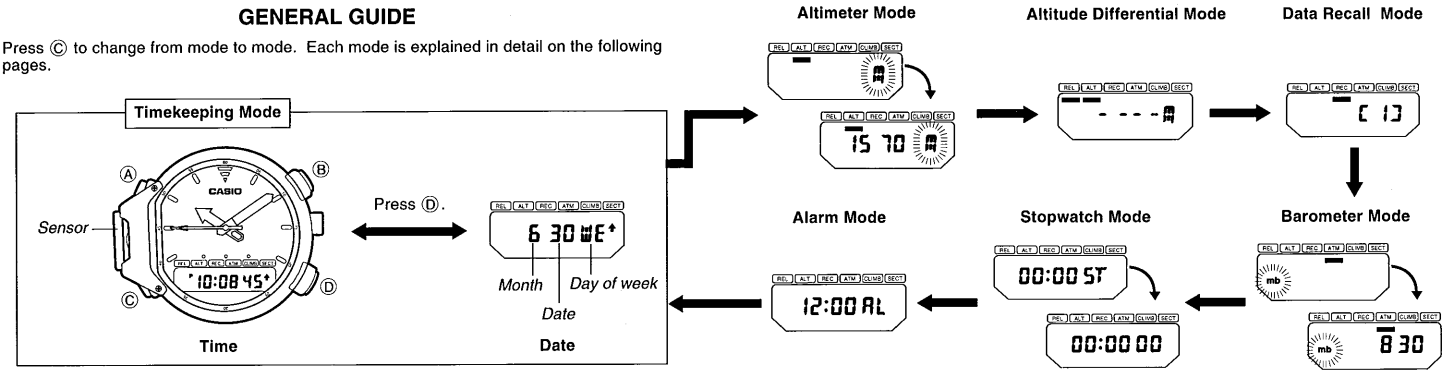
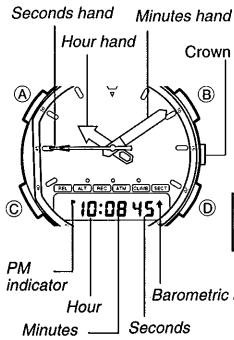
OPERATION CHART: MODULE QW-734

GENERAL GUIDE

- Press Ⓒ to change from mode to mode. Each mode is explained in detail on the following pages.



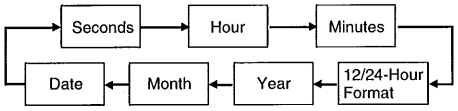
TIMEKEEPING MODE



- In the Timekeeping Mode, press Ⓓ to switch between time and date displays.

To set the digital time and date

1. Hold down Ⓐ while in the Timekeeping Mode until the seconds digits start to flash on the display. The seconds flash because they are *selected*.
2. Press Ⓒ to change the selection in the following sequence.



3. While the seconds digits are selected (flashing), press Ⓓ to reset the seconds to "00". If you press Ⓓ 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 Ⓓ to increase the number or Ⓑ to decrease it. Holding down either button changes the current selection at high speed.
   While the 12/24-hour setting is selected, press Ⓓ or Ⓑ to switch between the two formats.
5. After you set the time, format, and date, press Ⓐ to return to the Timekeeping Mode.

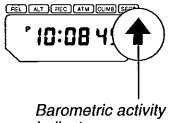
- If you do not operate any button for a few minutes while a selection is flashing, the flashing stops and the watch goes back to the Timekeeping Mode automatically.
- The day of the week is automatically set in accordance with the date.
- The date can be set within the range of January 1, 1990 to December 31, 2029.

To set the analog time

1. Pull the crown out to stop the seconds hand. If you plan to restart analog timekeeping on some time signal (from the radio or television), pull the crown out when the seconds hand in at the 12 o'clock position.
2. Set the hands by turning the crown.
3. Push the crown back in to restart timekeeping.

- Analog time is kept by a mechanical timepiece. Because of this, the second hand may not start to move exactly when you push the crown back in.

About the Barometric Activity Indicator



This watch is equipped with an atmospheric pressure monitor that takes atmospheric readings. Regardless of the mode the watch is in, the monitor measures the atmospheric pressure every three hours (starting from midnight). Two readings are taken and their average is applied as the measured value.
The direction of the barometric activity indicator is determined using the last two readings taken by the atmospheric pressure monitor. The last two readings are compared, and the barometric activity indicator indicates their difference as shown in the following table.

Change	Indicator
Increase of 3 mb	↑
Decrease of 3 mb	↓
Within ± 3 mb	None

This indicator appears on the display in the Timekeeping Mode.

ALTIMETER MODE

A built-in altimeter uses a pressure sensor to detect the current air pressure, which is then used to estimate the current altitude in accordance with ISA (International Standard Atmosphere) values for altitude and air pressure. The readout from the pressure sensor can be switched between meters (m) and feet (ft.).

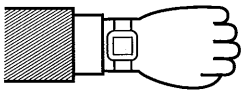
- If you do not press any button for one hour in the Altimeter Mode, the display returns to the Timekeeping Mode automatically.

About Altimeter Mode measurements

The Altimeter Mode automatically measures your current altitude. As soon as you enter the Altimeter Mode, measurements are taken every three seconds for the first five minutes. After that, measurements are taken every minute.

Important !

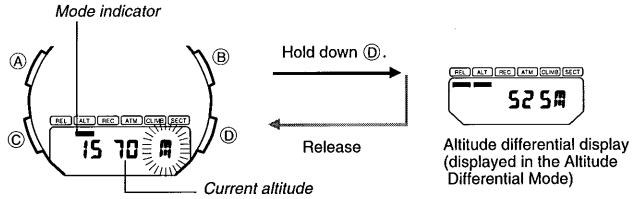
- This watch estimates altitude based on air pressure. This means that altitude readings for the same location may vary if air pressure changes.
- Sudden changes in the weather make it impossible to produce accurate altitude readings.
- Do not use this watch while participating in sports where there are sudden altitude changes. Also, do not use this watch for applications that demand professional or industrial level precision. This watch should not be used while engaging in the following activities: sky diving, hang gliding, paragliding, gyrocopter riding, glider riding, etc.
- In order to avoid measurement problems caused by differences in the watch's temperature, be sure to wear the watch so that it comes into direct contact with your skin.



Application

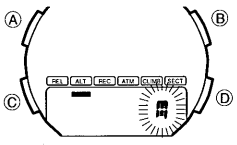
Measurement of altitudes during hiking or mountain climbing.

Reading the Altimeter Mode display



- While an altitude measurement is in progress, the unit of measurement (M or F) flashes on the display.
- The display shows the message "FULL" if a measured value falls outside the measuring range. The normal display returns as soon as the pressure falls within the allowable range again.
- Hold down Ⓓ to shows the altitude differential display. If a measurement is in progress, the current altitude measurement is shown. If no measurement is in progress, the display shows "– – – –".

Switching between meters and feet

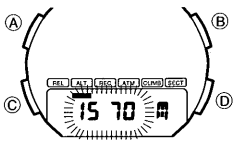


1. In the Altimeter Mode, hold down Ⓐ until the altitude value starts flashing on the display.
2. Press Ⓒ to select the meters/feet settings (**M** or **F** flashing).
3. Press Ⓑ or Ⓓ to select either meters "**M**" or feet "**F**".
4. After you select **M** or **F**, press Ⓐ to return to the Altimeter Mode.

Calibrating the Altimeter

The altitude measurements produced on this watch may be affected by atmospheric pressure. Because of this, we suggest that you calibrate the altimeter using information available from a map or other source.

To calibrate the altimeter



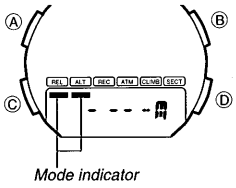
1. In the Altimeter Mode, hold down Ⓐ until the altitude value starts flashing on the display.
2. Each press of Ⓓ increases the displayed altitude value by 5 m, while pressing Ⓑ decreases it. Holding down either button changes the value at high speed.

- If you have selected feet as your unit of measurement, the above operations change the reading by 20 ft.
- You can calibrate the altitude within the range of 0 m to 4000 m (or 0 ft. to 13120 ft.).

3. After calibrating the altimeter, press Ⓐ to return to the Altimeter Mode.

- After you press Ⓐ, the numbers on the display indicate that the watch is making internal adjustments. This operation takes about nine seconds. Once adjustments are finished, the altitude display appears.

ALTITUDE DIFFERENTIAL MODE



In the Altitude Differential mode, the watch displays the difference between a starting altitude and each subsequent measured altitude value. Differential data from the start of the measurement to the end is stored in memory.
When you start a new measurement, the initial measurement is set as 0 (meters or feet). Each subsequent measurement is compared with zero, and the difference is shown on the display. Measurements are taken every three seconds.

- If you do not press any button for three hours in the Altitude Differential Mode, the display automatically returns to the Timekeeping Mode display.

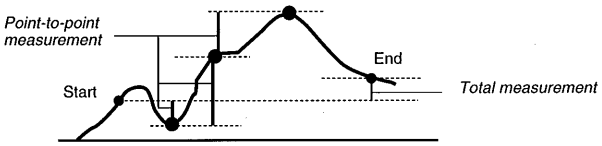
- The unit of measurement used in the Altitude Differential Mode is the same as that specified in the Altimeter Mode. To change this unit, use the procedure on "Switching between meters and feet".

Applications

- Measurement of the height of a building
- Measurement of changes in altitude while hiking or mountain climbing

How measurements are taken

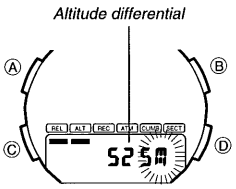
The Altitude Differential Mode can be used to measure total altitude differential and point-to-point differentials.
To measure total altitude differential, start the operation and let the watch take automatic measurements every three seconds. In such a case, the display is updated every two measurements (six seconds), and the final value shown is the total altitude differential.
For point-to-point altitude differential measurements, you press a button at the point up to which you want the differential measured and shown on the display.



Note

- Before performing an Altitude Differential Mode measurement, make sure that the display shows "– – – – M" or "– – – – F". If it doesn't, hold down the Ⓓ button in the Altitude Differential Mode until the above described display appears.

To perform a total altitude differential measurement



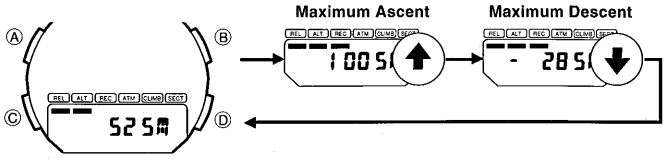
1. To start the measurement, hold down Ⓓ until "M" or "F" appears flashing on the display.
   - Measurements start to be taken every three seconds. The display is updated every six seconds with the average value of the last two measurements.
   - The unit of measurement ("M" or "F") flashes on the display while a measurement is in progress.
   - The display shows "FULL" if a measured value falls outside the measuring range. The normal display returns as soon as the pressure falls within the allowable range again.
2. To clear the displayed data and store it into memory, hold down Ⓓ until the display shows "– – – – M" or "– – – – F".
   - For details on the memory, see "About altitude differential memory management".

To perform a point-to-point differential measurement

1. To start the measurement, hold down Ⓓ until "M" or "F" appears flashing on the display.
2. When you reach the point up to which you want to measure the altitude differential, press Ⓑ. The altitude differential from your starting point (altitude zero) and your current position flashes on the display for about six seconds.
   - After six seconds, the display returns to the normal altitude differential display.
3. Repeat step 2 as many times as you like.
   - When you repeat step 2, remember that the resulting value is not the difference between your starting point and your current position, but rather between the point where you last pressed Ⓑ and your current position.
4. To clear the displayed data and store it into memory, hold down Ⓓ until the display shows "– – – – M" or "– – – – F".
   - For details on the memory, see "About altitude differential memory management".

Maximum Ascent/Maximum Descent

Pressing the Ⓐ button in the Altitude Differential Mode while a measurement is in progress shows the maximum altitude reached (maximum ascent) during the current measurement. Press Ⓐ again and the display changes to the maximum negative altitude reached (maximum descent). These values are calculated in relation to the start point (altitude zero) of the measurement.

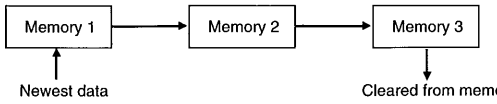


Altitude Differential Display

- If you do not press a button for about six seconds while the maximum ascent or maximum descent value is shown, the display automatically returns to the altitude differential display.

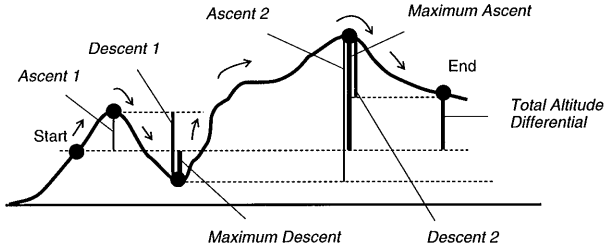
About altitude differential memory management

You can store up to three sets of altitude data in memory. Once memory is full, the next set of data recorded causes the oldest set of data in memory to be deleted. Note that no data is stored in memory if the maximum ascent/maximum descent does not exceed ±15 meters (40 feet).



The following table shows the data that makes up each set.

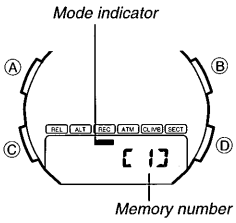
Data	Description
Total Altitude Differential	Differential between the end point and the starting point (altitude zero).
Maximum Ascent	Maximum differential between the end point and the starting point (altitude zero).
Maximum Descent	Maximum negative differential between the end point and the starting point (altitude zero).
Total Ascent	Total of ascent values
Total Descent	Total of descent values



Total Ascent = Ascent 1 + Ascent 2
Total Descent = Descent 1 + Descent 2

- The measured data can be recalled and manually deleted in the Data Recall Mode.

DATA RECALL MODE



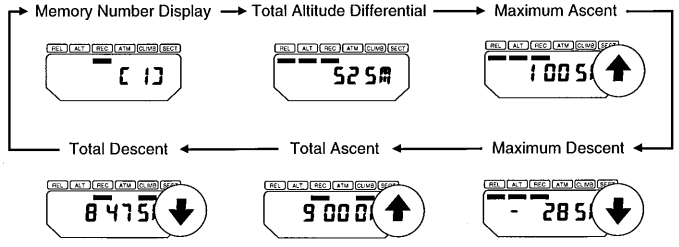
Use the Data Recall Mode to recall and delete altitude differential data from memory. Whenever you enter the Data Recall Mode from another mode, the newest data is displayed first.

To recall data from memory

1. In the Data Recall Mode, press Ⓑ to scroll through displays for altitude differential memory data sets 1, 2, and 3.

[Memory Number Display]

2. While any one of the memory data set displays is shown, press Ⓓ to scroll through the data contained in that set in the following sequence.



- For details on the meanings of the data contained in each display, see the table of "About altitude differential memory management".

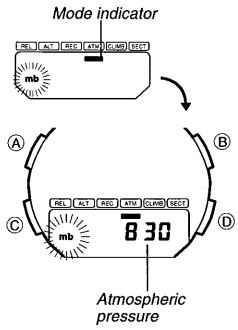
To delete data from memory

1. In the Data Recall Mode, display the memory number of the data you want to delete.

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

2. Holding down Ⓐ until the memory number starts to flash.
3. To clear all of the data in the currently displayed set, holding down Ⓒ and Ⓓ simultaneously until the display shows "CLEAR".

BAROMETER MODE



This watch uses a pressure sensor to measure atmospheric pressure. In addition to readings taken for the Barometric Activity Indicator, there is also a Barometer Mode that you can use for measuring atmospheric pressure. The readout from the pressure sensor can also be switched between millibars (mb) and inches/Hg (inHg). The barometer can be calibrated to correct for measurement error.

- The unit "mb" or "inHg" flashes on the display while the measurement operation is in progress.
- If you do not press any button for one hour in the Barometer Mode, the display returns to the Timekeeping Mode automatically.

Important !
The barometer that is built into this watch measures changes in atmospheric pressure, which you can then apply to your own weather predictions. It is not intended for use as a precision instrument in official weather prediction or reporting applications.

How to interpret atmospheric readings

- Atmospheric pressure indicates changes in atmospheric conditions, and you can predict weather with reasonable accuracy by monitoring these changes. Rising atmosphere pressure indicates good weather, while falling pressure indicates deteriorating weather conditions.
- The atmosphere pressure you see in the newspaper and on TV weather reports are measurements that are corrected to 0 m sea level values.

Applications

- Measurement of atmosphere changes while hiking to predict coming weather.
- Prediction of weather for golf or other outdoor activities.

About the Barometer Mode measurement

As soon as you enter the Barometer Mode, measurements are taken every 3 seconds for the first five minutes. After that, measurements are taken every minute. The display unit for Barometer Mode measurements is 1 mb (or 0.05 inHg) and the display range is 600 mb to 1099 mb (or 17.70 inHg to 32.45 inHg).

- The display shows "FULL" if a measured value falls outside the range of 600 mb to 1099 mb (or 17.70 inHg to 32.45 inHg). The normal display will return as soon as the pressure returns within the allowable range.

Switching between millibars and inches/Hg

In the Barometer Mode, press Ⓓ to select either millibars (mb) and inches/Hg (inHg).

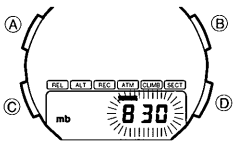
Calibrating the Atmospheric Pressure Measurement

The sensor of this watch is calibrated at the factory before shipment and further adjustment is normally not required. If noticeable error is found in the atmospheric pressure readings produced by the watch, you can adjust it to correct the error.

Important

- Incorrectly adjusting the atmospheric pressure measurement of this watch can result in incorrect readings. Compare the readings produced by the watch with those of another reliable, accurate barometer.

To calibrate the barometer



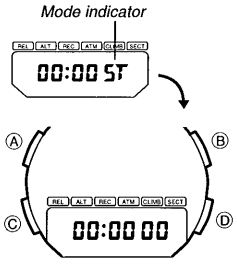
1. In the Barometer Mode, hold down Ⓐ until the atmospheric pressure value should start flashing on the display.
2. Each press of Ⓓ increases the displayed atmospheric pressure by 1 mb, while pressing Ⓑ decreases it. Holding down either button changes the value at high speed.

- If you have selected inHg as your unit of measurement, the above operations change the reading by 0.05 inHg.
- Atmospheric pressure can be calibrated within the range of 600 mb to 1099 mb (17.70 inHg to 32.45 inHg).

3. After calibrating the barometer, press Ⓐ to return to the Barometer Mode display.

- After you press Ⓐ, the numbers on the display indicate that the watch is making internal adjustments. This operation takes about nine seconds. Once adjustments are finished, the Barometer Mode display appears.

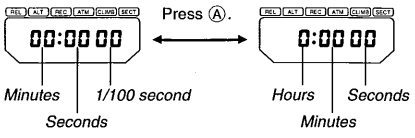
STOPWATCH MODE



The Stopwatch Mode lets you measure elapsed time, split times, and two finishes. The range of the stopwatch is 23 hours, 59 minutes, 59.99 seconds.

To change the measured time format

In the Stopwatch Mode, press Ⓐ to change the measure time display format between minutes (00:00 00) and hours (0:00 00).



To measure elapsed time

1. Press Ⓓ to start the stopwatch.
2. Press Ⓓ to stop the stopwatch.

- You can resume the measurement operation by pressing Ⓓ again.

3. Press Ⓑ to clear the stopwatch to all zeros.

To record split times

1. Press Ⓓ to start the stopwatch.
2. Press Ⓑ to display the timing up to that point. Stopwatch timing continues internally.
3. Press Ⓑ to clear the split time and to continue time measurement on the display.

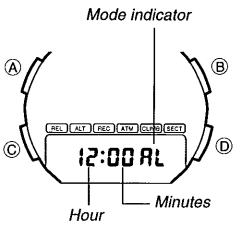
- You can repeat steps 2 and 3 as many times as you want.

4. Press Ⓓ to stop the time measurement.
5. Press Ⓑ to clear the stopwatch to all zeros.

To time first and second place finishes

1. Press Ⓓ to start the stopwatch.
2. Press Ⓑ when the first finisher crossed the line, and record the time.
3. Press Ⓓ when the second finisher cross the line.
4. Press Ⓑ to display the finishing time of the second finisher.
5. Press Ⓑ again to clear the stopwatch to all zeros.

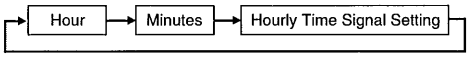
ALARM MODE



When the Daily Alarm is switched on, the alarm sounds for 20 seconds at the preset time each day. Press any button to stop the alarm after it starts to sound.
When the Hourly Time Signal is switched on, the watch beeps every hour on the hour.
Note that the Daily Alarm and the Hourly Time Signal operate based on the digital time setting.

To set the alarm time and switch the Hourly Time Signal on and off

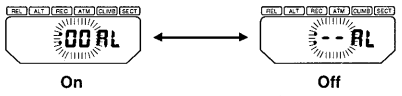
1. Hold down Ⓐ while in the Alarm Mode until the hour digits start to flash on the display. The hour digits flash because they are *selected*. At this time the Daily Alarm is switched on automatically.
2. Press Ⓒ to change the selection in the following sequence.



3. Press Ⓓ to increase the selected hour or minutes digits or Ⓑ to decrease them. Holding down either button changes the selection at high speed.

- 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 (am) or afternoon (pm).

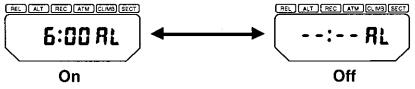
4. While the Hourly Time Signal setting is selected, press Ⓑ or Ⓓ to switch the hourly time signal on and off.



5. After you set the alarm time, press Ⓐ to return to the Alarm Mode.

To switch the Daily Alarm on and off

While in the Alarm Mode, press Ⓓ to switch the Daily Alarm on and off.



About the alarm

There are two different alarm sounds to choose from : high and low.

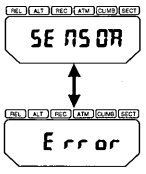
To test the alarm

Hold down Ⓑ while in the Alarm Mode to sound the alarm. Each time you test the alarm (by holding down Ⓑ) a different alarm sounds. The sound produced the last time you test the alarm is the one used for the alarm.

ERROR WARNING FUNCTION

This watch is designed to automatically stop taking measurements when there is a sensor malfunction, when battery power drops below a certain level, or when temperature drops below –10°C (or 14°F).

Sensor malfunction



Low battery or Low temperature



Important !

- There may be cases where the "SENSOR Error" or "HELP" message is cleared once you change modes. In this case, you can continue using the watch normally unless the error warning message reappears.

Whenever there is a sensor malfunction, be sure to take the watch to an authorized CASIO distributor or Service Center as soon as possible. If the appearance of the "HELP" message is caused by extremely low temperature, the message should clear from the display when normal temperature returns. It is recommended, however, that you still have the watch checked by an authorized CASIO distributor or Service Center.

THINGS TO KNOW ABOUT ALTITUDES

Relationships between altitude, barometric pressure, and temperature

Generally, atmospheric pressure and temperature decrease as altitude increases. This watch bases its altitude measurements on International Standard Atmosphere (ISA) values stipulated by the International Civil Aviation Organization (ICAO), which define relationships between altitude, atmospheric pressure, and temperature.

ALTITUDE	ATMOSPHERIC PRESSURE		TEMPERATURE	
4000 m	616 mb	About 8 mb per 100 m	−11°C	
3500 m				
3000 m	701 mb	About 9 mb per 100 m	−4.5°C	
2500 m				About 6.5°C per 1000 m
2000 m	795 mb	About 10 mb per 100 m	2°C	
1500 m				
1000 m	899 mb	About 11 mb per 100 m	8.5°C	
500 m				
0 m	1013 mb	About 12 mb per 100 m	15°C	

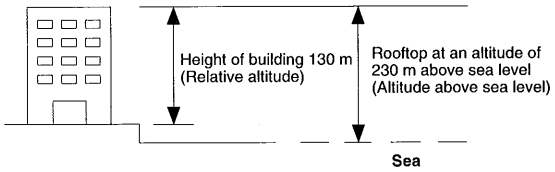
Source: International Civil Aviation Organization

ALTITUDE	ATMOSPHERIC PRESSURE		TEMPERATURE	
14000 ft				
12000 ft	19.03 inHg	About 0.15 inHg per 200 ft	16.2°F	
10000 ft				
8000 ft	22.23 inHg	About 0.17 inHg per 200 ft	30.5°F	
6000 ft				About 3.6°F per 1000 ft
4000 ft	25.84 inHg	About 0.192 inHg per 200 ft	44.7°F	
2000 ft				
0 ft	29.92 inHg	About 0.21 inHg per 200 ft	59.0°F	

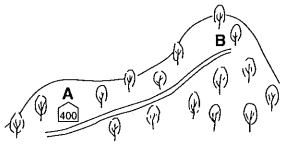
Source: International Civil Aviation Organization

How altitude is expressed

There are two standard methods of expressing altitude : Absolute altitude and relative altitude. Absolute altitude expresses an absolute height above sea level. Relative altitude expresses the difference between the height of two difference places.



Example: To obtain readings that are close to absolute altitude.
When you are out hiking or mountain climbing, calibrate the altimeter using an altitude value from another source (a signpost or map, for example). Do this just before you start your altitude measurements.



1. At Point **A**, calibrate the altimeter to 400 meters.
2. Proceed from Point **A** to Point **B**, taking altimeter measurements along the way.

- If you also have altitude data for Point **B**, you should again calibrate the altimeter there.
- Be sure to recalibrate at Point **B** if changing weather conditions produce altitude reading errors.
- The following conditions will prevent you from obtaining accurate readings.

When atmospheric pressure changes because of changes in the weather

Extreme temperature changes

When the watch itself is subjected to strong impact