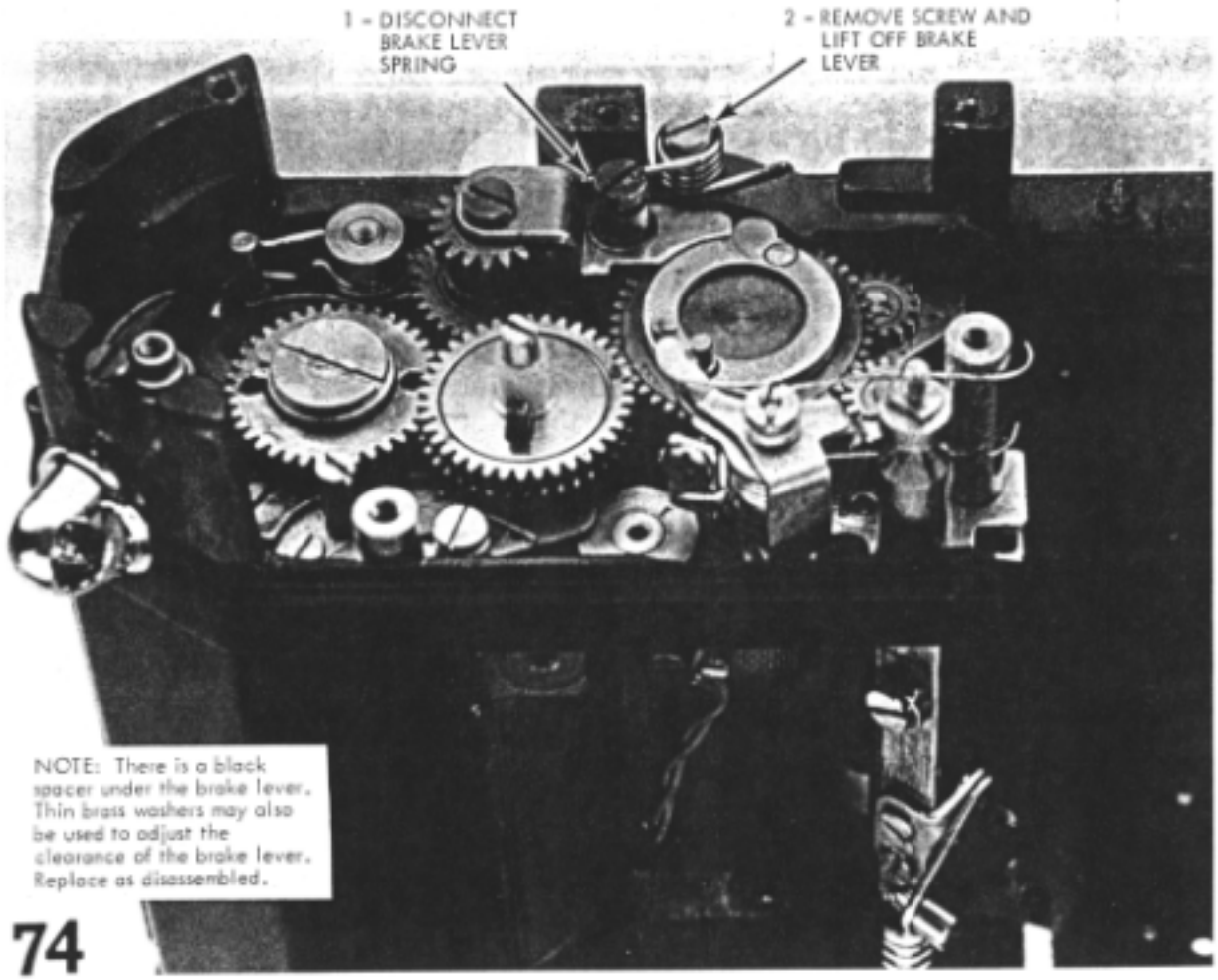

RESET LEVER
COUNTER DIAL ACTUATOR
WIND SHAFT GEAR
COUNTER DIAL RATCHET PAWL SPRING
COUNTER DIAL COUPLER LEVER
COUNTER DIAL RATCHET PAWL

71


2 - LIFT OFF RETAINING COLLAR
1 - DISCONNECT COUNTER DIAL RATCHET PAWL SPRING
3 - LIFT OFF COUNTER DIAL RATCHET PAWL (WASHER UNDERNEATH)
4 - LIFT OFF COUNTER DIAL COUPLER LEVER

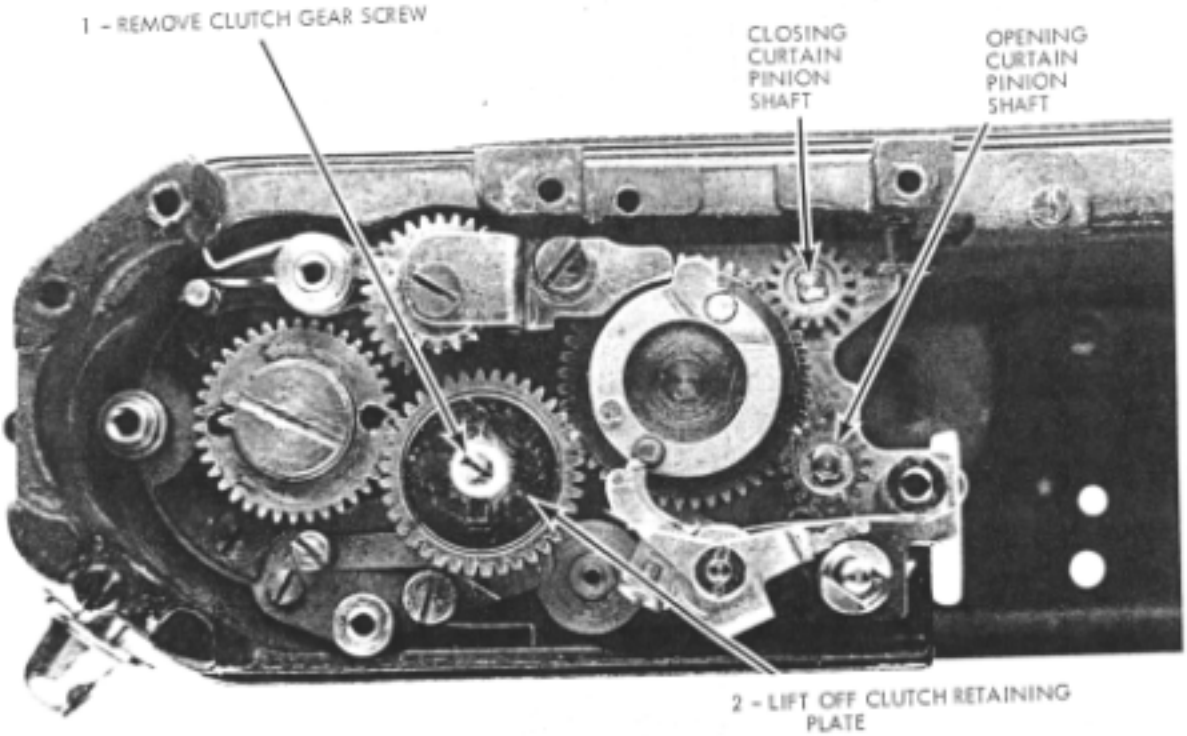
72

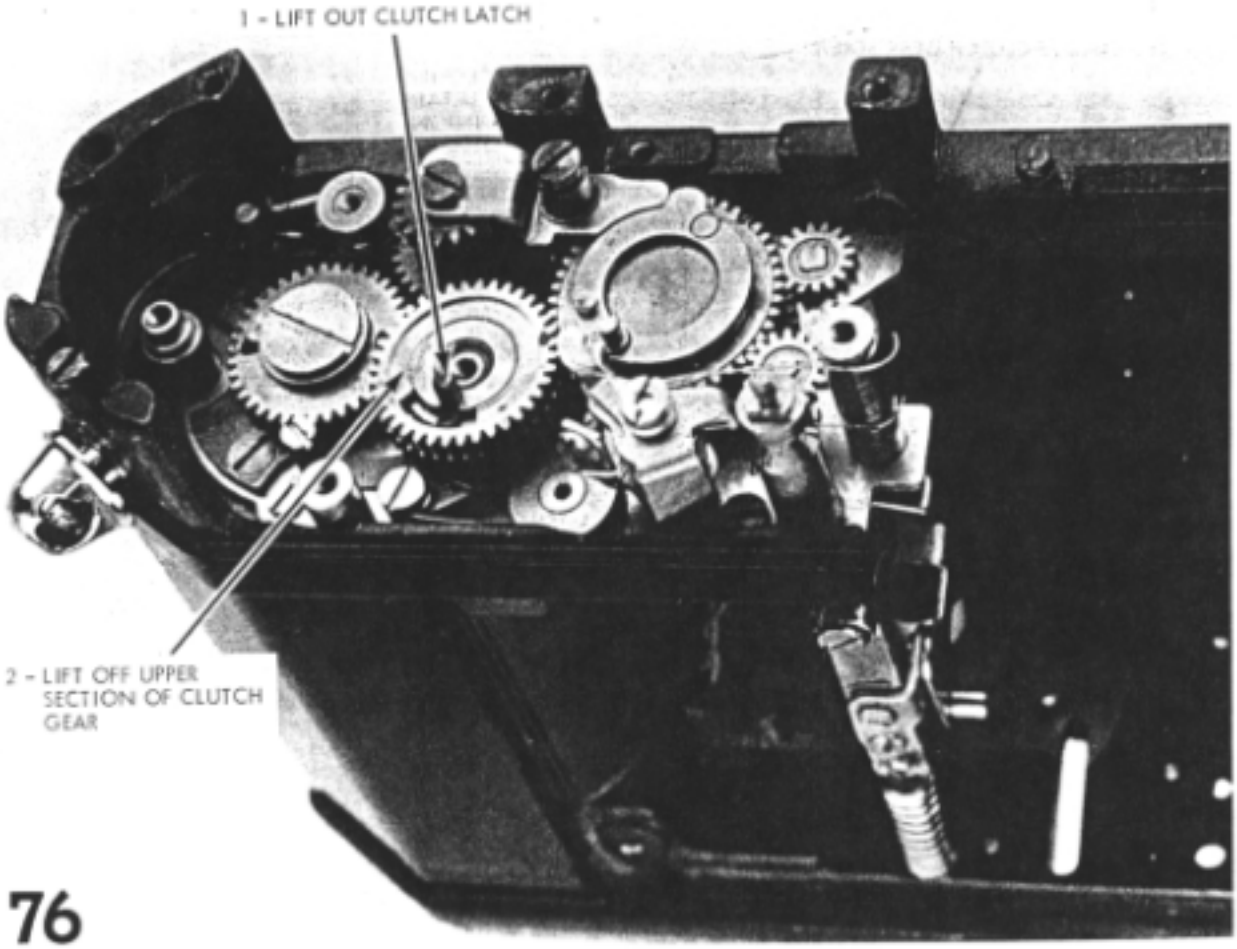

The counter dial ratchet pawl is available in three different sizes
0-03419
0-03319
0-03017
0-03219

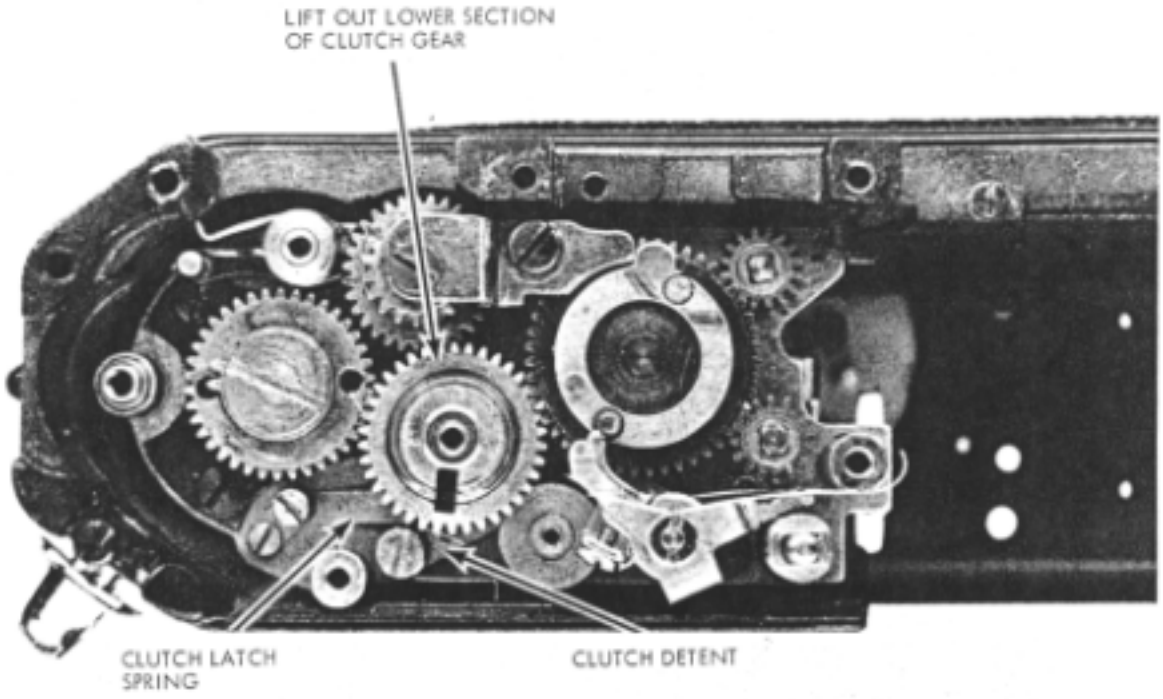


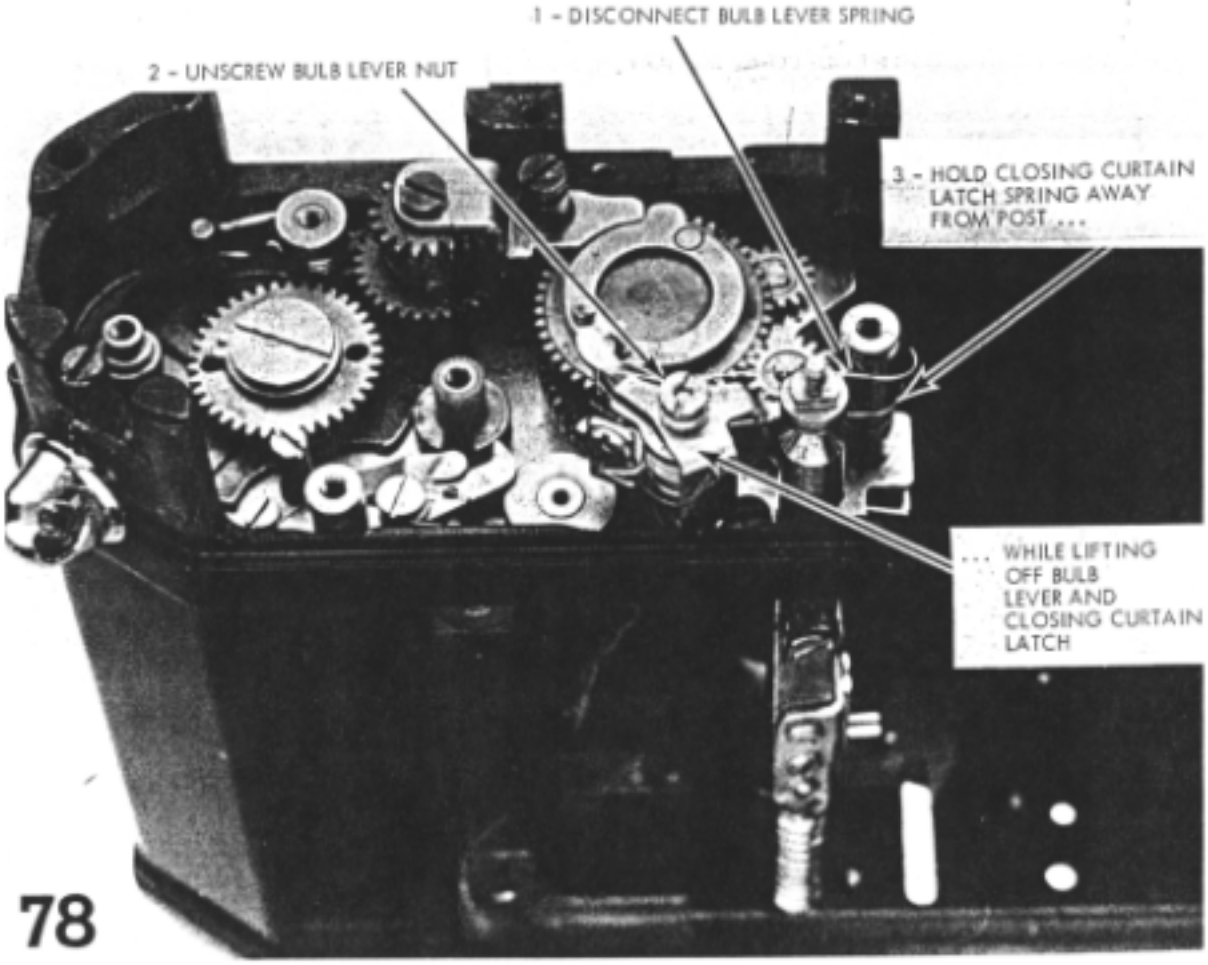
NOTE: There is a black spacer under the brake lever. Thin brass washers may also be used to adjust the clearance of the brake lever. Replace as disassembled.

74

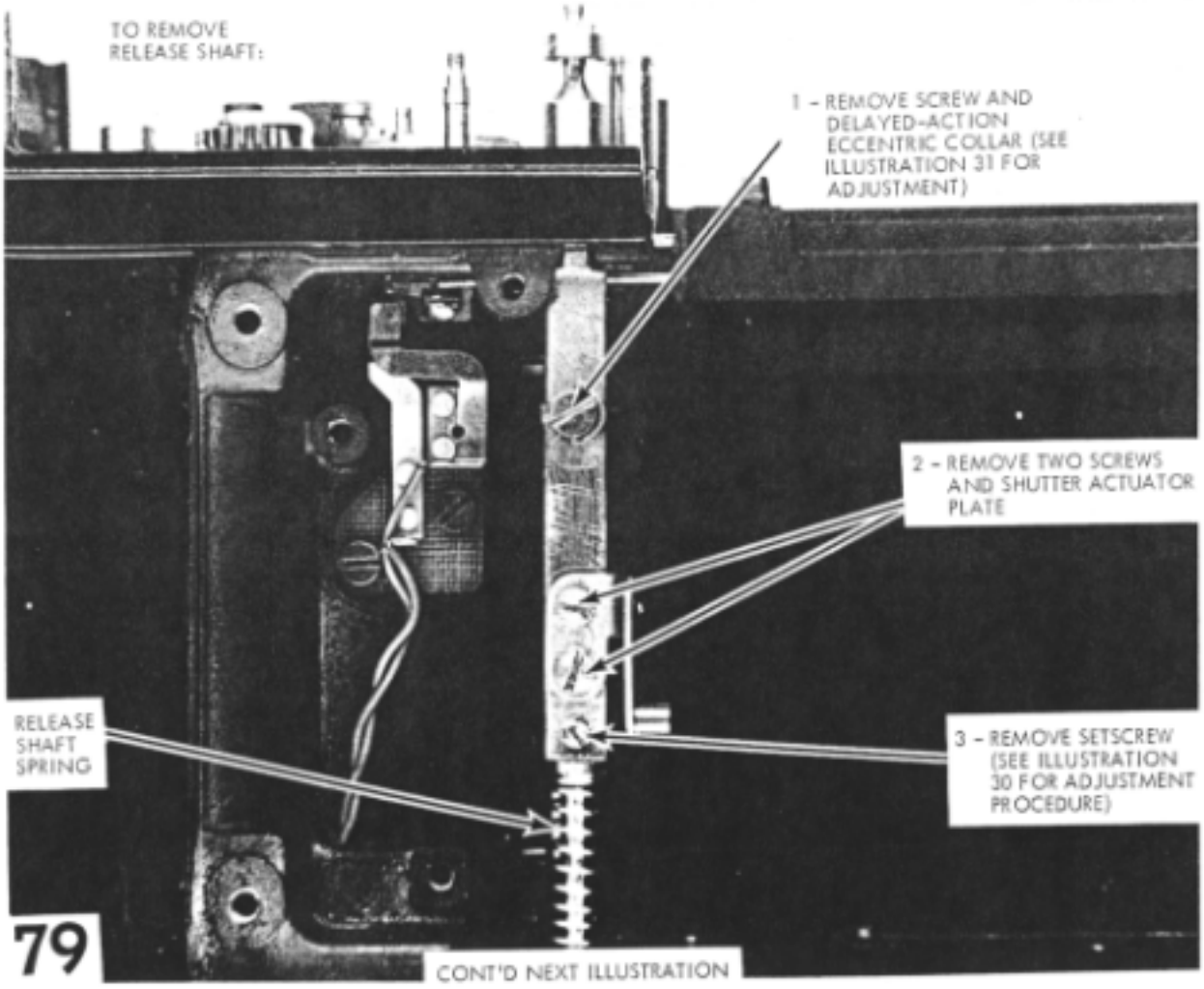

1 - REMOVE CLUTCH GEAR SCREW
CLOSING CURTAIN PINION SHAFT
OPENING CURTAIN PINION SHAFT
2 - LIFT OFF CLUTCH RETAINING PLATE


1 - LIFT OUT CLUTCH LATCH
2 - LIFT OFF UPPER SECTION OF CLUTCH GEAR

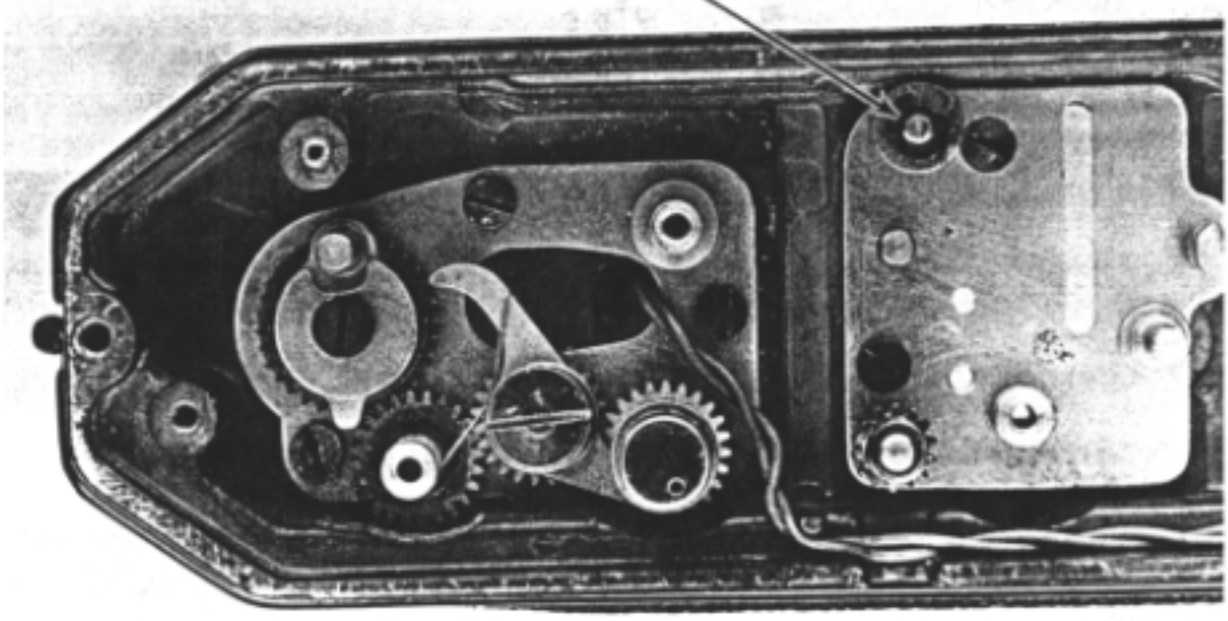

LIFT OUT LOWER SECTION
OF CLUTCH GEAR
CLUTCH LATCH
SPRING
CLUTCH DETENT


1 - DISCONNECT BULB LEVER SPRING
2 - UNSCREW BULB LEVER NUT
3 - HOLD CLOSING CURTAIN LATCH SPRING AWAY FROM POST . . .
. . . WHILE LIFTING OFF BULB LEVER AND CLOSING CURTAIN LATCH

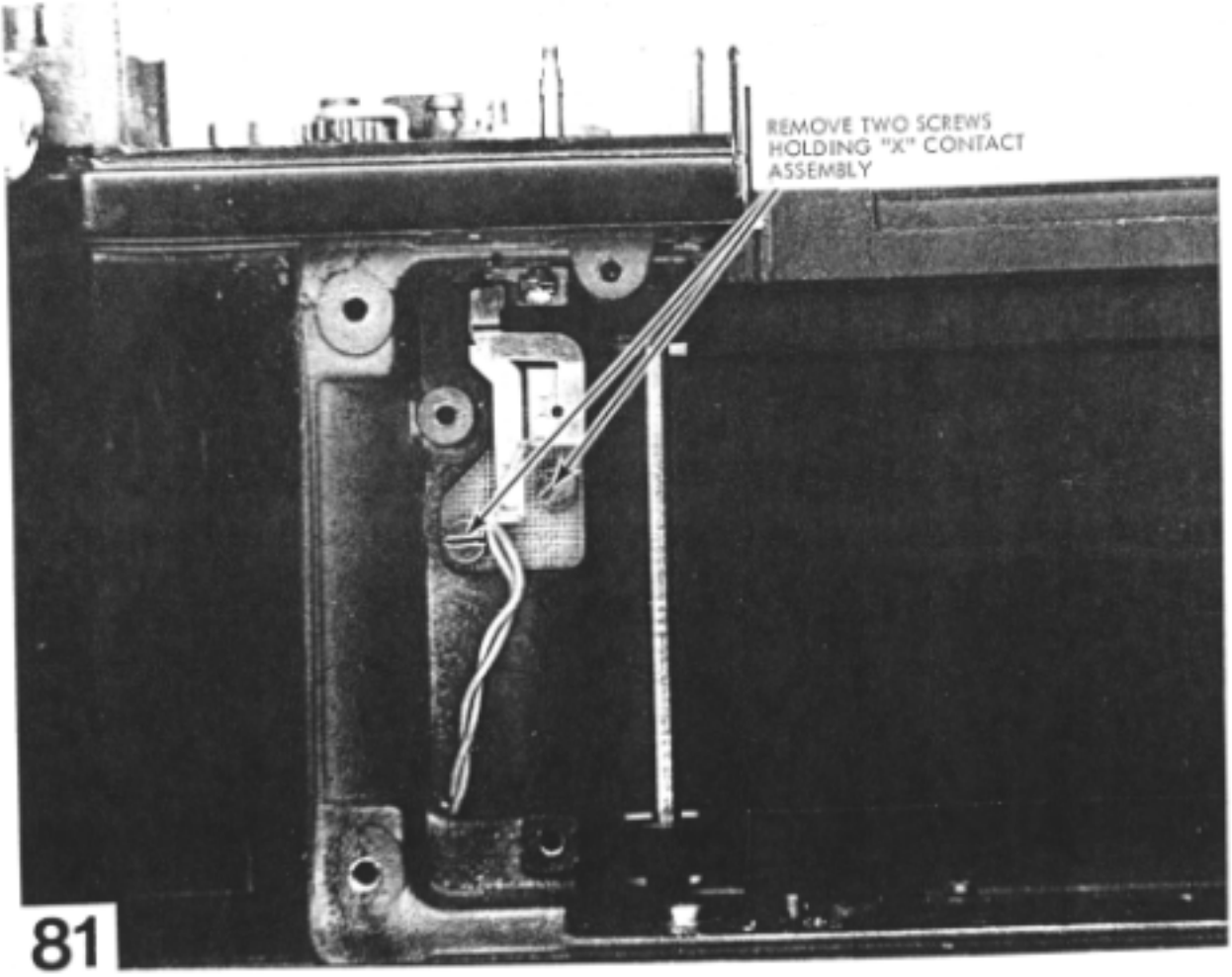
78


TO REMOVE RELEASE SHAFT:
1 - REMOVE SCREW AND DELAYED-ACTION ECCENTRIC COLLAR (SEE ILLUSTRATION 31 FOR ADJUSTMENT)
2 - REMOVE TWO SCREWS AND SHUTTER ACTUATOR PLATE
RELEASE SHAFT SPRING
3 - REMOVE SETSCREW (SEE ILLUSTRATION 30 FOR ADJUSTMENT PROCEDURE)
79
CONT'D NEXT ILLUSTRATION

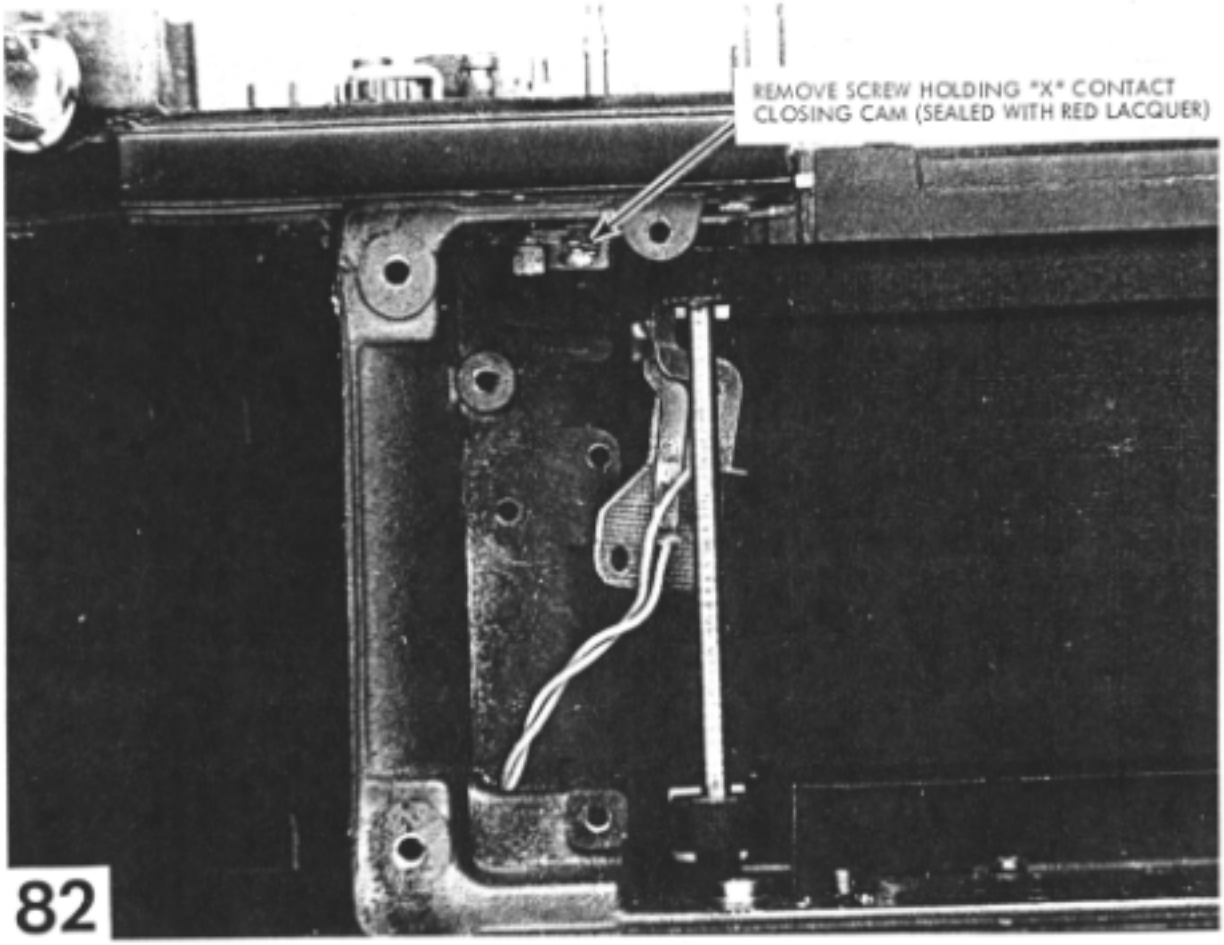
4 - REMOVE E-RING AND WASHER



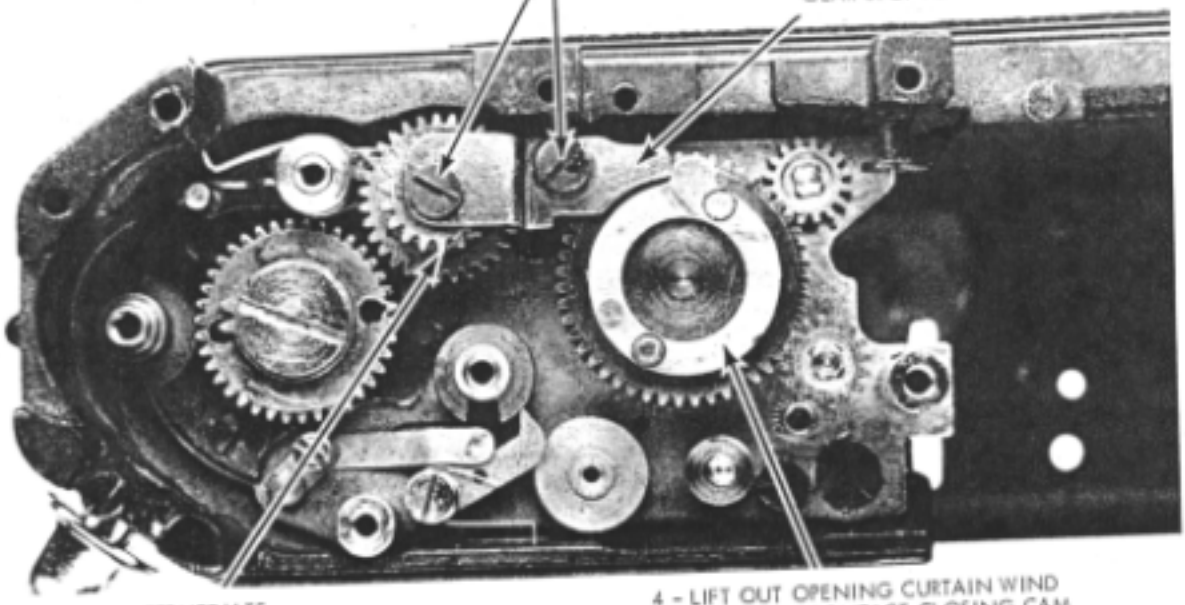
5 - LIFT OUT RELEASE SHAFT TOWARD TOP OF CAMERA -- REMOVE THE RELEASE SHAFT SPRING WHILE LIFTING OUT THE RELEASE SHAFT

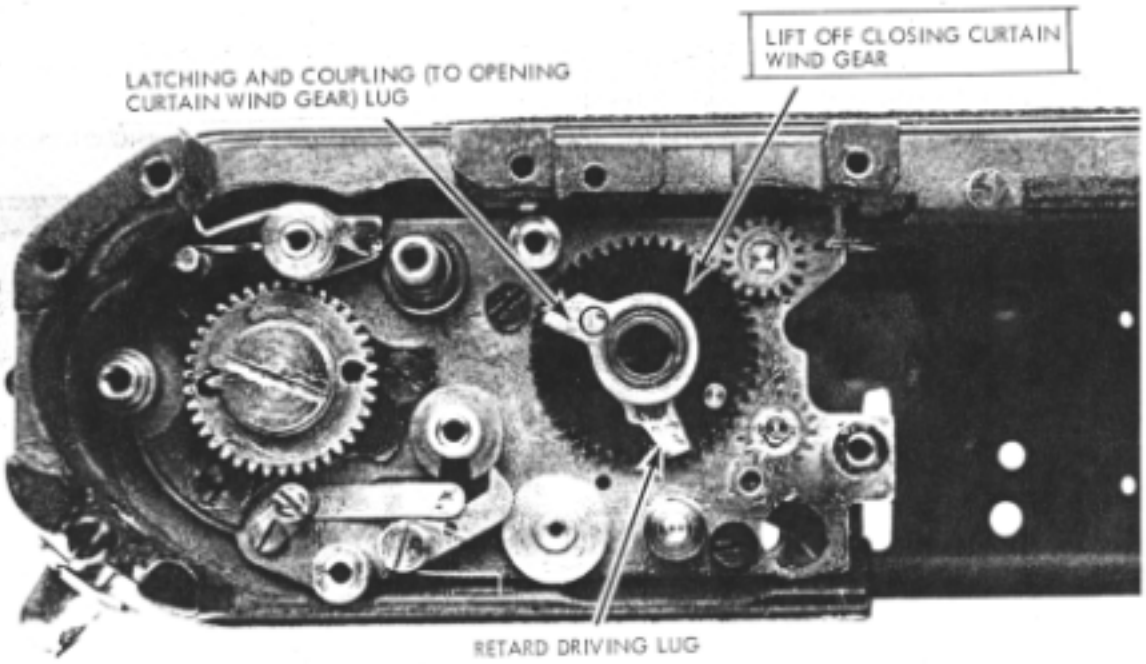


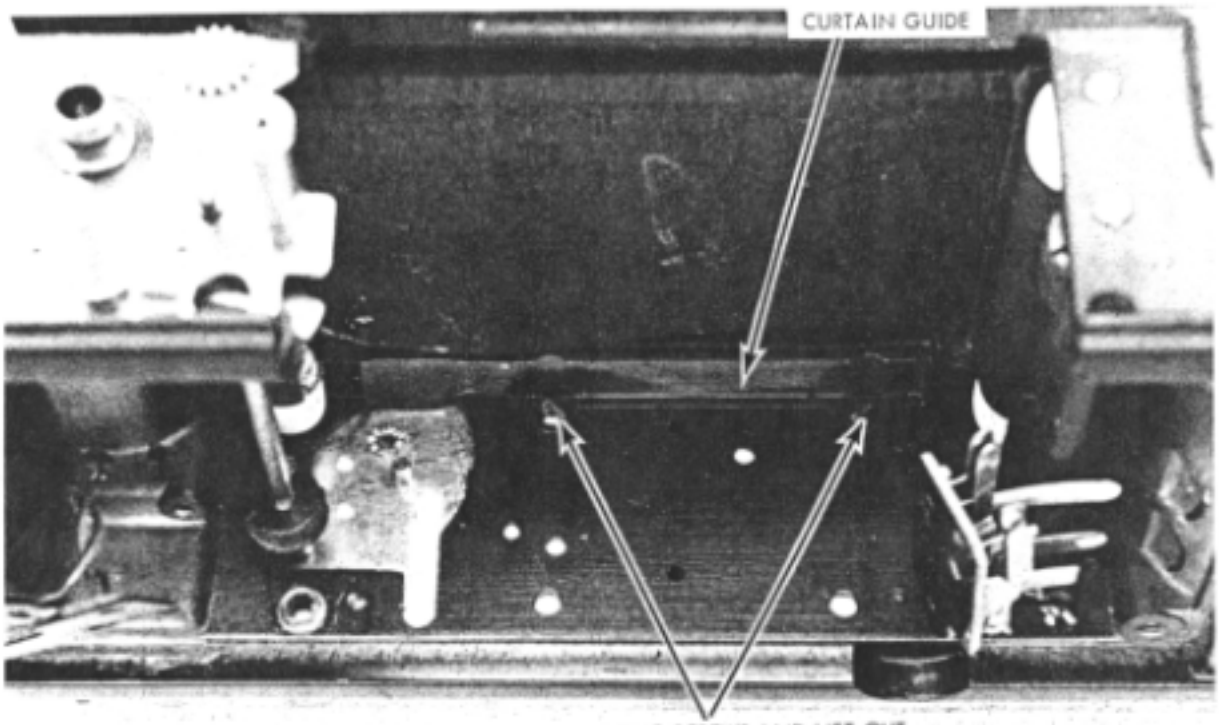
81


REMOVE SCREW HOLDING "X" CONTACT
CLOSING CAM (SEALED WITH RED LACQUER)

82

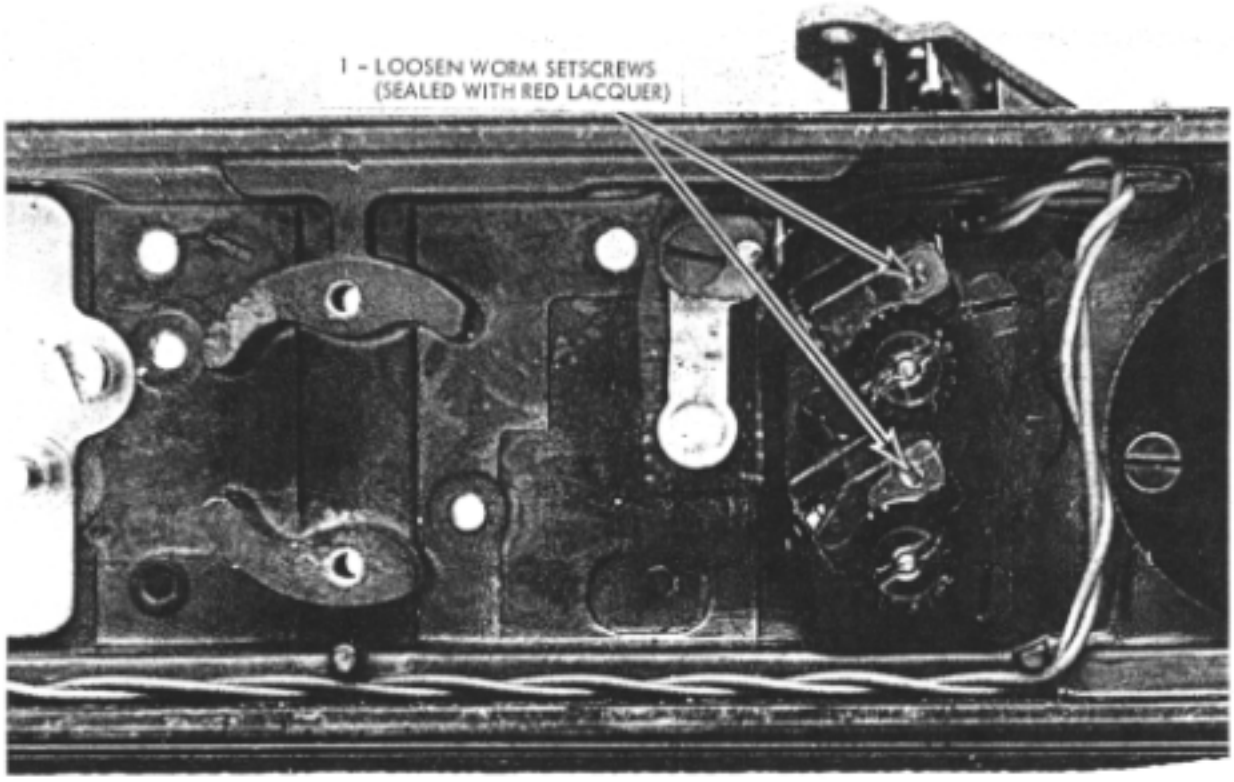

1 - REMOVE TWO SCREWS HOLDING OPENING CURTAIN WIND GEAR STOP PLATE (NOTE LOCK WASHER AND FLAT WASHER UNDER LONG-HEAD SCREW AND LOCK WASHER UNDER REGULAR SCREW)
2 - LIFT OFF OPENING CURTAIN WIND GEAR STOP PLATE
3 - LIFT OUT INTERMEDIATE REDUCTION GEAR
4 - LIFT OUT OPENING CURTAIN WIND GEAR ("X" CONTACT CLOSING CAM IS NOW LOOSE -- DURING REASSEMBLY, REPLACE "X" CONTACT CLOSING CAM WHILE INSTALLING OPENING CURTAIN WIND GEAR)


LIFT OFF CLOSING CURTAIN WIND GEAR
LATCHING AND COUPLING (TO OPENING CURTAIN WIND GEAR) LUG
RETARD DRIVING LUG

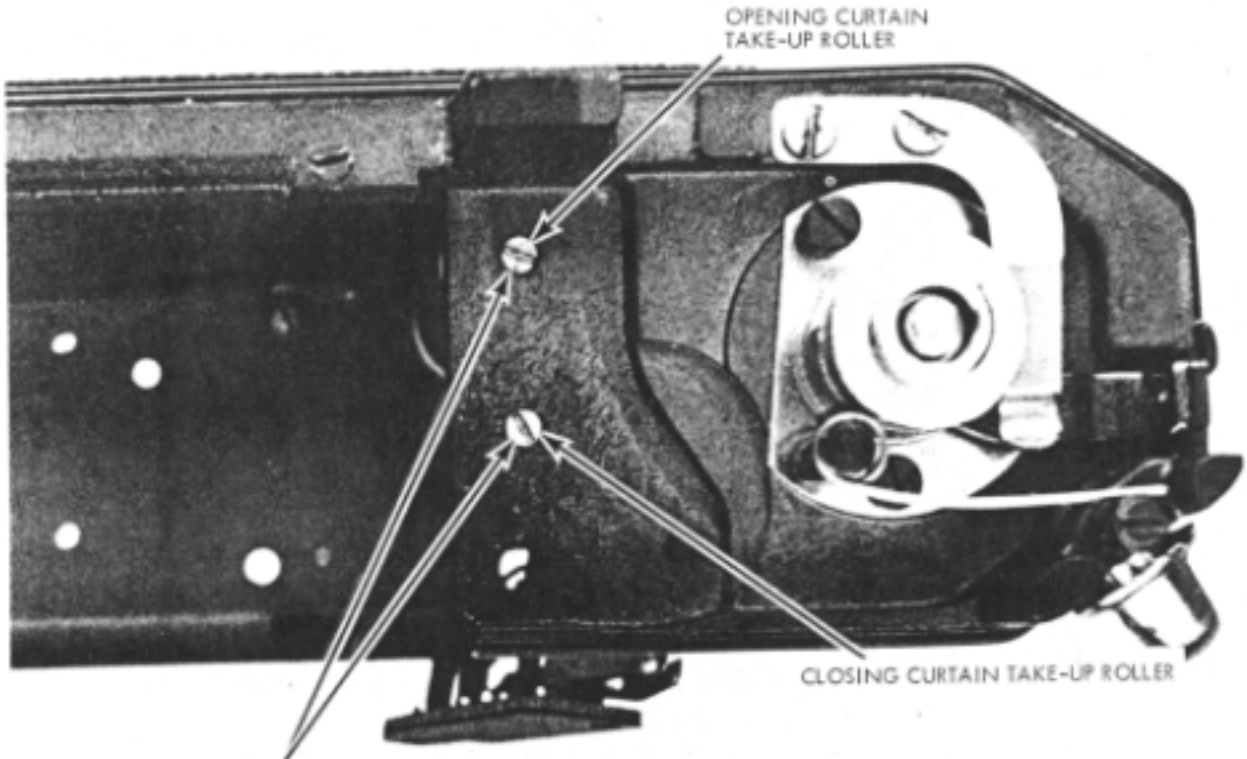


REMOVE TWO SCREWS AND LIFT OUT
CURTAIN GUIDE

1 - LOOSEN WORM SETSCREWS
(SEALED WITH RED LACQUER)



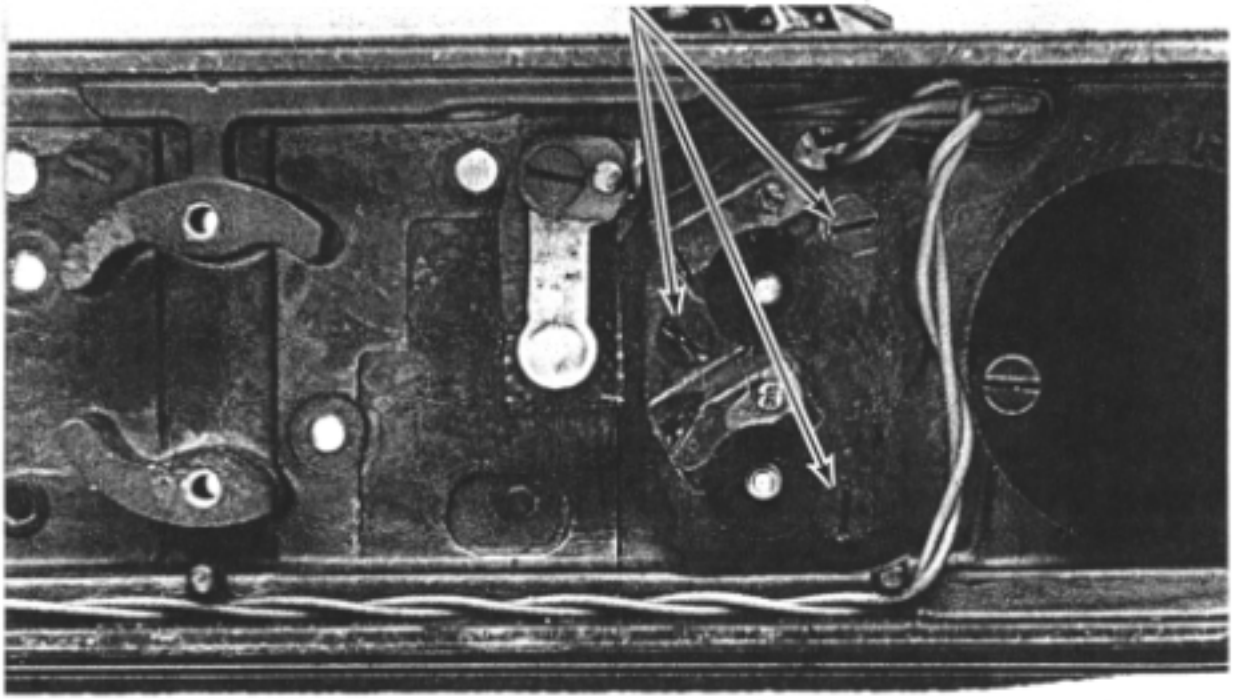
2 - TURN WORMS COUNTERCLOCKWISE TO LET OFF INITIAL TENSIONS — WORMS MAY BE REMOVED WHEN TOTAL TENSION IS RELEASED



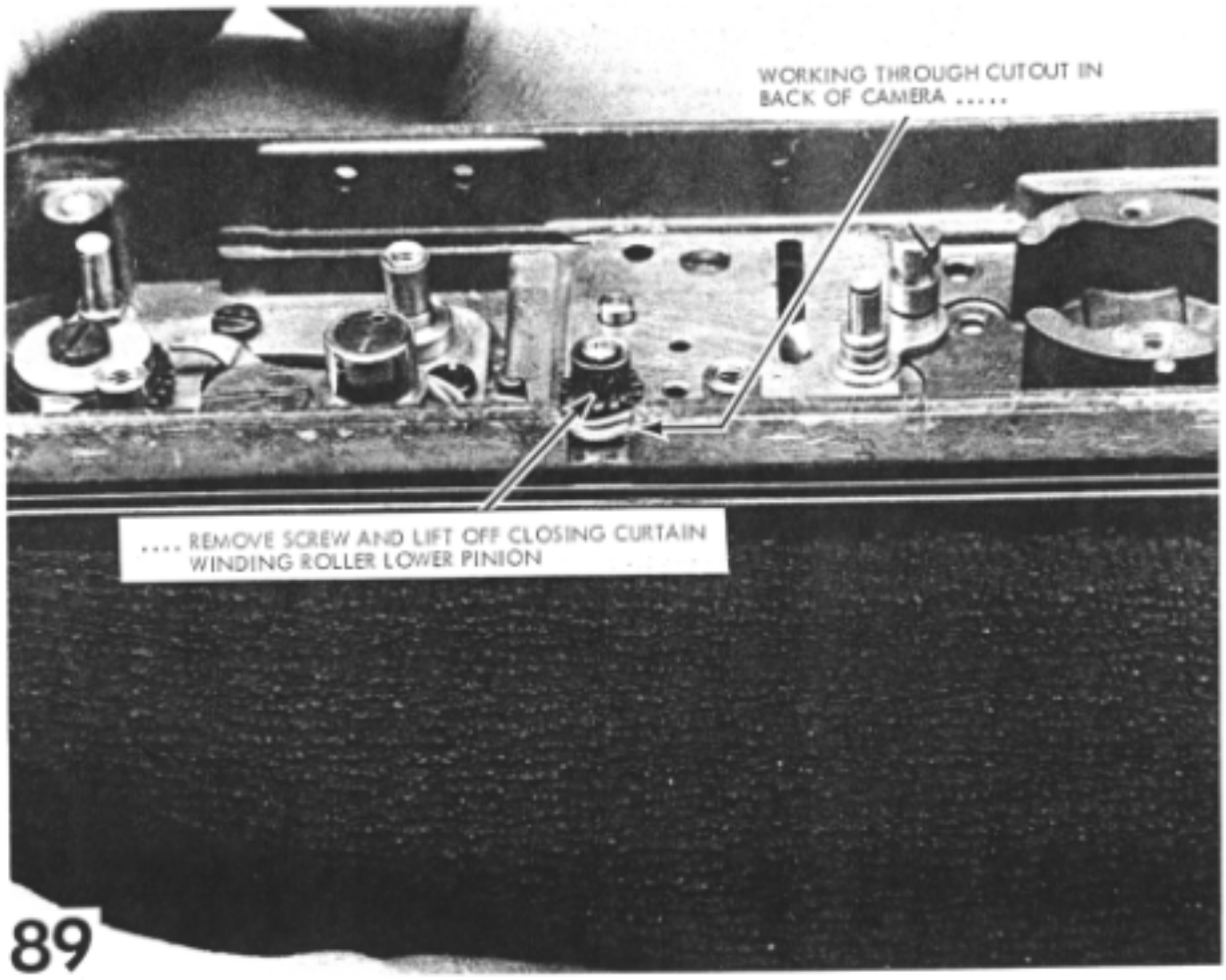
-- HOLD TAKE-UP ROLLERS CENTRAL SHAFTS STATIONARY AT TOP OF CAMERA

-- AND UNSCREW WORM GEARS (LEFT-HAND THREADS) FROM BOTTOM OF CAMERA

1 - REMOVE THREE SCREWS AND LIFT OFF TAKE-UP ROLLERS SUPPORT PLATE

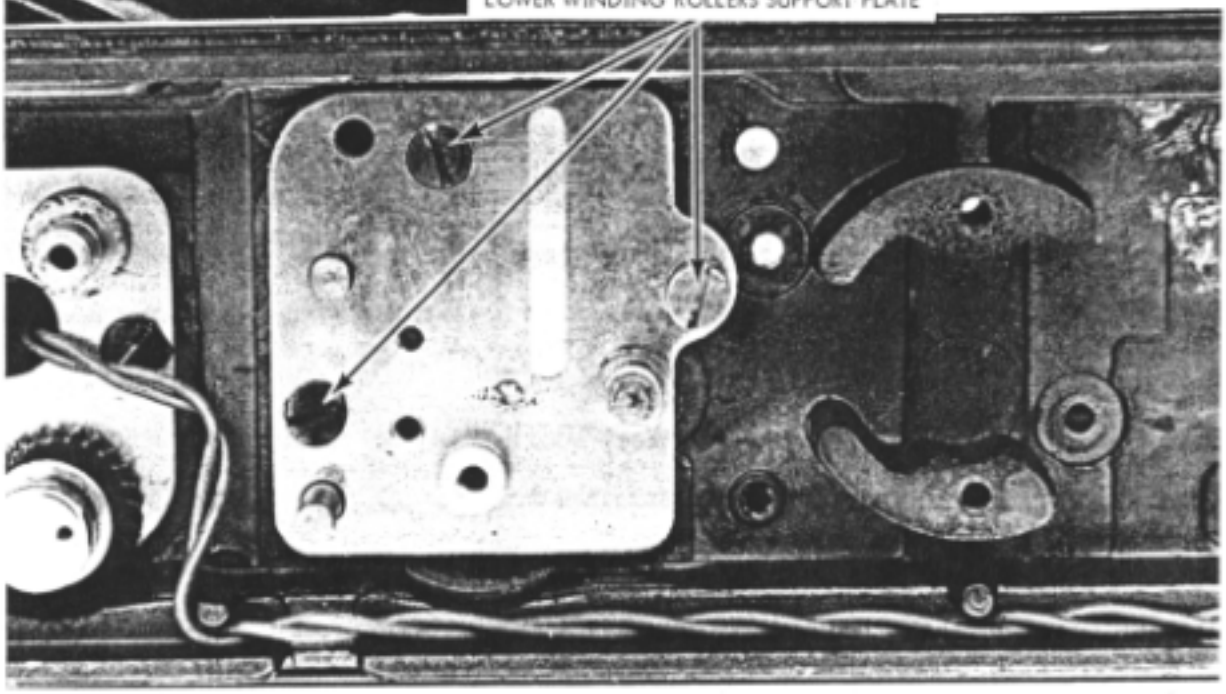


Lift out the take-up rollers -- note the spacers at the top ends of the take-up rollers and the loose teflon guide roller at the top end of the opening curtain take-up roller (see illustration 93 for the positions of the rollers and spacers)

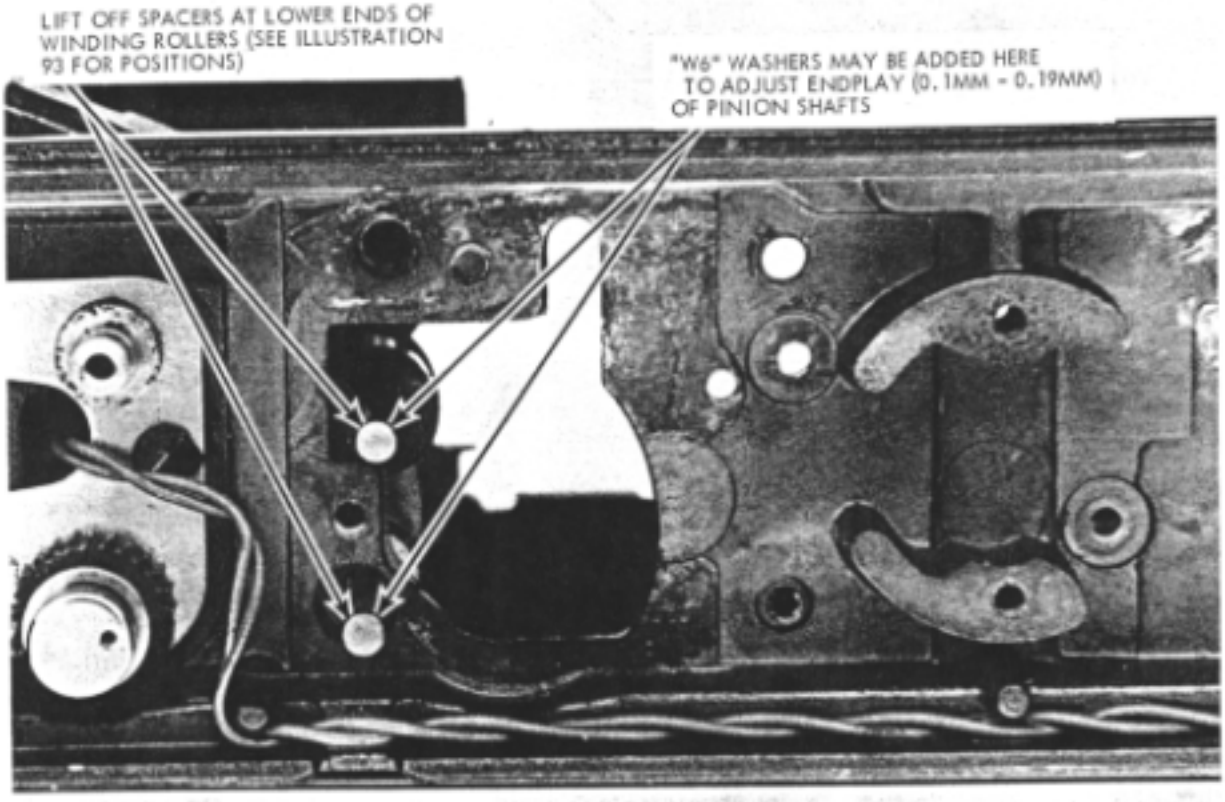

WORKING THROUGH CUTOUT IN BACK OF CAMERA .....
.... REMOVE SCREW AND LIFT OFF CLOSING CURTAIN WINDING ROLLER LOWER PINION

89

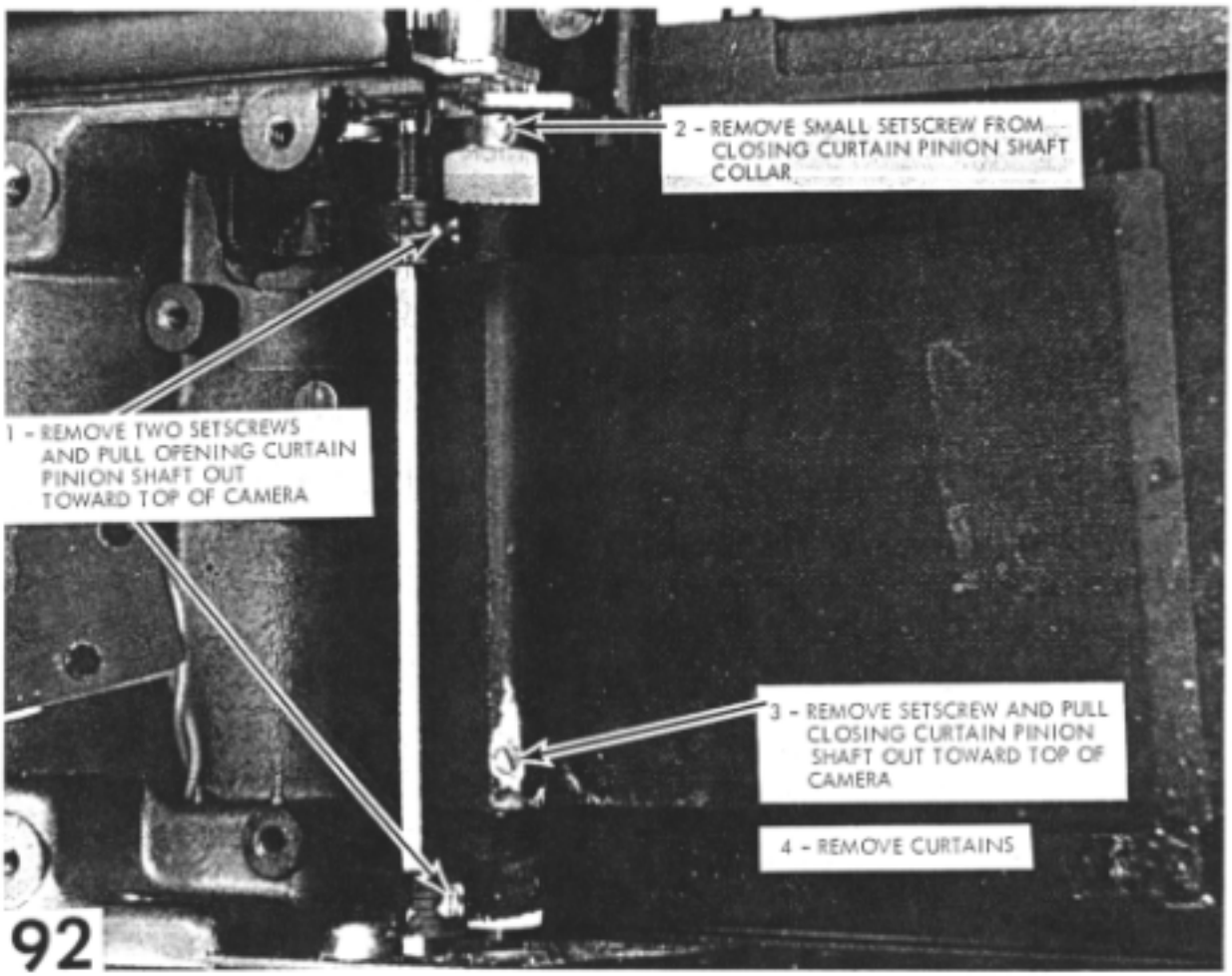
REMOVE THREE SCREWS AND LIFT OFF
LOWER WINDING ROLLERS SUPPORT PLATE

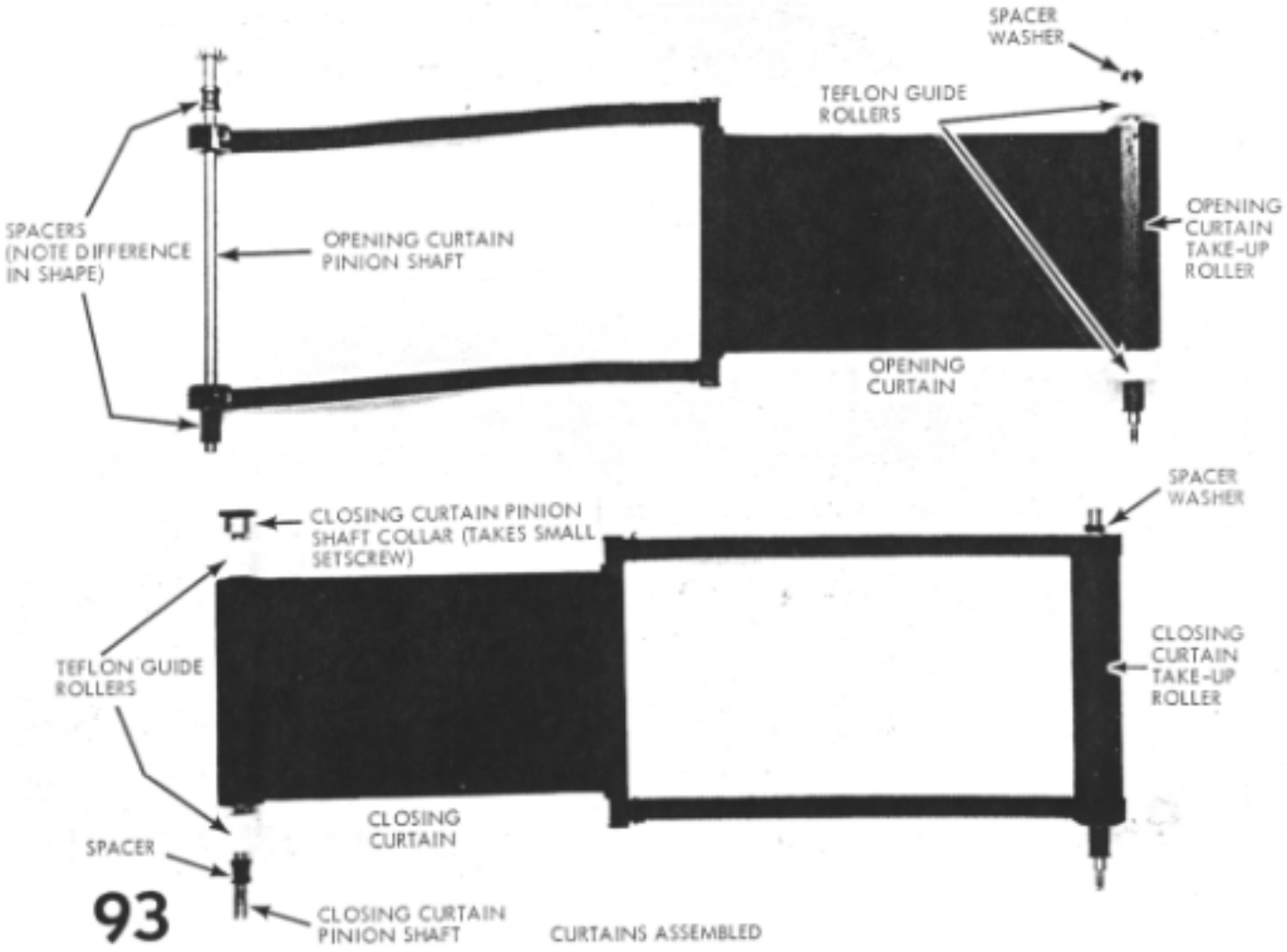


90


LIFT OFF SPACERS AT LOWER ENDS OF WINDING ROLLERS (SEE ILLUSTRATION 93 FOR POSITIONS)
"W6" WASHERS MAY BE ADDED HERE TO ADJUST ENDPLAY (0.1MM - 0.19MM) OF PINION SHAFTS

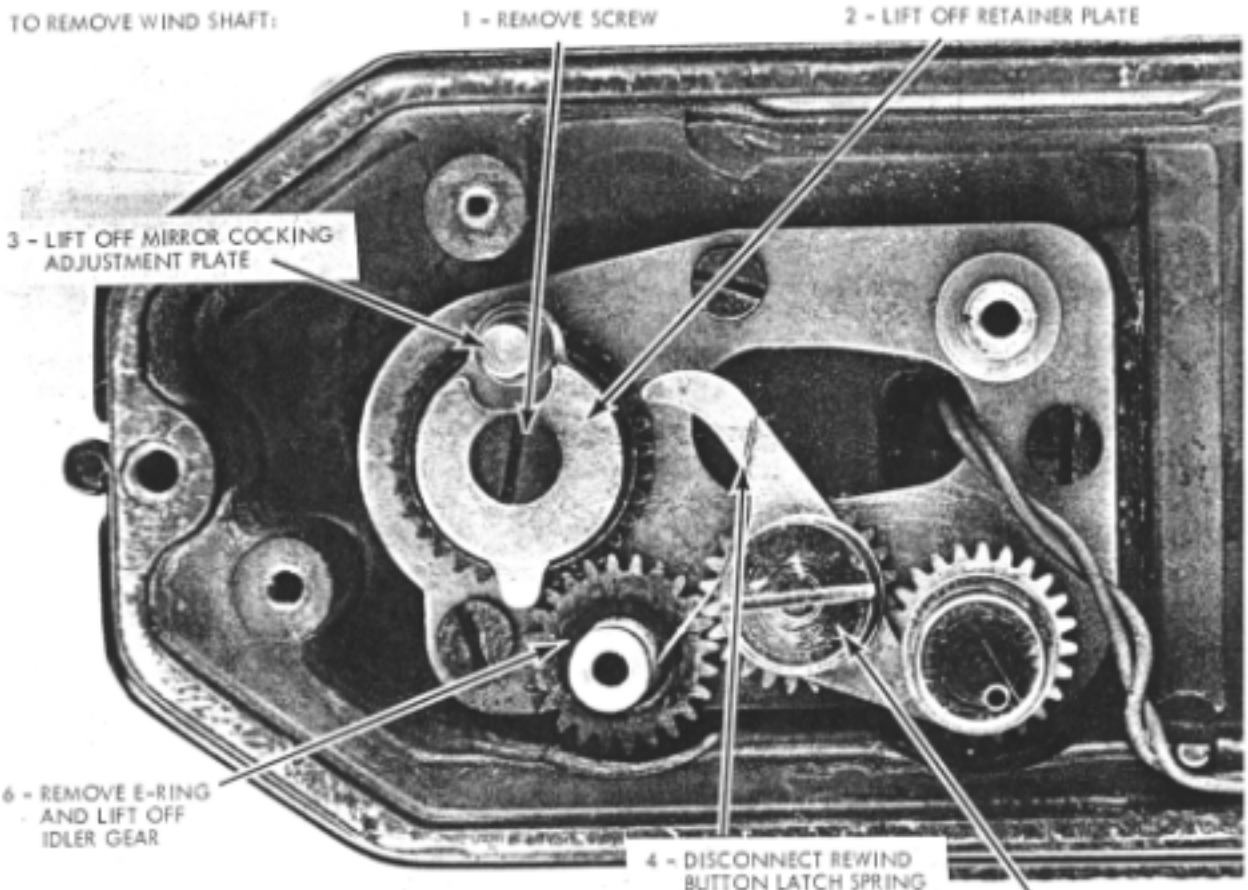
91

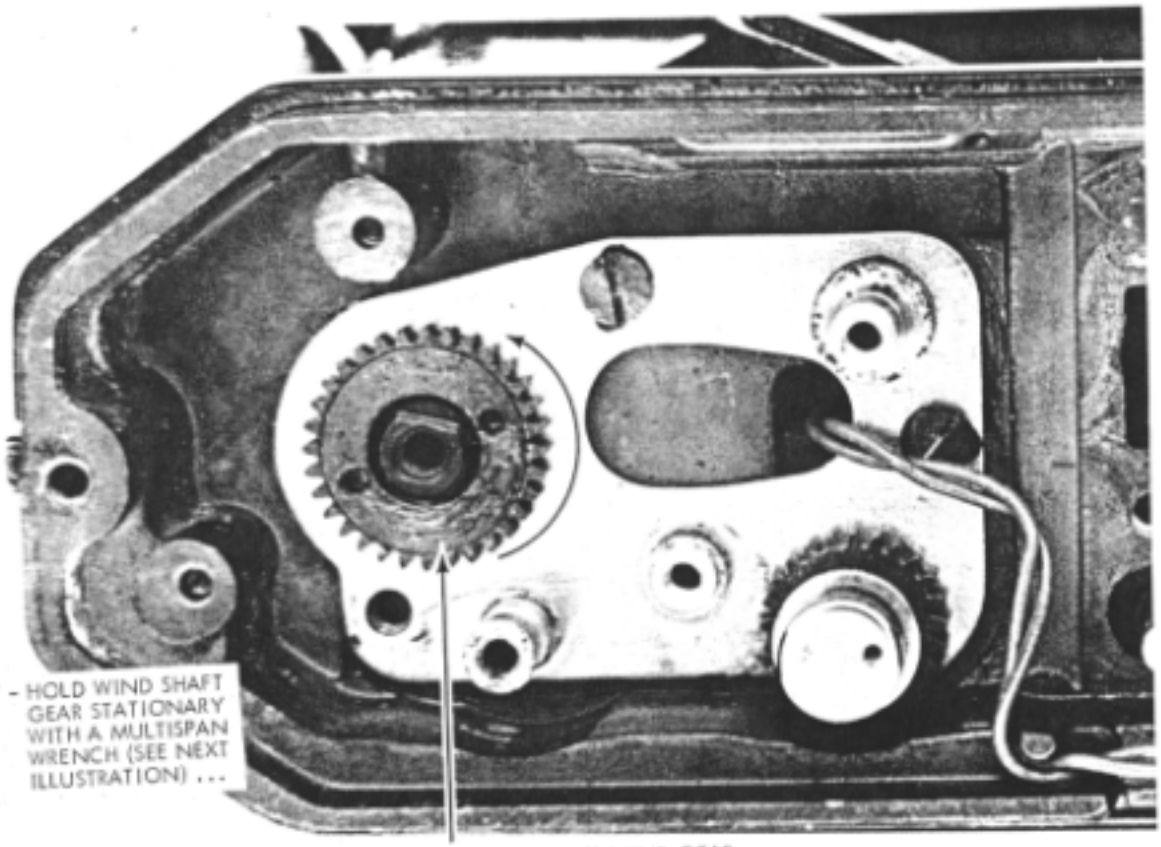

2 - REMOVE SMALL SETSCREW FROM CLOSING CURTAIN PINION SHAFT COLLAR
1 - REMOVE TWO SETSCREWS AND PULL OPENING CURTAIN PINION SHAFT OUT TOWARD TOP OF CAMERA
3 - REMOVE SETSCREW AND PULL CLOSING CURTAIN PINION SHAFT OUT TOWARD TOP OF CAMERA
4 - REMOVE CURTAINS
92



CURTAINS ASSEMBLED

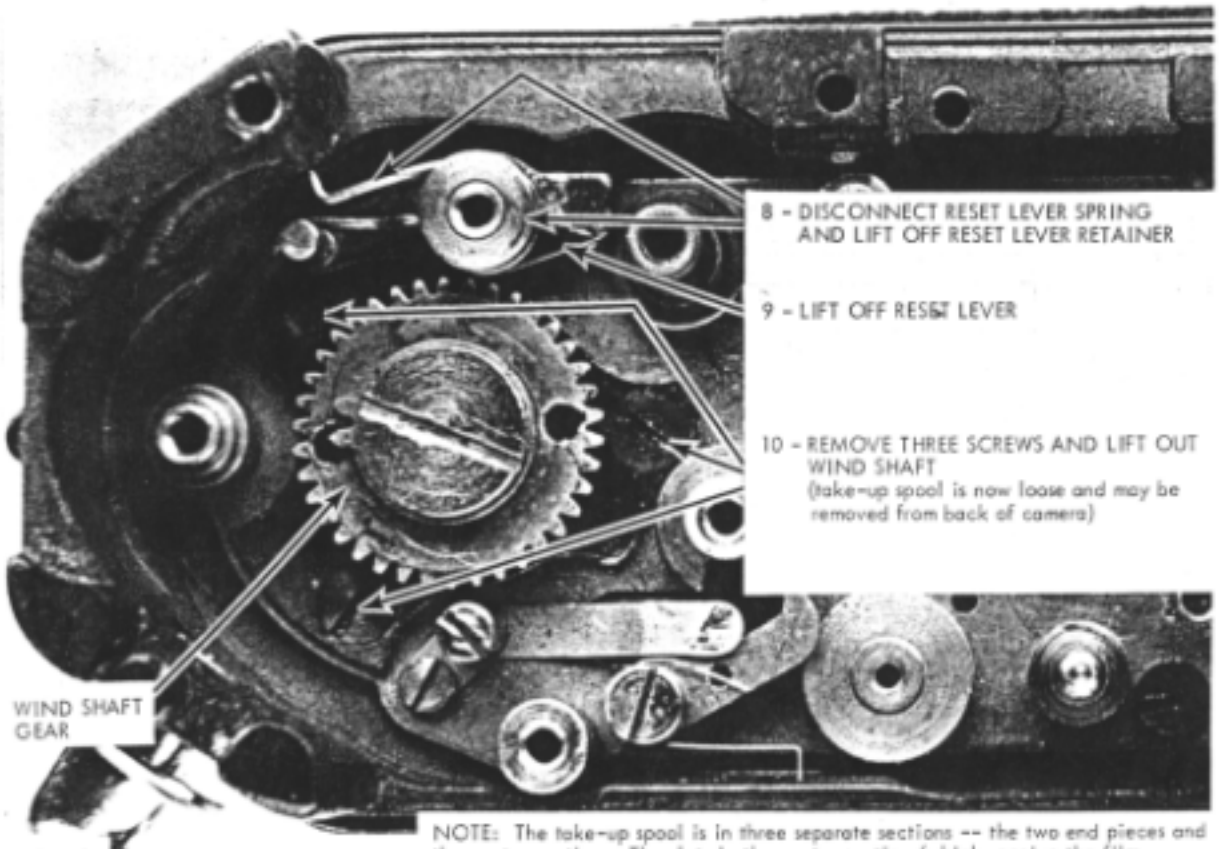
TO REMOVE WIND SHAFT:





7 - HOLD WIND SHAFT GEAR STATIONARY WITH A MULTISPAN WRENCH (SEE NEXT ILLUSTRATION) ...

... AND UNSCREW LOWER WIND GEAR WITH A SECOND MULTISPAN WRENCH

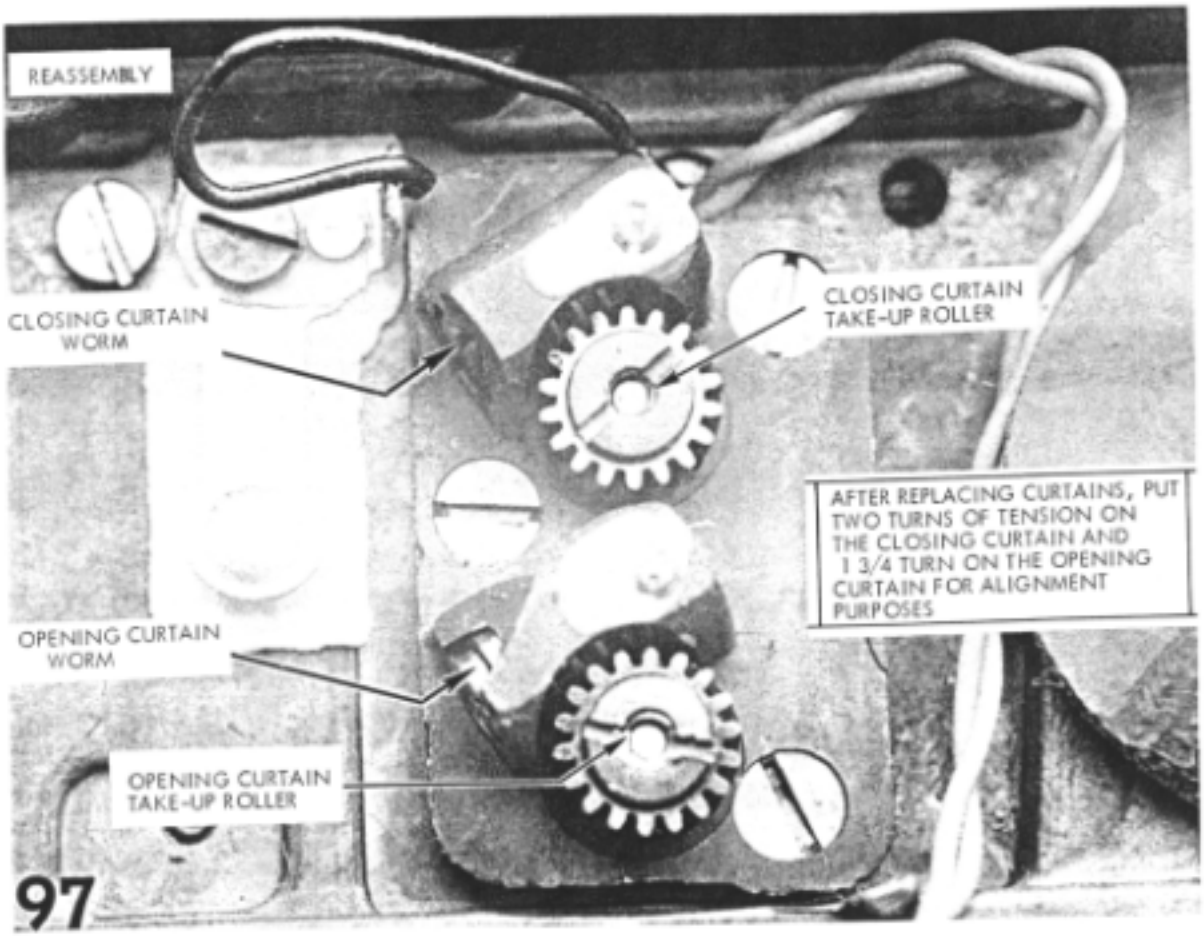


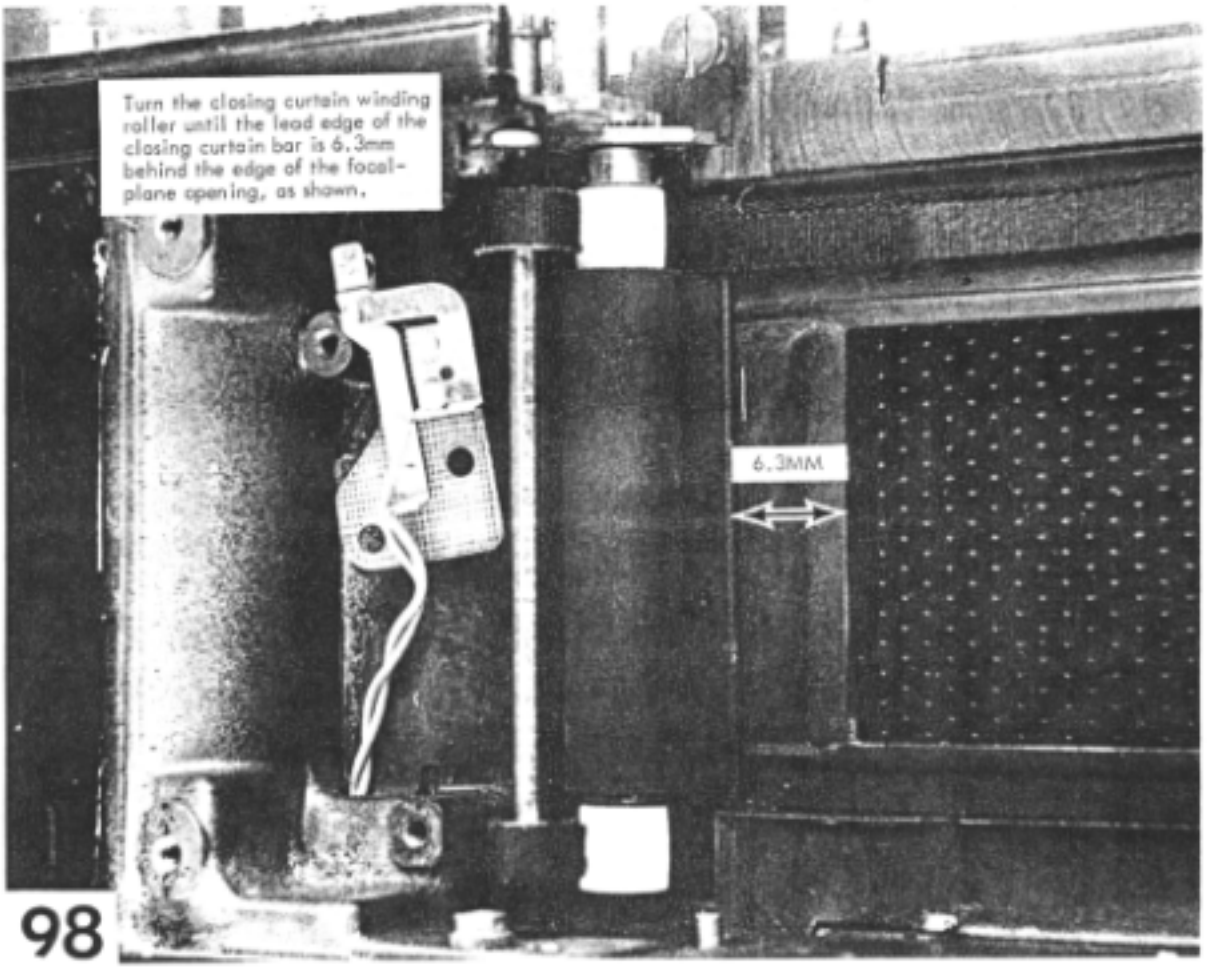
8 - DISCONNECT RESET LEVER SPRING AND LIFT OFF RESET LEVER RETAINER

9 - LIFT OFF RESET LEVER

10 - REMOVE THREE SCREWS AND LIFT OUT WIND SHAFT
(take-up spool is now loose and may be removed from back of camera)

NOTE: The take-up spool is in three separate sections -- the two end pieces and the center section. The slots in the center section (which receive the film leader) must be toward the bottom of the camera during reassembly. Also, note the positions on the spring steel and fiber washers on the end pieces.

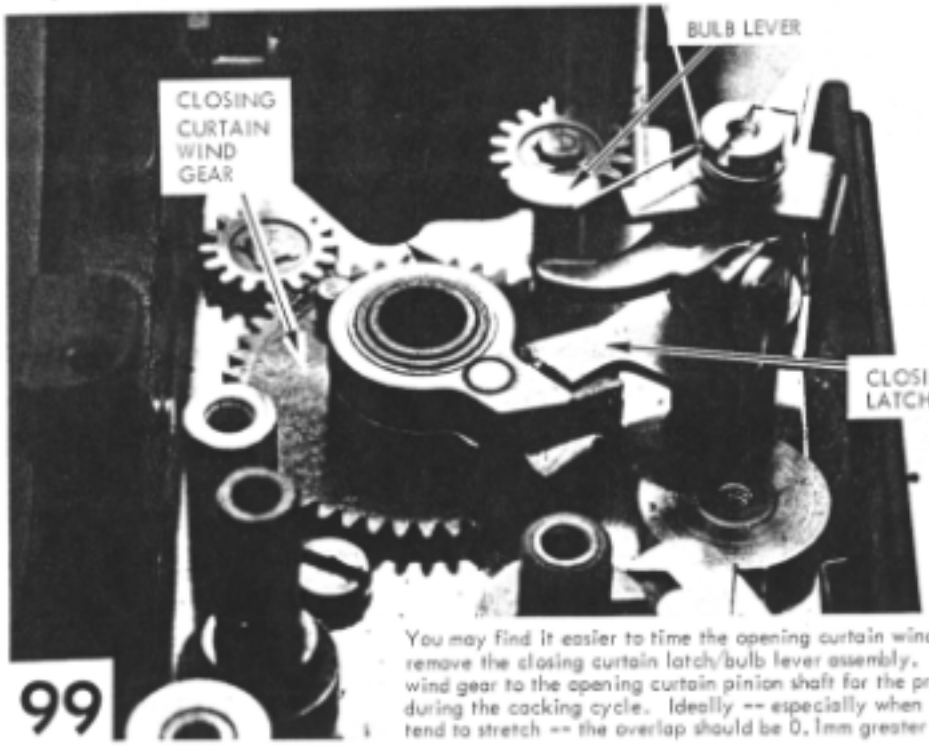

REASSEMBLY
CLOSING CURTAIN WORM
CLOSING CURTAIN TAKE-UP ROLLER
AFTER REPLACING CURTAINS, PUT TWO TURNS OF TENSION ON THE CLOSING CURTAIN AND 1 3/4 TURN ON THE OPENING CURTAIN FOR ALIGNMENT PURPOSES
OPENING CURTAIN WORM
OPENING CURTAIN TAKE-UP ROLLER
97


Turn the closing curtain winding roller until the lead edge of the closing curtain bar is 6.3mm behind the edge of the focal-plane opening, as shown.
6.3MM

98

Temporarily install the closing curtain latch/bulb lever assembly. When the closing curtain wind gear is held by the closing curtain latch/bulb lever assembly, the lead edge of the closing curtain should be aligned as shown in the previous illustration. Adjust the timing between the closing curtain wind gear and the closing curtain pinion shaft until you have the proper distance.

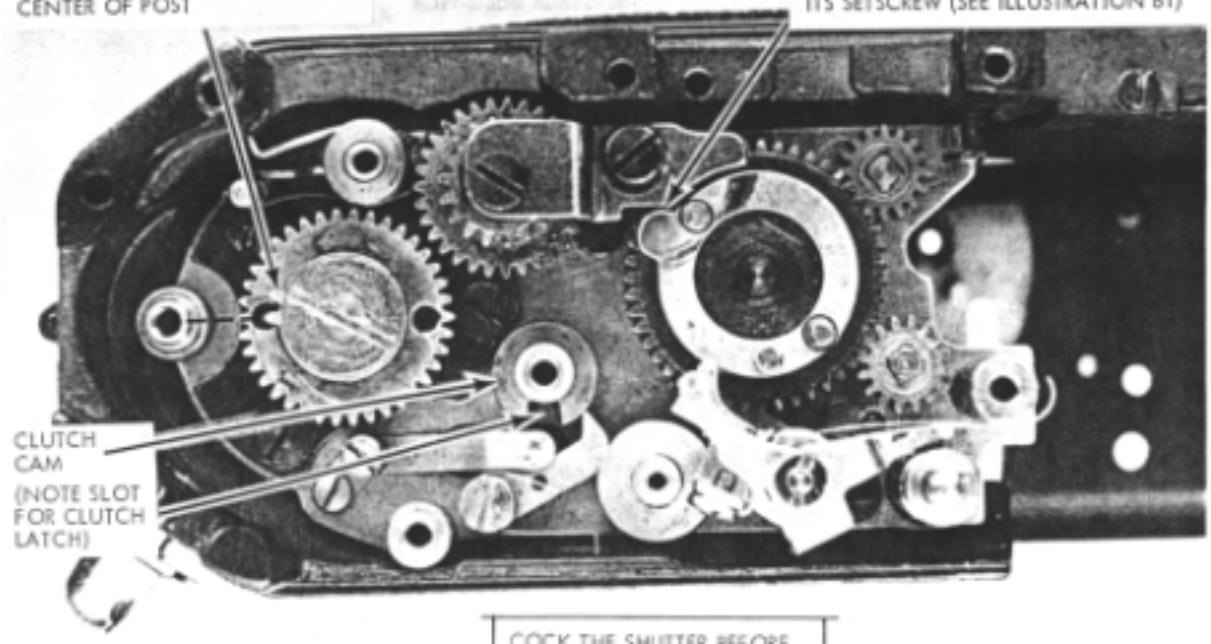
Unlike earlier Pentax models and the current H1A, the closing curtain should NOT creep into the aperture at the one-second setting.



You may find it easier to time the opening curtain wind gear if you once again remove the closing curtain latch/bulb lever assembly. Time the opening curtain wind gear to the opening curtain pinion shaft for the proper curtain overlap during the cocking cycle. Ideally -- especially when installing new curtains which tend to stretch -- the overlap should be 0.1mm greater than one bar.

TURN THE WIND SHAFT GEAR CLOCKWISE UNTIL THE COUNTER DIAL ACTUATOR POINTS TO THE CENTER OF POST

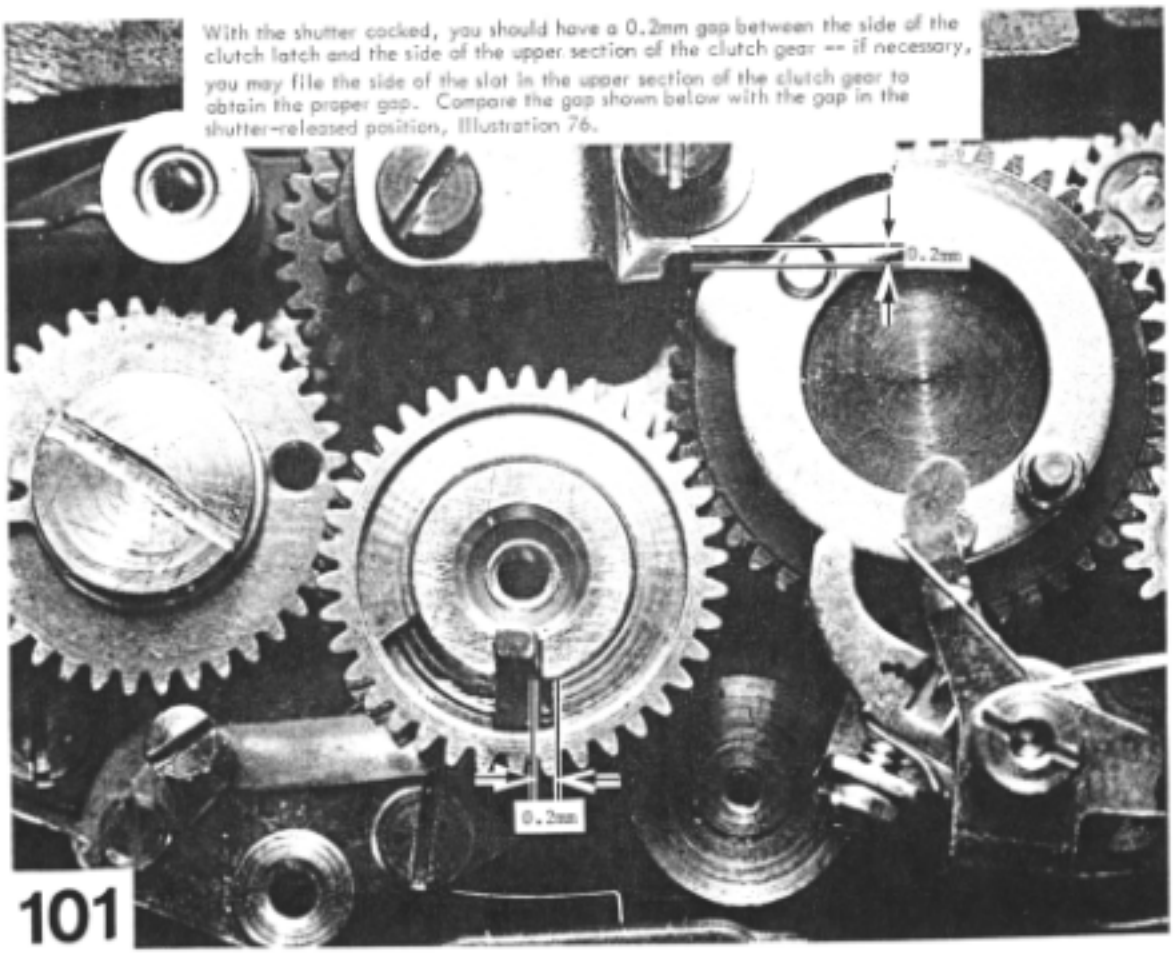
YOU SHOULD NOW HAVE A 0.2MM GAP BETWEEN THE OPENING CURTAIN WIND GEAR LUG AND THE STOP PLATE — ADJUST THE POSITION OF THE OPENING CURTAIN WIND GEAR STOP PLATE (IF NECESSARY) BY TURNING ITS SETSCREW (SEE ILLUSTRATION 61)



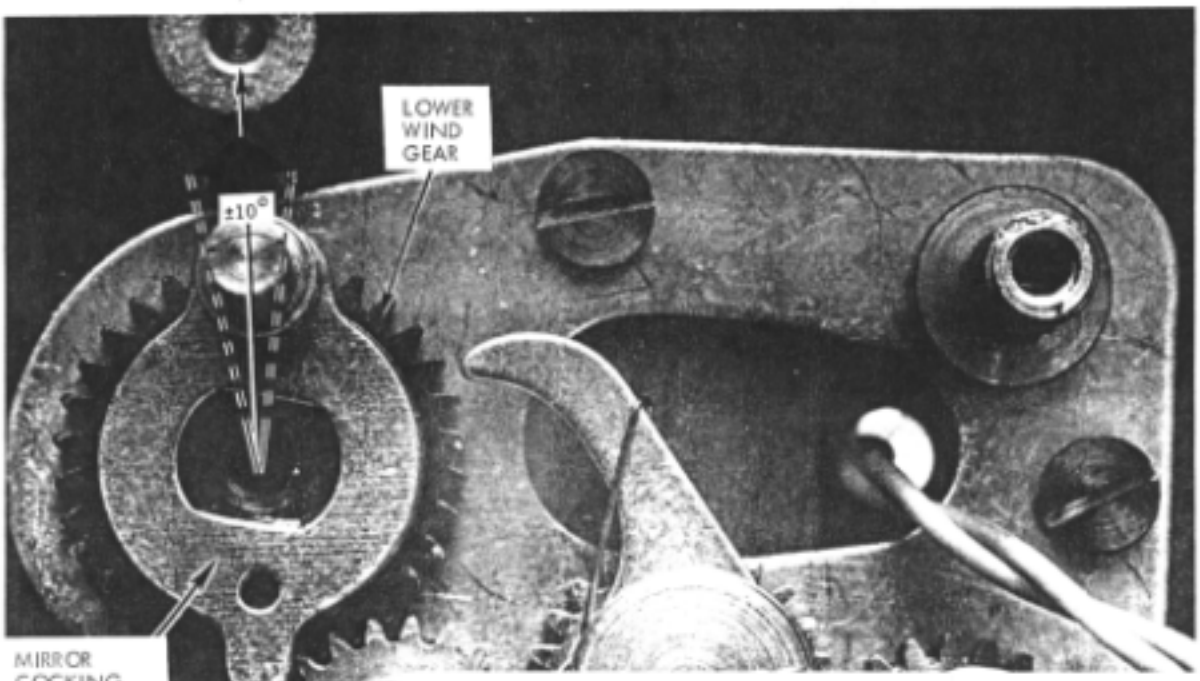
CLUTCH CAM (NOTE SLOT FOR CLUTCH LATCH)

COCK THE SHUTTER BEFORE REASSEMBLING CLUTCH GEAR

With the shutter cocked, you should have a 0.2mm gap between the side of the clutch latch and the side of the upper section of the clutch gear -- if necessary, you may file the side of the slot in the upper section of the clutch gear to obtain the proper gap. Compare the gap shown below with the gap in the shutter-released position, Illustration 76.



101

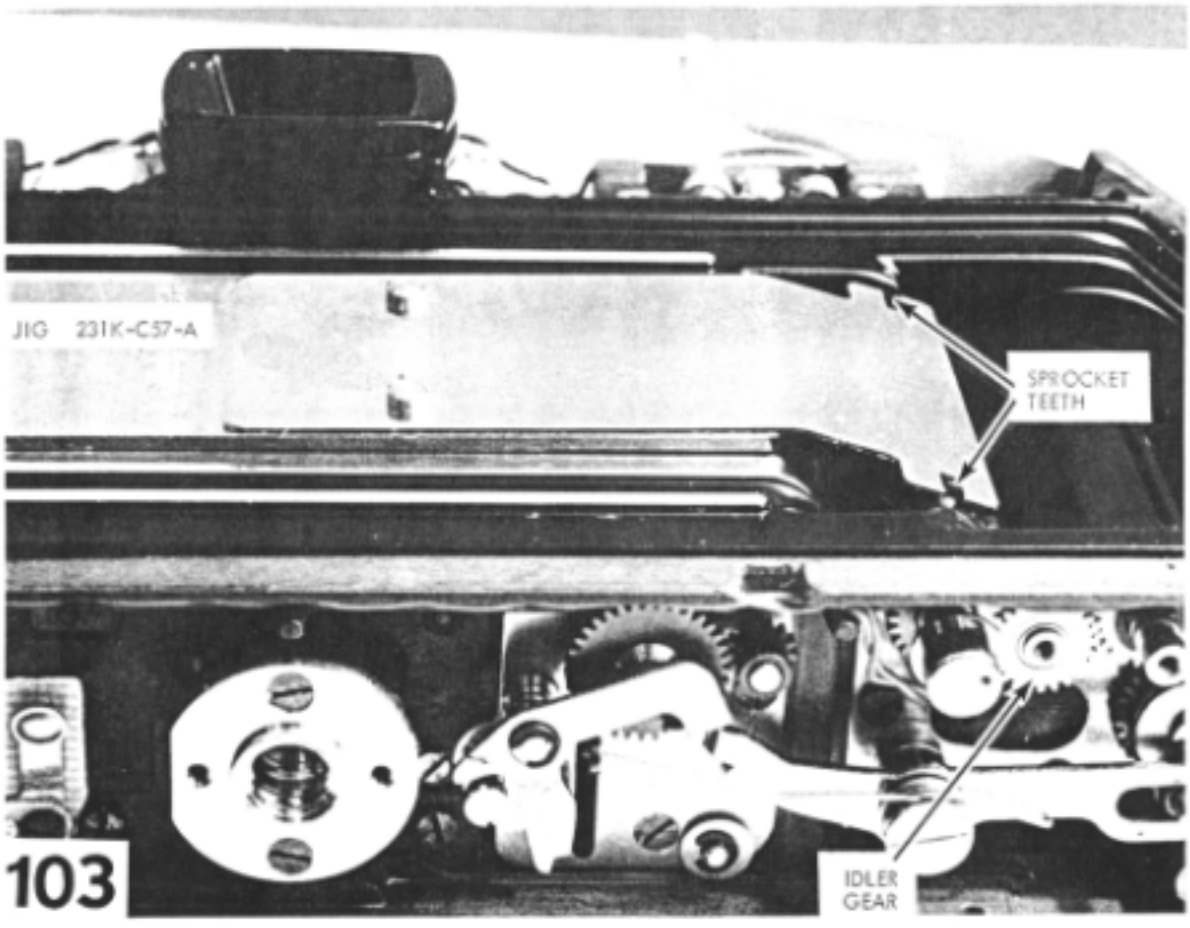


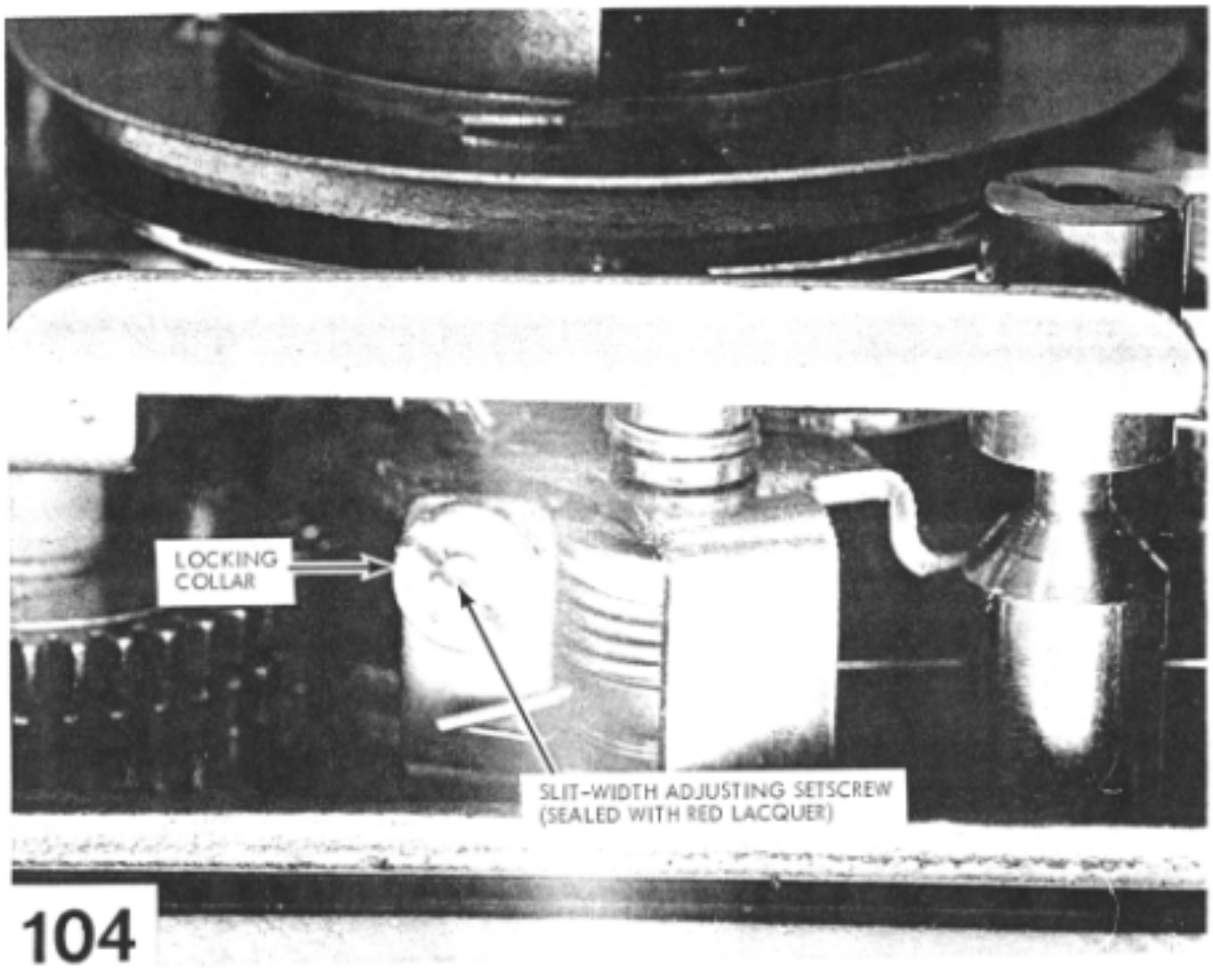
102

The pin on the mirror cocking adjustment plate should point to the post as shown. Note that you have a tolerance of 5° on either side of the center of the post -- however, it's preferable to have the pin pointing slightly to the right of the post center rather than to the left. If the pin does not align as shown, switch to one of the four other mirror cocking adjustment plates available.

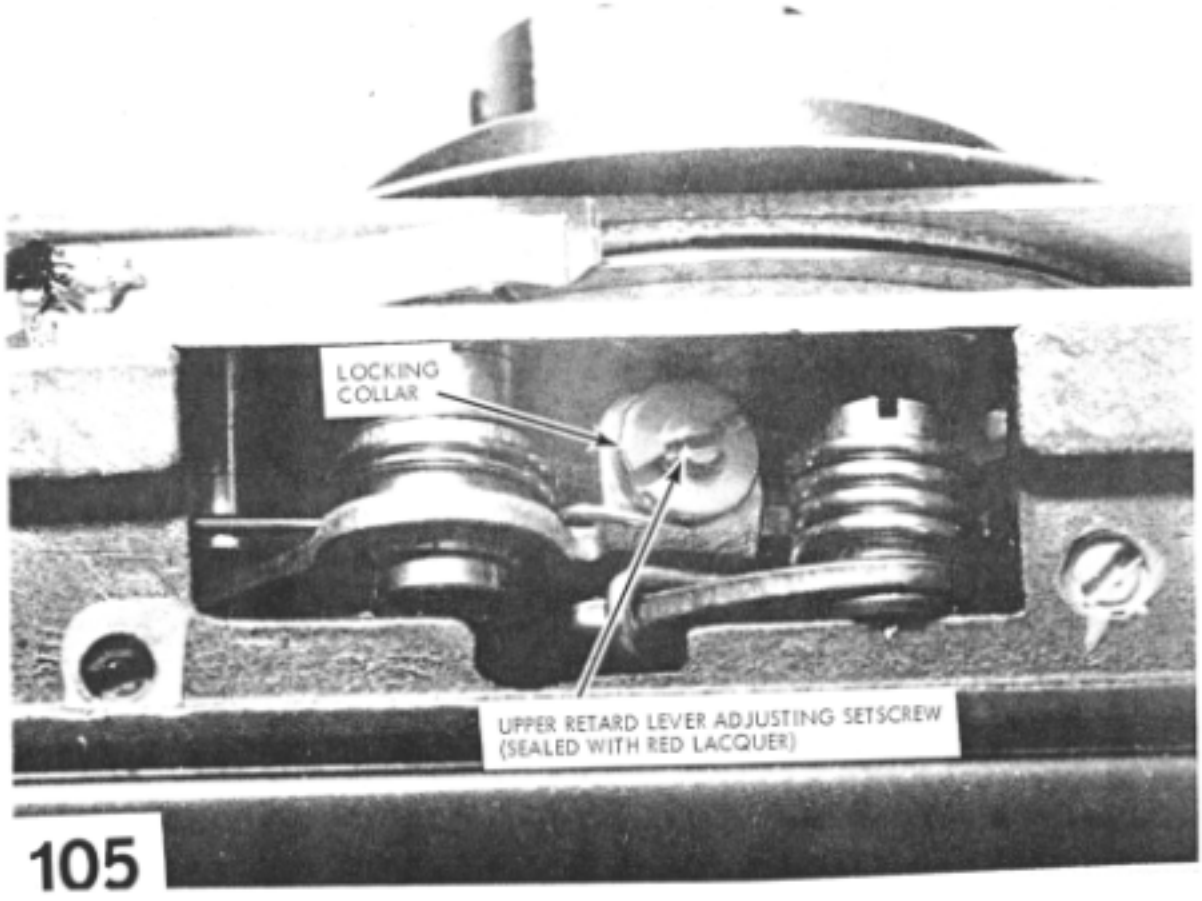
Standard 03212 | 03312 | 03412 | 03512 | 03612

Courtesy of Honeywell


JIG 231K-C37-A
SPROCKET TEETH
IDLER GEAR
103


LOCKING
COLLAR
SLIT-WIDTH ADJUSTING SETSCREW
(SEALED WITH RED LACQUER)

104


LOCKING
COLLAR
UPPER RETARD LEVER ADJUSTING SETSCREW
(SEALED WITH RED LACQUER)

105