DISASSEMBLY AND ASSEMBLY OF MODULE
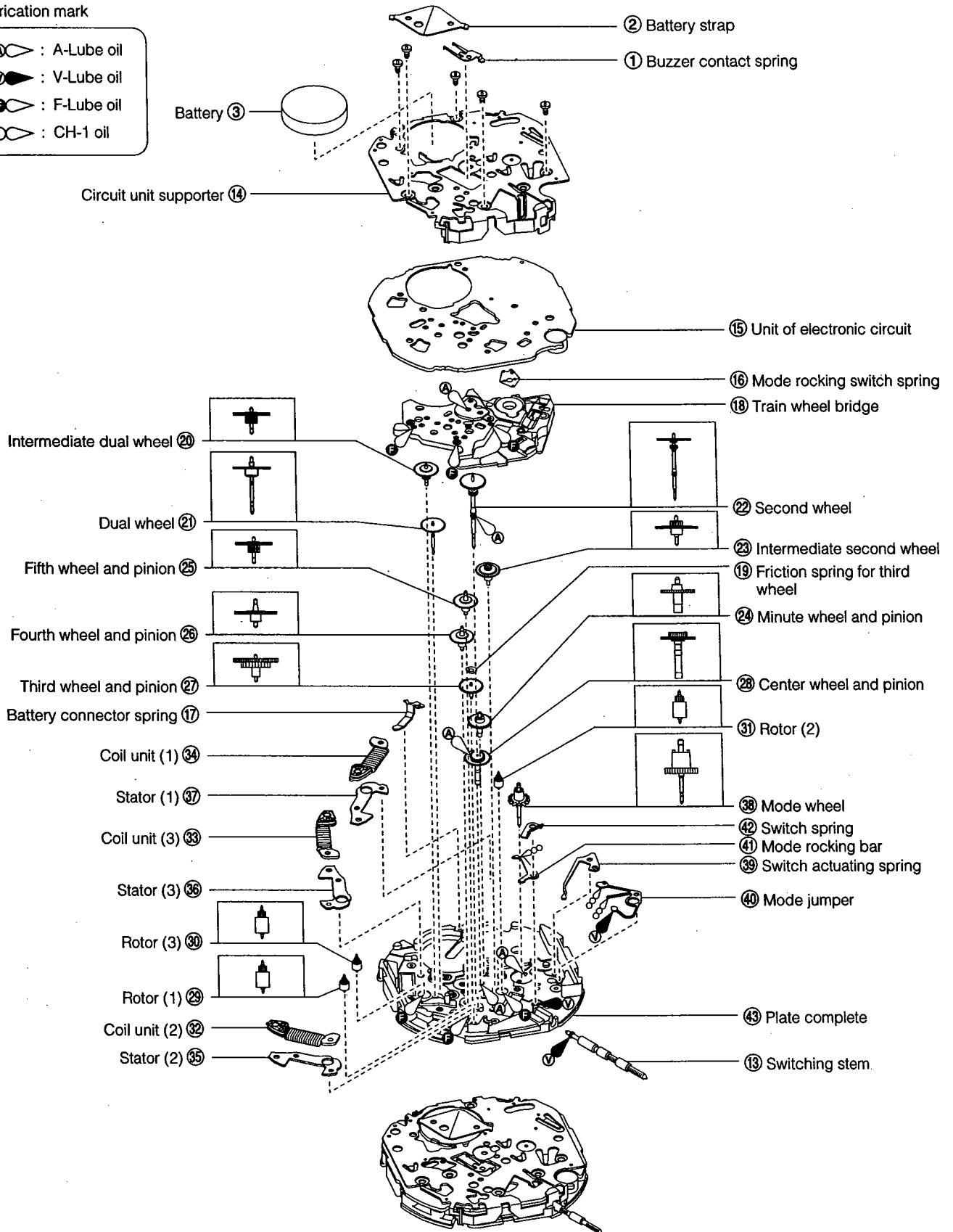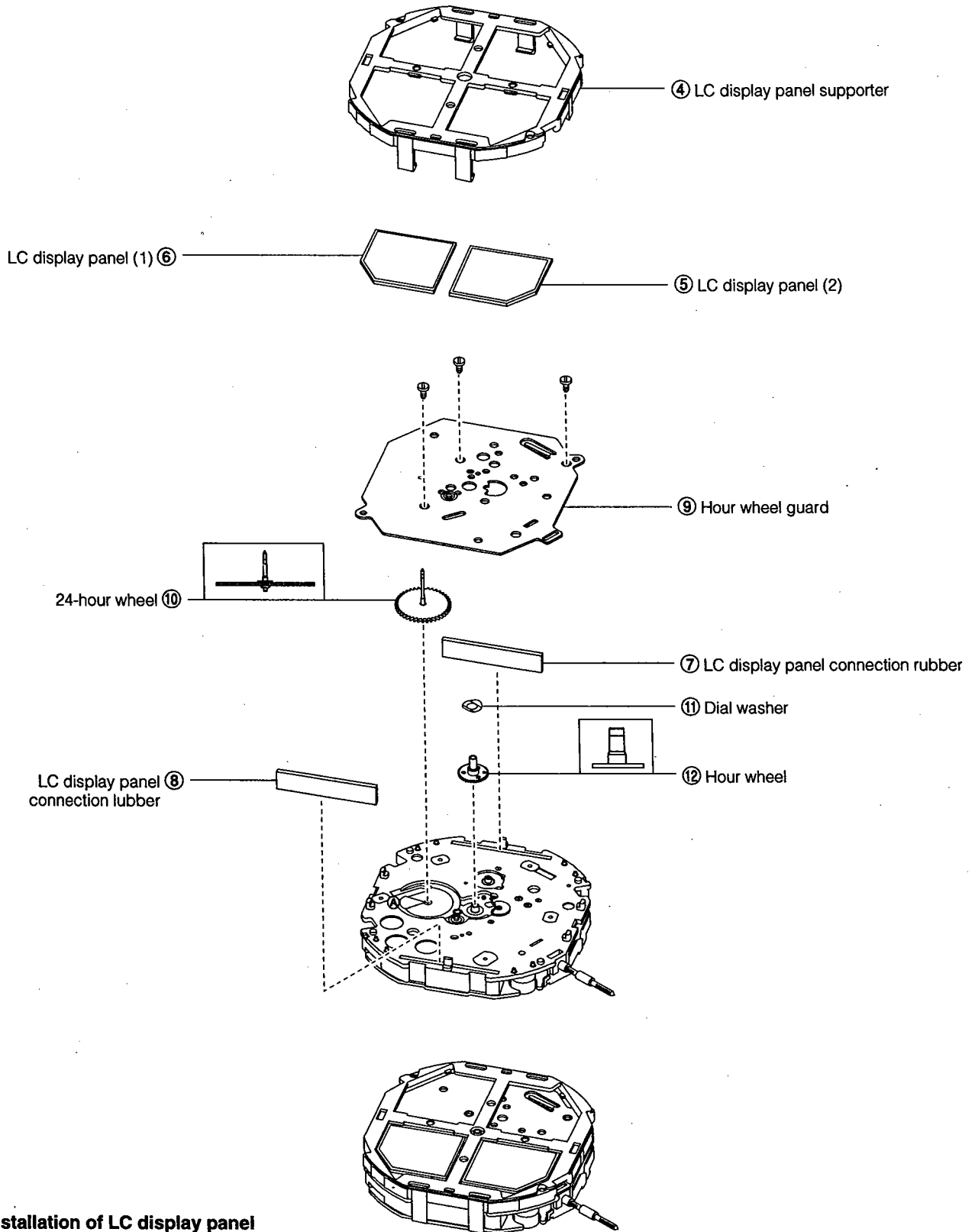
Disassemble the parts in order of ① → ㊸
Assemble the part in order of ㊸ → ①

● Lubrication mark

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

Battery ③

Circuit unit supporter ⑭

② Battery strap

① Buzzer contact spring

⑮ Unit of electronic circuit

⑯ Mode rocking switch spring

⑱ Train wheel bridge

Intermediate dual wheel ⑳

Dual wheel ㉑

Fifth wheel and pinion ㉕

Fourth wheel and pinion ㉖

Third wheel and pinion ㉗

Battery connector spring ⑰

Coil unit (1) ㉞

Stator (1) ㊲

Coil unit (3) �33

Stator (3) ㊱

Rotor (3) �30

Rotor (1) ㉙

Coil unit (2) �32

Stator (2) ㉟

㉒ Second wheel

㉓ Intermediate second wheel

⑲ Friction spring for third wheel

㉔ Minute wheel and pinion

㉘ Center wheel and pinion

㉛ Rotor (2)

㊳ Mode wheel

㊷ Switch spring

㊶ Mode rocking bar

㊴ Switch actuating spring

㊵ Mode jumper

㊸ Plate complete

⑬ Switching stem

④ LC display panel supporter

LC display panel (1) ⑥

⑤ LC display panel (2)

⑨ Hour wheel guard

24-hour wheel ⑩

⑦ LC display panel connection rubber

⑪ Dial washer

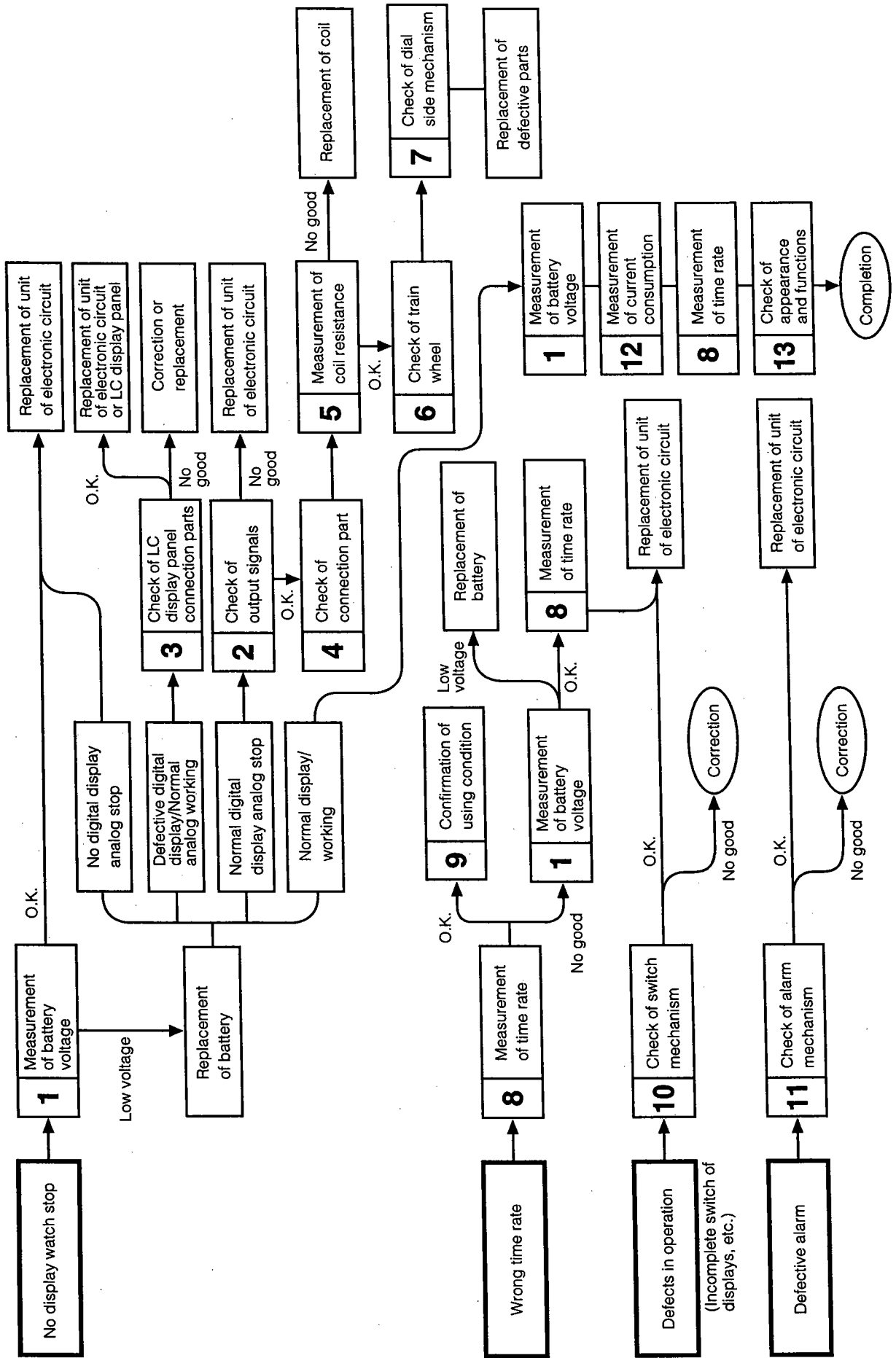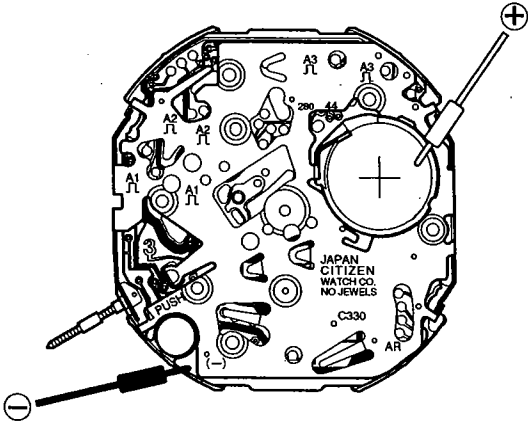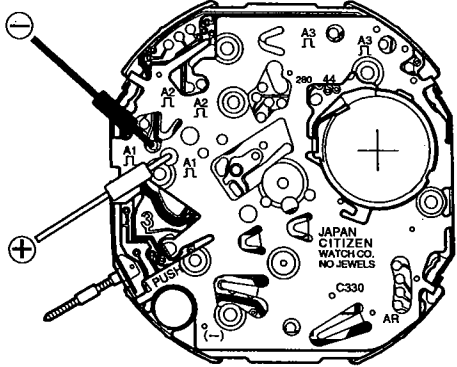⑫ Hour wheel

LC display panel ⑧
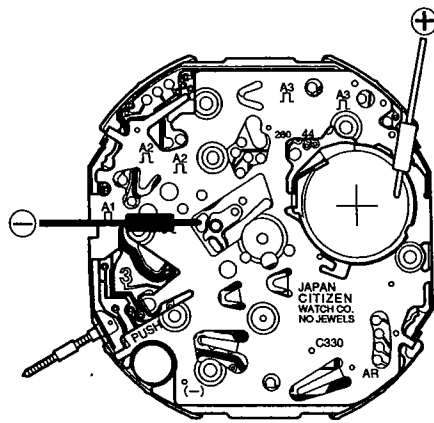connection lubber

Installation of LC display panel

① Fit the LC display pannel to the LC
display panel supporter, then install
them together to the movement.

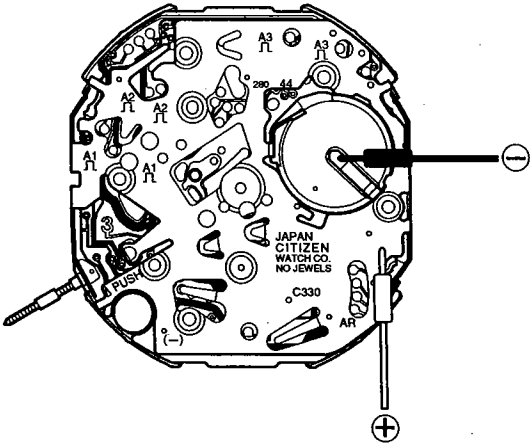② Take care not to install the LC display
panel upside down.

TROUBLESHOOTING AND ADJUSTMENT

No display watch stop

1 Measurement of battery voltage

Low voltage → Replacement of battery

O.K. → Replacement of unit of electronic circuit

No digital display analog stop

Defective digital display/Normal analog working

Normal digital display analog stop

Normal display/working

3 Check of LC display panel connection parts

O.K. → Replacement of unit of electronic circuit or LC display panel

No good → Correction or replacement

2 Check of output signals

No good → Replacement of unit of electronic circuit

O.K. → **4** Check of connection part

5 Measurement of coil resistance

No good → Replacement of coil

O.K. → **6** Check of train wheel

→ **7** Check of dial side mechanism → Replacement of defective parts

1 Measurement of battery voltage → **12** Measurement of current consumption → **8** Measurement of time rate → **13** Check of appearance and functions → (Completion)

Wrong time rate → **8** Measurement of time rate

O.K. → **9** Confirmation of using condition

No good → **1** Measurement of battery voltage

Low voltage → Replacement of battery

O.K. → **8** Measurement of time rate → Replacement of unit of electronic circuit

Defects in operation (Incomplete switch of displays, etc.) → **10** Check of switch mechanism

O.K. → (Correction)

No good → Replacement of unit of electronic circuit

Defective alarm → **11** Check of alarm mechanism

O.K. → (Correction)

No good → Replacement of unit of electronic circuit

Check Points	How to Check	Results and Treatments
❶ Measurement of baterry voltage	[Refer to Technical Manual, Basic Course II-1-a] <Tester range: DC 3V> 	• **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 1 second. → Normal • The tester pointer does not swing. → Check the 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 ⓜ button to the first clicking position, then push the Ⓐ, Ⓑ and Ⓒ buttons at the same time to turn off the digital indication. Release the button, and the digital indication in turned on. Check for defective segments. (Refer to §16. ALL RESET OPERATION) • Continuity test on LC display panel, cell connection rubber and plate . Check the parts for stain, breakage, etc.	• LC display panel, connection rubber or metal plate 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 part	[Refer to Analog Section of Technical Manual, Basic Course II-2-a]	

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>	• **1.1 kΩ ~ 1.6 kΩ (coil unit 1 & 3) 0.6 kΩ ~ 0.8 kΩ (coil unit 2)** → Nomal • Outside range of **1.1 kΩ ~ 1.6 kΩ (coil unit 1 & 3), 0.6 kΩ ~ 0.8 kΩ (coil unit 2)** → 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.	
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]	

❿ Check of switch mechanism	1. Inspection of movement.
	
	  • Press the switch spring of circuit unit supporter with tweezers, etc. to contact it to plate complete, 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.

Check Points	How to Check	Results and Treatments
⓬ Measurement of current consumption	[Refer to Technical Manual, Basic Course II-1-f] (1) Set the battery to tester. (2) Set the lead bars of the tester to the module. Pull the Ⓜ button and push the three buttons at the same time, them push the Ⓜ button (The all-reset operation procedure). Then, measure the current consumption. <Use the tester range: DC 10µA> ★ Precautions for measurment 1. Be sure to measure according to the above procedure. If measurement is not performed according to the above procedure, the watch may indicate and operate abnormally and the current power consumption cannot be measured correctly. 2. 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 3.5 µA.** → Nomal **Over 3.5 µA.** → Inspect train wheel and dial side mechanism, and remove dust and stain and oil. • Pull the Ⓜ button to measure the current consumption under the reset state. **Under 0.5 µA.** → Nomal **Over 0.5 µA.** → Electronic circuit unit is defective. ⬇ 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.	