Cast Iron Weights

NIST Class F, ASTM Class 6 and ASTM 7

Handling, Cleaning and Shipping Manual

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RICE LAKE® WEIGHING SYSTEMS

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www.ricelake.com

Contents

1.0 Introduction

This document covers the proper cleaning, handling and shipping of NIST Class F, ASTM Class 6 (weights larger than 5 kg) and ASTM Class 7 Cast Iron.

Cast iron weights with a painted finish, may also be referred to as lacquered, NIST Class F. The cast iron weight design includes a grip handle to assist in picking up and moving the weight.

ASTM Class weights are intended for calibrating Class III, Class IIIL and Class IIII industrial scales.

Manuals can be viewed or downloaded from the Rice Lake Weighing Systems website at www.ricelake.com/manuals

Warranty information can be found on the website at www.ricelake.com/warranties

Safety Signal Definitions:

DANGER ***Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.***

WARNING ***Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.***

CAUTION ***Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.***

IMPORTANT ***Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.***

General Safety

Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

WARNING

Failure to heed could result in serious injury or death.

Do not allow minors (children) or inexperienced persons to handle the weights.

Do not use for purposes other than scale calibration.

Do not use any load bearing component that is worn beyond 5% of the original dimension.

Do not use this product if cracked or damaged in any way.

Do not make alterations or modifications to the weights.

2.0 Weight Handling Procedure

Weights conforming to NIST Class F should be handled, transported and packaged with care. Lifting tools should not damage the weights in any way. Clean the weight with the proper cleaning method if they become soiled. The weights should be stored under cover so that they will stay clean.

2.1 Weight Care

Use the following recommendations when caring for test weights.

- Keep the weights clean and in good repair
- Ensure individual weight kits are identified with unique serial numbers
- Handle analytical weights carefully. Misuse and dirt can cause analytical weights to go out of tolerance easily

2.2 Weight Case Care

Keep the interior of the weight case clean and free of contaminants. Ensure the case is secure with working latches.

2.3 Handling

Proper handling of weights is important in preserving the integrity of that weight as a measurement standard.

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

3.0 Weight Cleaning Procedure

The following guidance is based on information published in ASTM E617 and/or OIML R111 documentary standards. These instructions are provided for informational purposes only.

It is essential to clean weights before any measurements are made because the cleaning process may change the mass of the weight. Cleaning should not remove any significant amounts of weight material. Weights should be handled and stored in a such a way that they stay contamination-free. Before calibration, dust and any foreign particles shall be removed by brushing with a clean soft-bristle brush or gentle wiping with a non-abrasive lint-free wipe. Care must be taken to not change surface properties of the weight (ie: by scratching the weight).

If the weight contains significant amounts of contamination that cannot be removed by brushing with a clean soft-bristle brush or gentle wiping with a non-abrasive lint-free wipe, the weight or some part of it can be washed with clean alcohol, distilled water or other solvents. Weights with internal cavities should normally not be immersed in the solvent to avoid the possibility that the fluid will penetrate the opening. If there is a need to monitor the stability of a weight in use, the mass of the weight should, if possible, be determined before cleaning.

3.1 Categories of Weights

There are two different cleaning procedures for these categories of weight, depending on the material of the weights. Cast Iron weights are in Category 3 - Lacquered weights.

3.1.1 Lacquered Weight Cleaning Procedure

The cleaning of lacquered weights requires special care because their protective lacquer coating is soluble in most solvents.

1. Carefully brush or whip off any visible particles on the weight with a soft non-abrasive material free from oils and other substances that would contaminate the weights. The weights may also be brushed with a soft brush such as a camel hair brush.
2. A rubber bulb type syringe may be used to blow off lint or other small particles. Be careful not to touch the weights with the nozzle.

An electrostatic charge may built up on the surfaces of the weights during the cleaning process or while handling them, especially in a very dry atmosphere. This charge must be bled off the weights before calibration to obtain reliable mass values.

3.1.2 Cast Iron Weight Cleaning Procedure

Cast iron weights in good condition may be cleaned by brushing the surface with a stiff brush. Surface contamination, such as rust, may be removed with a wire brush. Sand-blasting will remove all surface contaminants after which the weights should be sprayed with a zinc phosphate modified alkyd resin fleet primer and then repainted. The weights should ideally be handled using washable cotton gloves. Do not slide the weights across the load receptor and wipe the weights clean of any accumulated moisture during use. Store the weights in a well ventilated, covered weight store.

Cleaning Interval

Weights should be maintained in a manner that keeps the weight free from dirt and contaminants which could affect the integrity of the weights.

Weights do not need to be cleaned every time they are used. The interval between cleanings may be several months if the weights are handled carefully and kept in a clean atmosphere under a dust-tight when not in use. Under less favorable conditions, the interval may be only a few weeks.

Temperature Equilibrium

Allow newly cleaned weights to come to room temperature prior to calibration. This may take several hours for larger weights. Generally, laboratory weights will come to temperature equilibrium overnight.

Storage

The weights should be stored under cover to keep them clean and free of dust and debris. do not store the weights where moisture, water or other elements will make contact with the weights. Ideally, cast iron weights should be stored on weight retaining trays with detachable covers. The trays can be made ot allow for the set of weights to be moved by a forklift, truck or crane. the weight retaining tray should be perforated to allow for ventilation to all sides, including the base, of the weights. Special precautions must be taken to avoid corrosion of the weight surface when the weights are routinely used outside. Corrosion of the weight surface can lead to a change in mass of several times the calibration uncertainty. Wet or damp weights should be wiped with a dry clean cloth prior to storage in a well ventilated area. Weights which are routinely transported and stored on special testing vehicles, such as those used for testing weighbridges and other heavy weighing equipment, should be wiped dry if they are used in a damp atmosphere. The special testing vehicle should have a roof or canopy to keep the weights covered during transit, but should also allow for good ventilation over the surface of the weights to maintain a stable atmosphere and minimize surface corrosion.

4.0 Recommended Shipping Procedure for Weights

Use the following recommendations for shipping weights.

- Ship weights in cases and material designed to protect them from bumps and abrasions during shipping.
- Do not use packing peanuts as they tend to cling to the weights, creating static electricity which can compromise the lab environment.
- The following packing materials are recommended: Styrofoam (not peanuts or smaller pieces), paper (not shredded as this also conducts static electricity) or bubble wrap.
- Ensure loose, small weights are packed soundly with crumpled paper (not shredded) between each of them and the box.
- Clean room cases should be used only for weight storage and are not recommended for use in shipping weights.
- Do not ship heavy weights (10 lb or greater) in cardboard boxes.
- Larger weights should be individually wrapped and protected, supported with stiff packing material and double boxed for structural durability.
- Small weight kits should be held shut with secure latches, rubber bands or tape, and placed inside boxes or bags.

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