

TECHNICAL INFORMATION ***INFORMACION TECNICA***

CITIZEN QUARTZ

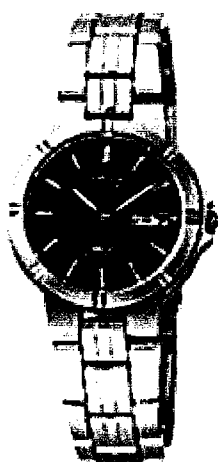
Cal. No. E001 ※

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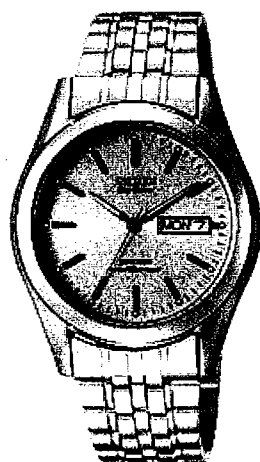
Cal. No. E031 ※

Cal. No. E101 ※

Cal. No. E111 ※



(Cal. No. E001 ※)



(Cal. No. E101 ※)

 **CITIZEN**

CITIZEN IS A REGISTERED TRADEMARK OF CITIZEN WATCH CO., JAPAN.

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§1. OUTLINE

This watch is a analog solar power watch which has a solar cell on its dial that converts the light energy into electrical energy to drive its mechanism.

§2. SPECIFICATIONS

Caliber No.		E031M	E011M	E001M	E111M	E101M
Type		Analog solar power watch				
Movement size (mm)	Major axis x Minor axis	ø18.5 x 18.2 x 17.4			ø23.7 x 22.1 X 22.1	
	Thickness	2.83	3.3	3.5	3.3	3.5
Accuracy (At normal temperature)		±15 sec/month (5°C to 35°C/41°F to 95°F)				
IC		1 unit of C/MOS-LSI				
Operating temperature		-10°C to +60°C (14°F to 140°F)				
Converter		Bipolar step motor				
Time adjustment		No adjustment terminal for use in market				
Measurement gate		10 sec.				
Display functions	Time	Hour, Minute, Second				
	Calendar	—	Date	Date, Day	Date	Date, Day
Additional functions		Quick start function				
		Insufficient charge warning function				
		Overcharging prevention function				
Continuous operating time		<ul style="list-style-type: none"> • Time until watch stops without charging after being fully charged: Approx. 6 months • Time from 2-second interval movement to stopped: Approx. 4 days 				
Battery		Secondary battery 1 pc.				

Specifications are subject to change without notice.

§3. SOLAR POWER WATCH

This watch is powered not by an ordinary battery, but by converting light energy into electrical energy.

A secondary battery is used in this watch to store electrical energy. **This secondary battery is a clean energy battery which doesn't use any toxic substances such as mercury. Once fully charged, the watch will continue to run for about 6 months without further charging.**

[Explain the following items to the user for comfortable use of this watch.]

<Good use of solar-powered watch>

- Since the energy source of this watch is light, expose it to light sufficiently to charge the battery in it.
- The battery of this watch is never overcharged by exposing it to light.
- If the user wears long-sleeved clothes usually, the watch is covered and its battery may not be charged sufficiently.
- The watch should be put on a well lit place as long as possible for its normal operation while it is not worn.

[Replacing the secondary battery]

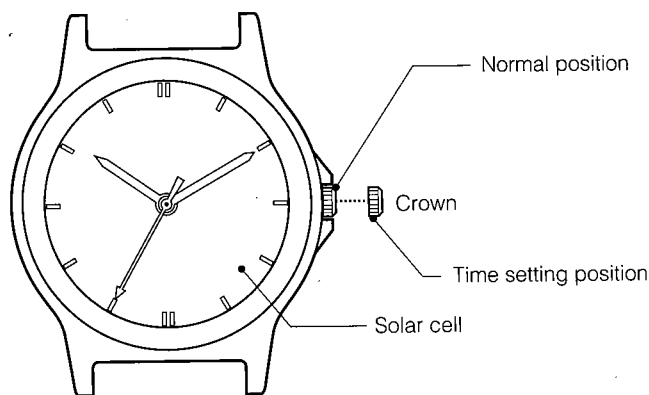
Unlike ordinary silver-based batteries, the secondary battery used in this watch does not have to be periodically replaced since it is able to be charged and discharged repeatedly.

§4. HANDLING OF WATCH

A. Setting the Time and Calendar

[1] Three-hand model without calendar display

- * If your watch has a screw-type crown, lift up the crown to loosen it before operation. Be sure to press the crown down firmly after operation.



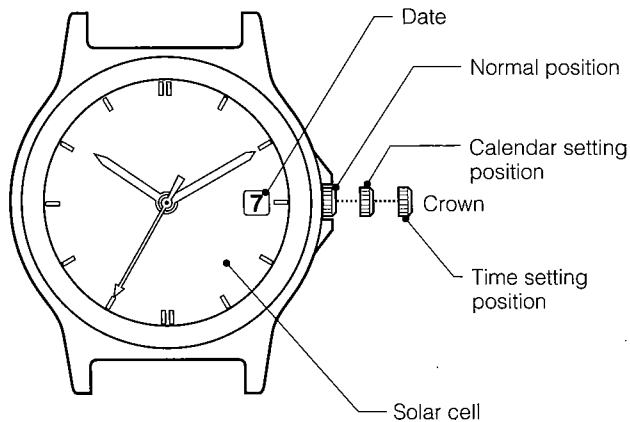
■ **Setting the time**

1. Pull the crown out to time setting position when the second hand reaches the 0 seconds position.
2. Set the time by turning the crown.
3. Securely return the crown to normal position in synchronization with a telephone or other time service.

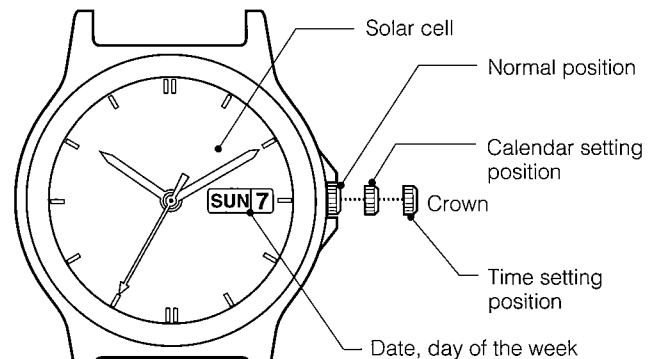
[2] Models with calendar (date and day of the week) display

* If your watch has a screw-type crown, lift up the crown to loosen it before operation. Be sure to press the crown down firmly after operation.

[Date display models]



[Date, day of the week display model]



■ Setting the time

1. Pull the crown out to the time setting position when the second hand reaches the 0 seconds position.
2. Turn the crown to set the time.
 - The date changes at 12:00 AM. Pay attention to AM and PM when setting the time.
3. Securely push in the crown to the normal position in synchronization with a telephone or other time service.

<Helpful hint for setting the time accurately>

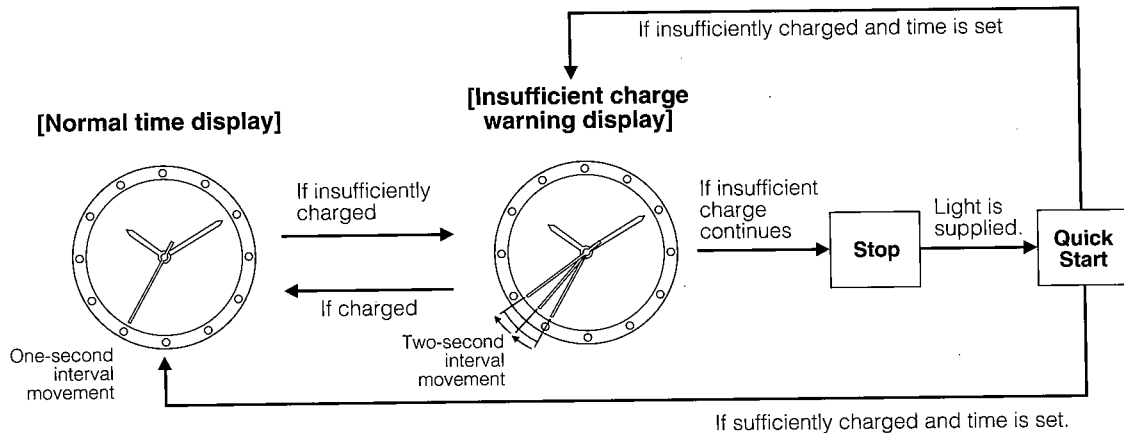
After first stopping the second hand at the 0 seconds position, advance the minute hand 4-5 minutes past the correct time and then turn it back to the correct time. Then push in the crown in synchronization with a telephone or other time service to accurately set the time.

■ Setting the calendar

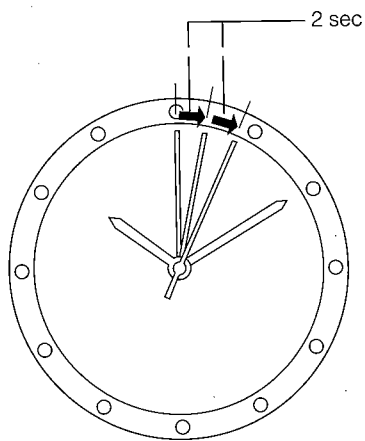
1. Pull the crown out to the 1st click (calendar setting position).
2. Set the desired date by turning the crown counterclockwise.
3. Set the desired day of the week by turning the crown clockwise.
 - In the case of date display models, turning the crown clockwise will result in the loose play of the crown.
4. After you have set the calendar, be sure to press the crown back to its normal position.
 - Do not adjust the calendar when the watch is reading as below. Otherwise the calendar may not change correctly.
 - * Date display models between 9:00 pm and 1:00 am
 - * Date, day of the week display models between 9:00 pm and 4:00 am

B. Functions of the Solar Power Watch

If the charge becomes insufficient, a warning function will operate and the display changes, as below.



■ Insufficient Charge Warning Function



Two-second interval movement

This feature indicates that the watch has become insufficiently charged when the second hand changes from 1-second interval movement to 2-second interval movement.

Even in such a case, the watch keeps correct time, but about 4 days after two-second interval movement begins, the watch will stop.

After exposing the watch to light, recharging takes place and the watch returns to one-second interval movement.

■ Quick Start Function

The watch will stop if it is completely discharged.

It will begin to operate soon after (within 10 second) it is exposed to light.

(However, the time to start may vary according to the brightness of the light.)

■ Overcharging Prevention Function

When the secondary battery becomes fully charged as result of light shining into the watch dial (solar cell), the over charge prevention feature is activated automatically to prevent the secondary battery from being charged further. This prevents the secondary battery as well as time-keeping accuracy, functions and performance of the watch from deteriorating no matter how much the watch is charged.

C. Time Required for Recharge

Time required for recharge may vary according to the Caliber number, design (color of the dial, etc.) and operating environment. The following table will serve you as rough reference.

“The recharging time is the time when the watch is continuously exposed to radiation.”

<Cal. E031/E011/E001>

Illuminance (lux)	Environment	Time required		
		One day usage	From the stop state to the one second movement	Empty to full
500	Inside an ordinary office	4 hours	60 hours	—
1000	60–70cm (24-28in.) under a fluorescent light (30W)	2 hours	25 hours	—
3000	20cm (8in.) under a fluorescent light (30W)	40 minutes	8 hours 30 minutes	130 hours
10000	Exterior, cloudy	12 minutes	3 hours	40 hours
100000	Exterior, summer, sunny	2 minutes	18 minutes	11 hours

<Cal. E111/E101>

Illuminance (lux)	Environment	Time required		
		One day usage	From the stop state to the one second movement	Empty to full
500	Inside an ordinary office	4 hours	50 hours	—
1000	60–70cm (24-28in.) under a fluorescent light (30W)	2 hours	25 hours	—
3000	20cm (8in.) under a fluorescent light (30W)	40 minutes	7 hours	120 hours
10000	Exterior, cloudy	11 minutes	2 hours	35 hours
100000	Exterior, summer, sunny	2 minutes	17 minutes	11 hours

Full recharging timeThe time for fully recharge from stopped.

(Empty to full)

One day usageThe time required for the watch to run for one day with one second interval movement.

D. Notes on Recharge

- Avoid charging the watch at high temperatures (about 60°C / 140°F or higher) since allowing the watch to reach a high temperature during charging can cause deformation or discoloration of external components as well as a malfunction of movement components.

Examples:

- Charging by placing the watch too close to a light source that may become hot such as an incandescent lamp or halogen lamp.
- Charging by placing the watch on an automobile dashboard that can easily reach a high temperature.
- When charging the watch with an incandescent lamp, halogen lamp or other light source that may reach a high temperature, always make sure to place the watch at least 50 cm (20 in.) away from the light source to prevent the watch from reaching a high temperature.

E. Replacing the Secondary Battery

This watch uses the secondary battery, which does not have to be periodically replaced due to repeated charging and discharging, unlike ordinary batteries.

Caution

Never use a battery other than the secondary battery used in this watch.

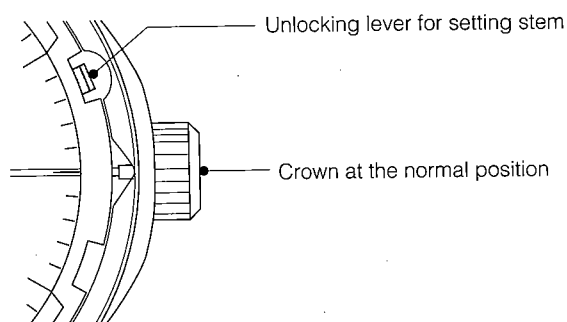
The watch structure is so designed that a different kind of battery other than the specified cannot be used to operate it. In case a different kind of battery such as a silver battery is used by some chance, there is a danger that the watch will be overcharged to burst, causing damage to the watch and even to the human body.

§5. 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.