

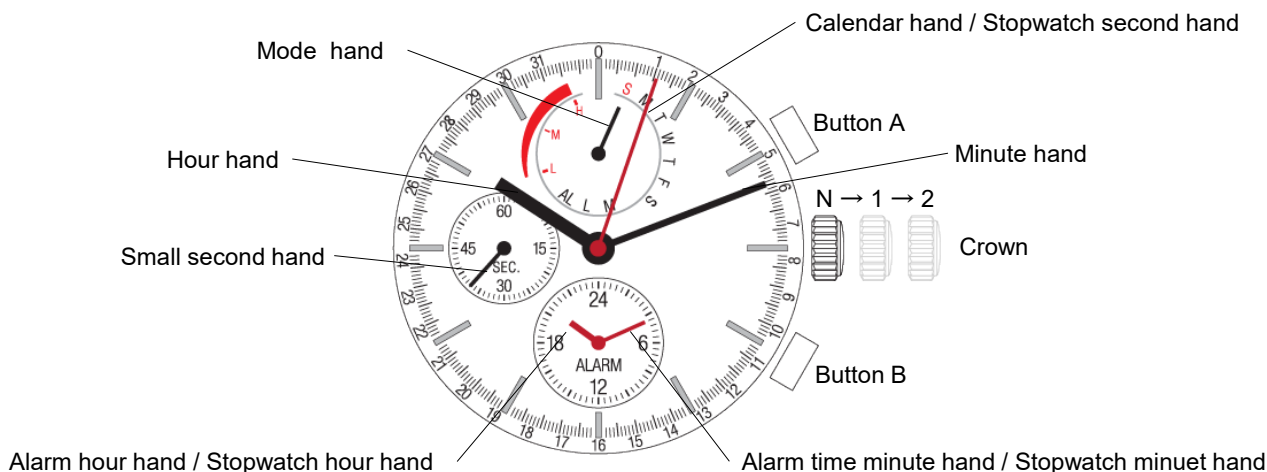
Instruction of Watch Movement

Cal. VS98A

SOLAR SERIES

- 1/5 sec. chronograph
- Alarm
- Perpetual calendar
- Battery indicator

◆ Display



◆ Crown and button operation

	Crown position		
	N : normal	1 : 1st click	2 : 2nd click
Crown	Free	Free	Time setting
Button A	Calendar display changing	Alarm time setting (Clockwise)	Calendar setting *2
Button B	Mode changing *1 (Calendar/Stopwatch)	Alarm time setting (Counterclockwise)	Calendar setting *2

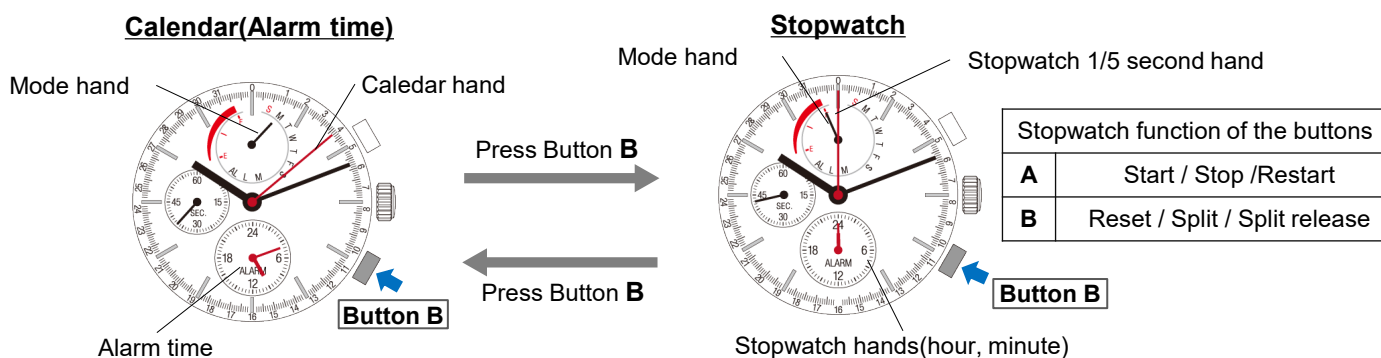
- *1 For button operations in stopwatch mode, please refer to "How to use the stopwatch".
- *2 For detailed operation, please refer to "How to use the perpetual calendar".

◆ How to change two modes (Calendar/Alarm time, Stopwatch)

Each press of button B change modes between Calendar (alarm time) and Stopwatch alternately .

After change to stopwatch mode, press button A to start measurement.

- Mode cannot be changed while the stopwatch is measuring. Please reset the stopwatch before changing mode.



◆ How to set the time

- (1) Pull the crown out to the 2nd click position when the small second hands reach to the 60-second position.
- (2) Turn the crown to set the hour hand and the minute hand.
 - When setting the minute hand, advance it 4 to 5 minutes ahead of the current time and then turn it back to the exact time.
 - There is no AM or PM setting
- (3) Press button B to set the alarm hands to the time of (2).

Tips: This time setting may be set correctly in 24-hour format as it will affect alarm time settings.

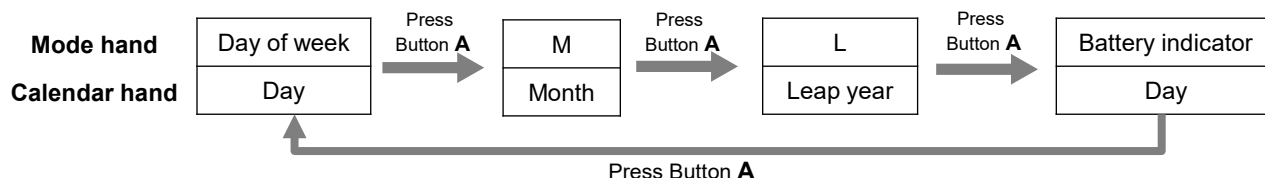
Tips: When setting the hands, the hand moves quickly if the button B is kept pressed.
- (4) Push the crown back to the normal position.

◆ How to use the perpetual calendar

- Day and month and leap year is indicated by the calendar hand.
- Day of the week and battery indicator is indicated by the mode hand.
- There is no need to revise the calendar until February 28, 2100.

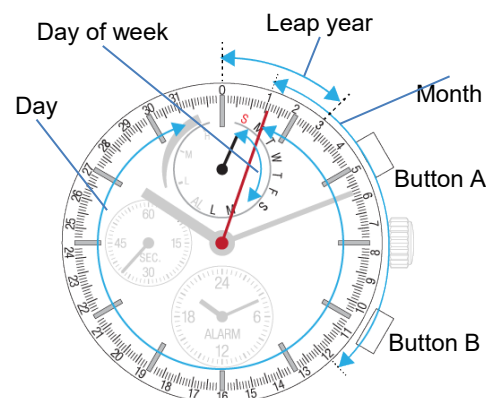
■ How to check the calendar and the battery indicator

In the calendar(alarm time) mode, each press of button A, The calendar hand moves to indicate the day, month and leap year in sequence.



■ How to set the calendar

- (1) Pull the crown out to the 2nd click position..
- (2) Press button A . The mode hand turns.
- (3) Press button B to set day of week.
- (4) Press button A . The calendar hand turns.
- (5) Press button B to align the calendar hand with day on the dial(1~31).
 - Each time you press button B, the calendar hand advances by one day.
- (6) Press button A . The mode hand moves "M".
- (7) Press button B to align the calendar hand with month on the dial(1~12).
 - Each time you press button B, the calendar hand advances by one month.
 - After reaching 12 (December), the calendar hand will automatically return to 1 (January).
- (8) Press button A . The mode hand moves "L".
- (9) Press button B to align the calendar hand with leap year on the dial(0~3).
 - Each time you press the button, the calendar hand advances by one number on the bezel.
 - After reaching 3 (3 years after leap year), the calendar hand will automatically return to 0 (leap year).



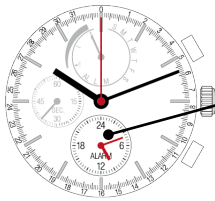
Calendar hand position	0	1	2	3
The number of years passed since the last leap year	Leap year	One year	Two years	Three years
Year	2024 2028 . 2092 2096	2025 2029 . 2093 2097	2026 2030 . 2094 2098	2027 2031 . 2095 2099

- (10) Push the crown back to the normal position.

◆ How to use the alarm

The alarm sounds only once at the set alarm time.

The alarm time can be set within 24 hours from the current time in 1-minute increments.



Alarm waiting:

Displays the set alarm time

No alarm:

Displays the current time

■ How to set the alarm time

- (1) Pull the crown out to the 1st click position.

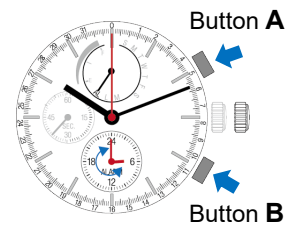
- The mode hand moves "AL".

- (2) Press button A or button B to set the alarm hands to alarm time.

Tips: If the alarm hands of fast-forwarding match the current time, the alarm hands will be stop. The alarm will be canceled.

- While you keep the button A or button B pressed to advance the alarm hands quickly.

- (3) Push the crown back to the normal position.



■ How to stop the alarm sounds

When alarm time arrives, the alarm will sound for 20 seconds one time only.

Press button A or button B to stop the alarm.

- After the alarm time arrives, it will point to the current time
- If the alarm sounds during stopwatch measurement, pressing button A or B will stop the alarm, but the stopwatch can not operation. After stop the alarm, operate stopwatch.
- The alarm sounds made during stopwatch measurement is different from normal, but this is not a malfunction.

■ How to cancel the alarm

Reset the alarm time to the current time, following "How to set time".

■ How to preview the alarm sound demonstration

Press and hold button B for longer than 3 seconds.

- The alarm sound can be heard while the button B is kept pressed.

◆ Features of the solar watch

This watch is a solar-powered watch containing a solar cell underneath the dial to convert any form of light into "electrical energy" and store the power in a secondary battery.

Unlike conventional quartz watches, this watch does not use a silver oxide battery, thus eliminating the need for battery replacement.

■ Running time

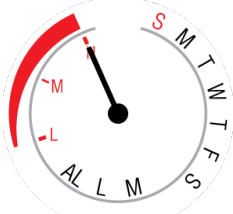
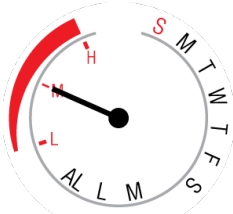
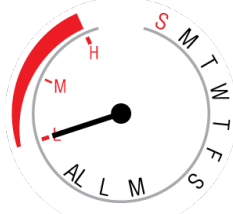
Expected running time from full charge to stoppage will be around 6 months.

■ Over charge prevent function

If the secondary battery is charged more than predetermined voltage, over charge prevent function is operated to prevent the secondary battery deterioration and breakage.

◆ Battery indicator

The battery indicator hands shows the running time of remain.

Battery indicator Display			
Battery level	H (High)	M (Middle)	L (Low)
the running time of remain	100 days or more	2 - 100 days	2 days or less
To do	Please use it as is.	Please wear it and charge it frequently.	The small second hand starts moving at 2-second intervals. Recharge the watch as soon as possible by exposing it to light.

■ Restrictions on operation due to 2-second hand movement

- Setting the calendar.
- Stopwatch measurement.
 - During measurement, it will automatically reset and change to the battery indicator.
- Alarm sounds and alarm time setting.
- Stopwatch hands and mode hand position adjustment.

◆ How to charge

When you start up the watch or when the battery level is very low, charge the watch by exposing the dial to sunlight or strong artificial light (more than 1,000 lx).

- The remaining energy can be checked by the battery indicator hand.
- The small second hand immediately starts moving at two-second intervals, but the energy stored in the secondary battery is not yet sufficient. If the watch is turned away from the light, it may stop operating.
- It is not necessary to charge the watch fully. It is important, however, to charge the watch sufficiently, especially in the case of initial charging.

■ Caution

When charging the watch, do not place it too close to fluorescent lamp or other light sources as the watch temperature will become extremely high, causing damage to the parts inside the watch.

■ To prevent energy depletion

- Avoid covering the watch face with your clothing while wearing it.
- When the watch is not in use, leave it in a brightly lit place for as long as possible.
- Make sure that the watch temperature does not exceed 50°C.

■ Charging from a stopped state

- The small second hand will start moving at 2-second intervals. Continue exposing the watch to light until it starts moving at 1-second intervals.
- After charging, please reset the date and time before use.

◆ Guidelines of charging time

The below table provides only general guidelines.

Illumination (lx)	Source of light	Environment	Dial transparency rate is 20%		
			A (Approx / Hours)	B (*) (Approx / Hours)	C (Approx / Minutes)
700	Fluorescent lamp	Inside the office	—	48	123
3,000		30W 20cm	90	11	28
10,000	Sun light	Cloudy	24	2.9	8
100,000		Fine weather	5	1.2	3

Condition A : Time required for full charge

Condition B : Time required for steady operation

Condition C : Time required for 1 day's charge

(*) The values in this column represent the charging times required until the small second hand moves constantly at one-second intervals after the watch starts operating with the small second hand moving at two-second intervals.

Even if the watch is not charged for the time specified in the column, the small second hand may temporarily move at one-second intervals. But it will soon resume moving at two-second intervals; therefore, charge the watch for more than the specified period.

◆ How to use the stopwatch

■ About the stopwatch function

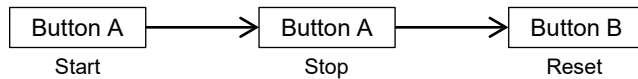
- The stopwatch can measure up to 24 hours in 1/5 second increments.
- When the calendar is displayed, press button B to switch to the stopwatch display.
- When the measurement time reaches 24 hours, the stopwatch will automatically stop and reset.
- The stopwatch will not operate when the small second hand is moving every two seconds. Please charge the watch.

■ Checking the stopwatch hand position

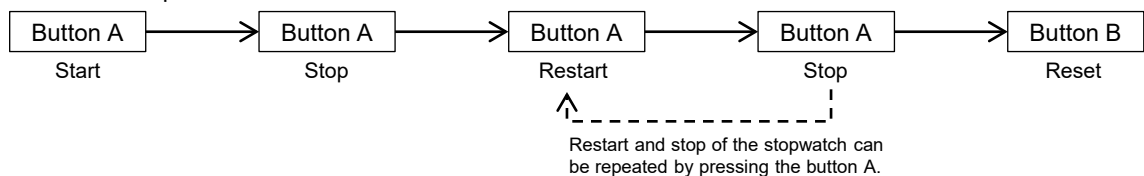
- Before using the stopwatch, be sure to check that the crown is set at the normal position and that the stopwatch hands are reset to the "0" position.
 - If the stopwatch hands do not return to the "0" position when the stopwatch is reset to "0", follow the procedure in "Stopwatch hand position adjustment".

■ How to measure of the stopwatch

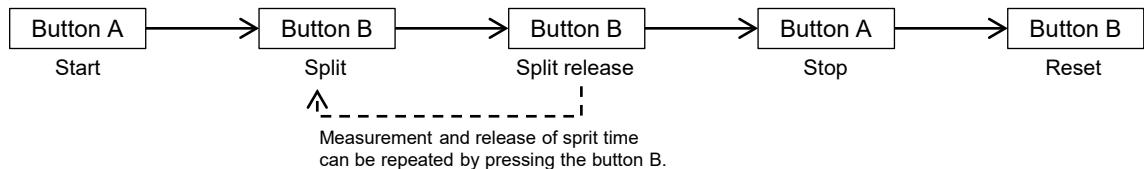
➤ Standard measurement



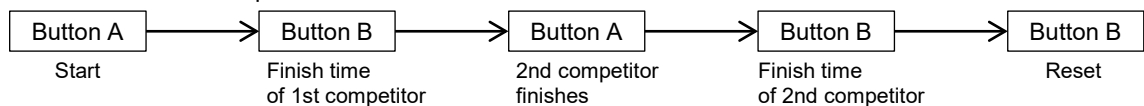
➤ Accumulated elapsed time measurement



➤ Split time measurement



➤ Measurement of two competitors



◆ Stopwatch hands and mode hand position adjustment

In the following cases, follow the procedures below to set them.

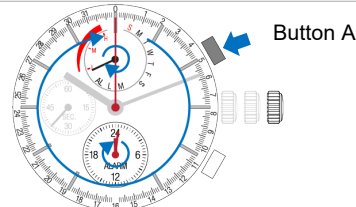
- The stopwatch hands are not at the "0:00:00" position.
- The mode hand is not in the correct position.

(1) Pull out the crown to the 2nd click position.

- When the stopwatch is measuring, if the crown is pulled out to the 2nd click position, it will be automatically reset.

(2) Press the button A for longer than 3 seconds.

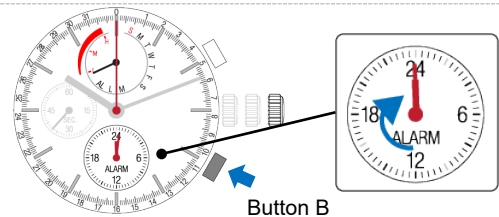
- The stopwatch hands (hour, minute, 1/5 minute) move to the reference positions.



Adjust the stopwatch hands (hour, minute).

(3) Press the button B repeatedly to move it to "24" position.

Tips: When setting the hands, the hand moves quickly if the button B is kept pressed.



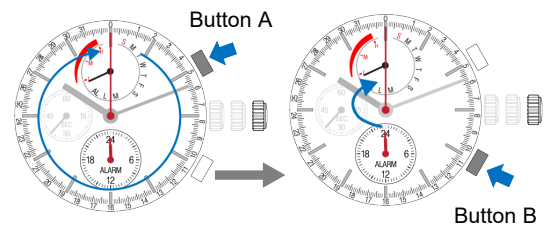
Adjust the stopwatch 1/5 second hand.

(4) Press the button A.

- The stopwatch 1/5 second hand turns a full round and can now be set to the correct position.

(5) Press the button B repeatedly to move adjust the 1/5 second hand to "0" position.

Tips: When setting the hands, the hand moves quickly if the button B is kept pressed.



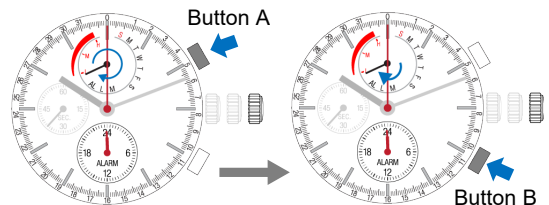
Adjust the mode hand.

(6) Press the button A.

- The mode hand turns a full round and can now be set to the correct position.

(7) Press the button B to repeatedly move adjust the mode hand to "L" position.

Tips: When setting the hands, the hand moves quickly if the button B is kept pressed.



(8) Push the crown back to the normal position.

(9) Set the current time and the calendar. Follow "How to set the time" and "How to set the calendar".

- After doing the reference position adjustment mode, the time and the alarm time may gain or lose time.

◆ System reset

When an abnormal display appears, reset the built-in integrated circuit.

(1) Pull the crown out to the 2nd click position.

- The small second hands stops.

(2) Press buttons A and B at the same time for longer than 2 seconds.

(3) Push the crown back to the normal position.

(4) Setting the following.

1. "Stopwatch hands and mode hand position adjustment"
2. "How to set the time"
3. "How to set the calendar"
4. "How to set/change the alarm time"

