KONICA C35 AUTOFOCUS

Batteries: 2 ea. AA-size

Fig. 1—top cover removed

Fig. 2—bottom cover removed

Fig. 3—front view, covers removed

Fig. 4—back view — module circuit board

Fig. 5—lens/shutter assembly removed

Fig. 6—back view, shutter assembly

Fig. 7—shutter separated from front plate

Fig. 8—lens assembly, front cover removed

Fig. 9—governor timing

Fig. 10—module circuit board — wiring for adjustments

Fig. 11—focus-scale indicator — distance positions

Fig. 12—position of test target for horizontal adjustment

Fig. 13—position of test target for vertical adjustment

Fig. 14—wiring pictorial and test points, old-style AF circuit board

Fig. 15—wiring variations in 502-E-1 AF circuit board

Fig. 16—wiring variations in 502-E-2 AF circuit board

Fig. 17—meter circuit board, wiring

Fig. 18—terminal board, wiring

ADJUSTMENT LOCATIONS:

Low-light LED	A*
Scan mirror, vertical	B
Scan mirror, horizontal	C
Transmission	D**
Auto exposure	E
Infinity focus	F

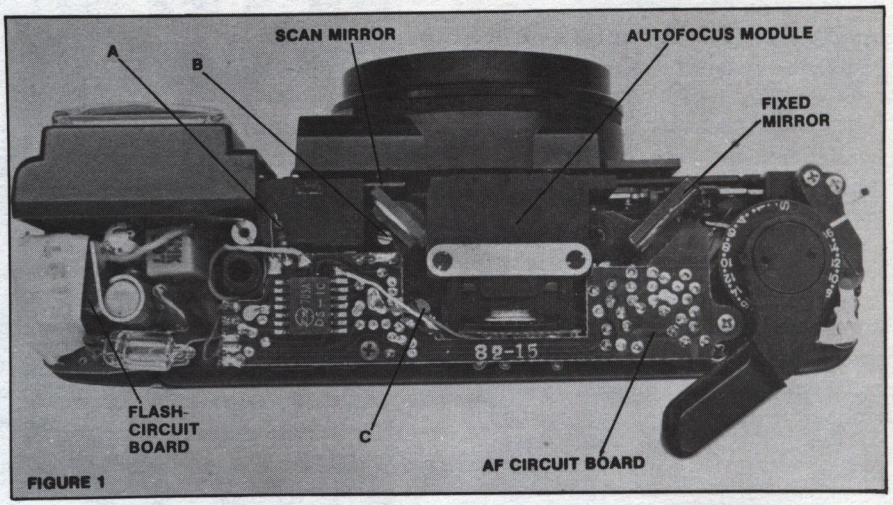

FIGURE 1

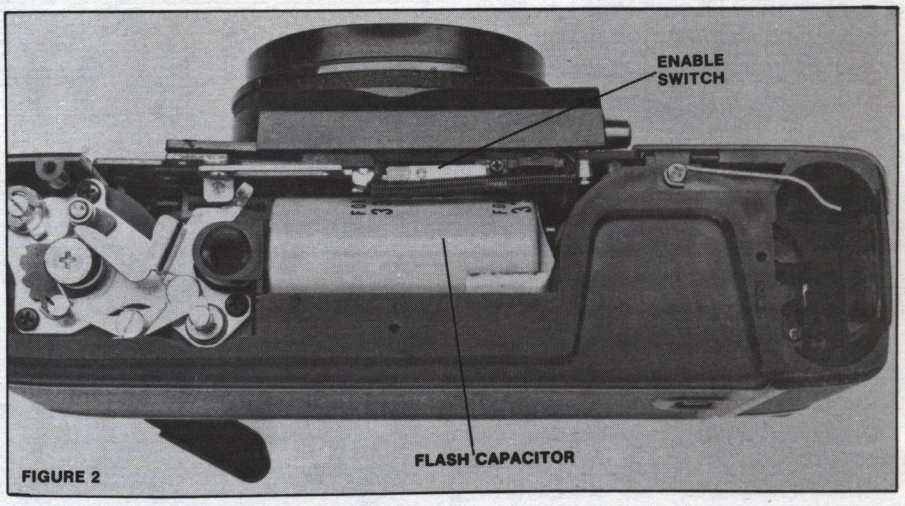

FIGURE 2

*Some cameras have a variable resistor at this position to adjust the turn-on point of the low-light LED.

**The holes at the front of the AF module accept an adjustment screw for balancing the light transmission. In the new-style AF module, the adjustment holes are at the top; there's one screw hole on the scan-mirror side of the module and another on the fixed-mirror side. Either style module should have no more than one adjustment screw — either on the scan-mirror side or on the fixed-mirror side. But, if no transmission adjustment was originally required, there may not be an adjustment screw in the module.

ADJUSTMENT AND TEST VALUES:

Low-light LED: on at EV 9, off at EV 10 (ASA 100)

Maximum dark current: 0.3ma (in cameras with new-style AF module), 0.5ma (in cameras with old-style AF module)

Reference for voltage measurements: black wire (-) at corner of AF circuit board to negative battery, Fig. 14

Autofocus-operating voltage: 6-7V (measure to blue wire on AF circuit board, Fig. 1)

Auto-exposure supply voltage: 1.27-1.3V (measure to gray wire on AF circuit board)

Governor timing: With the shutter cocked, the hole in the stop gear should align with the tip of the stop pawl, Fig. 8 and Fig. 9. To change the timing, disconnect the spring from the lower governor screw. Remove the lower screw and loosen the upper

governor screw. Then shift the lower end of the governor away from the focus ring, Fig. 8. Turn the stop gear until its timing hole aligns with the tip of the stop pawl and reengage with the focus ring.

Infinity focus: Adjustment should not be necessary unless you disassemble the lens, Fig. 8. To check, hold the shutter-charge slide, Fig. 3, as you push down the release slide. Hold down the release slide to open the diaphragm blades. Then allow the shutter-charge slide to move slowly toward the wind-lever end of the camera until the shutter blades open. Push the armature against the autofocus magnet, Fig. 8, so that the focus ring moves to infinity. You can reposition the lens for infinity focus by first loosening the three left-hand screws, Fig. 8.

ADJUSTMENT SEQUENCE:

1. transmission (module adjust)
2. horizontal (scan-mirror adjust)
3. vertical (scan-mirror adjust)
4. exposure

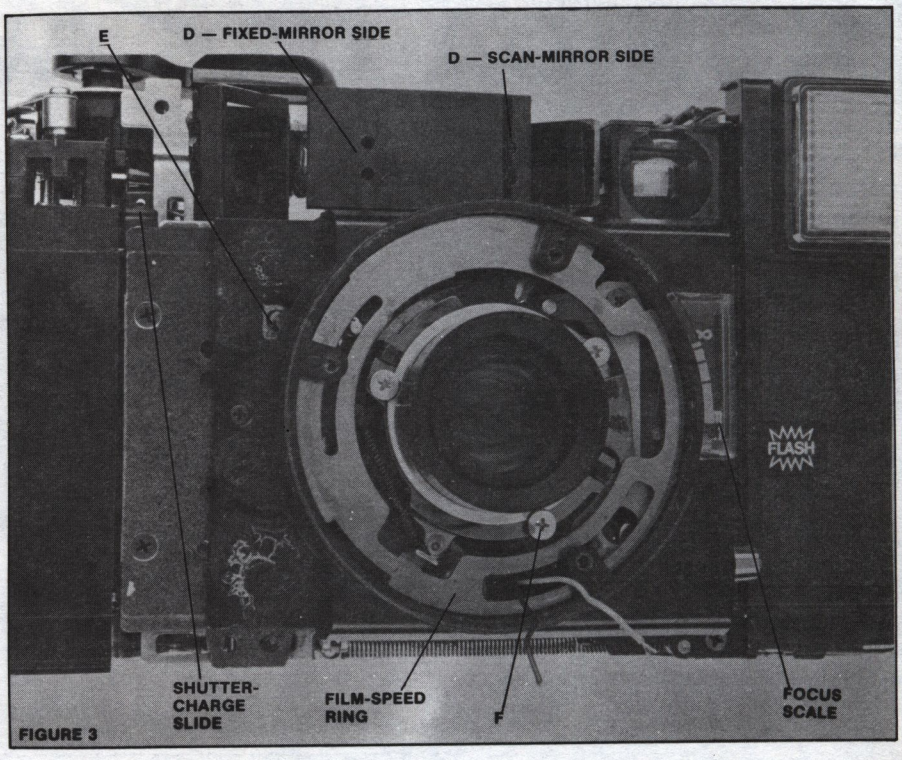

FIGURE 3

ADJUSTMENT PROCEDURES FOR THE AUTOFOCUS:

Note: Checking the autofocus requires that the camera top cover be in place; otherwise, stray light will cause incorrect focus results. You can facilitate the autofocus adjustments by making a dummy top cover. Cut away a section from the back of a top cover to provide access to the module circuit board, Fig. 4. Also drill clearance holes in the top to clear the vertical and horizontal adjustments, Fig. 1. For cameras with the new-style module, you can drill two additional holes over the transmission-adjust screw holes in the module. It's necessary to lift the dummy top cover to make the transmission adjustment with the old-style module.

A. Transmission

The autofocus module, Fig. 1, may use an adjustment screw at either the scan-mirror side or the fixed-mirror side to balance the light seen through each autofocus window. Changing the light that reaches either mirror results in a voltage change at the module. The adjustment screw simply decreases the light reaching one mirror or the other. By turning the screw in or out, you can balance the change resulting from one window with the change resulting from the other window.

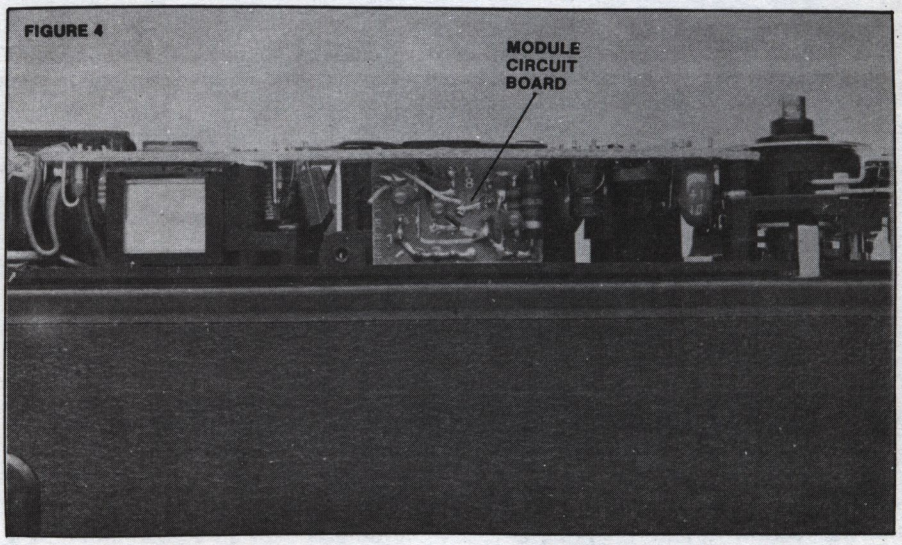

FIGURE 4

1. Connect wires to the back of the module as shown in Fig. 10.
2. Mount the dummy top cover.
3. Mount the camera so that both autofocus windows are covered by the window of a light box. Set the light box to EV 10.
4. Connect a voltmeter between the module wires, Fig. 10, and partially depress the release button. The voltage should be between 4.0 and 5.5V with the old-style module and between 5 and 7V with the new-style module.
5. Use a small piece of cardboard to progressively cover the window in front of the fixed mirror while watching the voltage change. Note whether the voltage increases or decreases as you cover the window. Then note the voltage change while progressively covering the window in front of the scan mirror. If both voltages decrease as you cover the windows, no adjustment is needed. But if one voltage increases while the other

decreases, the module requires adjustment.

6. If there is no adjustment screw in the module, you can install an adjustment screw to one side or the other (there should never be more than one adjustment screw in a module). Find the window which causes the voltage to increase as you block off the light Continue blocking off the light from that window until you find the maximum voltage — the highest voltage you can get by covering part of the window. Note the maximum voltage reading.
7. Install the adjustment screw in the opposite side to raise the voltage to the same level. For example, consider that the voltage increases as you cover the window in front of the fixed mirror. After you find the maximum voltage, install the adjustment screw on the scan-mirror side of the module, Fig. 3. Turn the adjustment screw in or out until you measure the same maximum voltage by partially covering the window in front of the fixed mirror. If the adjustment is correct, the voltage will now decrease as you start covering the fixed-mirror window. If the voltage still increases as you cover the fixed-mirror window, back out the adjustment screw a little further.

   Note: The new-style module and the old-style module require different adjustment screws. Adjustment screw for new-style module — 02035B. Adjustment screw for old-style module — 02035A.

B. Horizontal

Note: The horizontal and vertical adjustments on the scan mirror require a target which you can place at different distances from the film plane. You can make the target out of a piece of white paper and a piece of gray paper, Fig. 12. Arrange the target with the viewfinder-focus mark as shown in Fig. 12 for the horizontal adjustment. Arrange the target with the viewfinder-focus mark as shown in Fig. 13 for the vertical adjustment.

1. Note the final voltage reading after the transmission adjustment with both windows uncovered.

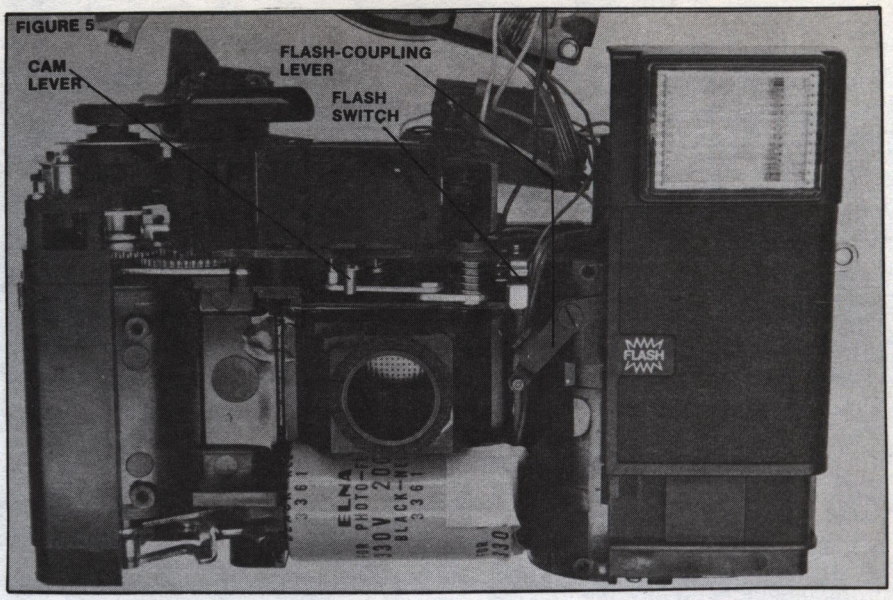

FIGURE 5

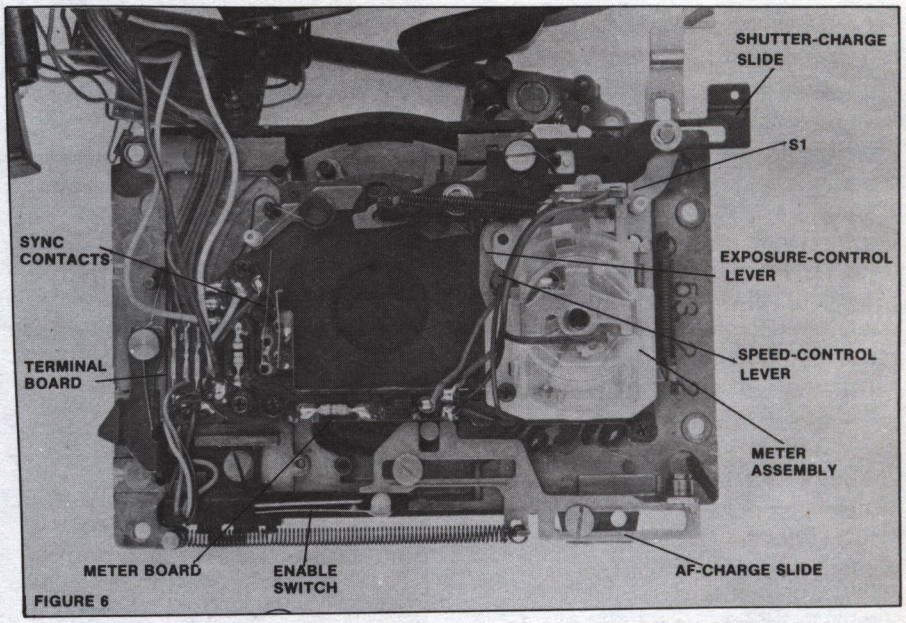

FIGURE 6

2. Set the camera 2.02 meters from the target (measured to the film plane).
3. Align the target horizontally, Fig. 12, and install the dummy top cover.
4. Push the release button part way and measure the voltage between the two hook-up wires, Fig. 10.
5. Adjust the mirror angle (C in Fig. 1) until the voltage reading matches that noted in step #1. Or, if you can't get the voltage as high as in step #1, adjust for the maximum possible voltage.

C. Vertical

1. Disconnect the voltmeter, but leave the dummy top cover in place.
2. Position the target vertically, Fig. 13, at a distance of 2.02 meters.
3. Cock and release the shutter. The lens should move to the 2.02-meters position. To check, note the position of the focus needle, Fig. 11. If the needle doesn't stop at the 2.02-meters position, change the vertical adjustment on the scan mirror (B in Fig. 1) and repeat the test.
4. After making the 2.02-meters adjustment, check the needle position at 3m and 1.1m from the film plane. Fig. 11 shows the proper needle positions at these distances. Finally, check the

focus on an infinity target to assure that the needle moves to infinity, Fig. 11.

ADJUSTMENT PROCEDURES FOR AUTO EXPOSURE:

1. Pry off the cemented cover plate at the wind side of the lens to uncover the auto-exposure adjustment, Fig. 3.
2. Adjust the eccentric for a 0 EV error.

OPERATION, GENERAL:

1. To cock the shutter with the lens/shutter assembly removed, first push the AF-charge slide, Fig. 6, from left to right. Then push the shutter-charge slide from right to left. The AF-charge slide rotates the AF-charge ring, Fig. 8. In turn, the AF-charge ring rotates the focus ring which moves the lens forward (the start position).
2. When you depress the release slide, switch S1, Fig. 6, closes and provides power to the AF circuit board, Fig. 1. The AF magnet, Fig. 8, now holds its armature, keeping the stop pawl disengaged from the stop gear in the governor assembly. Next the release slide disengages the latch holding the AF-charge ring. As the AF-change ring rotates, the focus ring also rotates and moves the lens toward the film.
3. The pin at the top of the AF-charge ring now swings the cam lever, Fig. 5, to move the scan mirror in an arc. The AF module, Fig. 1, now provides a changing output voltage as the scan mirror moves. When the voltage at the scan-mirror side of the module equals the voltage at the fixed-mirror side of the module, the AF module supplies the lens-stop signal to the AF circuit board.
4. The circuit then shuts off the current flowing through the AF magnet. When the AF magnet releases its armature, the stop pawl engages the stop gear, Fig. 9. The stop gear, engaged with the focus ring, arrests the lens movement at the proper focus position.
5. The AF-charge ring continues its release rotation after the focus ring has stopped. When the AF-charge ring reaches the end of its rotation, it strikes the shutter-release lever to disengage the shutter-charge slide. The shutter-charge slide now drives open the shutter blades.
6. A trap-needle system in the meter assembly, Fig. 6, determines the f/stop and the shutter speed. The needle-trapping blades move down as you depress the release slide. When the blades engage the meter needle, they stop the movement of the exposure-control lever, Fig. 6. The exposure-control lever arrests the aperture-control lever, Fig. 7, to stop the opening movement of the diaphragm blades. Also, the exposure-control lever positions the speed-control lever, Fig. 6. When the shutter releases, the speed-control lever limits the movement of the lever which opens and closes the shutter blades. The shutter provides one of three shutter speeds, depending on the position of the speed-control lever — 1/60, 1/125, or 1/250. The f/stop varies from f/2.8 to f/22.
7. When you raise the flash, the flash-coupling lever, Fig. 5, closes the flash switch, Fig. 5. The flash now charges. Also, the flash-coupling lever moves the cam ring, Fig. 7, in a counter-clockwise direction. The cam

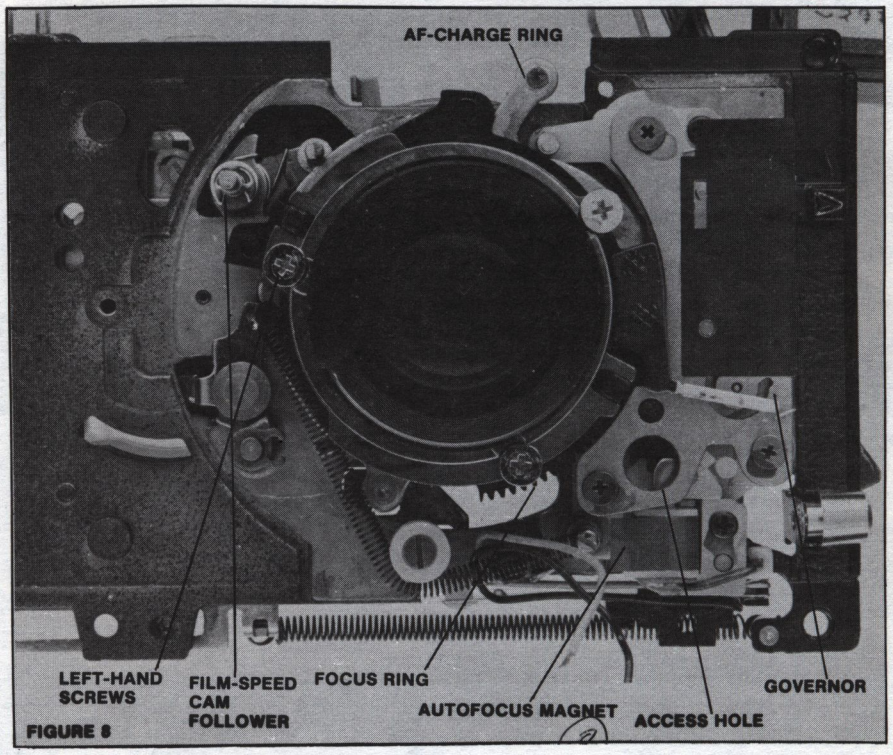

FIGURE 8

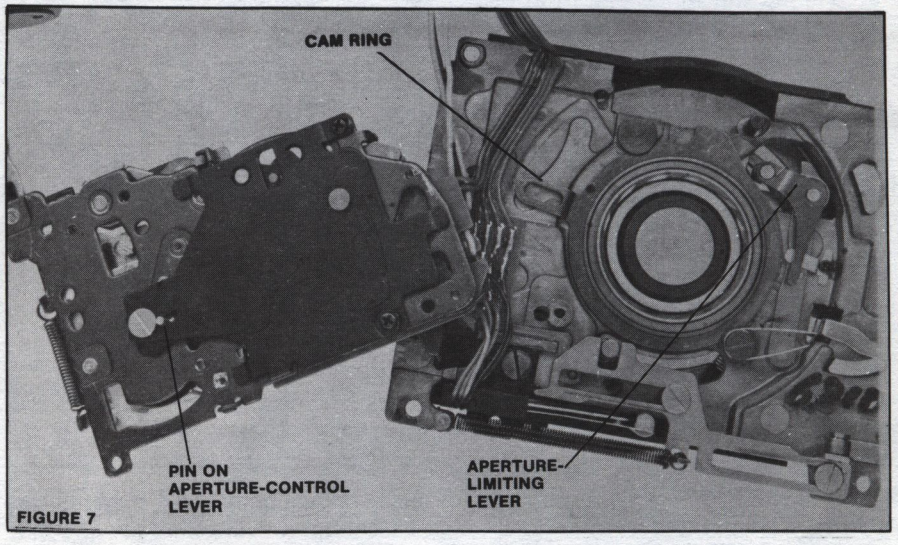

FIGURE 7

ring allows the aperture-limiting lever, Fig. 7, to move into the path of the pin on the aperture-control lever, Fig. 7. Now the aperture-limiting lever determines how far the diaphragm blades can open for the flash aperture. Both the focus distance and the film-speed setting affect the position of the aperture-limiting lever.

8. The flash fires when the sync contacts, Fig. 6, close. With fresh batteries, the neon ready lamp should turn on in around 8 seconds.
9. When S1 closes, the AF circuit board supplies the operating voltages for both the auto-exposure circuit and the autofocus circuit. A step-up transformer increases the battery voltage from 3V to around 6V to drive the autofocus. The AF circuit board supplies the 6V to the module circuit board, Fig. 4 (blue-wire connection).

DISASSEMBLY HIGHLIGHTS:
Sequence:

1. top cover and bottom cover (release button and battery-box cover loose)
2. remove 2 screws and lift aside AF circuit board, Fig. 1
3. remove viewfinder block (2 screws — post screw also serves as support for top cover)

   Note: The flash-circuit board, Fig. 1, is now loose. If the flash is charged, be careful to avoid touching the board. For safety, you can discharge the main capacitor at the bottom of the flash-circuit board; discharge the capacitor between the red and green wires that come from the flashtube.
4. remove wind-side front leatherette
5. cock shutter and raise flash
6. remove 4 front-plate screws
7. separate lens/shutter assembly from camera body, Fig. 5

   Note: The flash-coupling lever, Fig. 5, prevents the lens/shutter assembly from lifting off easily. To free the flash-coupling lever, partially depress the flash as you're lifting off the lens/shutter assembly.
8. 3 screws holding shutter mechanism (cock the shutter to reach the screw in the upper right-hand corner, Fig. 6)
9. separate shutter mechanism from front plate, Fig. 7

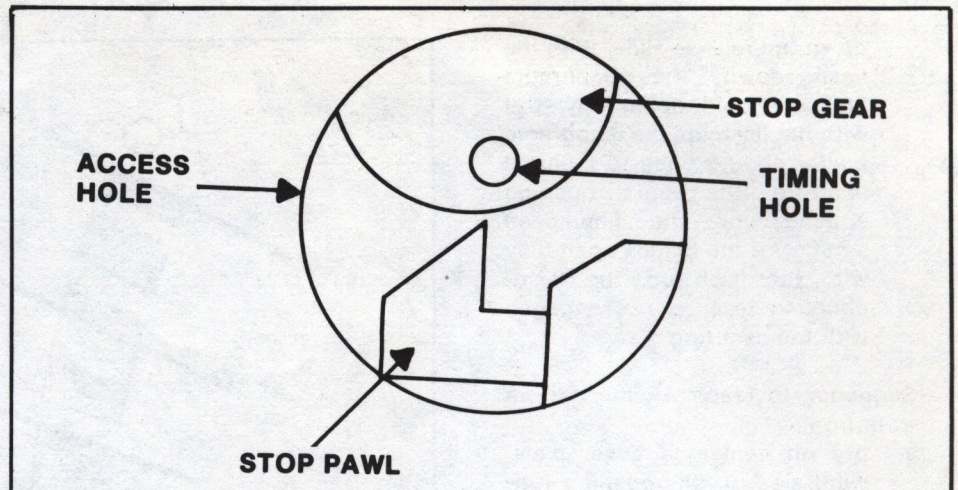

FIGURE 9

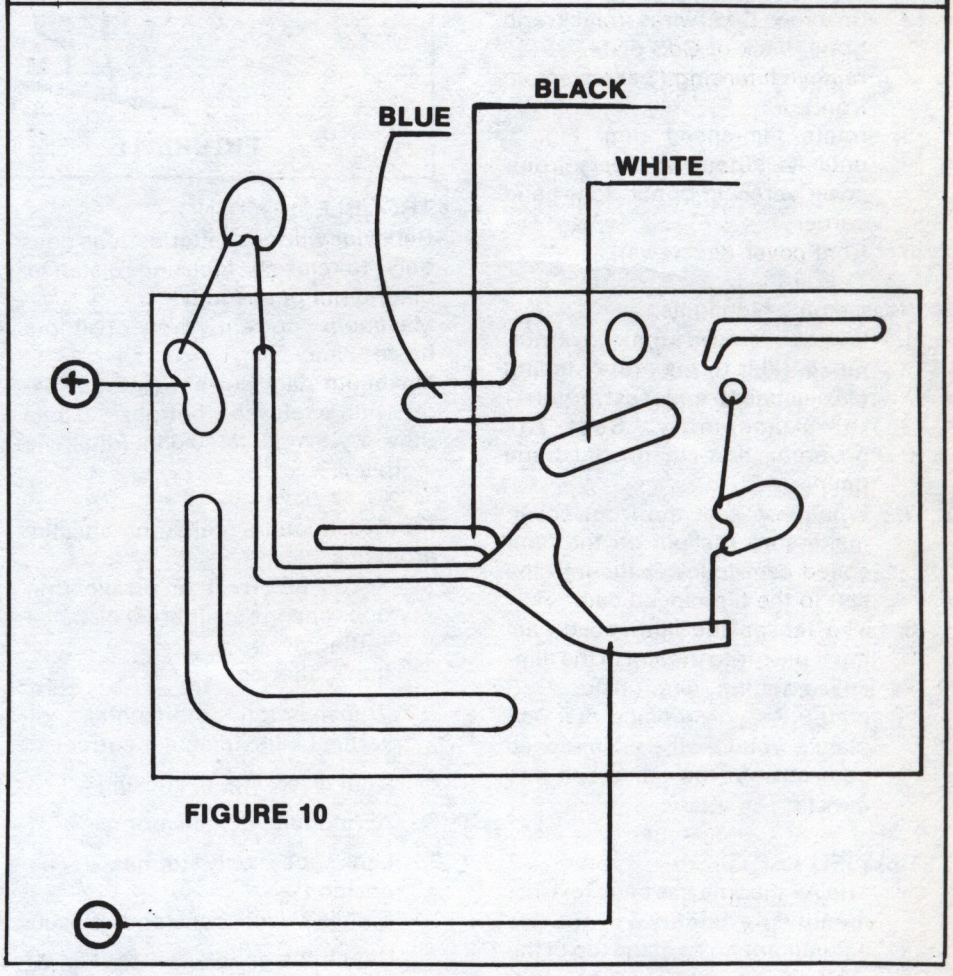

FIGURE 10

Reassembly highlights:
When you replace the lens/shutter assembly, the flash-coupling lever must connect to the slot in the cam ring, Fig. 7. Also, the pin on the AF-charge ring, Fig. 8, must sit to the left of the pin on the cam lever (as seen from the front). To install:

1. Rotate the cam ring clockwise to the flash-down position.
2. Release the shutter.
3. Seat the wind side of the lens/shutter assembly first — pass the end of the shutter-cocking slide inside the camera-body lug.
4. Hold down the flash as you seat the rewind side of the lens/shutter assembly. The pin on the flash-coupling lever should then pass into the slot in the cam ring. Push in the flash-latch button to fully seat the lens/shutter assembly.
5. Check for proper assembly by making sure you can cock and release the shutter. Also, watch the diaphragm blades from the front of the lens as you push

down the release slide. With the flash down, the diaphragm blades should open fully. But with the flash up, the diaphragm blades should open to a partial aperture (the actual opening depends on the film-speed setting). If the blades open fully with the flash up, the flash-coupling lever is not engaged with the cam ring.

Sequence to reach AF mechanism from front:

1. pry off cemented cover plate, wind side of lens opening (uncovers auto adjustment, Fig. 3)
2. unscrew retaining ring, front of lens, and lift out CdS plate
3. unscrew CdS wires (black and gray), back of CdS plate
4. remove filter ring (3 screws from front)
5. rotate film-speed ring, Fig. 3, until its cutout uncovers front-cover screw in upper right-hand corner
6. front cover (2 screws)

Reassembly highlights:

1. If you remove the governor, Fig. 8, refer to the proper timing ("Adjustment and Test Points") for reassembly. Seat the governor first; then adjust the timing.
2. When you seat the front cover, make sure the pin on the film-speed cam follower fits into the slot in the film-speed cam.
3. The tab on the film-speed cam must pass into the slot in the film-speed-setting ring (inside CdS plate). As you replace the CdS plate, rotate the film-speed control until the tab drops into the slot.

REVISED PARTS:

1. The AF module has been revised. Identify the new style by the two adjustment holes at the top of the module. The old style has four adjustment holes at the front, Fig. 3.
2. There are three versions of the AF circuit board. The old style, Fig. 14, can be used only with the old-style AF module, Fig. 3. Either of the other two boards, Fig. 15 and Fig. 16, can be used with the new-style AF module. You can quickly identify the new-style boards by the hole, Fig. 15; the hole indicates that you can

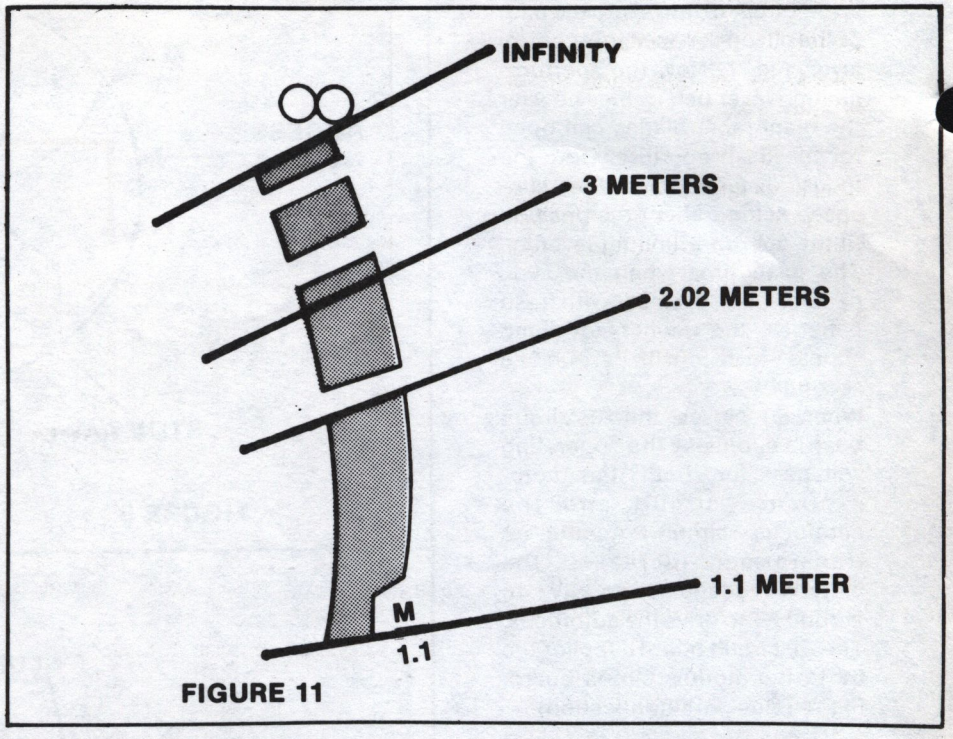

FIGURE 11

TROUBLESHOOTING:

Behavior without batteries: lens goes only to closest focusing distance, diaphragm opens fully

Maximum current draw (without flash): 3ma

Maximum dark current (without depressing release button): 0.3ma (new-style module), 0.5ma (old-style module)

Troubleshooting steps for specific problems:

1. Focus incorrect or erratic (but does change at different distance settings)

   Low batteries

   Transmission, horizontal, or vertical adjustments incorrect

   Cam lever, Fig. 5, sticking

   AF module, defective

2. Lens goes only to near-focus position

   Enable switch, constantly closed

   Check the enable switch, Fig. 6, between the green and black wires at the end of the AF circuit board, Fig. 14. You should measure no resistance with the shutter released, infinite resistance with the shutter cocked.

   AF magnet, defective

   Check the coil resistance between the brown wire and the red wire at the end of the AF circuit board, Fig. 14. You should measure around 225 ohms.

   Governor timing incorrect

   See proper timing under, "Adjustment and Test Values."

3. Lens goes only to infinity

   Enable switch, poor contact

   Check the enable switch as described under symptom #2.

   Switch S1, poor contact

   Check S1, Fig. 6, between the brown wire at the end of the AF circuit board and the small red wire at the front of the AF circuit board. You should measure no resistance (direct contact) when you partially depress the release slide. Alternately, measure the voltage to the brown wire. When you partially depress the release slide, you should measure the battery voltage.

   No voltage to AF module

   Check for around 6V at the blue wire, Fig. 14, with the release slide partially depressed. No voltage — blue-wire solder connections or AF circuit board.

   Governor defective

   Listen for the sound of the governor as you release the shutter. If you don't hear the retard sound, the governor isn't slowing the rotation of the AF cocking ring.

   Stop gear or stop pawl (in governor), damaged

4. Diaphragm always programs largest aperture

   Switch S1, poor contact

   Check S1 as described under symptom #3.

   No voltage to AE circuit

   Check for approximately 1.3V at the gray wire, end of AF circuit board, Fig. 14. No voltage — AF circuit board defective.

   Meter coil

   Check the coil between the red wire and the black wire, end of meter board, Fig. 17. Approximate coil resistance — 1.3K.

OTHER COMMENTS:

1. The AF circuit board is supplied only as a complete module. Although you can't get the IC as an individual replacement part, you can cannibalize the IC from an old board. One indication of a defective IC is that the red LED won't turn on. To verify, you can disconnect pin 8, Fig. 15, from the board. If the red LED will then turn on, the IC is defective.
2. The shutter assembly is supplied only as a complete module. Since there's no exchange policy on modules, you can keep the old unit for parts.
3. Konica makes both an export version and a domestic version of the camera, and not all parts will interchange. The domestic model (sold only in Japan) has a green LED to indicate good batteries rather than a red LED to indicate low light. You can also identify the domestic version by the focus-scale needle, Fig. 3; the domestic model has a white (rather than orange) needle. When ordering parts, specify the export model or put an "E" at the end of the part number. Specify the domestic model if you encounter a camera with the green LED and white focus-scale needle.

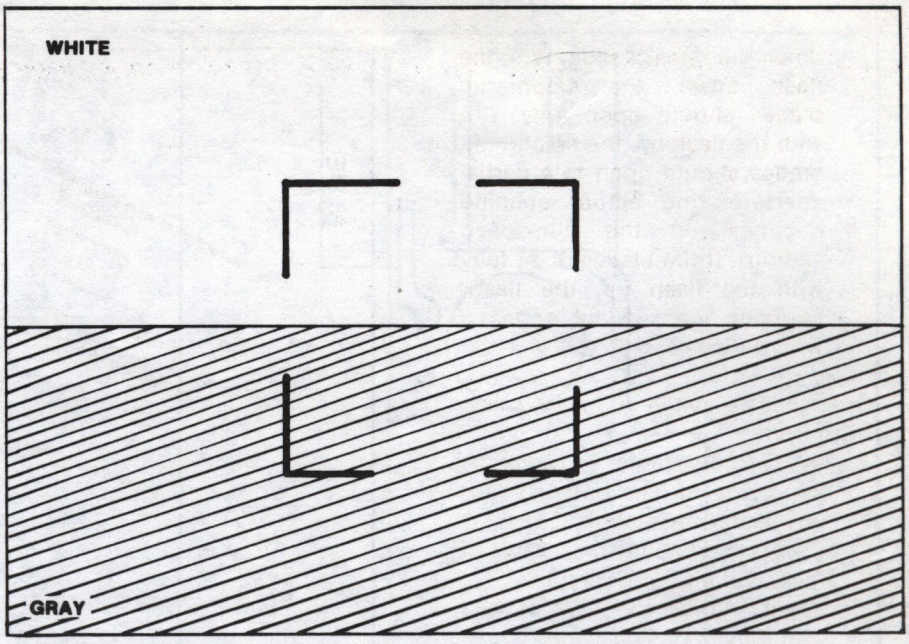

FIGURE 12

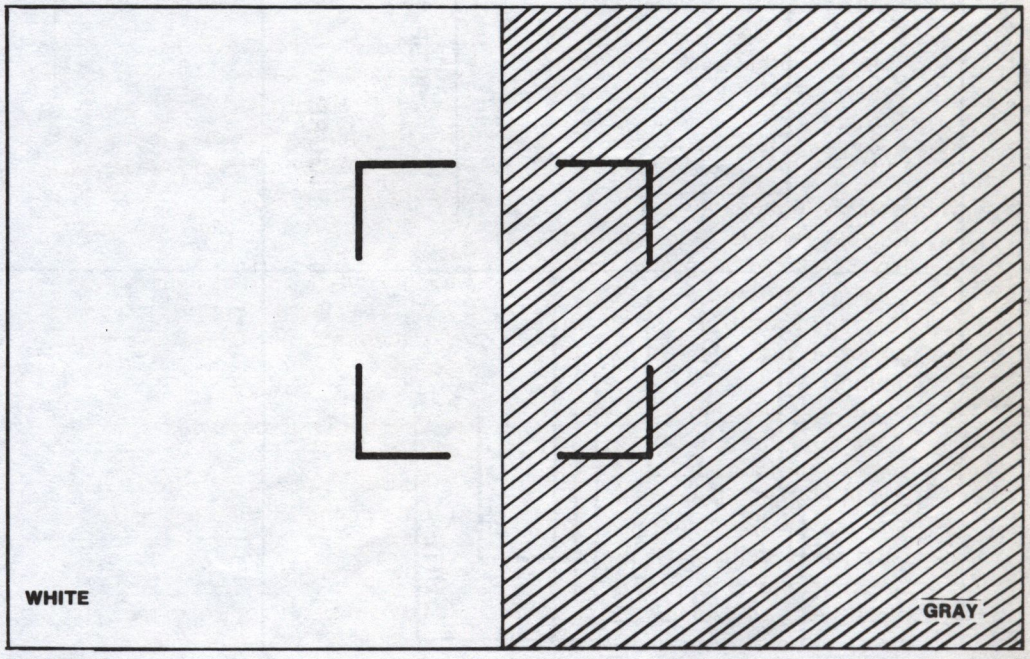

FIGURE 13

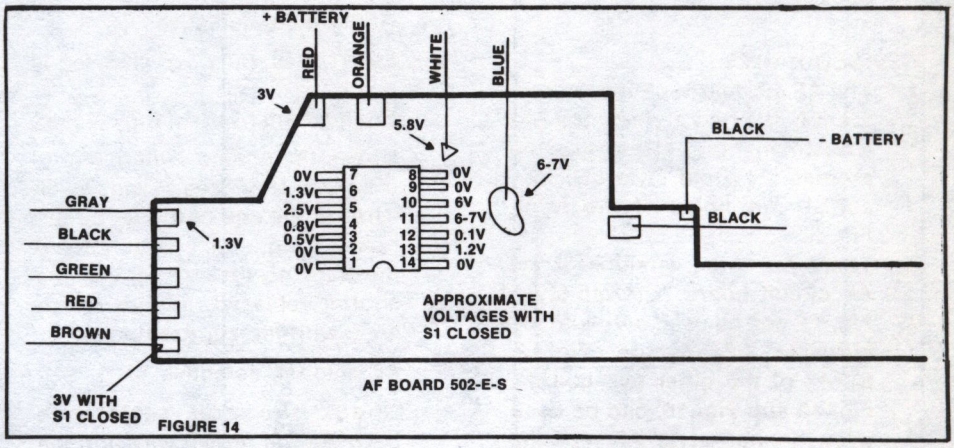

FIGURE 14

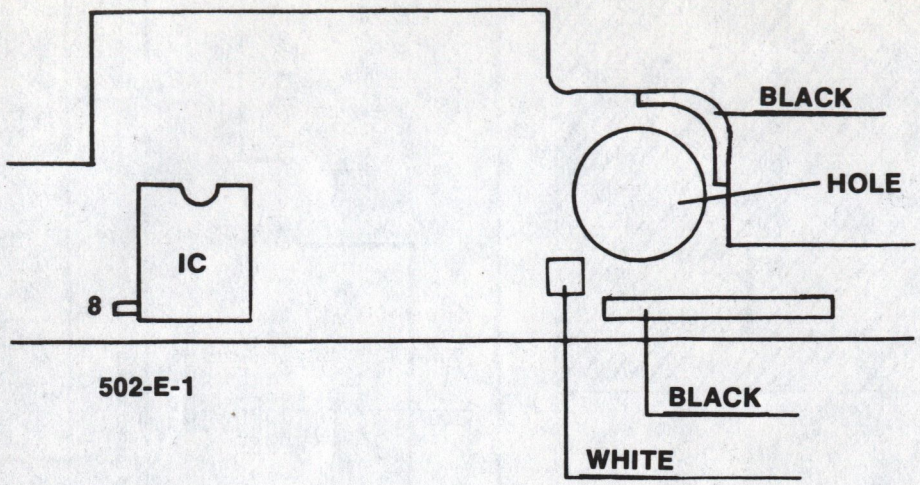

FIGURE 15

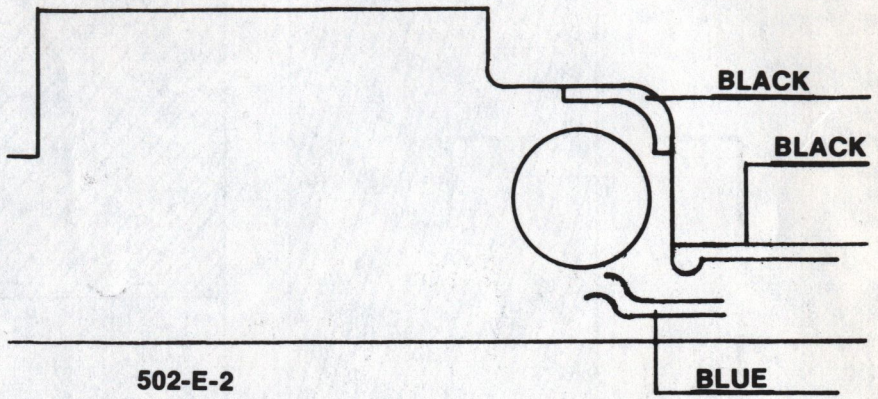

FIGURE 16

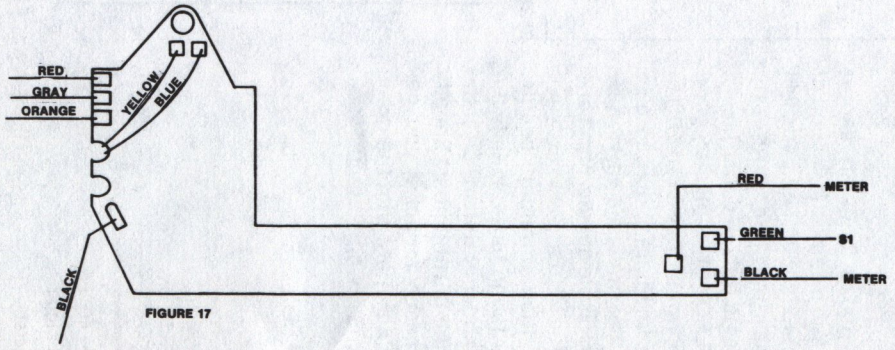

FIGURE 17

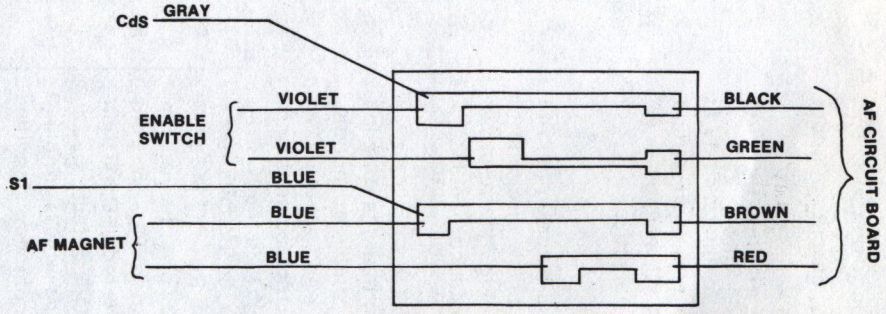

FIGURE 18