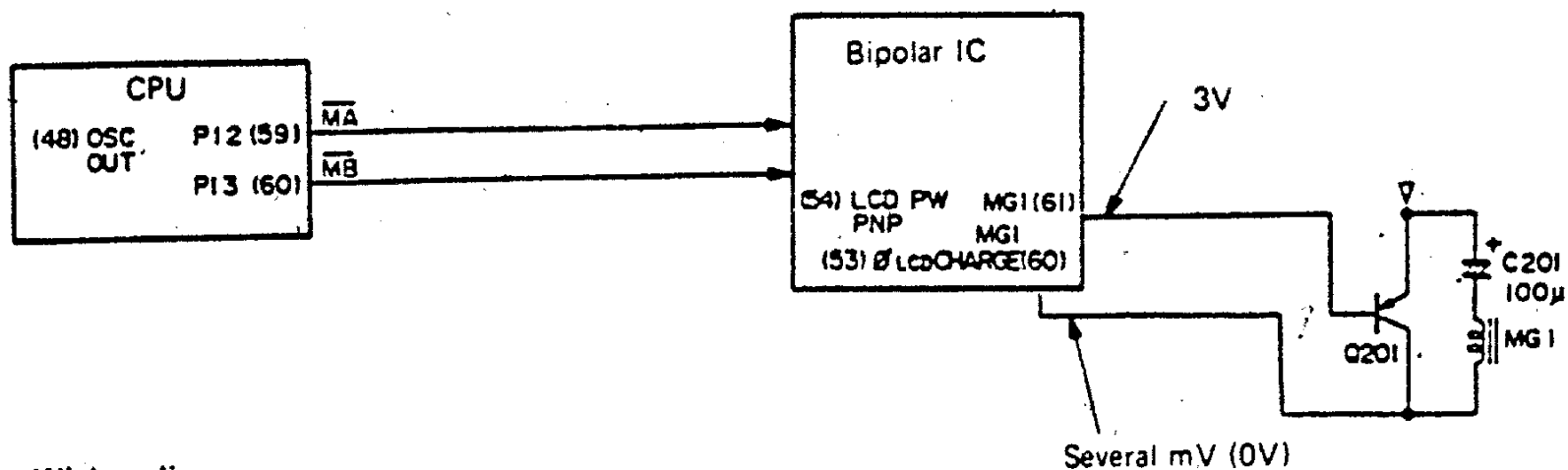


18. MG1 Charging Circuit

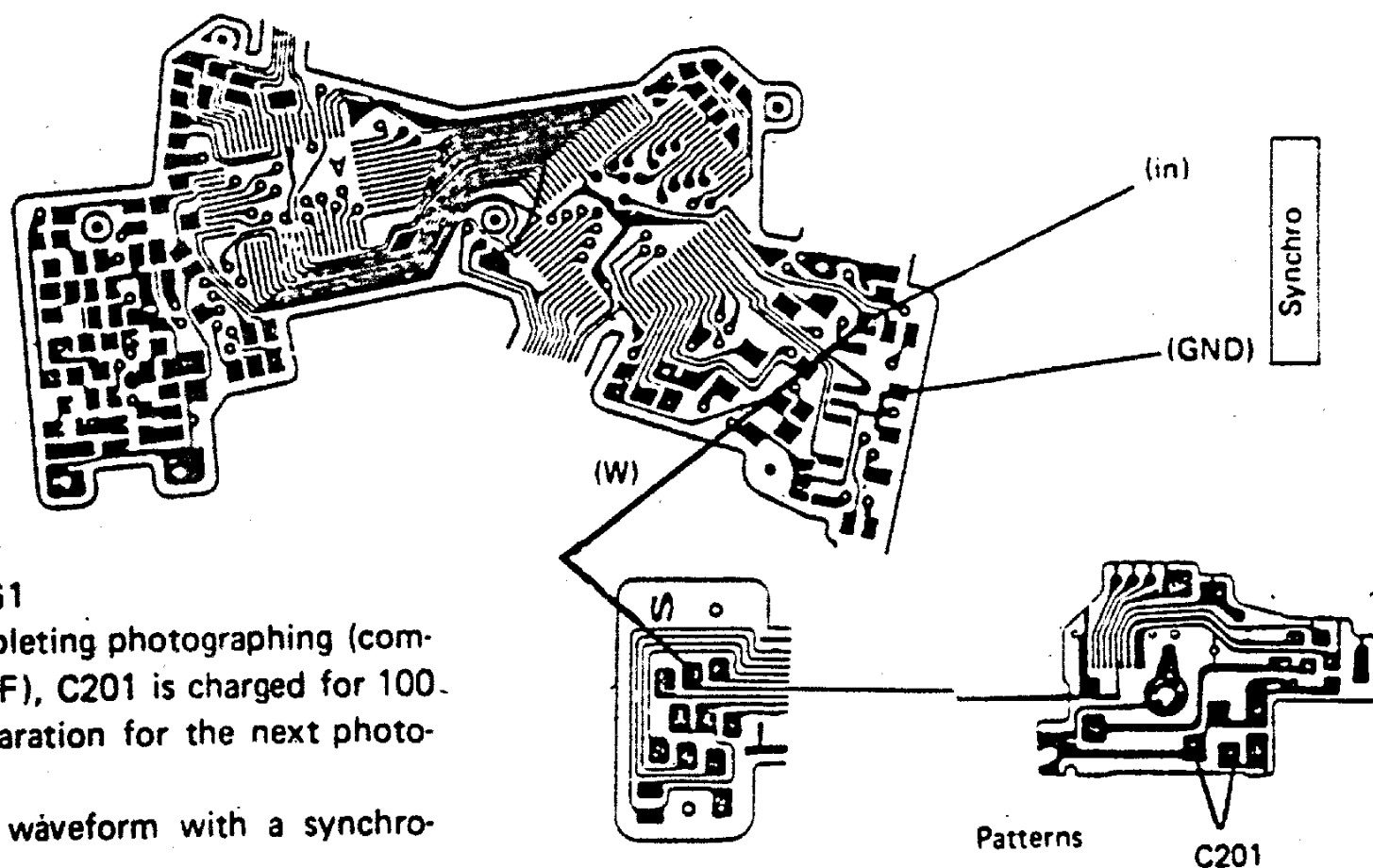
(1) Circuit diagram

- Checking procedures

1. Measuring instruments: Digivol or circuit tester
Shycroscope
2. Mode: AUTO or MANUAL
 - Release the shutter.



(2) Wiring diagram

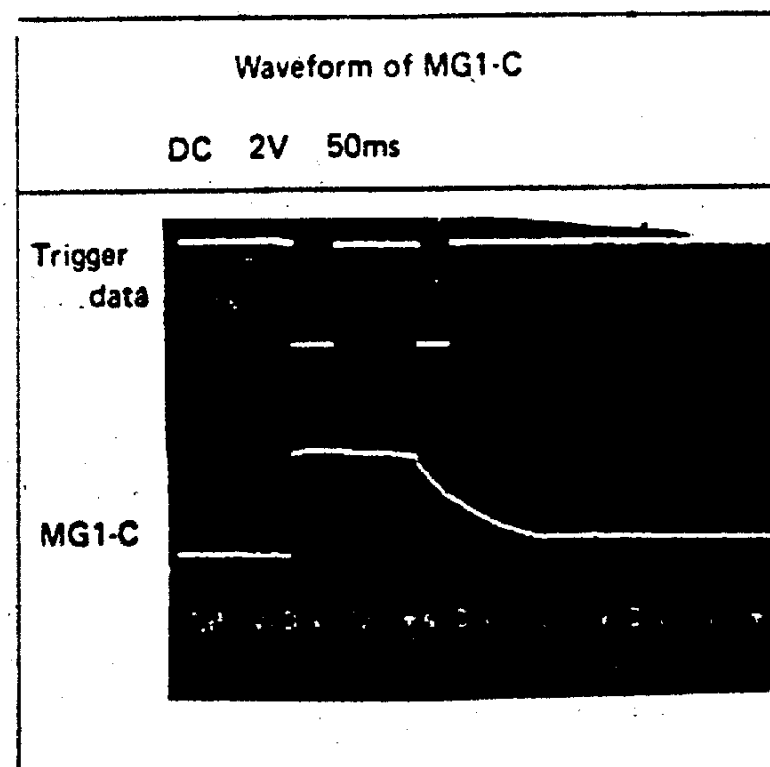
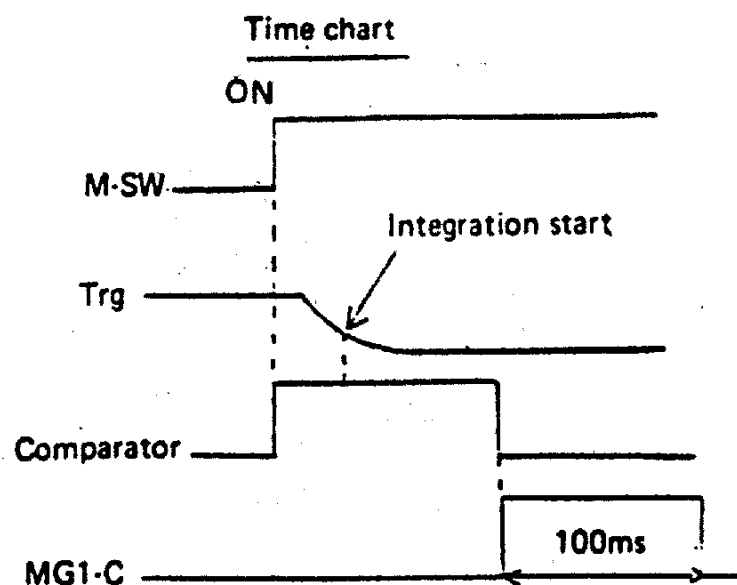


- Charging of MG1

1. Upon completing photographing (comparator OFF), C201 is charged for 100 ms as preparation for the next photographing.

- Check voltage waveform with a synchroscope.

1. Release the shutter to allow the mirror to go down.
2. Then, the charging is started.



(1) Circuit diagram

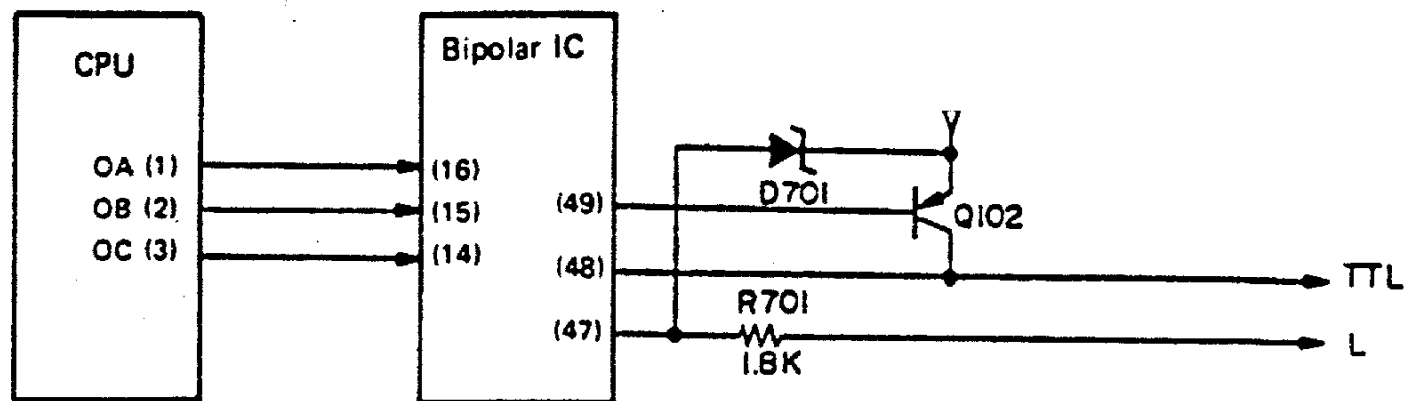


- **Operation check: Simple method**

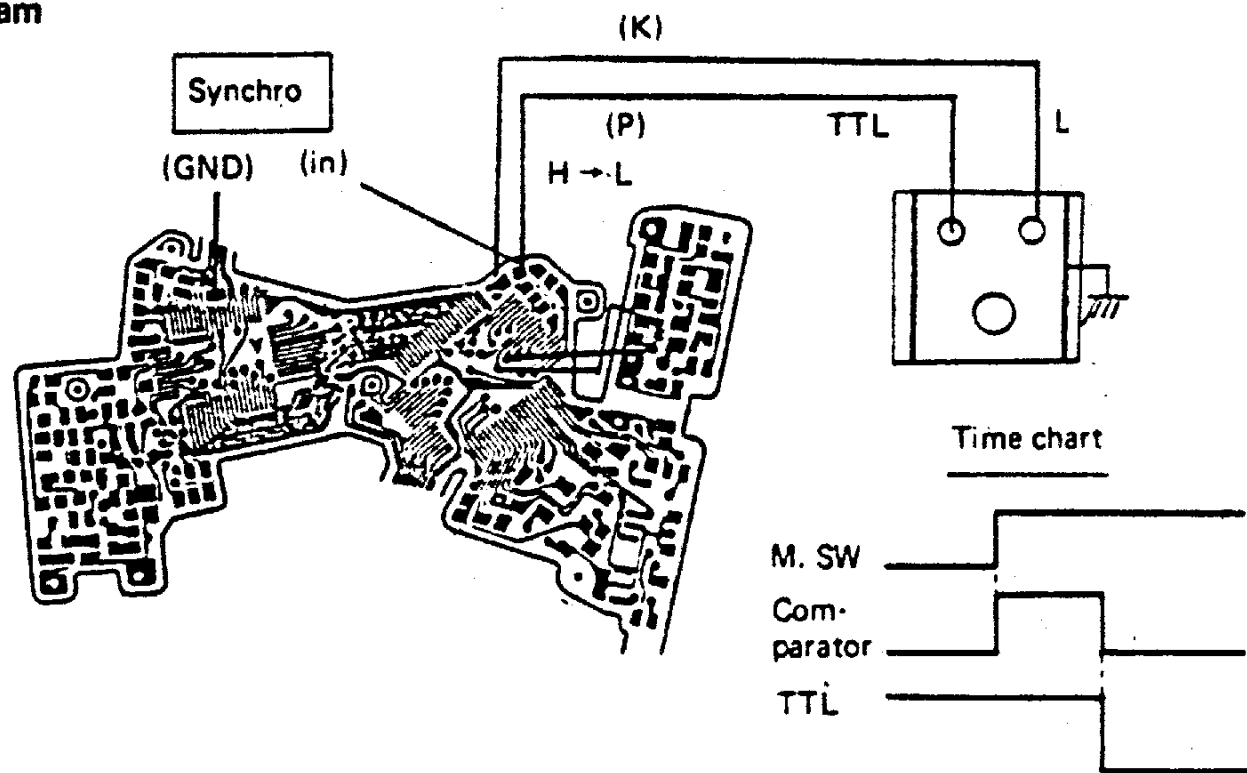
- E-46

20. Light Control Circuit

(1) Circuit diagram



(2) Wiring diagram



- Light control circuit

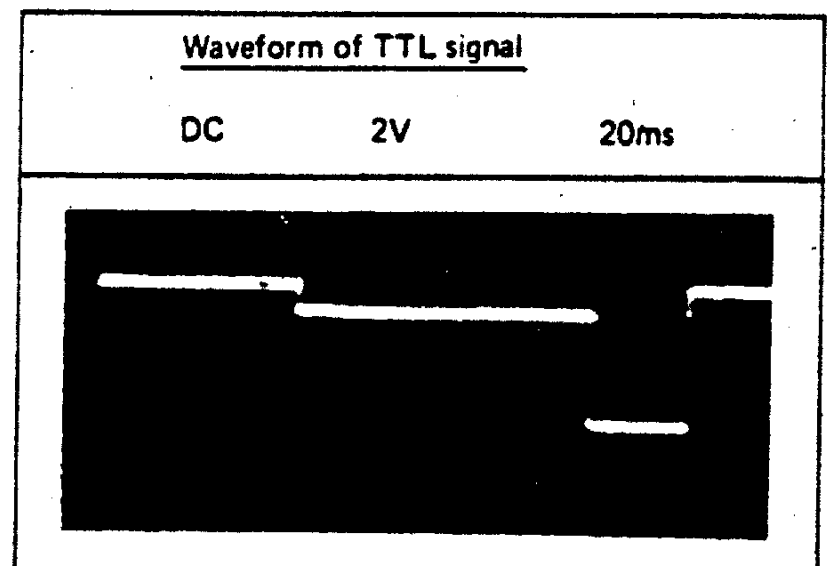
1. The CPU provides light control ON signal (OA, OB, OC) when shutter speed is 1/60 or lower, or light control OFF signal when shutter speed exceeds 1/60.
2. When the light control ON signal is provided, H = 3 V is outputted to TTL and L (2.4 to 2.6 V) is outputted to pin No. 49. (The light control is not stopped by other stop signals.)
3. When the strobe flashes (see flashing circuit) and exposure time is optimum, the comparator is inverted to deenergize MG2. Simultaneously, the circuit set pin No. 48 and pin No. 49 at the L and H levels respectively to stop flashing of the strobe.

- Connect lead wires (P) and (K) as well as the shielded wire correctly from the top cover. Set the strobe ready for use.
- Connect the lead wires without assembling the top cover with the camera body.
- Connect the strobe to the top cover and allow it to flash.
- At this time, form the strobe flashing circuit as shown above.

- Checking procedures

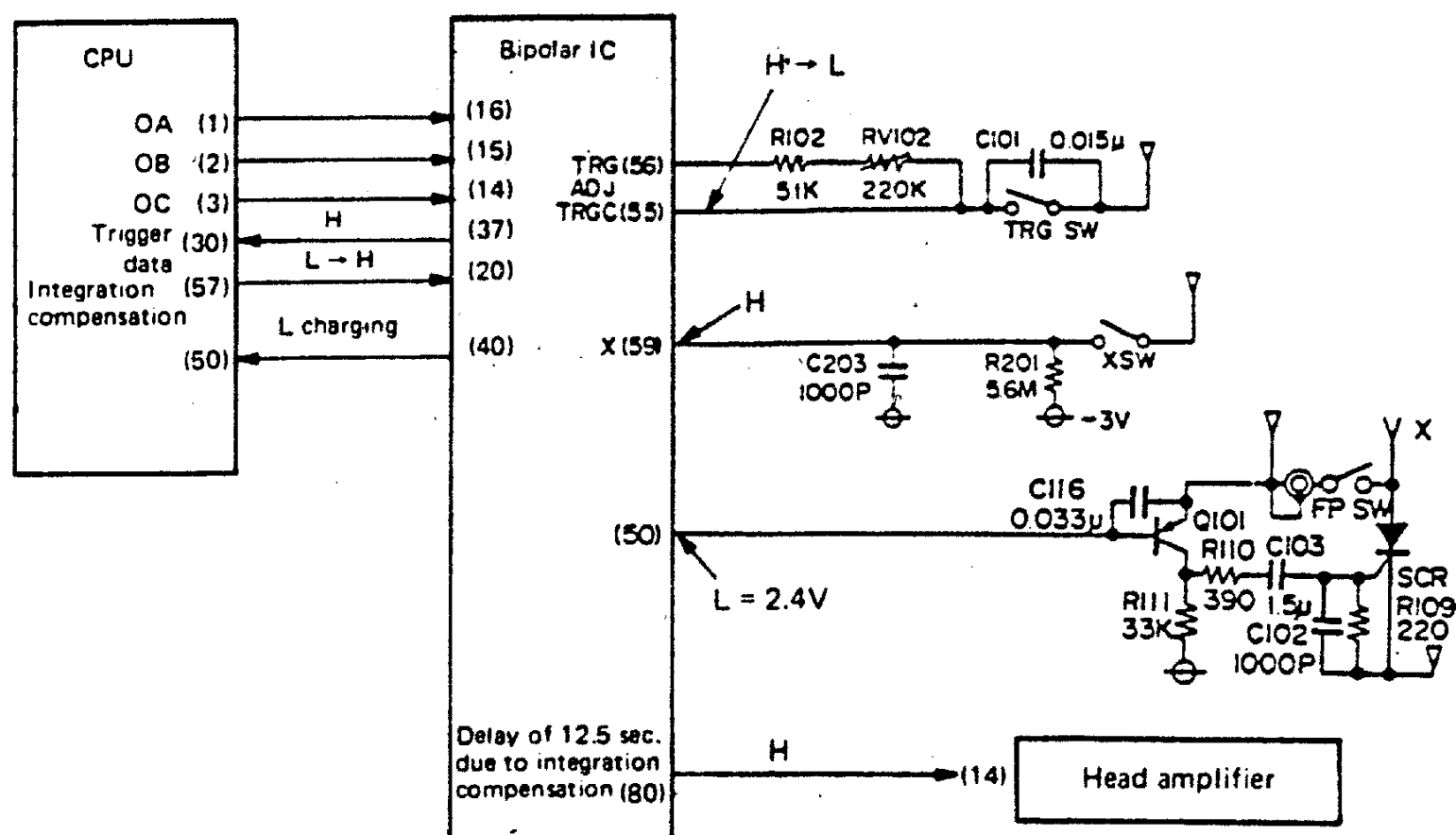
- TTL signal

- Set the camera in the AUTO mode and attach the strobe in position.



21. Flashing Circuit

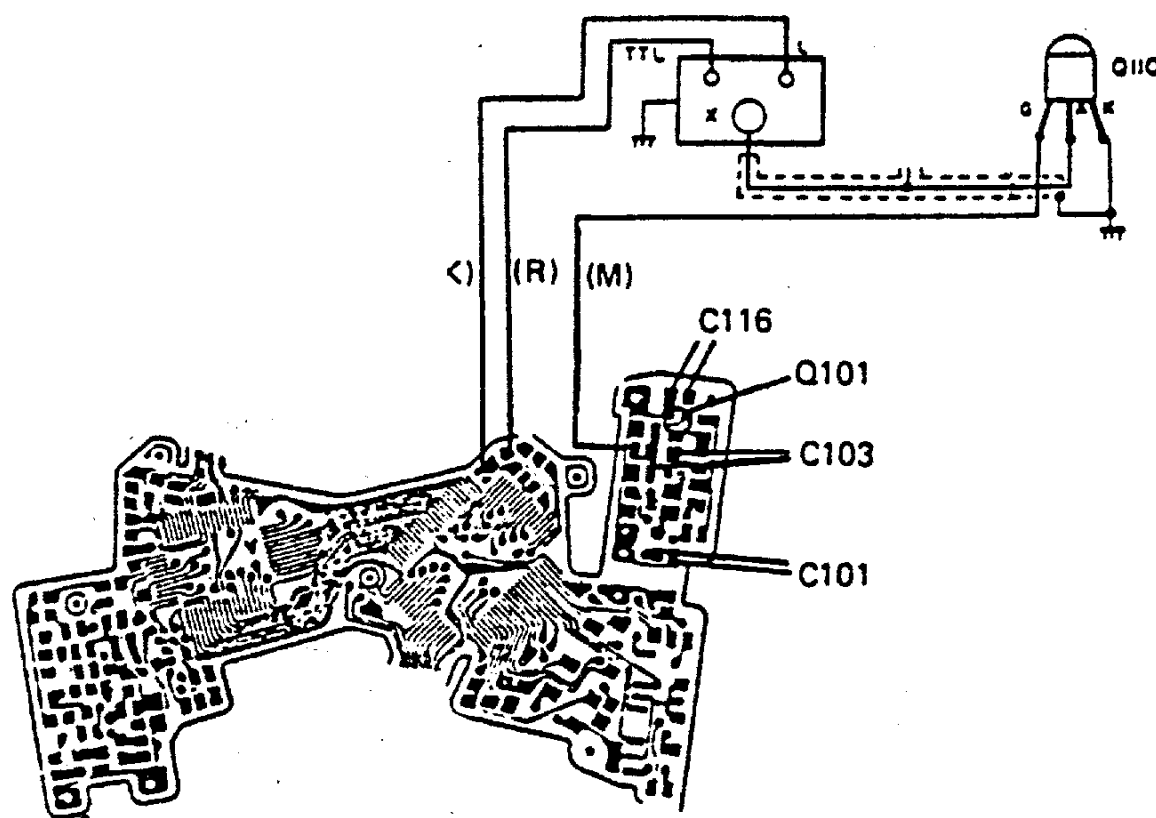
(1) Circuit diagram



(2) Wiring diagram

• Flashing circuit

- By releasing the shutter:
 - M SW ON
 - MG1 ON
 - Trg OFF
- The Trg OFF is used as trigger data signal H inputted from B.P. pin No. 37 to CPU pin No. 30.
- Upon receiving the trigger data signal, the CPU outputs integrator compensation signal L to delay Trg 12.5 ms.
- When X SW is turned ON, pin No. 59 and pin No. 50 are set at the H and L (2.4V) levels respectively to turn ON the thyristor for flashing.
- Upon flashing, the integrator compensation signal is set at the H level and integration start is informed from B.P. pin No. 80 to the head amplifier.
- Upon flashing, L terminal current is stopped and B.P. pin No. 40 is set at the L level to inform the flashing to CPU pin No. 50.

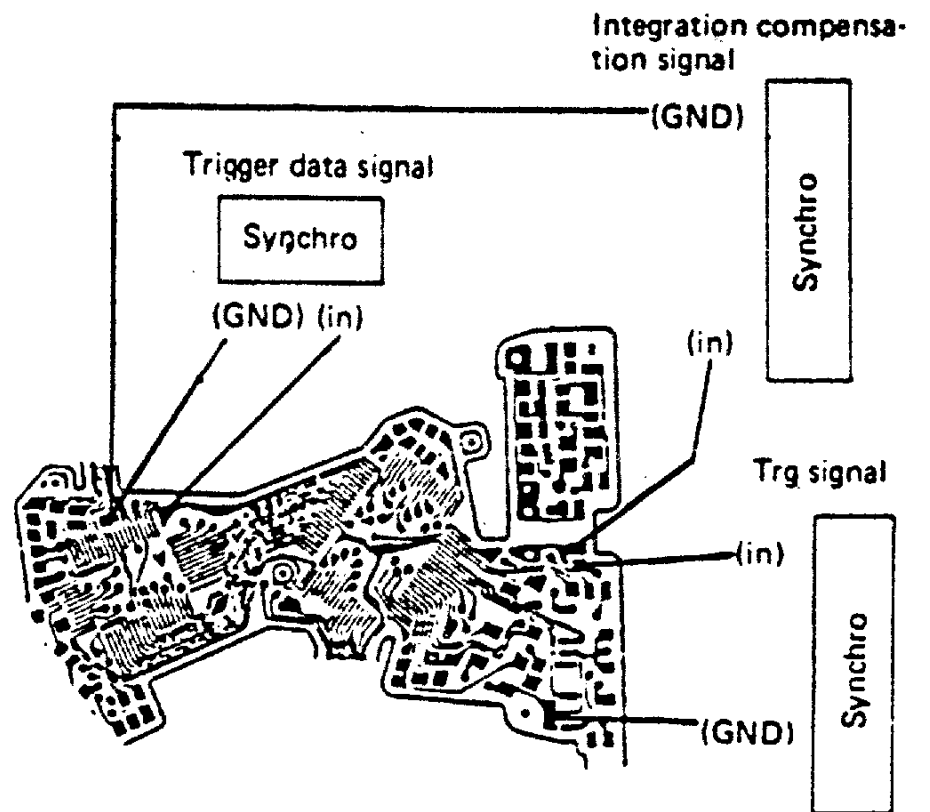


- Upon receiving the flashing signal, the CPU actuates the OVER/UNDER exposure-circuit at the next stage.
- Upon completing the integration, the comparator is inverted and the light control circuit at the preceding stage operates to stop the flashing.

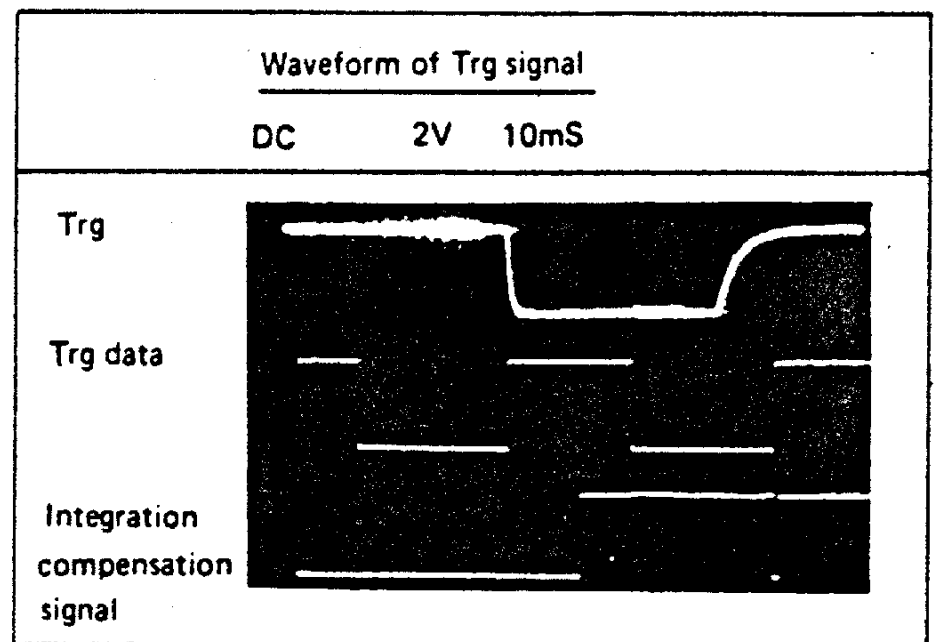
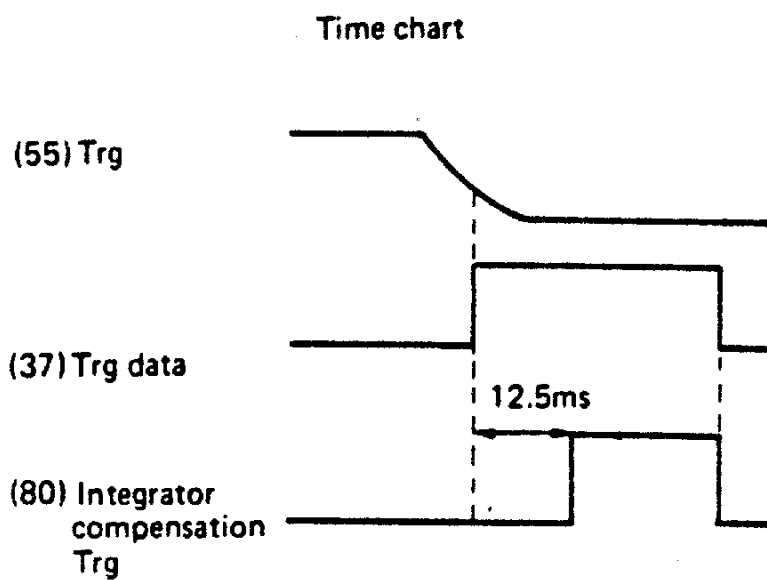
● Flashing circuit voltage

Check procedures

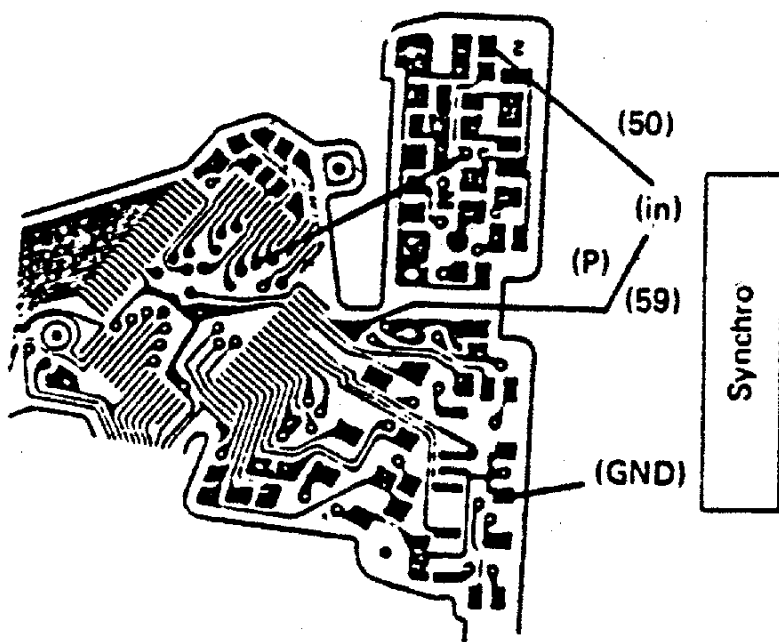
1. After detaching the top cover, connect the lead wires necessary for flashing the strobe.
 - (1) Pink lead wire
 - (2) Light green lead wire
 - (3) Shielded wire
2. Attach the strobe to the top cover.
3. Bring the measuring terminals of a synchroscope into contact with the measuring point.
4. Flash the strobe by releasing the shutter.
5. At this time, measure voltage with the synchroscope.



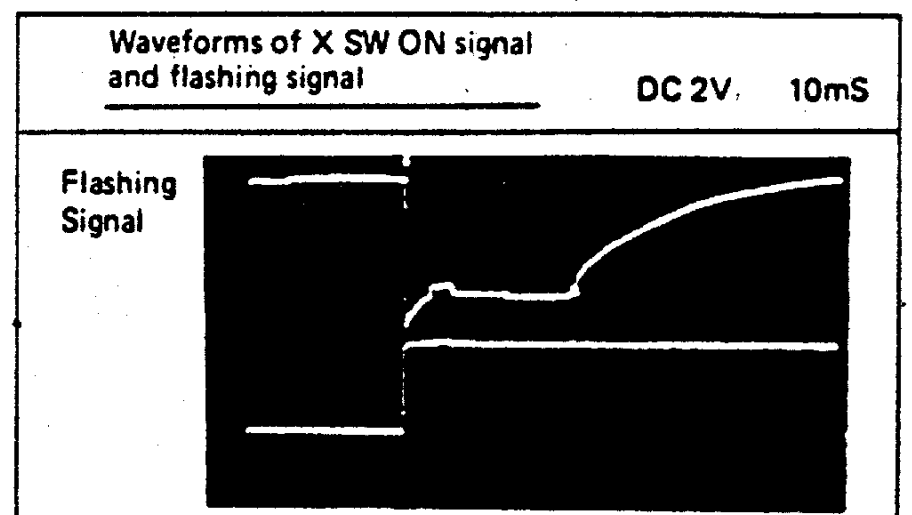
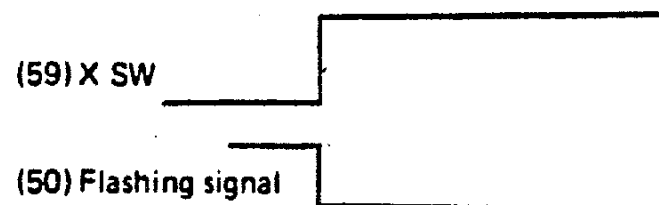
1. Each Trg signal provided?



2. X SW ON signal and flashing signal (50) provided?

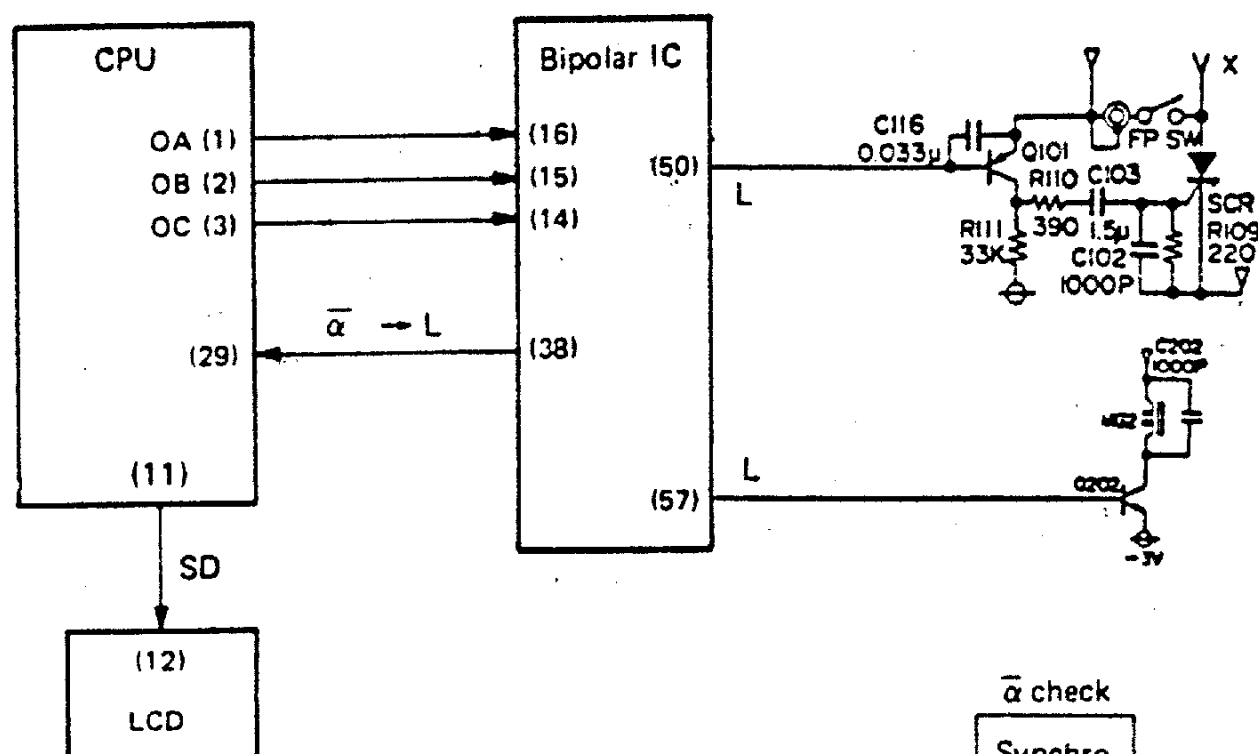


Time chart of X SW ON signal and flashing signal



22. Over/Under Exposure Circuit

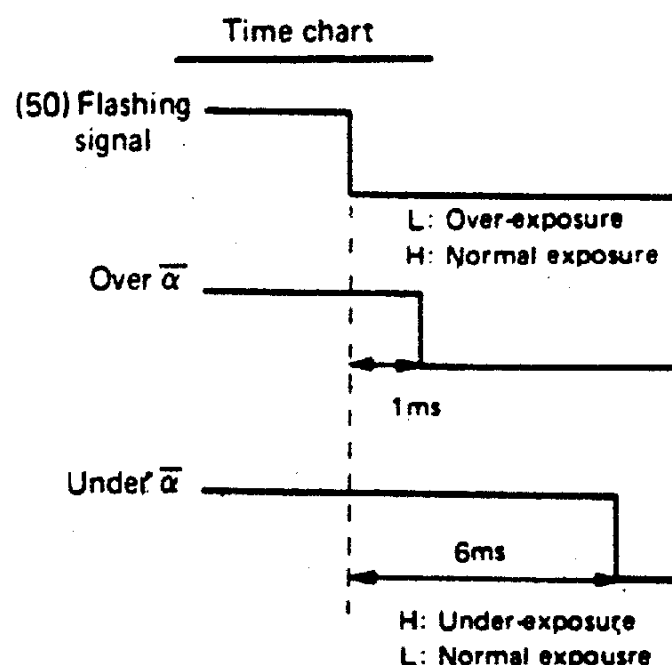
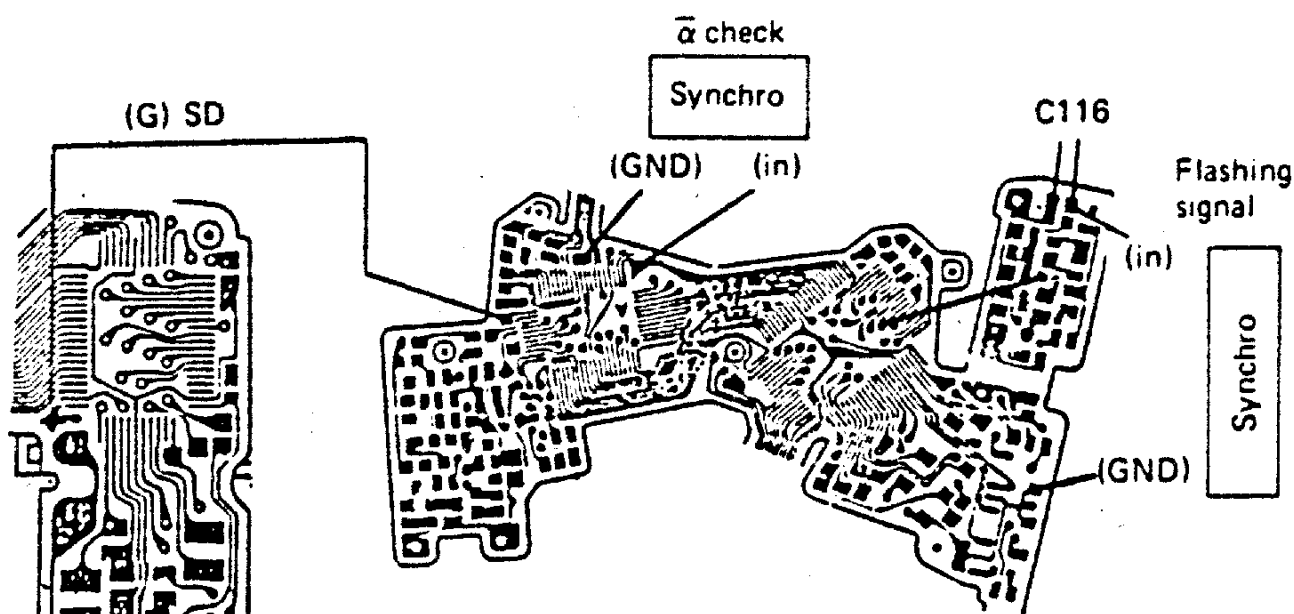
(1) Circuit diagram



(2) Wiring diagram

- Over/under exposure circuit

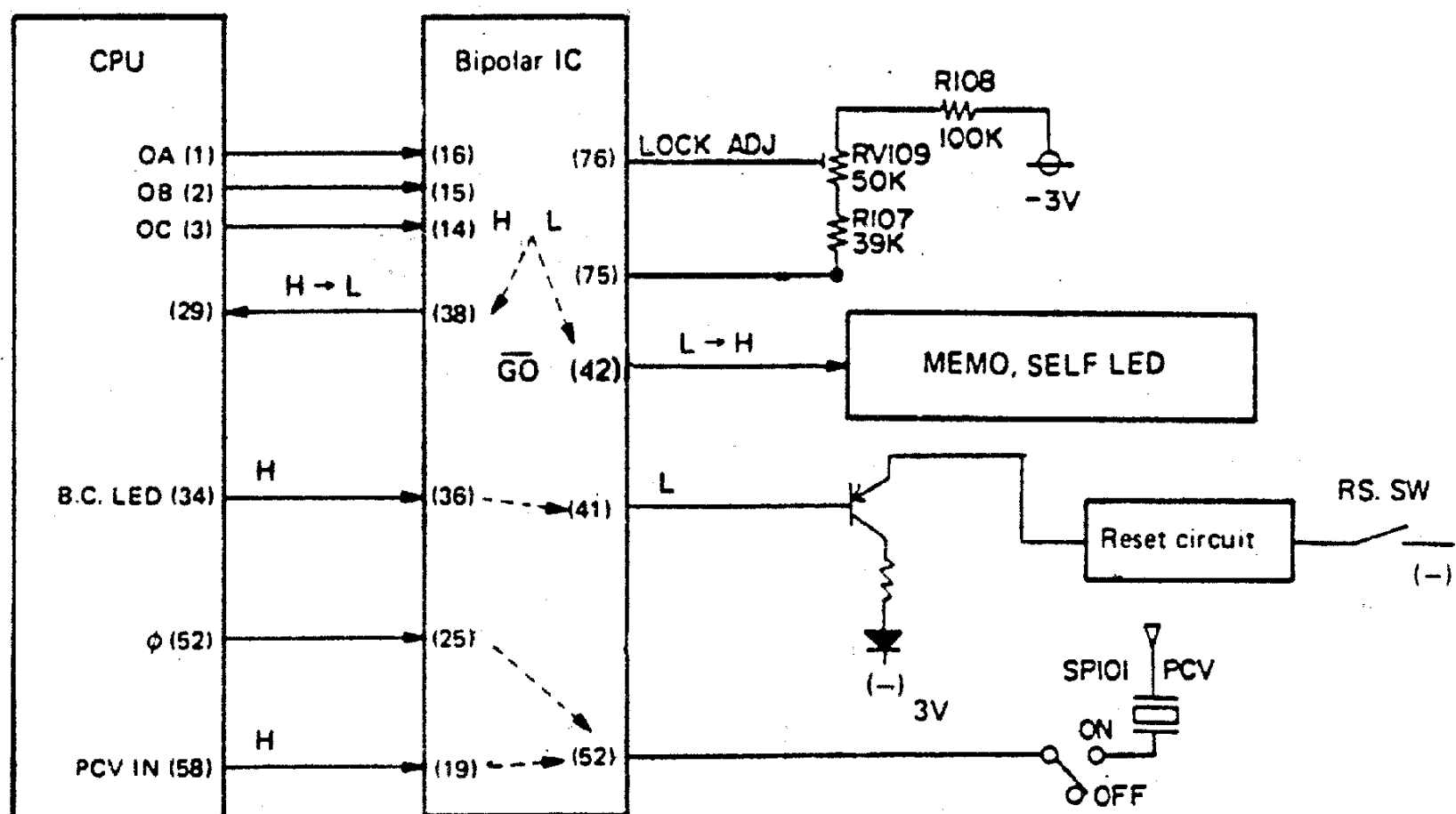
- Check for over-exposure
 - Check voltage 1ms after flashing.
 - The OVER indication should light if the exposure is +1 EV or more higher than the correct level.
- Check for under-exposure
 - Check voltage 6 ms after flashing.
 - The UNDER indication should light if the exposure is -0.6EV or more lower than the correct level.
- Operations of CPU
 - Outputs OA, OB and OC signals to check for over/under exposure.
 - Check result is informed by L signal from pin No. 38 of the bipolar IC to pin No. 29 of the CPU.
 - The CPU indicates the result on the LCD.



- The over/under exposure circuit has no external circuit. Trouble in the over/under exposure circuit is traced to defect in the IC or indication circuit.

23. B.C. Circuit

(1) Circuit diagram

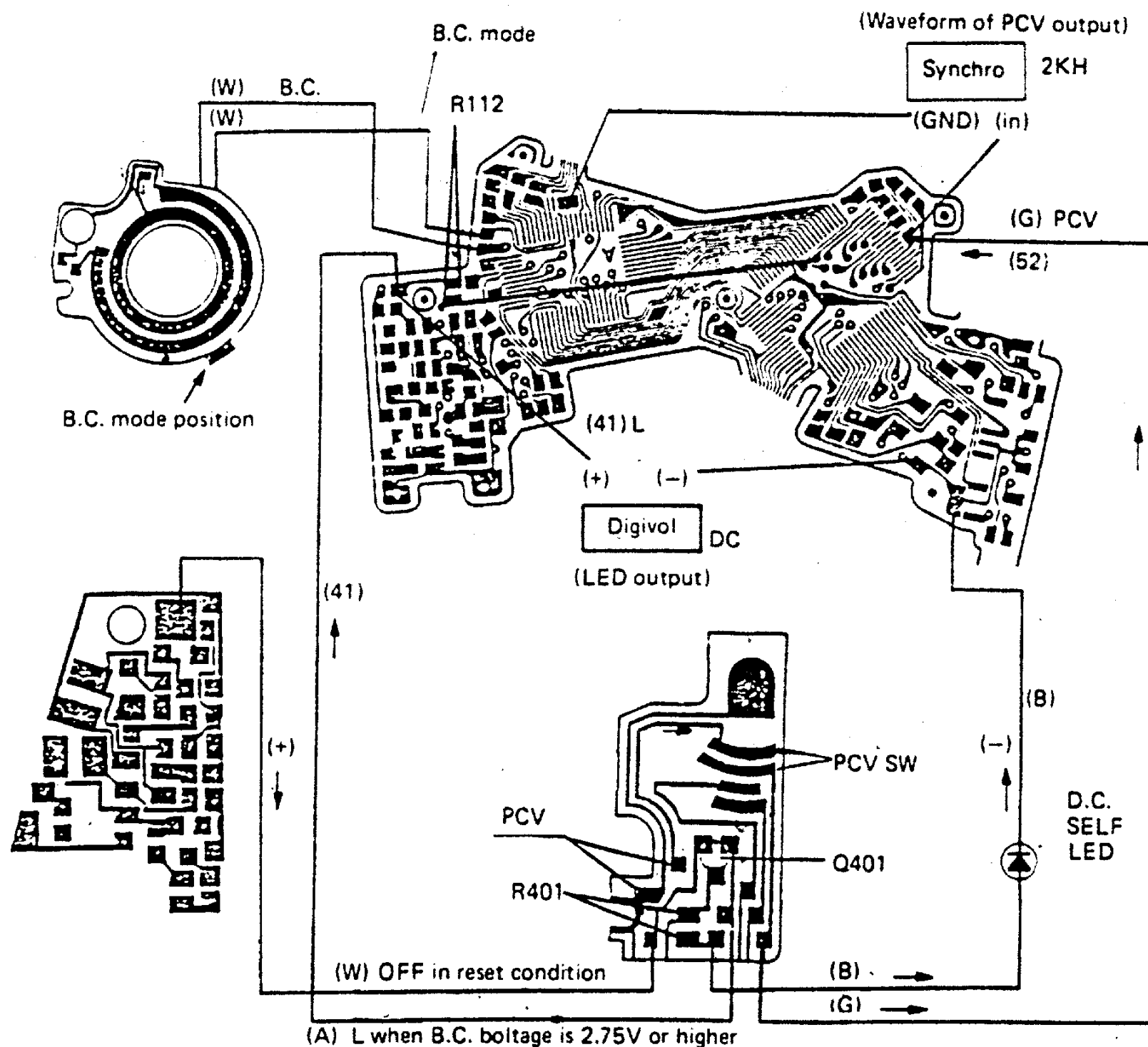


(2) Stereoscopic view

• B.C. circuit

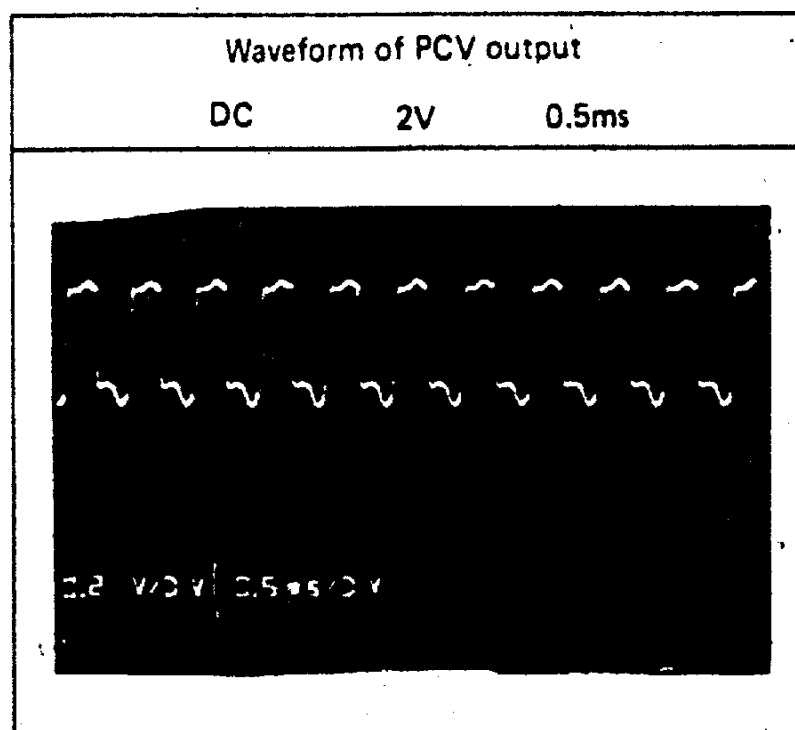
1. When the camera is set in the B.C. mode, the CPU outputs OA, OB and OC signals for battery check.
 2. When voltage is lower than the lock voltage of 2.65 V, all the circuits other than the CPU are deenergized. Further, H signal is outputted from pin No. 42 of B.P. to extinguish the MEMO and SELF LEDs.
 3. When power supply voltage exceeds 2.75 V, pin No. 38 of B.P. is set at the L level to emit L signal to pin No. 29 of the CPU.
 4. When pin No. 29 is set at the L level, the CPU sets pin No. 34 at the H level to emit H signal to pin No. 36 of B.P. When pin No. 36 is set at the H level, pin No. 41 is set at the L level to light the B.C. LED.
 5. Simultaneously, the CPU sets pin No. 58 at the H level. The H signal is transmitted to pin No. 19 of B.P. to turn ON pin No. 52 of B.P.
 6. When pin No. 52 is set at ON, ϕ signal from the CPU is processed by B.P. and outputted from pin No. 52 to sound the PCV.
 7. When the voltage exceeds the lock voltage and lower than 2.75 V, the CPU turns ON and OFF pin No. 34 and No. 58 to flicker the LED and sound the PCV intermittently.
- #### • Adjustment of B.C. voltage (lock voltage)
1. The B.C. voltage can be adjusted in the procedure similar to that for adjusting $V_{ref} = 1.8 \text{ mV}$.
 2. Turn RV109 until pin No. 75 of BP is set at $18 \text{ V} \pm 50 \text{ mV}$.

(2) Wiring diagram



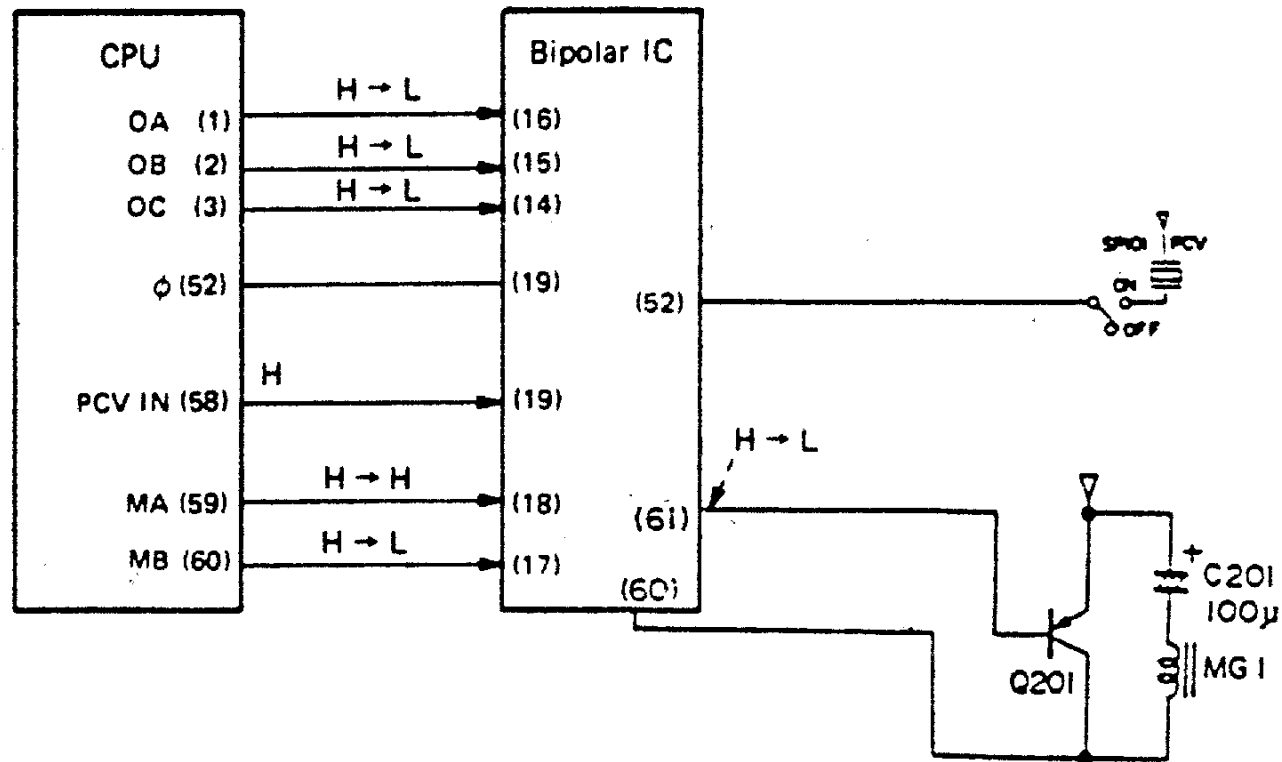
• Voltage checks

- (1) PCV output
Check waveform with a synchroscope.
- (2) LED output
Check the LED output to confirm that it is at the L level on pin No. 41 of B.P.



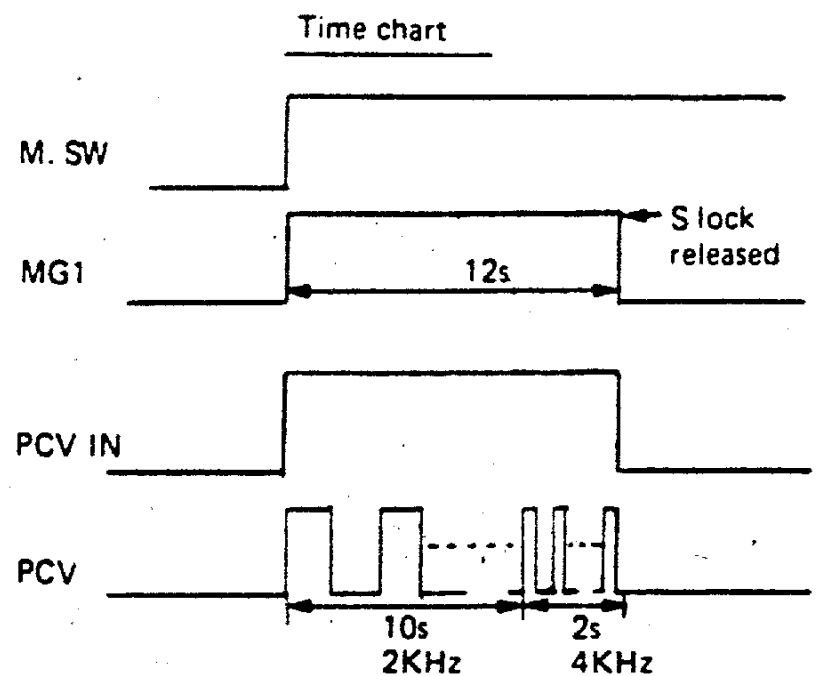
24. Self-Timer Circuit

(1) Circuit diagram



• Self-timer circuit,

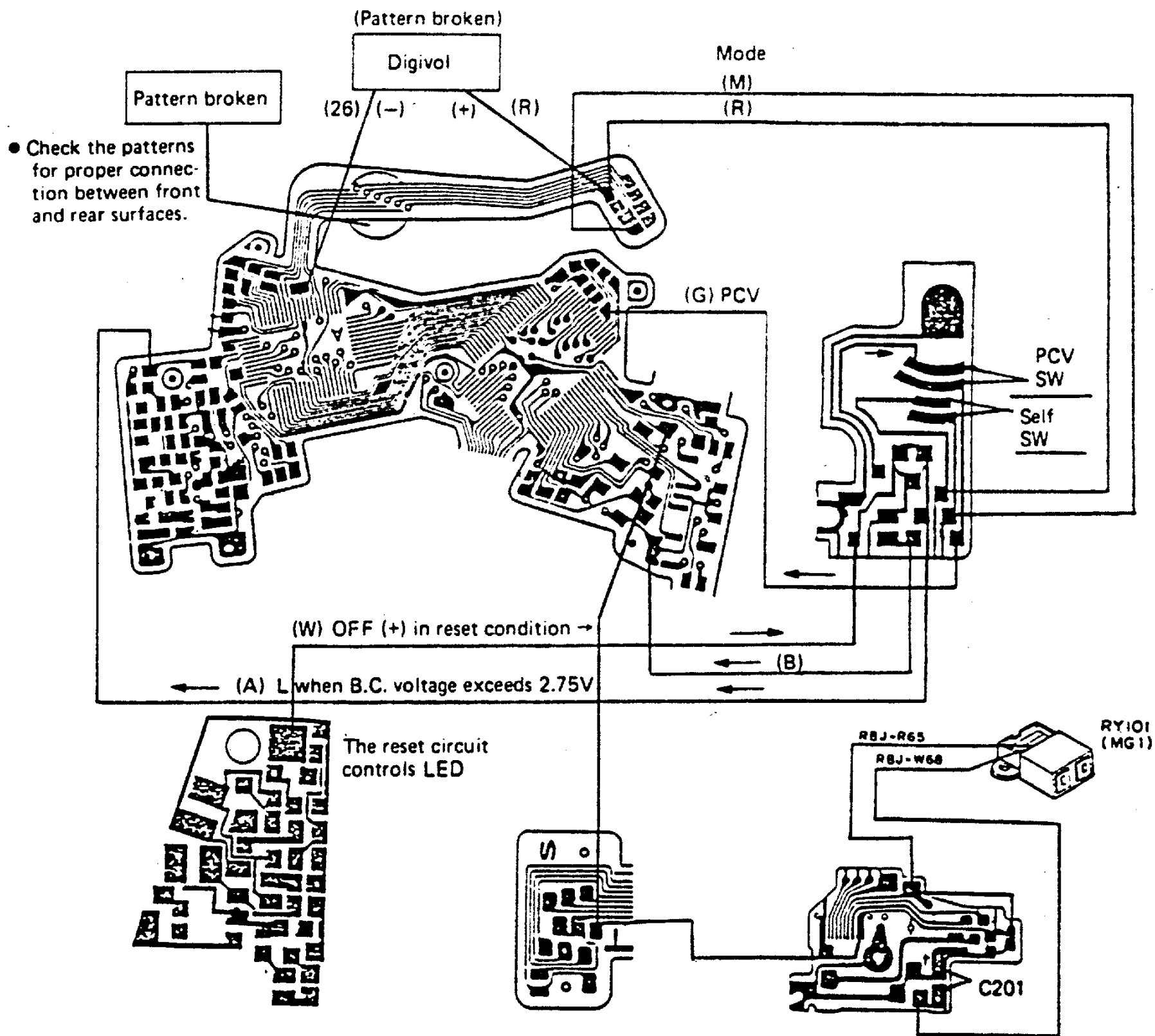
1. When the camera is set in the SELF mode, the CPU delays MG1 ON time by MA and MB signals 12 seconds. Therefore, the shutter is locked for 12 seconds.
2. For the 12 seconds, the CPU outputs H signal from pin No. 58 to set pin No. 52 of B.P. at ON.
3. The ϕ signal from pin No. 52 of the CPU is inputted to pin No. 19 of B.P. and reduced to 2 kHz by B.P. Then, the signal is outputted from pin No. 52 to sound the PCV.
4. 10 seconds later, the CPU provides OA, OB OC signals to set the output from pin No. 52 at 4 kHz for the rest 2 seconds.
5. 12 seconds later, the CPU provides MA and MB signals to release the shutter lock condition by energizing MG1.



(2) Wiring diagram

- In the self-timer circuit, pattern may be broken or IC may be defective if the AUTO, MANUAL and B.C. circuits are normal after:

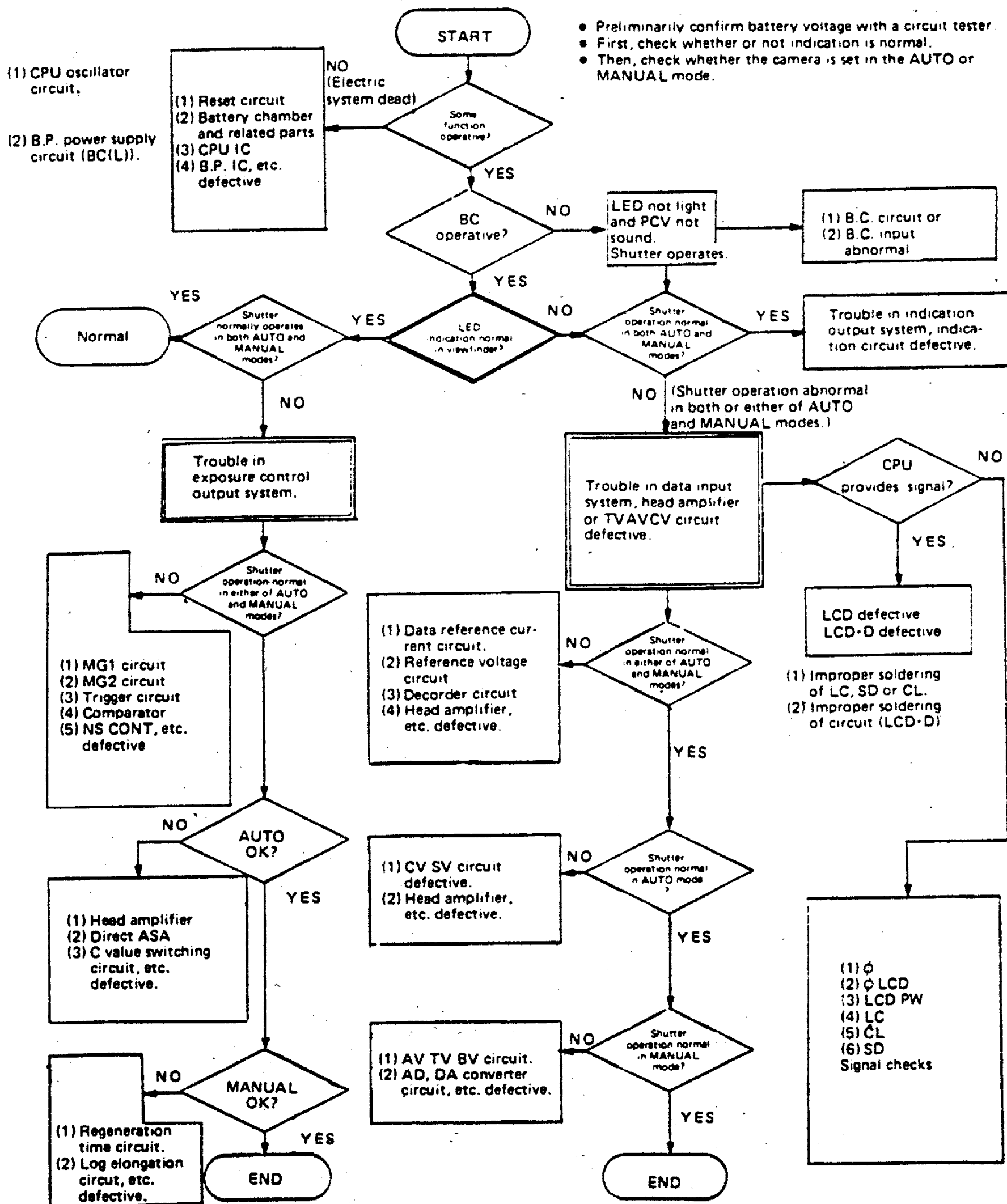
1. Detaching the top cover.
2. Disconnecting lead wires for the self-timer mode.
3. Setting the camera in the SELF mode by using tweezers.



IV. TROUBLESHOOTING OF ELECTRIC SYSTEM

1. Diagnosis Flow Chart

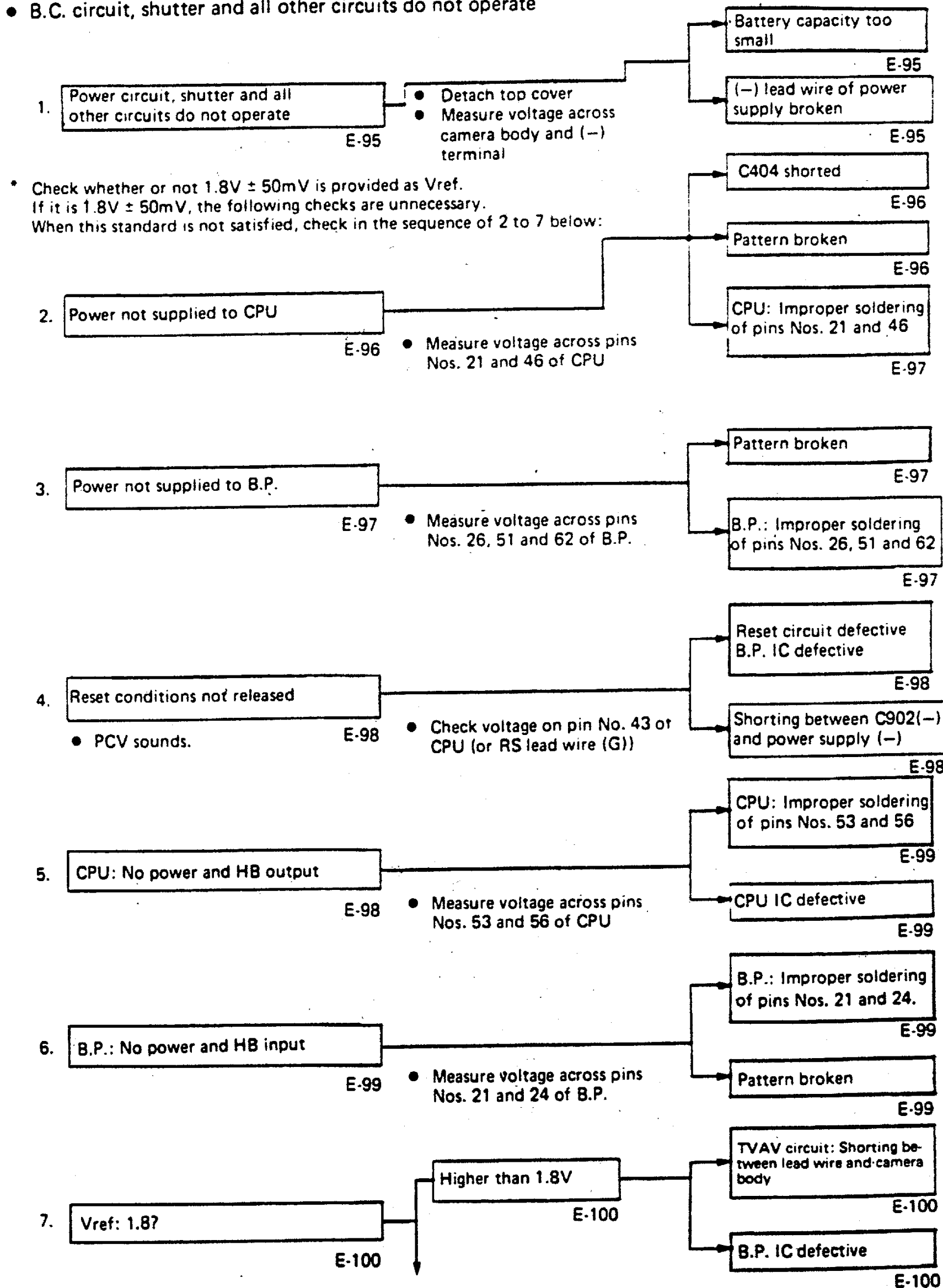
- The diagnosis flow chart is given on a premise that the mechanical system can operate normally.
- After understanding symptom correctly, check the electric system in the sequence illustrated by the following flow chart.

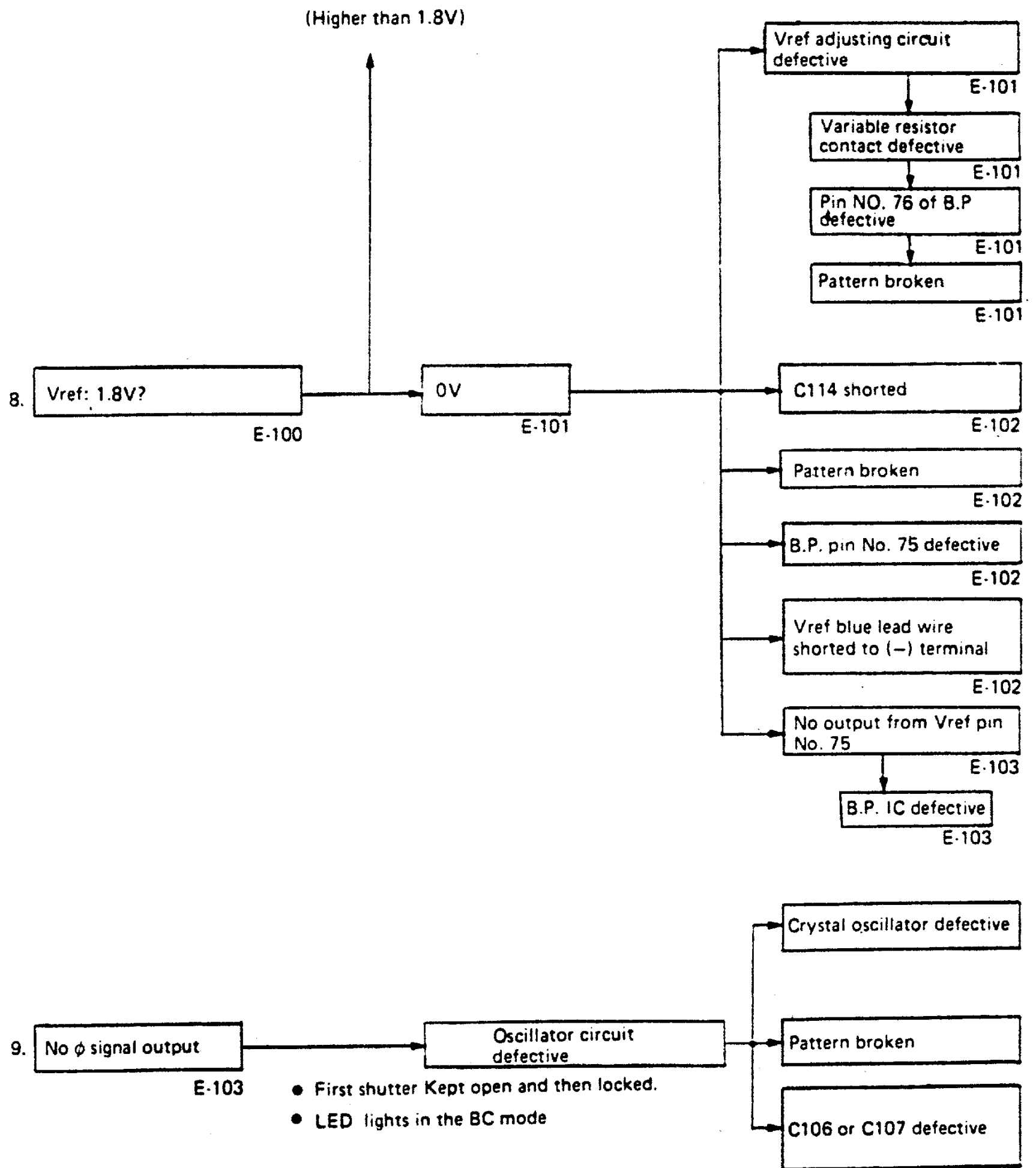


2. Troubleshooting Flow Charts

2-1. Electrical System Inoperative

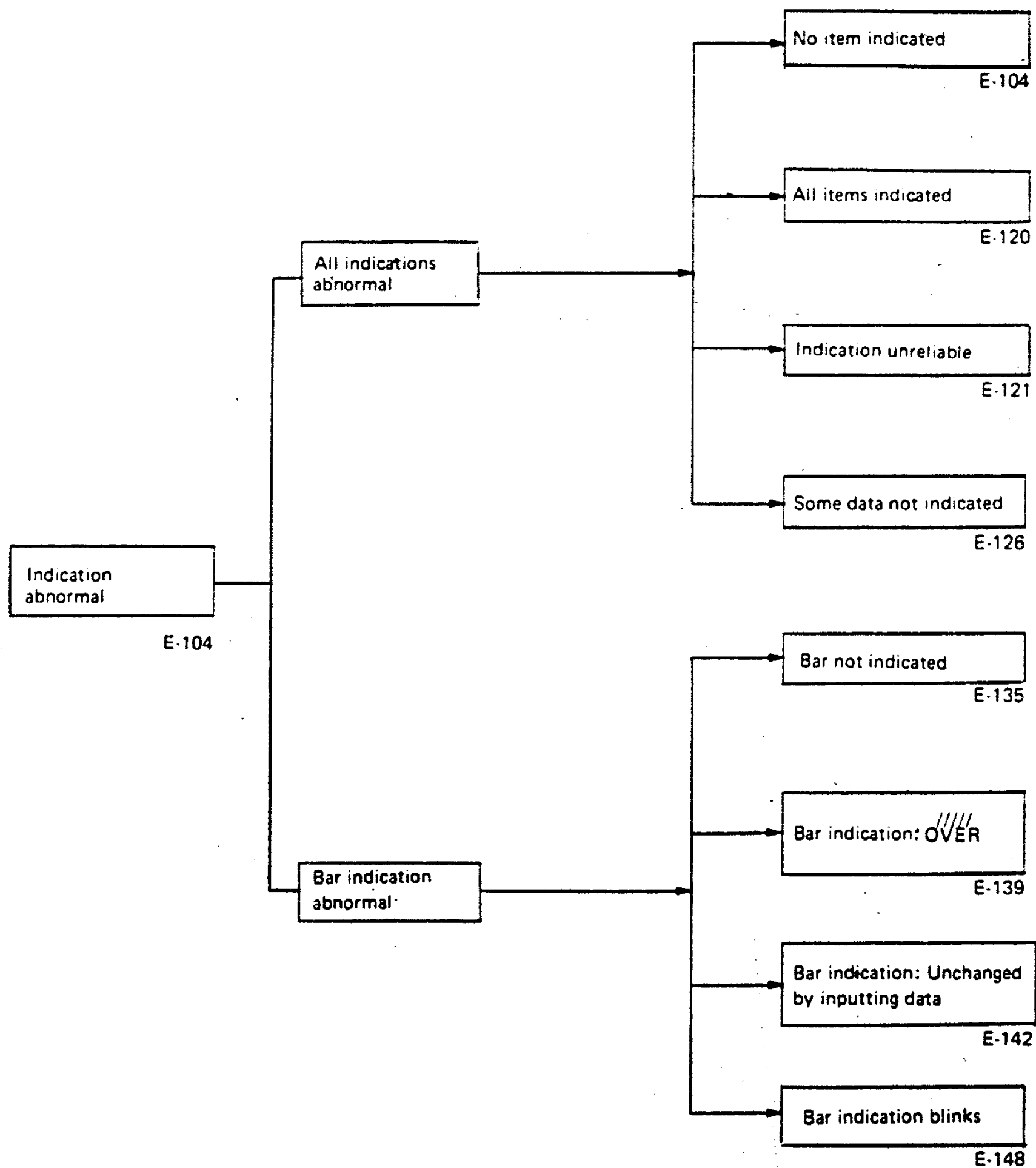
- B.C. circuit, shutter and all other circuits do not operate





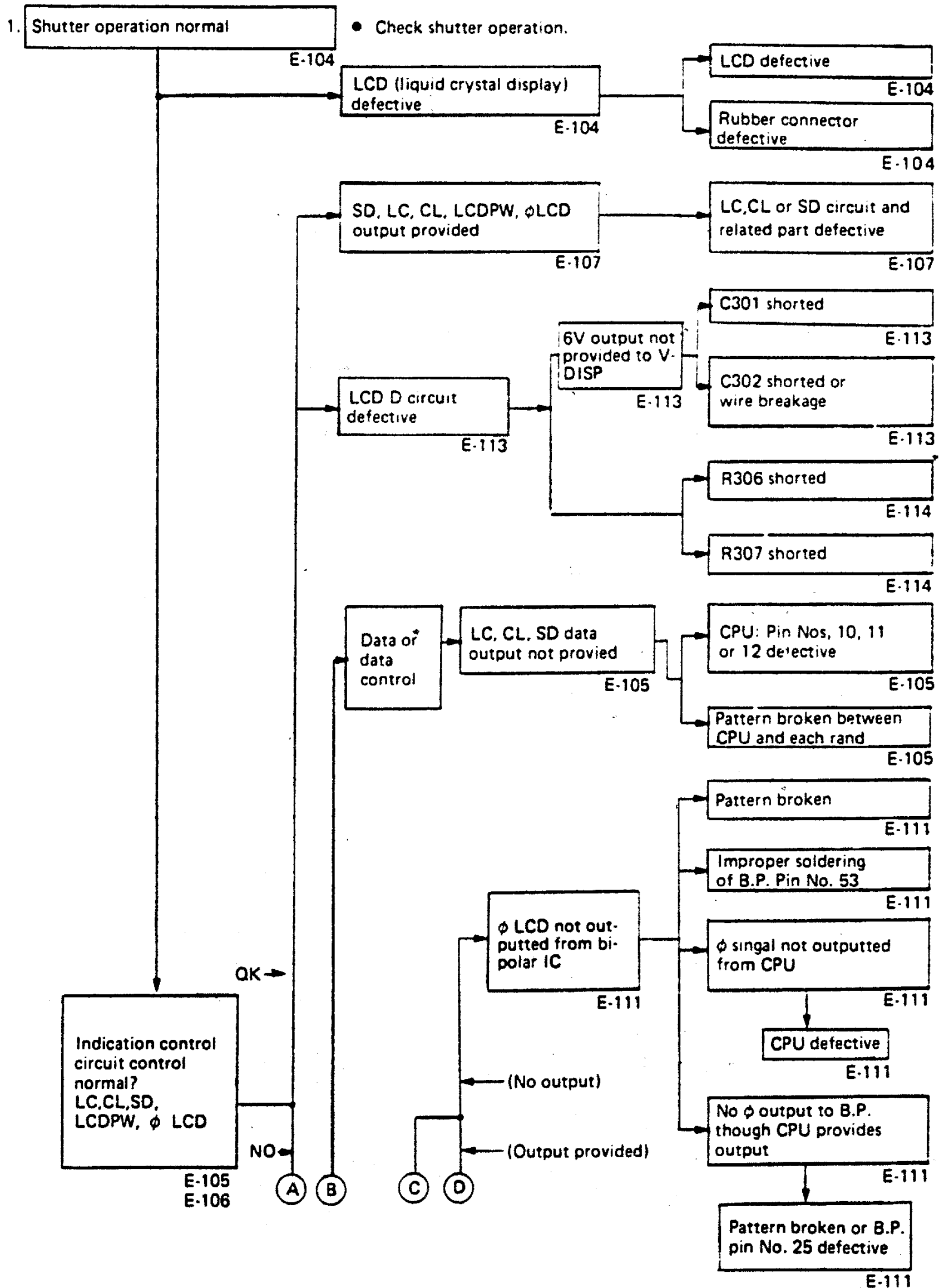
2-2. LCD Indication Abnormal

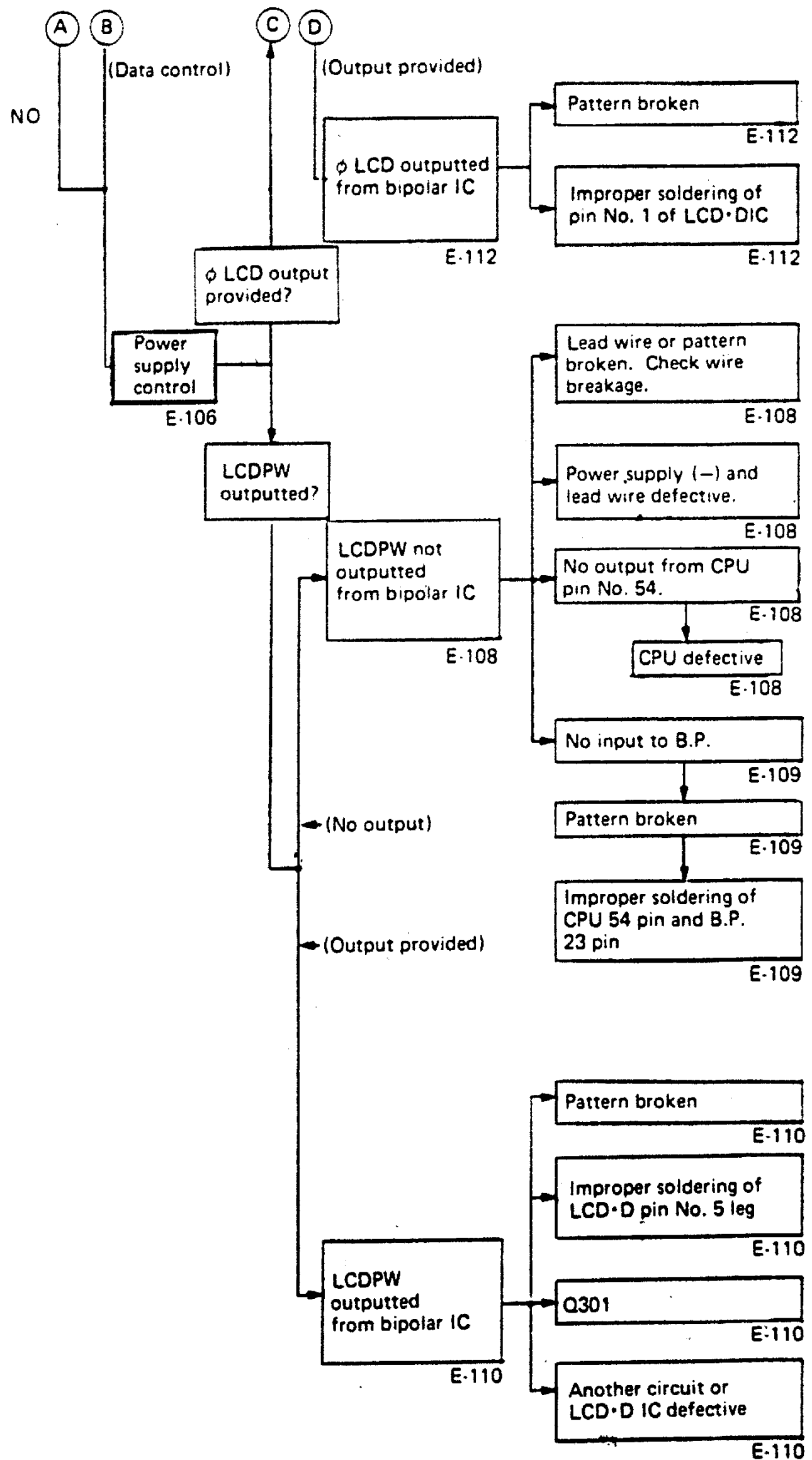
- Diagnosis flow chart for abnormal indication

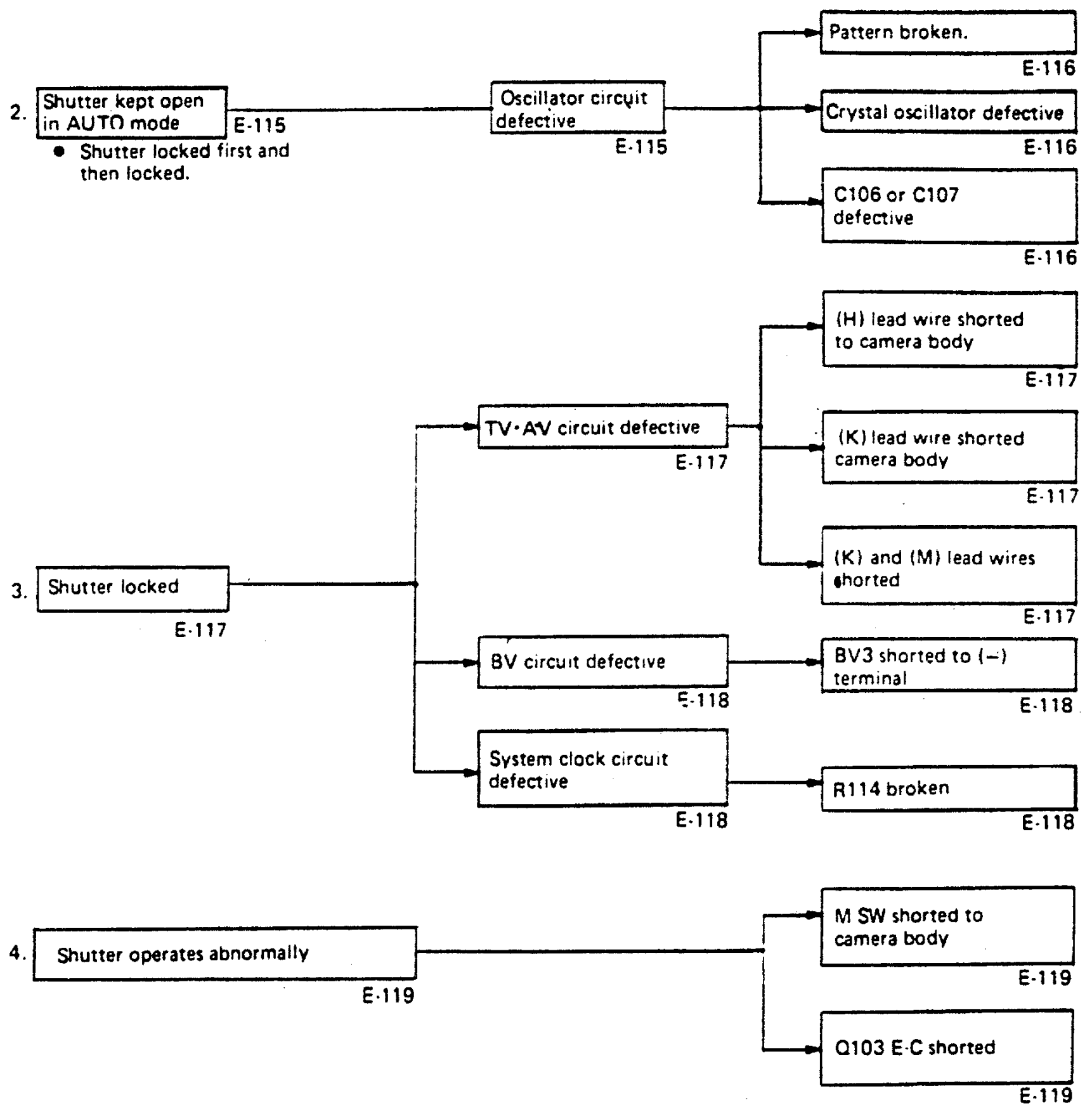


(1) No item displayed

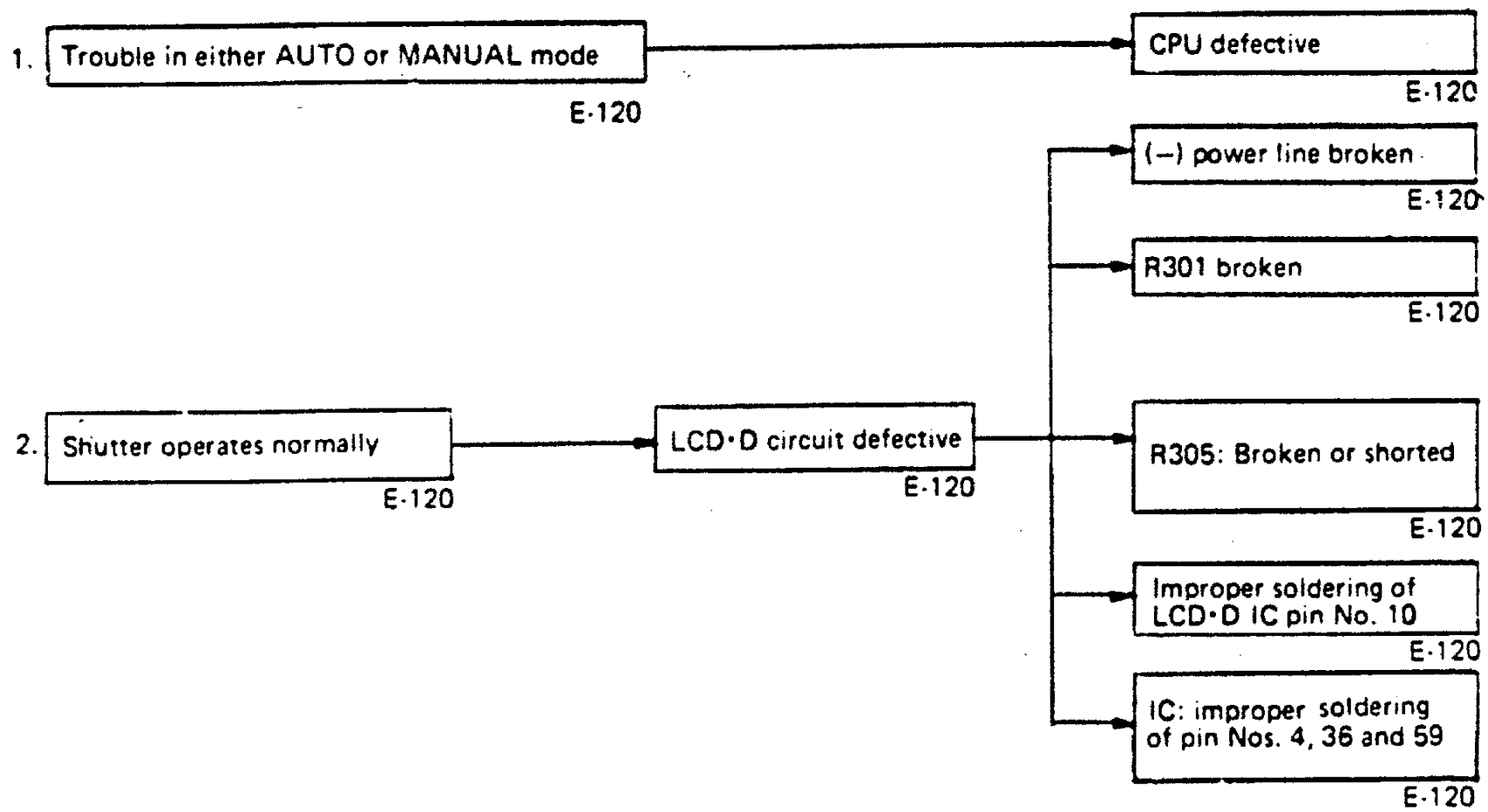
- No character or symbol displayed





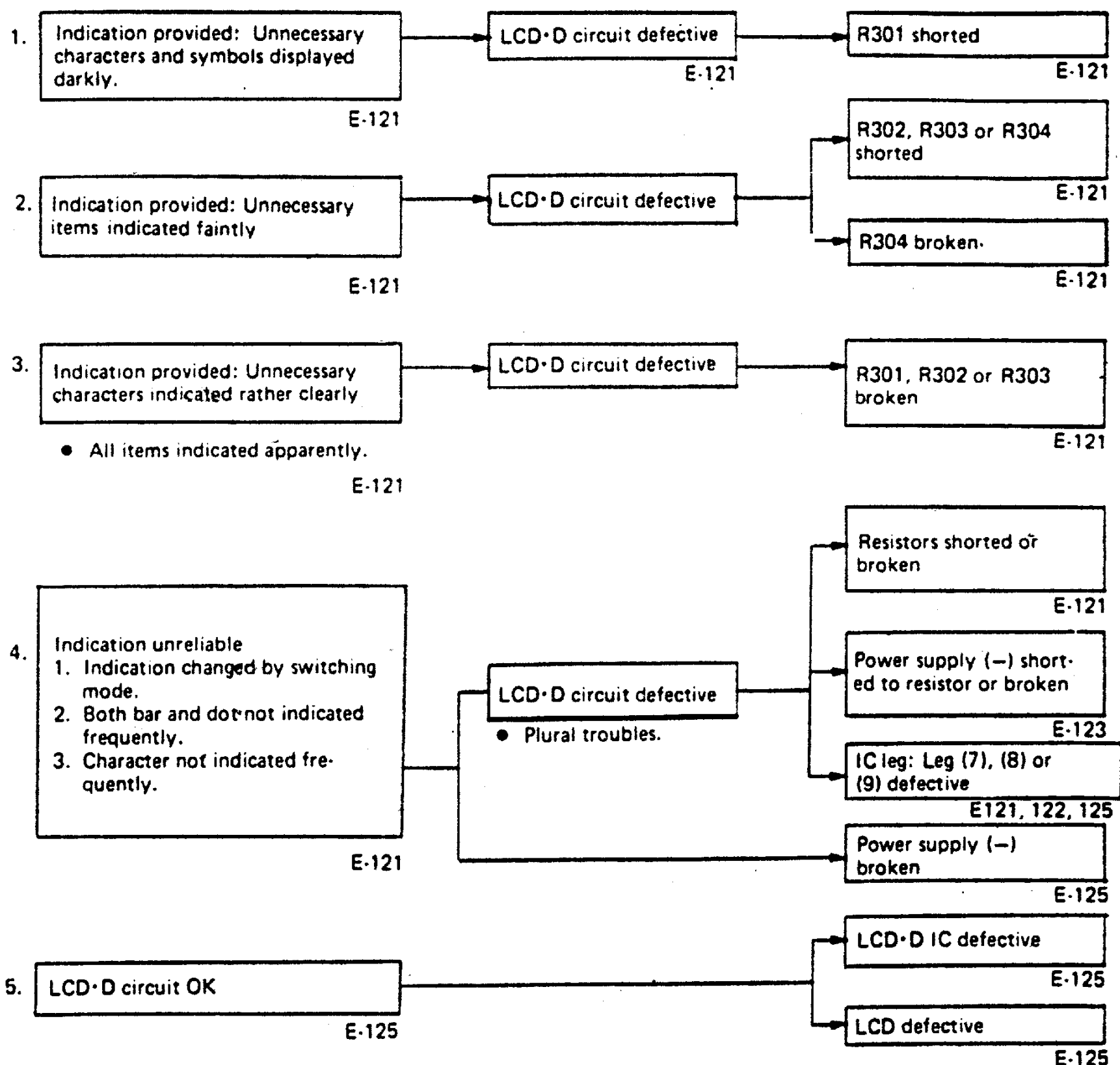


(2) All items indicated



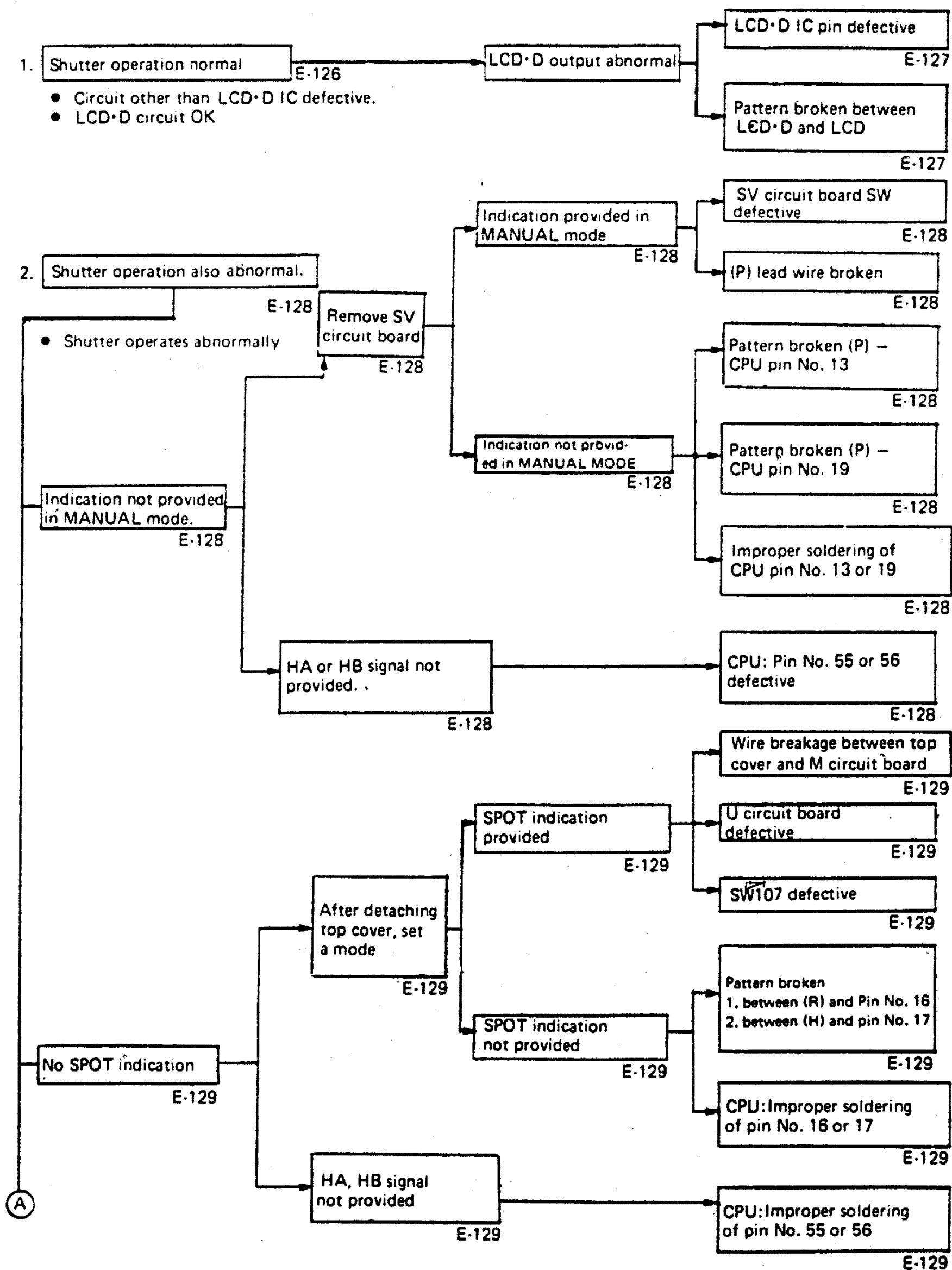
(3) Indication unreliable

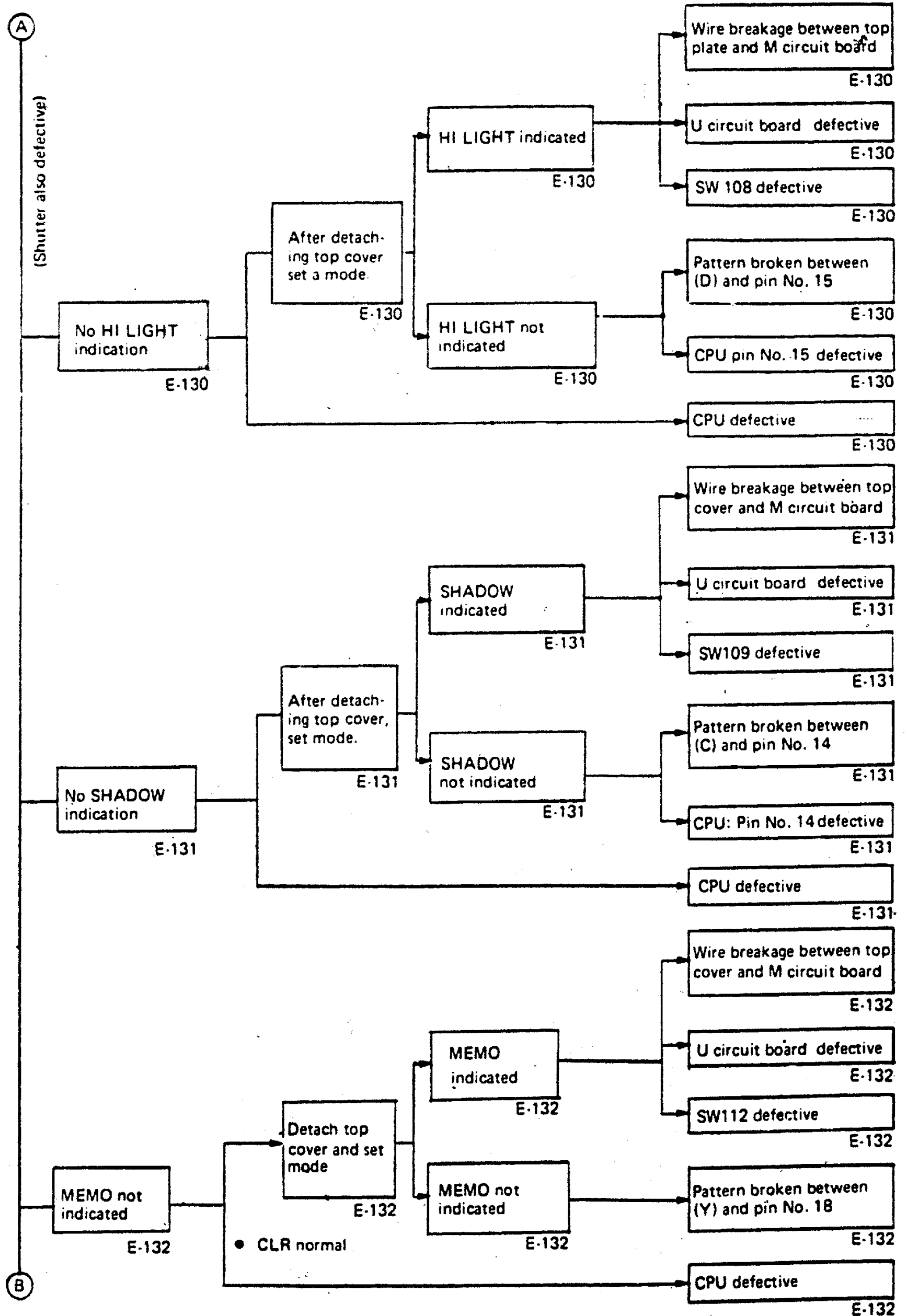
- All items not indicated but unnecessary items indicated.
- Indication unstable and changed by switching mode.
- Shutter operates normally.

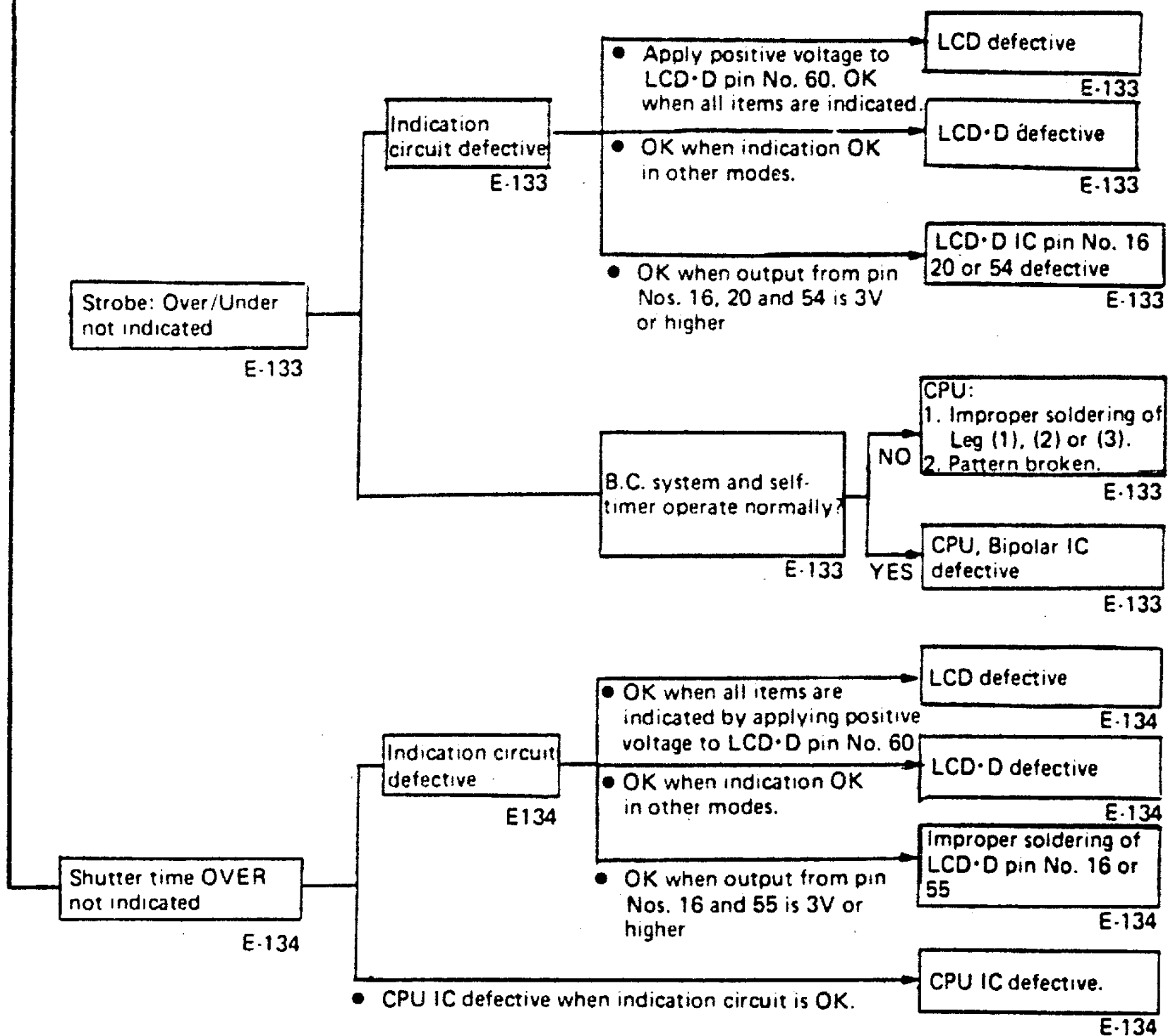


(4) Some items not indicated

- Necessary items not indicated

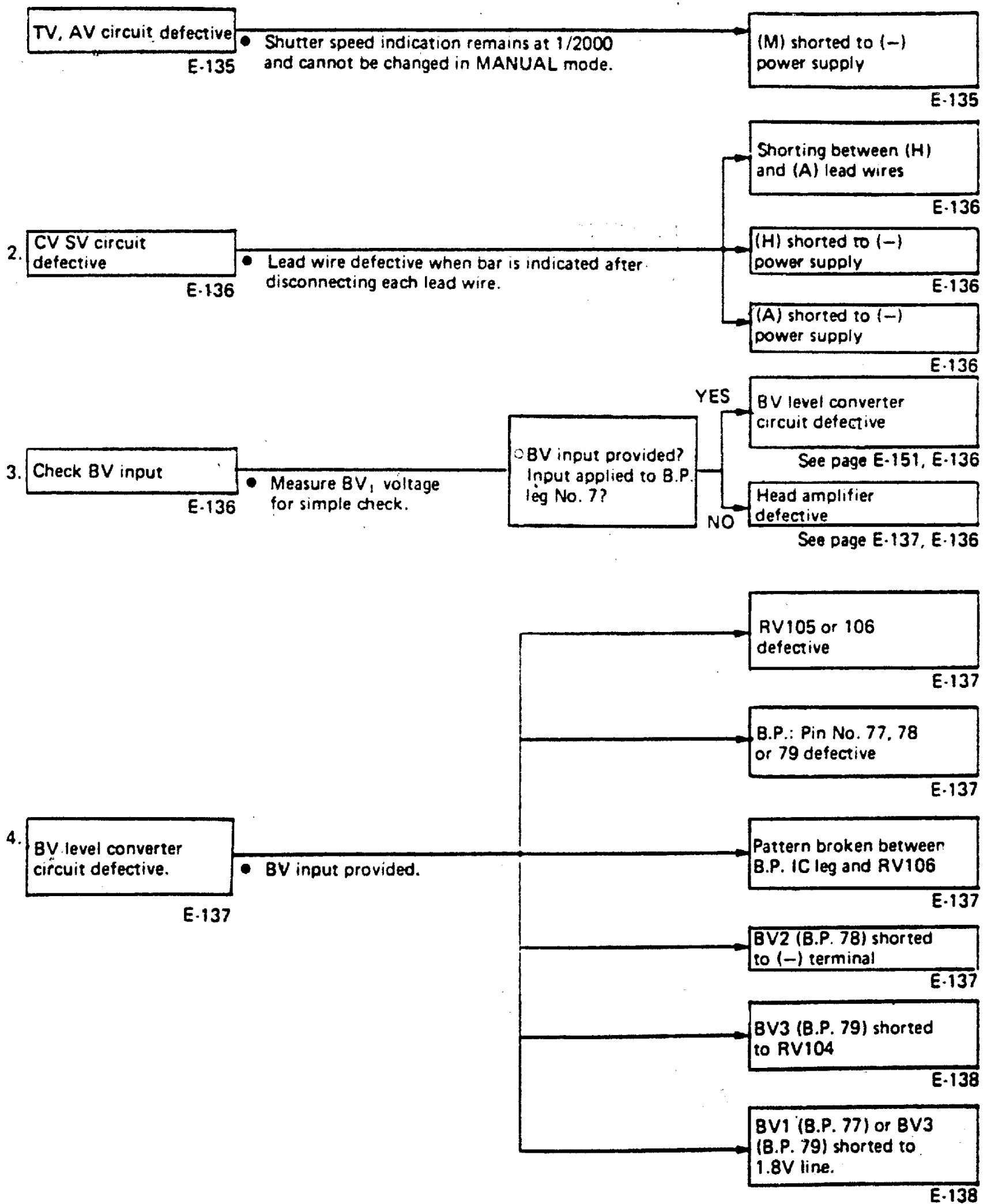






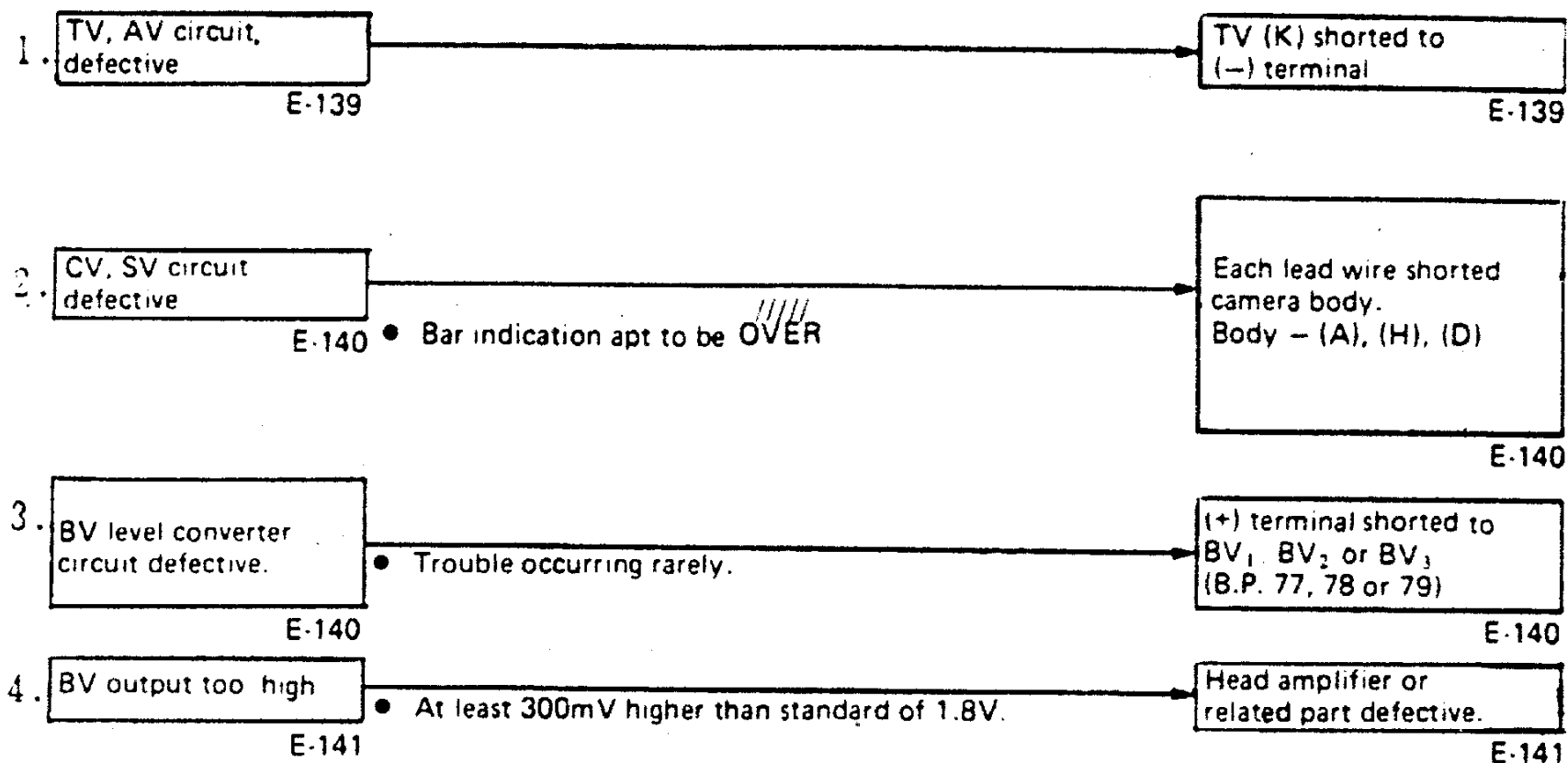
(5) Bar indication not provided

- Indication circuit is defective when shutter operates normally.
- When shutter operation is also abnormal, perform the following checks.



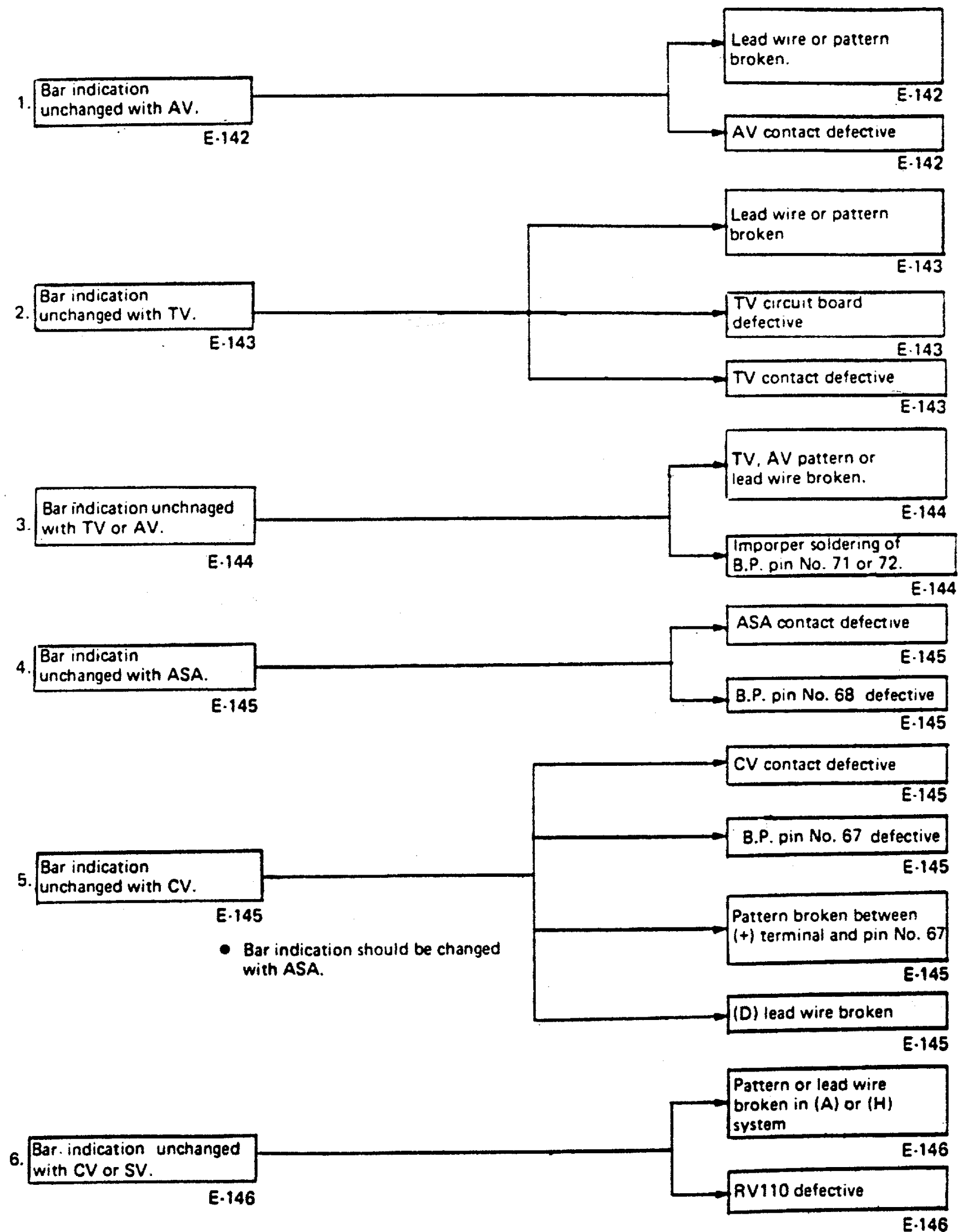
(6) Bar indication always **OVER**

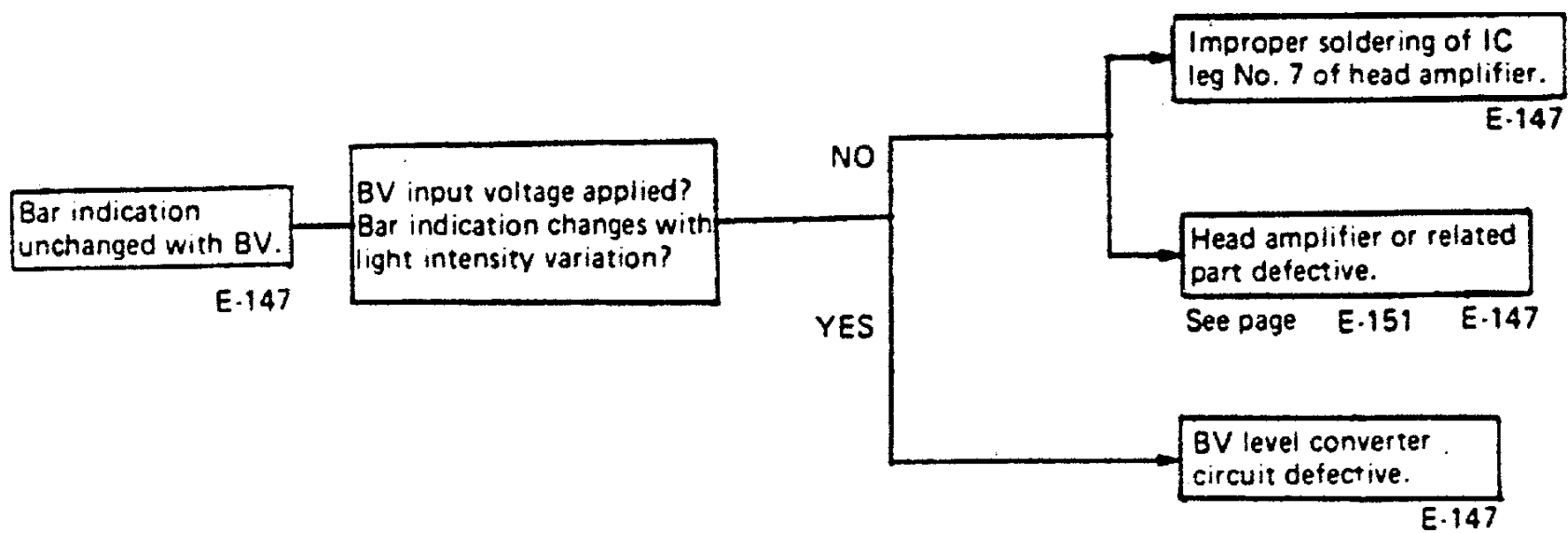
- Indication circuit is defective when shutter operates normally.
- When shutter operation is also abnormal, perform the following checks.



(7) Bar indication unchanged with data input

- Indication circuit is defective when shutter operation is normal.
- When shutter operation is also abnormal, perform the following checks.

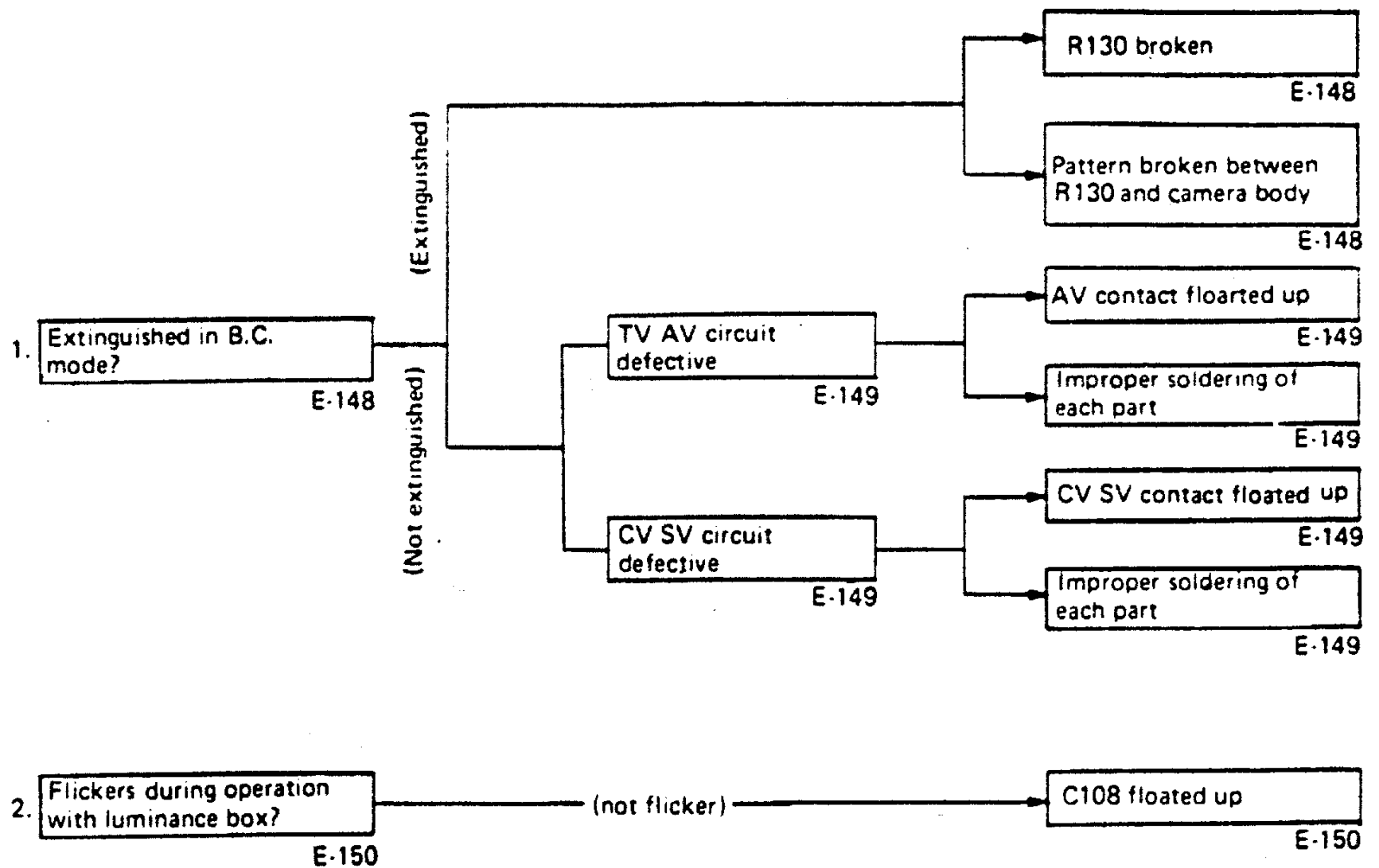




(8) Bar indication flickers

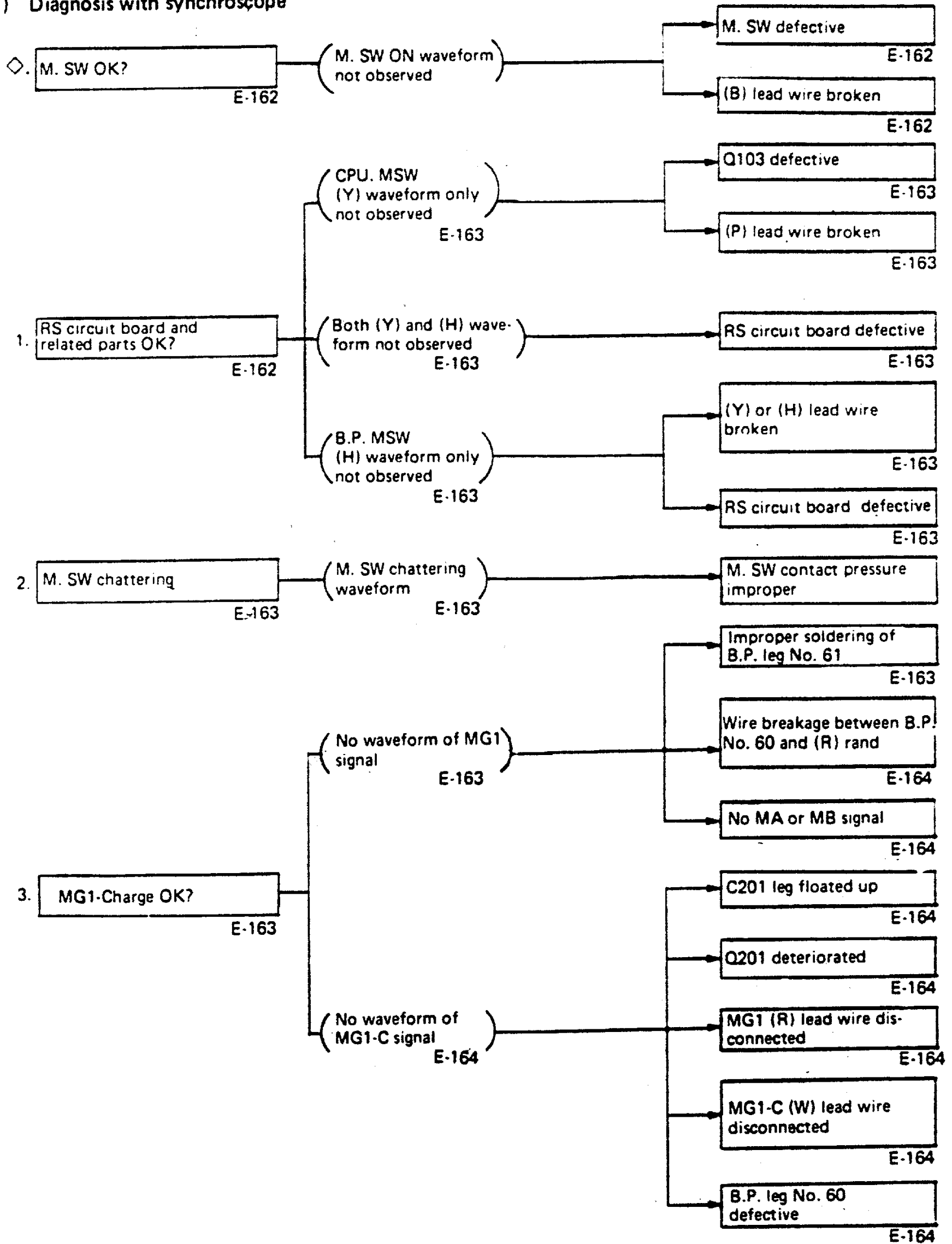
Normal:

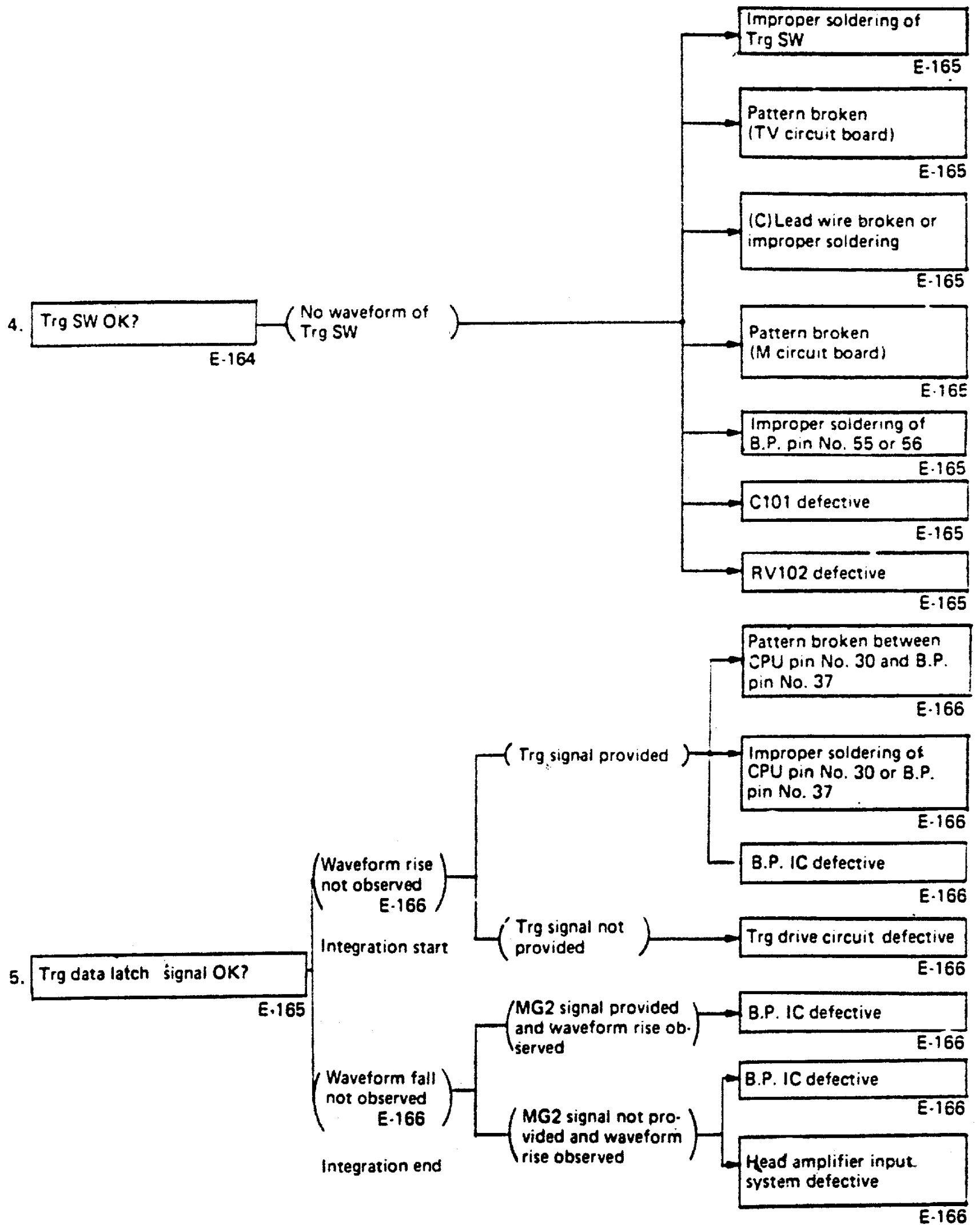
- Bar indication flickers in light from fluorescent lamp.
- Bar indication flickers when luminance varies more than 1/3 EV in day light.



2-3. Shutter Locked

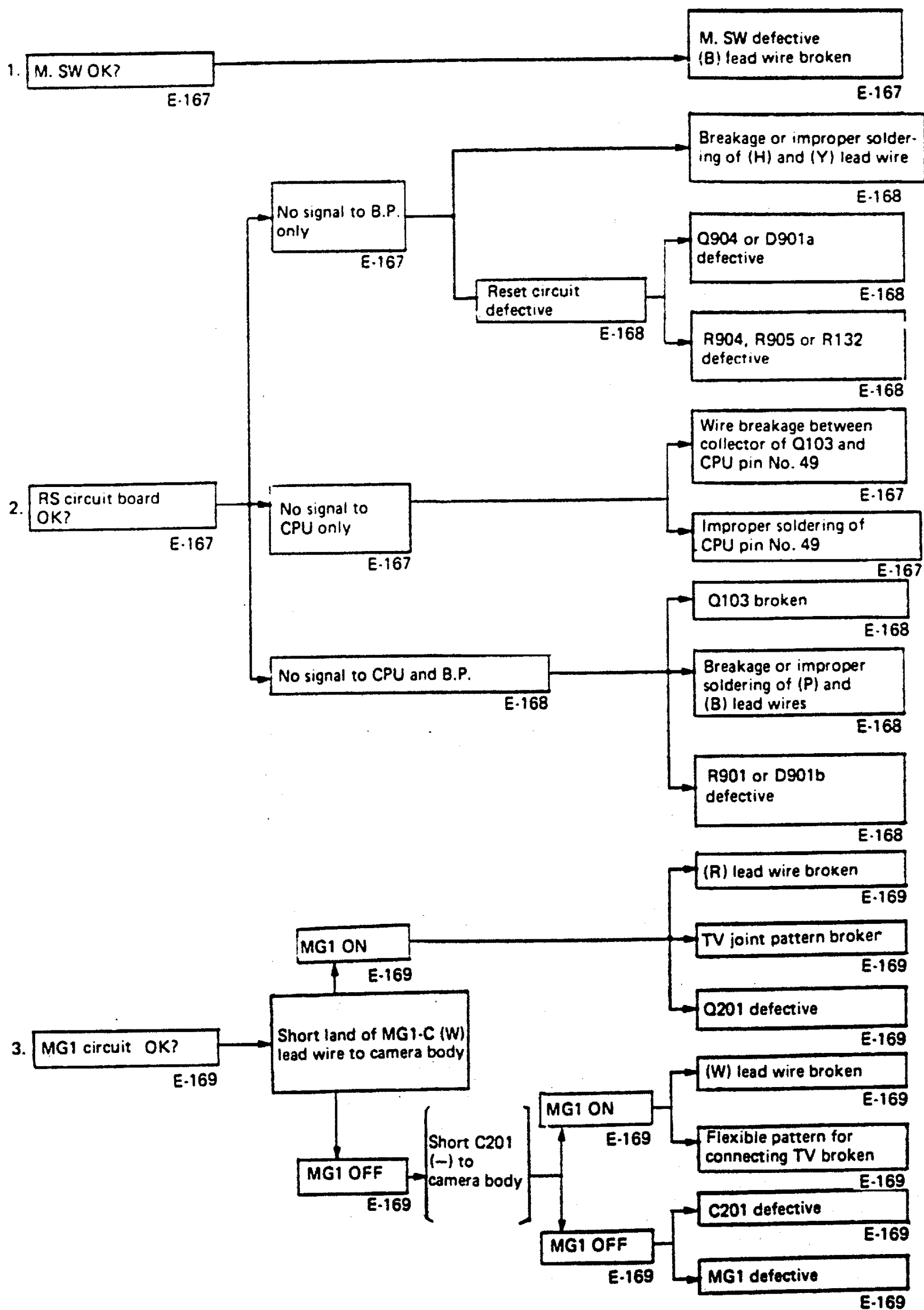
(1) Diagnosis with synchroscope

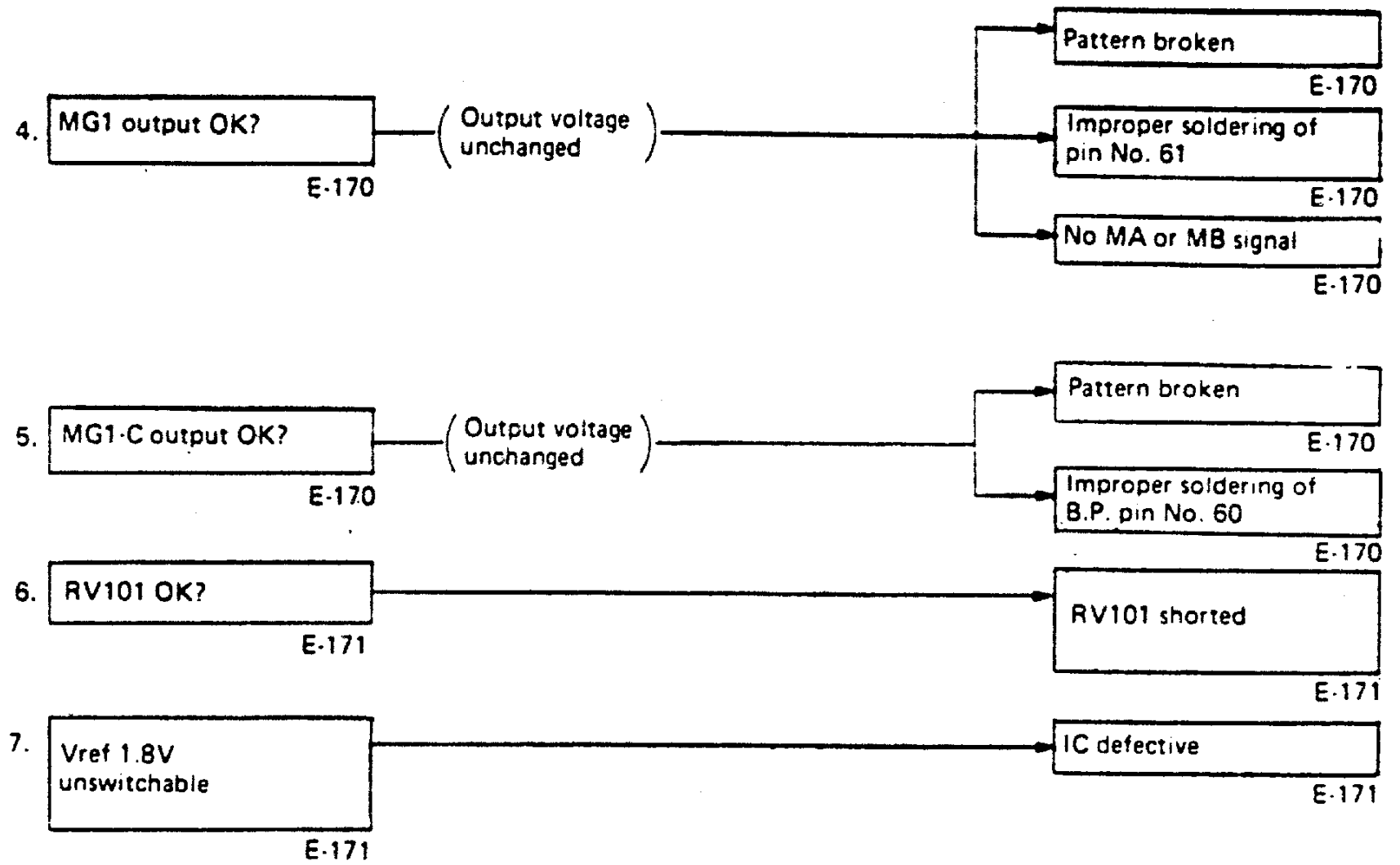




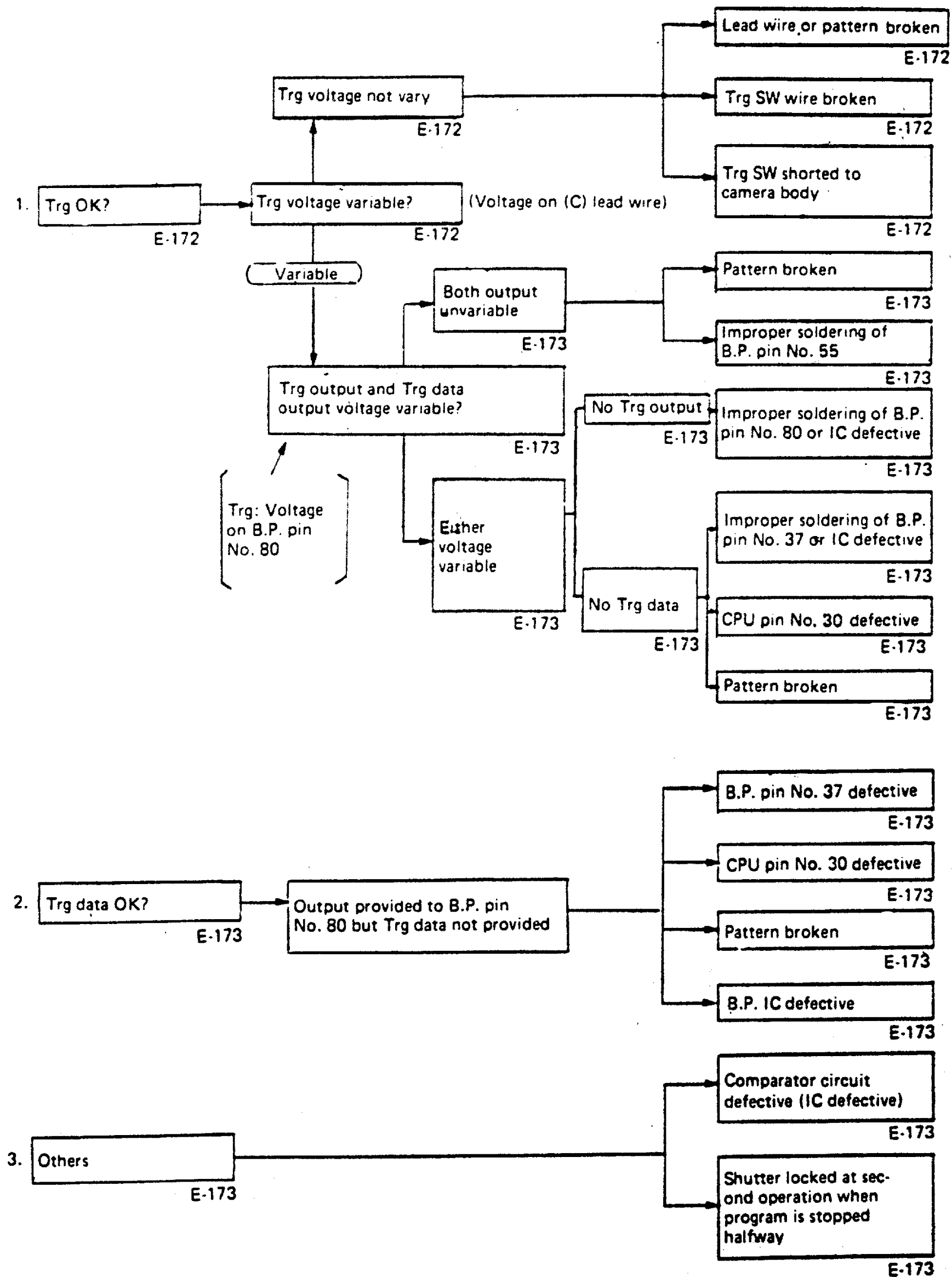
(2) Shutter locked in both AUTO and MANUAL modes

- Shutter is locked from the first though LCD indication is normal in viewfinder.





- Shutter locked at second and later operations



- Indication also abnormal
- Correct indication

(3) Shutter locked in AUTO mode only

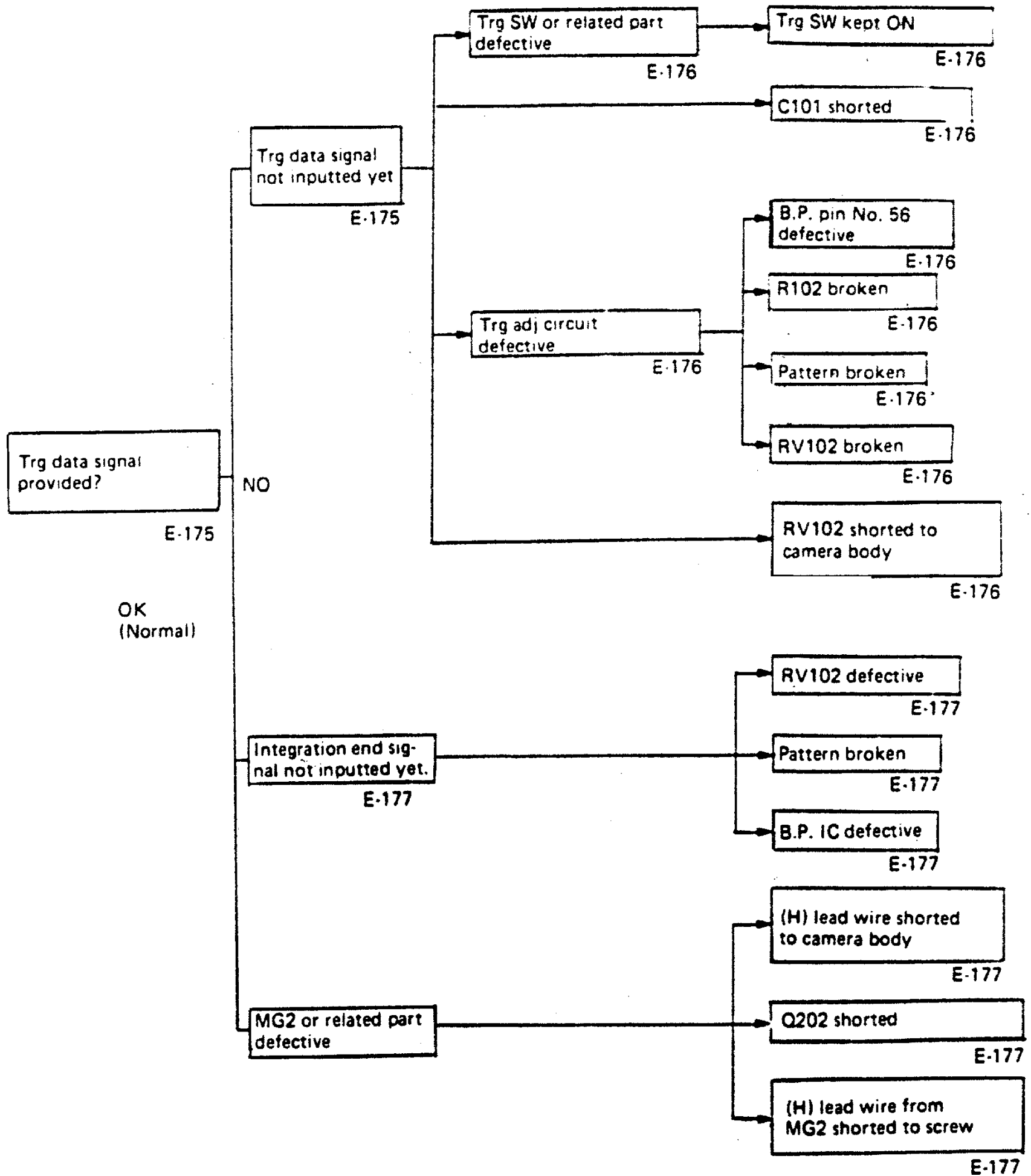
- B.P. IC defective
See page E-174.

(4) Shutter locked in MANUAL mode only

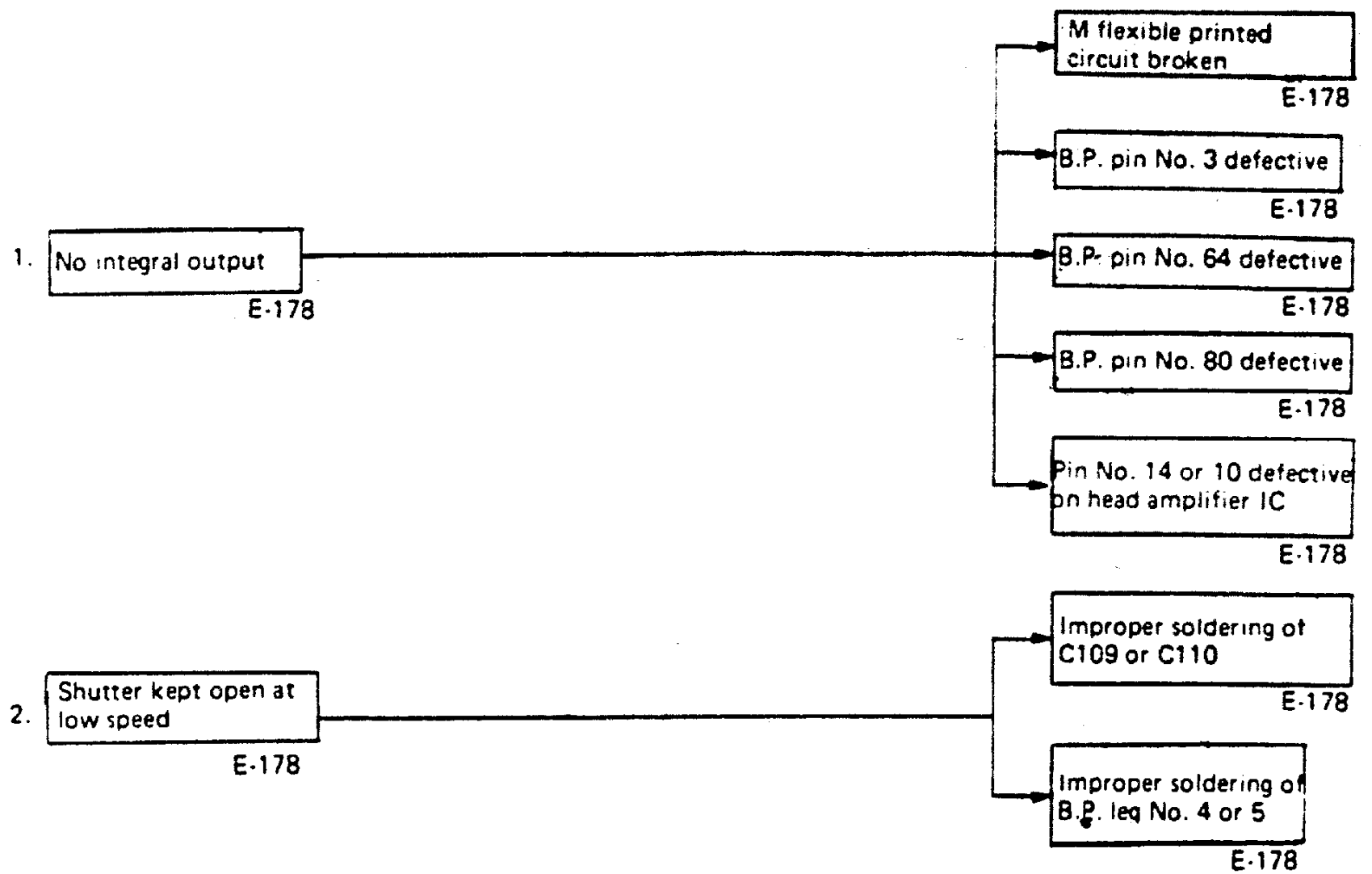
- B.P. IC defective
See page E-174.

2-4. Shutter Kept Open

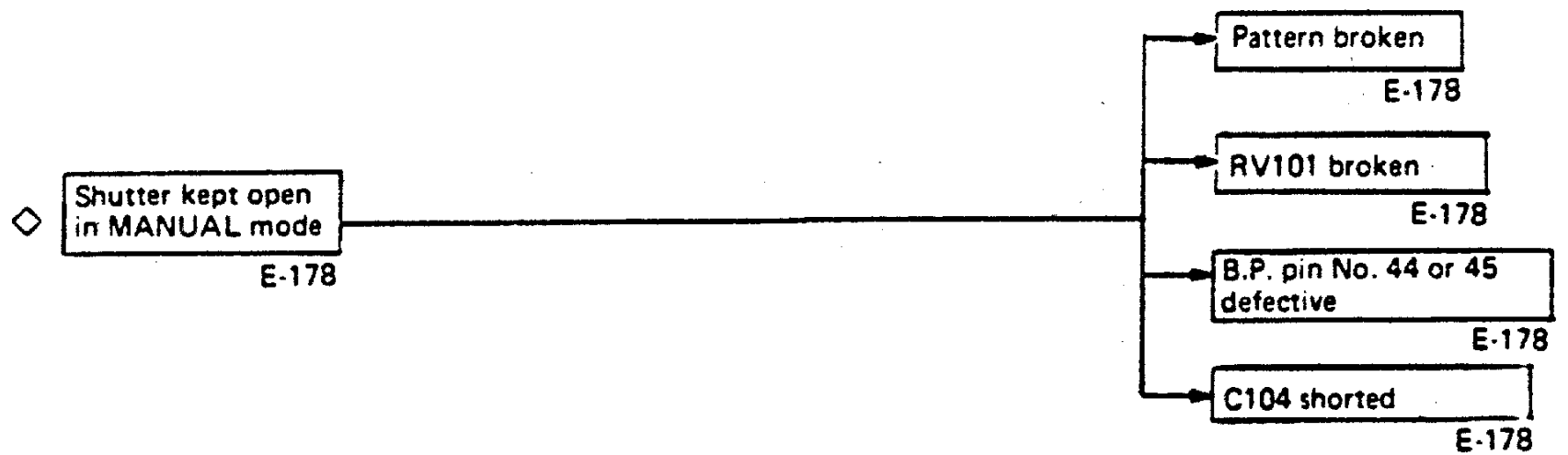
(1) Shutter left open in both AUTO and MANUAL modes



(2) Shutter kept open in AUTO mode only

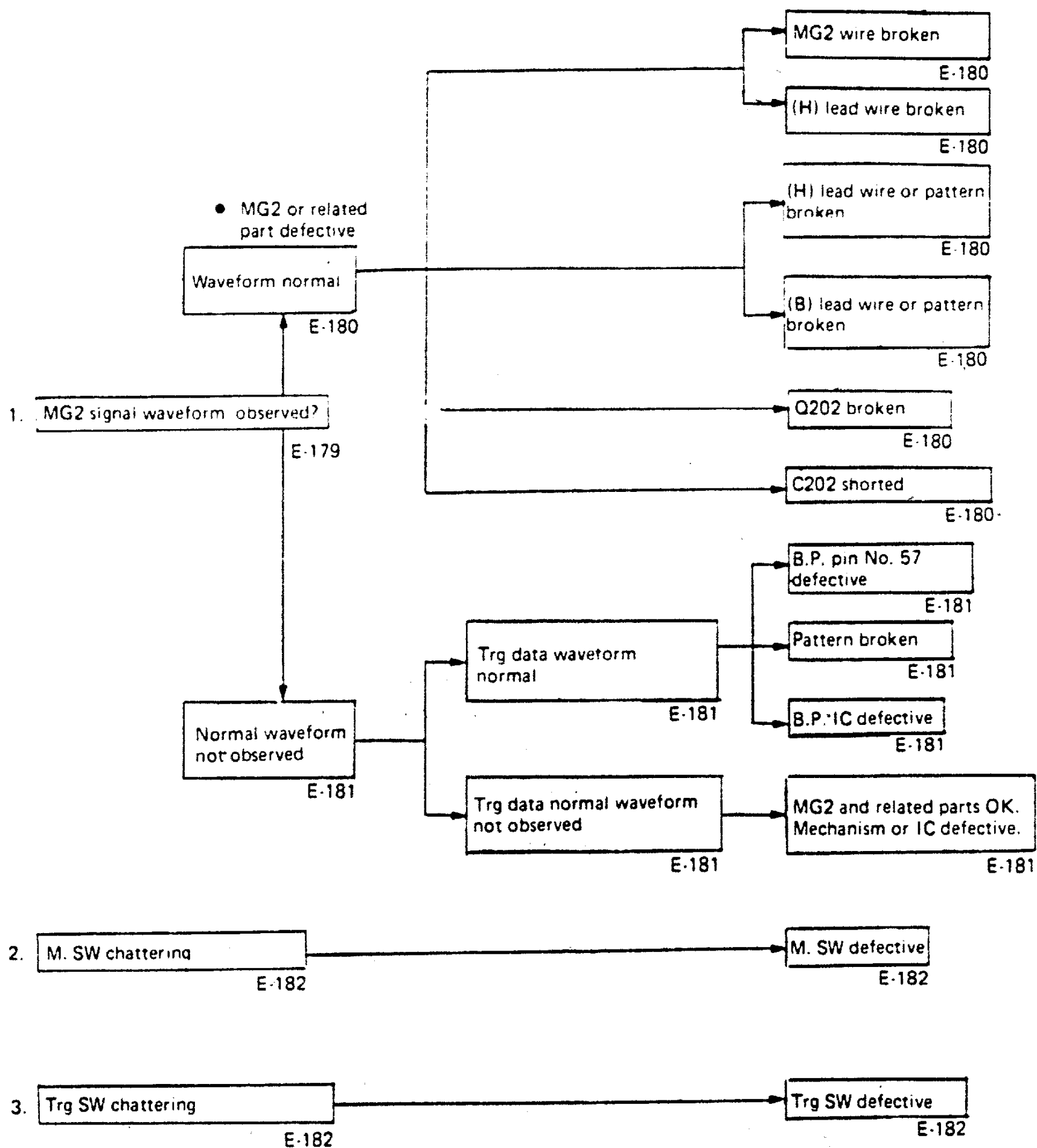


(3) Shutter kept open in MANUAL mode only

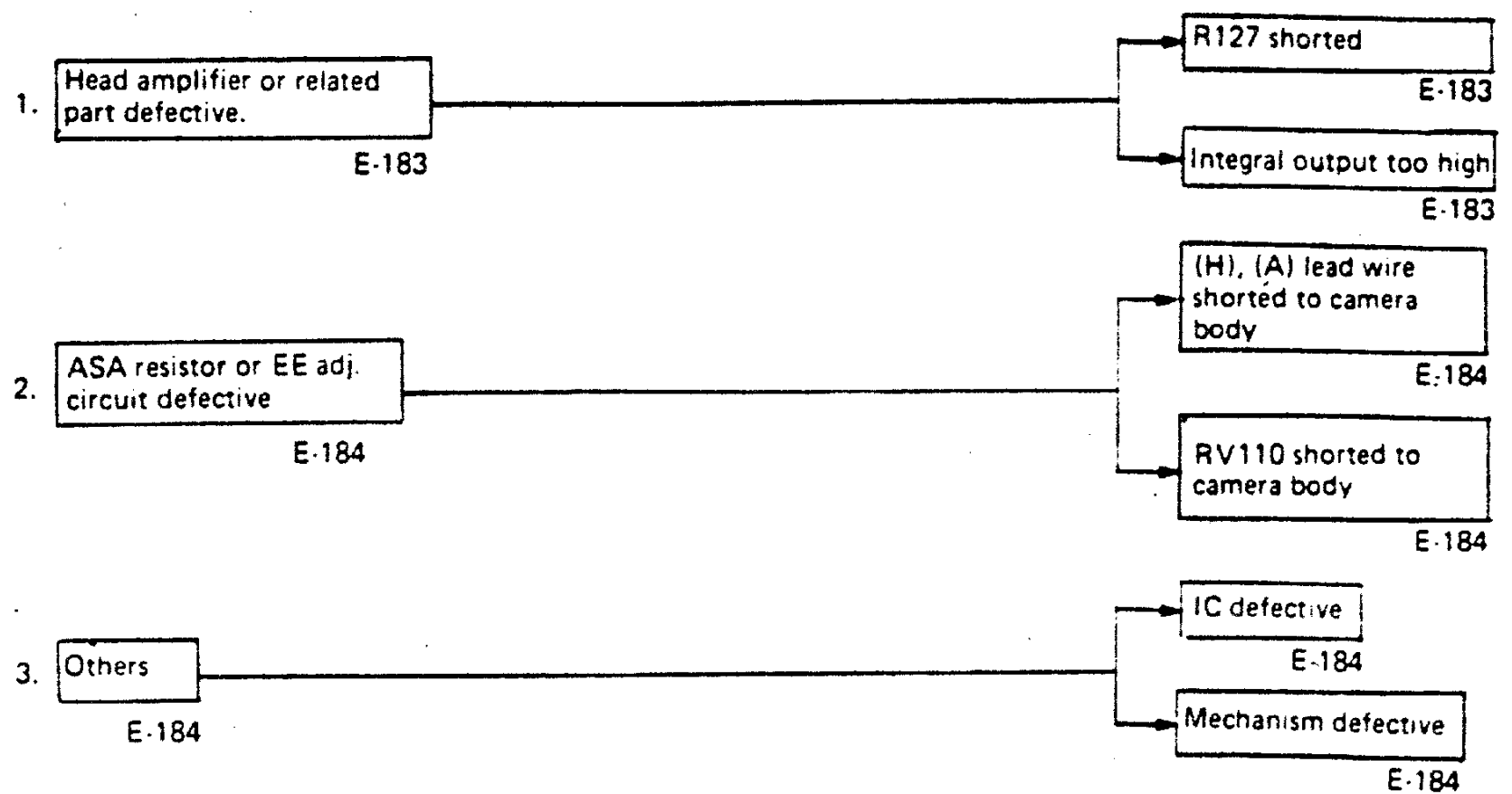


2-5. Shutter Speed Too High

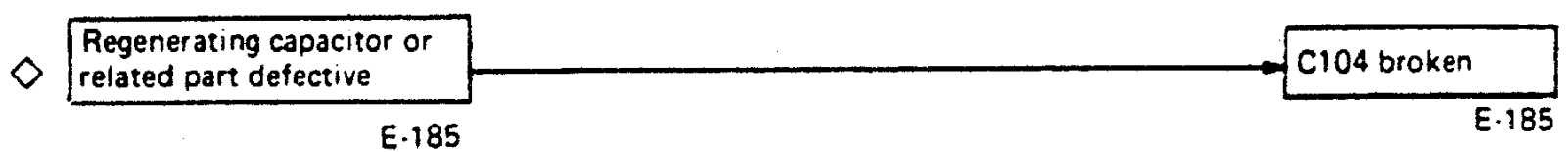
(1) Shutter speed too high in both AUTO and MANUAL modes



(2) Shutter speed too high in AUTO mode only

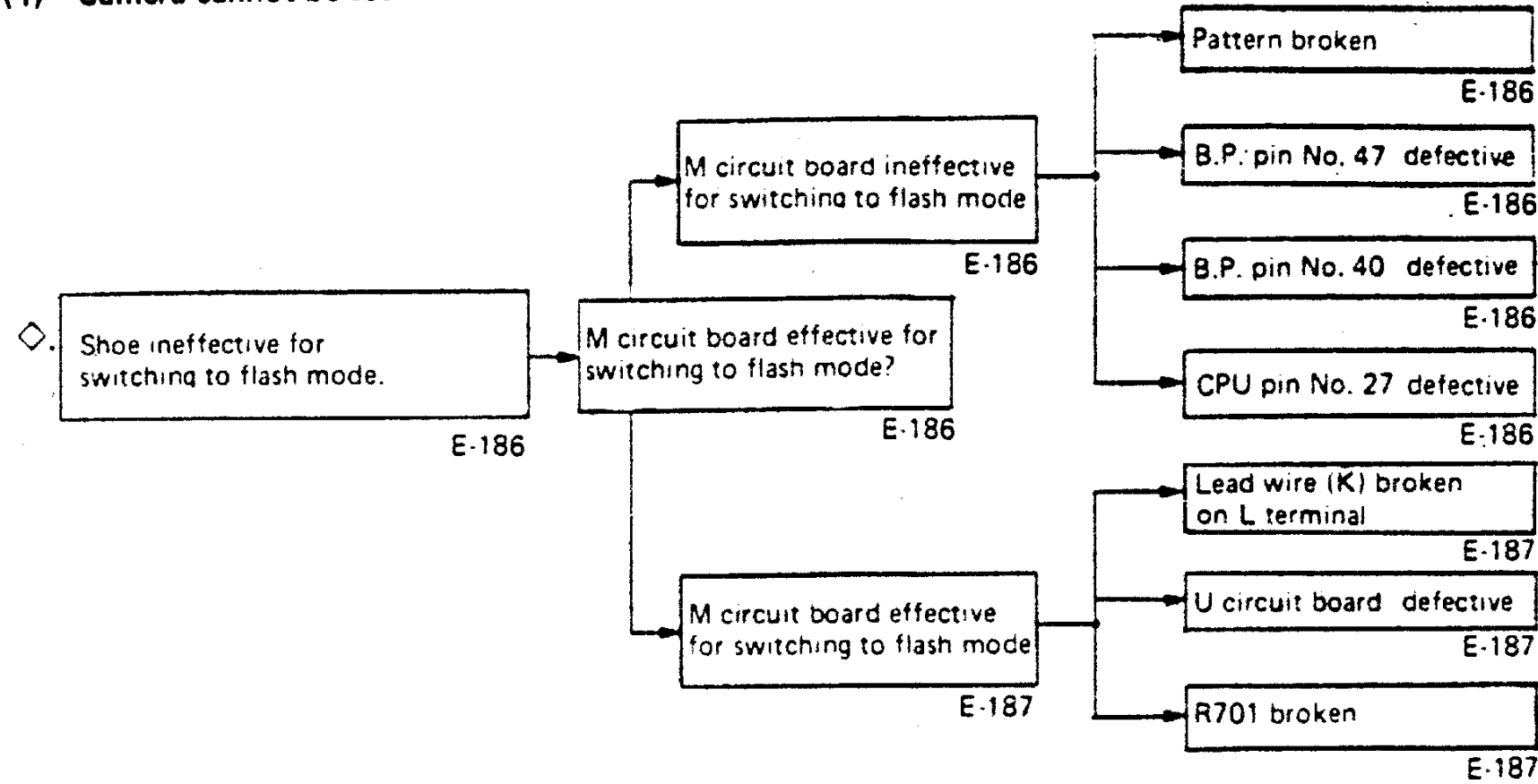


(3) Shutter speed too high in MANUAL mode only

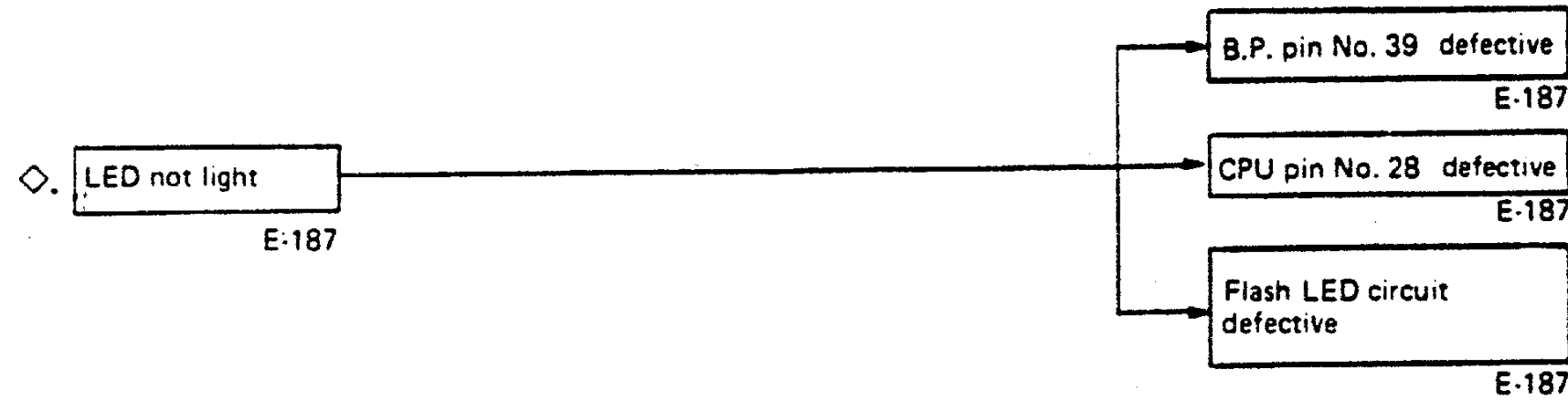


2-6. Flash Circuit Defective

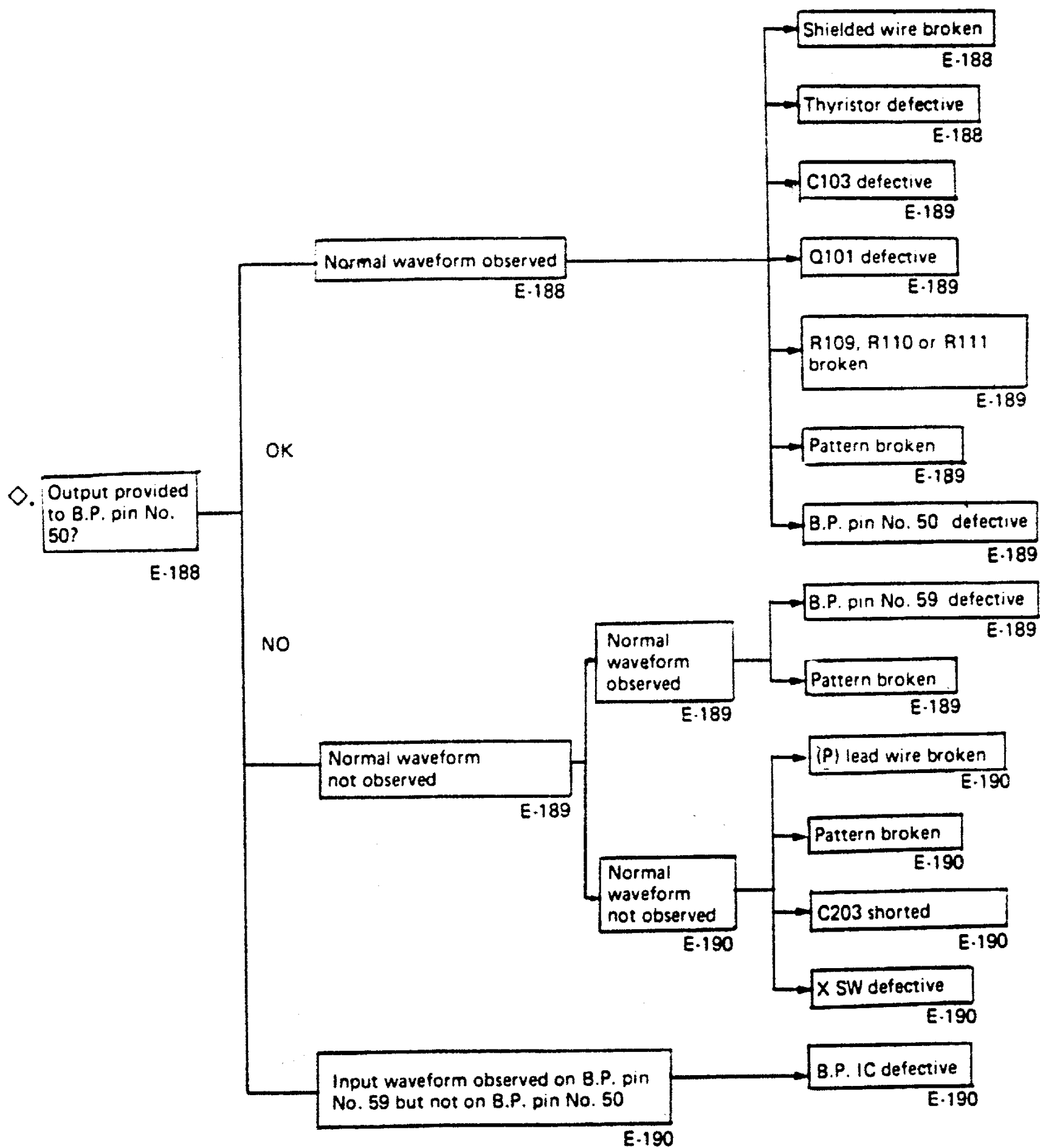
(1) Camera cannot be set in flash mode



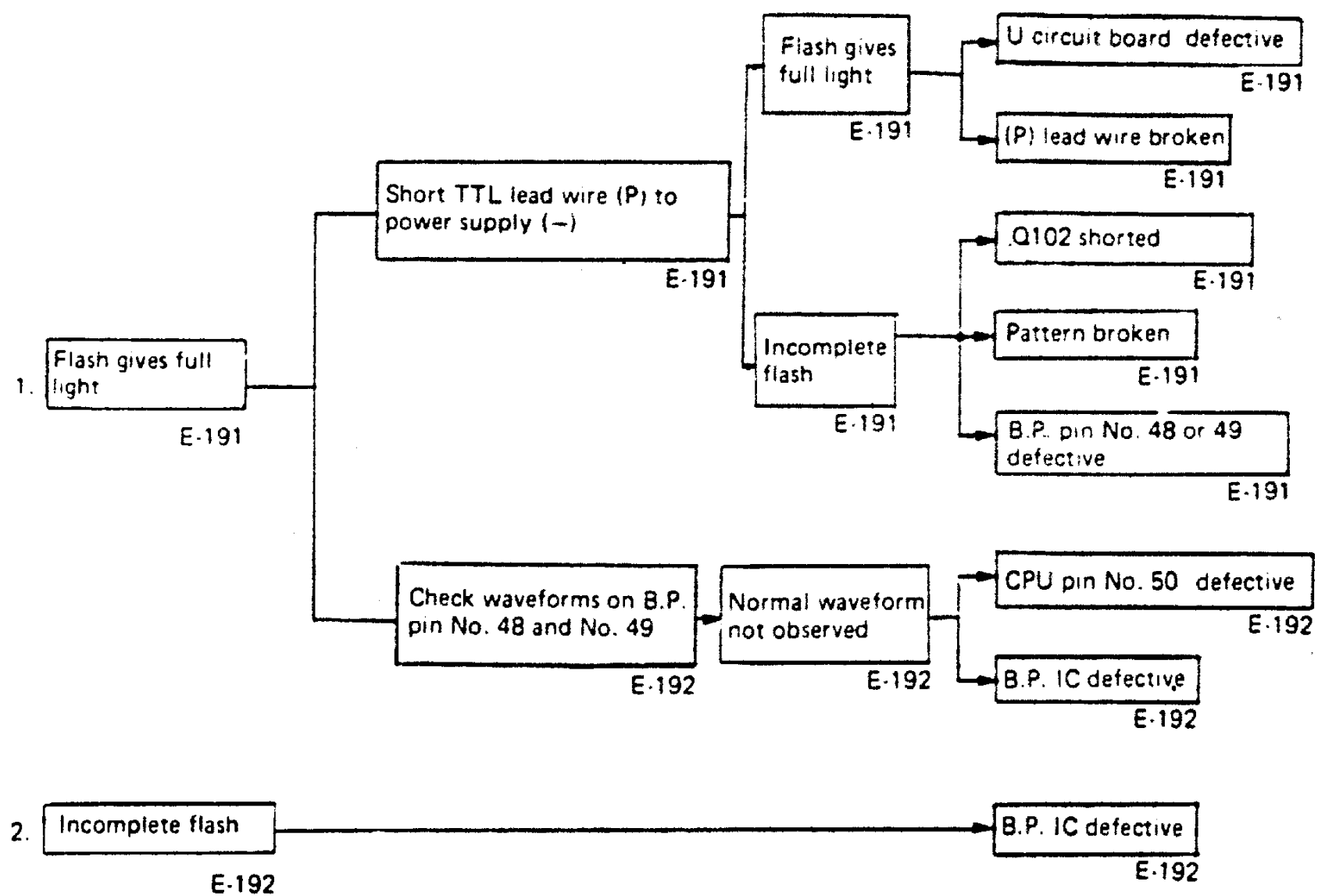
(2) Charging completion LED not light



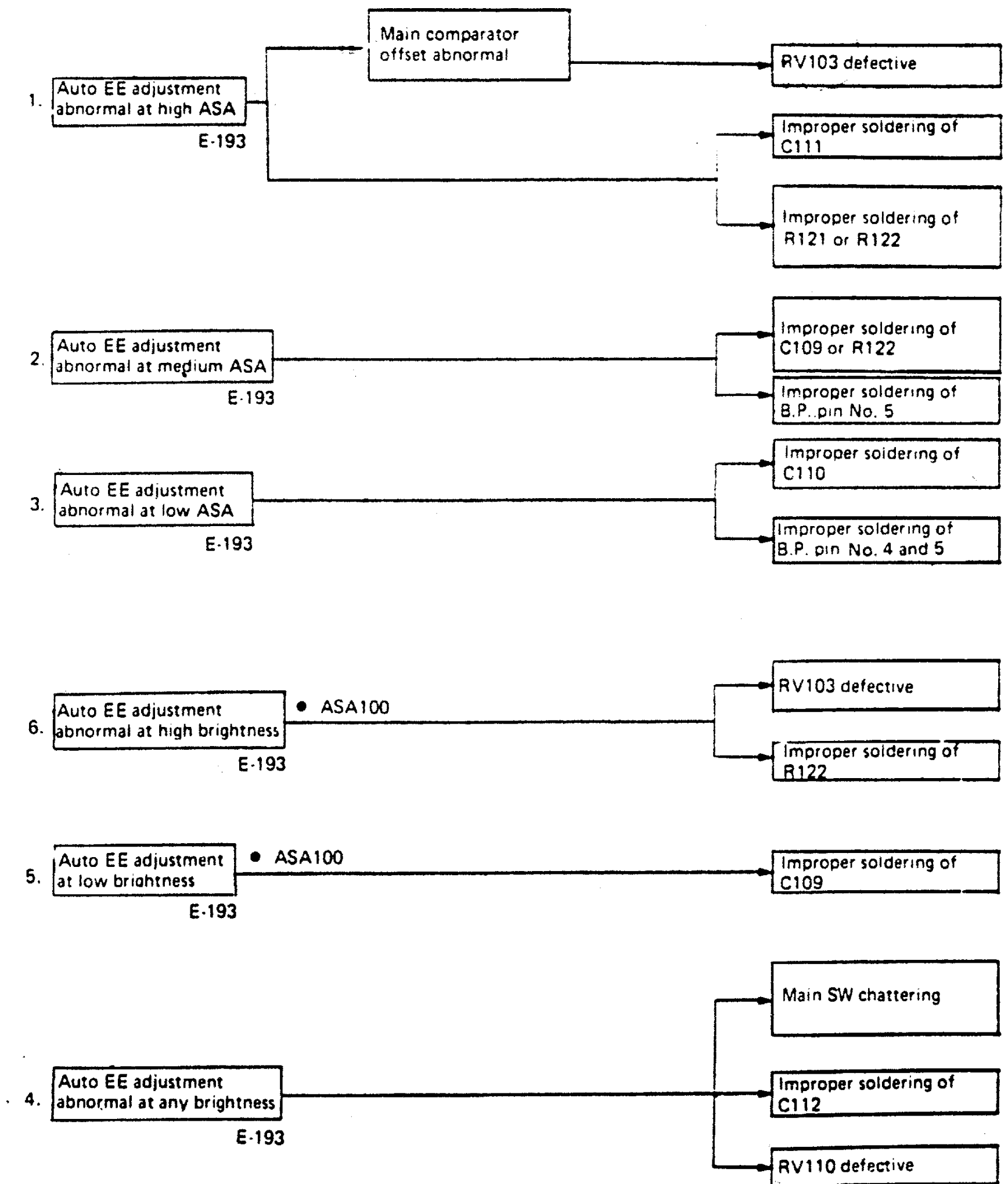
(3) Strobe not flash



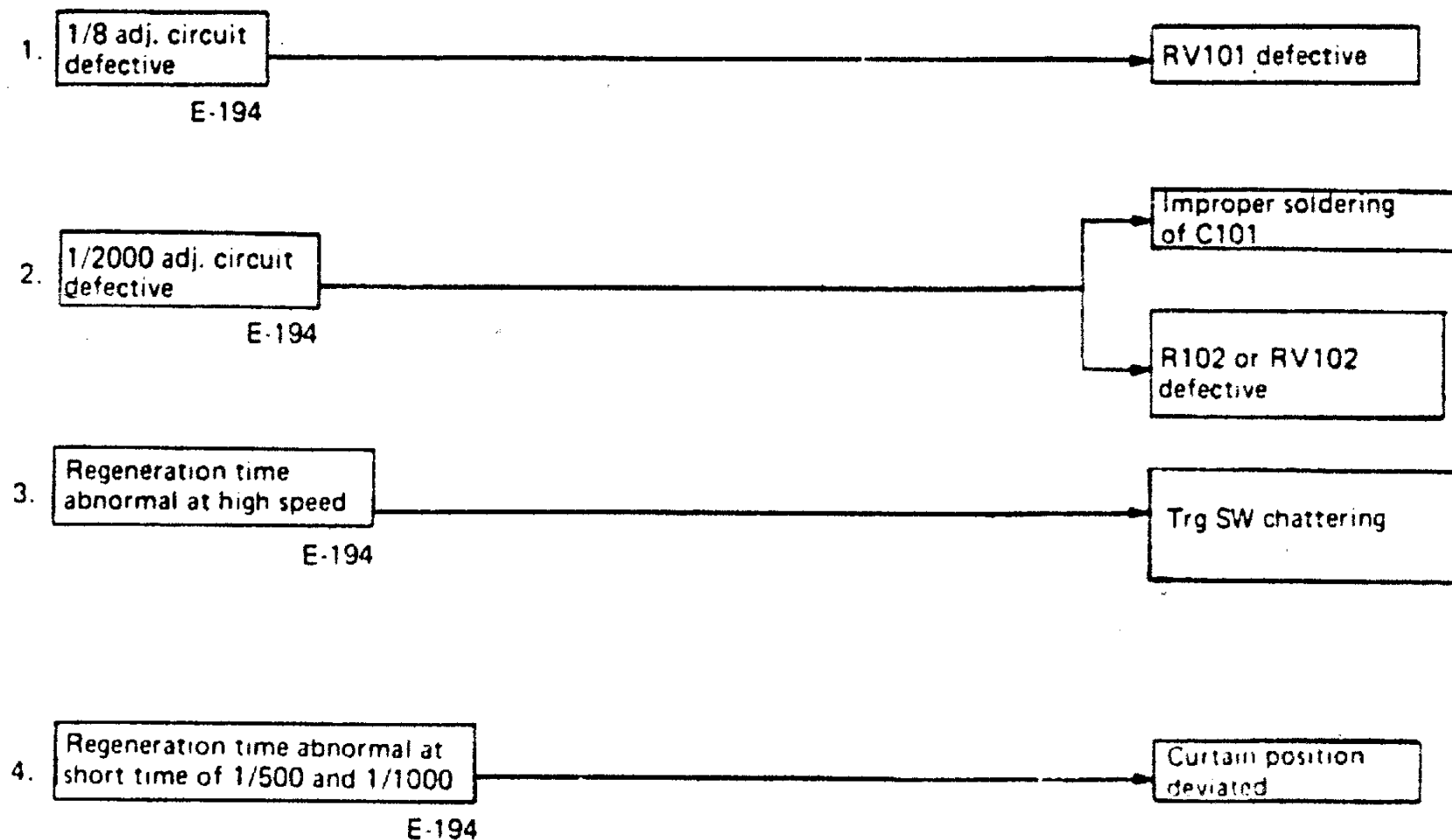
(4) Light control impossible



2-7. Auto EE Adjustment Abnormal

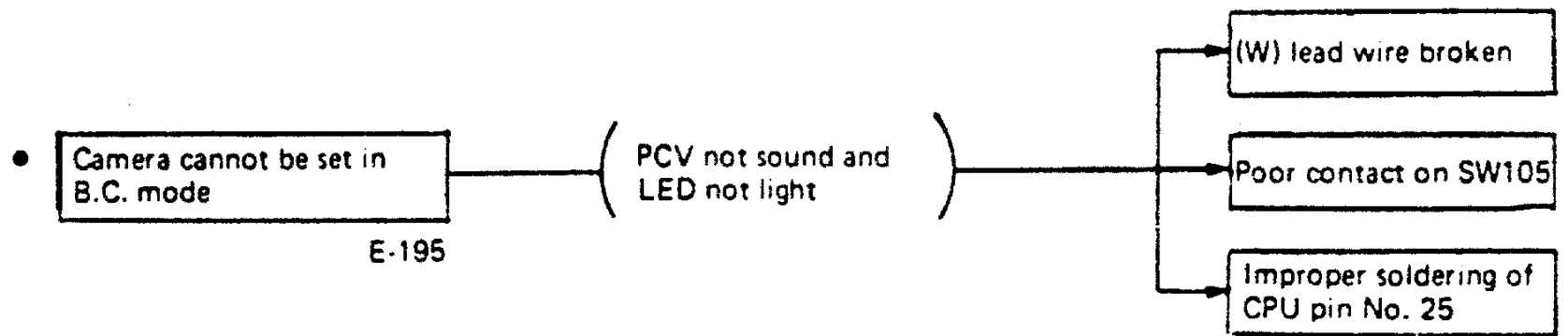


2-8. Regeneration Time Abnormal



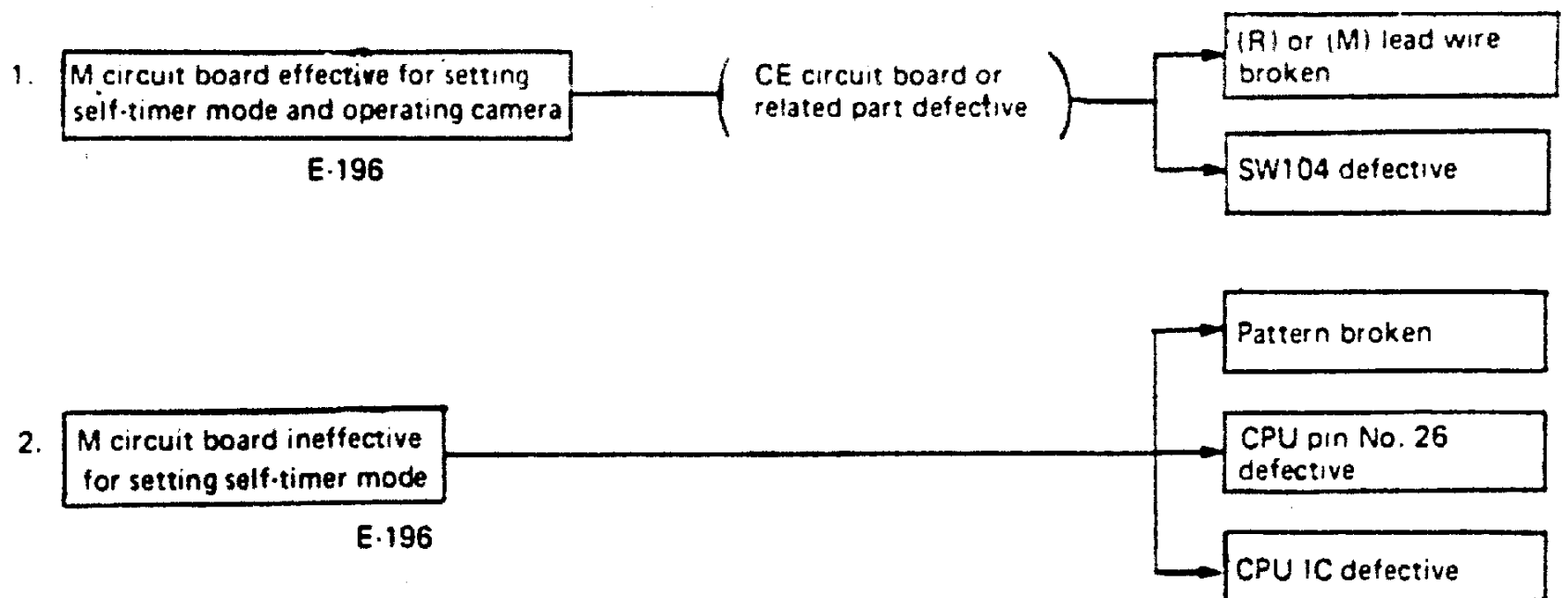
2-9. Malfunction of B.C. System

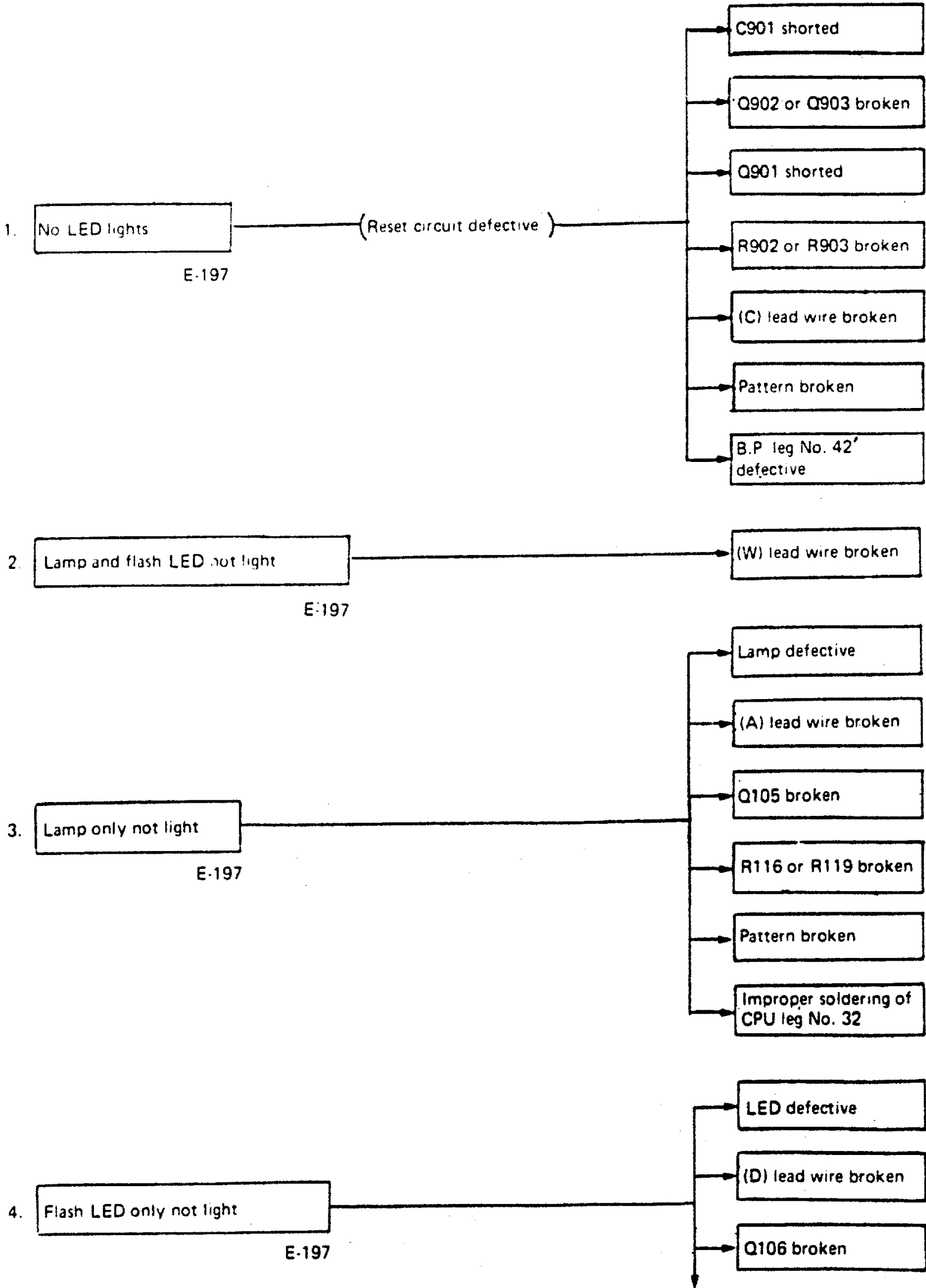
- For the LED and PCV, refer to the concerned items.

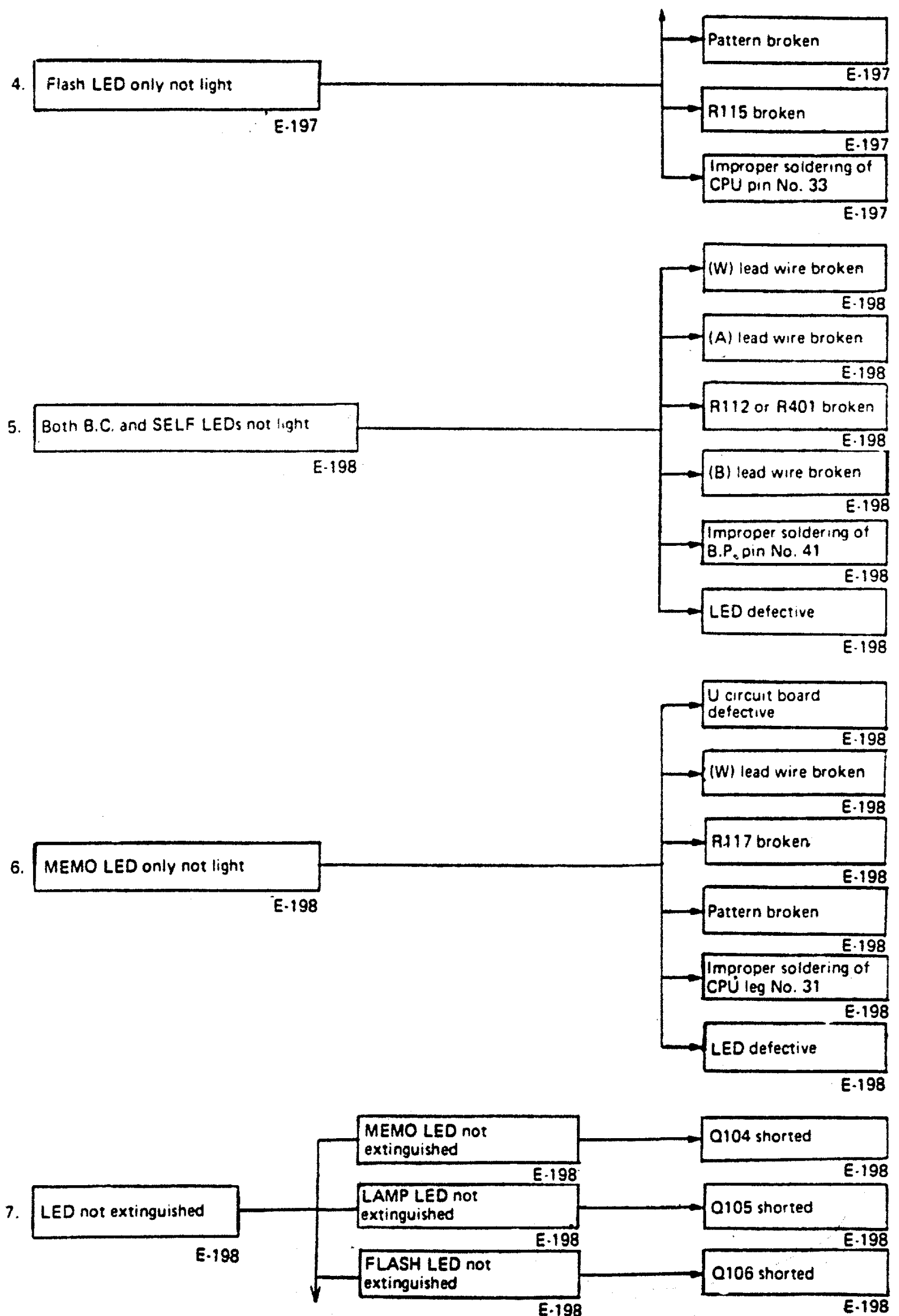


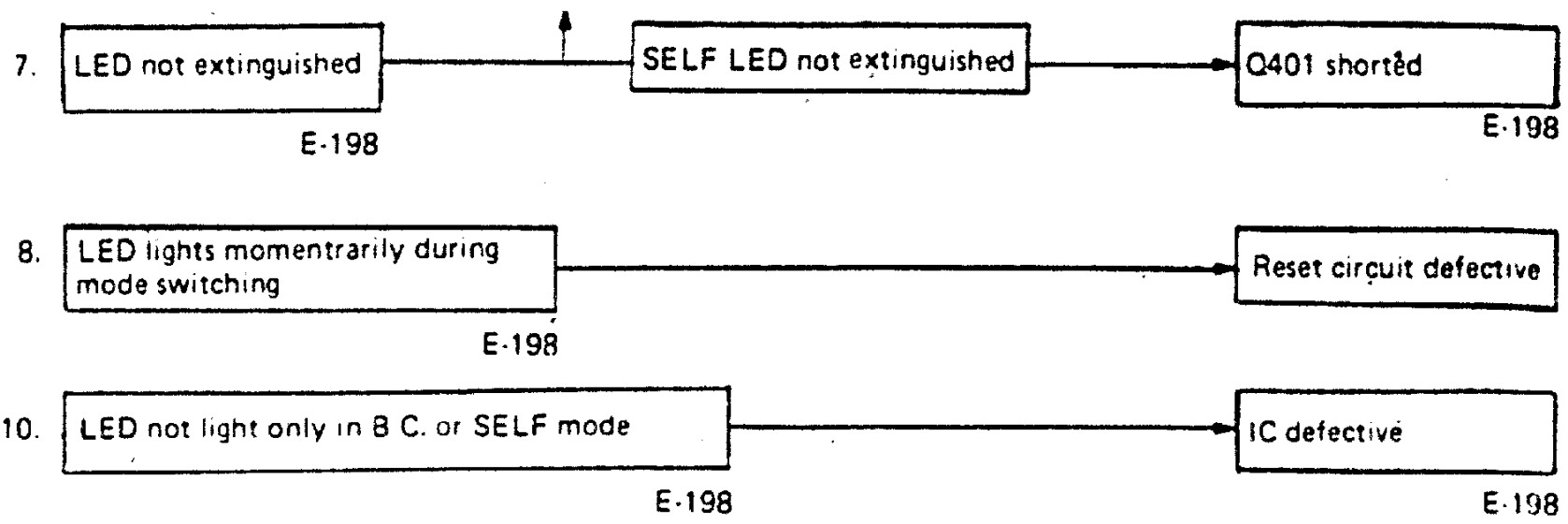
2-10. Self-Timer Inoperative

- For the LED and PCV, refer to the concerned items.

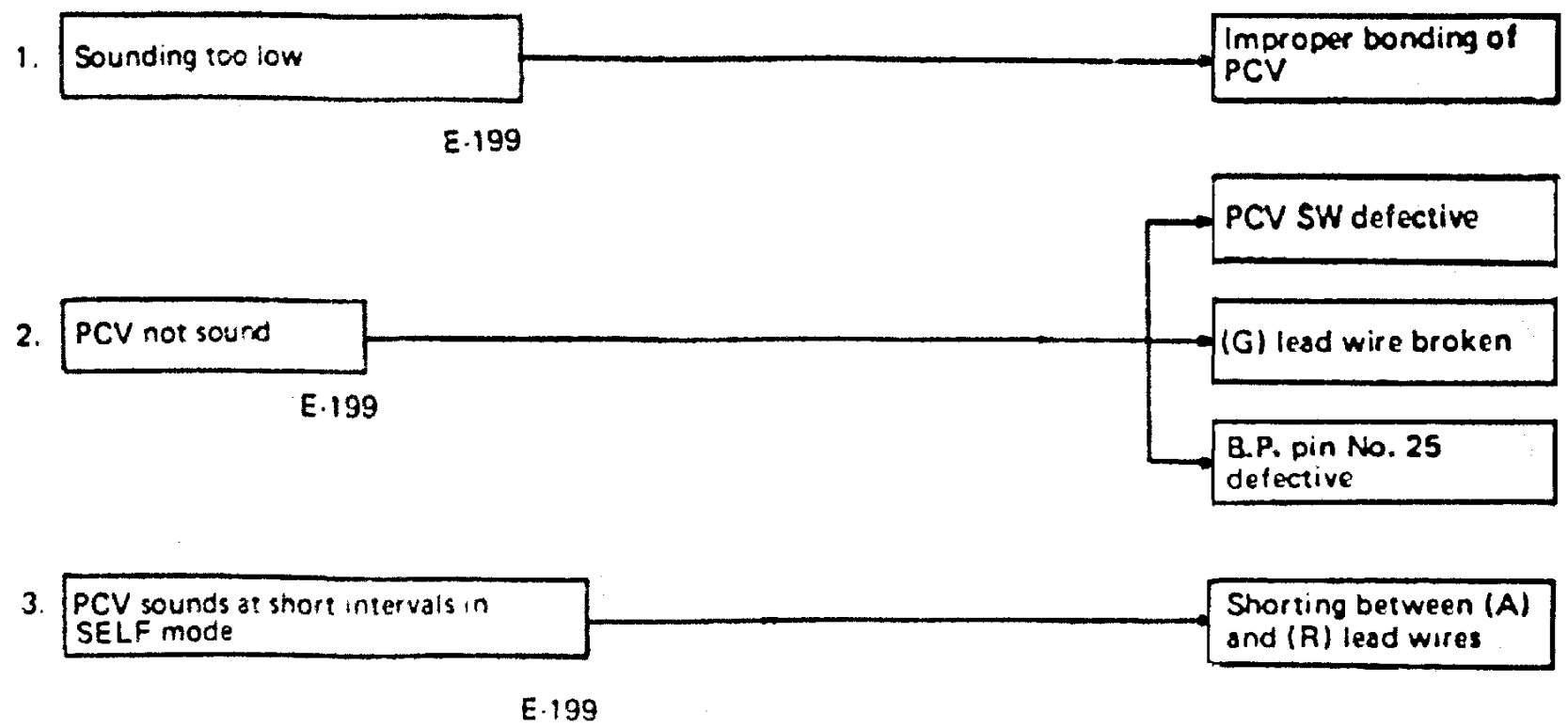




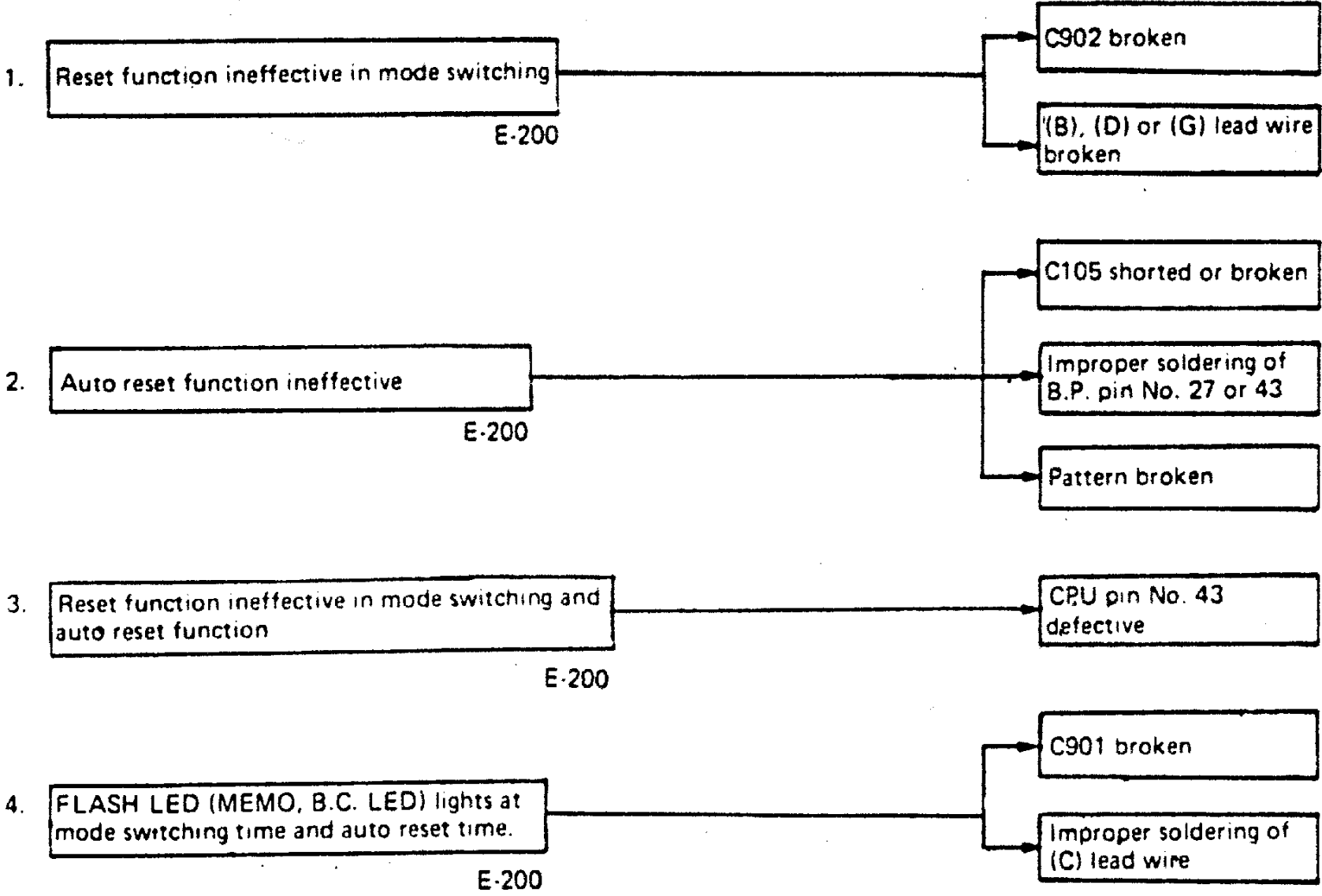




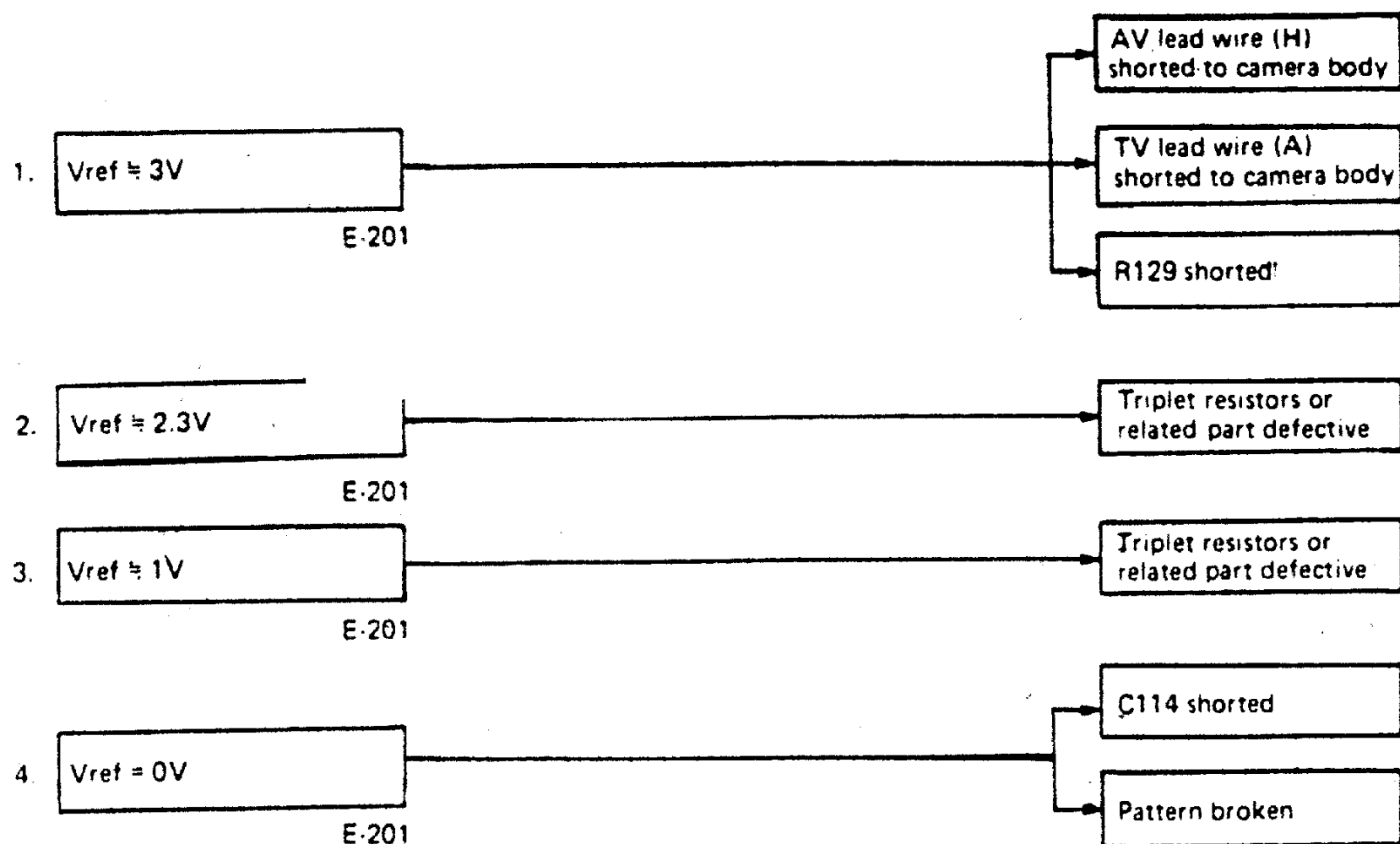
2-12. PCV Defective



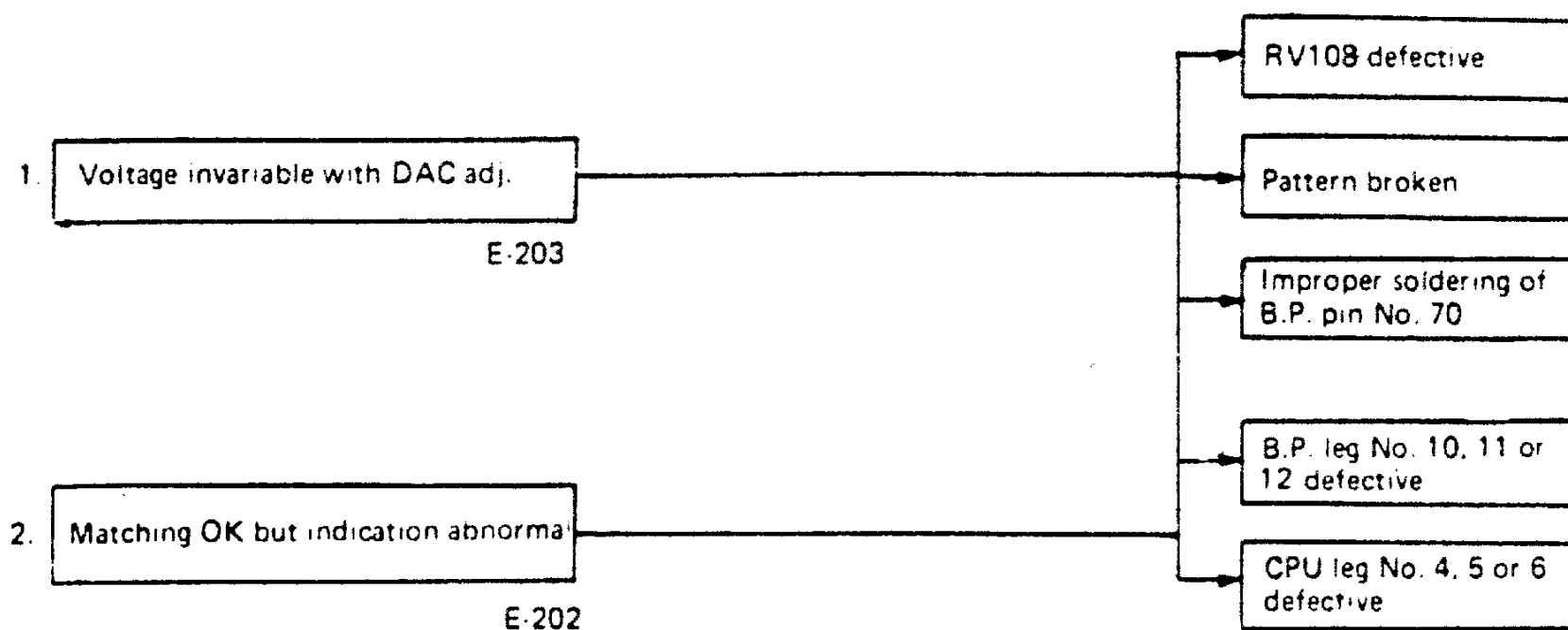
2-13. Reset Function Abnormal



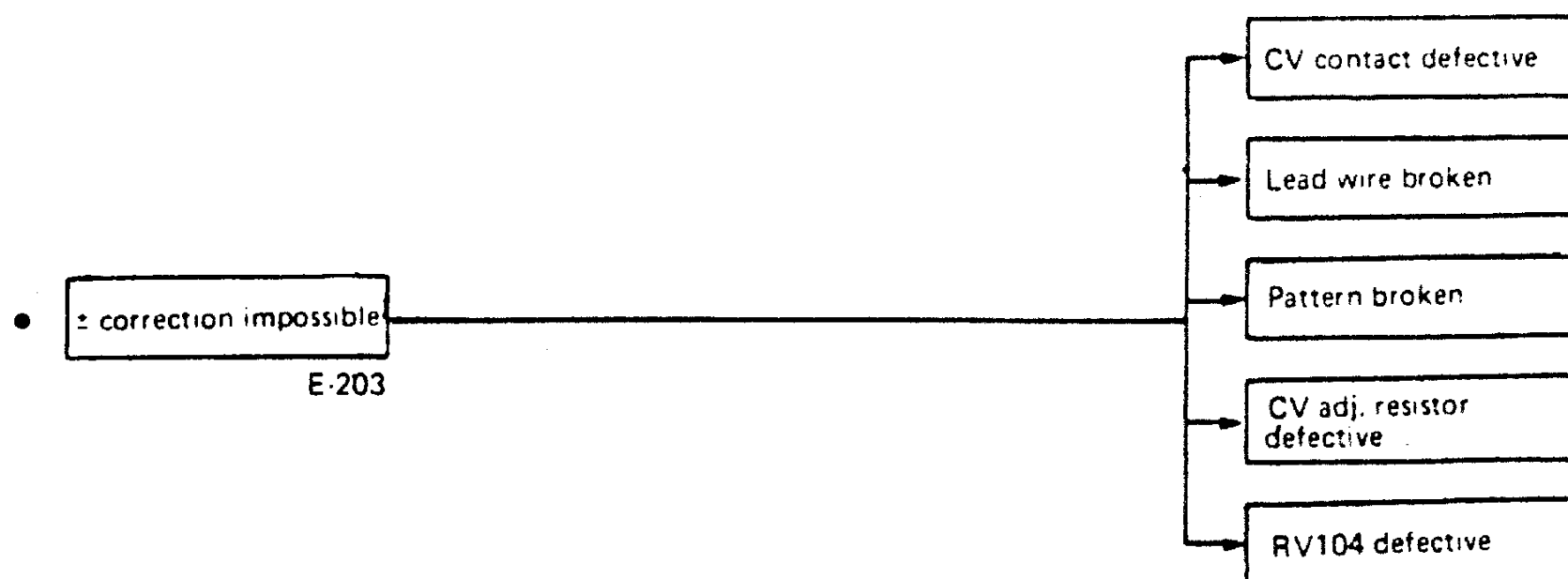
2-14. Reference Voltage Vref Abnormal



2-15. DAC Adjusting Circuit Defective



2-16. Correction Adjustment Abnormal



3. Troubleshooting: Check Procedures

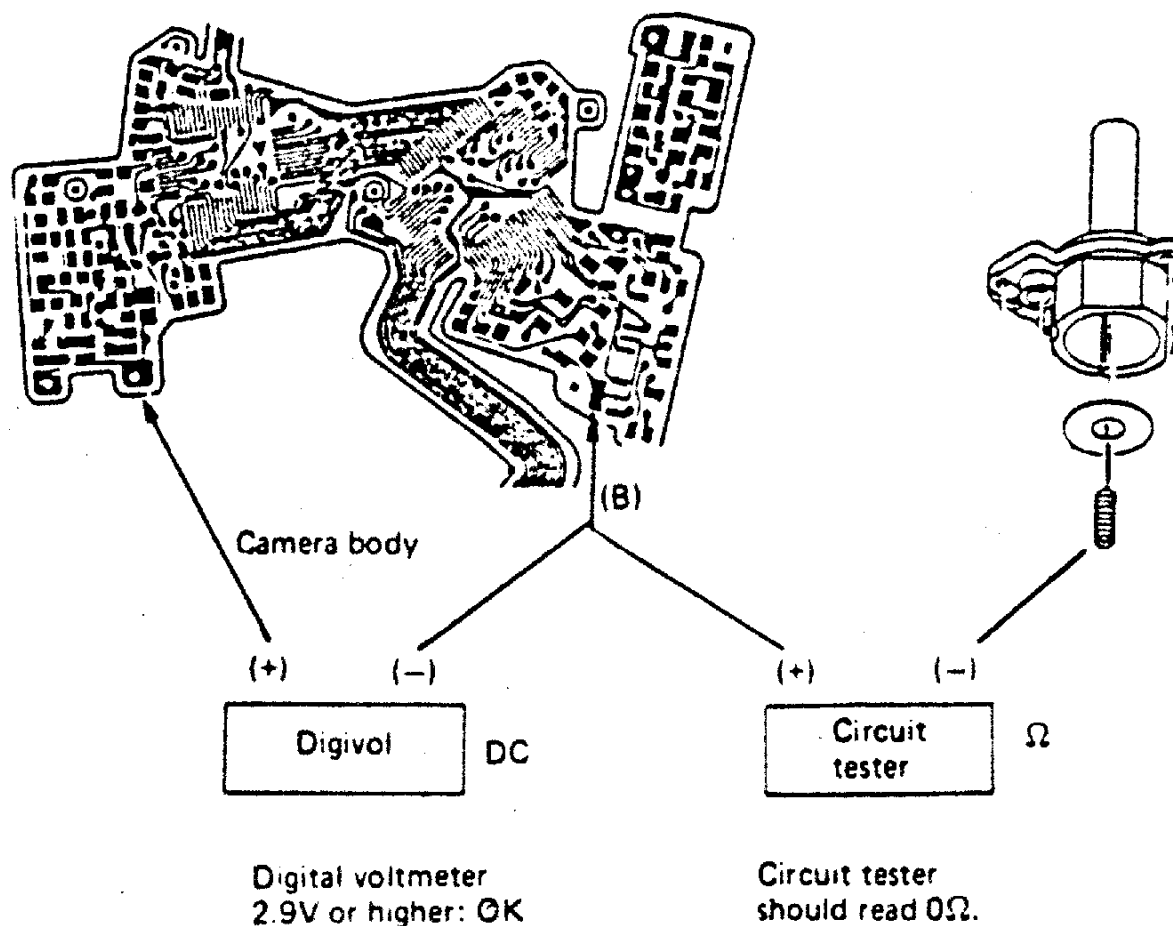
3-1. Electric System Dead

- LCD and LED indicators are inoperative in B. CHECK, AUTO and MANUAL modes.
- Troubleshooting is given on a premise that the mechanical system operates normally.
- Preparations
 1. Measuring instruments: Digital voltmeter or circuit tester
Synchroscope
 2. Mode: B.C. mode unless other wise specified.
When the camera is inoperative in the B.C. mode, attach the lens and check the camera in the AUTO or MANUAL mode.

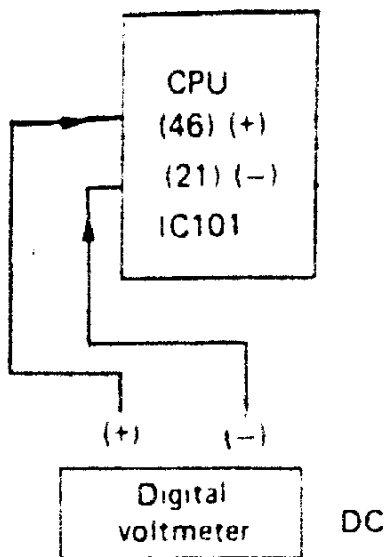
1. Power supplied to circuit board?

- Power supply voltage 2.90 V or higher: OK
- When power supply voltage is lower than 2.65 V.

- (1) Check battery capacity.
- (2) Check power supply (—) lead wire for breakage.



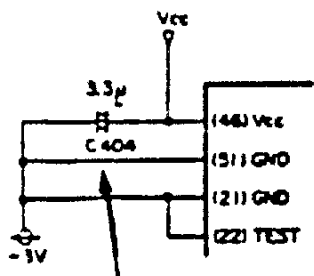
2. Power supplied to CPU?



- 2.90 V or higher: OK

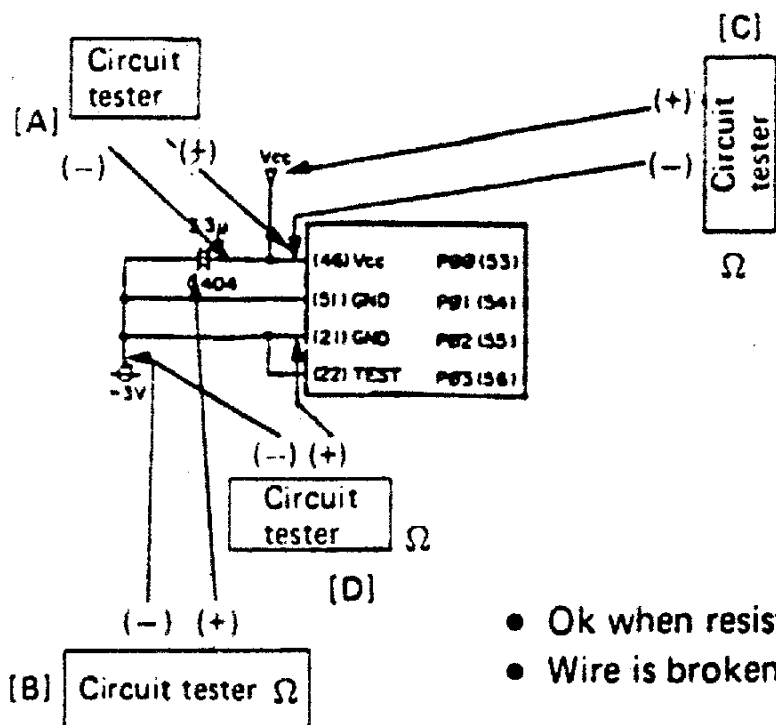
- When voltage is lower than 2.65 V

(1) C404 shorted



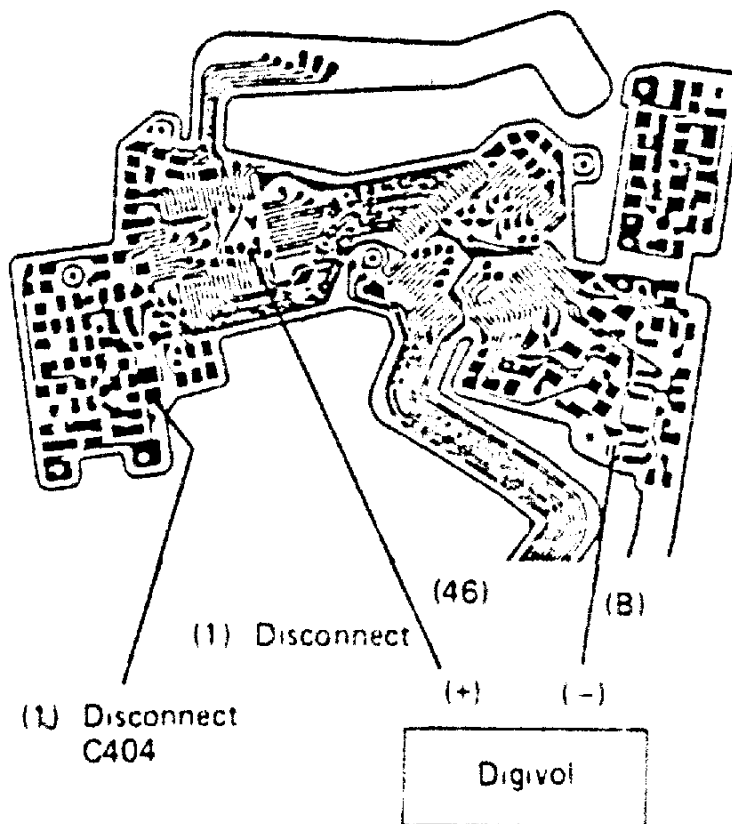
Disconnect
C404 is defective when the camera is opera-
tive after disconnecting the capacitor.

(2) Pattern broken

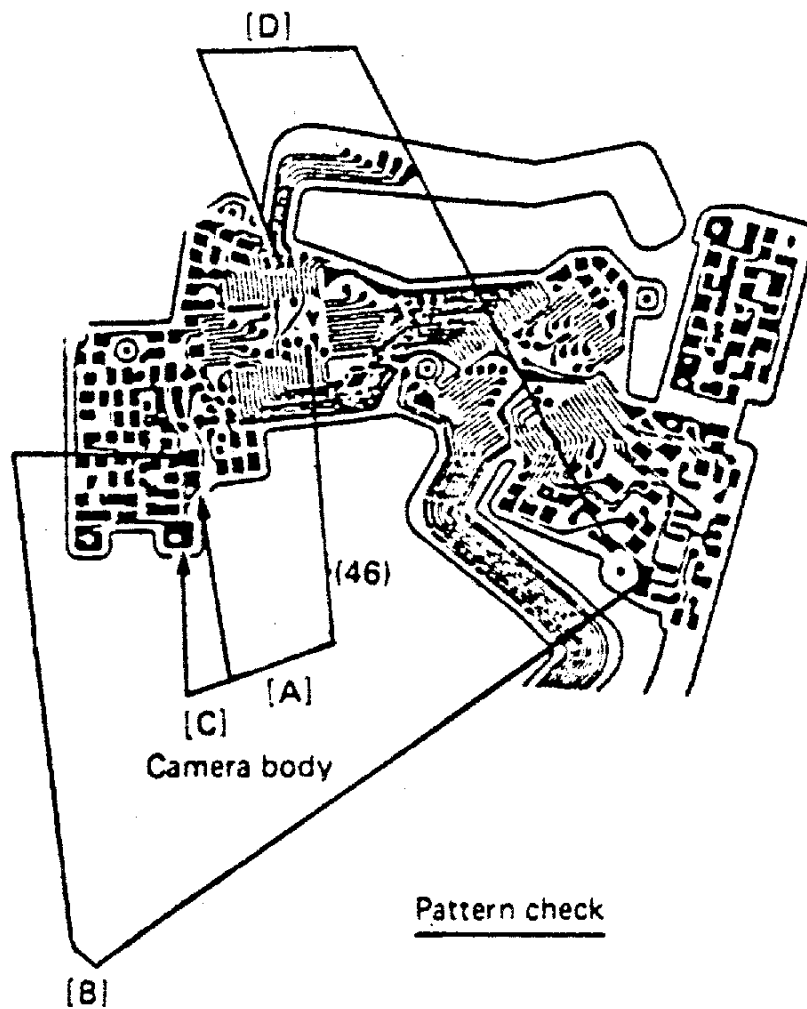


- Ok when resistance is 0Ω at each check point.
- Wire is broken when resistance exceeds scores of ohms.

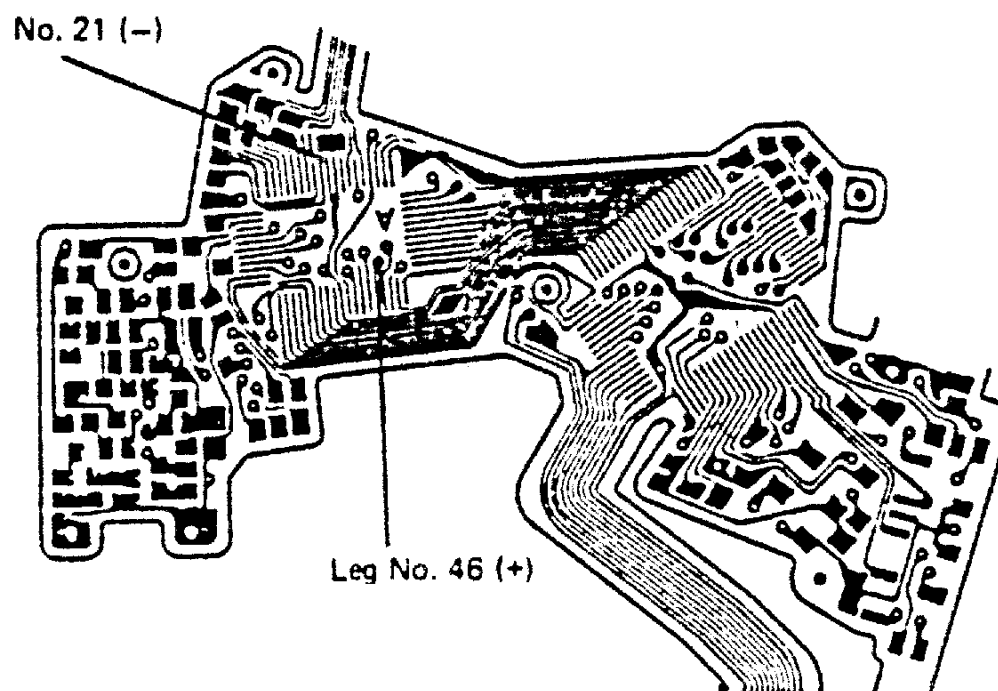
7. Checks of voltage and C404



2.90V or higher: OK

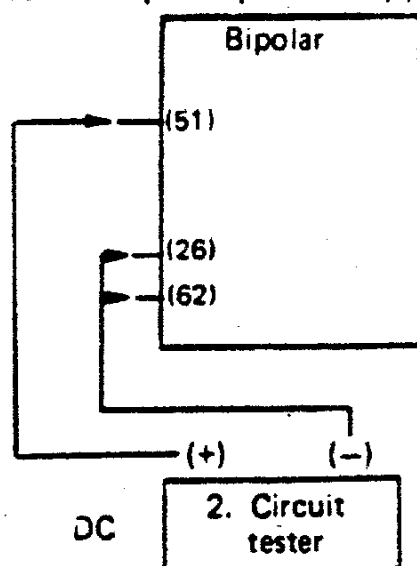


- (3) Check of CPU legs Nos. 1 and 46.
 ○ Resolder



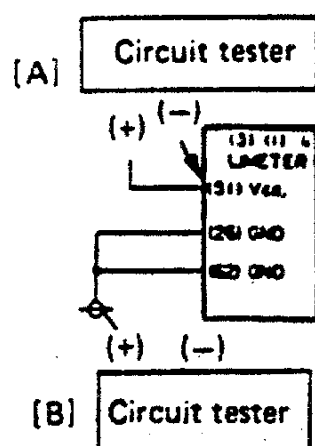
3. Bipolar power supplied?
 Vref 1.8V: OK

- Check of bipolar power supply.

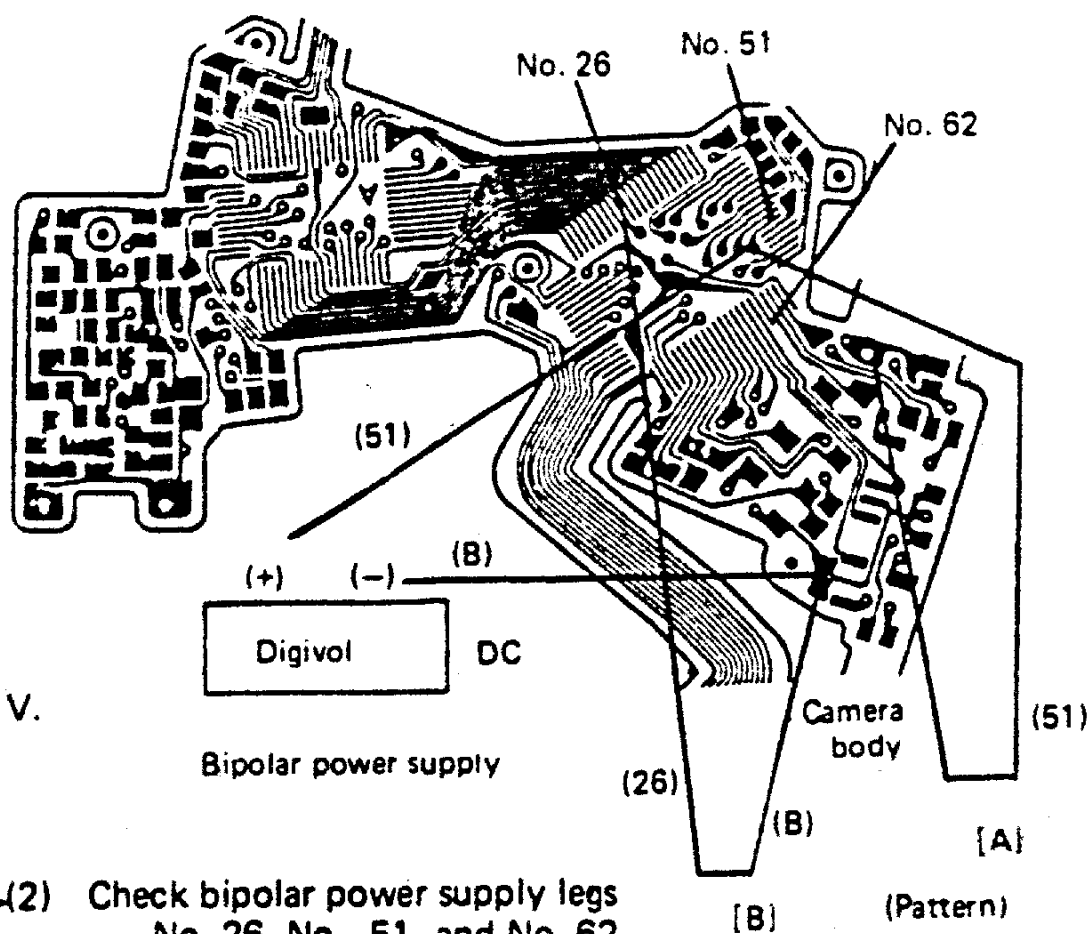


- 2.90 V or higher: OK
- When voltage is lower than 2.65 V.

(1) Pattern broken-----

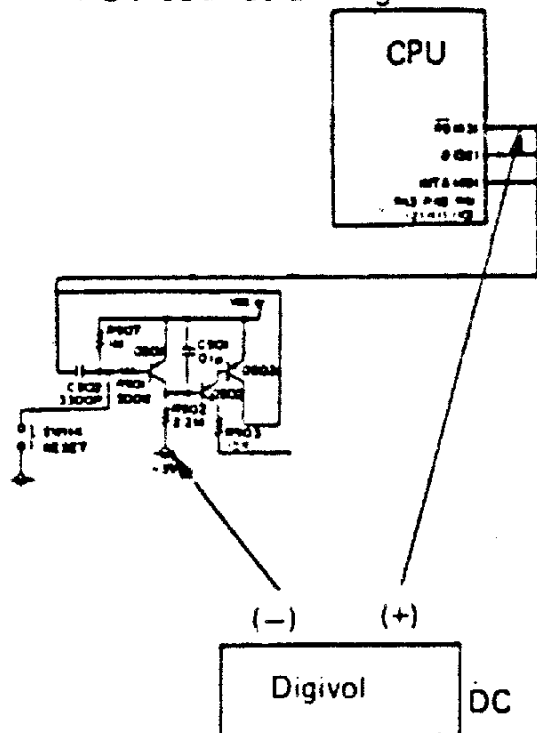


(2) Check bipolar power supply legs
 No. 26, No. 51 and No. 62
 for soldering.
 Resolder



4. Power supplied to reset circuit?

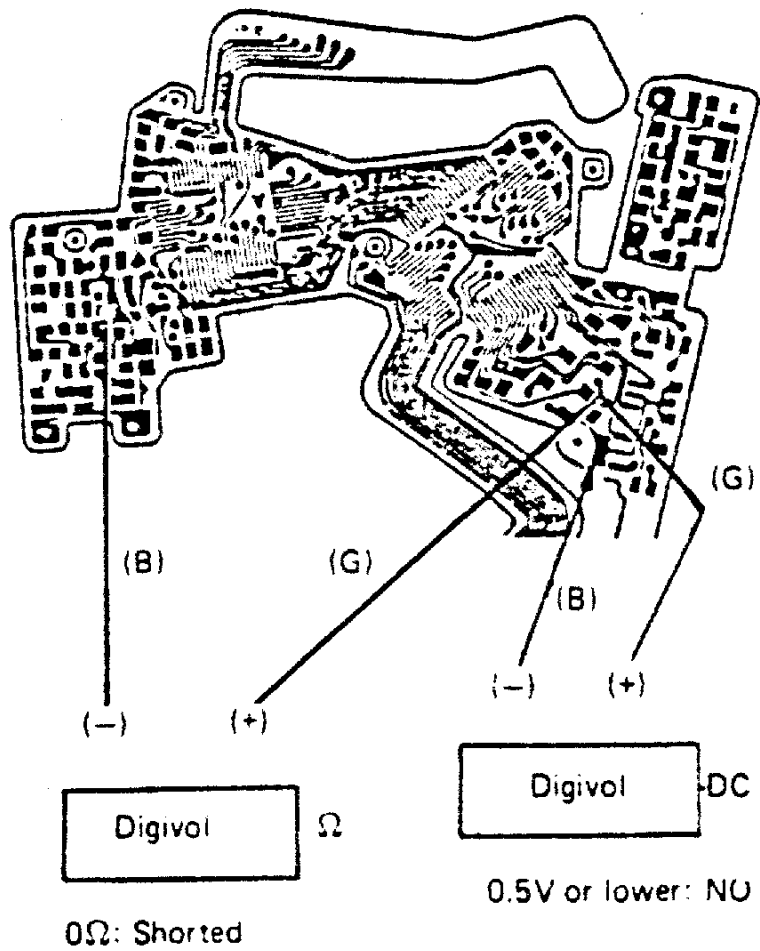
- PCV sounds during mode switching



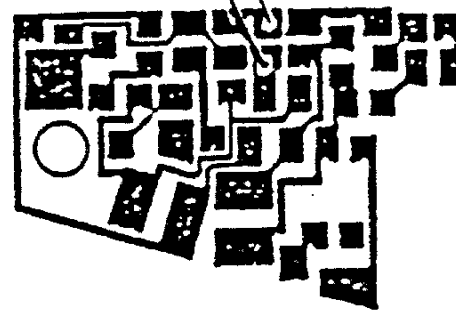
- OK when voltage is higher than 0.5 V.
- When voltage is lower than 0.5 V.

- (1) Reset circuit defective
Improper soldering of B.P. leg No. 26, 51 or 62.

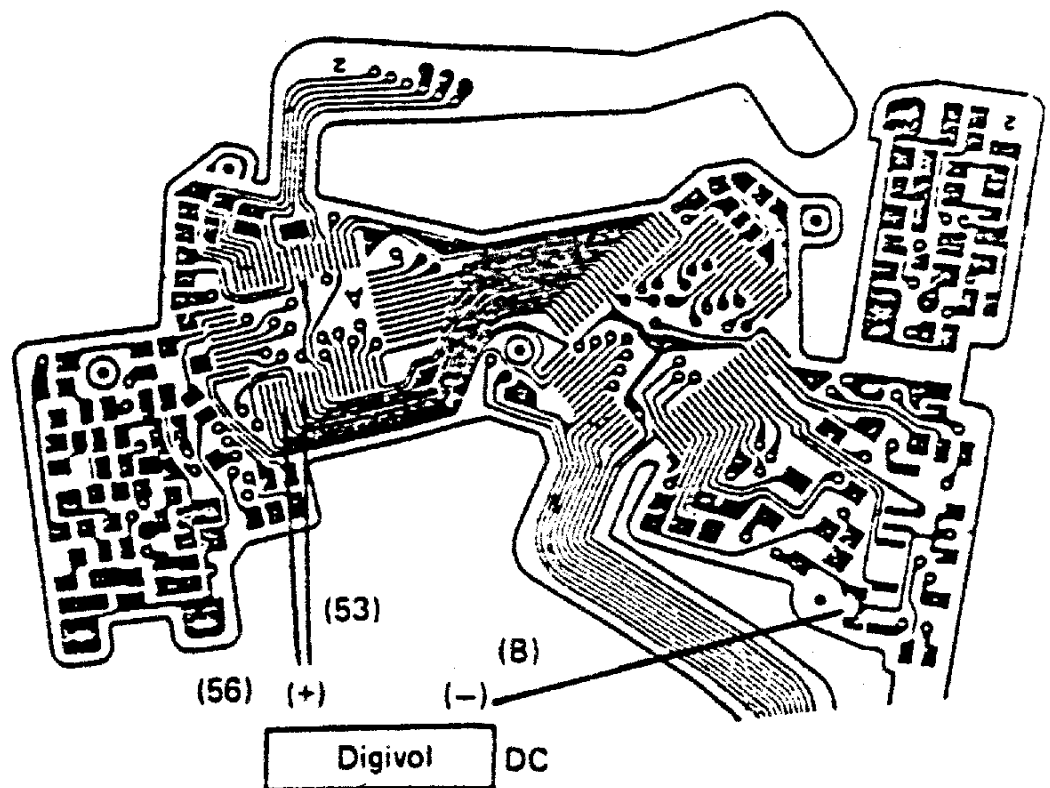
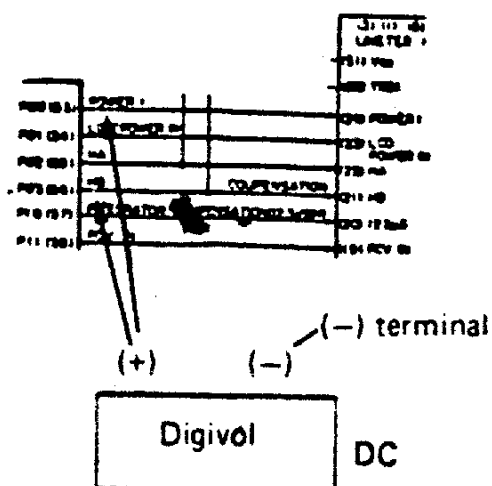
- (2) (-) side of C902 shorted to (-) power supply.



Check these parts for shorting.



5. CPU POWER, HB output provided?



- DC voltage at 3 V: OK

- When DC voltage is 0 V.

- (1) Improper soldering of CPU leg No. 53 or 56.

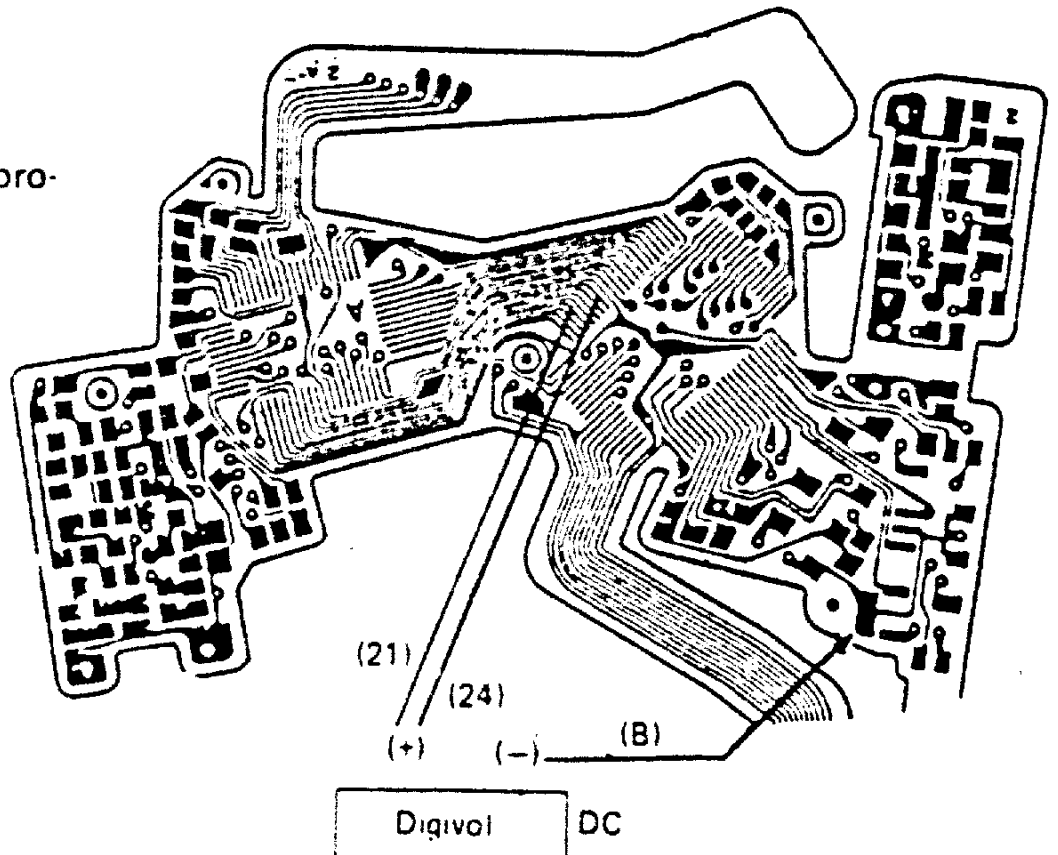
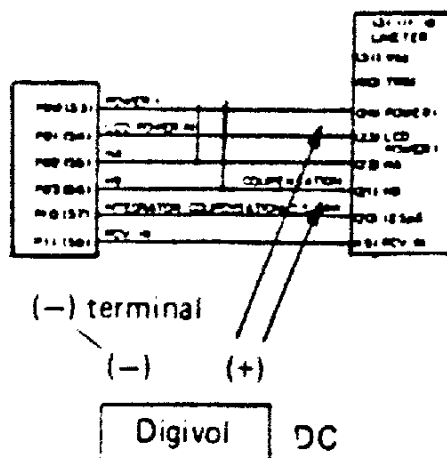
- When output is not provided after resoldering.

(2) CPU IC defective

Bipolar power supply

6. Check POWER, HB input.

- Check the input when output is provided from CPU.



- HA and HB supplied?

When DC voltage is 3 V: OK

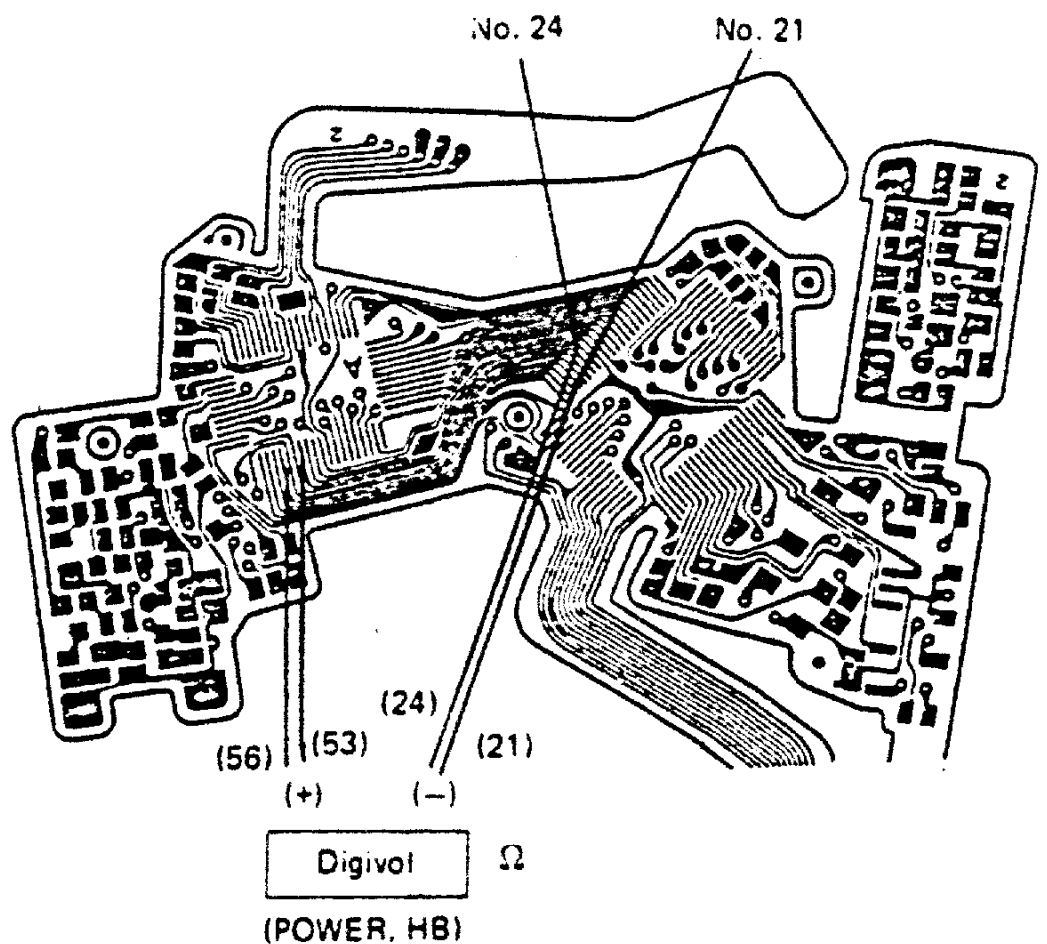
- When DC voltage is 0 V.

- (1) Check IC No 21 and No. 24 for soldering.

- (2) Check pattern for breakage.

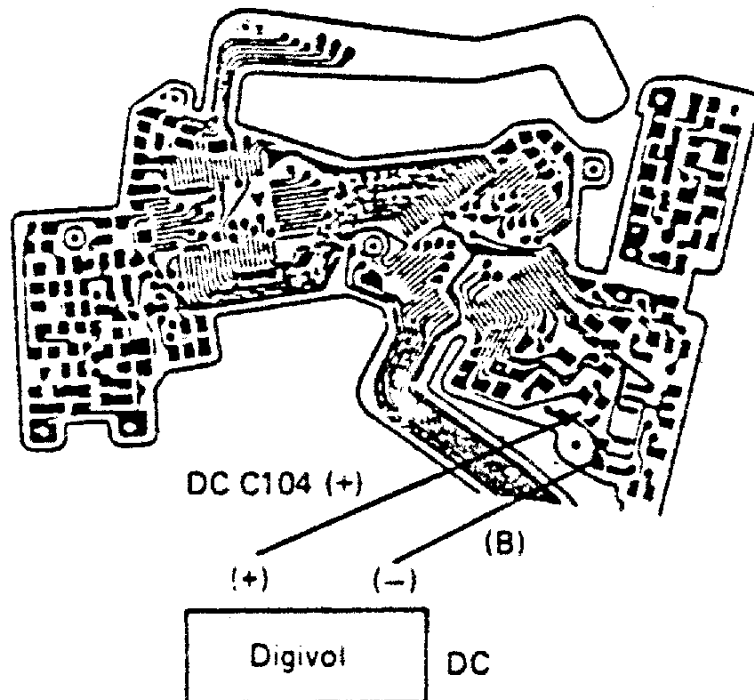
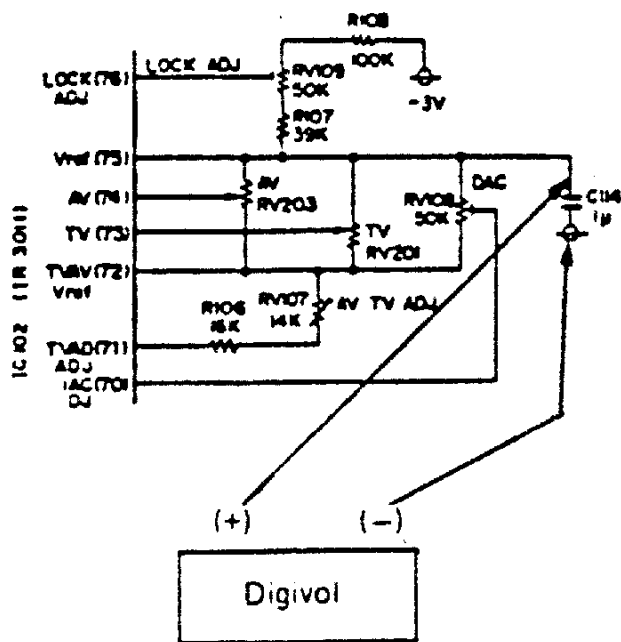
- 0Ω : OK
- Wire broken when resistance exceeds some scores of ohms.

- Check HB across No. 56 and No. 21:
- Check power across No. 53 and No. 24.



7. Vref 1.8 V outputted?

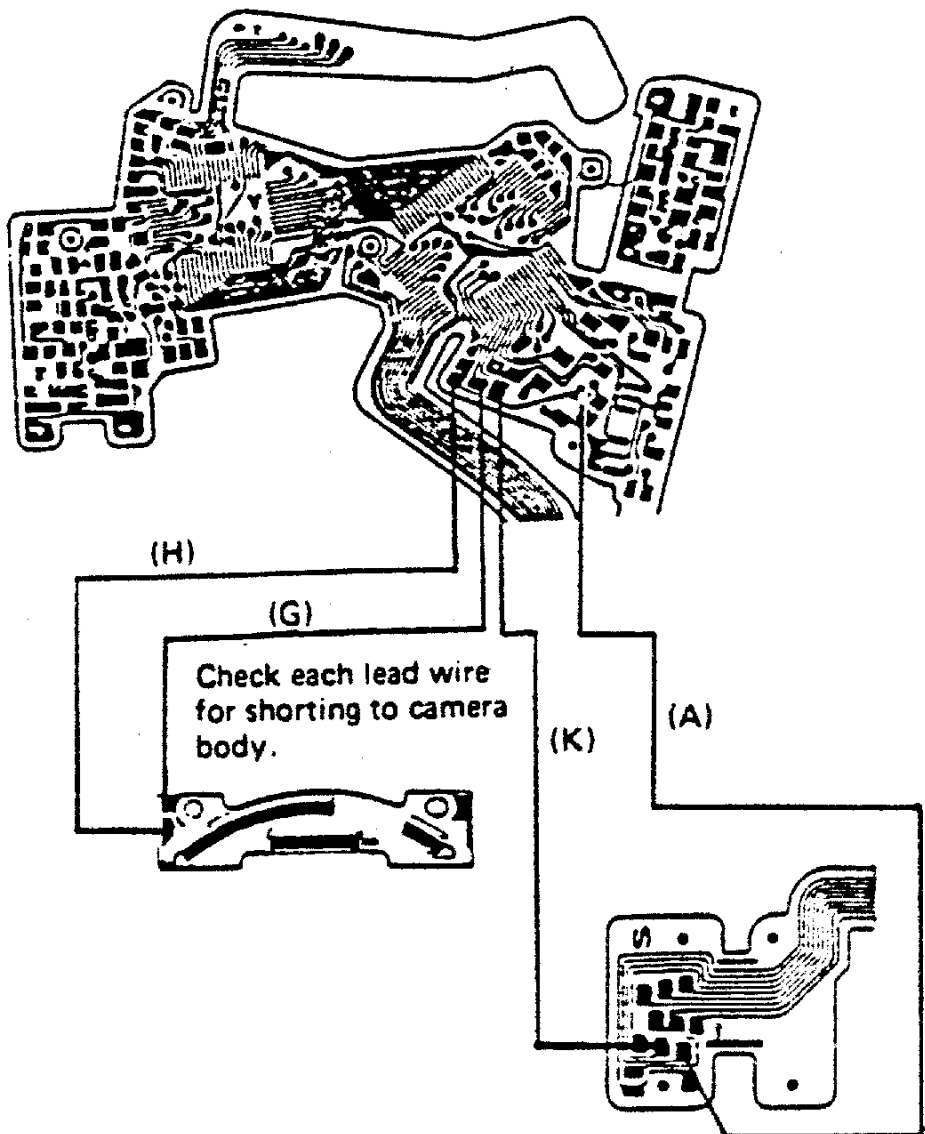
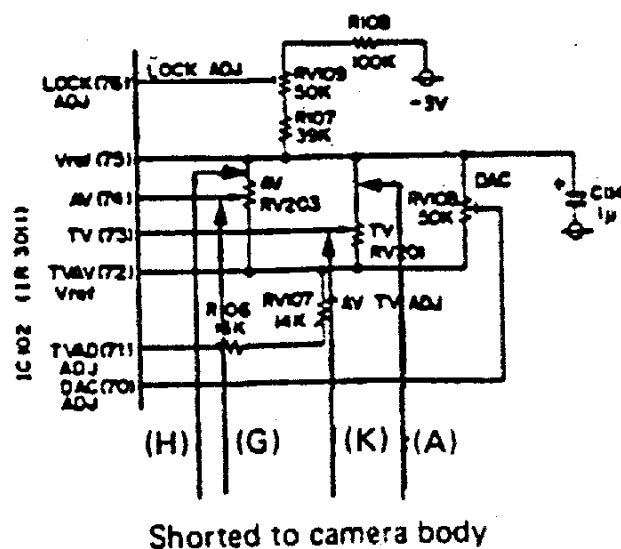
- Check Vref when POWER and HB are inputted.



- 1.8 V: OK
- Vref exceeding 1.8 V: NO
- Vref lower than 1.5 V: NO

• When Vref exceeds 1.8 V

- (1) TV, AV circuit: Each lead wire shorted to camera body. (PCV sounds during mode switching.)

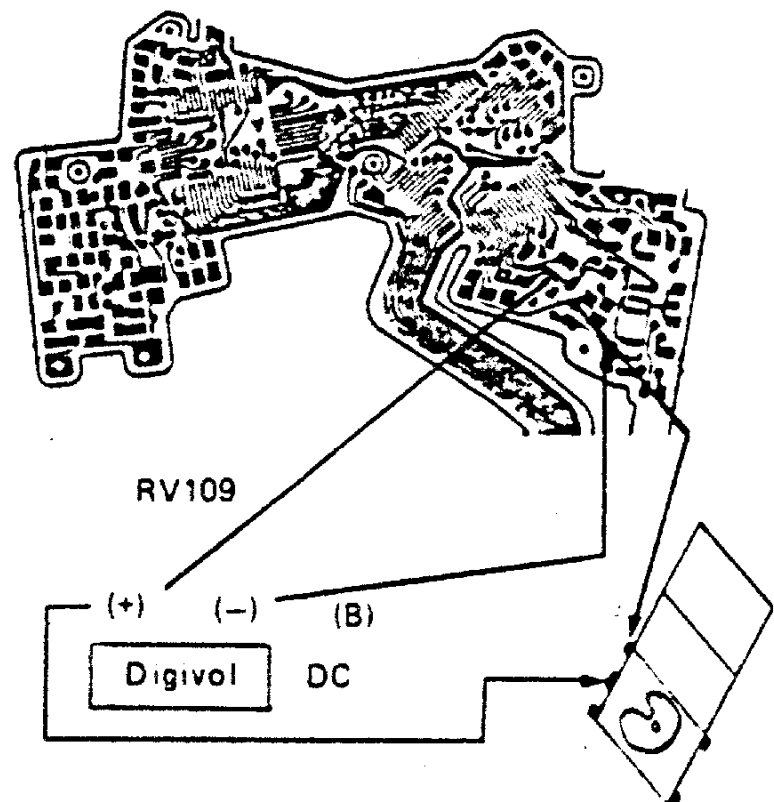
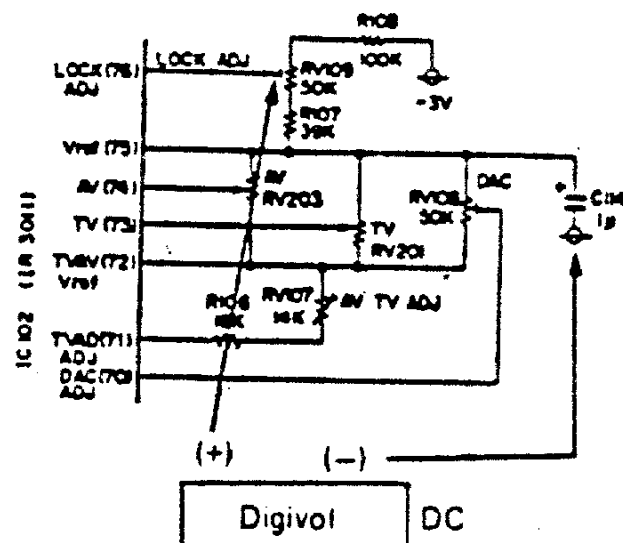


(2) B.P. IC defective

- When not shorted to camera body.

- When Vref is 0 V.

(1) Vref adjusting circuit normal?

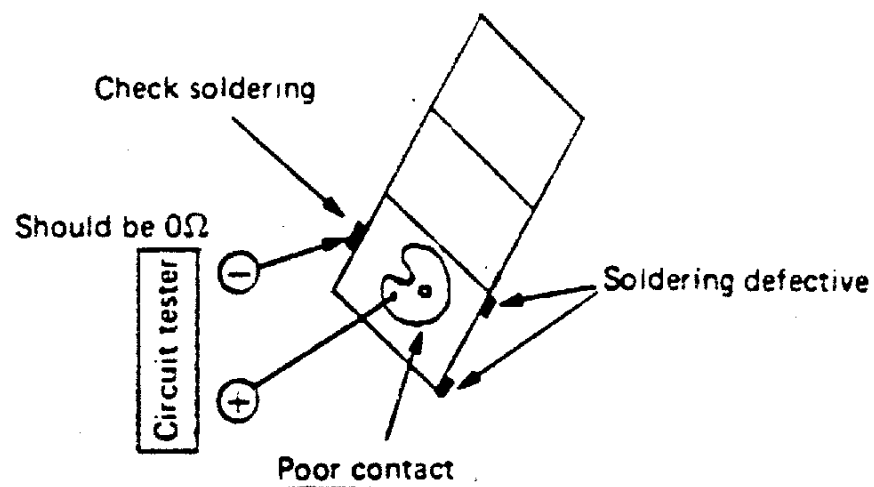


- DC 0.5 V or higher: OK

- When DC voltage is 0 V.

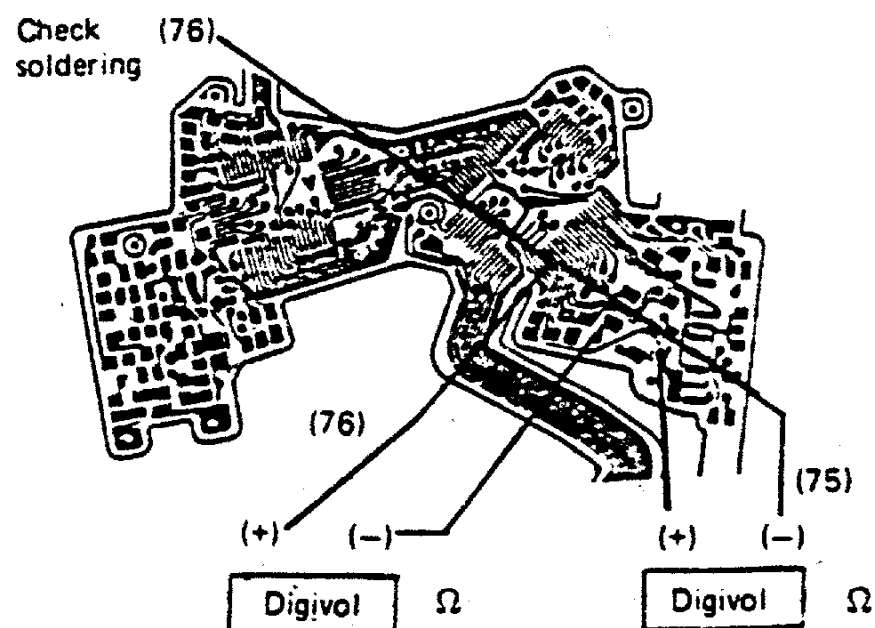
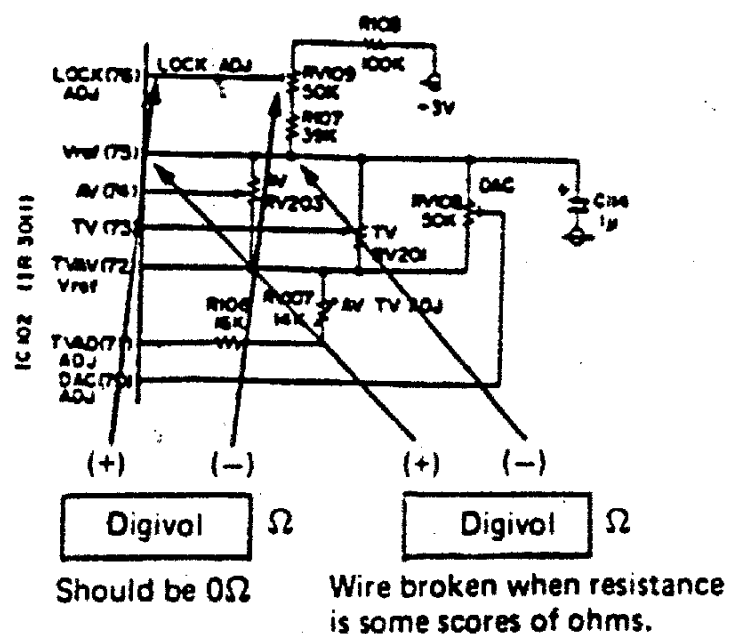
(a) Variable resistor contact or soldering defective

- Check variable resistor contact for poor contact with circuit tester. Resistance should be 0Ω . Resolder.



(b) No. 76 or soldering defective on bipolar IC.

(c) Pattern broken



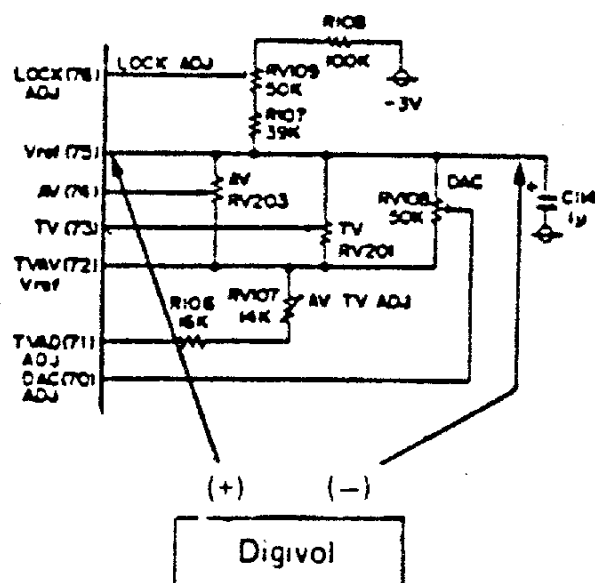
(2) C114 shorted

- Disconnect C114.

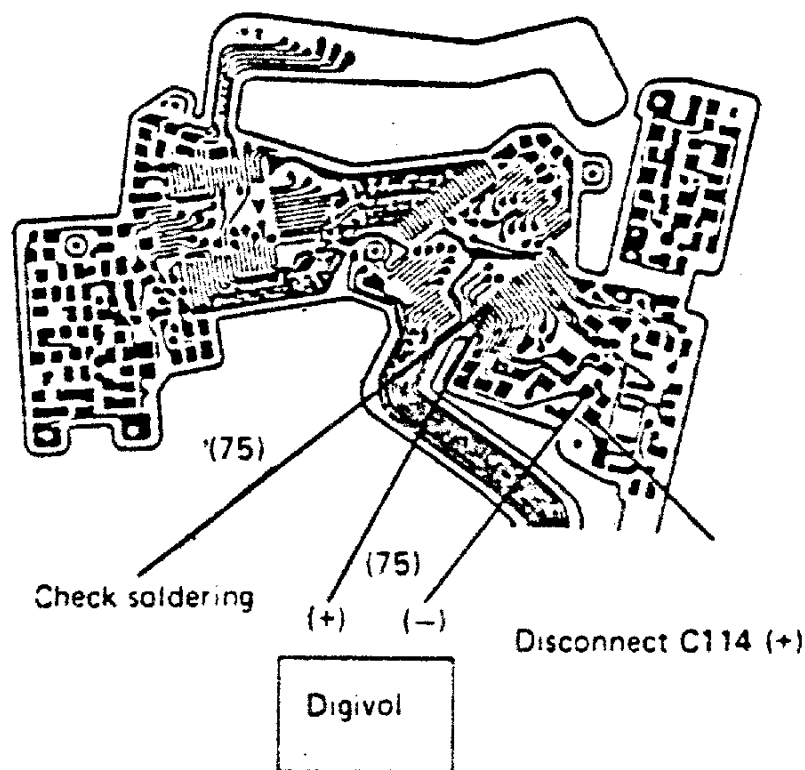
C114 is defective when voltage is 1.8 V.

Other part is defective when voltage is lower than 1.8 V.

(3) Pattern broken



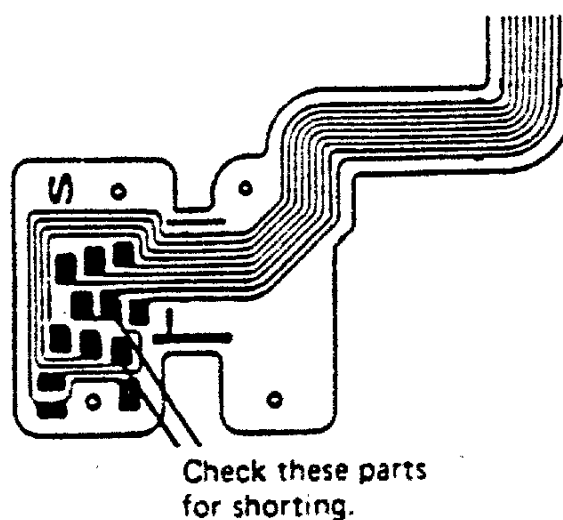
- 0Ω: OK
- Some scores of ohms: NO



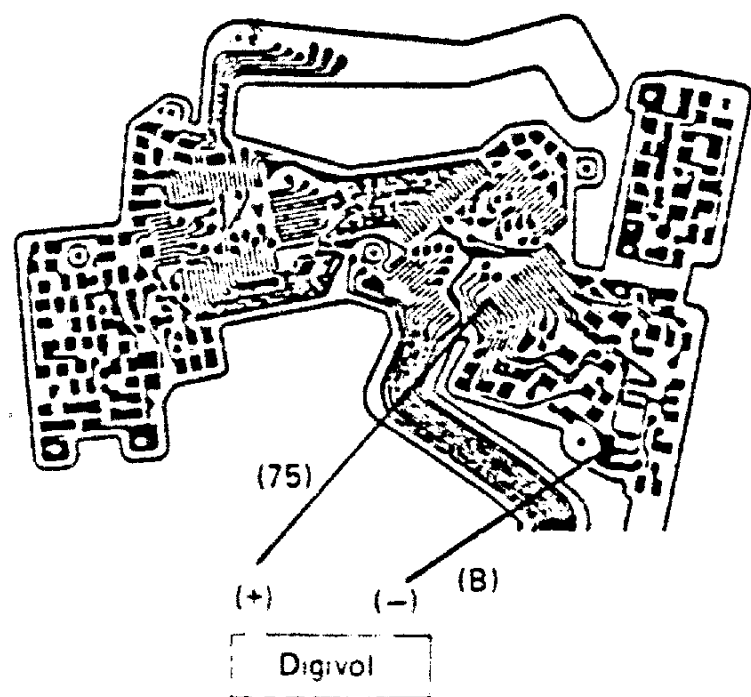
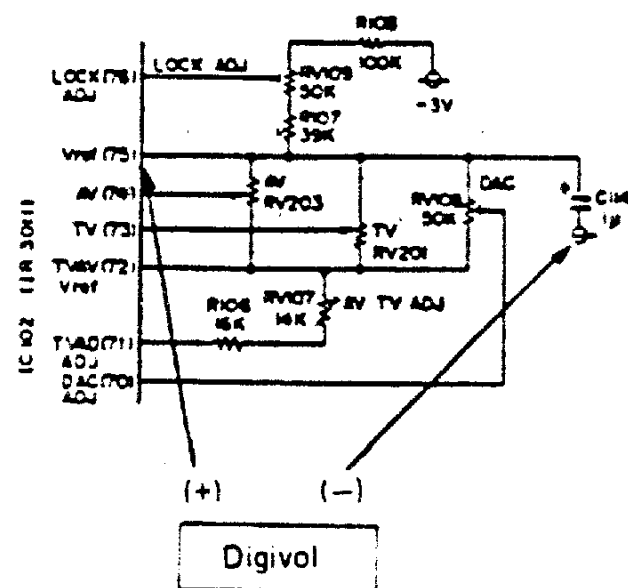
(4) No. 75 or soldering defective on bipolar IC supply.

(5) Vref shorted to blue lead wire (—)

- Check blue lead wire to see if it is shorted to power supply (—) black lead wire.



(6) Vref outputted to No. 75?
(B.P. 75)



- 1.8 V: OK
- When voltage is 0 V

Bipolar IC defective.

8. ☐ signal output provided?

- See page E-111.

3-2. LCD Indication Abnormal

(1) No indication

- Preparations
 1. Measuring instruments: ○ Digivol or circuit tester
○ Synchroscope
 2. Mode: ○ AUTO or MANUAL (lens should be attached in position)
 3. Light LCD indication.
- Shutter dial must not be set at B or mecha 1/60.

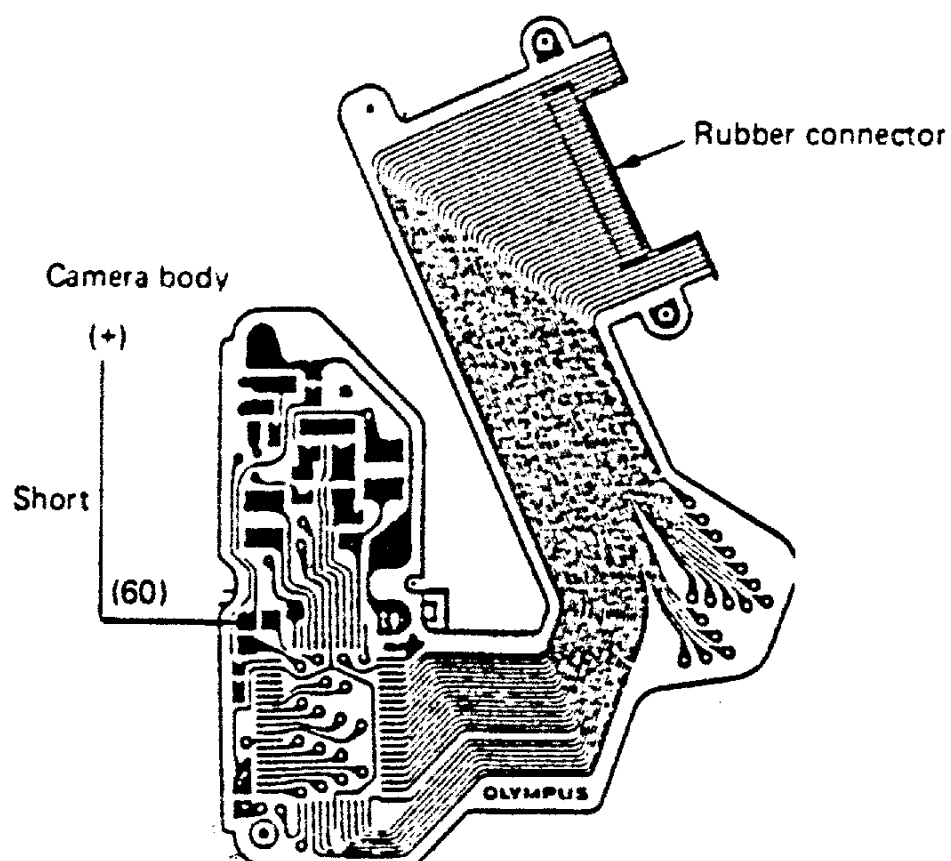
1. When shutter operates normally.

- (1) LCD POW, ϕ LCD or ϕ signal abnormal
- (2) LC, CL or SD signal abnormal
- (3) LCD D circuit defective
- (4) LCD defective or LCD-D IC defective

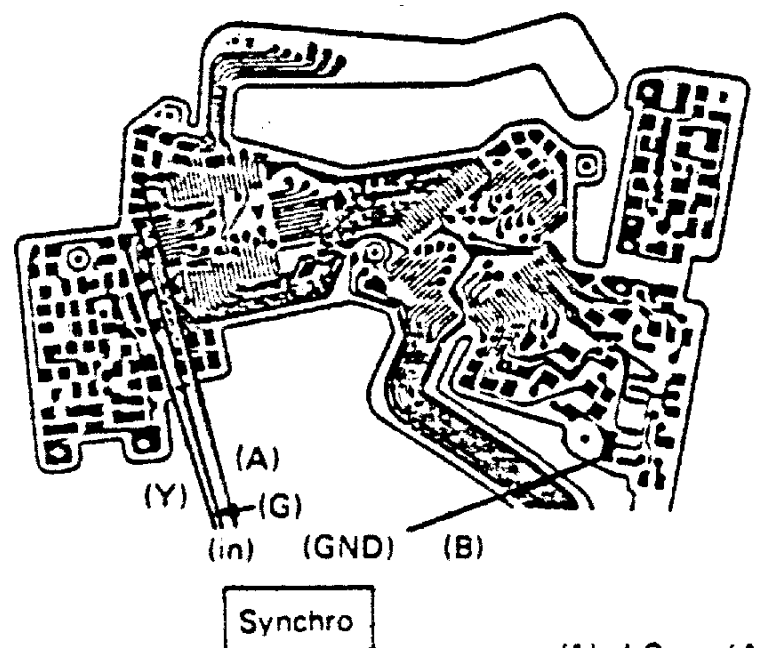
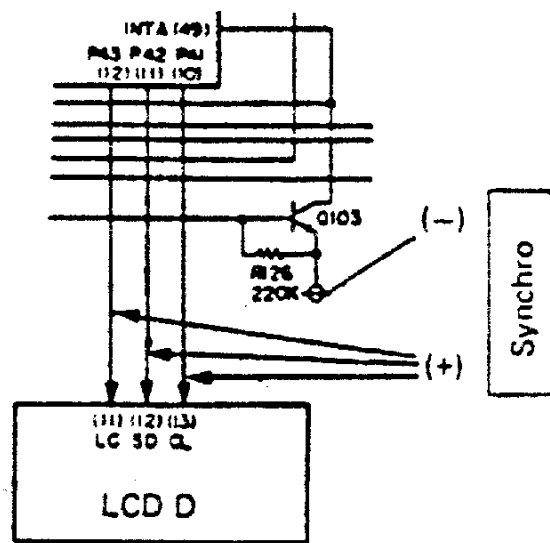
- Make sure that the shutter can be released normally in both the AUTO and MANUAL modes.
- B.C. can also operate normally.

(1) Check of LCD (liquid crystal display)

- Short camera body to LCD-D.
 - When indications are obtained, LCD is normal.
 - When no indication is obtained, LCD is defective.
- Check rubber connector
 - Positional deviation
 - Rubber connector broken

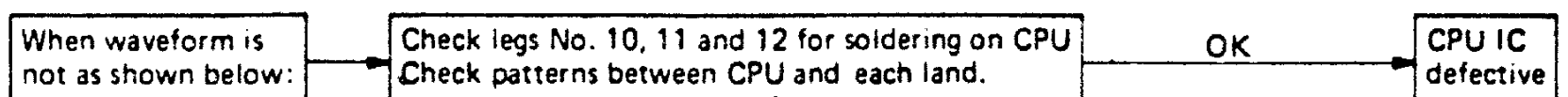


(2) Check of SD, CL and LC signals

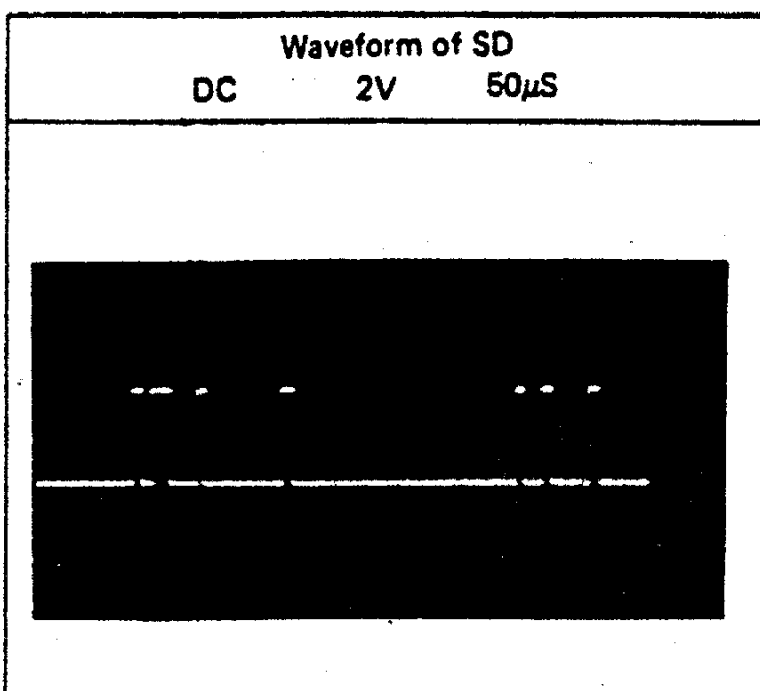
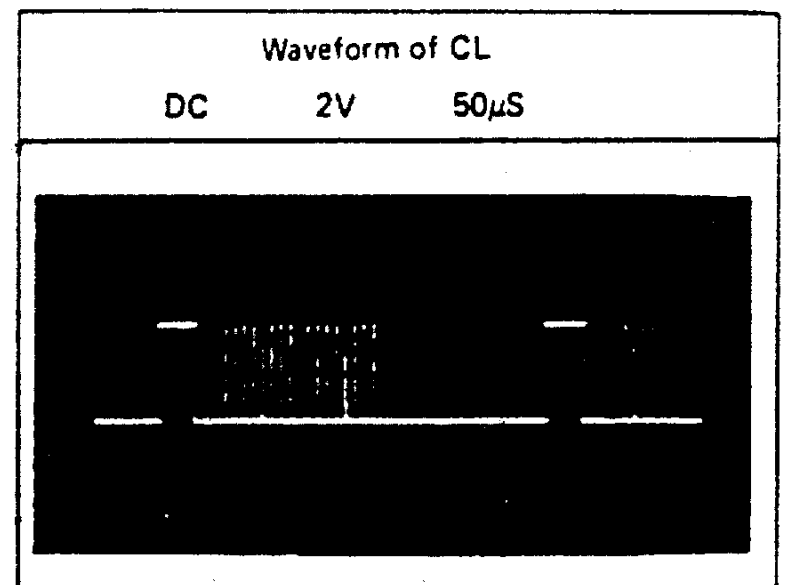
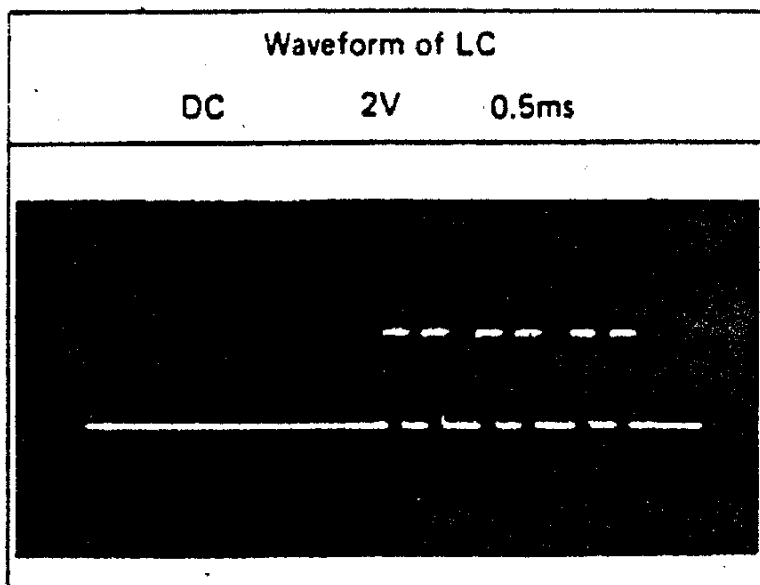


- (1) LC → (A)
- (2) CL → (Y)
- (3) SD → (G)

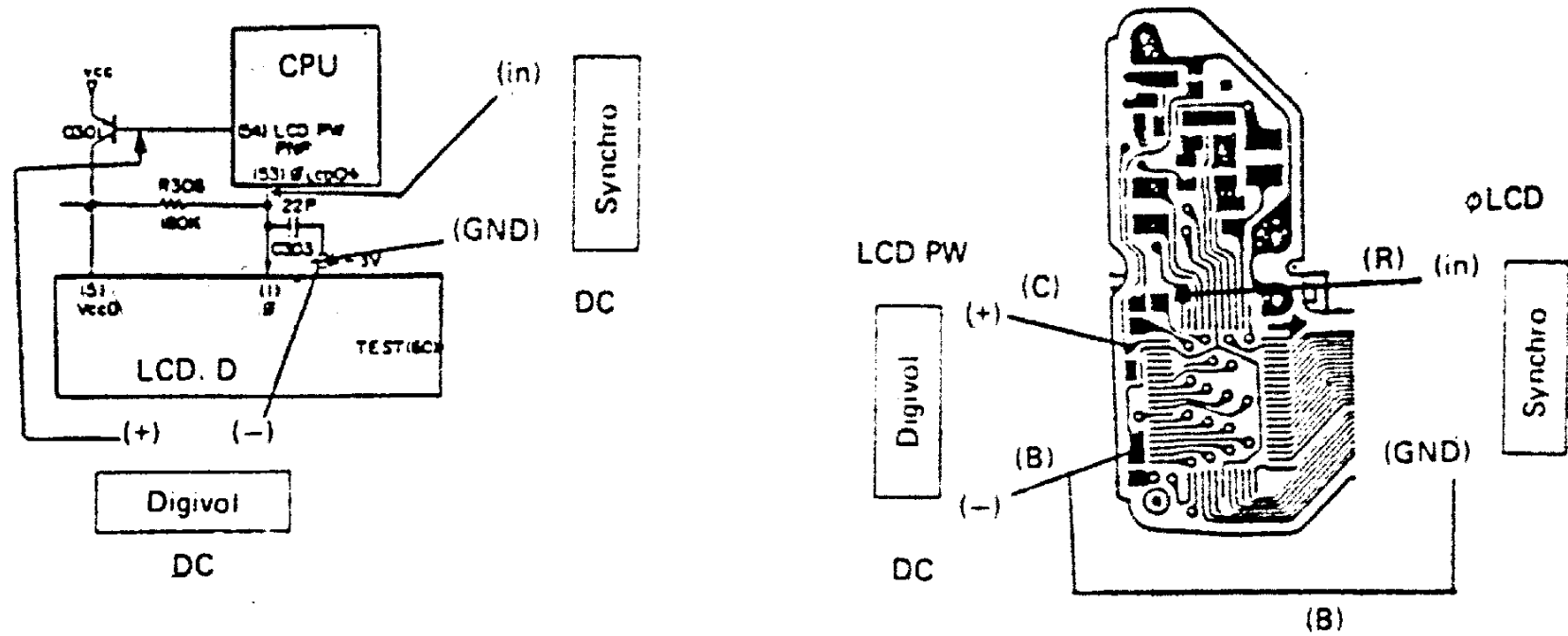
- Observe waveform on a synchroscope.
- Waveform should normal be as illustrated below: —



- Waveform is normal.



(3) Check of LCD POWER AND ϕ LCD



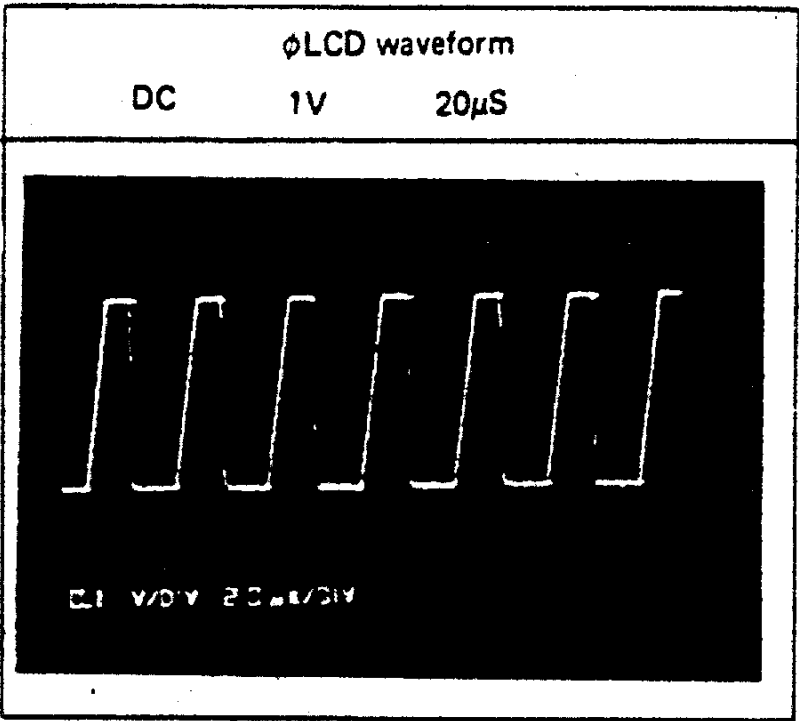
- LCD POWER: Normally 2.4 to 2.6 V

When output is not provided. → Check output from CPU.

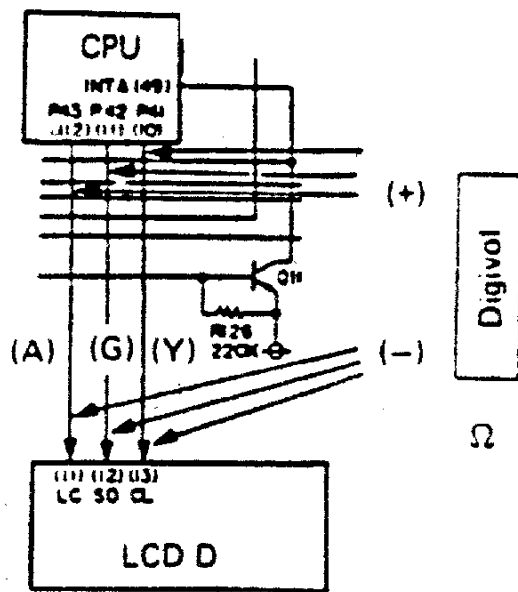
- ϕ LCD waveform is as shown on the right side below: OK

When output is not provided. → Check ϕ signal from CPU.

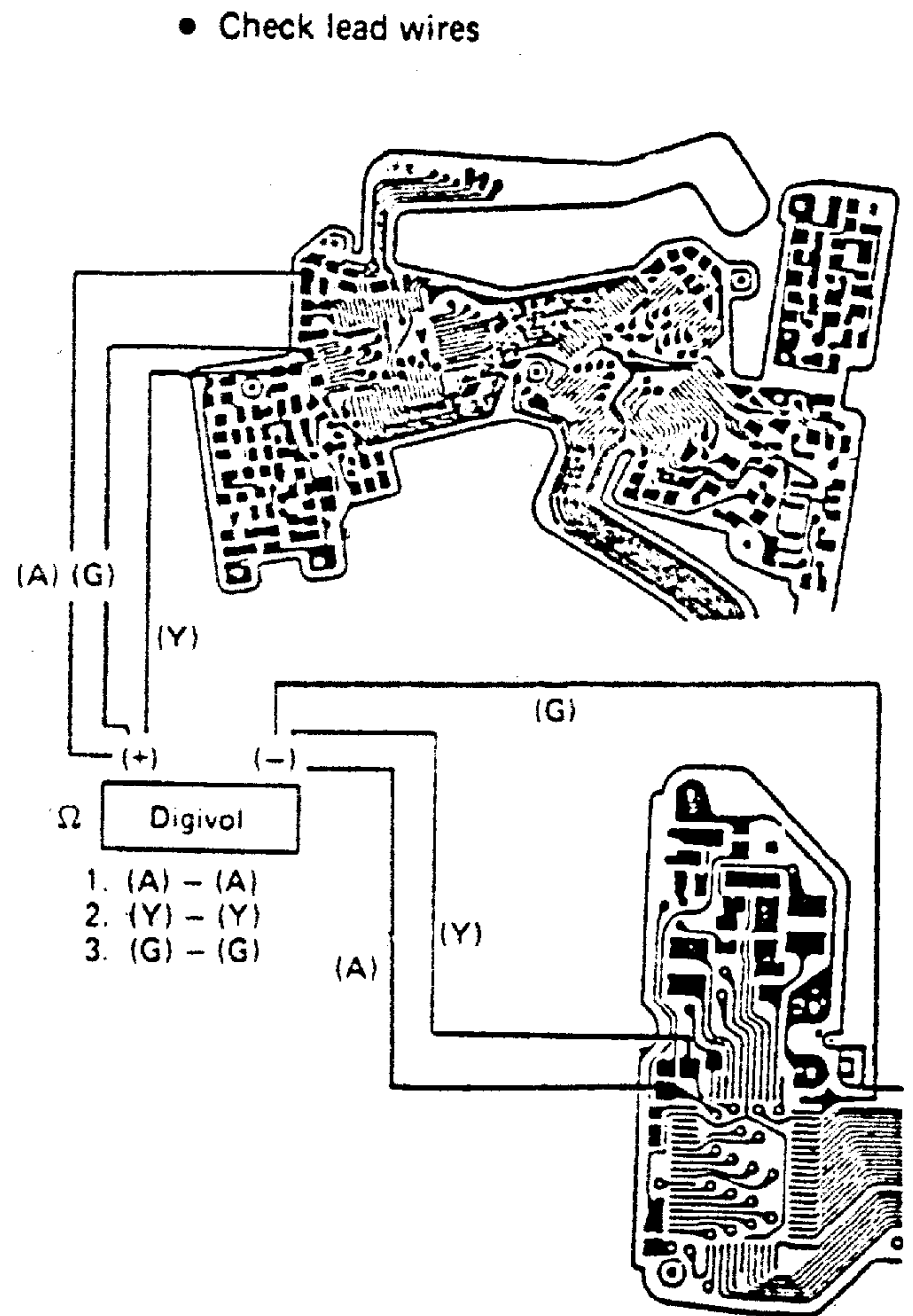
It is permissible to measure voltage by using a digital voltmeter in place of synchroscope.
DC 1 V to 2 V: OK (Standard 1.3 V)



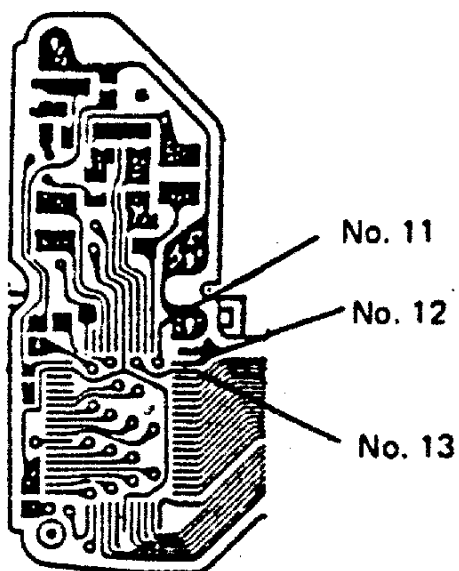
- (4) When LCD POWER and ϕ LCD output are provided in addition to SD, CL and LC outputs.
Check SD, CL and LC circuits



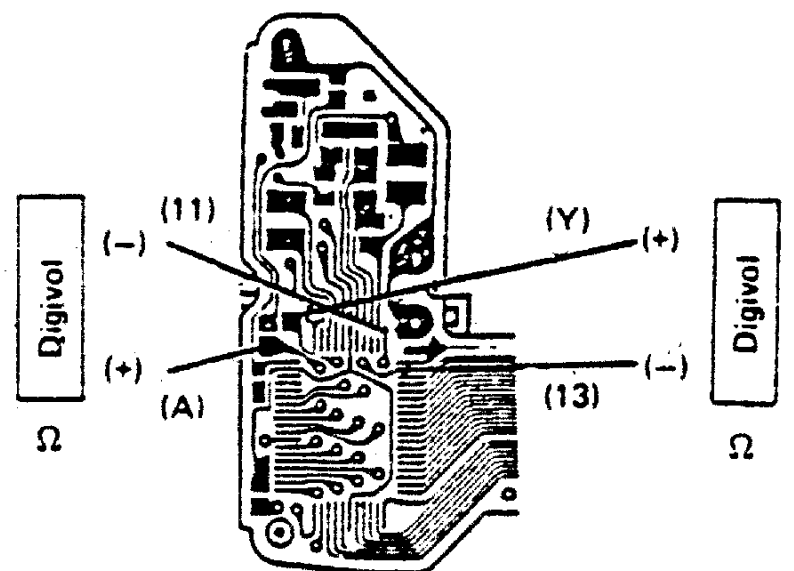
- Check each lead wire for soldering and breakage.
- Check resistance between patterns.
- Resistance should be 0Ω . ,
Wire broken when resistance is some scores of ohms.
- Check LCD-D IC legs Nos. 11, 12 and 13 for soldering.



1. • Check of IC legs

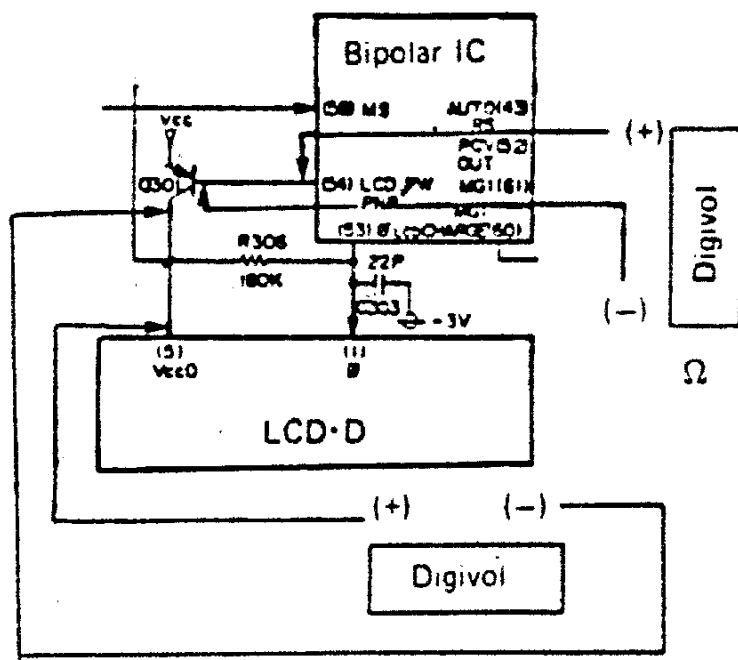


2. • Check of patterns



(5) When LCD POWER is not supplied from bipolar IC

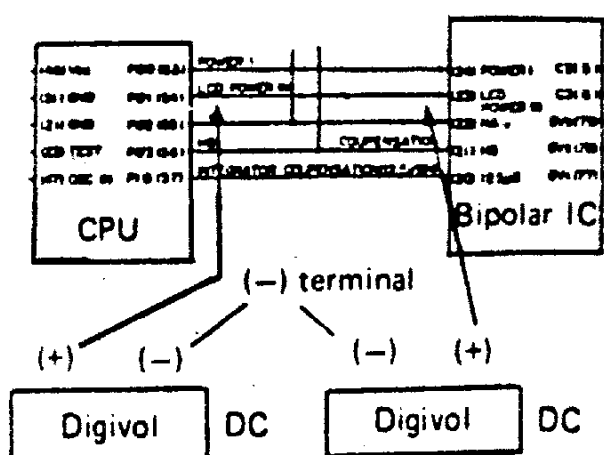
(a) Lead wire broken, pattern broken or soldering defective.



- 0Ω: OK
- Some scores of ohms: NO

(b) Check pattern and lead wire of power supply (-).

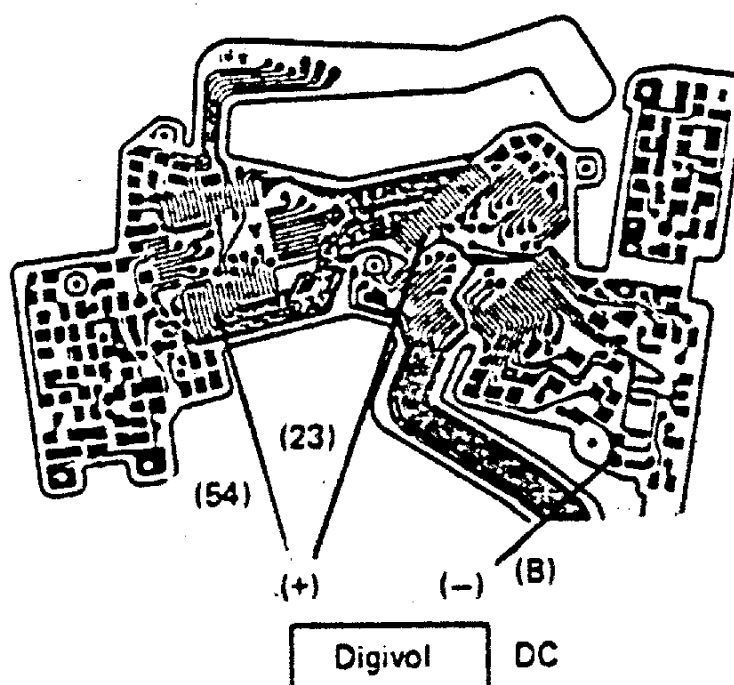
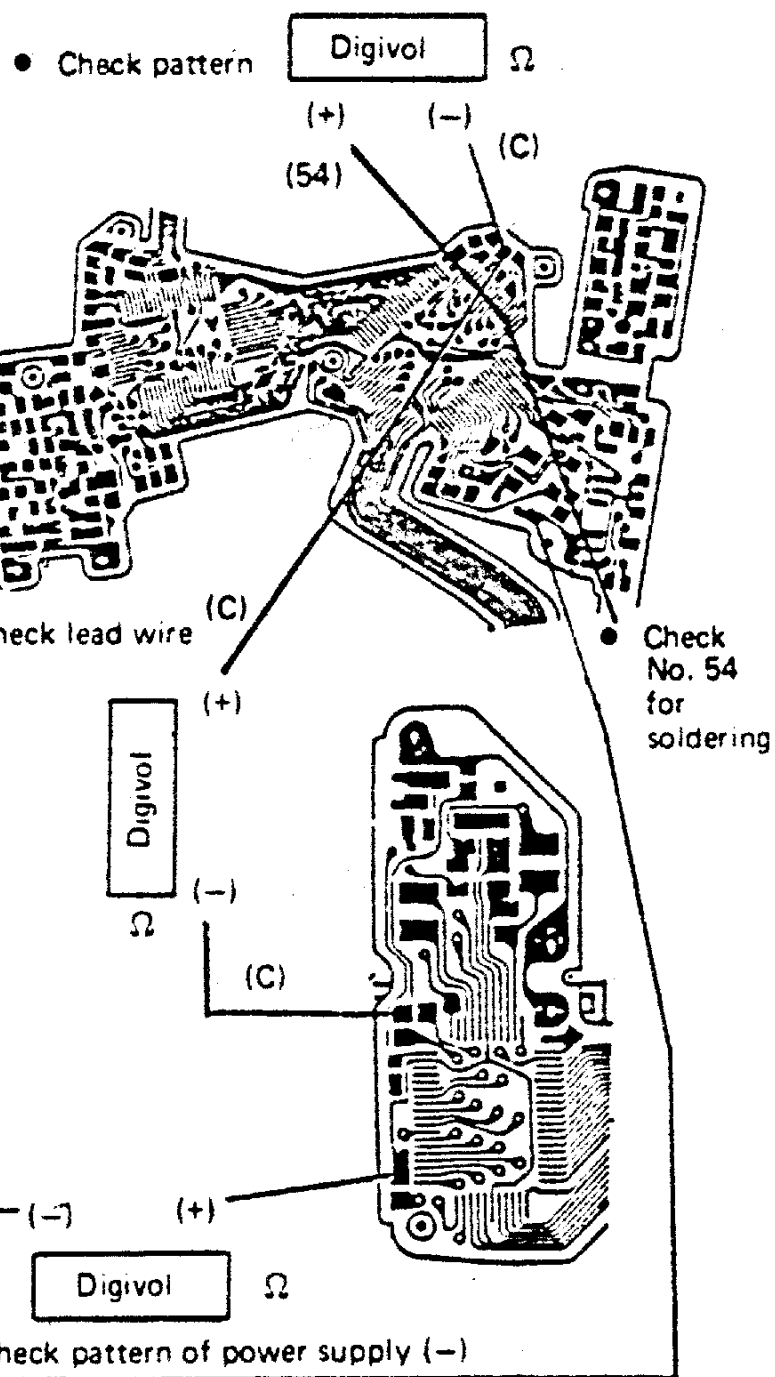
(c) LCD PW outputted from CPU?



- DC 3V: OK

- When DC voltage is 0 V

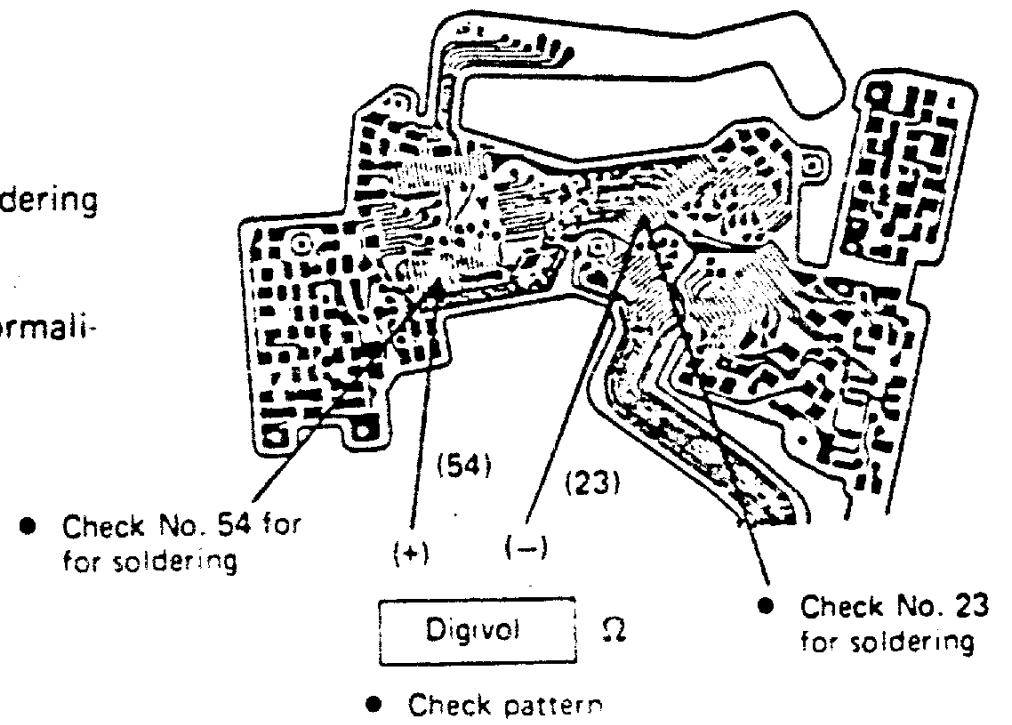
CPU IC defective



1. (B) - (54) (CPU output)
2. (b) - (23) (B.P. input)

(d) No bipolar IC input

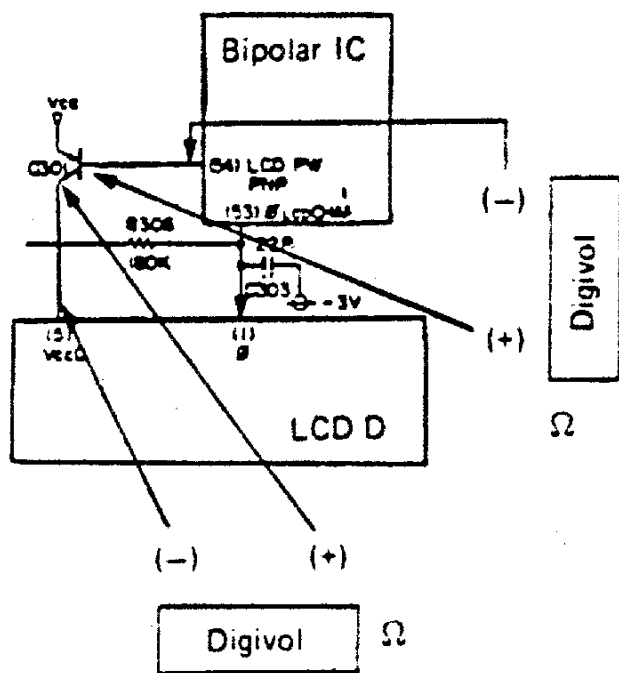
- When CPU output is available
 - (1) Check pattern for breakage
 - 0Ω : OK
 - Some scores of ohms: NO
 - (2) CPU No. 54 or B.P. No. 23 soldering defective.
 - (3) When above checks detect no abnormality.
B.P. IC defective



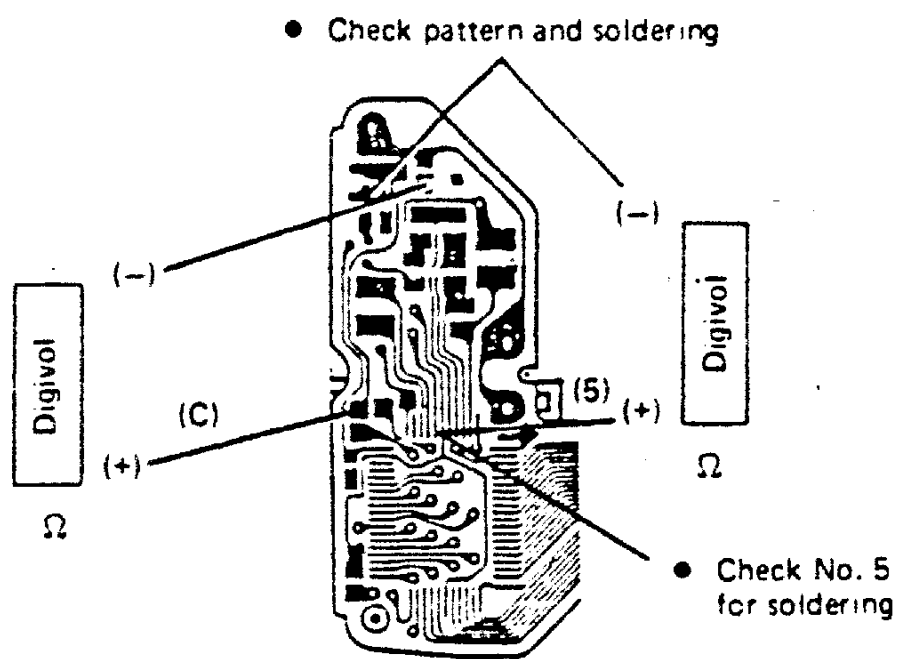
LCD POWER

(6) When output provided from bipolar IC (2.4 to 2.6 V)

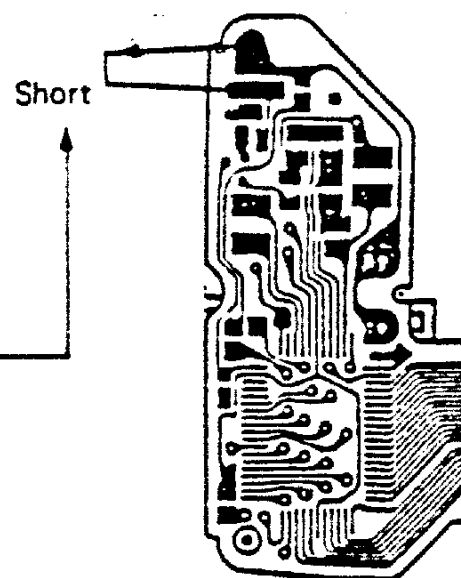
(a) Pattern broken



- 0Ω : OK
- Some scores of ohms: Breakage



• Check of Q301



(b) Defective soldering of LCD·D pin No. 5.

(c) Q301 defective

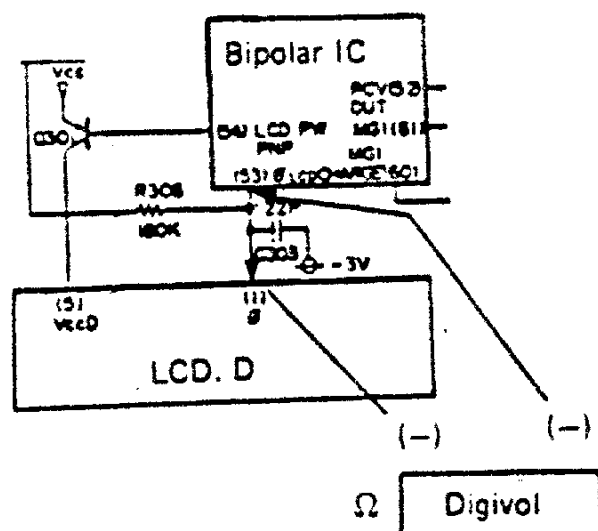
- Resolder each leg of Q301.
- Short collector and emitter of Q301.
- Q301 defective when indication is obtained.

(d) Another circuit or LCD·D IC defective.

- Check of lead wire, pattern and soldering

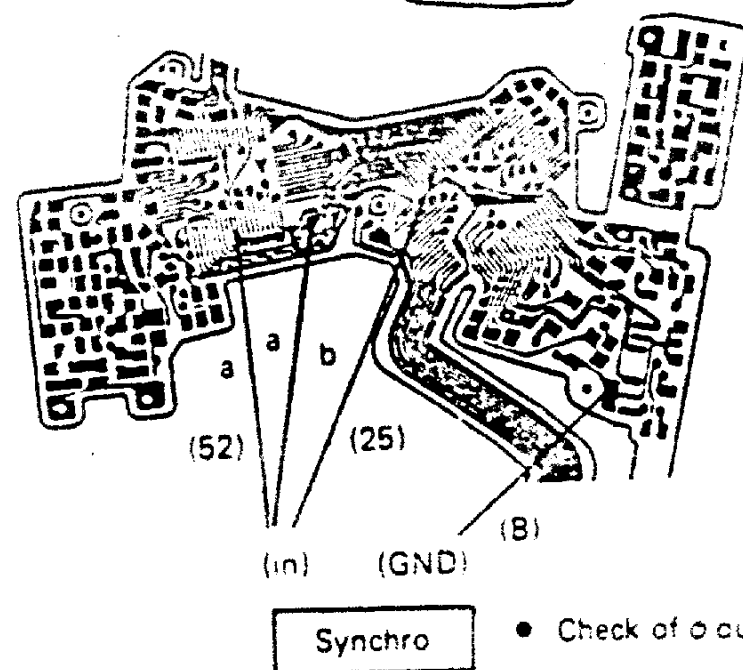
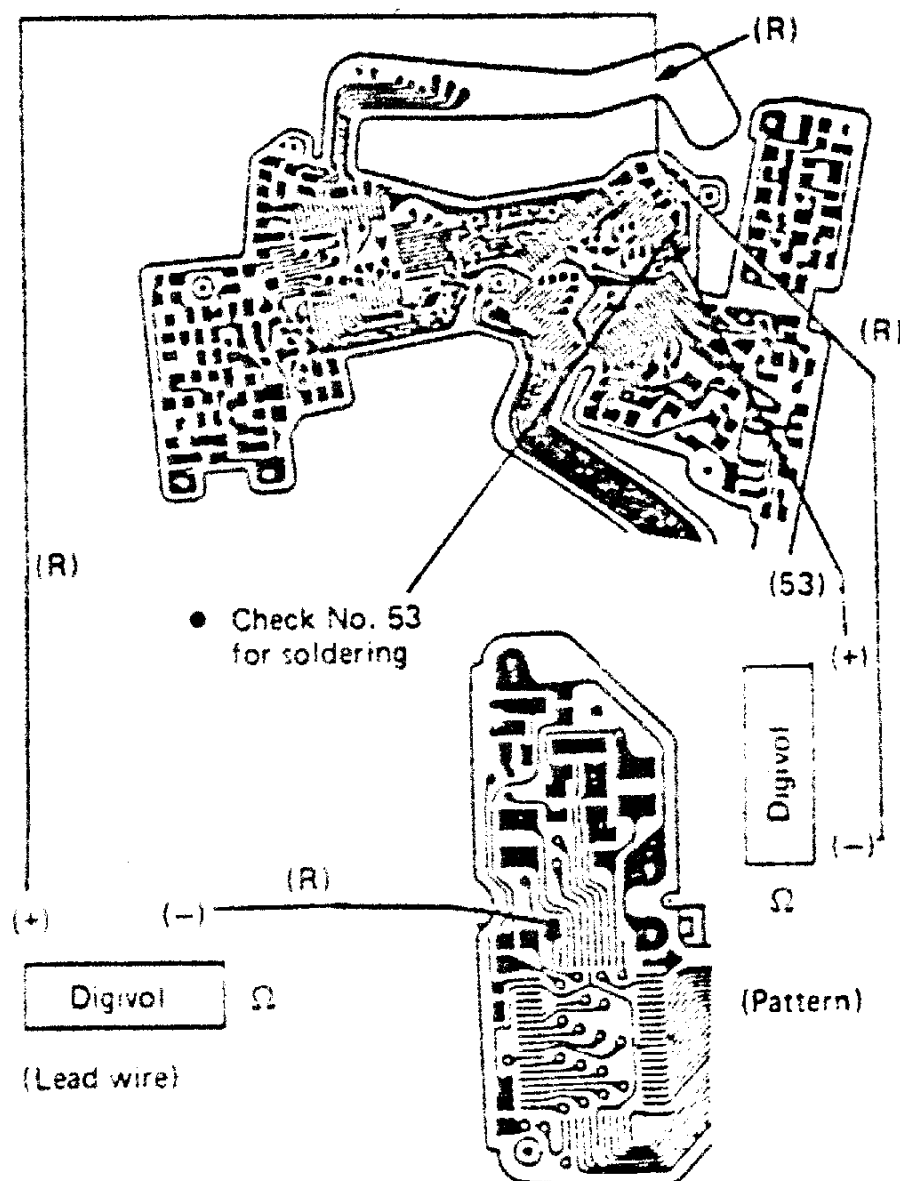
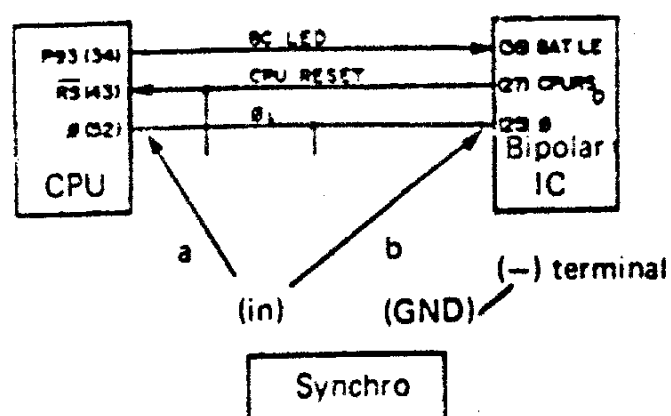
(a) Pattern broken

- When PCV sounds in B.C. mode.



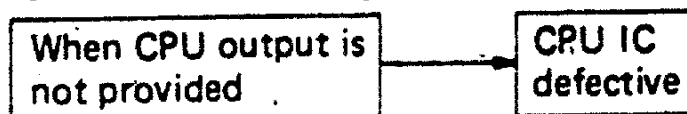
(c) No ϕ signal outputted from CPU. mode.

- When B.C. does not sound



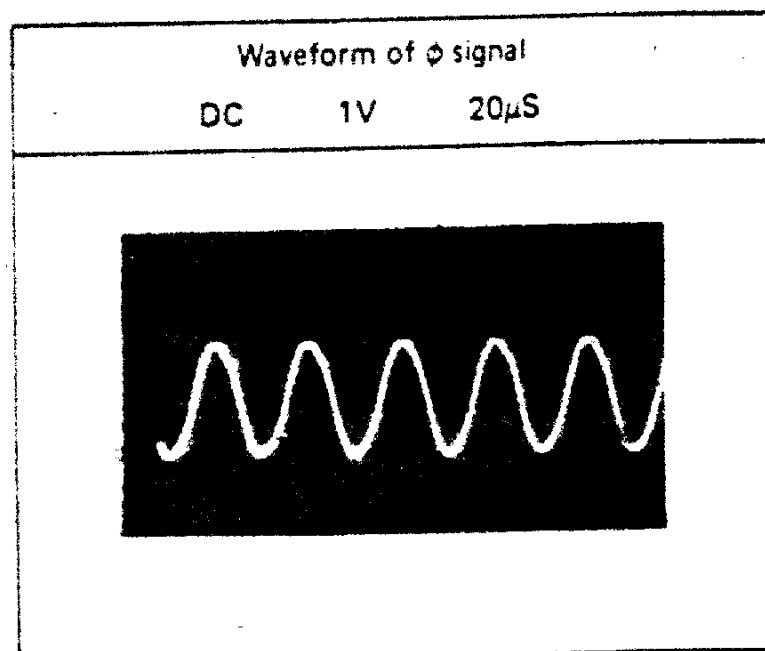
- Normal waveform of ϕ signal

1. CPU output should normally have the waveform shown on the right side.



2. Input signal provided to B.P.?

- When input signal is not provided
Pattern broken or defective soldering of
No. 25.

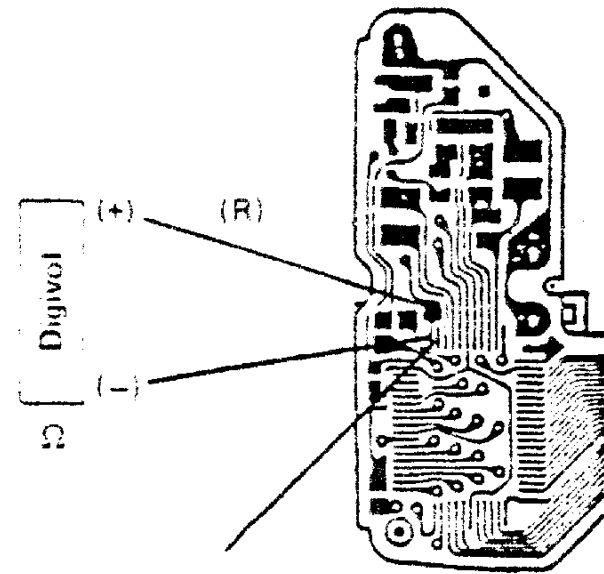


φLCD

(8) When output Provided from bipolar IC

(a) Pattern broken

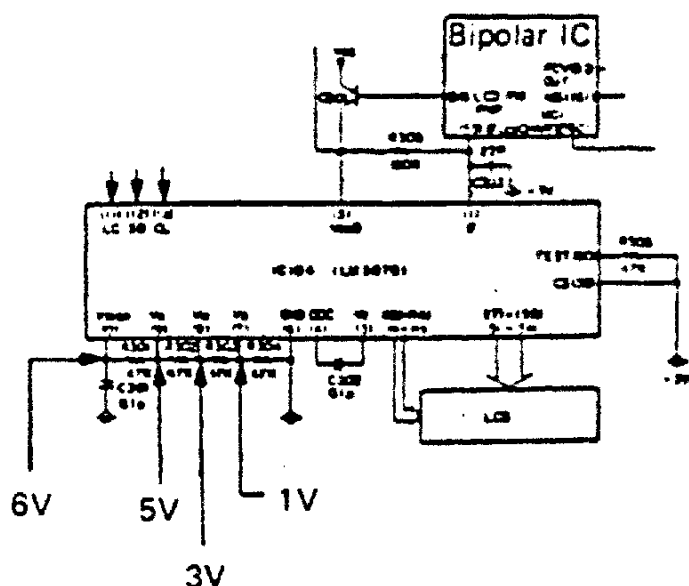
(b) Check LCD·D IC leg No. 1 for soldering



● Check leg No. 1 for soldering

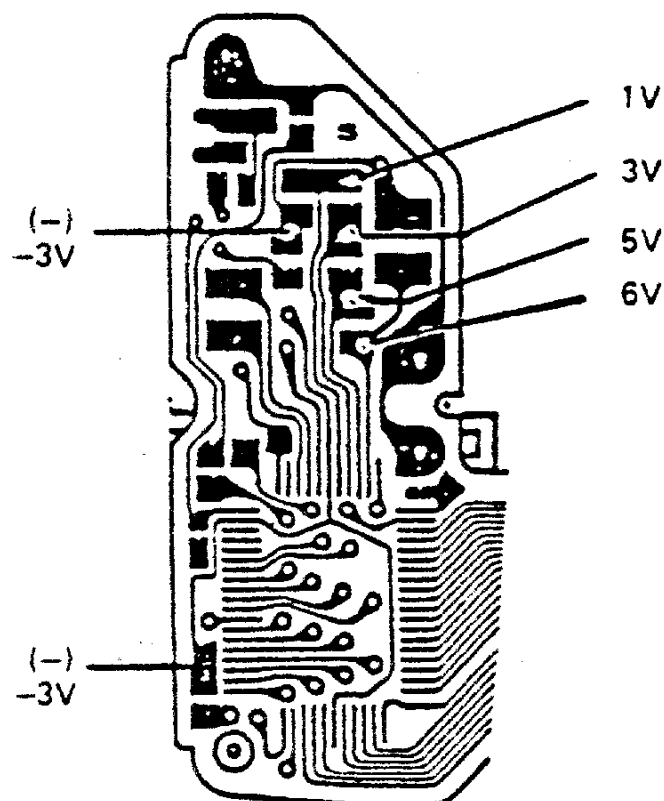
(9) LCD D circuit defective

- Voltage in normal condition



- All voltages should normally be as shown above. All voltages are measured from (–) 3V line.

- Voltage check



(a) 6 V not outputted as V_{DISP}

- No indication

(1) C301 shorted

- Indication faint when wire is broken.
- Measure voltage across both ends of C301. 0V: Shorting

(2) C302 shorted or broken

- No indication when C302 is shorted or broken.

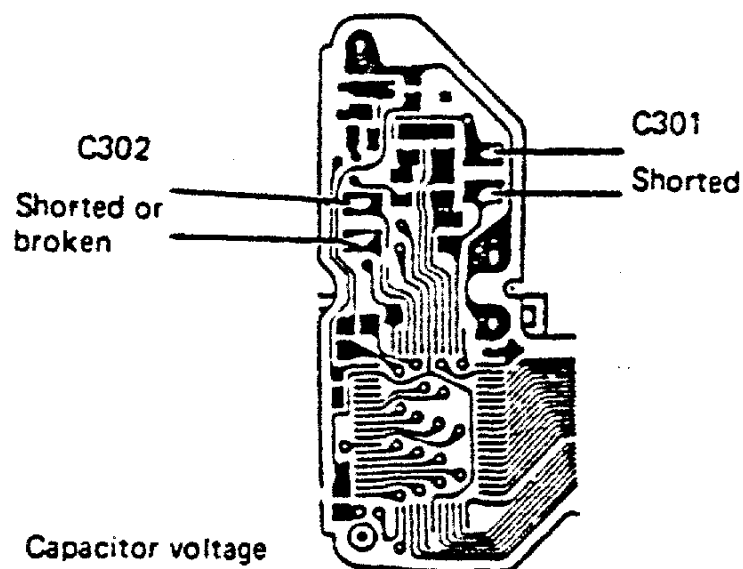
- Check procedure

Measure voltage across both ends of C301.

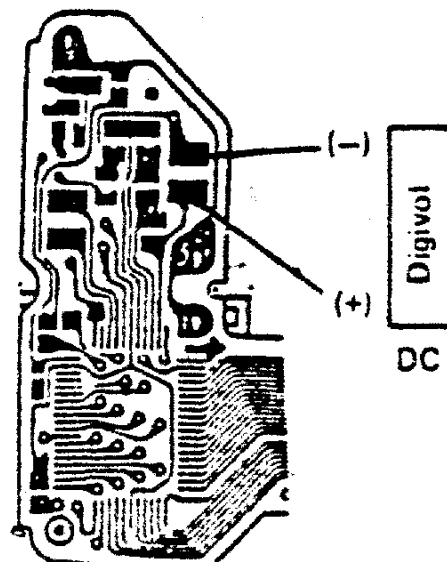
	Voltage of C301
C301 shorted	0V
C301 broken	4.2V
C302 shorted	3V
C302 broken	2.4V

Note: Some items are indicated even when another resistor is defective.

- Capacitor shorted



- Capacitor voltage



(b) Check of R306 and R307 for shorting

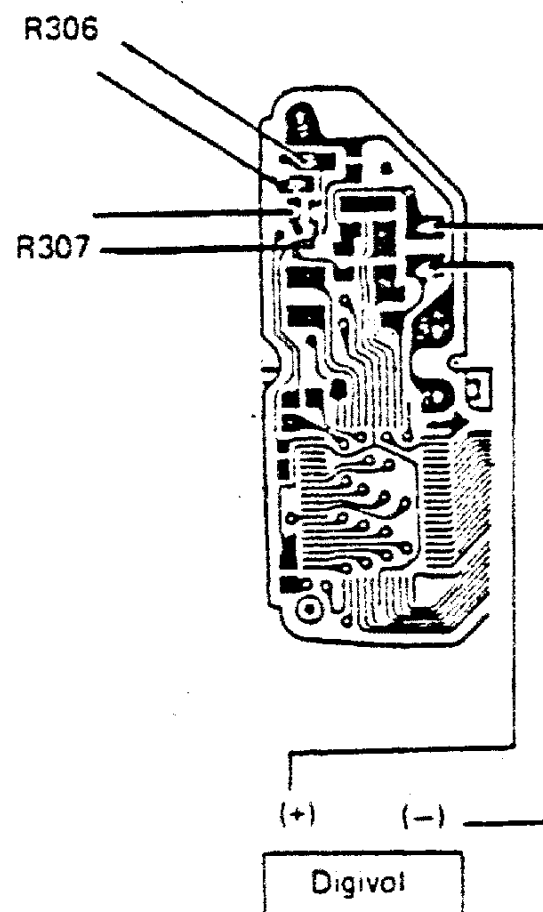
- No item is indicated when R306 or R307 is shorted.
- Indication is normal when R306 or R307 is broken.

(1) R306 shorted

- Operate B.C. system.
PCV does not sound in B.C. mode.
- Voltage across both ends of C301 is 2.2 to 2.4 V.

(2) R307 shorted

- Operate B.C. system.
PCV does not sound in B.C. mode.
- Voltage across both ends of C301 is 2.4 to 2.6 V.

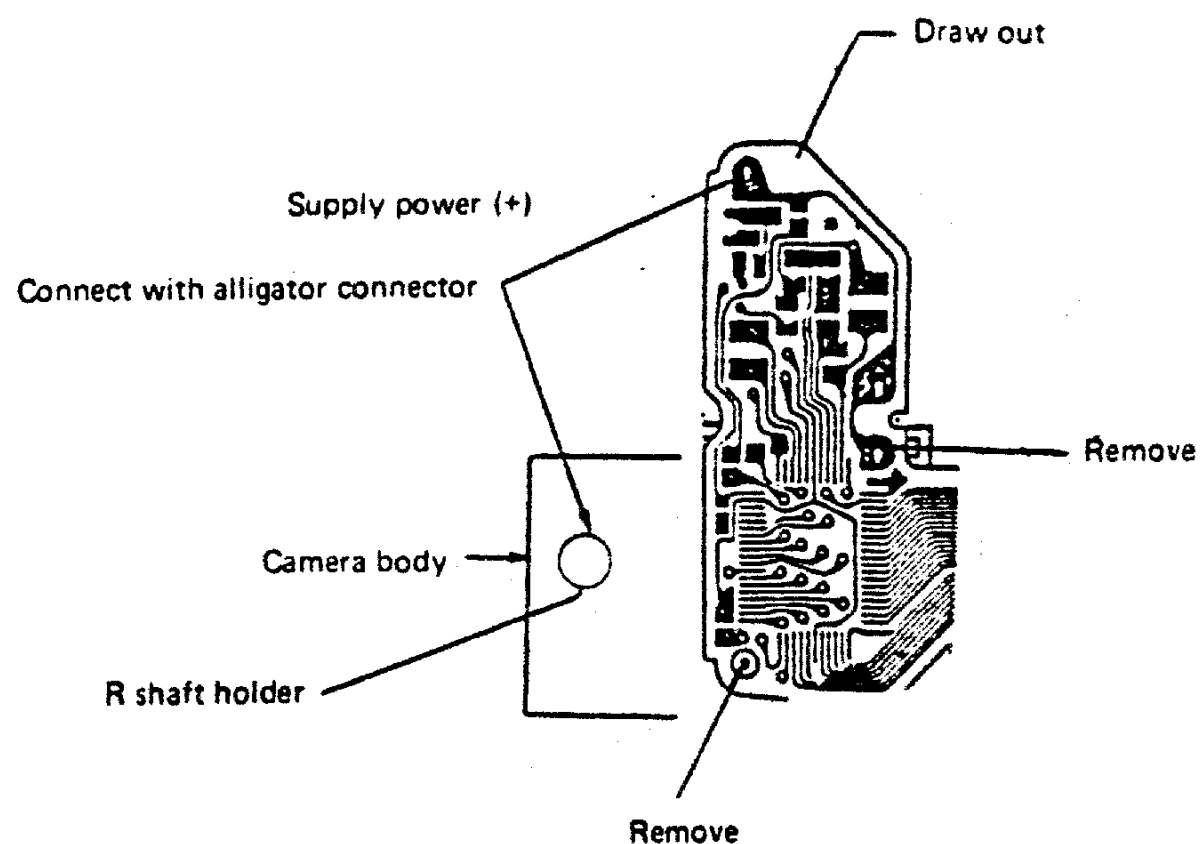


(10) LCD·D IC defective

- When the above checks are ineffective to locate cause and LCD indicates no item, wiring is erroneous or LCD·D IC is defective.
- Condition of LCD should be checked at the initial stage.

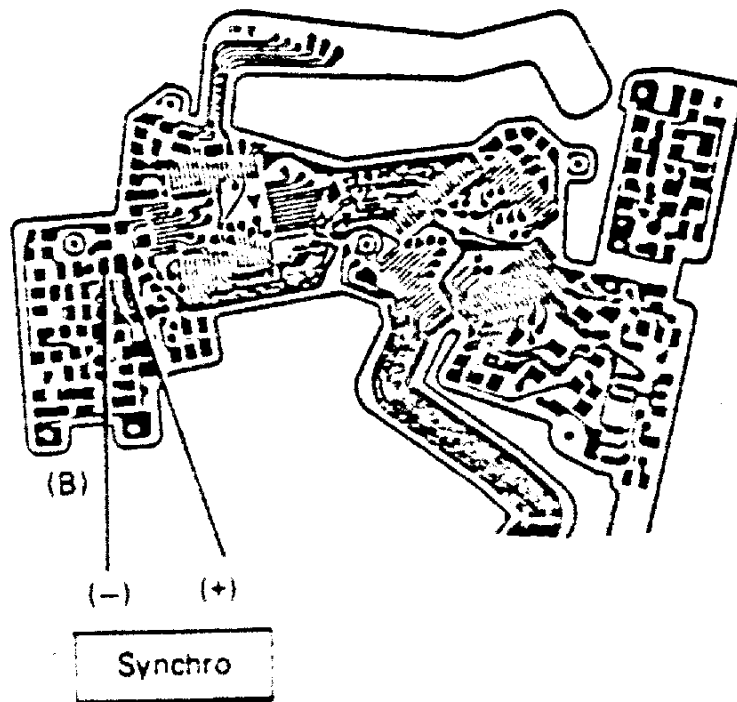
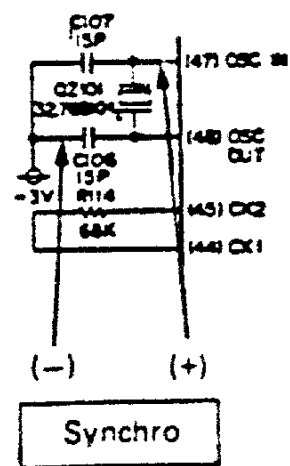
Note: For checking LCD·D circuit, proceed as follows:

1. Remove setscrew from L circuit board.
2. Draw out folded circuit board.
3. Supply power (+).



2. Shutter kept open in AUTO mode

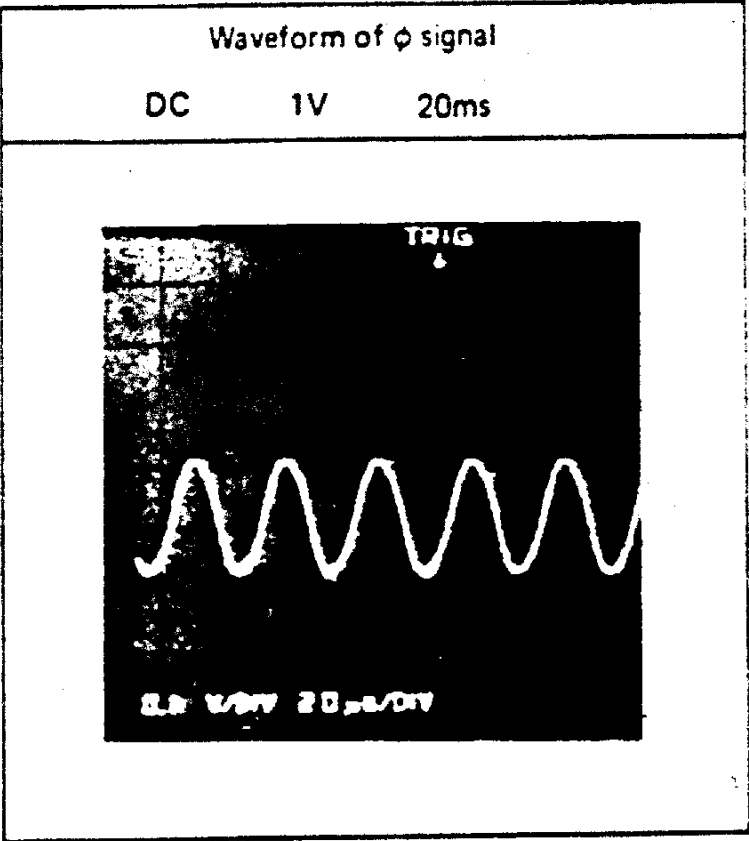
- PCV does not sound in B.C. mode
- Shutter locked at its second and later operations in MANUAL mode.
- CPU oscillates?



- OK when waveform is normal.
- Check by voltage measurement.

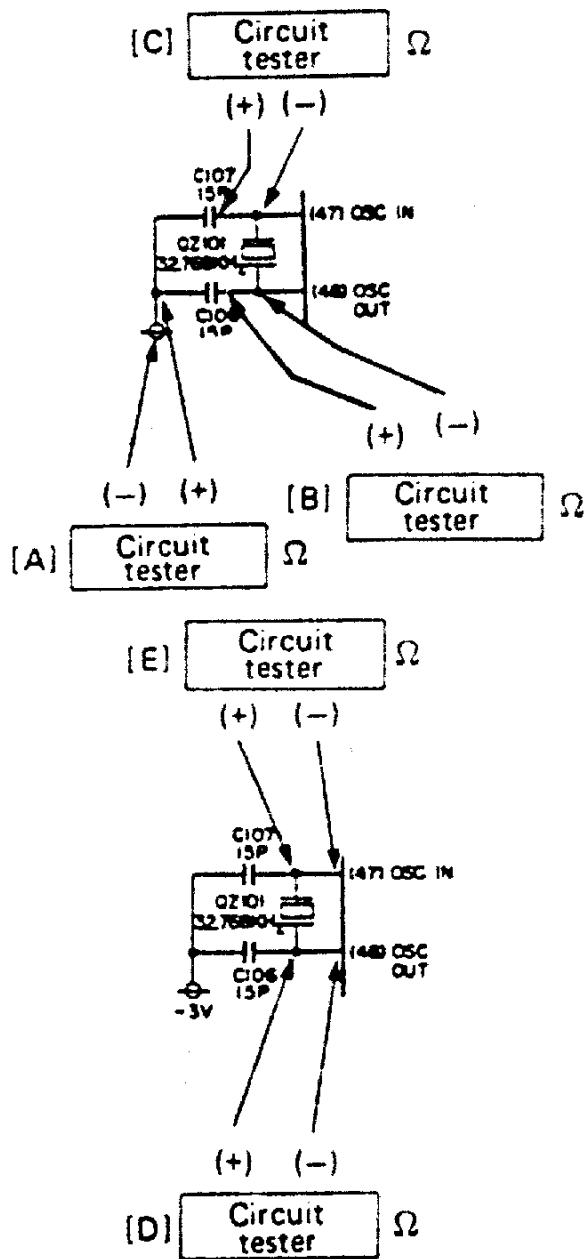
1. On positive side of C106 1.3 V ~ 1.5 V
2. On positive side of C107 0.9 V ~ 1.1 V

- Normal waveform

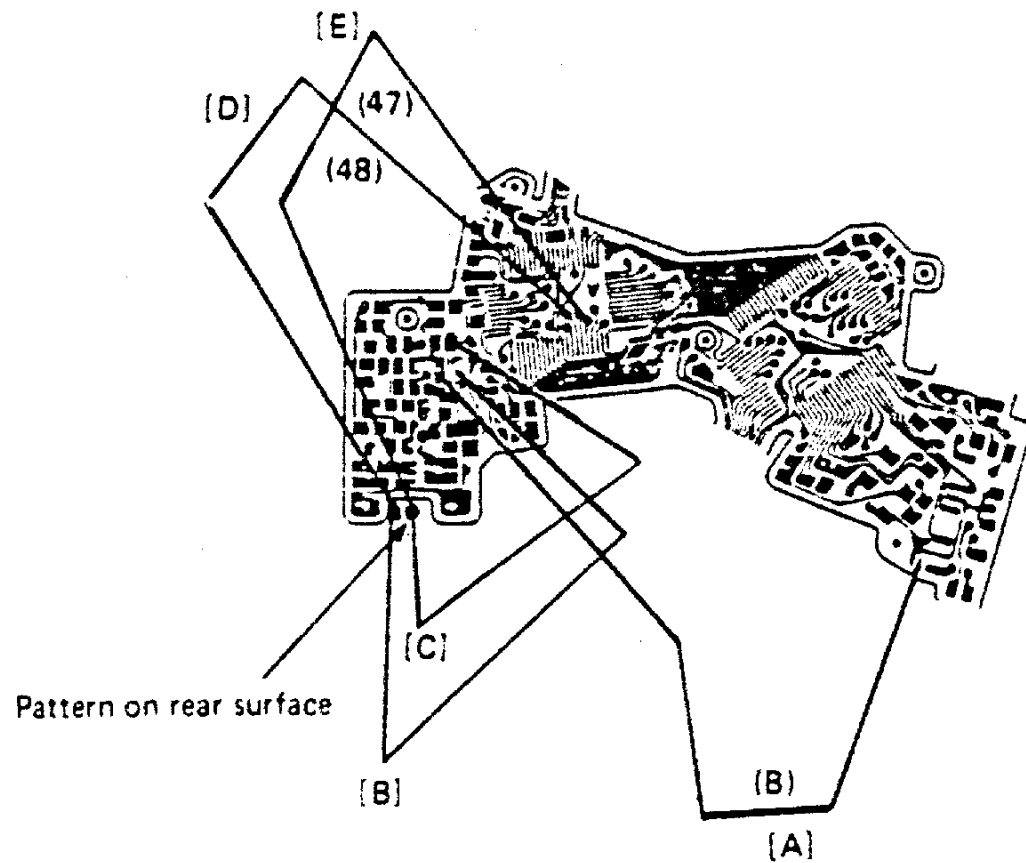


- When no waveform is observed

(1) Pattern broken



- Pattern check



Pattern on rear surface

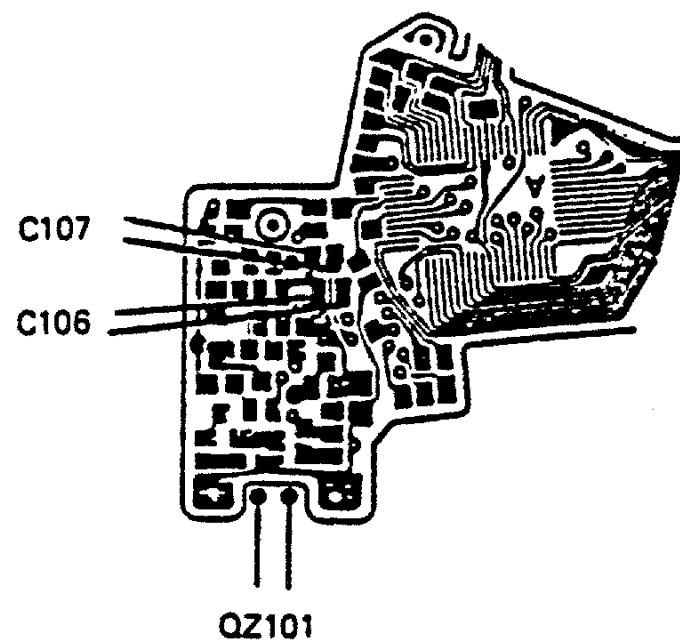
- Resistance should be 0Ω at each check point.
- When resistance is some scores of ohms, wire is broken.

(2) Crystal oscillator (QZ101) defective

- Replace

(3) C106 or C107 defective

- After disconnecting C106 and C107, check with a circuit tester set at X10 KΩ range.
- If a circuit tester having X10 KΩ range is not available, replace capacitor with new one.



Shutter locked

- Data input circuit defective

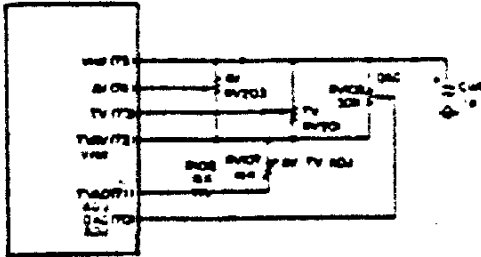
(1) TV circuit defective

(a) Vref lead wire for TV (gray) shorted to camera body.

- When shutter is operative with lead wire (gray) disconnected, it was shorted with camera body.

(When the gray lead wire was shorted with (-) power supply, no LCD indication was provided.)

Bipolar IC



(b) TV lead wire for TV (light green) shorted to camera body.

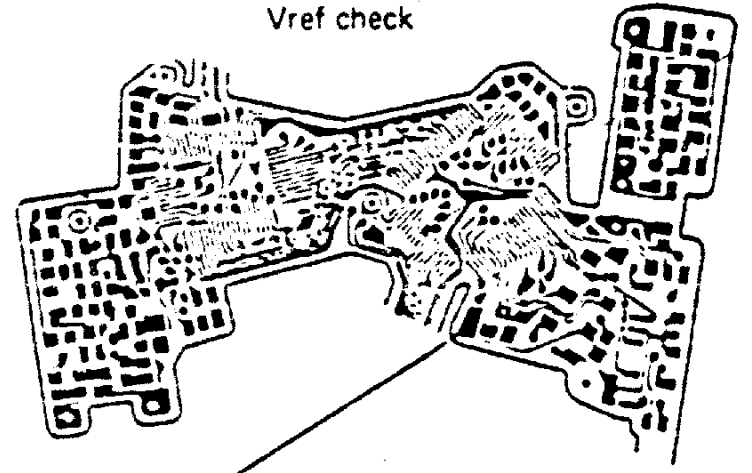
- When shutter is operative with lead wire (light green) disconnected, it was shorted with camera body.

(No indication is provided when a voltage exceeding 2.2 V is applied to TV input terminal.)

(c) TV lead wire (light green) for TV shorted to TVAV lead wire (purple).

- When shutter is operative with either lead wire disconnected, the lead wires were shorted to each other.

Vref check

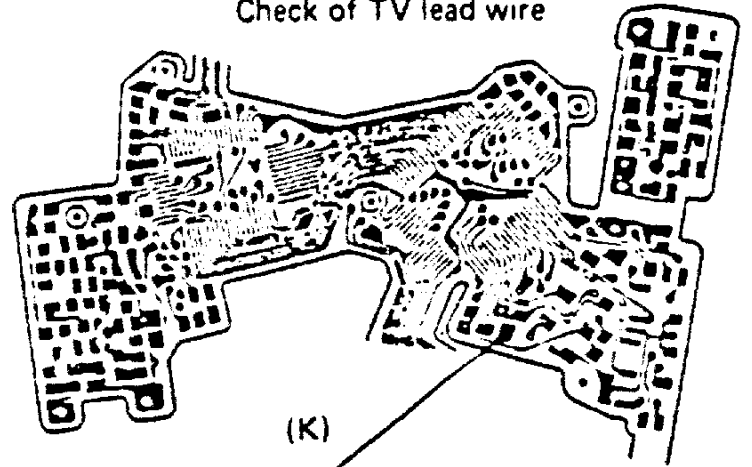


(H)  Crushed by top cover



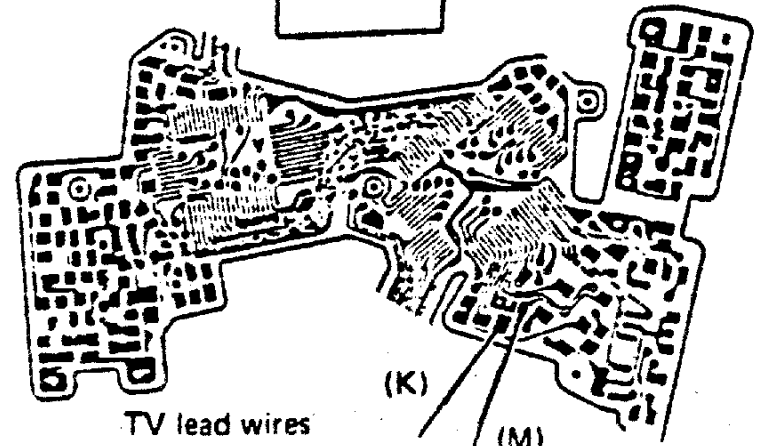
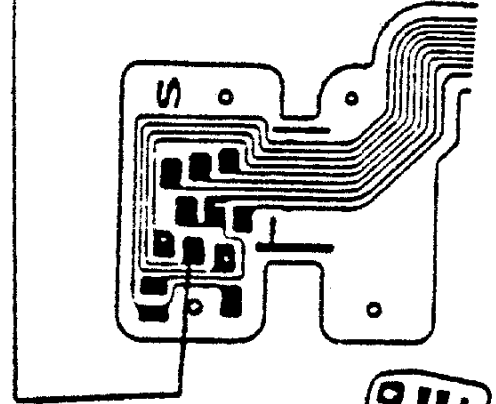
Shorted to camera body

Check of TV lead wire



(K)

← Crushed by top cover

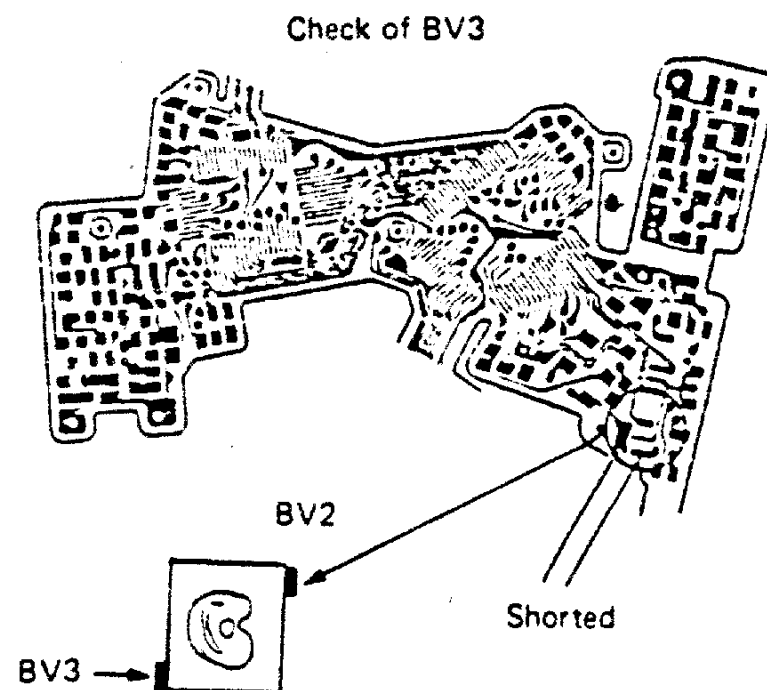


TV lead wires
shorted to each
other

Shorted

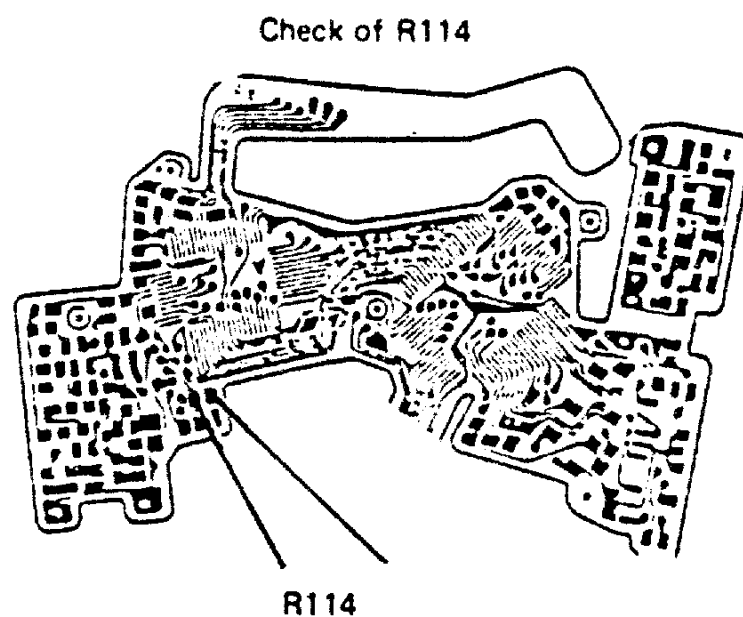
(2) BV circuit defective

- BV3 terminal shorted to (–) terminal



(3) System clock circuit defective

- LED lights.
- Resistor for CPU system clock
- R114 broken or soldering defective
 - When shutter is inoperative with no indication
Set camera in B.C. mode.
When LED lights, R114 is broken or soldering is defective.
 - When R114 is shorted, shutter is inoperative though indication is provided.



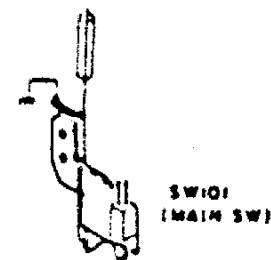
4. Shutter operates abnormally

- Shutter speed is too high at low level in AUTO and MANUAL modes
- B.C. system is inoperative

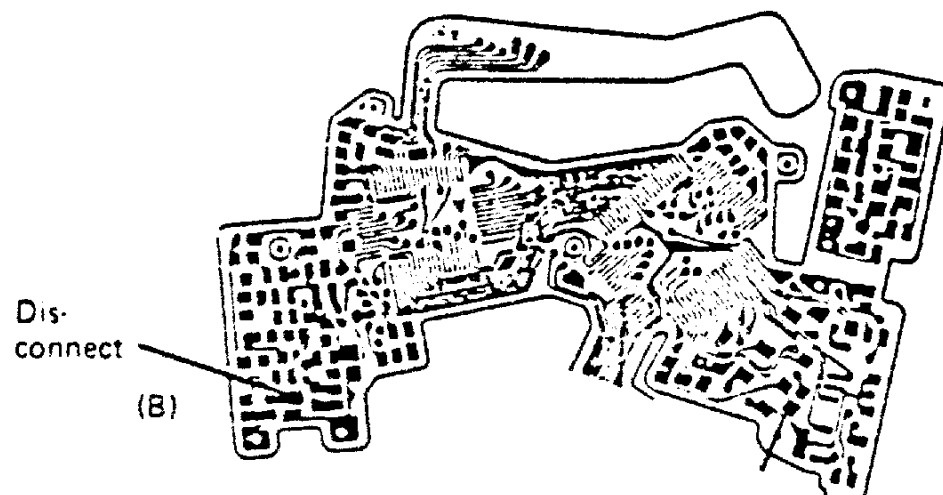
(1) M. SW shorted to camera body

- Irritating noise made by film winding
- Disconnect M. SW lead wire (black). When indication is provided, M. SW is shorted to camera body.

Check of shorting between M. SW and camera body



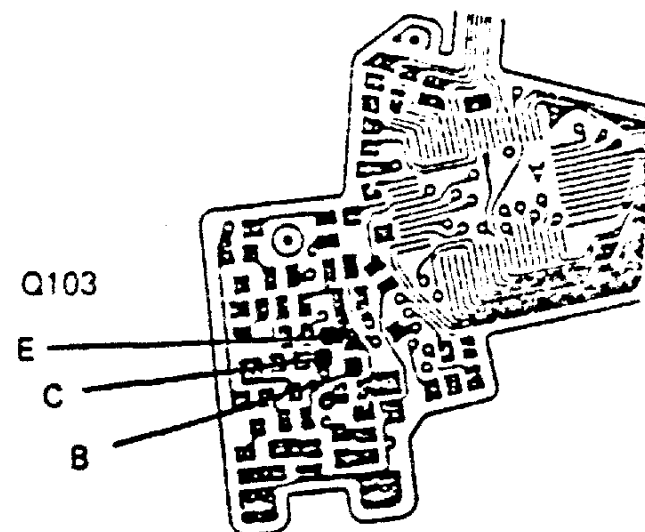
Disconnect M. SW lead wire (black)



(2) Shorting of Q103 E-C

- Shutter speed too low in AUTO and MANUAL modes.
- Shutter locked occasionally.
- Disconnect Q103. When indication is provided, Q103 is defective.
- Check soldering of Q103 E-C.

Check of Q103 shorting



Note: Indication is not provided when trigger signal is 0 V (low possibility).

(2) All Items Indicated

- All types of data are displayed simultaneously.
- Almost all types of data are displayed.
- This symptom is mostly traced to defective LCD·D circuit or LCD·D IC.

• Preparations

1. Measuring instruments: a. Digital voltmeter or circuit tester
b. Synchroscope
2. Mode: a. AUTO or MANUAL (lens should be attached in position)
3. Light LCD indicator.

- Do not set shutter dial at B or mecha. 1/60.

1. When shutter operates abnormally in AUTO or MANUAL mode.

CPU IC defective

- When shutter operates abnormally when it is released in AUTO or MANUAL mode
- This trouble is generally unconceivable.

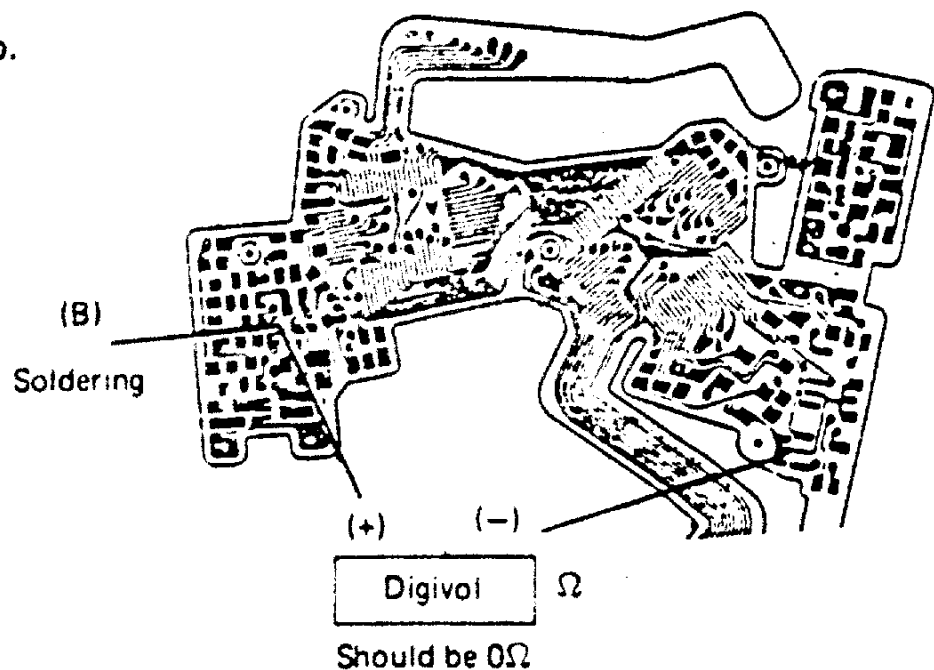
2. When shutter operates normally

- Release shutter and make sure that it can operate normally in both AUTO and MANUAL modes.

• LCD·D circuit defective

(1) (-) power line broken

- When (-) power is not supplied, almost all types of data are indicated faintly.
- Improper soldering of LCD·D IC pin No. (4), (36) or (59).



(2) R301 broken

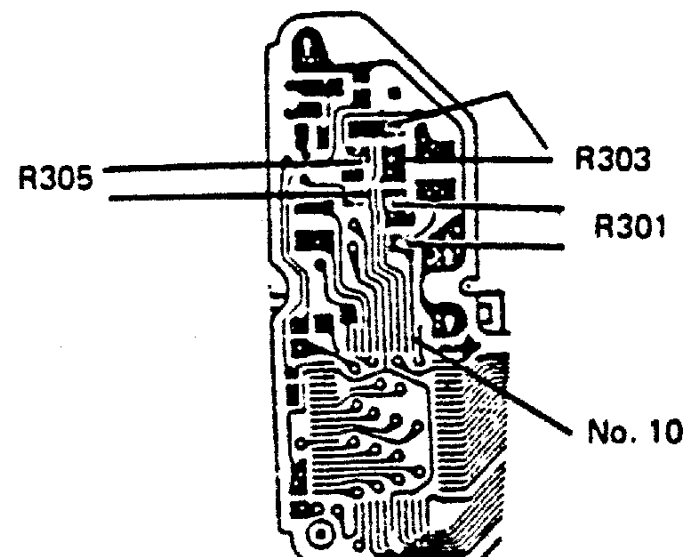
- All the items are displayed when R301 is broken.

(3) Improper soldering of LCD·D IC leg No. 10

- All the items are displayed faintly when no input voltage is applied to IC leg No. 10.

(4) R305 broken or shorted

- All the items are apt to be displayed when R305 is broken or shorted.



(3) Indication Unreliable (unnecessary items displayed)

- Items more than necessary are displayed though all the items are not indicated.
- Indication unstable or varied upon mode switching.
- This type of trouble mostly traced to defective LCD·D circuit or LCD·D IC or LCD.
- When shutter (manual mode) operates abnormally in addition, CPU is defective.

• **Preparations**

1. Measuring instruments: ○ Digital voltmeter or circuit tester
○ Synchroscope
2. Mode: ○ AUTO or MANUAL (lens should be attached in position)
3. Light LCD indicator.

- Do not set shutter dial at B or mecha. 1/60.

1. Indication provided. All the other characters and symbols are indicated very faintly.

- R301 shorted

2. Indication provided. All the other characters and symbols are indicated faintly.

- R302, R303 or R304 shorted
- R304 broken

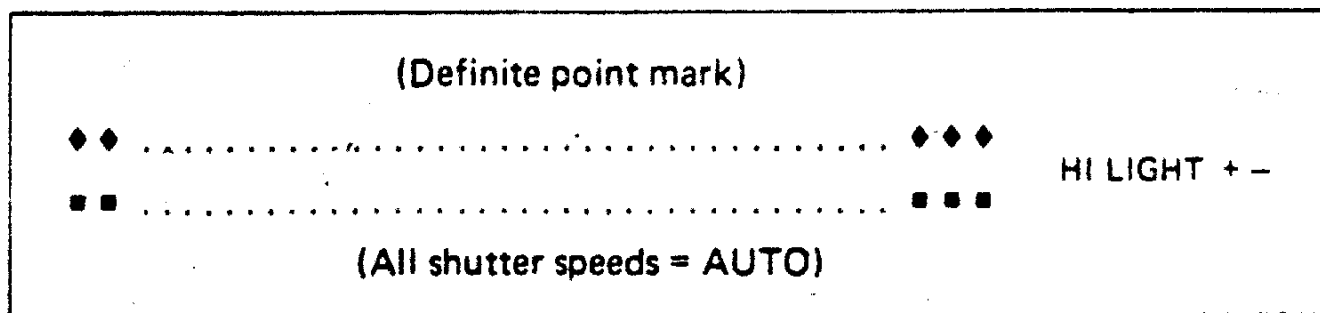
3. Indication provided. All the other characters and symbols are indicated clearly.

- R301, R302 or R303 broken

4. Indication unreliable

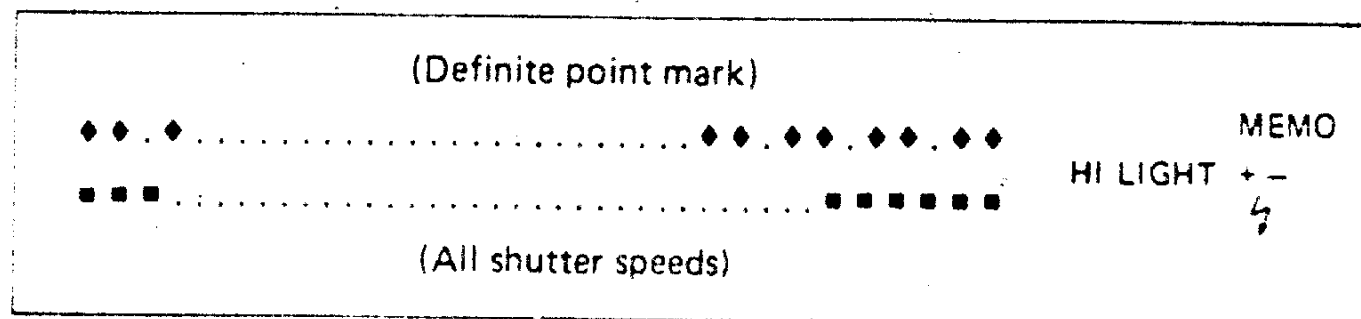
(1) Resistors shorted to each other or broken

(a) R301 and R302 broken (soldering defective) = Improper soldering of IC leg No. 9



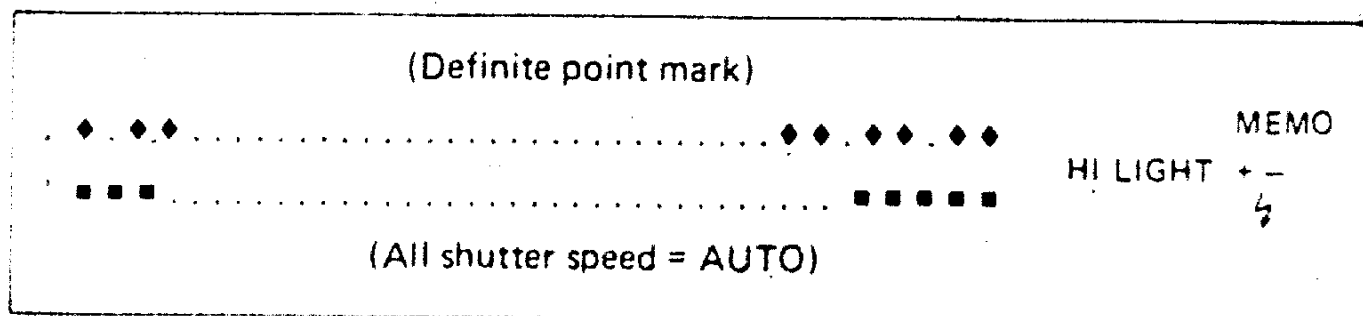
- Dot (◆) is indicated.
- HI LIGHT is indicated.

(b) R302 and R303 broken (soldering defective) = Improper soldering of IC leg No. 8



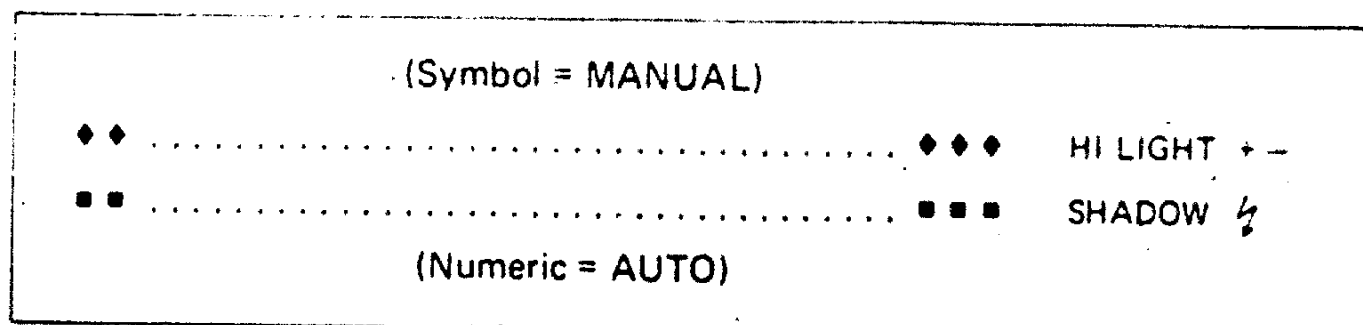
- All dots but every third one are indicated at the same time.
- HI LIGHT, MEMO, + - and ⚡ are indicated faintly.

(c) R301, R302 and R303 broken



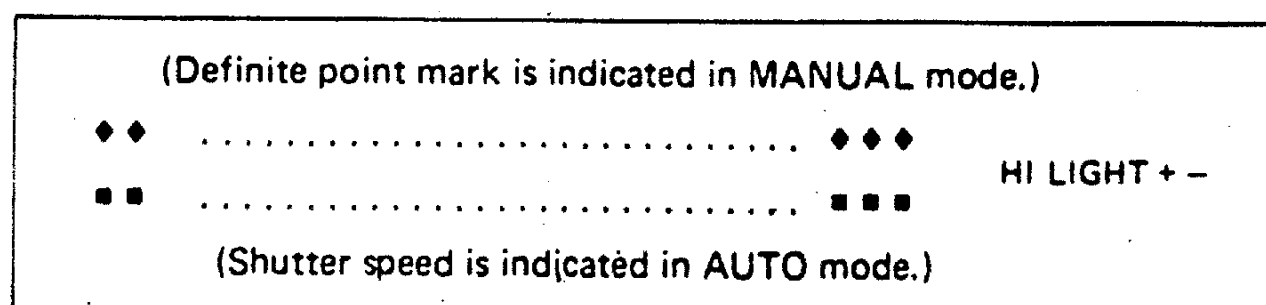
- All dots but every third one are indicated at the same time.
- HI LIGHT, MEMO, + - and ⚡ are indicated.

or



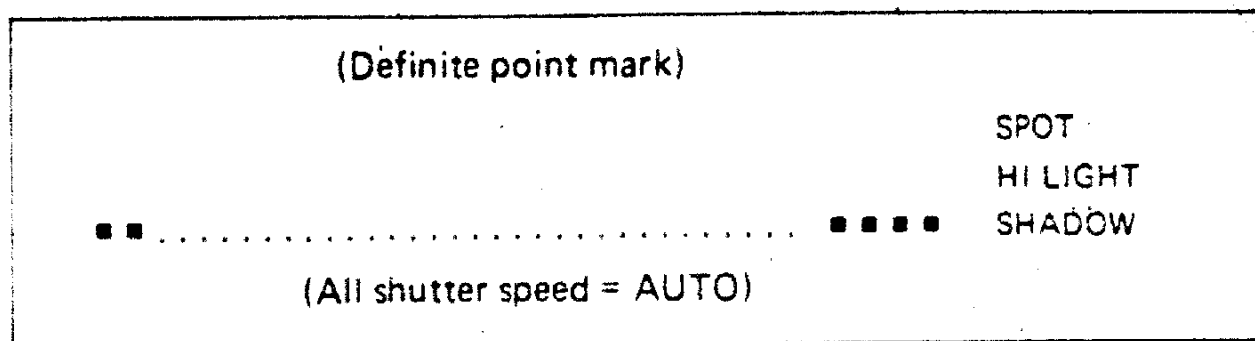
- Dot (♦) is indicated.
- HI LIGHT, + - are indicated.
- SHADOW and ⚡ are indicated faintly.

(d) R303 and R304 broken (improper soldering) = Improper soldering of IC leg No. 7



- Dot is indicated.
- HI LIGHT is indicated.
- All items are indicated faintly.

(e) R302 and R304 broken (improper soldering)



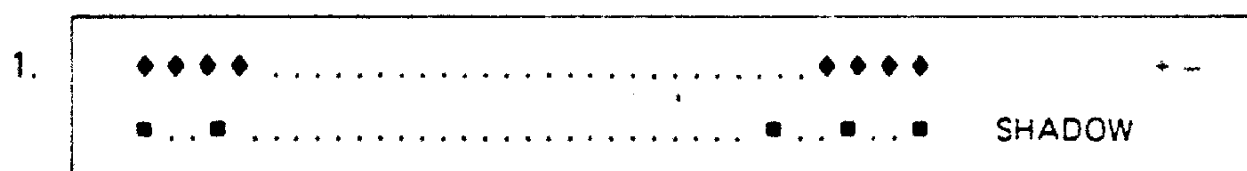
- SPOT, HI LIGHT and SHADOW indicated rather clearly.
- All items are indicated faintly.

(f) R301 and R304 broken (improper soldering)

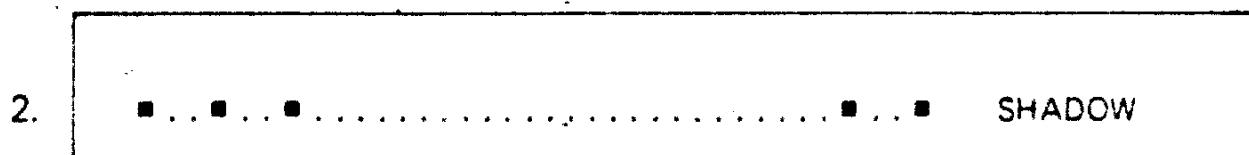
- All items are indicated.

(2) Power supply (—) shorted to resistor or broken

(a) Power supply (—) line and R301 broken (improper soldering)



- All items are indicated faintly.
- Dot, bar, SHADOW, + — are indicated clearly.



- All items are indicated faintly.
- Bar and SHADOW only indicated clearly.

3. Normal operation in AUTO and MANUAL modes

- Necessary items are dark and not clear.
- All items are indicated faintly.

4. Indication variable upon mode switching

- Indications are very dark.

(b) Power supply (—) and R302 broken or soldering defective

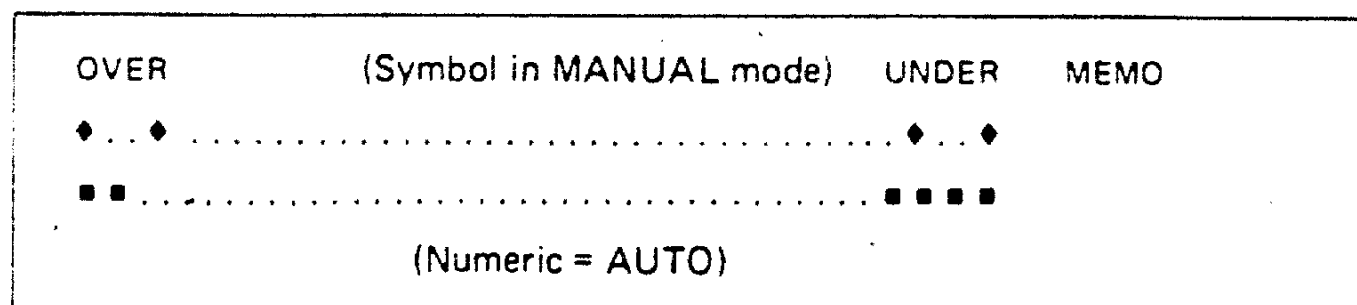
- Necessary items are indicated clearly.
- All the other items are indicated faintly.

(c) Power supply (—) and R303 broken or soldering defective

- Necessary items are indicated clearly.
- All the other items are indicated faintly.

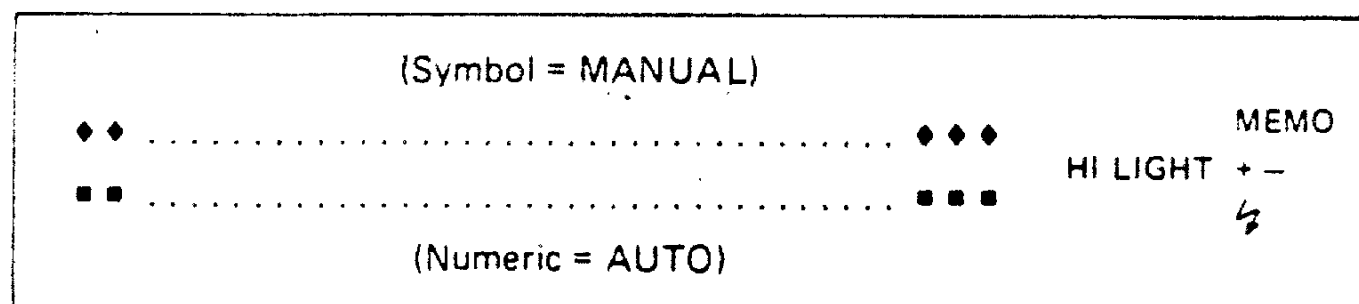
5. Examples of other symptoms

(1) R302 shorted and R304 broken



- OVER, UNDER and MEMO are indicated faintly.
- Dots (♦) are indicated at every third positions as shown above.

(2) R302 broken and other troubles



- Dot (♦) is indicated.
- +, - and ⚡ are indicated.
- HI LIGHT and MEMO are indicated faintly.

6. Improper soldering of LCD·D IC Leg

(1) Improper soldering of IC leg No. 7

- Same symptom as that caused by broken R303 or R304

(2) Improper soldering of IC leg No. 8

- Same symptom as that caused by broken R302 or R303.

(3) Improper soldering of IC leg No. 9

- Same symptom as that caused by broken R301 or R302.

(4) Improper soldering of IC leg No. 10

- Indication normal
- However, necessary items are not so clear and all the other items are indicated faintly.

7. Power supply (—) line broken

- All items are indicated
- or
- Necessary items are not clear and all the other items are indicated faintly.
- Indication faint and unreliable.

8. LCD·D IC defective

- IC is defective when LCD·D circuit is normal.

9. LCD defective

- Replace LCD.

(4) Some Items are Not Indicated (Too Faint)

- Lack of some indication items is traced to defective input stage or output stage (display side).
- Specific characters and symbols faint also in other modes (though visible)
- Defective input stage causes malfunction of shutter.
- Malfunction of output stage is traced to defective contact for LCD-D output and LCD.

• Preparations

1. Measuring instruments:
 - Digital voltmeter
 - Synchroscope
2. Mode:
 - AUTO or MANUAL (lens should be attached in position)

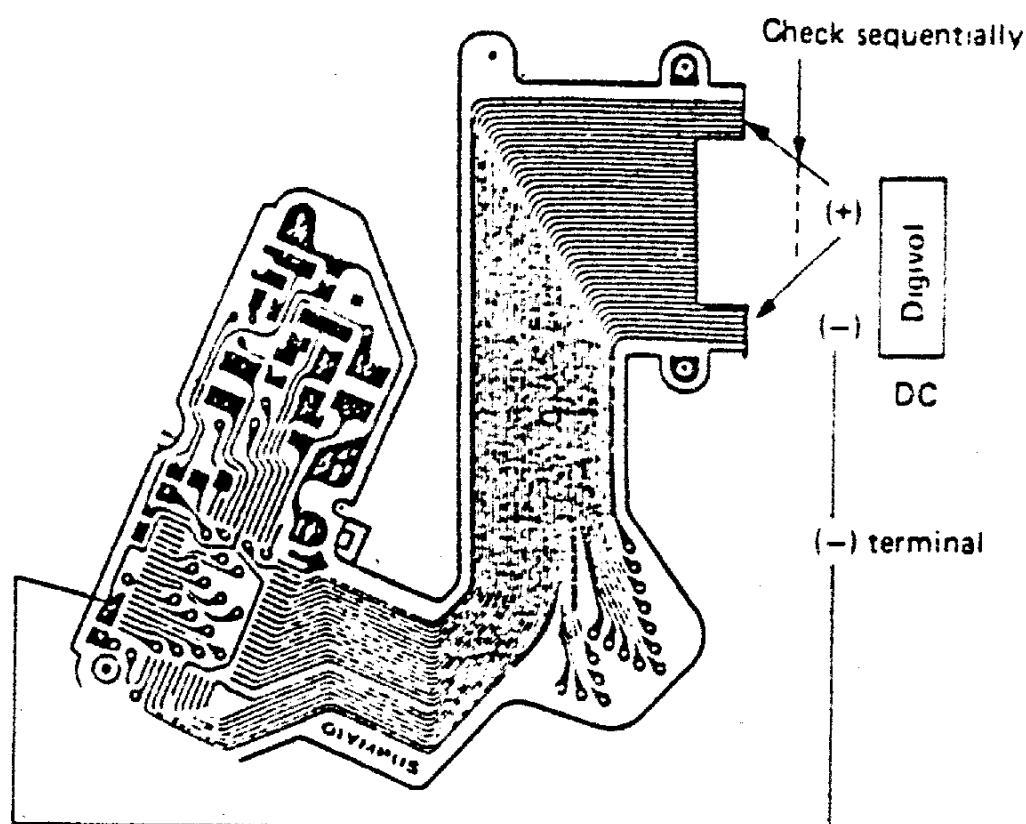
- Should be checked at a speed other than B. mecha. 1/60.

1. When shutter operates normally

- Output stage defective
- Lack of some indication items can be traced to defective IC or abnormal output from the IC (LCD-D circuit OK).

• Check output voltage from LCD-D.

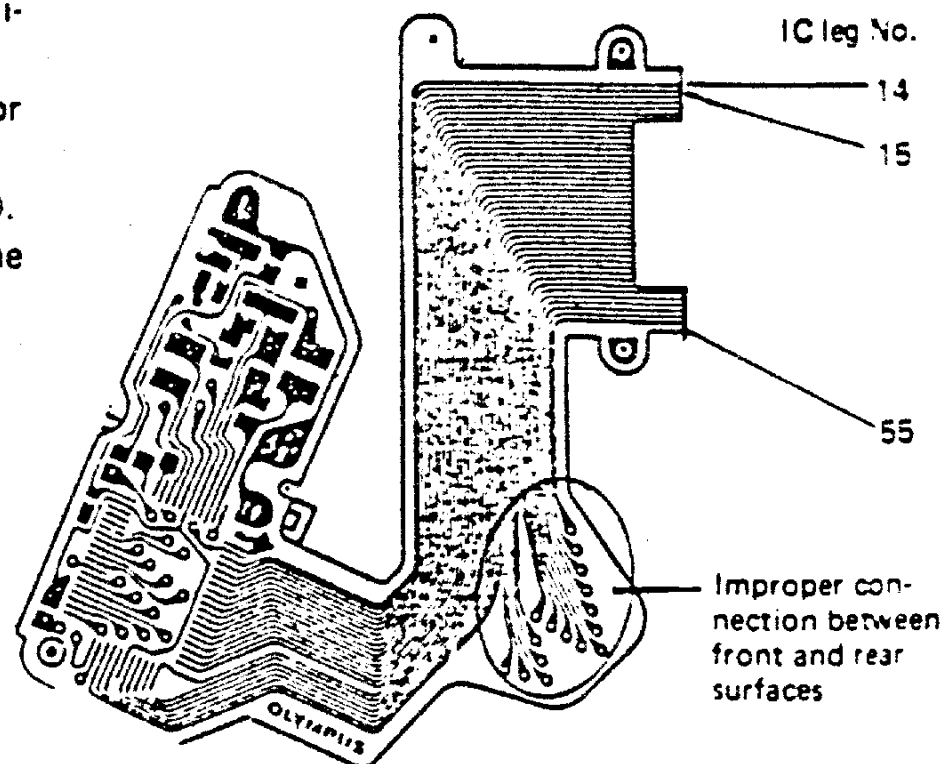
- Disconnect LCD.
- Measure voltage on each terminal.
- Normal voltage on each terminal
DC 3.6 to 4.0 V



(a) When no voltage is provided to some terminal

1. Improper soldering of LCD-D IC for that terminal.
2. Pattern broken between IC leg and LCD.
3. When 1 or 2 mentioned above is not the cause, LCD-D IC is defective.

- Resolder IC leg.
- Repair broken pattern.
- Indication items made faint by broken leg.



IC leg No.	Indication items (faded or lacked character and symbol)
14	+ - HILIGHT ♦♦♦.....♦
15	⚡ SHADOW ■■■.....■
16	1 ~ 2000, OVER, OVER +, , ▷ ◁ , -, UNDER, SPOT, MEMO
17	MEMO, + -, ⚡
18	SHADOW, HILIGHT, SPOT

Leg No.	Indication	Leg No.	Indication	Leg No.	Indication	Leg No.	Indication
19	1 sec.	29		39	▶ ◀	49	
20	UNDER	30		40	▶ 60 ◀	50	1000
21		31	15	41	125	51	+
22	2	32		42	▶	52	
23		33		43		53	2000
24		34	30	44	250	54	OVER
25	4	35		45		55	OVER
26	-	36		46			
27		37	◀	47	500		
28	8	38	60	48			

(b) When outputs provided to all terminals

1. Rubber connector defective Replace
2. LCD defective Replace

2. Shutter operation abnormal

- Operates though abnormally

(1) No indication in MANUAL mode

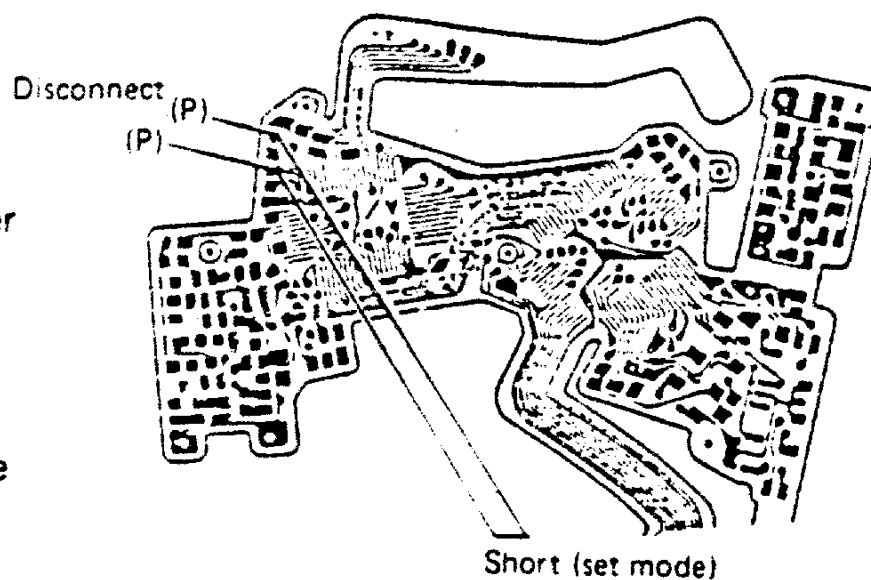
- Shutter inoperative

(a) Indication provided in MANUAL mode after disconnecting the following lead wire?

- Disconnect pink lead wire.
- Short the terminal with tweezers.

1. Indication provided in MANUAL mode

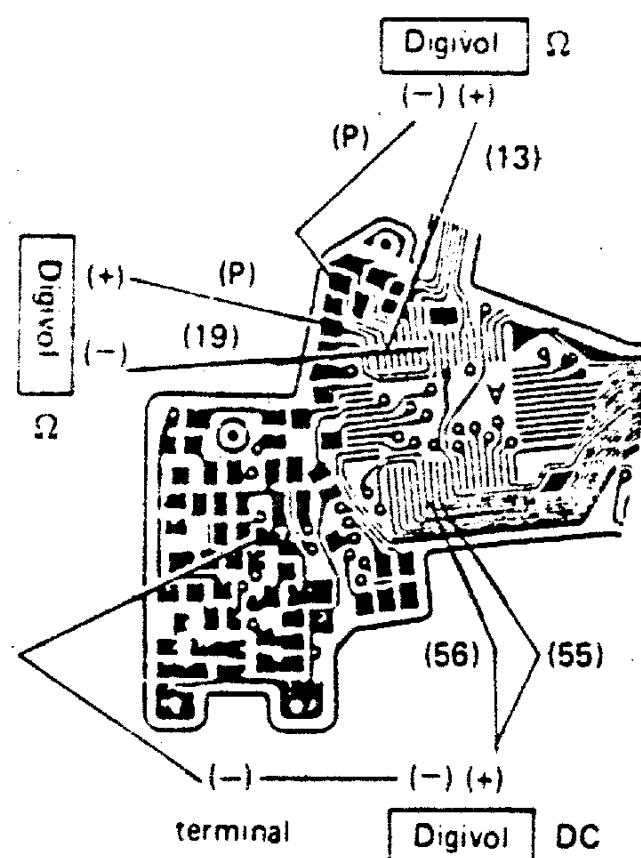
- SV circuit board SW defective
- (P) lead wire defective or desoldered



2. No indication in MANUAL mode

Check the following items:

- Pattern broken between (P) and CPU No. 13
- Pattern broken between (P) and CPU No. 19
- Improper soldering of CPU leg No. 13 or 19



(b) HA and HB signal provided?

CPU No. 55 → H = 3 V

CPU No. 56 → H = 3 V

When HA and HB not provided

↓
CPU IC defective

When HA and HB provided

↓
Indication obtainable.

(2) SPOT not indicated

- Indication normal in MANUAL and AUTO modes.
- SPOT not indicated and shutter operates abnormally (average exposure) in SPOT mode.

(a) Indication obtained after detaching top cover?

- Disconnect gray and red lead wires from top cover.
- Short terminals with tweezers.

1. When SPOT is indicated

Check the following items

- Wire breakage between top cover and M circuit board
- U circuit board defective
- SW107 defective
- For checking pattern measure resistance with a digital voltmeter (should be 0Ω).

2. When SPOT is not indicated

Check the following items

- Pattern broken between (R) and No. 16
- Pattern broken between (H) and No. 17
- Defective soldering of CPU No. 16 and No. 17

(b) HA and HB signals provided

CPU No. 55 → L 0 V

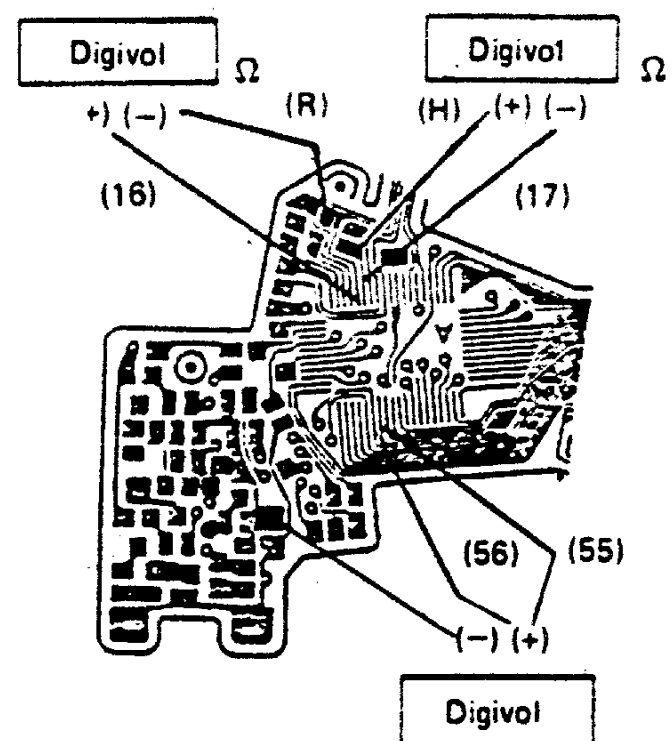
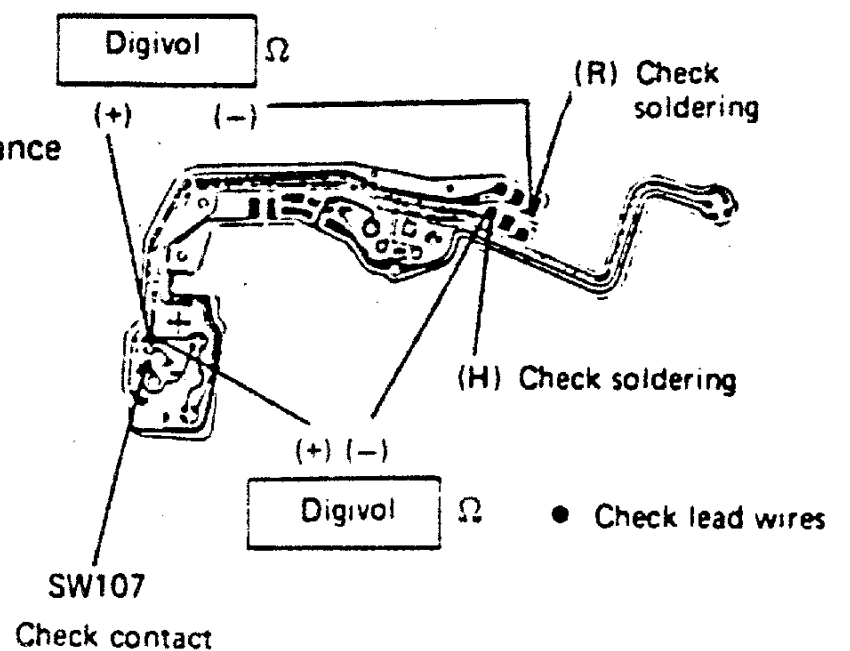
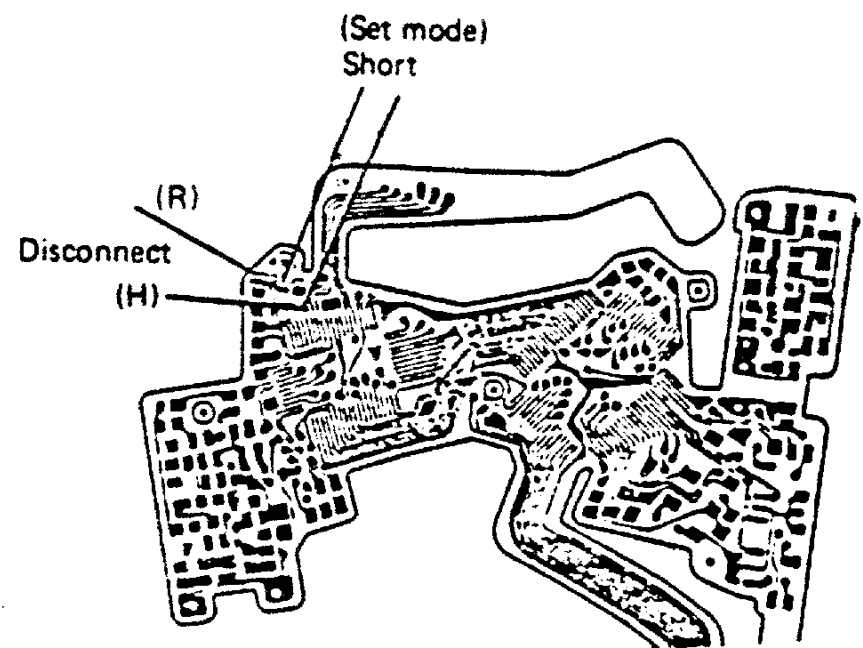
CPU No. 56 → H 3 V

When HA or HB not provided

CPU IC defective

When HA and HB provided

Indication obtainable.



(3) HI LIGHT not indicated

- Normal operation in SPOT mode
- HI LIGHT not indicated, bar indication immovable and shutter speed invariable

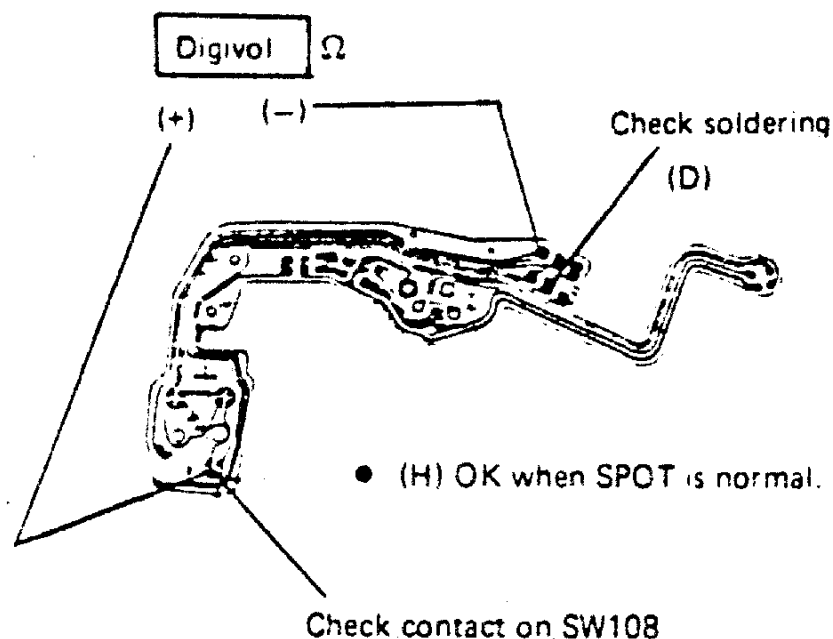
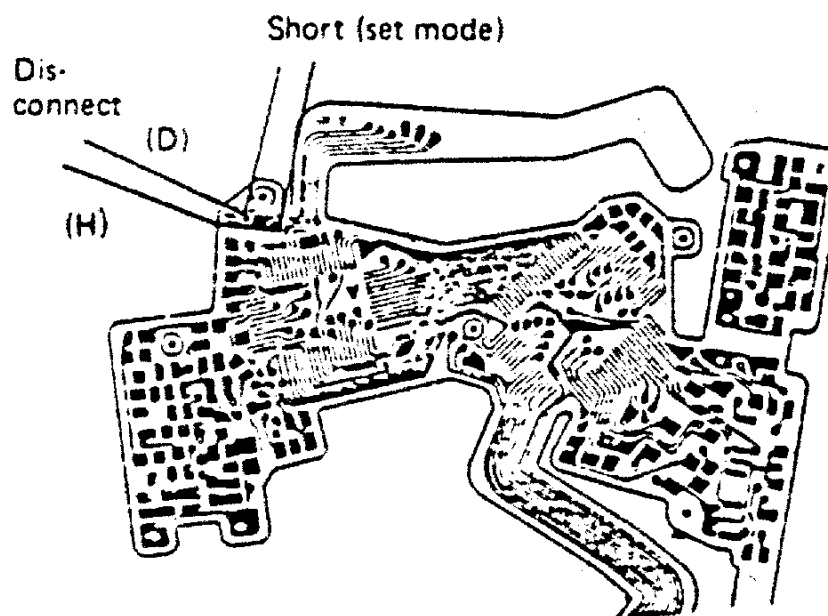
(a) HI LIGHT indicated after detaching top cover?

- Disconnect orange and gray lead wires from top cover.
- Short terminals with tweezers. (SPOT should be kept indicated.)

1. When HI LIGHT is indicated

Check the following items

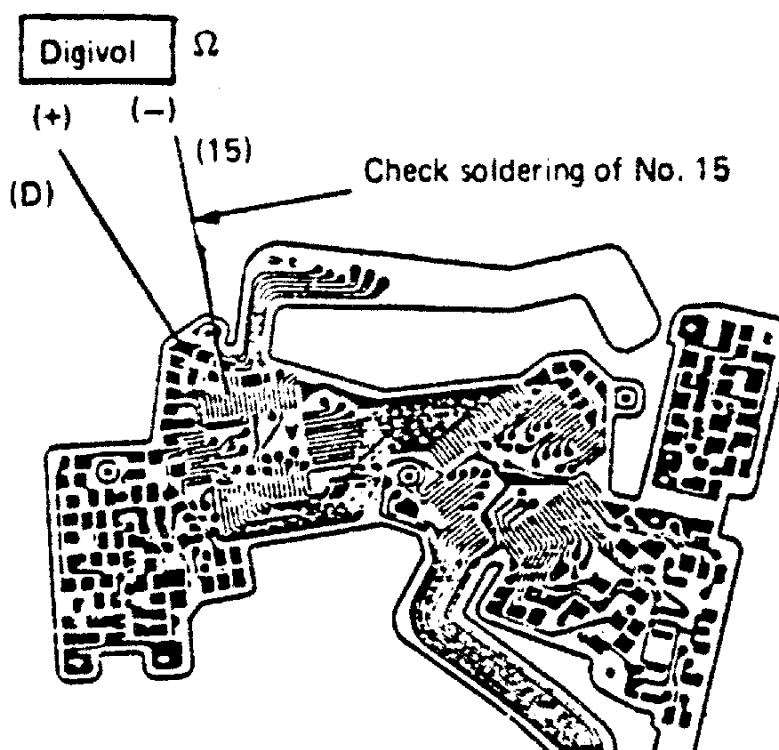
- Wire breakage between top plate and M circuit board
- U circuit board
- SW108
- For checking pattern, measure resistance with a digital voltmeter (should be 0Ω).



2. When HI LIGHT is not indicated

Check the following items.

- Pattern breakage between (D) and No. 15
- Soldering of CPU No. 15



(b) When indication is still abnormal

CPU IC defective

3. SHADOW not indicated

- Normal operation in SPOT mode
- SHADOW not indicated, bar indication immovable and shutter speed invariable

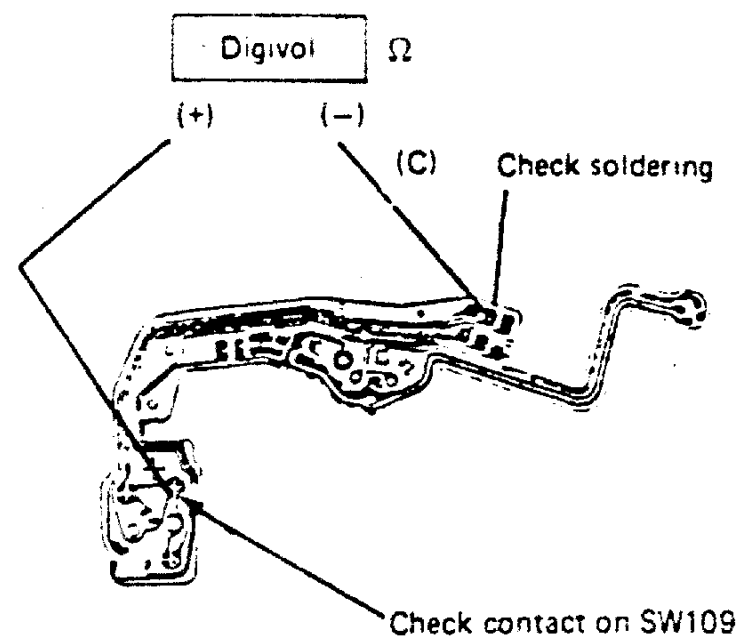
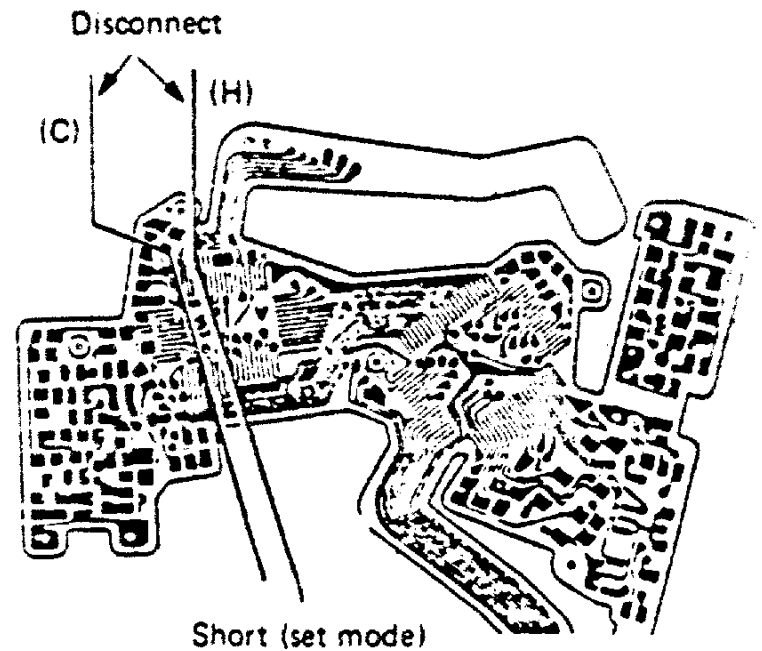
(a) SHADOW indicated after detaching top cover?

- Disconnect brown and gray lead wires from top cover.
- Short terminals with tweezers.
(SPOT should be kept indicated.)

1. When SHADOW is indicated

Check the following items

- Wire breakage between top cover and M circuit board
- U circuit board
- SW109
- For checking pattern measure resistance with a digital voltmeter (should be 0Ω).



- (H) OK when SPOT is normal

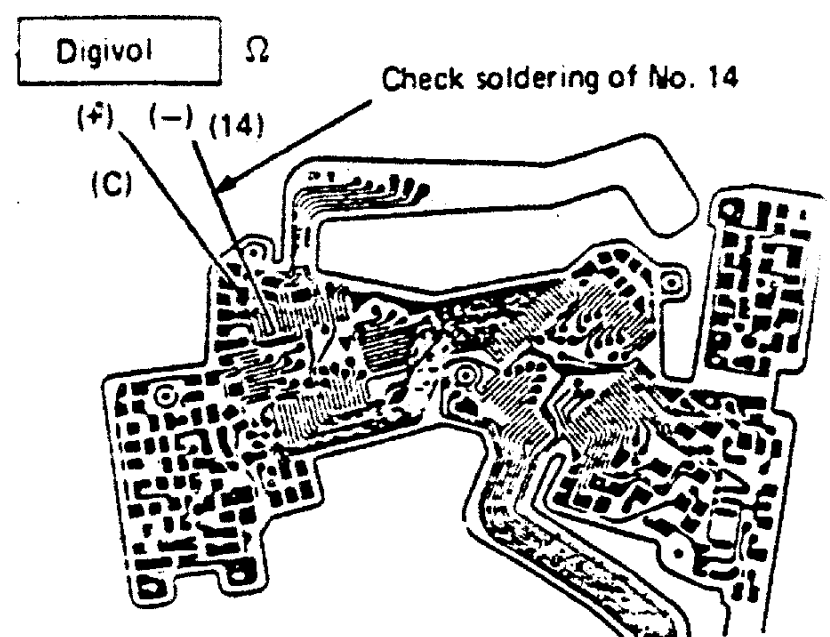
2. When SHADOW is not indicated

Check the following items

- Pattern breakage between (C) and No. 14
- Soldering of CPU No. 14

(b) When indication is still abnormal

CPU IC defective



(4) MEMO not indicated

- Shutter operation normal
- MEMO is not stored when it is set and held.

(a) MEMO indicated after detaching top cover?

- Disconnect brown and yellow lead wires from top cover.
- Short terminals by using tweezers.

1. When MEMO is indicated

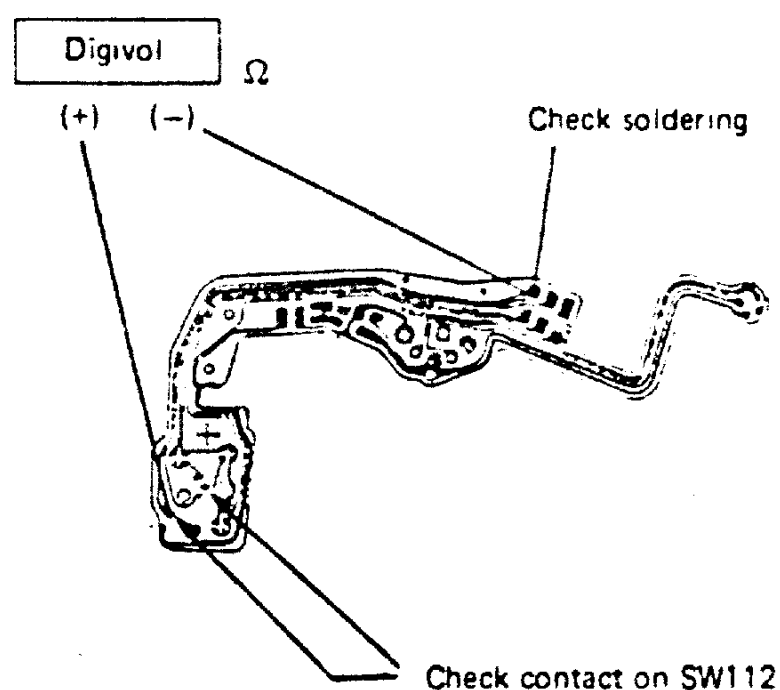
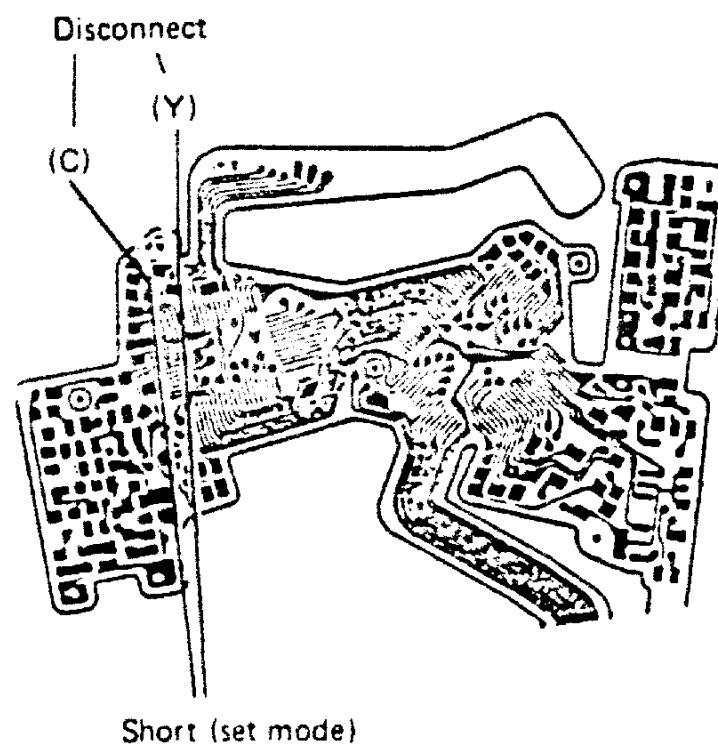
Check the following items

- Wire breakage between top cover and M circuit board
- U circuit board defective
- SW112
- For checking pattern, measure resistance with a digital voltmeter (should be 0Ω).

2. When MEMO is not indicated

Check as follows:

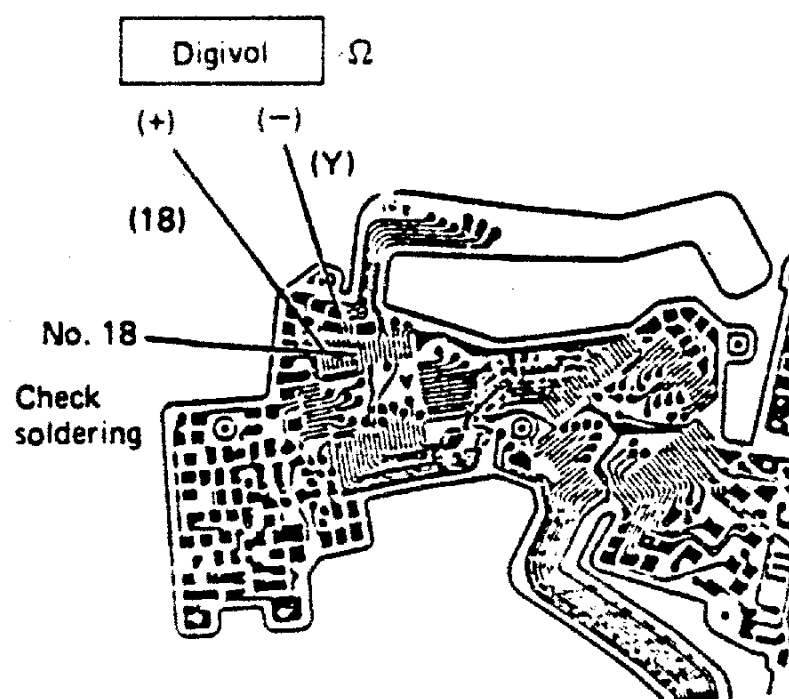
- CLR performed?
- When CLR is not performed, check pattern for breakage between (Y) and No. 18.



(b) When CLR is normal

CPU IC defective

Note: When SHADOW is not indicated, check pattern for breakage between (C) and No. 14.

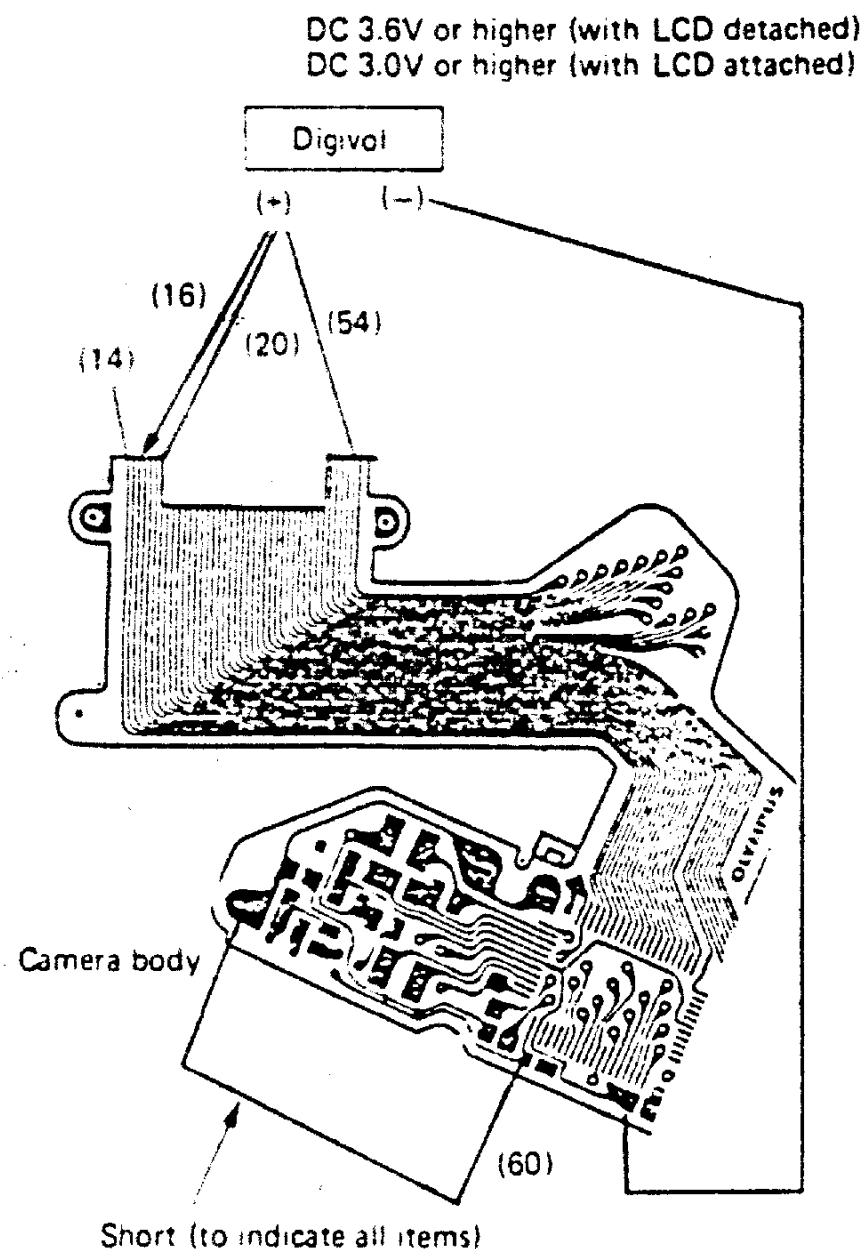


(5) Flash OVER/UNDER not indicated

- Normal operation in AUTO mode
- Flash operates normally.
- Set camera in AUTO mode and attach flash in position.
- Set flash in OVER and UNDER condition. Check.

(a) Indication circuit OK?

- Check LCD for its normal operation.
Apply positive voltage to LCD·D No. 60.
OK when all items are indicated.
- Check LCD·D for its normal operation.
OK when all the other items are indicated normally.
- Check LCD·D IC leg and pattern for detect or breakage.
Output provided to IC No. 16, No. 20 and No. 54?
DC 3.6 V or higher: OK
3 V or higher with LCD attached: OK



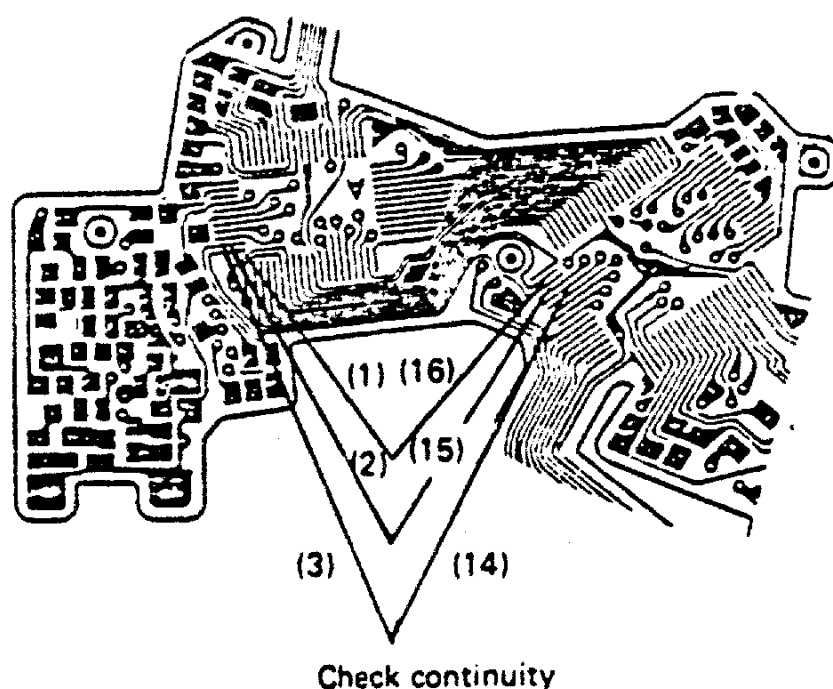
- When indication circuit OK

(b) Check whether or not B.C. system can operate normally and PCV sound is switchable from 2 kHz to 4 kHz in SELF mode.

1. When B.C. mode cannot be set and PCV sound is not switchable in SELF mode.
 - CPU leg No. 1, 2 or 3 defective or pattern broken.

2. When B.C. normal and PCV sound normal in SELF mode.

CPU or bipolar IC defective

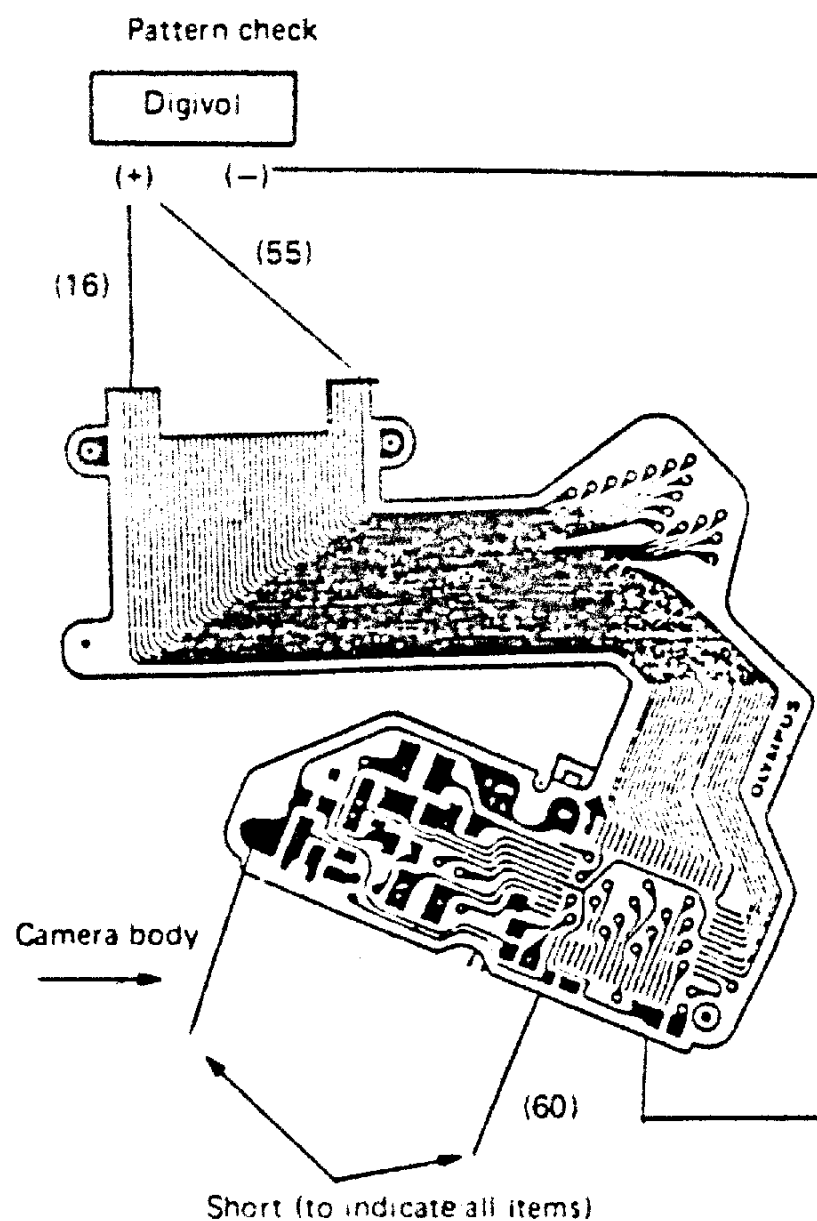


(6) OVER exposure (shutter time) not indicated

- EE accuracy satisfies standard.
- Normal operation in MANUAL and AUTO modes.
- Indication circuit normal?
- Check whether or not LCD is normal.
Apply positive voltage to LCD·D No. 60.
OK when all items are indicated.
- LCD·D normal?
OK when other two or three items are indicated.
- Check LCD·D IC leg and pattern for defect and breakage.
Output provided to IC pins No. 16 and No. 55?
At least 3.6 V
At least 3 V with LCD attached in position

• When indication circuit OK

CPU IC defective

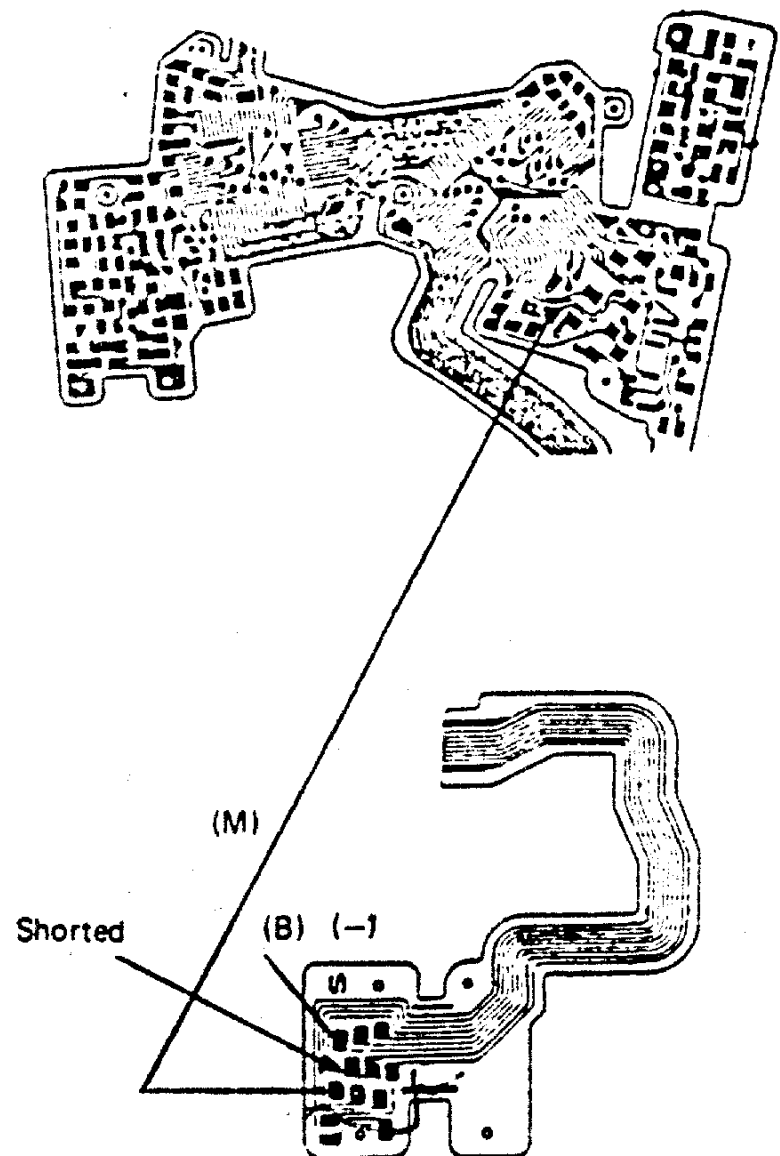
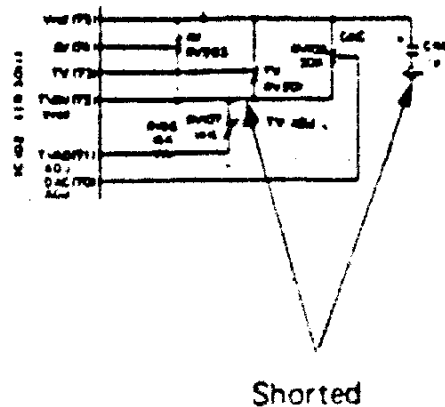


(5) Bar Indication Not Provided

- Bar indication fixed on low luminance side.
- When shutter operates normally (accuracy satisfies standard) in AUTO and MANUAL modes, indication circuit is defective.
- Preparations
 1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchro scope
 2. Mode:
 - AUTO or MANUAL (lens should be attached in position)
 3. LCD should be kept indicated.
- Shutter dial must not be set at B or mecha. 1/60.
- When shutter operates also abnormally

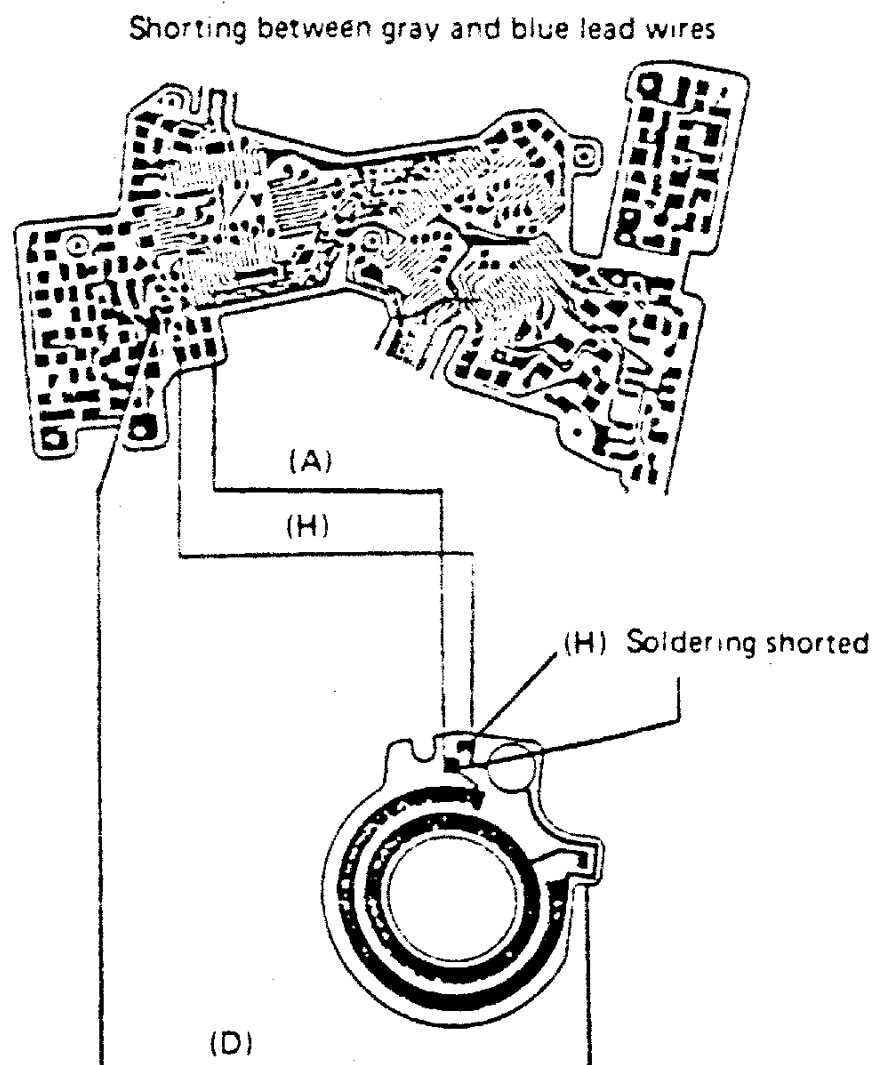
1. TV AV circuit defective

- TV AV lead wire (purple) shorted to (—) terminal.
- TV value fixed at 1/2000.
- When indication is provided after disconnecting lead wire, lead wire (purple) shorted.



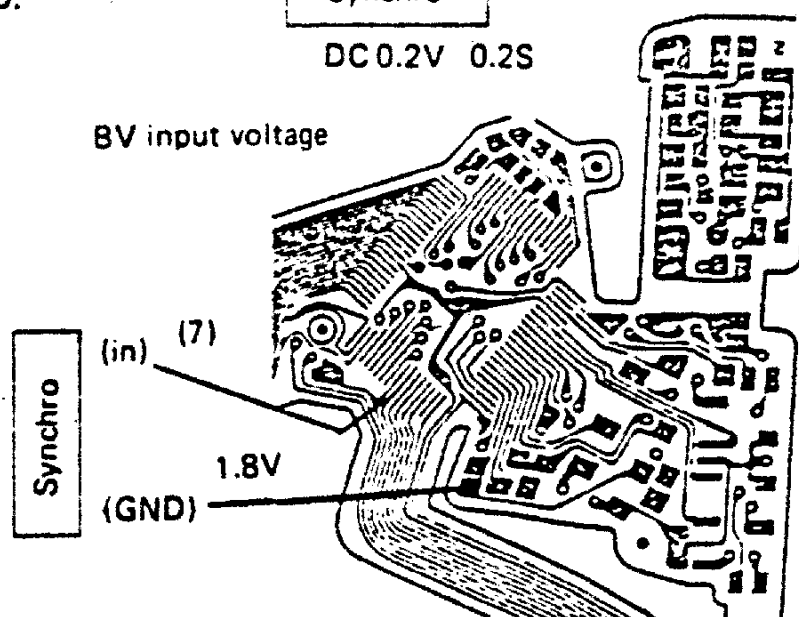
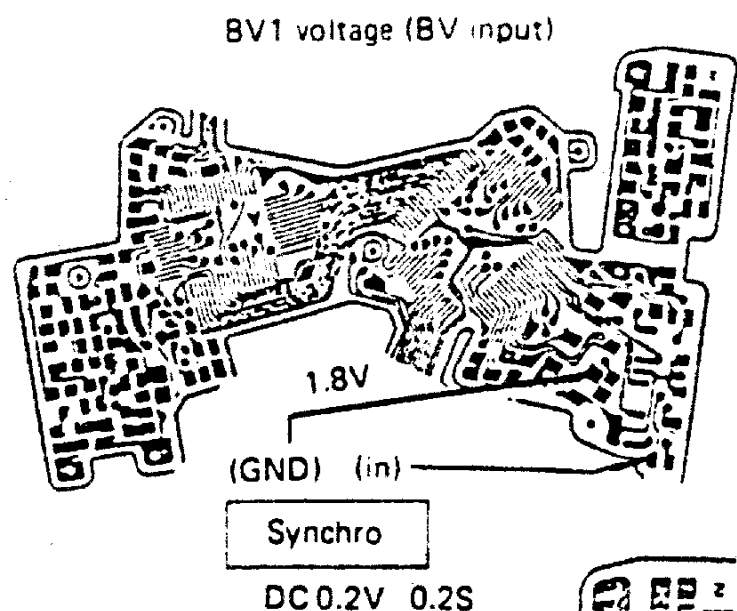
2. CV SV circuit defective

- (1) Gray lead wire shorted to blue lead wire
 - Check soldering
- (2) CV lead wire (gray) shorted to (–) terminal
- (3) EE adj. 2 lead wire (blue) shorted to (–) terminal.
 - Disconnect each lead wire.
 - When indication obtained, the lead wire is shorted.
 - (2) and (3) above are rather rare.



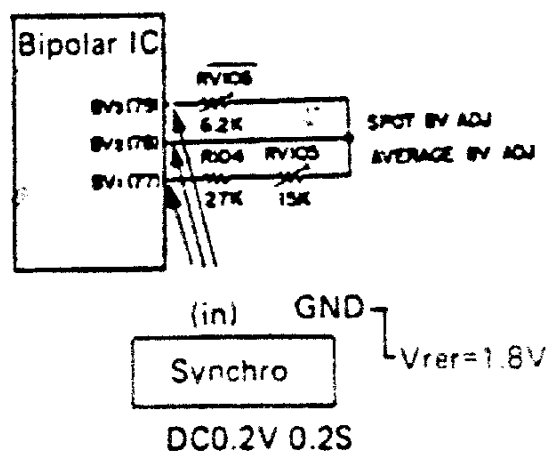
3. BV input provided?

- For simple check, measure BV voltage. It should normally be within a range of –200 to 100 mV.
- When input voltage is not provided, check voltage on pin No. 7 of bipolar IC.
- When no input voltage is not applied to IC pin No. 7.
Head amplifier or related part defective
See page E-151.
- When input voltage is applied to IC pin No. 7
BV level converter circuit defective.
See next page.

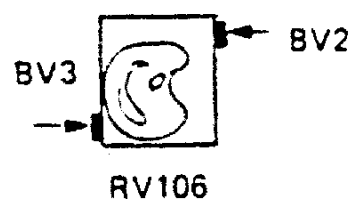
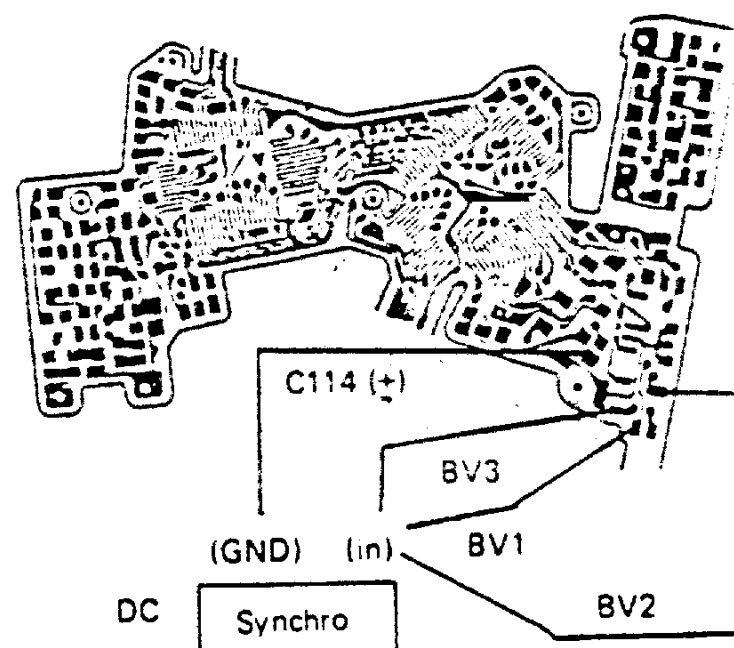


4. BV level converter circuit defective

- When BV input voltage is provided from head amplifier



Check of each BV voltage



(a) BV1 output provided?

- Vref standard voltage
-200 to -100 mV: OK

(BV output voltage is not provided from head amplifier, when BV1 input voltage is -200 mV and invariable depending on brightness.)

(b) BV2 output voltage provided?

- Vref standard voltage
+30 to +170 mV

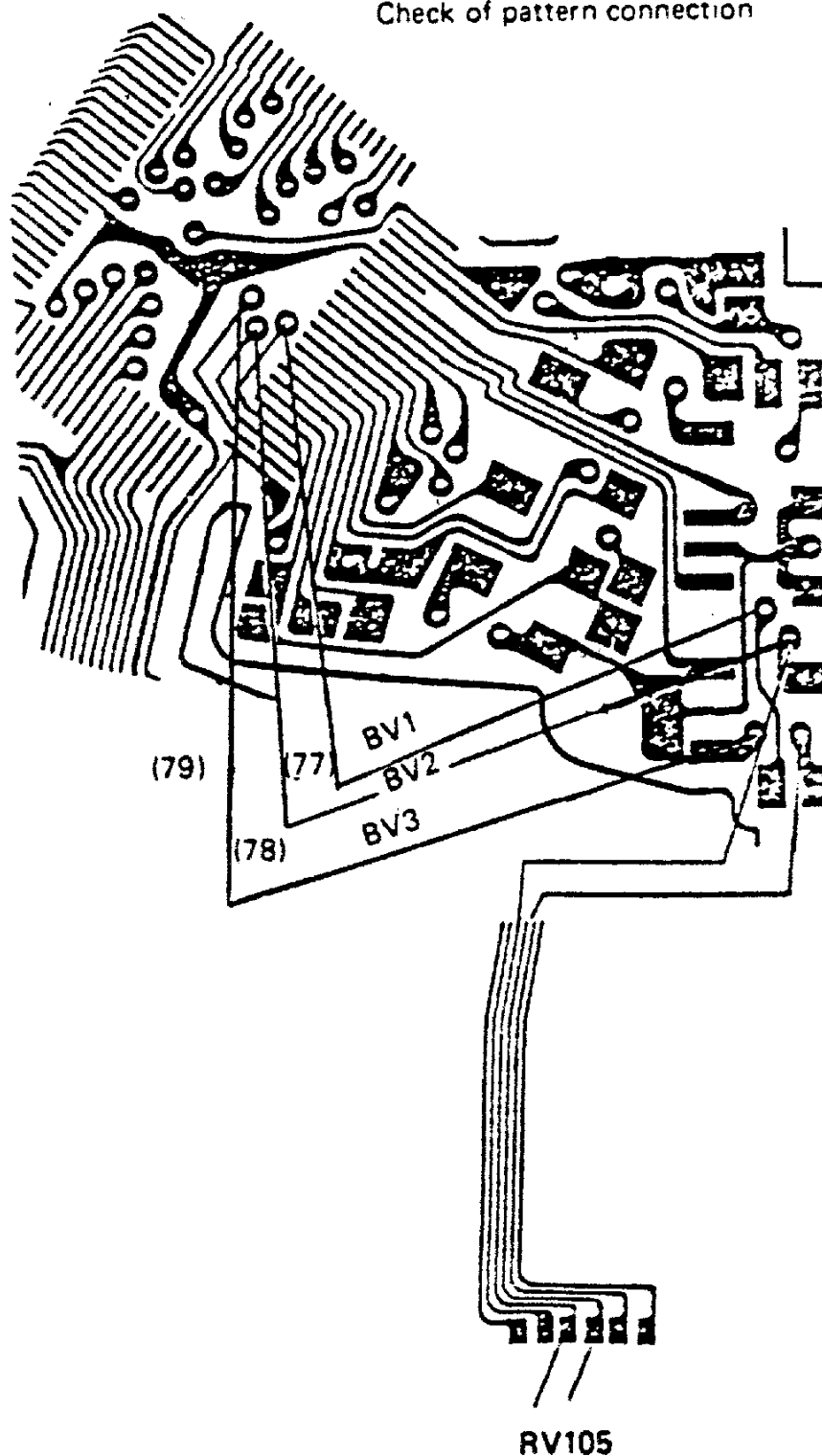
(c) BV3 output voltage provided?

- Vref standard voltage
+30 to +170 mV

(1) When each BV voltage is not provided

- Check RV105.
- Check RV106.
- Check IC leg and pattern of RV106.
- Check IC leg.

Check of pattern connection

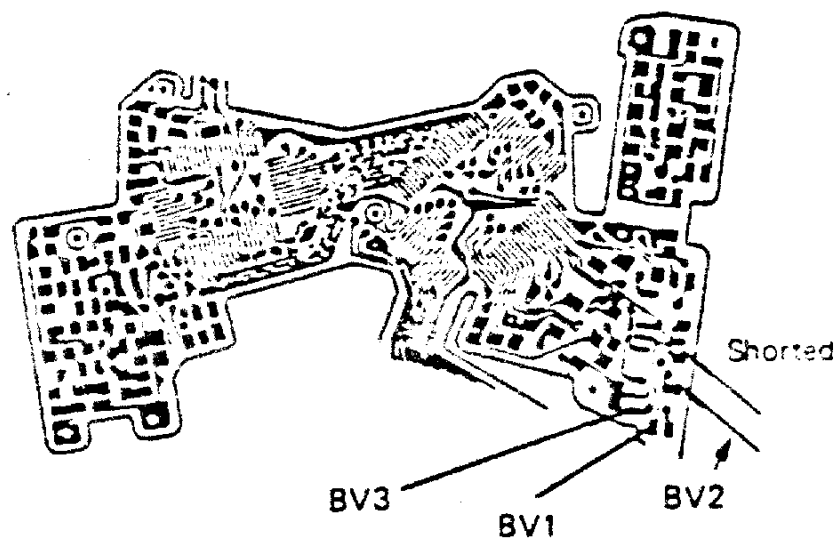


- (2) BV2 shorted to (—) terminal
• Check soldering.

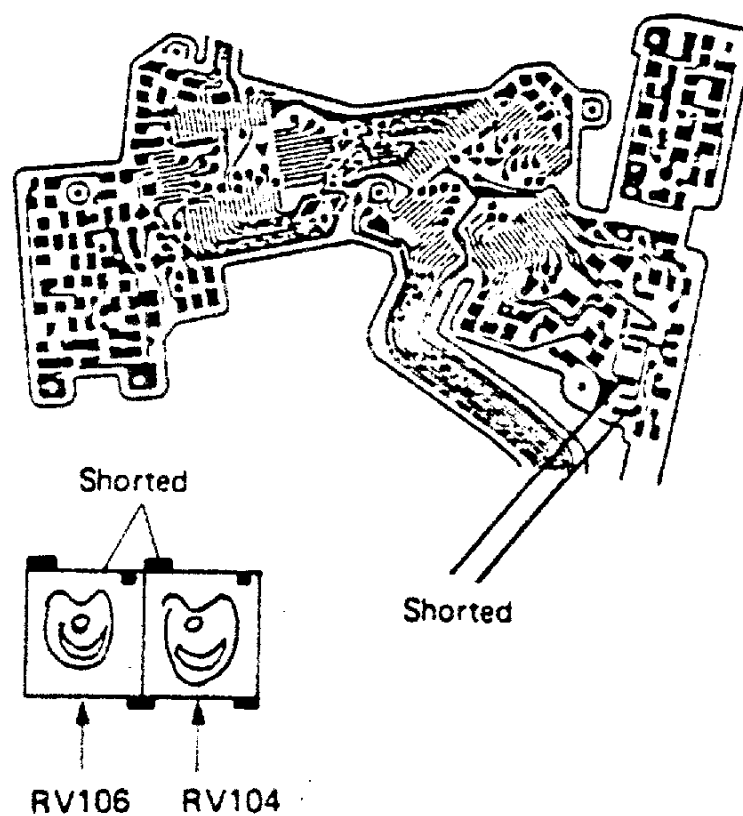
- (3) BV1 shorted to 1.8 V line
BV3 shorted to 1.8 V line
These troubles occurs rarely.

- (4) BV3 shorted to RV104
• Soldering shorted between Iref adjusting resistor RV104 and SPOT BV adjusting resistor RV106.

Check of each BV shorting

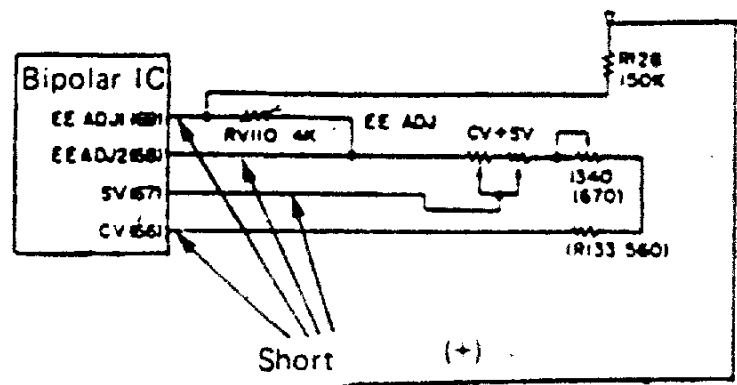


RV104 shorted to RV106

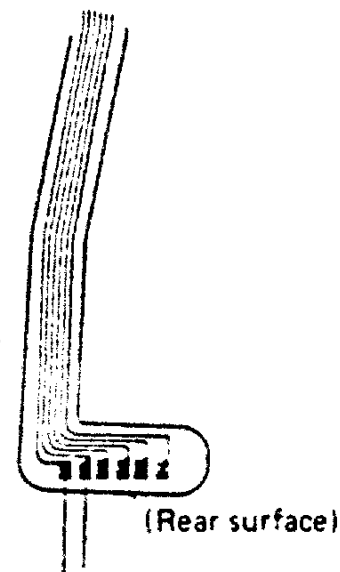
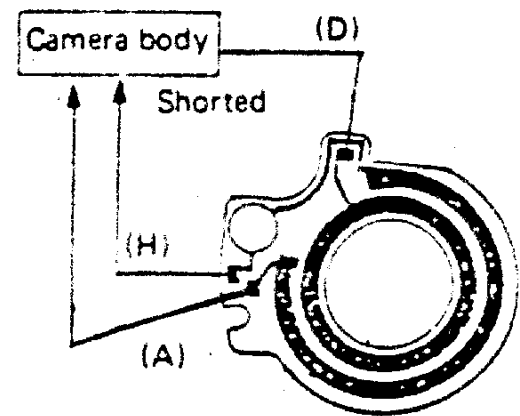


3. CV SV circuit defective

- Bar indication rather too high



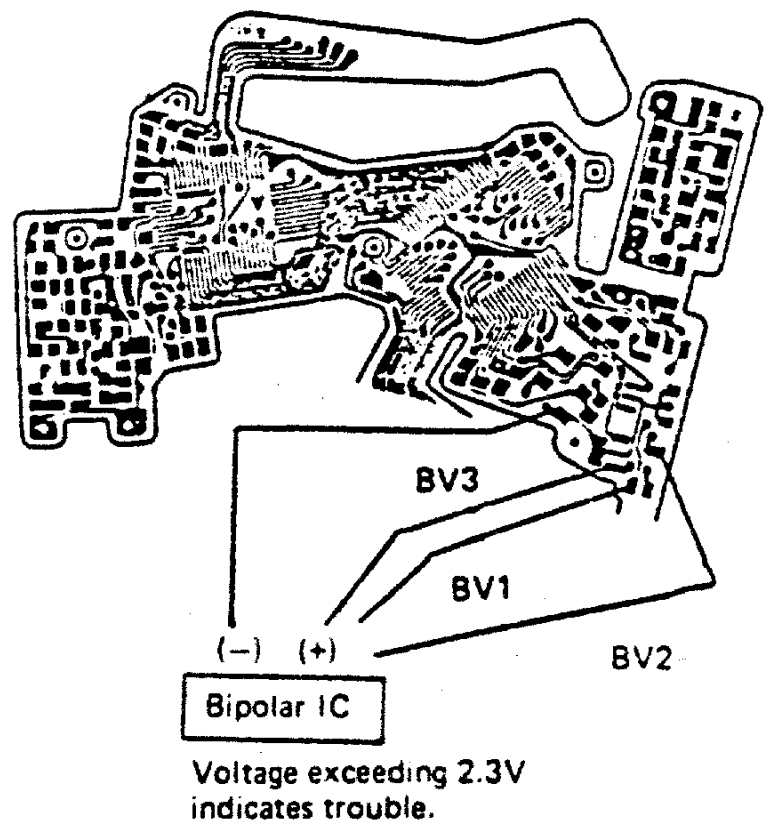
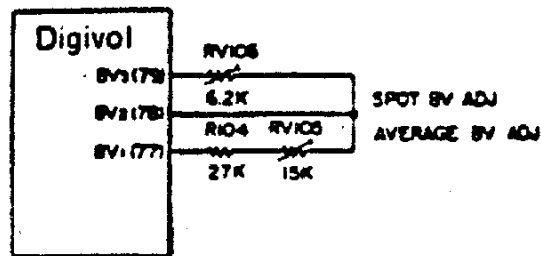
- Lead wire compressed against top cover.



RV110 shorted to camera body

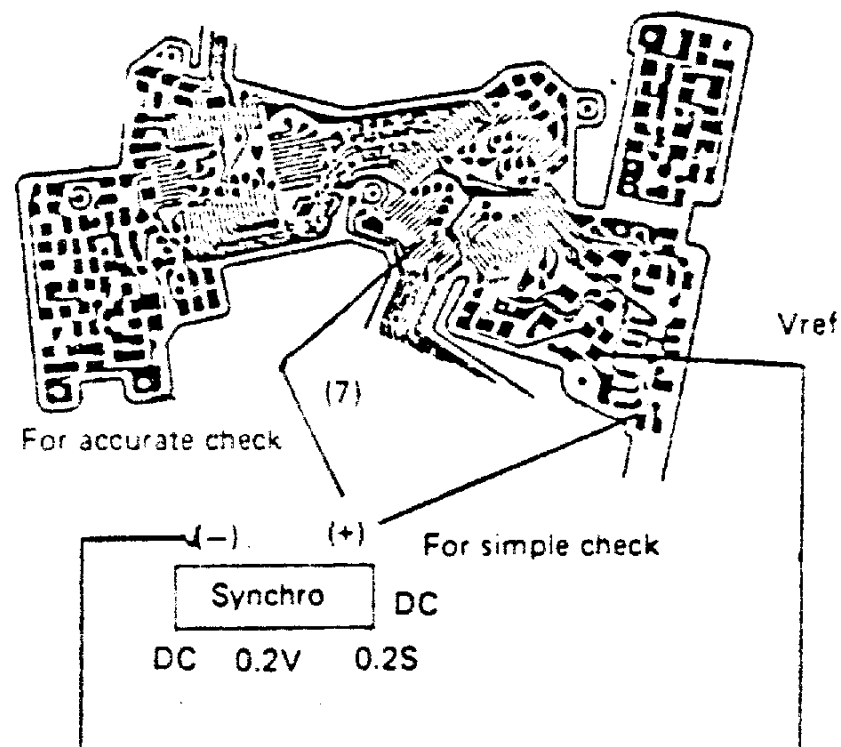
4. BV level converter circuit defective

- Bar indication made over by positive voltage applied to BV1, BV2 or BV3.
- Check each voltage. (+) 3 V indicates shorting between circuit and camera body.
- This trouble occurs rather rarely.



5. BV output too high

- Measure BV input voltage. When it is 300 mV or more higher than $V_{ref} = 1.8\text{ V}$, head amplifier or related part is defective.
- Check voltage with a synchroscope. (A digital voltmeter may be used though it provides unstable reading.)
- Head amplifier or related part defective
See page E-151.
(Head amplifier output abnormal)



(7) Bar Indication Uncharged with Data Input

- Bar indication is provided but invariable with data input.

• Preparations

1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchroscope
2. Mode:
 - AUTO or MANUAL (lens should be attached in position)
3. LCD should be lit in viewfinder.

- Shutter dial must not be set at B or mecha. 1/60.

1. When shutter operation is normal (in AUTO and MANUAL modes)

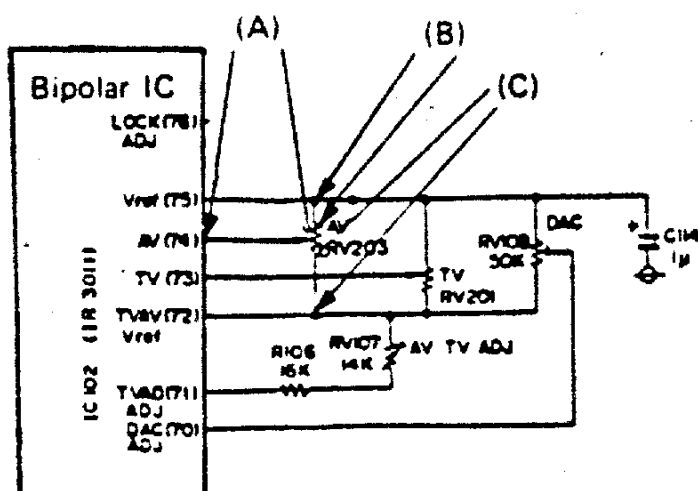
- In this case, indicator circuit (LCD·D or LCD) is defective.
Check indicator circuit.
- When indicator circuit and shutter are normal CPU IC defective.

2. Bar Indication invariable with F stop ring only

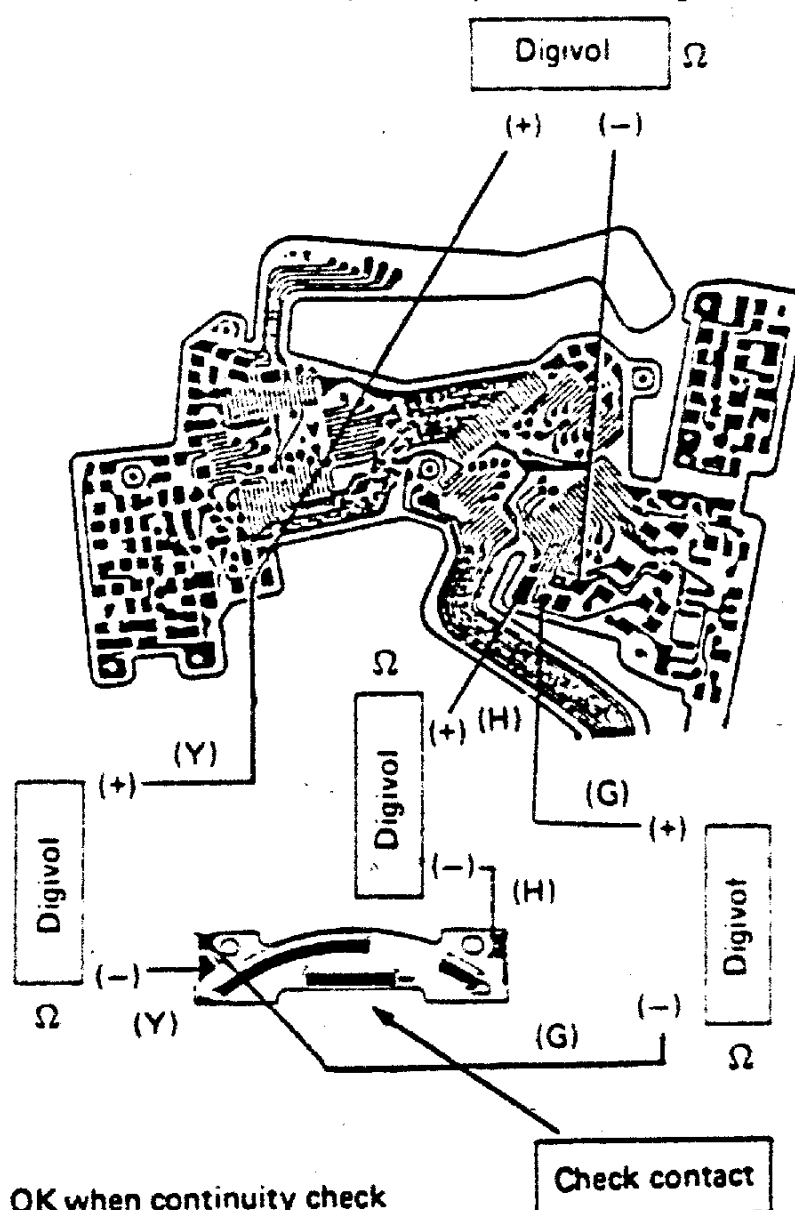
(1) When shutter operates normally, indicator circuit is defective.

(2) When auto EE adjustment is abnormal

- Data input circuit defective
- Check continuity of (A), (B) and (C) respectively.



- Check of pattern breakage



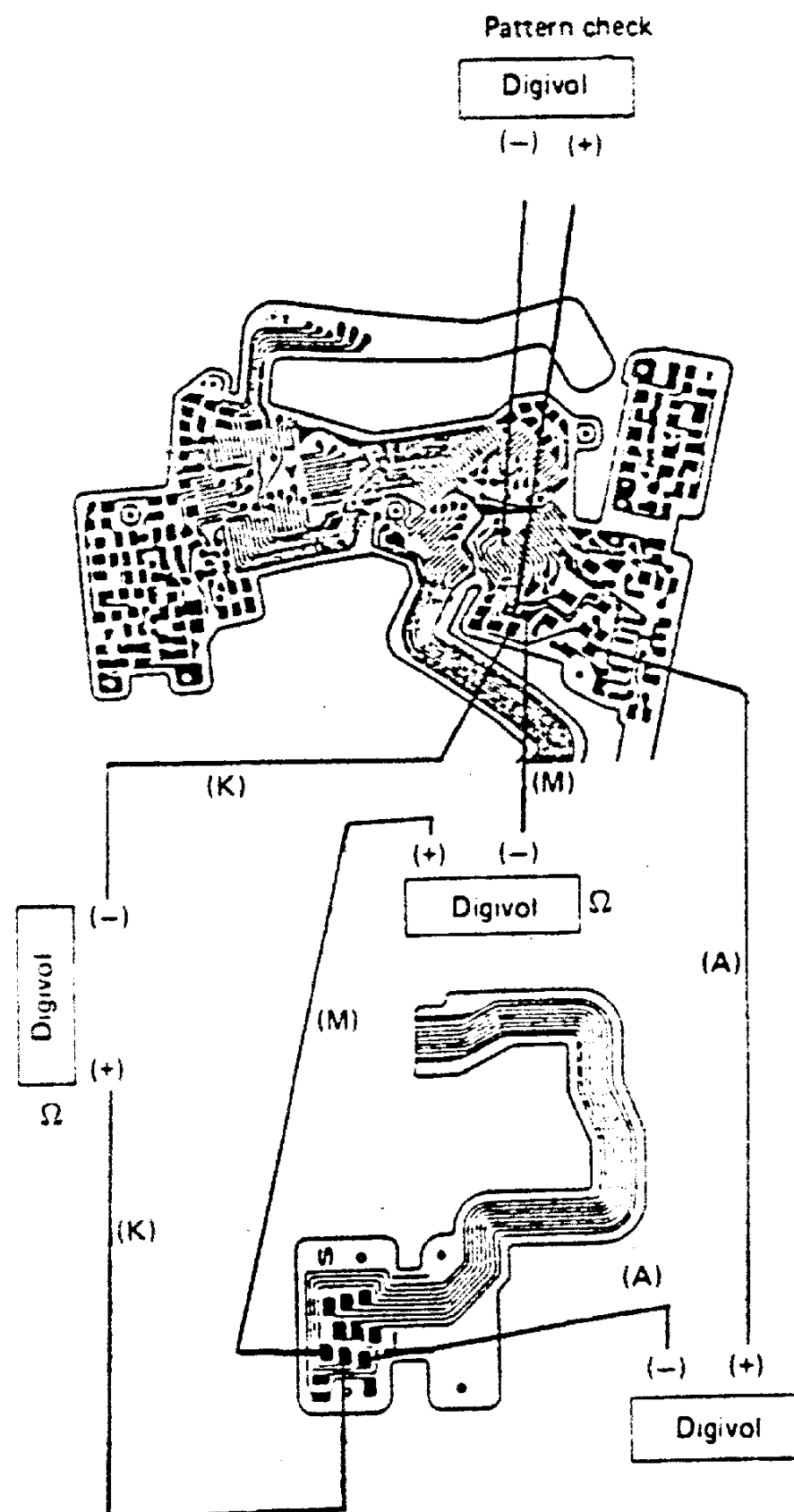
OK when continuity check indicates resistance below several ohms.

(1) When shutter is normal in MANUAL mode

-

-
- The diagram illustrates the electrical and mechanical connections of a magnetic head assembly. At the top, a flexible tape is shown with multiple tracks. Below it, a head assembly is depicted with various components labeled: (M) for the main head, (K) for the control head, and (A) for the tape head. The tape is connected to a series of lines labeled (+) and (-). The head assembly is connected to a circuit board with various components labeled: TV, TVAV, Vref, and Digivol. The Digivol is shown as a rectangular block with a wavy line representing the tape. The circuit board also features a large circular component, possibly a motor or a sensor, and several other smaller components. The overall layout shows the integration of the head assembly with the tape and the control circuitry.

TV AV - (M)
Vref - (A)
TV - (K)



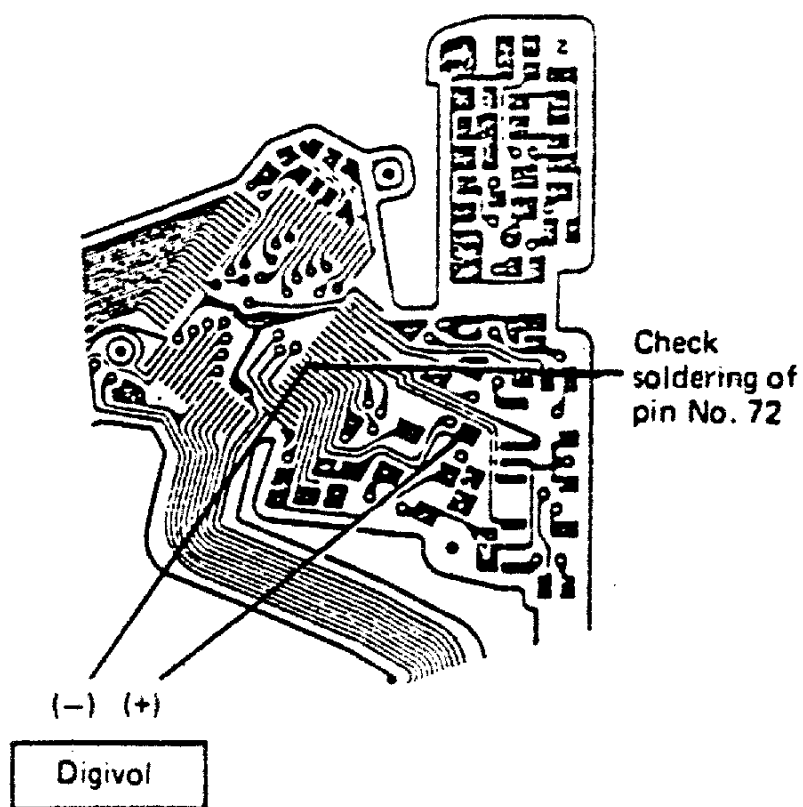
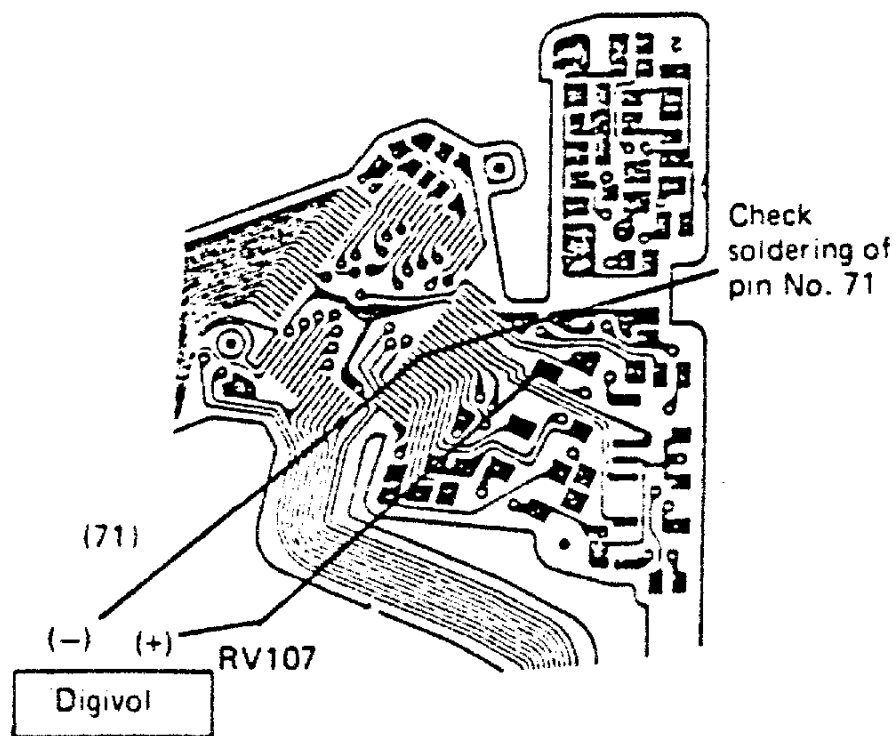
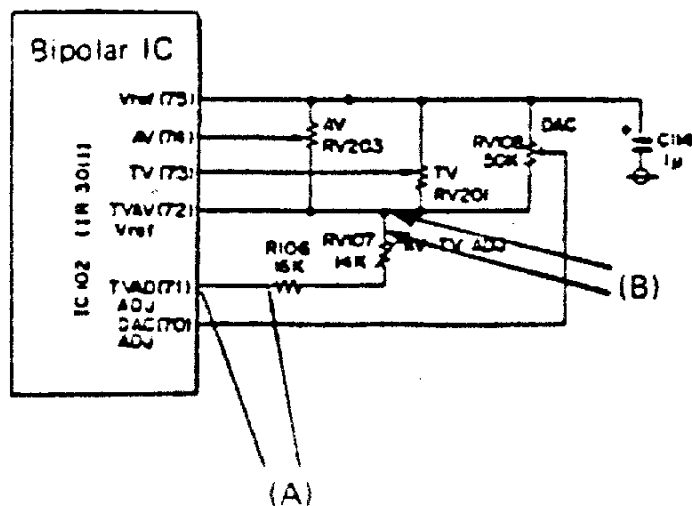
4. Bar indication invariable with F stop ring or shutter dial

(1) When shutter operates normally in AUTO and MANUAL modes

- Indicator circuit (LCD·D or LCD) defective

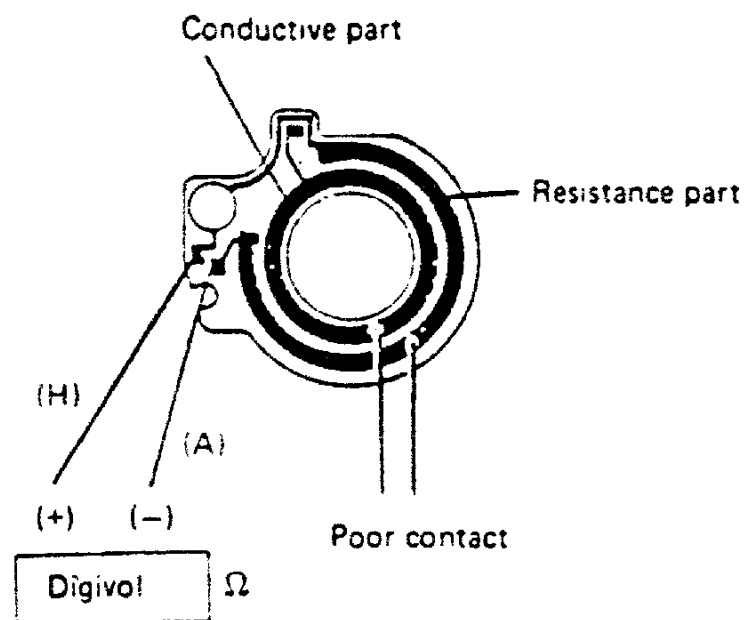
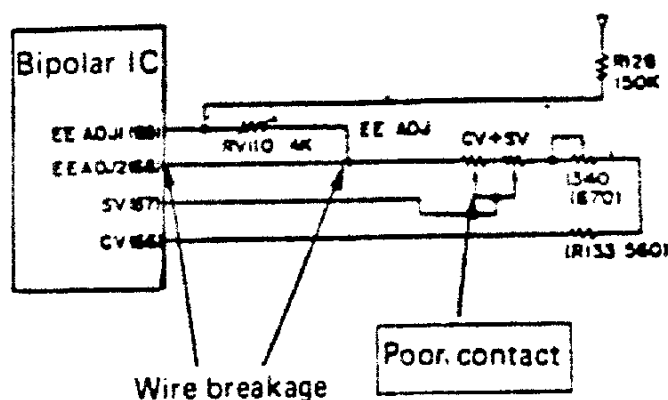
Shutter inoperative in MANUAL mode and bar indication invariable with F stop ring.

- Data input circuit defective
- TV AV misadjusted (IC pin No. 71 or 72 defective)



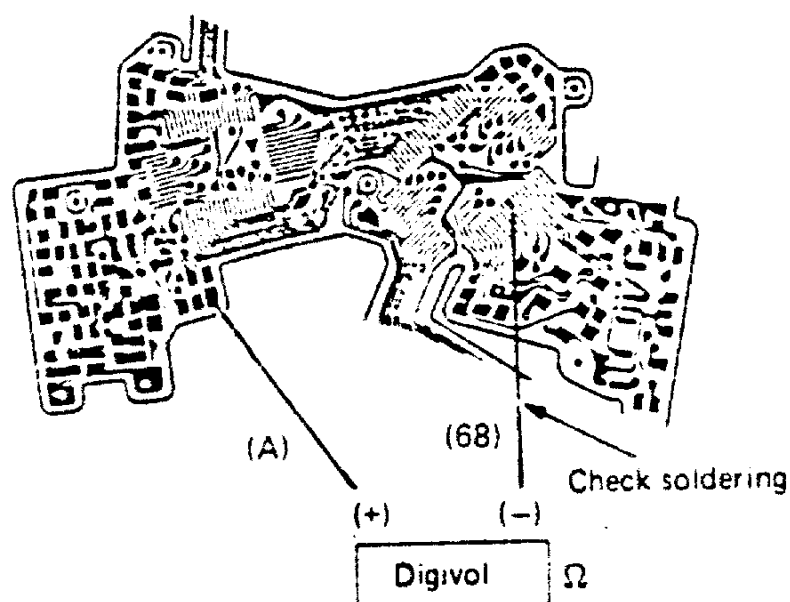
5. Bar indication invariable with ASA

- When shutter operation is normal, indication circuit is defective.
- Bar indication variable with exposure compensation. In this case, data input circuit is defective.



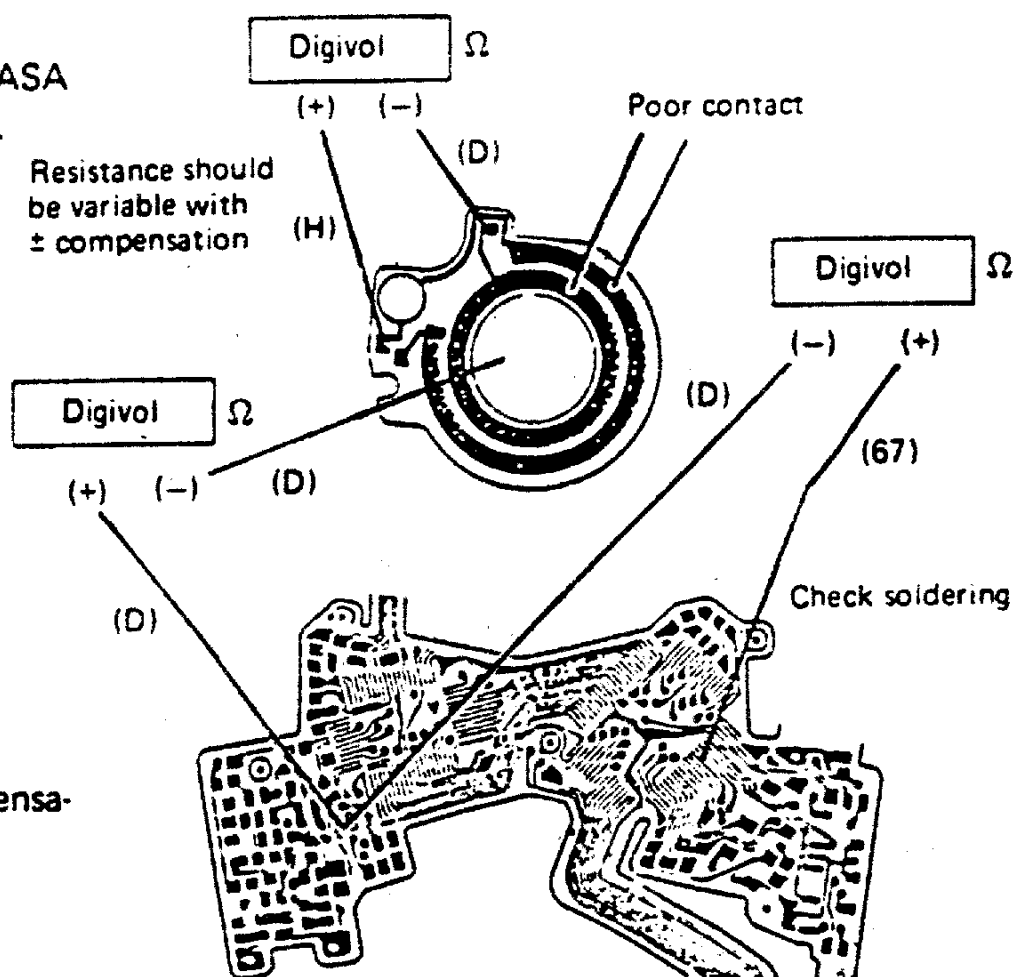
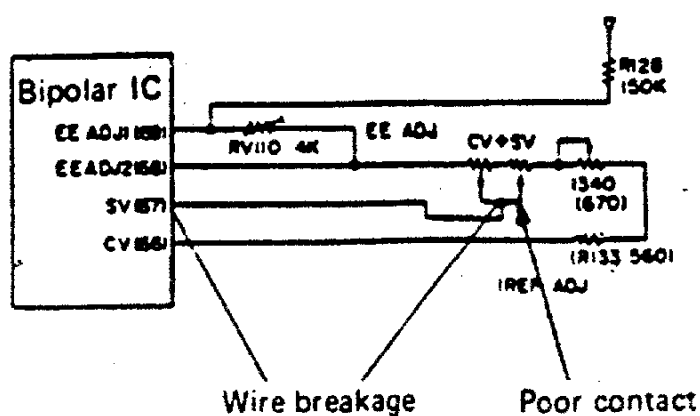
Resistance should be variable depending on ASA

- When bar indication variable with exposure compensation but invariable with ASA.
 1. Poor contact on ASA contact
 2. Pattern No. 68 broken



6. Bar indication invariable with exposure compensation

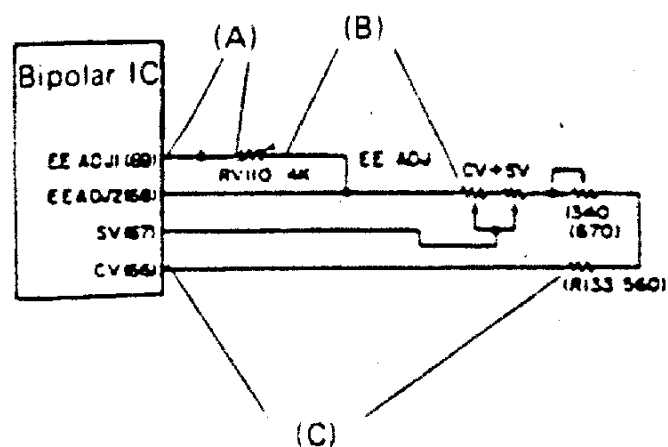
- When shutter operates normally, indication circuit is defective.
- When bar indication is variable with ASA (normal), data input circuit is defective.



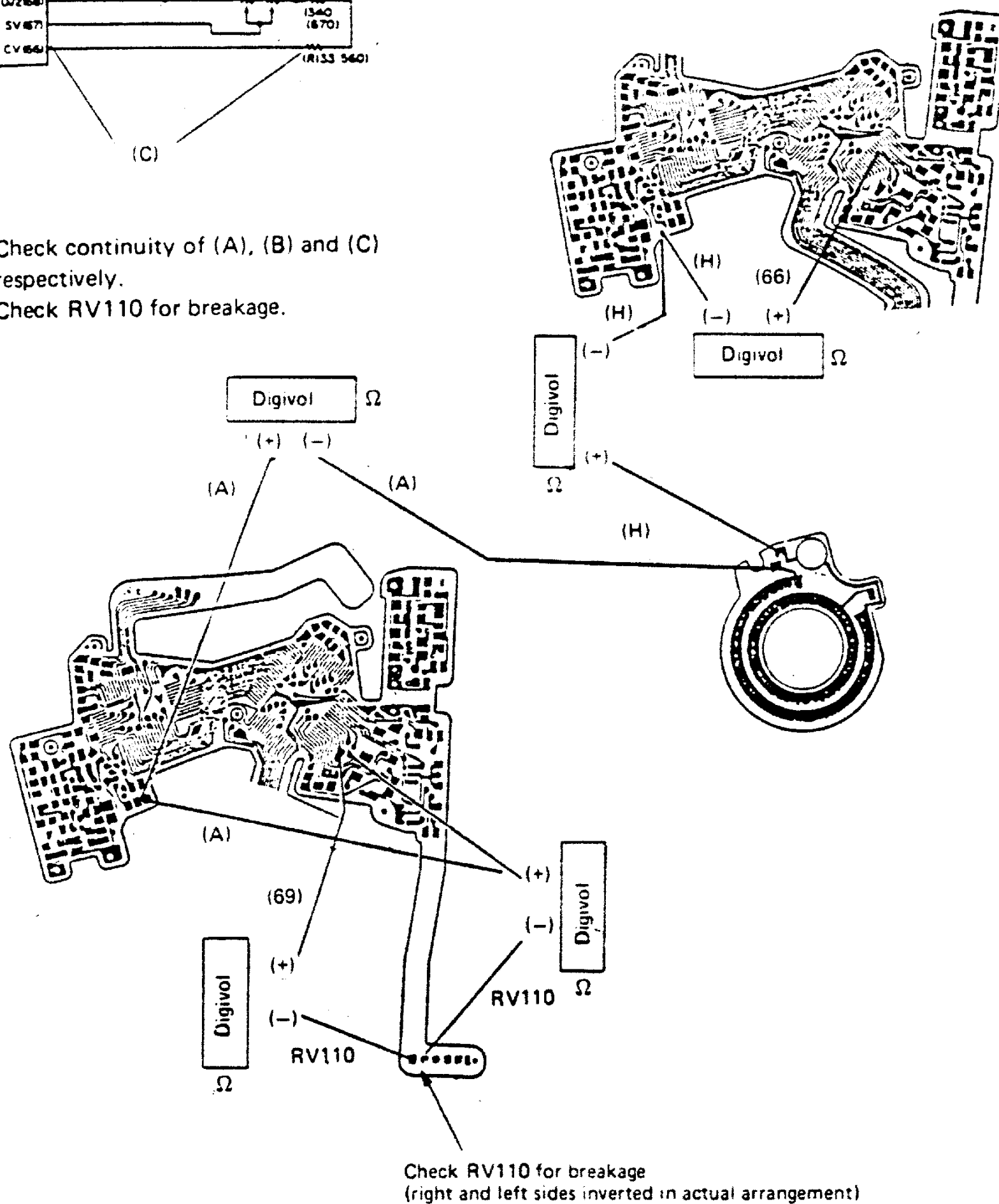
1. Poor contact on exposure compensation contact
2. Pattern No. 67 broken
3. Orange lead wire broken

7. Bar indication invariable with ASA or exposure compensation

- When shutter operates normally, indication circuit is defective (LCD-D or LCD).



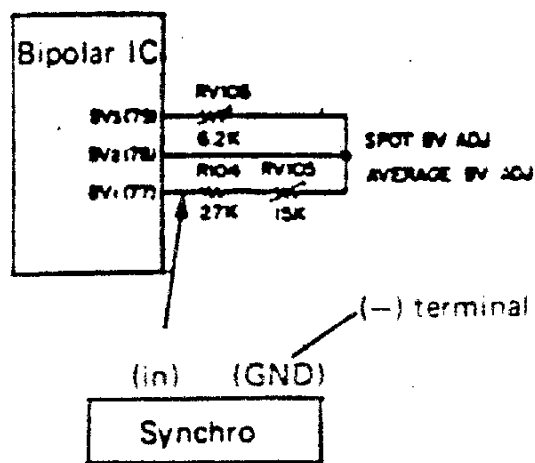
- Check continuity of (A), (B) and (C) respectively.
- Check RV110 for breakage.



- Each continuity check should indicate resistance below several ohms.
- Resistance exceeding scores of ohms indicate wire breakage.

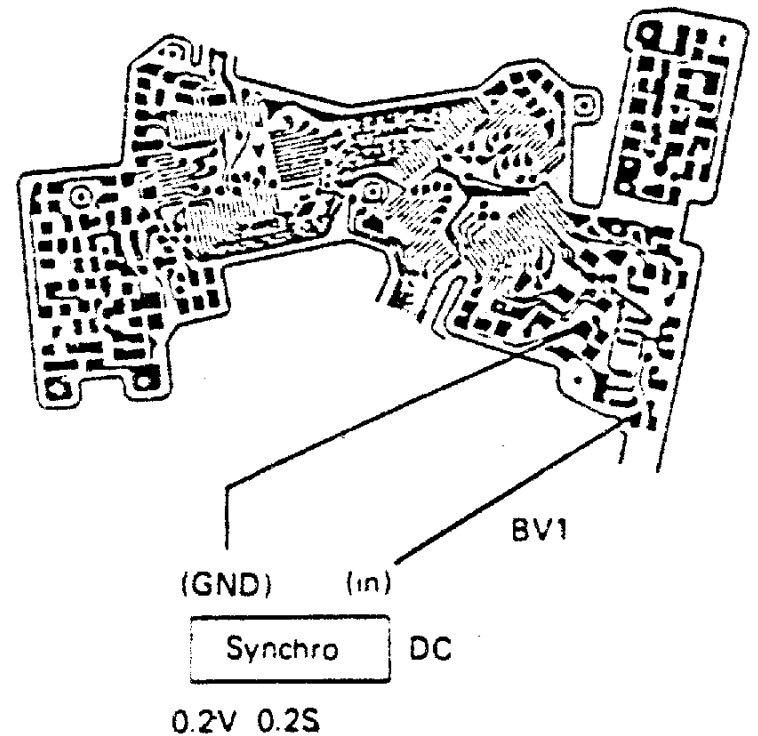
8. Bar indication invariable with BV

- Check BV input voltage.
- For simple check, measure BV1 voltage.



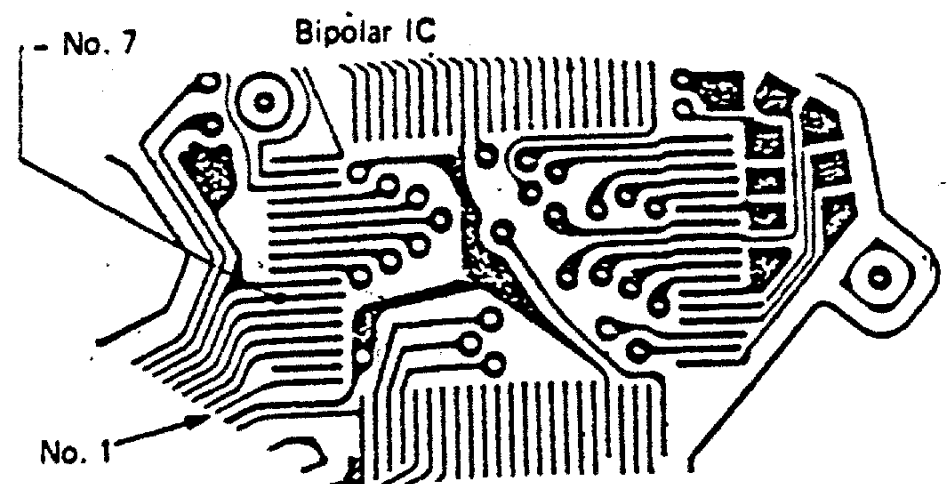
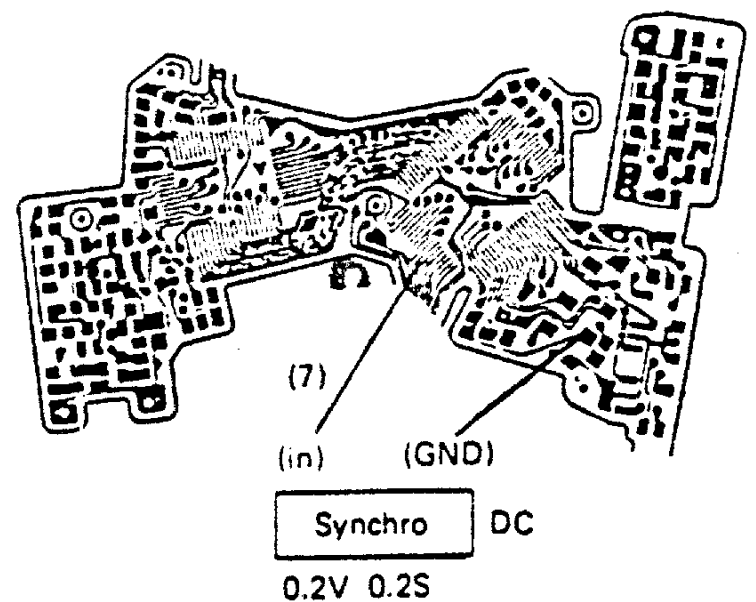
- Measure voltage with a synchroscope (a digital voltmeter is usable though it provides unstable reading).

- (1) BV input provided from head amplifier?
Vref standard voltage -200 to -100 mV: OK
- (2) The input voltage variable depending on brightness?
Variable: OK
- (3) When input voltage is provided and variable depending on brightness, BV level converter circuit is defective.
- (4) When BV input voltage is not provided or invariable depending on brightness, head amplifier is defective.
 - Check input voltage on pin No. 7 of bipolar IC.
 - When input voltage is not provided or invariable, check head amplifier.
 - See page E-151.
(Head amplifier or related part defective)



- Check voltage while varying light incident on lens

When input voltage is not applied to BV1

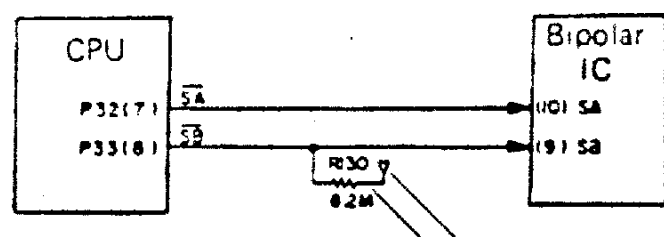


(8) Bar Indication Blinks

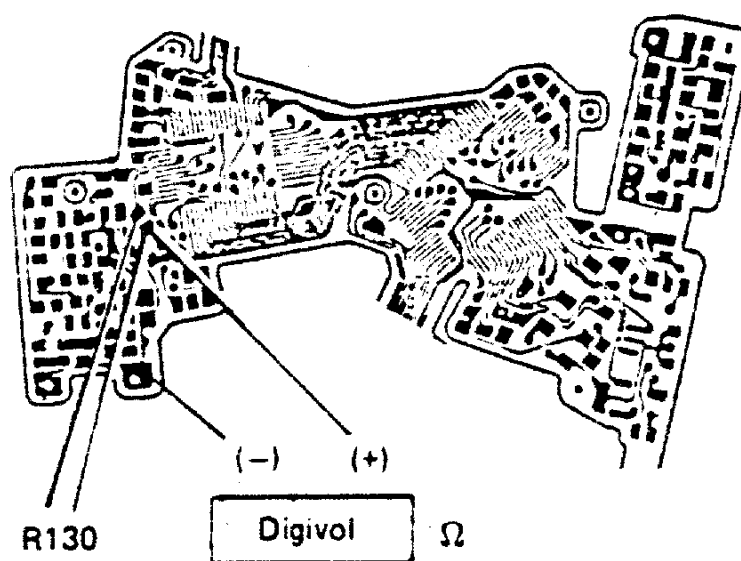
- Bar indication blinks about 3 segments
- Preparations
 1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchroscope
 - Luminance box
 2. Mode:
 - AUTO or MANUAL (lens should be attached in position)
 3. LCD should be lit in viewfinder.
- Shutter dial must not be set at B or mecha. 1/60.
- Bar indication blinks under fluorescent lamp or in day light when it varies 1/3 or more.
- When bar indication blinks in day light, turn camera to vary light intensity.
- Check whether or not bar indication stops blinking in B.C. mode:

1. Bar indication stops blinking in B.C. mode

- Pull amp resistor of SB terminal disconnected.



- Check pattern for breakage between R130 and camera body:



Should be lower than several ohms.

(9) Head amplifier or related part defective

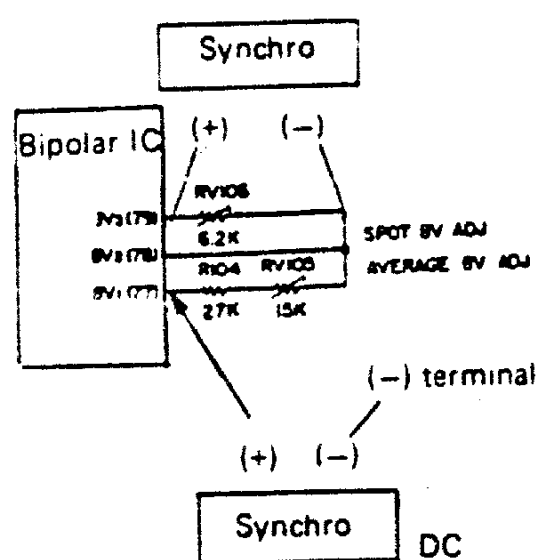
- BV output is not provided or invariable.
- Head amplifier or part related to its input/output abnormal.
- Indication abnormal due to defective head amplifier or related part. This type of trouble should be considered separately from exposure.

• Preparations

1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchroscope
 - Luminance box
2. Mode:
 - AUTO or MANUAL (Lens should be attached in position.)
3. Light LCD in viewfinder.

- Shutter dial must not be set at B or mecha. 1/60.

1. BV input provided from head amplifier?

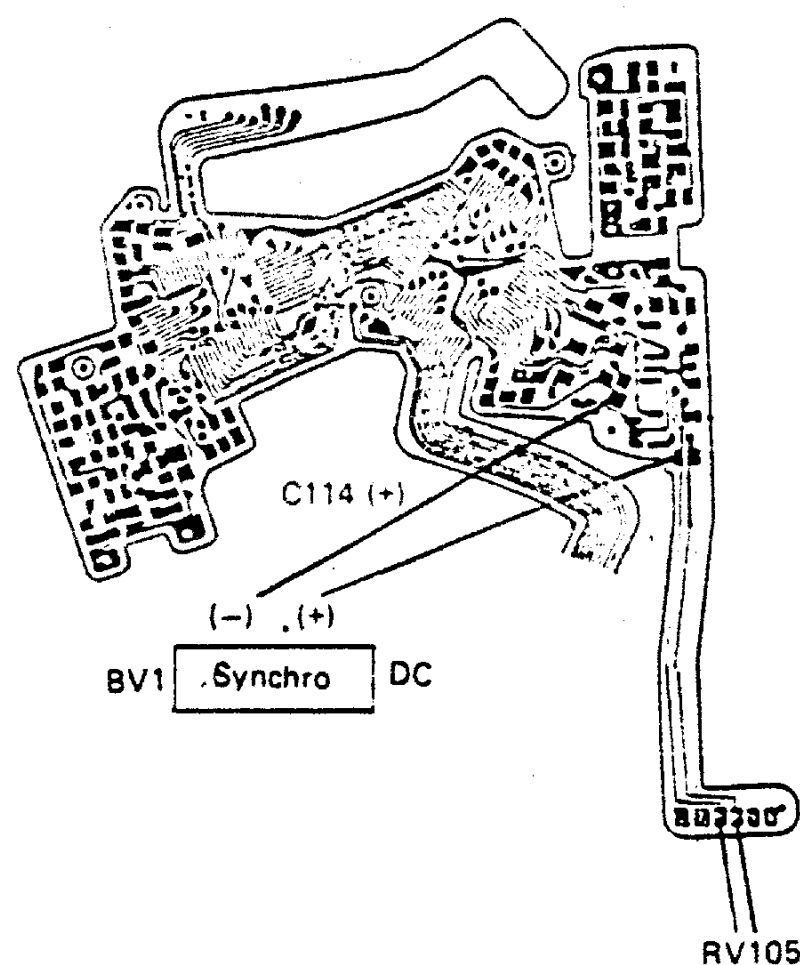


- Measure voltage with a synchroscope.
DC 0.2V, 0.2S
(A digital voltmeter is usable though reading is unstable on it.)

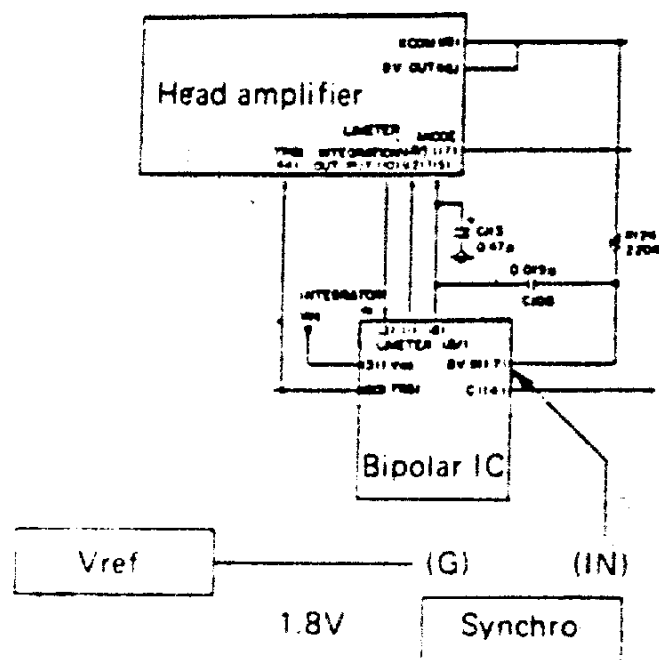
(1) Check BV1 input voltage.

- At BV11 and F5.6

Average BV	$-170 \pm 25 \text{ mV}$
Spot BV	$-170 \pm 25 \text{ mV}$

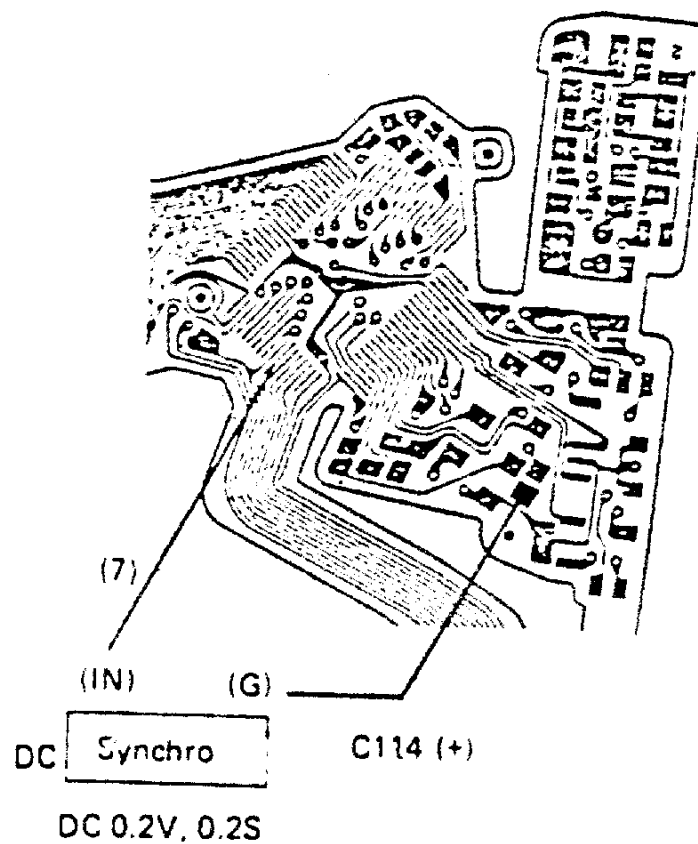


- (2) When BV1 input voltage is not provided
- When no output is provided BV1, check output on pin No. 7 of bipolar IC.



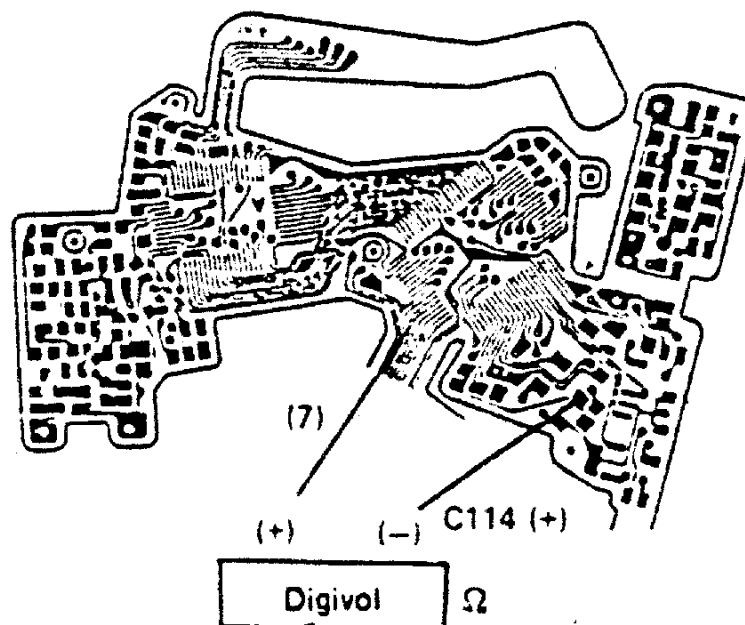
- At BV11 and F5.6

Average BV	$-170 \pm 20 \text{ mV}$
Spot BV	$-170 \pm 20 \text{ mV}$



* Remove adhesive agent from bipolar IC leg No. 7.

- (3) When input voltage is applied to pin No. 7 and not applied to BV1 (leg No. 77).
- Check pattern for breakage between IC leg No. 7 and C114 (+).



2. Diagnosis by measuring BV1 input voltage

- (1) -200 to -100 mV relative for Vref

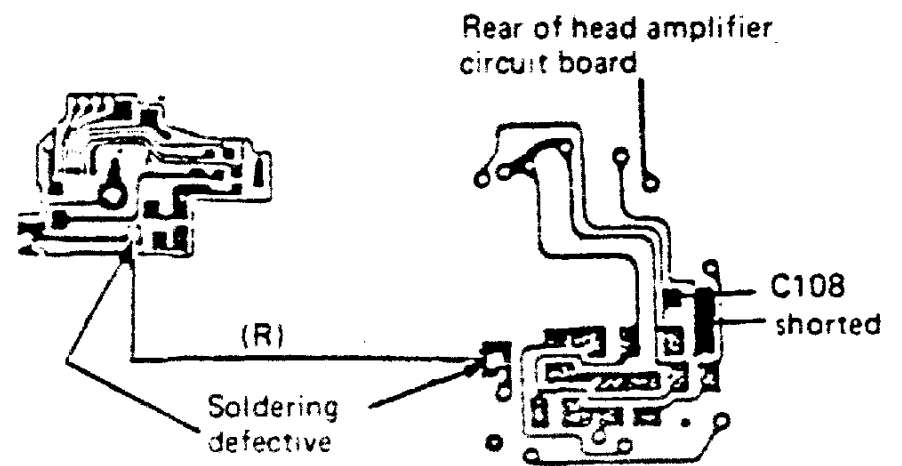
Normal (OK)

(BV output voltage is not provided from head amplifier, when BV1 input voltage is -200 mV and invariable depending on brightness.)

- (2) -350 to 200 mV relative to Vref

(+) power (Vcc) not supplied to head amplifier.

Check Vcc input to head amplifier



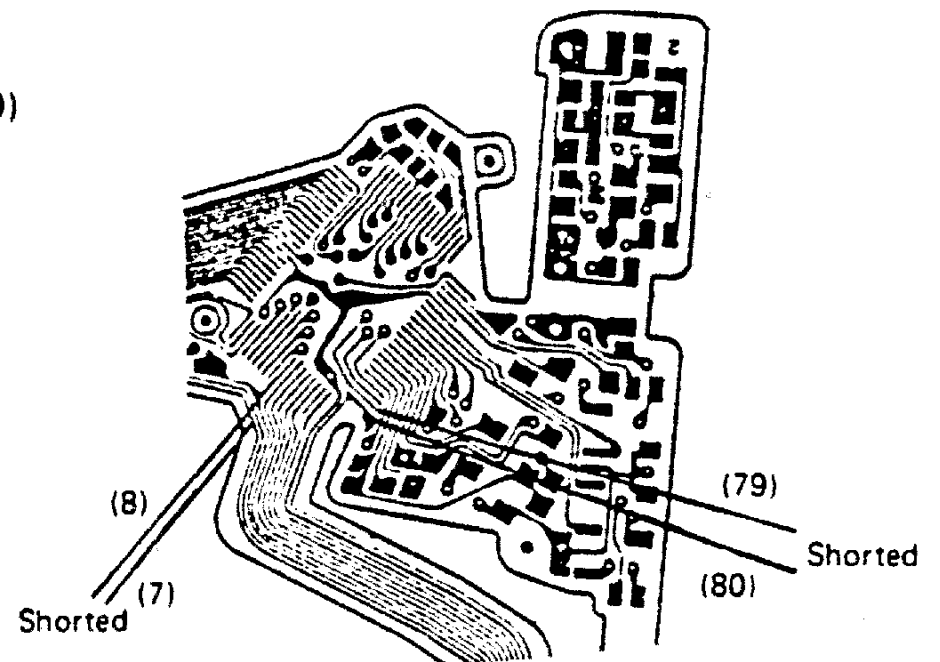
- (3) On the order of ± 10 mV

- Shorting between bipolar IC pin No. 7 and pin No. 8
- C108 shorted or broken

Check shorting of IC (7) ~ (8) and (79) ~ (80)

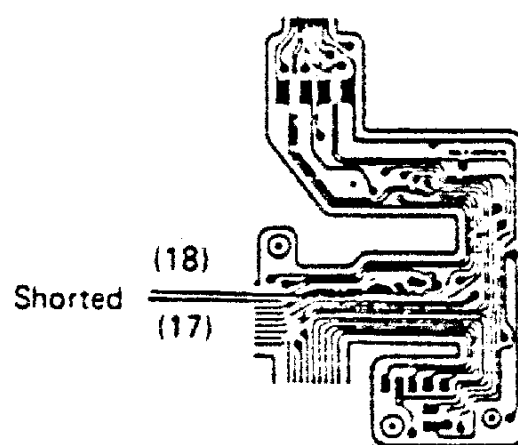
- (4) On the order of +650 mV

- Shorting between bipolar IC pin No. (79) and pin No. (80)

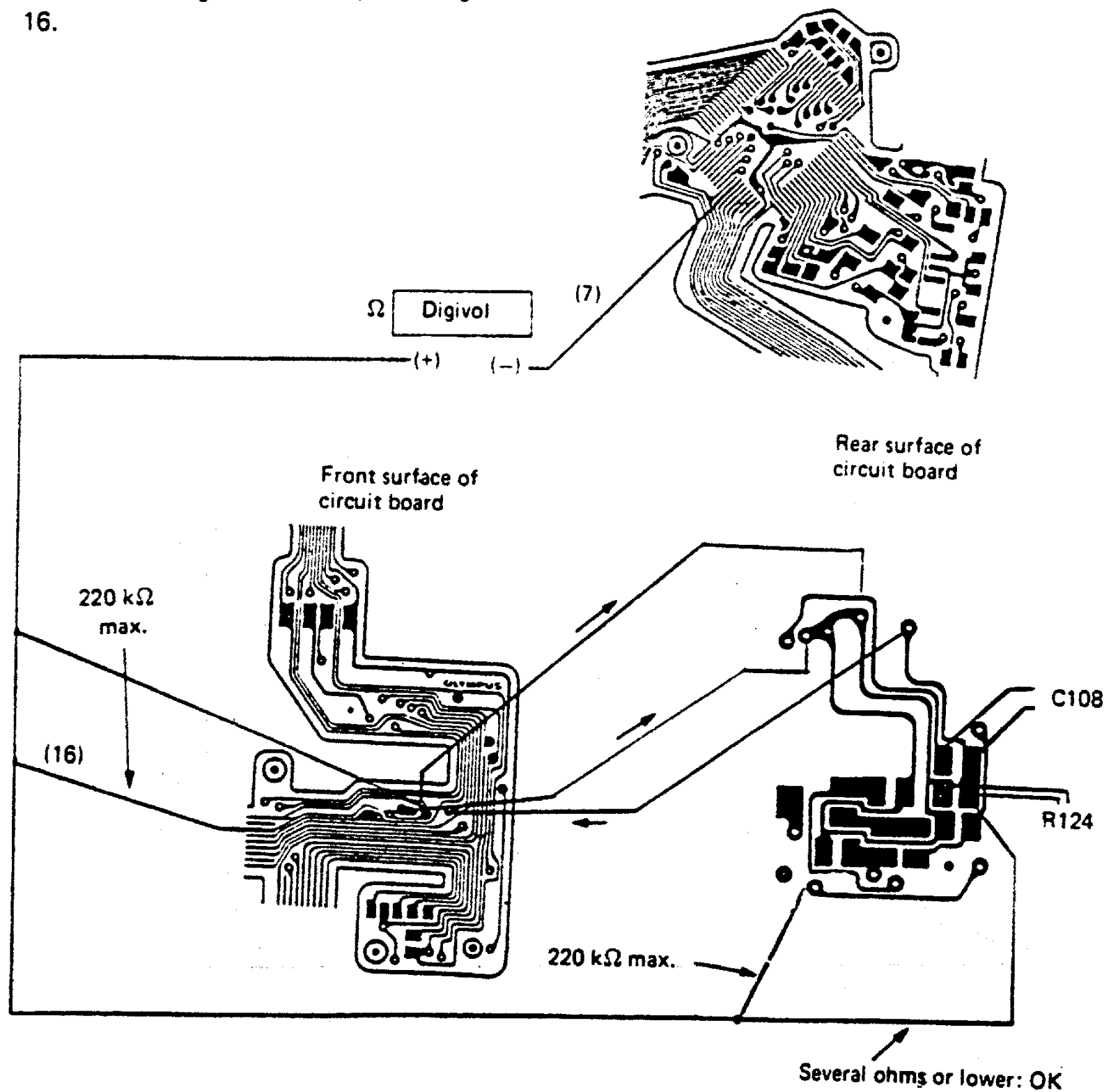


- (5) On the order of $-1.8V$ relative to V_{ref}
- Shorting between head amplifier IC pin No. (17) and pin No. (80)

Check shorting of IC (17) – (18)

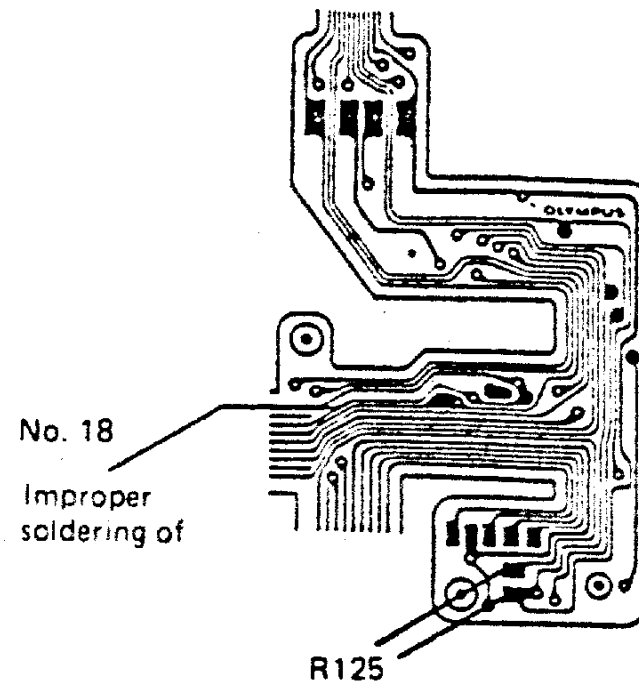


3. **BV input not applied to bipolar pin No. 7**
Check head amplifier and related parts
 - (1) Normal operation in DIRECT AUTO mode:
Head amplifier is operating since integral output is provided.
 - Detach front plate.
 - (a) Check continuity between bipolar IC pin No. 7 and head amplifier pin No. 16.
 - 220 k Ω max. via R124
 - Several ohms max. when R124 is not connected.
 - Check soldering of head amplifier leg No. 16.

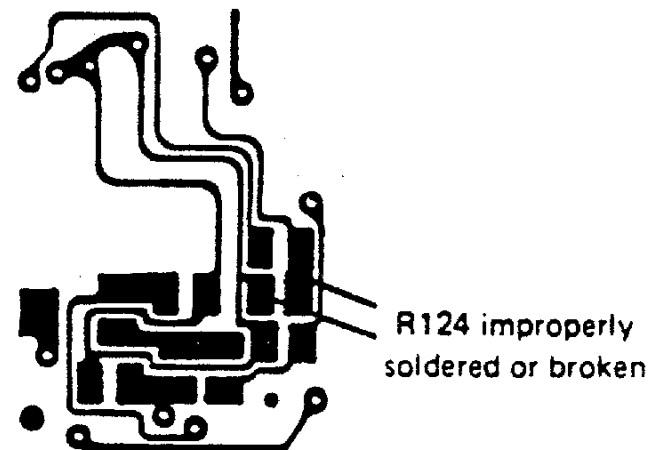


- b) Terminal of R125 shorted to conductive plating
 - Bar indication fixed on low luminance side.
- (c) Improper soldering of head amplifier IC pin No. 18
 - Bar indication fixed on low luminance side.
- (d) R124 broken or soldering defective
 - Bar indication fixed on low luminance side.
- (e) Other symptom can be traced to defective head amplifier IC.

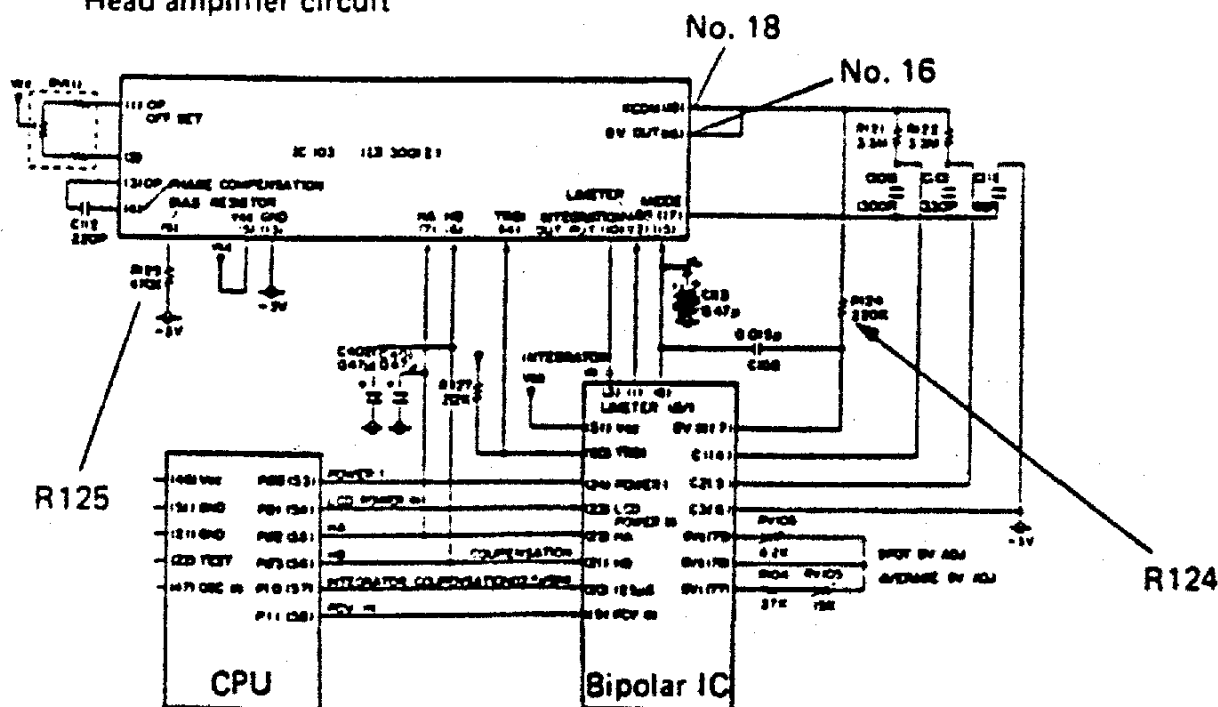
Improper soldering of No. 18
R125 shorted to conductive plating



R124 broken or soldering defective



Head amplifier circuit



(2) No operation (EE accuracy low) in DIRECT AUTO mode

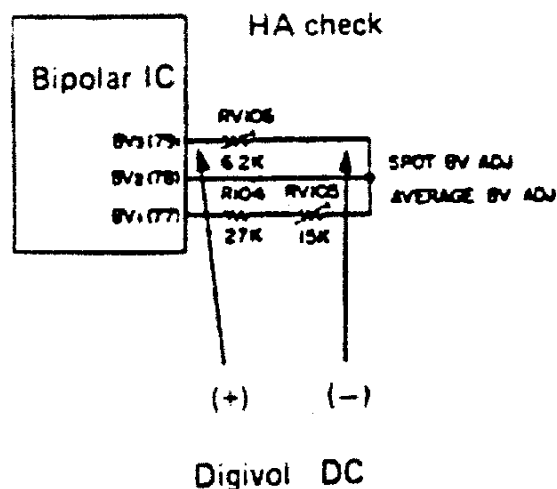
- Abnormal switching of indications and exposure time

(a) Check whether or not HA and HB signals are provided from CPU.

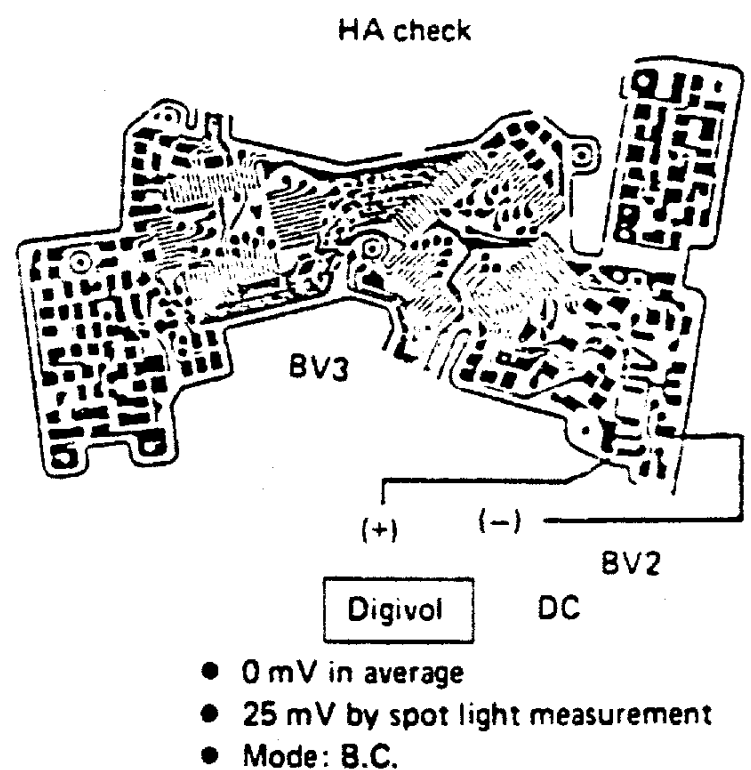
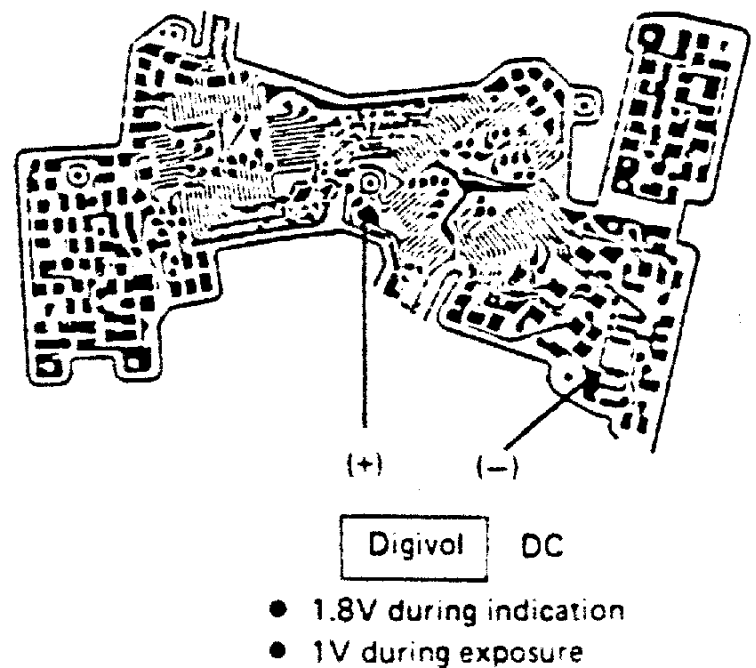
- Simple check

HB: Output of 1.8V should be obtained by switching of 1.8V/1V.

HA: Voltage across BV3 – BV2 (in B.C. mode) should normally be:
0 mV in average
25 mV by spot light measurement



HB check



- When the simple checks do not indicate normal values, check voltages on CPU IC pins Nos. 55 and 56.

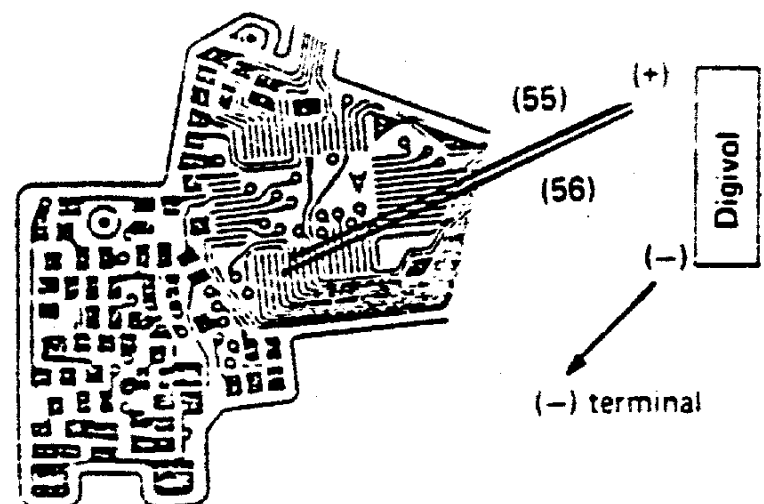
(Voltages in average light measurement)

HA: 3V on pin No. 55

HB: 3V on pin No. 56

(b) When no voltage is applied, leg is improperly soldered or CPU IC is defective.

Voltage checks on IC pins Nos. 55 and 56



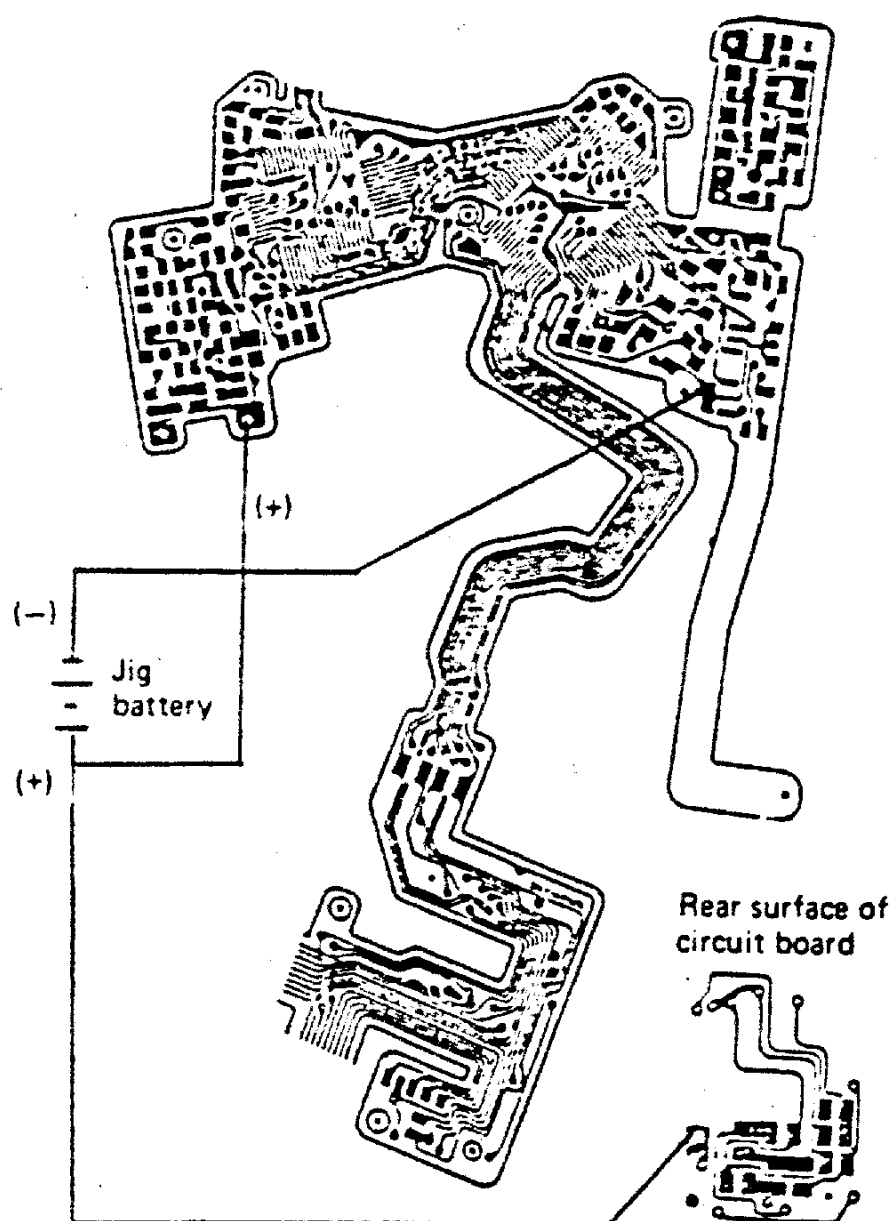
(c) When HA and HB signals are outputted from CPU

- Input applied to head amplifier IC pins No. 6 and No. 7?

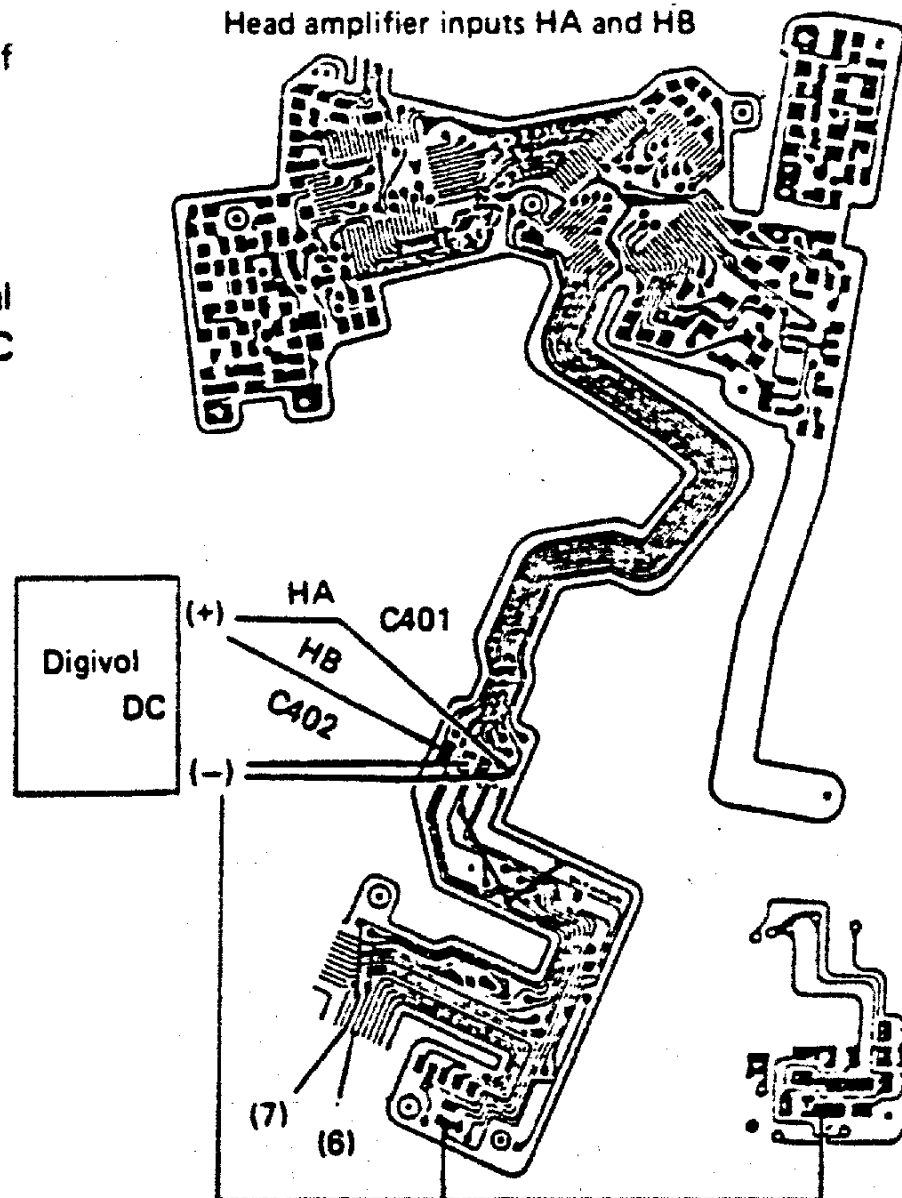
Note: Detach front plate for checking voltages.

- After detaching front plate, light LCD while supplying power from a dummy battery.

Procedure for indication with front plate unit only



Head amplifier inputs HA and HB



- Simple check
 - Measure voltages across both ends of C401 and C402.

HA: C401 voltage = 3V
HB: C402 voltage = 3V OK

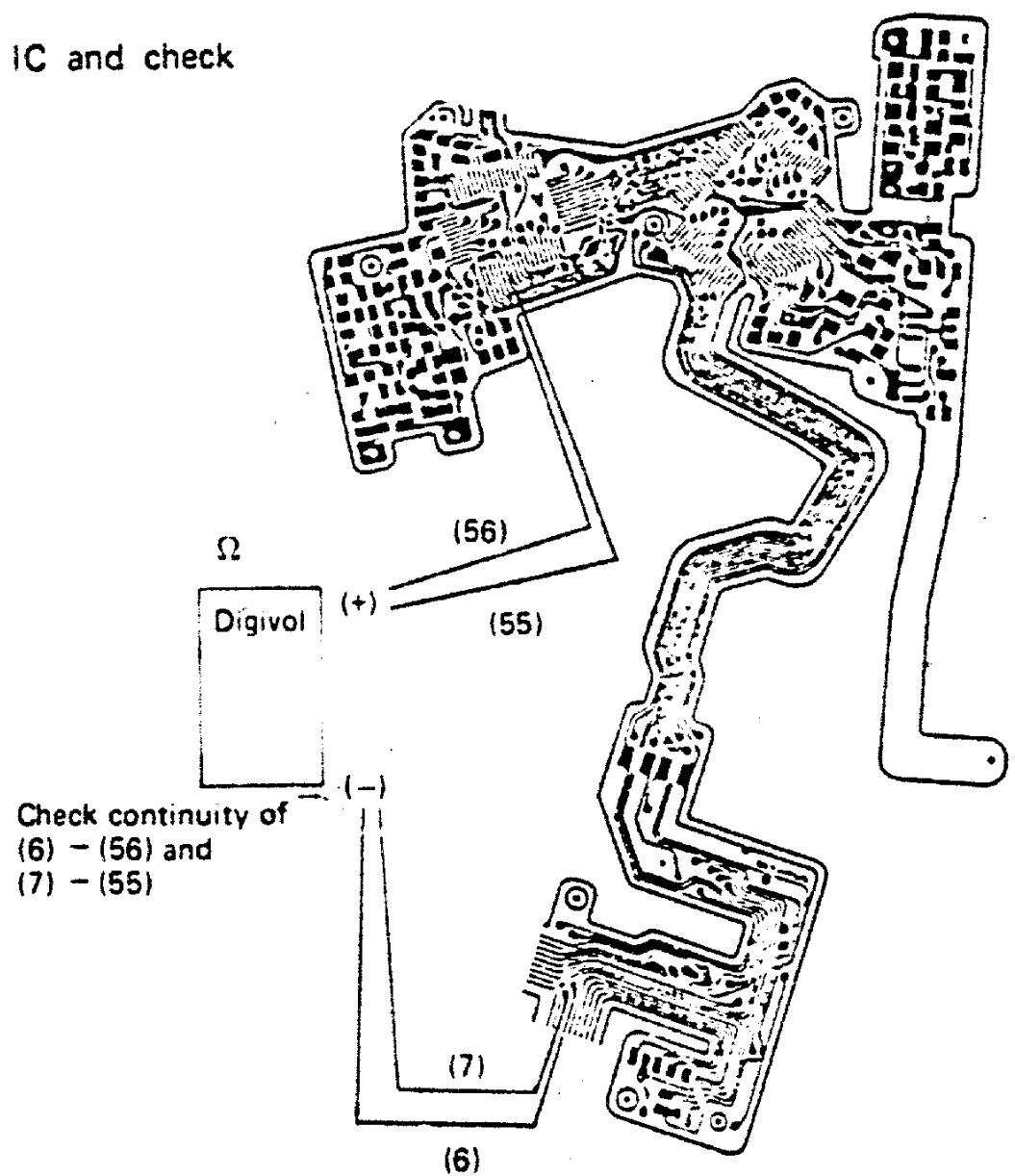
- When the simple checks indicate abnormal values, check voltages on head amplifier IC pin No. 6 and pin No. 7

Pin No. 6 = HB
Pin No. 7 = HA

(d) Check of HA and HB patterns

- When HA and HB are outputted from CPU but no input is applied to head amplifier, pattern is broken.
- Disconnect head amplifier IC and check pattern.

Check of HA and HB patterns



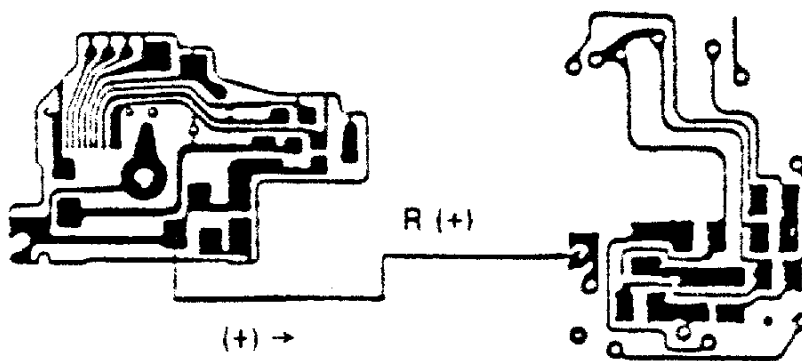
(3) Abnormal operation in DIRECT AUTO mode

- Shutter kept open in AUTO mode
- BV output and integral output are not provided.
- Signal provided from CPU?
Head amplifier IC defective?

(a) (+) and (–) power supplied to head amplifier?

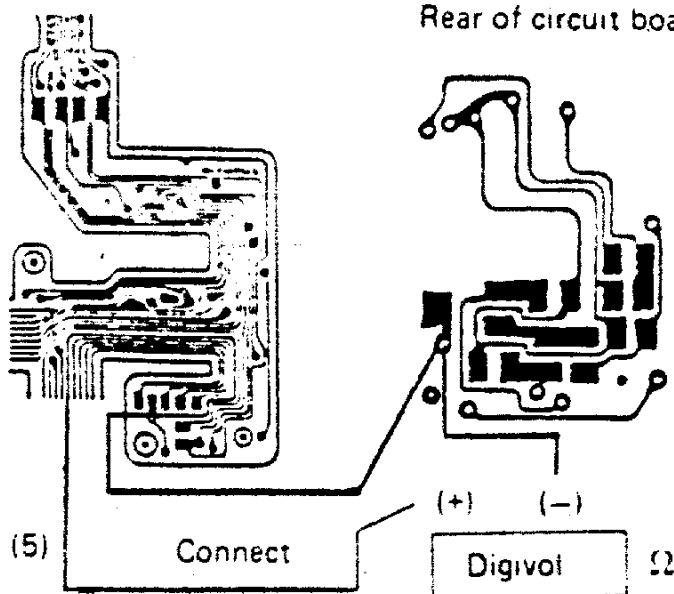
- Check resistance with a digital voltmeter. It should normally be lower than several ohms.

(+) power supply for head amplifier

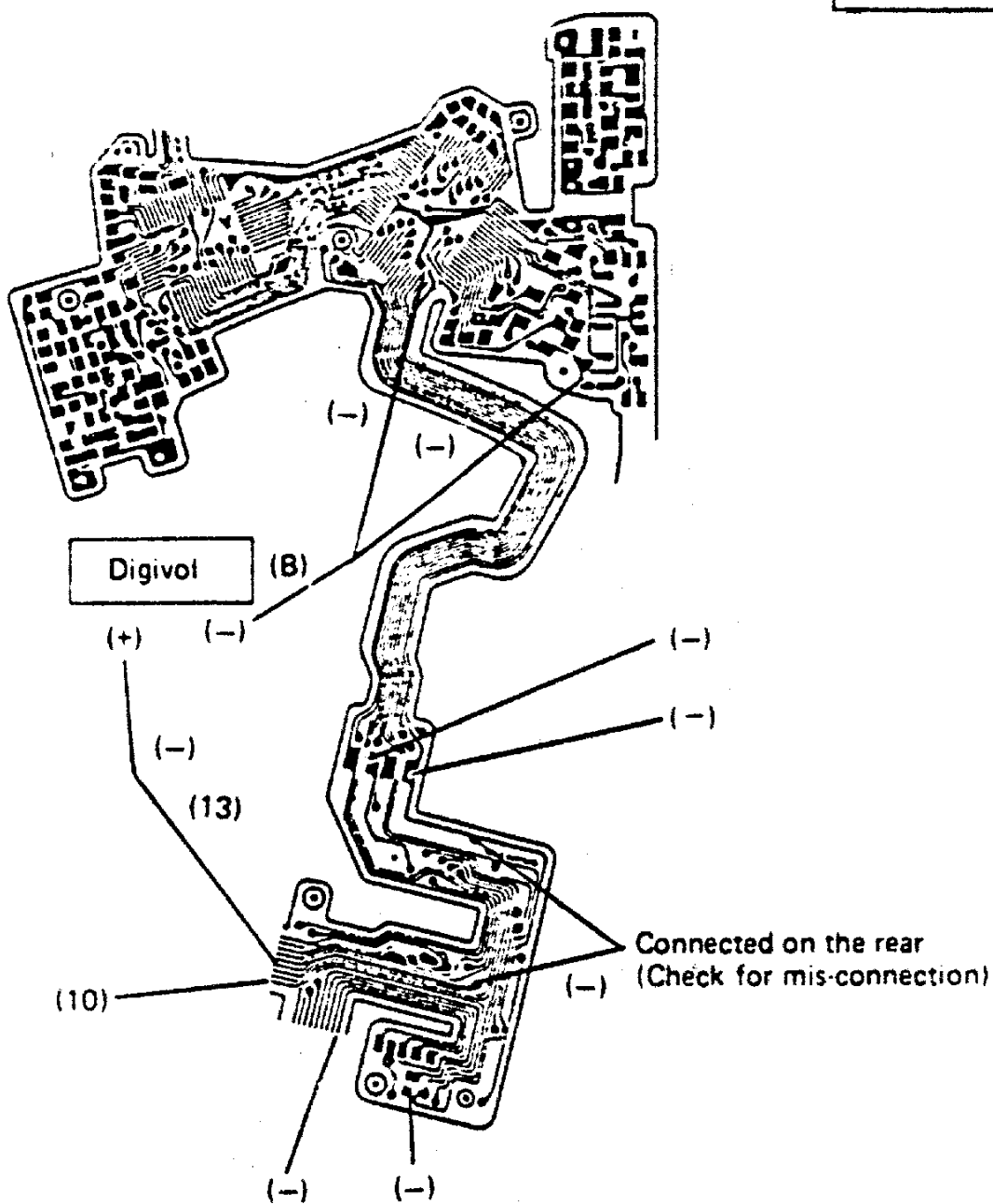


Rear of head amplifier
circuit board

Rear of circuit board

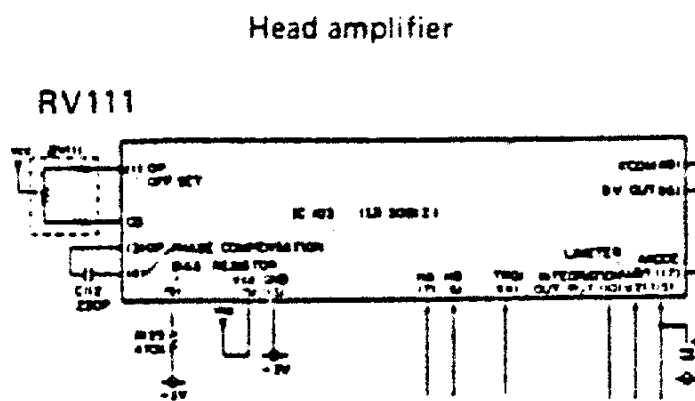


(-) power supply for head amplifier

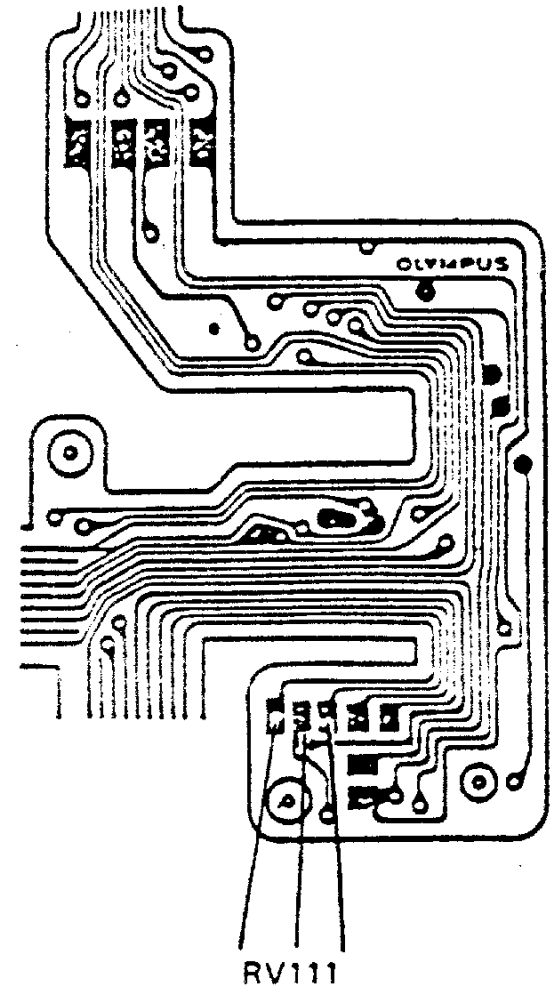


(b) Improper soldering of RV111

- Integration O.P. adjusting resistor
- Bar indication fixed on low luminance side.

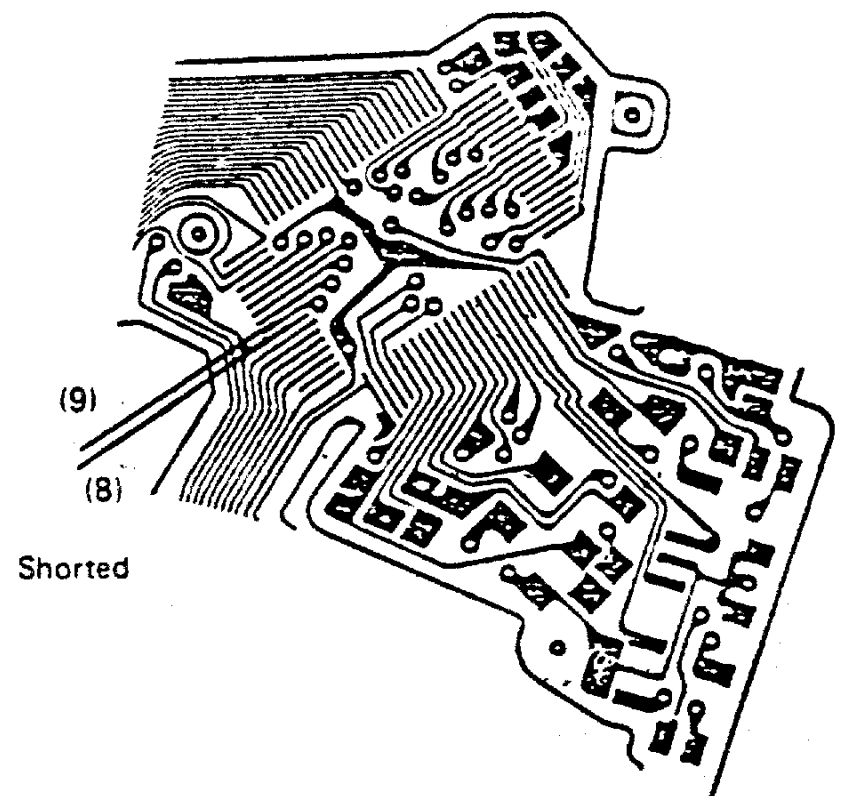


RV111 improperly soldered



(c) Shorting between bipolar IC pin No. 8 and pin No. 9

- SB signal pin shorted to 1.8/1V IC leg
- Bar indication fixed on low luminance side.

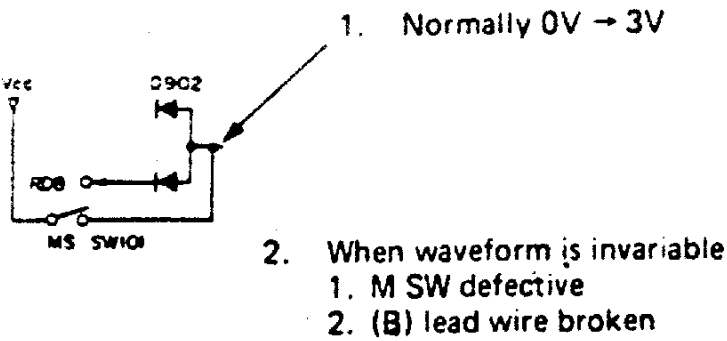


3-3 Shutter Locked

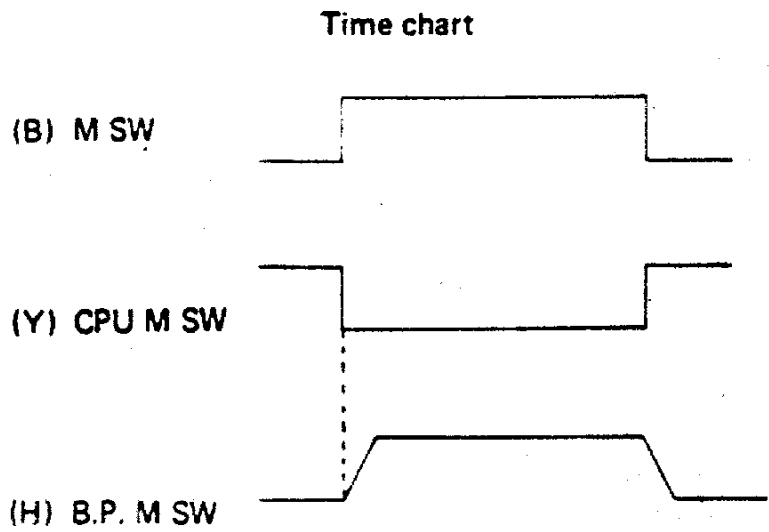
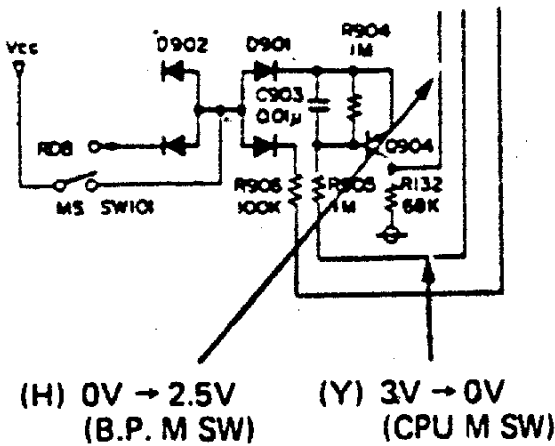
- Indication normal (abnormal indication should be corrected in advance)
- Preparations
 - 1. Measuring instruments: ○ Digital voltmeter or circuit tester
 - Synchroscope (storage)
 - 2. Camera mode: ○ AUTO or MANUAL (B if camera is inoperative in AUTO and MANUAL modes)
 - 3. Perform checks by operating the shutter.

(1) Diagnosis with synchroscope

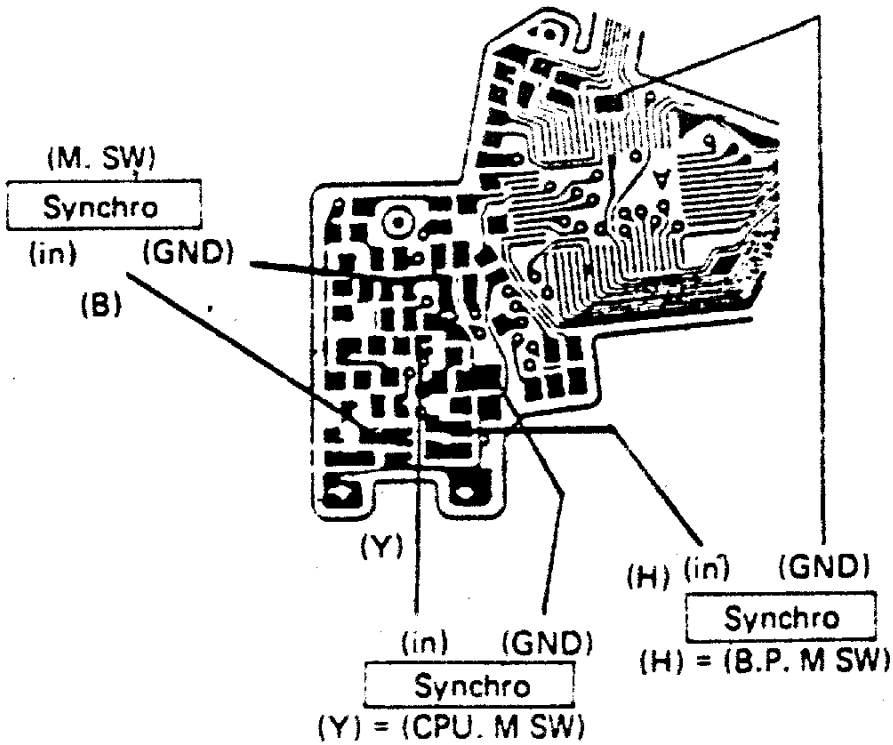
1. M SW OK?



2. RS circuit board and related parts OK?



Waveforms on M SW and RS circuit board

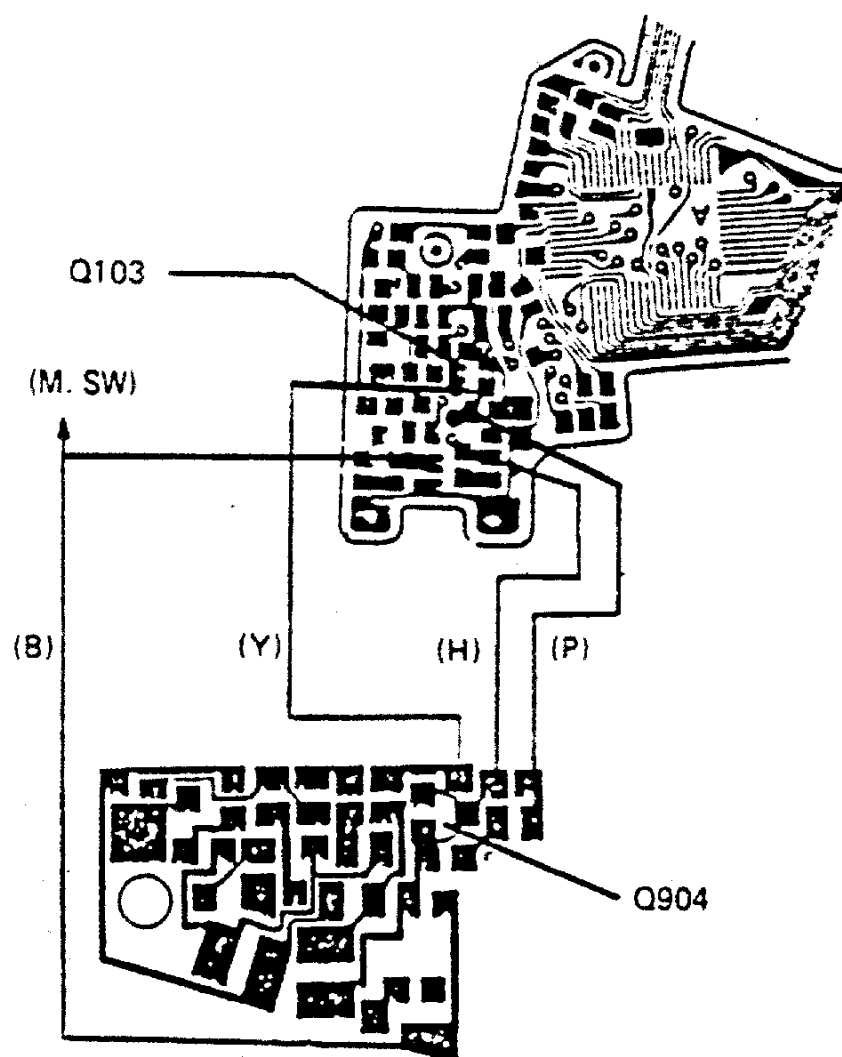


Waveforms on M SW and RS circuit board		
DC	2V	10ms
(B) M. SW		
(Y) CPU. M SW		
(H) B.P. M SW		

0.2 V/DIV 1.0 ms/DIV 0.2 V/DIV 1.0 ms

- Cause for no waveform

1. No waveform on M SW.
 - M SW defective
 - Lead wire broken or soldering defective
2. No waveform on both (Y) and (H)
 - RS circuit board defective
3. No waveform on (Y) only
 - Q103 defective
 - (P) lead wire broken
4. No waveform on (H) only
 - RS circuit board defective
 - (Y) or (H) lead wire broken



3. Check chattering of M SW

- Check procedures are the same as those described in 1 above.
- Observe waveform
- Shutter locked at the second and later operations.
- Contact pressure too low

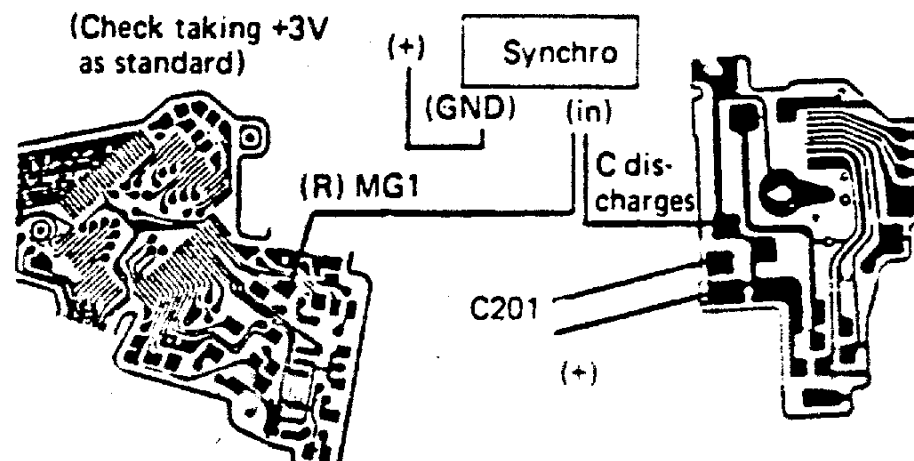
Chattering waveform of M. SW



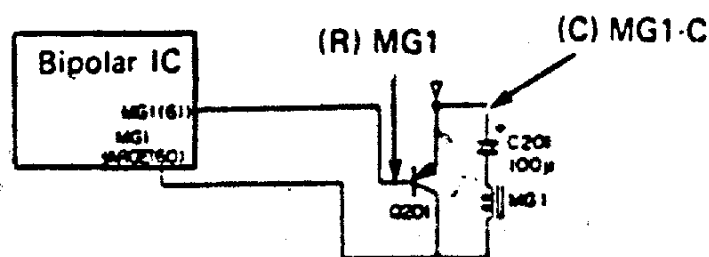
- Program stopped halfway by turning OFF M. SW momentarily.

Camera body

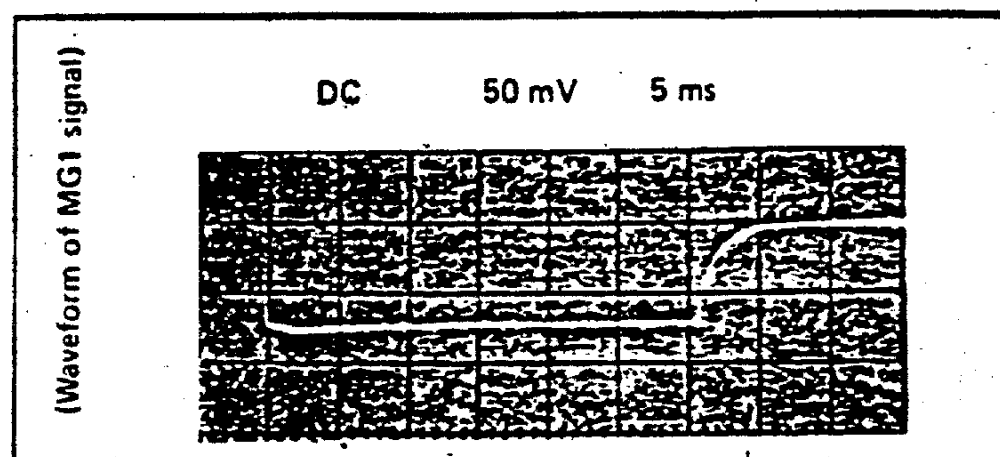
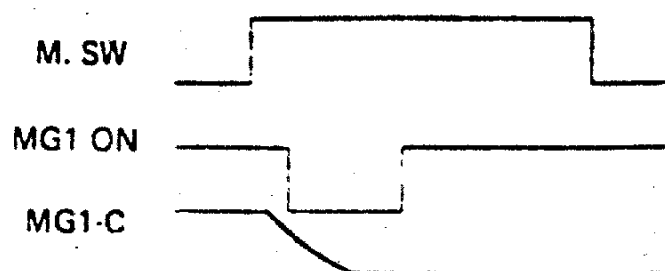
(Check taking +3V as standard)



4. MG-1 OK?



Time chart



Check taking +3V as standard

- Cause for no waveform,

1. No waveform of MG1 signal

- Soldering defective for B.P. leg No. 61
- Wire breakage between rand (R) and B.P. No. 60
- No MA or MB signal (CPU59; 60 – B.P. 18, 17)

2. No waveform of MG1-C (waveform of MG-1 signal observed by check 1 above)

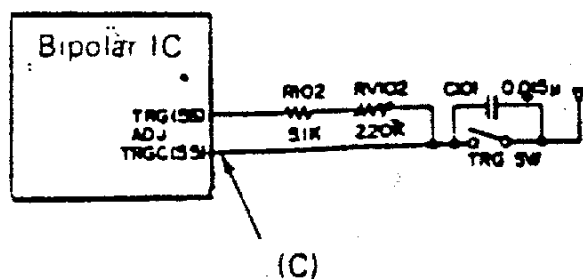
- C201 not charged
- Q201 not conductive
- MG1 lead wire (R) broken
- MG1-C lead wire (W) broken
- Pattern broken on TV circuit board for MG1 and MG1-C.
- B.P. pin No. 60 defective

- Main cause

1. Q201 deteriorated
2. C201 leg floated up
3. MG1 lead wire (R) disconnected
4. B.P. leg No. 60 broken

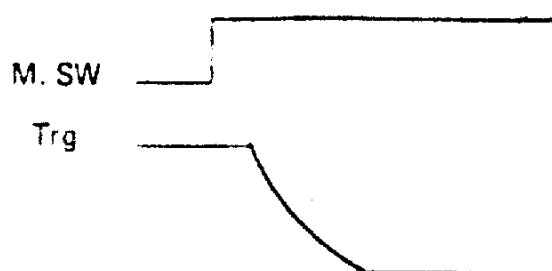
5. Trg SW OK?

- Check in BULB mode.

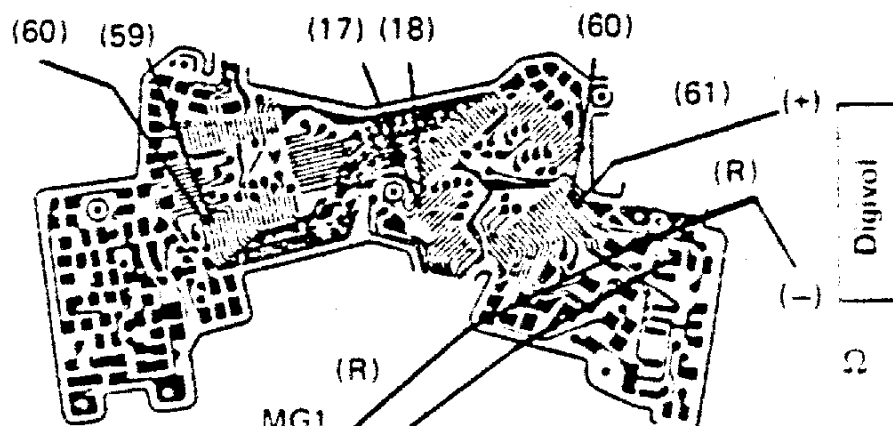


- Shutter is locked at second and later operations when Trg SW is defective. (In this case, PCV sounds lowly.)

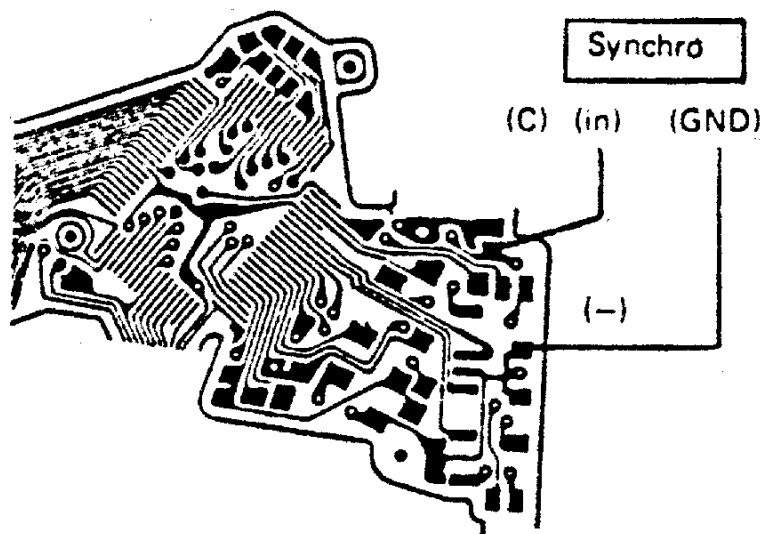
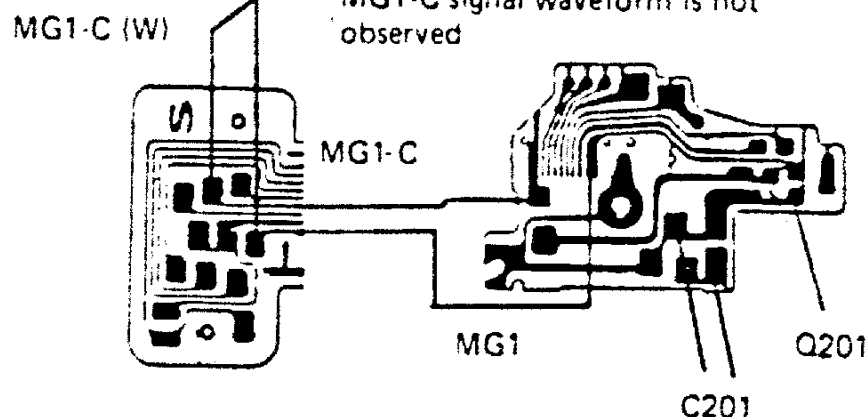
Time chart (When Trg SW is normal)



Locations to be checked when MG1 signal waveform is not observed

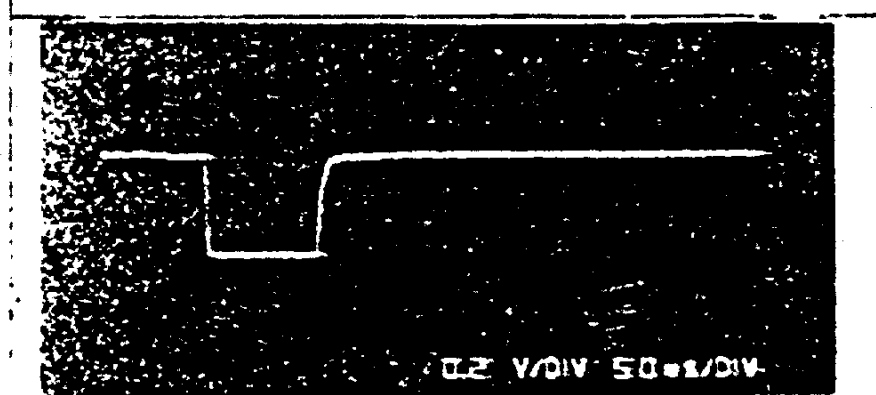


Locations to be checked when MG1-C signal waveform is not observed

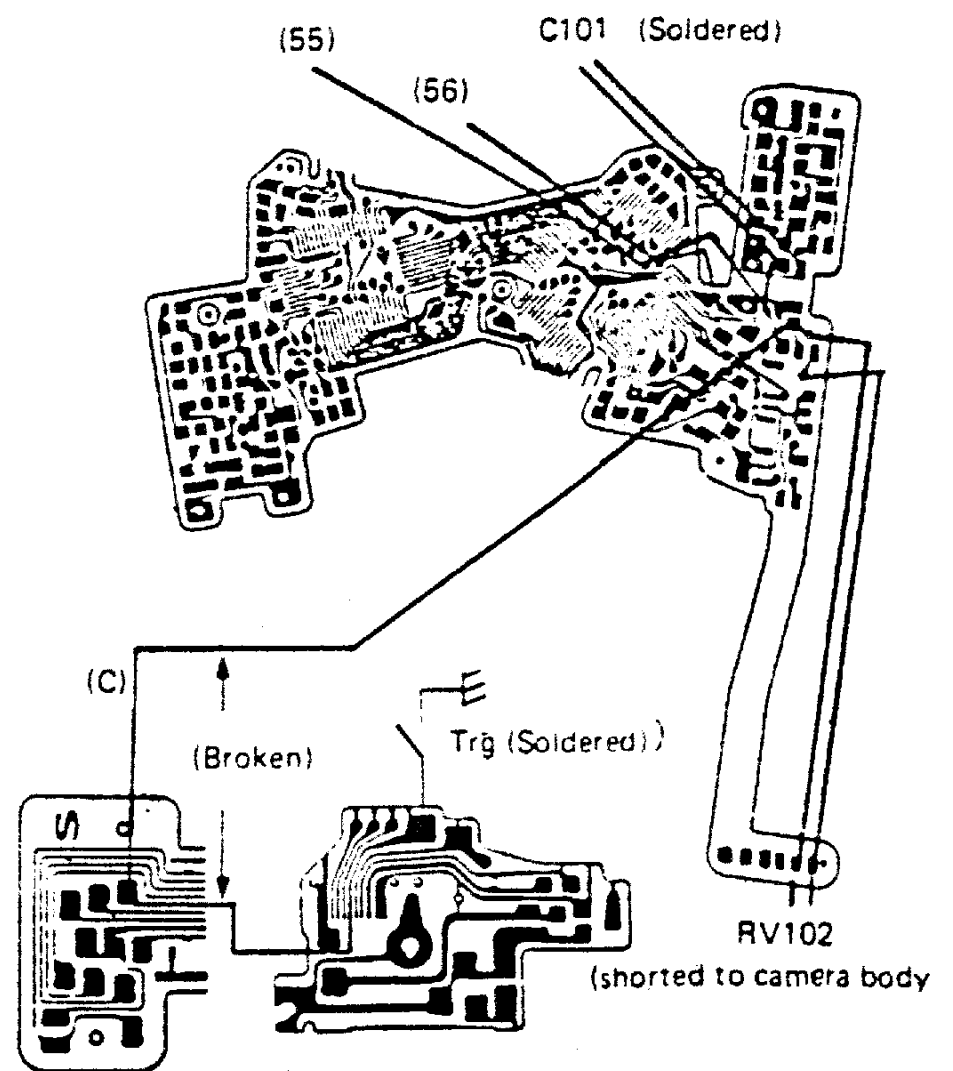


Waveform of Trg signal

DC 2V 50ms



- Cause for no waveform
- No waveform of Trg signal
 - Soldering defective for Trg SW
 - Pattern broken (on TV circuit board)
 - (C) lead wire broken or soldered improperly
 - Pattern broken (on M circuit board)
 - Improper soldering of B.P. leg No. 55 or 56
 - C101 or RV102 defective



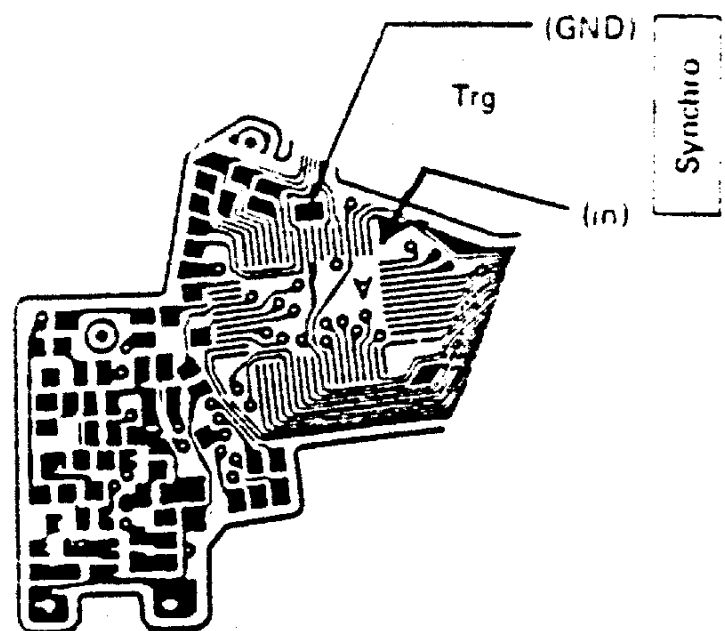
6. Trg data latch circuit OK?

(called also CPU Trg)

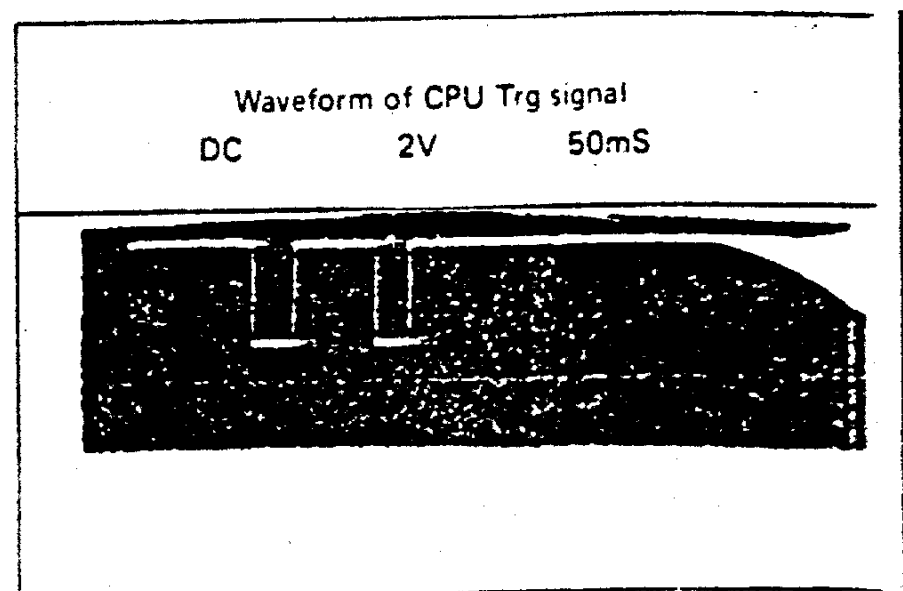
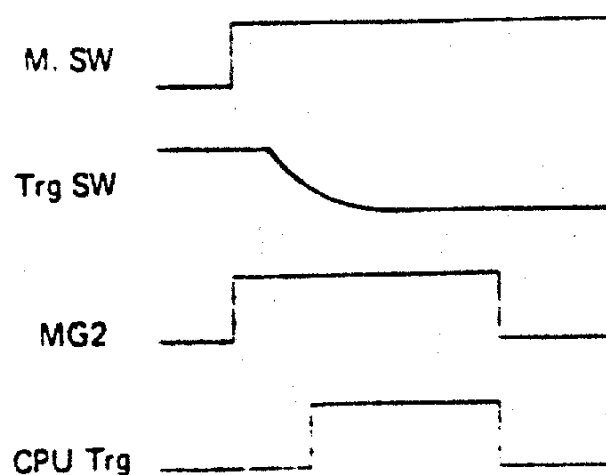
- Select BULB mode for checks.



- No external circuit connected.
- Shutter is locked at the second and later operations when Trg data latch circuit is defective.



Time chart (When Trg data latch circuit is normal)



- Cause for no waveform
- No waveform on CPU Trg

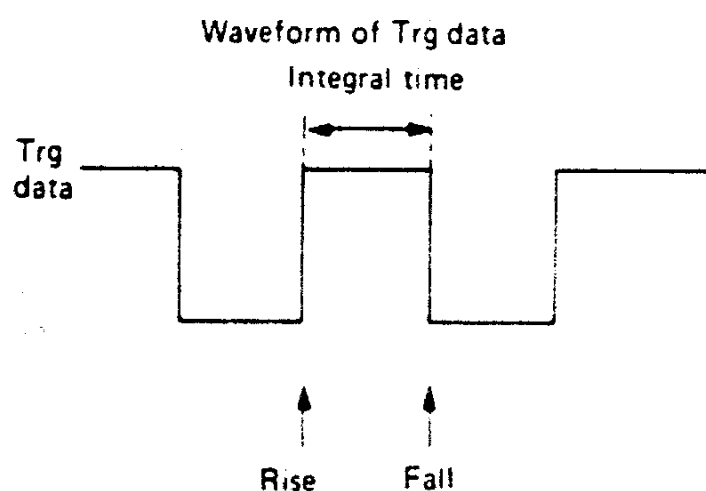
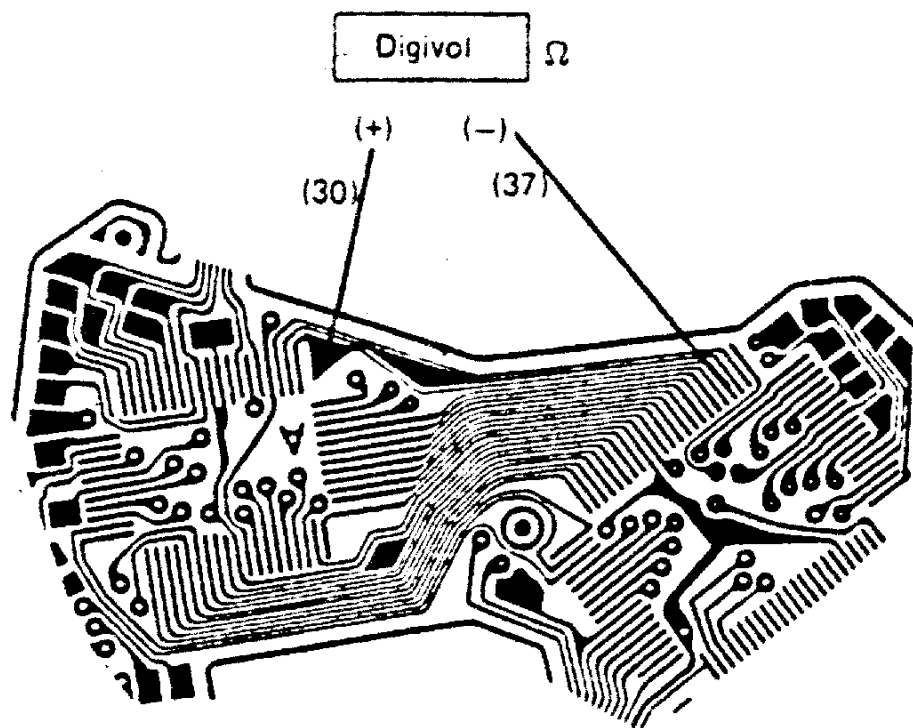
(a) No rise of waveform

- (1) When Trg signal waveform is observable
 - Pattern broken between CPU30 and B.P. 37
 - IC leg improperly soldered CPU30, B.P. 37
 - B.P. IC defective
- (2) When Trg signal waveform is not observable
 - Trg drive circuit defective

(b) No fall of waveform

- (1) When MG2 signal is provided
When rise of waveform is observable
 - B.P. IC defective (latch circuit defective)
 - (2) When MG2 signal is not provided (shutter kept open)
When rise of waveform is observable
 - B.P. IC defective (comparator)
 - Input stage of head amplifier defective (Check output of head amplifier)
- See page E-151.

(Check pattern for breakage)



(2) Shutter locked in both AUTO and MANUAL modes (Check with a digital voltmeter)

A. When indication is normal

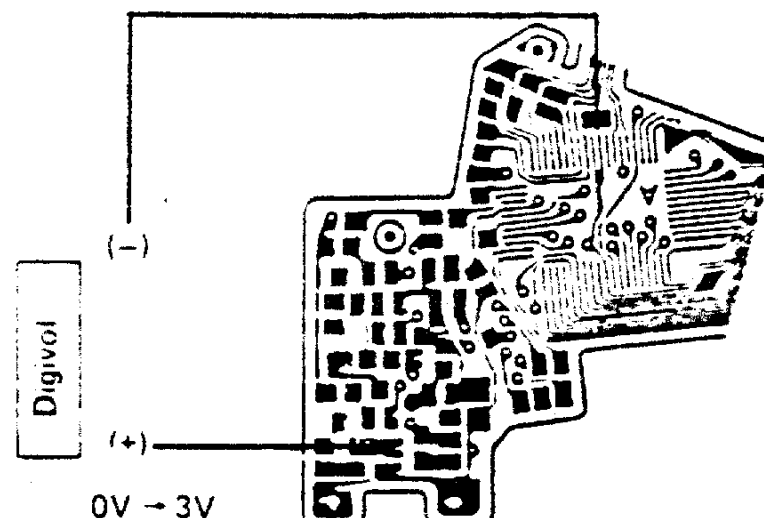
1. Shutter locked from the first though indication normal within viewfinder

- Shutter locked upon releasing it even after resetting the camera A.M to B.C mode with selector lever
- Main cause: M SW, MG1 or RS circuit board defective

(1) Check of M SW

- 3V applied to land of M SW?
 - Release shutter with camera set in BULB mode.
 - M-SW or related part defective if voltage is lower than 3 V.
 - For checking M-SW by observation of waveform, see the preceding page (E-168).

Check of M-SW



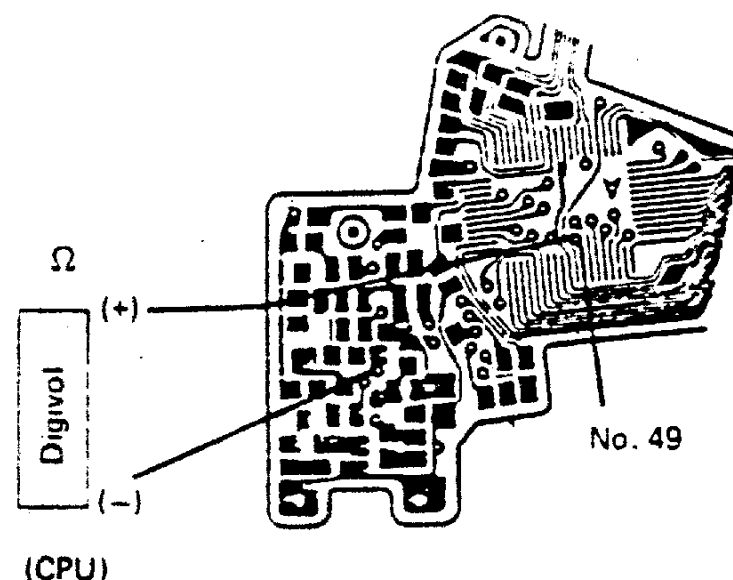
(2) Check of RS circuit board

1. No MS signal input to CPU

- Allow \pm compensation to be indicated within viewfinder.
- Release shutter. \pm LCD stops flickering while M-SW is kept ON?
- If not, MS signal is not provided to CPU.
- When MS signal is not provided to CPU
 1. Wire broken between collector of Q101 and CPU pin No. 49
 2. CPU pin No. 49 soldered improperly.

Check of MS signal to CPU

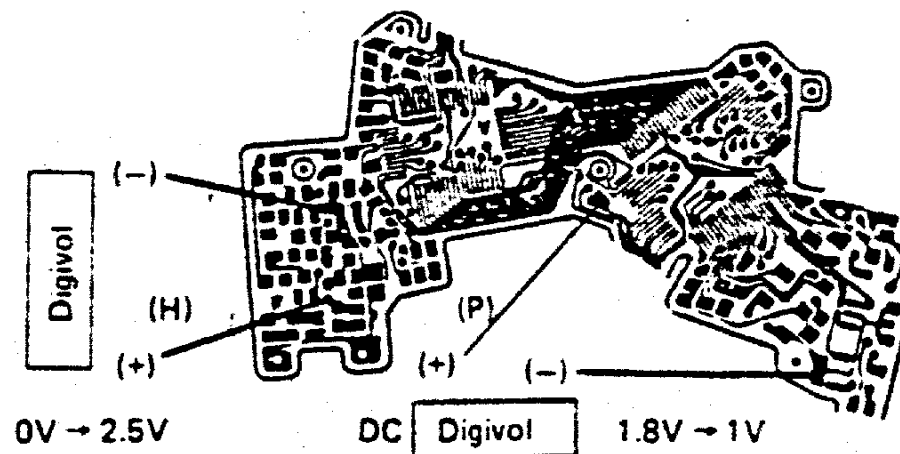
- OK when \pm compensation LCD stops flickering while M SW is turned ON.



2. No MS signal input to B.P.

- Vref switchable from 1.8 to 1 V?
- Measure voltage on (P) land.
- Or measure voltage on (H) land.
0 V \rightarrow 2.5 V

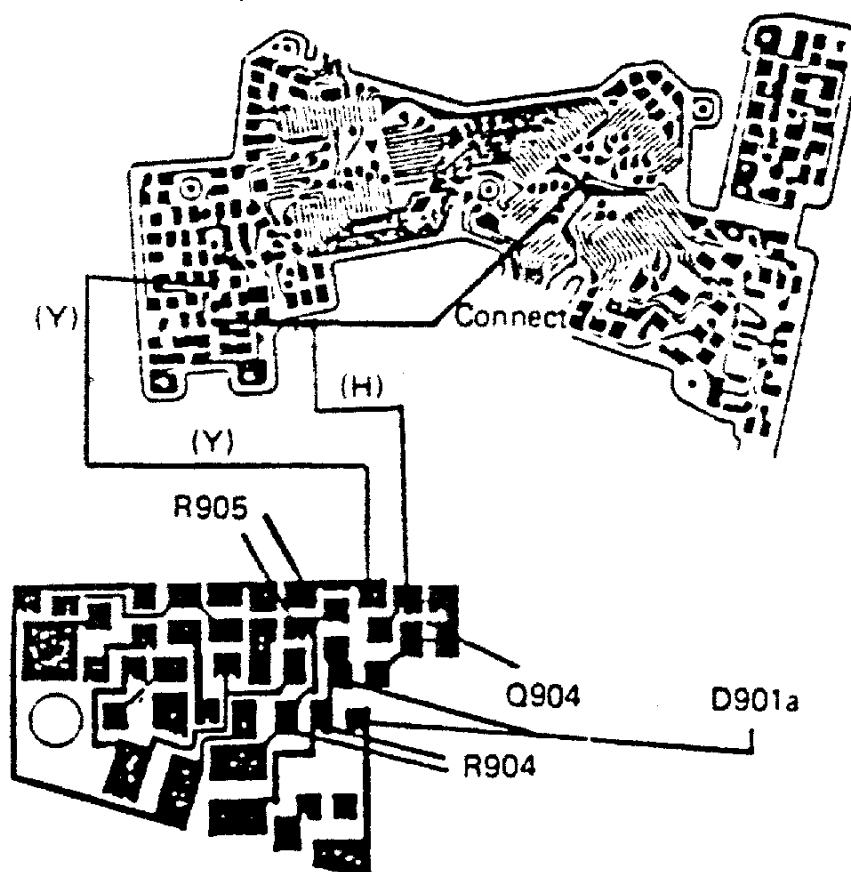
Check of MS signal to B.P.



- When no signal is provided to B.P. only

1. (H) lead wire broken or improperly soldered.
2. (Y) lead wire broken or improperly soldered.
3. Reset circuit defective
Q904, R904, R905, R132, D901a

No signal to B.P. only

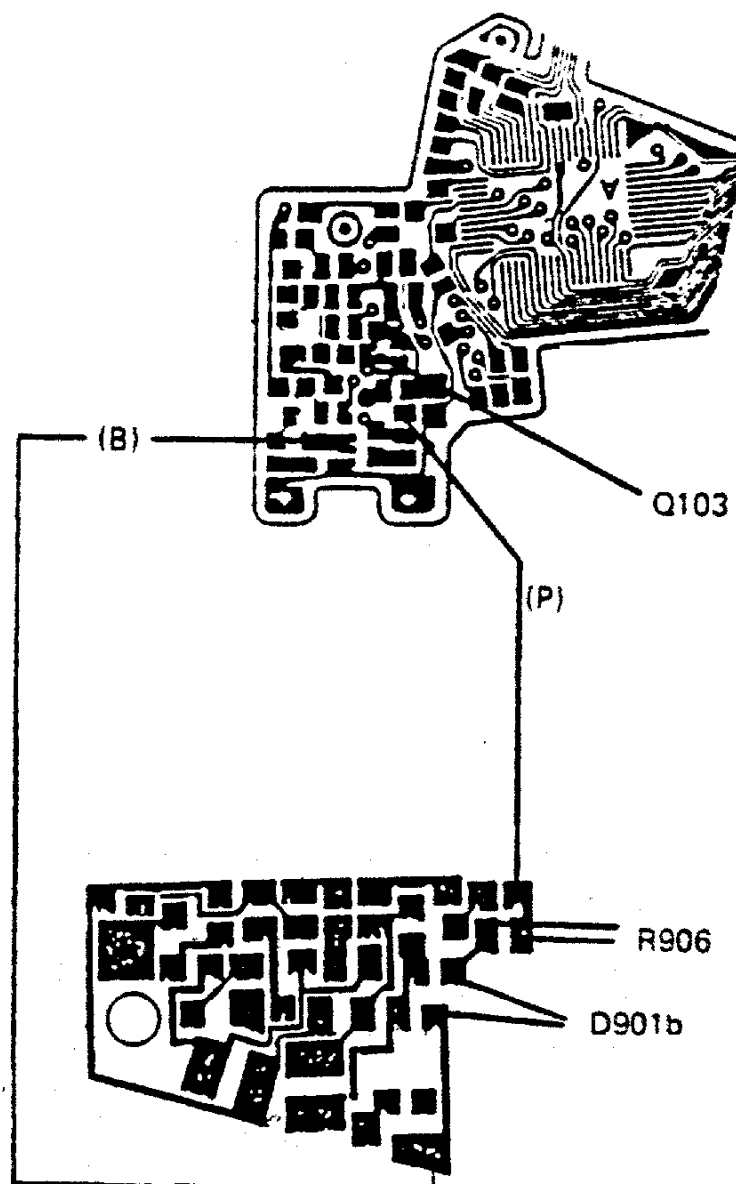


3. No signal to CPU and B.P.

- No signal to CPU and B.P.

1. Q103 broken
2. (P) lead wire broken or improperly soldered.
3. R906 or D901 defective
4. (B) lead wire broken or improperly soldered.

No signal input to CPU and B.P.

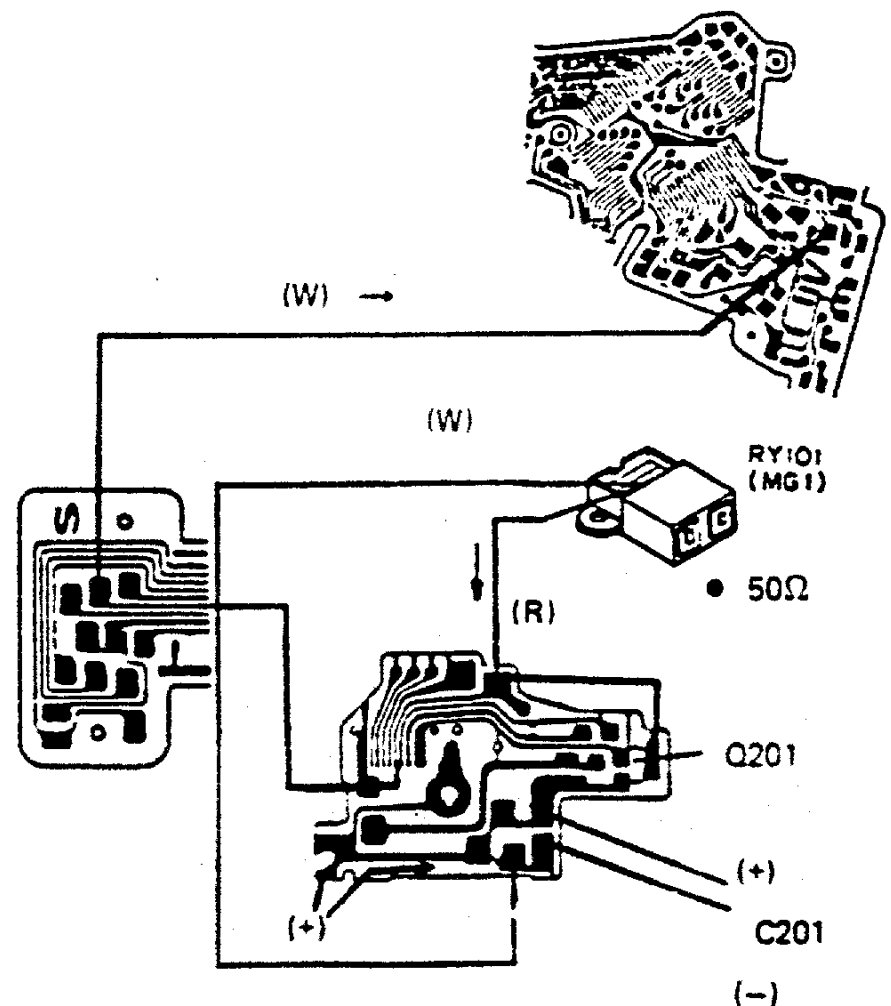


Check of MG1

-
- A schematic diagram of a transformer with a shorted secondary winding. The primary winding is on the left, and the secondary winding is on the right. The secondary winding is shorted, as indicated by the label "Short" and the symbol $(-)$. The primary winding is labeled (R) .

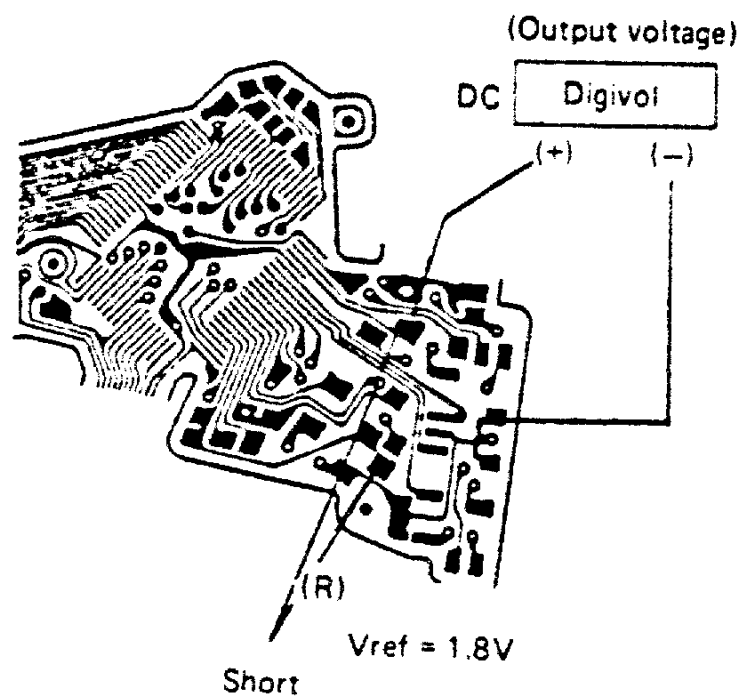
Diagram illustrating a short circuit in a camera body. The diagram shows a cross-section of the camera body with a short circuit indicated by a line labeled "Short" and a positive charge symbol "(+)" near the "Camera body" label. A component labeled "Q201" is shown with a "Pattern broken" label pointing to its base.

- MG1-C



(4) Check of MG1 output voltage

- Voltage variable on land of MG1?
 - Check procedures (camera in wound condition)
 1. With shutter kept in locked condition, short land (R) of MG1 to $V_{ref} = 1.8\text{ V}$.
 - OK when shutter is released with a clicking sound.



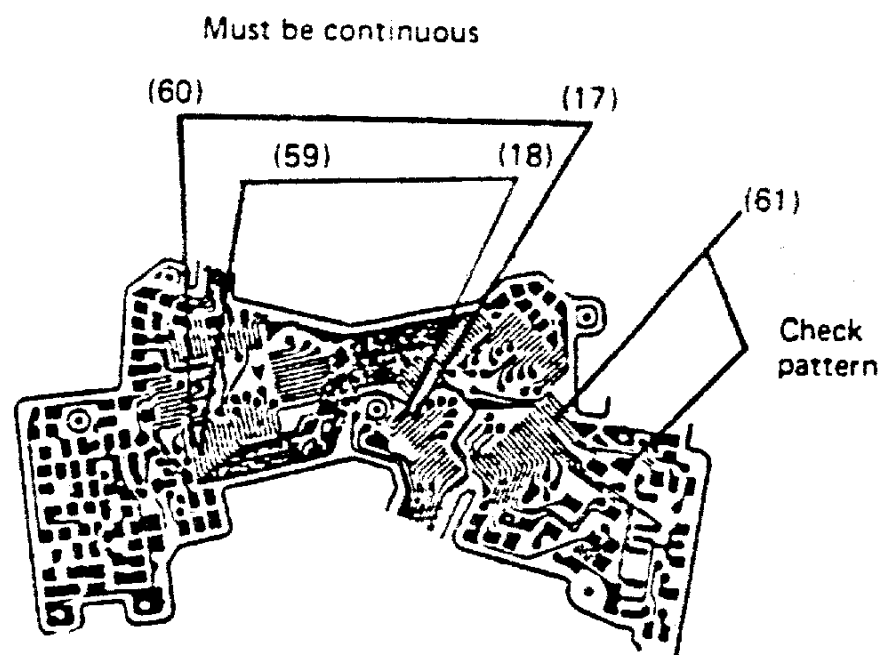
2. Check voltage on land (R) of MG1.

2.6 V → 2.5 V: OK

Release shutter (at low speed)

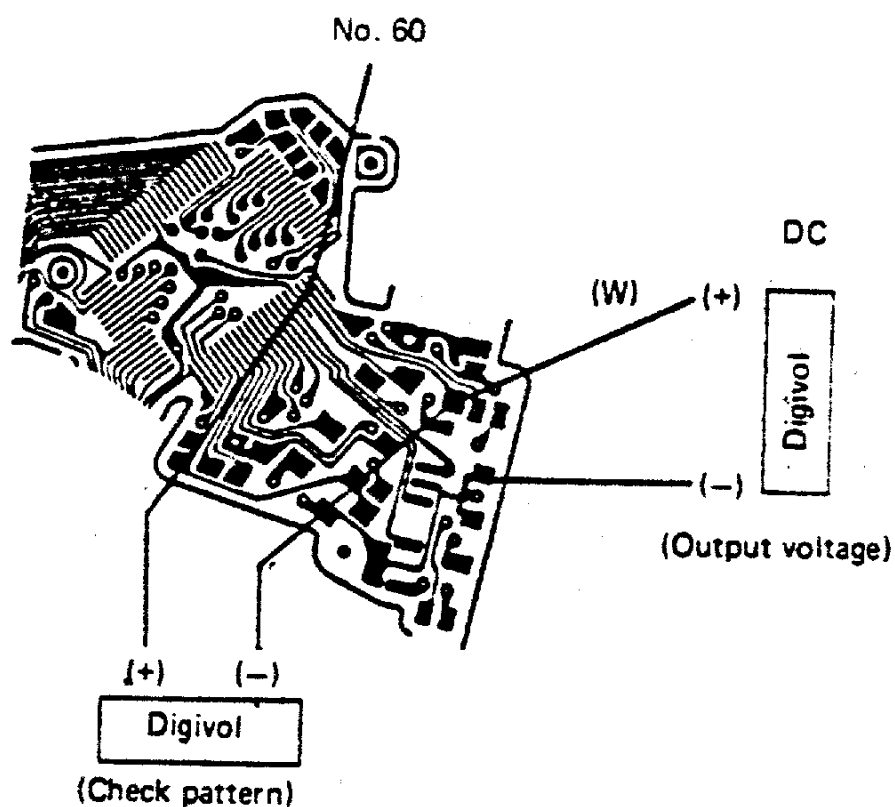
• Voltage invariable

1. Pattern broken
2. B.P. pin No. 61 improperly soldered.
3. No MA or MB signal from CPU
(MA = 0.5 V, MB = 0 V)
CPU legs No. 59 (MA) and No. 60 (MB)



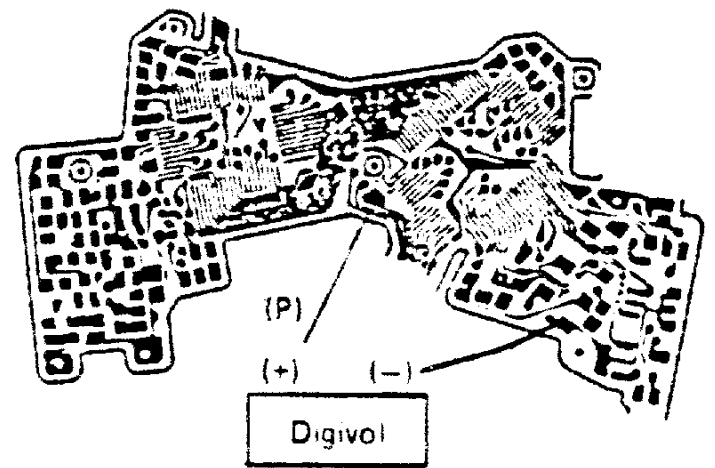
(5) Check of MG1-C output voltage

- Check procedures
- Check voltage on (W) of MG1-C
 - 0 V → 2.3 V
 - Check voltage variation while releasing shutter at low speed.
- Voltage invariable
 1. Pattern broken
 2. B.P. pin No. 60 improperly soldered.
- See (3)-2-(a) on the preceding page.



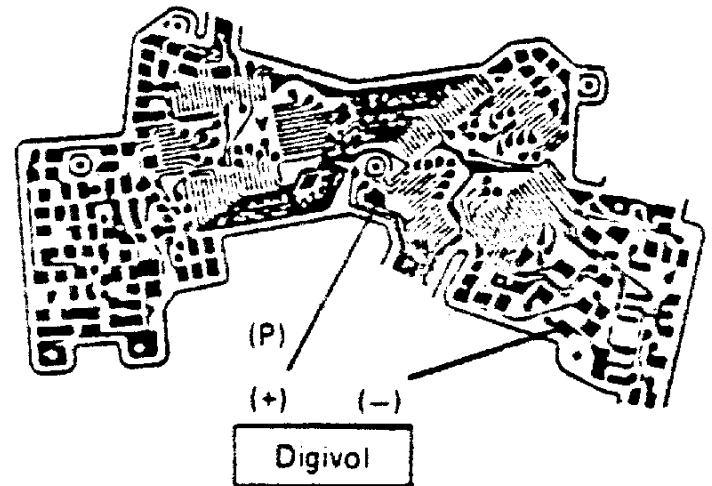
(6) RV101 shorted

- Check procedures
 - Check voltage of 1.8 V/1 V on land.
 - When M SW is turned ON
 - 1.8 V → 1 V: OK
 - 0 V
 - RV101 shorted



(7) No switching of 1.8 V/1 V on terminal when M-SW is turned ON

- 1.8 V is not switched to 1 V after turning ON of M-SW.
- IC defective



2. Shutter locked at second and later operations

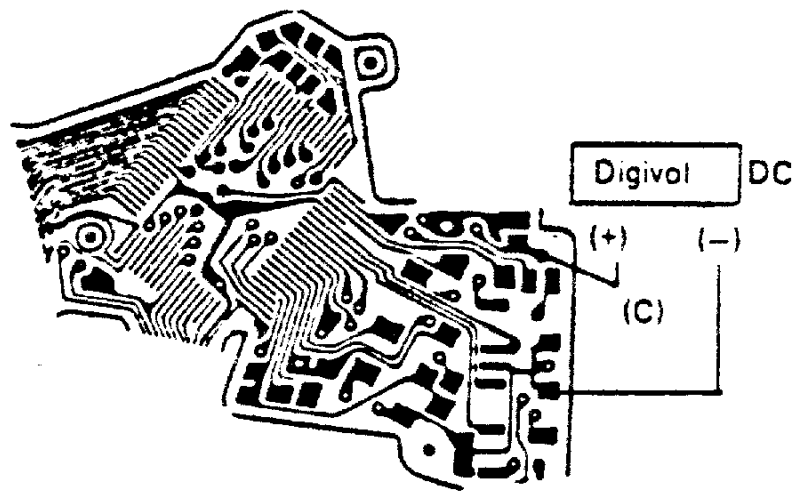
- After resetting camera, shutter can be released normally at the first operation but locked at the second and later operations.
- This symptom to halfway stop of the program.
- This symptom is traced to a trouble in MG-1 drive circuit or later stage.

(1) Check of Trg

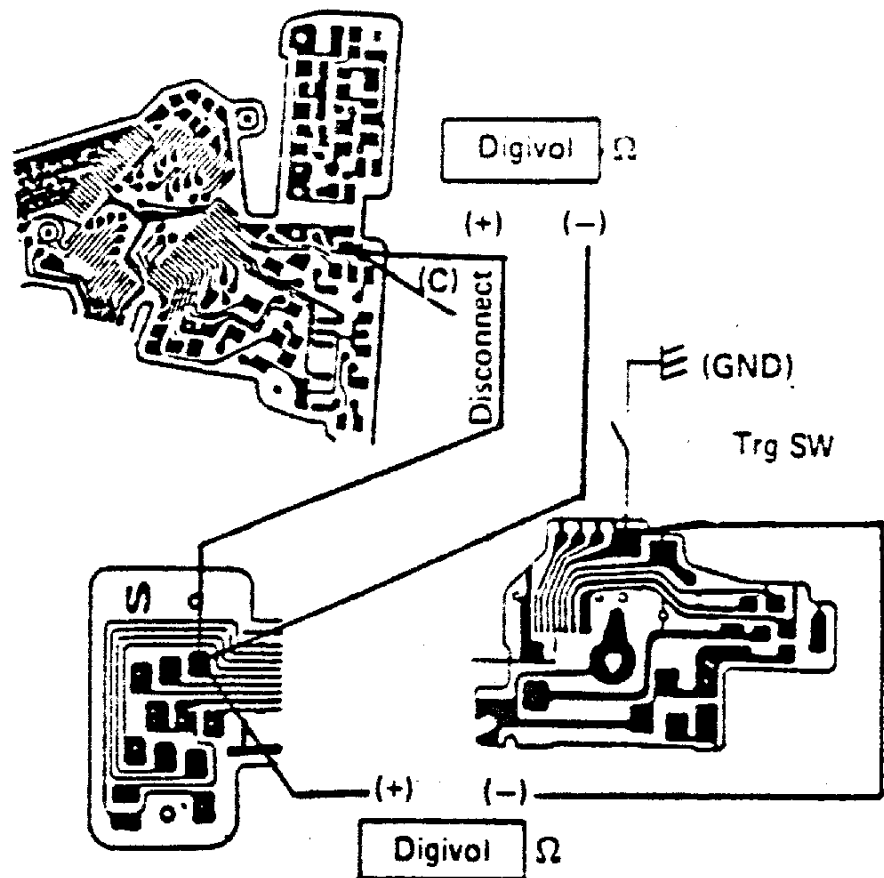
(a) Trg voltage variable?

- Check procedures
 - Disconnect (C) lead wire.
 - Check voltage on (C) lead wire.
3 V → 0 V: OK
 - Release shutter in BULB mode.
 - Voltage should desirably be checked with a synchroscope.
- Voltage invariable
 1. Lead wire or pattern broken
 2. Trg SW broken or improperly soldered
 3. Trg SW shorted to camera body

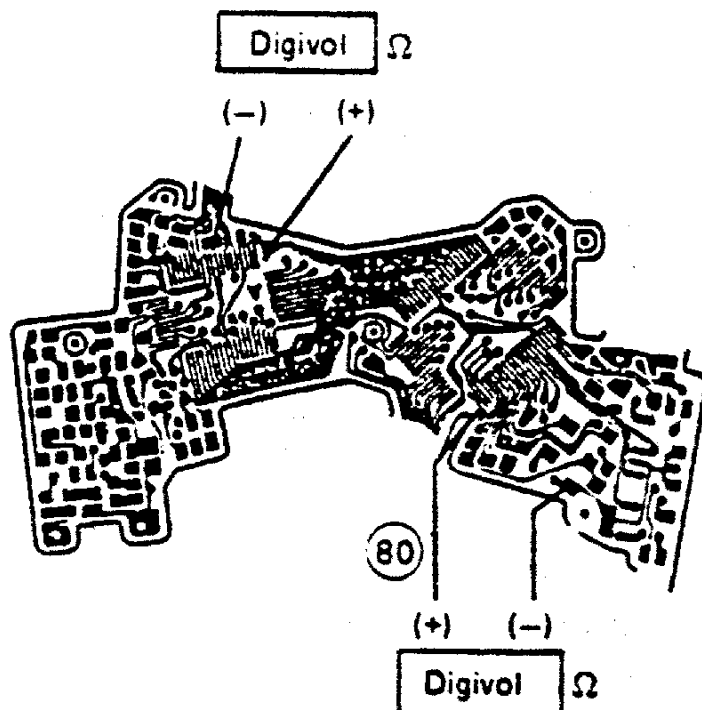
Check of Trg voltage



Lead wire C101 Pattern check



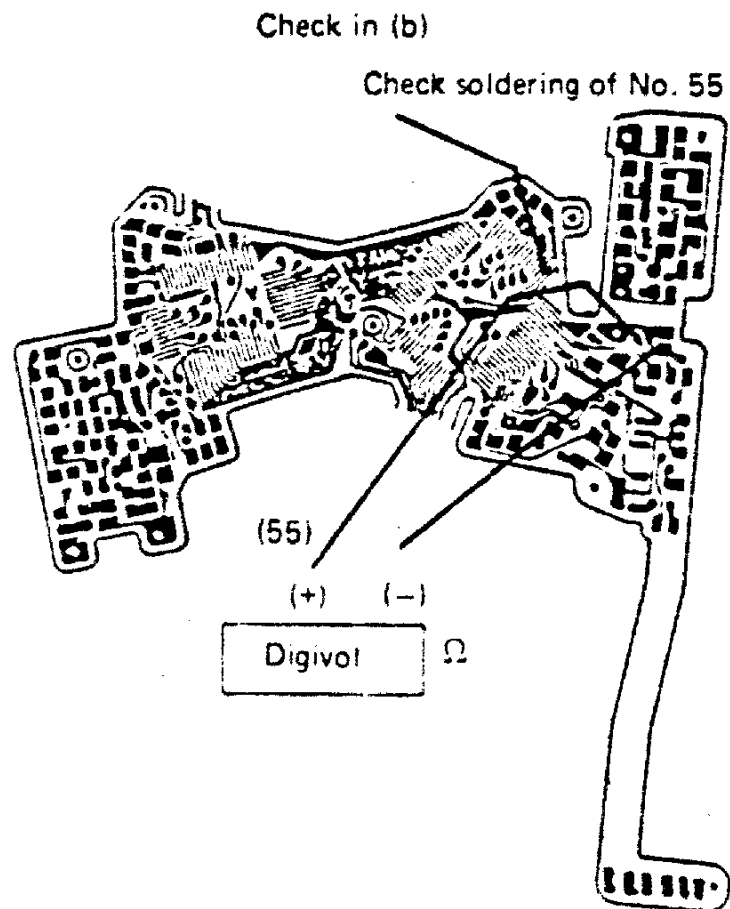
Checks of Trg output and Trg data output



(b) Trg output (on B.P. No. 80) and Trg data output voltage variable?

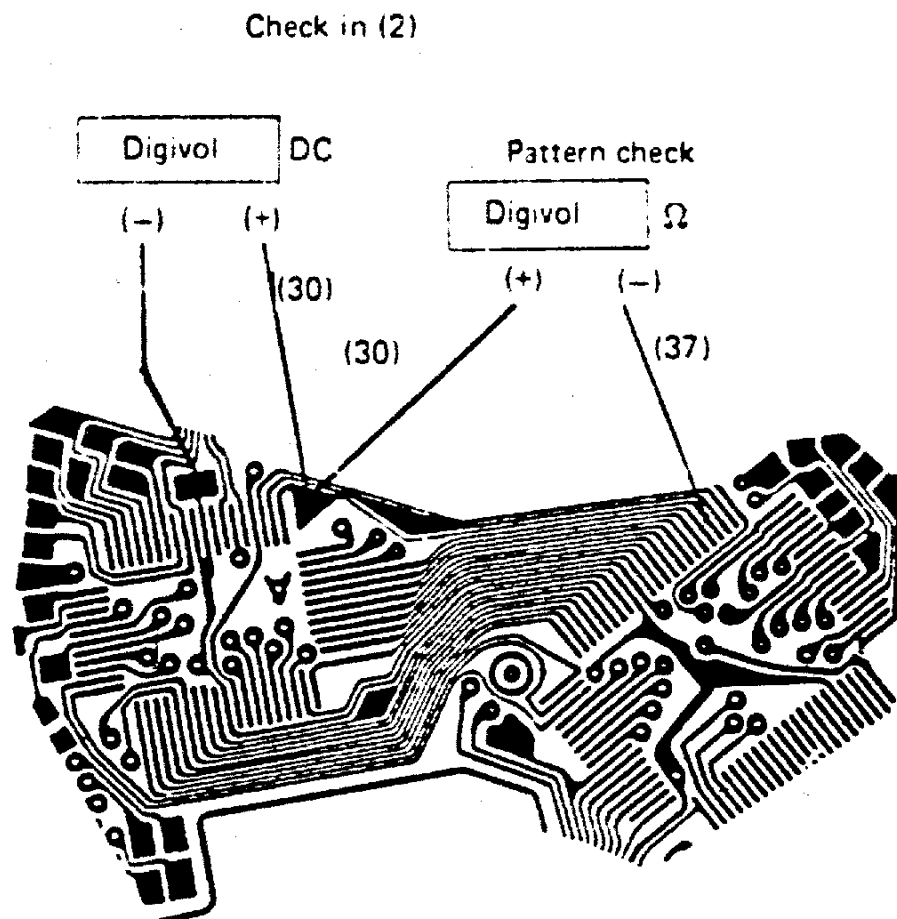
- Before check, make sure that Trg voltage (mentioned in (1)-(a) above) is normal.
- 1. Check voltage on B.P. No. 80 (R127 land).
- 2. Check voltage on CPU Trg land.
0 V → 3 V in 1 and 2 above: OK
- Release shutter in BULB mode.
- Voltage should desirably be checked with a synchroscope.

1. When neither Trg output nor Trg data output is variable
 1. Pattern broken
 2. B.P. No. 55 improperly soldered
 3. B.P. IC defective
2. When either voltage is variable
 - When no Trg output (B.P. No. 80) is provided
 - B.P. No. 80 or IC defective
 - When no Trg data output is provided
 - B.P. No. 37 or IC defective
 - CPU No. 30 defective
 - Pattern broken
 - See (2) below



(2) Check of Trg data voltage

- When output is provided to B.P. No. 80 and output is not provided to Trg data No. 37 in (1)-(b)-2 above.
 1. B.P. No. 37 defective
 2. CPU No. 30 defective
 3. Pattern broken
 4. B.P. IC defective



(3) Others

1. Comparator circuit defective (B.P. defective).
2. When program stops halfway, shutter is locked at the second and later operations.

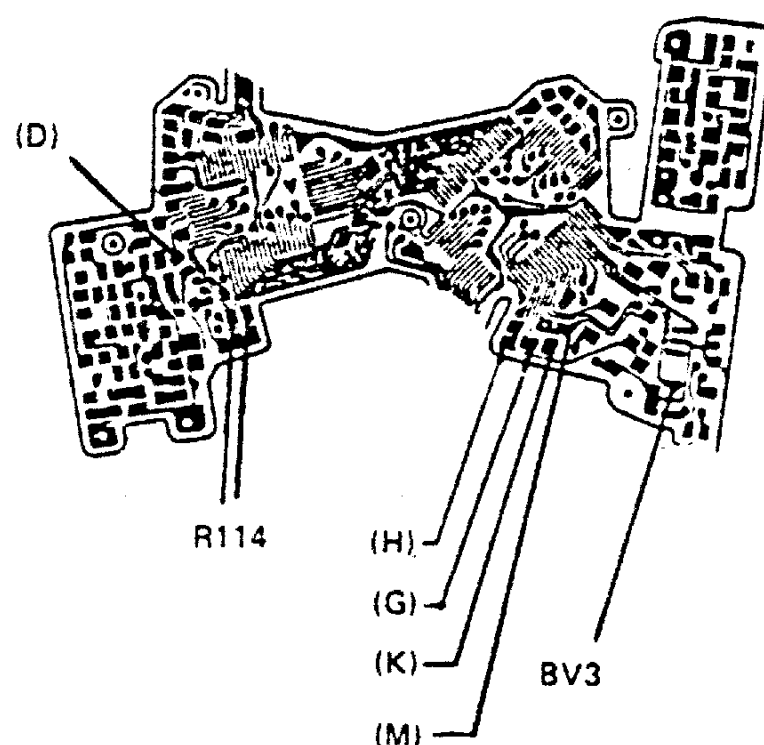
B. Indication also abnormal

System clock circuit or data input circuit defective

- In this case, data input circuit is also defective.
- Correct indication referring to "LCD Indication Abnormal".

(Reference)

1. System clock circuit defective
 - R114 broken or shorted
 - See page E-118.
2. BV circuit defective
 - BV3 shorted to (—) terminal
 - See page E-118.
3. TV AV circuit defective
 1. (H) lead wire shorted to camera body.
 2. (K) lead wire shorted to camera body.
 3. (G) lead wire shorted to camera body.
 4. (K) and (M) lead wire shorted to each other.
 - See page E-117.
4. CV SV circuit defective.
 - (D) lead wire shorted to camera body.
5. For other symptoms, refer to "Electric System Dead".
 - See page E-95.



(3) Shutter locked in AUTO mode only

- B.P. IC defective

(4) Shutter locked in MANUAL mode only

- B.P. IC defective

3-4 Shutter Left Open

- Check whether or not indication is normal.
- When indication is abnormal, correct it referring to "LCD Indication Abnormal".
- Preparations
 1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchroscope (storage)
 2. Mode:
 - AUTO or MANUAL
 3. Others
 - Release shutter for checks.

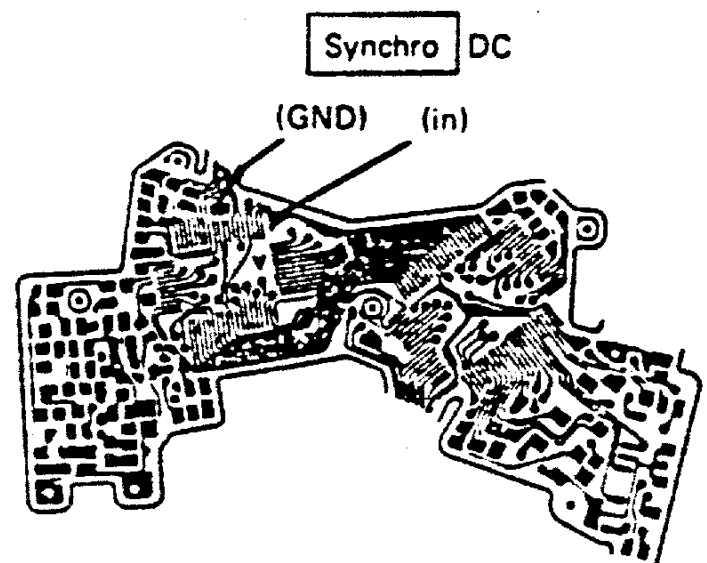
(1) Shutter Left open in both AUTO and MANUAL modes

- Trg data signal provided?
 - Check procedure
Observe waveform on trigger rand of CPU with a synchroscope (or check voltage with a digital voltmeter).

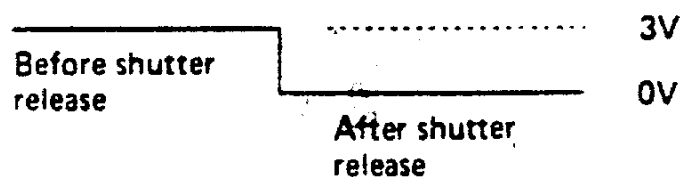
A. When Trg data signal output is not provided

- Trg data kept at L level after releasing shutter.
- In this case, Trg SW or related part defective.

Waveform of Trg data signal

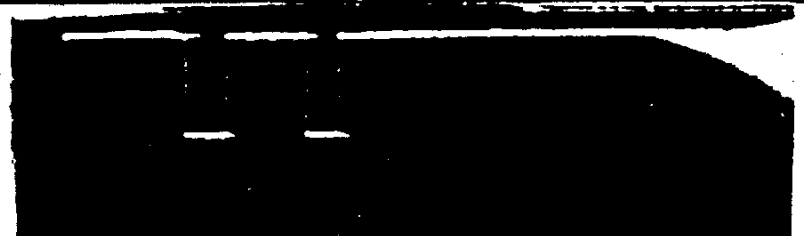


Abnormal waveform



Normal waveform of Trg data signal

DC 2V 50ms



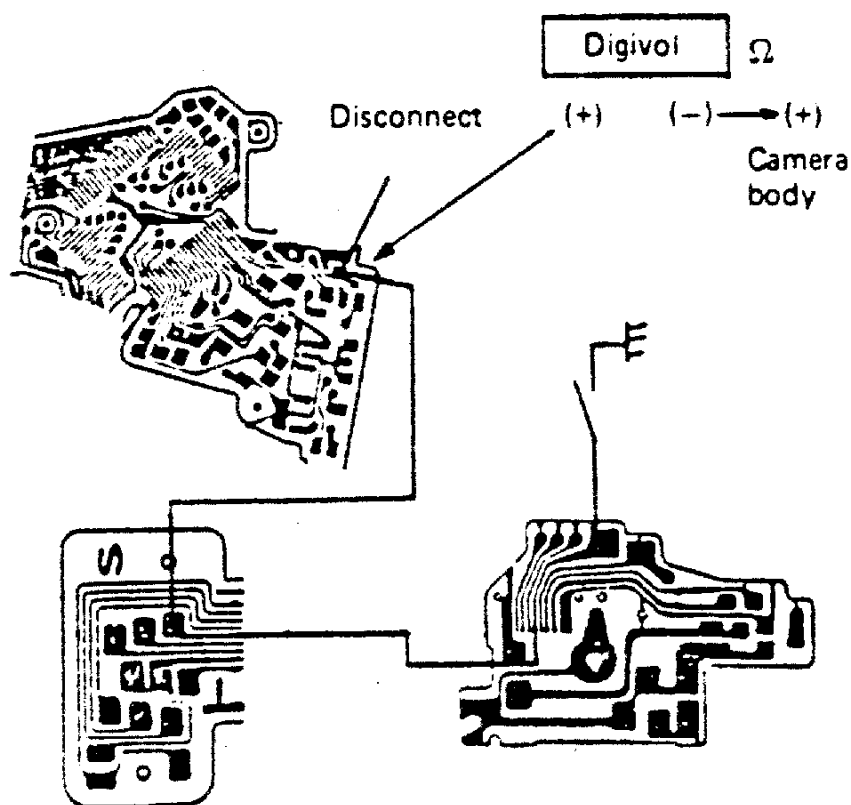
(1) Trg SW or related part shorted

- Check procedures

- Disconnect (C) lead wire.
- Set camera in BULB mode.
- Resistance between camera body and (C) lead wire should normally be:
 1. ∞ before film winding.
 2. 0Ω after film winding.
 3. Varied from 0Ω to ∞ upon releasing shutter.

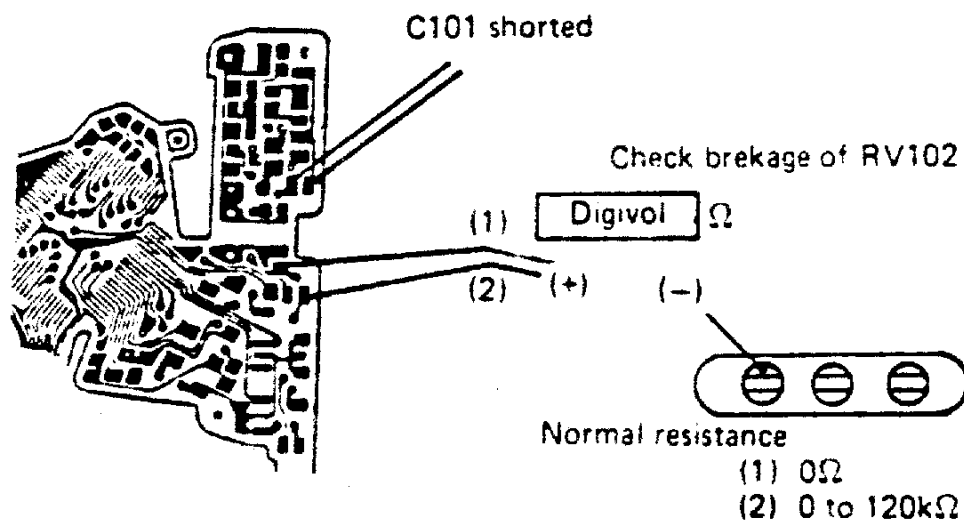
- When resistance is 0Ω before film winding Trg SW kept ON

Trg SW and related parts



(2) C101 shorted

- Disconnect and check C101.
- Or disconnect C101 and release shutter. When shutter is closed, C101 is defective.

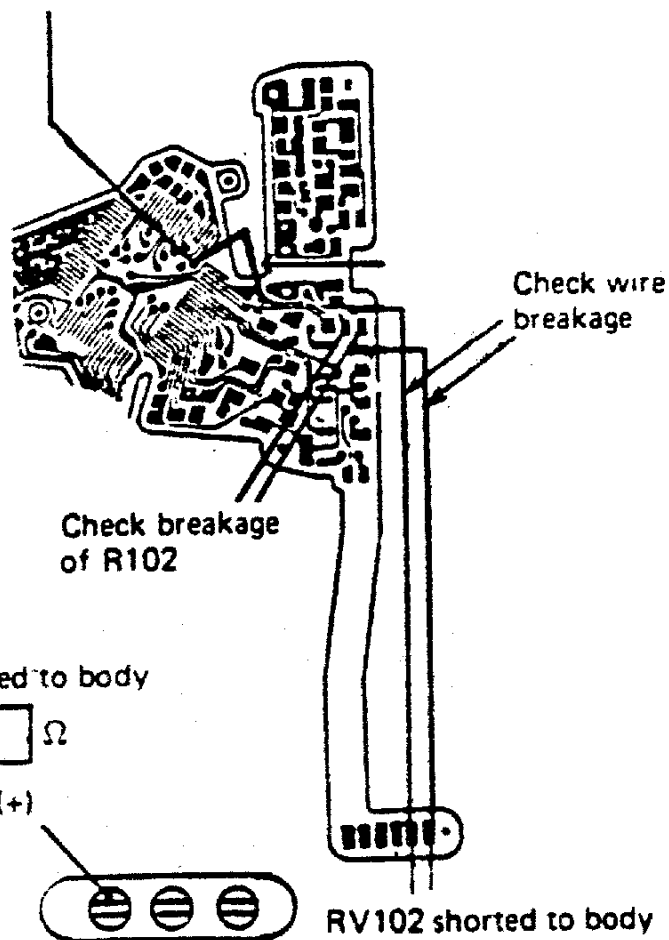


(3) Wire broken in Trg adj. circuit

- Check procedure

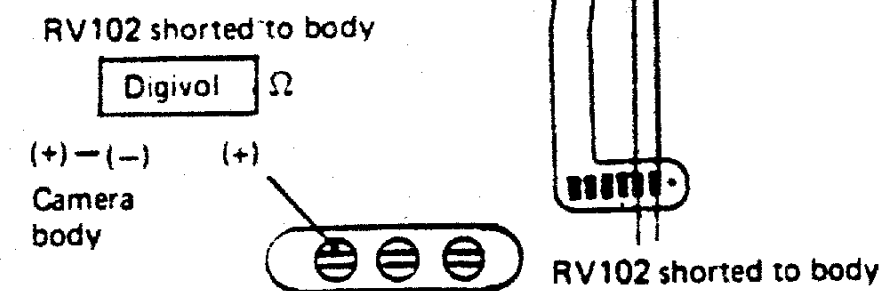
- Check continuity with a digital volt-meter.
- 1. No. 56 improperly soldered.
- 2. R102 broken
- 3. RV102 broken (See drawing on upper right side)
- 4. Check pattern

No. 56 improperly soldered



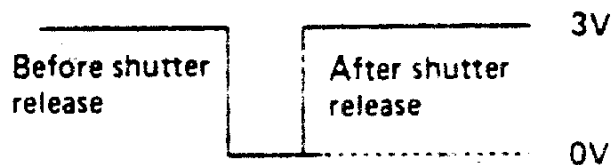
(4) RV102 shorted to camera body

- Resistance between camera body and RV-102 should normally be ∞
- Resistance of 0Ω indicates shorting.

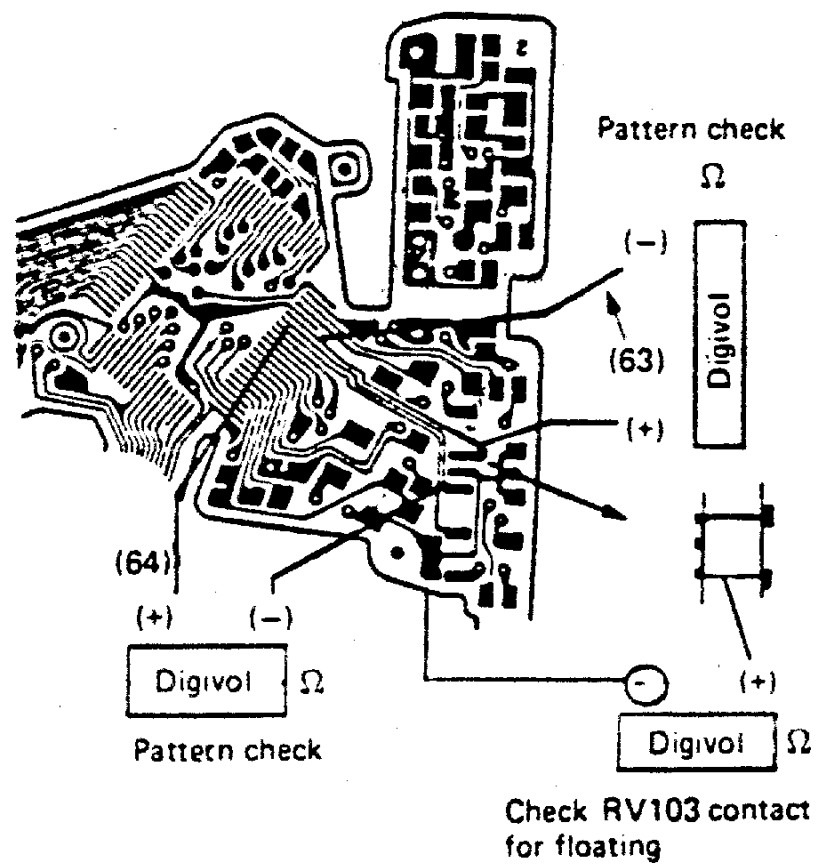


B. Integral end signal not inputted

- Main comparator defective (IC defective)
- Upon releasing shutter, Trg data signal drops from H to L level and rises to H level. Then, it does not drop to L level.



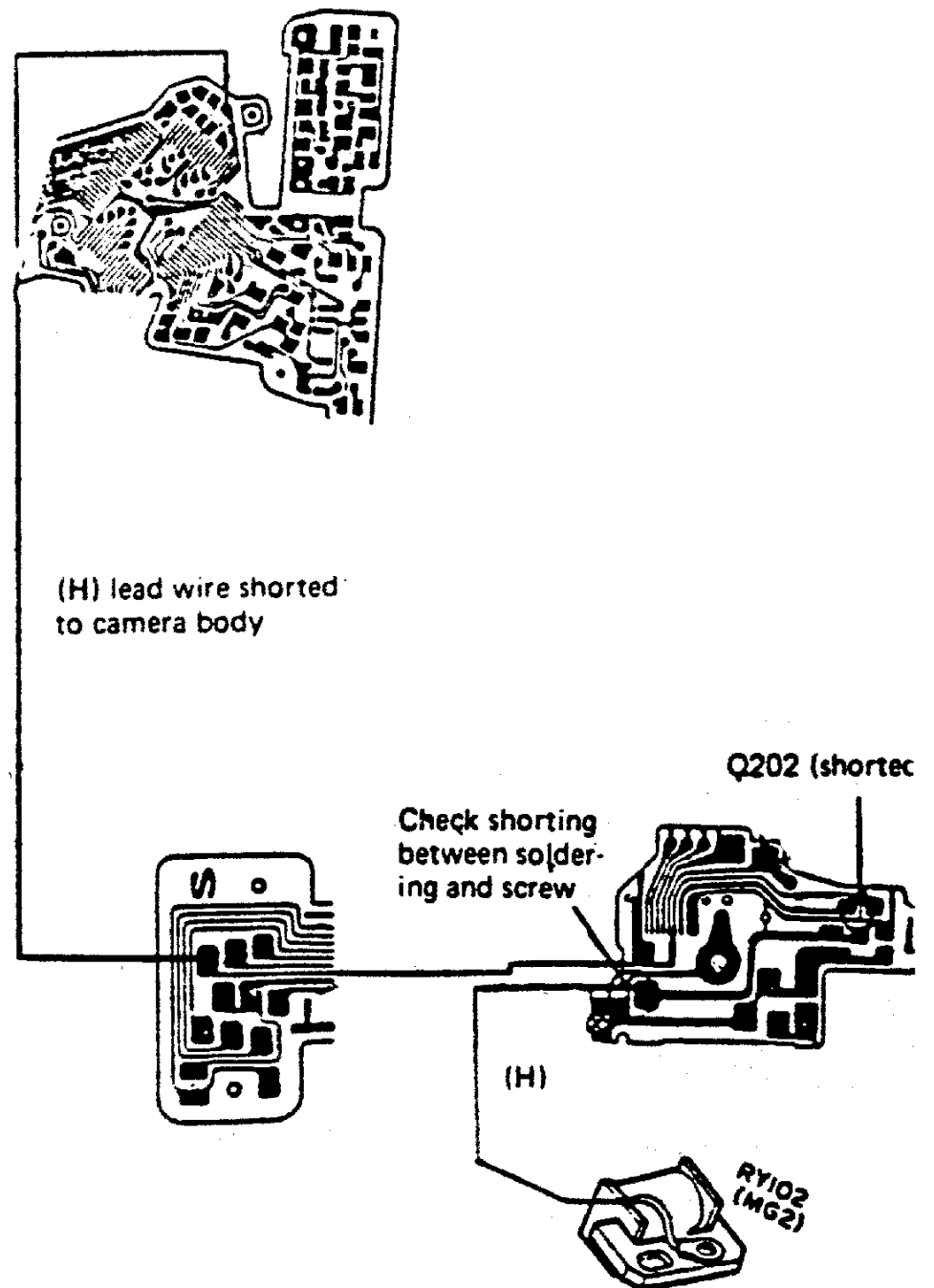
- (1) RV103 broken or contact floated up
- (2) Pattern broken
- (3) B.P. IC defective



C. When normal waveform of Trg data signal is observed

- MG2 or related part defective

- (1) (H) lead wire shorted to camera body.
- (2) Q202 shorted or broken.
- (3) Soldering of (H) lead wire from MG2 shorted to screw.



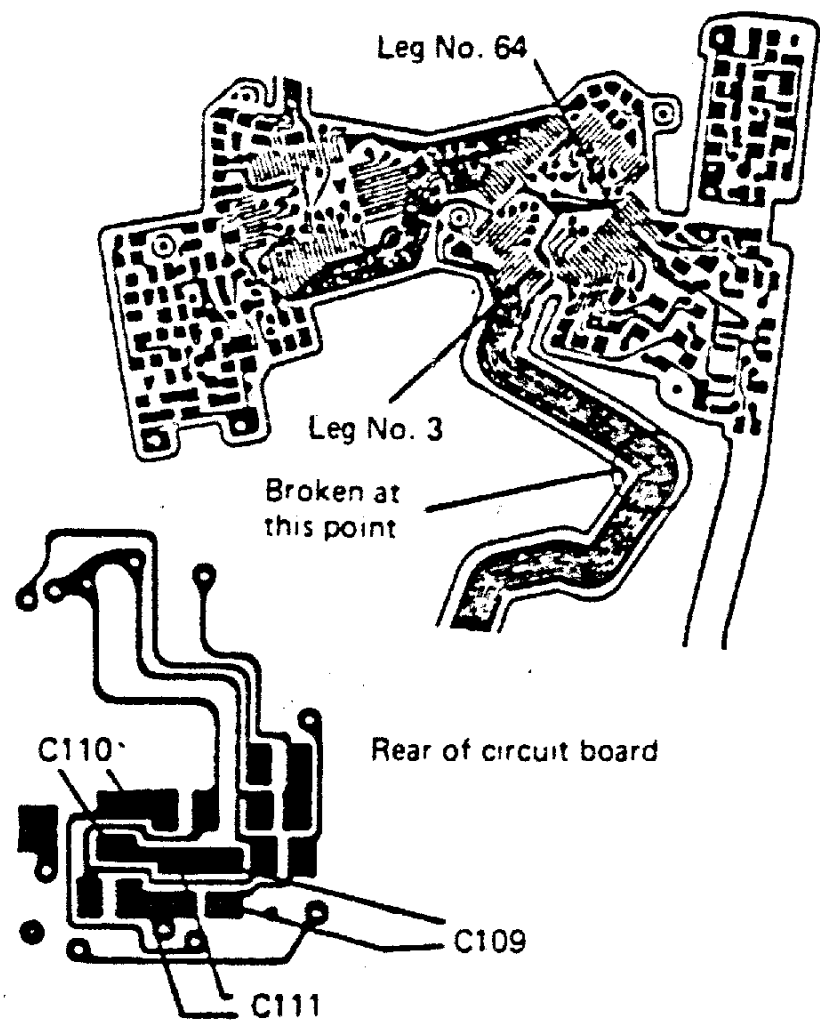
(2) Shutter left open in AUTO mode only

- Trouble caused when integral input voltage is not provided.

Main cause

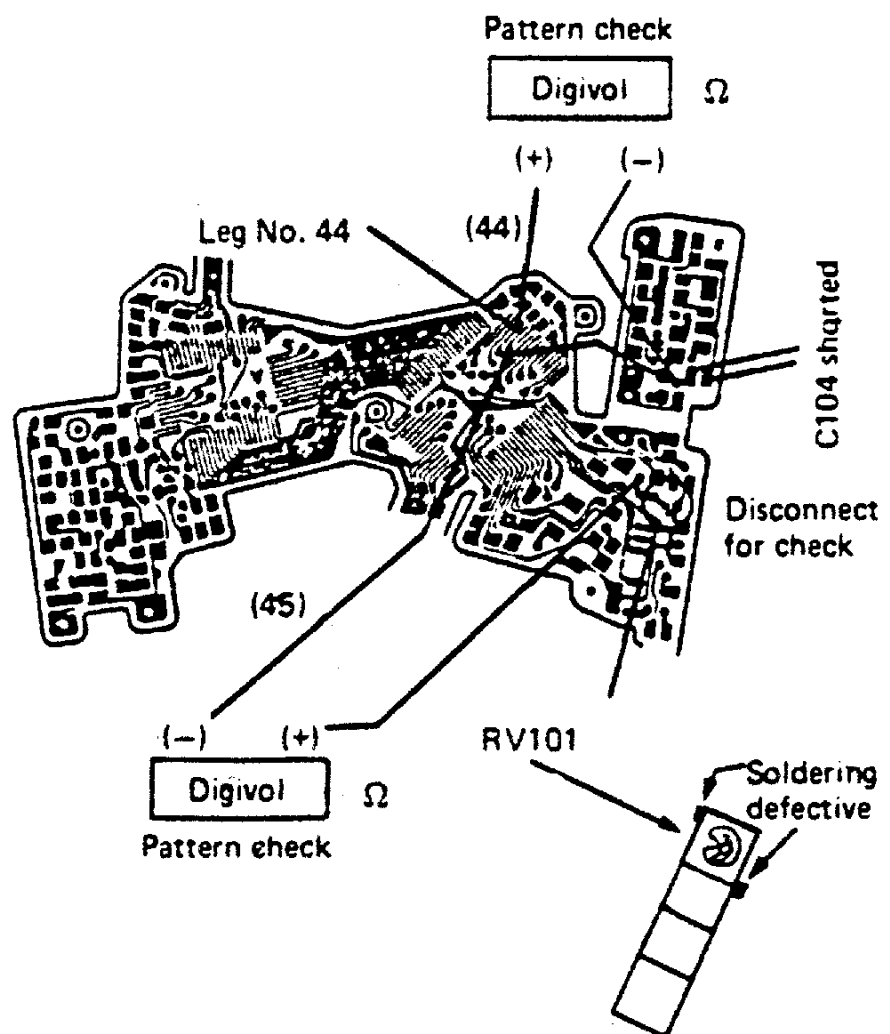
1. Flexible wire broken on M circuit board
 2. B.P. leg No. 3 defective (broken or improperly soldered)
 3. B.P. leg No. 64 defective
 4. B.P. leg No. 80 defective
 5. Head amplifier IC leg No. 10 or 14 defective
- When shutter kept open at low speed
 1. C109 or C110 improperly soldered.
 2. B.P. leg No. 4 or 5 improperly soldered

Shutter kept open in AUTO mode



(3) Shutter left open in MANUAL mode only

- When indication is abnormal, correct it first. Refer to "LCD Indication Abnormal".
- When indication is normal
 1. C104 shorted
When shutter is closed after disconnecting C104, it is defective
 2. Pattern broken
 3. B.P. leg No. 44 improperly soldered
 4. RV101 broken or improperly soldered
 5. B.P. leg No. 45 improperly soldered



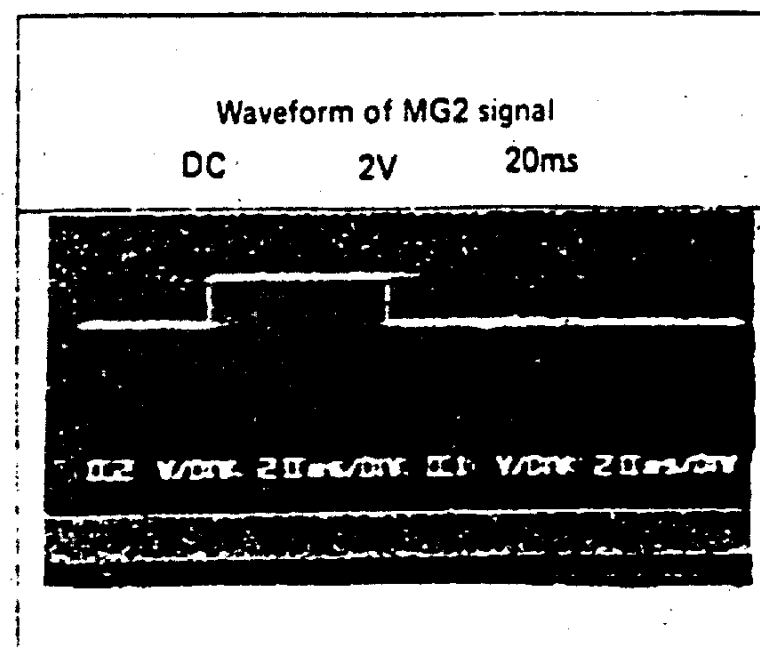
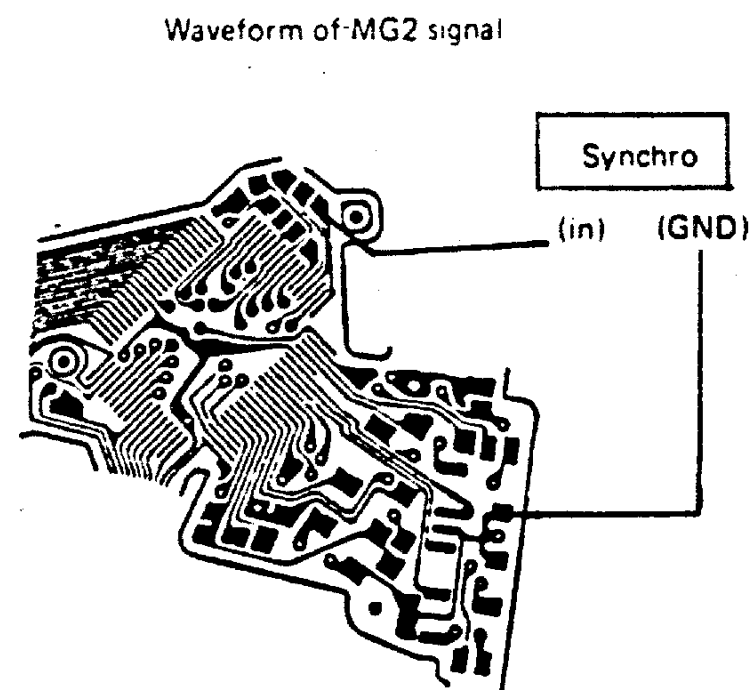
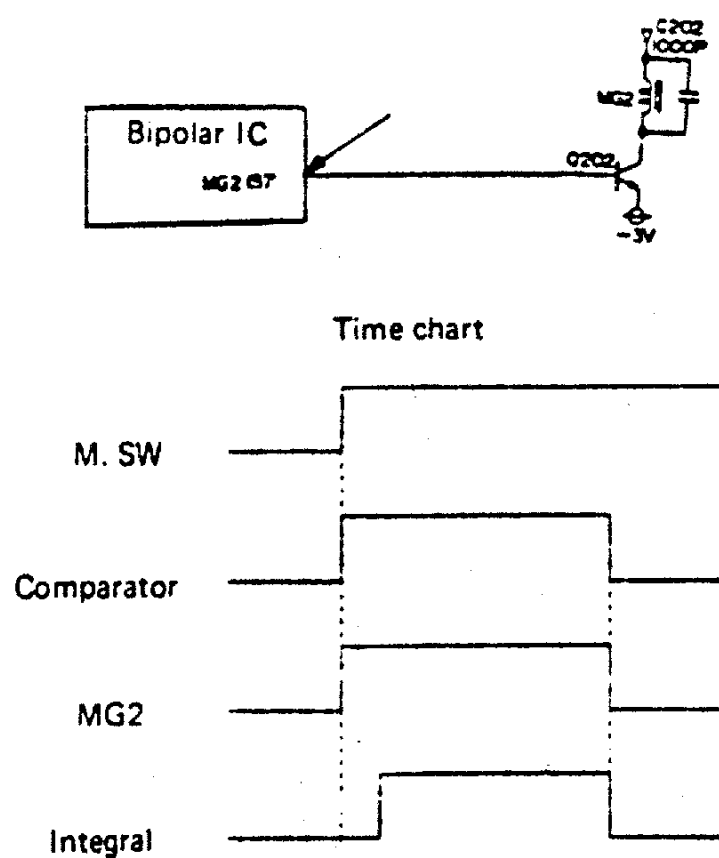
3-5 Shutter Speed Too High

- Check indication whether or not it is normal.
- When indication is abnormal, correct it referring to "LCD Indication Abnormal".
- Therefore, check on a premise that indication is normal.
- Preparations
 1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchroscope (storage)
 2. Mode:
 - AUTO or MANUAL
 3. Replace shutter for checks.

(1) Shutter speed too high in both AUTO and MANUAL modes

1. MG2 signal observable?

- Check with a synchroscope.



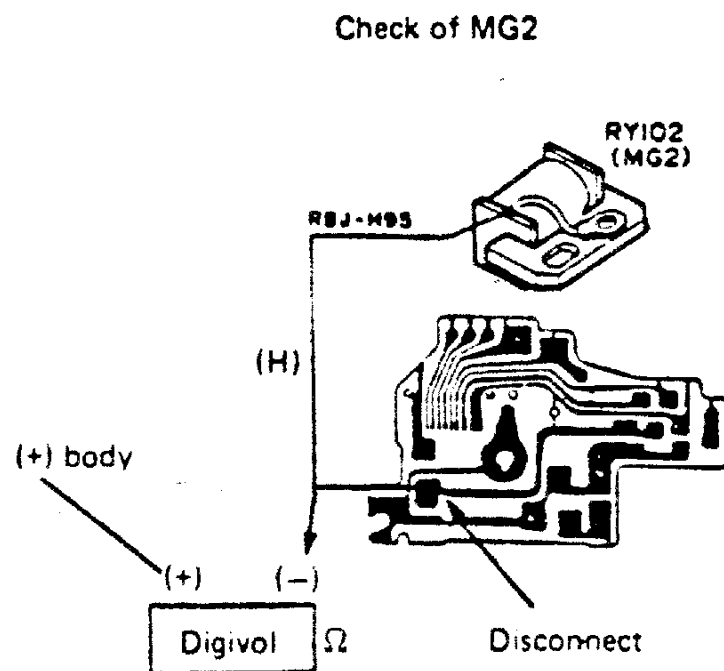
- If a synchroscope is not available, disconnect (H) lead wire. With (H) lead wire shorted to camera body, release shutter. When shutter speed is still too high, MG2 or related part is defective. (See the next page)

A. When normal waveform is observed

- MG2 or related part defective

(1) MG2 or (H) lead wire broken

- Disconnect (H) lead wire.
 - Detach cover.
 - Check continuity.
- Resistance should normally be 600Ω .

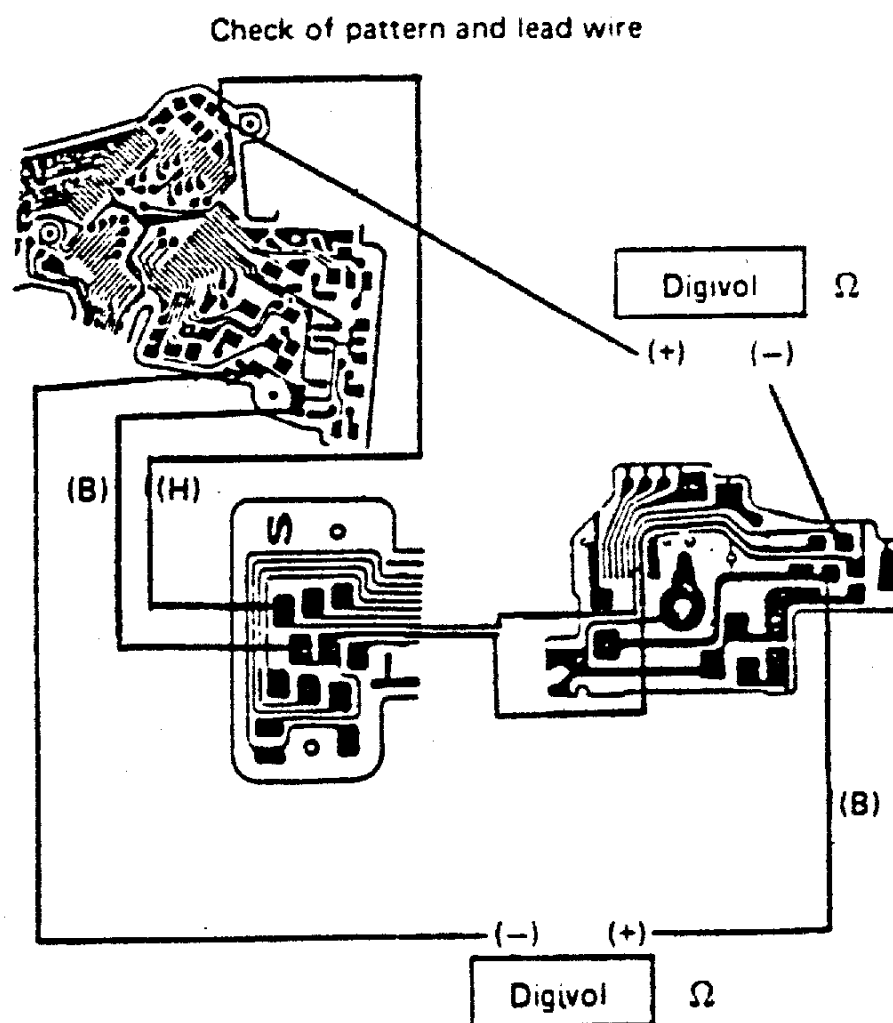


(2) Check (H) lead wire and pattern

- Check continuity.

Check (B) lead wire and pattern.

- Check continuity.



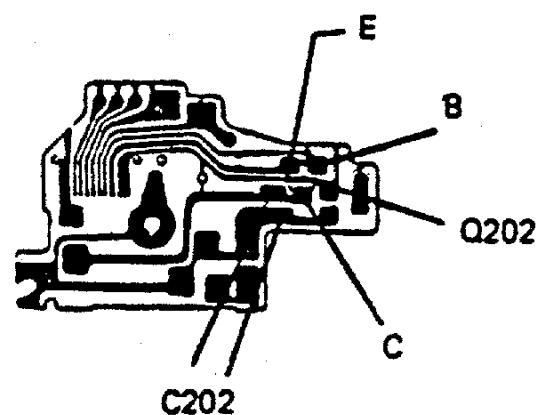
(3) Q202 broken or defective

- Release shutter with emitter and collector of Q202 shorted to each other. When shutter is kept open, Q202 is defective.
- For strict confirmation, disconnect and check Q202.

(4) C202 shorted or defective

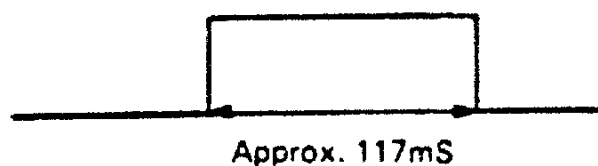
- Release shutter with C202 disconnected.
- When shutter is kept open, C202 is shorted.

Check of Q202 and C202



B. When normal waveform is not observed

- Check whether or not trigger data signal is provided.
 - Release shutter at a low speed in MANUAL (or AUTO) mode.
 - Normal waveform at 1/8 in MANUAL mode.



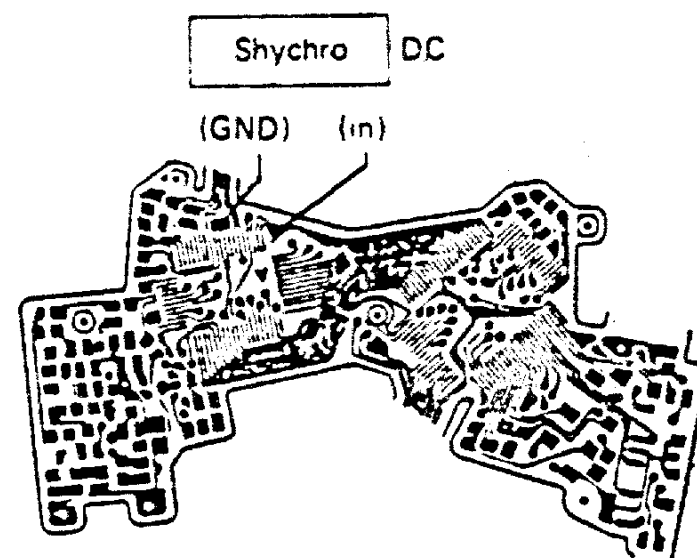
- (1) When normal waveform of trigger data is observed.

- (a) B.P. leg No. 57 improperly soldered.
- (b) Pattern broken
- (c) B.P. IC defective

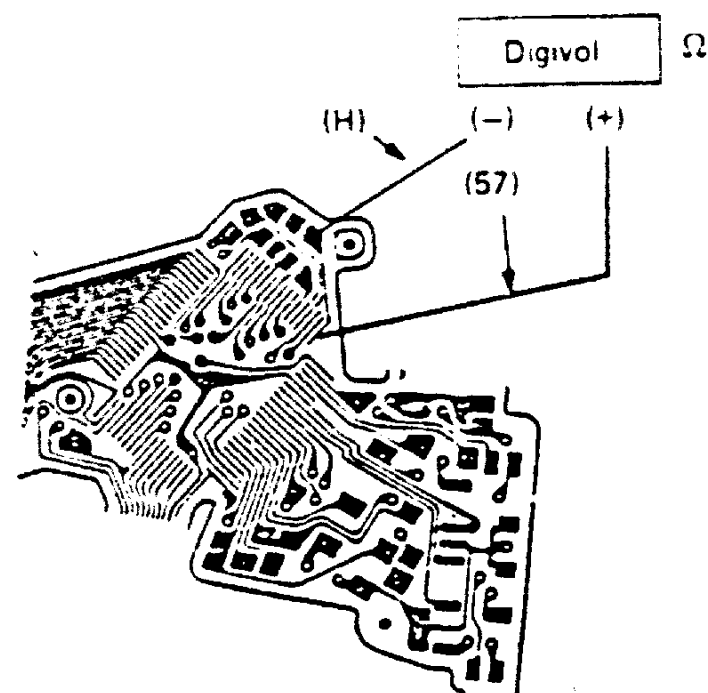
- (2) When waveform of trigger data is not observed

- MG2 and related circuit OK
- Shutter mechanism or B.P. defect

Check of trigger data waveform



Check in (1)



2. M SW chattering

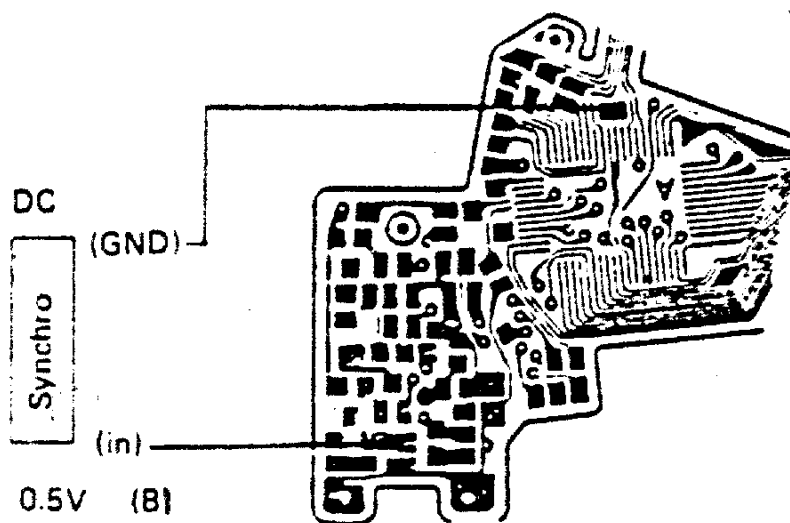
- Check with a synchroscope.
- Normal waveform



- Chattering



Check of M SW chattering



3. Trg SW chattering

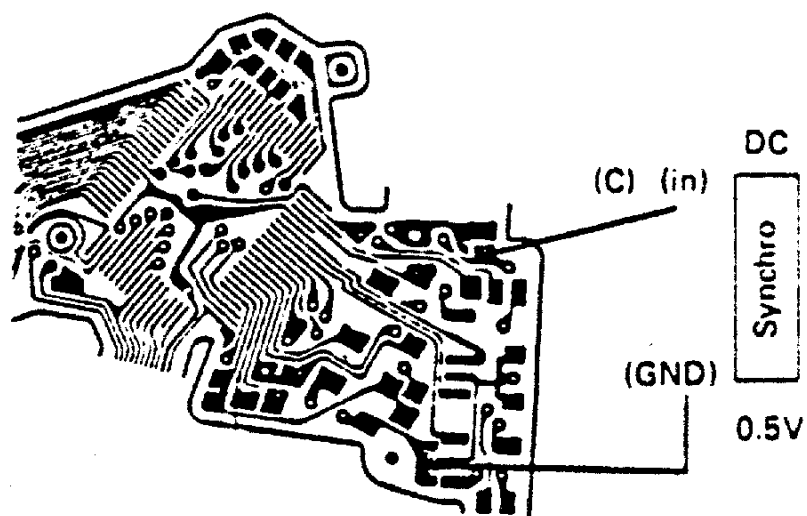
- Check with a synchroscope.
- Normal waveform



- Chattering



Check of Trg SW chattering



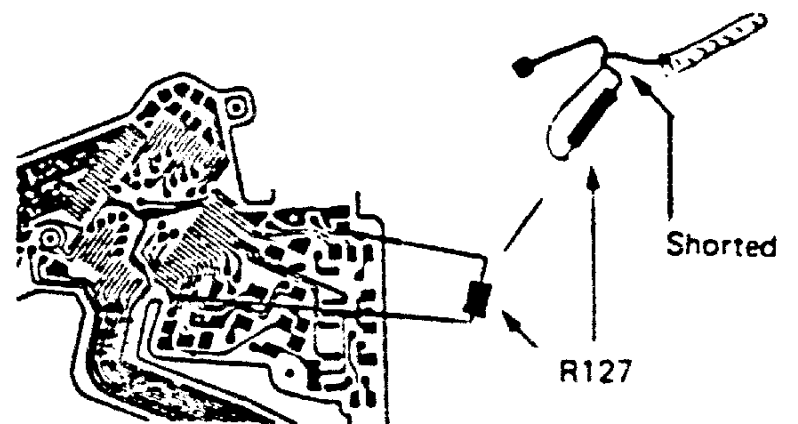
(2) Shutter speed too high in AUTO mode only

- Head amplifier or related circuit defective
- ASA resistor, direct EE circuit or related part defective

1. Head amplifier or related circuit defective

(1) R127 shorted

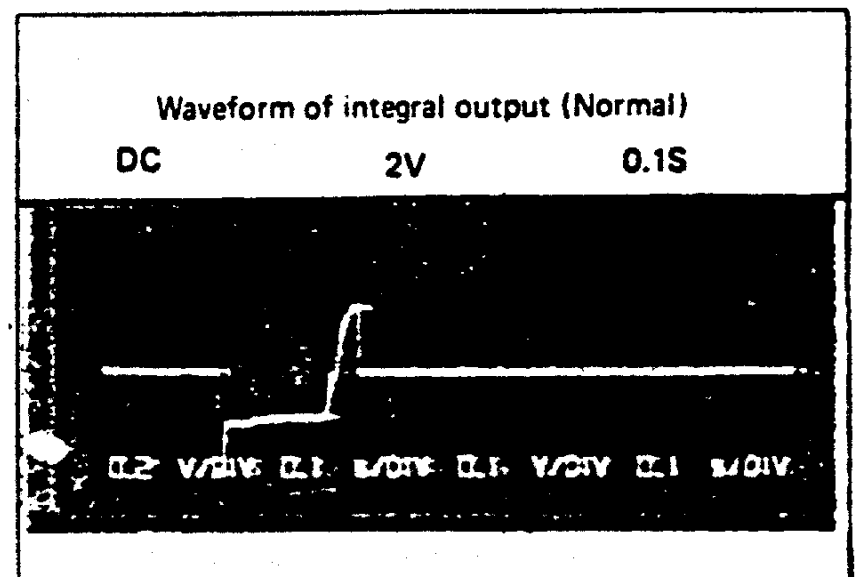
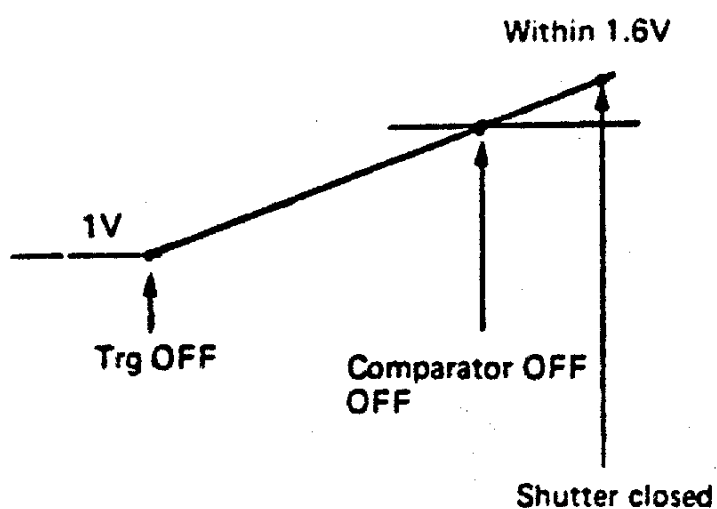
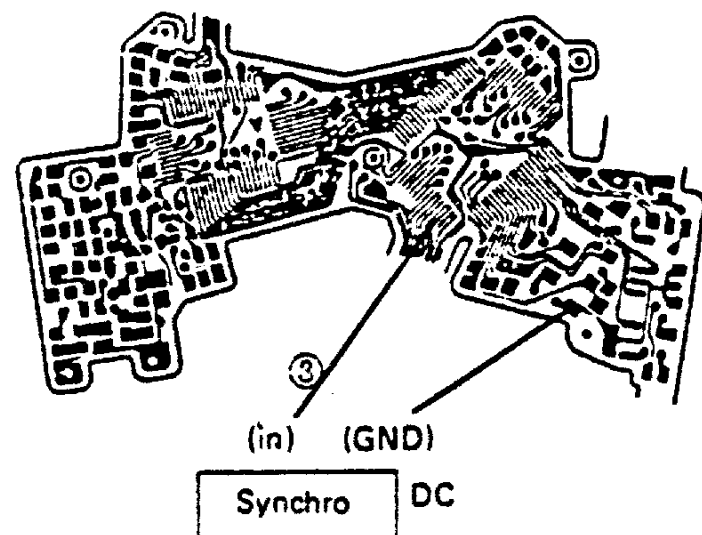
R127 shorted



(2) Integral output too high

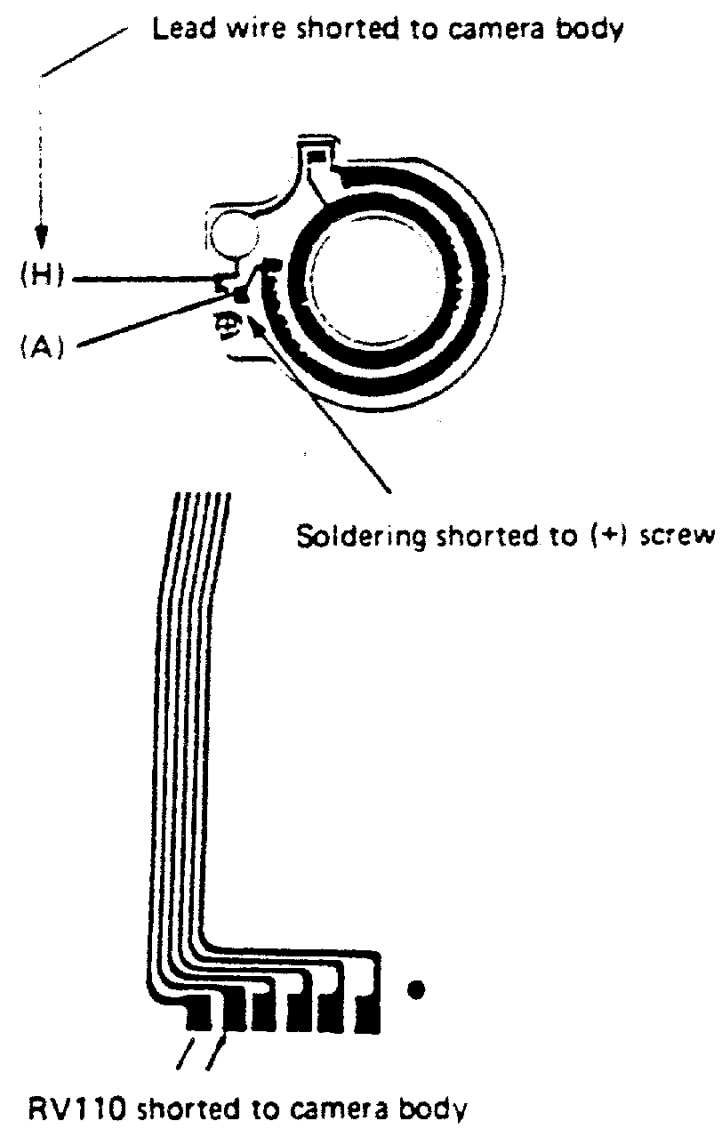
- See 3-2-(9) "Head amplifier or related part defective".
- Check with a synchroscope.
- Release shutter at a low speed in AUTO mode. Voltage should be lower than 1.6 V while shutter is closed.
- Normal waveform

Check of integral output



2. ASA resistor, EE adj. circuit or related part defective

- (1) ASA resistor lead wire shorted to camera body
- (H) and (A) lead wire shorted



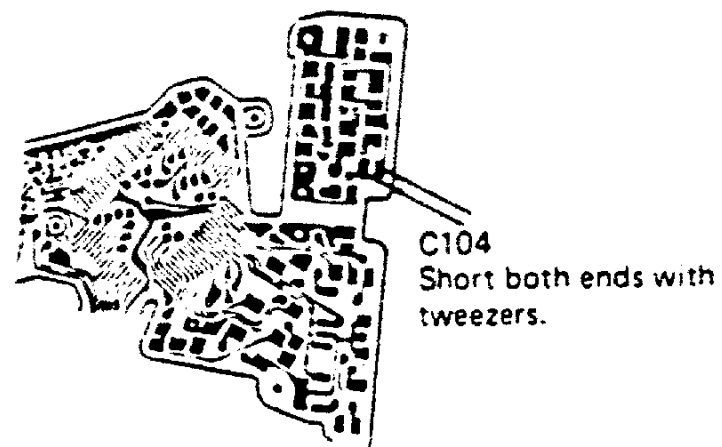
- (2) RV110 (EE adj.) shorted to camera body

3. Others

- IC defective
- Mechanism defective

(3) Shutter speed too high in MANUAL mode only

- When indication is normal but shutter operation is abnormal in MANUAL mode only, regeneration capacitor or related part is defective. Otherwise, IC is defective.
- When TV input is abnormal, indication becomes also abnormal.
In such a case, correct indication first.
- C104 broken or defective
Short both ends of C104 with tweezers.
If shutter is kept open, C104 is defective.



3-6 Flash Circuit Defective

- Preparations

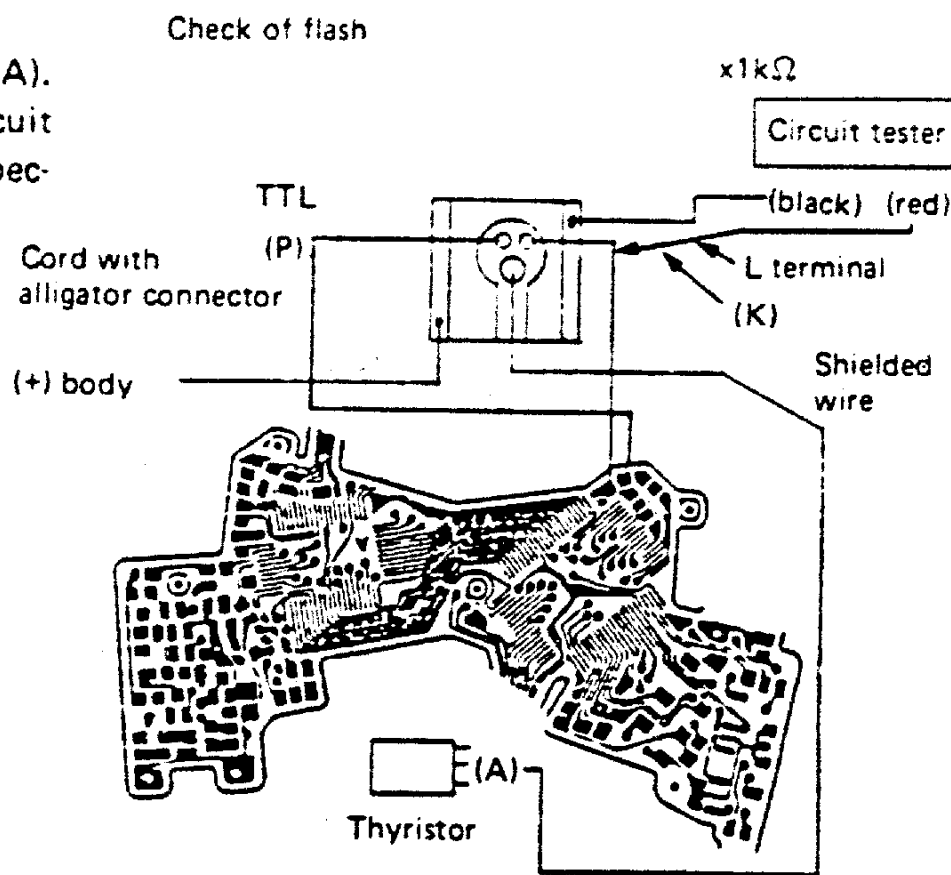
1. Measuring instruments:
 - Digital voltmeter or circuit tester
 - Synchroscope (storage)
2. Mode:
 - AUTO
3. Others:
 - Detach top cover.
 - Do not remove L terminal (K), TTL (P) and X (shielded wire) for flash. Lead wires may be extended for convenience of checks.
 - Connect top cover to camera body with alligator connector.
 - Attach flash (T20 or 32) in position.

1. Flash mode unswitchable

- Check procedures

1. Set a circuit tester at $\times 1 \text{ k}\Omega$ range (0.06mA).
2. Connect black and red rods of the circuit tester to camera body and L terminal respectively.
3. OK when LCD indicates FLASH mode.
(▶ 60 ◀)

- Set camera in AUTO mode.

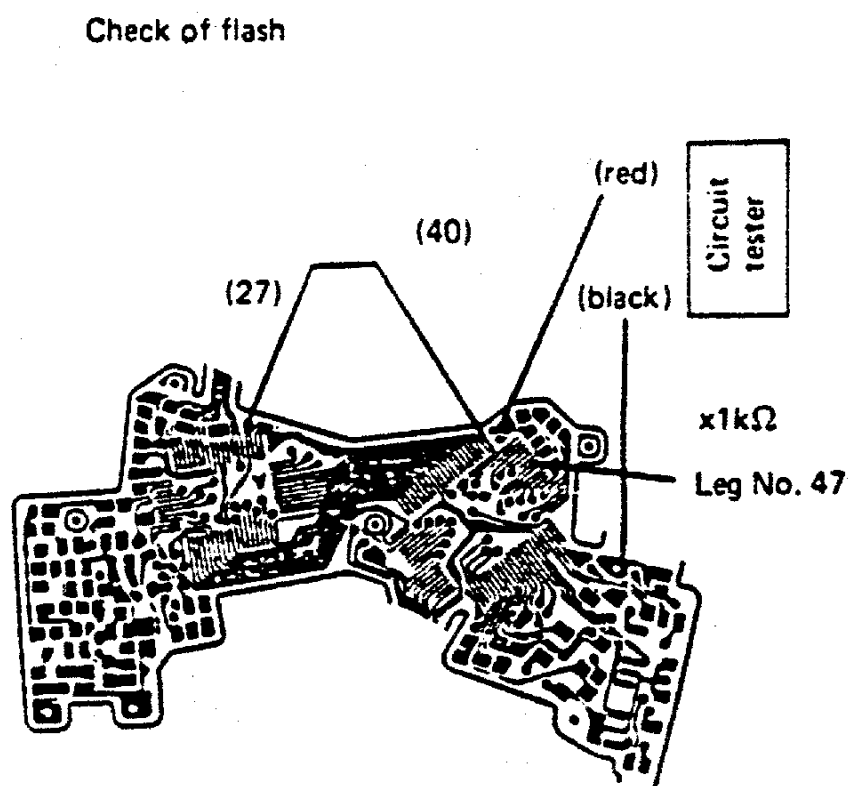


(1) Camera cannot be set in FLASH mode with shoe.

- Check in the procedures similar to those described above with red rod of circuit tester connected to L terminal.

(a) Camera cannot be set in FLASH mode with M circuit board.

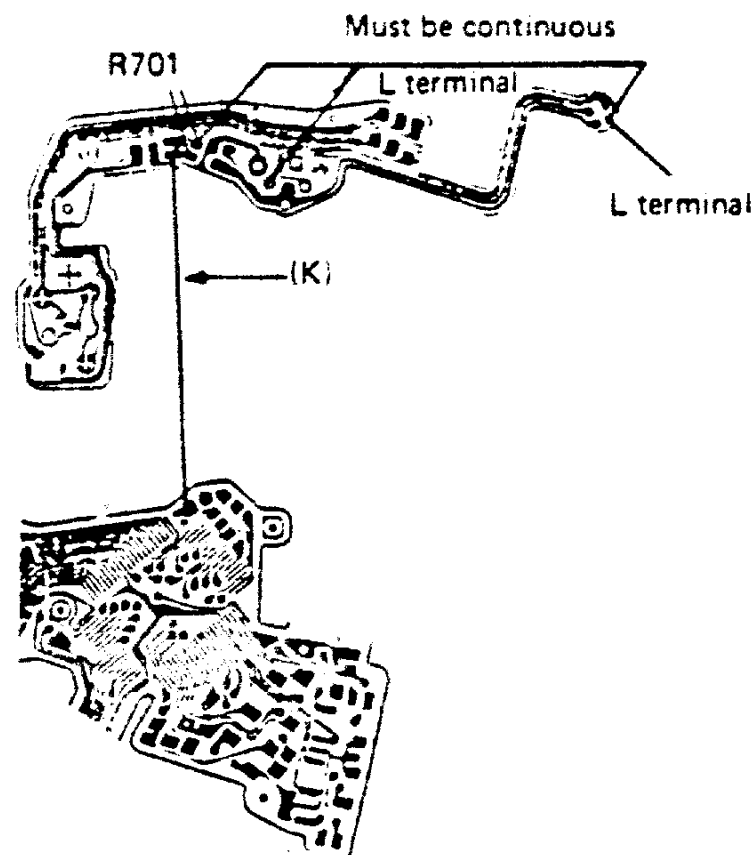
1. Pattern broken
2. B.P. leg No. 47 improperly soldered.
3. B.P. leg No. 40 improperly soldered.
4. CPU leg No. 27 improperly soldered.



(b) Camera can be set in FLASH mode with M circuit board

- Top cover or related part defective
 1. L terminal lead wire (K) broken.
 2. U circuit board defective
 3. R701 broken

Check of L circuit board

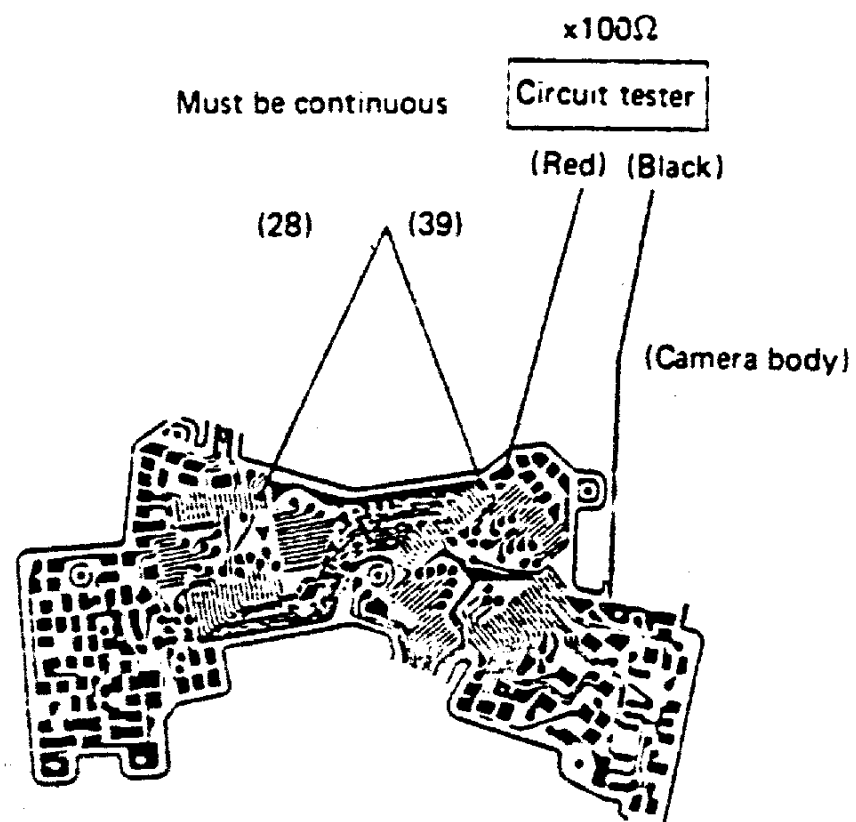


2. Charge completion LED not light

- Check procedures
 1. Set circuit tester at $\times 100\Omega$ range (0.6 mA).
 2. Connect black and red tester rods to camera body and L terminal respectively.
 3. OK when LED lights.
- Premise: Camera is set in FLASH mode at the preceding step.
- When LED not light
 1. Pattern broken between B.P. leg No. 39 and CPU leg No. 28.
 2. B.P. leg No. 39 improperly soldered.
 3. CPU leg No. 28 improperly soldered.
 4. Flash LED circuit defective.

See "LED indication abnormal" on page E-197.

Check of charge completion LED



3. Strobe not flash

- Check procedures

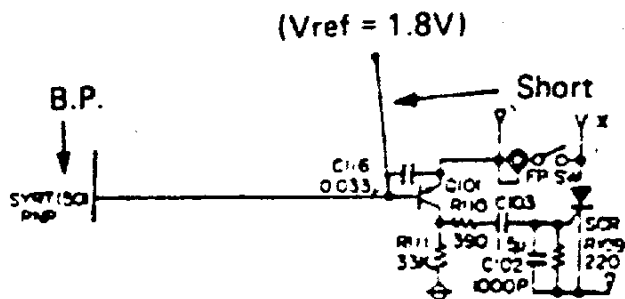
1. Observe waveform on a synchroscope
2. Check waveform on B.P. leg No. 50 (or Q101B). Release shutter with flash attached in position (power SW ON) and check waveform.

Normal waveform

$$H = 3V$$
$$L = 2.4V$$

Flashing start

3. If a synchroscope is not available, short Q101B to terminal of $V_{ref} = 1.8$ V. When strobe-flashes, external flash circuit is OK.



(1) Strobe not flash with normal waveform

- External flash circuit defective

1. Shielded wire broken

Check with a circuit tester.

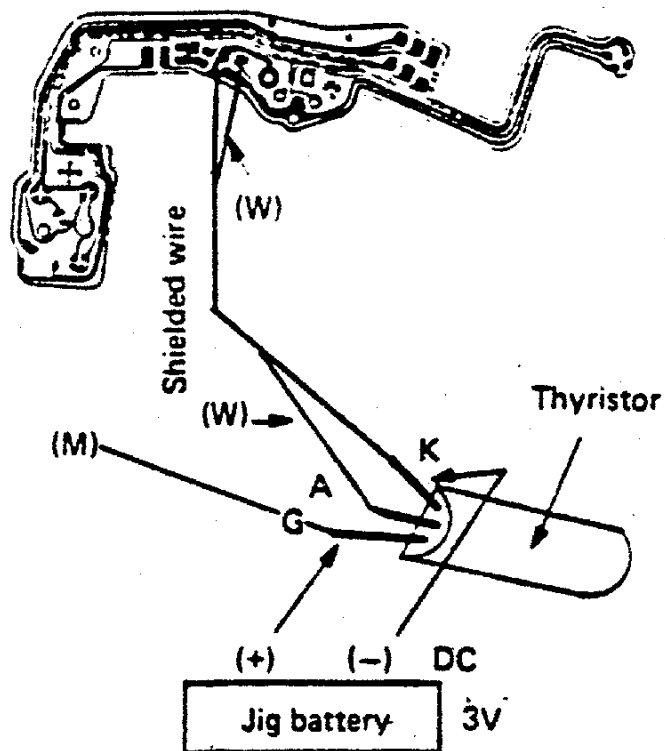
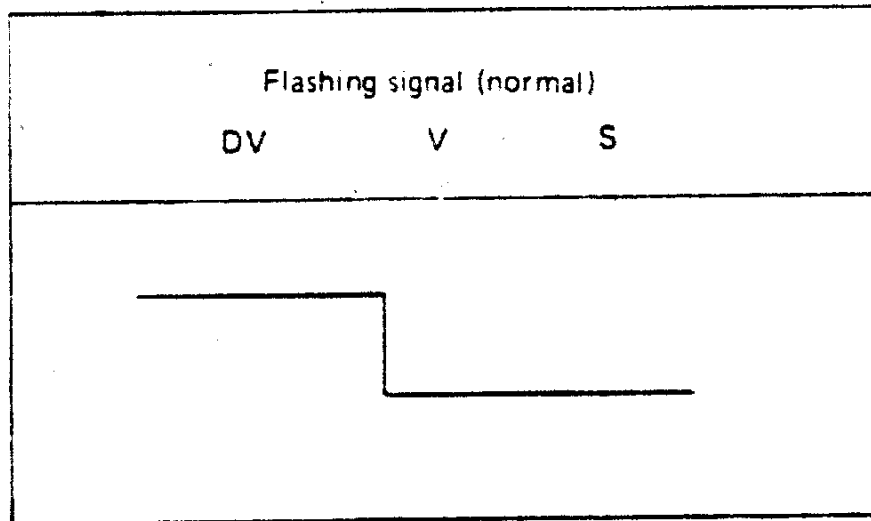
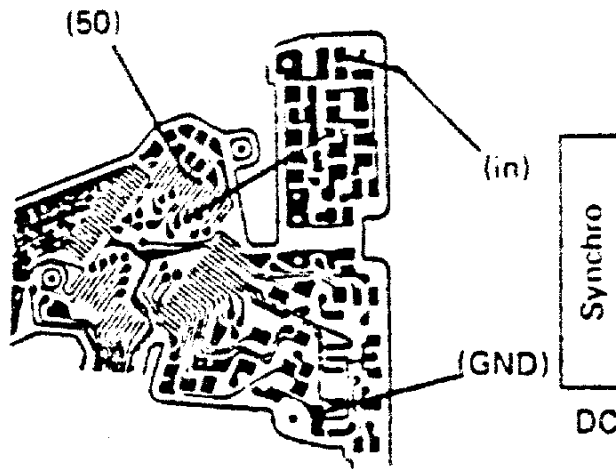
- ## 2. Thyristor broken

Connect (—) and (+) terminals of a dummy battery (3 V) to (K) and (G) respectively of thyristor.

Thyristor is OK when strobe flashes.

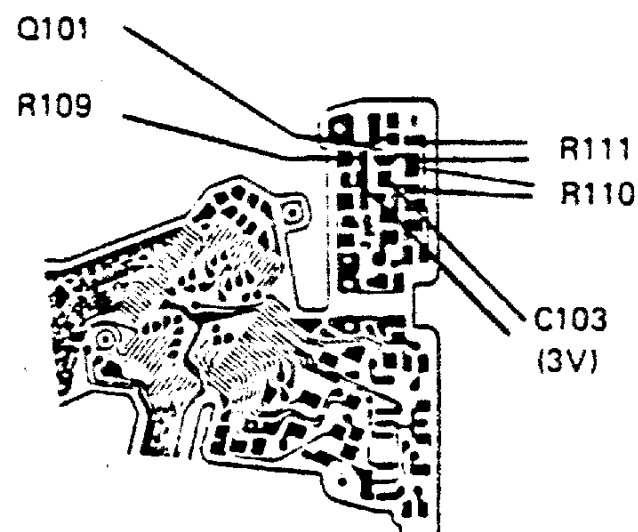
Thyristor is defective when strobe does not flash.

Check flashing

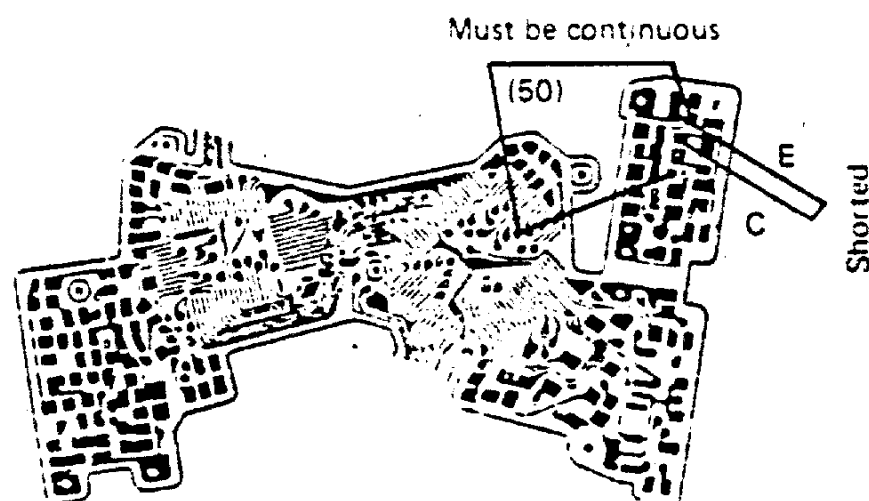


3. Voltage applied to C103?
Should normally be approx. 3 V.
 - When voltage is not applied
R109, R110 or R111 lead wire broken.
Check C103.
 - Disconnect and check Q101 for shorting.

When no voltage is applied to C103



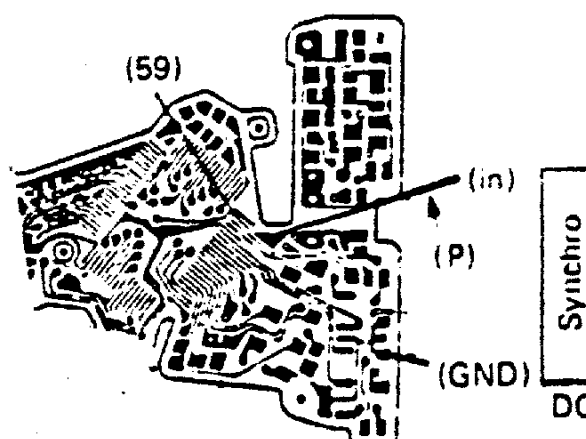
4. Pattern broken
Check for breakage between B.P. leg No. 50 and Q101B.
5. B.P. leg No. 50 improperly soldered.
6. Short emitter and collector of Q101 with tweezers.
Q101 is defective when strobe flashes.



- (2) Normal waveform not observed on B.P. leg No. 50 or Q101B.

1. Check voltage waveform on soldering of pattern for X contact lead wire (with a synchroscope).

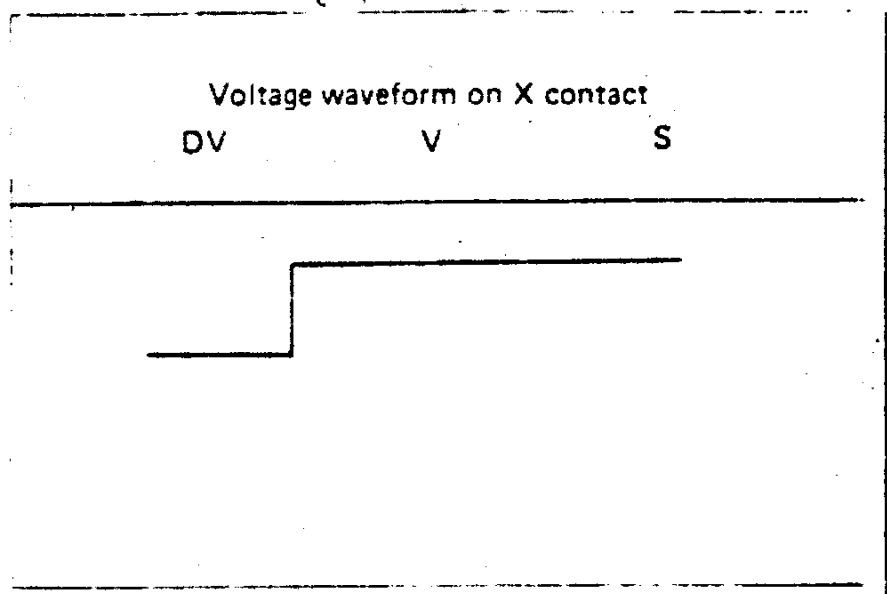
Normal waveform



Voltage waveform on X contact

DV V S

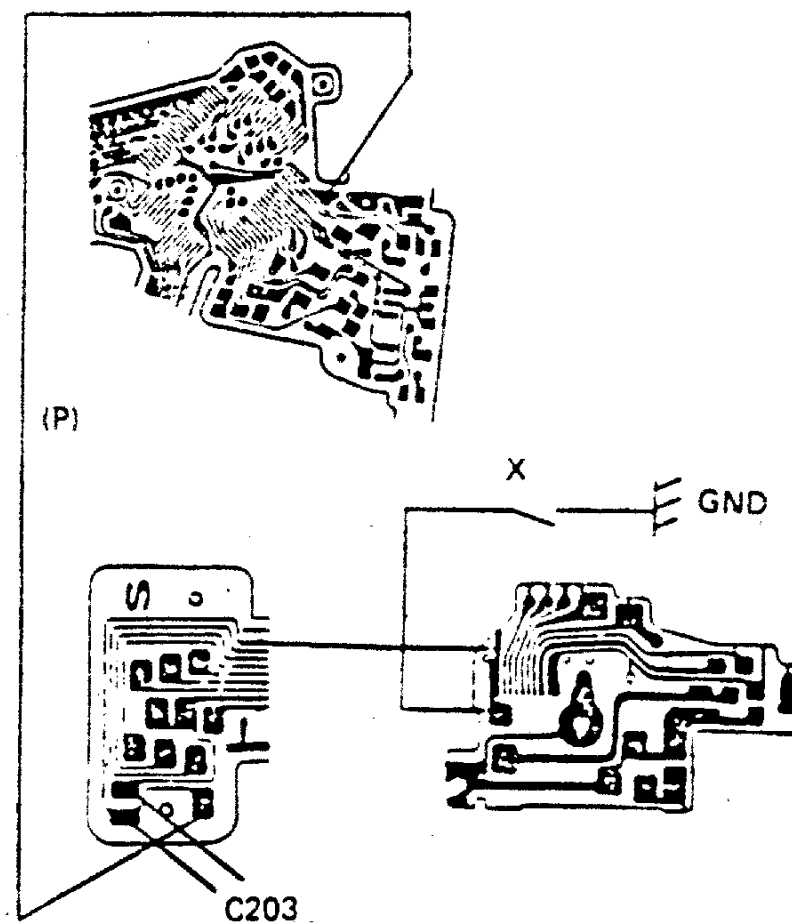
2. When normal waveform is observed
 - B.P. leg No. 59 improperly soldered.
 - Pattern broken



3. When normal waveform is not observed

- (P) lead wire broken
- Pattern broken
- C203 shorted or broken
- X SW contact defective

Check in (3)



- (3) When input waveform is normal on B.P. leg No. 59 but no waveform is observed on leg No. 50, B.P. IC is defective.

4. Light control impossible (TTL central control ineffective)

- Flash operates normally.
- Camera must be set in FLASH mode.
- Strobe flashes normally.
- When light control does not operate in the conditions mentioned above

(1) Flash gives full light

- Check procedure
Disconnect TTL lead wire (P) and short it to (-) power supply.

(a) When flash gives full light

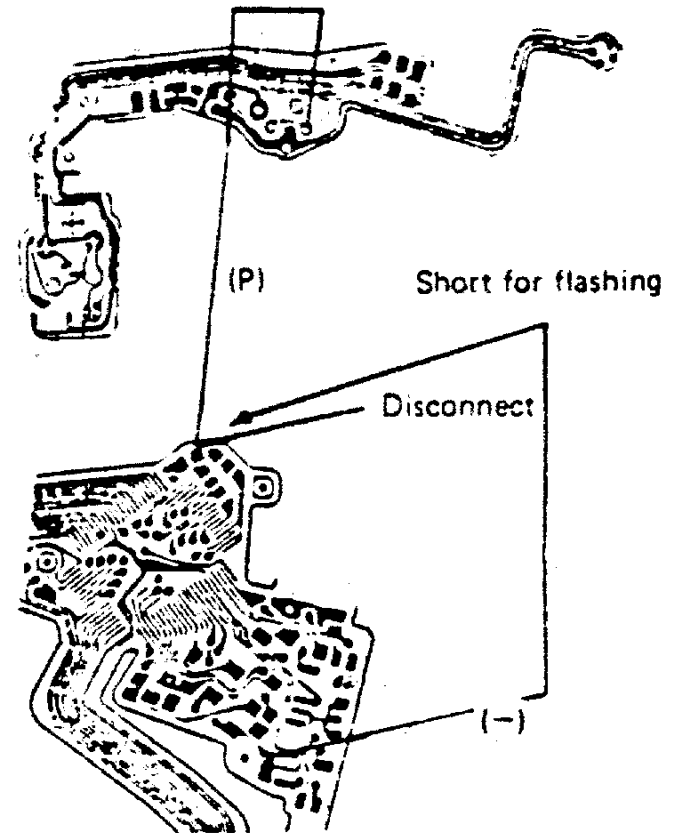
1. U circuit board defective
2. (P) lead wire broken

(b) When flash gives low light

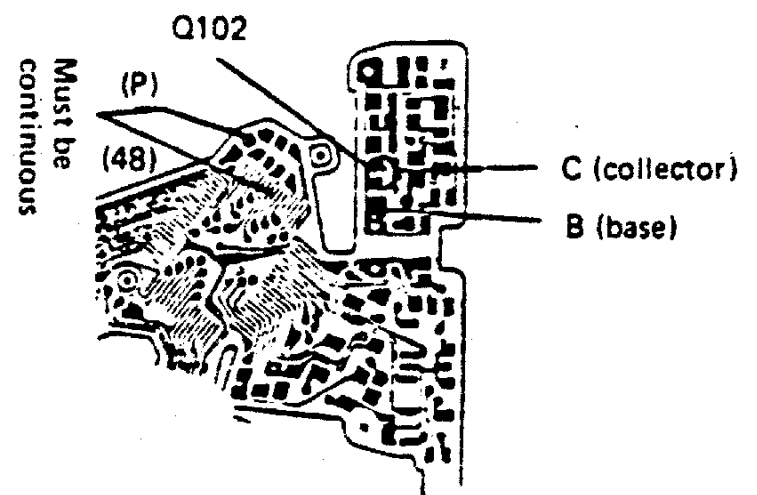
1. Q102 shorted or broken
 - Short base and emitter of Q102 for flashing.
 - Q102 is defective when strobe flashes normally.
 - Q102 is OK when strobe gives full light.
2. Wire breakage between B.P. leg No. 48 and land for (P) lead wire.
3. B.P. leg No. 48 or 49 improperly soldered.

Check of full light flashing

Must be continuous



Checks in 1. and 2.

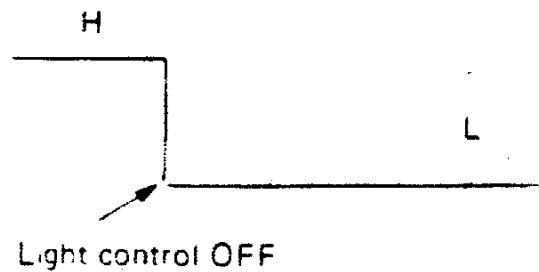


(c) Check waveforms on B.P. legs No. 48 and No. 49.

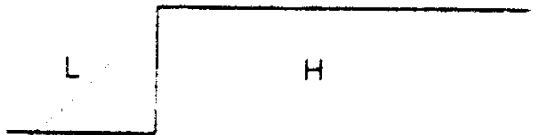
Check of outputs on legs No. 48 and No. 49

Normal waveforms

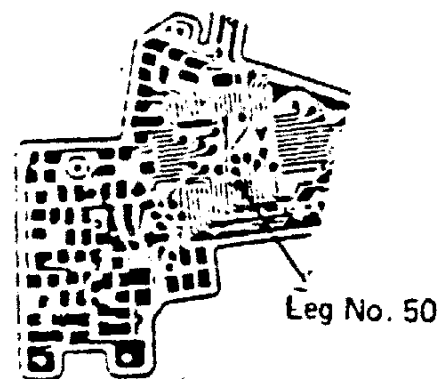
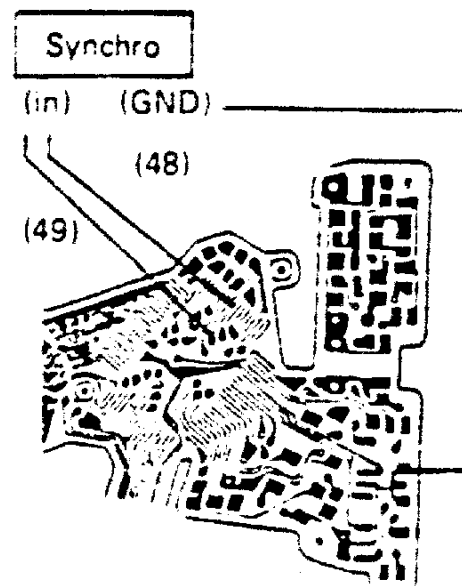
1. Leg No. 48



2. Leg No. 49



3. When normal waveform is not observed
CPU leg No. 50 improperly soldered.
B.P. IC defective



- (2) Flash gives low light
- IC defective

3-7 EE Adjustment Abnormal

1. Main comparator offset misadjusted

- EE abnormal at high luminance
- No stability of EE
- Check procedures
 - (1) Set shutter speed at 1 sec in MANUAL mode.
 - (2) Connect a stabilizer power supply to positive (+) side of C104.
 - (3) Connect negative side of the stabilizer to negative land of C114.
 - (4) Set the stabilizer at 1 V.
 - (5) Release shutter.
 - (6) Adjust RV103 so that shutter is closed within 1 sec.
 - (7) For this adjustment turn RV103 counter-clockwise. After releasing shutter, turn RV103 clockwise and stop it when shutter is closed.
 - (8) Make sure that shutter can be closed within 1 sec.

When shutter cannot be closed within 1 sec.

- RV103 contact floated up
 - Readjustment
- Clean RV103 with a piece of dry cloth.

2. C109, C110 or C111 leg, or B.P. No. 4, 5 or 6 improperly soldered

- When EE adjustment is abnormal at any one of three stages ASA 6 to 32, ASA 40 to 250 and ASA 320 to 3200, C109; C110, C111 or B.P. No. 4, 5 or 6 is improperly soldered.

3. Chattering of main SW

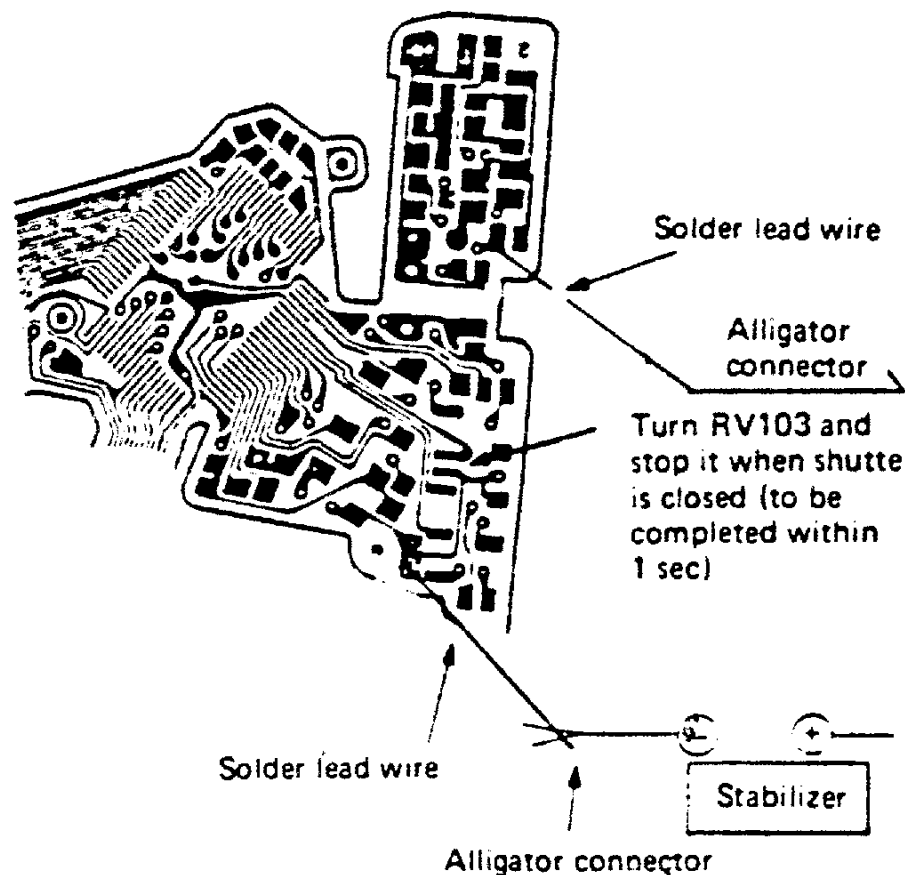
- See page E-182.

4. C112 (phase compensating capacitor) floated up.

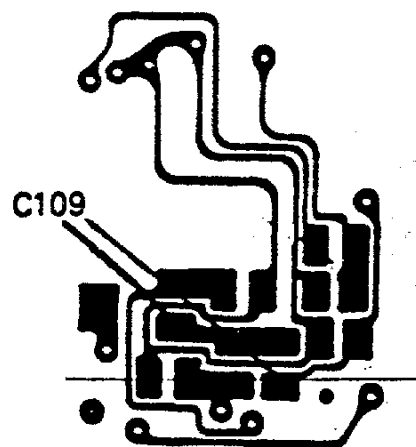
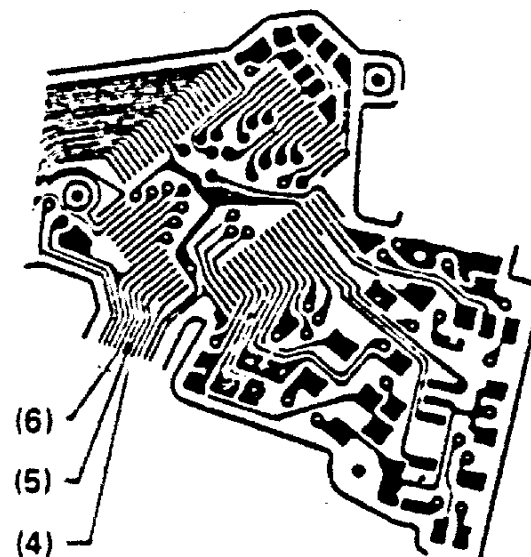
5. Head amplifier defective

- See page E-151.

Adjustment of comparator offset



Checks in 2 and 4.



3-8 Regeneration Time Abnormal

- When indication is abnormal, correct it first referring to "LCD Indication Abnormal".

1. 1/8 sec adjustment impossible in MANUAL mode

- RV101 defective → Replace

2. 1/2000 sec adjustment impossible in MANUAL mode

- C101 improperly soldered

3. R102 or RV102 defective

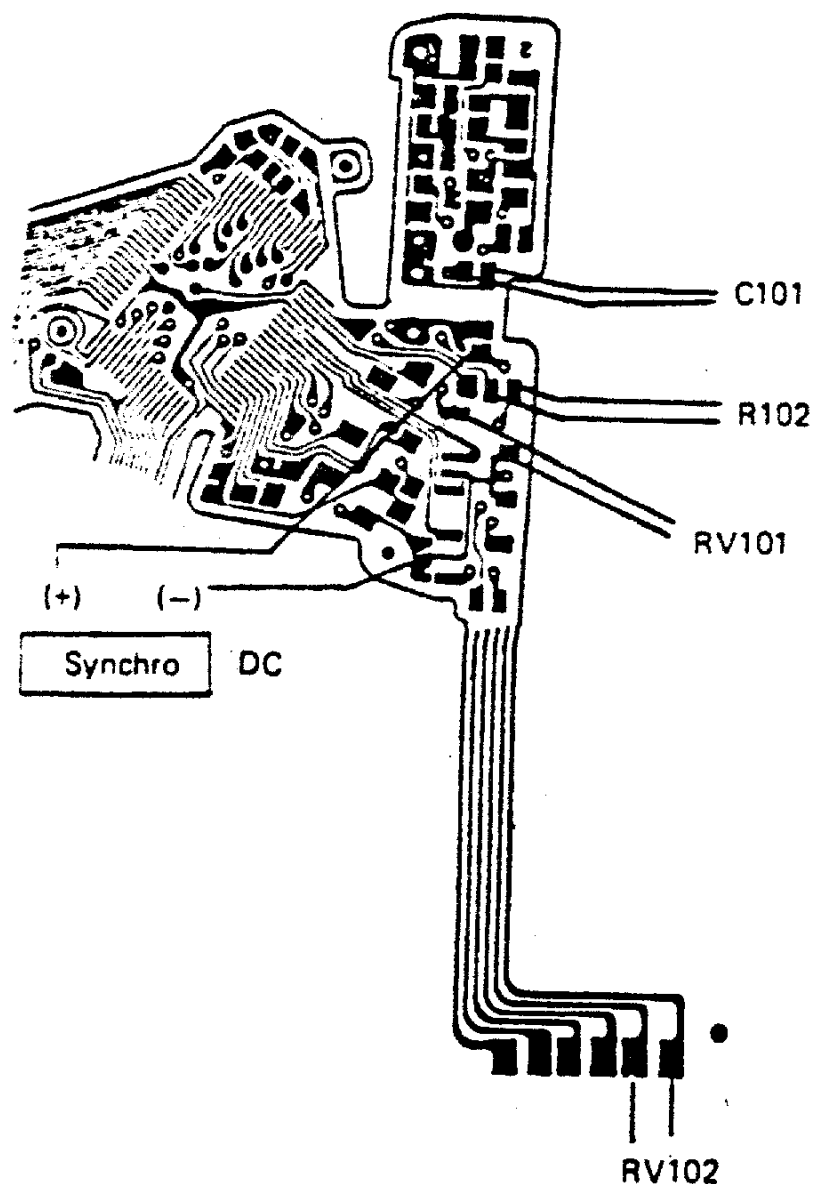
- Resistor constant wrong

4. Chattering of Trg SW

- Chattering causes instability at high speed.
- See page E-182.

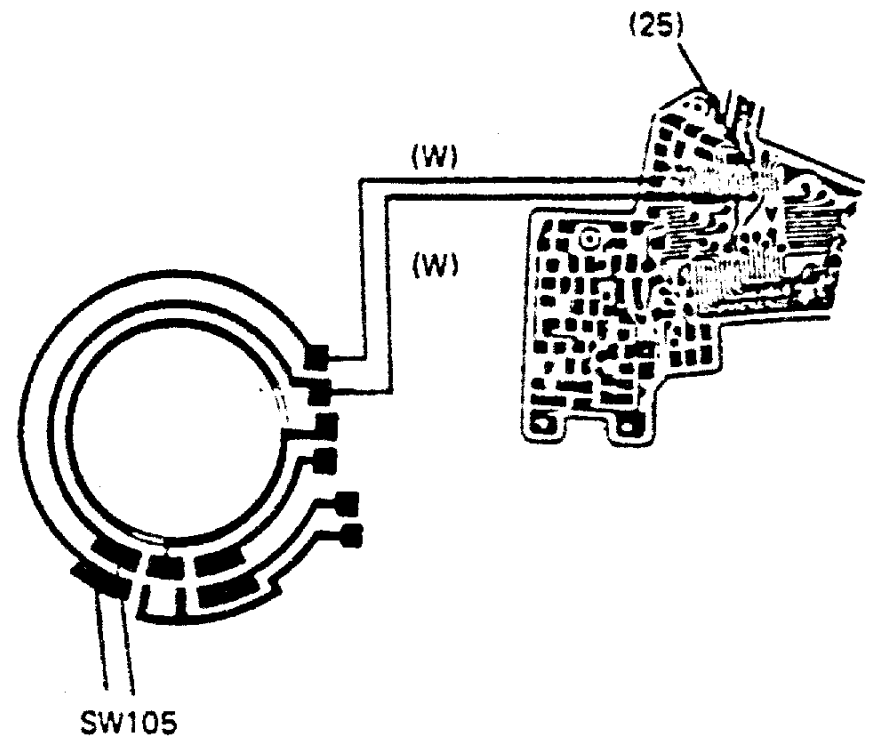
5. 1/500 and 1/1000 negatively deviated

- Mechanical trouble
 - Slight positional deviation between 1st and 2nd curtains.
 - Readjust curtain positions.



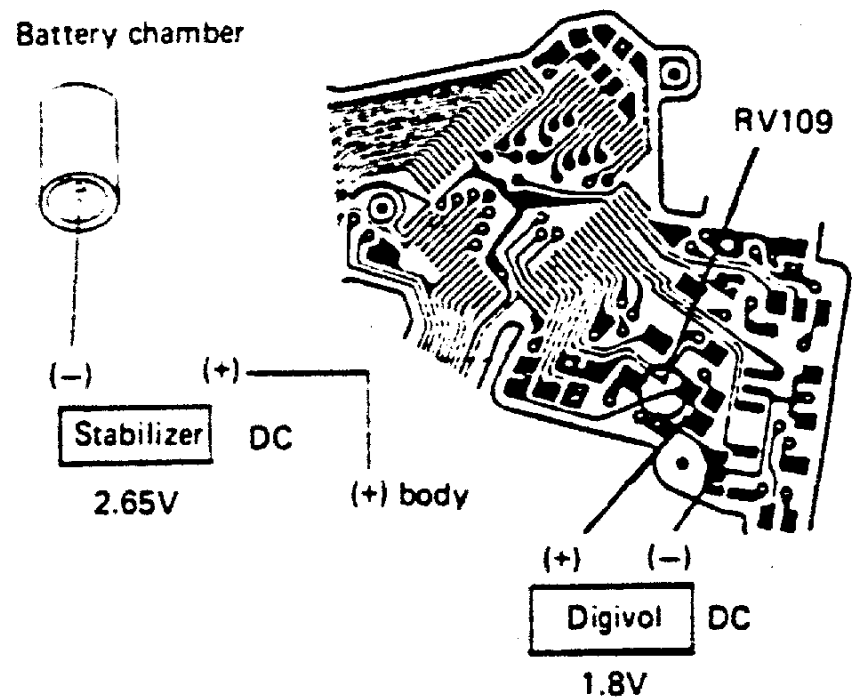
1. Camera cannot be set in B.C. mode

- PCV does not sound and LED does not light
 - (1) (W) lead wire broken
 - (2) Poor contact on SW105
 - (3) CPU leg No. 25 improperly soldered.
- Check for $V_{ref} = 1.8\text{ V}$
If not, circuit misadjusted.



2. Adjustment of B.C. circuit

- Set stabilizer at 2.65 V and turn lock adj. RV109 as to obtain $V_{ref} = 1.8\text{ V}$.
- For LED and PCV, refer to the concerned sections.
See page E-197, 199.



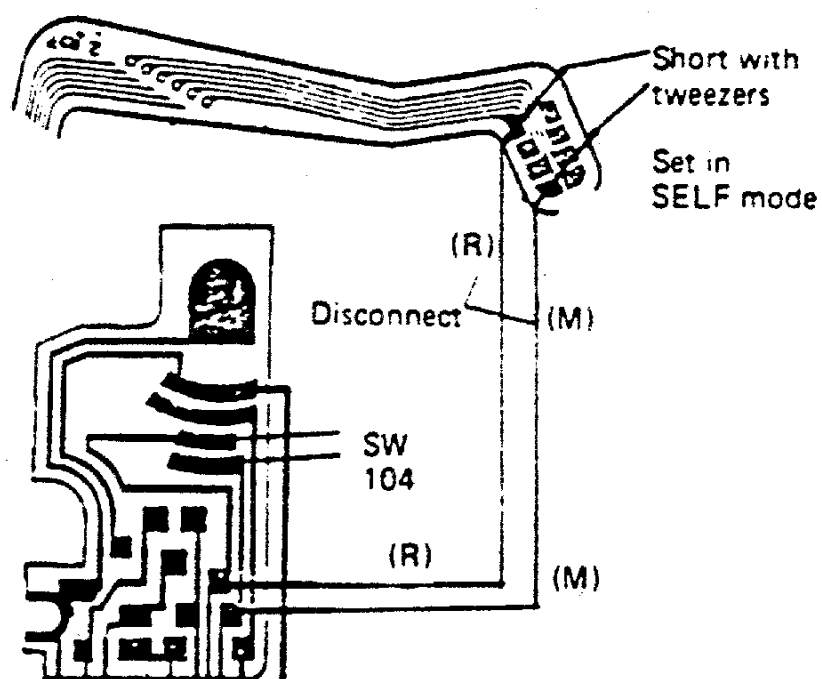
3-10 . Malfunction of Self-Timer

- Check whether or not LCD indication is normal within viewfinder. Correct indication first if it is abnormal.
- For LED and PCV, refer to the concerned sections.
- Disconnect SELF mode lead wire and set camera in the mode by shorting its land with tweezers.

1. When camera is operative after setting it in SELF mode by shorting with tweezers

- CE circuit board or related part defective
 - (1) (R) or (M) lead wire broken
 - (2) SW104 defective

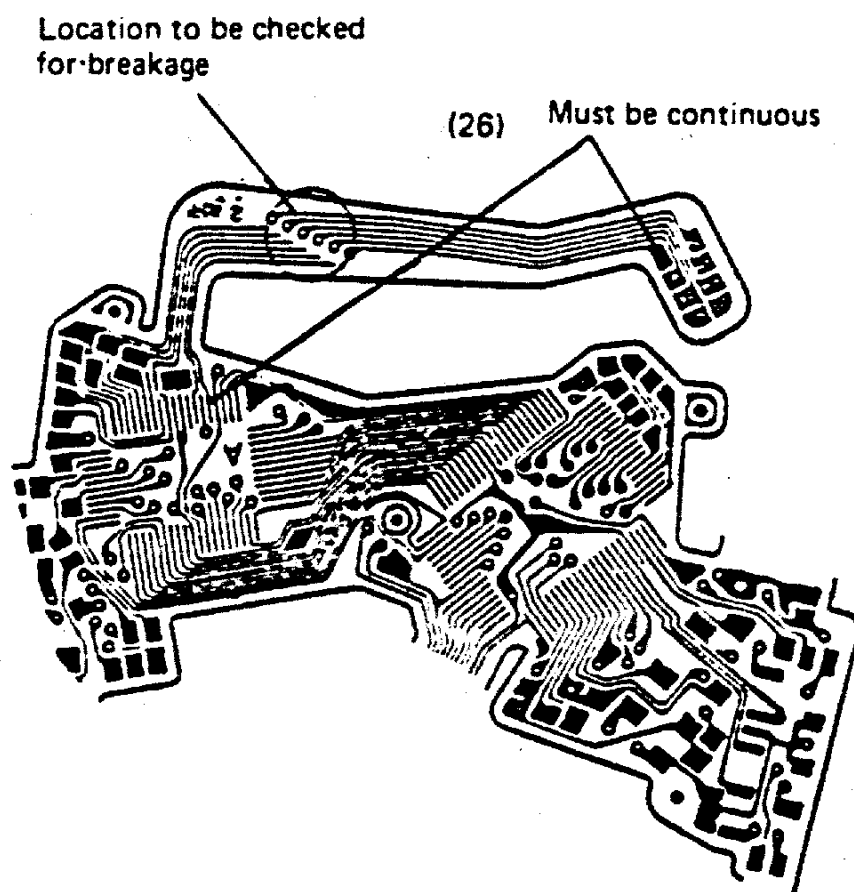
Check of CE circuit board



2. When camera is inoperative after setting it in SELF mode by shorting with tweezers

- (1) Pattern broken
- (2) CPU leg No. 26 improperly soldered
- (3) CPU IC defective

Pattern broken



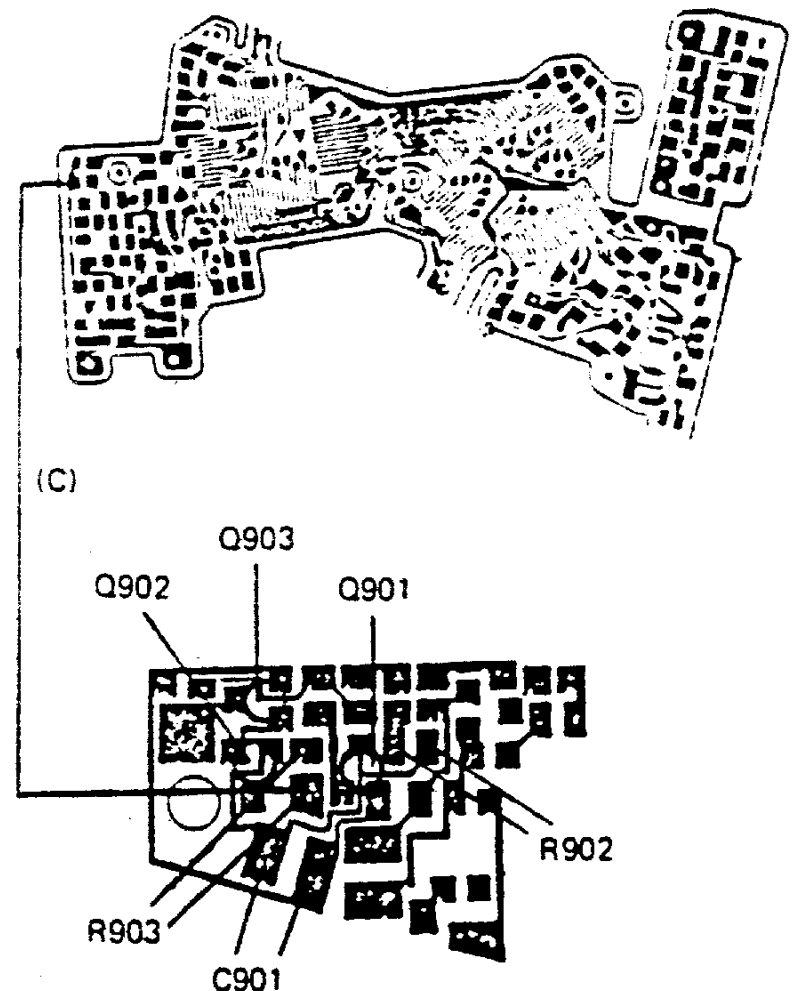
3-11 LED not Light

- Check whether or not LCD indication is normal. When LCD indication is abnormal, correct it first.

1. All LEDs not light

- Reset circuit defective
 - (1) C901 shorted or broken
 - (2) Q902 or Q903 broken
 - (3) Q901 shorted or broken
 - (4) R902 or R903 broken
 - (5) (C) lead wire broken
 - (6) Pattern broken
 - (7) B.P. leg No. 42 improperly soldered

Check in 1



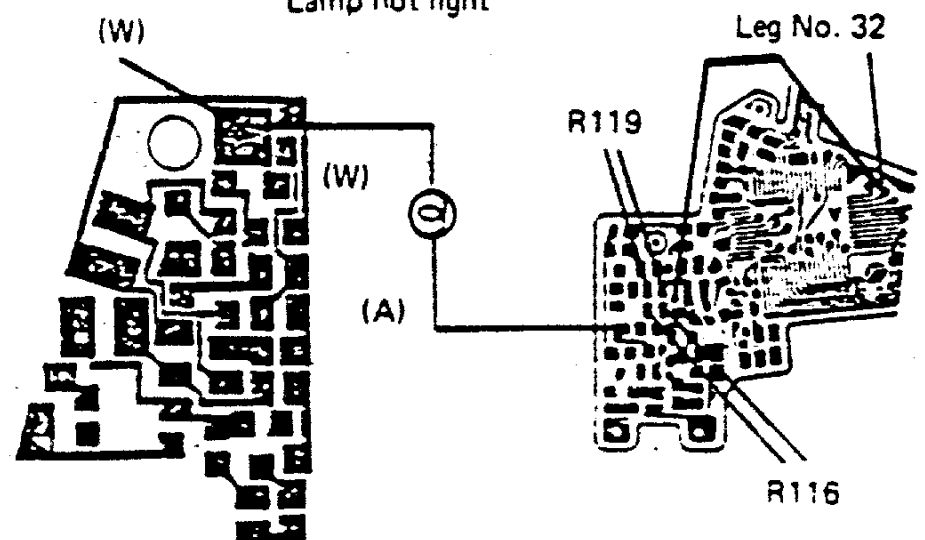
2. LAMP and FLASH LEDs not light

- (W) lead wire broken or improperly soldered

3. LAMP LED only not light

- (1) Lamp defective
- (2) (A) lead wire broken
- (3) Q105 broken
- (4) R119 or R116 broken
- (5) Pattern broken
- (6) CPU leg No. 32 improperly soldered

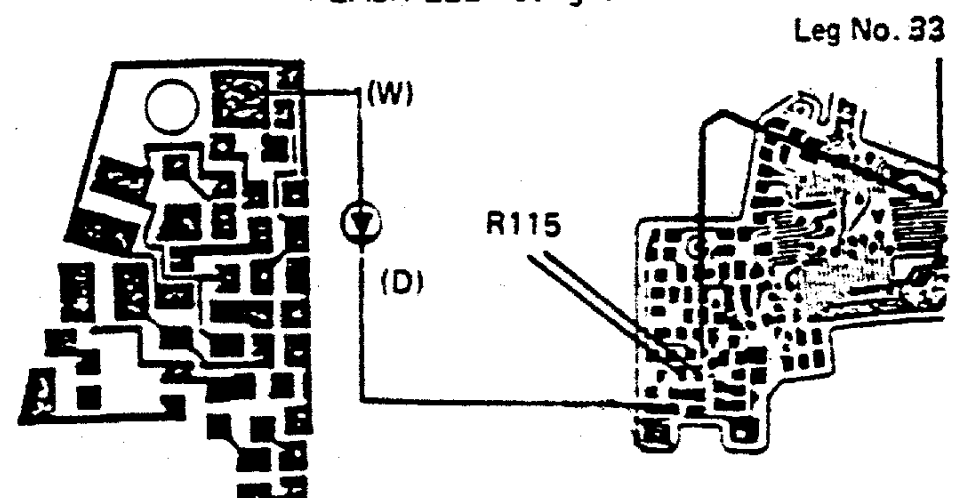
Lamp not light



4. FLASH LED only not light

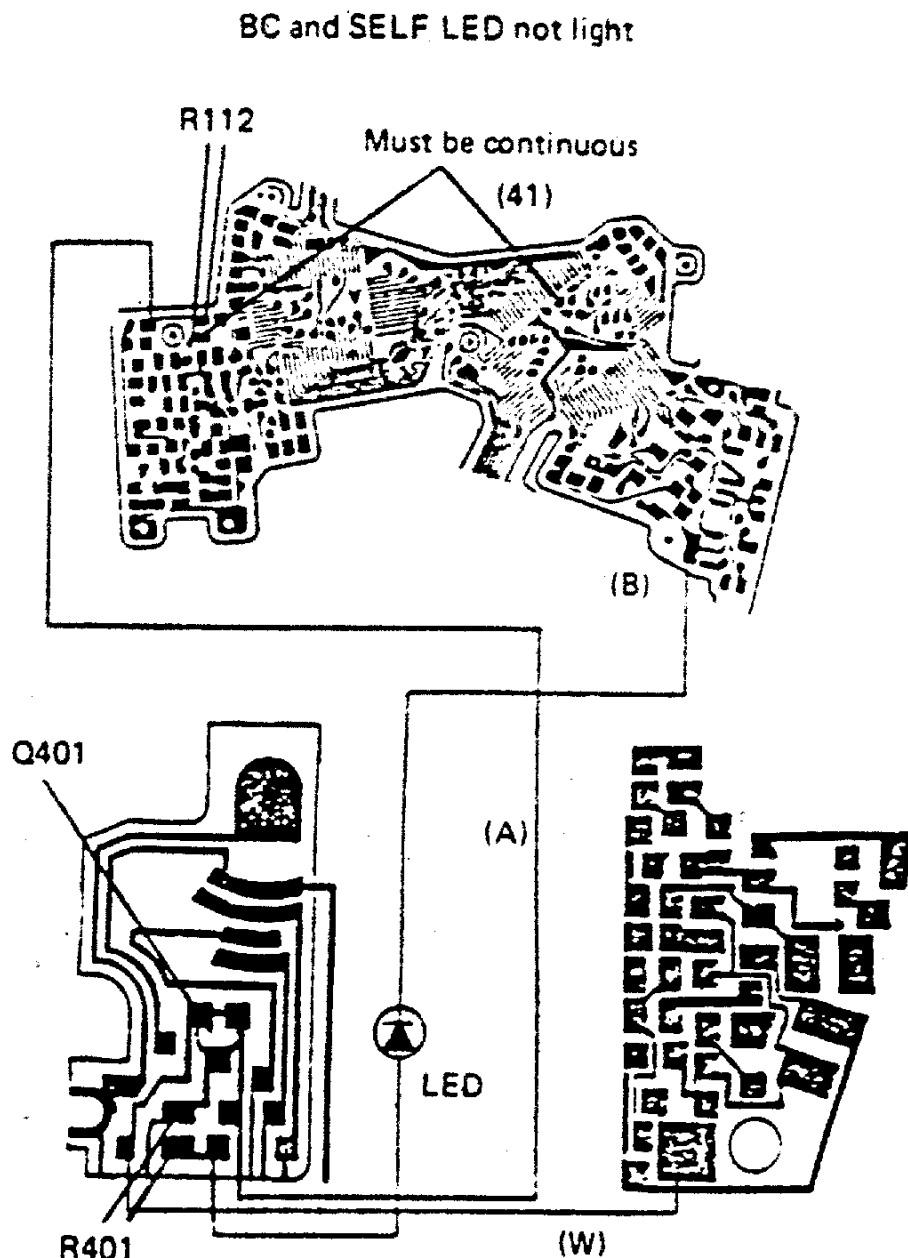
- (1) LED defective
- (2) (D) lead wire broken or improperly soldered
- (3) Q106 broken
- (4) Pattern broken
- (5) R115 broken
- (6) CPU leg No. 33 improperly soldered

FLASH LED not light



5. BC and SELF LED not light

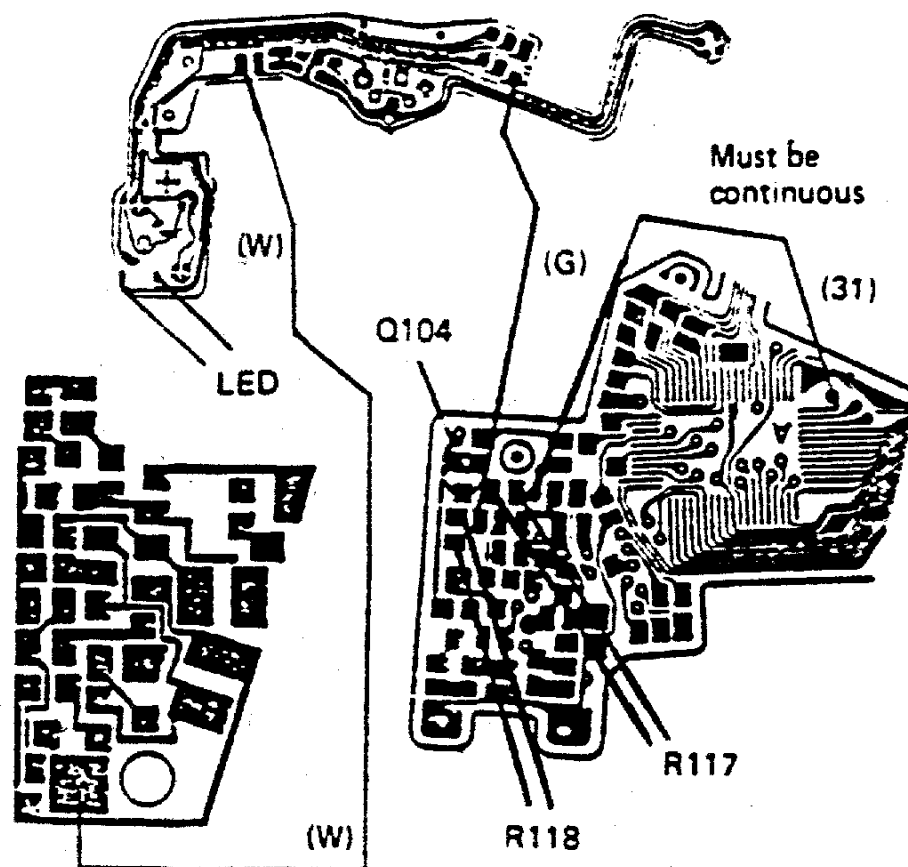
- (1) (W) lead wire broken or improperly soldered
 - (2) (A) lead wire broken or improperly soldered
 - (3) R112 or R401 broken
 - (4) Q401 broken
 - (5) (B) lead wire broken or improperly soldered
 - (6) B.P. leg No. 41 improperly soldered
 - (7) LED defective
- When PCV sounds normally and LED does not light in B.C. or SELF mode only, CPU or B.P. is defective.



6. MEMO LED only not light

- (1) U circuit board defective
- (2) (W) lead wire broken
- (3) R117 broken
- (4) Pattern broken
- (5) CPU leg No. 31 improperly soldered
- (6) LED defective

MEMO LED not light



7. LED kept lit (cannot be extinguished)

- (1) MEMO LED not extinguished
Q104 shorted or broken
- (2) LAMP LED not extinguished
Q105 shorted or broken
- (3) FLASH LED not extinguished
Q106 shorted or broken
- (4) SELF LED not extinguished
Q401 shorted or broken

8. LED lit momentarily during mode switching

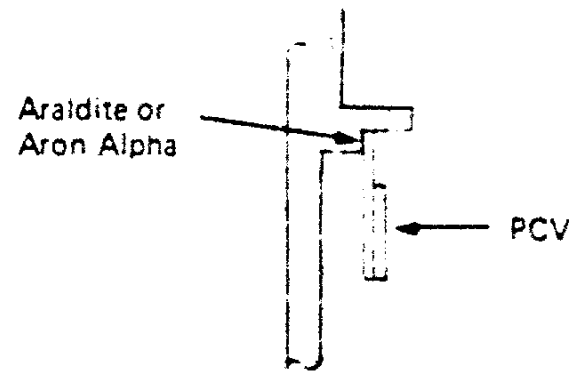
See "Reset Circuit Abnormal" on page E-200.

3-12 PCV Defective

- LCD indication is normal

1. Sounding too low

- Improper bonding of PCV
Bond PCV to front plate with Aron Alpha or Araldite.

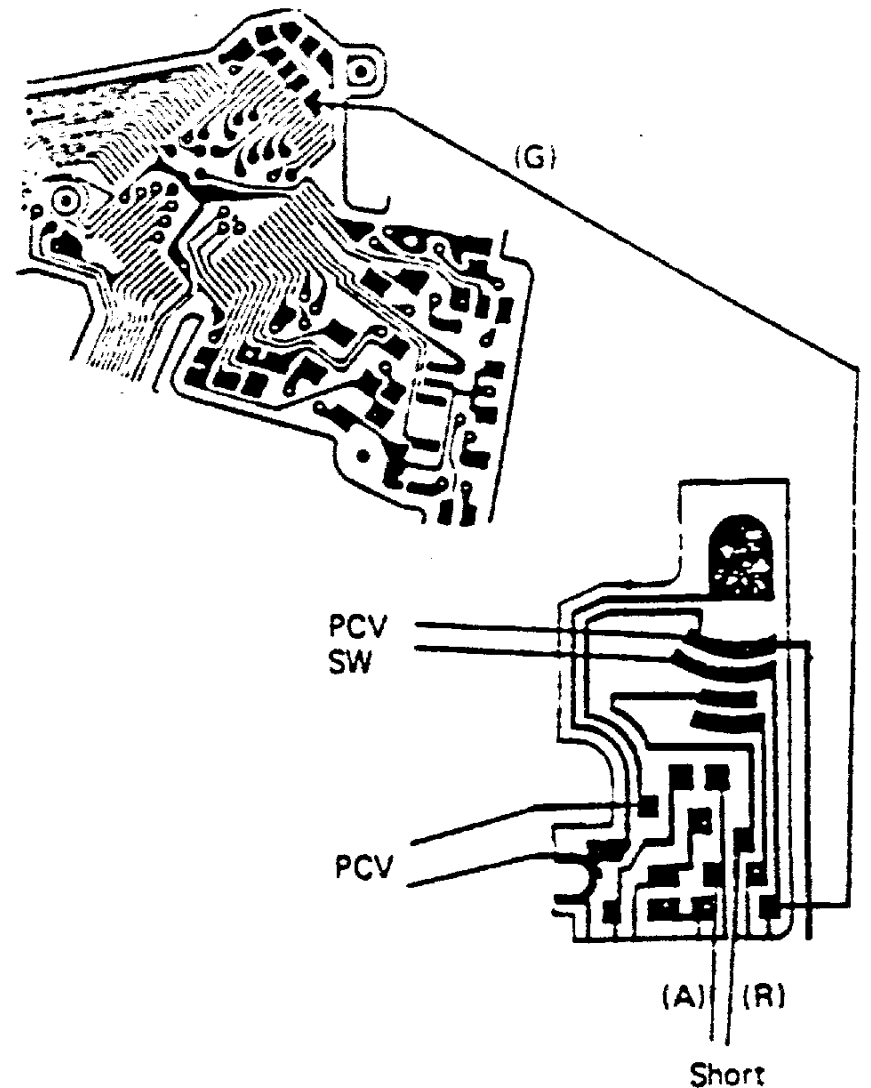


2. PCV not sound

- (1) PCV SW defective
- (2) (G) lead wire broken
- (3) B.P. leg No. 25 defective

3. PCV sounds at short intervals in SELF mode

- (1) (A) and (R) lead wires shorted on CE circuit board.



3-13 Reset Circuit Defective

- LED lights for a very short time when reset circuit is activated by turning mode selector lever.
- Reset function is ineffective

1. Reset function ineffective upon mode switching

- (1) C902 broken
- (2) Lead wire broken (black, orange or green)

2. Auto reset function ineffective

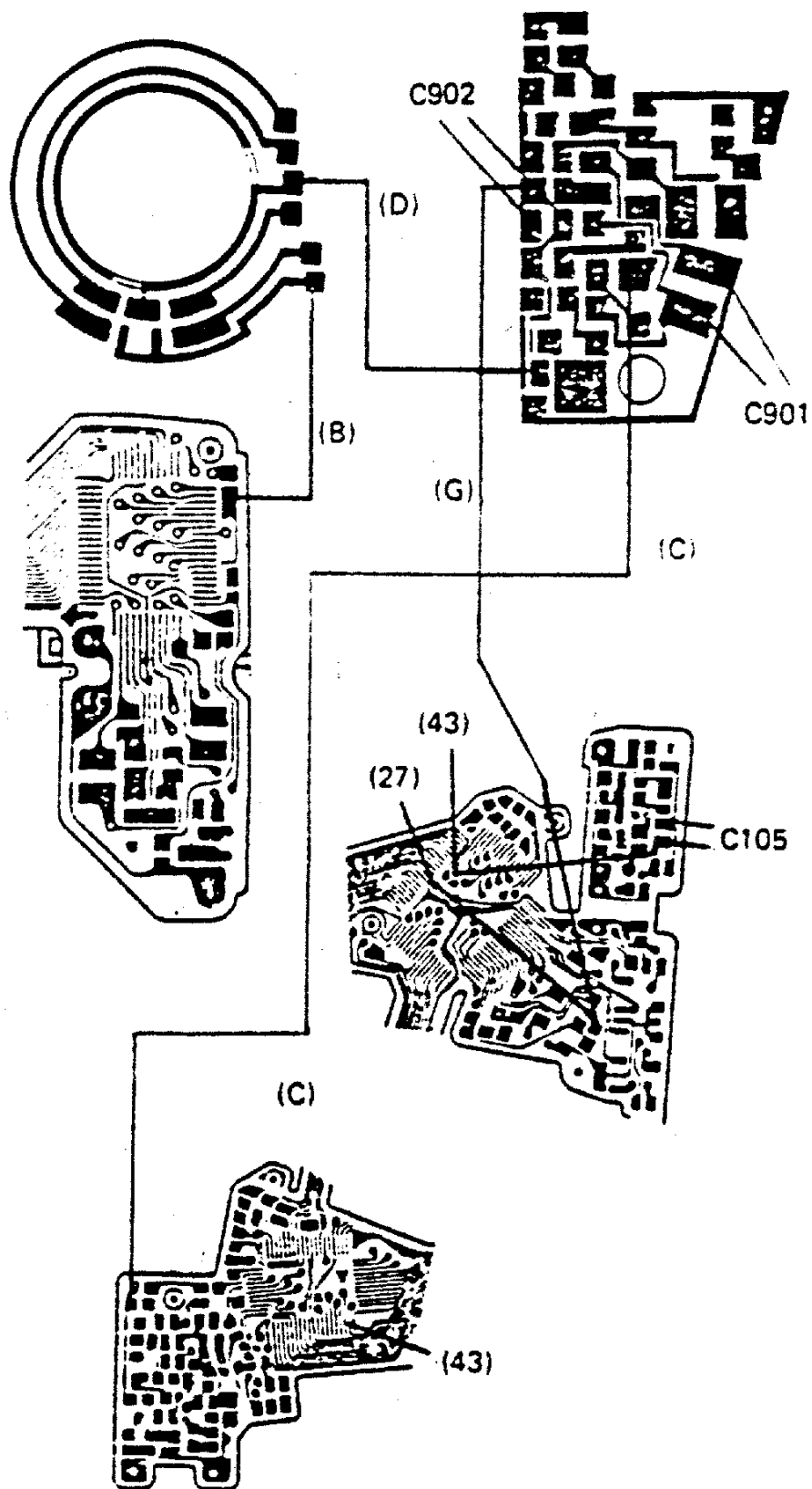
- (1) C105 shorted or broken
- (2) B.P. leg No. 43 or 27 improperly soldered
- (3) Pattern broken

3. Both reset and auto reset functions ineffective upon mode switching

- LED extinguished (normal)
- CPU leg No. 43 improperly soldered

4. Flash LED (MEMO and B. C. LED) light upon mode switching and auto reset

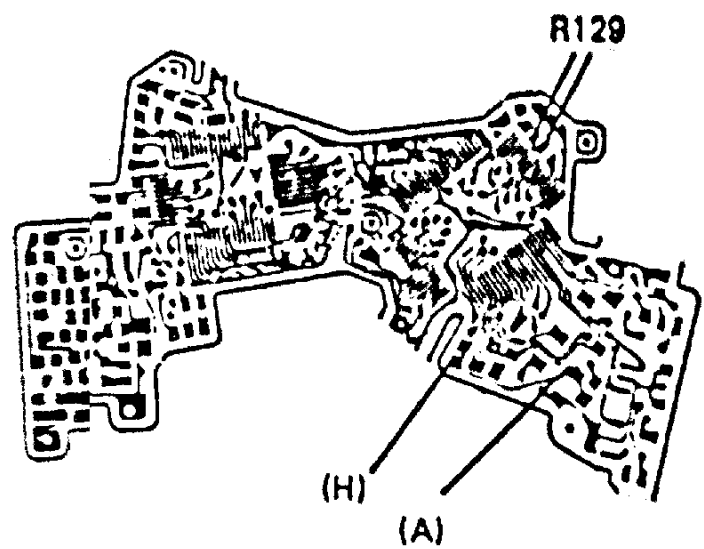
- (1) C901 broken or improperly soldered
- (2) (C) lead wire improperly soldered



3-14 Reference Voltage Vref Abnormal

1. $V_{ref} = 3\text{ V}$

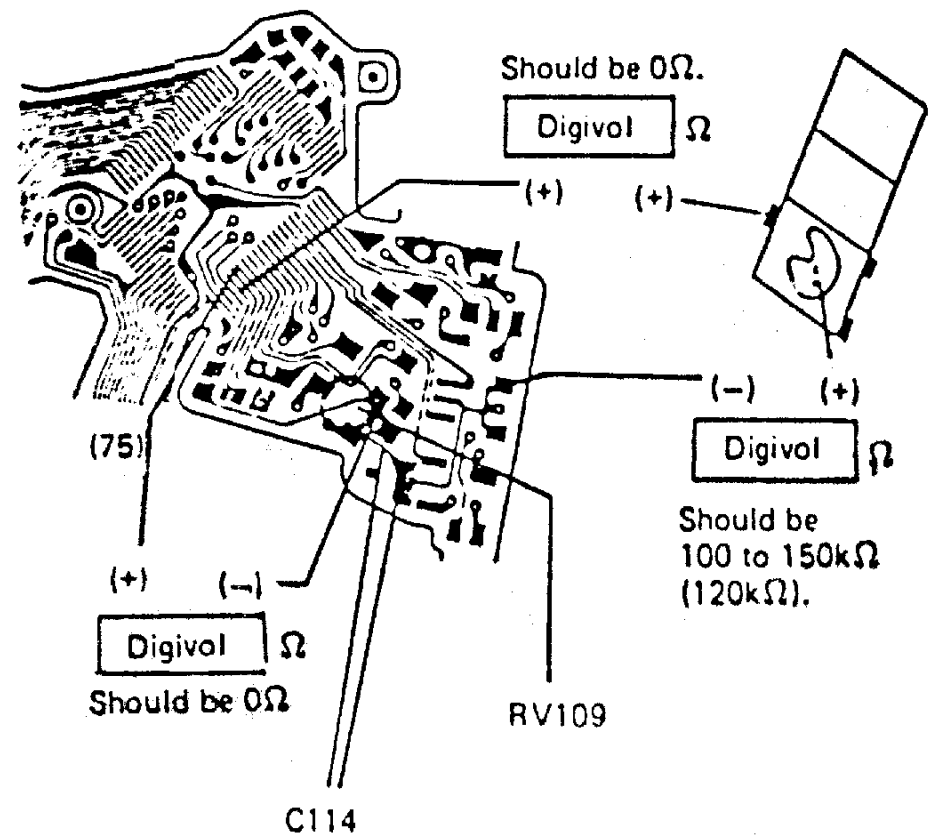
- (1) Gray lead wire of AV shorted to camera body
- (2) Blue lead wire of TV shorted to camera body
- (3) R129 shorted or broken



2. $V_{ref} = 2.3\text{ V}$

- Triplet resistors or related part defective

Check in 2, 3 or 4

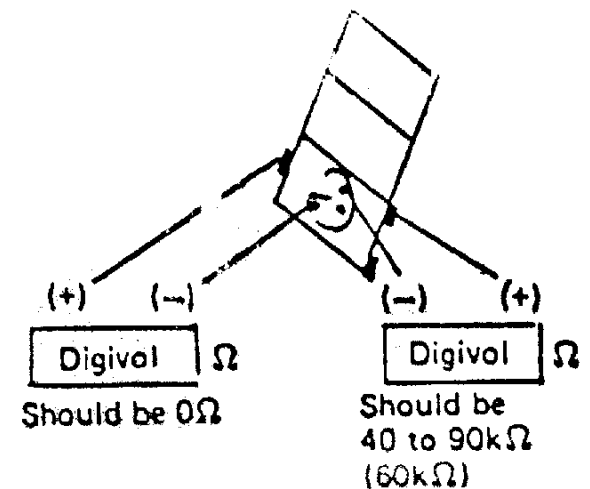


3. $V_{ref} = 1\text{ V}$

- Triplet resistors or related part defective

4. $V_{ref} = 0\text{ V}$

- (1) C114 shorted or broken
- (2) Pattern broken



3-15 DAC Adjusting Circuit Defective

- Adjustment impossible with variable resistor
- Indication abnormal regardless of accurate matching
- Other symptoms

- Check procedures

1. Check of output voltage $V_{ref} = 1.8\text{ V}$

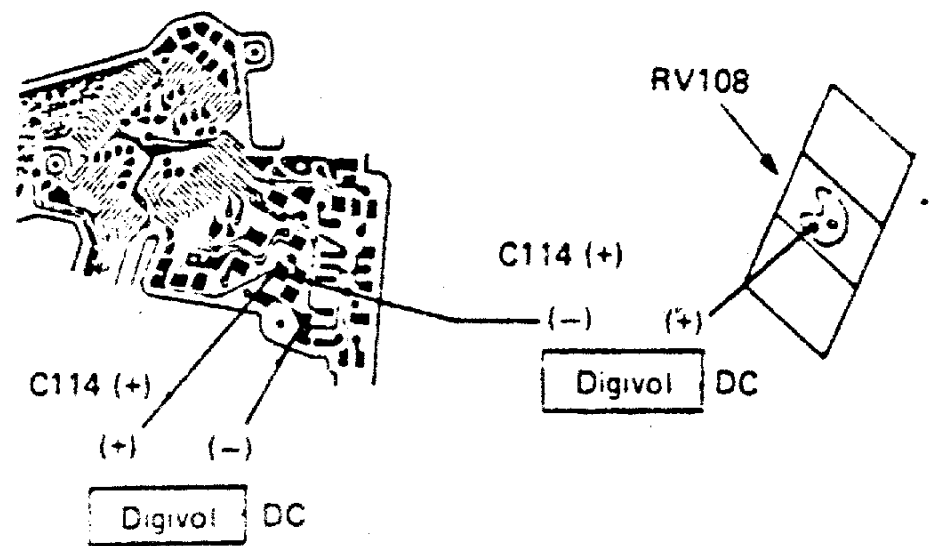
2. Check of DAC adjustment with RV108

- Voltage should be varied from 0 to 200 mV by turning the variable resistor (V_{ref} taken as standard).

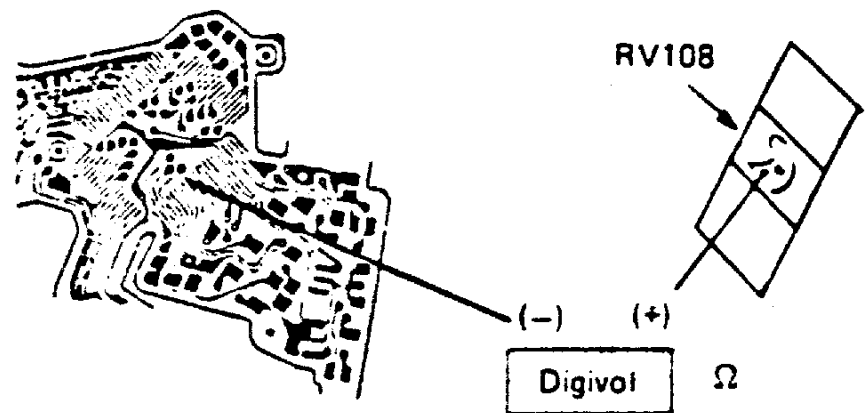
- (1) Clean or replace RV108.
- (2) Wire breakage between RV108 and B.P. leg No. 70
- (3) B.P. leg No. 70 improperly soldered

3. Indication abnormal regardless of accurate matching

- Check B.P. legs Nos. 10, 11 and 12.
- Check CPU legs Nos. 4, 5 and 6.



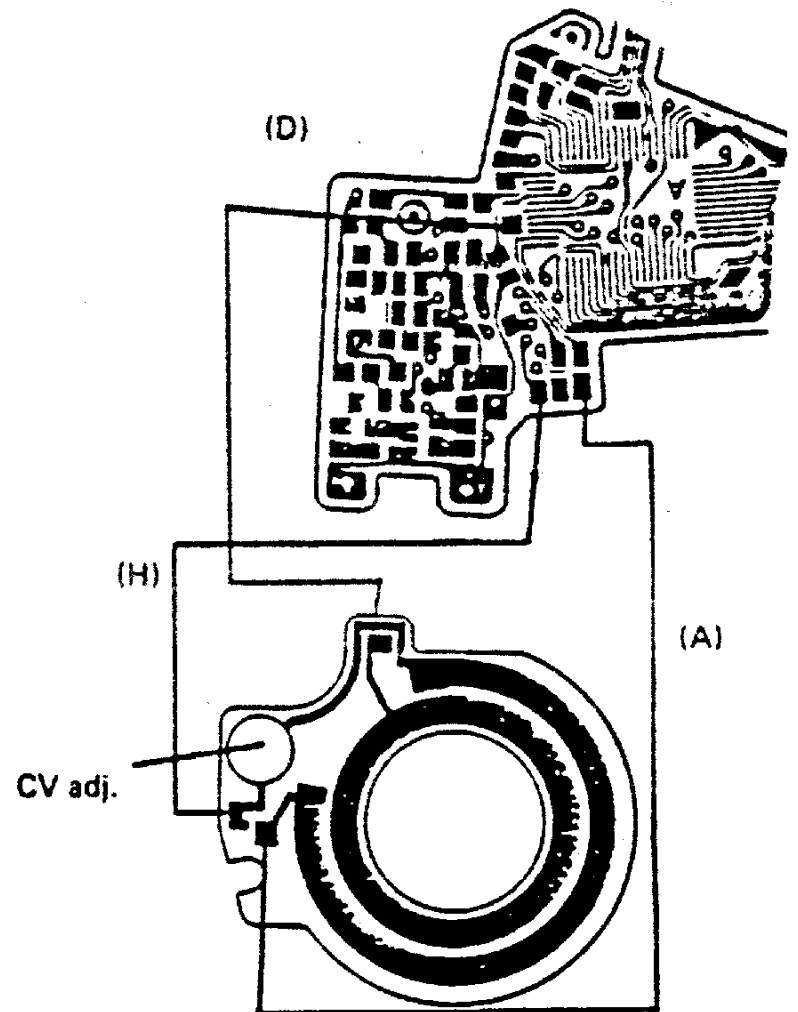
V_{ref} check



3-16 Misadjustment of \pm Compensation

- \pm compensation impossible

1. Poor contact on CV contact
2. Check lead wire and pattern
3. CV adj. resistor defective
4. RV104 defective



- Clean variable resistor. If cleaning is ineffective for correcting trouble, replace variable resistor with a new one.

Quartette resistors

