

TECHNICAL INFORMATION

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CITIZEN QUARTZ

Cal. No. C900

**This watch needs to be repaired by the manufacturer,
when it has any trouble.**

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<This watch needs to be repaired by the manufacturer, when it has any trouble.>
 Ask CITIZEN Service Center for any repair, including replacement of the battery.

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§1. FEATURES

This watch is a combination watch equipped with a water depth gauge that measures water depth during diving, and an altimeter that measures altitude during mountain climbing and other high altitude activities.

<Water Depth Measurement Function>

- Begins measurement of water depth automatically simply by wearing on the wrist and entering the water.
- Measures water depth in 0.1m units down to a maximum depth of 80m.
- Automatically records diving data (log data) of the four most recent dives.
- Equipped with various warning functions necessary for ensuring safe diving.

<Altitude Measurement Function>

- Measures altitude in 5m units over a range from -300m to 6,300m.
- Measures barometric pressure in 1 hPa (1 hectopascal = 1 millibar) units over a range from 452 hPa to 1050 hPa.
- Equipped with an altitude memo function that enables altitude, barometric pressure, time and other data to be stored in memory for a maximum of six measurement points.

<Other Functions>

- Temperature measurement function that allows measurement of water temperature while diving and air temperature.
- Chronograph function (24 hour register) able to measure time in 1/100 second units.
- 24-hour alarm function

All repairs performed on this watch, including battery replacement, are to be performed by a Citizen Service Center since special techniques and equipment are required for making final adjustments and checks after repairs (including battery replacement) have been completed. Please contact a Citizen Service Center when having your watch repaired or inspected.

§2. SPECIFICATIONS

Caliber No.	C900	
Type	Combination quartz watch	
Movement size (mm)	ø32.2 x 7.9t	
Accuracy (At normal temperature)	±20 sec/month (+5°C to +35°C/41°F to 95°F)	
Water depth measurement accuracy	±(3% of displayed value +30cm), provided that the working temperature is constant * Guaranteed accuracy temperature range: +10°C to +40°C (the accuracy of water depth measurement is affected by changes in the temperature at which the watch is worn)	
Altitude measurement accuracy	Accuracy when altitude is corrected at a constant temperature: Altitude of 3000m or less: ±(5% of altitude difference +10m) Altitude of 3001m or more: ±(8% of altitude difference +10m) * Effects of temperature changes are shown below (per 10°C) Altitude: Max. 120m. * Relative accuracy when measured in compliance with standard atmosphere. * Guaranteed accuracy temperature range: -20°C to +40°C	
Barometric pressure measurement accuracy	Altitude of 3000 m or less: ± (5% of barometric pressure difference + 1hPa) Altitude of 3001 m or more: ± (8% of barometric pressure difference + 1hPa) * Effects of temperature changes are shown below (per 10°C). Barometric pressure: 1hPa max. * Guaranteed accuracy temperature range: -20°C to +40°C	
Temperature measurement accuracy	Displayed value ±3°C	
IC	C/MOS-LSI 1 unit	
Operating temperature range	-20°C to +60°C (-4°F to 140°F)	
Converter	Step motor	
Time adjustment	No adjustment terminal for market use	
Measurement gate	10 sec.	
Display functions	Time	Hour, Minute, Second
	Calendar	Date, day (year and month displayed only during setting)
	Alarm	Hour, Minute ON/OFF
	Chronograph	Hours, Minutes, Seconds, 1/100 seconds, Split time (24 hour register)
	Log memo	Log data of four most recent dives; number of dive, dive date, dive starting time, maximum depth, dive time, average depth, minimum water temperature
	Depth alarm	1 to 80m (1m units), number of times alarm sounds (0-5 times or continuously)

Display functions	Dive time alarm	5 to 95 minutes (5 minute units)
	Altitude memo	Maximum of 6 points can be stored in memory as altitude memos; point number (1 through 6), memo date, memo time (hours, minutes), altitude, barometric pressure, temperature, and altitude and temperature differences (as compared with the previous memo)
	Surface mode	Measurement of elapsed time after diving (24 hour timekeeping system)
	Temperature measurement	-9.9°C to +40.0°C (0.1°C units)
	Altitude measurement	-300m to +6300m (5m units)
	Barometric pressure measurement	452 hPa to 1050 hPa (1 hPa units) * Only use the display of barometric pressure as a rough indicator of changes in barometric pressure.
	Elapsed time measurement	24 hour timekeeping system (1 minute units)
	Water depth measurement	1.0m to 80.0m (0.1m units)
	Diving time measurement	00 minutes 00 seconds to 99 minutes 59 seconds (1 second units)
Other functions		Altitude correction function, barometric pressure change display, water sensor, rapid ascent warning function, abnormal depth warning function, water sensor check warning function, low battery warning function and button function display
Battery	Part No., Code	200-205 (CR2025)
	Life time	Approx. 2 years Reference using condition Alarm: 15 sec/day, Temperature measurement: 3 min/day, Water depth measurement: 50 times/year (1 hour/time), Altitude measurement: 100 times/year (Continuous altitude measurement: 10 min/time, Altitude measurement for fixed time: 8 hours/time)

* Specifications are subject to change without notice.

§3. HANDLING THE WATCH

1. Digital Display

The digital display of this watch uses three major modes consisting of the "Standard Mode", "Water Depth Measurement Mode" and "Altitude Measurement Mode". There are several other modes (functions) contained in the "Standard Mode", such as the time, calendar and alarm modes. Please refer to the respective sections describing the use of each mode for further details.

[Standard Mode]

- **Time/Calendar [TME]**

This mode is used to display and correct the time and date. Measurement of temperature and barometric pressure are also performed in this mode.

- **Alarm [ALM]**

This mode is used to switch the alarm on and off, and set the alarm time.

- **Chronograph [CHR]**

This mode is used to measure and display time with the chronograph function (measures up to 24 hours).

- **Log Mode [D.log]**

This mode is used to recall and display the four most recent sets of diving data automatically stored in memory during water depth measurement.

- **Dive Alarm [D.AL]**

This mode is used to display and set the depth alarm and dive time alarm.

- **Altitude Mode [?. 00]**

This mode is used to recall and display the altitude memories of six points stored in memory in the altitude measurement mode.

- **Surface Mode**

This mode is used to automatically measure and display the elapsed time until 24 hours from completion of diving. (This mode only displays 24 hours of elapsed time after making a continuous dive to a depth of 1m or more for at least 3 minutes.)

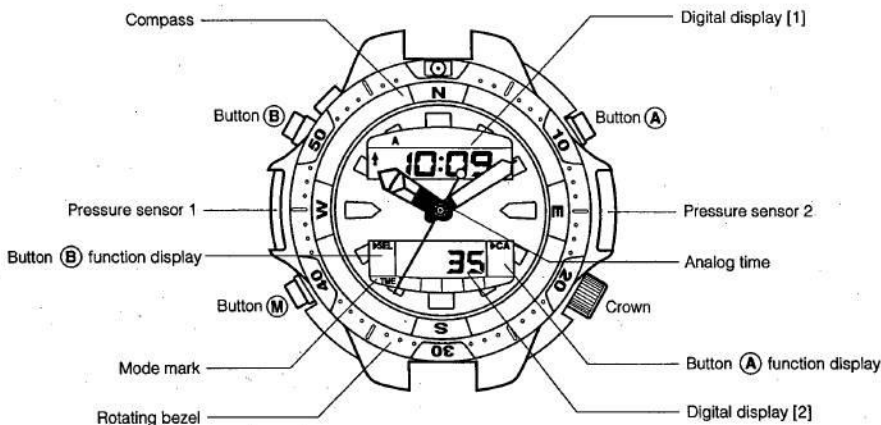
[Water Depth Measurement Mode]

This mode is used when diving. It is used to measure and display current water depth and dive time at 1 second intervals while diving.

[Altitude Measurement Mode]

This mode is used when mountain climbing and so forth. It is used to measure and display altitude and barometric pressure either at 1 second or 15 minute intervals. In addition, this mode is also used to correct altitude to measure altitude more accurately.

2. Name of Parts



Button (A) function display: ...Functions of button (A) are displayed with marks.

Button (B) function display: ...Functions of button (B) are displayed with marks

Crown:.....Used to set analog time

Analog time:Continuously displays the current time (hours, minutes, seconds) with the respective hands.

Pressure sensor 1:Detects water pressure to measure and display water depth.

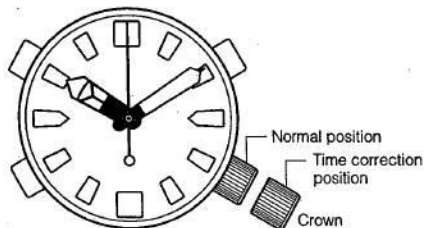
Pressure sensor 2:Detects barometric pressure to measure and display altitude and barometric pressure.

Water sensor:.....The watch automatically switches to the water depth measurement mode when this water sensor gets wet (except during display in the altitude measurement mode, during chronograph measurement and when correcting settings in any of the modes).

Rotating bezel:.....Elapsed time can be measured by using this rotating bezel.

Compass:A rough approximation of direction can be determined from the position of the sun by using this compass (only applicable to models equipped with a compass).

3. Setting Analog Time



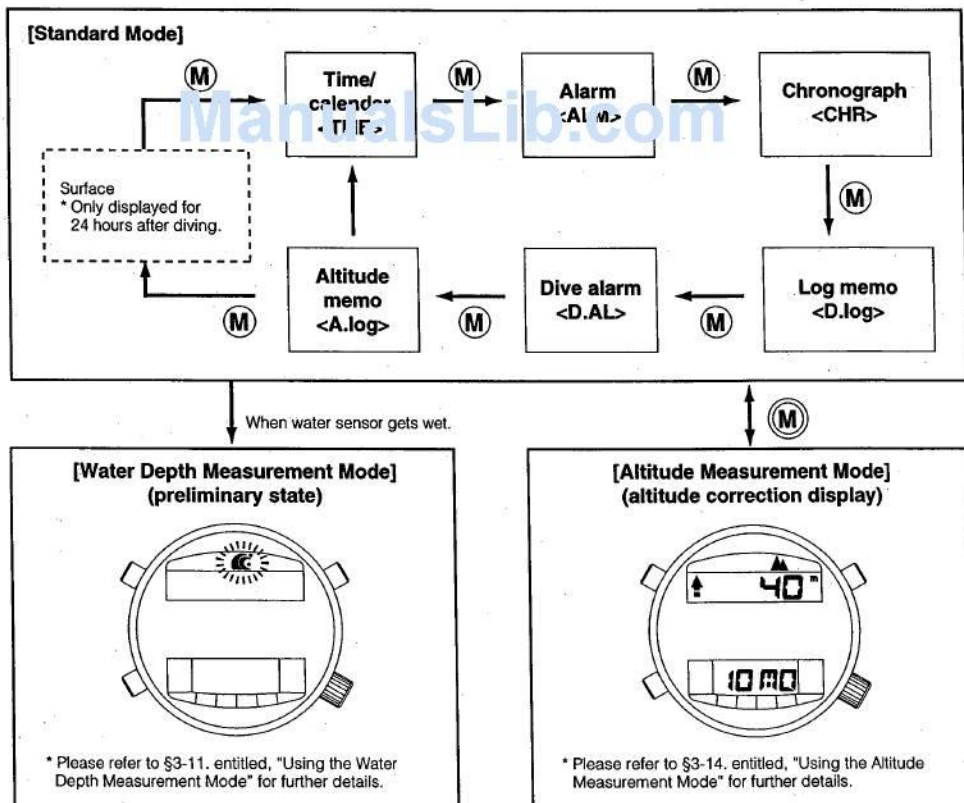
- (1) After unscrewing the crown to loosen it, pull the crown out. The second hand stops when the crown is pulled out.
- (2) Turn the crown to set the time.
- (3) The second hand starts to move when the crown is returned to the normal position.
- (4) Securely screw the crown in to lock in position.

<Screw-Locking Crown>

- Unscrew the crown to loosen it before turning.
- Always make sure that the crown is screwed in and locked in position after turning.
- Do not press any of the buttons with the crown pulled out.
- Do not attempt to turn the crown when there are water droplets on the watch or when underwater. This can allow water to enter inside the watch and impair water resistance.

4. Changing the Mode

- The mode changes in the following order each time button **M** is pressed: Time/calendar → alarm → chronograph → log memo → dive alarm → altitude memo → surface (after diving).
- When the water sensor of this watch becomes wet in any of the modes of the standard mode (except during chronograph measurement), the mode automatically changes to the water depth measurement mode.
- When button **M** is pressed for at least 2 seconds in any of the modes of the standard mode (except during chronograph measurement), the mode changes to the altitude measurement mode (altitude correction display).

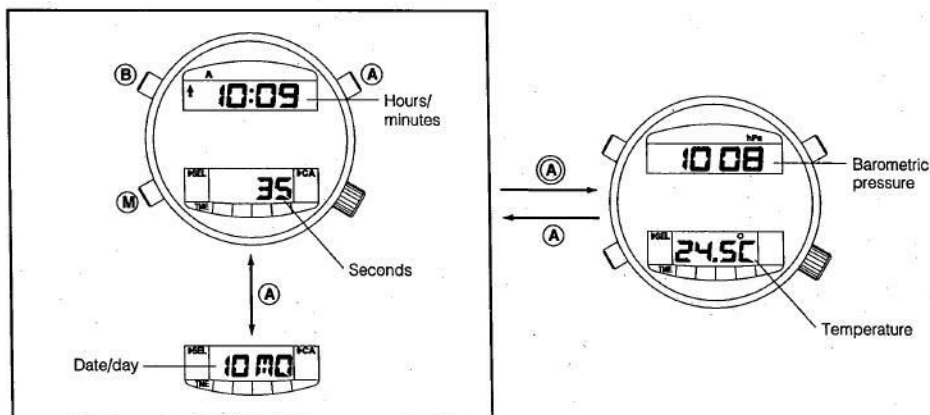


- * The surface mode only displays 24 hours of elapsed time after completion of a continuous dive of at least 3 minutes duration. In other cases, pressing button (M) when the watch is in the altitude memo mode switches the watch to the time/calendar mode.
- * When none of the buttons are pressed for at least 3 minutes when the watch is in the alarm mode, reset state of the chronograph mode, log memo mode, dive alarm mode or altitude memo mode, the watch automatically returns to the time/calendar mode.
- * The watch cannot be changed to the water depth measurement mode or altitude measurement mode when the low battery warning function has been activated.

5. Using the Time/Calendar Mode

This mode is used to display the current time and date.

- The watch alternates between displaying "hours, minutes and seconds" and "hours, minutes, date and day" each time button (A) is pressed during the normal display.
- Temperature and barometric pressure are displayed for 3 minutes when button (A) is pressed for at least 2 seconds during the normal display.
- * Pressing button (A) again during display of temperature and barometric pressure returns the watch to the time/calendar display.
- * Although the measured value of barometric pressure does not change during the time the value is displayed, the measured value of temperature is updated every 10 seconds.



A. Setting the Digital Time and Date

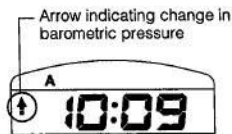
- (1) Press button **(M)** to switch to the time/calendar mode.
- (2) Press button **(B)** for at least 2 seconds. The display flashes indicating that the time and date can be set. The location of the display that is flashing indicates the characters that can be set.
- (3) The location on the display that is flashing changes in the order shown below each time button **(B)** is pressed.
 - Seconds → minutes → hours → month → date → day → year → 12/24-hour timekeeping system
- (4) Press button **(A)** to set the characters at the location on the display that is flashing. (Pressing button **(A)** continuously causes the characters to advance rapidly.)
 - When setting the seconds, pressing button **(A)** returns the seconds to "00" seconds. (When this is done while the seconds are between 30 and 59 seconds, the minutes advance by 1 minute.)
 - The 12/24-hour timekeeping system is switched between 12 and 24 hours each time button **(A)** is pressed.
- (5) Press button **(M)** to return to the normal display.

- * The year can be set from 1998 to 2099.
- * Make sure that AM [A] and PM [P] are set correctly when using the 12-hour timekeeping system.
- * If none of the buttons are pressed for about 3 minutes when the display is flashing, the watch automatically returns to the normal display.
- * Pressing button **(M)** when the display is flashing immediately returns the watch to the normal display.
- * The calendar functions is completely automatic. Once it is set, it does not require adjustment for the end of the month or leap years.

B. Temperature Measurement

- Since the thermometer installed in this watch measures and displays temperature inside the watch, it is affected by body temperature when the watch is worn. In order to measure air temperature accurately, remove the watch from your wrist and allow it to acclimate to the environment in which temperature is to be measured for at least one hour.
- The measured temperature value of this watch should only be used as a rough indicator of temperature.

C. Display of Changes in Barometric Pressure



This watch is equipped with a function that automatically measures barometric pressure on the hour. This function informs the wearer of whether the current barometric pressure is higher or lower than that measured for the previous hour with an arrow mark. This function is used as a rough indicator of changes in barometric pressure.

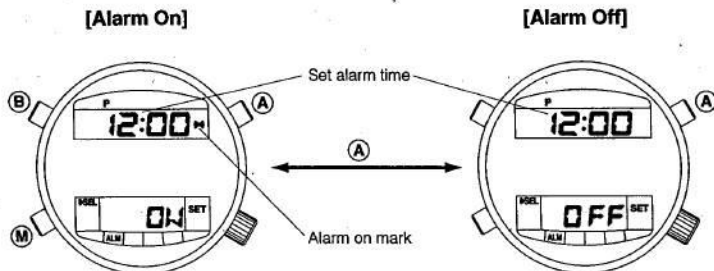
The change in barometric pressure is displayed in the time/calendar mode.

- When there has been a large rise in barometric pressure: ↑
- When there has been a small rise in barometric pressure: ▲
- When there has been a large drop in barometric pressure: ↓
- When there has been a small drop in barometric pressure: ▼
- When there has been little change in barometric pressure: No arrow

- * The barometric pressure change display is cancelled when the watch is changed to the "Altitude Measurement Mode" or when all-reset is performed. In this case, the change in barometric pressure is displayed starting on the next hour.
- * Barometric pressure is not measured exactly on the hour when using chronograph measurement or when the watch is in the altitude measurement mode or water depth measurement mode. In this case, the change in barometric pressure is displayed based on the results of comparison with that measured two hours ago.

6. Using the Alarm Mode

Once the alarm is set (switched on), it sounds for 15 seconds at the same time every day. When the alarm sounds, it can be turned off by pressing any button.



<Switching the Alarm On and Off>

The alarm can be turned ON (set) and OFF (canceled) by pressing button (A).

When the alarm has been set, the alarm on mark (M) is continuously displayed on the digital display.

A. Setting the Alarm Time

- (1) Press button **(M)** to switch to the alarm mode.
- (2) Press button **(B)** for at least two seconds. The "hours" flash.
- (3) Press button **(A)** to set the "hours". (Pressing button **(A)** continuously causes the characters to advance rapidly.)
- (4) Press button **(B)**. The "minutes" flash.
- (5) Press button **(A)** to set the "minutes".
- (6) Press button **(M)** to return the watch to the normal display.

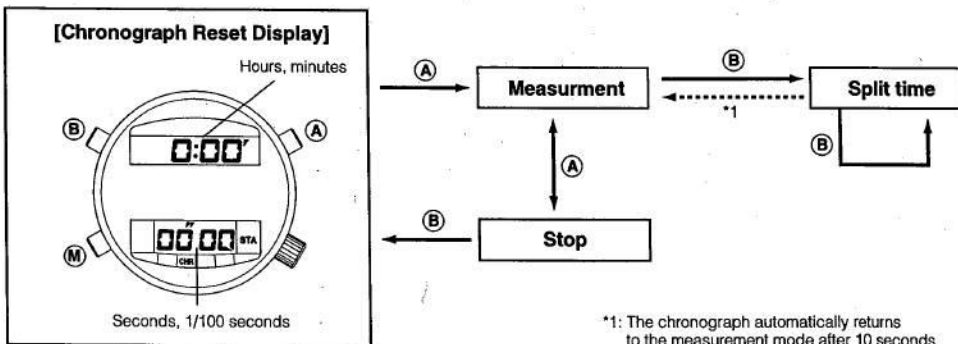
- * If none of the buttons are pressed for about 3 minutes when the display is flashing, the watch automatically returns to the normal display.
- * Pressing button **(M)** when the display is flashing immediately returns the watch to the normal display.
- * If none of the buttons are pressed for about 3 minutes when in the alarm mode, the watch automatically returns to the time/calendar mode.

<Alarm Tone Monitor>

The alarm tone can be monitored by pressing button **(A)** in the alarm mode. The alarm tone can be heard for as long as button **(A)** is pressed.

7. Using the Chronograph Mode

The chronograph function provided with this watch is able to measure elapsed time in 1/100 second units up to a maximum of 23 hours, 59 minutes and 59 seconds. After 24 hours have elapsed, the chronograph returns to the reset display (0:00'00"00) and stops.



*1: The chronograph automatically returns to the measurement mode after 10 seconds.

A. Chronograph Measurement

<Elapsed Time>

- (1) Press button **(M)** to switch to the chronograph mode.
- (2) Press button **(A)** to start or stop the chronograph.
- (3) Press button **(B)** when the chronograph is stopped to reset.

<Split Time>

- (1) Press button **(M)** to switch to the chronograph mode.
- (2) Press button **(A)** to start or stop the chronograph.
- (3) Pressing button **(B)** during measurement of elapsed time displays the split time for about 10 seconds. The most recent split time is measured and displayed whenever button **(B)** is pressed. (The SP mark flashes when split time is being displayed.)
- (4) Press button **(B)** while the chronograph is stopped to return the watch to the chronograph reset display.

☆ Confirmation Tone

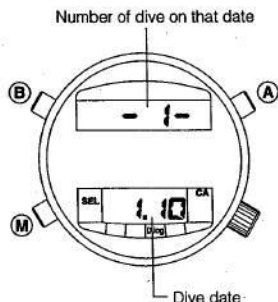
The watch produces a confirmation tone whenever the chronograph is started, stopped, reset or the split time is displayed.

- * If none of the buttons are pressed for about 3 minutes during the chronograph reset display, the watch automatically returns to the time/calendar mode.
- * The mode cannot be switched during chronograph measurement (including when split time is being displayed). However, when the mode is switched by pressing button **(M)** when the chronograph is stopped, the time when the chronograph was stopped is maintained.

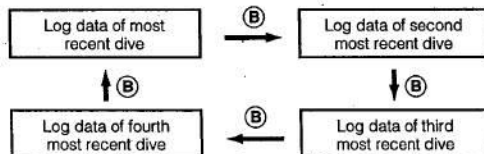
8. Using the Log Memo Mode

This watch automatically stores the log data from one dive (number of dive, dive date, dive starting time, maximum depth, dive time, average depth, minimum water temperature) in memory when it is worn while diving. Log data from a maximum of the four most recent dives can be recalled and displayed.

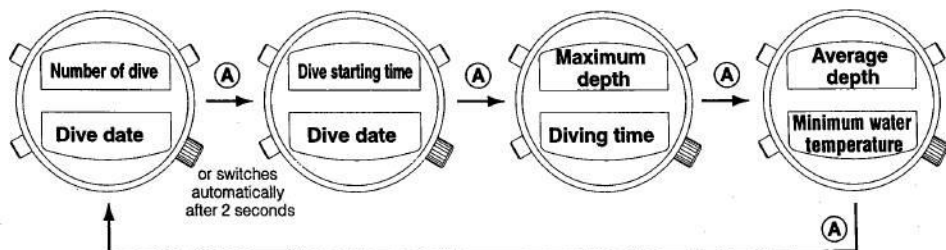
A. Recalling Log Data



- (1) Press button **(M)** to switch to the log memo mode.
- (2) Each time button **(B)** is pressed, the watch displays the four most recent sets of log data starting with the most recent log data and going back in order.



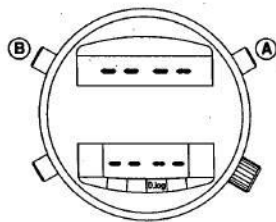
- (3) The display changes in the order shown below each time button **(A)** is pressed. The log data of one dive is displayed using four separate displays.



Whenever a new dive is started, the log data of the oldest of the four sets of log data is automatically deleted. It is recommended that you record necessary data in a log book or other record beforehand.

- * A series of hyphens (----) is displayed when there is no log data stored in memory.
- * When there are less than four sets of log data in memory, the log data stored in memory is repeatedly displayed whenever button **(B)** is pressed.
- * When there has been an abnormality or error in water depth measurement, the displays of maximum depth and average depth flash or the letters "ER" are displayed.
- * If none of the buttons are pressed for a while in the log memo mode, the watch automatically returns to the time/calendar mode.

B. Deleting Log Data



All log data is deleted by simultaneously pressing button **(A)** and **(B)** for at least 2 seconds. A tone confirming deletion of log data sounds at this time.

- * Individual sets of log data cannot be deleted.

C. Explanation of Log Data Terms

- 1. Number of dive:** The number shown indicates the number of the dive made on that day.
* The dive count starts over from 1 when the day changes.
- 2. Dive date:** Date on which the dive was made (month, date).
- 3. Dive starting time:** Time when measurement of water depth started (when water depth exceeded 1 meter).
- 4. Maximum depth:** Depth at the deepest point of the dive.
- 5. Dive time:** Total amount of elapsed time while diving at a depth of 1 meter or more. Measurement of dive time stops when the water depth becomes less than 1 meter. It continues from the time it is stopped if diving is resumed at a depth of 1 meter or more within 10 minutes after measurement of dive time stopped.
- Dive time is measured up to a maximum of 99 minutes, 59 seconds. It continues measuring elapsed time from 00 seconds after 100 minutes have elapsed.
- 6. Average depth:** Average depth for a single dive.
- 7. Minimum water temperature:** The lowest water temperature for a single dive.

9. Using the Dive Alarm Mode

The dive alarm mode is a depth alarm and a dive time alarm. When the alarm sounds for either the depth alarm or dive time alarm, it can be stopped by pressing any button.

<Depth Alarm Function>

The alarm sounds for a maximum of 15 seconds when the set depth is reached while diving. After the alarm has sounded once, it continues to sound at 1 minute intervals (for the set number of times) when diving is continued beyond the set depth. The alarm stops sounding when the diver returns to a depth shallower than the set depth.

- Depth alarm setting range: 1m to 80m (in 1m units)
- Number of times alarm sounds: 1 to 5 times, ON (sounds continuously for 15 seconds at 1 minute intervals), OFF (does not sound)

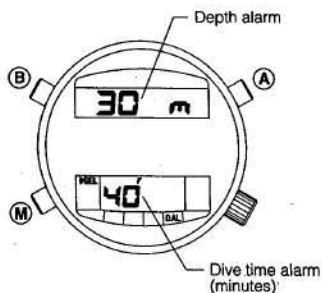
<Dive Time Alarm Function>

The alarm sounds for 15 seconds when the set dive time elapses after starting a dive. This alarm sounds only once.

- Setting range: 5 to 95 minutes (5 minute increments), -- (Alarm does not sound)

- * This watch is also equipped with a rapid ascent warning function that sounds an alarm when the ascent rate while diving exceeds 1.5 meters in 10 seconds.
- * Caution is required when using these alarms since they may be difficult to hear depending on surrounding conditions (air bubbles, etc.) and the manner in which the watch is worn.

A. Setting the Depth Alarm and Dive Time Alarm



- (1) Press button **(M)** to switch to the dive alarm mode.
- (2) Press button **(B)** for at least 2 seconds.
The dive time alarm display changes to a display indicating the number of times the alarm sounds, and the depth display flashes.
- (3) Press button **(A)** to set the depth. (Pressing button **(A)** continuously causes the characters to advance rapidly.)
Each time button **(A)** is pressed, the depth increases by 1 meter.
- (4) Press button **(B)**. The display indicating the number of times the alarm sounds flashes.
- (5) Press button **(A)** to set the number of times the alarm sounds.
 - When desiring to have the depth alarm sound repeatedly, set the characters to "ON", and when desiring to have the alarm not sound at all, set the characters to "OFF".
- (6) Press button **(B)**. The dive time display flashes.
- (7) Each time button **(A)** is pressed, the dive time increases in 5 minute increments.
 - When desiring to have the dive time alarm not sound at all, set the dive time to "--".
- (8) Press button **(M)** to return the watch to the normal display.

- ManualsLib.com**
- * If none of the buttons are pressed for about 3 minutes when the display is flashing, the watch automatically returns to the normal display.
 - * Pressing button **(M)** when the display is flashing immediately returns the watch to the normal display.
 - * If none of the buttons are pressed for about 3 minutes when the watch is in the dive alarm mode, it automatically returns to the time/calendar mode.

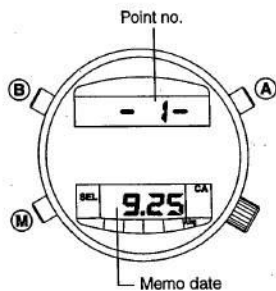
<Dive Alarm Monitor>

Each of the alarm tones of the depth alarm, dive time alarm and rapid ascent warning alarm can be monitored for about 4 seconds each in the order by pressing button **(A)** in the dive alarm mode. Each alarm tone can be heard in sequence for as long as button **(A)** is pressed.

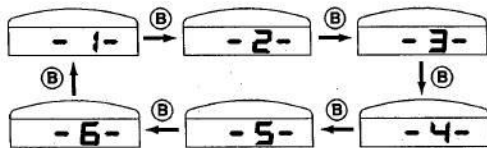
10. Using the Altitude Memo Mode

In the mode, point memos (point number, memo date, memo time, altitude, barometric pressure, temperature and altitude and temperature differences as compared with the previous point) can be recalled and displayed for a maximum of six locations previously stored in memory during altitude measurement.

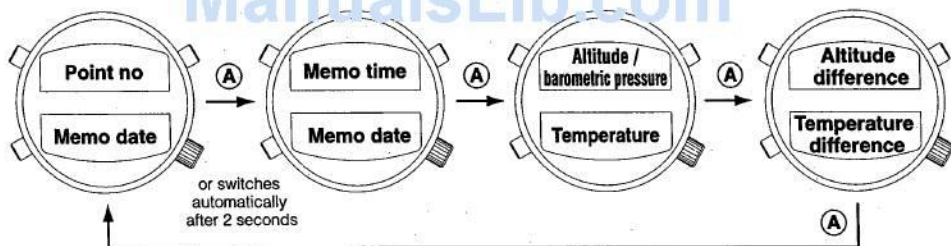
A. Recalling a Point Memo



- (1) Press button **(M)** to switch to the altitude memo mode.
- (2) The point number changes in order starting with the oldest point memo each time button **(B)** is pressed.



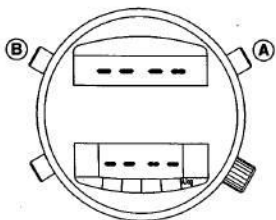
- (3) The display changes in the order shown below each time button **(A)** is pressed. The contents of one point memo are displayed using four separate displays.



A maximum of six points can be stored in memory as point memos. When more point memos are necessary, save the new memo in the altitude measurement mode after first deleting all point memos in memory.

- * Altitude and barometric pressure are alternately displayed. Altitude is displayed in "m", while barometric pressure is displayed in "hPa".
- * When displaying altitude and temperature differences, a comparison is made with the values of the previous point number. A "↑" is displayed if the altitude or temperature has risen, and a "↓" is displayed if the altitude or temperature has fallen. A series of hyphens (---) is displayed for the altitude and temperature differences of point no. 1 since there is no previous data for comparison.
- * A series of hyphens "----" is displayed when there are no point memos stored in memory.
- * When there are less than six memos in memory, only the point memos stored in memory are repeatedly displayed whenever button **(B)** is pressed.
- * If none of the buttons are pressed for about 3 minutes in the altitude memo mode, the watch automatically returns to the time/calendar mode.

B. Deleting a Point Memo

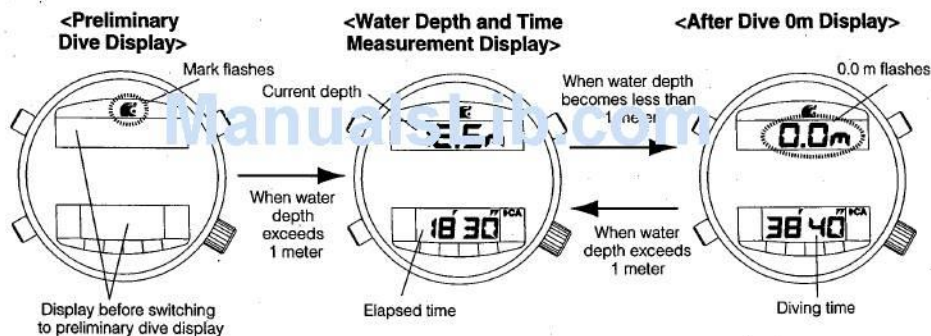


All point memos are deleted by simultaneously pressing buttons **A** and **B** for at least 2 seconds. A tone confirming deletion of point memos sounds at this time.

* Individual point memos cannot be deleted.

11. Using the Water Depth Measurement Mode

When the water sensor gets wet in any of the standard modes (except during chronograph measurement), the watch automatically switches to the water depth measurement mode (preliminary dive display). When water depth exceeds 1 meter during the preliminary dive display, water depth measurement begins, and water depth is measured once every second.



- During the preliminary dive display, the mode displayed prior to switching to the preliminary dive display is maintained.
- During the water depth measurement display, maximum depth and water temperature are displayed while button **A** is pressed.
- During the after dive 0m display, the maximum depth and minimum water temperature of the current dive are displayed while button **A** is pressed.

<Terminating Water Depth Measurement Mode>

- Pressing button **M** for at least 2 seconds during the after dive 0m display returns the watch to the surface mode or time/calendar mode.
- The watch automatically returns to the surface mode or time/calendar mode after about 10 minutes have elapsed during the after dive 0m display. The watch changes to the water depth measurement display when diving is resumed below a depth of 1 meter within 10 minutes after the previous dive.

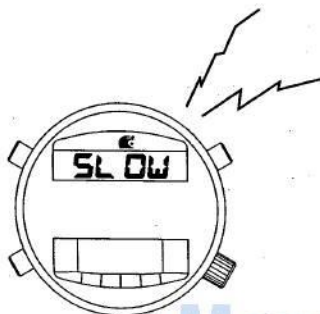
C. Measurement of Water Temperature

When the water depth exceeds 1.0 meter, the watch begins to measure water temperature starting after 1 minute. Water temperature is displayed while button **A** is pressed during water depth measurement.

Measuring range: -9.9°C to $+40.0^{\circ}\text{C}$ (0.1°C units)

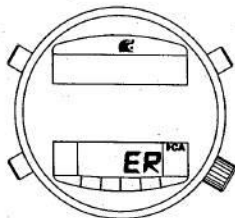
D. Warning Functions During Water Depth Measurement

This watch is equipped with the following three warning functions. These warning functions should be used for reference purposes to ensure safe diving.



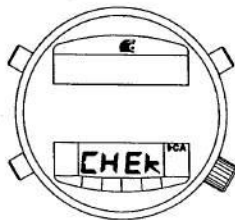
<Rapid Ascent Warning Function>

The rapid ascent warning alarm sounds when the ascent rate while diving exceeds 1.5 meters in 10 seconds. "SLOW" is displayed on the digital display during the time the rapid ascent warning alarm is sounding. The alarm continues to sound until a proper ascent rate is achieved.



<Abnormal Depth, Warning Function>

When water depth changes rapidly by more than 4 meters in 1 second during water depth measurement, the watch interprets this as being an abnormal depth, and "ER" and diving time are alternately displayed on digital display [2]. This display continues until the water depth measurement mode is terminated. "ER" is also displayed when altitude exceeds 4000 meters when on land or when there is an abnormality in the pressure sensor. The watch will not switch to the water depth measurement mode while "ER" is displayed.

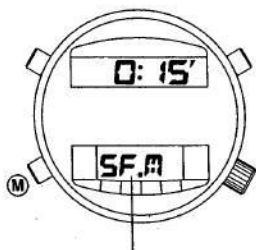


<Water Sensor Check Warning Function>

Once the water sensor has been activated and the watch switches to the preliminary dive display of the water depth measurement mode, and it remains displayed for more than 1 hour without changing to the water depth measurement display, "CHEK" appears on the digital display to urge the wearer to check the water sensor. This display continues until activation of the water sensor is canceled. While "CHEK" is displayed, none of the buttons can be operated except for mode switching and measurement of temperature/barometric pressure in the time/calendar mode.

12. Using the Surface Mode

The surface mode automatically measures elapsed time following completion of a dive for a maximum of 23 hours and 59 minutes. This can be used as a general indicator of the amount of rest time on the surface.



SF.M (abbreviation for surface mode)

- * The surface mode is displayed when the water depth measurement mode is terminated after diving to a depth of more than 1 meter for 3 consecutive minutes in the water depth measurement mode.
- * The surface mode is no longer displayed after 24 hours have elapsed following completion of a dive.
- * When the watch is in the surface mode, none of the buttons can be operated except for switching the mode.



If the watch is switched to the altitude measurement mode within 24 hours after the watch entered the surface mode, "SF.ck" is initially displayed for 10 seconds. The watch then switches to the altitude measurement mode. This is displayed to urge the wearer to check whether or not a suitable rest period has been taken after diving, since moving to a high altitude soon after diving can result in the risk of decompression sickness (DCS).

13. Altimeter Basic Features

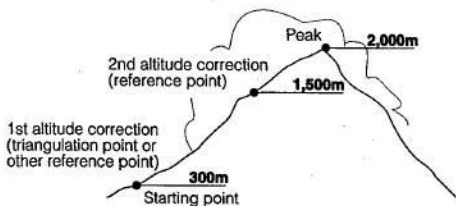
This watch is designed to calculate altitude from changes in barometric pressure using the relationship between barometric pressure and altitude based on the conditions of standard atmosphere*1. "Altitude Correction" is necessary to ensure accurate display of the altitude while using this watch.

*1: Standard Atmosphere

Standard atmosphere refers to the "ICAO Standard Atmosphere" employed by ICAO (International Civil Aeronautics Organization in 1964). It is defined as having a barometric pressure of 1013.25 hPa and air temperature of 15°C at sea level. Actual atmospheric states are constantly changing with time even at the same location.

Barometric pressure (hPa)	Altitude (m)	Temperature (°C)	Temperature difference per 1,000m
540.2	5,000	-17.5	Approx. 6.5°C
616.4	4,000	-11.0	
701.1	3,000	-4.5	
795.0	2,000	2.0	
898.7	1,000	8.5	
1013.25	0	15.0	

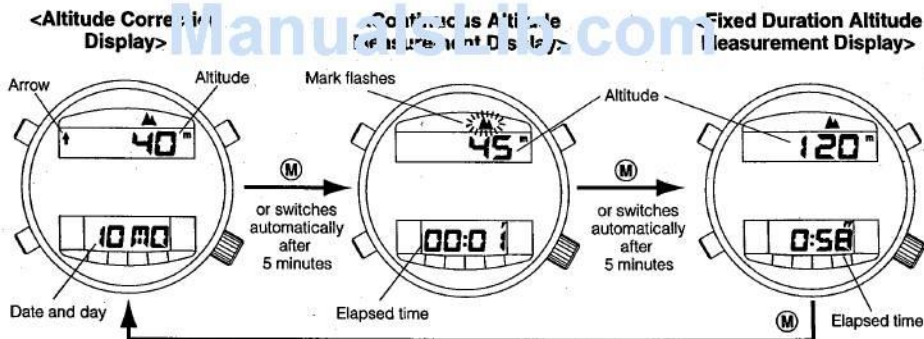
<Altitude Correction>



In order to accurately measure altitude for mountain climbing and so forth, it is necessary to set the displayed altitude to the correct altitude at a location that serve as a reference for correct altitude (triangulation point, first order leveling point or altitude shown on an accurate map). This procedure is referred to as altitude correction. Since the altitude displayed on the watch changes by about 10 meters when barometric pressure changes by 1 hPa (1 hectopascal = 1 millibar), it is necessary to correct altitude several times per day under conditions such as when the weather changes rapidly while mountain climbing.

14. Using the Altitude Measurement Mode

The watch switches to the altitude measurement mode (altitude correction display) when button **M** is pressed for at least 2 seconds in any of the standard modes (except during chronograph measurement). During altitude measurement, altitude and elapsed time from the start of altitude measurement are displayed. In addition, pressing the appropriate buttons allows the watch to save data, including altitude, barometric pressure and time for a maximum of 6 points, in memory in the form of altitude memos.



The altitude measurement mode is composed of the following three displays. The display changes in the order each time button **M** is pressed.

Altitude Correction Display:

The altitude displayed on the watch can be corrected to the actual altitude before and during altitude measurement

Continuous Altitude Measurement Display:

Altitude is measured every second and displayed continuously for 5 minutes, allowing changes in altitude to be monitored continuously.

Fixed Duration Altitude Measurement Display:

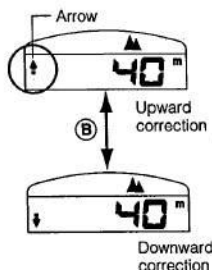
Altitude is measured and displayed every 15 minutes of elapsed time measurement (00, 15, 30 and 45 minutes).

* A series of hyphens "----" is displayed during measurement of altitude and barometric pressure. None of the buttons are operable while "----" is displayed.

<Auto Shift Function>

- When none of the buttons are pressed for about 5 minutes during the altitude correction display, the watch automatically switches to the continuous altitude measurement display.
- When about 5 minutes elapse during the continuous altitude measurement display, the watch automatically switches to the fixed duration altitude measurement display.

A. Altitude Correction



- (1) Press button **(B)** during the altitude correction display to change the direction of the arrow (correcting up or down). Corrections can be made upward when the arrow is pointing up, and downward when the arrow is pointing down.
- (2) Press button **(A)** to correct the altitude. Altitude is corrected in 5m units each time button **(A)** is pressed. Pressing button **(A)** continuously causes the change to advance rapidly.

- * Altitude correction range: -300m to 6300m (in 5m units)

A series of hyphens "----" is displayed when the measured altitude exceeds the altitude correction range. Altitude can be corrected by pressing button **(A)** or **(B)** until it is displayed.

- * After altitude has been corrected, altitude is measured based on this corrected value. This corrected value is maintained until the next time altitude correction is performed.



Always make sure to perform altitude correction at a location where altitude does not change. Since altitude is not measured during the altitude correction display, if altitude changes during altitude correction, the actual altitude and altitude displayed on the watch do not agree, thereby preventing altitude from being measured accurately. In addition, since the altitude and barometric pressure measurements performed by this watch are affected by temperature, only perform altitude correction after allowing the watch to acclimate to the surrounding temperature.

<Deleting Corrected Value>

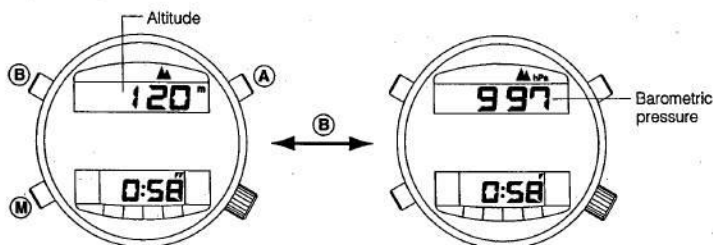
The corrected altitude is deleted by simultaneously pressing buttons **(A)** and **(B)** for at least 2 seconds during the altitude correction display. After the corrected value is deleted, approximate altitude is displayed corresponding to the conditions of standard atmosphere. The altitude displayed at this time differs from the actual altitude.

- * When a series of hyphens "----" are flashing on the altitude correction display, since this may indicate that there is an abnormality in altitude measurement or altitude correction, try deleting the corrected value and repeating the altitude correction procedure.

B. Continuous Altitude Measurement and Fixed Duration Altitude Measurement

<Switching Between Altitude Display and Barometric Pressure Display>

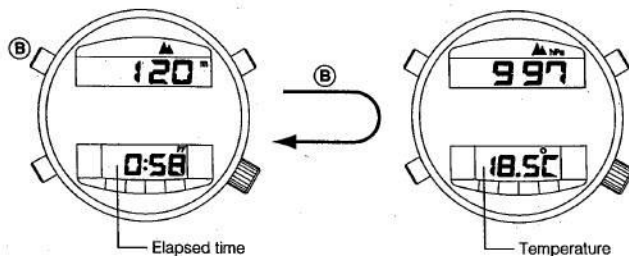
The watch switches between the altitude display and barometric pressure display whenever button **(B)** is pressed during the continuous altitude measurement display or fixed duration altitude measurement display.



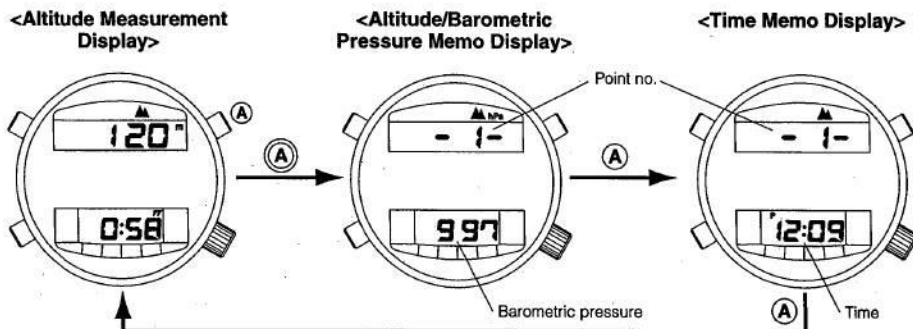
- Altitude measuring range: -300m to +6300m (in 5m units)
 - * "----" is displayed when the measuring range is exceeded.
- Barometric pressure measuring range: 452 to 1050 hPa (in 1 hPa units)
 - * "----" is displayed when the measuring range is exceeded.
- An "m" is displayed during altitude display, while "hPa" is displayed during barometric pressure display.

<Temperature Measurement>

Temperature is displayed for about 10 seconds when button **(B)** is pressed for at least 2 seconds during the fixed duration altitude measurement display. The watch also alternates between display of altitude and barometric pressure during this time.



<Storage of Altitude Memos in Memory>



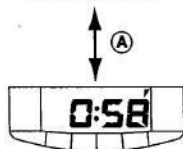
- (1) Press button **A** for at least 2 seconds during the continuous altitude measurement display or fixed duration altitude measurement display. A tone confirming button operation sounds and the altitude and barometric pressure at that time are stored in memory in the form of an altitude memo. After this procedure, the point number (P1 through P6) and barometric pressure are displayed for 10 seconds.
- (2) When button **A** is pressed during point (P1 through P6) and barometric pressure display, the time at that time is stored in memory in the form of a time memo. After this procedure, the point number (P1 through P6) and time are displayed for 10 seconds.
- (3) Pressing button **A** during display of the point number (P1 through P6) and time returns the watch to the altitude measurement display.

* If none of the buttons are pressed for about 10 seconds after performing the procedure of (1) or (2) above, the watch automatically returns to the altitude measurement display. Time is not stored in memory if the procedure of (2) is not performed.

* A maximum of 6 altitude memos can be stored in memory. When button **A** is pressed for at least 2 seconds after storing 6 points of altitude memos in memory, "FL" and "----" are displayed and data is not stored in memory. If additional memos are desired to be stored in memory, it is necessary to delete all point memos in the altitude memo mode of the standard mode.

<Elapsed Time Measurement>

<Display when Measurement is in Progress>



<Display when Measurement is Stopped>

Measurement of elapsed time starts automatically when the watch is initially switched to the continuous altitude measurement display.

The amount of time that elapses from the start of altitude measurement during the continuous altitude measurement display or fixed duration altitude measurement display is measured and displayed. Pressing button **A** during measurement of elapsed time causes a tone confirming button operation to sound and makes it possible to stop and resume measurement of elapsed time.

* During measurement of elapsed time, the colon (:) of digital display [2] flashes. The colon is displayed continuously when measurement is stopped.

- Elapsed time measuring range: 0 hours 00 minutes to 23 hours 59 minutes (in 1 minute units)
- * Measurement repeats after 24 hours have elapsed.

15. Altimeter Applications

The following is an introduction to specific applications of the altimeter of this watch. Please read the explanations of the uses of each function for further details regarding the respective operating procedure.

A. Measuring Altitude when Mountain Climbing

1. Deleting the Altitude Memo of the Previous Climb to Store Data of the Current Climb

- (1) Press button **(M)** to switch to the altitude memo mode of the standard mode.
- (2) Press button **(A)** or **(B)** to recall the altitude memos of the previous climb. Necessary data displayed at this time should be recorded in a log.
- (3) Simultaneously press buttons **(A)** and **(B)** to delete all altitude memos.

2. Ensuring Accurate Altitude Measurement Before Climbing

- (1) Press button **(M)** for 2 seconds or more to switch from the standard mode to the altitude measurement mode.
- (2) Press buttons **(A)** or **(B)** during the altitude correction display to align the altitude displayed on the watch with a display of correct altitude as determined by triangulation and so forth.

3. Starting Altitude Measurement

- (1) Press button **(M)** during the altitude correction display to switch to the continuous altitude measurement display. Altitude measurement and elapsed time measurement start automatically.
- (2) Switching to the continuous altitude measurement display or fixed duration altitude measurement display (during or after) reads a continuous display of altitude and elapsed time. Pressing button **(B)** during altitude measurement switches the display between altitude and barometric pressure.

4. Storing Altitude and Time Memory at Check Points while Climbing

- (1) When button **(A)** is pressed for at least 2 seconds during the altitude measurement display, "-1-" (point no.) is displayed which represents the first memo. Data including altitude, barometric pressure and temperature at that location are stored in memory in the form of an altitude memo.
- (2) Press button **(A)** again to store the time in memory.
- (3) A maximum of 6 points can be stored in memory as altitude memos by repeating steps (1) and (2).

5. Terminating Altitude Measurement after Arriving at the Peak

- (1) Stop measurement of elapsed time by pressing button **(A)** during the altitude measurement display. When desiring to store data at the peak, perform the procedure for storing altitude memos in memory (4.-(1), (2)).
- (2) Press button **(M)** for at least 2 seconds to return to the standard mode. This terminates altitude measurement.

B. Other Applications

<Monitoring Changes in Altitude>

Switch the watch to the continuous altitude measurement display in the altitude measurement mode when riding on a train or cable car as it travels through the mountains. Changes in altitude can be monitored for a maximum of 5 minutes in 1 second increments.

<Determination of Altitude Difference from Starting Point>

Perform altitude measurement after correcting the altitude to 0 meters during the altitude correction display. The altitude displayed when the destination is reached can be read directly from the watch as the difference in altitude between the starting point and destination.

16. Low Battery Warning Function

When the battery of the watch approaches the end of its service life, the second hand begins to move at two-second intervals (the second hand advances by two increments in two seconds). When this happens, have the battery replaced as soon as possible.

The functions of the watch are restricted according to the conditions described below when the low battery warning function has been activated.



- Alarm and confirmation tones do not sound.
- Temperature cannot be measured in the time mode.
- The watch cannot be switched to the water depth measurement mode (including the preliminary dive display).

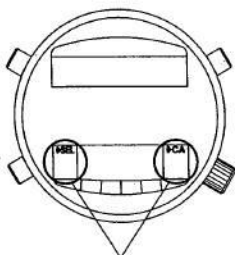
When the low battery warning function is activated during measurement of water depth, although measurement of water depth continues until completion of that dive, the depth alarm and dive time alarm do not sound.

- The watch cannot be switched to the altitude measurement mode. When the low battery warning function is activated during continuous altitude measurement, the watch switches to fixed duration altitude measurement.

17. Other Functions

A. Button Function Display

This watch is equipped with two displays that indicate the functions of buttons **A** and **B** using marks and abbreviations.



Indicate button functions

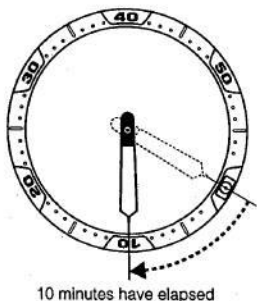
<Meanings of Marks and Abbreviations>

- >> : Press button for at least 2 seconds
- SEL : Switches display or setting
- SPL : Measures and displays split time
- RES : Resets chronograph measurement
- CA : Recalls a display
- SET : Sets a display
- STA : Starts the chronograph
- STP : Stops the chronograph

* These indications of button functions are not intended to indicate button functions under all conditions. They are only meant to serve as a guide for operating the watch.

B. Rotating Bezel

The rotating bezel is a rotating ring attached to the watch body. It can be used to measure elapsed time while diving.



<Using the Rotating Bezel>

Turn the rotating bezel to the left and align the "▽" mark (zero mark) with the minute hand before starting the dive.

Elapsed time can then be read from the minute marks on the rotating bezel to which the minute hand is pointing.

Example: In the illustration at left, the rotating bezel indicates that 10 minutes have elapsed since the start of the dive (location of the "▽" mark).

⚠ CAUTION

- The rotating bezel can only be rotated in the counter-clockwise direction to prevent erroneous operation. Caution : Do not attempt to forcibly rotate the rotating bezel in the clockwise direction since this can damage it.
- When using the rotating bezel, remember that it should only be used as a rough indicator of elapsed time and is not a proper indicator of safety should always be allowed.

C. No Decompression Limits

The range within which the diver can rise to the surface without rest for decompression is determined by the depth and elapsed time of the dive. The ranges are called "No Decompression Limits".

A table of "No Decompression Limits" compiled according to the U.S. Navy Diving Manual (1993 edition) is printed on the watchband of this watch (there are some models that do not have this table on the watchband).

No Decompression Limits

DEPTH.m	N.D.TIME
12	200
15	100
18	60
21	50
24	40
27	30
30	25
33	20
36	15
39	10
42	10
45	5

-How to read no decompression limits-

DEPTH.m	N.D.TIME
(Max.depth in meters)	(No decompression time)
12m	200 Min
15m	100 Min
18m	60 Min
21m	50 Min
24m	40 Min
27m	30 Min
30m	25 Min
33m	20 Min
36m	15 Min
39m	10 Min
42m	10 Min
45m	5 Min

Example: Read the table as follows.

In case the maximum dive depth is 21m and the elapsed time is 50 minutes or shorter, the dive is not required to take a rest for decompression while ascending to the surface.



CAUTION

- The table of no decompression limits is provided for one-time diving.
- Since the no decompression limits differ depending on the diver's physical condition and varies among individuals, use this table as a guideline only.
- In case of diving that requires the diver to take a rest for decompression before ascending to the surface, always follow a reliable manual exclusively compiled for diving.

18. Troubleshooting

<When the Second Hand Moves at Two-Second Intervals>

The low battery warning function is activated when the battery approaches the end of its service life. Have the battery replaced promptly when this occurs.

<CHEK Remains Displayed for a Long Time>

It is possible that the water sensor is continuing to operate due to the presence of sand, dirt, perspiration or other debris on the sensor. When this happens, rinse off the debris with water and carefully wipe off any moisture with a dry cloth.

<ER Remains Displayed for a Long Time>

- ER is displayed during use on land (at diving locations at an altitude of 4000m or higher).
- ER remains displayed even when considerable time has passed after diving.

In the above cases, there is the possibility of a problem with the pressure sensor. When this happens, ask your nearest Citizen Service Center for repair.

<Watch Cannot be Switched to Another Mode from the Water Depth Measurement Mode>

When there has been a pressure change of 1000 hPa or more with the water sensor still activated by perspiration and so forth at a high altitude (such as in an airplane) and barometric pressure changes occur in a short period of time, the water depth measurement display may not return to 0.0m after returning to a lower altitude (earth), thereby preventing the watch from leaving the water depth measurement mode.

When this happens, pull the crown out after loosening the screw to cancel the water depth measurement mode. (Since the display of analog time becomes incorrect when the crown is pulled out, make sure to reset the analog time after performing this procedure.)

<Watch Exhibits an Abnormal Display or Operation>

If the watch is accidentally subjected to a strong shock or intense static electricity, the display or operation of the watch may rarely become abnormal (such as the digital display being incorrect or the alarm sounding continuously). When this happens, perform the all-reset procedure as described in Section 19 "All-Reset". If the problem is still not resolved even after the all-reset procedure has been performed, please consult your nearest Citizen Service Center.

19. All-Reset

The all-reset procedure is used to return all functions of the watch, including the time and calendar, to their initial states. Perform this all-reset procedure when the display of the watch is abnormal and after replacing the battery.



All log data and altitude memos are erased when the all-reset procedure is performed. Make sure to retain a separate record of this data when it is required for future use.



- (1) Loosen the crown screw and pull the crown out.
- (2) Press all three buttons simultaneously. A tone confirming the all-reset procedure sounds.
- (3) Push the crown in to the normal position. A tone confirming this operation sounds.
- (4) After resetting the analog time, screw the crown in to the lock position. This completes the all-reset procedure. After performing this procedure, only use the watch after first correctly resetting the display of each mode.

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§4. BATTERY

<Battery Life>

The battery life of this watch is approximately 2 years after a new battery has been installed.

Typical Conditions of Use for Battery Life of 2 Years:

Alarm: 15 seconds/day

Temperature measurement: 3 minutes/day

Water depth measurement: 50 times/year (1 hour/measurement)

Altitude measurement: 100 times/year (continuous altitude measurement: 10 minutes, fixed duration altitude measurement: 8 hours/measurement)

* Battery life varies depending on the frequency of use of the alarm and other functions.

<Battery Installed in Watch at Purchase>

The battery pre-installed in the watch at the time of purchase is a monitor battery provided only for the purpose of viewing functions and performance.

Please be aware that the battery may not last for the full two years after purchase for this reason.

<Replacing the Battery>

- The battery of this watch must be replaced at a Citizen Service Center. Please have the battery replaced at a Citizen Service Center.
- When replacing the battery, the service center also inspects water resistance and performs other checks, including replacement of the packing as necessary.
- All log memos, altitude memos and other data are erased as a result of battery replacement. Please retain a separate record of this data when it is required for future use.

§5. PRECAUTIONS FOR USE

Direct the customer to understand the precautions for use and handling method of this watch and use it correctly.

- When using this watch, please make sure that you have a thorough understanding of its handling and precautions relating to its use to ensure that it is used correctly. Please note that handling this watch in a manner not described in these instructions may cause it to function improperly.
- The water depth measurement functions as well as the altitude and barometric pressure measurement functions of this watch are not certified for use as officially sanctioned measuring instruments. They should only be used as auxiliary measurements.
- The measured values for water depth, altitude and barometric pressure displayed by this watch should only be used for reference purposes as rough indications of their respective values.

1. Use During Diving

A. Please observe the following for safe diving.

- When using this watch during diving, always make sure to receive the necessary education and training and observe diving rules
- Always make sure to use the "buddy system" when diving.
- This watch is recommended to be used for recreational diving only to depths of no more than 20m in consideration of safety.
- It is recommended that the battery be replaced promptly. The battery life of this watch is approximately 2 years after a new battery has been installed (although this varies considerably depending on the frequency of use of the water depth measurement function and other functions).
- Please make sure to allow for a suitable rest period after diving in accordance with rules for diving safety. Flying in an airplane or moving to high altitudes without allowing a suitable rest period after diving can cause decompression sickness (bends).

B. Prohibited Uses During Diving

Do not use this watch for diving under the following conditions:

- When the low battery warning function has been activated
... The second hand of the watch moves at two-second intervals when the battery level becomes low.
- When the watch stops or when an abnormality occurs (please be careful not to bump the watch on diving equipment, rocks or other hard objects).
- When the water depth measurement function is used outside the guaranteed temperature range or at high altitudes
... The temperature range over which the water depth measurement accuracy of this watch is guaranteed is +10°C to +40°C.
... Water depth cannot be measured at altitudes more than 4,000m above sea level.
- When behavior or the situation is judged to be dangerous
... This watch is not made to be used as a preventive or emergency device for shipwrecks or other maritime accidents.
- When the watch is used in atmospheres containing helium gas (such as during saturated diving)
... Use of the watch under these conditions can cause failure or damage to the watch.

C. Diving Precautions

<Before Diving>

- Check that the display of the watch is in a mode other than the altitude measurement mode or chronograph measurement mode.
- Check that "ER" or "CHEK" is not displayed on the digital display.
- Check that the crown is firmly pressed in and screwed in to the lock position.
- Check that the band is securely fastened to the watch body.
- Check that there are no cracks, chips or other abnormalities in the watch band or glass.
- Check that the rotating bezel rotates normally.
- Check that the time and date are set correctly.
- Check that the water depth alarm and dive time alarm are set correctly.
- Check that the second hand is moving properly.
 - * If the second hand is moving at two-second intervals, this indicates that the battery is nearly worn down.

<During Diving>

- Avoid ascending too rapidly. Attempting to ascend at an excessively rapid rate can have detrimental effects on the body such as causing the bends. Observe a safe ascent rate at all times.
- Never attempt to operate the crown underwater. This can cause a malfunction due to impaired water resistance.
- Caution is required since the alarm may be difficult to hear due to the ringing noise underwater.

<After Diving>

- Allow a suitable rest period after diving while referring to the surface mode (measurement of elapsed time after diving).
- Rinse off any sea water, mud or sand adhering to the watch with fresh water after confirming that the crown is screwed in and locked in position, and then wipe off any excess moisture with a dry cloth.
- Do not attempt to remove any debris or dirt trapped in the sensor by removing the sensor cover or poking with a sharp object. If debris should happen to enter the sensor, rinse with fresh water.

D. Diving at High Altitudes or in Fresh Water

- Do not use this watch when diving at high altitudes more than 4000m above sea level since it is unable to measure water depth correctly under these conditions.
- When diving at high altitudes or in fresh water, only use the watch after receiving special safety training.
- Since this watch displays water depth by converting on the basis of sea water (specific gravity: 1.025), the water depth displayed when diving in fresh water is actually 2.5% deeper. For example, when the watch displays a water depth of 20m in fresh water, the actual water depth is $20 \times 1.025 = 20.5\text{m}$.

2. Use of Altimeter and Barometer

A. Altitude and Barometric Pressure Measurement Functions

- The altitude displayed by this watch is approximate altitude as calculated by applying external barometric pressure as detected with a pressure sensor to the relationship between altitude and barometric pressure of an international standard atmospheric model. Consequently, even when altitude is measured at the same location, the displayed altitude varies if the barometric pressure changes. In order to measure altitude correctly, it is necessary to always correct altitude at a location where the correct altitude is clearly indicated. For further details, refer to §3-13 entitled, "Altimeter Basic Features".
- Since barometric pressure displayed by this watch is the external barometric pressure detected by a pressure sensor at the location of the measurement, the displayed barometric pressure changes if altitude changes. In addition, it also differs from the barometric pressure indicated on weather maps (barometric pressure converted to that at 0m above sea level). Use the barometric pressure measurement function of this watch as a general reference for monitoring changes in barometric pressure at the same location.
- Both the altitude and barometric pressure measurement functions of this watch are subject to the effects of temperature changes. Even in the case of the same barometric pressure, display values (for altitude and barometric pressure) may change if the temperature changes.

B. Prohibited Uses of Altitude and Barometric Pressure Measurement Functions

Do not use the altitude or barometric pressure measurement function of this watch under the following conditions

- When behavior or the situation is judged to be dangerous.
- When there are sudden changes in barometric pressure and temperature due to changes in weather conditions.
- When barometric pressure is being adjusted such as in an airplane or building.
- When altitude changes greatly in a short time (such as when skydiving).

C. Pressure Sensor

- The pressure sensor used in this watch is a high-precision device. Never attempt to disassemble it or poke it with a sharp object.
- The altitude measurement function may not operate properly if air is not allowed to flow to the sensor. Be careful to prevent debris and dust from entering the sensor as much as possible. In case debris, dust or other dirt becomes trapped in the sensor, rinse the sensor with fresh water.

§6. REPAIR OF THIS WATCH

This watch shall be repaired by the manufacturer (handled by CITIZEN SERVICE CENTER), since it needs special technologies and equipment for final adjustment and check after it is repaired.

Accordingly, if this watch has any trouble and needs to be repaired and adjusted, ask CITIZEN SERVICE CENTER.

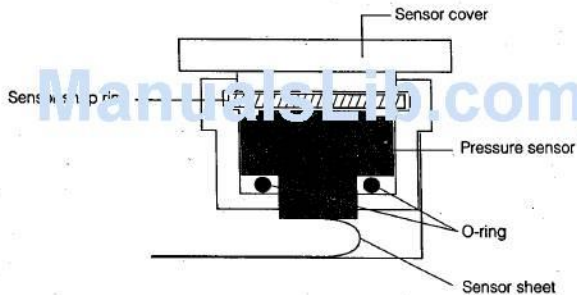
The information on repair, trouble, and inspection is described for only reference.

§7. PRECAUTIONS FOR DISASSEMBLY AND ASSEMBLY

1. Handling Method of Pressure Sensor

- When removing and installing the pressure sensor, take care not to touch or prick the molded part (black) of the pressure sensor with tweezers or a screwdriver.
- When removing and installing the pressure sensor, use the pressure sensor snap ring setting jig (CTA-028) for Cal. C52*.

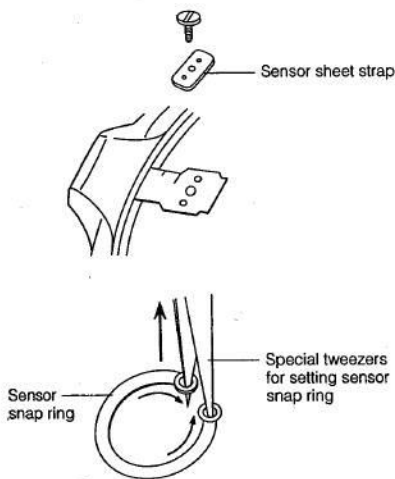
A. Structure of Pressure Sensor



B. Replacement of pressure sensors

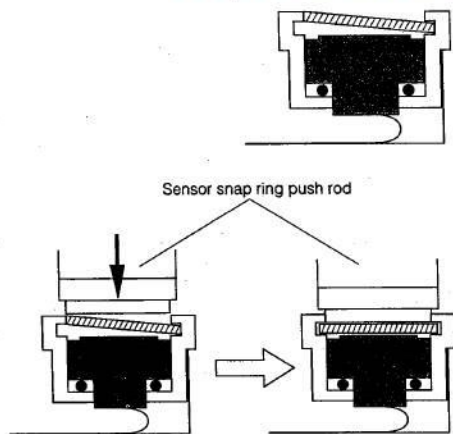
- The two pressure sensors (for water depth measurement and altitude measurement) and the unit of electronic circuit are adjusted as a set for accuracy. When any of these three parts needs to be replaced, be sure to replace all of them as a set.

C. How to Remove Pressure Sensors



- (1) Remove one screw, and remove the sensor sheet strap from the movement. Then, remove the sensor sheet from the dowel of the movement.
- (2) Insert a screwdriver under the sensor cover to remove it.
- (3) Remove the sensor snap ring with the special tweezers for it. Insert both tips of the tweezers in the two holes of the snap ring perpendicularly, then hold the snap ring and lift it up.
- (4) Hold the pressure sensor with the tweezers, and remove it.
- (5) Remove the O-ring from the pressure sensor.

D. How to Install Pressure Sensors

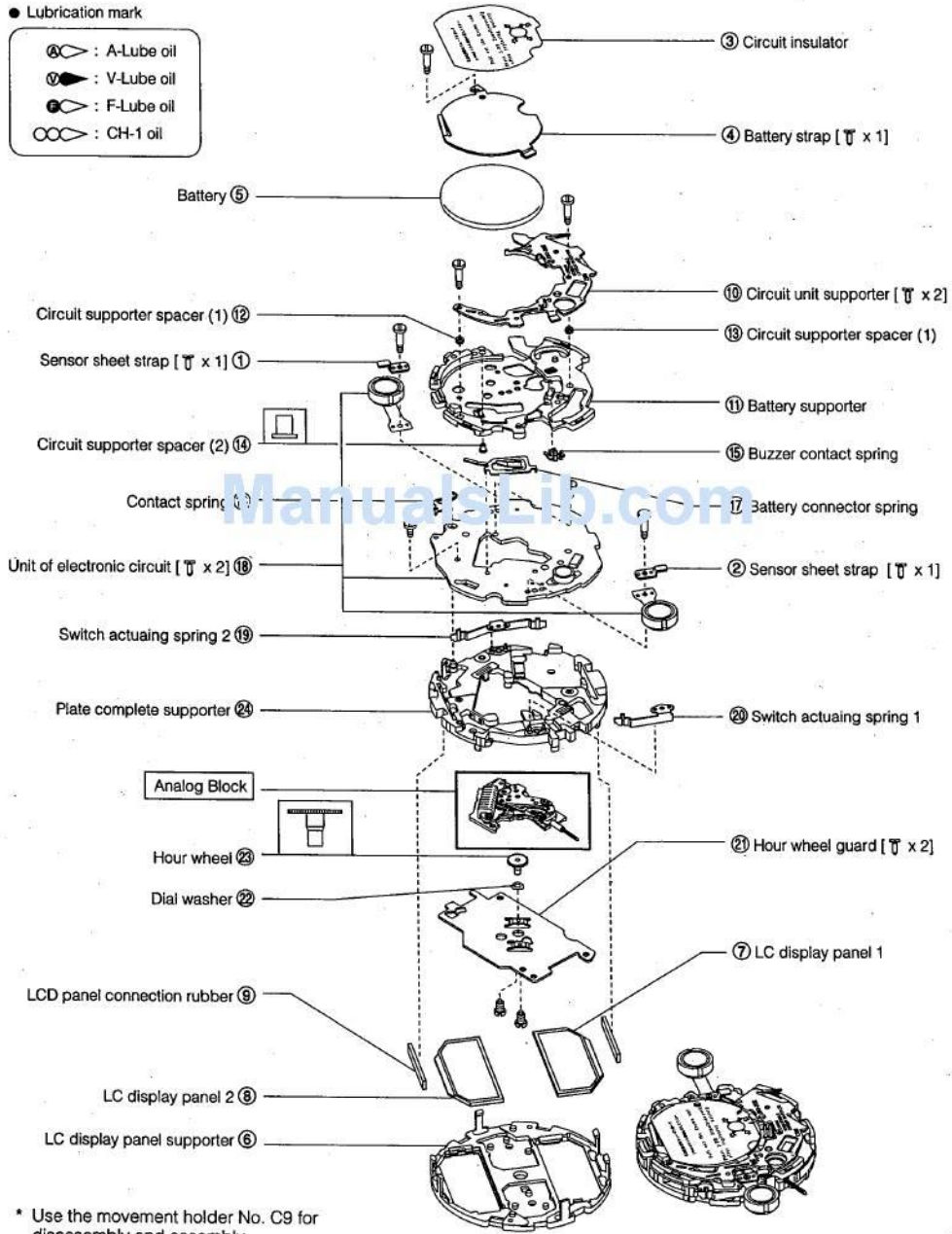


- (1) Set the O-ring to the pressure sensor.
- (2) Install the pressure sensors to the case, taking care of their direction.
 - Sensor for water depth measurement (9 o'clock direction): Pink
 - Sensor for altitude measurement (3 o'clock direction): White
- (3) Hold the sensor snap ring with the special tweezers for the snap ring, and set it as shown at left (It may be set in any direction.)
- (4) Push the top of the sensor snap ring with the sensor snap ring push rod to the specified position.
- (5) Stick the sensor cover to the case.

§8. DISASSEMBLY AND ASSEMBLY OF MOVEMENT

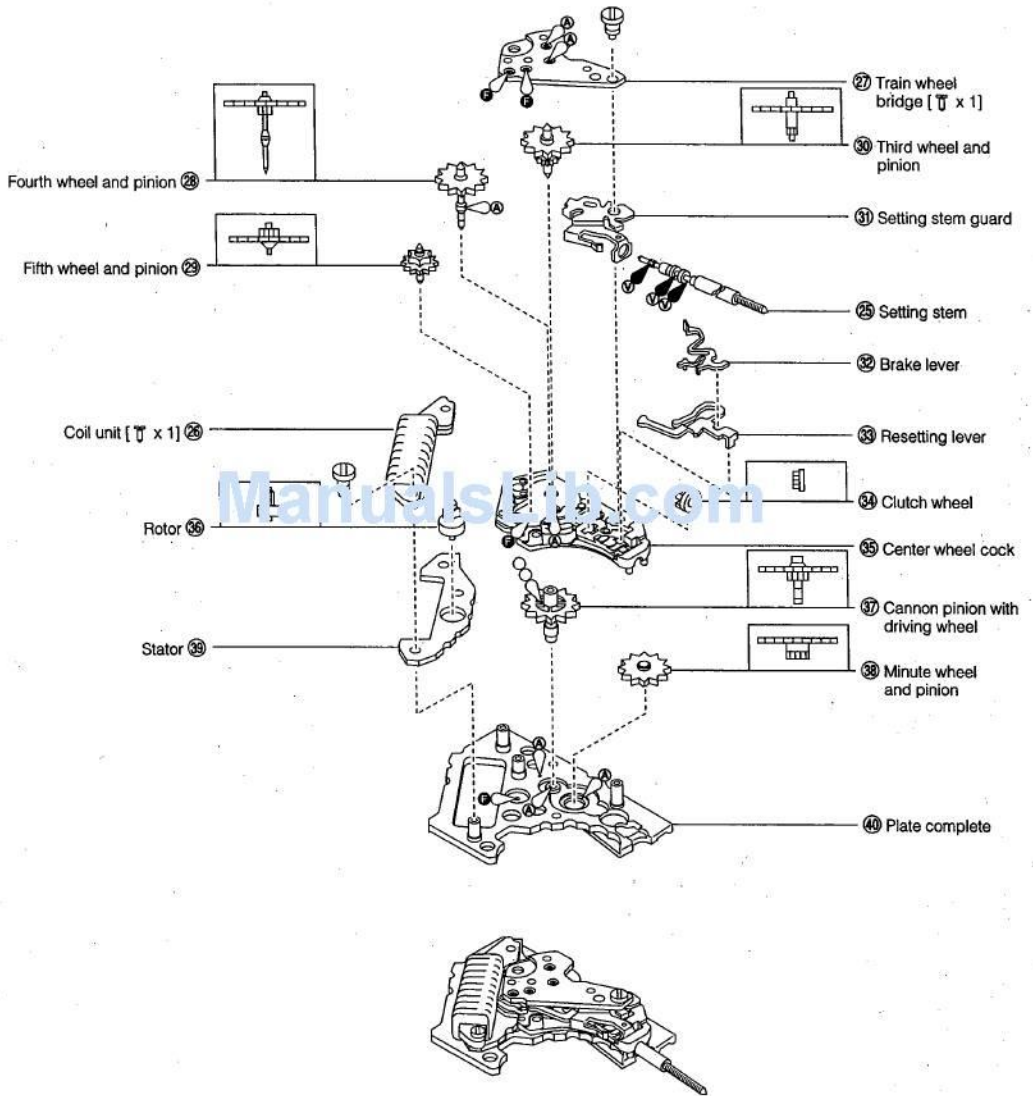
Disassembly procedure: ① → ④⑩
 Assembly procedure: ④⑩ → ①

- Lubrication mark
- Ⓐ : A-Lube oil
 - ∇ : V-Lube oil
 - Ⓛ : F-Lube oil
 - ∞ : CH-1 oil

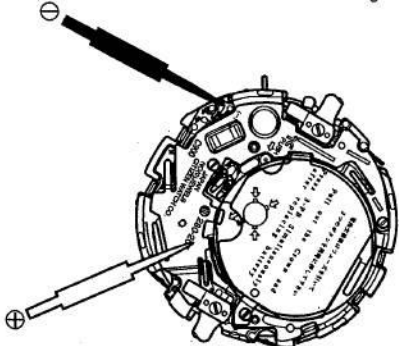
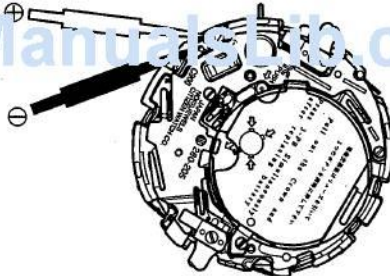


* Use the movement holder No. C9 for disassembly and assembly.

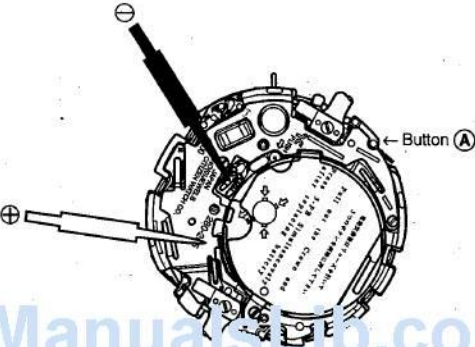
[Analog Block]

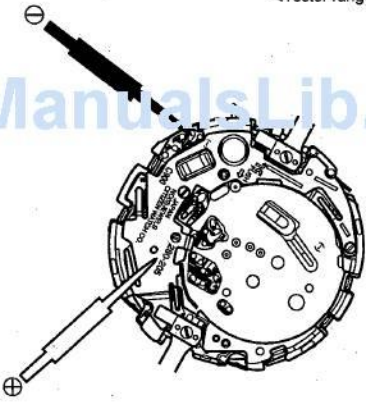


* When disassembling/assembling the analog block, use the movement holder "AQ-1".

Check Points	How to Check	Results and Treatments
<p>① Measurement of battery voltage</p>	<p>[Refer to Technical Manual, Basic Course II-1-a]</p> <p><Tester range: DC 6V></p> 	<ul style="list-style-type: none"> • Over 2.8 V → Normal • Under 2.8 V → Replace the battery.
<p>② Check of output signals</p>	<p>[Refer to Technical Manual, Basic Course II-1-b]</p> <p><Tester range: DC 0.3V></p>  <p>(The tester lead pins have no polarity.)</p>	<ul style="list-style-type: none"> • The tester pointer swings. → Normal • The tester pointer does not swing. → Check the connections parts. <p style="text-align: center;">↓</p> <ul style="list-style-type: none"> • The connections are normal. → Replace two pressure sensors and unit of electronic circuit as set.
<p>③ Check of LC display panel connection parts</p>	<p>[Refer to the Digital Section of Technical Manual, Basic Course II-2-a]</p> <ul style="list-style-type: none"> • Check of all-segment glow Pull out the crown and press (A), (B), and (M) buttons simultaneously, and the all segments are shown. Check for a defective segment. • Check for dirt on contacts, chipping and breakage of parts, etc. 	<ul style="list-style-type: none"> • LC display panel, connection rubber, or unit of electronic circuit is not installed correctly. → Install correctly. • Parts are stained or dirty. → Remove stain and dirt. • Parts are cut broken or scratched. → Replace parts.
<p>④ Check of connection part</p>	<p>[Refer to Analog Section of Technical Manual, Basic Course II-2-a]</p>	

Check Points	How to Check	Results and Treatments
<p>5 Measurement of coil resistance</p>	<p>[Refer to Technical Manual, Basic Course II-1-c]</p> <ul style="list-style-type: none"> Remove the unit of electronic circuit, then measure the resistance of coil. <p><The tester lead pins have no polarity.></p> <p style="text-align: right;"><Tester range: R x 10Ω></p>	<ul style="list-style-type: none"> Resistance of coil unit 1.9 kΩ ~ 2.3 kΩ → OK. Beyond above range → Replace coil unit.
<p>6 Check of train wheel</p>	<p>[Refer to Technical Manual, Basic Course II-2-b]</p>	
<p>7 Check of dial-side mechanism</p>	<p>[Refer to Technical Manual, Basic Course II-2-c]</p>	
<p>8 Measurement of time rate</p>	<p>[Refer to Technical Manual, Basic Course II-2-d]</p> <ul style="list-style-type: none"> Since this watch uses the D.F.C. (digital frequency control) method and has no control terminal, there is no way of adjusting its time rate in the field. 	<ul style="list-style-type: none"> Watch gains or loses extremely. → Replace two pressure sensors and unit of electronic circuit as set.
<p>9 Confirmation of using condition</p>	<p>[Refer to Technical Manual, Basic Course II-2-e]</p> <ul style="list-style-type: none"> Ask the customer about the using condition of the watch (Temperature, effects of magnetism, replacement period of the battery, etc.) Confirm that the customer has read the instruction manual material thoroughly and uses the watch correctly. 	
<p>10 Check of switch mechanism</p>	<ol style="list-style-type: none"> Inspection of movement. <ul style="list-style-type: none"> Press the switch spring of movement with tweezers, etc. and confirm the switching function. Check for removal of pattern of electronic circuit unit, deformation of switch actuating spring, etc. Inspection of push button <ul style="list-style-type: none"> Check push button for deformation, stain, etc. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>(Note) Be sure to apply silicone oil to the packing of push button for waterproofness and smooth operation.</p> </div>	<ul style="list-style-type: none"> Movement is normal. → Inspect push button. Deformation of switch spring, removal of circuit pattern → Replace defective parts. Push button is stained or deformed. → Remove stain, or replace push button.

Check Points	How to Check	Results and Treatments
<p>① Check of alarm mechanism</p>	<p>[Refer to Technical Manual, Basic Course II-1-d]</p> <p>*1. Set the movement in the case, and check output of alarm signal with the case back removed.</p> <p>(1) Set the watch in alarm mode (ALM).</p> <p>(2) Apply ⊕ lead pin to the top of the circuit unit supporter and ⊖ lead pin to the buzzer contact spring, then keep pressing button (A).</p> <p style="text-align: right;"><Tester range: DC 0.3V></p>  <p>*2. If the output of alarm is normal, perform the following inspection.</p> <ul style="list-style-type: none"> • Check the piezo-electric element of vibrating plate for cracks and breakage. • Check the buzzer contact spring for bend and deformation. • Check the pattern of electronic circuit unit for dust and stain. 	<ul style="list-style-type: none"> • Tester pointer does not swing. → Replace two pressure sensors and unit of electronic circuit as set. <p style="text-align: center;">↓</p> <ul style="list-style-type: none"> • Tester pointer swings. → Normal <p style="text-align: center;">↓</p> <ul style="list-style-type: none"> • Perform inspection in *2. <p style="text-align: center;">↓</p> <p>Normal indication. → O.K.</p>
<p>② Check of pressure sensors</p>	<p>[Refer to this Technical Manual, §7-1. "Handling Method of Pressure Sensors"]</p> <p><Check of pressure sensors></p> <ul style="list-style-type: none"> • Check that the pressure sensor for water depth measurement (On the 9 o'clock side: Pink) and the one for altitude measurement (On the 3 o'clock side: White) are installed correctly. • Check that the pressure sensors are not filled with sand, dust, etc. • Check that the pressure sensors are free from flaw and breakage. Check for projection and lack of the gel material. • Check that the contacts of the sensors and movement are normal. • The two pressure sensors (for water depth measurement and altitude measurement) and the unit of electronic circuit are adjusted as a set for accuracy. When any of these three parts needs to be replaced, be sure to replace all of them as a set. 	<ul style="list-style-type: none"> • Wrong installation → Install correctly. • Dirt, clogging of sensors → Clean. • Abnormal pressure sensor → Replace two pressure sensors and unit of electronic circuit as set.

Check Points	How to Check	Results and Treatments
<p>⑬ Check of water depth and altitude measurement accuracy</p>	<ul style="list-style-type: none"> The pressure sensors for water depth measurement and altitude measurement and the unit of electronic circuit are adjusted as a set for accuracy. If the measurement accuracy is extremely low, either of the pressure sensors or the unit of electronic circuit may be defective. In this case, replace all of them as a set. 	
<p>⑭ Measurement of current consumption</p>	<p>[Refer to Technical Manual Basic Course II-1-f]</p> <p>Measure the current consumption according to the following procedure.</p> <p>(1) With the crown pulled out, set a tester (using a 3.0V battery). Set the tester the 10mA range at first.</p> <p>(2) With the tester set, press (A), (B), and (M) buttons simultaneously (to perform the all-reset operation).</p> <p>(3) Push in the crown.</p> <p>(4) After the tester pointer stabilizes, set the tester to the 10 μA range and read the current consumption.</p> <p style="text-align: center;"><Tester range: DC 6V></p>  <p>☆ Precautions for measurement of current consumption When the tester lead pins are applied to the measuring point or when the all-reset operation is performed, the tester pointer may swing to the maximum or may read an abnormal value. This is not an abnormal operation, however. In this case, wait until the pointer stabilizes, then read it.</p> <p><Effects of light> Do not measure the current consumption in a place where the watch is exposed to an incandescent lamp or direct sunlight. The current consumption may increase in such a place. It is not affected by a fluorescent lamp, however.</p>	<ul style="list-style-type: none"> Current consumption of the movement below 1.8μA. → Normal Current consumption of the movement above 1.8μA. → Check and clean train wheel and dial side mechanism. <p style="text-align: center;">↓</p> <p>Measure again. If result is abnormal, → Replace two pressure sensors and unit of electronic circuit as set.</p> <ul style="list-style-type: none"> When reset, current consumption below 1.6μA. → Normal When reset, current consumption above 1.6μA. → Replace two pressure sensors and unit of electronic circuit as set.
<p>⑮ Check of appearance and functions</p>	<p>[Refer to Technical Manual Basic Course II-2-f]</p>	