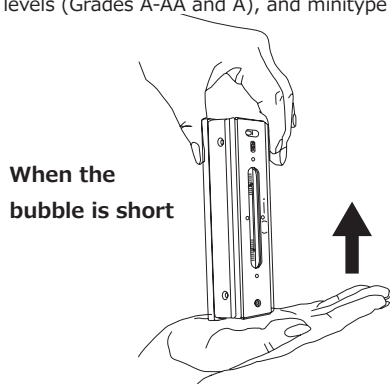


## Adjustment of bubble length

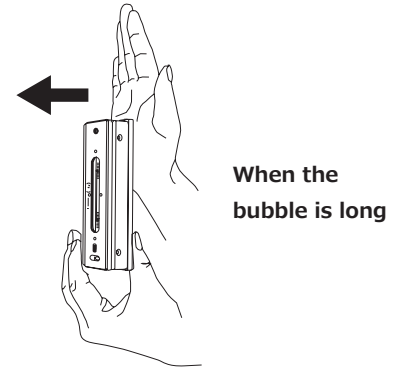
The length of the bubble in a level may vary depending on temperatures and vibrations.

If the length of the bubble changes, an inclination cannot be measured accurately. Adjust the length with respect to the reference lines before use in accordance with the following procedure:

\* Levels whose bubble length can be adjusted are as follows: Square-shaped precision levels (Grades A-AA and A), flat-type precision levels (Grades A-AA and A), and minitype levels.



Face down the zero point adjusting screw and tap the side of a level. Small bubbles rise and therefore the main bubble is lengthened.



Face up the zero point adjusting screw and tap the back side of the zero point adjusting screw (measuring plane).

## Zero point adjustment (Centering of bubble)

Be sure to check the zero point of a precision level before use.

Turn around the level by 180° and then check whether the bubble stays in the same position.

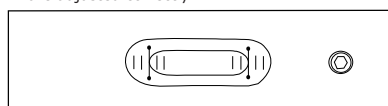
In cases (3) and (4), zero point adjustment is required.

In case (3), the position of the bubble differs by four graduations before and after the level is turned. Adjust the bubble position by turning the adjusting screw until the bubble moves back by two graduations (a half of the displacement).

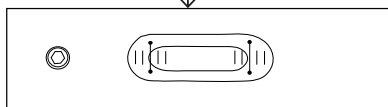
Repeat this procedures until the bubble stays in the same position when the level is turned around.

\* Note that an inclination cannot be indicated correctly when the temperature changes drastically or the measuring plane does not function normally (due to poor cleaning or the flatness of a surface plate).

(1) The zero points of the level and the surface plate are adjusted correctly.



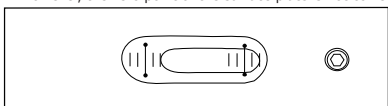
Turned around



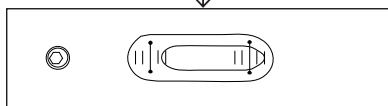
The bubble is centered with respect to the reference lines.

(2) The zero point of the level is adjusted correctly.

However, the zero point of the surface plate is not correct.

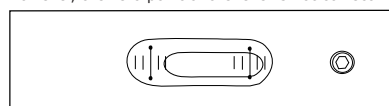


Turned around

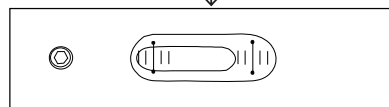


The right side of the surface plate is two graduations higher than the left side.

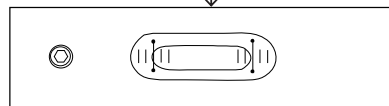
(3) The zero point of the surface plate is adjusted correctly. However, the zero point of the level is not correct.



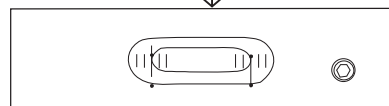
When the level is turned around, the zero point varies by four graduations.



In this case, adjust the position of the bubble by turning the adjusting screw until the bubble moves back by two graduations (a half of the variation).

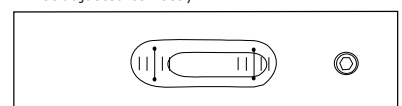


Turned around

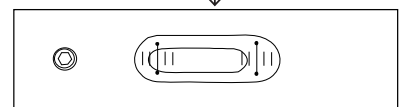


The zero points of the level and surface plate are adjusted correctly.

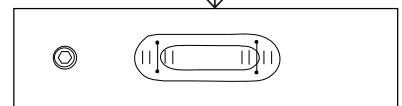
(4) The zero points of a level and a surface plate are not adjusted correctly.



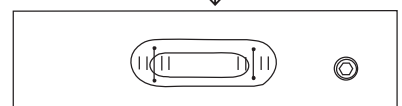
When the level is turned around, the zero point varies by three graduations.



In this case, adjust the position of the bubble by turning the adjusting screw until the bubble moves back by 1.5 graduations (a half of the variation).



Turned around



The left side of the surface plate is 0.5 graduation higher than the right