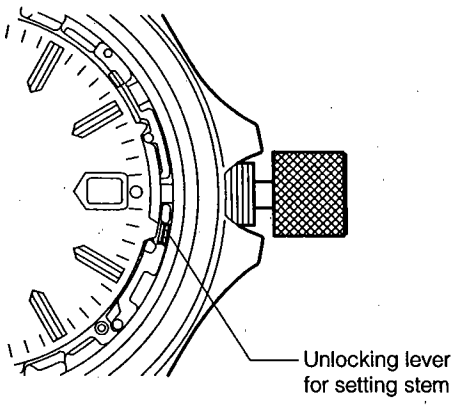
PRECAUTIONS FOR DISASSEMBLY AND ASSEMBLY

A. How to Pull Out Setting Stem from One-piece Case

1. When removing the setting stem from the case

- Pressing down the end of the unlocking lever for setting stem from above, pull out the setting stem.



<Procedure>

(1) Set the crown at the normal position (Push it in).

(2) Lightly press the end of the unlocking lever for setting stem with a screwdriver, etc. from above.

(3) With the lever pressed, pull out the setting stem.

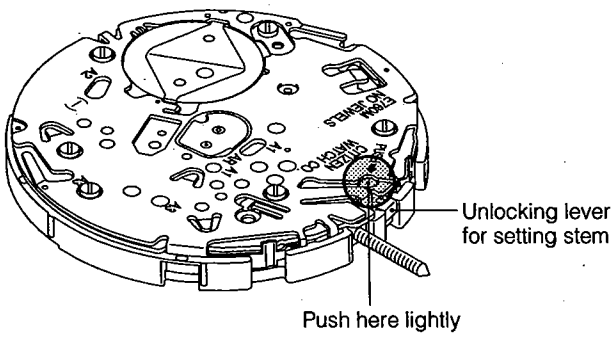
2. When removing the setting stem from the movement

- Pressing the base of the unlocking lever for setting stem ("PUSH →" position), pull out the setting stem.

<Note>

When the movement has been removed from the case, do not press the end of the unlocking lever for setting stem. If it is pressed in this case, it may be pressed too much to deform itself, circuit unit supporter, etc. since there is not a stopper.

If the movement is installed to the case with any part deformed, the setting stem may not be pulled out even if the unlocking lever for setting stem is pressed.



<Procedure>

(1) Set the crown at the normal position (Push it in).

(2) Lightly press the base of the unlocking lever for setting stem ("PUSH →" position) with a screwdriver, etc. from above.

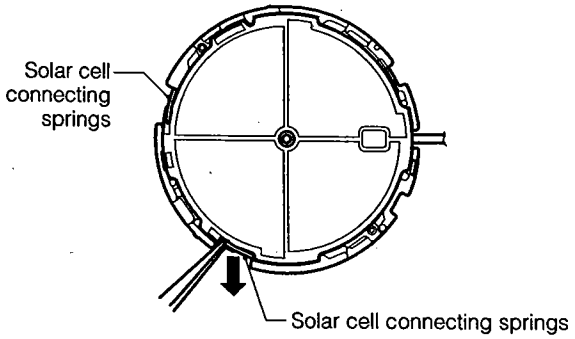
(3) With the lever pressed, pull out the setting stem.

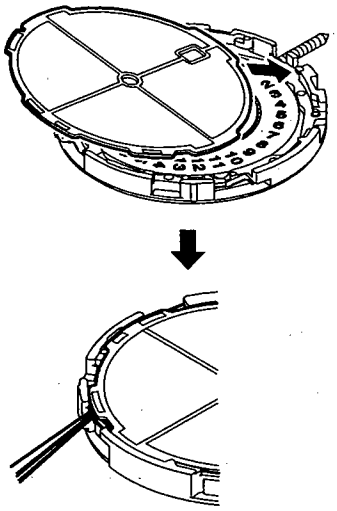
<Precautions for Removal and Setting of Solar Cell>

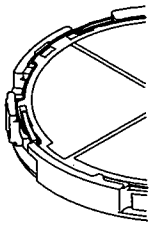
1. Precautions for handling of solar cell

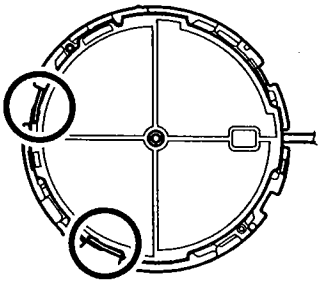
- If the top of the solar cell is damaged, its charging capacity and other functions are lowered. Accordingly, sufficiently take care not to damage the top of the solar cell when removing and setting it.
- If the electrodes are stained or flaked off, a continuity trouble occurs. Since it is difficult to clean the top of solar cell, do not touch them with a finger, etc.

2. Removing and setting methods of solar cell









<Removing method of solar cell>

(1) Slide off the contact of each of the two solar cell connecting springs on the top of the solar cell outward.

(2) Pull and lift up the solar cell in the 9-o'clock direction to remove it.

<Setting method of solar cell>

(1) Slide the solar cell into under the overchanging sheet at the 4-o'clock position of the plate complete.

(2) Press down the solar cell lightly.

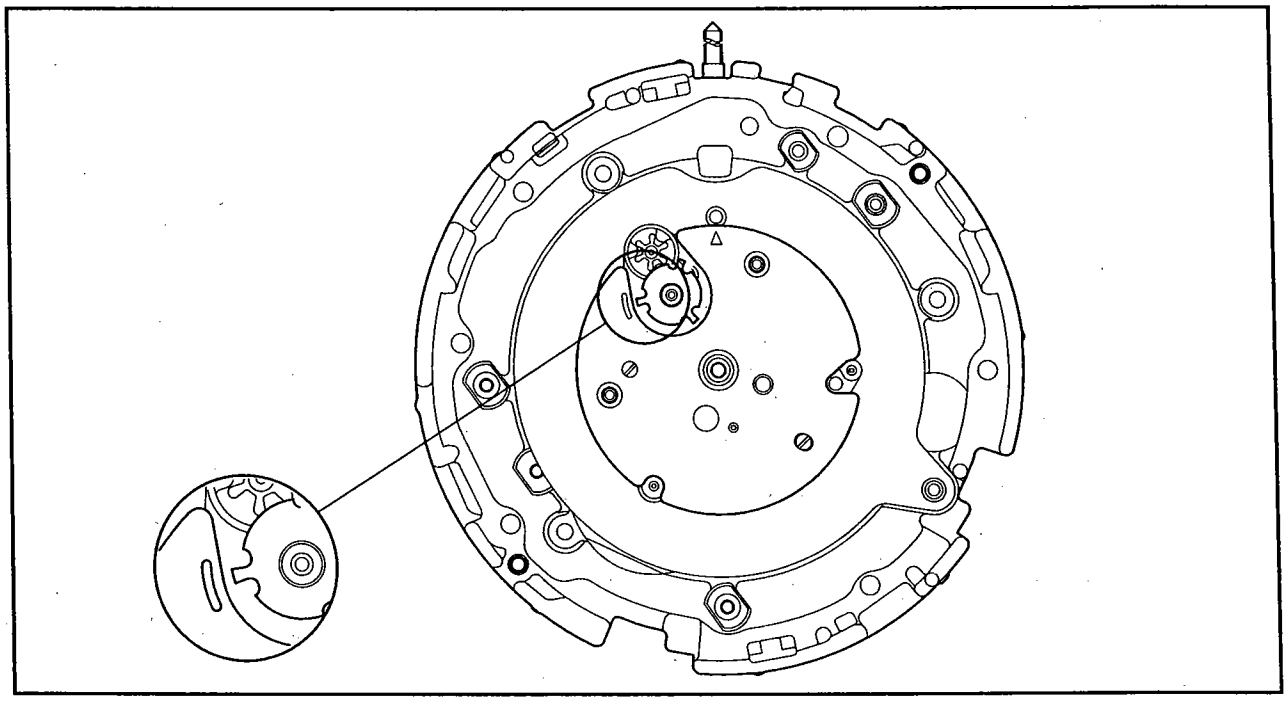
(3) Holding, opening, and lifting up each solar cell connecting spring with tweezers, move its contact onto the solar cell.

- Take care not to deform the spring with a too large force. Deformation of the spring can cause a bad contact, etc.
- Check that the solar cell connecting spring is securely in contact with the conductor of the solar cell.

[Assembly of Parts Around Calendar]

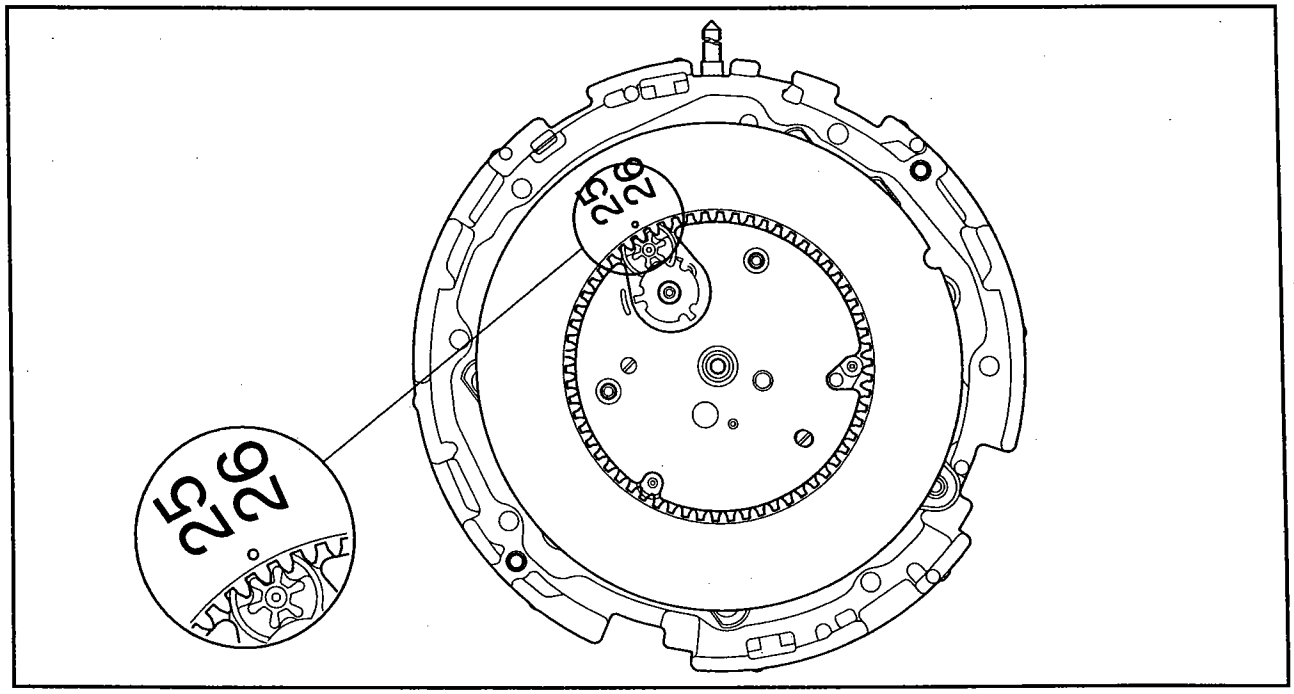
1. Installing position of intermediate date wheel (4)

Position and install intermediate date wheel (4) through the oval zone of the date dial guard, taking care that its finger tip will not be removed.
If this wheel is deviated from the correct position, the changing timing of the date dial changes.



2. Installing position of date dial

Position and install the date dial so that the dot "•" between 25 and 26 on itself will be between the teeth of the date dial driving wheel. If it is installed correctly, 28 will be positioned at the setting stem.



[How to fit hands]

Before fitting the hands, perform the all-reset operation and then start the 1-second interval movement.

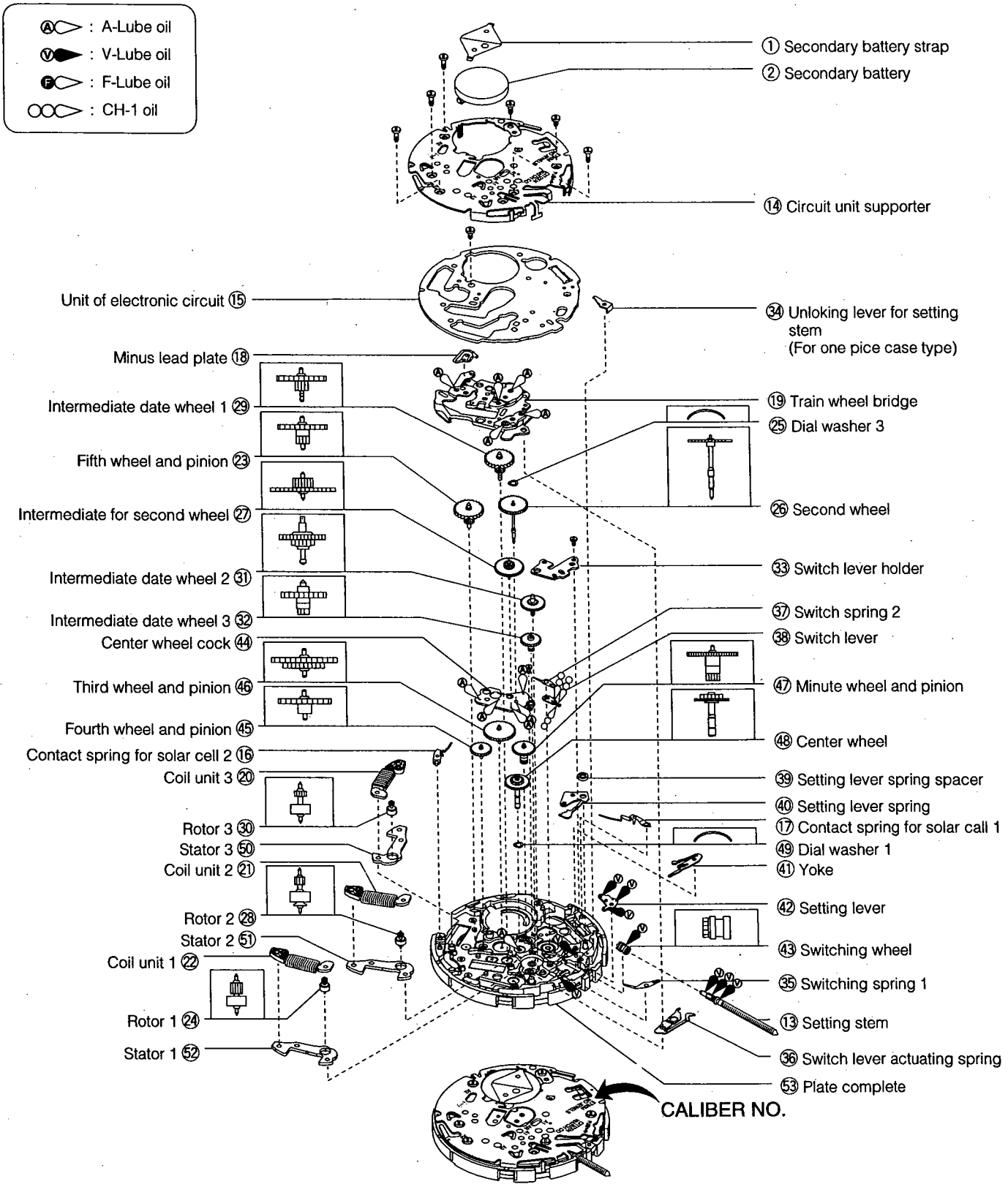
1. Perform the "all-reset" operation.
   ① Pull the crown to the second click and press and hold the Ⓐ button (the switch spring in the 2-o'clock division) for 2 seconds or longer.
2. Perform the "standard position setting".
   ① Pull the crown to the second click and turn it to the right or left.
   ② Pull the crown to the first click and turn it to the right or left.
   ③ Return the crown to the normal position.
   ④ Pull the crown to the second click and return it to the normal position again, and the watch starts the 1-second interval movement.
3. Fit each hand.
   - Fit the "hour hand" before the 12-o'clock division and pull the crown to the second click and turn it to the right to set the hour hand to the 12-o'clock division.
   - Fit the "minute hand" to the 12-o'clock division.
   - Fit the "second hand" to the 12-o'clock division.
4. Set the movement in the case and perform the "all-reset" operation and "standard position setting" again, then set the time and calendar correctly.

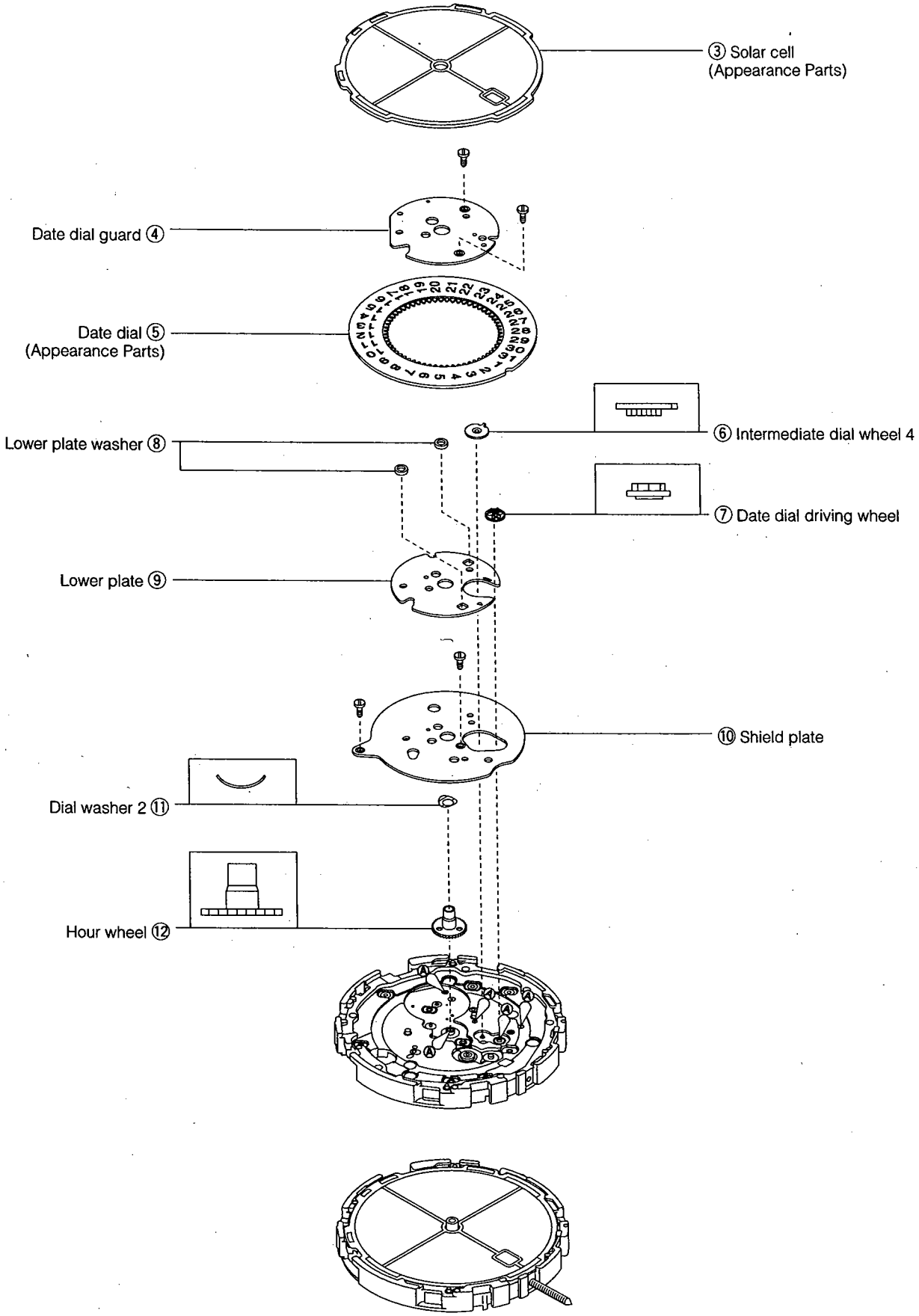
DISASSEMBLY AND ASSEMBLY OF MOVEMENT

Disassembly procedure: ① → ㊸
Assembly procedure: ㊸ → ①

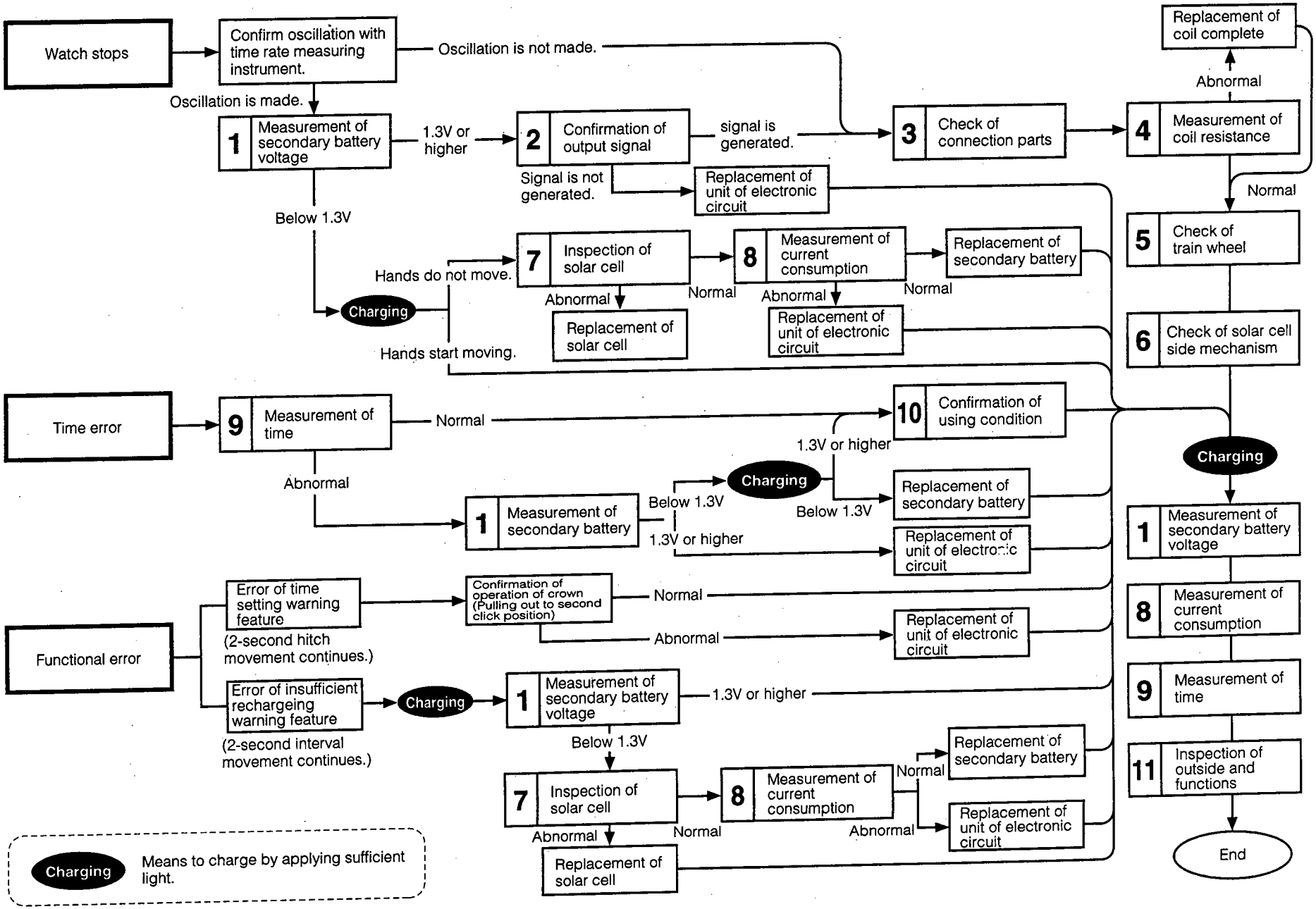
● Lubrication mark

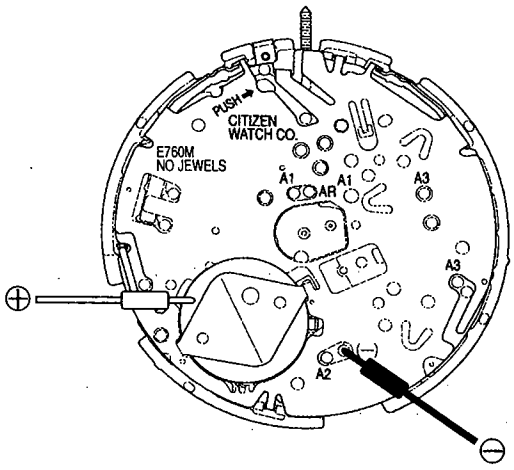
Ⓐ : A-Lube oil
Ⓥ : V-Lube oil
Ⓕ : F-Lube oil
○○○ : CH-1 oil

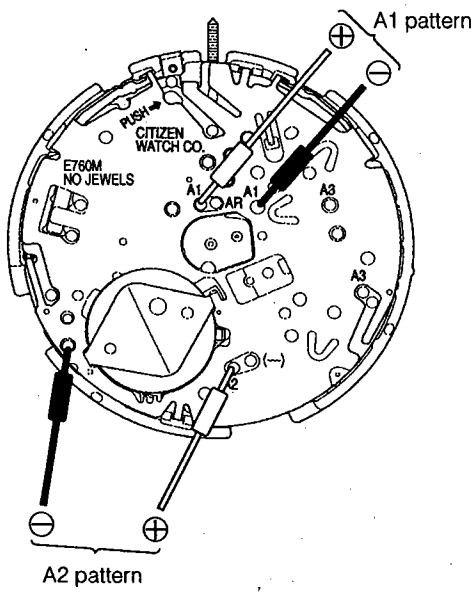


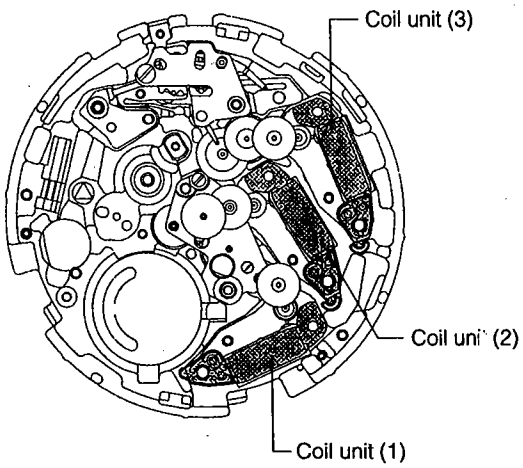

③ Solar cell
(Appearance Parts)
Date dial guard ④
Date dial ⑤
(Appearance Parts)
⑥ Intermediate dial wheel 4
Lower plate washer ⑧
⑦ Date dial driving wheel
Lower plate ⑨
⑩ Shield plate
Dial washer 2 ⑪
Hour wheel ⑫

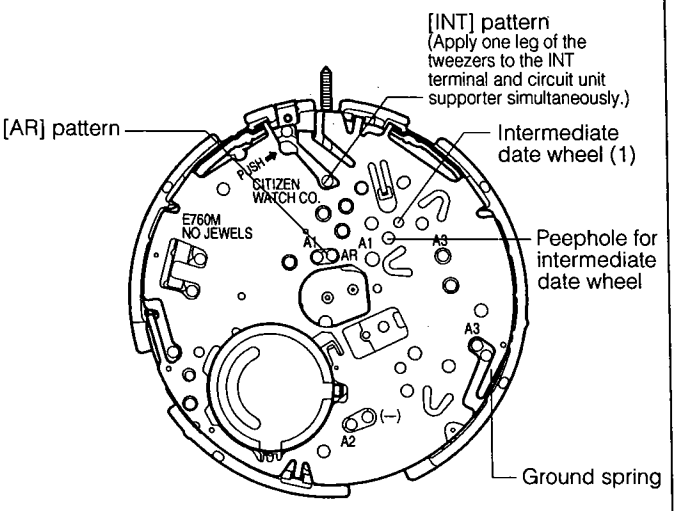
TROUBLESHOOTING AND ADJUSTMENT METHOD



Check Items	How to Check	Result and Treatment
❶ Measurement of secondary battery voltage	<Tester range: DC. 3V>  Reference: • 1.1V~1.3V: 2-second interval movement 1.3V~2.6V: Normal 1-second interval movement • 2-second hitch movement is a function that signals that the watch has stopped and restarted. This mode will continue until the watch is set to the correct time, irrespective of the voltage. • In the case the watch has stopped due to insufficient charging, a minimum of 30 minutes are required until the watch changes to the time setting warning display even if sufficiently exposed to light. **Caution:** When measuring the voltage, be careful not to place the ⊖ tester pin on the supporter for electronic circuit (a short circuit will occur).	1.3V or higher → Good Below 1.3V → Charge. ⬇ Measure again after charging. 1.3V or higher → Check connecting parts. Below 1.3V → Check solar cell. ⬇ Good ⬇ Replace secondary battery.

Check Items	How to Check	Result and Treatment
❷ Confirmation of output signal	* Refer to Technical Manual, Basic Course: II-1-b. <Tester range: DCV. 0.3V>  <Pattern A1> • In the 1-second interval movement, the tester pointer should moves to the right left every 1 second. • In the 2-second interval movement or 2-second hitch movement, the test pointer moves in only one direction every 2 seconds. <Pattern A2> • The tester pointer should move to right and left every 15 seconds.	Tester pointer does not move → Check connection parts. ⬇ Connection parts are normal → Replace of electronic circuit unit.
❸ Check of connection parts	* Refer to Technical Manual, Basic Course: II-2-a. • Check for looseness of screws, dust, stain, etc. • Check for stain and removal of the solar cell pattern (two places), deformation of connection spring, removal of welded lead plate of the secondary battery, stain of the circuit pattern, bad contact of each part.	Stain of solar cell pattern and circuit pattern → Remove stain. Removal of solar cell pattern, removal of circuit pattern, removal of welded lead plate of secondary battery → Replace parts.

Check Items	How to Check	Result and Treatment
❹ Measurement of coil resistance	* For the setting method of the tester, see Basic Course: II-1-c. • Remove the unit of electronic circuit and measure the coil resistance. <Tester range: R x 10Ω>  <The tester lead pins have no polarity>	Coil units (1), (3) • 1.0 ~ 1.5kΩ → Good • Out of range of 1.0 ~ 1.5kΩ → Replace coil unit. Coil units (2) • 1.9 ~ 2.3kΩ → Good • Out of range of 1.9 ~ 2.3kΩ → Replace coil unit.
❺ Check of train wheel	* Refer to Basic Course: II-2-b.	
❻ Check of solar cell side mechanism	* Refer to Basic Course: II-2-c.	
❼ Check of solar cell	• Check the solar cell for breakage and stain, and check its electrode for stain and flaking.	Breakage of solar cell → Replace solar cell. Stain → Remove stain. Flaking of electrode → Replace solar cell.

Check Items	How to Check	Result and Treatment
❽ Measurement of current consumption	* Refer to Basic Course: II-1-f. This watch uses a secondary battery instead of a battery. Accordingly, prepare a silver battery (1.50V or higher), then measure the current consumption according to the following procedure. (1) Remove the secondary battery strap, then remove the secondary battery. (2) Referring to Technical Manual, Basic Course, set the silver battery (1.55V) to the adapter of the tester correctly. (3) Set the crown to the normal position. (4) Set the tester. Replace the positive ⊕ tester pin with a clip, then hitch it on the ground spring of the circuit unit supporter. Apply the negative ⊖ tester pin to the negative ⊖ pattern of the unit of electronic circuit. (5) Short the AR pattern and INT pattern simulataneously for about 2 seconds with tweezers, etc. • Apply one leg of the tweezers to the INT terminal and circuit unit supporter simultaneously. (6) Release the AR pattern first, and intermediate date wheel (1) rotates quickly. (7) After confirming that intermediate date wheel (1) rotates quickly, relase the INT pattern. **Note:** The tester indicates a high value at first. Wait until the tester pointer is stabilized, then measure the current consumption of the movement. **Note:** When measuring the current consumption, do not apply any light to the solar cell. If any light is applied, the voltage changes and correct current consumption cannot be measured. <Tester range: DC 10μA>  	Current consumption by module **Below 1.2μA** → Good **1.2μA or higher** → Measure unit of electronic circuit. Measurement of unit of electronic circuit. **Below 0.4μA** → Good **0.4μA or higher** → Replace unit of electronic circuit. Current consumption by module is high but that by electronic circuit unit is low → A part other than circuit seems to have a trouble. Check for stain, bad lubrication, deformation of parts, and remove causes of load.

Check Items	How to Check	Result and Treatment
❾ Measurement of time	* Refer to Basic Course: II-2-d. • Since DF measurement is applied, measure in the 10-second range. The time rate cannot be adjusted, however. The time rate may not be measured accurately in the 2-second interval movement or 2-second hitch movement. In this case, apply light to the watch until the second hand moves in the 1-second interval movement, the measure the time rate.	• Time rate is very different from specification → Replace unit of electronic circuit.
❿ Confirmation of using condition	* Refer to Basic Course: II-2-e. • Since this watch is energized by light, it should receive light as much as possible. If the watch is placed near a light source which generates heat (above 60°C) such as an incandescent lamp, a halogen lamp, etc., its functions and parts may be deteriorated or deformed by the heat. Accordingly, take care when applying light to it. Example: When the watch is hidden under a long sleeve or the customer works in a dark place, it needs to be exposed to light on purpose.	
⓫ Inspection of outside and functions	* Refer to Basic Course: II-2-f.	