Scale Training Seminar

Arkansas Bureau of Standards

2026

Objectives

- Know and locate all applicable laws that pertain to registered servicepersons
- Seal and Decal Policies
- NTEP Requirement
- NTEP Certificate of Conformance
- Proper completion of Official Annual Test Reports
- Requirement to adjust device as close as practicable to zero
- What to do if a report is rejected
- Proper Completion of Placed in Service Report (Form 1822)
- What to do if a device is rejected

Laws pertaining to Registered Service Agencies and Persons
Arkansas Title 4 – Business and Commercial Law

- ***AR Code § 4-18-308***
- ***AR Code § 4-18-322*** **(Prohibited Acts)**
- ***AR Code § 4-18-323*** **(Civil Penalties)**
- ***AR Code § 4-18-324*** **(Criminal Penalties)**
- ***AR Code § 4-18-344***

ARCODE (arkansas.gov)

AR Code § 4-18-344

- (c) A registered service agent shall perform the recalibration if the inspection or test indicates the bulk meter or liquefied petroleum gas metering device, pump, or scale needs to be recalibrated.
- (d)
  - (1) After the approval of a decal by the Arkansas Bureau of Standards, a registered service agent shall place an approved decal conspicuously on the bulk meter or liquefied petroleum gas metering device, pump, or scale which indicates that it is suitable for trade in accordance with the National Institute of Standards and Technology Handbooks 44 and 112, as adopted by the bureau.
  - (3) A registered technician shall place an approved security seal on the device to prevent any unauthorized access to the adjusting mechanism unless otherwise authorized by the bureau.

AR Code § 4-18-344

- (e) The registered service agent shall provide a copy of all bureau-approved inspection and test reports to the bulk meter or liquefied petroleum gas metering device, pump, or scale owner and to the director.

Note : A copy of the test report **MUST** be left on site at the time of the inspection

- (f)
  - (1) The registered service agent shall retain a copy of all inspection and test reports for a period of three (3) years.
  - (2) The owner of the device shall retain a copy of all inspection and test reports at the device location for a period of three (3) years.

Voluntary Registration

- Authorizes Servicepersons to remove rejection red seals and tags
- Place devices into service that have been newly installed or rejected
- Service person has in possession and will use all necessary testing equipment and standards; has full knowledge of Arkansas Weight & Measures laws and NIST Handbooks 44 &130 regulations and rules

- Director is authorized to suspend or revoke a certificate of registration for:
  -found taking unfair advantage of an owner of a device
  -failure to have test equipment or standards certified.
  -failure to use adequate testing equipment
  -failure to adjust commercial devices to comply with NIST Handbook 44 following a service or repair
  -Repeated Offenses

Regulations pertaining to Voluntary Registration of Servicepersons and Service Agencies NIST Handbook 130

- Section IV. Uniform Regulation
- Subsection D. Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices

Security Seals

- If a device has a place or requires a physical seal, affix one
- NTEP Certificate of Conformance describes the sealing required on each device
- Apply seals only if you calibrate a device
- Seals MUST be properly affixed to prevent tampering and adjustments. No loose wire.
- Lead seals must be replaced with state approved seals
- The Bureau of Standards DOES NOT provide decals or seals:
  -Decal and seal ordering information found on our website

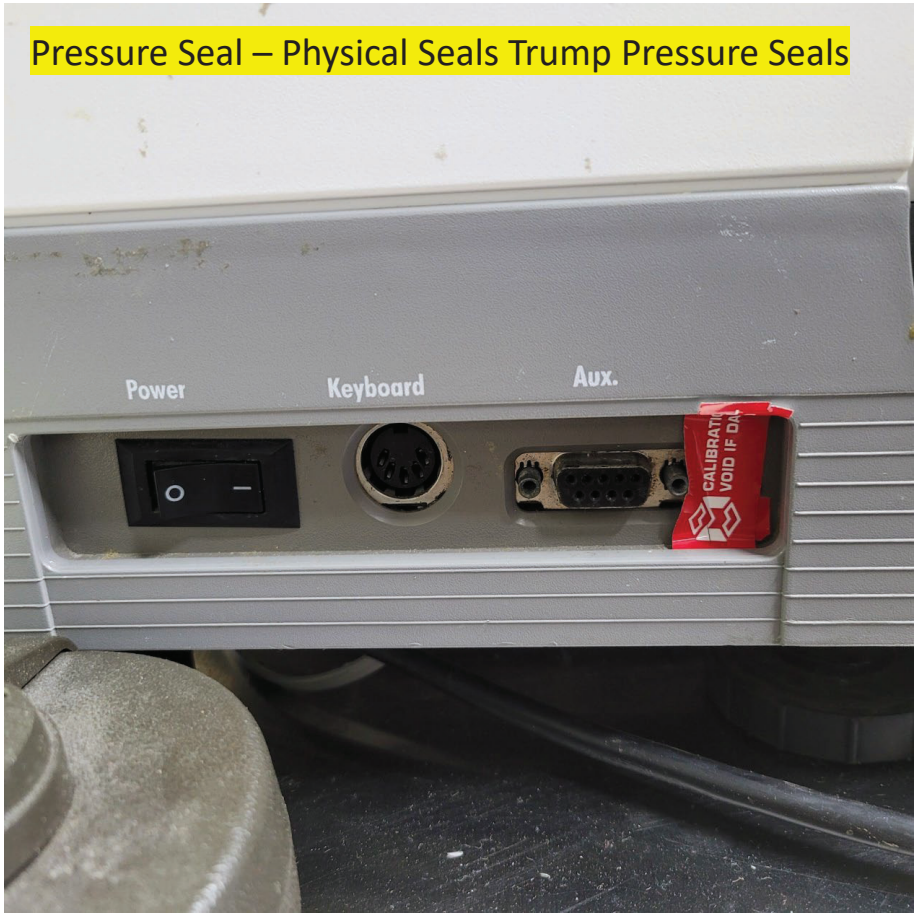
Ordering_Info_For_Approval_Decals_and_Security_Seals.pdf (arkansas.gov)

https://www.agriculture.arkansas.gov/wp-content/uploads/2020/05/Security_Seal_Policy.pdf

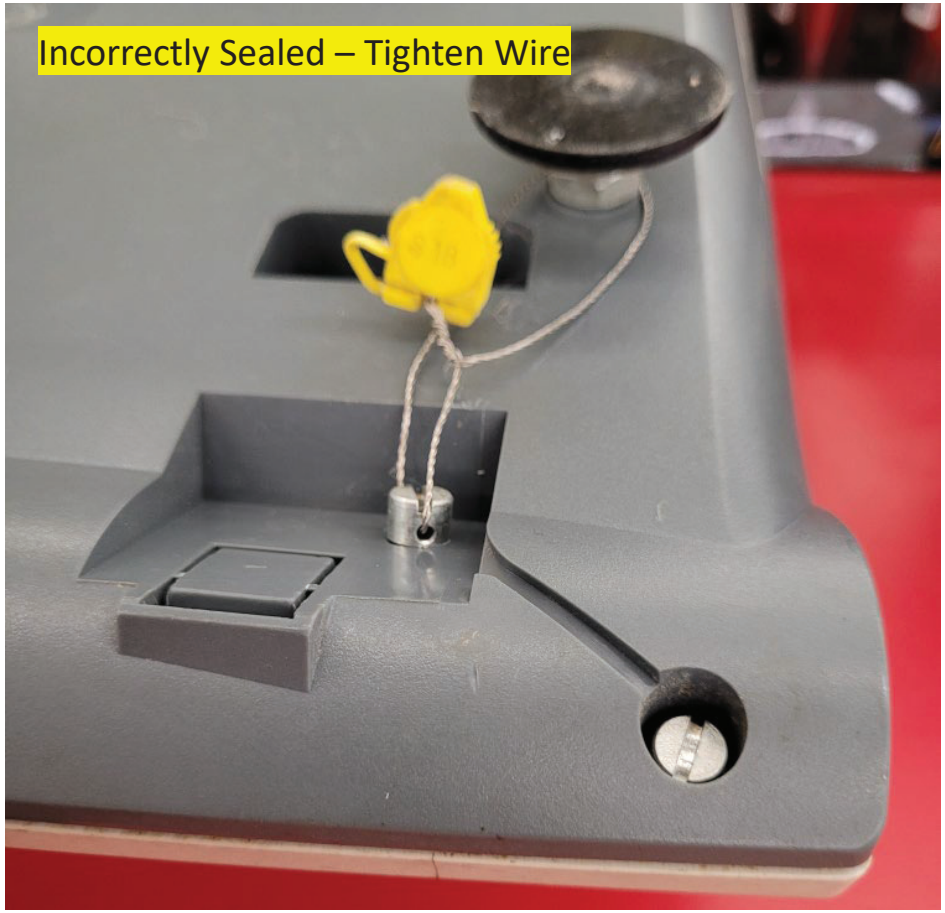
Security Seals

Security Seals

Pressure Seal – Physical Seals Trump Pressure Seals



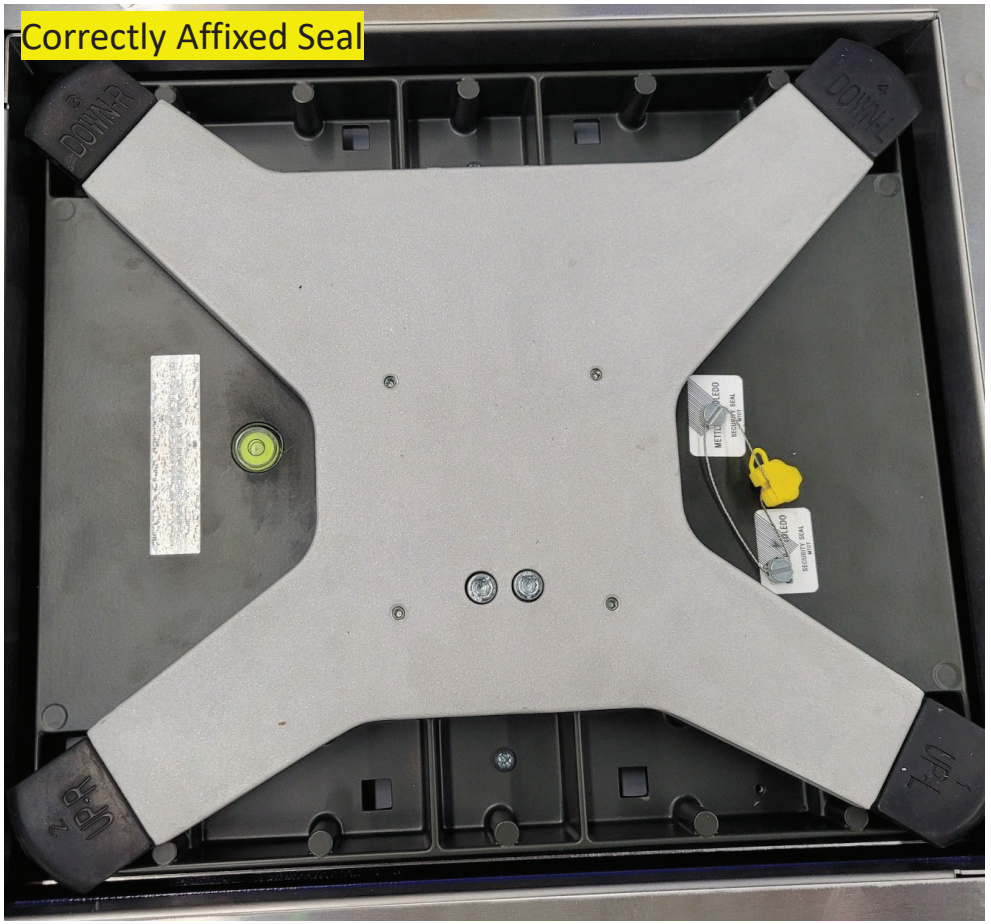
Incorrectly Sealed – Tighten Wire



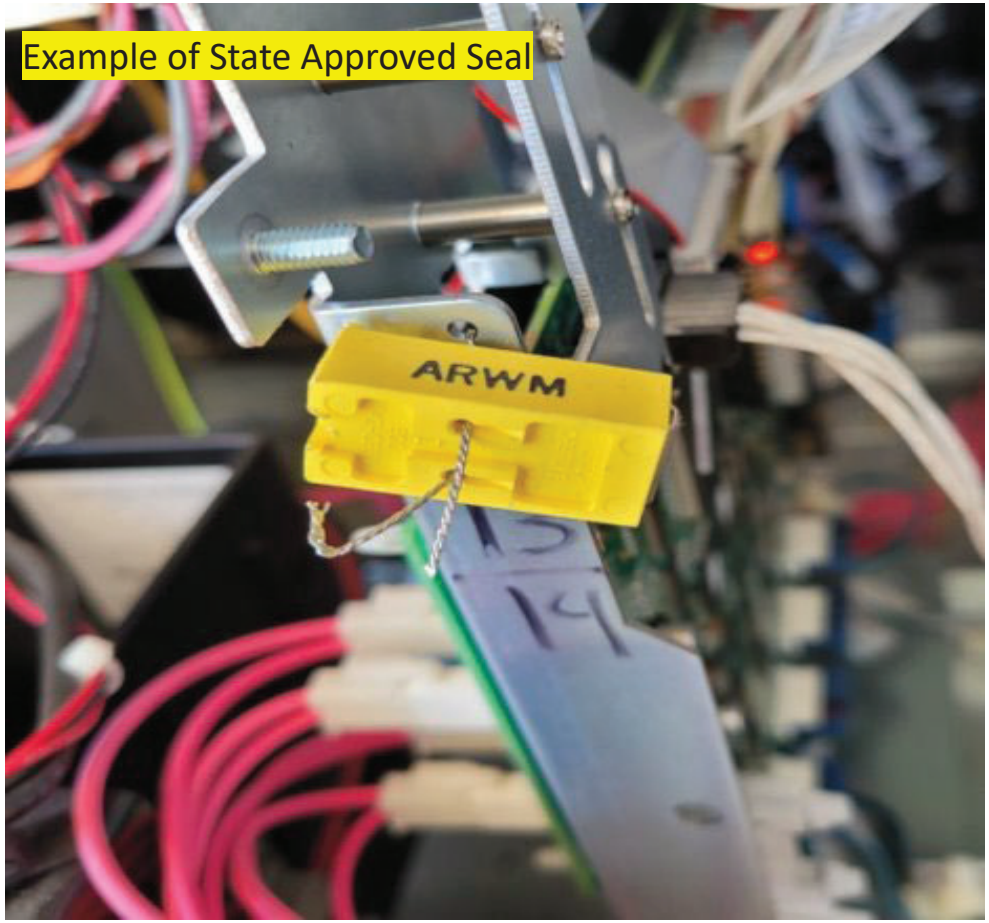
Security Seals

Security Seals

Security Seals



Security Seals



Example of State Approved Seal

Decals

- Apply current (GREEN) annual decal only after testing and approving the device.
- Remove all old decals before applying a new decal. No stacking decals.
- Decals shall be affixed as close as possible to the customer indication as possible
- Punch hole in decal for year of test.
- You will be required to return to the facility to correct any issues

Decals

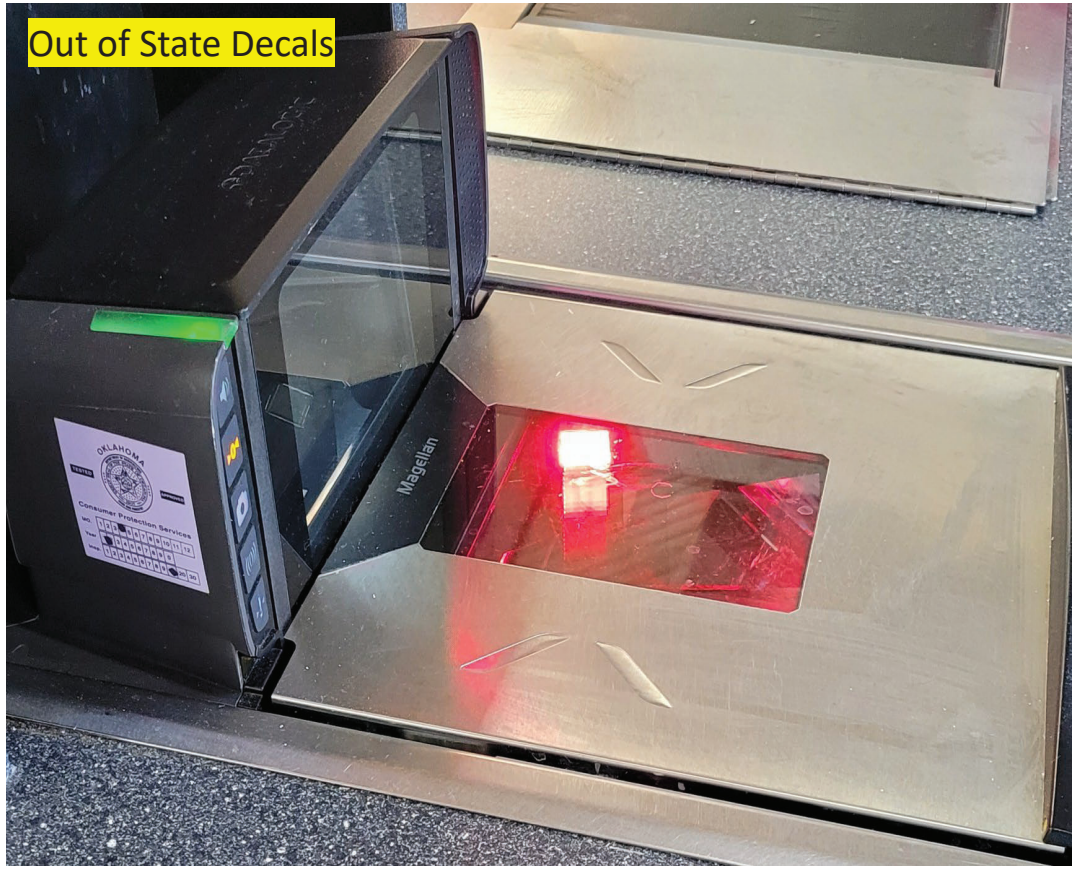

No Yellow Decals-Remove Old Decals
PRINT


No Decals On Platters
agriculture.arkansas.gov
REG. No. S100
APPROVED
2023 2024 2025 2026
A&D EK-1200i
NET
ZERO
0.0 g
ON:OFF
SAMPLE
MODE

Decals

No Stacking Decals

Out of State Decals



National Type Evaluation Program

Locating the Devices
National Type Evaluation Program (NTEP)
Certificate of Conformance (CC)

- Open Link - https://www.ncwm.com/ntep-certificates

- Enter in Devices NTEP # located on data plate:

  Example NTEP CC No. 95-122

19

National Type Evaluation Program

- Devices installed in the state prior to January 01, 2003, are not required to be traceable to an NTEP Certificate of Conformance.

- Device installed after January 01, 2003, must meet NIST Handbook 44 requirements and be traceable to an **ACTIVE** Certificate of Conformance

NIST Handbook 130 – Regulation for National Type Evaluation

- Section IV. Uniform Regulation
- Subsection E. Uniform Regulation for National Type Evaluation

OFFICAL ANNUAL TEST REPORTS

2026

Official Annual Test Reports

- When to Perform Annual Tests
- Improper Testing
- Adjustment and Calibrations
- Official Annual Field Test Report and Examples (Report Revised 2023)
- When a report is rejected

When to Perform an Annual Inspection

- Any time a device is newly installed and placed into service
- When hired to do so by the customer
- Only complete ONE Official Annual Inspection Report per year (when placing decals)

Improper Testing

- Tests should be performed in accordance with the prescribed Examination Procedure Outline (EPO) as written in NIST Handbook 112. EPO's No. 1.
- Any scale 300lbs or less shall be tested to capacity.
- If a device is adjusted, it must be retested to ensure compliance.
- Service agencies are subject to fines and penalties if repeated offenses occur.

P:\NTP\EPOS\EPOs -NISTHB 112 2002\EPOCoverPage4-02.wpd

Adjustments or Calibrations

"The Registered Serviceperson or Service Agency is responsible for installing, repairing, and adjusting devices such that the devices are adjusted as closely as practicable to zero error."

Appendix A (A-4) HB44 2.3. Tolerances and Adjustments. – Tolerances are primarily accuracy criteria for use by the regulatory official. However, when equipment is being adjusted for accuracy, either initially or following repair or official rejection, the objective should be to adjust as closely as practicable to zero error. Equipment owners should not take advantage of tolerances by deliberately adjusting their equipment to have a value, or to give performance, at or close to the tolerance limit. Nor should the repair or service personnel bring equipment merely within tolerance range when it is possible to adjust closer to zero error.

Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST

NIST HB130 - 2024 IV Uniform Regulations - D Uniform Regulation for the Voluntary Registration

PLANT INDUSTRIES DIVISION

OFFICIAL ANNUAL FIELD TEST REPORT

Bureau of Standards
4608 West 61st Street
Little Rock, Arkansas 72209
bureau@agriculture.arkansas.gov
501.570.1159

DATE: 11/12/2024	LOCATION NAME: Store #123		PHONE #: (555) 555-5555
EMAIL ADDRESS: Store123@aol.com			
COUNTY: Garland	CITY: Hot Springs	PHYSICAL ADDRESS: 123 Main Street	
MAILING ADDRESS: Same or Write if Different than Physical		CITY: 123 Main Street	ZIP: 56245
SERVICE AGENCY: Cool Agency LLC	REG. #: S123		PHONE #: (777) 777-7777

DESCRIPTION OF EQUIPMENT

COMPUTING, SCANNER-SCALE, MONORAIL, FLOOR, HOPPER, BENCH, RAILWAY TRACK,
(IDENTIFY TYPE BY THESE TERMS, IF OTHER SPECIFY)

TYPE OF SCALE	LOCATION	MAKE	MODEL	SERIAL	NTEP CC#	CAPACITY
POS #1	Front End	Zebra	MP7001	18202466594	17-	
Computing 30lbs	Meat Dept	Hobart	Quantum	25-5565-654	95-122	, 30lbs

REMARKS:

By signing this form, the Service Agent states; (1) the devices above were inspected and tested in accordance with the current Examination Procedure Outline (EPO) as found in the National Institute of Standards and Technology's Handbook 112 and Handbook 44; (2) the devices above comply with all applicable requirements as specified in Handbook 44.

Joe Dirt	Joe Dirt	Charles Smith	Charles Smith
Service Agent Signature	Service Agent Printed Name	Owner / Operator Signature	Owner / Operator Printed Name

Form N-1A Revised 4-19-2023

[Service Agencies Information - Arkansas Department of Agriculture]

PLANT INDUSTRIES DIVISION

OFFICIAL ANNUAL TEST REPORT FOR VEHICLE SCALES

Bureau of Standards
4608 West 61st Street
Little Rock, Arkansas 72209
bureau@agriculture.arkansas.gov
501.570.1159

DATE: 11/12/2024	FACILITY NAME: Store #123					PHONE: 555-555-5555		
EMAIL: Store123@aol.com	PHYSICAL ADDRESS: 123 Main St			CITY: Hot Springs		ZIP: 72123		
MAILING ADDRESS: Write Same if Same as Physical/Write if different	CITY: Same			STATE: AR		Mailing ZIP: Same		
SERVICE AGENCY: Cool Scales LLC	REG. NO: S123			PHONE: 555-555-555				
COUNTY: Garland	MANUFACTURER	MODEL	SERIAL NO.	CAPACITY	NTEP CC#			
INDICATOR	Mettler - Toledo	Jaguar	MTJ94096	120000	94-096A2			
WEIGHING ELEMENT	Thurman	8130	T813088	120000	88-036A2			
PRINTER	Rice-Lake	KB-105	RLKB105	120000	89-156			
INDICATOR: DIGITAL X BEAM ☐ DIAL ☐	MARKED CLASS III/IIIL: YES X NO ☐	DIVISION = 20	BALANCE CONDITION AS FOUND: 0					
WEIGHING ELEMENT: ELECTRONIC ☐ MECHANICAL ☐ ELECTRO-MECHANICAL X	CLC/SECTION CAP: 35K	NO. OF SECTIONS: 4						
LENGTH: WIDTH: 11	AZSM RANGE: 30	MOTION RANGE 30	SENSITIVITY/DISCRIMINATION TEST: ZERO (d) 0	MAX. (d) 12				

SECTION TEST	SECTION	TEST LOAD	INDICATOR	ERROR	SECTION	TEST LOAD	INDICATOR	ERROR
INCREASING & DECREASING-LOAD TESTS ON BOTH ENDS. TEST CARTS ON ONE (SAME) END. TEST CARTS MUST TEST ALL SECTIONS. INDICATE TEST BOTH DIRECTIONS.	1	4000	4000	0	4	4000	4000	0
		8000	8000	0		8000	8000	0
		12000	12020	+20		12000	12020	+20
		16000	16020	+20		16000	16020	+20
		20000	20020	+20		20000	20020	+20
		24000	24020	+20		24000	24020	+20
		28000	28020	+20		28000	28020	+20
DECREASING-LOAD TEST AT ½ MAX LOAD		16000	16000	0		16000	16000	0
	BALANCE CHECK: OK				BALANCE CHECK: OK			

STRAIN LOAD TEST		END	CENTER	CENTER	CENTER	END
SECTIONS ARE LEFT TO RIGHT READING THE INDICATOR. 1 2 3 4 5	EMPTY TRUCK WT.	24040	24040		24040	24040
	TEST WTS. ADDED	28000	28000		28008	20000
	TRUCK + WTS.	52040	52040		52040	52040

REMARKS: Could not adjust twenty pound

John Smith	J. Smith	Charles Smith	C Charles Smith
Service Agent Signature	Service Agent Printed Name	Owner / Operator Signature	Owner / Operator Printed Name

Form SC-1 Revised 4-21-2023

[Service Agencies Information - Arkansas Department of Agriculture]

A Report is Rejected if…

- The test results indicate the possibility the devices were not tested in accordance with the applicable Handbook 112 Examination Procedures Outline (EPO)
- Not Legible
- Not Complete
- Not Correct

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TEST REPORT MUST BE LEFT ON SITE AT THE TIME OF INSPECTION

AR Code § 4-18-344 (f)(1)(2)

Must retain copy for 3 years

Place in Service Reports (Form 1822)

2026

When to complete a Form 1822

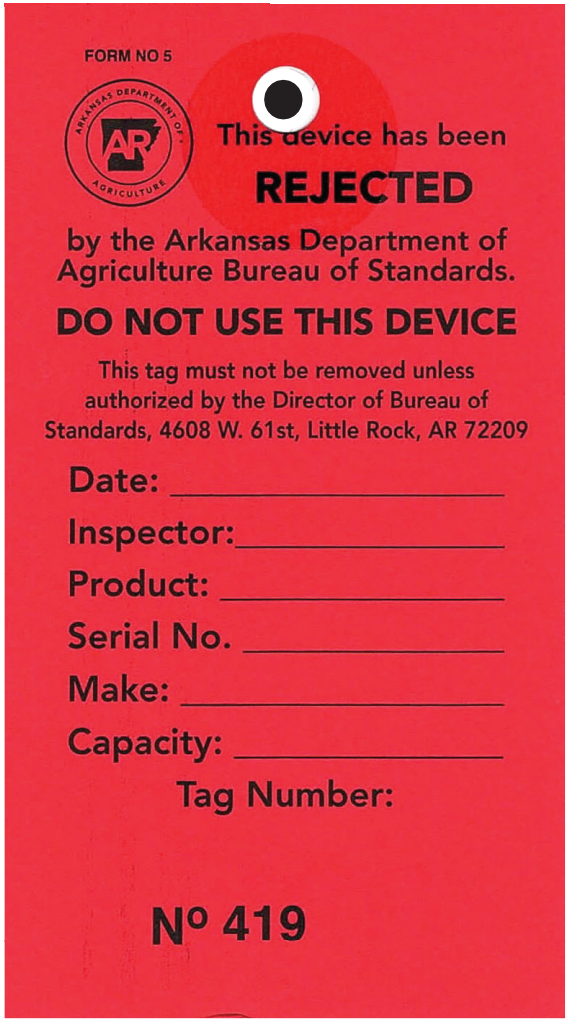
- When a device is newly installed at a location in the state
- When a device is removed and reinstalled at a location in the state
- When performing calibration of a device
- Replacing metrological components on the device – Indicators, Load Cells etc.
- When a device is Officially Rejected by the state

FORM1822 arkansas.gov

When to complete Form 1822

- When a device is restored to service after officially rejected by the Bureau of Standards (Red Rejection Tag)

- Placed into Service Report (Form 1822) shall be emailed to the Bureau of Standards within 24 hours of a device being returned to service
- Email: *bureau@agriculture.arkansas.gov*

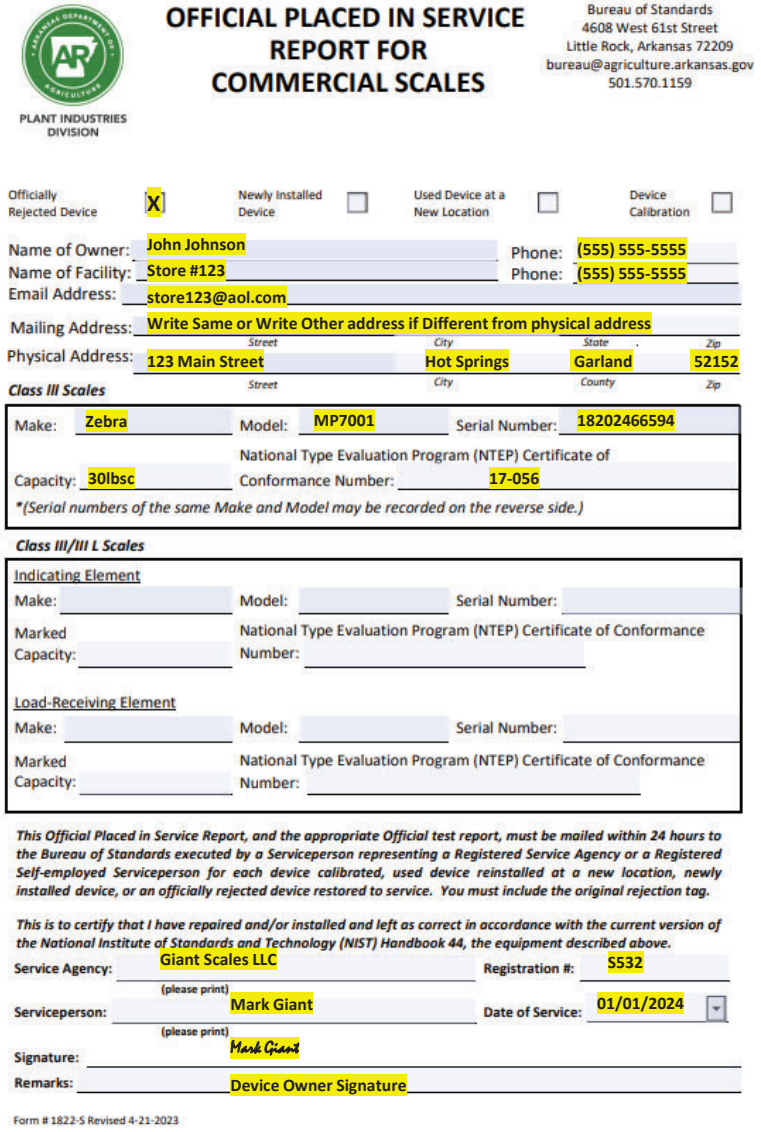


FORM1822 arkansas.gov

Rejection Red Tags and Seals

If a device has been officially rejected

- Servicepersons are authorized to remove Bureau applied tags and seals to repair devices
- If device IS NOT restored to FULL compliance
  - Device is NOT to be returned to service
  - Serviceperson shall reattach the original Bureau applied red tag with serviceperson's properly attached security seal



PLANT INDUSTRIES DIVISION

OFFICIAL PLACED IN SERVICE REPORT FOR COMMERCIAL SCALES

Bureau of Standards
4608 West 61st Street
Little Rock, Arkansas 72209
bureau@agriculture.arkansas.gov
501.570.1159

Officially Rejected Device [X] Newly Installed Device [ ] Used Device at a New Location [ ] Device Calibration [ ]

Name of Owner: John Johnson Phone: (555) 555-5555
Name of Facility: Store #123 Phone: (555) 555-5555
Email Address: store123@aol.com
Mailing Address: Write Same or Write Other address if Different from physical address
(Street / City / State / Zip)
Physical Address: 123 Main Street | Hot Springs | Garland | 52152
(Street / City / County / Zip)

Class III Scales

Make: Zebra Model: MP7001 Serial Number: 18202466594
Capacity: 30lbsc National Type Evaluation Program (NTEP) Certificate of Conformance Number: 17-056
**(Serial numbers of the same Make and Model may be recorded on the reverse side.)*

Class III/III L Scales

Indicating Element
Make: Model: Serial Number:
Marked Capacity: National Type Evaluation Program (NTEP) Certificate of Conformance Number:

Load-Receiving Element
Make: Model: Serial Number:
Marked Capacity: National Type Evaluation Program (NTEP) Certificate of Conformance Number:

This Official Placed in Service Report, and the appropriate Official test report, must be mailed within 24 hours to the Bureau of Standards executed by a Serviceperson representing a Registered Service Agency or a Registered Self-employed Serviceperson for each device calibrated, used device reinstalled at a new location, newly installed device, or an officially rejected device restored to service. You must include the original rejection tag.

This is to certify that I have repaired and/or installed and left as correct in accordance with the current version of the National Institute of Standards and Technology (NIST) Handbook 44, the equipment described above.

Service Agency: Giant Scales LLC (please print) Registration #: 5532
Serviceperson: Mark Giant (please print) Date of Service: 01/01/2024
Signature: Mark Giant
Remarks: Device Owner Signature

Form # 1822-S Revised 4-21-2023

[Service Agencies Information - Arkansas Department of Agriculture]

Scale Testing Seminar

Arkansas Bureau of Standards

2026

Objectives

- Upon completion of this presentation, you will be able to Understand and Describe: Inspection for *correctness* & Testing for *accuracy*
  - Referencing Handbook 44 using Handbook 112
  - Safety
  - Zero-load Balance as found
  - General Considerations
  - Marking Requirements
  - Indicating and Recording Element
  - Weighing element
  - Testing
  - Sealing

Handbook 112

Examination Procedure Outline (EPO) for Retail Computing Scales

EPO No. 1

Handbook 44

Device Requirements in Two Sections

Section 1.10. General Code

Section 2.20. Scales

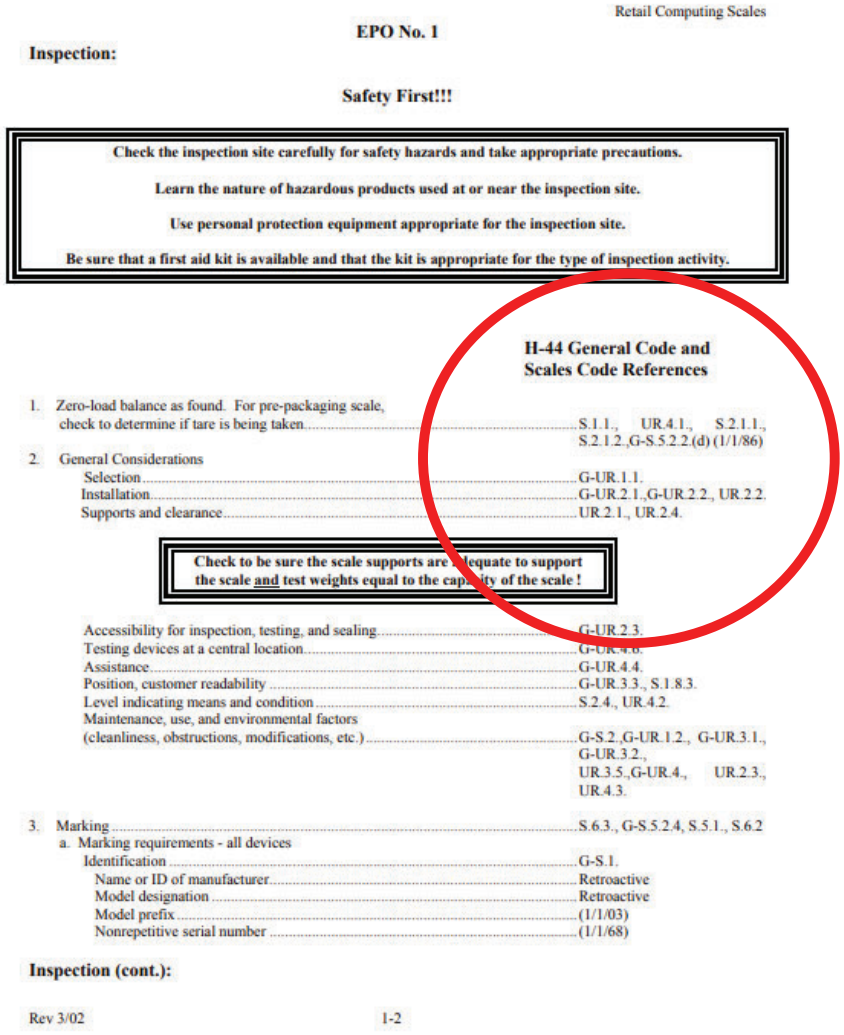
Handbook 112: P:\NTP\EPOS\EPOs -NISTHB 112 2002\EPOCoverPage4-02.wpd

Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST

Handbook 44 Key

- Handbook Key
- Any G- prefix

- General code – Applies to all devices
  - G-A – Application
  - G-S – Specifications
  - G-N – Notes
  - G-T – Tolerances
  - G-UR – User Requirements



Retail Computing Scales

EPO No. 1

Inspection:

Safety First!!!

Check the inspection site carefully for safety hazards and take appropriate precautions.

Learn the nature of hazardous products used at or near the inspection site.

Use personal protection equipment appropriate for the inspection site.

Be sure that a first aid kit is available and that the kit is appropriate for the type of inspection activity.

H-44 General Code and Scales Code References

1. Zero-load balance as found. For pre-packaging scale, check to determine if tare is being taken ..... S.1.1., UR.4.1., S.2.1.1., S.2.1.2.,G-S.5.2.2.(d) (1/1/86)

2. General Considerations
   - Selection ..... G-UR.1.1.
   - Installation ..... G-UR.2.1.,G-UR.2.2., UR.2.2.
   - Supports and clearance ..... UR.2.1., UR.2.4.

Check to be sure the scale supports are adequate to support the scale and test weights equal to the capacity of the scale !

   - Accessibility for inspection, testing, and sealing ..... G-UR.2.3.
   - Testing devices at a central location ..... G-UR.4.6.
   - Assistance ..... G-UR.4.4.
   - Position, customer readability ..... G-UR.3.3., S.1.8.3.
   - Level indicating means and condition ..... S.2.4., UR.4.2.
   - Maintenance, use, and environmental factors (cleanliness, obstructions, modifications, etc.) ..... G-S.2.,G-UR.1.2., G-UR.3.1., G-UR.3.2., UR.3.5.,G-UR.4., UR.2.3., UR.4.3.

3. Marking S.6.3., G-S.5.2.4, S.5.1., S.6.2
   a. Marking requirements - all devices
      - Identification ..... G-S.1.
        - Name or ID of manufacturer ..... Retroactive
        - Model designation ..... Retroactive
        - Model prefix ..... (1/1/03)
        - Nonrepetitive serial number ..... (1/1/68)

Inspection (cont.):

Rev 3/02 1-2

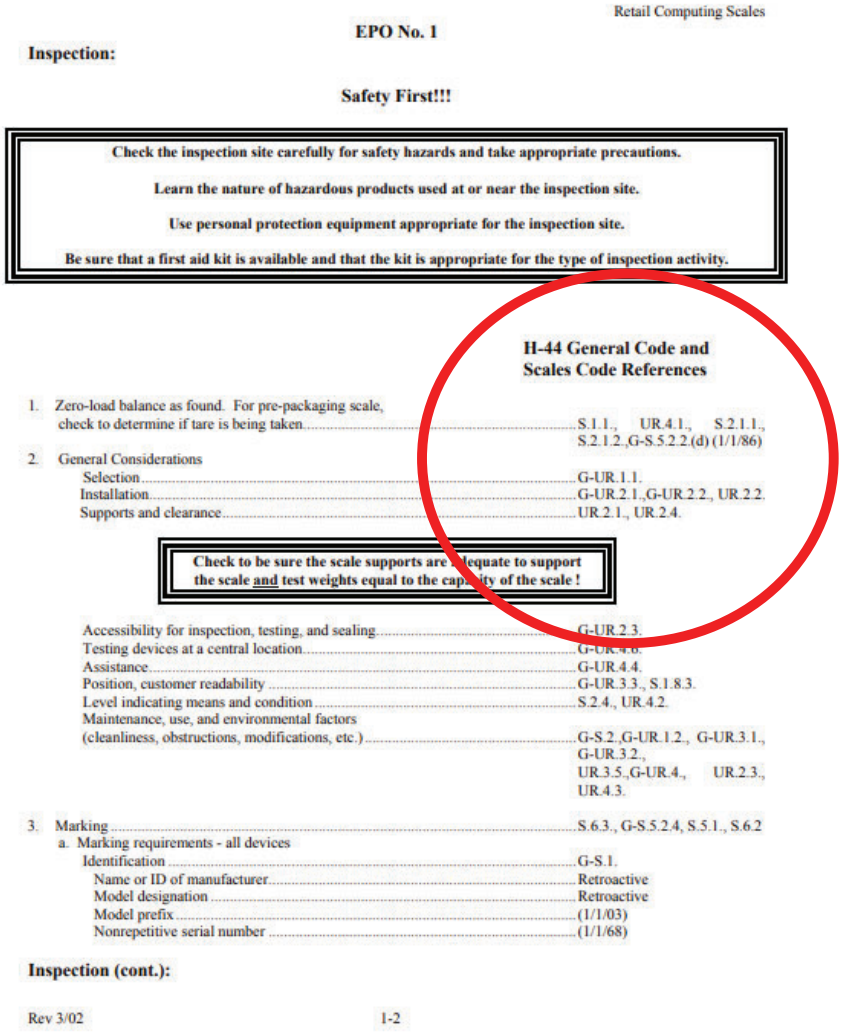
Handbook 112: P:\NTP\EPOS\EPOs -NISTHB 112 2002\EPOCoverPage4-02.wpd

Handbook 44 Key

- Handbook Key
- Any code with no prefix
  - Applies to only –

Scales Code (Section 2.20)

  - A. – Application
  - S. – Specifications
  - N. – Notes
  - T. – Tolerances
  - UR. – User Requirements



Retail Computing Scales

EPO No. 1

Inspection:

Safety First!!!

Check the inspection site carefully for safety hazards and take appropriate precautions.

Learn the nature of hazardous products used at or near the inspection site.

Use personal protection equipment appropriate for the inspection site.

Be sure that a first aid kit is available and that the kit is appropriate for the type of inspection activity.

H-44 General Code and Scales Code References

1. Zero-load balance as found. For pre-packaging scale, check to determine if tare is being taken ..... S.1.1., UR.4.1., S.2.1.1., S.2.1.2.,G-S.5.2.2.(d) (1/1/86)

2. General Considerations
   - Selection ..... G-UR.1.1.
   - Installation ..... G-UR.2.1.,G-UR.2.2., UR.2.2.
   - Supports and clearance ..... UR.2.1., UR.2.4.

Check to be sure the scale supports are adequate to support the scale and test weights equal to the capacity of the scale !

   - Accessibility for inspection, testing, and sealing ..... G-UR.2.3.
   - Testing devices at a central location ..... G-UR.4.6.
   - Assistance ..... G-UR.4.4.
   - Position, customer readability ..... G-UR.3.3., S.1.8.3.
   - Level indicating means and condition ..... S.2.4., UR.4.2.
   - Maintenance, use, and environmental factors (cleanliness, obstructions, modifications, etc.) ..... G-S.2.,G-UR.1.2., G-UR.3.1., G-UR.3.2., UR.3.5.,G-UR.4., UR.2.3., UR.4.3.

3. Marking S.6.3., G-S.5.2.4, S.5.1., S.6.2
   a. Marking requirements - all devices
      - Identification ..... G-S.1.
        - Name or ID of manufacturer ..... Retroactive
        - Model designation ..... Retroactive
        - Model prefix ..... (1/1/03)
        - Nonrepetitive serial number ..... (1/1/68)

Inspection (cont.):

Rev 3/02 1-2

Handbook 112: P:\NTP\EPOS\EPOs -NISTHB 112 2002\EPOCoverPage4-02.wpd

General Code

- Retroactive Requirements[1]
  - Enforceable on ALL EQUIPMENT
  - Printed in Upright Roman Type in Handbook 44
  - Example: Handbook 44 - G-S.1. (a) Marking Requirements Manufacturer
- Nonretroactive Requirements[2]
  - Enforceable on or after effective date
  - Printed in *Italics Type* in Handbook 44
  - Example: Handbook 44 - G-S.1. (e) Marking Requirements NTEP CC *(January 1st, 2003*)

EPO 1 Safety

2026

Safety

Supports:

Be certain that the installation is adequate to support the scale, test weights equal to the capacity of the scale, and any weight carts, test platforms, platters, chains, hooks, or other accessories used to suspend or support the test weights prior to proceeding with a testing procedure. Any test platforms, platters, chains, hooks, or other accessories must be capable of supporting the test weights necessary for the inspection.

Protective footwear.

Safety

Check for proper Installation. These can tip over.

Check for proper Support. Leg missing. Do not apply weights.

EPO 1 Zero Load Balance

2026

Zero-Load Balance

- Zero-load balance as found. For pre-packaging scale, check to determine if tare is being taken.

  - **S.1.1. Zero Indication**

    (a) On a scale equipped with indicating or recording elements, provision shall be made to indicate or record zero-balance condition.

  - **UR.4.1.**

    With no load on the load receiving element, scales shall indicate or record a zero-balance condition.

Zero-Load Balance

Must be found with zero load balance unless tare being taken:
Official Rejection
Red Tag
Remove from service

Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST

EPO 1 General Considerations

2026

General Consideration

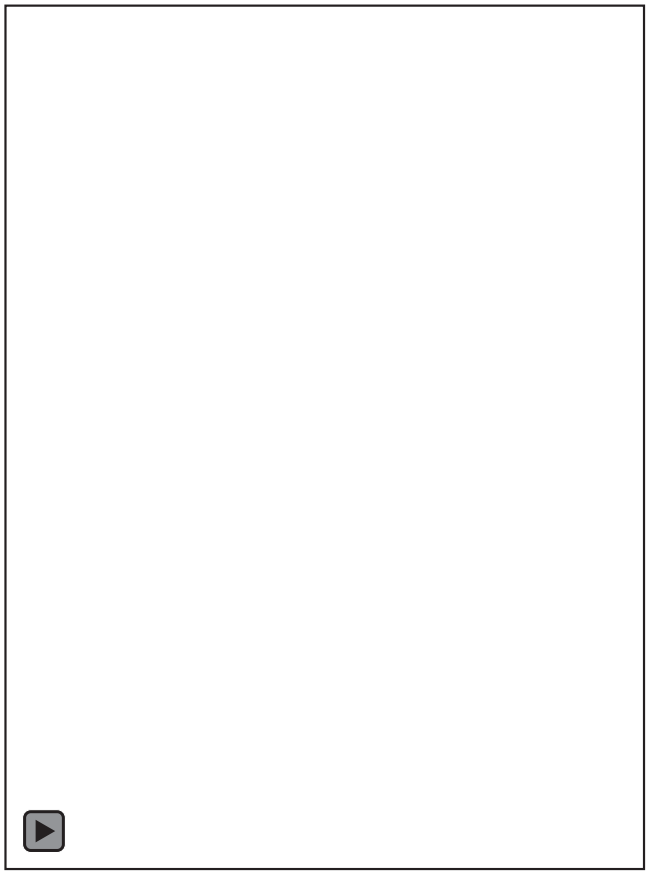
- Must be observed when:
  - Purchasing
  - Installing
  - Inspecting
- **Selection**
  - **G-UR.1.1.** - Suitability of Equipment-is the scale suitable for which it will be used?

General Consideration

- **Installation**
  - G-UR.2.1. – Installation in accordance with manufacturer instructions.
  - UR.2.2. – Suspension of Hanging Scale
- **Supports and Clearance**
  - UR.2.1. –Supports
  - UR.2.4.- Foundations, Supports, Clearance. – weighing element must be clear at all times
- **Accessibility**
  - G-UR.2.3. – Accessible for inspection, testing, sealing

General Consideration

Improper Installation:
Official Rejection
Red Tag
Remove from service



Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST

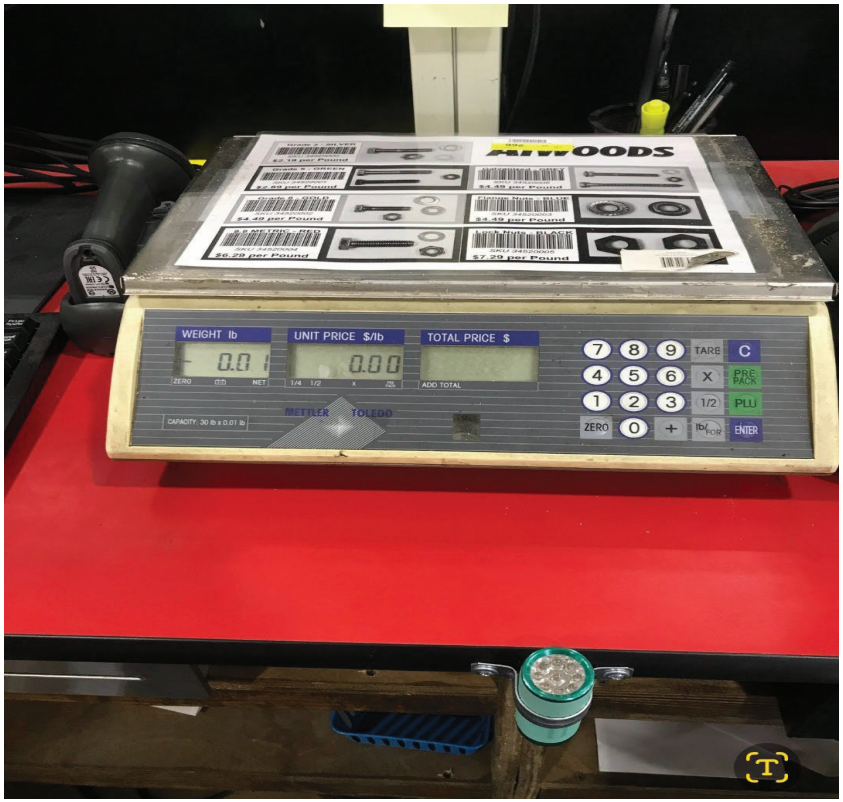
General Consideration

Improper Installation:
Cannot access seal or data plate

Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST

General Consideration

Clearance: Regulation states weighing elements must have clearance at all times.



[Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST]

General Considerations

Clearance: Regulation states scale must always have clearance on weighing element. Ice cream cone stand.

[Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST]

General Consideration

- **Position and Customer Readability**
  - G-UR.3.3. Position of Equipment- scales used in direct sales, customer must be able to observe primary indicator by some reasonable distance

- **Level Indicating Means and Condition**
  - UR.4.2. – scales must be level, if equipped with level indicator

General Considerations

Position and Customer Readability: During direct sales, customer must be able to see indicator.

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General Consideration

Level: if the scale is equipped with level. Scale must be level.

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General Considerations

- **Maintenance, use, and environmental factors**
  - **G-UR.1.2. Environment.**
    - equipment should be suitable for the environment in which it is used including, but not limited to, the effects of wind, weather, and RFI.

      -Scrap Yards/Landfills/RFI near Indicator

      -Garden Centers with Electric Fans

      -Delis with Electric Fans

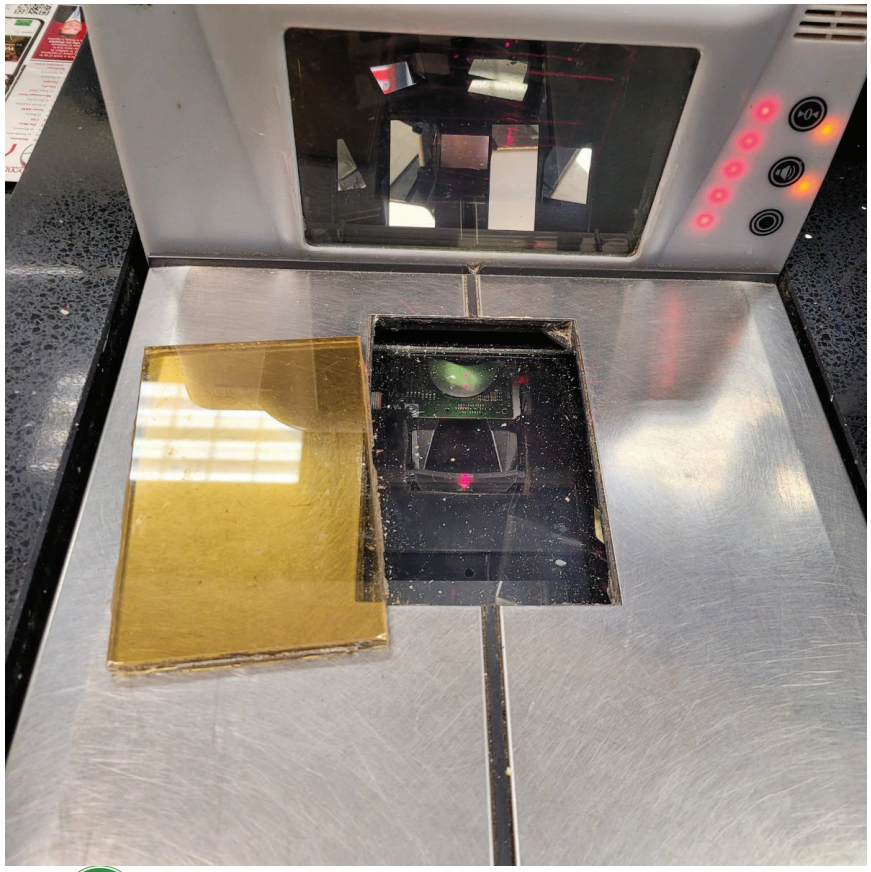
General Considerations

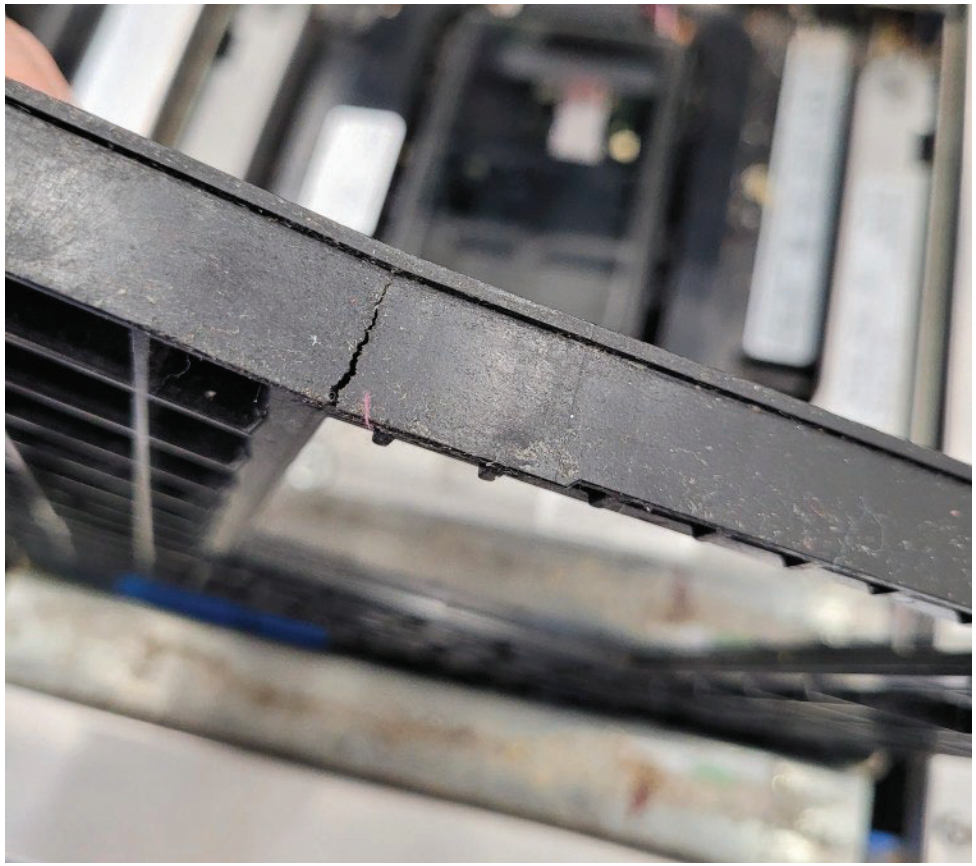
- **Maintenance, use, and environmental factors continued…**
  - **G-UR.4.1. Maintenance of Equipment**

    -all equipment in service and all mechanisms and devices attached thereto or used in conjunction therewith shall be continuously maintained in proper operating condition throughout the period of such service.

General Considerations

Maintenance of Equipment. Official rejection. Red tag.





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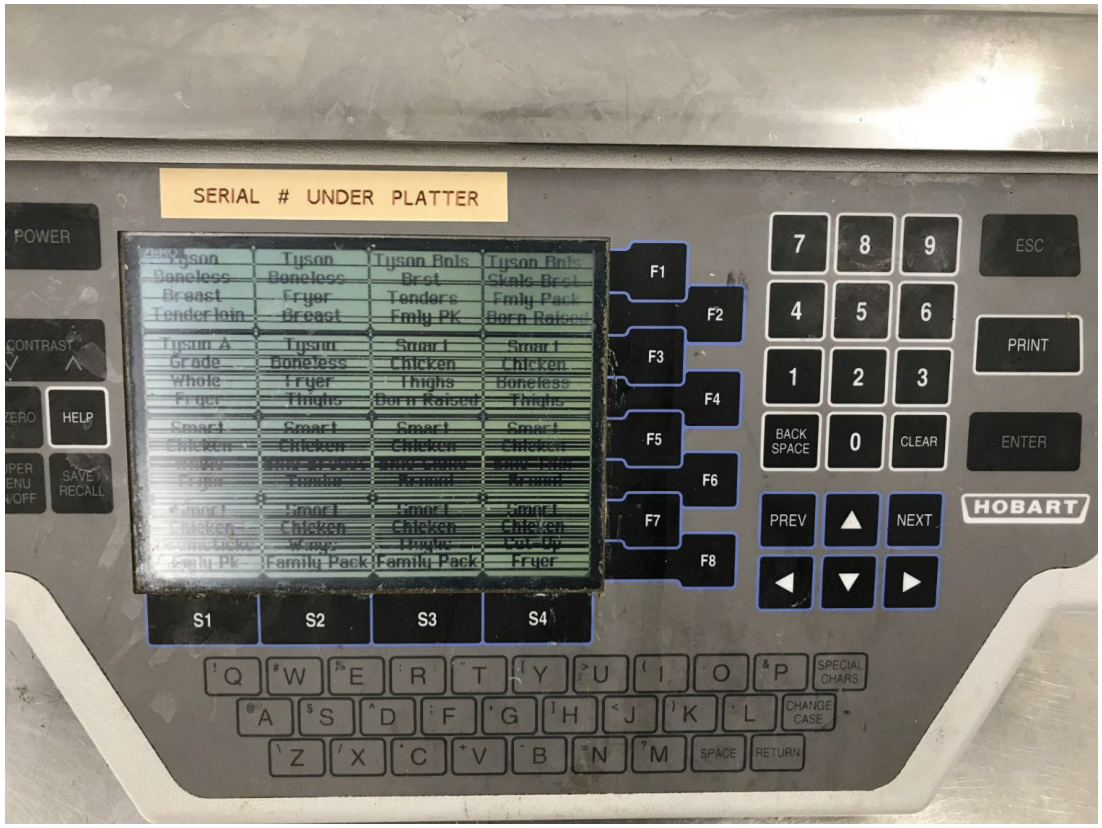
General Considerations

Maintenance of Equipment. Official rejection. Red tag.



[Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as adopted by the 108th National Conference on Weights and Measures | NIST]

General Consideration

Maintenance of Equipment. Printer broken Official rejection. Red tag.

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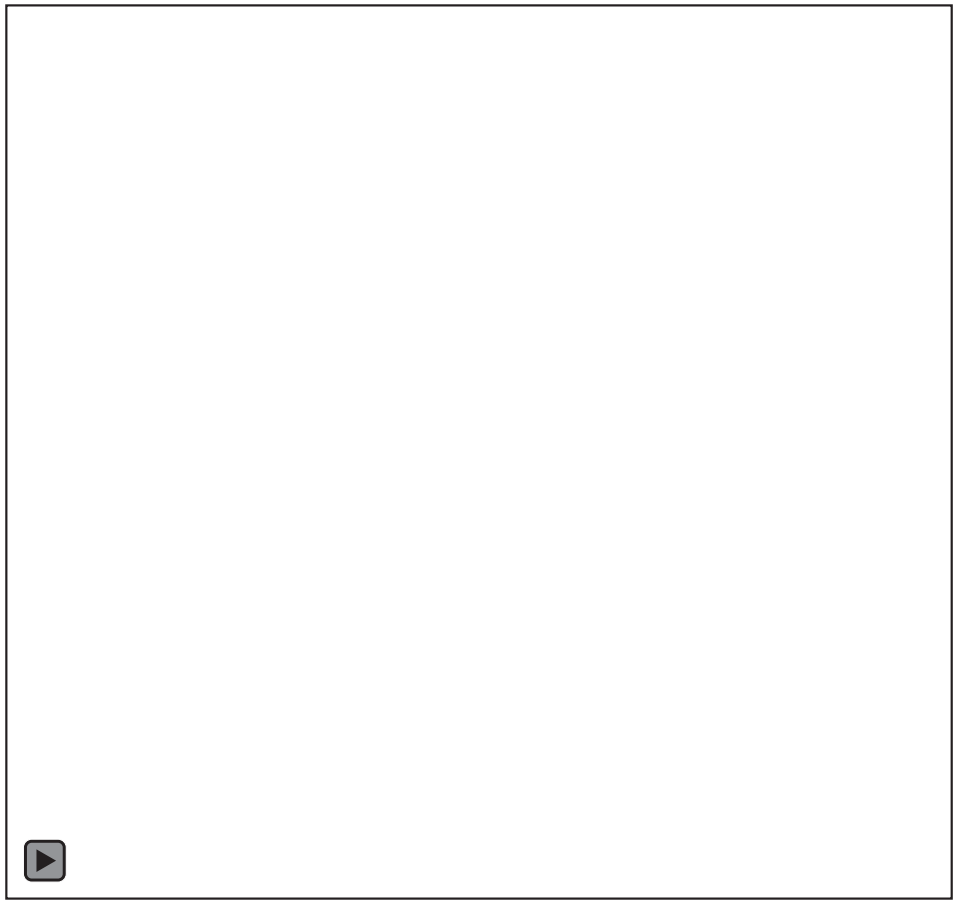
General Considerations

Maintenance of Equipment. Detached load Cell. Red tag



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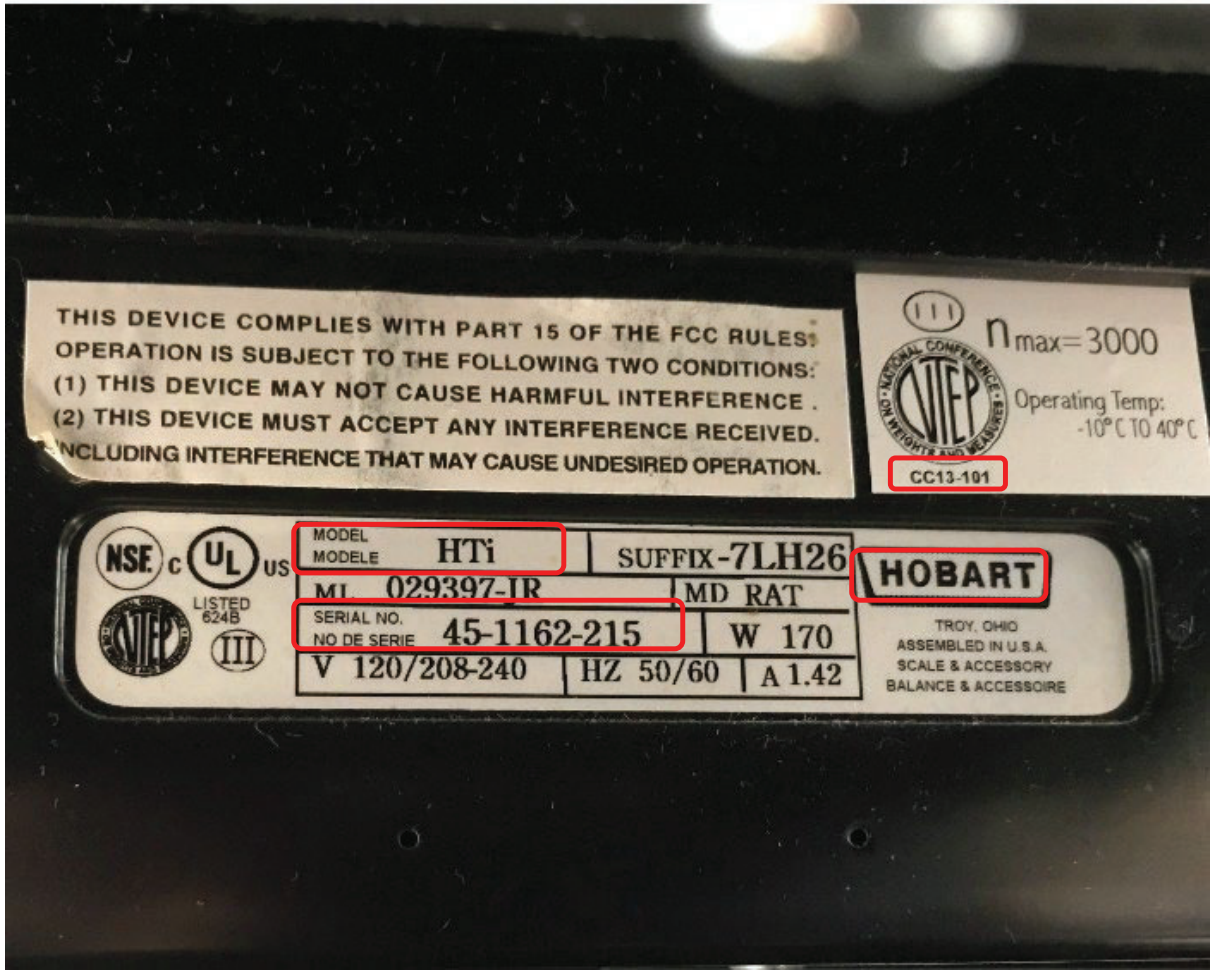
EPO 1 Marking Requirements

2026

Marking Requirements

- **Marking requirements for all devices**
  - **G-S.1. Identification**
    (a) Name, initial, trademark of Manufacturer
    (b) Model identifier
    (c) Non repetitive serial number *(nonretroactive)*
    (d) Current software version or identifier
    (e) National Type Evaluation Program Certificate of Conformance Number *(nonretroactive)*

Marking Requirements



Marking Requirements

Marking: Marking required on primary and secondary indicators.

EPO 1 Indicating and Recording Elements

2026

Value of Scale Division

- **S.1.2. Value of Scale Division Units** - Except for batching scales and weighing systems used exclusively for weighing in predetermined amounts, the value of a scale division "d" expressed in a unit of weight shall be equal to:

  (a) 1, 2, or 5; or

  (b) a decimal multiple or submultiple of 1, 2, or 5; or Examples: scale divisions may be 10, 20, 50, 100; or 0.01, 0.02, 0.05; or 0.1, 0.2, 0.5, etc.

  (c)a binary submultiple of a specific unit of weight. Examples: scale divisions may be ½, ¼, 1 /8, 1 /16, etc.

  [Nonretroactive as of January 1, 1986]

Value of Tare Division

- **S.2.3. Tare.** – On any scale (except a monorail scale equipped with digital indications and multi-interval scales or multiple range scales when the value of tare is determined in a lower weighing range or weighing segment), the value of the tare division shall be equal to the value of the scale division.* The tare mechanism ***shall operate only in a backward direction*** (that is, in a direction of under-registration) with respect to the zero-load balance condition of the scale. A device designed to automatically clear any tare value shall also be designed to prevent the automatic clearing of tare until a complete transaction has been indicated. * [*Nonretroactive as of January 1, 1983] (Amended 1985 and 2008)

EPO 1 Pretest Determinations

2026

Scale Division(s)

- **Determine Total Number of Scale Divisions (*n*)**

$$n = \frac{Scale\ Capacity\ or\ Test\ load}{Value\ of\ Scale\ Division}$$

Example: $3000 = \frac{30.00\ lbs}{0.01\ lbs}$

- **Determine the Scale Division (d) of the Scale**

$$d = Scale\ division$$

Example: scale shows a 0.01lbs scale division

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Tolerances

- **T.N.3. Tolerance Values**

  - **T.N.3.1. Maintenance Tolerance Values.** – The maintenance tolerance values are as specified in **Table 6.** Maintenance Tolerances.

  - **T.N.3.2. Acceptance Tolerance Values.** – The acceptance tolerance values shall be one-half the maintenance tolerance values.

Tolerances

Table 6.
Maintenance Tolerances
(All values in this table are in verification scale intervals (e))

Tolerance				
	1	**2**	**3**	**5**
Class	**Test Load Applied**			
I	0 to 50 000	50 001 to 200 000	200 001 +	
II	0 to 5 000	5 001 to 20 000	20 001 +	
III	0 to 500	501 to 2 000	2 001 to 4 000	4 001 +
IIII	0 to 50	51 to 200	201 to 400	401 +
III L	0 to 500	501 to 1 000	Add 1 e for each additional 500 e or fraction thereof (Only applies to Class III L)	

(Amended 2024)

Tolerance Values

Class III Multi-interval Scale in Maintenance Tolerance

- 0-30lbs/d=0.01lbs and 30-60lbs/d=0.02lbs
- At 50lbs how many (d) is the scale off?
- At 50lbs n=?
- According to table 6, how many (e) can the scale be off by?
- This scale is within maintenance tolerance

Table 6.
Maintenance Tolerances
(All values in this table are in verification scale intervals (e))

	Tolerance			
	1	2	3	5
Class	Test Load Applied			
I	0 to 50 000	50 001 to 200 000	200 001 +	
II	0 to 5 000	5 001 to 20 000	20 001 +	
III	0 to 500	501 to 2 000	2 001 to 4 000	4 001 +
IIII	0 to 50	51 to 200	201 to 400	401 +
III L	0 to 500	501 to 1 000	Add 1 e for each additional 500 e or fraction thereof (Only applies to Class III L)	

(Amended 2024)

Device Underregistering

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Minimum Test Weights and Test Loads

- **N.3. Minimum Test Weights and Test Loads.** – The minimum test weights and test loads for in-service tests (except railway track scales) are shown in Table 4.

Table 4.
Minimum Test Weights and Test Loads[1]

Devices in Metric Units			Devices in U.S. Customary Units		
Device Capacity (kg)	Minimums (in terms of device capacity)		Device Capacity (lb)	Minimums (in terms of device capacity)	
	Test Weights (greater of)	Test Loads[2]		Test Weights (greater of)	Test Loads[2]
0 to 150	100 %		0 to 300	100 %	
151 to 1 500	25 % or 150 kg	75 %	301 to 3 000	25 % or 300 lb	75 %
1 501 to 20 000	12.5 % or 500 kg	50 %	3001 to 40 000	12.5 % or 1 000 lb	50 %
≥ 20 001	12.5 % or 5 000 kg	25 %[3]	≥ 40 001	12.5 % or 10 000 lb	25 %[3]

Where practicable:

- Test weights to dial face capacity, 1000 d, or test load to used capacity, if greater than minimums specified.
- During initial verification, a scale should be tested to capacity.

[1] If the amount of test weight in Table 4. Minimum Test Weights and Test Loads combined with the load on the scale would result in an unsafe condition, then the appropriate load will be determined by the official with statutory authority.

[2] The term "test load" means the sum of the combination of field standard test weights and any other applied load used in the conduct of a test using substitution test methods. Not more than three substitutions shall be used during substitution testing, after which the tolerances for strain load tests shall be applied to each set of test loads.

[3] The scale shall be tested from zero to at least 12.5 % of scale capacity using known test weights and then to at least 25 % of scale capacity using either a substitution or strain load test that utilizes known test weights of at least 12.5 % of scale capacity. Whenever practical, a strain load test should be conducted to the used capacity of the scale. When a strain load test is conducted, the tolerances apply only to the test weights or substitution test loads.

(Amended 1988, 1989, 1994, and 2003)

Note: GIPSA requires devices subject to their inspection to be tested to at least "used capacity," which is calculated based on the platform area of the scale and a weight factor assigned to the species of animal weighed on the scale. "Used capacity" is calculated using the formula:

Used Scale Capacity = Scale Platform Area × Species Weight Factor

Where species weight factor = 540 kg/m^2 (110 lb/ft^2) for cattle, 340 kg/m^2 (70 lb/ft^2) for calves and hogs, and 240 kg/m^2 (50 lb/ft^2) for sheep and lambs.

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EPO 1 Testing Retail Computing Scales

2026

Test for Electronic Scales

- **Increasing Load Test (Center load)**
  - **Begin by checking for discrimination at zero-load balance then checkpoints will be;**
    - ❑ (20d)
    - ❑ 0.50lb
    - ❑ 1lb increments until you reach 5lbs
    - ❑ 1lb, 2lb, or 5lb increments until you reach 30-35% of the scale's capacity
    - ❑ At 30-35% of the scale's capacity, conduct a shift test
  - **Shift Test**
    - ❑ **T.N.4.4. Shift or Section Tests.** – The range of the results obtained during the conduct of a shift test, or a section test shall not exceed the absolute value of the maintenance tolerance applicable, and each test result shall be within applicable tolerances.

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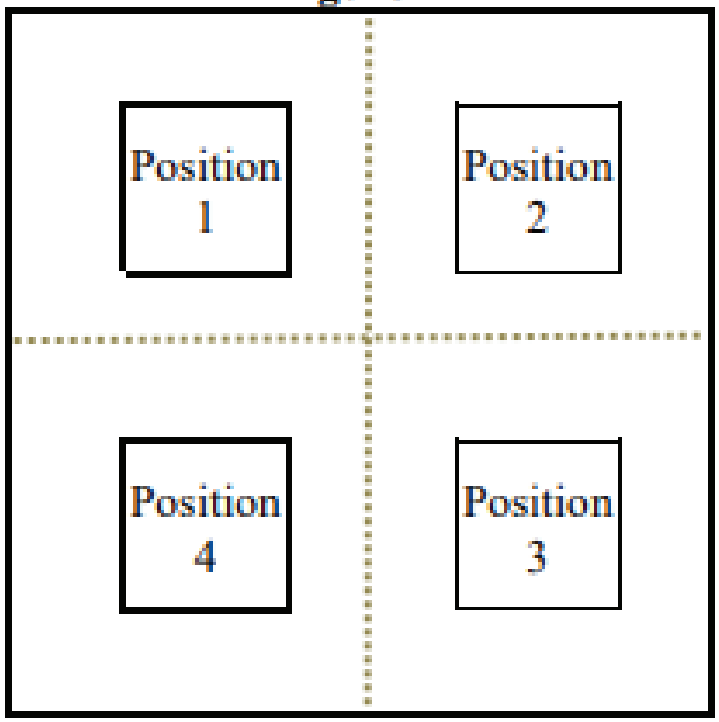
Test for Electronic Scales

Shift Test: Center load in each quadrant

Figure 1



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Test for Electronic Scales

- **Increasing Load Test continued… (Center load)**

  After shift test;

  - ❑ 5lb increments until you reach capacity
  - ❑ During increasing load test, include check points equal to 500d, 2000d, 4000d
  - ❑ Test for over-capacity
  - ❑ Check for RFI/EMI if problem suspected

Test for Electronic Scales

- **Decreasing Load Test (Load Centered)**

  After testing for over-capacity;

  - ❑ if the scale has 1000 or more scale divisions, test with loads equal to the maximum test load at each tolerance value.
  - ❑ All other scales test with one-half of the maximum test load applied in the increasing load test.

Example: for a Class III scale with 3000 scale divisions and 0.01 scale division test at 3000d, 2000d, 500d. Checkpoints on decreasing load test will be 30lbs, 20lbs, and 5lbs.

- ❑ Recheck zero-load balance

- **Reapply a physical security seal if calibration was performed and a physical seal is required.**

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Other Information

Arkansas Bureau of Standards may require Handbook 44 Inspection and Testing Scales Certification

Certification exam is available on the National Council on Weights and Measures (NCWM) website and recognized by this state.

Summary

- Our follow up goal is to quickly determine compliance and exit.
- Affix Seals and Decals properly. No stacking decals.
- Leave a copy of Test Report at the site.
- Email one copy to Bureau@agriculture.arkansas.gov.
- Once the reports are signed, you could accountable for any issues at the site.
- Do not work in the State if your Registration has expired. Renew before it expires.

  -Extension on Registration will not be granted if your Registration has expired

  -If your calibration certification date is over six-months-old, you may not apply for registration with our office
- We require your cooperation in correcting nonconformities in expediting manner.
- Your work represents our office and the State of Arkansas.