# Instruction of Watch Movement
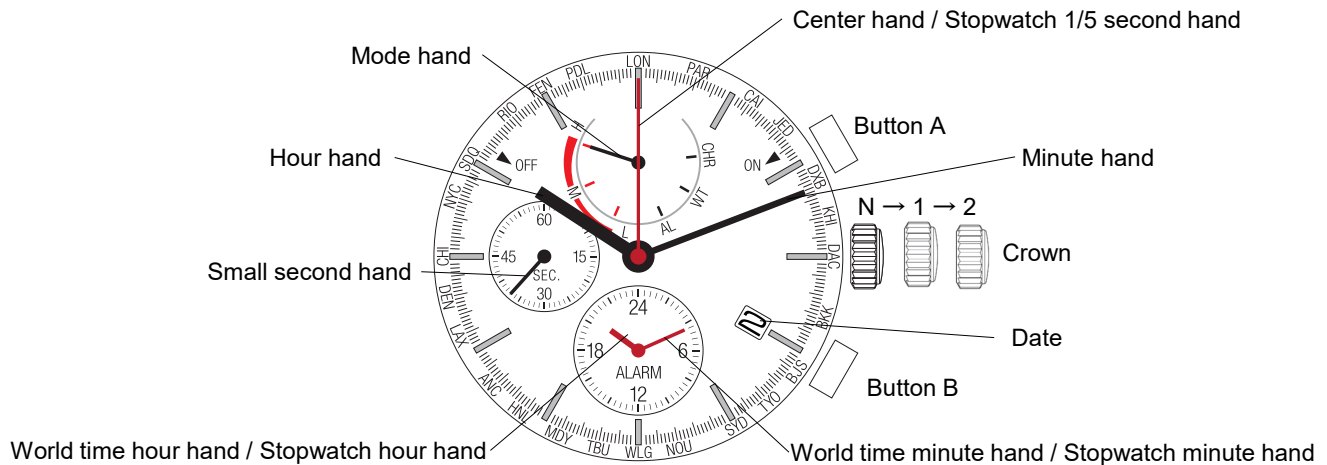
# Cal. VS97A

## ◆ Display

Mode hand

Center hand / Stopwatch 1/5 second hand

Hour hand

Button A

Minute hand

Small second hand

N → 1 → 2

Crown

Date

Button B

World time hour hand / Stopwatch hour hand

World time minute hand / Stopwatch minute hand

## ◆ Crown and button operation

|  | Crown position | | |
|---|---|---|---|
|  | N : normal | 1 : 1st click | 2 : 2nd click |
| Crown | Free | Date setting | Time setting |
| Button A | Stopwatch Start      Stop      Restart | Alarm ON/OFF | City setting |
| Button B | Stopwatch Reset      Split      Split release | Alarm time setting | World time setting |

## ◆ How to change two modes  (World time/ Battery indicator,  Stopwatch)
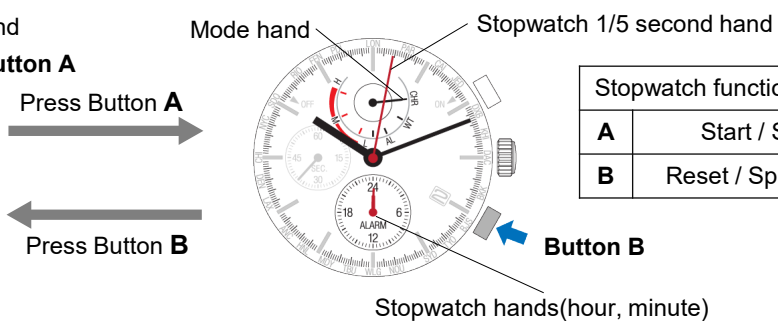
By button A and B change mode between World Time (battery indicator) and Stopwatch.

• While the battery indicator is displayed, press button A change to the stopwatch mode and start measurement.
• After the stopwatch is reset, pressing button B can change to the battery indicator display.
- Mode cannot be changed while the stopwatch is measuring. Please reset the stopwatch before change mode.
• One minute after resetting the stopwatch, mode will automatically change to the battery indicator.

**World time (Battery indicator)**

Mode hand

Center hand

Button A

Press Button **A**

Press Button **B**

World time hands (hour, minute)

**Stopwatch**

Mode hand

Stopwatch 1/5 second hand

Button B

Stopwatch hands(hour, minute)

| Stopwatch function of the buttons | |
|---|---|
| A | Start / Stop /Restart |
| B | Reset / Split / Split release |

## ◆ How to set the date

Tips: If the date change during daytime, it happens  a.m./p.m. is wrongly set. Advance the hour hand by 12 hours.

(1) Check that the hour and minute hands are not pointing between 9:00 p.m. and 1:00 a.m.
   - Do not set the date between 9:00 p.m. and 1:00 a.m..
   - If the hour and minute hands are between 9:00 p.m. and 1:00 a.m. , move them past 1:00 a.m.

(2) Pull the crown out to the 1st click position.
   - At this time, Pressing button B will move the alarm hands. please note.

(3) Turn the crown clockwise to set the date.

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


## ◆ 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.
   - The center hand will move to the selected world time city. The mode hand indicates "WT".

(2) Turn the crown to set the hour and minute hands.  Pay attention to am/pm, when setting the hour and minute hands to the current time.
   - 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.

(3) Press button A, set the center hand to point at the world time city.
   - With each press of button A, the city hand advances by one city. Pressing and holding it will not fast forward.

(4) Press button B, set the world time to the time of city.
   - With each press of button B, the hand is advanced by one minute. Fast forward while the button is pressed.

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


## ◆ How to use the world time

The cities around the world are displayed in 24hour format.
Cannot be used while the stopwatch is measuring.

### ■ How to select a world time city

(1) Press button B for longer than 3 seconds.
   - The mode hand moves to the "WT" position. The center hand moves to current City.
   - If no operation is performed for 10 seconds or more, the display will automatically return to the battery indicator.

(2) Press button A or B, select a world time city by center hand.
   - With each press the button, the center hand moves one City (time zone).
     Button A: Clockwise   /   Button B: Counterclockwise

Tips: When the City is observing daylight saving time, select the city that is adjacent clockwise to compensate for +1 hour time difference.

(3) After 10 seconds, mode will automatically change to the battery indicator.


### ■ The list of world time city and time difference

| Center hand positions (Second) | Representative cities | | Time difference from UTC (Hours) | Center hand positions (Second) | Representative cities | | Time difference from UTC (Hours) |
|---|---|---|---|---|---|---|---|
| 0 | UTC / London | LON | 0 | 34 | Midway | MDY | -11 |
| 3 | Paris / Rome | PAR | +1 | 36 | Honolulu | HNL | -10 |
| 6 | Cairo | CAI | +2 | 38 | Anchorage | ANC | -9 |
| 8 | Jeddah | JED | +3 | 41 | Los Angeles | LAX | -8 |
| 11 | Dubai | DXB | +4 | 43 | Denver | DEN | -7 |
| 13 | Karachi | KHI | +5 | 45 | Chicago | CHI | -6 |
| 15 | Dhaka | DAC | +6 | 48 | New York | NYC | -5 |
| 18 | Bangkok | BKK | +7 | 50 | Santo Domingo | SDQ | -4 |
| 21 | Beijing | BJS | +8 | 53 | Rio de Janeiro | RIO | -3 |
| 23 | Tokyo | TYO | +9 | 55 | Fernando de Noronha | FEN | -2 |
| 25 | Sydney | SYD | +10 | 57 | Azores | PDL | -1 |
| 28 | Noumea | NOU | +11 | | | | |
| 30 | Wellington | WLG | +12 | | | | |
| 32 | Nuku' alofa (Tongatapu) | TBU | +13 | | | | |

# ◆ How to use the alarm

This product is 24 hour daily alarm. Can be used in battery indicator mode.
The alarm time can be set in 1 minute increments.

### ■ How to set/change alarm time

Before using the alarm, check that the alarm time indicate world time.
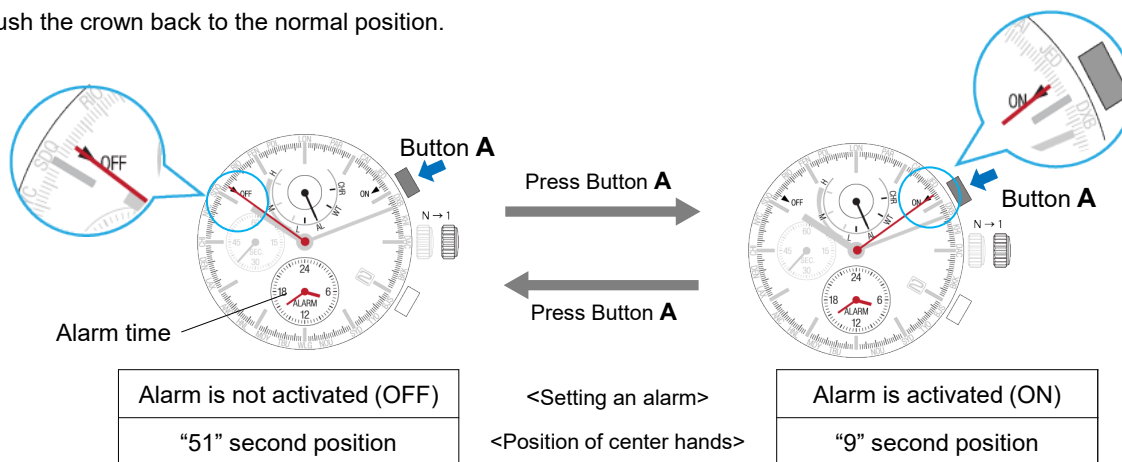- If the alarm time is a world time, follow the steps in "How to set time".

(1) Pull the crown out to the 1st click position.
- The alarm time indicate the currently set alarm time.
- The mode hand indicates "AL".

(2) Press button B to set the alarm hands to an alarm time.
- While keep button B pressed to advance the alarm hands quickly.

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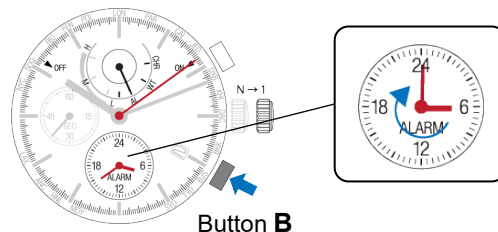


Button **B**

### ■ How to switch the alarm ON/OFF

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

(2) Press button A.
- Each time you press Button A it will toggle between on and off.

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



Button **A**

Alarm time

Press Button **A**

Press Button **A**

Button **A**

| Alarm is not activated (OFF) | <Setting an alarm> | Alarm is activated (ON) |
|---|---|---|
| "51" second position | <Position of center hands> | "9" second position |

### ■ How to stop the alarm

When the set time arrives, the alarm sounds for 20 seconds.
Press button A or B to stop the sounding alarm.

- 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 preview the sound demonstration

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

(2) Press and hold button A for longer than 3 seconds.
- The alarm sound can be heard while the button A is kept pressed.

(3) Push the crown back to the normal position.
- The stopwatch cannot be operated while the alarm is sounding.

## ◆ 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.
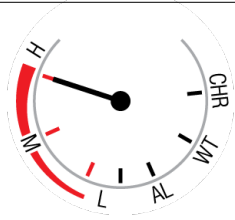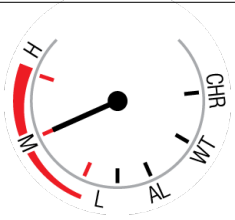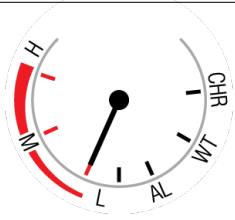
- **Running time**
  Expected running time from full charge to stoppage will be around 6 months.

- **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 world time.
  • Stopwatch measurement.
  - During measurement, it will automatically reset and change to the battery indicator.
  • Setting the alarm time and sound.
  - Automatically it will change to "OFF".
  • 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℃.

- **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.
 • Stopwatch measurement is started by pressing button A while  the battery indicator is displayed.
 • 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.

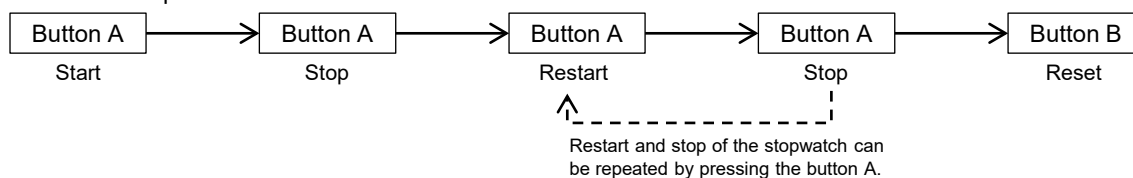■ Checking the stopwatch hand position
 • Before using the stopwatch, be sure to check that the crown is set at the normal position and that the stopwatch hands are reset to the "0" .
  - If the stopwatch hands do not return to the "0" position when the stopwatch is reset to "0", follow the procedure in "Stopwatch hand position adjustment".
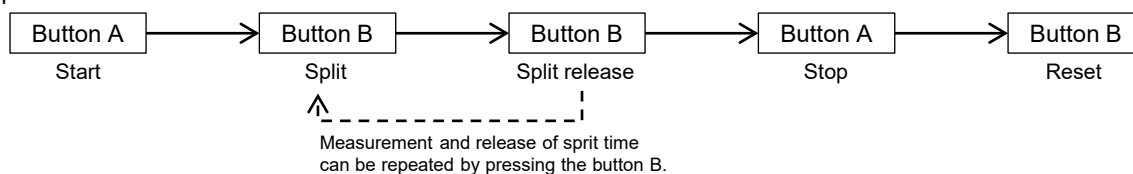
■ How to measure of the stopwatch
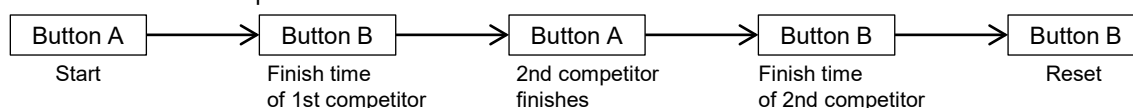 ➢ Standard measurement

| Button A | → | Button A | → | Button B |
|---|---|---|---|---|
| Start | | Stop | | Reset |

 ➢ Accumulated elapsed time measurement

| Button A | → | Button A | → | Button A | → | Button A | → | Button B |
|---|---|---|---|---|---|---|---|---|
| Start | | Stop | | Restart | | Stop | | Reset |

Restart and stop of the stopwatch can be repeated by pressing the button A.

 ➢ Split time measurement

| Button A | → | Button B | → | Button B | → | Button A | → | Button B |
|---|---|---|---|---|---|---|---|---|
| Start | | Split | | Split release | | Stop | | Reset |

Measurement and release of sprit time can be repeated by pressing the button B.

 ➢ Measurement of two competitors

| Button A | → | Button B | → | Button A | → | Button B | → | Button B |
|---|---|---|---|---|---|---|---|---|
| Start | | Finish time of 1st competitor | | 2nd competitor finishes | | Finish time of 2nd competitor | | Reset |

## ◆  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.

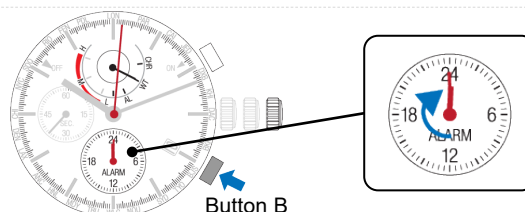**(2) Press button A  for longer than 3 seconds.**
- The stopwatch hands (hour, minute, 1/5 second) and mode hand move to the reference positions.
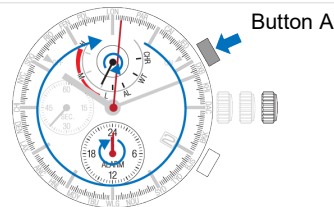
Button A

Adjust the stopwatch hands (hour, minute).

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

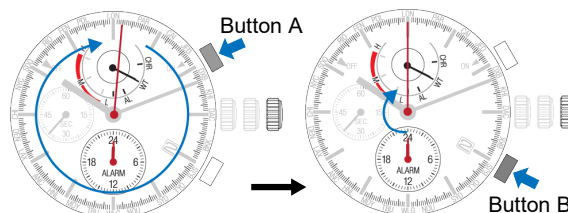Tips: When setting the hands, the hand moves quickly if the button B is kept pressed.

Button B

Adjust the stopwatch 1/5 second hand.

**(4) Press button A.**
- The stopwatch 1/5 second hand turns a full round and can now be set to the correct position.

Button A

**(5) Press button B repeatedly to 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.
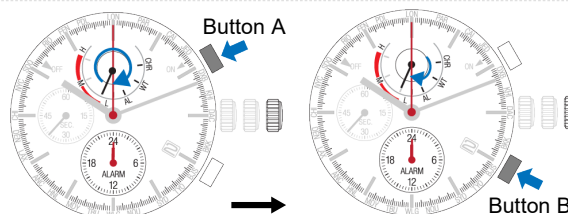
Button B

Adjust the mode hand.

**(6) Press button A.**
- The mode hand turns a full round and can now be set to the correct position.

Button A

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

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

Button B

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

**(9) Set the current time and world time and date.**
- 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 the 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 date"
3. "How to set the time"
4. "How to use the world time"
5. "How to set/change the alarm time"

Button A

Button B

Press at the same time for longer than 2 seconds.