

TECHNICAL INFORMATION
INFORMACION TECNICA

CITIZEN QUARTZ
Cal. No. 78❖❖



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

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§1. OUTLINE

This watch is an analog solar power watch which has solar cell on its dial to convert optical energy into electric energy to drive itself.

Composition of caliber

Caliber No.	Secondary battery block	Capacitor	Appearance structure			Remarks, other items
			Solar cell display frame is large	One-piece structure	Case back fitting structure	
7810		○			○	
7811		○			○	
7812		○			○	Diver's, 200m water-resistance
7815		○		○		
7817		○		○		Diver's, 200m water-resistance
7820	○		○		○	
7822	○		○		○	Diver's, 200m water-resistance
7825	○		○	○		
7827	○		○	○		Diver's, 200m water-resistance
7860		○			○	
7861		○			○	
7862		○			○	
7865		○		○		
7867		○		○		
7870	○				○	
7872	○				○	Diver's, 200m water-resistance
7875	○			○		
7877	○			○		Diver's, 200m water-resistance

§2. SPECIFICATIONS

Caliber No.		781※	782※	786※	787※
Type		Analog solar cell watch (Three hands)			
Module size		ø28.4 x 3.4 (t)			
Accuracy (At normal temperature)		±20 sec/month			
Oscillation		32768Hz			
IC		1 unit of C/MOS-LSI			
Operation temperature		-10°C ~ +60°C (14°F ~ 140°F)			
Converter		Bipolar step motor			
Time adjustment		D.F.C (No adjustment terminal for use in market)			
Measurement gate		10 sec			
Additional functions	Date (Quick setting device)	Installed			
	Device to stop second hand at any point	Installed			
	Quick start feature	Installed			
	Insufficient recharging warning feature	Installed			
	Time setting indication feature	Installed			
	Overcharging prevention feature	Installed			
Secondary battery used	Part No.	298-177	295-34	298-226	295-34
	Capacitor symbol	GC920	MT920	GC920	MT920
	Remarks	Capacitor unit	Secondary battery block	Capacitor block (With welded lead plate)	Secondary battery block

§3. FEATURES

1) Quick start feature

If light is applied to this watch while the watch has stopped, the watch starts irregular 2-second operation of the second hand within several seconds. The time to start depends on the intensity of the given light. It is about 10 seconds maximum, however, when the watch is placed in an ordinary room (Illumination intensity: Approx. 500 lux).

2) Time setting indication feature

Once this watch stops, its second hand moves irregularly to notify that the indicated time is incorrect when it starts again. At this time, if the crown is pulled to the second click position and the watch is set to the correct time and pushed in the normal position, the second hand starts the normal operation (1-second or 2-second operation). (The irregular 2-second operation continues until the time correcting operation is performed.)

3) Insufficient recharging warning feature

(Cal.781* and 786* used capacitors.

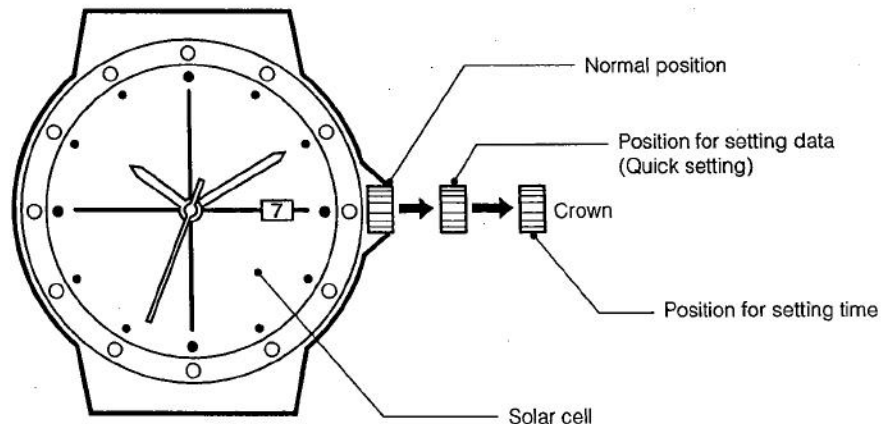
Cal.782* and 787* use secondary batteries.)

If the secondary battery (capacitor) is not charged sufficiently, the second hand moves by 2 seconds to notify that the secondary battery (capacitor) needs to be charged. The watch still operates accurately at this time, but will stop about three days (one day in case of Cal. 781* and 786*) after the 2-second operation starts. Accordingly, apply light to the watch to charge the capacitor until the one-second operation starts.

4) Overcharging prevention feature

If the secondary battery (capacitor) is fully charged, the IC stops charging it. Accordingly, the secondary battery (capacitor) is not over-charged even if the watch is exposed to light for long hours.

§4. HANDLING

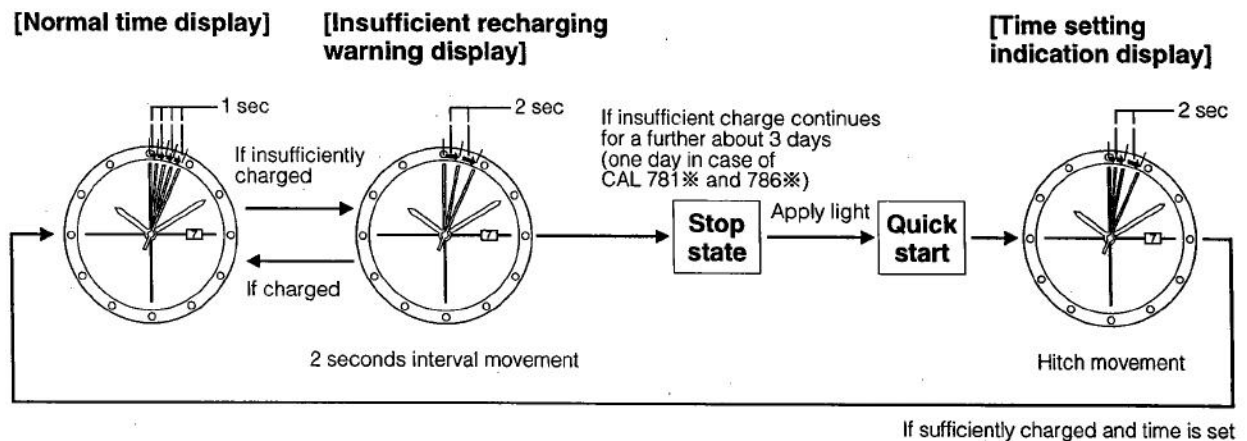


The handling method of this watch is the same as that of a common analog watch. Give light to it as much as possible so that it operates in the one-second operation mode, however, since its energy source is light.

Second hand operation modes

These functions are only found in the solar power watch.

If this watch becomes insufficiently charged, a warning function comes into operation and the display changes, as below.



When the second hand movement is abnormal

Two-second interval movement

Insufficient recharging warning feature is working.

Recharge the watch immediately by exposing it to light until it has returned to one-second interval movement.

During two-second interval movement, the watch continues to keep the correct time.

Hitch movement

Time setting indication feature is working.

Immediately expose the solar cell to light in order to recharge it, then reset to the correct time.

Time required for charge

Illuminance (lux)	Environment	CAL. 781*, 786*			CAL. 782*, 787*		
		Time required					
		One day usage	From the stop state to the one second movement	Empty to full	One day usage	From the stop state to the one second movement	Empty to full
500	Inside an ordinary office	1 hour 30 minutes	14 hours	34 hours	1 hour	30 hours	250 hours
1,000	60-70cm under a fluorescent light	40 minutes	7 hours	17 hours	35 minutes	15 hours	125 hours
3,000	20cm under a fluorescent light	15 minutes	3 hours	4 hours 30 minutes	10 minutes	5 hours	40 hours
10,000	Exterior, cloudy	5 minutes	45 minutes	1 hour 30 minutes	3 minutes	1 hour 30 minutes	12 hours
100,000	Exterior, summer, sunny	1 minutes	5 minutes	15 minutes	1 minutes	25 minutes	3 hours 30 minutes

- Since the necessary charging time depends on the type (Color and area of the dial) and environment (Intensity of light), use the above table for only reference.
- 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 characteristics and parts may be deteriorated or deformed by the heat. Accordingly, take care when applying light to it.