TANGENT LABS
Calibration, Sales & Repair from every angle.

Using the Right Scale

By John Ulrich
Director of Metrology

2845 Tobey Drive | Indianapolis, IN 46219
TE 317.487.2378 | FAX 317.487.2375 | FREE 888.701.2378
www.tangentlabs.com

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Scale Usage

In almost every manufacturing facility or lab you'll find scales and balances that weigh product or count parts and can have many other uses. They can measure loads as big as fully-packed semi-trucks, or measure down to parts of micrograms. Some of them require extreme stability and wind protection while others can be used outside in the elements. You may even have one in your bathroom at home so you can monitor your own weight. With the wide variety of scales and balances available, how do you know which one to use? Chances are you have more than one at your facility and someone has told you which one to use depending on your application. What if you had to make the decision on your own? Could you do it?

Problem Statement

Using the wrong scale or using it improperly can potentially cost money in different ways. If the load cell inside the scale is over-ranged, then there is a cost incurred to get it fixed, if it even is economical to be fixed. Sometimes it's more economical to buy a brand new one to replace it. The load cell is the most expensive part of a scale and when it's damaged, it becomes an expensive problem. If you are weighing product on a scale, and you use a scale with too little of resolution, you may be shorting goods to your consumers or giving away goods to your consumers. Either way someone will be upset! With a little bit of insight into what kind of commonly used scales should be utilized, these kinds of issues can be avoided. That means if a problem occurs on the floor of your facility in regards to shorting your customer or giving away your product, you can be confident your choice in the scale you use to measure something won't come into question.

Tangent Solutions

Some common types of scales that Tangent Labs calibrates: Counting scales, Legal for Trade Scales, Precision and Analytical Balances, and Semi-Micro Analytical Balances.

Counting Scales

Counting smaller manufacturing parts or pieces used to be done by hand and was a tedious job. Somebody came up with a brilliant idea that if you knew how much each part you were counting weighed, you could program a scale to count every time that amount of weight was placed on it. That way you could dump a whole lot of those parts in a bin and let the scale count for you. It's important to be able to calculate how many parts you can measure to ensure you don't over range the scale by putting too many parts on it. It wouldn't be good to measure 200 0.75 lb parts on a 60 lb max scale. That would be more than double the capacity and would ruin the load cell. These scales can have a lower resolution (0.5 g), and can typically have a range anywhere from 10 lbs to 700 lbs.

Legal for Trade

Another type is the legal for trade scale. You find these a lot in butcher shops, candy shops, or anywhere that sells their goods by the pound. A butcher isn't usually going to be asked to prepare 2.37862 pounds of ground beef; therefore the resolution of the scale doesn't need to be that high. You don't want to be overcharged for your purchase, but higher resolution still isn't necessary. These scales typically have a range up to 60 pounds and can have typical resolutions of 0.01lbs or 0.005 lbs.

Precision and Analytical Balances

These are the most commonly used balances for loads where accuracy starts to become important and are the workhorses of labs and plants. The difference between the two is that precision balances don't usually necessitate a draft shield to block the breezes and air movement and they have less resolution. Analyticals require draft shields and have considerably smaller full ranges. You wouldn't want to measure your low weight UPS packages on an analytical balance, but you might be able to with a precision balance. Analytical balances get used a lot for measuring sample sizes with a good degree of accuracy, but aren't good enough to measure a piece of dirt or a piece of lint. Precision balances can range anywhere from 600 g to 64000 g, and will have 1 to 3 digits of resolution (1.1 or 1.001). Analytical balances typically range anywhere from 200 g to 600 g, and have 4 digits of resolution (2.0001 g).

Semi -Micro Analytical Balance

Semi-micro balances get into an even more accurate class of balances. Draft shields and a stable, vibration free surface are definite musts when measuring. You usually see these sitting on top of a surface plate of some kind tucked away in a lab from other noise and interference. Semi-micro balances can range anywhere from 40-100 g, and have a resolution of 5 digits (1.00001).

Summary

It's important when using a scale or balance to think about what accuracy you need, what capacity you need so you don't over range it, and whether or not the wind or other noises and vibration need to be accounted for. This way you can be sure of your measurement and reduce unwanted errors!