

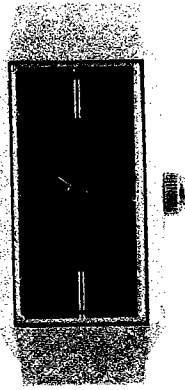
TECHNICAL INFORMATION

CITIZEN QUARTZ

Cal. No. 13 ※ ※ ※

 **CITIZEN**

§1. OUTLINE



This is a miniature and thin-gage quartz crystal watch for ladies' use with no center second, adopting the world first rectangular movement with the quartz crystal watches along with a unique appearance design.

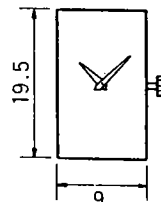
It also features a very thin movement by using a miniature and thin-gage power cell as well as an extremely reduced amount of the power consumption due to development of the new circuit and converter to realize a long life time. With completion of this watch, the range of selection has been more extended for the bracelet watches.

§2. FEATURES

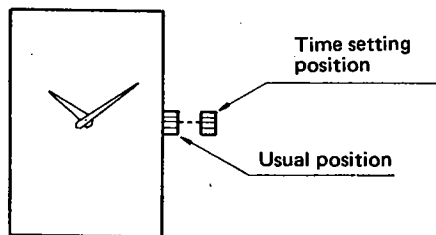
- 1) Quartz crystal oscillation type electronic watch for ladies' use with no center second
The movement size: 9 x 19.5 mm
- 2) 20-second step movement of hand
The minute hand moves every 20 seconds.
- 3) Time rate measurement signal
The time rate measurement is possible by the signal of 1 Hz and by means of the general-purpose timing machines including Citizen Quartz Timer (CQT-101).
- 4) Hour/minute hand stopping device
With the crown pulled out by one step, the minute hand stops to secure the resetting state. And the hand starts again in 20 seconds after the crown is pushed in.
- 5) About 3 years of nominal power cell life
The accurate operation of the watch is ensured for about 3 years continuously with just a single unit of a miniature power cell thanks to development of the new circuit and converter even with the miniature and thin-gage movement.

§3. SPECIFICATIONS

Caliber No.	1300-04A
Type Movement	Analog-type quartz crystal watch (with no center second) Size: 9 x 19.5mm Thickness: 2.4mm 2.57mm (Incl. power cell part)
Accuracy	±15 sec./month at normal temperatures
Oscillation	32,768Hz
Converter	Bipolar step motor (20-second step movement of hand)
Integrated circuit	C/MOS-LSI (1 unit)
Effective temperature range	-10°C ~ +60°C (14°F ~ 140°F)
Additional mechanism	Hour/minute hand stopping device
Power cell	Miniature silver oxide power cell Parts No. : 280-34 Nominal voltage : 1.55V Capacity : 15mAH Size : 6.8φ x 2.1mm Life time : About 3 years

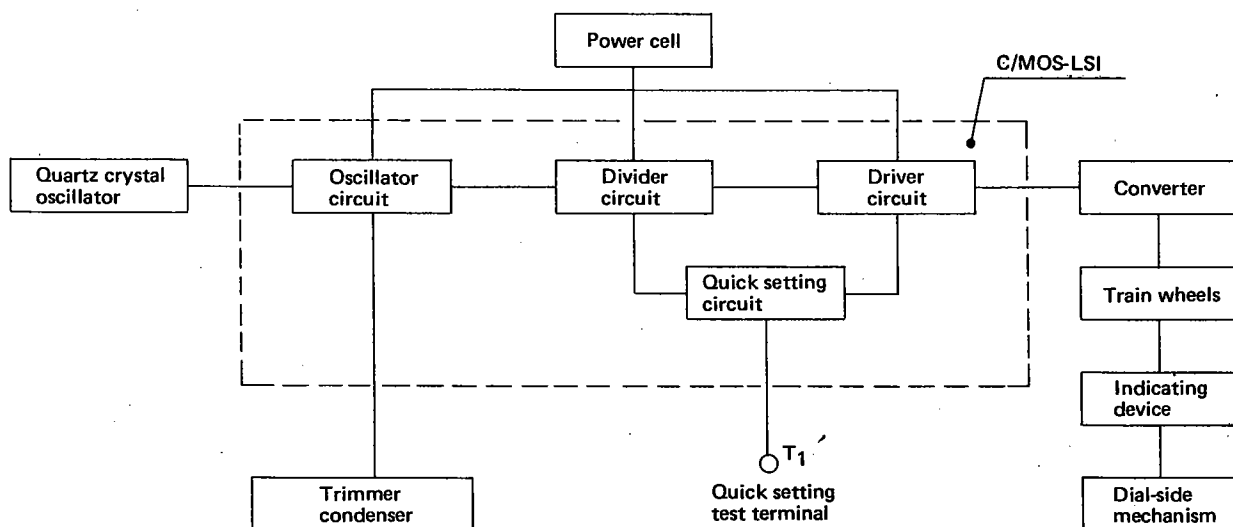


§4. HANDLING INSTRUCTIONS

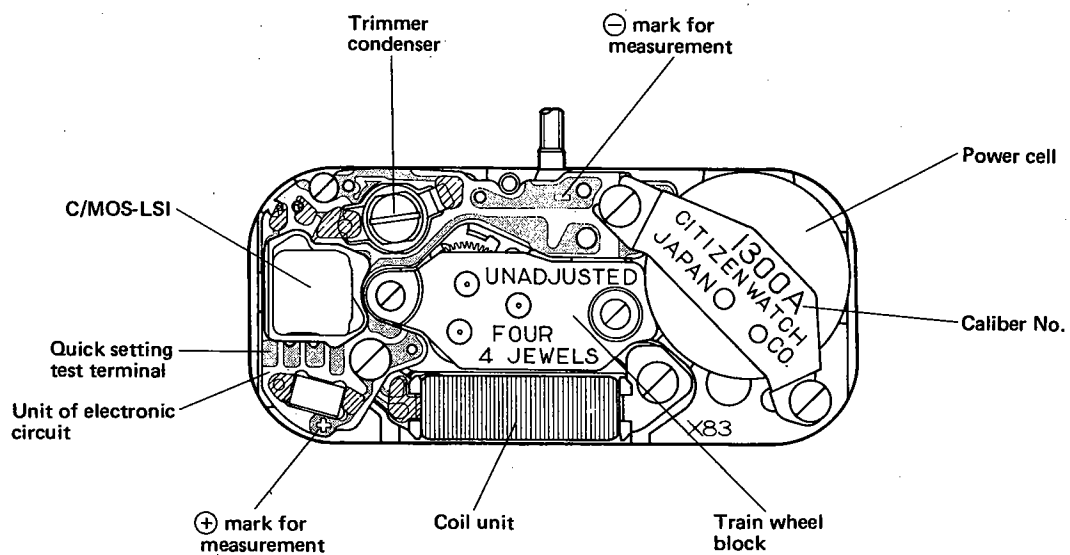


- 1) The handling of this watch is identical to other analog quartz watches.
- 2) The time is set by pulling the crown out.

§5. STRUCTURE OF MOVEMENT



Structural diagram of movement



Plan of Movement

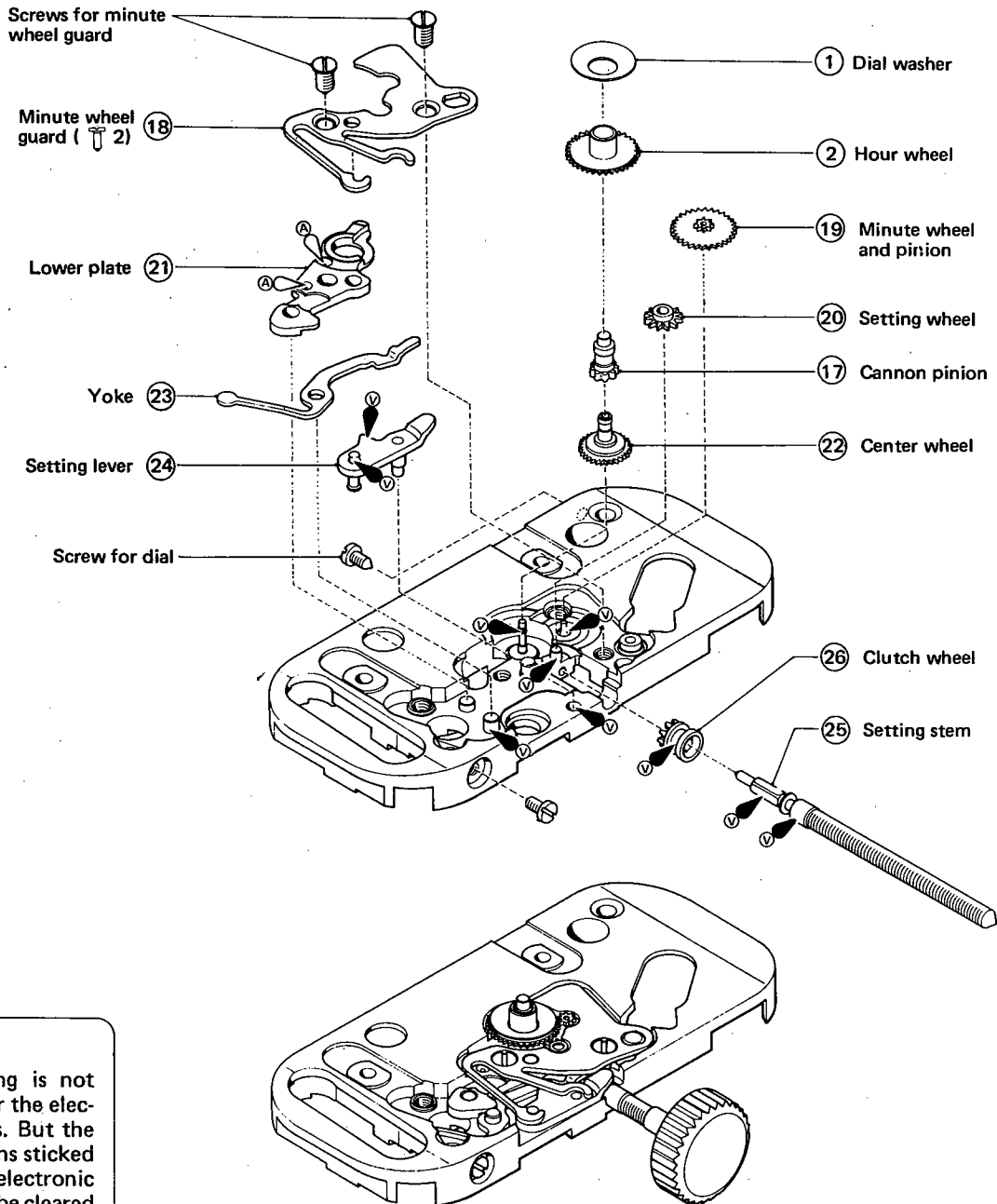
§ 6. DISASSEMBLING/ASSEMBLING PROCEDURE OF MOVEMENT

1. Dial side

Disassembling procedure: ① ~ ②⑥
 Assembling procedure: ②⑥ ~ ①

Lubrication marks:

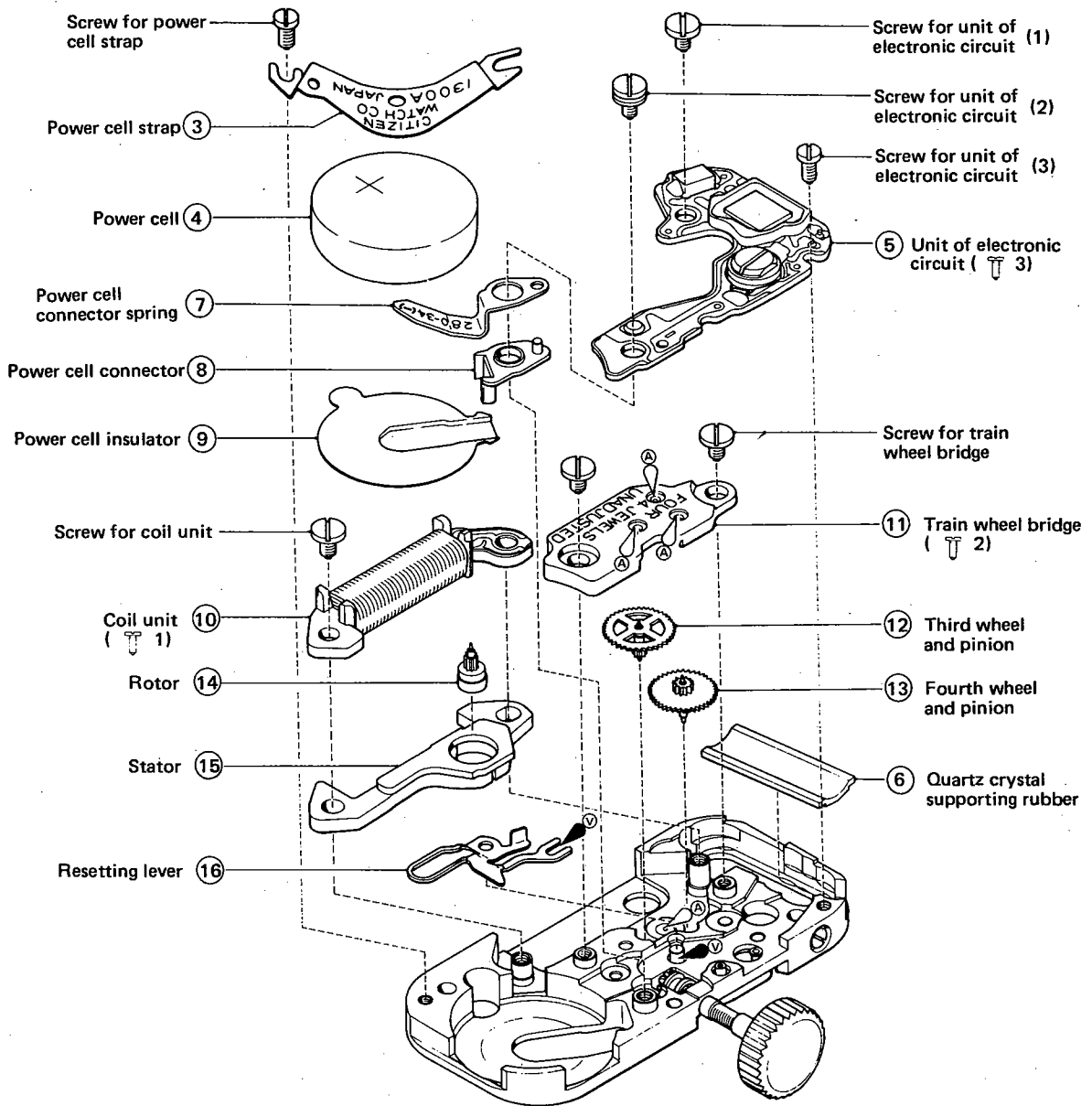
Ⓐ : Synt-A-Lube oil
 ▼ : Synta-V-Lube oil
 ○○ : Citizen watch oil (CH-1)



Note:

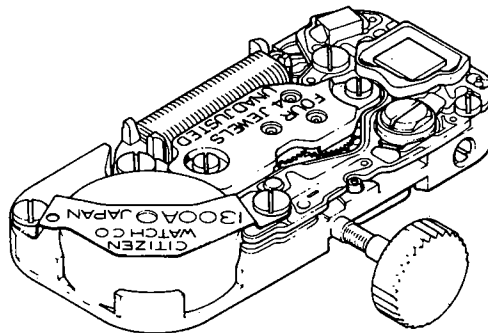
The washing is not required for the electronic parts. But the dust or stains stuck to the electronic parts must be cleared away to avoid lowering of good contact.

2. Bridge side



Note:

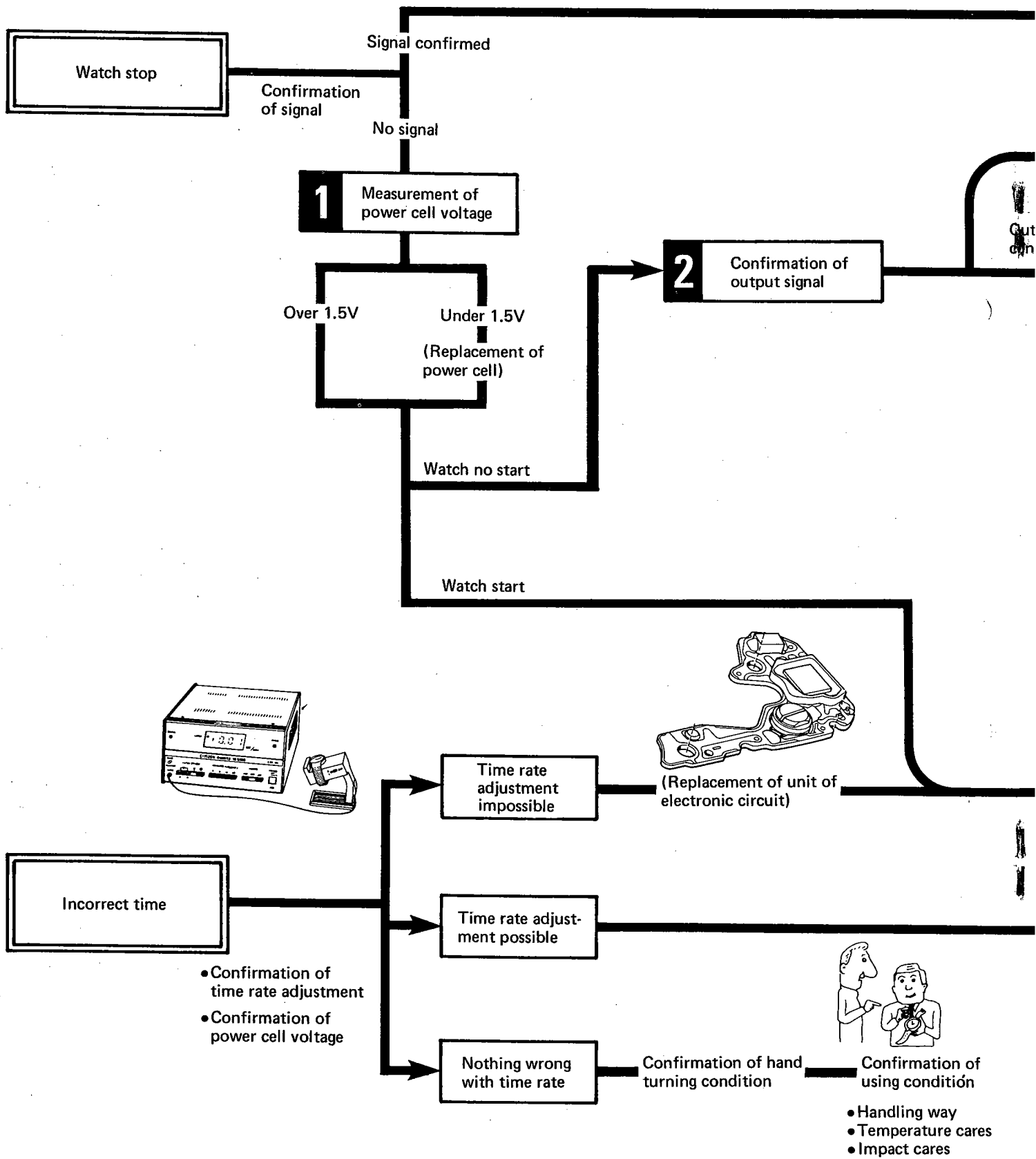
- 1 The screw for unit of electronic circuit (1) can be used in common to two screws for train wheel bridge and the screw for coil unit.
- 2 The screw for unit of electronic circuit (3) can be used in common to the screw for power cell strap.
- 3 The screw for unit of electronic circuit (1) is fixed first when assembling the unit for electronic circuit.

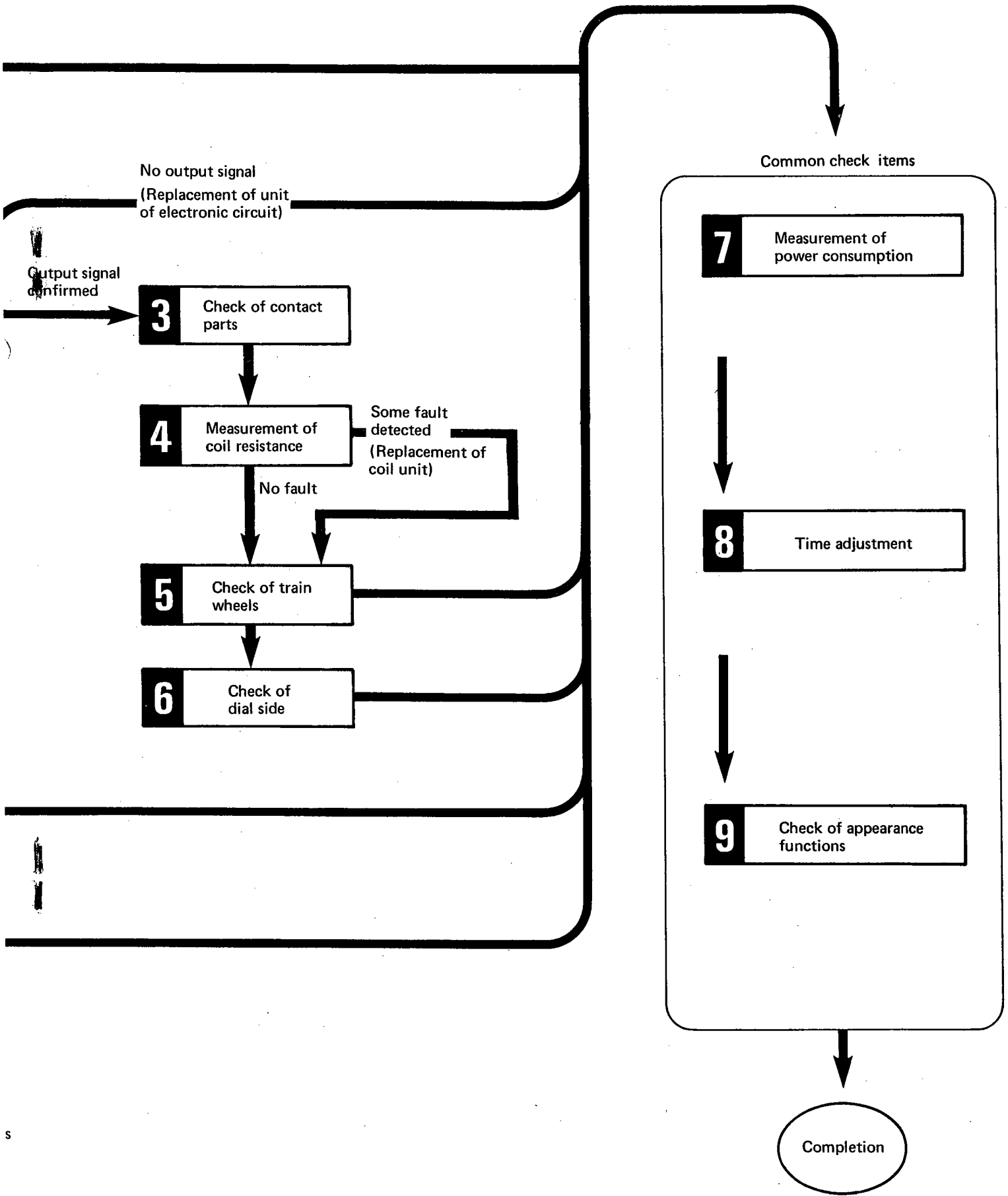


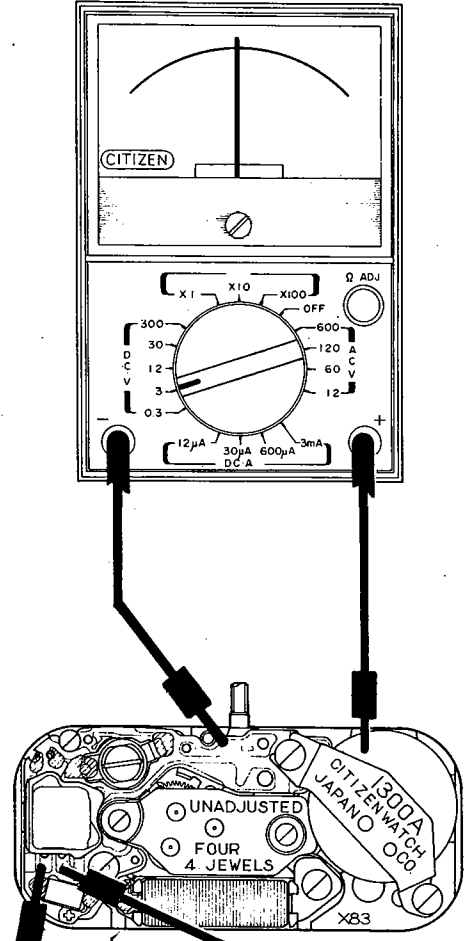
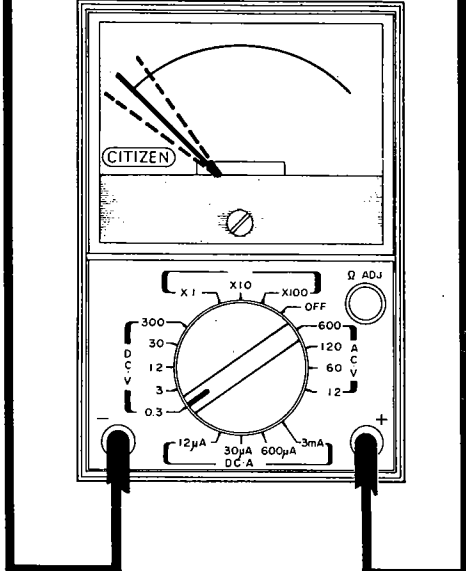
3) Notes on disassembly/assembly and lubrication

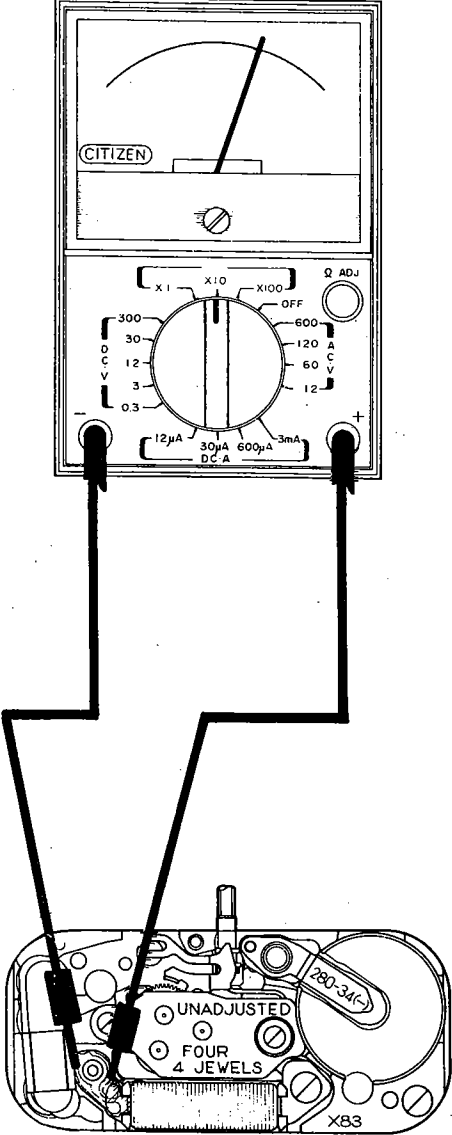
- (1) The electronic parts do not usually need washing, but the dust and stains stuck to them must be cleared away in order to maintain good contact.
- (2) The depth of the plate complete is reduced as a whole owing to the miniature and thin-gage structure of the watch. Particularly, this watch uses a rectangular movement, so the following points must be carefully made sure.
 - 1 The force more than necessary must be avoided when attaching the hands.
 - 2 The force more than necessary must be avoided when the screws are tightened.
- (3) The setting stem of 0.7mm ϕ (at screw part) is used in this watch for the first time in Citizen. When the setting stem or the crown is replaced with the length of the setting stem shortened or the crown is attached, the meticulous care must be given in how to chuck or how to file in order to avoid breaking the setting stem at its thinnest area.

§7. TROUBLESHOOTING AND ADJUSTMENT

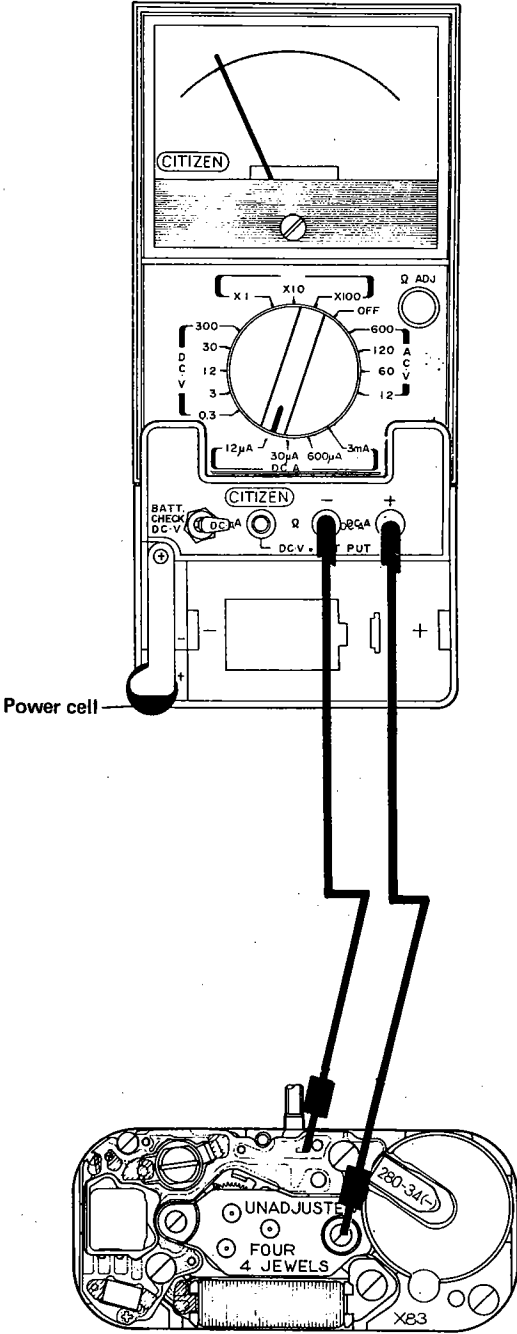


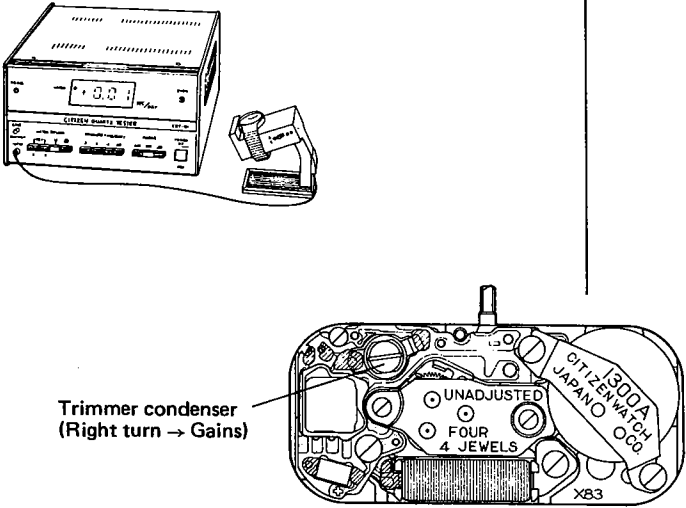
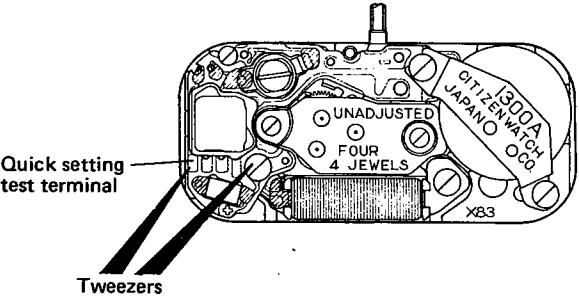


Checking items	How to check	Results and treatment
<p>1 Measurement of power cell voltage</p>		<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Over 1.5V</p> <p>→ Nothing wrong.</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>Under 1.5V</p> <p>→ Replacement of power cell.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Note</p> <p>In case the watch has been used more than 3 years, the power cell must be replaced with new one although it reads more than 1.5V output.</p> </div>
<p>2 Confirmation of output signal</p>		<p>The emission of the output signal is confirmed with the movement incorporated.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>The emission of the output signal is nothing wrong if the tester needle goes and comes back centering on the 0V with every 20 seconds.</p> </div> <p>•Some fault detected</p> <p>→ Replacement of unit of electronic circuit</p>

Checking items	How to check	Results and treatment
<p>3 Check of contact parts</p>	<ul style="list-style-type: none"> • Make sure that no dust nor stain is stuck to the contact part between the coil terminal and the unit of electronic circuit. • Make sure that the screws for unit of electronic circuit are not loose. 	<ul style="list-style-type: none"> • Dust or stains stucked → To be removed • Screws loosened → To be tightened
<p>4 Measurement of coil resistance</p>	<div style="text-align: center;">  </div> <p>For measurement of the coil resistance, the unit of electronic circuit is removed and the tester terminals are applied to the areas as illustrated above.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Resistance reads:</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px;"> <p>1.6 ~ 2.2KΩ</p> </div> <p>→ Nothing wrong</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The disconnection is conceivable when the resistance reads ∞Ω.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The short circuit is conceivable when the resistance reads 0Ω.</p> </div> <ul style="list-style-type: none"> • In both above cases → Replacement of coil unit

Checking items	How to check	Results and treatment
<p>5 Check of train wheels</p>	<ul style="list-style-type: none"> • Make sure that the transmission is smooth between the wheels with no clearance nor creaking. • Make sure that a proper amount of oil is supplied. • Make sure that no dust nor stains stick to each wheel. 	<ul style="list-style-type: none"> • Creaking detected → Replacement of wheel • Improper clearance → To be corrected • Dust or stains stuck → To be removed
<p>6 Check of dial side mechanism</p>	<ul style="list-style-type: none"> • Give a check to the dial-side mechanisms in terms of the smooth transmission between wheels, the bend of joggles and attachment of the iron filings or other foreign matters. 	<p>Slip torque of second wheel and cannon pinion:</p> <ul style="list-style-type: none"> • Too strong → Replacement • Too weak → Replacement • Lack of oil → Lubrication (CH-1 oil)

Checking items	How to check	Results and treatment
<p>7 Measurement of power consumption</p>	 <p>The diagram illustrates the setup for measuring power consumption. A CITIZEN multimeter is configured to measure DC voltage (DCV) on the 12V scale with a 120μA range. The watch movement, labeled 'UNADJUSTED FOUR 4 JEWELS X83', is connected to a power cell. The multimeter's probes are inserted into the watch movement's terminals. The watch movement also features a component labeled '200-34(-)'.</p>	<div style="border: 1px solid black; padding: 10px;"> <p>Under 1μA</p> <p>→ Nothing wrong</p> <p>Over 1μA</p> <p>→ Replacement of unit of electronic circuit</p> </div>

Checking items	How to check	Results and treatment
<p>8 Time adjustment</p>	<p>•The time rate is measured via the timing machine to adjust the time.</p>  <p>The diagram shows a timing machine on the left and a watch movement on the right. The timing machine has a digital display showing '0.00'. The watch movement diagram includes labels: 'UNADJUSTED', 'FOUR 4 JEWELS', 'CITIZEN WATCH CO. JAPAN', and 'X83'. A line points to a component with the label: 'Trimmer condenser (Right turn → Gains)'.</p>	
<p>9 Check of appearance functions</p>	<ol style="list-style-type: none"> 1. Make sure that the minute hand moves every 20 seconds. This watch contains the quick setting test terminal for the minute hand. The minute hand starts the 20-second step movement with application of the tweezers as illustrated below, thus ensuring a quick confirmation of the hand movement.  <p>The diagram shows the watch movement with tweezers applying pressure to a terminal. Labels include: 'Quick setting test terminal', 'Tweezers', 'UNADJUSTED', 'FOUR 4 JEWELS', 'CITIZEN WATCH CO. JAPAN', and 'X83'.</p> <ol style="list-style-type: none"> 2. Make sure that no dust nor other foreign matters attaches to the movement or the dial. 3. Check other additional functions such as the minute hand stopping device and others. 	