



OHIO METROLOGY LABORATORY POLICY STATEMENT

Instruction Sheet for Submission of Test Equipment

Effective: 1975

Revised: 2012

The State of Ohio Weights and Measures Laboratory is open for calibration of test equipment. Since the laboratory is the calibration center for the entire State of Ohio, we feel it is imperative that we point out certain guidelines for testing. We therefore offer an outline of requirements for laboratory calibration.

1. **Scheduling Work – By Appointment Only.** Before sending any work to the Ohio Metrology Laboratory, you must first contact the lab and make your initial request. All work will be scheduled as soon as possible after the initial request, depending on the schedule of the lab. After the lab has determined the amount of time needed to process your request, you will be provided a calibration date. If you need to ship any items to the lab, please make sure they arrive prior to your scheduled calibration date. Include any specific requirements with the artifacts such as, but not limited to:
 - Physical address to be listed on certificate
 - Billing address to which certificate and invoice will be mailed.
 - Purchase Order
 - End user company name and address (If different than company submitting artifacts).

You can telephone or email the laboratory for scheduling. (614) 728-6290 or weights@agri.ohio.gov

*Invoice and Certificate(s) will be mailed to the same address

*Dropped off artifacts that do not have an appointment will fall to the end of the laboratory test queue.

2. **Re-Scheduling.** Scheduled appointments may have to be re-scheduled due to unforeseen circumstances. This may include, but not limited to, illness, jury duty or an emergency. Each metrologist individually prepares their schedule. Therefore, scheduled items may still be dropped off, however, they may not be done at the original time expected. All efforts by the laboratory staff will be made to contact the scheduled client and determine if they would like to re-schedule or drop off the items and have them worked back in to the schedule.
3. **Fees.** The fee for testing is \$80.00 per hour. A quote can be provided upon request. Fees must be paid by money order, check or bank check. NO CASH OR CREDIT CARDS will be accepted. If any of the conditions in this policy are not met and no certificate can be issued for the item submitted, there will still be a charge involved for our setup and scheduling time (minimum ½ hour).
4. **Due Dates.** It is not the responsibility of the Ohio Metrology Laboratory to modify the schedule in order to accommodate artifacts that are near or past the calibration due date. It is the owner of the artifacts responsibility to make sure they are scheduled far enough in advance of the expiration date.
5. **Calibration Intervals.** Field standards used by Ohio Weights and Measures officials are required to be tested once every three years. Field standards used by registered servicepersons are required to be tested at least once every two years. These requirements are in accordance with Ohio Revised Code Section 1327.50 (H) and Rule 901:6-8-01.



6. **Shipping Items To Lab.** All items shall be securely packed before shipping. Any item ten (10) lbs or larger should be shipped in wooden crates, not cardboard. The Ohio Metrology Laboratory is not responsible for items not shipped properly. Cardboard shipments are accepted for smaller items, but larger items should be double boxed and secured. Items should be individually wrapped or protected with appropriate packing materials. **Foam peanuts are not acceptable.**
 - *Handheld weight kits shall be secured in the closed position with latches, rubber bands, tape, boxes, or bags. Small weights can be lost if the kit is not securely closed.
 - *Weights 50 lb (25 kg) and larger, whether shipped or delivered, should be stacked on full size pallets whenever possible. A forklift is available for pallet delivery.
 - *The laboratory **will not accept** items shipped freight collect or C.O.D.

7. **Return Shipping.** Return shipment of small boxes (150 lb or less) will be shipped via UPS Ground. Current UPS shipping and insurance charges will be prepaid by the laboratory and added to the invoice along with the calibration charges.
 - *It is the customer's responsibility to advise the laboratory of the appropriate monetary value for insurance amounts. This value should include the cost to replace the artifacts as well as the cost of recalibration. If an insured value is not provided by the customer, the laboratory reserves the right to make a judgment on the value of which to insure the package. The Ohio Metrology Laboratory assumes no liability in excess of the insured amount.
 - *Arrangements for return shipping of items on pallets (LTL Freight) or shipments utilizing customer's shipping account (freight collect) should be made with the laboratory during scheduling or initial delivery.

CONDITION OF ARTIFACTS

We believe the testing and repair work in the weights and measures field cannot be any better than the equipment used. It is to the advantage of the individual or company to make certain their standards are kept in excellent condition at all times. National Institute of Standards and Technology (NIST) 105-X Series Handbooks, ASTM E617 Standard and policy outlined in this document are used by the Ohio Metrology Laboratory as suitability criteria for test equipment. Equipment submitted to the laboratory in good condition and ready for immediate calibration will result in more rapid service to the owner by the State.

All Items Submitted:

8. **Cleanliness.** Artifacts submitted must be cleaned of all foreign matter, such as but not limited to: dirt, rust, concrete, adhering debris, loose paint, grease, oil, marks or films that can be removed easily with water, mild detergent, mild solvent or isopropyl alcohol, etc. The laboratory staff may refuse to calibrate artifacts that aren't properly cleaned or fix the issue of the artifacts at the owner's expense if a very limited amount of cleaning is needed.

9. **Temperature of Artifacts.** The Ohio Metrology Laboratory requires that all artifacts' structural mass is at a temperature that will not affect the accuracy of the calibration process. Artifacts will be held in the laboratory's environment until this thermal equilibrium is obtained. The owner of the artifacts must take weather conditions (especially temperature) into account when scheduling their artifacts for calibration. **Delaying testing in order to wait for warmer weather does not allow for the calibration certificate to be extended from its original expiration date.**

Volume Standards:

10. **Cleanliness.** Test measures and provers must be cleaned of all foreign matter and rinsed out until there are no strong odors or evidence of hydrocarbons. Any vessels with obvious residues will not be tested. Volume standards must also meet the cleanliness requirements found in paragraph 8 of this policy.

11. **Dents.** Dents must be removed and all leaks repaired.



12. **Corrosion.** Vessels with badly corroded interiors will not be tested.
13. **Painting.** All test measures not made of stainless steel must have a dried fresh coat of paint. This does not apply to items that have never been used.
14. **Condition.** Gauge tubes, valves, reading scales and other test measure and prover components must be in working order and in a reasonably good state of repair.
15. **Non-Commercial Vessels.** Five gallon test measures called “non-reference” or “station standards” do not meet the requirements of NIST Handbook 105-3 and cannot be tested. These are generally identified with a glass plate set right in the neck of the test measure.
16. **Other NIST 105-X Requirements.** The Ohio Metrology Laboratory adopts all requirements of the NIST Handbook 105 series for commercially used standards. Owners of commercially used standards should familiarize themselves with these publications in order to be aware of any requirements not covered in detail in this policy. The NIST 105 series of standards can be found at <http://www.nist.gov/pml/wmd/pubs/handbooks.cfm>

Mass Standards:

17. **Painting.** Cast iron test weights must be cleaned and freshly painted with a **light** coat of an approved type paint (not epoxy or enamel), unless they are brand new, just prior to submission. Paint all sides and bottom of weight. Cast metric and avoirdupois field standards shall be color coded (i.e., gold for metric and silver for avoirdupois) to differentiate the weights.
18. **Serial Numbers.** Individual weights not part of a handheld kit should be identified with a permanent stamp or serial number into the surface of the weight. Serial numbers shall not be placed on the bottom of the weight. Identifying stickers are not allowed and will be removed from the surface of any weights submitted. Handheld weight kits may have one serial number to cover all contents of the kit. In the case that multiple weights of the same nominal value are contained within the kit, each weight of the same nominal value should have a permanent, unique stamp or mark into the surface of the weight to differentiate from other weights of the same nominal value in the kit. The Ohio Metrology Laboratory may elect to stamp weights appropriately if not done so prior to submission.
19. **Cleanliness.** Interior of handheld weight kit cases should be wiped down or vacuumed to remove any foreign material. All weights shall meet the cleanliness requirements outlined in Paragraph 8 of this policy. A lint free cloth dampened with non-denatured ethyl alcohol works well for cleaning stainless steel weights.
20. **Precision Weights.** Precision weights must arrive 2 -3 days in advance to acclimate to the laboratory’s environment prior to testing. Handle your analytical weights carefully; tolerances are small, so dirt or abuse can throw them out of tolerance.
21. **Same Day Calibrations.** The Ohio Metrology Laboratory may elect to perform same day calibrations of large weights (scale trucks) during seasons of the year that allow weights to be at an appropriate temperature at time of delivery. These tests must be scheduled in advance with the laboratory. Customers must be at the lab and ready to unload by 8:00 am on the scheduled calibration day.
22. **Fabricated Weights.** Fabricated weights (consisting of a steel case filled with various material) not previously submitted will not be accepted. Fabricated weights already certified are to be submitted at intervals not to exceed one year to insure their stability. Those weights that are unstable will be rejected and should be replaced with weights made of metal of uniform density, such as cast iron.



23. **Brass Weights.** A weight made of brass or a fabricated weight (such as a laminated weight or a weight of nonuniform density) shall not be placed in service after the effective date of this policy.
24. **Small Cast Iron Weights.** Cast iron weights 10 lb (5 kg) and smaller are not permissible for use as commercial field standards. To meet the requirements of NIST Class F found in NIST Handbook 105-1, weights of these sizes must be constructed of materials such as iron, steel, or stainless steel, having a hardness of Rockwell B 80 or greater, and be resistant to abrasion, corrosion, denting and chipping. For customers not performing testing of commercial weighing devices, cast iron weights 10 lb (5 kg) and smaller can be certified by the laboratory as ASTM Class 7 weights. Certificates issued for these weights will clearly state that they are not approved for testing of commercial weighing devices.
25. **Other NIST 105-X Requirements.** The Ohio Metrology Laboratory adopts all requirements of NIST Handbook 105 series for commercially used standards. Owners of commercially used standards should familiarize themselves with these publications in order to be aware of any requirements not covered in detail in this policy. The NIST 105 series of standards can be found at <http://www.nist.gov/pml/wmd/pubs/handbooks.cfm>

Field Standard Weight Carts:

The requirements for field standard weight carts are published in NIST Handbook 105-8. HB 105-8 specifications apply to new weight carts manufactured after September 2003. For weight carts manufactured prior to September 2003, many specifications are non-retroactive, however some of the requirements are retroactive for weight carts currently in use (most notably requirements for tires, batteries and fuel tanks).

We have taken the time to formulate the table included with this policy on the next page. The left column of the table lists significant HB 105-8 requirements for new weight carts. The right column lists HB 105-8 retroactive requirements for carts manufactured prior to September 2003 and Ohio requirements that were already in effect.

Please remember that user modifications of weight carts are discouraged. Any modifications must be permanent changes to the weight cart structure and require recalibration. Any maintenance process performed between calibrations altering the mass of the weight cart (changing the battery, wheels, hydraulic pump, etc.) invalidates the calibrated mass of the cart and requires recalibration.

NIST Handbook 105-8 requires a maintenance log be established for each weight cart. The maintenance log must contain a detailed record of all maintenance performed on the cart.

Carts must be kept clean at all times. Weight carts submitted to the Ohio Metrology Laboratory must be wire brushed and power washed to remove dirt, rust, grease and other foreign substances. The carts must have a dried fresh coat of paint (top to bottom) prior to the regular calibration submission. The weight value of the cart must be labeled on each side of the cart.

The Ohio Metrology Laboratory adopts all requirements of NIST Handbook 105-8 for motorized weight carts. Owners of weight carts should familiarize themselves with this publication in order to be aware of any requirements not covered in detail in this policy. NIST HB 105-8 can be found at <http://www.nist.gov/pml/wmd/pubs/handbooks.cfm>



NIST Handbook 105-8

Requirements for New Weight Carts (Manufactured after Sept. 2003)	Requirements for Carts In-service (Manufactured prior to Sept. 2003)
<ul style="list-style-type: none"> ◆ Weight value in 500 lb increments ◆ ID Plate with: Weight of cart, Max. gross wt., Name & address of manu., Model no., Serial no., Date of manu., Statement “meets HB 105-8, Rev. ___” ◆ Metallic tubing is to be used where possible to minimize use of rubber hoses ◆ Calibrated fuel tank <ul style="list-style-type: none"> - 1 gal or less - vertical sight gauge with at least 0.72 gal visible in gauge, graduated in 0.25 lb increments - 0.5 lb fuel error weight kit must be provided - cylindrical shape - top of tank below top edge of cart - identified with a serial no. - constructed of a low carbon or corrosive resistant steel - light in color ◆ Hydraulic fluid system must have a sight gauge, marked reference level, fill and drain caps must be sealed ◆ Engine oil must be maintained at reference level ◆ Tires: must be smooth (no tread) and insure max. 200 lb/in² point load concentration ◆ Designed to drain water from inside cart ◆ Must have a parking brake ◆ Battery: non maintenance type and must be sealed to the cart (battery replacement requires recalibration) ◆ Must have an adjusting cavity with a min. capacity of 150 lb, adjusting cavity must be sealed to the cart and adjusting cavity opening must be sealed ◆ Weight cart maintenance log is required 	<ul style="list-style-type: none"> ◆ Weight value in 100 lb increments ◆ Calibrated fuel tank <ul style="list-style-type: none"> - 1 gal or less - vertical sight gauge with at least 0.72 gal visible in gauge, graduated in 0.25 lb increments - 0.5 lb fuel error weight kit must be provided - cylindrical shape - top of tank below top edge of cart - identified with a serial no. - constructed of a low carbon or corrosive resistant steel - light in color ◆ Engine oil must be maintained at reference level ◆ Tires: <ul style="list-style-type: none"> - must be smooth (no tread) - max. 200 lb/in² point load concentration ◆ Designed to drain water from inside cart ◆ Must have an adjusting cavity, adjusting cavity must be sealed to the cart and adjusting cavity opening must be sealed ◆ Battery: non maintenance type and must be sealed to the cart (battery replacement requires recalibration) ◆ Weight cart maintenance log is required

