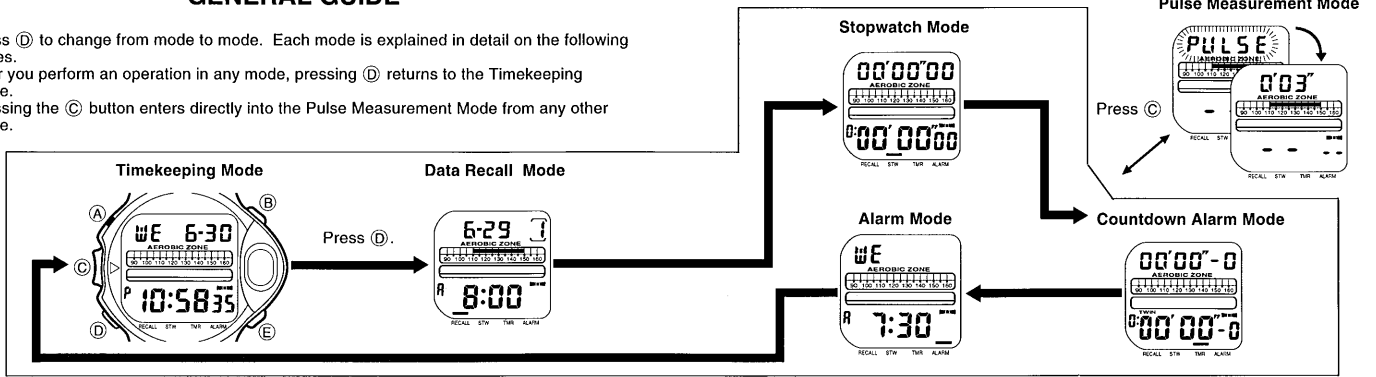


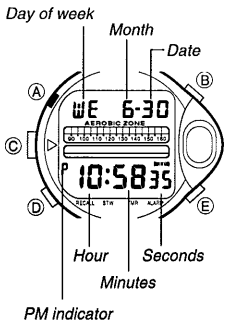
OPERATION CHART: MODULE QW-1009

GENERAL GUIDE

- Press (D) to change from mode to mode. Each mode is explained in detail on the following pages.
- After you perform an operation in any mode, pressing (D) returns to the Timekeeping Mode.
- Pressing the (C) button enters directly into the Pulse Measurement Mode from any other mode.



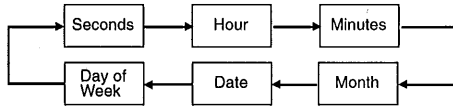
TIMEKEEPING MODE



- In the Timekeeping Mode, hold down (B) to illuminate the display.
- In the Timekeeping Mode, press (E) to switch between the 12-hour and 24-hour formats.

To set the time and date

1. Press (A) while in the Timekeeping Mode. The seconds digits flash on the display because they are selected.
2. Press (D) to change the selection in the following sequence.

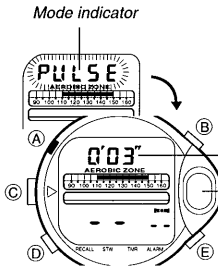


PM indicator

3. While the seconds digits are selected (flashing), press (E) to reset the seconds to "00". If you press (E) while the seconds count is in the range of 30 to 59, the seconds are reset to "00" and 1 is added to the minutes. If the seconds count is in the range of 00 to 29, the minutes count is unchanged.
4. While any other digits (besides seconds) are selected (flashing), press (E) to increase the number or (B) to decrease it. While the day of the week is selected, pressing (E) advances to the next day and (B) goes to the previous day. Holding down either button changes the current selection at high speed.
5. After you set the time and date, press (A) to return to the Timekeeping Mode.

- The watch does not make any allowance for leap years. Be sure to manually set February 29 (when one occurs) to the appropriate date.
- If you do not operate any button for a few minutes while a selection is flashing, the flashing stops and the watch goes back to the Timekeeping Mode automatically.

PULSE MEASUREMENT MODE

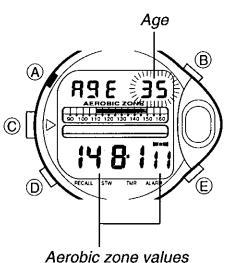


The Pulse Measurement Mode helps you monitor your pulse. Each pulse measurement can be up to two minutes long, and your pulse and other data is stored in memory. In addition to measuring pulse, this watch can also provide you with other important exercise data based upon your age. Because of this, we recommend that you set your age before performing pulse measurements.

Applications

- Measure your pulse anytime throughout the day to keep tabs on your physical condition.
- Measure your pulse after exercising to monitor your recovery time.

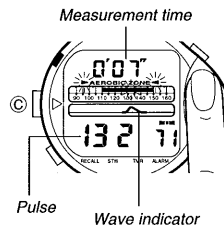
Setting Your Age



1. Press (C) to enter the Pulse Measurement Mode.
2. Press (A) and the age value flashes on the display.
3. Press (E) to increase the age value or (B) to decrease it. Holding down either button changes the value at high speed.
4. After you set the age value, press (A) to return to the Pulse Measurement Mode.

5. Press (C) to return to the Timekeeping Mode.
- You must perform the above operation to set the age whenever the age of the person using the watch for pulse measurements changes.

To measure your pulse



1. Press (C) to enter the Pulse Measurement Mode.
 - The message "PULSE" appears at the top of the display. The message is soon replaced by the measurement time display.
2. Place your finger lightly onto the Photosensor.

Important!
Try not to move your finger during this measurement.

- Within about 7 to 10 seconds, a value showing the initial measurement result appears on the display, along with a wave indicator that is synchronized with your pulse. This value is updated every 2 to 3 seconds.

For a detailed explanation of the Pulse Measurement Mode display, see "How To Read The Measurement Display" below.

- If you have problems getting a value to appear, press (C) to stop the measurement procedure, and consult the section titled "Tips On Placing Your Finger On The Photosensor".
 - You can continue a single measurement for up to 2 minutes.
3. After two minutes, the watch automatically switches out of the Pulse Measurement Mode (to the mode you were previously in), and stores the measured data into memory.

Notes

- You can restart a measurement without leaving the Pulse Measurement Mode by pressing (B) and (E) at the same time. When you do this, any measurement data currently on the display is cleared without being stored into memory.
- To abort the measurement operation before it is complete (before a full 2 minutes of measurements have been taken), press (C) to change back to the mode you were in before you entered the Pulse Measurement Mode. When you do, all measurements taken up to that point are stored into memory.
- If a Daily Alarm or Countdown Alarm time is reached while a pulse measurement is in progress, the pulse measurement operation is interrupted (but the measurement time count continues) until the alarm operation stops. The measurement operation resumes after the alarm operation is complete.

How To Read The Measurement Display

① Measurement time



Each time you measure your pulse, the display of the watch shows a pulse rate, intensity level, and your current pulse relative to the aerobic zone for your age.

② Aerobic zone indicator

④ Intensity level

③ Pulse rate

① Elapsed measurement time

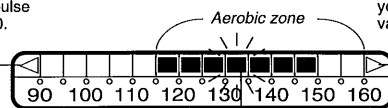
Shows the time elapsed since the start of the pulse measurement (when you enter the Pulse Measurement Mode).

② Aerobic zone indicator: This graph shows the following two types of information.

- The darkened area within the indicator ► AEROBIC ZONE ◀ indicates the zone in which you are achieving maximum aerobic benefit from an activity. The aerobic zone is determined in accordance with your age.
- A flashing segment on the display indicates your current pulse value. You can easily see if your pulse is within the aerobic zone.

Pointer flashes here if your measured pulse value is below 90.

Pointer flashes here if your measured pulse value is above 161.



Measured value

③ Pulse rate: Beats per minute

- ④ Intensity level: The intensity value is calculated dividing your current active pulse by your maximum pulse (220 minus your age), and then multiplying by 100.

$$\text{Maximum Pulse} = 220 - \text{Your Age}$$

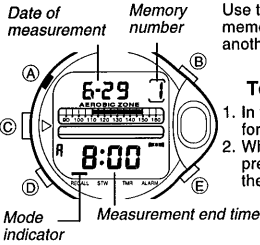
$$\text{Intensity (\%)} = \frac{\text{Current Pulse}}{\text{Maximum Pulse}} \times 100$$

For more details on this calculation, see the section titled "About The Intensity Value".

About Pulse Memory Management . . .

You can store up to three sets of pulse data in memory. Each set of data includes measurements for a full 2-minute measurement, recording your initial pulse value and pulse values at 15, 30, 45, 60, 90, and 120 seconds from the start of the measurement. Memory data also includes end time, date, intensity level, and Aerobic Zone Indicator. If memory is already full when you perform the measurement procedure, the oldest set of measurement data is deleted to make room for the new data. You can also manually delete data in the Data Recall Mode.

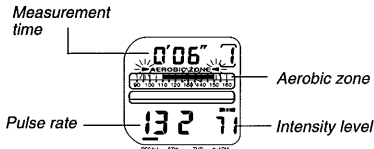
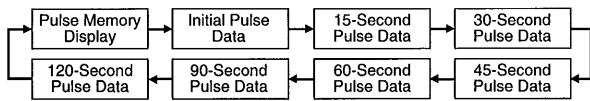
DATA RECALL MODE



Use the Data Recall Mode to recall and delete pulse data from memory. Whenever you enter the Data Recall Mode from another mode, the newest data is displayed first.

To recall data from memory

1. In the Data Recall Mode, press (B) to scroll through displays for pulse memory data sets 1, 2, and 3.
2. While any one of the pulse memory set displays is shown, press (E) to scroll through the data contained in that set in the following sequence.



[Error Display]

- For details on reading the data on the display, see "How To Read The Measurement Display".
- If a measurement operation did not produce usable data, "--" appears in place of the pulse rate and intensity level values.
- The watch considers the first successful pulse measurement it can make after the measurement operation starts as the initial pulse data. If initial pulse data cannot be measured until one of the other measurements (such as the 15-second or the 30-second data) is passed, those other measurements are skipped, and are not indicated when you recall data.

Example: If the first measured pulse value is not produced until 18 seconds after a measurement operation begins, the first data recorded after the initial pulse (at the 18-second point) is for the 30-second measurement.

To delete data from memory

1. In the Data Recall Mode, display the set of data you want to delete. You can start from any data screen (initial pulse value, 15-second pulse value, etc.) from the set you will delete.

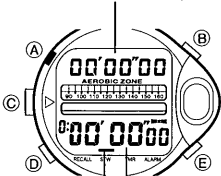
Important!

The delete operation erases the entire set of data you have selected. You cannot delete parts of a set of data.

2. To clear all of the data in the currently displayed set, hold down (A) until the watch emits a long beep.

STOPWATCH MODE

Lap time (minutes, seconds, 1/100 second)



Split time (hours, minutes, seconds, 1/100 second)

Mode indicator

The Stopwatch Mode lets you measure elapsed time, two finishes, lap times, and split times. Time is measured with 1/100 of a second accuracy.

- The lap time appears in the upper part of the display. You can use this function to time how long it takes to complete a specific portion (such as a single lap) of a race.
- The split time appears in the lower part of the display. You can use this function to time how long it takes to get from the start to a specific point in a race.

To measure elapsed time

1. Press (E) to start the stopwatch.
2. Press (E) to stop the stopwatch.
- You can resume the measurement operation by pressing (E) again.
3. Press (B) to clear the stopwatch to all zeros.

To record lap and split times

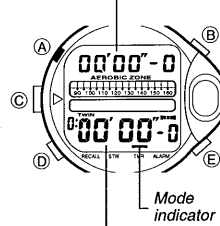
1. Press (E) to start the stopwatch.
2. Press (B) to display the timing up to that point. Stopwatch timing continues internally.
- When you do, times are remaining on the display for about seven seconds, and then the display changes back automatically to the stopwatch display.
3. You can repeat step 2 as many times as you want.
4. Press (E) to stop the time measurement.
5. Press (B) to clear the stopwatch to all zeros.

To time first and second place finishes

1. Press (E) to start the stopwatch.
2. Press (B) when the first finisher crossed the line, and record the time.
3. Press (E) when the second finisher crosses the line.
- The time of the second finisher appears in the lower part of the display. The time of the first finisher can be calculated by subtracting the second finishers time from the time shown in the upper part of the display.
4. Press (B) again to clear the stopwatch to all zeros.

COUNTDOWN ALARM MODE

Timer 2 (minutes, seconds, 1/10 second)



The Countdown Alarm Mode uses two timers (Timer 1 and Timer 2), which countdown in units of a tenth of a second. When the countdown reaches zero, an alarm sounds for 10 seconds, or until you press any button.

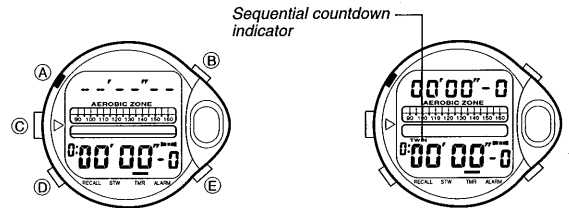
About countdown timer measurements

The Countdown Alarm Mode can countdown times *individually* or *sequentially*. When individual countdown is selected, the timer counts down the time and stops when it reaches zero. With sequential countdown, Timer 1 counts down until it reaches zero, and then Timer 2 starts. When Timer 2 reaches zero, Timer 1 starts again. This continues for 30 countdowns. This function is useful when timing sporting events that allow for rest periods between halves, quarters, or rounds.

Timer 1 (hours, minutes, seconds, 1/10 second)

To switch between Individual and Sequential timer measurements

While in the Countdown Alarm Mode, press (B) to switch between individual and sequential countdown.

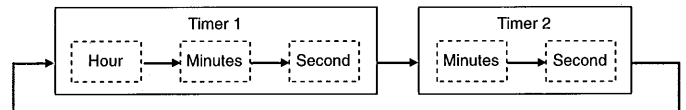


[Individual Countdown]

[Sequential Countdown]

To set the countdown time

1. Press (A) while in the Countdown Alarm Mode. The hour digit of Timer 1 starts to flash on the display. The hour digit flashes because it is selected.
2. Press (D) to change the selection in the following sequence.

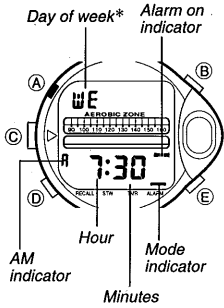


- Be sure to set Timer 1 if you want to use an individual countdown.
3. Press (E) to increase the selected number or (B) to decrease it. Holding down either button changes the selection at high speed.
 - Timer 1 can be set within the range of 1 second to 9 hours 59 minutes 59 seconds. To set the starting value of the countdown time to 10 hours, set 0:00'00'.
 - Timer 2 can be set within the range of 1 second to 59 minutes 59 seconds. To set the starting value of the countdown time to 60 minutes, set 00'00'.
4. After you set the countdown time, press (A) to return to the Countdown Alarm Mode.

To use the countdown timer

1. In the Countdown Alarm Mode, select Individual or Sequential timer measurement.
2. Press (E) to start the countdown timer.
3. Press (E) again to stop the countdown timer.
- You can continue countdown timer operation by pressing (E).
4. Stop the timer and then press (B) to reset the countdown timer to its starting value.
- If you attempt a sequential timer measurement with a countdown time that is 10 seconds or less, the alarm sounds for only one second when zero is reached.

ALARM MODE



You can set an alarm with hour, minutes, and the day of the week. When the alarm is on, the alarm sounds for 20 seconds at the preset time. Press any button to stop the alarm after it starts to sound.

When the Hourly Time Signal is on, the watch beeps every hour on the hour.

- In the Alarm Mode, hold down (B) to illuminate the display.

* Day of week
 SU: Sunday, MO: Monday, TU: Tuesday, WE: Wednesday,
 TH: Thursday, FR: Friday, SA: Saturday

Alarm type

The types of alarm you get depends on the information you set.

- To set Daily alarm

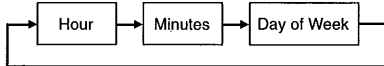
Set the hour and minutes for the alarm time. Set “-” for the day of the week (see step 3 under **To set the alarm time**). This type of setting causes the alarm to sound every day at the time you set.

- To set Weekly alarm

Set the hour, minutes, and the day of the week for the alarm time. This type of setting causes the alarm to sound every week at the time you set, on the day of the week you set.

To set the alarm time

1. Press (A) while in the Alarm Mode. The hour digits flash on the display because they are selected. At this time, the alarm is automatically switched on.
2. Press (D) to change the selection in the following sequence.



3. Press (E) to increase the selected digits and (B) decrease them. Holding down either button changes the selection at high speed.
- To set an alarm that does not include a day of the week (daily alarm), set “-” for the day of the week. Press (E) or (B) until the “-” mark appears (between SA and SU) while the day of the week setting is flashing.
- The format (12-hour and 24-hour) of the alarm time matches the format you select for normal timekeeping.
- When setting the alarm time using the 12-hour format, take care to set the time correctly as morning (A) or afternoon (P).
4. After you set the alarm, press (A) to return to the Alarm Mode.

To switch the alarm and Hourly Time Signal on and off

Press (E) while in the Alarm Mode to change the status of the alarm and Hourly Time Signal in the following sequence.



To test the alarm

Hold down (E) while in the Alarm Mode to sound the alarm.

TIPS FOR TAKING PULSE MEASUREMENTS

The following are useful tips you can use to ensure successful pulse measurements.

Tips On Placing Your Finger On The Photosensor

Note the following points if you experience problems with measurements.

Correct



Place your finger so that the photosensor is covered by the pads of the finger, not the fingertip. If your fingernail turns white, it means you are pressing too hard. Try pressing down a bit with your finger first, and then make adjustments as you view the display of the watch to see if measurements are being taken.

Note



If you have trouble keeping your finger still after physical exercise, try grasping your other hand as shown in the illustration.

Incorrect



Finger too upright.



Finger not covering Photosensor completely.



Finger too forward on the Photosensor.

Tips on Taking Measurements

Use the following techniques to ensure correct pulse measurements every time.

- Do not change the pressure of your finger on the Photosensor.
- Do not move your finger on the Photosensor.
- Warm up your finger before taking measurements.
- Avoid bright light when taking measurements.
- During measurements, keep still and do not talk.
- Once you start the measurement procedure, place your finger on the Photosensor as soon as possible.
- Remove rings or any other items that might restrict normal blood flow.

Important

The following factors may make it difficult or even impossible to achieve good pulse readings with this watch.

- Severe arrhythmia
 Pulse waves are unstable, so they cannot be detected properly by the Photosensor.
- Arteriosclerosis or other circulatory problems
 Circulation at the fingertips is bad, so the Photosensor cannot detect pulse waves.
- Thick fingertip skin
 Thick skin impedes the passage of light through the fingertip. This makes it hard for the Photosensor to take readings.

Taking Measurements During Exercise

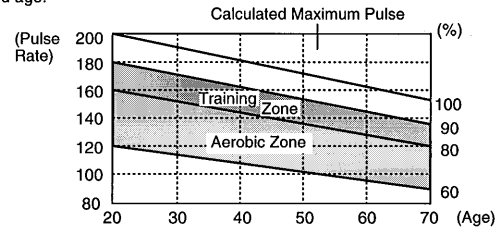
Your pulse rate drops almost as soon as you stop exercising. This means that the sooner you can take your first measurement, the nearer the value produced will be to your exercise pulse rate.

Caution!

Suddenly interrupting very intense exercise puts a strong load on the heart. Always exercise carefully, and consult with a physician before embarking on any serious exercise program.

About The Intensity Value

Intensity values are expressed in percentages of the calculated maximum pulse rate for a person of a given age. They can be used as guidelines to determine the intensity of almost any physical activity. The following graph shows the relationship between calculated pulse rates and age.



Normally, the maximum pulse rate is calculated by subtracting your current age from 220. Maximum aerobic benefit can be derived from activities that raise your pulse to a level that is 60% to 80% of your maximum. This range is your aerobic zone.