SETTING INSTRUCTIONS FOR PERPETUAL CALENDAR MOVEMENT CALIBER B110

Contents (click on a topic)

1. FEATURES

This watch is a solar-powered watch that contains a solar cell in its face that drives the watch by converting light energy into electrical energy. It is equipped with numerous functions including a perpetual calendar that changes the year, month and day automatically through February 28, 2100, including leap years, a time difference correction function that makes it possible to easily change the time difference without stopping the watch, and a power save function that reduces current consumption when the solar cell is not exposed to light.

2. BEFORE USING

This watch is a solar-powered watch. Make sure to charge the watch prior to use by adequately exposing it to light. If the watch should happen to stop as a result of being insufficiently charged, charge by exposing the watch to intense light such as direct sunlight.

An Eco Drive rechargeable battery (manganese titanium) is used in this watch to store electrical energy. This Eco Drive Rechargeable battery is a clean energy battery that does not contain mercury or other toxic substances. Once fully charged, the watch circuit will continue to keep time for about 2 years without additional charging (when the power save function is operating).

<Proper Use of this Watch>
To use this watch comfortably, make sure to recharge it before it stops running completely. There is no risk of overcharging no matter how much the watch is charged (Overcharging Prevention Function). **It is recommended that the watch be recharged everyday.**

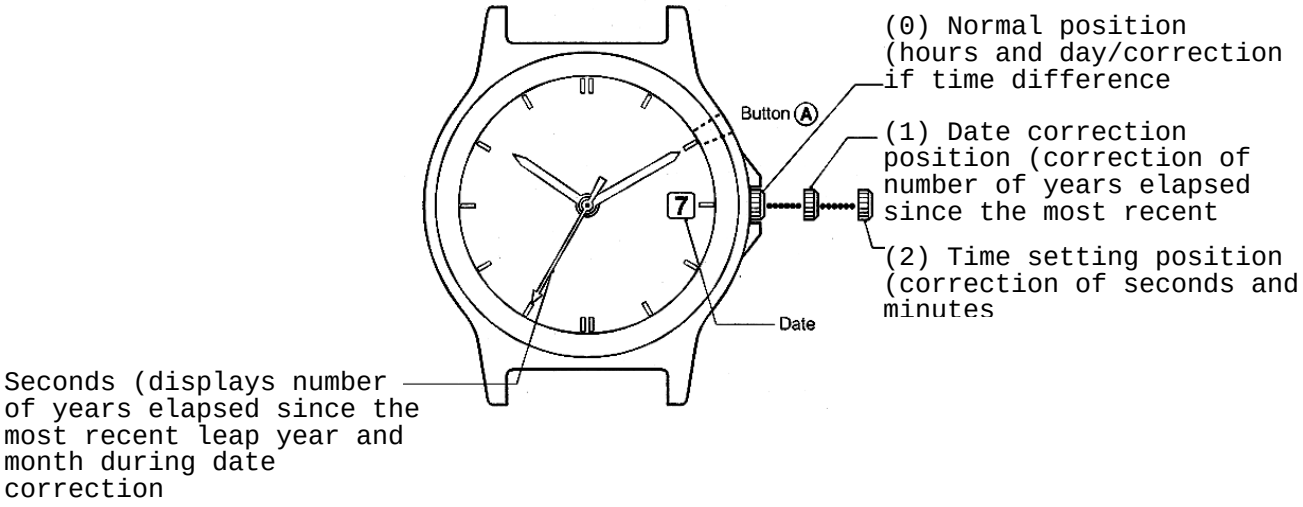
3. SPECIFICATIONS*

Movement Caliber	B110
Accuracy	Within +/- 15 seconds per month on average. (When worn at normal temperatures of 5° C to 35° C / 41° F to 95° F
Operating Temperature	-10° C to 60° C / 14° F to 140° F
Display function Time	Hours, minutes seconds (the second and minute hands move every second and the hour hand moves every 3 minutes
Calendar	Date Display Month and years elapsed since the most recent leap year are displayed by the second hand (only displayed when correcting the number of years elapsed since the most recent leap year and month)
Additional Features	• Power Save Feature • Time difference correction function (forward and backward in 1 hour units • Insufficient recharge warning • Time setting warning function • Overcharging prevention feature
Eco Drive Rechargeable Battery	Eco Drive Manganese Titanium Rechargeable Battery. (Not user replaceable.)
Continuous operating time	From a full charge to stop: Approximately 2 years (while in operation of power save feature 2 Second interval low charge warning to stop: Approximately 2 Days

- Note: specifications subject to change without notice.

4. SETTING THE TIME AND DATE

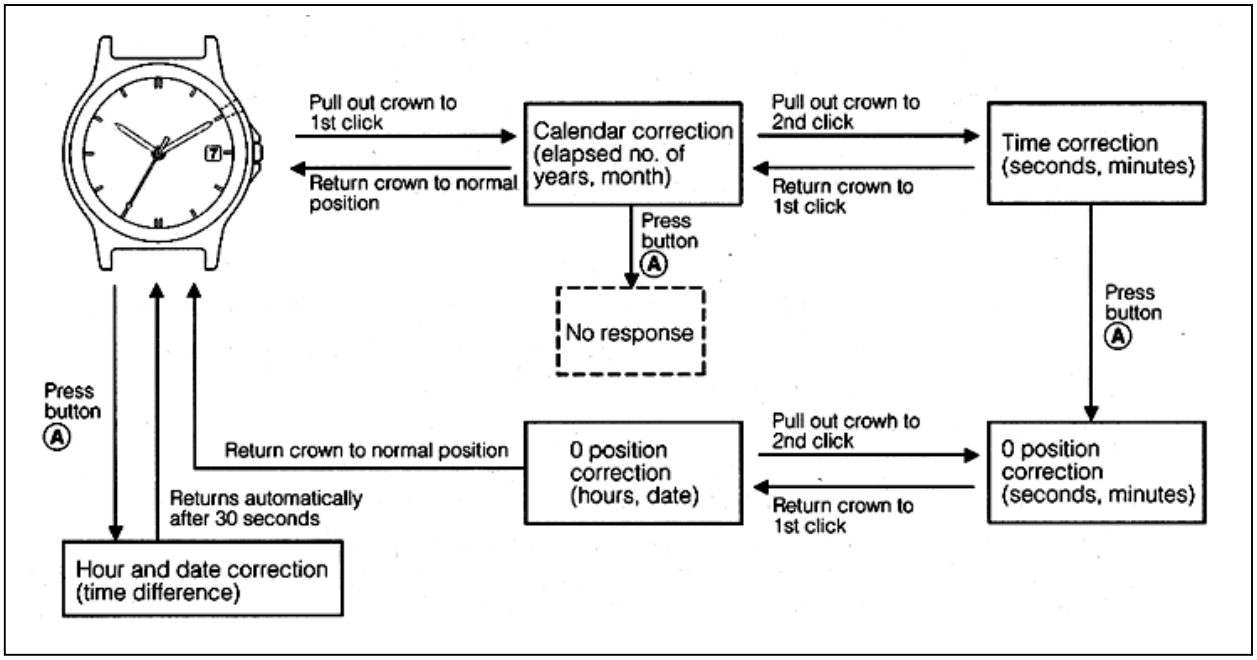
In the case the crown is of the screw-lock type, operate the crown after first loosening the screw and then make sure to securely retighten the screw after the crown has been operated.



Switching the Mode

The correction mode is switched by operating the crown and button as indicated below.

<Normal time display>



Setting the Time and Date

<Correcting Minutes and Seconds>

1. When the crown is pulled out to the second click, the second hand rapidly advances to the 0 seconds position and stops.
   - Align the hands at the reference position after performing the all-reset procedure when the second hand does not stop at the 0 seconds position.

2. Turn the crown and set the minutes.

   1. When the crown is turned to the right, the second hand makes one revolution and the minute hand moves forward by I minute (clockwise rotation).

   2. When turned to the left, the second hand makes one revolution in the counter- clockwise direction and the minute hand moves backward by one minute (counter-clockwise rotation).

      - When the crown is turned continuously, the second and minute hands advance rapidly. Turn the crown to either the left or right to stop the hands from advancing rapidly.
      - Since the movement of the hour hand is linked to movement of the minute hand, the watch can also be set by rapidly advancing the minute hand.
      - Changing of the date is linked to movement of the hour hand. The date is rapidly advanced automatically when set to a date that does not exist (such as February 30 or April 31). When the date is advancing rapidly, the minute and second hands are paused at 12:00 AM, and the hour hand moves continuously to rapidly advance past the non-existent date.

   3. Return the crown to the normal position in synchronization with a telephone time signal or other time service.

<Correcting Hours and Date>

When the hours (hour hand) are incorrect, the hour hand can be corrected without stopping the minute and second hands. Since movement of the date is linked to movement of the hour hand, the date cannot be corrected alone. The date is changed by advancing the hour hand. The hour hand and date can be corrected for 30 seconds after pressing button **(A)** or for 30 seconds after the hands have finished moving.

1. Put the crown in the normal position and press button
   The second hand performs a demonstration movement (forward rotation -> backward rotation -> forward rotation).

2. Turn the crown to set the hours.
   1. When turned to the right, the hour hand moves forward by 1 hour (clockwise rotation).
   2. When turned to the left, the hour hand moves backward by I hour (counter-clockwise rotation).
   - When the crown is turned continuously, the hour hand advances rapidly. Turn the crown to either the left or right to stop the hour hand from advancing rapidly.
   3. Turn the crown continuously to advance the hour hand rapidly and correct the date.
   - The date changes between the hours of about 1 0:00 PM and 3:00 AM.
   - When the month is set to a month with 30 days, even when the date changes from the 30th to the 31st, the non-existent date is corrected to the 1st of the following month by advancing the date rapidly.

NOTE: When correction the time, pay attention to AM and PM. The time when the date has been changed is AM.

<Correcting Elapsed Number of Years and Month>

When the crown is pulled out to the 1st click, the second hand switches to display of the number of years that elapsed since the most recent leap year and the month.

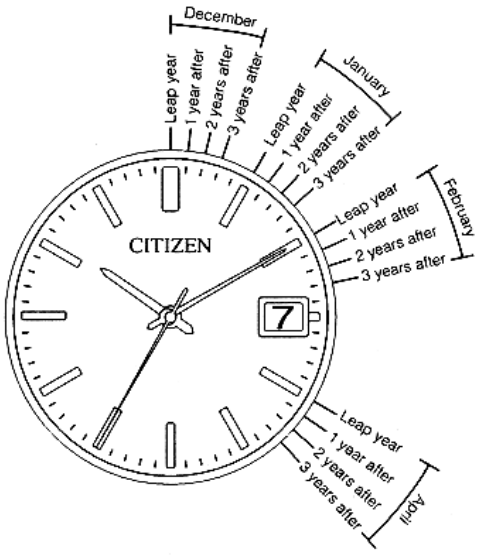
1. When the crown is pulled out to the 1st click, the second hand moves to the year and month position stored in memory and stops.
2. Turn the crown and set the year and date.
   1. 1.Turn the crown to the right to set the second hand to the position corresponding to the year (number of years elapsed since the most recent leap year) and month.
   2. 2.When the crown is turned to the left, the second hand moves backward.
   - Turning the crown continuously causes the second hand to advance rapidly. Turn the crown to the right or left to stop the second hand from advancing rapidly.

   Examples:
   - In the case of December in a leap year: Align the second hand at 0 seconds.
   - In the case of April in a year that is three years after the most recent leap year: Align the second hand at 23 seconds (between 4:00 and 5:00).
3. Always make sure to return the crown to the normal position after correcting the years and month. The second hand catches up to the current seconds and the hands begin to move.

[When the Date has been Set to a Date that does not Exist]

When the month has been changed and the data has been set to a date that does not exist after setting the date, the date automatically changes to the first day of the following month when the crown is returned to the normal position from the correction state.

<How to Read Month and Year



How to read the month:
January: Between 1:00 and 2:00
February: Between 2:00 and 3:00
:
:
December: Between **12:00** and 1:00

How to read the year:
Leap year: First mark in each month zone

1 year after most recent leap year: Second mark in each month zone

2 years after the most recent leap year: Third mark in each month zone

3 years after the most recent leap year: Fourth mark in each month zone

<Quick Reference Table for Number of Years Since Most Recent Leap Year>

Year	Years elapsed	Year	Years elapsed
2000	Leap year	2004	Leap year
2001	1st year after leap year	2005	1st year after leap year
2002	2nd year after leap year	2006	2nd year after leap year
2003	3rd year after leap year	2007	3rd year after leap year

5. CORRECTING THE TIME DIFFERENCE

When button **(A)** is pressed and the crown is turned, time difference can be corrected in 1-hour units.

The time difference can be corrected for 30 seconds after button A has been pressed or for 30 seconds after the hands finish moving.

1. Put the crown in the normal position.
2. When button A is pressed, the second hand performs a demonstration movement (forward rotation -> backward rotation -> forward rotation).
3. Correct the time difference by turning the crown to the right or left.
   1. When the crown is turned to the right, the hour hand moves forward by one hour (clockwise rotation).
   2. When the crown is turned to the left, the hour hand moves backward (counter-clockwise-rotation) by one hour.
      - Turning the crown continuously causes the hour hand to advance rapidly. Turn the crown to the left or right to stop the hour hand from advancing rapidly.

Note 1: Pay attention to AM and PM when correcting the time difference
Note 2: When returning the time difference to its original setting, return the hour hand in the opposite direction in which it was corrected.

Example:
Setting the time difference of London (local time) when the time in Tokyo (home time) is 10:OO AM:

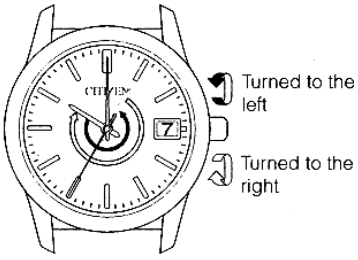
The time difference between Tokyo and London is -9 hours. Since it is 1:00 AM in London when it is 10:00 AM in Tokyo, in the case of correcting the time difference at this time:

1. Press button A.
2. Turn the crown to the left to turn the hands backward (counter-clockwise) by 9 hours.

Note:
If the crown is turned to the right to move the hands clockwise to set the time to 1:00, the time will be 1:OOPM and the calendar function will not operate correctly, preventing the date from changing at the proper time.

Case of Correcting Time Difference by -9 Hours

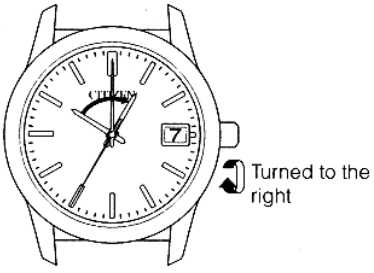
<Proper Correction Procedure>



Direction of time difference correction

Direction of returning time difference correction

<Improper Correction Procedure>



Direction of improper time difference correction

The time difference cannot be corrected when the second hand is moving at two-second intervals indicating that the watch is insufficiently charged. Correct the time difference after charging the watch by exposing it to light so that the second hand returns to one- second interval movement.

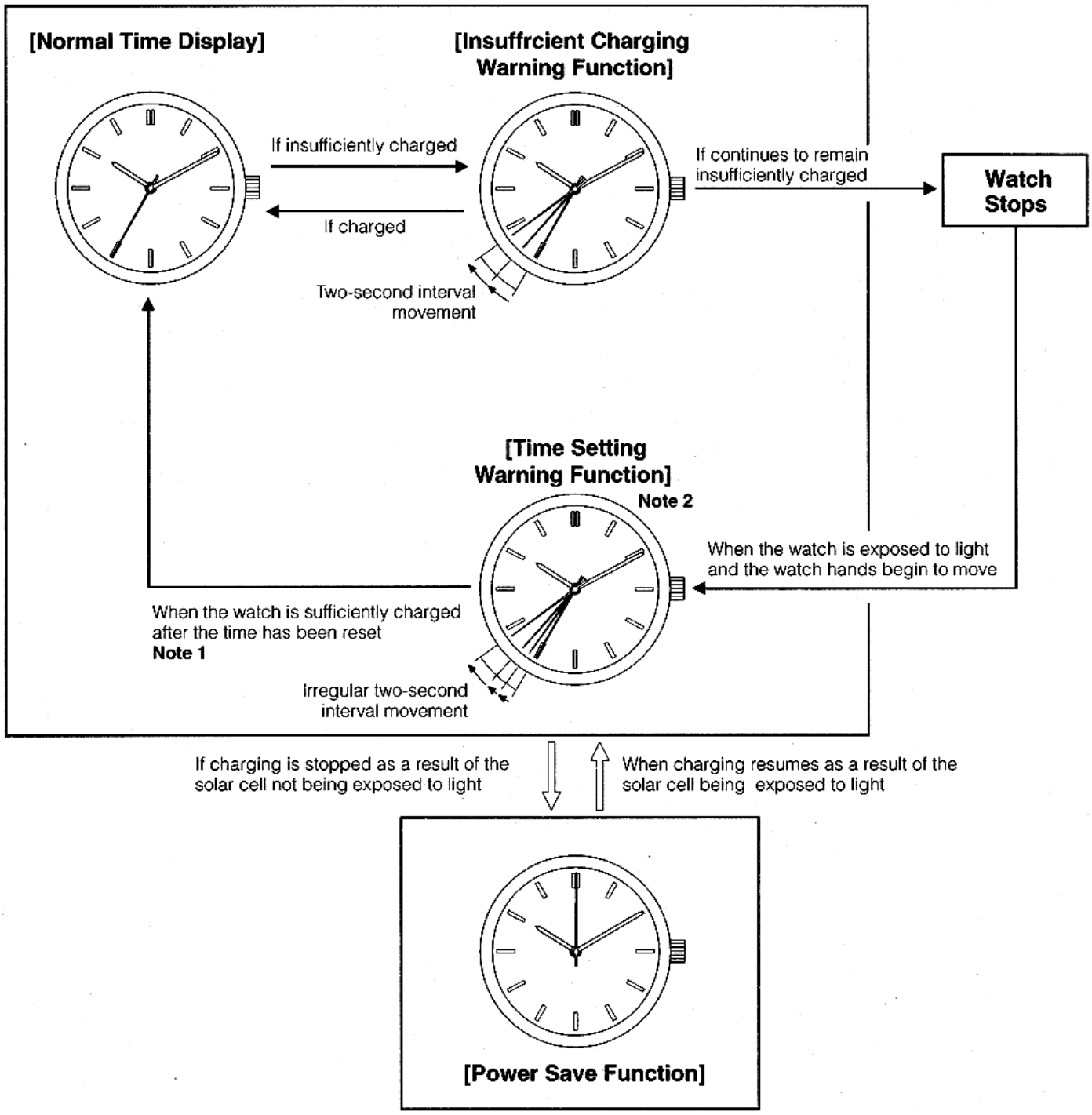
Reference: Time Differences of Major World Cities Based on UTC

City name	Time difference	Daylight savings time	City name	Time difference	Daylight savings time
London	±0	O	Noumea	+11	X
Paris	+1	O	Auckland	+12	O
Cairo	+2	O	Honolulu	–10	X
Moscow	+3	O	Anchorage	–9	O
Dubai	+4	X	Los Angeles	–8	O
Karachi	+5	X	Denver	–7	O
Dacca	+6	X	Chicago	–6	O
Bangkok	+7	X	New York	–5	O
Hong Kong	+8	X	Caracas	–4	X
Tokyo	+9	X	Rio de Janeiro	–3	O
Sydney	+10	O			

- Cities (regions) in which daylight savings time is used are indicated with a 0, while those in which it is not are indicated with an **X.**
- The time difference and use of daylight savings time of each city are subject to change **by** the particular country.

6. FUNCTIONS UNIQUE TO SOLAR-POWERED WATCHES

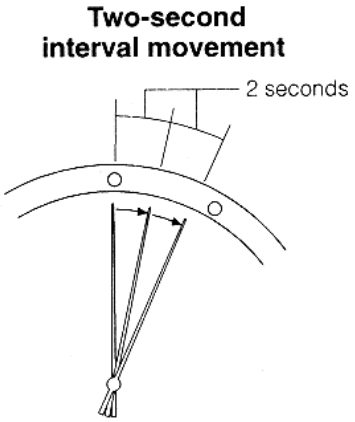
When the watch becomes insufficiently charged, the following warning functions are activated to inform the wearer that the watch is insufficiently charged.



Note 1
Irregular two-second-interval movement will continue if the time is not reset

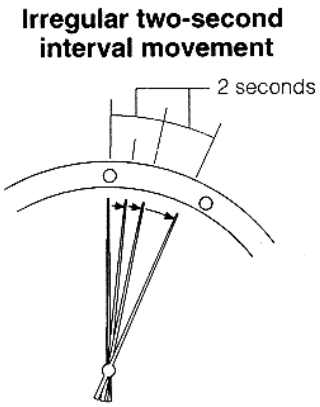
Note 2
Check the date since it also may not be correct

Insufficient Charging Warning Function



The second hand moves at two-second intervals to indicate that the watch is insufficiently charged. Although the watch will continue to operate normally at this time as well, it will stop after about 2 days have elapsed since the start of two-second-interval movement. Expose the watch to light to return the second hand to one-second interval movement. When the second hand is moving at two-second intervals, time, date and time difference cannot be corrected.
Once the insufficient charging warning function (two-second interval movement) operates, it takes at least 30 minutes for the second hand to return to one-second-interval movement even if the watch is exposed to light sufficiently.

Time Setting Warning Function



When the watch is again exposed to light after stopping, although the second hand begins to move, since the time is incorrect, the second hand moves irregularly at two-second intervals to indicate that the time is incorrect. Reset the time after the watch has been sufficiently charged. The second hand will continue to move irregularly at two-second intervals unless the time is reset.
Once the watch stops for insufficient charging, it takes at least 30 minutes for the watch to indicate the time setting warning even if the watch is exposed to light sufficiently

Overcharging Prevention Function

The overcharging prevention function is activated when the Eco Drive Rechargeable battery is fully charged so that it is not charged further.

Power Save Function

When power is no longer generated as a result of light not shining on the solar cell continuously for 2 hours, the second hand stops at the 12:00 position and the watch enters the Power Save State to reduce power consumption of the Eco Drive Rechargeable battery. The minute hand stops simultaneous to stopping of the second hand. The hour hand continues to keep time by moving at one- hour intervals, and the date changes with the movement of the hour hand. The power save function does not operate when the crown is pulled out.

Note: The power save function is not activated even when power is not generated as a result of light not shining on the solar cell during the time the Eco Drive Rechargeable battery is fully charged and the overcharging prevention function is activated.

Canceling Power Save

The power save function is canceled when the solar cell is exposed to light and power generation is resumed. The minute and second hands advance rapidly to the current time and begin moving.

7. GENERAL REFERENCE FOR CHARGING TIMES

The time required for recharging varies according to the model of the watch (color of the dial, etc.). The following times are shown below to serve only as a reference.

Recharging time refers to the amount of time the watch is continuously exposed to light.

Illuminance (lux)	Environment	Charging Time		
		Charging time for 1 day of operation	Charging time from the stopped state to 1-second interval movement	Charging time from stopped state to fully charged
500	Inside an ordinary office	2.5 hours	53 hours	470 hours
1,000	60–70cm (24-28 in.) under fluoresent light (30W)	1.5 hours	26 hours	216 hours
3,000	20cm (8 in.) under fluorescent light (30W)	26 minutes	9 hours	69 hours
10,000	Outdoors, cloudy weather	9 minutes	3 hours	24 hours
100,000	Outdoors, summer under direct sunlight	7 minutes	50 minutes	16 hours

8. NOTES REGARDING USE OF THIS WATCH

<Try to keep the watch charged at all times. >
Please note that if you frequently wear long sleeves, the watch can easily become insufficiently charged as a result of it being concealed and unable to be exposed to light.
When you take the watch off, try to place it in as bright a location as possible to ensure that it always keeps the correct time.

CAUTION - Charging Precautions -
Avoid recharging at high temperatures (over about 60'C/140'F) since this may result in dam- age to the watch during recharging.
Examples:

- Charging the watch in close proximity to an incandescent lamp, halogen lamp or other light source that can easily reach high temperatures.
- Charging the watch in a location that reaches high temperatures such as on a car dashboard.
- When charging the watch with an incandescent lamp, always make sure the watch is at least 50 cm (20 in.) away from the lamp so that it does not reach excessively high temperatures during charging.

9. REPLACING THE ECO DRIVE RECHARGEABLE BATTERY

The rechargeable battery used in this watch does not have to be periodically replaced in the manner of ordinary batteries as it can be charged and discharged repeatedly. **Note: This rechargeable battery is not a user replaceable item**

10. ALL-RESET

The display of this watch may not read correctly as a result of being subjected to the effects of static electricity or strong impact and so forth. When this happens, perform the procedure described in section "11. REFERENCE POSITION ALIGNMENT" after performing the all-reset procedure described below.

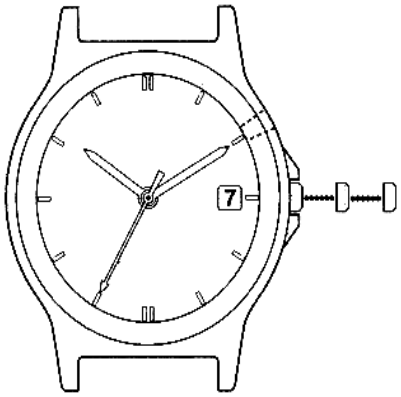
1. Pull out the crown to the second click.
   - The second hand moves to the 0-position stored in memory and stops.
2. Continuously press button A for at least 1 second.
   - The second and hour hands perform a demonstration movement (forward movement backward movement ---> forward movement). This completes the all-reset procedure. Always make sure to perform the reference position alignment procedure after performing all-reset.

Note: Demonstration movement is not performed when the watch is insufficiently charged. Perform the all-reset procedure only after charging the watch sufficiently.

11. REFERENCE POSITION ALIGNMENT

After performing the all-reset procedure, align the second and minute hands at their reference positions by pulling out the crown to the second click, and the hour hand and date to their reference positions by pulling out the crown to the first click.

1. Align the second and minute hands at the 12:00 position with the crown pulled out to the second click.
   - Turning the crown to the right moves the second and minute hands forward.
   - Turning the crown to the left moves the second and minute hands backward.
   - Turning the crown continuously causes the hands to advance rapidly. Turn the crown to the left or right to stop the hands from advancing rapidly.



1. Align the date between the 31st and 1st and the hour hand at the 12:00 position with the crown pulled out to the first click.
   - Turning the crown to the right causes the hour hand to move forward.
   - Turning the crown to the left causes the hour hand to move backward.
2. The date moves with the hour hand. Continuously move the hour hand to set the date between the 31st and 1st.
3. Align the hour hand at 12:00.
4. After each hand and the date have been set, return the crown to the normal position.

Note 1: It takes about 1 second for the watch to store the reference position in memory. Once the reference position has been stored in memory, the second hand will begin irregular two-second interval movement. The reference position may not be stored in memory if the crown is operated before the start of irregular two-second interval movement after returning the crown to the normal position.

Note 2: The second hand will continue to remain stopped even if the crown is returned to the normal position unless the reference position alignment procedure is performed.

6. After performing the reference position alignment procedure, properly reset the time and date.
   - The watch shows 12:00 AM for the time of reference position alignment after the all-reset procedure has been performed. Set the time and date by referring to section **"4. SETTING THE TIME AND DATE"**, while being careful not to incorrectly set AM and PM.

PRECAUTIONS ABOUT CARE AND HANDLING OF WATCHES

TEMPERATURE CARE
Avoid temperature extremes. Exposing your watch to high temperatures, such as placing it on the dashboard of a vehicle or use in a hot tub, may cause the watch to malfunction, shorten battery life or damage certain components. Leaving the watch in extreme cold temperatures may cause irregular timekeeping until the watch returns to normal operating temperature.

SHOCK-RESISTANT
The watch may be worn while playing golf or other activities, but avoid severe shocks such as dropping it on a hard surface.

MAGNETIC-RESISTANT
No problem should occur from using the watch around ordinary household electric appliances such as TV sets or stereos. Keep away from magnets.

CHEMICAL/GAS RESISTANT
Do not expose the watch to chemicals or gases for long periods.

WATCH CLEANING
Stains, waterspots and accumulated dirt on the case, crystal or band should be removed with a soft cloth to prevent damage and premature wear.

HANDLING OF WATER-RESISTANT WATCHES
Although water-resistant watches are warranted, steps should be taken to avoid damage that may result from accidents or mishandling:

- Do not operate the crown or push-button in the water or while the watch is wet. Tighten screw lock crown completely.
- Should the watch become immersed in water, dry it off right away. If the watch comes in contact with salt water, be sure to rinse it thoroughly in warm fresh water to remove any trace of salt.
- If a watch is wet from cleaning or by accident, never store it in a closed container. It should be dried immediately or taken to a watchmaker or jeweler if moisture is inside the case to prevent damage from rust.
- Vital components necessary to resist the entrance of moisture deteriorate with time and use. Gaskets, crowns and other materials should be replaced every year or two to ensure that water resistant quality remains at factory specifications.

CARE FOR METAL BRACELETS
To extend the life and maintain the good appearance of the metal watch bracelet, the following recommendations are given:

- Be aware that since the watch and bracelet is worn next to the skin, it collects dust and perspiration and becomes soiled if not cleaned regularly. This is particularly true of the inner parts of the links or mesh of the bracelet.
- Soil and rust, when present in a bracelet, are dissolved by perspiration and can cause staining of cuffs and irritation of the skin in some instances.
- Heavy perspiration should be wiped off the watch and bracelet with a soft dry cloth. The bracelet should be cleaned occasionally by using an old toothbrush and warm soapy water after which the soap is thoroughly rinsed with clear water and the bracelet dried completely. The foregoing manner of cleaning should not be done if the watch is not water-resistant but should instead be done by your jeweler.

CARE FOR STRAPS
LEATHER

- Heavy perspiration, if not removed from a leather strap, can wash out the natural oils and cause the leather to become dry and deteriorate. Any moisture should be blotted with a soft dry cloth or paper towel and the strap allowed to dry naturally.
- Salt residue and soil can be removed from the leather by cleaning with a dampened soft cloth and mild soap or saddle soap.
- Occasionally, the inside surface of the strap should be cleaned by using a soft cloth dampened with alcohol.
- The strap should always be worn a little loosely (one finger space between wrist and strap) to allow air to circulate thus causing any moisture to evaporate.

RUBBER

- Rubber straps should be washed frequently with mild soap and warm water using a soft brush.
- Thorough cleaning, using the same method, should especially be done after use in salt water.
- Solvents, oils, perspiration, tanning lotion and salt can cause rubber to deteriorate if not removed.

Marking on the Dial	Marking on the Caseback	 Face washing, splashes, sweat, raindrops, etc.	 Swimming	 Skin diving (diving without air tanks)	 Scuba diving (diving with air tanks)	Water-resistant characteristics
NONE	NONE	**NO**	**NO**	**NO**	**NO**	Non water-resistant watch and must be kept away from water.
NONE	WATER RESIST	**OK**	**NO**	**NO**	**NO**	An ordinary water-resistant watch and can withstand splashes, sweat, rain-drops and etc. for daily life use.
WR100M WR10bar WR150M	WATER RESIST	**OK**	**OK**	**OK**	**NO**	For frequent use with water. It is not specially designed for scuba diving.
WR200M	WATER RESIST	**OK**	**OK**	**OK**	**OK**	For skin and scuba diving. Usable up to the respective indicated depths.

See instruction book for further information

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Water Resistance

The water-resistant quality of our timepieces is offered in varying degrees depending on the model. This ranges from non-water resistant models to those suitable for SCUBA diving. Water resistance of our timepieces is measured in BAR or Barometric Pressure. Each BAR of pressure is equal to 14.5 pounds per square inch of pressure.

Water resistance is measured when the watch is at a static, or motionless state. As the watch is moved in water, such as from the motion of swimming, pressure is added from velocity. While you may be swimming in a pool at surface level, the watch may be experiencing forces equal to that of 100 feet of water pressure (3 BAR). Diving into a pool can cause forces on the watch to exceed those pressures. As such, you should always allow a margin of safety when exposing your watch to moisture. Never "push the limit" of the degree of water resistance of your timepiece.

A primary factor to keep in mind about water resistance is that periodic maintenance is needed to maintain original factory specifications for water resistance. When a watch is new, it meets specifications for water resistance as indicated on the case back. However, as the watch ages, the gaskets that seal the watch become dry and brittle, diminishing its water resistant quality. Exposure to environments such as chlorinated pools, salt water or soaps from showering can accelerate drying of the gaskets. We recommend that the gaskets be changed at least every 18 to 24 months to maintain the water resistant quality of your timepiece. If the watch is frequently exposed to chlorinated pools, soaps salt water, etc., we recommend that the gaskets be changed on a yearly basis.

From time to time, you may notice condensation that appears then goes away after a short period of time. This is a normal occurrence and happens primarily from sudden temperature changes. When there are sudden temperature changes such as entering a cool building from the hot out of doors, or jumping into pool on a hot day the watch may fog. Conversely, if you go to the cold outdoors from a warm building, fogging may occur. As long as the fogging clears in a short period of time, there is no need for concern.

Be sure the crown is completely pushed in prior to any contact with moisture. If your model is equipped with a screw down crown, be sure it is properly seated against the case. Do not operate the crown or any push button when the watch is wet as this may allow the entrance of moisture. . If at anytime, you notice moisture in your timepiece that does not clear in a short period of time, you should send your timepiece as soon as possible to the nearest Authorized Service Center for inspection.

You can determine the level of water resistance of our watches from the markings on your case-back. Additionally, models that are water resistant to 100 or 200 meters have an indication on the dial as well. The case-backs and dials are normally marked as follows:

The case back has no indication of water resistance
This indicates the watch is a non water-resistant model and is not designed for contact with moisture at all. Caution should be exercised to avoid any contact with moisture, such as when washing your hands or from a rainstorm.

“Water Resist”
This watch is designed to withstand water from accidental splashing, such as from washing your hands or rain. Any submersion into water may result in the entrance of moisture.

“Water Resist 10BAR” or “W.R. 10BAR”, Dial marked “WR100”
This watch is designed to withstand water pressure up to 333 feet. This includes water exposure from accidental splashing and rain, but also from showering, swimming in a pool and snorkeling. Be sure to rinse the watch with fresh water after exposure to a chlorinated pool, salt water, soaps, etc. After rinsing with fresh water, be sure to dry the exterior with a soft cloth.

“Water Resist 20BAR” or “W.R. 20BAR”, Dial marked “WR200”
This watch is designed to withstand water pressure up to 666 feet. This includes all exposure to water up to and including recreational SCUBA diving. Be sure to rinse the watch with fresh water after exposure to a chlorinated pool, salt water, soaps, etc. After rinsing with fresh water, be sure to dry the exterior with a soft cloth.

Special Note about Jacuzzis and Hot Tubs
The various components used in the manufacture and assembly of your watch expand at various rates. This results in a loss of the sealing capabilities of gaskets, which may allow moisture to enter. In addition, heat from these sources can cause deformation of certain materials leading to mechanical failures. For these reasons, you should remove your watch before entering a hot tub or Jacuzzi.

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