C & C ASSOCIATES

troubleshooting guides

ELECTRONIC TROUBLESHOOTING THE OLYMPUS OM-10

1. CIRCUIT DESCRIPTION

The Power Circuit

The camera body is connected to the positive (+) battery terminal and the flex circuit grounds to the body at several points indicated on the schematic. The negative (—) battery terminal connects to the flex circuit via the black wire soldered above the prism near the front right side of the camera. Power is connected to the readout circuit when the switch under the rewind knob is turned on. The exposure circuit (located at the bottom of the mirror box) is powered up only when the mirror begins to rise or when the battery test switch is closed.

Turning on the readout circuit switch connects pin 33, **IC-2** to the negative side of the battery and charges capacitor **C-202**. The charge on **C-202** turns on the internal power to the IC which displays the exposure. After about 1.5 minutes, **C-202** discharges and the display is turned off even though the switch is still in the "on" position. (This feature prevents battery drain if the switch is left on when the camera is not in use.) There is also a touch switch located under the release plunger bezel which when closed connects one side of **C-201** to the chassis (positive). The discharge of **C-201** enables **C-202** to recharge and the display is turned on for another 1.5 minute interval.

The exposure-control circuit is separated from the readout section, and is powered up only after the release button is pushed. As the diaphragm control lever moves, a switch on the side of the mirror box **(SW-104)** closes and connects **IC-1** to the negative side of the battery. All exposure related functions are controlled by **IC-1**, but since the camera does not have a memory circuit, there is no need for this IC to be powered up until just prior to the shutter operation.

All of the devices such as magnets, piezoelectric buzzer, and timer LED have one terminal connected to the chassis (positive). The other terminal of each is connected to **IC-1** which controls their operation.

Battery requirement: two S-76 batteries.

Readout Circuit

The sole function of **IC-2** is to provide exposure information to the operator before the shutter is released. The process begins with a positive voltage at pin 30 causing current to flow through the **CdS** cell (located behind the eyepiece) and then to pin 29. Pin 29 is referenced to pin 28 which is also the origin of an external loop.

The loop path is across the flex to the **ASA** resistor, to the front through the aperture value resistor **(AV-VR)**, then to the back of the camera through the adjustment resistors **(VR-203** and **VR-204)**, finally returning to **IC-2** at pin 24. The voltage at pin 24 is near battery negative (B—). Thus, there is a voltage drop along the loop related to the settings of ASA, AV, and adjustment resistors. The voltage at pin 28 varies in regular increments of about 11 mv per Ev change in AV or ASA. Since this also changes the reference for the CdS cell, the voltage at pin 29 will vary with subject brightness (BV), ASA, and AV. This change is typically 11 mv per Ev and becomes the basis for the readout display.

The voltage at pin 29 is compared internally to a program which turns on a LED to indicate each shutter speed from 1 to 1/1000 second and "over."

Release Circuit

The release button operates a transverse link across the bottom of the camera which releases the mirror latch. As the mirror and diaphragm operating lever begin to move, the main switch **(SW-104)** is closed and the negative side of the battery is connected to **IC-1**. The IC powers up as the mirror continues to rise and encounters a second latch. The second latch is held in place by a combination magnet **(mirror magnet)** — whose operation is controlled by comparator **CP-1** located inside **IC-1**. While the IC is powered up, the voltage at pin 9 is maintained at a level 1.1v below the positive battery voltage by **VR-102** and an internal regulator. This voltage is used to set comparator **CP-1** "on" which causes the combination magnet to release the second mirror latch. In the actual operation, the time interval between the closing of **SW-104** and the operation of the mirror magnet is so short that there is no discernible delay in mirror travel.

If the battery voltage falls below 2.0v, the reference voltage is too low to operate **CP-1** and the mirror remains latched by the combination magnet. This provision prevents shutter operation if the batteries are depleted. Resistor **VR-102** adjusts the minimum battery voltage at which the camera will operate.

Exposure Control

The Olympus OM-10 is an aperture priority camera, so the problem it faces is to determine the proper shutter speed for existing subject brightness, ASA, and aperture. Furthermore, the exposure control operates only in the present. There is no memory circuit to consider the situation before the exposure begins. The camera is obliged to follow the progress of the exposure even as the light is falling on the film. To manage this task, a **photodiode** is positioned in the bottom of the mirror box so that light falling on the film aperture and reflecting from the film controls the exposure.

As mentioned, when the release plunger is pushed, the first motion of the mirror and diaphragm control lever closes switch **SW-104** connecting **IC-1** to the negative side of the battery. The first function of the IC is to check the battery voltage. It then releases the combination magnet allowing the mirror to continue its travel. As the mirror rises and the aperture closes, a constant voltage appears at pin 11, **IC-1**. This voltage is maintained at about 170mv below battery positive and travels up the flex through the **ASA** resistor, and returns to pin 12, **IC-1**.

Pin 12 is less positive than pin 11 because of the voltage drop across the **ASA** resistor. At ASA 25 the difference is over 200 mv, but at ASA 1600 the difference is less than 5 mv. The voltage at pin 12 is applied to one input of comparator **CP-2** and sets the comparator output high. This output turns on transistor **TR-1** which conducts current through the shutter magnet and latches the closing curtain. The other input of **CP-1** is internally connected to pin 10, **IC-1**. In the outside world, pin 10 is connected to the cathode of the **photodiode** and to one side of the **timing switch**. Before the opening curtain moves, the **timing switch** is closed, connecting pin 10 and the **photodiode** to the constant voltage at pin 11. One more condition: the other side (anode) of the **photodiode** is connected to pin 9, **IC-1** which is at a lower potential than either pin 10 or pin 12. Everything is now ready for the exposure to begin.

To review the situation:

1. The mirror is moving upward and is about to release the opening curtain.
2. The diaphragm has closed down so that the light focused upon the film aperture is a function of subject brightness and lens opening. The **photodiode** is seeing the light reflected from the film aperture.
3. The closing shutter curtain is latched by the shutter magnet. The current path is from battery positive through the magnet, into pin 16, **IC-1**, through **TR-1**, out of pin 18, **IC-1**, and finally through **switch 104** to battery negative.
4. Comparator **CP-2** is keeping **TR-1** "on" because of the voltage difference between pins 10 and 12 of **IC-1**. The voltage difference, remember, is determined by the ASA setting.

At this moment the three variables necessary to determine shutter speed (brightness, aperture, and ASA) are known and are being expressed in terms of voltage. The mirror now releases the opening curtain.

As the opening curtain begins to move, the timing switch opens and disconnects the cathode of the photodiode from the voltage source at pin 11. The timing capacitor **Ct** (probably made as part of the photodiode), which is connected to pin 10, **IC-1**, is now free to discharge through the **photodiode** to the lower potential at pin 9, **IC-1**. When the timing capacitor discharges to a voltage below that at pin 12, **IC-1**, comparator **CP-2** will switch states. This turns off **TR-1** and the shutter magnet, allowing the closing curtain to run.

The rate of **Ct's** discharge determines the shutter speed. How fast it discharges depends entirely upon the brightness of light reflecting from the film aperture to the **photodiode**. How much discharge takes place before **CP-2** switches is a function of the ASA setting. This system enables the camera to produce an electrical analog of the exposure as it is actually taking place. The response time of the **photodiode** is fast enough to detect changes in light level during the exposure, such as when a flash is used.

A few last details. Because film exposure begins as the opening curtain moves, the **photodiode** must take that into account also. The opening curtain, therefore, is decorated with reflective paint to reflect as much light as film.

Calibration of the system is adjusted by **VR-103**.

Manual Speeds

A switch built into the **ASA resistor board** is used to select automatic, manual, or bulb function. The center pole of the switch connects to pin 8, **IC-1**. In the auto mode, the switch is open and pin 8 connects to nothing. Moving the switch to manual position connects pin 8 to battery positive. Two events now occur inside the IC: (1) the voltage at pins 10, 11, and 12 becomes near battery negative.(2) One side of capacitor **C-101** is connected to the voltage reference through pin 4.

As **SW-104** closes, the other side of **C-101** connects to battery negative and that same voltage appears across the capacitor and at pin 4, **IC-1**. When the **timing switch** opens, the voltage at pin 10 rises to about 750mv below battery positive. At the same time, **C-101** begins to charge through resistor **R-103**. When the voltage at pin 4 just exceeds that at pin 10, the comparator switches states and the shutter magnet releases the closing curtain. The resistor **R-103** is selected to produce a flash sync speed of about 1/45 second. If the manual adapter is plugged into the jack on the front of the camera, a variable resistor is substituted for **R-103** and speeds from 1 to 1/1000 second may be selected.

Moving the shutter function switch to "bulb" connects battery positive to the bulb switch located under the exposure-control circuit board. Events now proceed exactly as in the manual mode except that while the release button is held, the bulb switch is closed and positive voltage is applied to pin 17, **IC-1**. As long as the bulb switch is closed, the voltage at pin 4 (from **C-101**) is inhibited from switching the comparator and the shutter remains open.

Self Timer

Setting the self-timer switch connects one side of capacitor **C-104** to the main switch **SW-104**. As the mirror begins to rise and **SW-104** is closed, **C-104** discharges to battery negative. The pulse is transmitted across the capacitor to pin 15, **IC-1** and to comparator **CP-1**. Since the voltage is well below that required to turn **CP-1** "on," (remember that **CP-1** is used to inhibit release if the battery voltage is low) the mirror comes to rest against the combination magnet latch. Everything stops now while **C-104** charges to the voltage required to set **CP-1** and release the combination magnet. The recharge takes about 12 seconds.

There are two oscillators inside **IC-101**. One of them operates at 2 Hz off the capacitor connected to pin 7. The other operates at 2 kHz off the capacitor connected to pin 6. The 2 kHz oscillator provides the signal to drive the piezoelectric buzzer which provides the audible signal during the timer operation and battery check. The other oscillator provides the interval between "beeps."

The buzzer and **LED** are driven from the same output, pin 3, **IC-1**. During the time that **C-104** is recharging, the buzzer and **LED** are enabled to indicate the camera is in timer mode.

Flash Dedication

When a dedicated strobe such as the Olympus T-20 is installed on the accessory shoe, a voltage from the strobe is applied to pin 3, **IC-2**. As the strobe charges, the voltage at pin 3 increases and switches on two transistors inside **IC-2**. The first connects battery positive from pin 19 to pin 4. Pin 4 is common with pin 8, **IC-1** and switches **IC-1** to the manual timing mode. The second transistor switched on by the strobe causes the "flash" LED to indicate in the viewfinder display. After the flash exposure, if the detector on the flash has read back sufficient light, the LED in the display will blink. Capacitor **C-204** determines the frequency.

II. EQUIPMENT AND GENERAL INFORMATION

A. The following tools and equipment should be available to carry out the testing procedures in this guide:

- Grounded soldering iron
- 1000 ohm test probe
- 0 ohm test probe
- DVM
- Power supply
- 200 K ohm resistor

B. Typical power consumption:

Readout	2.4ma
Battery check	32.5ma
Timer mode	13.0ma
SW-104 closed (mirror Mag)	15.2ma
Shutter magnet (Bulb)	8.8ma

C. Typical coil resistance:

Mirror magnet	360 ohms
Shutter magnet	590 ohms

D. All typical voltage measurements indicated in this guide were made with the **common** lead of the DVM connected to the camera **body**. Because the body is equal to **battery positive** (+), the numbers are preceded by a minus sign. The magnitude of the voltage is its difference from battery positive.

For example: The reading "0.00v" indicates battery positive. The reading "—3.00v" indicates battery negative.

E. For this guide, "**B+**" will be used to indicate battery positive which is also the body. "**B–** " will be used to indicate battery negative.

III. IC CHECKS.

A. IC-1

1. Pin 5 is battery positive.

2. Pin 18 connects to battery negative when **SW-104** is closed.

3. Pin 1 is the input from the battery check switch. Connecting pin 1 to **B–** should activate the buzzer and LED. Access pin 1 at **TP-17**.

4. Pin 2 is the output to the mirror magnet. With shutter cocked, use a test probe to apply **B–** to pin 2 or **TP-8**. The magnet should release with an audible "click."

5. Pin 3 is the output to the buzzer and LED. Check at **TP-26** and **TP-27** for 2KHZ signal at 0.5 sec. intervals in timer and battery check mode.

6. Pin 4 is the input from the manual timing capacitor, **C-101**. At **TP-20** use the 1000 ohm probe to apply **B+** in the manual mode. The shutter should run through at the fastest speed. Use the 1000 ohm probe to apply **B–** to **TP-20**. The shutter should latch open.

7. Pins 6 and 7 are outputs to the oscillator capacitors for the buzzer signals.

8. Pin 8 is the input from the A/M switch (shutter function switch). **B+** applied to pin 8 or **TP-23** should change the shutter to manual speeds.

9. Pin 9 is the input from the mirror lock adjustment, **VR-102**. Typical: -1.15v with **SW-104** on.

10. Pin 10 is one input to **CP-2**. In auto mode, the shutter should latch open if **B+** is applied with the 1000 ohm probe.

11. Pin 11 is a constant voltage.
    Auto: –0.175v
    Manual: –0.810v

12. Pin 12 is the other input to **CP-2**. In the auto mode, the shutter should latch open if **B–** is applied with the 1000 ohm probe.

13. Pins 13 and 14 are inputs from the offset adjustment, **VR-104**.

14. Pin 15 is the input from the self timer capacitor. Using the 1000 ohm probe to apply **B–** to pin 15 should latch the mirror and activate the buzzer.

15. Pin 16 is the output to the shutter magnet. This pin should be near **B–** (– 3.0v) to latch the closing curtain. To test the magnet, use the 1000 ohm probe to apply **B–** to pin 16. The shutter should latch open.

16. Pin 17 is the input from the bulb switch. The shutter should latch open when **B+** is applied to pin 17 or **TP-16** with the 1000 ohm probe.

B. IC-2

1. Pin 19 is **B+**, common to the camera body.

2. Pin 33 is connected to **B–** when the meter switch is "on."

3. Pins 5 and 23 are connected to **B–** at all times.

4. Pins 6 through 18 are the display LED drivers. To light any display LED, connect that pin to the body (**B+**) using the 1000 ohm probe. Typical voltages: –1.45v LED on, –1.85v LED off.

5. Pins 29 and 30 connect to the CdS cell.
    Typical voltages: Pin 29 ..... –2.10v 11mv/EV.
    Pin 30 ..... –0.70v 11mv/LV.

6. Pin 31 typical voltage: –2.0v, 11mv/Ev.

7. Pin 32 is a constant voltage. Typical: –1.80v.

8. Pin 28 begins the **ASA/AV** loop. Typical voltage: — 2.65, 11mv/Ev with ASA or AV. If the loop is open because of poor wiper contact or solder connection, the voltage at pin 28 will go to near **B+** (read 0.00) and the "over" LED will light.

9. Pin 24 is the end of the **ASA/AV** loop. Typical voltage: — 2.80.

10. Pin 25 is the input from **VR-204**. Typical voltage: — 2.80.

11. Pin 3 is the input from the flash dedication contact on the hot shoe. To test the operation, apply +3.0 volts above battery positive to pin 3 through the 1000 ohm probe. The shutter should change to manual speeds.

12. Pin 4 is the output to pin 8, **IC-1**. Use the 1000 ohm probe to apply **B+** to pin 4, the shutter should change to manual speed.

13. Pin 1 connects to the capacitor used in indicating correct flash exposure.

14. Pin 2 is **B+**.

15. Pins 20, 21, 22, and 26 have no connection.

16. Pins 34, 35, and 36 are inputs from auto shutoff circuit. Apply **B+** to pin 36 to reset to "on." **B–** to pin 34 should turn display off.

Note:

To power up **IC-1** for extensive testing, close **SW-104** with a jumper across **TP-2** and **TP-7**. For short term testing, release the shutter while holding the diaphragm operating lever just above the point where the mirror magnet releases.

To power up **IC-2**, turn the meter switch to "on." The IC will turn off after 1.5 minutes. To renew the power, momentarily connect **TP-28** to the body **(B+)**.

Take care to discharge any test probe or DVM lead by touching it to the camera body before touching **IC-1** pins.

IV. ADJUSTMENT PROCEDURE

1. Mirror lock voltage.

Connect a metered power supply in place of the battery. Adjust **VR-102** so that the mirror magnet will not release at a supply voltage of 1.95v and will release at 2.05v.

2. Viewfinder readout.

Place camera in front of a light source set to LV 15. Set ASA 100, f-16, and adjust **VR-204** so that display indicates 1.125.

Next, set LV-6, ASA 100, and f-5.6. Adjust **VR-203** so that the display indicates 1/2 second.

Finally, repeat the two adjustments for the best linearity.

3. Offset voltage.

Set ASA 1600 and self timer mode. Rotate **VR-104** fully **CCW**, then release the shutter. Rotate **VR-104 CW** until the buzzer and LED begin to indicate the timer mode.

4. Auto speeds.

Set LV-12, ASA 100, and f-5.6. Using an exposure tester, adjust **VR-103** for zero exposure error.

Increase light to LV-15 and check exposure error for 1/1000 speed. If there is significant over-exposure, clean the shutter magnet and adjust the timing switch eccentric screw for earlier opening.

NOTES:

To set ASA 100 with the top cover off, position the ASA wiper so that the slots are parallel to the front of the camera.

The resistors for mirror lock voltage and offset voltage are locked down with lacquer. These adjustments are usually not necessary unless a component has been replaced.

The face of the format adapter used to measure auto exposure must have the same reflectivity as film.

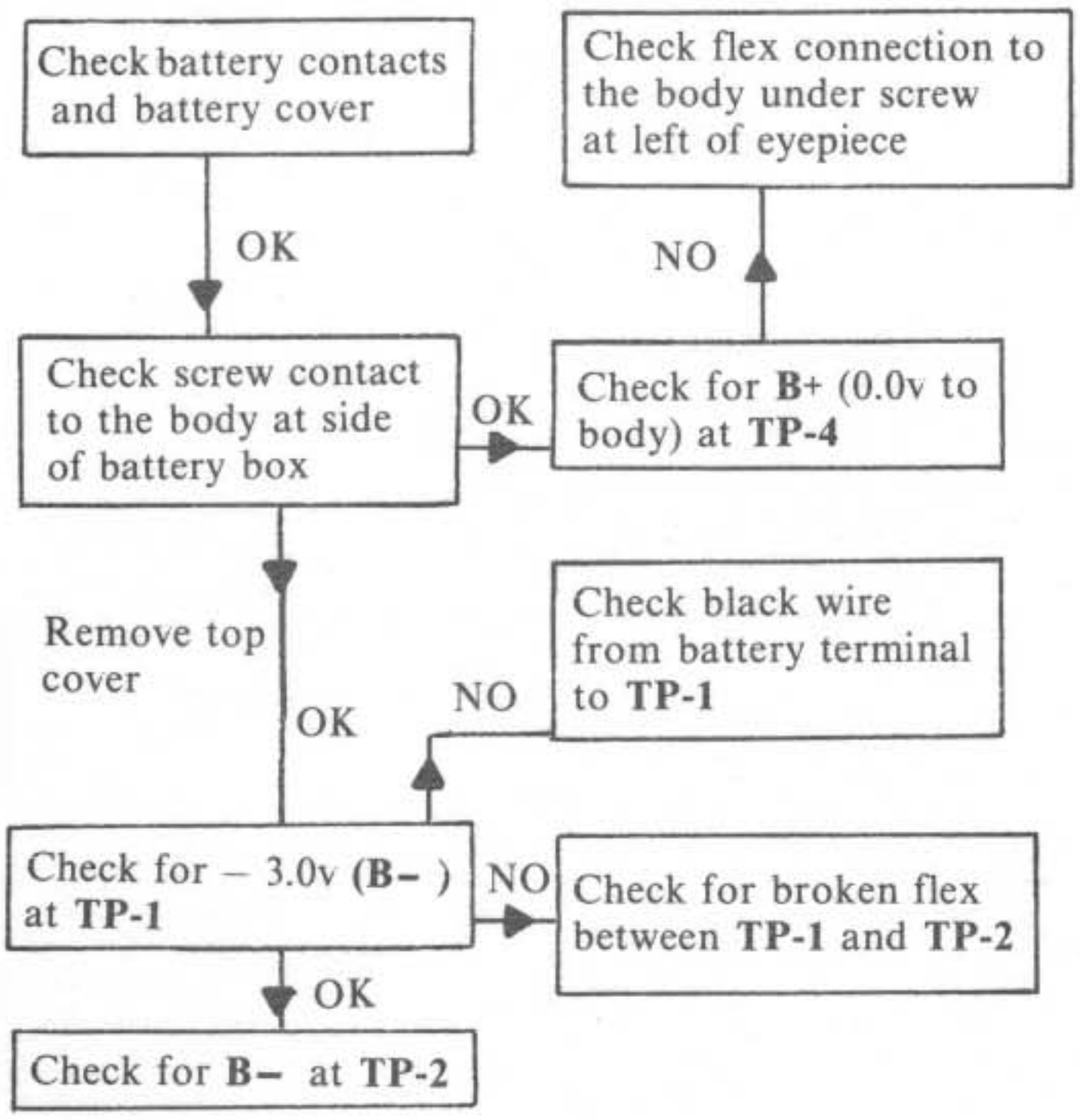
The resistor values for manual speeds begin at 8 K-ohm for 1/1000 and double for each speed to 8.3 Mega-ohm at 1 second.

The range of manual speeds can be made faster by replacing C-101 with capacitor of smaller value; slower with larger value capacitor.

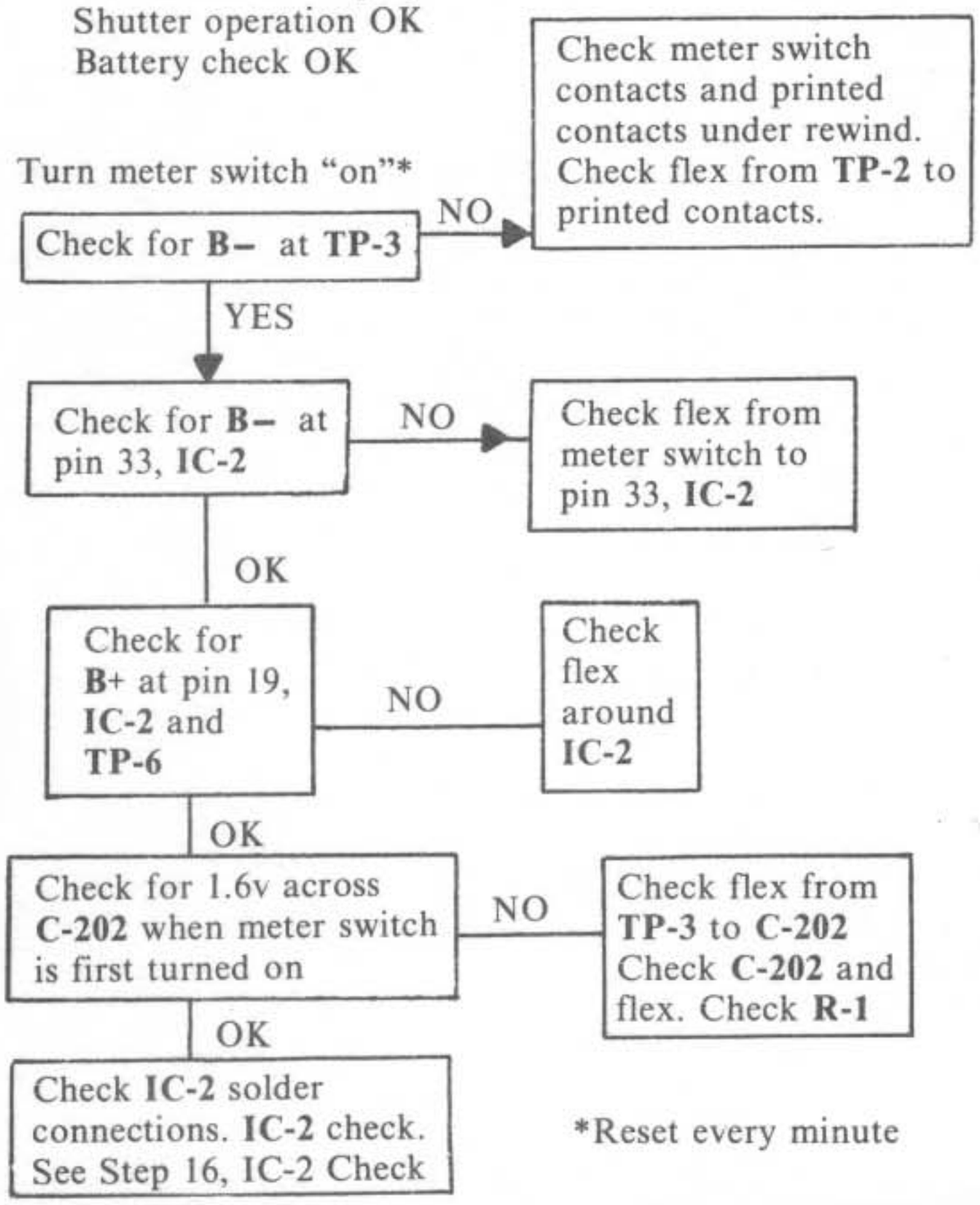
V. TROUBLESHOOTING

Power Circuit Malfunctions

A. External Observations:
No viewfinder display
No battery check
Shutter will not operate



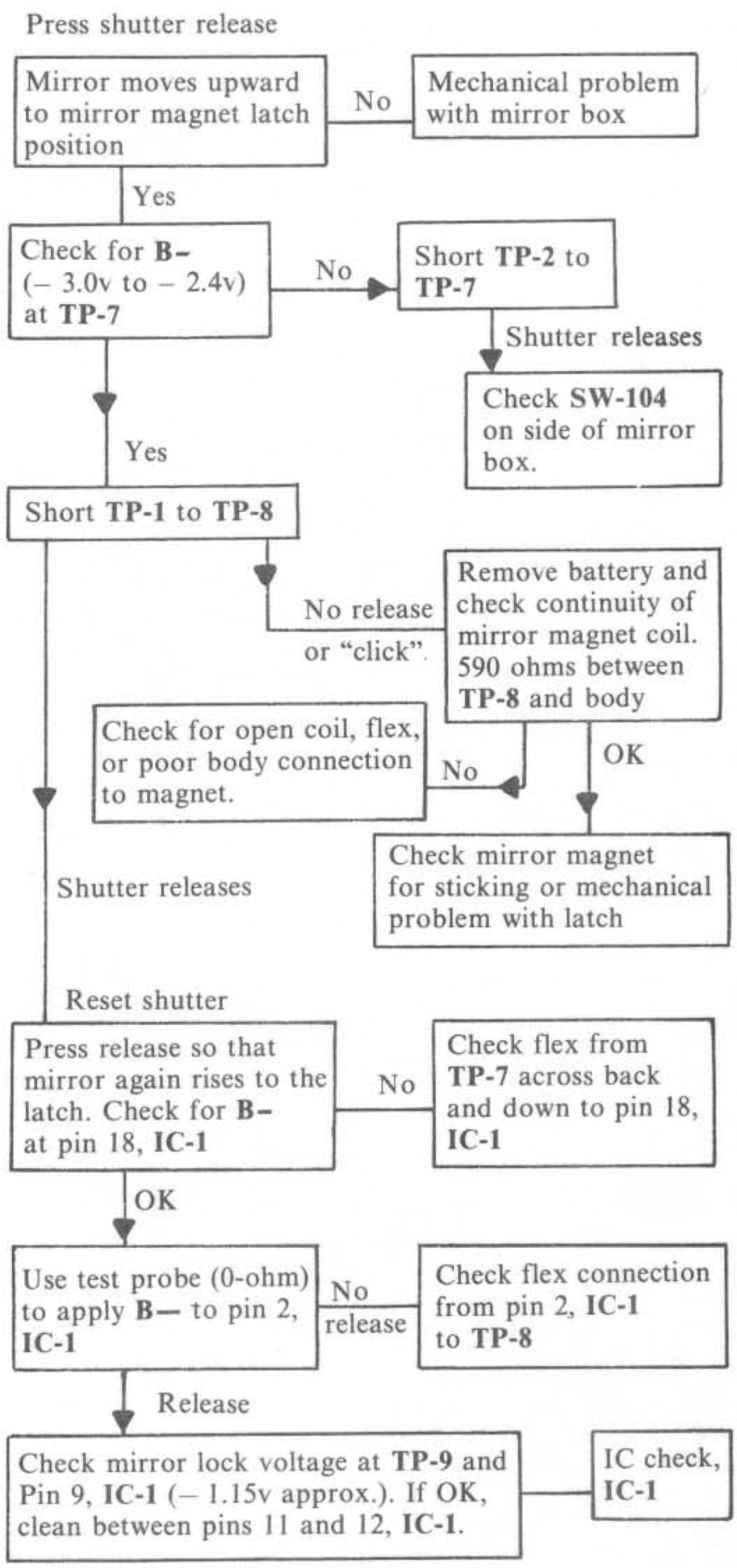
B. External Observations:
No viewfinder display
Shutter operation OK
Battery check OK



*Reset every minute

Power Circuit Malfunctions (cont.)

C. External Observations:
Viewfinder display OK
Shutter will not operate (mirror is locked)



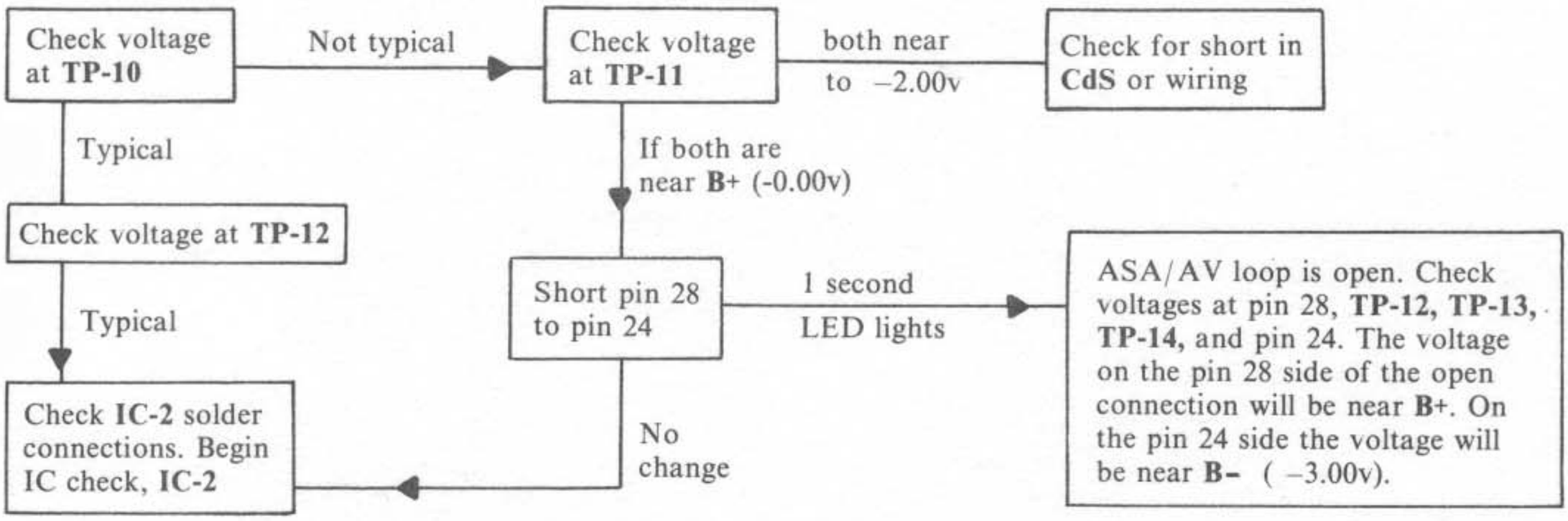
Note:
To test mirror magnet operation:
1. Set shutter
2. Be sure batteries are good.
3. Short **TP-1** to **TP-8**.
   There should be a single "click" as magnet releases:

Readout Malfunctions.

A. External Observations:

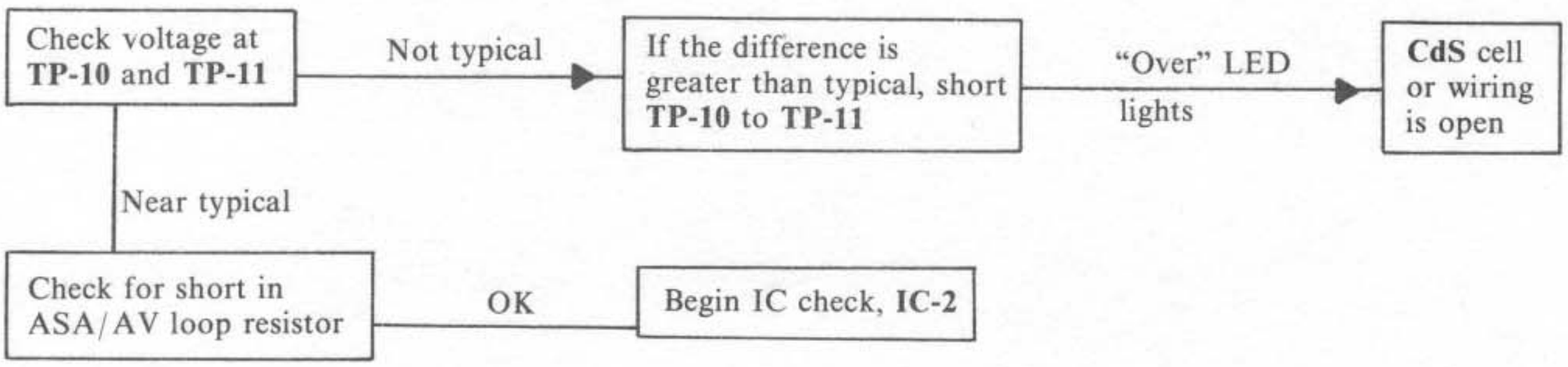
"Over" LED remains on
Shutter OK
Display turns on and off OK

When making voltage checks of the readout circuit, reset switch every minute to defeat auto shut-off.



B. External Observations:

1 second LED remains on
Shutter OK
Display turns on and off OK

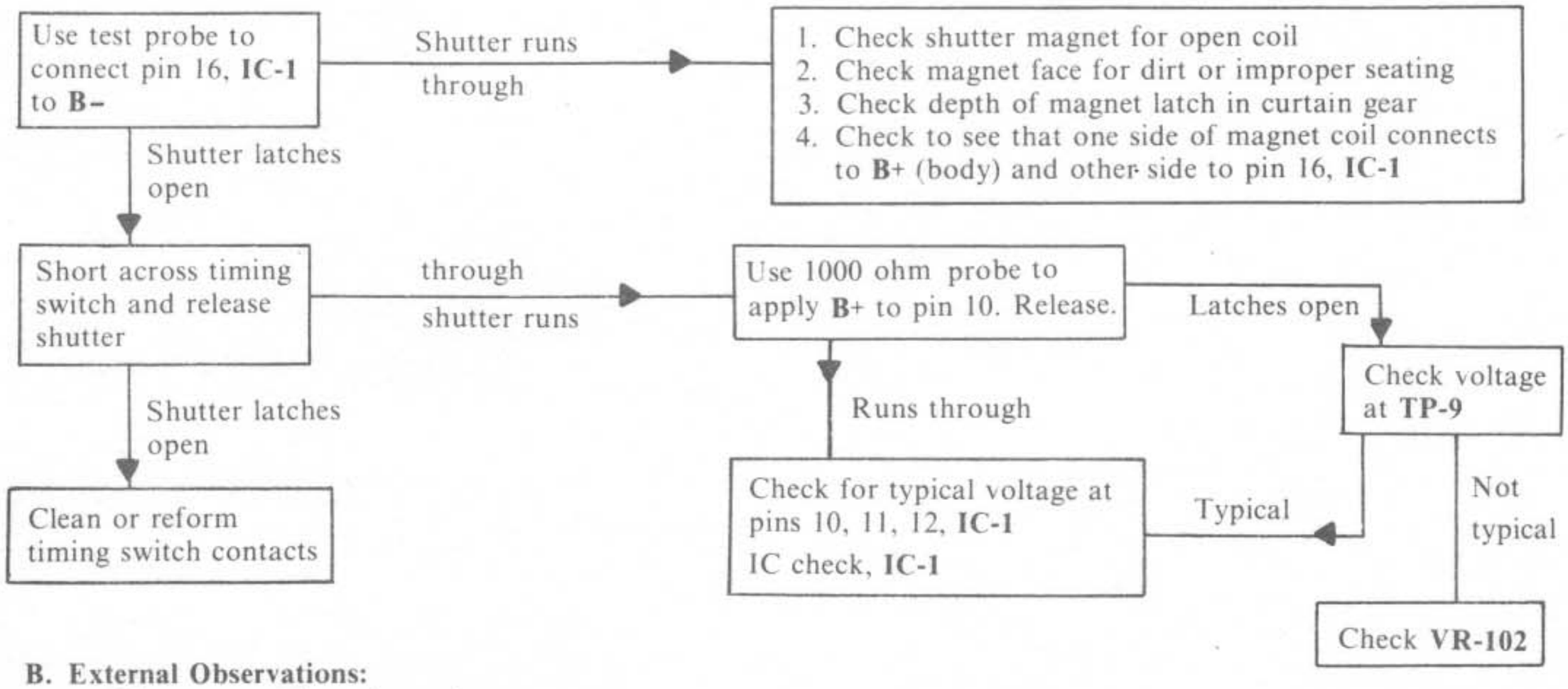


Shutter Malfunctions

A. External Observations:

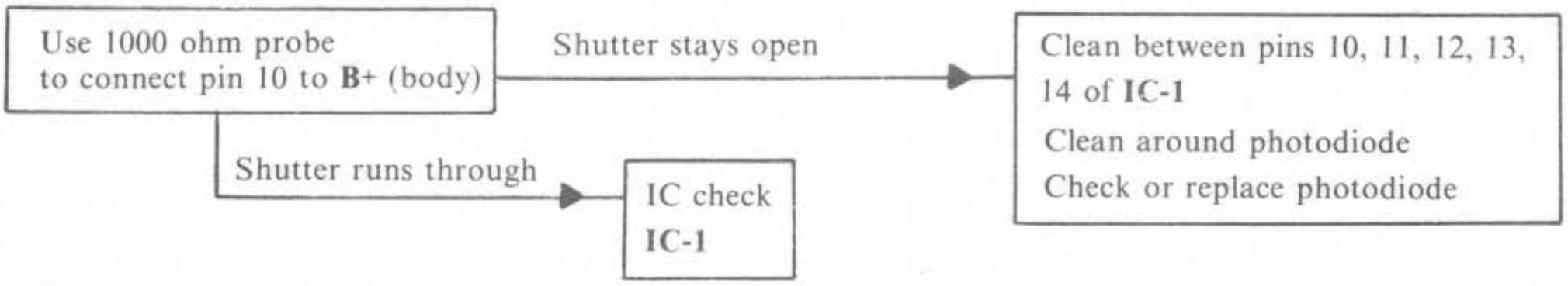
Shutter runs through on Auto and Manual
Self timer is OK
Battery check is OK

Set "Auto," ASA-100



B. External Observations:

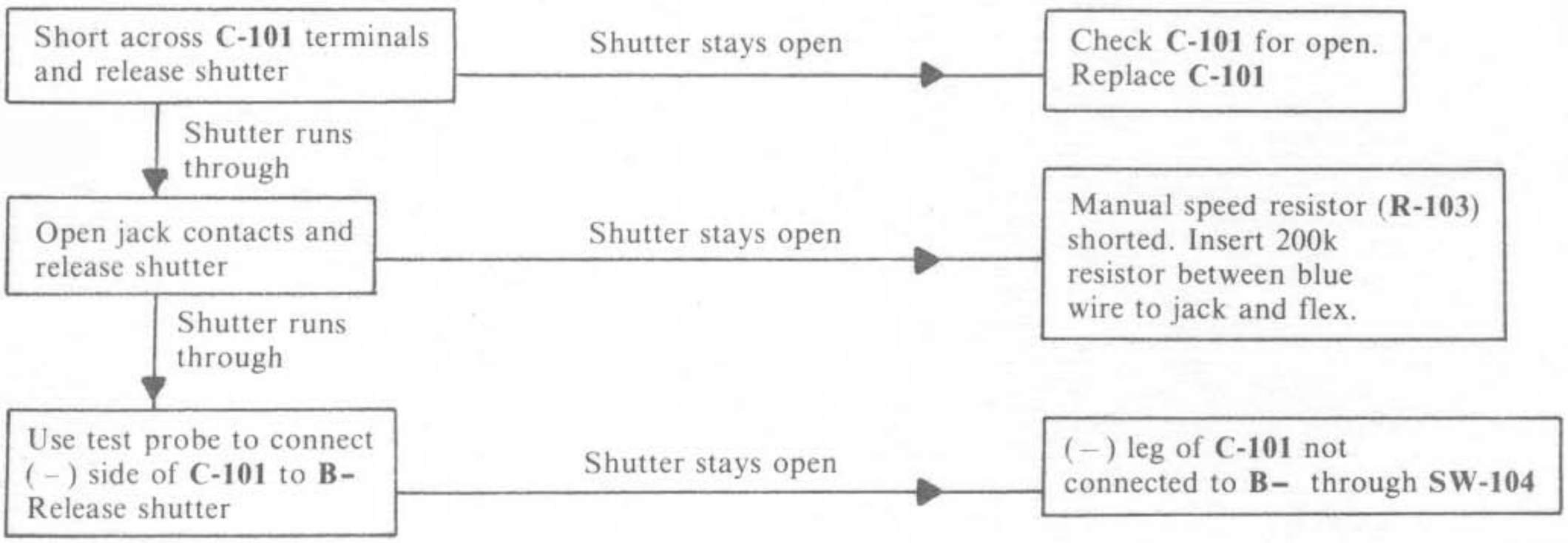
Shutter runs through on Auto
Manual speeds OK



C. External Observations:

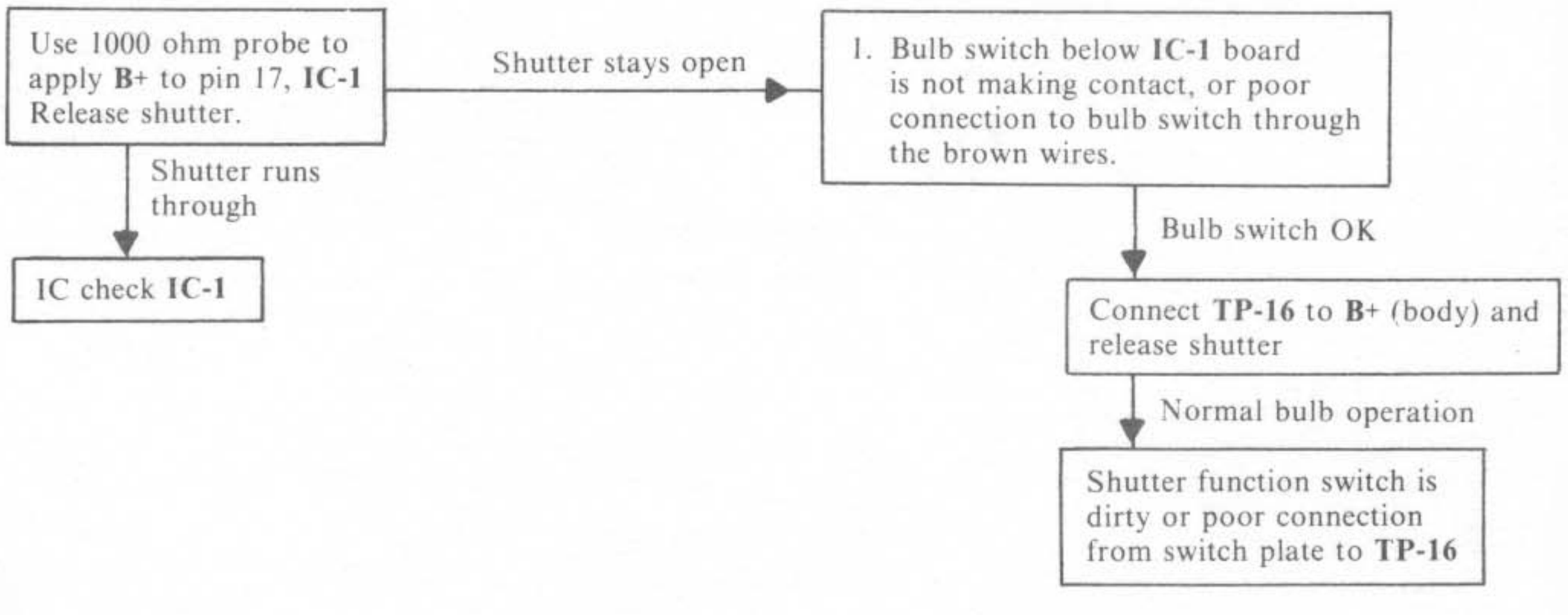
Shutter runs through on Manual
Auto speeds OK
Bulb operation OK

Set shutter function switch to "M"

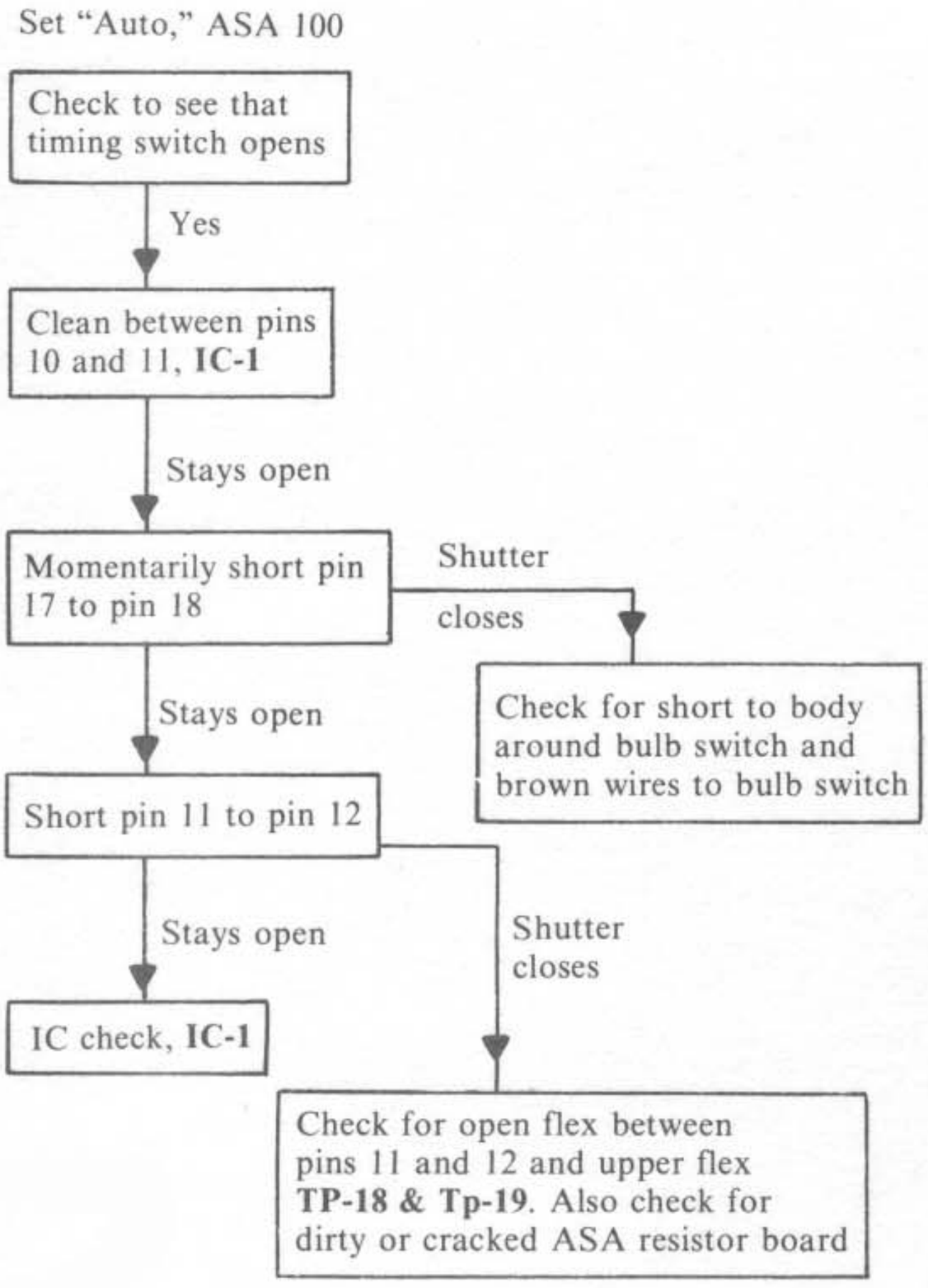


Shutter Malfunctions (cont.)

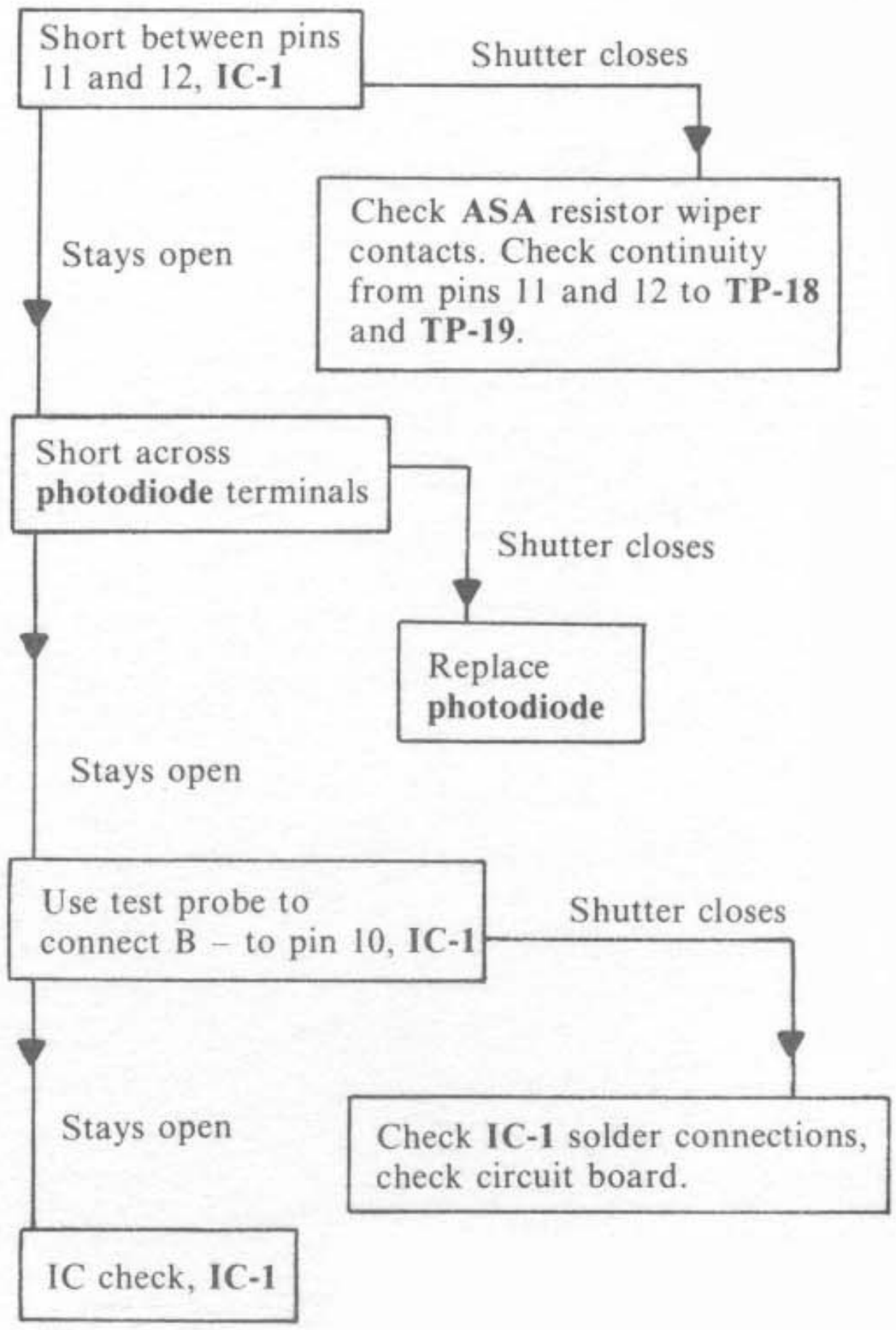
D. External Observations:
Shutter runs through on bulb
Manual and auto speeds OK



E. External Observations:
Shutter stays open in Auto and Manual

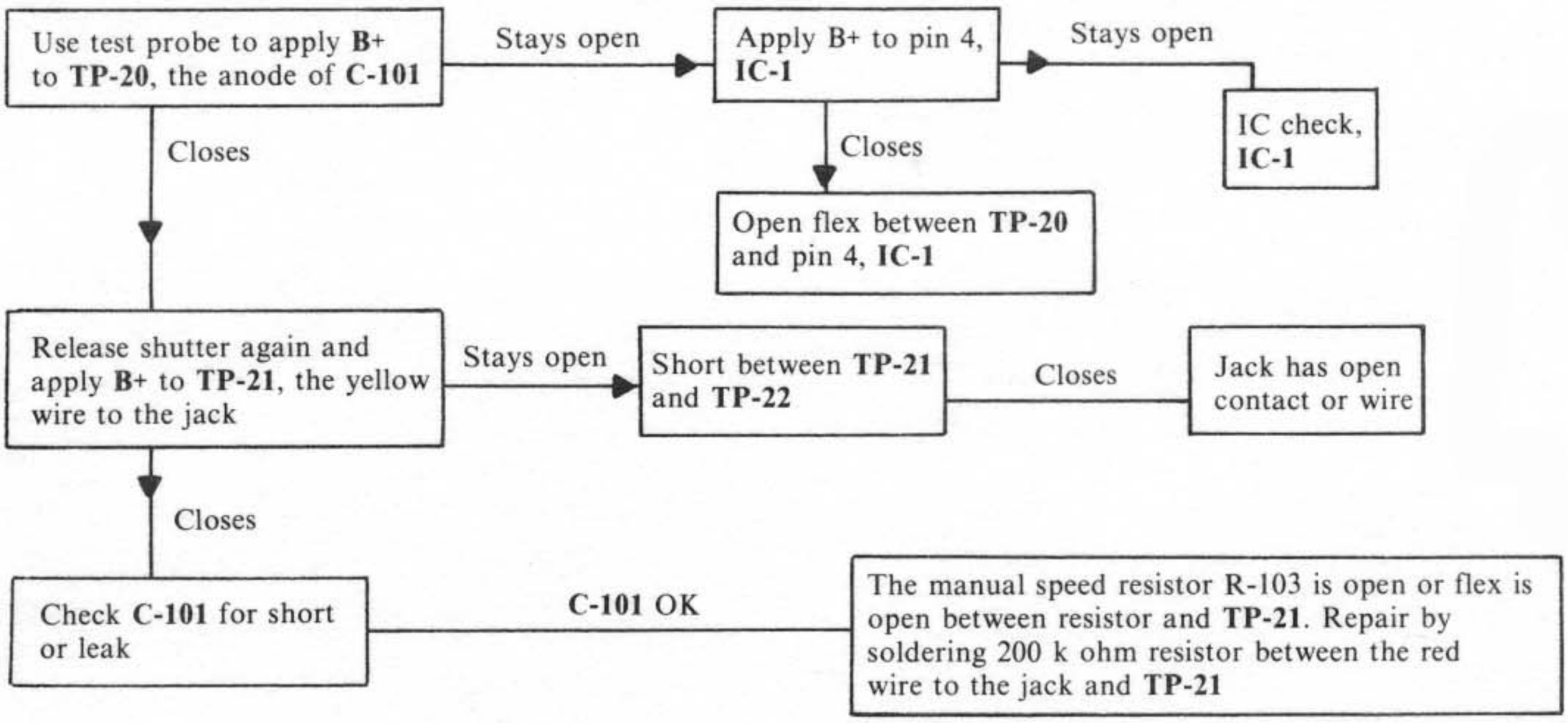


F. External Observations:
Shutter stays open in "Auto"
Manual speeds OK



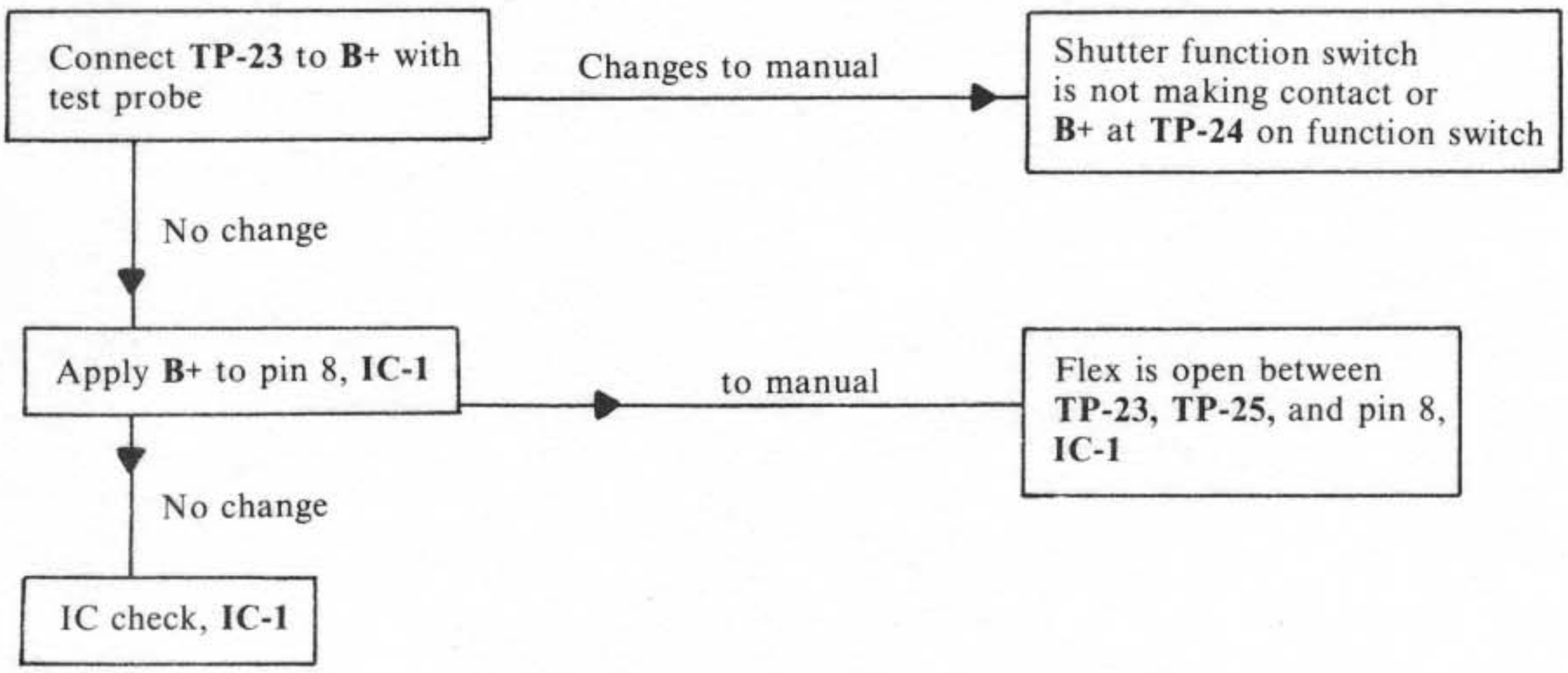
G. External Observations:

Shutter stays open in "Manual"
Auto speeds OK
Stays open in "Bulb"



H. External Observations:

Shutter is always in "Auto" mode.



I. Other Shutter Malfunctions

PROBLEM	CAUSE
Shutter stays open in bulb mode	Bulb switch not opening or wires to switch shorting
First exposure is long if camera sets for a time with shutter cocked. Also, no fast speeds.	Shutter magnet dirty. Clean shutter magnet with isopropyl alcohol.
Fast speeds slow or erratic. Magnet is clean.	Timing switch leaking. Clean circuit board near timing switch terminals. Also, around pin 10-13, **IC-1**

Mirror Magnet Malfunctions

PROBLEM	CAUSE
Mirror will not latch in timer mode or without batteries.	Dirt on magnet face or latch spring unhooked. Also, camera may be incorrectly assembled so that magnet is not being set.
Magnet slow to release or erratic.	Oil on magnet face. Clean with alcohol.

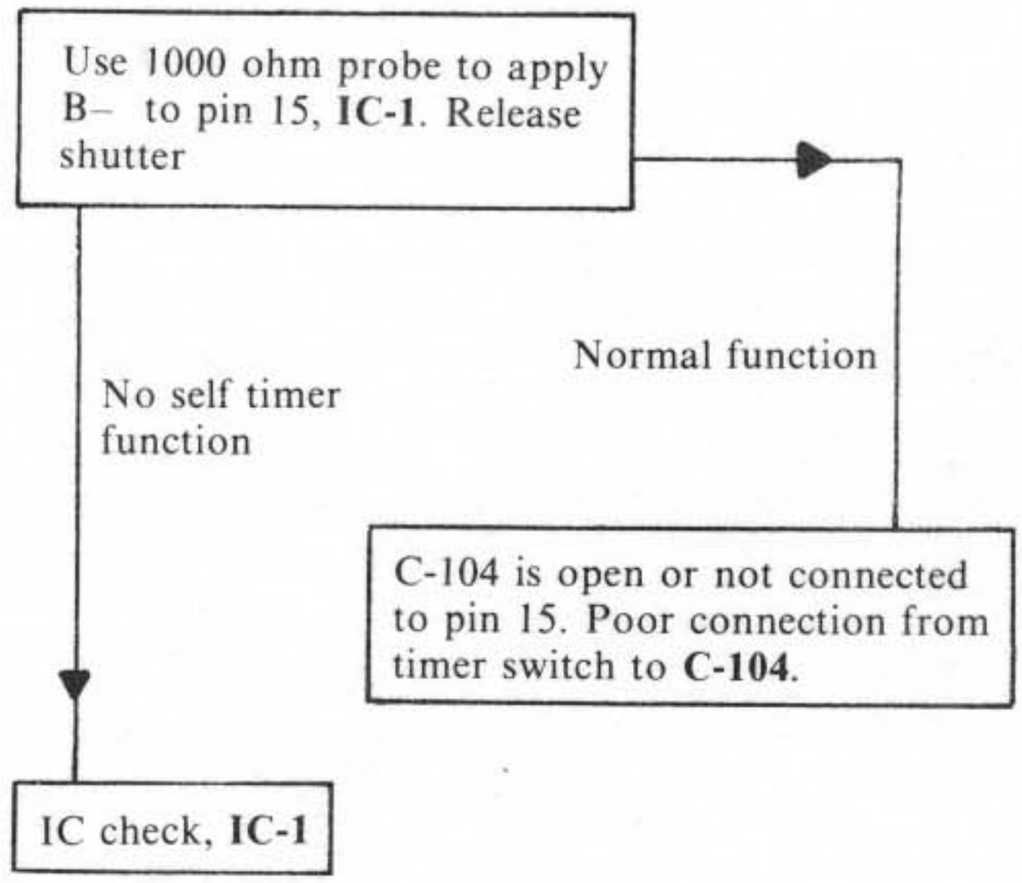
Self Timer Malfunctions

External Observations:

No self timer action

Mirror locks without batteries

Set "Auto," ASA 100



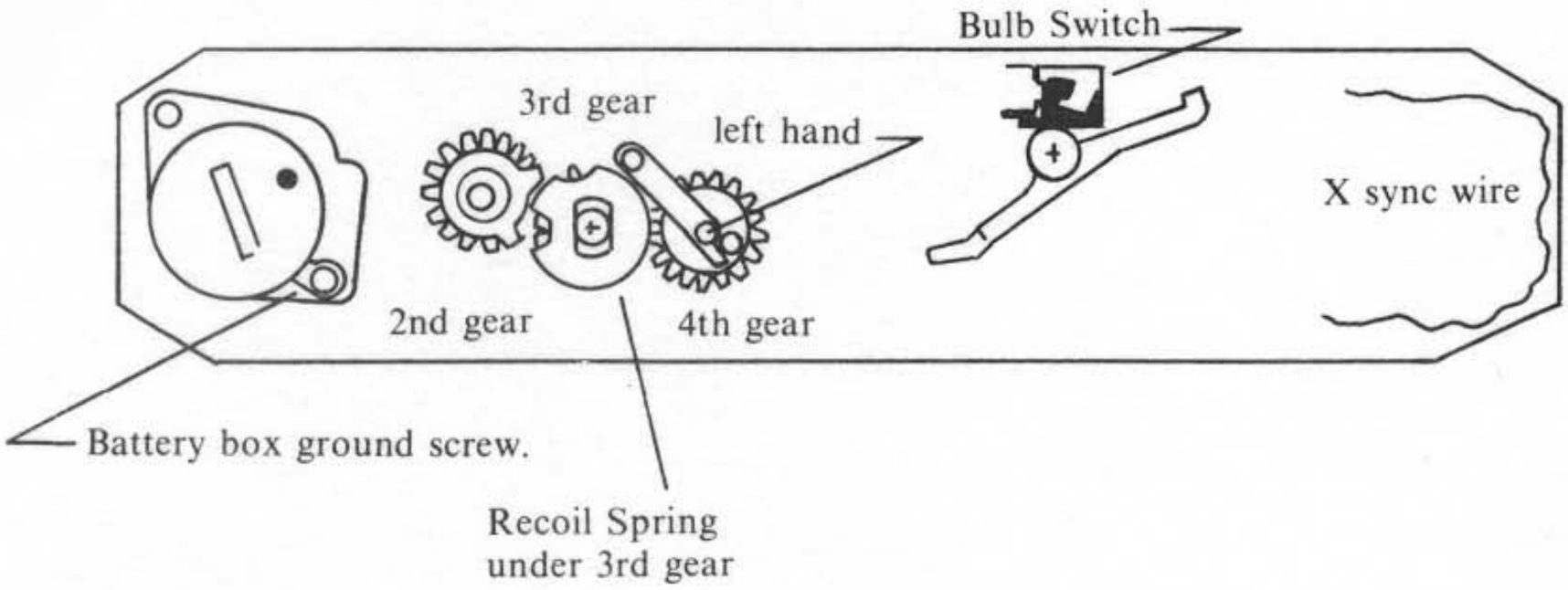
Notes: If timer does not time out in about 12 seconds, **C-104** may be leaking

If timer interval is too short, **C-104** is under value.

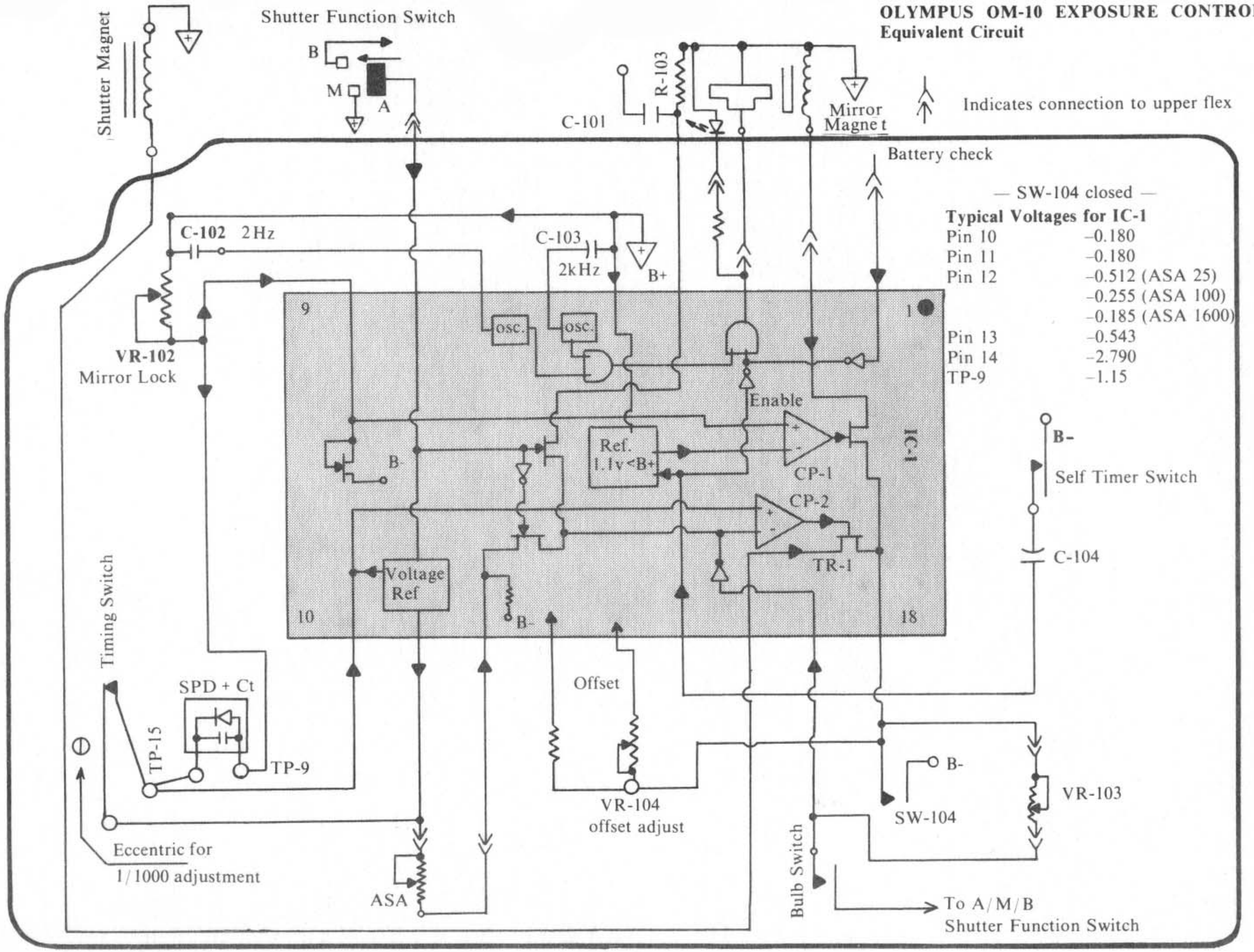
VI. Common Mechanical Problems

1. The camera jams, but will release when bottom cover is loosened. The horizontal release arm catches on the winder port cap in the bottom cover and does not return fully.

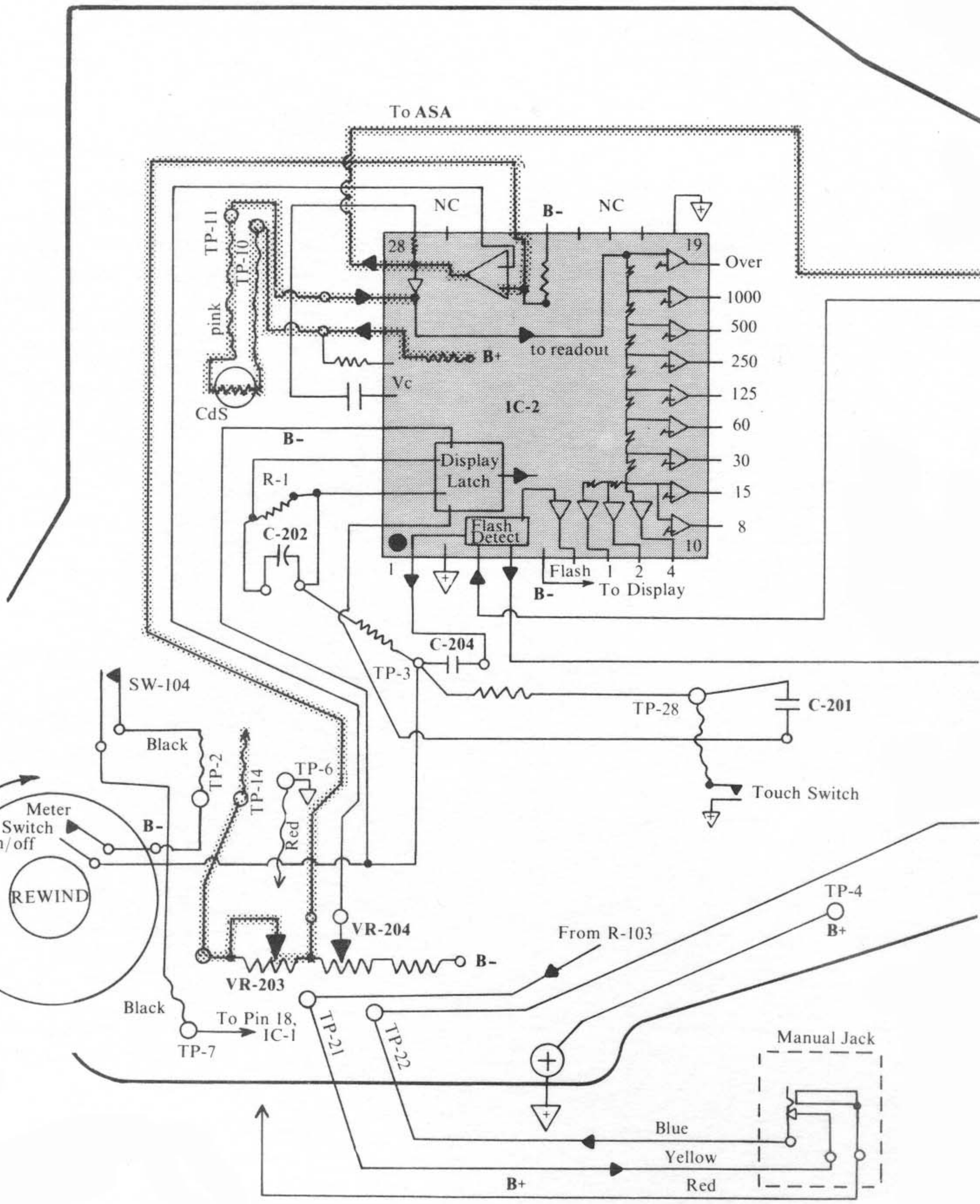
2. The shutter charge gears on the bottom of the camera become out of time and cause the camera to jam. The problem may be due to a broken recoil spring under the center gear, or the gears do not spin freely. See the diagram below for proper timing.



OLYMPUS OM-10 EXPOSURE CONTROL
Equivalent Circuit



OLYMPUS OM-10 READOUT CIRCUIT



All measurements taken with controls set to "Auto," ASA 100 (unless otherwise noted), shutter cocked, and SW-104 closed. The DVM common lead was connected to the camera body (B+).

Typical Voltages for **ASA/AV** Loop

TP-10	–0.750v	11mv/LV
TP-11	–2.150v	11mv/EV
TP-12	–2.700v	11mv/ASA-AV
TP-13	–2.719v	11mv/ASA-AV
TP-14	–2.774v	11mv/ASA-AV
Pin 24	–2.840v	constant

All voltage measurements were made with the DVM common lead to the body.

B+ = 0.00v B– = 3.00v

All wire color codes depend upon values of ASA and AV resistors. Note wire colors when ordering parts.

VII. List of Commonly Used Parts

Part Description	Part Number
Wind lever	ZC207200
Wind lever screw/	CE205700
washer	CE205600
dress plate	CE204100
Rewind knob	ZC208300
crank	CE201400
screw	CE201800
shaft	CE215200
shaft bearing	CE214700
Meter/timer switch	ZC208500
Manual speed jack	ZJ132600
Accessory shoe	CE202200
Battery cover	CE215700
Foam for auto board cover	CA915600
Rewind button assembly	ZC202700
Right side mirror box assy./mirror magnet	ZC205100
Right front leather	CE211600
Left front leather	CE211500
Main flex circuit	ZC200300
Photodiode	ZJ132500

Part Description	Part Number
Shutter magnet	ZC132100
ASA board (Rev.)	ZC207700*
ASA wiper assembly	ZC213100
CdS cell	ES5010
Screen	LC409100
2nd gear shaft assembly	ZC201700
3rd gear assembly	ZC103000
Recoil spring	CA885100
4th gear assembly	CE223800 (1
	CE223900 (2
	CE224000 (3
	CE224100 (4
Top cover screws	PUK1.7 410SG
Bottom cover screws	CEZ15500
Mirror	LC409000
AV resistor	CZ206100*
*Note wire color code	

OLYMPUS OM-10 UPDATES — JUNE 1985

I. EXTERNAL TESTS

1. Wind the shutter, then leave the camera set for at least 15 minutes. With lens off, test the "Auto" shutter speed pointing the camera toward a bright light. Next, release the shutter several times in rapid succession. Note any hesitation in the mirror the first shot (**Mirror Magnet** sticking) and any tendency for the shutter speed to increase on successive shots (**Shutter Magnet** sticking).

2. Release the shutter with the batteries removed. The mirror should rise part way and stop. If the shutter cycles through, the **Mirror Magnet** is dirty and not latching.

3. Test self-timer operation; the interval should be about 12 seconds. Next, set ASA 1600 and try self-timer operation. If it does not function, the offset voltage is incorrect or **VR-104**'s wiper is not making contact.

4. Test the minimum release voltage. The **Mirror Magnet** should not release if the supply voltage is below 1.95v. Adjustment is made with **VR-102** and auto speeds can be affected.

5. Replace the lens, then test auto shutter operation to see if it changes with light and ASA.

6. Turn on the display and be sure it responds to changes in light, ASA, and aperture value. Remember, the display and Auto shutter speeds are not related.

7. Wind the shutter 10 times in rapid succession while holding pressure on the film sprocket. If the wind lever slips, the upper ratchet needs to be cleaned.

II. TROUBLESHOOTING UPDATES

1. If the shutter is fast at low light levels:

   A. Clean around the photodiode under the mirror.

   B. Check the offset voltage and minimum release voltage adjustments.

   C. Check the **ASA Board** for dirt or corrosion which could cause leaks.

2. If the display is erratic or self-timer doesn't function, check for cracks or wear on the printed switch board under the rewind. Damage can sometimes be repaired with conductive paint.

III. MECHANICAL CONSIDERATIONS

1. To remove the upper film transport for service:

   A. Take out the screw holding the rewind button and shaft assembly, then lift the assembly away while turning it to clear the hole.

   B. Remove the three screws holding the counter plate and wind gears. There will be a loose bushing.

2. If the owner forces the wind lever when shutter curtains can't move, the lug on the first curtain charge gear may be broken. Sometimes this can be repaired by inserting a pin from the bottom; however, replacing the gear is usually not practical.

3. On early models, the screw holding the third gear has a small head which allowed the gear to wobble and lose timing. New screws (part number CE1 14600) correct the problem.

Another reason OM series cameras sometimes jam is slow action of the second wind stroke prevention latch on the bottom.