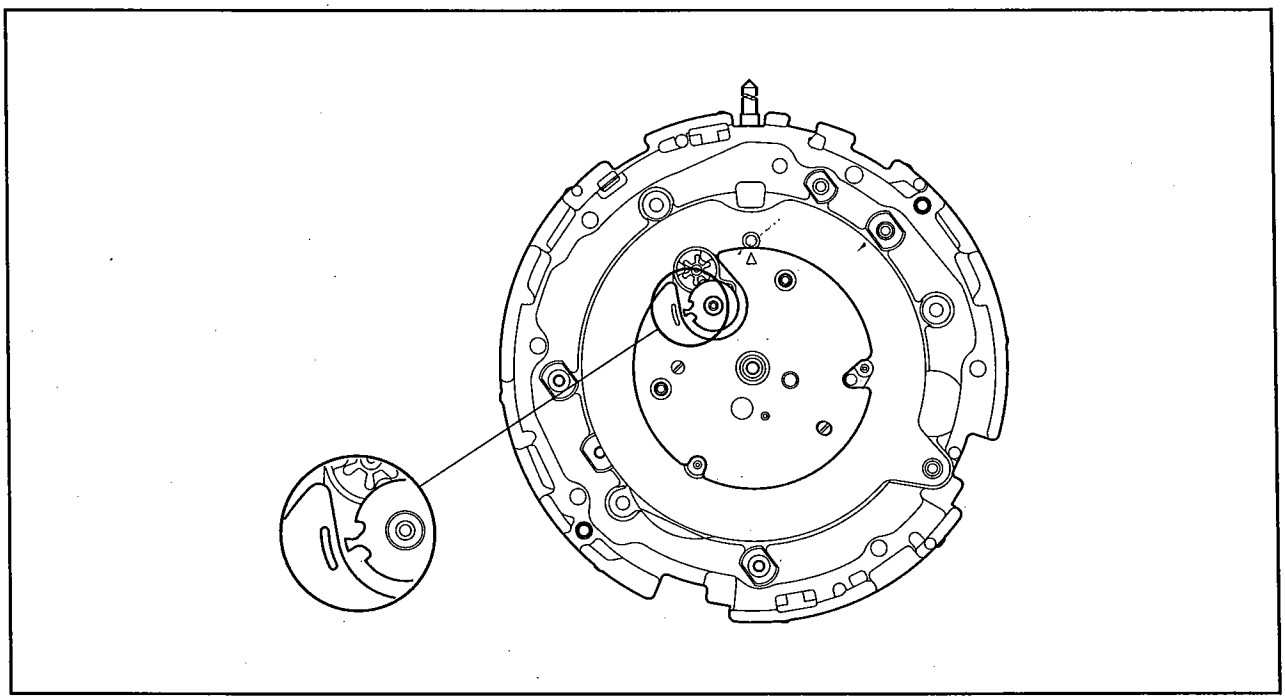
PRECAUTIONS FOR DISASSEMBLY AND ASSEMBLY

[Assembly of Parts Around Calendar]

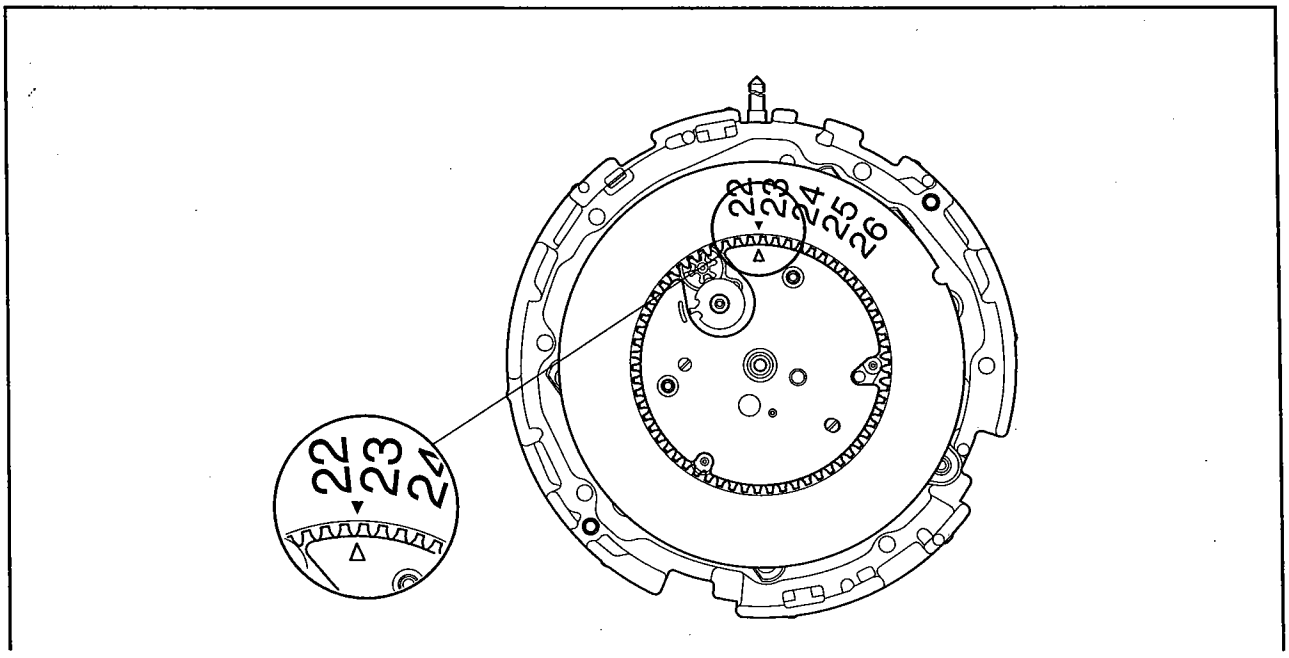
1. Installing position of intermediate date wheel (2)

Position and install intermediate date wheel (2) 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 mark "▼" between 22 and 23 on itself will be at the "▲" on the date dial guard. If it is installed correctly, "25" will be indicated in the window at the 4-o'clock position.

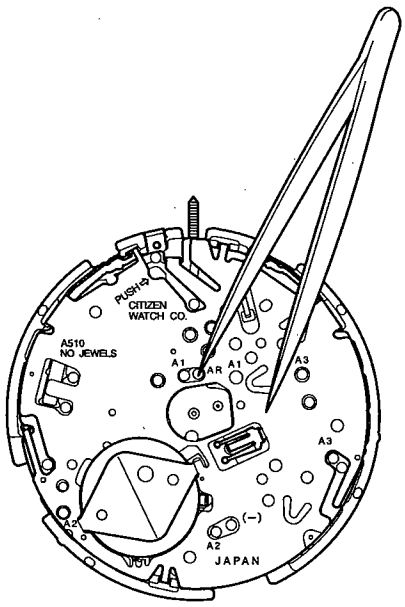


[How to fit hands]

1. Find the "TME" mode.
   ① Pull the crown to the second click and fit the second hand temporarily.
   ② Return the crown to the normal position.
   ③ Turn the crown to find the 1-second interval movement.
   ④ Pull the crown to the second click.
   - If the second hand stops, the watch is in the "TME" mode.
   - If the second hand does not stop, the watch is in the "L-T" mode.

   ⑤ After finding the "TME" mode, remove the second hand.

2. Perform the all-reset operation in the "TME" Mode.
   ① Turn over the movement.
   ② Short the "AR" terminal to the "circuit unit supporter" with tweezers to perform the all-reset operation.

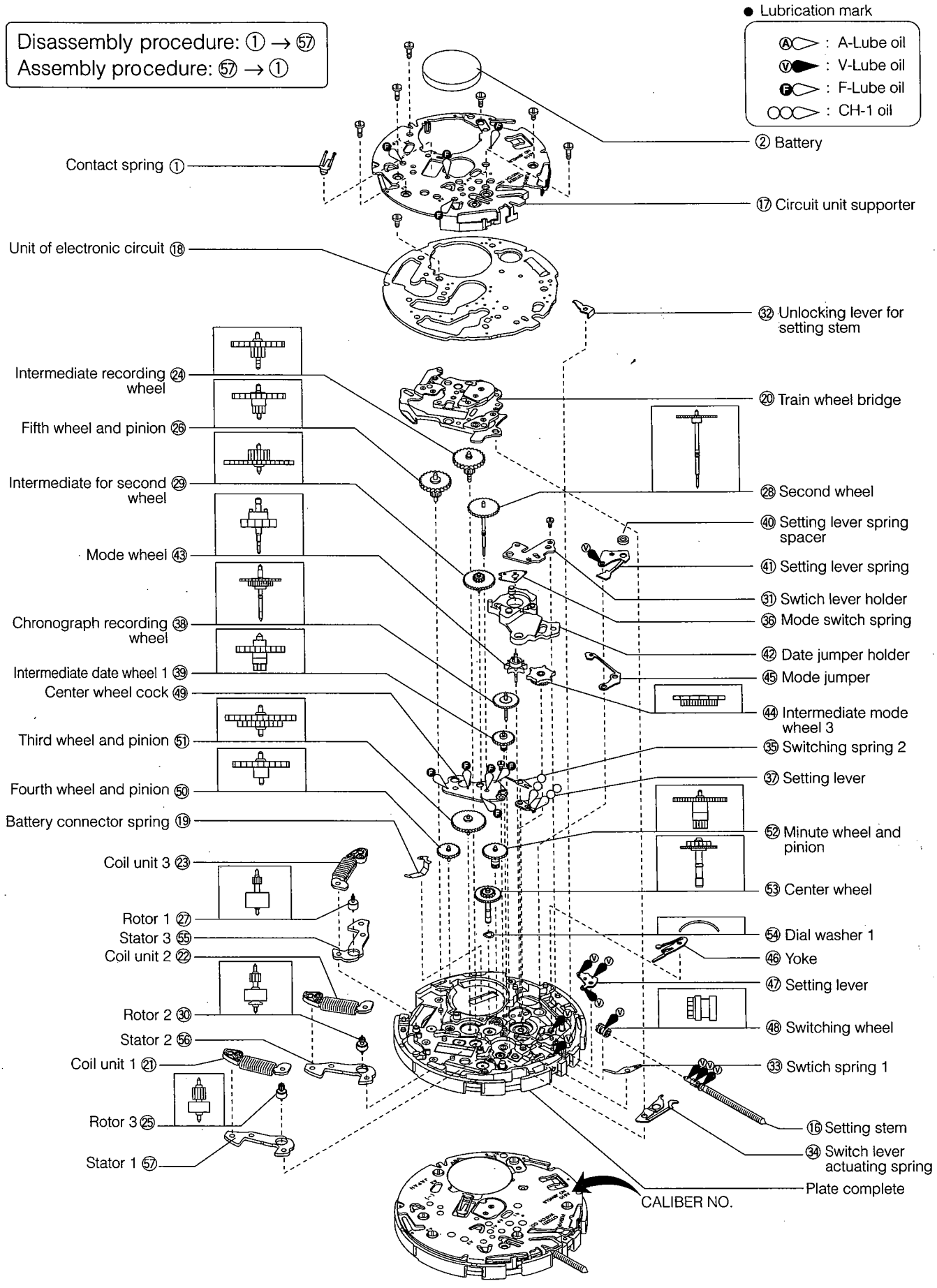


3. Fit each hand to the correct position.
   ① Mode hand: Position and fit to the division of the "TME" mode.
   ② Function hand: Position and fit to the division of "0".
   ③ 24-hour hand: Position and fit to the division of "24".
   ④ Hour, minute, and second hands: Position and fit to the division of "12".

4. Perform the "0-adjustment" operation for each hand in the "CHR" mode.
   - For the "0-adjustment" operation, see "§5. HAND 0-POSITION CHECK AND CORRECTION". If the 0-adjustment operation is not performed, the watch does not start.

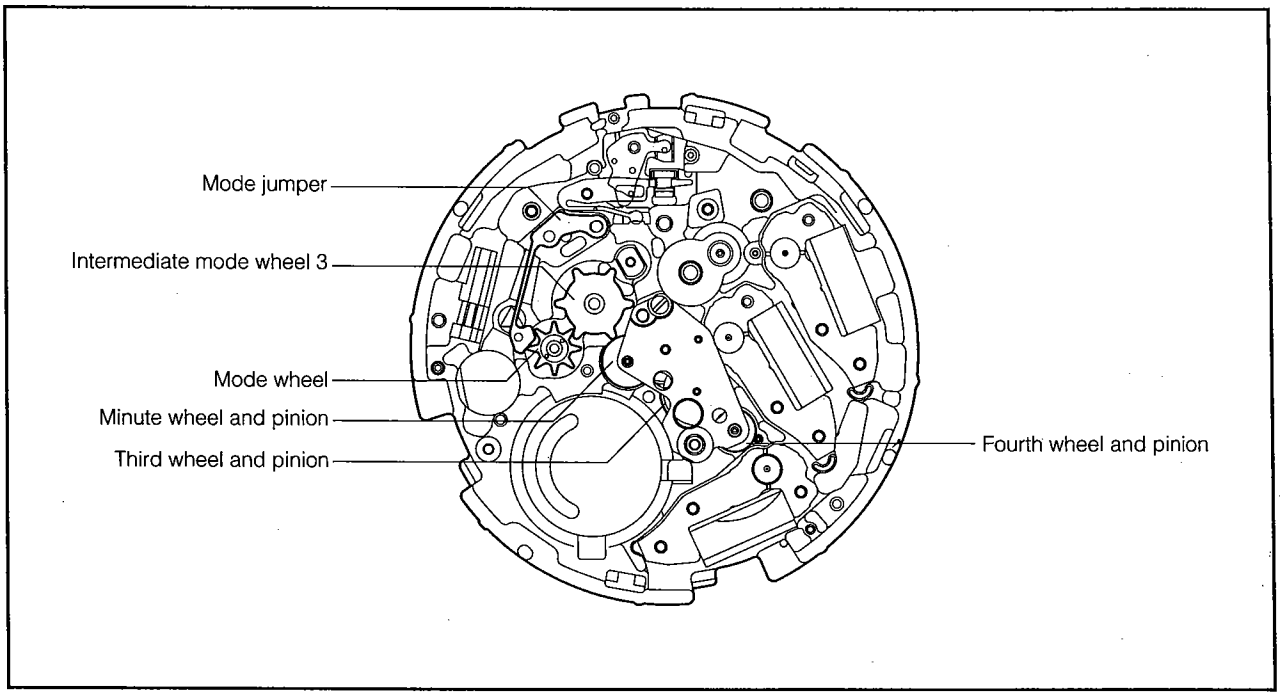
5. Set the movement in the case and set each mode correctly.

DISASSEMBLY AND ASSEMBLY OF MOVEMENT

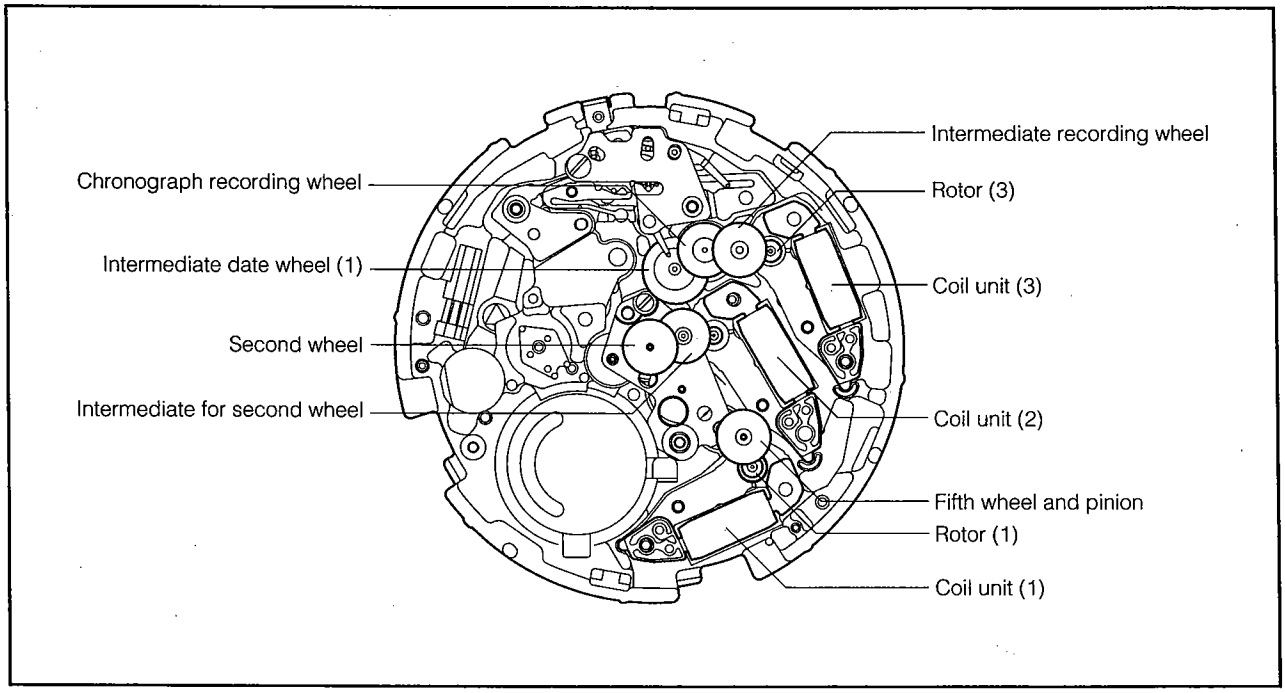


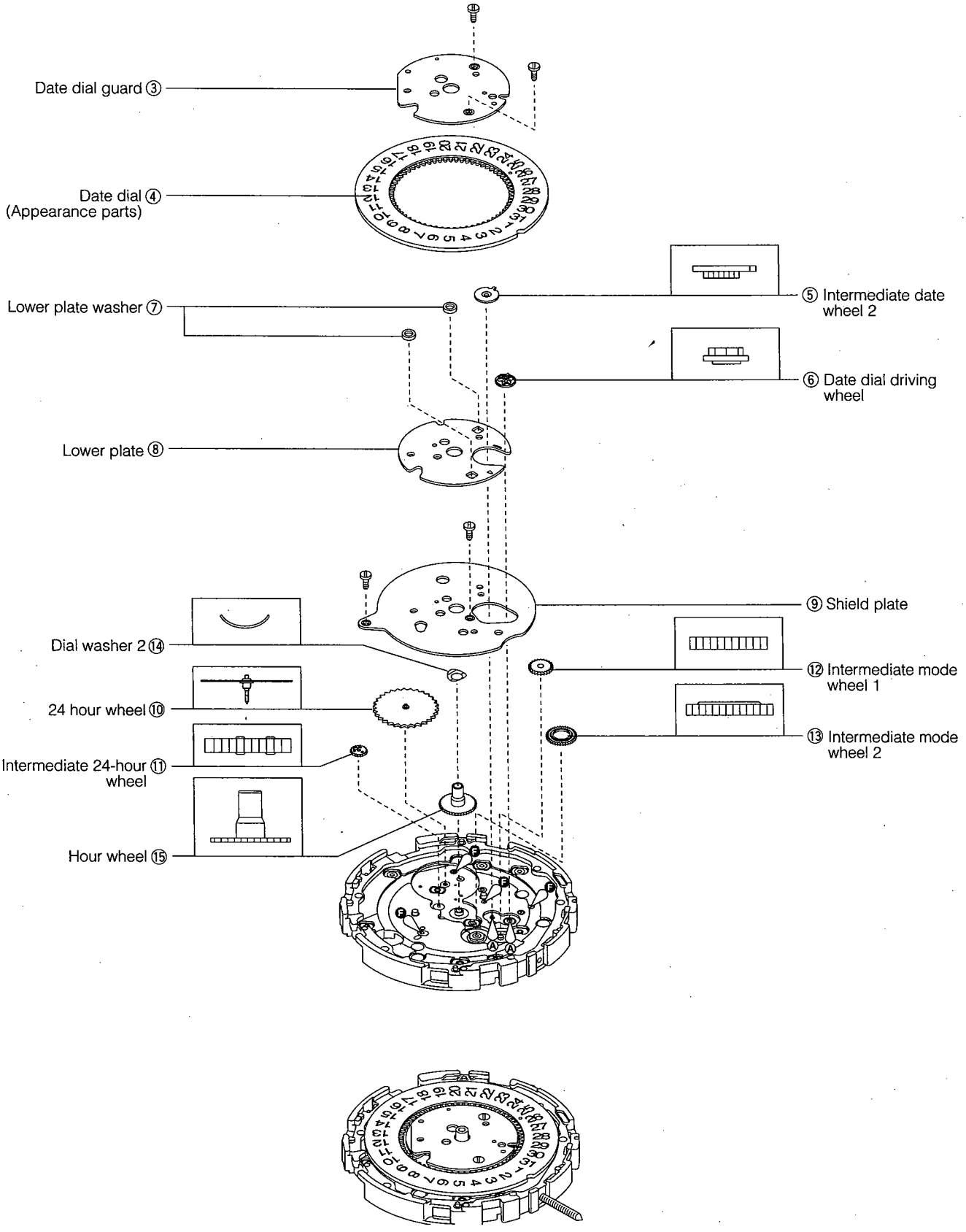
[Arrangement of wheels]

<From third wheel and pinion to mode wheel>

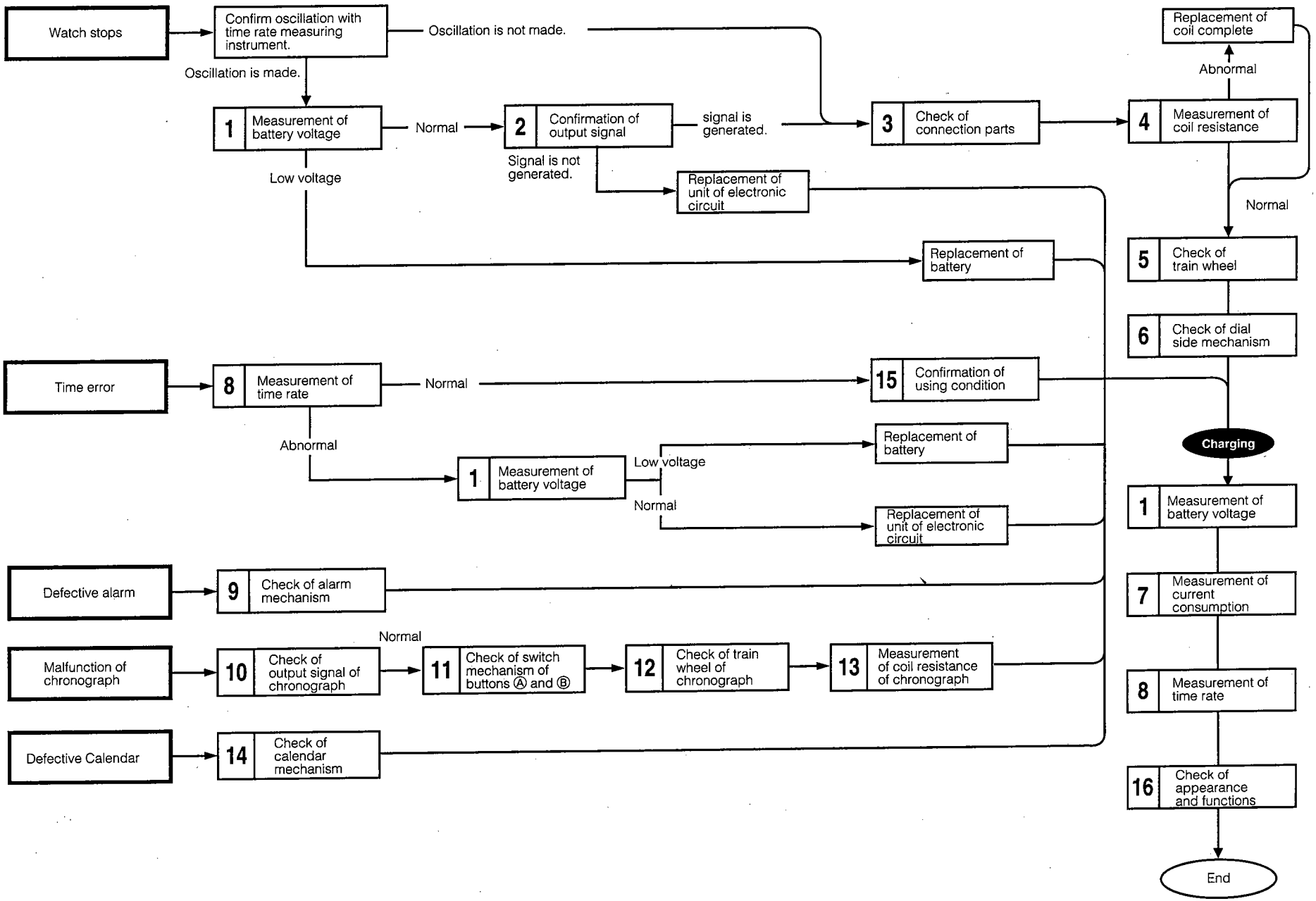


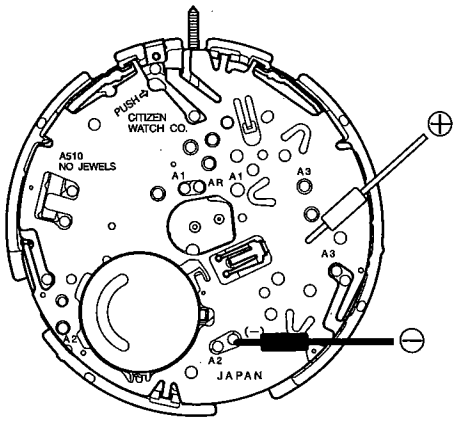
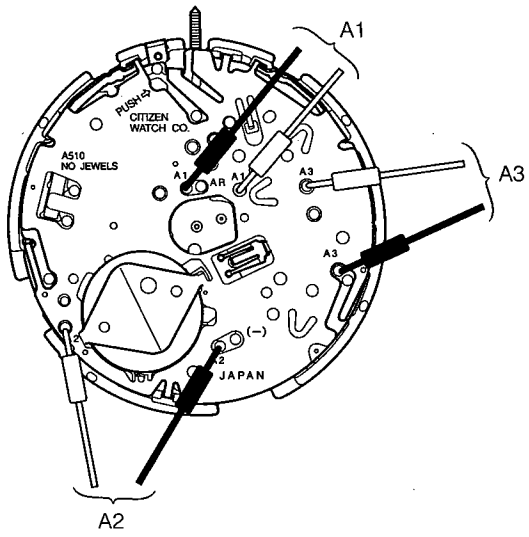
<From intermediate date wheel (1) to chronograph recording wheel>

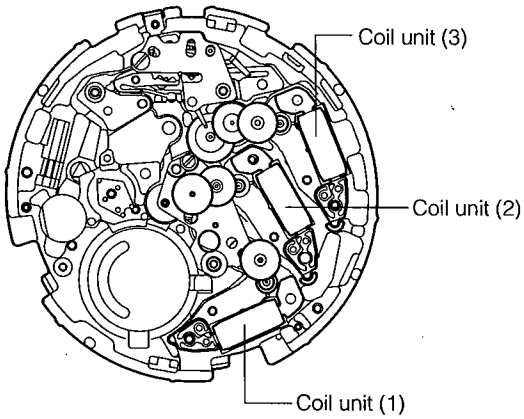



Date dial guard ③
Date dial ④
(Appearance parts)
Lower plate washer ⑦
⑤ Intermediate date wheel 2
⑥ Date dial driving wheel
Lower plate ⑧
⑨ Shield plate
Dial washer 2 ⑭
⑫ Intermediate mode wheel 1
24 hour wheel ⑩
⑬ Intermediate mode wheel 2
Intermediate 24-hour ⑪ wheel
Hour wheel ⑮

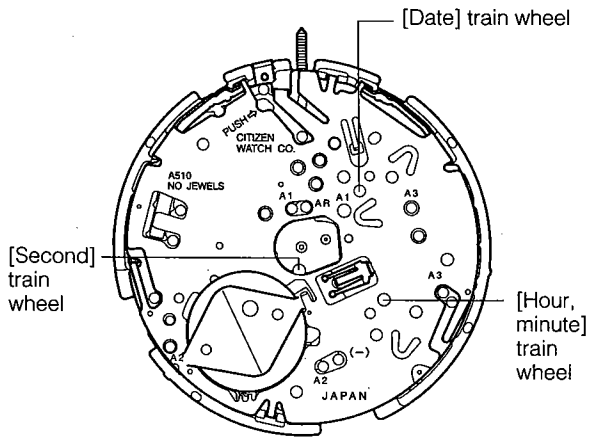
TROUBLESHOOTING AND ADJUSTMENT METHOD

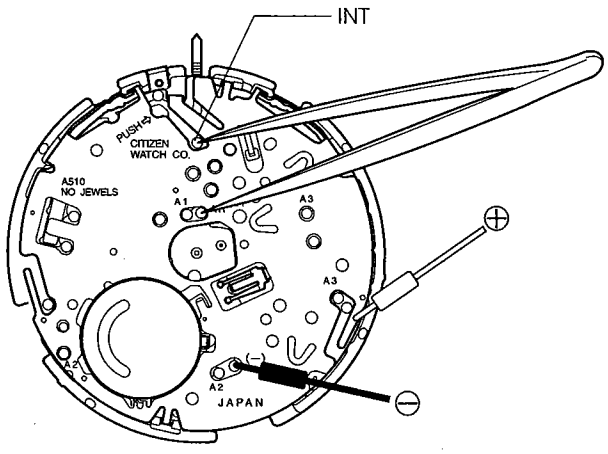


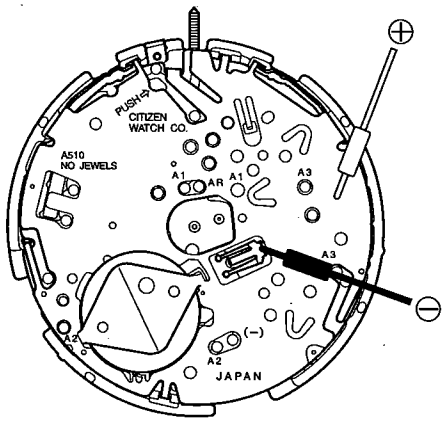
Check Items	How to Check	Results and Treatment
❶ Measurement of battery voltage	* Refer to Technical Manual Basic Course II-1-a. <Tester range 3V>  	**Over 1.3 V** → Non defective **Under 1.3 V** → Replace of battery
❷ Confirmation of output signal	* Refer to Technical Manual Basic Course II-1-b. <Tester range: D.C. 0.3V>  This watch output the signals as following. • Output signals (A1) of the time system (Second). • Output signals (A2) of the time system (Minute, hour, 24 hour). • Output signals (A3) of the chronograph system.	Check the output signal A1. The tester pointer swings every second in the TME mode → Non defective The tester pointer does not swings → Check the connection parts Check the output signal A2. The tester pointer swings every 15 seconds in the TME mode → Non defective The tester pointer does not swings → Check the connection parts. Check the output signal A3. 1. Press the Ⓐ button in the CHR mode to start the chronograph. The tester pointer swings every minute → Non defective The tester pointer does not swings → Check the connection parts 2. Pull the crown to the first click in the TME mode and turn it to the left continuously to turn the date dial forward continuously. The tester pointer swings continuously → Non defective The tester pointer does not swing → Replace the circuit

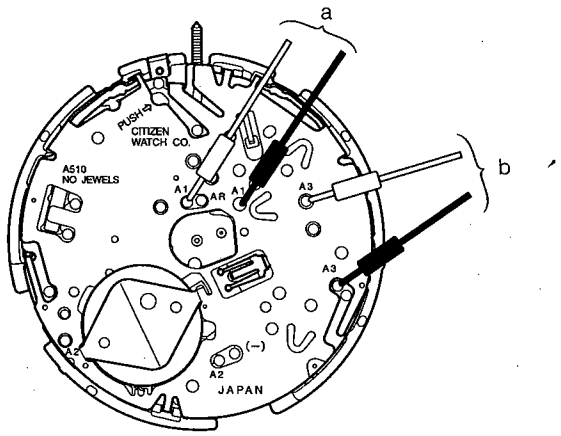
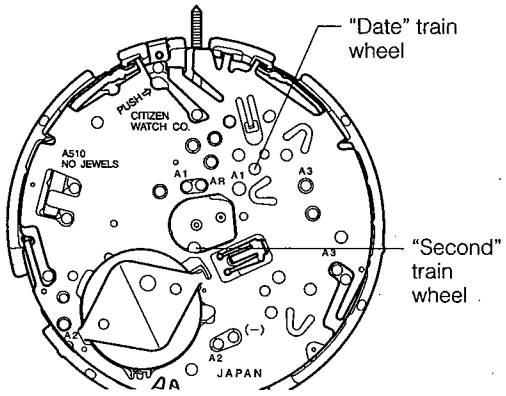
Check Points	How to Check	Results and Treatments
❸ Check of connection parts	* Refer to Technical Manual Basic Course II-2-a.	
❹ Measurement of coil resistance	* Refer to Technical Manual Basic Course II-1-c. <Tester range: R x 10Ω>  	• Coil unit [1], [3] **1.1 kΩ ~ 1.3 kΩ** → Non defective • Coil unit [2] **1.9 kΩ ~ 2.3 kΩ** → Non defective • Outside range of above value. → Replace the coil unit
❺ Check of train wheel	* Refer to Technical Manual Basic Course II-2-b. • Check that the all wheels are meshed smoothly. • Check the lubricating condition, etc. • Check that each train wheel works normally.	

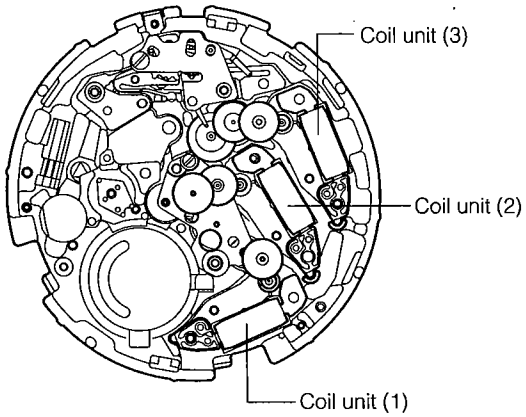
Mode	Position of crown	Working condition
TME mode	Normal position	"Second" train wheel: Revolves every second. "Hour, minute" train wheels: Revolve every 15 seconds.
Calendar setting	First click position	"Second" train wheel: Revolves continuously after the crown is pulled to the first click position, then stops. If the Ⓑ button is pressed, this wheel revolves by an angle for 5 seconds. "Date" train wheel: Revolves continuously if the Ⓐ button is pressed or the crown is turned to the left.
Time setting	Second click position	"Second" train wheel: Revolves continuously after the crown is pulled to the second click position, then stops. "Hour, minute" train wheels: Revolve continuously if the crown is turned continuously.
CHR mode	Normal position	"Second" train wheel: Revolves continuously and then revolves every second if the Ⓐ button is pressed. "Hour, minute" train wheels: Revolve every 15 seconds if the Ⓐ button is pressed. "Date" train wheel: Revolves every minute if the Ⓐ button is pressed.
ALM mode	First click position Second click position	"Second" train wheel: Revolves continuously if the Ⓐ button is pressed. "Second" train wheel: Revolves continuously if the Ⓐ button is pressed. "Hour, minute" train wheel: Revolve continuously if the crown is turned.



Check Items	How to Check	Results and Treatment
❻ Check of dial side mechanism	* Refer to Technical Manual Basic Course II-2-c. 1. Pull the crown to the second click in the TME mode and turn it to check that the hands are moved normally. 2. Pull the crown to the first click in the TME mode and turn it to check that the date dial is moved normally.	
❼ Measurement of current consumption	* Refer to Technical Manual Basic Course II-1-f. <Tester range: DC 10μA> **Measurement of current consumption** 1. Turn the crown to set the watch in the "TME" mode. 2. Referring to Technical Manual Basic Course, set the silver battery (1.55V) to the adapter of the tester correctly. 3. Set the tester • Replace the positive ⊕ tester lead pin with an alligator clip and install it to the ground spring of the circuit unit supporter. • Apply the negative ⊖ tester lead pin to the negative ⊖ pattern of the unit of electronic circuit. 4. Apply either leg of tweezers to the "AR" pattern" and the other leg to the "INT pattern" and circuit unit supporter simultaneously to short them. 5. After shorting, release the "AR pattern" first. 6. Check that the "second" train wheel is revolving and then release the "INT pattern". • If the "second" train wheel does not revolve, repeat the above work from 4 to 6. 7. Measure the current consumption. • The tester pointer indicates a high value at first. Wait until the tester pointer is stabilized and then measure the current consumption.  	• Current consumption of the movement **Under 2.0 μA** → Non defective **Over 2.0 μA** → Check train wheel → Remove dirt. Module is non defective, but current consumption is over 2.0 μA. ⇩ Replace of unit of electronic circuit

Check Points	How to Check	Results and Treatments
❽ Measurement of time rate	* Refer to Basic Course II-2-d. <Measurement gate: Analog 10 sec> • The time rate cannot be adjusted.	• The watch loses or gains substantial time → Replace the unit of electronic circuit.
❾ 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 with the case back removed. 2. Turn the crown to switch to the alarm mode. 3. Apply ⊕ lead pin to circuit unit supporter surface and ⊖ lead pin to buzzer contact spring (flat part), then press Ⓐ button. At this time, check the alarm output signal by the swing of the tester pointer. <Tester range: D.C. 0.3 V>  4. 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.	• The tester pointer swings → Non defective. • The tester pointer does not swings → Replace of unit of electronic circuit

Check Points	How to Check	Results and Treatments
⑩ Check of output signals of chronograph	* Refer to Technical Manual, Basic Course: II-1-b for the setting procedure of the tester. (a) Check the output signal (A1) to drive the step motor for the second hand of the chronograph. (b) Check the output signal (A3) to drive the step motor for the minute hand of the chronograph. **(Measuring method)** Before measuring any of the above signals, start the chronograph. 	a. Output signal of 1-second chronograph • Tester pointer moves to right and left from 0V every 1 sec. → Normal. • Tester pointer does not move. → Replace electronic circuit unit. b. Output signal of 1-minute chronograph • Tester pointer moves to right and left from 0V every 1 min. → Normal. • Tester pointer does not move. → Replace electronic circuit unit.
⑪ Check of switch mechanism of button Ⓐ and Ⓑ	1. Confirm that the buttons Ⓐ and Ⓑ operate smoothly and check the switch springs of Ⓐ and Ⓑ for deformation. 2. Check the part between the switch springs and pattern of the electronic circuit unit of dirt and dust.	1. Buttons do not move smoothly. • Dust or dirt → Clean. • Supply oil to push button packings again. • Deformation → Replace parts. 2. Dust or dirt → Clean.
⑫ Check of train wheel of chronograph	* Refer to Technical Manual, Basic Course: II-2-b. 1. Press the Ⓐ button and check that the "second" train wheel revolves. 2. Press the Ⓐ button to stop the chronograph and press the Ⓑ button and check that the "date" train wheel revolves. 	1. Train wheel does not revolve. • Wheel is deformed or its teeth is broken. → Replace parts. • Lubrication trouble. → Supply lubricant. • Dust or dirt → Clean.

Check Points	How to Check	Results and Treatments
⓭ Measurement of coil resistance of chronograph	* Refer to Technical Manual, Basic Course: II-1-c for the setting procedure of the tester. **<Measuring position>** Measure the resistance of coil unit (3).  	**Coil unit (3)** • **1.0 kΩ ~ 1.4 kΩ** → Normal • **Out of 1.0 kΩ ~ 1.4 kΩ** → Replace coil unit (3).
⓮ Check of calendar mechanism	* Refer to Basic Course: II-2-c. 1. Check that the intermediate date wheel (2) is installed to the correct position. 2. Check that the mark "▼" on the date dial is matched to the mark "▲" on the date dial guard. 3. Check that the date changes by one day each time the function hand moves by 4 turns.	
⓯ Confirmation of using condition	* Refer to Basic Course: II-2-e.	
⓰ Check of appearance and function	* Refer to Basic Course: II-2-f. • Check that there is not dust or dirt. • Check that each push-button is free from abnormality. • Perform the alarm monitor operation to check that the alarm sounds.	