

Scale calibration frequency.

Internal calibration checks and how often to check.

Determination of proper calibration intervals is an important consideration to ensure your scale or balance is performing at sufficient accuracy over its lifespan. There are many reasons for you to check the calibration accuracy.

You may have a legal obligation (selling of goods by weight or alcohol content determination) to ensure weighing errors are kept within limits.

You may have a regulatory requirement imposed by an authority.

You may be weighing high value items and wish to keep weighing errors to a minimum.

Most legal and regulatory requirements will simply require you to ensure your weighing errors do not exceed stipulated limits. Under Australian Uniform Trade Measurement Legislation vendors are required to ensure *"the average content in a sample of pre-packed articles of the same measurement can't be less than the stated quantity marked on the packages, and no pre-packed article can have a shortfall greater than 5% of the stated quantity"*.

The only way to ensure accurate weighing and to minimise problems due to poor weighing is to check the calibration. Unfortunately there is no simple answer to how often you should check the calibration accuracy, there is no standard to provide guidance and authorities do not provide any information on checking requirements for scales. So you need to establish your own. Establish the accuracy you require by asking yourself the question "if the scales were in error by "X" would this be significant to our process or regulatory requirements? Understand the calibration stability of your scales as follows.

The calibration stability of modern scales and balances is greatly dependent on the weighing technology and the resolution of the weighing instrument. Electronic balances are capable of resolutions of 1 in 1,000,000 with very good stability over many months and many have internal self-calibration features to adjust the calibration if it drifts. Load cell based electronic scales have resolutions up to 1 in 30,000 but typically provide reliable calibration accuracy to about 1 in 3000 and some are better. Weighing errors can result from variations in the scale calibration over time or faults with the scale. Calibration stability can be directly influenced by frequency of use, handling and storage and the environment. Check calibration near capacity and at about ½ capacity. Checks under 1/3rd capacity provide limited accuracy. Scale calibration variations can be understood and quantified by establishing a calibration checking program. With sufficient history the records will show if the calibration is drifting or changing over time and if the drift is significant. To check the calibration use appropriate calibrated reference weights with good stability and begin with frequent daily or weekly checking and extend this if appropriate. Scale faults can occur at any time and are best detected by confirming calibration immediately before use and for critical applications it is normal to use a daily or shift change calibration check. For pre-packaged goods for trade applications we recommend a daily or weekly internal checks and for non-critical applications this can be extended to Monthly checks.

External 3rd party calibrations.

An external 3rd party calibration and scale service will provide a more extensive check than internal checks can provide. An external scale service will check repeatability, off centre load error, sensitivity, scale calibration, linearity of calibration, zero track and return to zero and provide information on the scale capabilities and accuracy. Have a 3, 6 or 12 month external service as appropriate. Use an ISO17025 3rd party accredited service organization only as this provides confidence in the service providers technical capabilities. Accreditation to ISO17025 includes the principles of ISO9001 quality accreditation as well as accreditation of the service providers technical skills and capabilities. Don't wait for something to go wrong before you have to answer the question *"Did you apply due diligence in selecting the service provider or did you choose on the basis of price alone?"*