



Calibration Weight

Storage, Cleaning, and Handling

Introduction

Troemner recommends using good laboratory techniques and practices as part of a preventative maintenance plan. We suggest weights be calibrated annually. Periodic calibration will assure that measurements made using your weights are valid. Periodic calibration will detect changes in mass value which otherwise may go unnoticed. These changes could have an impact on the quality of your measurement results. Following Good Manufacturing Practice (GMP) regulations with proper maintenance and quality control of your calibration weights will lead to less sources of error and accurate results.

Storage of Weights



Weights should be stored in the original case and protected from airborne contaminants. If the weights were not supplied with a case, either purchase one or use a clean container to protect the surface of the weight – this will keep airborne particles from getting on your weights between uses. Weights should be in thermal equilibrium with the balance, so store the weights near your balance. Another option is to leave calibration masses commonly used inside the weighing chamber when not in use – this assures your weights are in thermal equilibrium with the balance producing a better measurement. Excessive scratching of the weight must be prevented, as weight can be lost or gained. Excessive scratches can be caused by dragging the weight along the balance pan or by placing the unprotected weight on a hard surface or dirty surface.

- Laboratory Standards of ASTM Classes 000, 00, 0 and OIML Class E1, E2 and Class E0* weights should be stored in bell jars to keep contaminants off the weights. The bell jar should be made of glass to prevent out gassing of chemicals that can attach to the weight. The weight should sit on an acid and lint free cloth. The weight should be stored in a controlled environment that has temperature swings of no more than 1°C, where humidity is maintained between 40%-60% RH.
* E0 is a theoretical tolerance that is 50% of OIML R 111 Class E1
- Laboratory Standards of ASTM Classes 1, 2, 3, 4 and OIML Classes F1 and F2 should be stored in cases. The case should cover the weight to protect from contaminants. The case should hold the weight securely in a cavity and the shoulder of the weight should be even with the edge of the cavity. The weight should be stored in a controlled environment that has temperature swings of no more than 1°C and humidity is between 40%-60% RH. Weights that are used in areas of high humidity need to acclimate to this environment. The weights should be removed from the cases in the storage area and then covered with a lint free cloth for 24 hours.

- ASTM Classes 5, 6, 7 and OIML Classes M1, M2 and M3 weights 1 kg and smaller should be stored in cases. Weights greater than 1 kg can be stored in individual cases or covered in a clean area. Weights do not have to be stored in environmentally controlled conditions.

Cleaning



No cleaning method is perfect. It is important to understand that certain cleaning procedures may alter a calibrated mass value of a weight. Substance, whether dirt or actual material, may be removed during the cleaning process. If proper cleaning procedures are not followed, residual dirt or solvent may be left on the mass standard, which will also affect the mass value of the weight. There are different recommended cleaning methods for sheet metal and non-sheet metal weights, because of their different physical characteristics. There are also different cleaning methods for periodic or daily cleaning and “spot” cleaning, which is a more vigorous method to be used when daily/periodic cleaning methods do not remove foreign matter.

Daily/Periodic Cleaning

- Non-sheet metal weights - Before each use clean all weights with a camel hair or other suitable soft brush to remove any particles that might have settled on the weight. Remember to pay special attention to the bottom surfaces, since these tend to be overlooked. One may also use a syringe bulb to remove loose particles. Spot cleaning may be necessary.
- Sheet metal weights - Prior to each use visually inspect weights for foreign matter and brush lightly with a suitable soft brush. Sheet metal weights are the most delicate and fragile weights manufactured. Sheet metal weights also have the largest surface to mass ratio, so any effect on a sheet metal weight’s surface will have a greater impact in its mass value as compared to cylindrical weights. These weights have a tendency to attract foreign matter due to the flatness and raised markings of each piece. Extra care must be taken when handling and cleaning these weights. It is highly recommended that sheet metal weights be placed in a protective casing in order to prevent contamination. A syringe bulb should be used to help clean the weight and to blow off particles.

Spot Cleaning



Spot cleaning is recommended when foreign matter is observed on weights that cannot be removed using daily/periodic cleaning methods. Use cheesecloth dampened with ethyl alcohol and gently rub the weight surface in order to remove any residual or stubborn debris from the weight surface. If using alcohol does not remove the foreign debris, repeat the process using other solvents such as window cleaner or distilled water. If solvents other than distilled water and alcohol are used, the weights should be cleaned again using alcohol to remove any residual solvent from the weight. Solvents other than distilled water should never be used on brass weights or cast iron weights since they have a protective coating of lacquer and paint respectively, and solvents will deteriorate coated surfaces.

- For sheet metal weights or other weights made out of aluminum, alcohol should never be used since alcohol can deteriorate aluminum. After spot cleaning, the weight should not be used for a period of 4 hours in order for the weight to return to thermal equilibrium with the environment.
- Painted cast iron weights – These weights should be brushed or compressed air should be employed to remove any foreign material. When cast iron weights are calibrated and the “as found” data has been ascertained, you may want to add a coat of paint to the weights, especially if there are signs of rust or abrasions. A calibration should be performed after any paint is applied. Use a lacquer or aluminum-based paint that goes on thin. A thick paint like an epoxy-based paint leaves too heavy a coat and is not recommended. Avoirdupois weights should be painted silver and metric weights should be painted gold.

- Brass weights – The only cleaning procedure recommended for brass weights is cleaning with a clean cloth dampened with distilled water.

Handling



Calibration weights are sensitive and we should take extra care when handling them. We recommend using lint free gloves at all times when handling the weights. Of course there are other options available. We have a variety of accessories designed with your precision weights in mind. Accessories include weight forks, lifters, and tweezers which will assure you get the best out of your precision weights. At Troemner, we believe that weights are an important investment. Troemner's Individual Weight Cases are constructed of high quality polycarbonate and have color-coded inserts designed specifically for each weight size. The lid of each case locks tightly to ensure that your weight is held securely and kept clean. A urethane bumper gently holds the weight in place and prevents it from shifting, which could damage the weight.

Individual cases are available for weights from 1mg through 2kg. Weight Set Cases are available for sets where the largest weight is 500g and below. The weight cases can be used to store your weights in or outside of your lab. We also have a full line of specialty cases and custom weight carts designed for all of your weight storage and shipping needs.

Calibration Services



Troemner is your single source calibration services provider, with local pick-up/delivery options and all the services needed for a complete calibration program. We are synonymous with precision instrumentation and measurement accuracy. At Troemner, our reputation is built on our commitment to accuracy and precision. We address every variable of our measurement process to ensure consistency of calibration, which leads to accurate results in your processes, products and services.

Our calibrations are accredited, NIST Traceable services fully compliant with ISO 9001, ISO/IEC 17025 and CGMP (Current Good Manufacturing Practices) coupled with great prices and fast turnaround. We offer the very best in calibration services and prices. That's what it is really all about!

About Troemner, LLC

Troemner, LLC maintains one of the largest and most advanced independent metrology laboratories in the world. Troemner provides the highest level of quality calibration by pursuing every measurement detail in order to achieve the most accurate and repeatable calibrations in the industry. Our measurement system is rigorously reviewed and procedures are documented for every step of the calibration process. Our metrology staff and calibration technicians have extensive manufacturer training and experience in calibrations. Have a question or need more information just give us a call at 856.686.1600 or via email at troemner@troemner.com.