Precision level

Descripition

Auxiliary bubble tube
Main bubble tube
Zero point adjusting screw
Heat insulator

Non-conductor handle
Main bubble tube
Auxiliary bubble tube
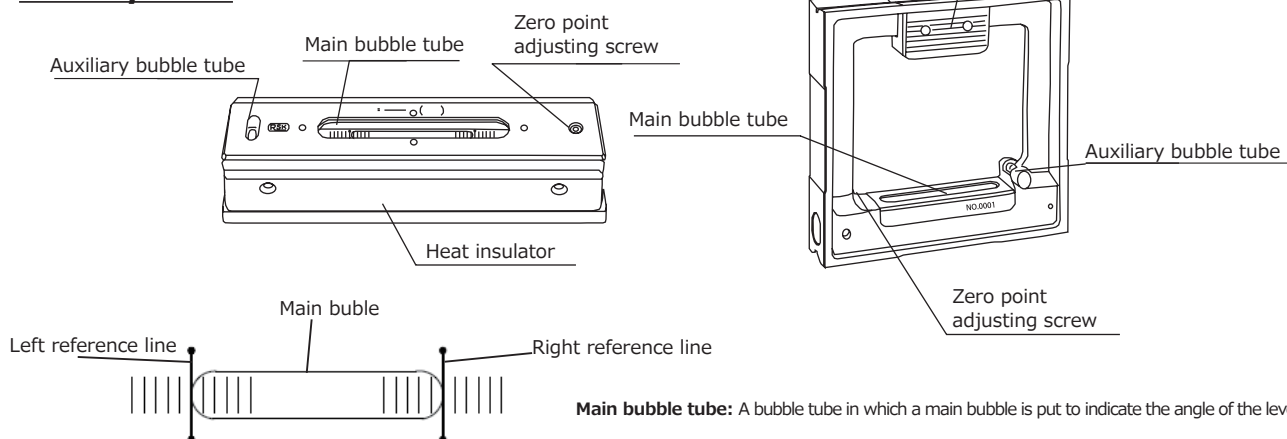Zero point adjusting screw

Left reference line
Main buble
Right reference line

Main bubble tube: A bubble tube in which a main bubble is put to indicate the angle of the level.

Auxiliary bubble tube: A bubble tube that indicates an inclination in the Y-axis direction.

Zero point adjusting screw: A screw used for zero point adjustment of a level (centering of the main bubble) before use.

Degree of Accuracy

Degree of accuracy indicates how closely the reading of a level agrees with the inclination of a place where a level is put.

The grade of a level (Grades A or B) indicates the degree of accuracy. (For details of grades of accuracy, refer to page 13.)

Total range accuracy means allowable accuracy throughout the measuring range of a bubble tube. While, adjacent accuracy means the allowable accuracy between graduations. (Refer to JIS B 7510.)

	Sensitivity category	Grade A	Grade B
Full range accuracy	Class 1	± 0.5 graduations or less	± 0.7 graduations or less
	Class 2	± 0.3 graduations or less	± 0.5 graduations or less
	Class 3		
Adjacent accuracy	Class 1	0.2 graduations or less	0.5 graduations or less
	Class 2		
	Class 3		

Sensitivity

JIS B 7510 prescribes that the sensitivity of a level is indicated with an inclination (a height or angle of a right triangle whose base is 1m) that moves the bubble in the main bubble tube by one graduation when the base is 1m. (Refer to the figure on the right.) Basically, levels are classified into three classes per sensitivity.
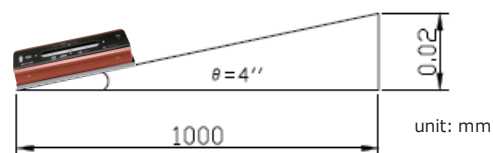
Class 1: 4 s (0.02 mm/m)

Class 2: 10 s (0.05 mm/m)

Class 3: 20 s (0.1 mm/m)

unit: mm

The measurable range of a level differs depending on the sensitivity.

If an inclination of an item to be measured exceeds the measurable range of level, the bubble goes outside the graduations and therefore the inclination cannot be measured. Select an appropriate level according to your measurement requirements.

If five graduations are drawn on both sides of the left and right reference lines, the measurable range of the level is as follows:

	Class 1 (0.02mm/m)	Class 2 (0.05mm/m)	Class 3 (0.1mm/m)
Measurable range	± 0.1mm/m	± 0.25mm/m	± 0.5mm/m

Ex:

When the bubble in a class-1 level moves from the position shown in Fig. (1) to the position shown in Fig. (2), the bubble indicates an inclination of 4 seconds (a height difference of 0.02 m at a distance 1 m from the edge of the level).

(1)

(2)