



# Caring for your hand weights

## The Best Practice Guide



If you're reading this guide, there is a strong chance that accurate weight plays a crucial role in your business's operations. Whether you use hand weights to calibrate equipment, as process checks, or to provide a reference weight, it's important you care for your weights correctly.

Great care should be taken when using hand weights as they are prone to wear and contamination through daily use. Even the smallest oversight can cause weights to become damaged, and damaged weights which are out of tolerance will not provide you with accurate results.

This guide recommends best practice advice on cleaning, handling, storage and calibration of your weights – helping you to maintain and keep them accurate for years to come!

## CLEANING WEIGHTS

If well handled, under ideal conditions weights should not become contaminated and would never need cleaning.

However, in practice, weights are subjected to an external environment where even tiny fragments of dust and grease can affect their integrity.

To minimise contamination, when not in use, weights should be stored under cover to keep them as free from contamination as possible, ideally in their original cases or storage cupboards.

Adding labels or stickers to weights is bad practice as they can affect the accuracy of the weight. The sticker can push the weight out of tolerance, which can have a knock-on effect further down the line if you are using the weight to calibrate or check your machine or process.



## HOW TO AVOID USING LABELS OR STICKERS?

Avoid using labels or stickers but ensure your weight is still identified and traceable by marking it with either:

- Paint pen
- Stamping
- Etching

## How to clean OIML Class E1 to Class F2 weights

Before weights are used, gently brush the weights with a clean, soft brush to remove dust particles or blow particles off with a small bulb-type puffer blower.

Check the bottom of each weight to remove any dust or fibres from the lining material of the box.

If you use a brush, do not touch the bristles with bare hands.

When brushes are laid down, place them so that the bristles do not touch anything. Store brushes in clean containers between use. Clean brushes regularly in soapy water and then rinse several times in fresh water.

## How to clean class M weights

Class M weights should be cleaned with a firm brush to remove any loose material. Contaminants on the surface of the weights, e.g. rust, can be removed with a wire brush. Sand-blasting the weights will remove all surface coatings after which the weights should be coated with a suitable paint.





# HANDLING WEIGHTS

Proper handling of weights is important to avoid contamination and ensure the weights are not damaged during use.

## Wear Gloves

Some weights are so sensitive that their accuracy can be compromised by picking up skin acids, oil, sweat and dirt, or even heat from the operator's hand.

Wearing special gloves is recommended when handling weights to prevent contamination of the weight surface. For high class weights, soft chamois leather gloves may be used, providing that they have been washed several times before use and then regularly afterwards. Washing removes dirt, oils and also chemicals which may have been used in the manufacture of the gloves. For lower class weights, clean, lint-free cotton gloves can be used.

Gloves should ideally be used to handle class M weights, but cast-iron weights may also be handled with clean dry hands.



## Use appropriate handling devices

A wide range of handling devices, including special pronged lifters and tweezers can be used to minimise contact between the operator and the weight.

Any lifting device should be covered with a suitable material, such as clean chamois leather, so that metal surfaces do not come into contact with the weight.

If using plastic tipped tweezers, be aware that the plastic easily wears and may permit contact with the metal of the tweezer tips. Additionally, some plastic tipped tweezers can become contaminated with dirt, which is then transferred onto the weights which are being handled.

## Protect the weight's surface

Metal-to-metal contact, either with other weights, or with the load receptor of balances or mass comparators, can cause wear and damage to the surface of weights. We recommend placing weights on acid-free tissue paper when in use. Weights, where possible, should not be stacked on top of each other.

# STORAGE OF WEIGHTS

The ideal storage of weights is in a storage cupboard, where they can be protected from dust and atmospheric pollution by glass covers.

## Guidelines during transit

Weights are sensitive objects, and movement during transport can cause weights to inflict damage on other weights if they are not stored correctly. When transported for calibration or used outside the laboratory, weights should be contained in specially built weight boxes.

Boxes should have individual compartments for each weight, with the holes for larger cylindrical weights being lined with a material which has been washed and is chemically inert and which does not shed fibres whilst in use. Each weight should fit in its respective hole, neither too tightly nor too loosely (tight fitting weights can have their surface damaged through repeated insertion into the hole).

Wood, such as mahogany, is the traditional material for the manufacture of weight boxes.

Acidic woods, such as oak, and the use of animal or vegetable glue should not be permitted.

Some modern plastic materials are also used for weight boxes.

## NO WEIGHT BOX?

Although it is best practice to use a specially made weight box to transport weights, if you don't have a weight box, follow these guidelines to keep your weights safe during transit:

- To prevent damage: individually wrap each weight in bubble wrap
- To prevent loss: pack weights in a sturdy box which will not split during transit
- When it comes to re-calibration time, to allow for easy processing, always include full details of your calibration requirements, a packing slip, and a return address

## Guidelines for weights not being transported

When not being transported between sites, it is recommended that high accuracy weights are removed from their transit boxes. Larger standard weights can be placed under a simple bell jar, with a granite or non-magnetic stainless-steel base.

The weights should not rest directly on the granite or stainless-steel base plate, but should be placed on to sheets of clean acid-free tissue paper (other papers, including filter paper are not suitable, as chemicals may have been used in their manufacture).

Smaller weights can often be stored in the balance case, sat on acid-free tissue paper, covered with a simple glass cover.

It is often safer and more convenient to leave fractional weights in their storage box.



## Cast iron weights

Cast iron weights should ideally be stored on weight retaining trays with detachable covers. The trays can even be made to allow the set of weights to be moved by a fork-lift truck or crane. If possible, the tray should be perforated to allow ventilation to all sides including the base of the weights.

Where weights are routinely used outdoors for the calibration of weighing machines, special precautions need to be taken to avoid corrosion of the surface of the weight (as this can lead to a change in mass of several times the calibration uncertainty).

A common occurrence from outdoor use are weights becoming damp, in this case, they should be wiped with a dry, clean cloth prior to storage in a well-ventilated area. Weights used for the testing weighbridges and other heavy weighing machines, and which are routinely transported and stored on special testing vehicles, should likewise be wiped to dry them off if they are used in a damp atmosphere.



# CALIBRATING WEIGHTS

Calibrating weights is extremely important as it ensures weights are within tolerance, accuracy and specification. There is no legal requirement which stipulates how often weights should be calibrated. The most common frequency is once every twelve months, however as the calibration process is based on the risk of inaccurate performance, weights that are used daily or for process critical operations, for example, may be calibrated more often.

To achieve the highest level of accuracy, quality and service, weights should only be calibrated in an accredited laboratory.



## Optimum laboratory conditions

Accredited laboratories will provide calibrations under optimum conditions where there are tight controls for temperature, humidity, air flow and other environmental factors.

Once a calibration is complete, the laboratory will provide a calibration certificate which details all relevant aspects of the artefact's calibration.





## ASK THE EXPERTS

If you have any questions about caring for your weights, then ask our experts. We have been calibrating weighing equipment for over 250 years.

Our UKAS accredited laboratory calibrates over 10,000 weights annually.



Email us at [webinfo@awtx-itw.com](mailto:webinfo@awtx-itw.com)  
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