Definition of terms

A spirit level is a hollow body filled with a fluid and a gas bubble, which is used to check the horizontal position of an object.

Types of spirit levels

A distinction is made between bull's eye, screw-on, and cross spirit levels.

The position of the gas bubble in the bull's eye level simultaneously indicates the direction and the angle of inclination with which an object is inclined relative to the horizontal plane.

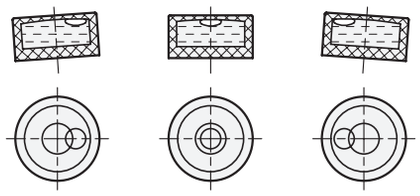
For screw-on spirit levels, the gas bubble only indicates the angle of inclination along the spirit level axis; the overall inclination and its direction relative to the horizontal plane are not taken into account.

Cross spirit levels have two spirit levels arranged at an angle of 90° to each other. This makes it possible to simultaneously indicate the direction and the angle of inclination, divided into their X and Y components.

Function

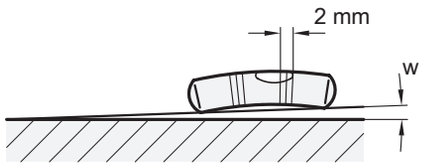
The function can be clearly explained using a bull's eye spirit level. The hollow body containing the fluid and the gas bubble has a defined radius at its upper side, causing the gas bubble to always float to the highest point due to its buoyancy.

The transparent upper section normally carries markings or a circle centric to the middle position. If the gas bubble is precisely centered in the marking, the object to be checked or the reference surface of the spirit level is in the horizontal position.



Sensitivity

The sensitivity of spirit levels is given as angle of inclination, e.g. 30 angular minutes or 0.5 degrees. This is the angle of inclination by which the spirit level must be tilted to make the bubble move by 2 mm. A spirit level with a sensitivity of 6 angular minutes therefore has a higher sensitivity than a spirit level with a sensitivity of 30 angular minutes.



Angle of inclination and difference in altitude

Sensitivity is sometimes also given in millimeter per meter, i.e. as difference in altitude per unit of length.

See also the reference table.

Difference in altitude in millimeter / inch per meter	**Angle w** in angular minutes	Degree, decimal
0.3 *0.01*	1	0.0167
0.9 *0.04*	3	0.0500
1.7 *0.07*	6	0.1000
2.9 *0.11*	10	0.1667
5.8 *0.23*	20	0.3333
8.7 *0.34*	30	0.5000
11.6 *0.46*	40	0.6667
14.5 *0.57*	50	0.8333
17.5 *0.69*	60	1.0000