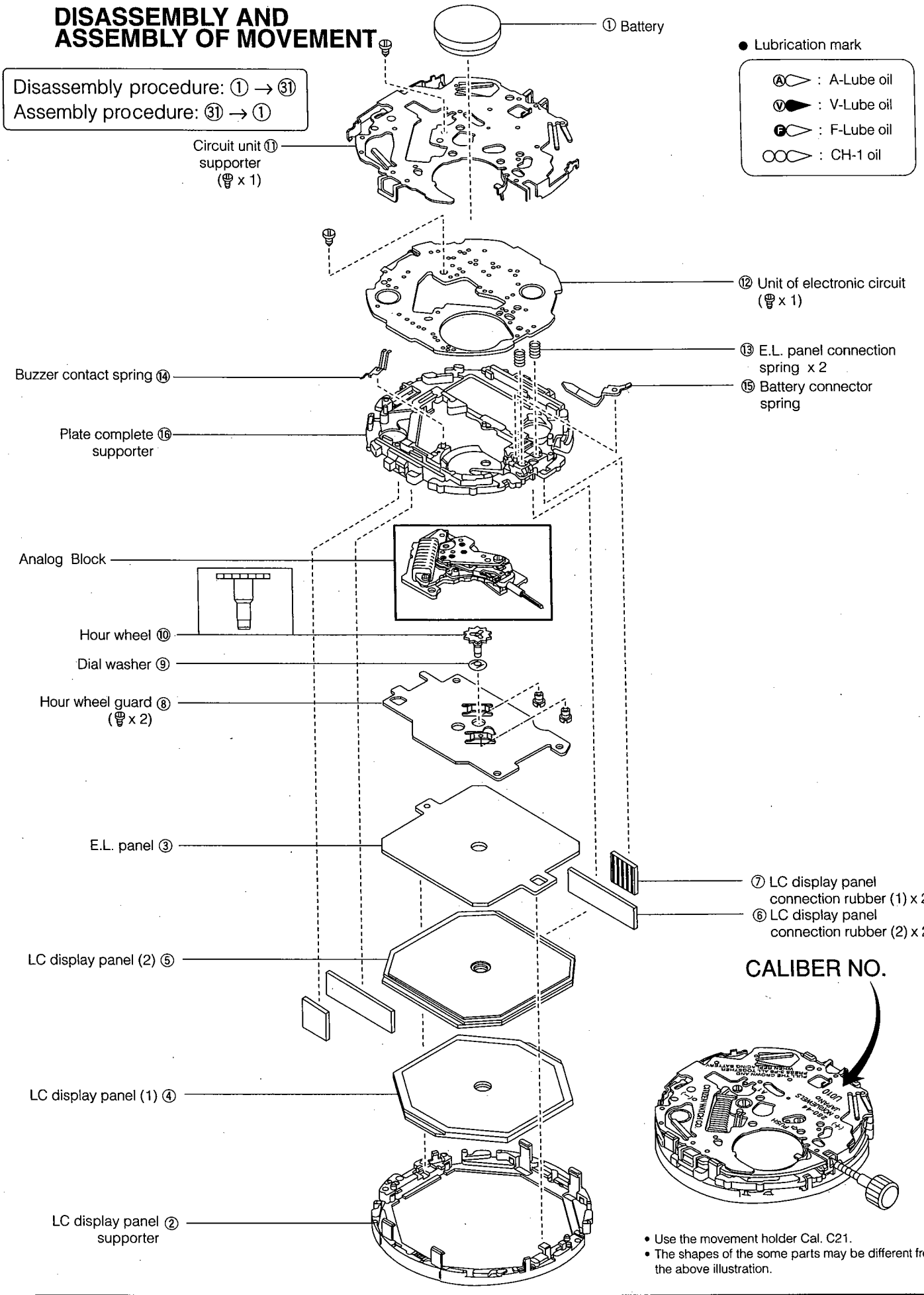
DISASSEMBLY AND ASSEMBLY OF MOVEMENT

Disassembly procedure: ① → ㉛
Assembly procedure: ㉛ → ①

● Lubrication mark

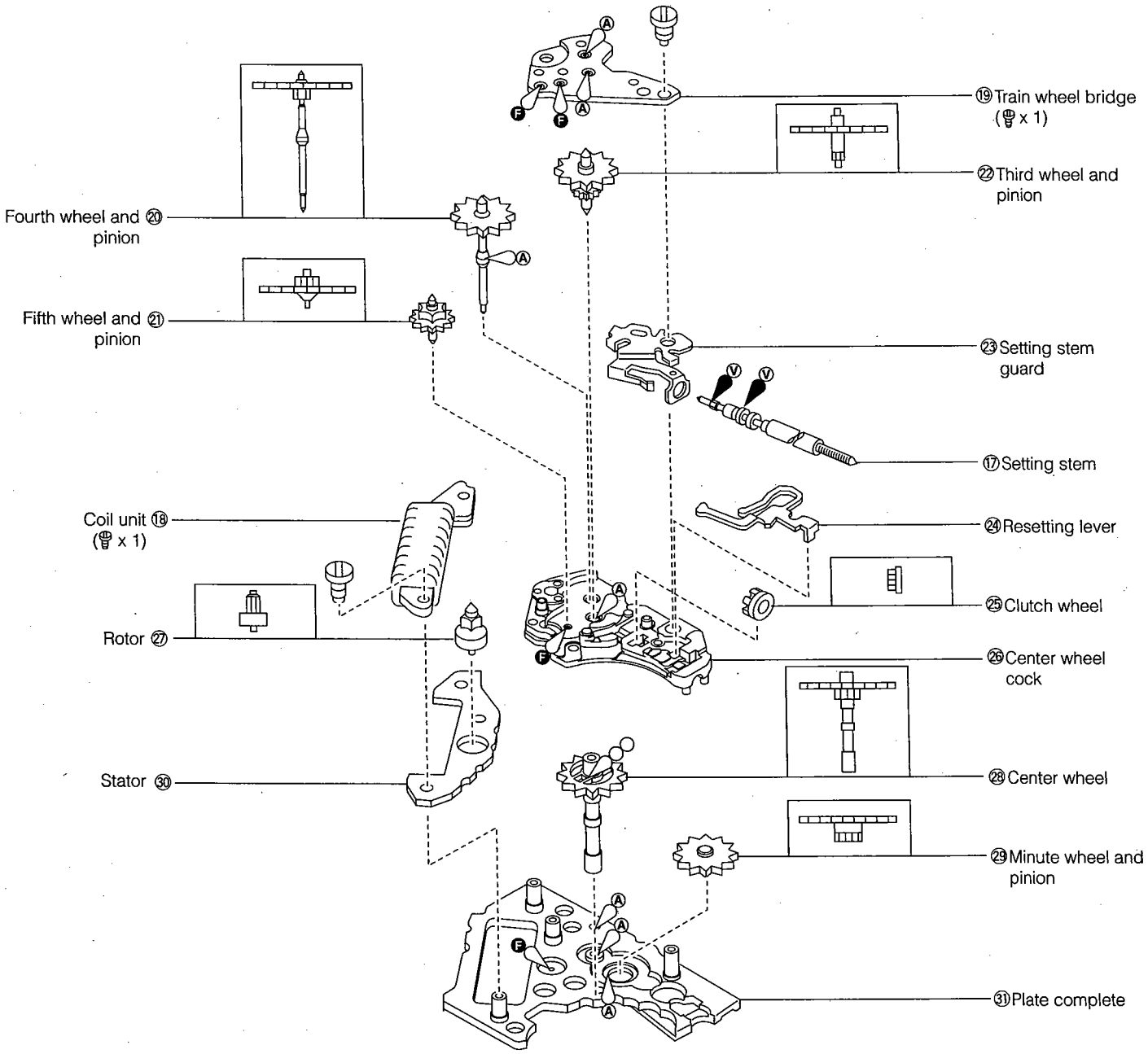
Ⓐ : A-Lube oil
Ⓥ : V-Lube oil
Ⓕ : F-Lube oil
: CH-1 oil



CALIBER NO.

- Use the movement holder Cal. C21.
- The shapes of the some parts may be different from the above illustration.

Analog Block



Precautions for disassembly and assembly

<How to remove and install circuit unit supporter>

When removing and installing the circuit unit supporter, take care not to deform its hooks, push buttons, etc.

1. Removal of circuit unit supporter

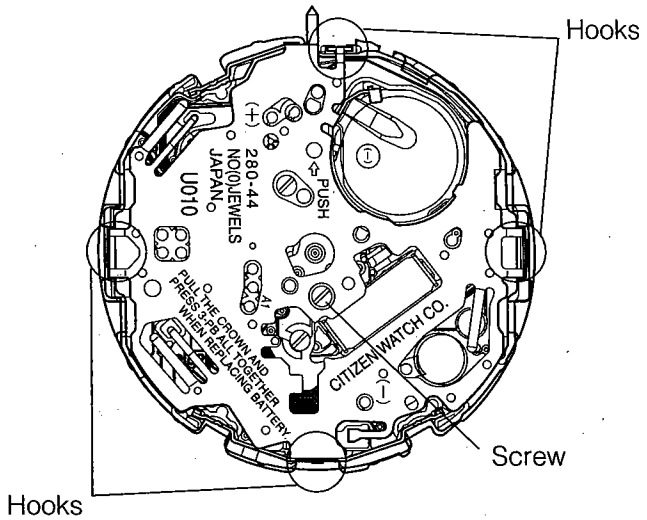
(1) Remove the 1 screw for the circuit unit supporter.

(2) Release the 4 hooks on the periphery of the circuit unit supporter.

2. Installation of circuit unit supporter

(1) After setting the electronic circuit unit, place the circuit unit supporter on the correct position.

(2) Push the top of the circuit unit supporter hooks (4 places) to fix the hooks to the plate complete supporter securely.



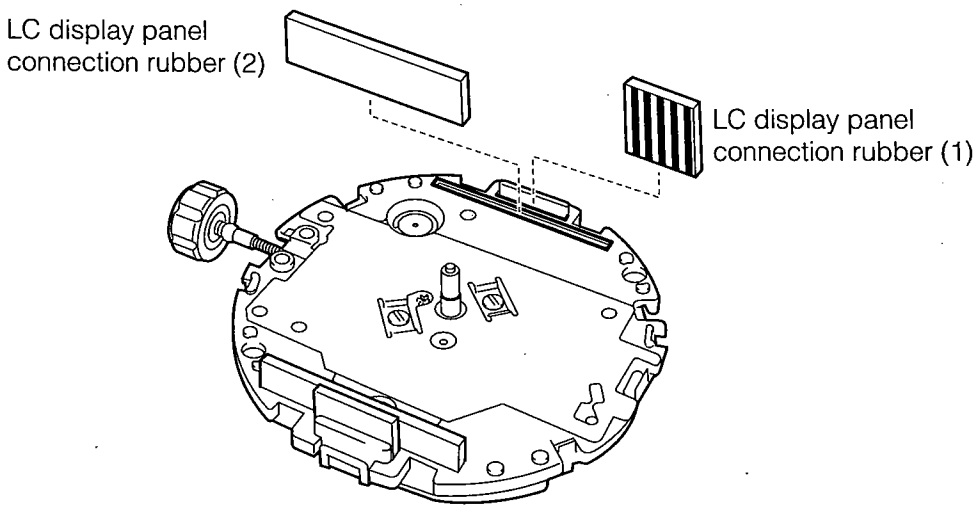
(3) Fix the push button springs (3 places) of the circuit unit supporter to the grooves of the plate complete supporter and tighten the 1 screw for the circuit unit supporter.

<Precautions for setting LC display panel connection rubber (1)>

Check the setting directions (vertical and horizontal) of the LC display panel connection rubber (1).

Set the LC display panel connection rubber (1) on the plate complete supporter so that the lines printed on it will be vertical.

The LC display panel connection rubber (1) does not have a right side or a wrong side. Since the LC display panel connection rubber (2) does not have a right direction, it may be set in any direction.

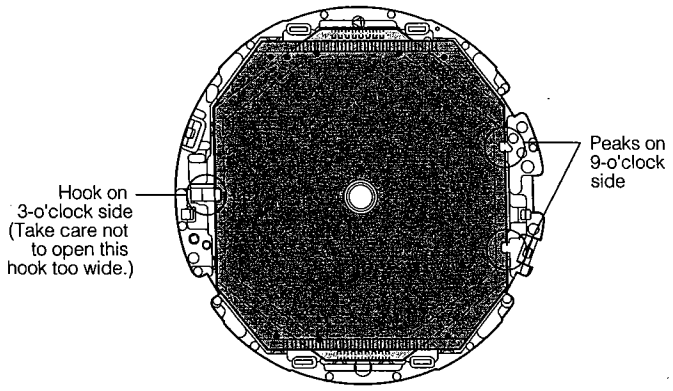


<How to set LC display panels, LC display panel supporter, and E.L. panel>

Check the setting directions of the LC display panel supporter and the 2 LC display panels.

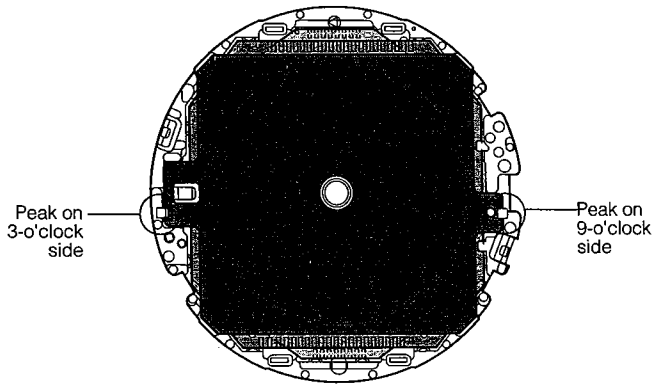
(1) Taking care of the setting directions of each part, set the LC display panels (1) and (2) to the LC display panel supporter.

Insert the LC display panels under the peaks (2 places) on the 9-o'clock side of the LC display panel supporter and open the hook on the 3-o'clock side to set the LC display panels.



(2) Insert the 3-o'clock side (electrode side) of the E. L. panel under the peak on the 3-o'clock side of the LC display panel supporter. Bend the E. L. panel and set it to the peak on the 9-o'clock side.

(3) Set the LC display panel supporter on which the 2 LC display panels and the E. L. panel are installed to the movement.



<How to set each part in correct direction>

- LC display panel supporter:

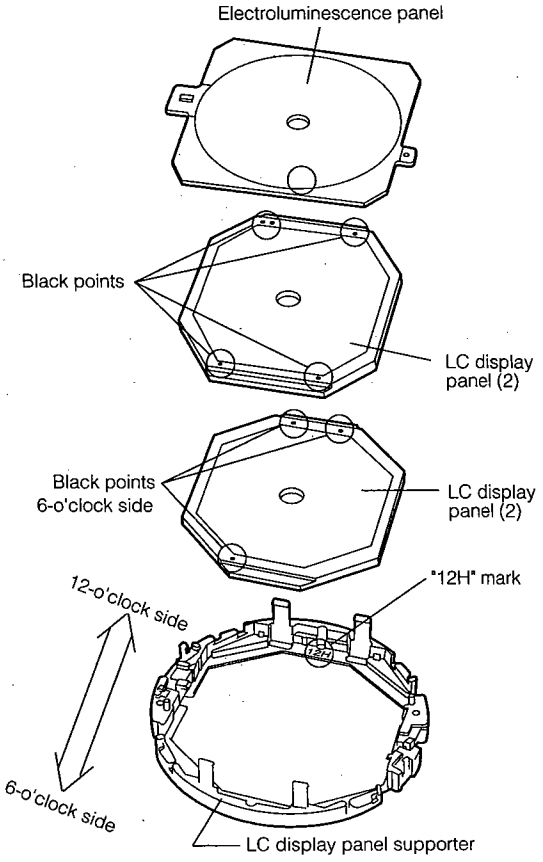
  Set the mark of "12H" to the 12-o'clock side.

- LC display panel (1):

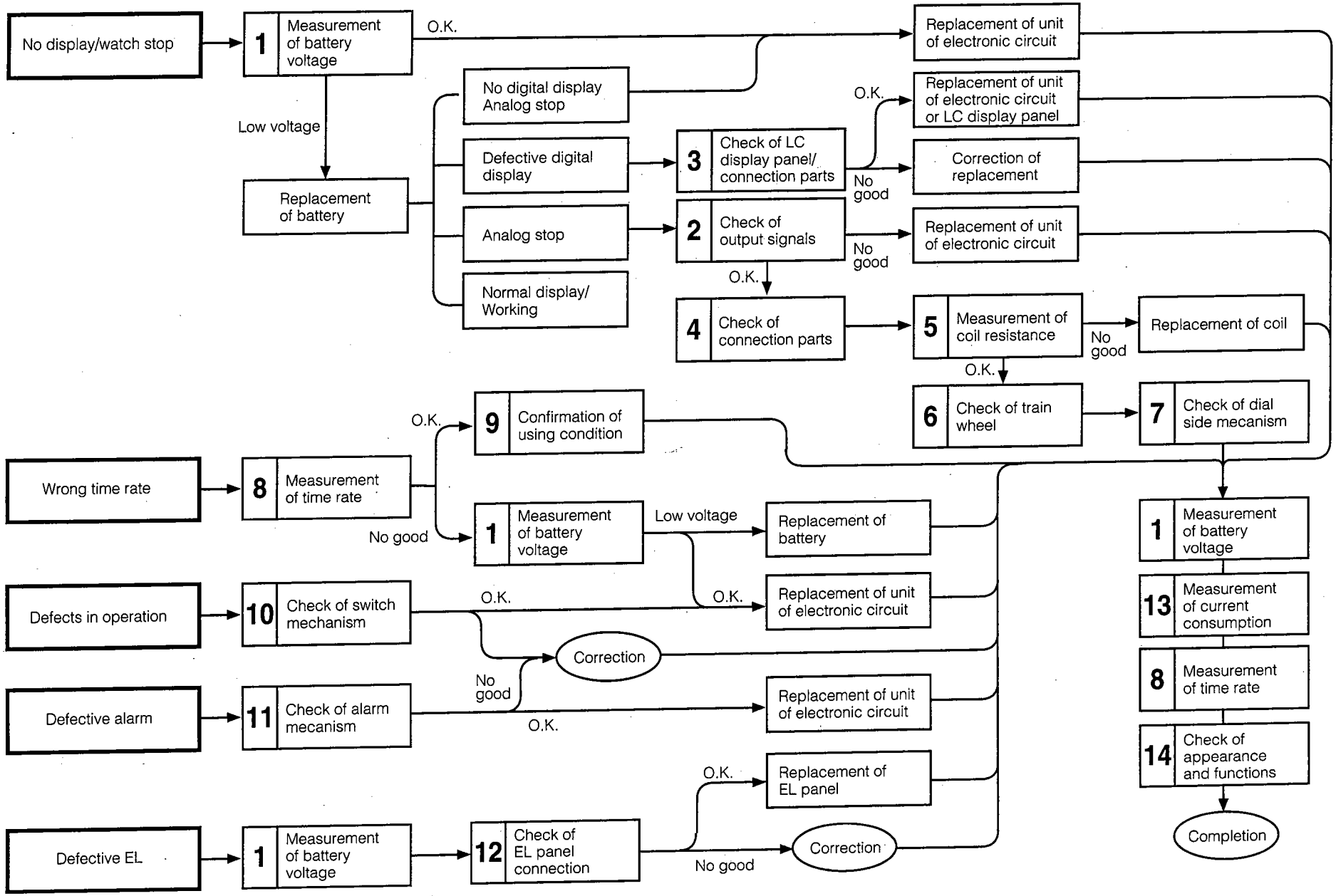
  Set the electrode having 1 black point at each end to the 12-o'clock side and the electrode having 1 black point at only 1 end to the 6-o'clock side.

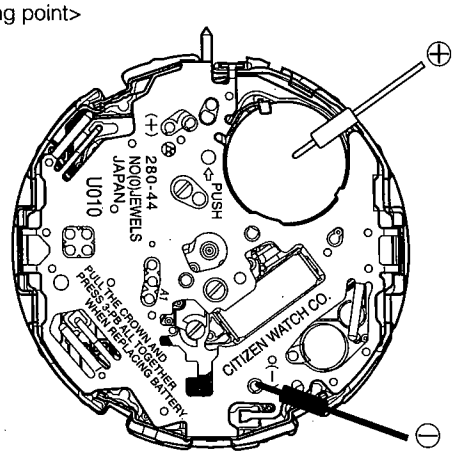
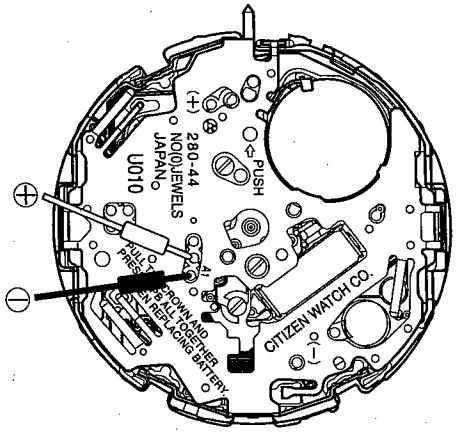
- LC display panel (2):

  Set the electrode having 3 black points (1 at 1 end and 2 at the other end) to the 12-o'clock side and the electrode having 2 black points (1 at each corner) to the 6-o'clock side.

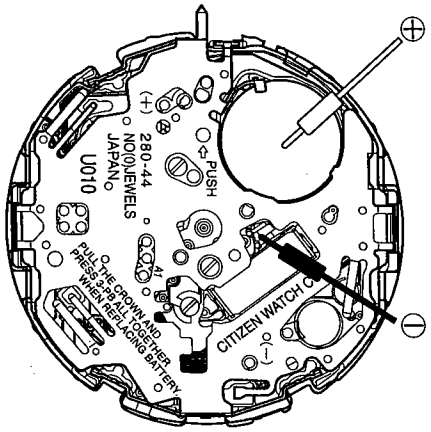


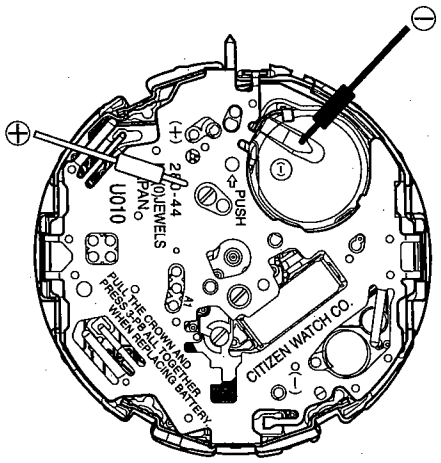
TROUBLESHOOTING AND ADJUSTMENT



Check Points	How to Check	Results and Treatments
❶ Measurement of battery voltage	[Refer to Technical Manual, Basic Course II-1-a] <Tester range: DC 3V> <Measuring point>  	• **Over 1.5 V** → Normal • **Under 1.5 V** → Replace the baterry.
❷ Check of output signals	[Refer to Technical Manual, Basic Course II-1-b] <Tester range: DC 0.3V>  (The tester lead pins have no polarity.)	• The tester pointer swings every second to the right and left from 0V. → Normal • The tester pointer does not swing. → Check of connections parts. ⬇ • The connections are normal. → Replace the unit of electronic circuit.
❸ Check of LC display panel and connection parts	[Refer to the Digital Section of Technical Manual, Basic Course II-2-a] • Inspection of all segments Pull out the crown and push the Ⓐ, Ⓑ and Ⓜ at the same time to turn on all the segments, and check for defective ones. • Continuity test on LC display panel, LC display panel connection rubber and unit of electronic circuit. Check the parts for stain, breakage, etc.	• LC display panel, connection rubber or unit of electronic circuit is not installed correctly. → Install correctly. • Parts are stained or dirty. → Remove stain and dirt. • Parts are cut broken or scratched. → Replace parts.
❹ Check of connection parts	[Refer to Analog Section of Technical Manual, Basic Course II-2-a] • Check the connection parts for stain and dirt. • Check the screws for looseness.	• Parts are stained or dirty. → Remove stain and dirt. • Screws are loose. → Fasten screws.

Check Points	How to Check	Results and Treatments
❺ Measurement of coil resistance	[Refer to Technical Manual, Basic Course II-1-c] • Remove the unit of electronic circuit, then measure the resistance of coil. (The tester lead pins have no polarity.) <Tester range: R x 10Ω>	• **1.9 kΩ to 2.3 kΩ** → Nomal • Outside range of **1.9 kΩ to 2.3 kΩ** → Replace coil unit.
❻ Check of train wheel	[Refer to Technical Manual, Basic Course II-2-b] • Check clearance of each wheel. Check rotor for dust and oil. • Check the plastic parts for deformation and flaw.	
❼ Check of dial-side mechanism	[Refer to Technical Manual, Basic Course II-2-c] • Confirm all parts are not deformed and are lubricated properly.	
❽ Measurement of time rate	[Refer to Technical Manual, Basic Course II-2-d] • Since this watch uses the D.F.C. (digital frequency control) method and has no control terminal, there is no way of adjusting its time rate in the field. (Measurement is made in a 10-second range.)	The watch loses or gains a substantial amount of time. → Replace the unit of electronic circuit.
❾ Confirmation of using condition	[Refer to Technical Manual, Basic Course II-2-e] • If the analog section is affected by magnetism, in particular, the watch may stop or become inaccurate. Accordingly, the using condition must be confirmed.	
❿ Check of switch mechanism	1. Inspection of movement. • Press the switch spring of circuit unit supporter with tweezers, etc. to contact it to unit of electronic circuit, and confirm the switching function. • Check for removal of pattern of electronic circuit unit, deformation of switch return spring, etc. 2. Inspection of push button • Check push button for deformation, stain, etc. **(Note)** Be sure to apply silicone oil to the packing of push button for waterproofness and smooth operation.	• Switching function is normal. → Inspect push button. • Pattern is removed or deformed. → Replace defective parts. • Push button is stained or deformed. → Remove stain, or replace push button.

Check Points	How to Check	Results and Treatments
⓫ Check of alarm mechanism	[Refer to Technical Manual, Basic Course II-1-d] *1. Set the movement in the case, and check output of alarm signal with the case back removed. (1) Set the watch in alarm mode. (2) Apply ⊕ lead pin to battery surface and ⊖ lead pin to pattern of buzzer contact spring, them press Ⓐ button. <Tester range: DC 0.3V>  *2. If the output of alarm is normal, perform the following inspection. • Check the piezo-electric element of vibrating plate for cracks and breakage. • Check the buzzer contact spring for bend and deformation. • Check the pattern of electronic circuit unit for dust and stain.	• Tester pointer does not swing. → Replace the electronic circuit unit. • Tester pointer swings. → Normal ⬇ • Perform inspection in *2. ⬇ Normal indication. → O.K.
⓬ Check of EL panel connection	1. Confirmation of battery voltage 2. Check of EL panel connection • Check the EL panel for breakage. Particularly check the electrode pattern on the back side for stain, breakage, etc. which can lower electrical continuity. • Confirm that the EL connection spring is in contact with the EL panel and electrode pattern normally. If any cause is not found by inspections 1 and 2, the EL panel must have been deteriorated. Replace the EL panel.	• **Over 1.5 V** → Check EL panel connection. • **Under 1.5 V** → Replace battery. • **Trouble of EL panel** → Replace EL panel. • **Deformation of EL connection spring** → Repair or replace.

Check Points	How to Check	Results and Treatments
⓭ Measurement of current consumption	[Refer to Technical Manual, Basic Course II-1-f] Measure the current consumption in the time mode according to the following procedure. (1) Pull the crown and set the tester. First, set the tester range to 10mA. (2) With the tester set, push the Ⓐ, Ⓑ, and Ⓜ buttons at the same time (All-reset operation). (3) Push the crown. The watch is in the shutter mode just after the all-reset operation. (4) Push the Ⓜ button once to set the watch in the time mode. (5) After the tester point is stabilized, change the tester range to 10μA and read the current consumption. <Use the tester range: DC 10μA> <Measuring point>  ★ Precautions for measurment • When the lead bars are applied to the measurement parts, the meter reading may exceeds the maximum value. In this case, wait for about 30 seconds, then measure again. **Influence of light** **Avoid taking measurements under an incandescent lamp or direct sunshine, because this may cause the current value to increase.** **The light of a fluorescent lamp has no influence on current consumption.**	• Current consumption of the movement **Under 5.0 μA.** → Nomal **Over 5.0 μA.** → Inspect train wheel and dial side mechanism, and remove dust and stain and oil. ⬇ Re-measured value is abnormal. → Replace the electronic circuit unit. • Pull the crown to measure the current consumption under the reset state. (in shutter mode) **Under 0.6 μA.** → Nomal **Over 0.6 μA.** → Replace the electronic circuit unit.
⓮ Check of appearance and functions	[Refer to Technical Manual, Basic Course II-2-f] • Check inside of case for dust and stain. • Check operation of setting switches for normality. • Check segment for normality (See ❸ Check of LC display panel and connection part.) * Be sure to apply silicone oil to packing of each push button. It is necessary for water resistance and smooth operation.	