CANON T70

Similar models: T50 (mechanically similar)
Batteries: 2ea AA-size (negative ground)

Fig. 1— top cover removed

Fig. 2— bottom cover removed

Fig. 3— front view, covers removed

Fig. 4— back view

Fig. 5— top view, rewind side

Fig. 6— top view, wind side

Fig. 7— front view, wind side - converter cover removed

Fig. 8— top view, rewind side - flex-base plate removed

Fig. 9— top view, wind side - LCD block removed

Fig. 10— front view, mirror box removed

Fig. 11— underside of flex circuit

Fig. 12— top view, wind side - flex removed

Fig. 13— top view, wind side - upper winding base plate removed

Fig. 14— bottom view, wind side - lower winding base plate removed

Fig. 15— mirror box, bottom view

Fig. 16— mirror box, rewind side

Fig. 17— mirror box, wind side

Fig. 18— shutter block, back view

Fig. 19— DC/DC converter, wiring and pin voltages

Fig. 20— wiring pictorial and test points, top of flex

Fig. 21— schematic, IC pin numbering

ADJUSTMENT LOCATIONS:

1/1000	A
Auto exposure, level	B
Auto exposure, shift	C
SPC, vertical	D*
SPC, horizontal	E*
SW4-2	F
SW4-1	G

Canon T70

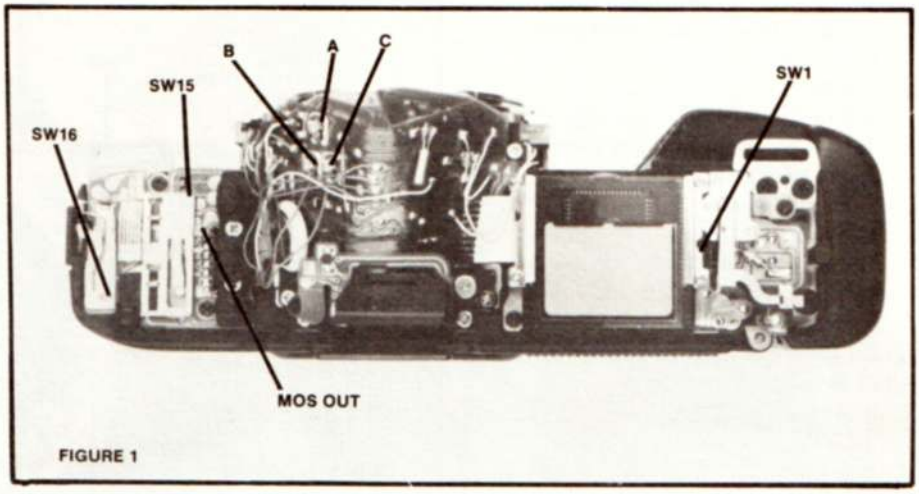


FIGURE 1

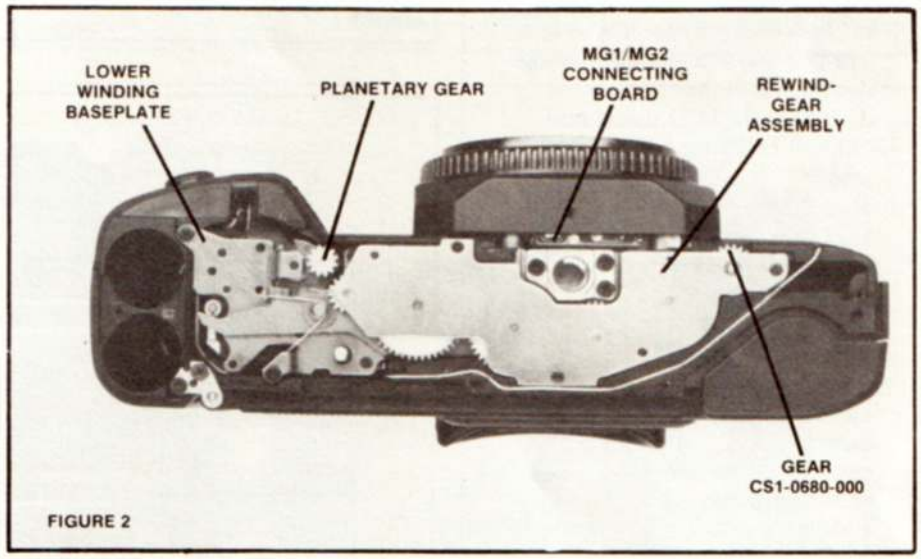


FIGURE 2

Travel time, 2nd curtain H
Travel time, 1st curtain I**

*do not disturb unless you replace IC1, the SPC holder, or the pentaprism frame.

**reach from bottom of camera after removing rewind-gear assembly, Fig. 2

ADJUSTMENT VALUES:

Curtain-travel time: 7.5ms (24mm distance.), 6.25ms (20mm distance)
Flange-focal distance: 42.14mm (flange to pressure-plate rails), 41.9mm (flange to film-guide rails)
K-factor: 12.5
Vc voltage: 1.2V (measured to Vc test point, Fig. 5, or to pin 4 of IC1, Fig. 21)
Vcc voltage: 4.3V (measured to pin 3 of DC/DC converter, Fig. 7)
KVc voltage: 1.3V (measured to pin 2 of IC1, Fig. 21)
Inhibit voltage: 2.1 +0.2, –0.15V (below this voltage, the shutter should not release)
SW4-1 contact gap (switch open, winding-stop lever in slot of winding-stop gear):
0.5mm or over
Clock frequency at crystal: 65.536 KHz
Clock frequency at LCD and LED connectors: 32.768KHz.

ADJUSTMENT SEQUENCE, PROCEDURES:

1. Curtain-travel time
   Check in TV mode, 1/1000. You can adjust the first curtain from the bottom (remove the rewind-base assembly, Fig.2). Turn the worm gear to change the first-curtain travel time. To adjust the second-curtain travel time, remove the shutter

block.
Note: To set the mode with the top cover removed, hold down the mode key and short either of the shutter-speed-key lands, Fig. 21, to ground. To set the shutter speed, short the up-key land (for a faster speed) or the down-key land (for a slower speed) to ground.

2. 1/1000
Adjust with A, Fig. 1 (turn the wiper counterclockwise for a faster speed, clockwise for a slower speed).

3. Auto exposure
Use B, Fig. 1, to set the auto exposure in the partial mode; use C to match the exposure in the average mode. Canon suggests using the test mode and adjusting by the LCD indication as follows:
a. Set the test mode by shorting TP1, Fig. 5, to ground.
b. Set the circuit to selective-area metering (partial) by shorting TP2, Fig. 5, to ground.
c. Check with a 50mm lens set to a. The ISO and selector-switch settings don't matter in the test mode.
d. At EV9, the LCD should read "13." At EV15, the LCD should read "5."
Note: If the cartridge symbol and/or bar LCDs turn on, the indication is a partial stop underexposure, as follows:
1 bar - 1/8
2 bars - 2/8
3 bars - 3/8
cartridge symbol - 4/8
cartridge +1 bar - 5/8
cartridge + 2 bars - 6/8
cartridge + 3 bars - 7/8
e. Adjust with B, Fig. 1. The reading at EV9 should be within 1/8 stop and the reading at EV15 should be within 2/8 stop.
Note: If you can correct the reading at one light level, but the reading at the other light level is out of tolerance, the gain is incorrect. Adjusting the gain requires changing fixed resistor R5, Fig. 5 (substitute a variable resistor and adjust for the same error at both light levels). However, the gain is preadjusted on a replacement flex and should not normally require adjustment.
f. Remove the ground connection from TP2. The circuit is now set for average metering.
g. Check at EV9 and EV 15. The readings should match those noted when you adjusted the selective-area metering. Adjust with C. Fig. 1.

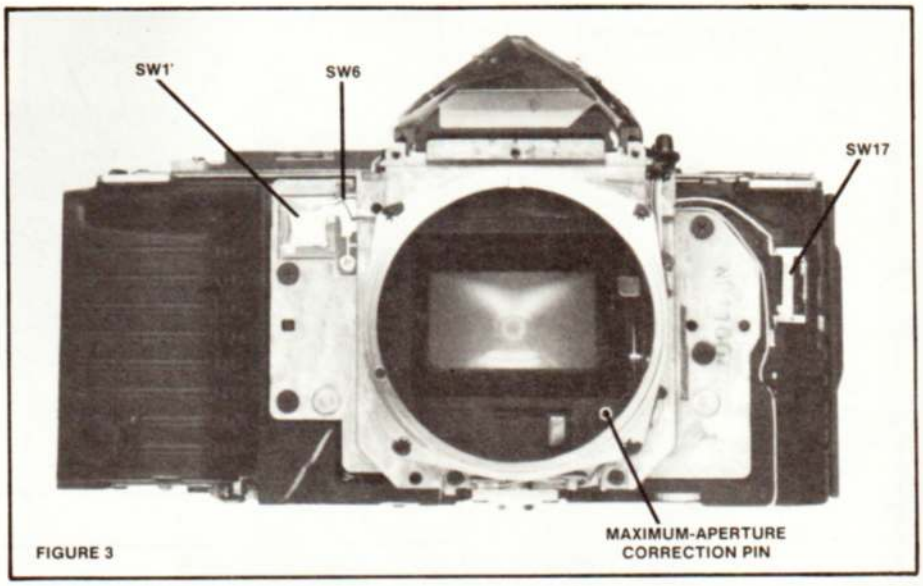


FIGURE 3

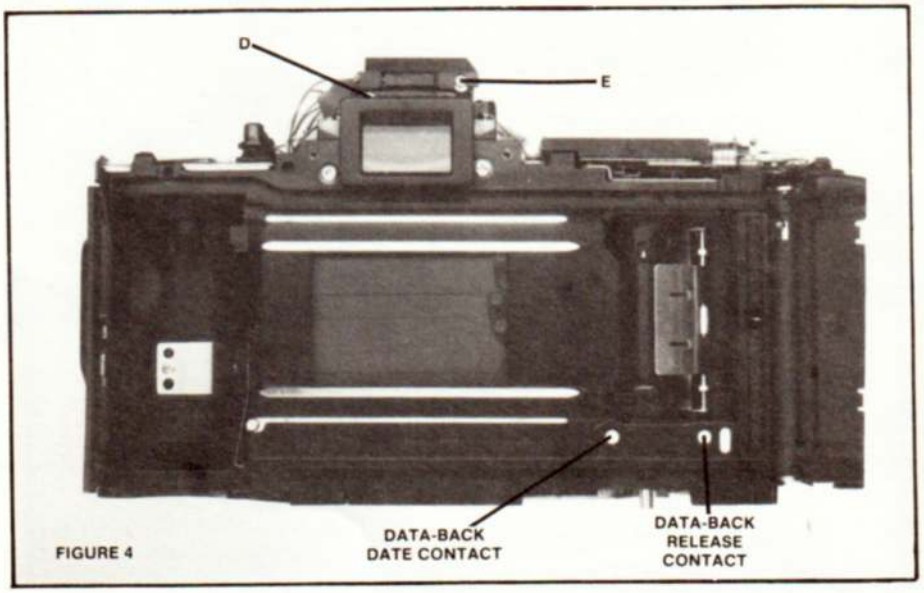
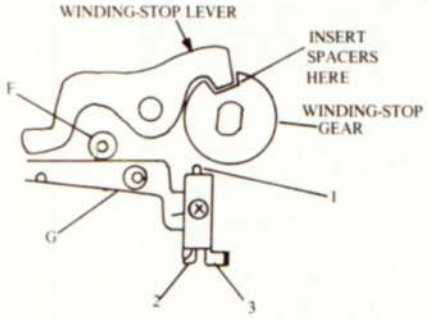


FIGURE 4

ADJUSTMENTS NOT NORMALLY REQUIRED:

1. SW4 timing
Check the timing if the camera doesn't wind properly or draws too much current during film advance. To check, connect hook-up wires to the three SW4 tabs (the tabs that connect to the flex, Fig. 9). Connect an ohmmeter between the hook-up wires to see precisely when the switches open and close with respect to the position of the winding-stop lever, Fig. 13. To position the winding-stop-lever, insert spacers between the end of the winding-stop lever and the bottom of the slot in the winding-stop gear as indicated here. Spacers needed — 0.7mm, 1.0mm, and 0.45mm.
Procedures:
a. Insert the 0.7mm spacer. Check the continuity between tabs 2 and 3. You should measure an open (infinite resistance).
b. Remove the 0.7mm spacer and insert the 1mm spacer. The two contacts should close, and you should measure direct continuity

between pins 2 and 3.
c. Adjust for proper operation in (a) and (b) by turning eccentric G (use a 0.9mm hex key).
d. Remove all spacers. Check the continuity between tabs 1 and 2. You should get direct continuity.
e. Insert the 0.45mm spacer. You should now measure an open between tabs 1 and 2 (the contact should move away from eccentric post F).
f. Adjust for proper operation in (d) and (e) with eccentric F.



2. SPC position
Note: The SPC adjustments, Fig 4, position the selective-area SPC to read from the circle at the center of the focusing screen (around the focusing aid). The adjustments should not be disturbed unless you replace related parts (IC1, SPC holder, pentaprism frame). To adjust, Canon suggests simulating a point source of light by making a mask to cover the light-source window. The mask should have a 4mm hole in the center. Then check as follows:
a. Set the light source to EV15.
b. Position the camera on a tripod in front of the mask. Use a 50mm lens set to the closest focusing distance.
c. Set TV mode and partial metering.
d. Focus on the point source of light. Position the camera until the point source is centered on the split-image focusing aid.
e. change the shutter speed until the f/stop indication on the LED is f/1.8 or f/2.
f. Check the indication at four different positions of the point source (within the selective-area circle on the focusing screen). The indication should be the same at each position. If the indication varies horizontally, adjust with D, Fig. 4. If the indication varies vertically, adjust with E, Fig. 4.

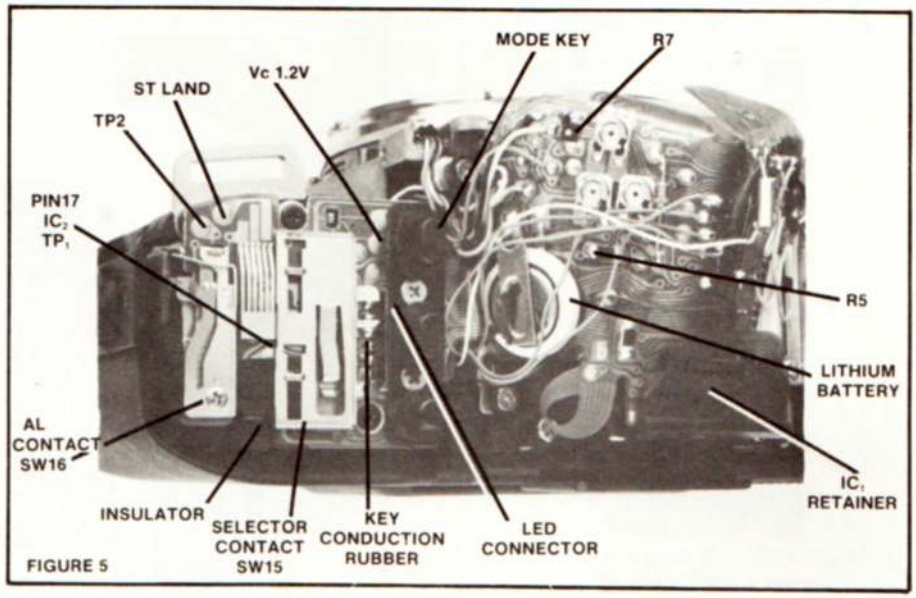


FIGURE 5

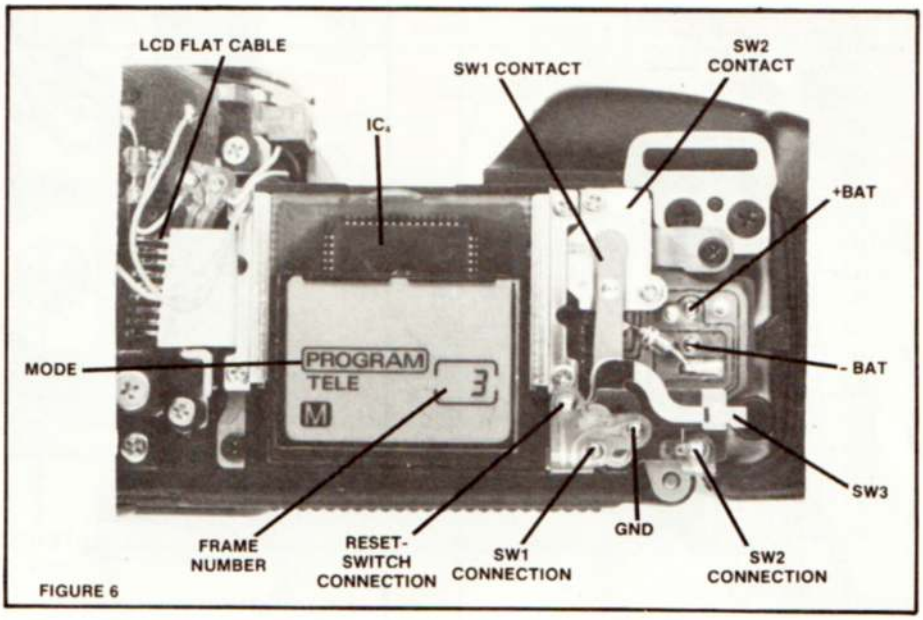
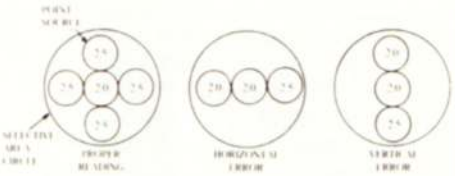


FIGURE 6



OPERATING INSTRUCTIONS:

1. With the selector knob (rewind side, top) in the lock position, the shutter won't release. Also, the metering LCDs and the finder LEDs won't turn on when you push the release button part way. However, the LCD does show the frame # and the cartridge symbol (with film loaded).
2. Moving the selector knob to the "average" or "partial" position turns on the mode LCD (program, TV, etc.). Pushing the release button part way turns on the metering LCDs and the finder LEDs. When you fully depress the release button, the motor operation is continuous - the camera will continue to advance and release as long as you hold the release button partially depressed.
3. At the "average" setting, the metering system averages the light on the focusing screen. The metering

changes continuously as long as you hold the release button partially depressed. At the "partial" setting, the metering system takes the reading from the focusing-screen circle (around the microprism). The partial setting also serves as an auto-exposure lock. The exposure won't change as long as you hold the release button partially depressed. To change the exposure, let up and redepress the release button.

4. To change the mode, hold down the mode key (top, rewind side). Then push either shutter-speed key. Set the lens to auto for program modes. In the normal program mode, the LCD reads "program." There are two additional program modes - program wide and program tele. Fig. 6 shows the LCD in the standby mode at program tele (selector at average or partial setting). At program tele, the circuit sets a faster shutter speed (with larger f/stop). At program wide, the circuit sets a smaller f/stop (with slower shutter speed).
5. When you push the release button part way, the LCD shows the shutter speed the camera will set (all program modes). Pushing in the preview button (front of camera, center of lock knob) also turns on the metering LCDs (same function as depressing release button part way). The finder LEDs also turn on, showing the f/stop the camera will set on program.
6. In all program modes, the green P LED turns on in the finder (release partially depressed). The P LED flickers as a slow speed warning. The shutter speed at which the P LED starts flickering depends on the mode -

   wide - 1/30 or slower
   standard - 1/60 or slower
   tele - 1/125 or slower
7. If the selector knob is at the partial setting, a red * LED turns on when you depress the release button part way. The * is below the P LED in the finder.
8. In the TV mode, you can manually select the shutter speed using the shutter-speed keys (if you depress both shutter-speed keys at the same time, the down key has priority). With the lens at auto, the camera automatically sets the f/stop (shutter-speed priority); the finder LED shows the f/stop that will be automatically selected. If the camera can't set a large enough or small enough f/stop for proper exposure, it will change the shutter-speed setting. The f/stop LED flickers at 2Hz to indicate that the shutter-speed shift is in operation (a warning that you're not going to get the selected shutter speed).
9. The lock knob (front, wind side of camera) locks the shutter-speed setting in the TV mode. At lock, the shutter speed will not change when you depress the shutter-speed keys.
10. The finder LED flashes at 8Hz to indicate that you're out of the exposure range (any mode).

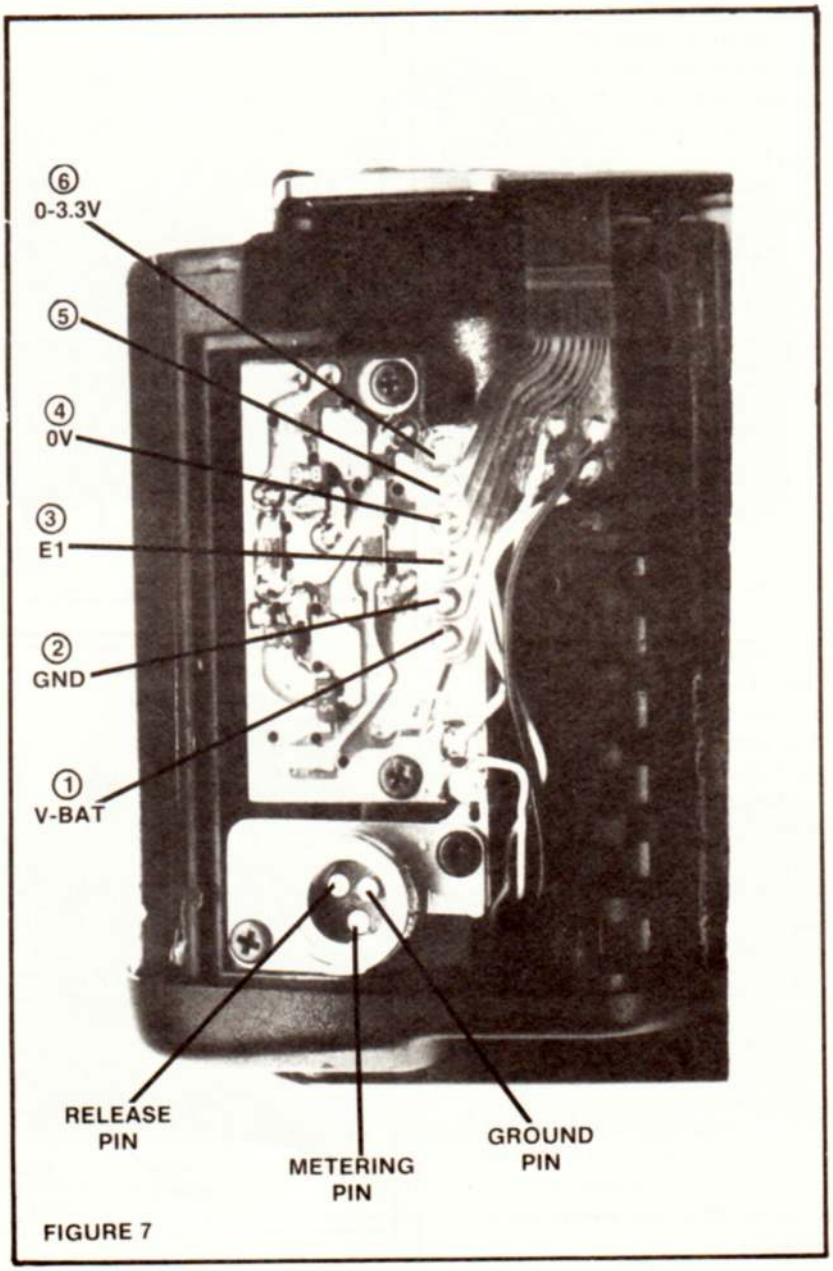


FIGURE 7

11. For manual, set the lens to a manual f/stop and the mode to TV. The M LCD, Fig. 6, turns on (even without depressing the release button). When you push the release button part way, the M LED flickers in the finder. With the lens at manual, the finder LED shows the f/stop that you should select for proper exposure.
12. Without a lens (or with a non-FD lens), you can set one more mode - the stopped-down mode, indicated by a diaphragm symbol in the LCD. Use the stopped-down mode with

FL lenses, bellows attachments, etc. The finder LED now changes from f/stop readings to shutter-speed readings. The fast shutter speeds are abbreviated - HL for 1/125 - 1/350, HH for 1/500 - 1/1000. In the stopped-down mode, the camera will automatically switch to standard program when you install the FD lens (check by holding the release button partially depressed and then pushing in the maximum-aperture correction pin, Fig 3 - the mode should change from stopped-down to standard program).

13. To set the film speed, hold down the ISO key and push either shutter-speed key. Push the up key to set a higher ISO, the down key to set a lower ISO. The LCD shows the ISO film speed when you depress the ISO key. If you hold either shutter-speed key depressed, the ISO setting will change continuously. However, the LCD will pause briefly at each of the common settings.
14. Push the BC key to check the batteries. If the batteries are good, the LCD shows three bars across the bottom. If two bars turn on, you can still operate the camera (but the batteries are getting low). One bar flashing indicates that the batteries need replacement. If the batteries are too low for proper exposure, the shutter will not release. The circuit tests the batteries under load by pulsing the magnets once each second; you can hear the clicking sound of the magnets when you hold down the BC key.
15. Open the camera back by holding in the lock button and pushing down the back latch (rewind end of camera). The frame # LCD then returns to start (no indication). Closing the camera back initiates the auto-load - the camera releases and winds four times (the mirror rises each time, but the shutter doesn't release). The LCD shows the ISO setting during the auto-load. After the auto-load cycle, the frame # LCD shows "1." The frame # LCD and the auto-load operate even without film.
16. With film loaded, the LCD shows a cartridge symbol. Three bars extend from the cartridge at the bottom of the LCD. When you release the shutter, the three bars turn off. Then, as the film advances after the exposure, the bars turn on sequentially (extending from the cartridge to indicate film advance).
17. At the end of the roll, the film prevents the motor from completing its cycle. A timer then shuts off the motor in two seconds to conserve batteries. When the motor stops, the piezo beeps and the bar and frame # LCDs flicker. After four seconds, the piezo beeper stops. But the LCD continues flashing until you start the film rewind.
18. To rewind the film, push in the lock button (bottom) and slide the rewind button in the arrowmarked direction. The motor runs in the reverse direction to rewind the film. During rewind, the bar LCDs appear sequentially (opposite direction to the wind cycle, indicating that the film is returning into the cartridge). The counter LCD counts down during rewind. The camera winds the film completely into the cartridge, and the motor then stops. The cartridge-symbol LCD now flickers to indicate that the film-rewind is complete. The camera won't again operate until you open the back.
19. With the selector knob in the self-

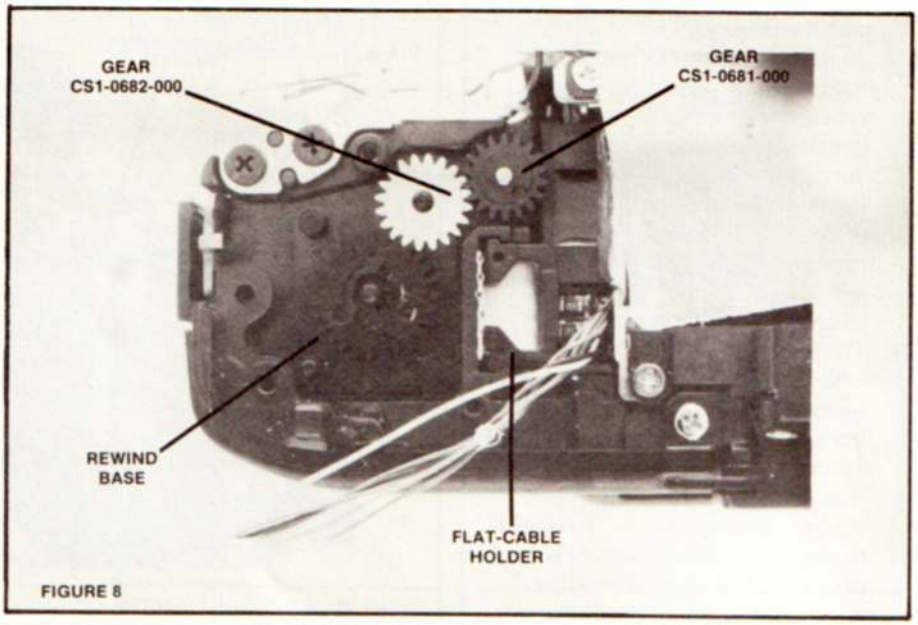


FIGURE 8

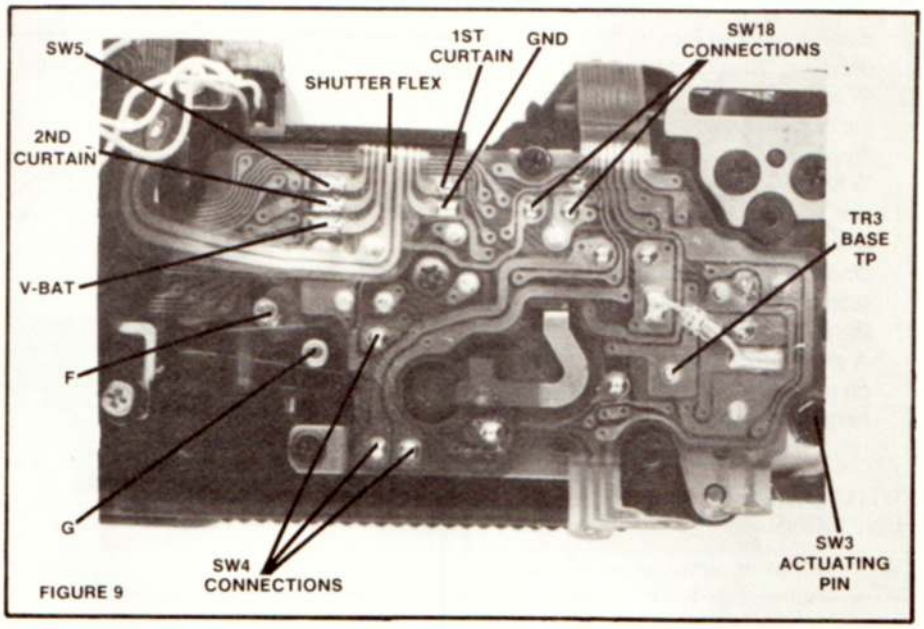


FIGURE 9

timer position, the circuit provides a 10-second delay. When you push the release button, the frame # LCD changes to 10 (for 10 seconds). The frame counter then counts down the seconds during the delay and the piezo beeps. To cancel the self-timer, push the BC key.

20. At the bulb setting (TV mode), the frame # LCD serves as an elapsed-time counter - it counts the seconds that the shutter remains open. When the counter reaches 30, it starts over. But one bar appears at the bottom of the LCD to indicate 30 seconds elapsed time. Two bars indicate 60 seconds, and three bars indicate 90 seconds.
21. The operating batteries (AA-size) hold the exposure mode, shutter-speed setting, the ISO, and the frame # in memory (even with the selector knob at lock). If you remove the AA-size batteries (or if the batteries drop too low in voltage), the built-in 3V lithium battery holds the information in memory. If the lithium battery is low, the film speed and ISO LCDs flicker in the standby mode as long as the operating batteries are o.k.
22. With the Speedlite 277T flash unit, the camera automatically sets the flash speed (1/90) and the aperture. When you push the release button part way, the flash emits a preflash beam of infrared light for determining the distance and the subject reflectivity. The camera uses the information to set the aperture. A green lightning-flash LED turns on to indicate the flash mode (flash installed and charged).

SWITCH LOCATIONS AND FUNCTIONS:

SW1. Metering switch under release button, Fig. 1. Closes with the release button partially depressed to turn on the metering system.

SW1' Metering switch at center of lock button, front wind side of camera, Fig. 3. Pushing the preview button closes SW1', connecting the orange wire (top wind side) to ground (same function as SW1).

SW2. Release switch under release button, Fig. 6. When SW2 closes, the release magnet separates and releases the mirror.

SW3. LCD-reset switch, top wind side near battery box, Fig. 6. Closes when you remove the batteries to provide the clear signal. Opens when you install the battery near the back of the camera.

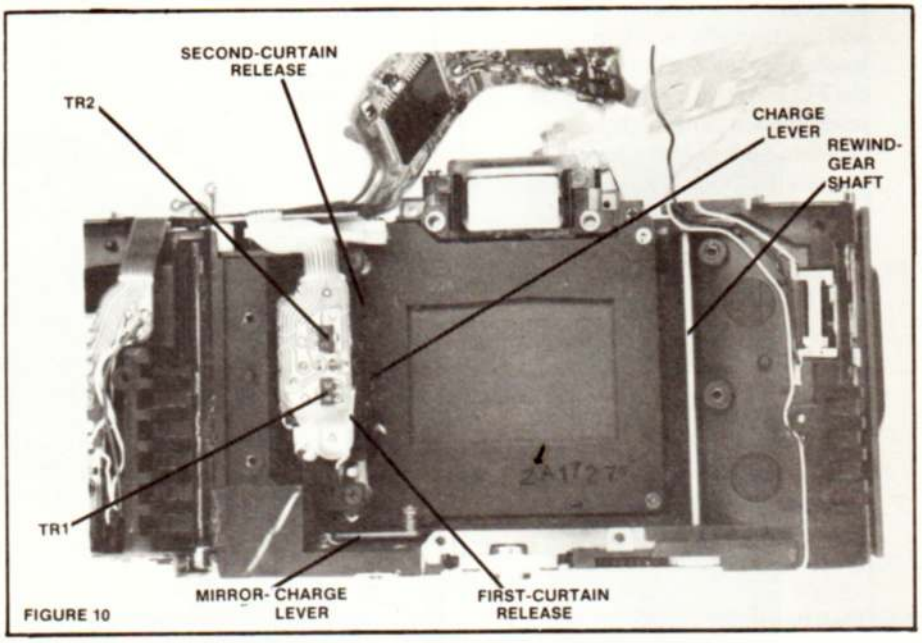


FIGURE 10

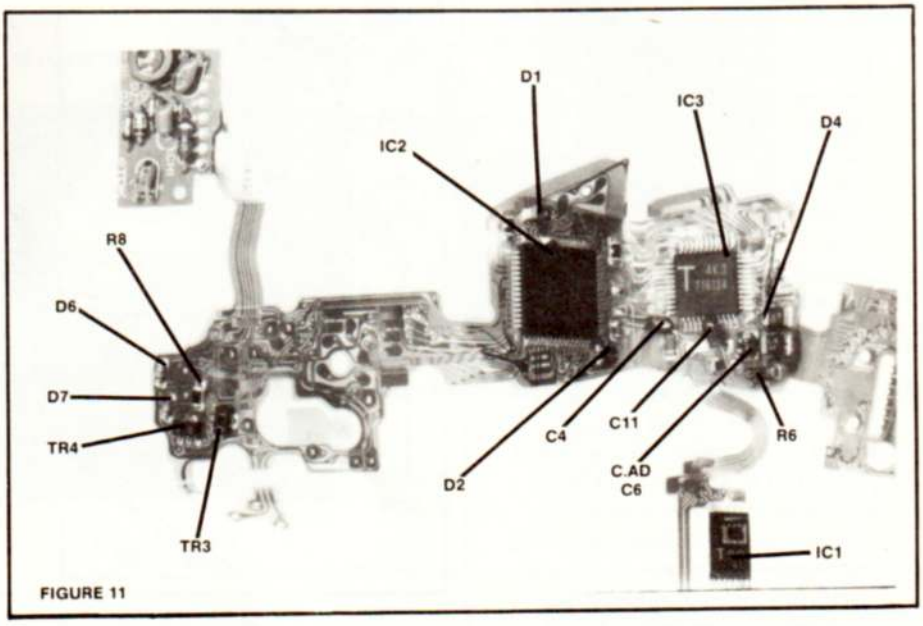


FIGURE 11

SW4-1. Winding-mode switch, Fig. 12. Closes with the mirror up, connecting the winding motor to + battery. The motor then runs as soon as IC3 switches on TR4.

SW4-2. Winding-completion switch, Fig.12. Closes when the winding-stop lever drops into the notch in the winding-stop gear. IC3 then turns off TR4 to stop the motor.

SW5. Exposure-complete switch in shutter block. Closes when the second curtain completes the exposure. Both SW5 and SW4-1 must be closed before the winding motor will run in the film-advance mode.

SW6. TV-lock switch, Fig. 6. Operated by the lock control. At the lock setting (SW6

closed), the shutter-speed keys won't change the shutter speed (TV mode).

SW7. Up key in top cover.

SW8. Down key in top cover.

SW9. Winding-display switch in lower wind-gear unit, Fig. 14. Operated by the cam at the bottom of the sprocket. As the film turns the cam, SW9 opens and closes. The bars then appear sequentially in the LCD.

SW10. Rewinding-display switch, Fig. 12. Operated by the cam at the top of the sprocket. As the sprocket turns, SW10 opens and closes. In the rewind mode, SW10 causes the LCD bars to appear sequentially.

SW11. A/M switch in front plate. Operated by lens pin. With the lens at auto, SW11 is open. SW11 closes (yellow wire to ground, Fig. 20) with the lens at a manual f/stop. The LCD and LED then show the "M" indication, and the aperture magnet won't separate to stop the diaphragm.

SW12. Mode key, Fig. 5. Closing SW12 causes the mode to change when you depress the up key or the down key.

SW13. ISO key (center key on key - conduction rubber, Fig. 5). Closing SW13 causes the film-speed setting to change when you push the up key or the down key.

SW14. Battery-test key (key on key-conduction rubber, Fig. 5, closest to back of camera). Closing SW14 pulses the magnets to check the batteries under load. The LCD bars turn on to indicate the condition of the batteries.

SW15. Selector switch, Fig. 5. Selects lock, AEL (partial), averaging, or self-timer functions.

SW16. Auto-load switch operated by back-cover latch, Fig. 5. Open with the back cover closed, closed with the back cover open. The on-off signal when you open and close the camera back initiates the auto load.

SW17. Cartridge-display switch, Fig. 3. Opens when you install the film cartridge. The cartridge symbol then appears in the LCD.

SW18. Rewind switch, Fig. 12. Closes when you push up the rewind button. The motor then runs in the reverse direction to rewind the film.

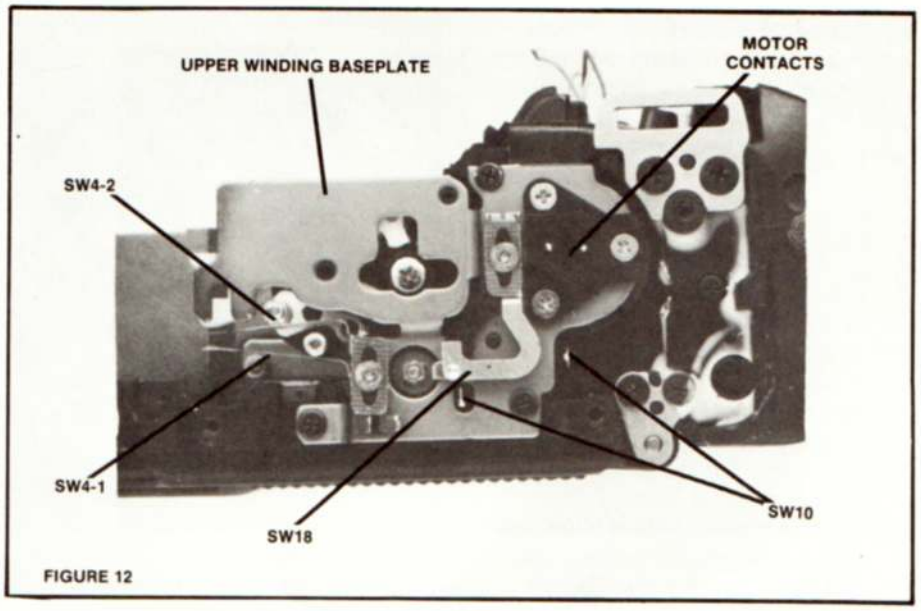


FIGURE 12

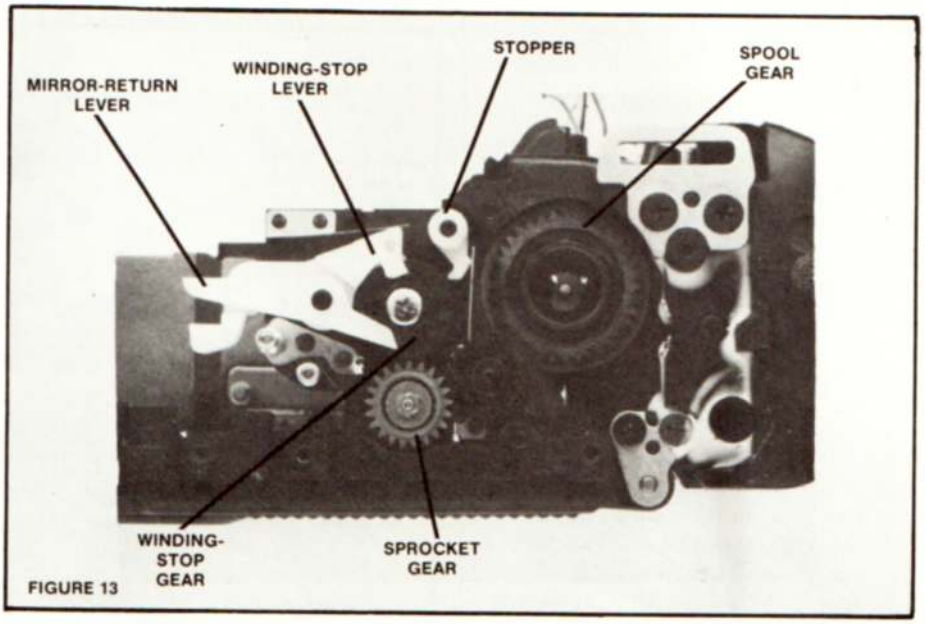


FIGURE 13

BASIC CIRCUIT OPERATION:

1. The circuit uses five ICs:
-IC1. Above eyepiece frame, Fig. 5. Contains the built-in SPD for measuring light from the focusing screen. Provides an analog voltage output (MOS out) that varies according to the BV. Also provides the regulated Vc and KVc voltages.
-IC2. Underside of flex, wind side, Fig. 11. Microprocessor with built-in oscillator. Calculates the exposure data and provides the control signals for the camera functions (through IC3) and for the displays.
-IC3. Underside of flex, rewind side, Fig. 11. Interface IC connecting IC2 to the magnets and switches. Includes the A-D converter for the BV (MOS out) signal.
-IC4. LCD driver in LCD block, Fig. 6. Receives information from the data bus to turn on the LCDs.
-IC5. LED driver on LED block mounted to mirror box, Fig. 17. Receives information from the data

bus to turn on the LEDs.

2. The crystal-controlled oscillator in IC2 turns on as soon as battery power is supplied. The 65.5KHz signal is converted to a square wave and divided in half for the LCD and LED clock signals (32KHz).
3. Closing the metering switch SW1 switches IC3 pin 24 low. IC3 pin 26 then switches low, providing the SW1-closed signal to IC2. IC2 switches pin 38 low to turn on the DC/DC converter. The E1 voltage (stepped up to 4.3V) is supplied to the ICs.
4. IC1 now measures the light and supplies an analog signal (MOS out) to IC3. IC3 converts the analog voltage to a digital signal. IC2 receives the BV information from the data bus and adds it to the other exposure information.
5. The setting of the selector switch for average or partial metering determines which SPD in IC1 is used for metering. For partial mode, IC2 pin 41 switches low. The low signal goes into IC1 at pin 6. Now the metering signal is taken from the small SPD located within the large SPD.
6. Closing the release switch SW2 switches IC3 pin 25 low. IC3 then switches pin 27 low, providing the SW2-closed signal to IC2. IC2 now locks all the exposure variables in memory. The data-bus signal switches high, and IC3 pin 16 switches low to route current through the release magnet MG2. MG2 separates to release the mirror.
7. As the diaphragm closes, the flush plate (encoder) supplies a pulse signal to pin 47 of IC2. IC2 counts the pulses and compares the count to that stored in AV memory. When the counts are equal, IC2 switches pin 45 low. The low signal is supplied to IC3 pin 35. IC3 switches pin 34 high to shut off the aperture magnet MG1 and stop the diaphragm closure.
8. After the mirror rises, IC2 switches pin 42 high for 15ms. The signal causes IC3 to switch pin 33 high, turning on TR1 to energize the first-curtain magnet MG3-1. The first curtain releases to start the exposure. After the proper shutter-open time, IC2 switches pin 44 high. IC3 now switches pin 32 high, turning on TR2 to energize the second-curtain magnet MG2-2. MG2-2 then releases the second curtain to end the exposure.

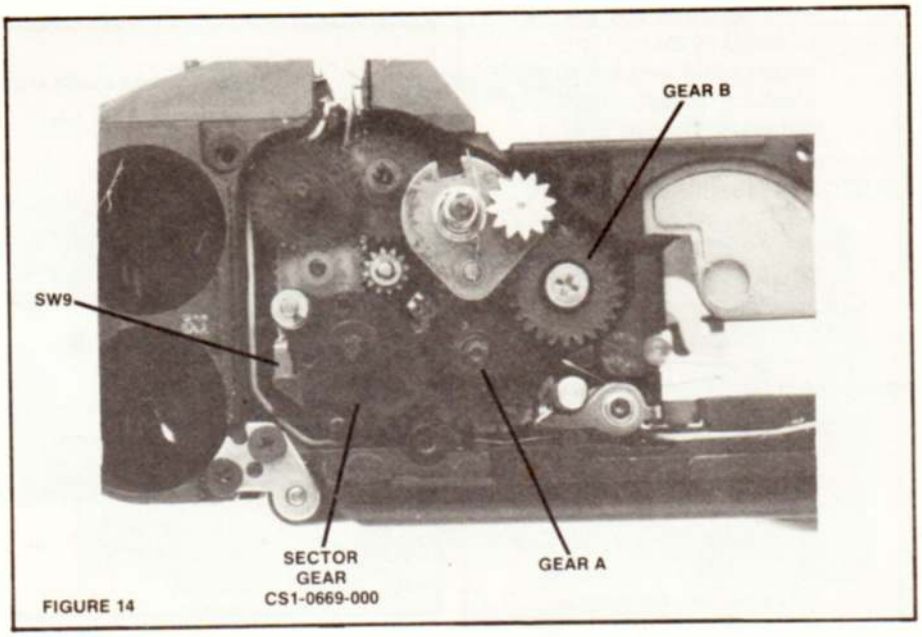


FIGURE 14

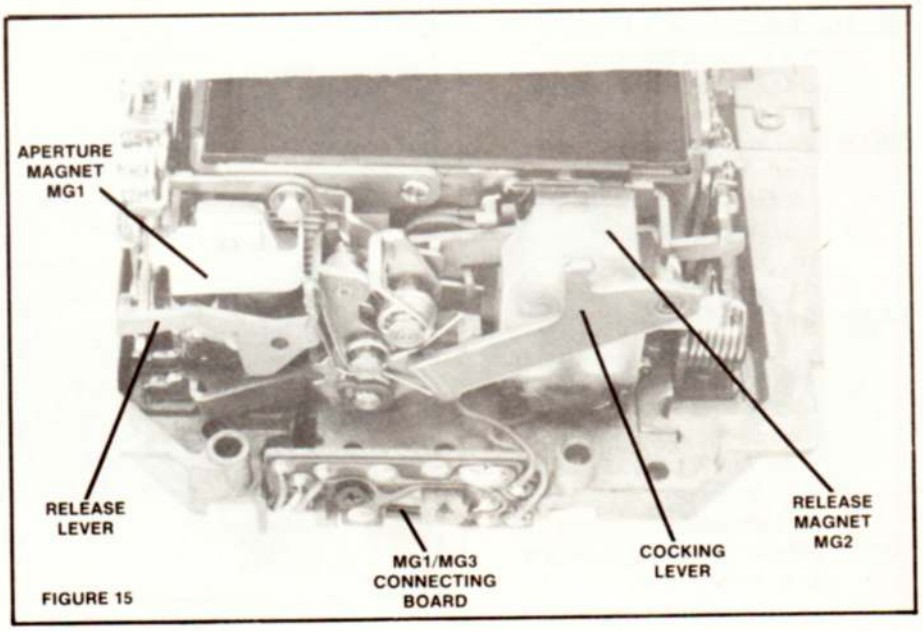


FIGURE 15

9. In the raised position, the mirror closes the winding-mode switch SW4-1. The motor now connects to positive battery. However, the motor can't run until the second curtain releases and closes the exposure-complete switch SW5. The SW5-closed signal at pin 6 of IC2 is input to IC3 through the data bus. IC3 now switches pin 15 high to turn on TR4 and run the motor in the advance direction.
10. As the motor runs, the wind-stop gear pushes forward the mirror-return lever to return the mirror, Fig. 13. The motor continues running until the winding-stop lever drops into the notch in the winding-stop gear, Fig. 13. Switch SW4-2 (wind-complete switch) then closes, connecting the motor to ground for a braking action, and IC3 turns off TR4. When TR4 switches off, the LCD frame counter advances one number.
11. As the film advances, it turns the cam at the bottom of the sprocket. The cam causes the winding-display

switch SW9 to open and close, providing a pulse signal to IC2. The pulse signal causes the LCD bars to appear sequentially during film advance. At the end of the film, IC2 no longer receives the pulse signal and the winding-stop gear can't complete its rotation. SW4-2 remains open. After 2 seconds, the motor turns off to preserve batteries. IC2 next turns on the piezo beeper for 4 seconds and flashes the LCD bars.

12. Pushing up the rewind button (sprocket rod) closes the rewind switch SW18 and frees the sprocket. SW18 switches IC2 pin 18 low. IC2 pin 27 switches high, causing IC3 to switch pin 20 low. The low signal turns on TR3. The motor circuit cycles once in the advance direction when you first close SW13 (now possible because the sprocket is free). SW4 then moves to the winding-complete position (SW4-2 closed). Turning on TR3 drives the motor in the reverse direction.
13. The reverse motion of the motor causes the planetary gear, Fig. 2, to move into engagement with the rewind-gear assembly. As the film rewinds, the sprocket motion opens and closes the rewinding-display switch SW10. The pulse signal from SW10 causes the LCD bars to appear sequentially (running toward the cartridge symbol). Although SW10 also opens and closes during film advance, the pulse signal is ignored by IC2 until the rewind switch closes. The SW10 pulse signal also causes the counter to count backwards.
14. After the frame counter reaches 1, it turns off. The motor continues running long enough to completely rewind the film into the cartridge. Then the winding motor cycles once in the advance direction to reset the planetary gear in the advance position, Fig. 2 (disengaged from the rewind-gear assembly).
15. When you open the camera back, the sprocket rod disengages and allows the rewind switch to open. Opening the rewind switch resets the circuit to the advance mode. The auto-load switch closes when the back opens; the switch reopens when the back closes. The on-off signal starts the auto-load function. IC2 pin 22 switches high when the auto-load switch opens. Now IC2 sends a signal to IC3 through the data bus. IC3 cycles the mirror four times (without releasing the shutter) to advance the film until the counter reaches "1."
16. When you remove the batteries, the built-in lithium battery charges capacitor C4. The capacitor voltage at IC2 pin 32 (—2V) holds the frame number and film speed in memory.

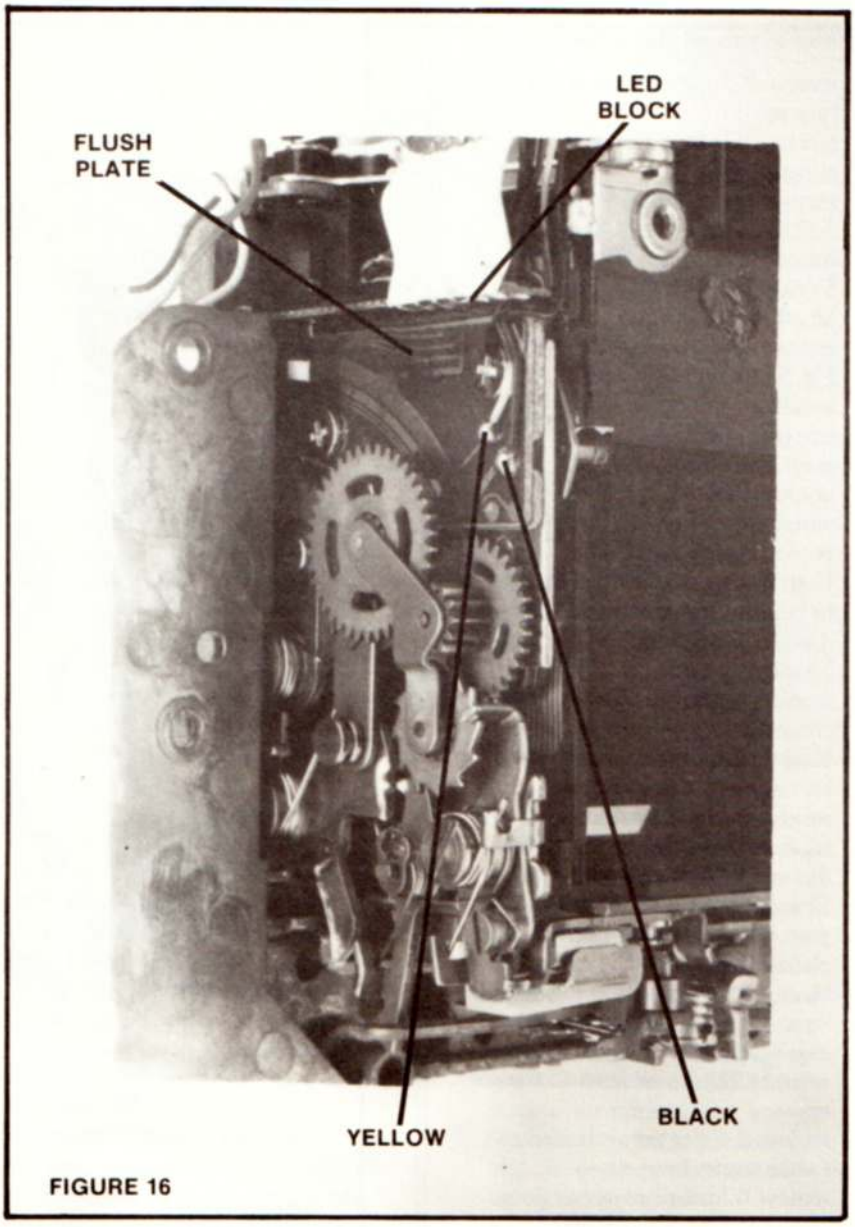


FIGURE 16

DISASSEMBLY HIGHLIGHTS:

Settings for disassembly: lock switch in L position to remove front cover

Sequence:

1. bottom cover (6 screws, 1 under battery cover - long screws go to front of tripod socket and next to battery box)
   Note: Hold the rewind-button latch toward the rewind button (against its spring tension) both to remove and replace the bottom cover.
2. loosen 2 screws holding back latch
3. set lock knob to L
4. remove front cover (3 screws - short screw goes to front)
5. top cover (5 screws)
6. unsolder 6 top-cover wires and shielded lead from flex (connections of shielded lead are covered with insulating tape)

7. lift off 3 key buttons, rewind side, Fig. 5
8. remove rubber grip, wind side front
9. remove converter cover, wind side front (1 screw)

Sequence to remove mirror box:

1. remove IC1 (SPC) retainer, Fig. 5 (pry up)
2. separate IC1 from holder above eyelens
3. remove key conduction rubber, Fig. 5 (2 screws)
4. remove selector contact SW15, Fig. 5 (slide toward back of camera)
5. lift off insulator, Fig. 5
6. remove auto-load contact SW16, Fig. 5 (1 screw)
7. unsolder wires from flex, rewind side (red, yellow, black, blue, pink, gray)
8. unsolder AE-unit wires (small wires), top of flex (yellow, gray, brown, purple, green, black)
   Note: Twist together the small wires to facilitate reassembly.
9. unsolder wires from flex, wind side (orange, white, yellow)
10. desolder 6 tabs of LED flat connector, Fig. 5, from main flex - bend tabs straight up for clearance
11. lift rewind section of flex and remove insulator (under flex)
12. lift out flex-base plate (metal plate that supports rewind side of flex)
13. lift out rewind base, Fig. 8, with 2 gears (gears may stay with flex-base plate - it's not necessary to remove black rewind gear 0681, Fig. 8)
14. remove LED flat-cable holder, Fig. 8
15. reform LED flat cable so it's straight up
16. remove 2 upper mirror-box screws (white screws by eyelens)
17. remove 6 front-plate screws (long screws at 2 bottom positions)
18. lift out mirror box

Sequence to remove shutter block:

1. remove mirror box
2. unsolder LCD flat cable from flex (9 connections, Fig. 6)
3. desolder section of flex from SW1/SW3, Fig. 6 (3 connections)
4. unsolder SW2 section of flex from LCD board, Fig.6
   Note: In early models, the SW2 section of flex fits over a through pin. Later models eliminate the through pin; the flex solders directly to the LCD board.
5. remove LCD block (2 black screws, 1 white screw by SW3 connection) - SW3 actuating pin loose, Fig. 9
6. desolder 5 connections of shutter flex from main flex, Fig. 9
7. open shutter
   Note: To charge the shutter, push the charge lever, Fig. 10, fully clockwise. Then return the charge lever in a counterclockwise direction. Push the armature of the first-curtain magnet, Fig. 10, against the core to open the shutter. Push the armature of the second-curtain magnet against the core to close the shutter.
8. remove 2 screws, top of shutter block
9. lift out rewind gear and shaft, Fig. 10
10. lift out shutter block (be careful to avoid damaging SW4)

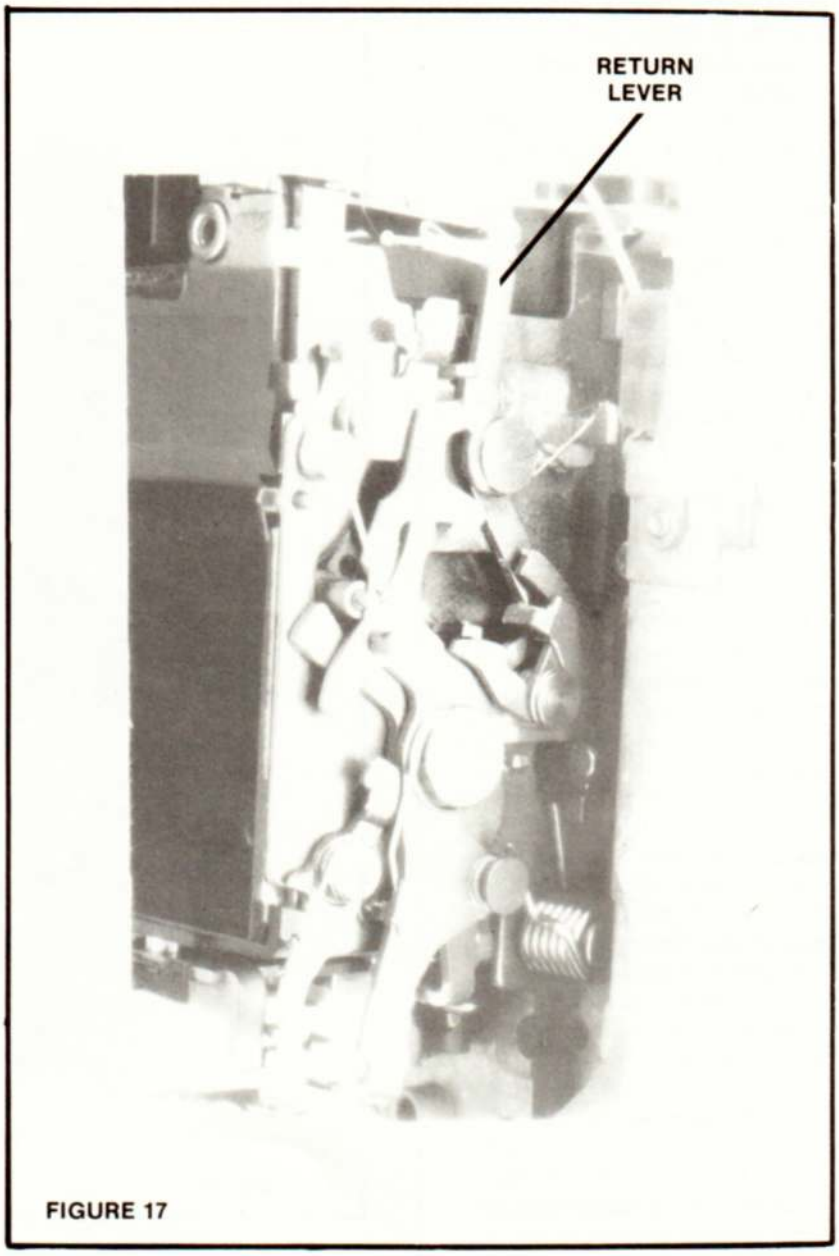


FIGURE 17

Reassembly highlights:

1. Open the shutter to protect the curtains.
2. Hold the mirror-charge lever toward the front of the camera as you seat the shutter block.
3. Raise the mirror before replacing the mirror box. Push the release lever, Fig. 15, toward the front of

the mirror box to raise the mirror.

4. You can replace the rewind gear with the mirror box intalled. The bottom of the shaft keys to the white gear in the rewind-gear assembly, Fig. 2.
5. To check mirror-box operation, push forward the mirror-return lever, Fig. 13; the mirror should return. To charge the mirror, hold the winding-stop lever, Fig. 13, clear of the winding-stop gear; then turn the screw of the winding-stop gear, Fig. 13, in a clockwise direction. Release the winding-stop lever so it stops the winding-stop gear when the mirror is charged. Check the release by connecting around 3V across the release magnet MG2 (positive to red wire, negative to blue wire, Fig. 20). The mirror should move to the raised position.

Sequence to remove flex (mirror box doesn't have to be removed):

1. diconnect rewind side of flex (steps 1 through 11, "Sequence to remove mirror box")
2 remove LCD block and unsolder shutter flex (steps 2 through 6, "Sequence to remove shutter block")
3. desolder 11 through-pin connections, top of flex at wind side, Fig. 9
4. unsolder wires at front of flex, Fig.7
5. desolder ground tab from DC/DC converter, Fig. 7
6. remove 2 screws holding DC/DC converter, Fig. 7
7. remove flex together with DC/DC converter

Sequence to disassemble wind unit:

1. remove upper winding baseplate, Fig. 12 (3 screws)
2. remove loose parts, Fig. 13 (mirror-return lever, winding-stop lever, spool gear, idler gear, stopper)
3. hold winding-stop gear (spanner notches, top) and unscrew nut on top of sprocket gear, Fig. 13
4. remove 2 sprocket gears
5. hold winding-stop gear and remove its screw (normal thread)
6. remove winding-stop gear and plastic baseplate
7. remove rewind-gear assembly, Fig. 2 (3 screws) - white plastic rewind gear loose
8. remove 3 screws holding lower winding baseplate, Fig. 2
   Note: You can remove the lower winding mechanism and motor as a unit; take out the screw accessible through the slot at the top of the sprocket. Or, to reach the lower winding gears, you can leave the motor installed and just remove the lower winding baseplate. Leave the sprocket screw in place. Then hold down the brass planetary gear, Fig. 2, and pry off the lower winding baseplate to break loose the plastic rivets. On reassembly, it's not necessary to heat-seal the plastic rivets; the screws for the lower winding baseplate are sufficient to hold the unit. Note the position of the spring on the planetary gear, Fig. 2; the spring disconnects when you remove the lower winding baseplate.

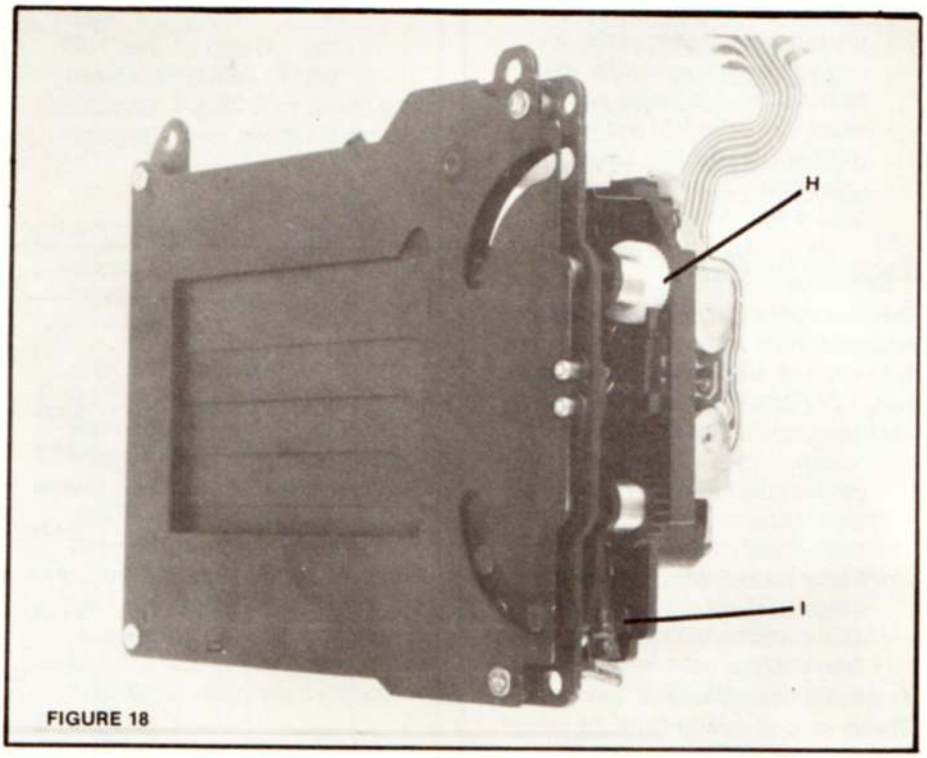


FIGURE 18

Reassembly highlights:

1. If you've removed the lower winding baseplate, time the gears as shown in Fig. 14. With the sector gear against the stop post, the sector-gear timing hole aligns with the timing mark on gear A. The timing mark on top of gear B, Fig. 14, should now point directly to the center of gear A.
2. The timing on gear B places the shaft for the winding-stop gear in the proper position. Seat the plastic baseplate. Then seat the winding-stop gear over the shaft; the slot in the winding-stop gear points to the front of the camera, Fig. 13.
3. The lower sprocket gear (plastic) has a timing groove in its top surface. Install the lower sprocket gear with its timing mark aligned with the timing mark on the winding-stop gear (the timing mark is just to the front of the lug that actuates the mirror-reutrn lever). Turn the sprocket as necessary to seat the lower sprocket gear with its timing mark aligned.
4. Replace the upper sprocket gear. Hold the winding-stop gear as you tighten the nut.
5. Replace the winding-stop lever, Fig. 13. Check by holding the winding-stop lever disengaged from the winding-stop gear. Then turn the screw holding the winding-stop gear in a clockwise direction; allow the winding-stop lever to move against the outer edge of the winding-stop-gear ridge. As the winding-stop gear turns clockwise, the mirror-charge lever should move toward the front of the camera (the end that charges the mirror). When the winding-stop lever then drops into the notch in

the winding-stop gear, the mirror-charge lever should snap back to its starting position.

6. When you replace the spool gear, pass the end of the slip spring into any one of the four holes at the top of the motor assembly.
7. If you're replacing the motor, you may also have to replace the collar that's cemented to the top of the motor - it's difficult to remove the collar without damage. Order a new collar CA1-5233-000 when you order a new motor.

TROUBLESHOOTING:

Behavior without batteries: shutter won't release
Behavior without lens: finder LED and body LCD show "M" indication
Maximum current draw:

Standby (selector knob at any postion other than lock) - 100 microamps
SW1 closed - 100ma
Motor running during film advance - 680ma
Motor running during rewind (with film) - 450ma

Frequently repaired sections:
Shutter curtains damaged (usually caused by operator during film-loading). The shutter curtains (CF1-1281-000) are interchangeable with the curtains in the T50.

Tips for troubleshooting without disassembly:

1. If the shutter won't release - yet the LCD and LEDs operate - watch the finder LEDs as you depress the release button. If the LEDs turn off, the circuit is getting the release signal; the problem may be with the the release magnet MG2. If the LEDs don't turn off, the circuit may not be getting the release signal from SW2. You can check SW2 by shorting the accessory release pin to the ground pin, Fig. 7, or the data-back release contact, Fig. 4, to ground. The shutter should release. If so, the problem is SW2.
2. For release and shutter problems, first check the condition of the curtains.
3. If segments are missing in the LCD, yet the LCD seems to operate normally in other respects, the problem is probably poor contact between the LCD pressure connectors and the LCD board. Remove the LCD (bracket on each end, Fig. 6) to clean the pressure connectors and the board contacts. You can check by simultaneously shorting LCD-cable pins 7 and 8 to ground; all the LCDs should turn on.
4. For readout failures, check both the LCD and the finder LEDs. If both displays fail, the problem is probably in IC2. However, if only the LCD fails, the problem is probably in the LCD driver or in the flat-cable connections. If only the LED fails, the problem is probably in the LED driver or solder connections to the flex.
5. For light leaks, check the porous-plastic light seals in the back cover (near the hinge).

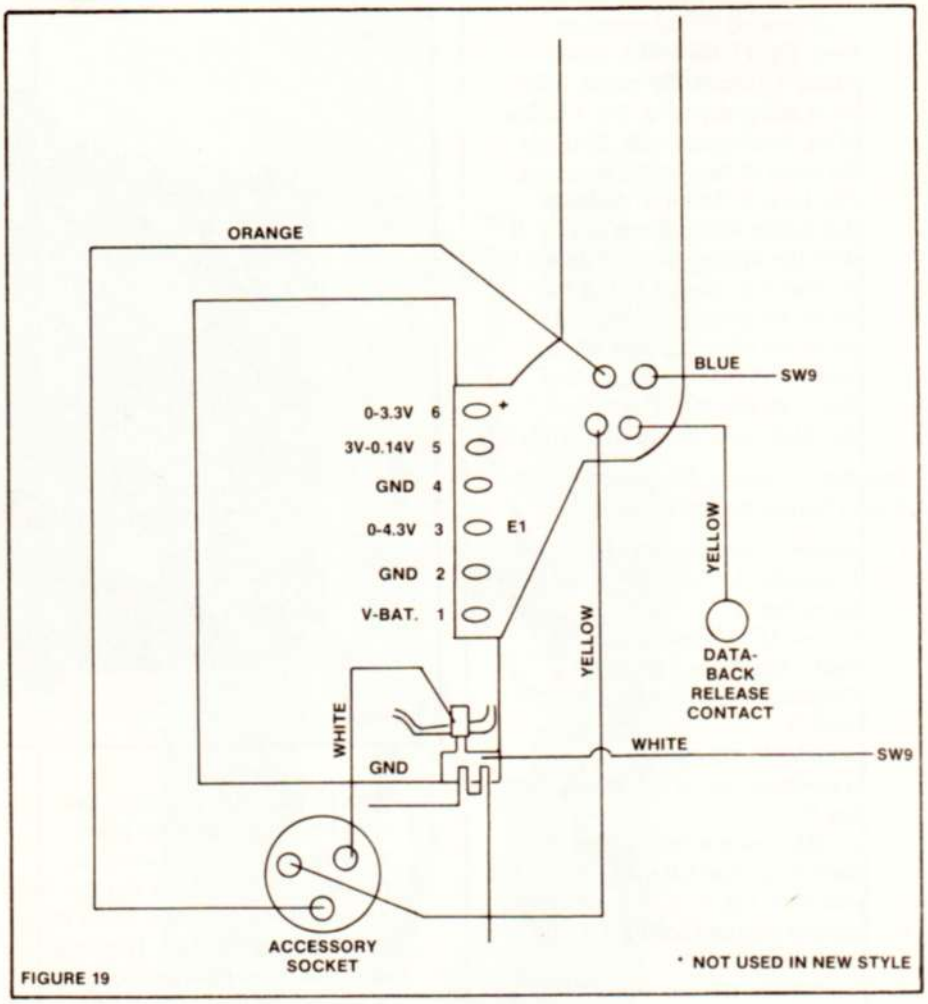


FIGURE 19

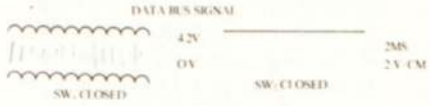
Circuit tests:

1. Since IC2 and IC3 are on the underside of the flex, it may be difficult to determine which of the two is defective. You can make some tests from the top of the flex that may indicate the defective IC (described in this section). Also, you may be able to determine the defective IC by symptom. IC2 provides the control signals as well as driving the displays. A problem with the camera operation, along with a problem in the readouts, may indicate a defective IC2. IC3 provides the interface between the IC2 signals and the outboard components (magnets, switches). A problem that affects one portion of the camera operation may then indicate a defective IC3. To check pin voltages - or to replace IC2 or IC3 - you can pull aside the flex as follows:

a. Remove SW15 and SW16, Fig.1.
b. Remove the key conduction rubber, Fig. 5.
c. Desolder the leads of the LED

connector, Fig. 5.
d. Unsolder the wires from the rewind side and the top of the flex, Fig. 20.
e. Remove the SPC (IC1) retainer, Fig. 5.
f. Lift the rewind side of the flex to reach the underside.
g. To test the circuit, jumper across the SW15 contacts. If you jumper the ST land, Fig. 5, to the large land for the AL ground contact, the circuit is set to the self-timer function. The metering LCDs should then change as you change the light level (SW1 closed). If you close SW2, the film-counter LCD should count from 10 to 1. You can also connect a jumper between the SW1 connection, Fig.6, and the ground connection (rather than holding SW1 closed for metering tests).
h. If you're using a power supply connected across the battery connections, Fig. 6, open SW3 (disconnect the SW3 through pin or slip an insulator between the SW3 contacts).

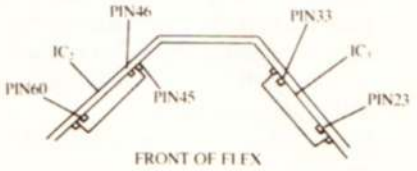
2. Major-component tests, top of camera
a. IC1. Check for metering and/or release problems.
(1) Check the Vc voltage at pin 4, Fig. 21, or at the Vc test point, Fig. 5 (SW1 closed). If you don't measure 1.2V, IC1 may be defective (check inputs - E1 at pin 3 and ground at pin 1, Fig. 21).
(2) Check the MOS-out signal at pin 7, Fig. 21, or at the MOS-out test point, Fig. 1. The signal (1 - 1.2V) should go more positive as you increase the light on the SPD. No change with BV changes or out of range - IC1 defective.
b. IC2
(1) Check the clock signal at the crystal lead, Fig. 20. No signal - crystal or IC2 defective.
(2) Set the selector switch SW15 to the partial (AE lock) position. Then short test point 1, Fig 5, to ground (without closing SW1). The LCD should change to the test mode (number reading) and read "4." Then set SW15 to the average position and set the test mode by shorting test point #1 to ground. The number reading on the LCD should now change as you change the light level (higher number for a lower BV).
c. IC3
(1) Check the flash changeover by connecting a 4.7K resistor between the CCC land, Fig. 20, and ground. When you close SW1, the finder LED should read f/4. The flash LED (lightning flash) should turn on. Also, the shutter-speed indication on the LCD should read "90."
(2) Check the data-bus signal at terminal #9 of the LCD flat connector, Fig. 20. You should get the signal shown with SW1 closed.



d. DC/DC converter
(1) Check the battery inputs between pins 1 and 2, Fig. 19. No voltage - check battery connections and pin solder at 1 and 2, Fig. 19.
(2) Check the voltage at pin 5, Fig. 19 (selector switch in any position other than lock). When you close SW1, the voltage should switch low (nearly 0V). If not, the problem may be SW1, IC2, or IC3 (see, "Troubleshooting steps for specific problems").
(3) Check the pin 3 voltage, Fig. 19. The voltage should switch to over 4V with SW1 closed. If not, the DC/DC converter may be defective.
e. LCD
(1) Check inputs at LCD connections 1 (VDD - over 4V with SW1 closed) and 2 (32KHz square wave). If you don't get the inputs, check the solder connections and IC2.
(2) Check the data bus signal at connection 9, Fig. 20. No signal - check the solder connection, IC2, and IC3.
(3) Simultaneously short terminals 7 and 8 to ground. All the LCD segments should turn on. If not, check for poor contact between the LCD pressure connectors and the LCD board.
f. LED
Check the inputs shown in Fig. 20. If you get the proper inputs, but the LEDs don't operate, the problem may be in the LED driver.

Troubleshooting steps for specific problems:

1. Shutter won't release, no LCDs
Note: If none of the LCDs will turn on, including the frame # box, check the battery voltage and the oscillator. If the frame # box will turn on, but the mode LCD won't turn on, check the selector switch SW15, Fig. 1. If only the metering LCDs fail to turn (SW1 closed), check the DC/DC converter, IC2, and IC3.
Battery voltage to flex
Check between the battery-terminal pins, Fig. 6. No voltage - battery terminals or pin solder.
Oscillator
Check for the sine-wave signal at the crystal lead, Fig. 20. No signal - crystal or IC2.
LCD-reset switch SW3 or D1
Make sure SW3, Fig. 6, opens with the battery installed. A shorted D1, Fig. 11, has the same effect as a constantly closed SW3.
DC/DC converter
See, "Circuit Tests."
IC2, IC3
Check by shorting IC3 pin 26 to ground (you can reach pin 26 from the front of the flex, rewind side -the first pin at the front nearest the end of the camera is pin 23). If the metering LCDs then turn on, IC2 is o.k. - the problem is IC3. If the metering LCDs still won't turn on, the problem is IC2.



2. Shutter won't release, LCDs operate
Release magnet MG2
Check by shorting the blue MG2 wire, Fig. 20, to ground. The mirror should release (and stay up — closing SW1 or SW1' should return the mirror). If the mirror doesn't release, check MG2, Fig. 15, for an open coil or a dirty interface. You can check the coil by measuring the the voltage to the blue MG2 wire, Fig. 20 — if you measure 3V at the red wire, but OV at the blue wire, the coil is open. Or you can measure the resistance between the red and blue wires (around 37 ohms).
Release switch SW2
Check by shorting the SW2 contact of the flex, Fig. 6, to ground. If the shutter then releases, the problem is poor solder at the SW2 contact or poor switch contact.
IC1
Check for the Vc voltage at the Vc

test point, Fig. 5 (SW1 closed). No voltage or incorrect voltage — IC1 defective.
IC2, IC3
Check by shorting IC3 pin 27 to ground (you can reach pin 27 from the front of the flex, rewind side — the first pin at the front nearest the end of the camera is pin 23). If the shutter then releases, IC2 is o.k. — the problem is IC3. If the shutter still won't release, IC2 is probably defective or has poor solder (pin 60). You can check IC2 by testing the data-bus signal at the LCD flat connector (pin 9, Fig. 20). The signal should change as shown ("Circuit Tests") when you close SW2. If you do get the signal change, but the shutter won't release, IC3 may still be the problem (defective or poor solder at pins 16, 41).

3. Mirror remains up, shutter remains closed
Winding-start switch SW5 (mirror returns when you depress release a second time)
Remove the LCD and check at the shutter-flex connector, Fig. 9. SW5 should close (direct contact to ground) when the second curtain releases. If you get direct contact to ground, check for poor solder at the SW5 connection, Fig. 9. No contact — remove the mirror box to check SW5 (in shutter block).
SW4-1 (shutter remains in released position)
Check for poor contact, Fig. 12, and adjustment ("Adjustments not normally required, #1").
First-curtain magnet MG3-1, TR1 (shutter remains in charged position)
Remove the LCD and check at the shutter-flex connector, Fig. 9. With the mirror up, short the TR1-base connection, Fig. 9, to the V-bat connection. The first curtain should release, and the shutter should remain open. If not, check for poor solder to the shutter-flex connector. If o.k., the first-curtain magnet or TR1 is defective (shutter block).
Winding motor
Check the rewind mode. If the motor will not run in either advance or rewind mode, the motor may be defective. Test by applying around 2V directly across the motor contacts, Fig. 12. Hold the winding-stop lever disengaged from the winding-stop gear; the motor should run and return the mirror (advance polarity). If the motor runs but won't return the mirror, check the mirror-return unit, Fig. 13 (the mirror should return if you manually push the mirror-return lever toward the front of the camera). If the motor draws current but won't wind, check for a broken winding gear.
IC2, IC3
Check by pulling aside the flex ("Circuit tests"). Check the signal at IC2 pin 42; you should get a positive pulse when you close SW2 (release signal for the first curtain). No pulse — IC2 may be defective. If you do get the positive pulse, the problem may be a defective IC3 or poor solder at IC2 pin 42 or IC3 pin 37.

4. Shutter remains open
Second-curtain magnet MG3-2, TR2, or shutter-flex connector
Check by removing the LCD. Then short the TR2-base connection, Fig. 9, to the V-bat connection. The shutter should close. If not, the second-curtain magnet may be defective (or out of position) or TR2 may be open (shutter block).
IC2, IC3
You can check by pulling aside the flex circuit ("Circuit tests"). With SW1 closed, IC2 pin 44 should be around 0.4V. When you close SW2, you should get a positive pulse at pin 44. If not, IC2 may be defective. If you do get the pulse, the problem may be a defective IC3 or poor solder (32, 36).

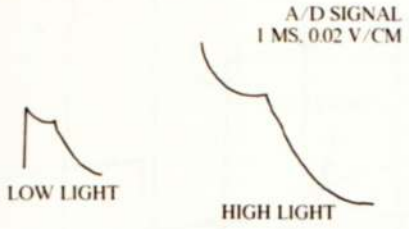
5. Diaphragm always stops down fully (to selected aperture)
Flush plate (encoder)
Check the signal at the yellow flush-plate wire as you release the shutter. You should get the pulse signal as the diaphragm closes. If the signal switches high, but doesn't pulse, check for poor contact in the flush plate, Fig. 16, and poor solder (yellow, black).
IC2, IC3
Check by shorting pin 45 of IC2 to ground (you can reach pin 45 from the front of the camera — pin 45 is the first pin on the side of the IC that faces the top of the camerra). When you release the shutter, the diaphragm should remain fully open. If so, IC3 is o.k.; the problem is IC2. If the diaphragm still stops down fully, the problem is IC3. Check the solder at IC3 pins 34 and 35.

6. Diaphragm always remains fully open
Aperture magnet
Check by shorting the yellow MG1 wire to ground as you release the shutter. If the aperture magnet is o.k., the diaphragm will stop down fully (to the selected aperture).
IC2, IC3
As you release the shutter, the signal at the yellow MG1 wire, Fig. 20, should pulse low (to allow the diaphragm to close) and then high (to stop the diaphragm). If the signal remains high, IC2 or IC3 may be defective. You can check by testing the signal at IC2 pin 45 (reach pin 45 from the front of the camera — pin 45 is the first pin on the side of the IC that faces the top of the camera). The pin 45 signal should be a pulse when you release the shutter. If the signal remains high, IC2 may be defective. If you do get the pulse signal, the problem may be a defective IC3

7. No rewind
SW4, TR3
Check by shorting the TR3-base test point, Fig. 9, to ground. If TR3 and SW4 are o.k., the motor will run in the rewind direction. If the motor doesn't run, check SW4 for poor contact between the contact blade and the SW4-2 eccentric, Fig. 12. Check TR3 for a collector-to-emitter open or a base-to-emitter short.
Rewind switch SW18
Check for continuity between the SW18 connections, Fig. 9, when you push up the rewind button (sprocket rod).
IC3, IC2
You can determine which IC is at fault by lifting aside the flex ("Circuit tests"). Short across the selector-switch contacts to turn on the mode display. Measure the voltage at IC2 pin 27; you should measure around 2.5V. Then short IC2 pin 16 to ground. The pin 27 voltage should switch to around 3.8V. If the voltage does switch, yet the motor doesn't run, IC3 is the problem (or has poor solder at pins 42, 20). If the voltage doesn't switch, IC2 is the problem.
Rewind gears
If the motor draws current in the rewind mode, but doesn't drive the rewind shaft, check for broken rewind gears, Fig. 2 and Fig. 8.

8. Exposure indication won't change with BV, no change in auto exposure
IC1

Check the MOS-out signal at the MOS-out test point, Fig. 1 (1 -1.2V - more positive with higher BV).
Thermistor R6
Check for an open or poor solder, Fig. 11. You should measure the MOS-out signal at each end of R6 ("Circuit Tests"). If you measure the MOS-out signal at one end of R6, but not at the other, R6 is defective
A/D converter
Check for the A/D integrator signal at one end of C6, Fig. 11. No signal or a distorted signal may indicate defective C6 or IC3.



IC2, IC3
See, "Circuit Tests."

9. Motor runs continuously
Release magnet MG2
MG2, Fig. 15, may not be holding its armature (permanent magnet). Check for a dirty interface and a defective magnet.
SW2, shorted to ground
Check between the SW2 connection, Fig. 6, and ground.
Mirror not charging fully
Check the mirror-charge lever, Fig. 10.
IC3
Check for a short between pins 26 and 27.

10. Battery drain
SW4, adjustment
See, "Adjustments not normally required."
DC/DC converter
Check the voltage at pin 3, Fig. 19. You should measure 0V until you close SW1. Or check by desoldering the + battery pin. If the standby current then drops to normal, the DC/DC converter is the problem.
TR1, TR2
Check by disconnecting the shutter flex, Fig. 9. If the current drain then stops, the problem is in the shutter block (either TR1or TR2 leaking).
IC leakage
You can check IC3 by disconnecting pin 21 and IC2 by disconnecting pin 53 ("Circuit Tests").

REVISED SECTIONS:

3. Other part numbers:
LCD board (includes IC driver) - electric parts unit CY1-1161-000
LCD - WG2-9083-000
MG2 assembly - CF1-1139-000
AE unit (including MG1) -CG1-0226-000
Rewind gear assembly -CF1-1127-000
Mirror-return lever -CA1-5263-000
Winding-stop lever -CA1-5262-000
Motor - CY1-1172-000
DC/DC converter -CH3-0016-000
IC1 - CH4-0112-000
IC2 - CH4-0110-000
IC3 - CH4-0111-000
IC4 - CH4-0113-000
TR3 - WA2-0411-000
TR4 - WA2-0216-000
Crystal - CH2-1816-000
Lithium battery -WK1-9022-000

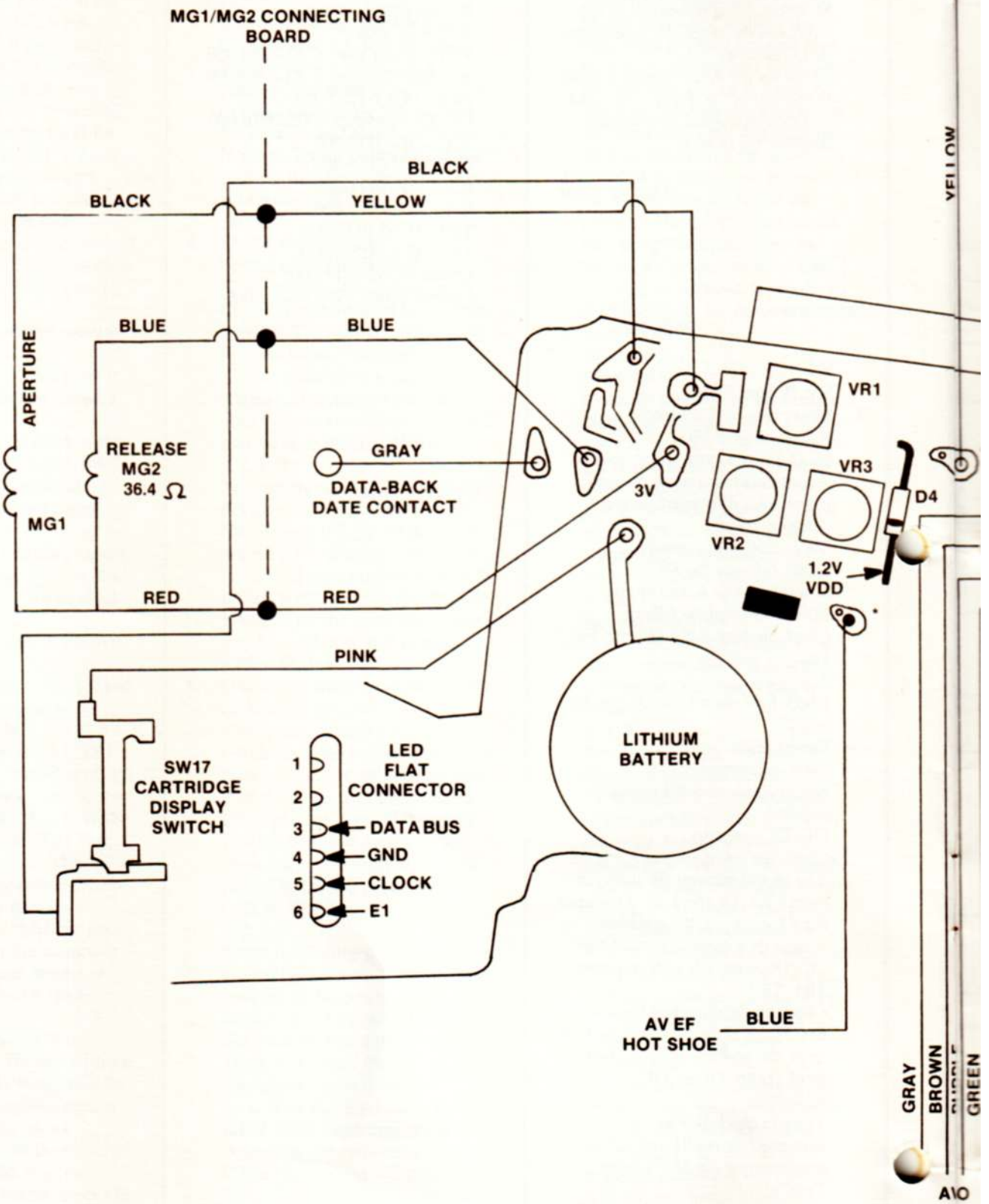
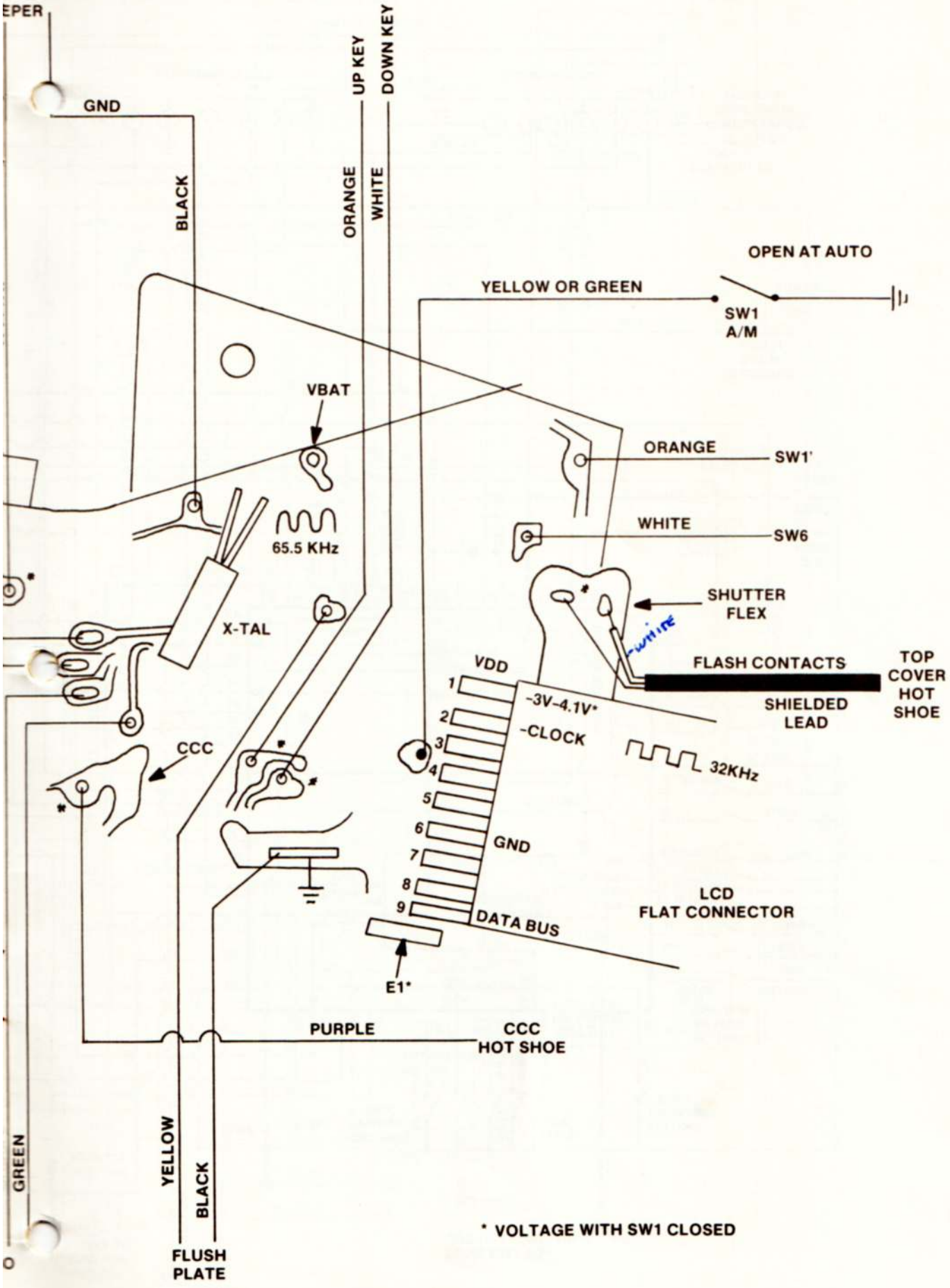

MG1/MG2 CONNECTING BOARD
BLACK
BLACK
YELLOW
BLUE
BLUE
APERTURE
RELEASE MG2 36.4 Ω
MG1
GRAY
DATA-BACK DATE CONTACT
3V
VR1
VR3
D4
VR2
1.2V VDD
RED
RED
PINK
LITHIUM BATTERY
SW17 CARTRIDGE DISPLAY SWITCH
LED FLAT CONNECTOR
1
2
3 DATA BUS
4 GND
5 CLOCK
6 E1
AV EF HOT SHOE
BLUE
PIEZO BEPE
YELLOW
GRAY
BROWN
GREEN

FIGURE 20


EPER
GND
BLACK
UP KEY
DOWN KEY
ORANGE
WHITE
OPEN AT AUTO
YELLOW OR GREEN
SW1
A/M
VBAT
ORANGE
SW1'
WHITE
SW6
65.5 KHz
SHUTTER
FLEX
X-TAL
VDD
1
2
3
4
5
6
7
8
9
-3V–4.1V*
-CLOCK
32KHz
GND
DATA BUS
FLASH CONTACTS
TOP
COVER
HOT
SHOE
SHIELDED
LEAD
CCC
LCD
FLAT CONNECTOR
E1*
PURPLE
CCC
HOT SHOE
GREEN
YELLOW
BLACK
FLUSH
PLATE
* VOLTAGE WITH SW1 CLOSED

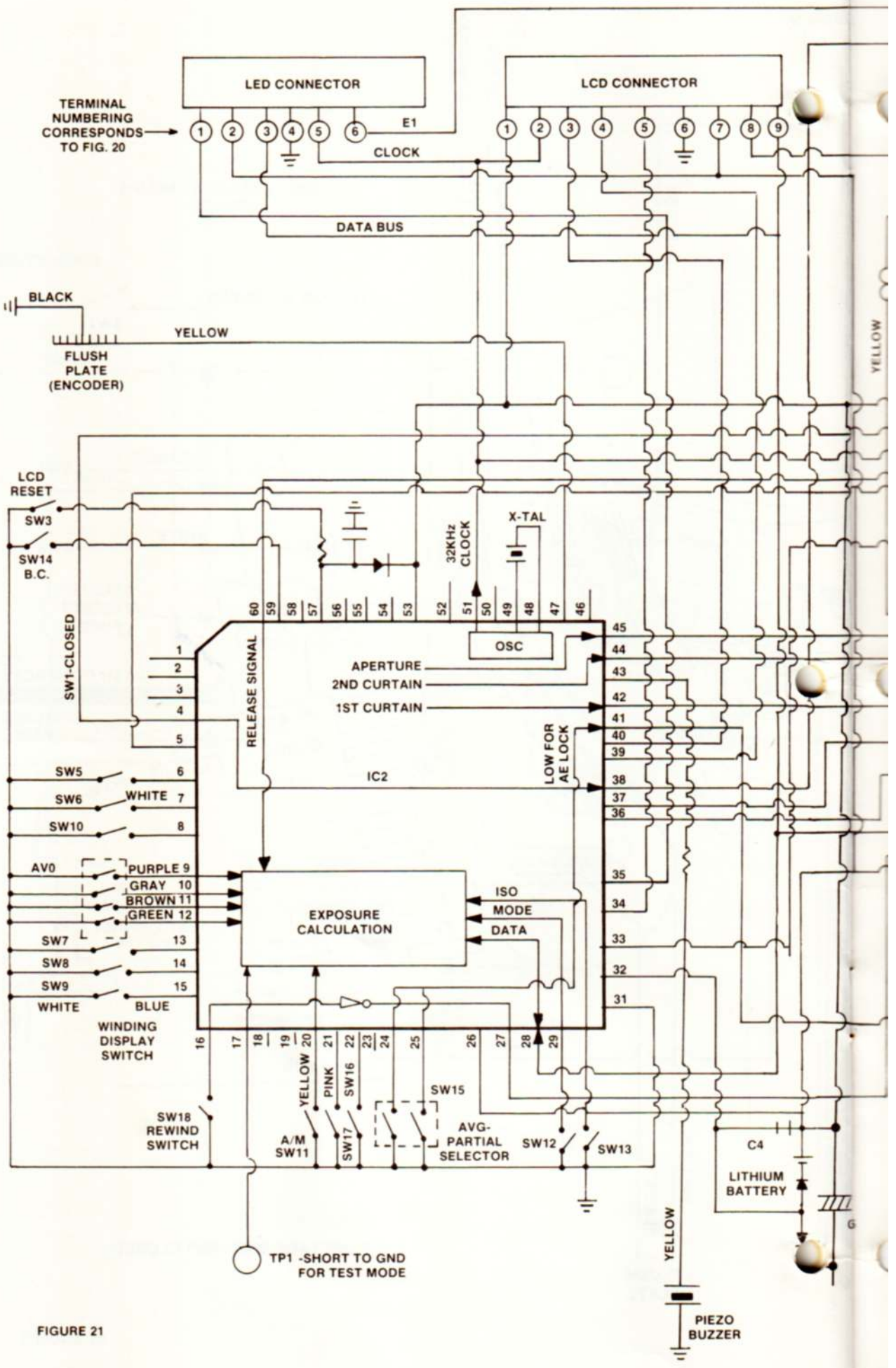
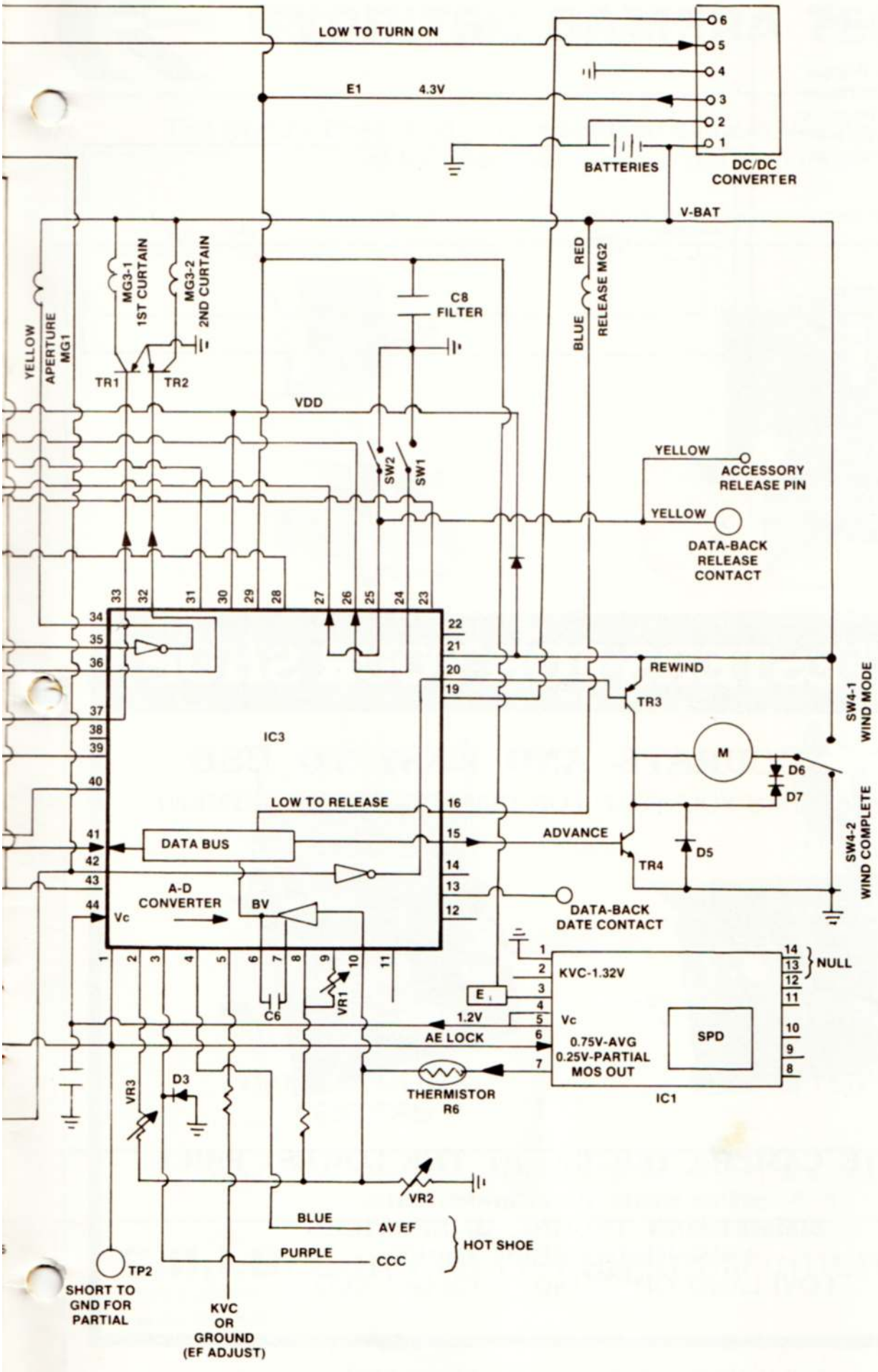

LED CONNECTOR
LCD CONNECTOR
TERMINAL NUMBERING CORRESPONDS TO FIG. 20
E1
CLOCK
DATA BUS
BLACK
YELLOW
FLUSH PLATE (ENCODER)
LCD RESET
SW3
SW14 B.C.
SW1-CLOSED
32KHz CLOCK
X-TAL
OSC
RELEASE SIGNAL
APERTURE
2ND CURTAIN
1ST CURTAIN
LOW FOR AE LOCK
IC2
SW5
SW6
WHITE
SW10
AV0
PURPLE
GRAY
BROWN
GREEN
SW7
SW8
SW9
WHITE
BLUE
WINDING DISPLAY SWITCH
EXPOSURE CALCULATION
ISO
MODE
DATA
YELLOW
PINK
SW16
SW15
SW18 REWIND SWITCH
A/M SW11
SW17
AVG-PARTIAL SELECTOR
SW12
SW13
C4
LITHIUM BATTERY
TP1 -SHORT TO GND FOR TEST MODE
YELLOW
PIEZO BUZZER

FIGURE 21


LOW TO TURN ON
E1 4.3V
BATTERIES
DC/DC CONVERTER
V-BAT
YELLOW APERTURE MG1
MG3-1 1ST CURTAIN
MG3-2 2ND CURTAIN
TR1
TR2
C8 FILTER
BLUE
RED
RELEASE MG2
VDD
SW2
SW1
YELLOW
ACCESSORY RELEASE PIN
YELLOW
DATA-BACK RELEASE CONTACT
IC3
REWIND
TR3
M
D6
D7
SW4-1 WIND MODE
LOW TO RELEASE
DATA BUS
ADVANCE
TR4
D5
SW4-2 WIND COMPLETE
A-D CONVERTER
BV
Vc
DATA-BACK DATE CONTACT
C6
VR1
KVC-1.32V
E1
1.2V
Vc
AE LOCK
0.75V-AVG
0.25V-PARTIAL
MOS OUT
SPD
NULL
IC1
VR3
D3
THERMISTOR R6
VR2
BLUE
AV EF
PURPLE
CCC
HOT SHOE
TP2
SHORT TO GND FOR PARTIAL
KVC OR GROUND (EF ADJUST)

CORRECTION — Sept/Oct 1986 SPT Journal

Please correct Fig. 11 (Super Program Update) and Fig. 11 (Program Plus) as shown here. The resistor for the pull-up resistor assembly should connect to the capacitor lead closer to the back of the camera.