CANON F-1

Similar models: other pre-A Canon SLRs

Battery: 1 ea. PX625 (positive ground)

Fig. 1 — top covers removed

Fig. 2 — bottom covers removed

Fig. 3 — back view, cover plates removed

Fig. 4 — top, speed bridge and wind mechanism removed

Fig. 5 — top, speeds escapement removed

Fig. 6 — top, rewind side

Fig. 7 — front view, mirror box removed

Fig. 8 — mirror box

Fig. 9 — pointer adjustment

Fig. 10 — meter cord

ADJUSTMENT LOCATIONS:

Battery test	A
Meter calibration	B
Warning lever	C
Finder focus (shim)	D
Alignment, speed indicator	E
Overtravel, mirror-charge lever	F
Release stroke	G
Travel time, second curtain	H
Travel time, first curtain	I
Meter linkage	J
1/8 second	K
Second-curtain latch	L
1/1000 second	M
1/125 second	N
1 second	O
1/2000 second	P
First-curtain brake	Q
Following needle (pointer)	R

ADJUSTMENT VALUES:

Curtain-travel time:
12.5 - 13.5ms (full frame)
10.8-11.3ms (32mm distance)

Flange-focal distance:
42.14mm (flange to pressure-plate rails)
41.9mm (flange to film-guide rails)

Initial tension, speed-indicator sping: 2 - 2.5 turns

Meter linkage: Set 1/125 second, ASA 100. The scribe line on top of the meter housing should align with the edge of the plate above the meter. Adjust by loosening screw (J in Fig. 3) and changing the position of the coupling rod.

Warning lever: Set 1/2 second, ASA 100. The red marker on the warning lever should completely cover the information prism. At 1/4 second, the red marker should completely uncover the prism. Adjust by loosening screw (C in Fig. 1) and shifting the position of the warning lever.

Battery test: Set 1/2000 second, ASA 100. With 1.3V applied to the battery compartment, the needle should just enter the lower corner of the battery-test square.

Following needle: Install the f/1.8, 50mm lens. Align the following needle as shown in Fig. 9 by shifting its position on the following lever, Fig. 6. Apply cement to the following needle to lock its adjusted position.

Meter accuracy: +0.5 f/stop

Check at f/5.6, ASA 100. The needle should center in the circle of the following needle at the following shutter speeds and light levels:

EV9	1/15 second
EV12	1/125 second
EV15	1/1000 second

Adjust the total response with eccentric B, Fig. 1. For linearity adjustments—or if the eccentric does not provide enough adjustment—you can change the values of the fixed calibration resistors. Change the resistor that has the green wire as a mid-range (EV 12) adjustment, and change the other resistor as a high-light (EV 15) adjustment. Then use the eccentric as a low-light adjustment. However, Canon recommends replacing the complete meter assembly (Y00-1266) for calibration. Changing resistance values or the hairspring position can destroy the CATS calibration.

CATS check: Connect a micro-ammeter and a 4 megohm variable resistor in series with a 1.3V power supply between the CATS contact, Fig. 1, and ground. Set f/16, ASA 100, 1/60 second. Adjust the 4M resistor until the needle centers in the following needle. The microammeter should now read 84 + 3 microamps. If not, replace the meter assembly.

Overtravel, mirror-charge lever: Adjust if the shutter releases but the mirror does not rise. Cock the

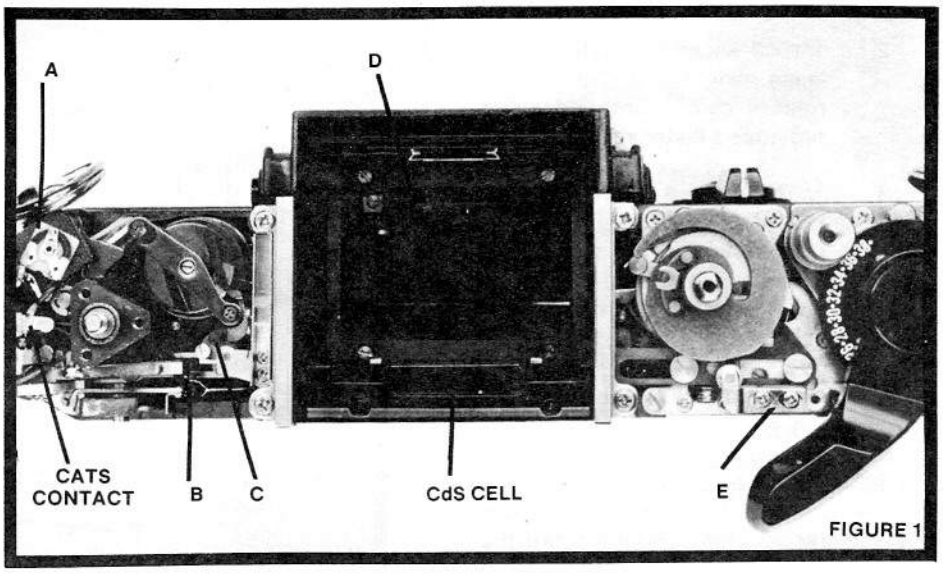

FIGURE 1

mechanism while checking the overtravel between the mirror-charge lever and its latch, Fig. 2 — there should be at least 0.5mm overtravel before the mirror-charge lever drops back into engagement with the latch. If not, loosen the screws and shift the position of the mirror-charge lever.

Release stroke: Adjust if it takes too much or too little pressure on the release button to release the mirror — or if the mirror releases as soon as you push the release button when the self timer is cocked. The diaphragm-release lever should disengage when the release button moves down 1.5mm. Adjust by loosening the screws and shifting the position of the diaphragm-release lever, Fig. 2.

Sprocket timing: Cock the shutter. Then rotate the sprocket toward the rewind side to take up the backlash. The sprocket teeth should now point directly toward the back of the camera. Adjust before replacing the shutter charge gear, Fig. 2.

Shutter speeds:

1. 1/125 second — turn the eccentric under the high-speed cam follower, Fig. 4. The adjustment requires a special tool. However, you can sometimes turn the eccentric by rotating the cam-follower screw in the screw-tightening direction. Remove the sync-cam follower at the top of the speed bridge; you can then reach the screw-head through a cutout. Caution: if the eccentric is very tight, turning it with the screw could break the screw.

2. 1/1000 second—rotate the release cam, Fig. 4. Turning the release cam counterclockwise provides a faster shutter speed.

3. 1/2000 second — form the slit in high-speed cam, Fig. 4. Making the gap wider provides a faster speed. Caution: avoid overcorrecting — the high-speed cam may break.

4. 1 second — turn the eccentric, Fig. 4.

5. 1/8 second — loosen the screw on top of the slow-speed lever (accessible through a hole in the

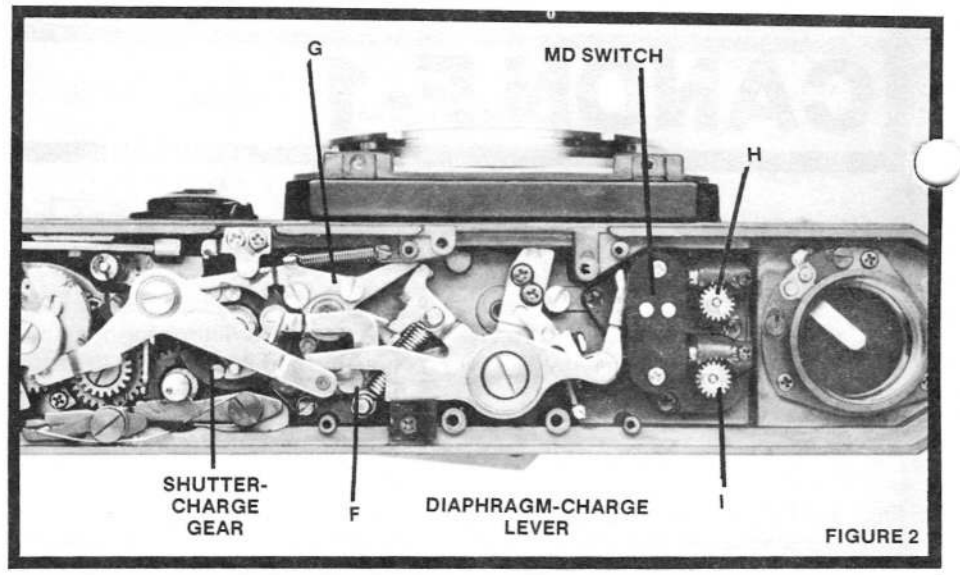

FIGURE 2

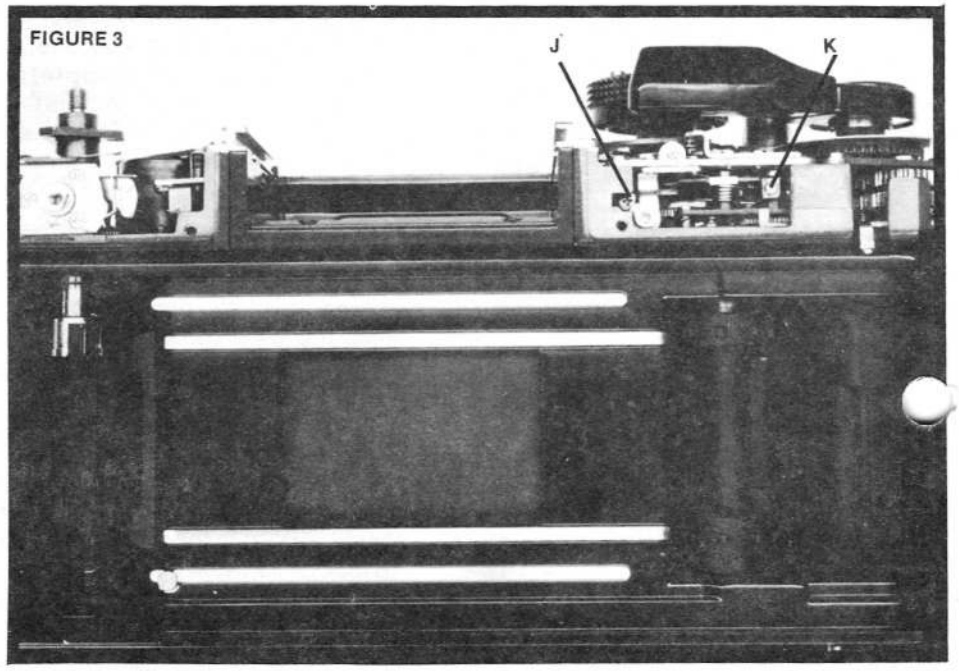

FIGURE 3

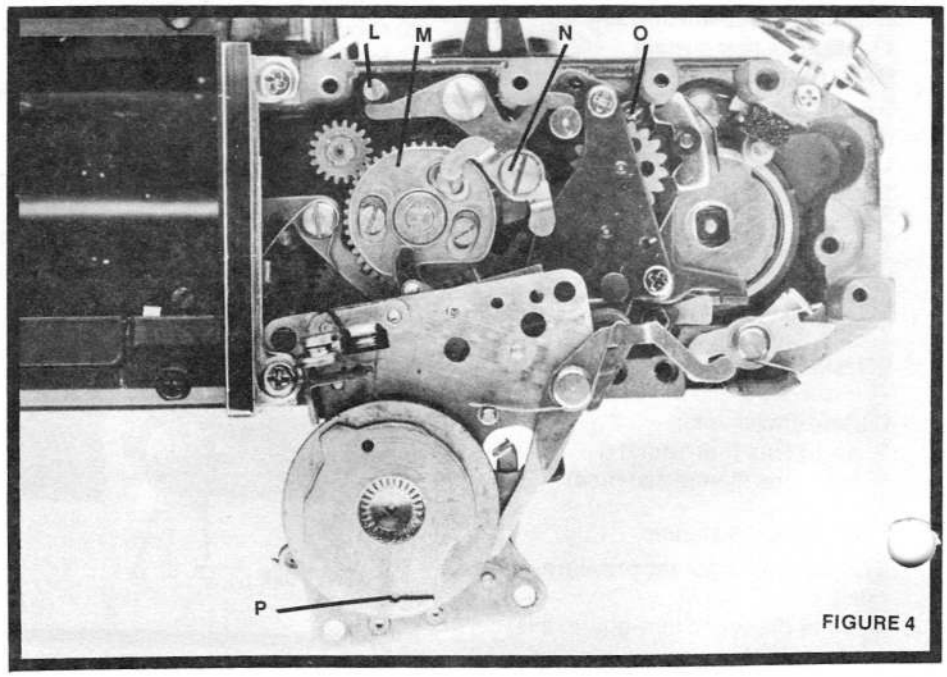

FIGURE 4

speed bridge) and turn the setscrew, Fig. 3. Turning in the setscrew provides a faster speed.

DISASSEMBLY HIGHLIGHTS:

Control positions: unimportant

Precautions:

1. In the early models, remove the speed knob by first peeling off the leatherette disc at the top of the center screw; you can then reach the screw. In current models, a metal cap covers the center screw. It's difficult to snap off the cap without cosmetic damage. Unless you can unscrew the cap and the screw as one assembly, you may have to replace the metal cap.

2. The two guide rails for the pentaprism have sliding adjustments. Remove only one of the rails at a time. You can then use the pentaprism to adjust the position of the rail you removed. Setting the positions of both rails requires a special tool.

Sequence:

1. battery-box cover and bottom cover

2. 2 cover plates at bottom of camera (early versions have loose spacers under the cover plates)

3. pentaprism assembly (depress latches and slide out toward back)

4. focusing screen (lift rear edge to remove)

5. front cover plate

6. rewind-side top cover: rewind knob, accessory shoe, loosen locking setscrew for flashcord terminal through cutout in cover (not in early models), unscrew flashcord terminal, meter-switch knob

7. wind-side top cover: wind lever, speed knob, release-button locking collar (loosen 3 setscrews, ball detent and compression spring will be loose)

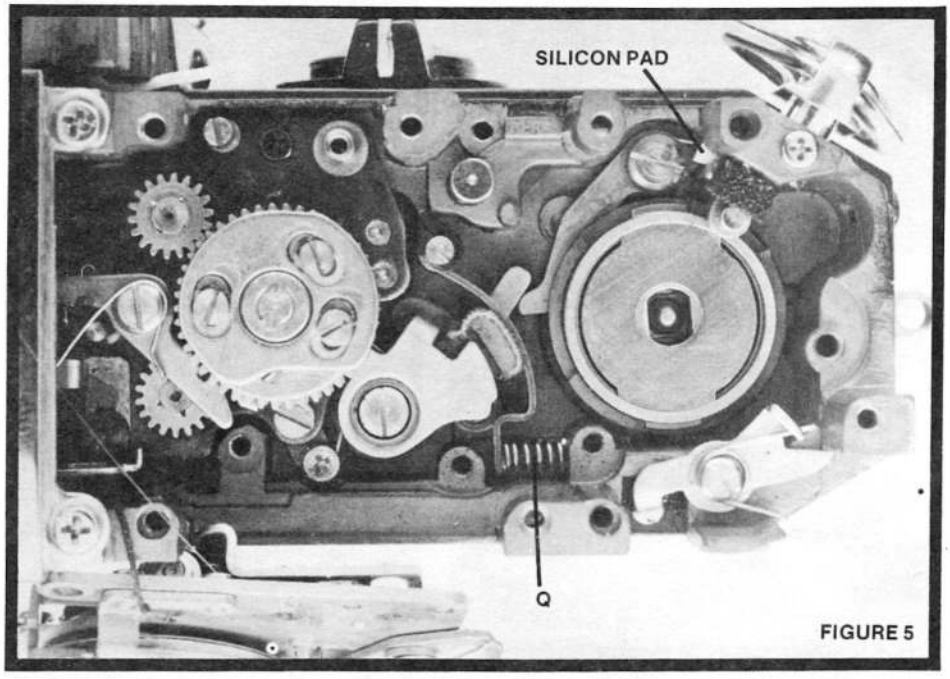

FIGURE 5

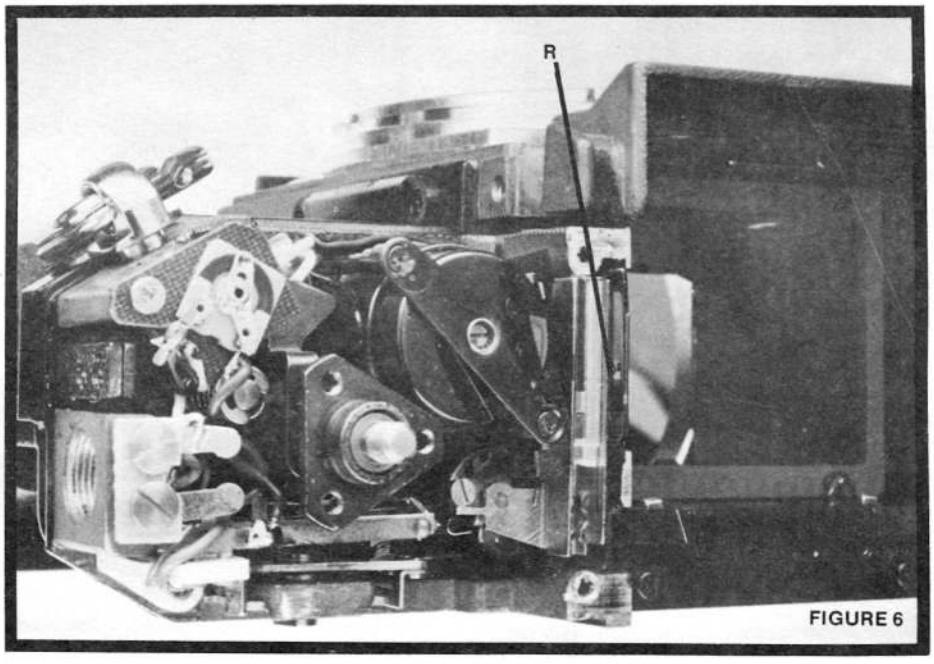

FIGURE 6

Sequence to remove front-plate /mirror-box assembly:

1. unsolder white wire from X-sync contact, wind side

2. unsolder white wire from hot-shoe contact, rewind side

3. rewind-side finder-guide rail

4. information prism

5. following needle from end of following lever, Fig. 6 (a spring clip on the following lever holds the following needle; also, the following needle is cemented to the following lever to hold the adjusted position)

6. tripod socket

7. diaphragm lever (the black extension arm that contacts the lens diaphragm, held by 2 screws at the bottom of the camera)

8. front leatherette, 2 sections (not necessary to remove self-timer lever)

9. 6 front-plate screws

13. front-plate/mirror-box assembly (self-timer coupler will be loose)

Reassembly highlights:

1. Use the self-timer coupler to cock the self timer. Also move the self-timer lever on the front plate to the cocked position.

2. Install the front-plate assembly with the shutter and the mirror in their released positions.

3. Before fully seating the front plate, move the release lever on the mirror box to the back of the first-curtain latch.

4. Cock and release the shutter. The self timer should pick up and turn the self-timer lever, allowing the front plate to seat fully.

5. Replace and adjust the following needle.

Sequence to lift aside speed bridge:

Note: You can lift aside the speed bridge without disconnecting the indicator cord.

1. set to bulb

2. remove screw connecting meter rod to cam follower, Fig. 3

3. loosen screws holding adjustment plate (E in Fig. 1)

4. shift the adjustment plate to reach the speed-bridge screw

5. 4 speed-bridge screws

6. move pallet lever for clearance and lift aside speed bridge, Fig. 4

Reassembly highlights:

1. As you seat the speed bridge, push aside the high-speed cam follower (from the front) and the slow-speed cam follower (from the back) so that they ride against the outer edges of their respective cams.

2. Readjust the speed-indicator alignment and the meter linkage.

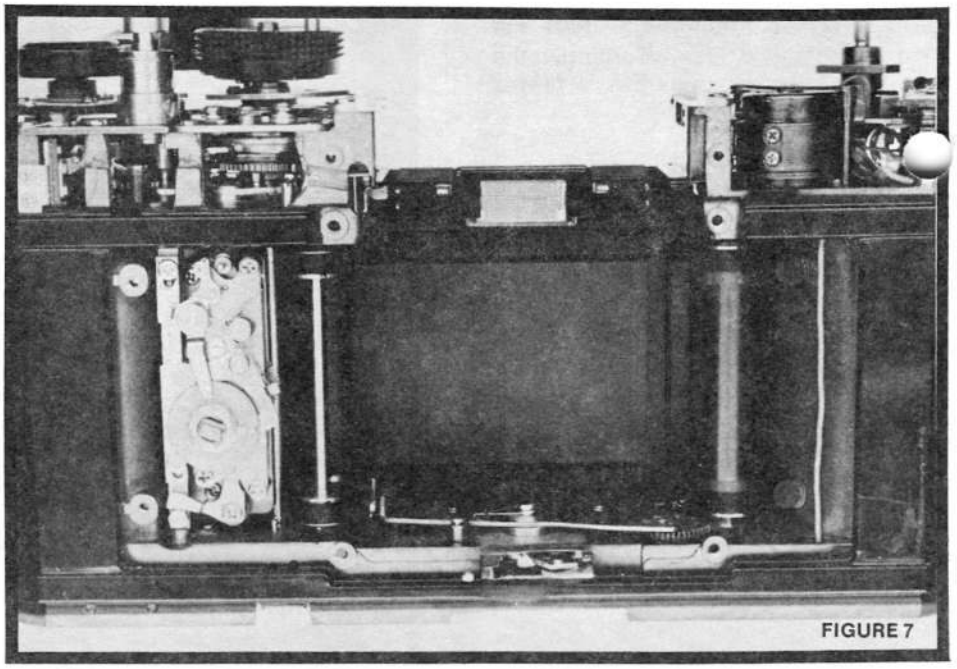

FIGURE 7

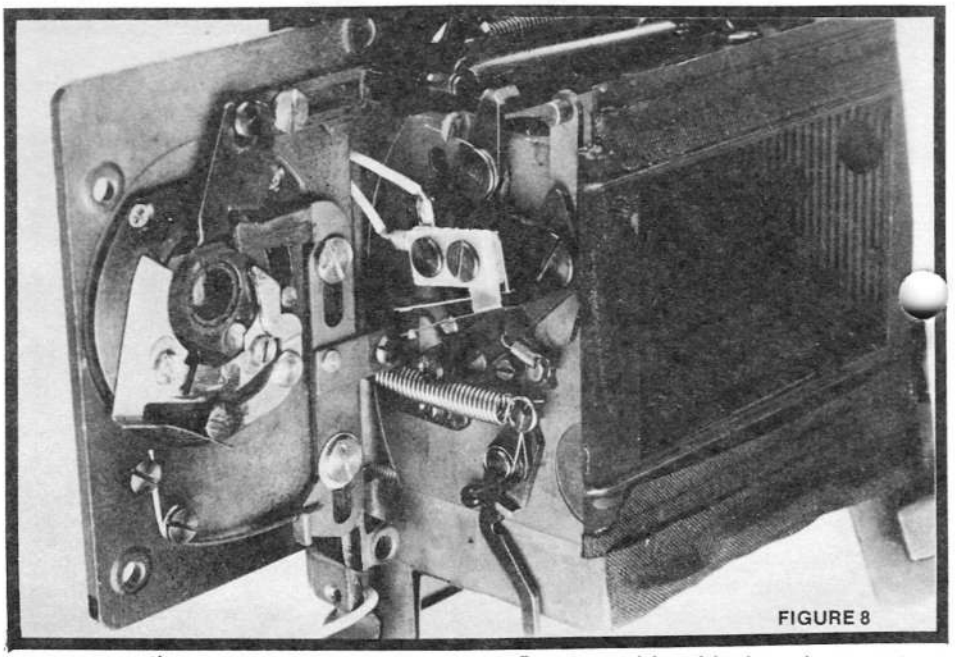

FIGURE 8

Sequence to remove galvanometer:

1. disconnect indicator cord from the speed selector

2. lift out the calibrations resistors (housed under the rewind-shaft latch)

3. unsolder 3 photocell wires — black, green, red

4. CdS cell, Fig. 1

5. unsolder black galvanometer wire from the calibration resistor

6. lift aside switch assembly (1 screw)

7. disconnect and remove galvanometer spring

8. galvanometer assembly (3 screws)

Reassembly highlights:

1. Apply 2 - 2½ turns of initial tension to the spring pulley that connects the indicator cord (counterclockwise as seen from

the rewind side). Use a piece of wire or tweezers to lock the pulley in position. The knot in the indicator cord which connects to the spring pulley should now be toward the bottom.

2. Route the cord to the wind side, Fig. 10, and connect it to the speed selector.

TROUBLESHOOTING:

CdS cell resistance, EV 14, measured with front of cell held against light source:

between black and green:	633 ohms
between black and red:	620 ohms
between red and green:	90 ohms

Galvanometer coil resistance, measured between black galvanometer wire and ground: 2.87K.

Frequently repaired sections:

1. drift in meter, requiring calibration
2. dirty speeds escapement
3. impact damage at top

REVISED PARTS:

1. Diaphragm-charge lever, Fig. 2. Old style (in cameras with serial numbers lower than 200,000) may cause jamming with the MF motor drive. To check, remove the lens and hold open the shutter on bulb. The pawl at the end of the diaphragm-charge lever should remain engaged with the tab on the diaphragm-closing lever. Now pull the diaphragm lever (the black lever passing to the front of the camera under the mirror box) from left to right (as seen from the front) and release it suddenly; the pawl should remain engaged, and the diaphragm lever should snap back to the stopped-down position.

2. Motor-drive switch, Fig. 2. Contacts have been improved to reduce chattering. In the older cameras (serial numbers lower than 200,000), the switch could cause improper operation with the MF motor drive.

3. First-curtain brake. The later models use a coil spring, Fig. 5, for adjustment; the spring comes in seven different strengths. In the earlier models, a setscrew accessible from the back of the camera provides the brake adjustment; reach the setscrew through the clearance hole in the take-up cavity. If you install the new-style brake in the earlier camera, use cap #L3-9970 to cover the hole in the body casting.

4. Pressure plate and film-roller system changed to prevent film scratching. New style has two rollers on back cover. Individual parts not interchangeable. New back cover unit — 18-0707.

5. Wind mechanism for shorter wind stroke. The counter-drive mechanism is now part of the wind assembly. Also, the X-sync contact mounts to the body casting rather than to the wind mechanism.

OTHER COMMENTS:

1. A silicon rubber pad has been added behind the brake-charge lever, Fig. 5, to bring the first curtain to a smoother braking action. Adding the pad usually corrects curtain bounce without further adjustment. Part #13-9971.

2. If the body threads for the flash-cord terminal are stripped, you can get an oversize (7.5mm thread) flashcord terminal. Part #Y16-0028.

3. Do not overlubricate the ball races for the curtain rollers; the oil lubrication will attract dirt and cause erratic curtain speeds. You can leave the ball races dry.

4. Curtain replacement is difficult because of the staked wind-gear assembly which doesn't allow you to adjust curtain positions. Scribe the old curtains before removing them from the winding rollers. It's possible to replace the curtains without replacing the rollers. To check the timing, make sure that the second curtain aligns with the scribe mark when the shutter is open on bulb.

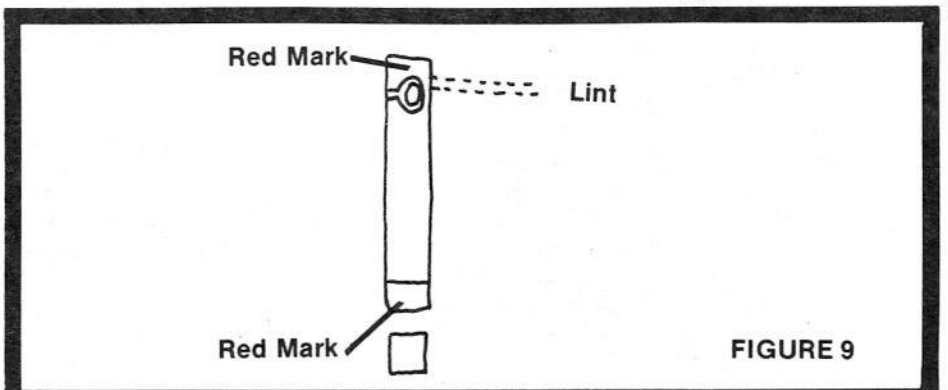

FIGURE 9

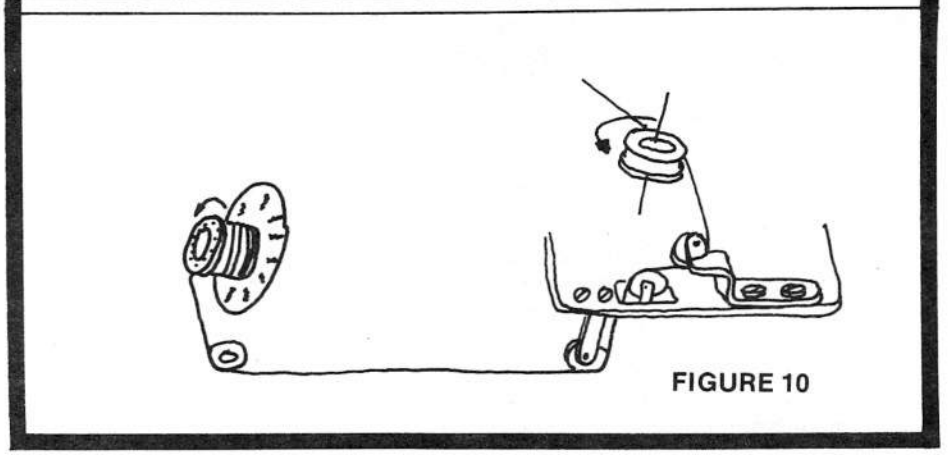
FIGURE 10