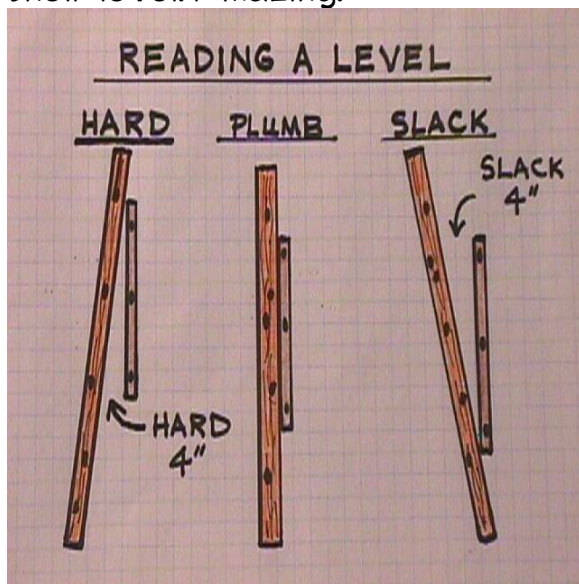


CHECKING A LEVEL

First off, don't leave your level in the sun, it will warp. Wood, aluminum, steel, plastic, it will warp and not be accurate. Rain and snow do not cause a 2x4 to warp, the sun, activating pitch tension, does. Freezing temperatures will not affect it the vials, they have mineral spirits in them for the liquid you see.

All levels are probably true at sometime of their life. The thing about this is that your job and reputation could depend on whether or not you know how to read and check your level.

The carpenters union that I was a member of in 1972 did a survey on carpentry competence. The results were astounding. Only 8% of the carpenters knew how to check their level. Amazing.



This drawing shows that you always call out a plumb reading

from the top of a level. When you put a level on a wall, get the level plumb, if you have slack (gap) at the bottom, it is called hard (hard against the wall). If you have slack (gap, slack) at the top it is called slack.

To check a level, it is best to use a plumb wall, and you should be able to turn the level on either edge, or either end, and it should read the same (all positions)

If it doesn't, get rid of it and buy another.

There are some levels you can adjust, take the lens off and put the level on a wall and rotate the vial until it reads exactly the same from both sides.

When you go to buy a level, check the level before you buy it. If they won't let you, go somewhere else. I have 7 levels and all are accurate. I check them often, as some of the characters I work with use them for pry bars and other handy uses for a \$60 level. Most levels sold, even the cheap ones, are good levels. A level is only as good as the person using it.

It doesn't matter what brand you buy, it does matter if you don't check it often. I will not use a level that is not accurate.

With the bubble in the center, the two lines on each side are called eyelines, if it has two more; these are called drain lines ($\frac{1}{4}$ " per foot). If it has three lines on each side of the bubble the 3rd line is .0834% slope (handicap) though I have never used this line. I just don't trust it,

I had rather calculate the slope and set elevations, then I know I have a 1/12 slope.

The eyelines are 1/2" apart. Bubbles are 3/8" at 72 degrees.

Don't buy a level if the bubble is touching both lines, it did not get the correct amount of mineral spirits at the factory.

If your bubble is touching one of these lines, you are out of level or plumb 1/2" in 10 feet. Doesn't matter if it is a 6" level, 4' level or a 6' level. 1/2" in 10'. Doesn't make sense does it.

To move anything takes energy. It takes energy to move the liquid in the vial; gravity is the energy source here.

A level gives you a line with a perfect gravitational pull to the center of the earth, but only at the center of the level. It doesn't matter if it's 6" long or 6 miles long, same line. You had better study this one.

If you had a level that was 5000' long and you got it level, it would only be accurate at the center, the ends of the 1000' level would not be level, but they would be in a plane with the center of the level, but if you put a good 4' level on the end of this 5000' level the 4' level would not read level.

This gets into gravitational engineering, a field all by itself.

Get an engineering book and read about it or read "[Gravity and Leveling](#)" in the [Carpenters Book](#).

I am going to say that my preference is Empire levels, they are adjustable, deadly accurate, and their warranty leads the industry.

A levels warranty is no better than the people you buy it from, so it is usually better to buy a level from someone you know, mom and pop lumber/hardware store, they will usually honor a warranty, online tools may be cheaper, but if you have a problem they usually won't even answer your emails.

Bob