Scale Training Seminar

Arkansas Bureau of Standards

2025

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)

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

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:
    -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

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.

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 a new seal 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 yellow seals
- Must be marked or stamped with ARWM on one side/Registration number on opposite side
- 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

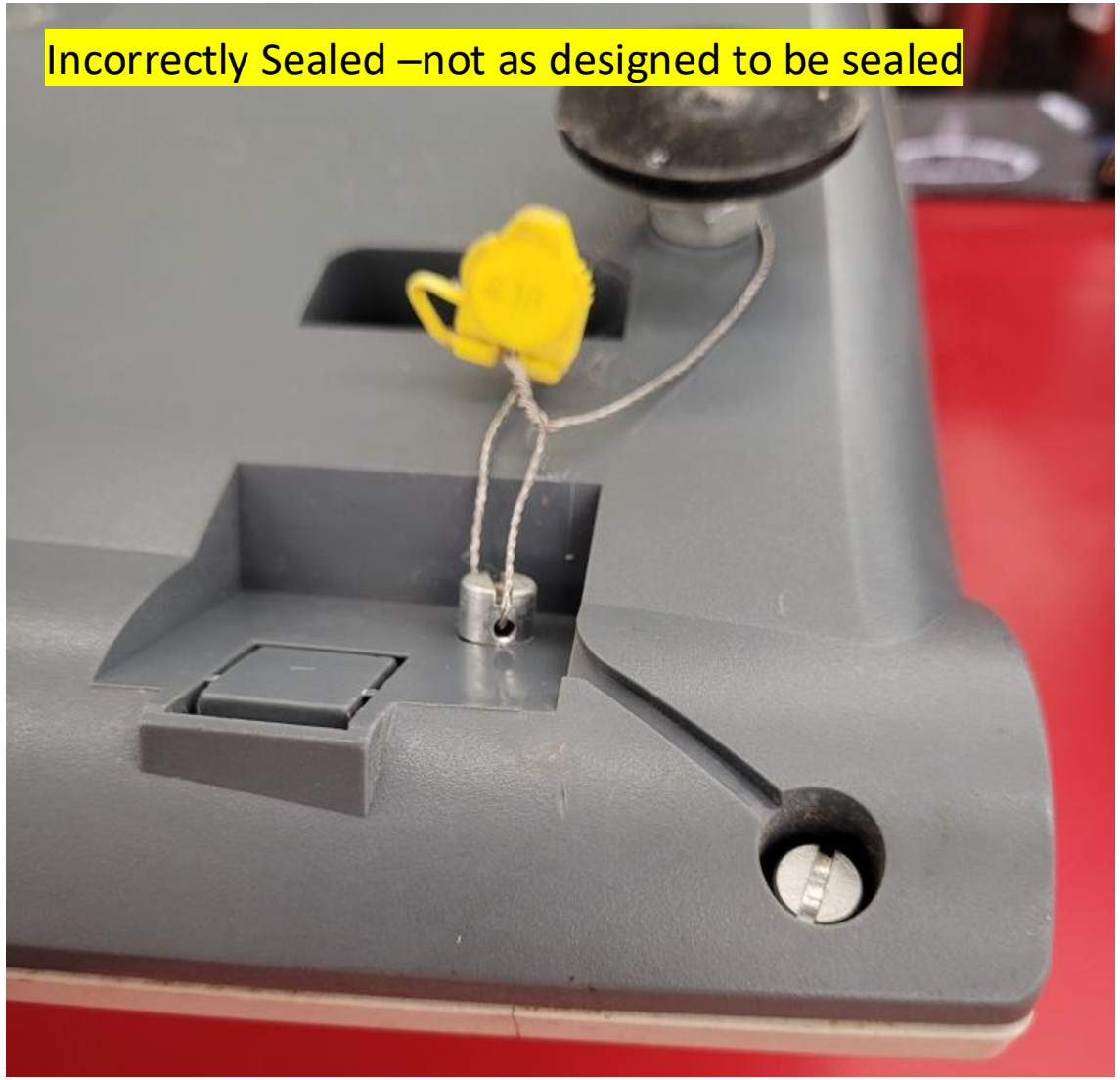
Lead Seal – Must be removed and replaced with state approved seal

Lead Seal – Must be removed and replaced with state approved seal

Security Seals

Pressure Seal – Physical Seals Trump Pressure Seals

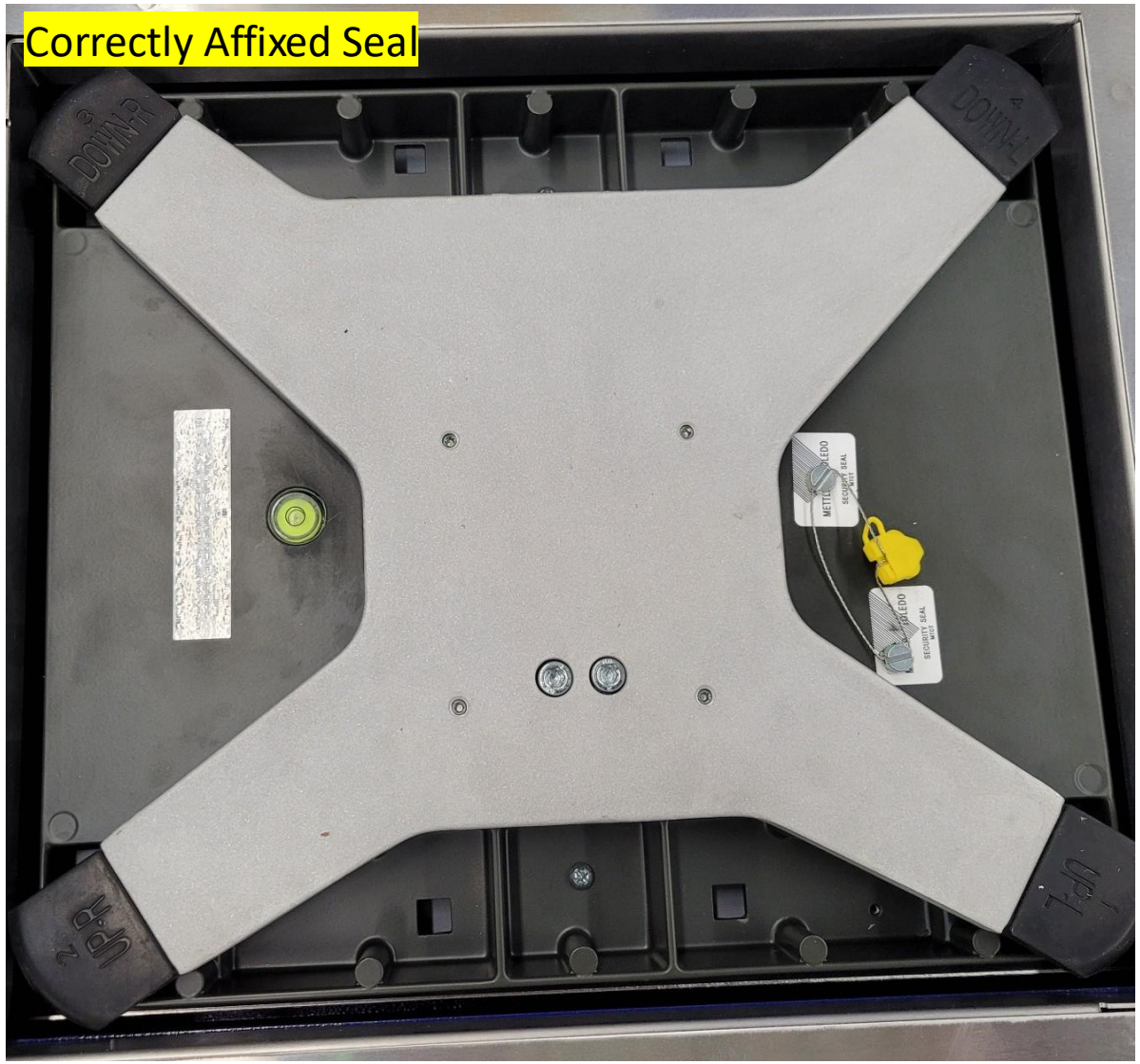
Incorrectly Sealed –not as designed to be sealed



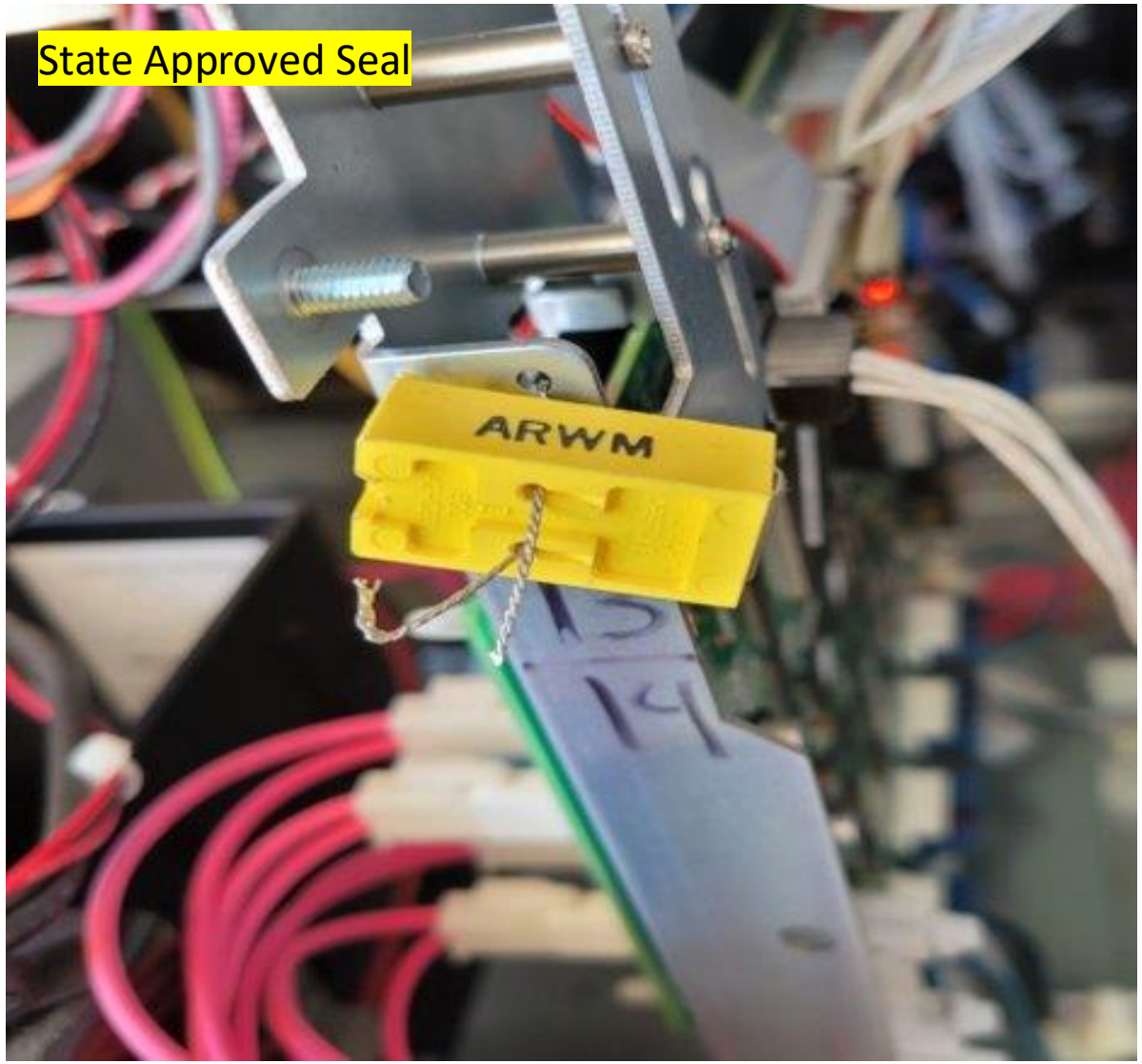
Security Seals

Security Seals

Security Seals



Security Seals



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 close as possible
- Punch hole in decal for year of test.
- You will be required to return to the facility to correct any issues

https://www.agriculture.arkansas.gov/wp-content/uploads/2020/08/New-Approval-Decal-Memo-and-Requirement.pdf

Decals

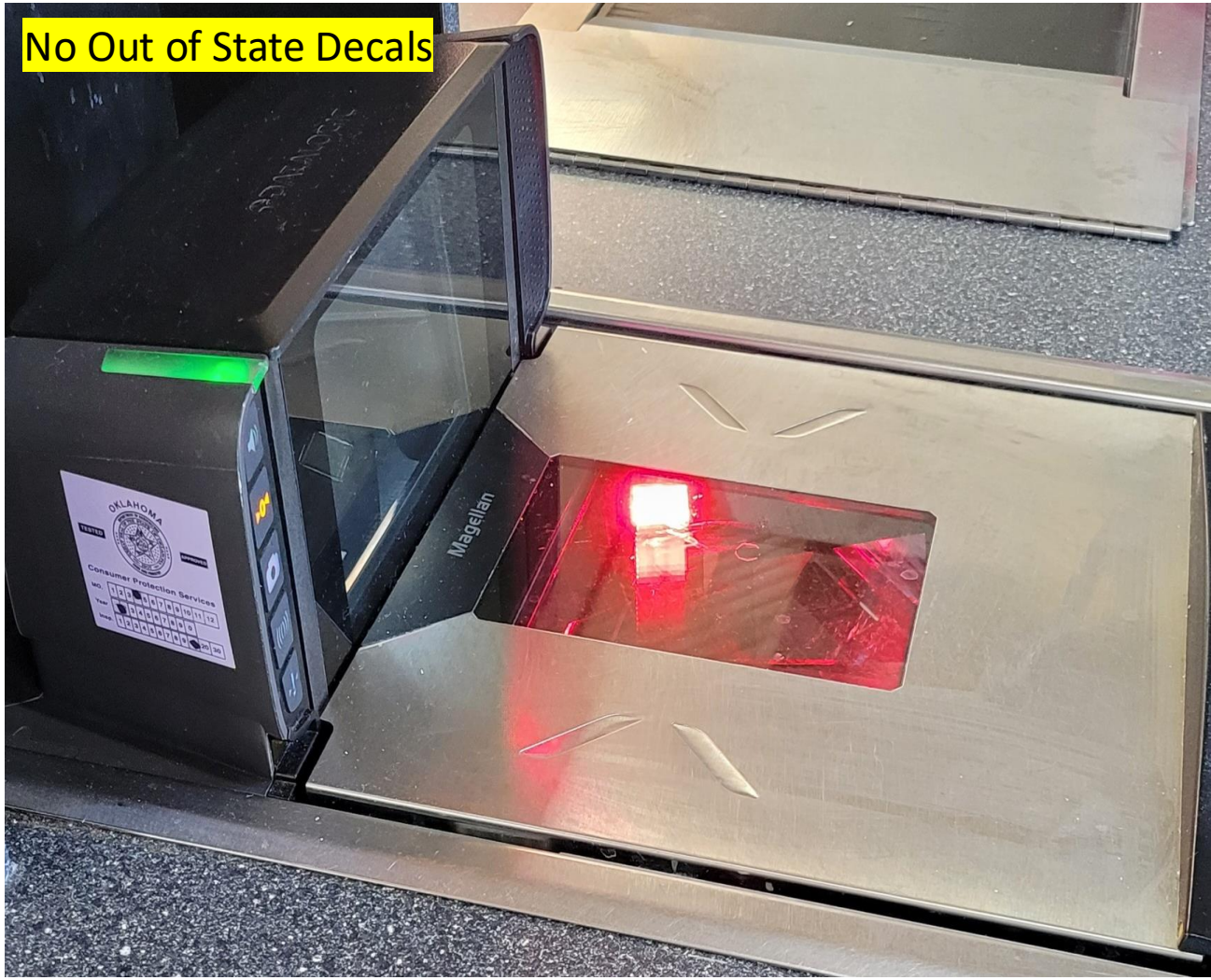

No Yellow Decals-Remove Old Decals
PRINT


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

Decals

No Stacking Decals

No 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 the data plate or use the link above to find NTEP #:

  -Example: NTEP CC No. 17-056

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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 44 2024 Section 1 General Code

NIST Handbook 130 – Regulation for National Type Evaluation

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

OFFICAL ANNUAL TEST REPORTS

Official Annual Test Reports

Topics to discuss:

- When to Perform Annual Tests
- Improper Testing
- Adjustment and Calibrations
- Official Annual Field Test 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 under 300lbs, 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	MP70011	18202466594	17-0566	30lbs
Computing	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	

	MANUFACTURER	MODEL	SERIAL NO.	CAPACITY	NTEP CC#
INDICATOR	Fairbanks	2700	180810100070	200,000	16-003
WEIGHING ELEMENT	Fairbanks	2600-02	2371-13	120,000	02-085
PRINTER	Brother	TN920	N/A	N/A	N/A

INDICATOR: DIGITAL [X] BEAM [ ] DIAL [ ]	MARKED CLASS III/IIIL: YES [X] NO [ ]	DIVISION = 20	BALANCE CONDITION AS FOUND: 0
WEIGHING ELEMENT: ELECTRONIC [X] MECHANICAL [ ] ELECTRO-MECHANICAL [ ]		CLC/SECTION CAP: 60K	NO. OF SECTIONS: 7
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	0	0	2	0	0	0	
		4000	4000		4000	4000		
		8000	8000		8000	8000		
		12000	12000		12000	12000		
		16000	16000		16000	16000		
		20000	20000		20000	20000		
DECREASING-LOAD TEST AT ½ MAX LOAD								
	BALANCE CHECK: 12000				BALANCE CHECK: 12000			

STRAIN LOAD TEST		END	CENTER	CENTER	CENTER	END
SECTIONS ARE LEFT TO RIGHT READING THE INDICATOR. 1 2 3 4 5	EMPTY TRUCK WT.	23000				23000
	TEST WTS. ADDED	20000				20000
	TRUCK + WTS.	43000				43000

REMARKS:

Joe Dirt	Joe Dirt	Charles Smith	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)

When to complete a Form 1822

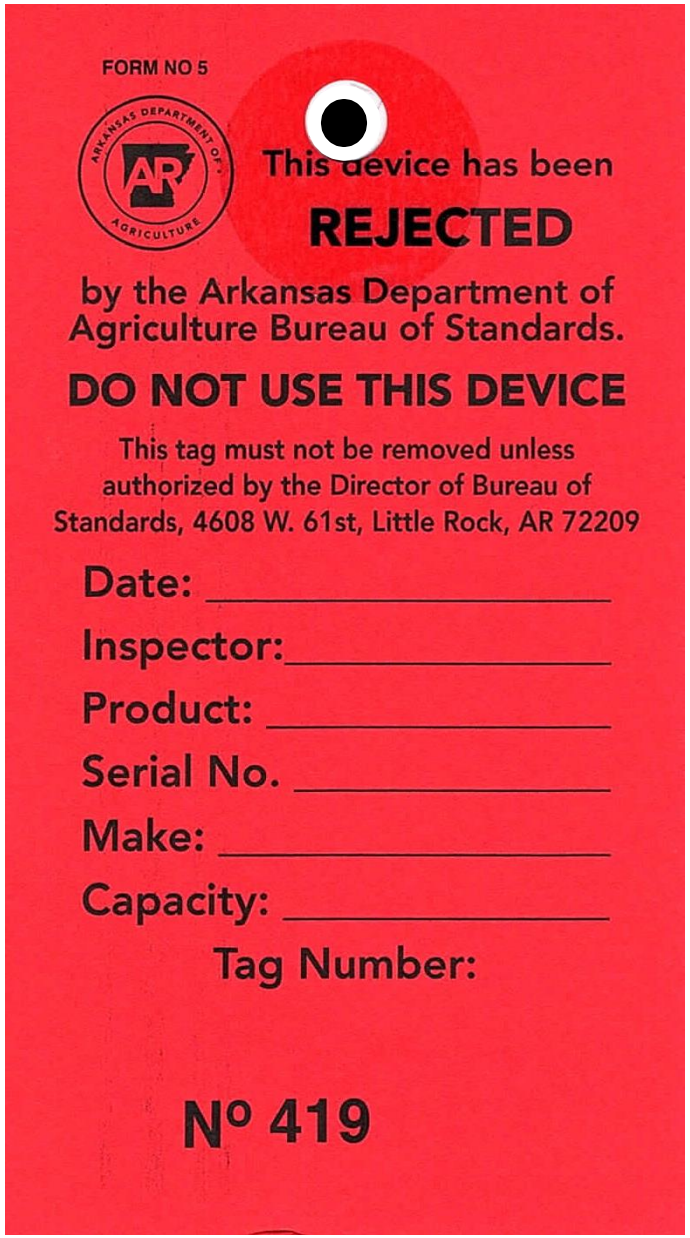
- When a device is newly installed at a location in the state
- When a device is removed and reinstalled at a location in the state
- When performing calibration of a device
- When a device is Officially Rejected by the state

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 #:** S532

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

2024

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
    - Testing
    - Summary

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

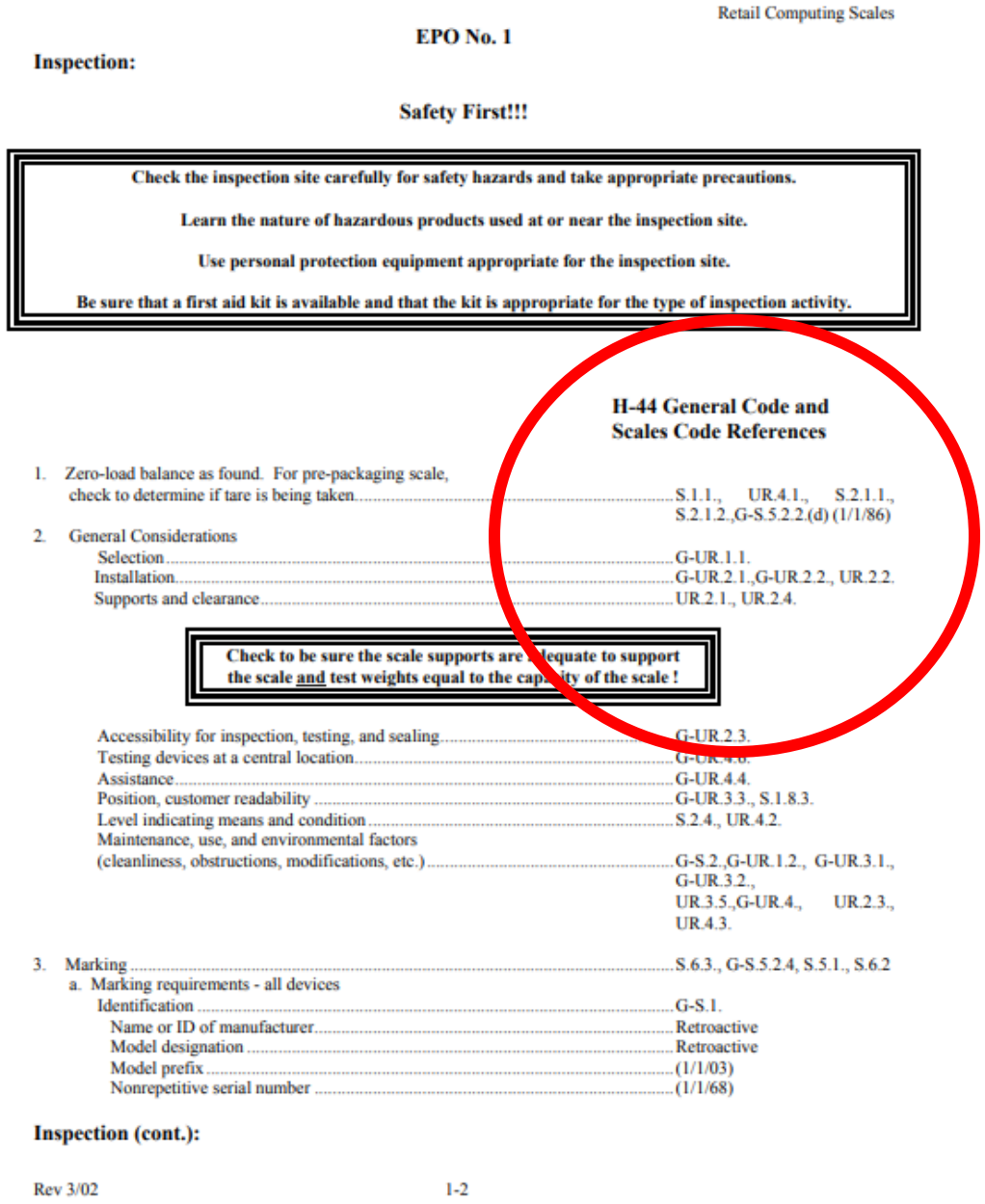
Handbook 112: P:\NTP\EPOS\EPOs -NISTHB 112 2002\EPOCoverPage4-02.wpd

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

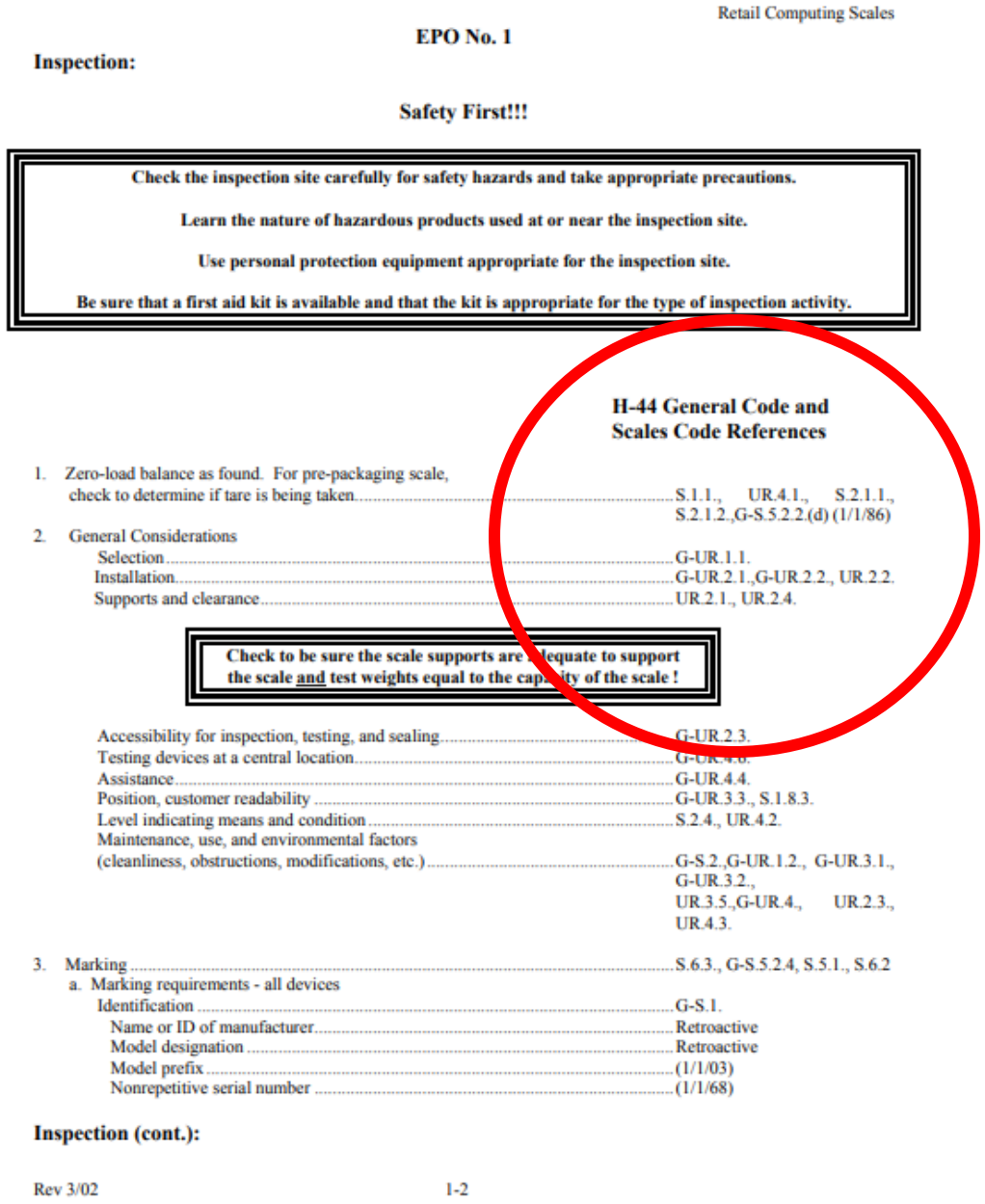
Handbook 112: P:\NTP\EPOS\EPOs -NISTHB 112 2002\EPOCoverPage4-02.wpd

Handbook 44 Key

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

Scales (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
  - Enforceable on ALL EQUIPMENT
  - Printed in Upright Roman Type in Handbook 44
  - Example: Handbook 44 page 1-7 G-S.5.2.3 (Size and Character.)- Retroactive as of January 1, 1975)
- Nonretroactive Requirements
  - Enforceable on or after effective date
  - Printed in *Italics Type* in Handbook 44
  - Example: Handbook 44 page 1-4 G-S.1. (b) (1)-(Identification.)- Nonretroactive as of January 1, 2003)

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 Safety

2024

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.

Safety

Check for proper Installation. These can tip over.

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

EPO 1 Zero-Load Balance

2024

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.

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

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

2024

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**. – Installed in accordance with manufacturer instructions.
  - **UR.2.2**. – Hanging scales must be freely supported.
- **Supports and Clearance**
  - **UR.2.1.** –Scales must be securely supported.
  - **UR.2.4.-** Foundations, Supports, Clearance. – must provide strength, rigidity. All live parts must have clearance.
- **Accessibility**
  - **G-UR.2.3.** – Scales must be accessible for inspection, testing, sealing

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:
Official Rejection
Red Tag
Remove from service

Press Play →

[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 scale must always have clearance on weighing element.

[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 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. Level condition-** scales must be level, if equipped with level indicator

General Consideration

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

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

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

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General Consideration

- **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

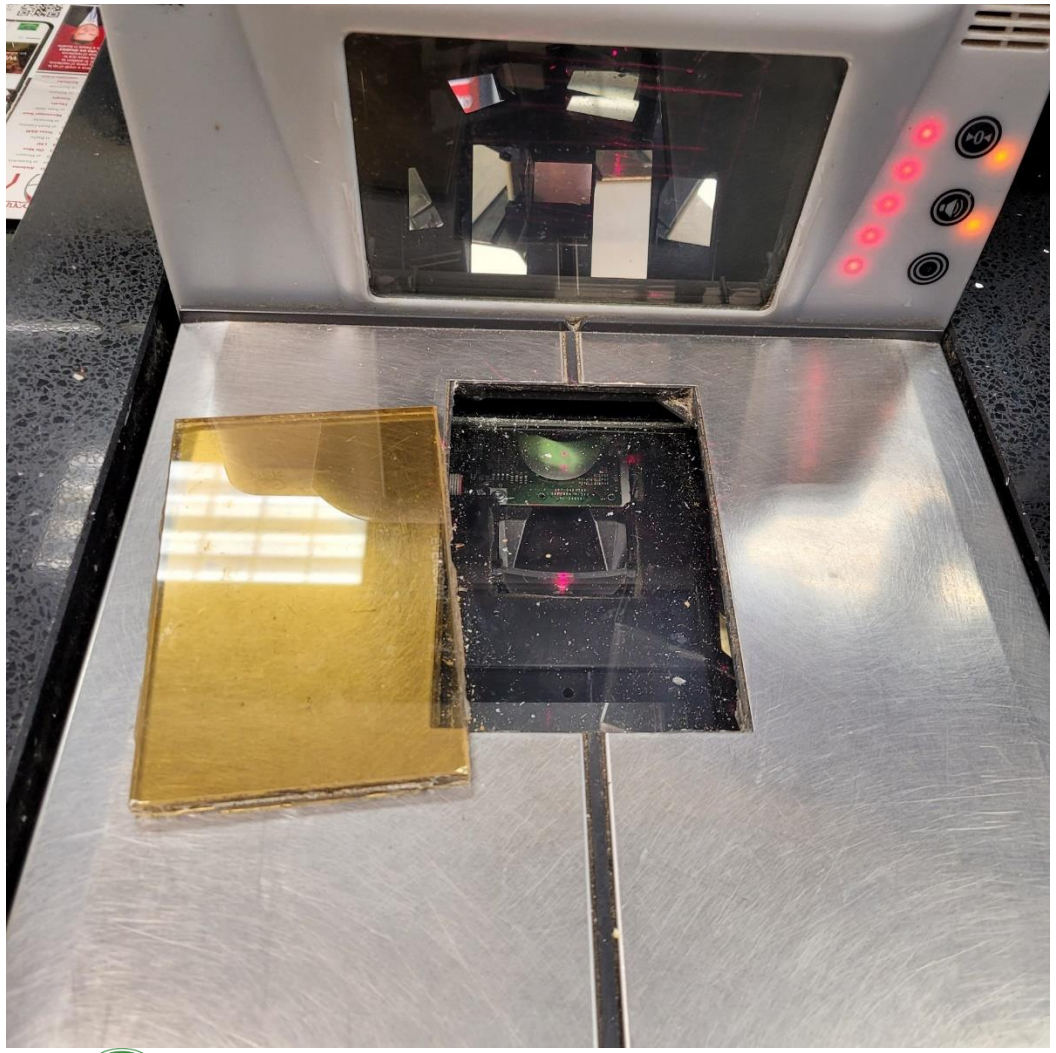
General Consideration

- **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 Consideration

Maintenance of Equipment. Official rejection. Red tag.



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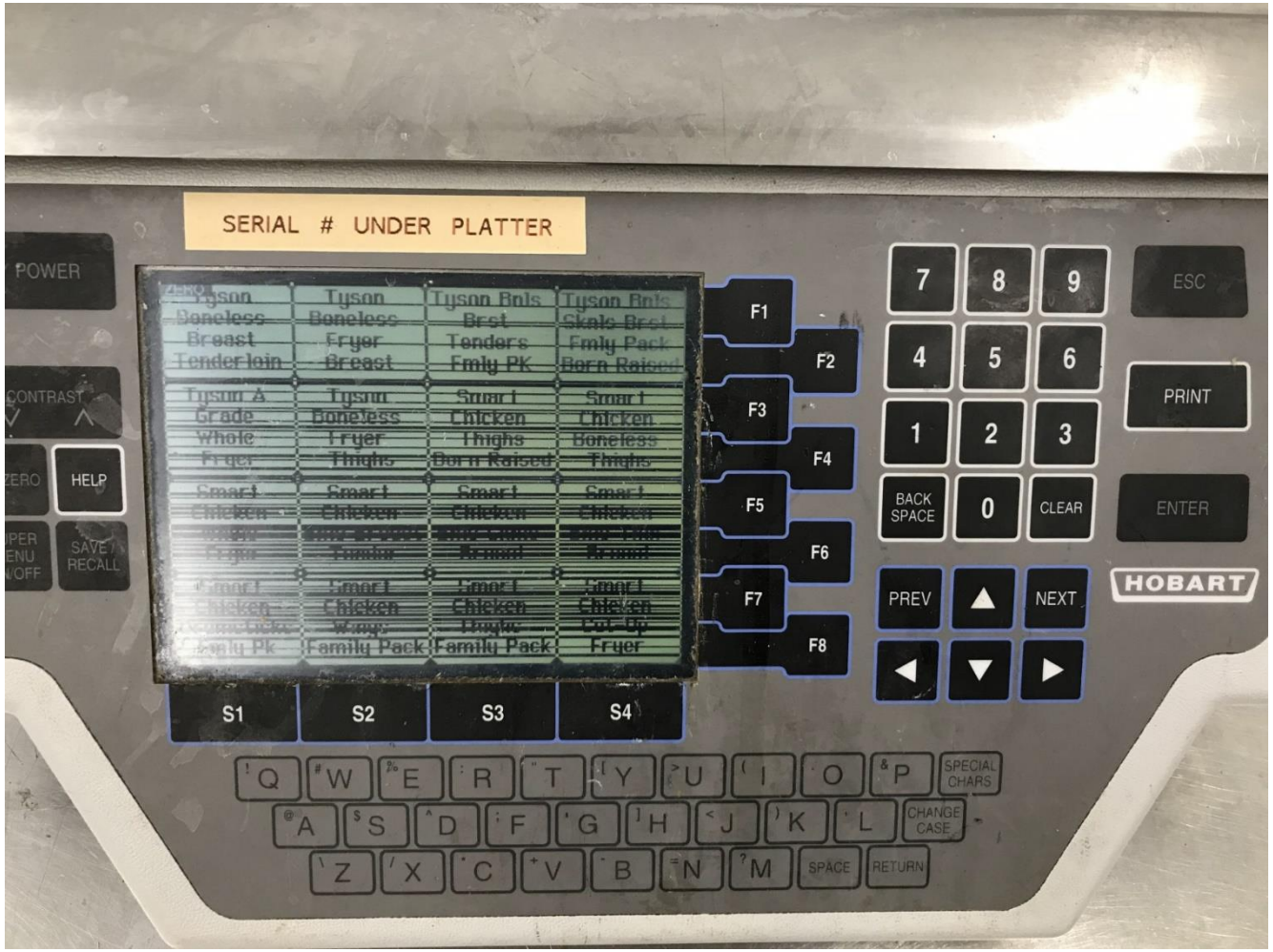
General Consideration

Maintenance of Equipment. Official rejection. Red tag.



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General Consideration

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

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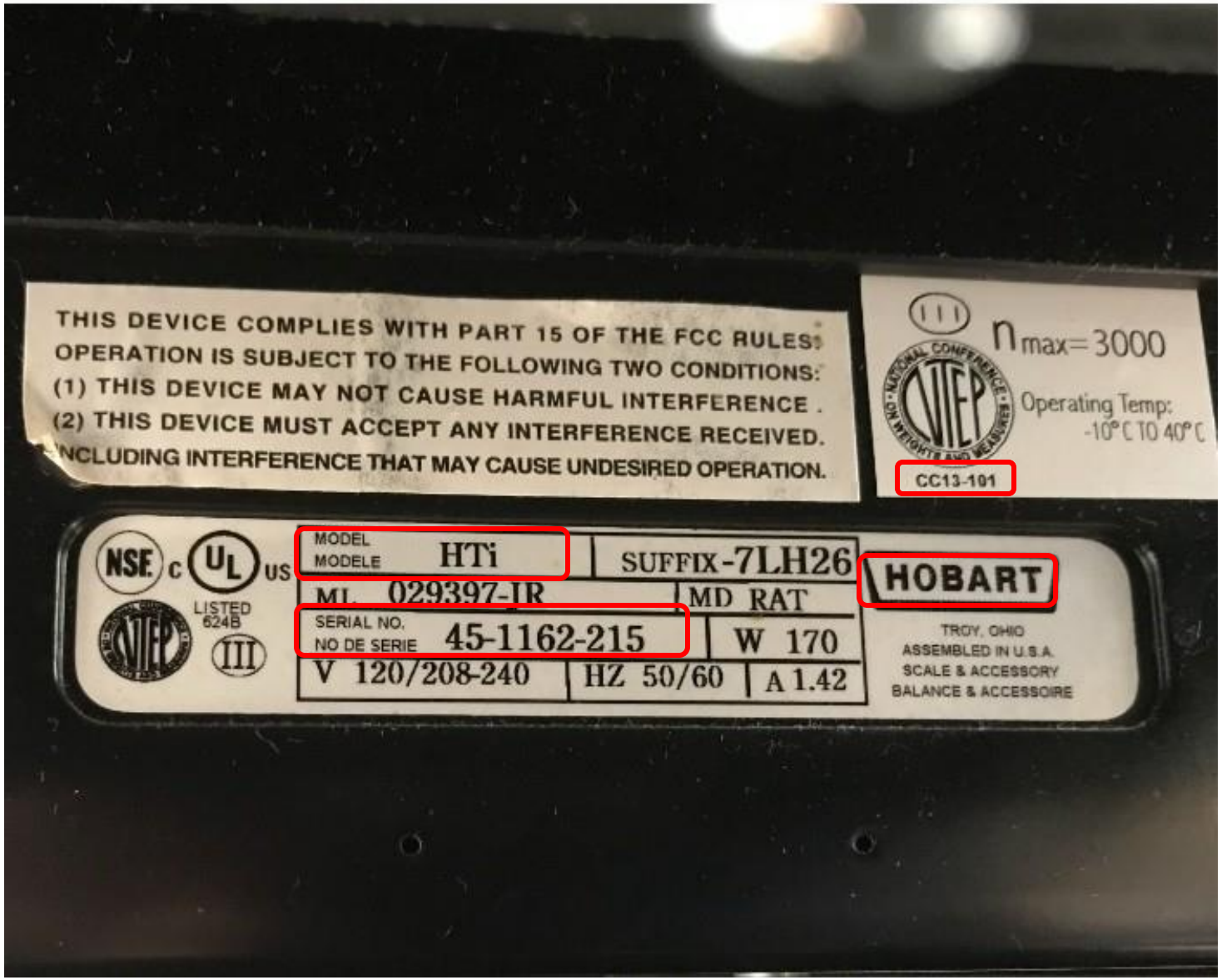
EPO 1 Marking Requirements

2024

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.

Marking Requirements

Table S.6.3.a.
Marking Requirements

To Be Marked With ⇓	Weighing Equipment				
	Weighing, Load-Receiving, and Indicating Element in Same Housing or Covered on the Same CC[1]	Indicating Element not Permanently Attached to Weighing and Load-Receiving Element or Covered by a Separate CC	Weighing and Load-Receiving Element Not Permanently Attached to Indicating Element or Covered by a Separate CC	Load Cell with CC (11)	Other Equipment or Device (10)
Manufacturer's ID (1)	X	X	X	X	X
Model Designation and Prefix (1)	X	X	X	X	X
Serial Number and Prefix (2)	X	X	X	X	X (16)
Certificate of Conformance Number (CC) (23)	X	X	X	X	X (23)
Accuracy Class (17)	X	X (8)	X (19)	X	
Nominal Capacity (3)(18)(20)	X	X	X		
Value of Scale Division, "d" (3)	X	X			
Value of "e" (4)	X	X			
Temperature Limits (5)	X	X	X	X	
Concentrated Load Capacity (CLC) (12)(20)(22)		X	X (9)		
Special Application (13)	X	X	X		
Maximum Number of Scale Divisions (n_{max}) (6)		X (8)	X (19)	X	
Minimum Verification Scale Division (e_{min})			X (19)		
"S" or "M" (7)				X	
Direction of Loading (15)				X	
Minimum Dead Load				X	
Maximum Capacity				X	
Minimum and Maximum Speed (25)		X			
Maximum Speed Change (26)		X			
Vehicle Direction Restriction (27)		X			
Vehicle Restriction (28)		X			
Safe Load Limit				X	
Load Cell Verification Interval				X	

EPO 1 Indicating and Recording Elements

2024

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 underregistration) 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)

Appropriateness of Design

Table 3.
Parameters for Accuracy Classes

Class	Value of the Verification Scale Division (d or e[1])	Number of Scale[4] Divisions (n)	
		Minimum	Maximum
SI Units			
I	equal to or greater than 1 mg	50 000	--
II	1 to 50 mg, inclusive	100	100 000
	equal to or greater than 100 mg	5 000	100 000
III[2,5]	0.1 to 2 g, inclusive	100	10 000
	equal to or greater than 5 g	500	10 000
III L[3]	equal to or greater than 2 kg	2 000	10 000
IIII	equal to or greater than 5 g	100	1 200
U.S. Customary Units			
III[5]	0.0002 lb to 0.005 lb, inclusive	100	10 000
	0.005 oz to 0.125 oz, inclusive	100	10 000
	equal to or greater than 0.01 lb	500	10 000
	equal to or greater than 0.25 oz	500	10 000
III L[3]	equal to or greater than 5 lb	2 000	10 000
IIII	greater than 0.01 lb	100	1 200
	greater than 0.25 oz	100	1 200

[1] *For Class I and II devices equipped with auxiliary reading means (i.e., a rider, a vernier, or a least significant decimal differentiated by size, shape, or color), the value of the verification scale division "e" is the value of the scale division immediately preceding the auxiliary means.*

[2] *A Class III scale marked "For prescription weighing only" may have a verification scale division (e) not less than 0.01 g.*

(Added 1986) (Amended 2003)

[3] *The value of a scale division for crane and hopper (other than grain hopper) scales shall be not less than 0.2 kg (0.5 lb). The minimum number of scale divisions shall be not less than 1000.*

[4] *On a multiple range or multi-interval scale, the number of divisions for each range independently shall not exceed the maximum specified for the accuracy class. The number of scale divisions, n, for each weighing range is determined by dividing the scale capacity for each range by the verification scale division, e, for each range. On a scale system with multiple load-receiving elements and multiple indications, each element considered shall not independently exceed the maximum specified for the accuracy class. If the system has a summing indicator, the n_{max} for the summed indication shall not exceed the maximum specified for the accuracy class.*

(Added 1997)

[5] *The minimum number of scale divisions for a Class III Hopper Scale used for weighing grain shall be 2000.)*

[*Nonretroactive as of January 1, 1986*]

(Amended 1986, 1987, 1997, 1998, 1999, 2003, and 2004)

Provisions for Sealing

- **G-UR.4.5. Security Seal.** – A security seal shall be appropriately affixed to any adjustment mechanism designed to be sealed.

No Seal: Official rejection. Red tag.

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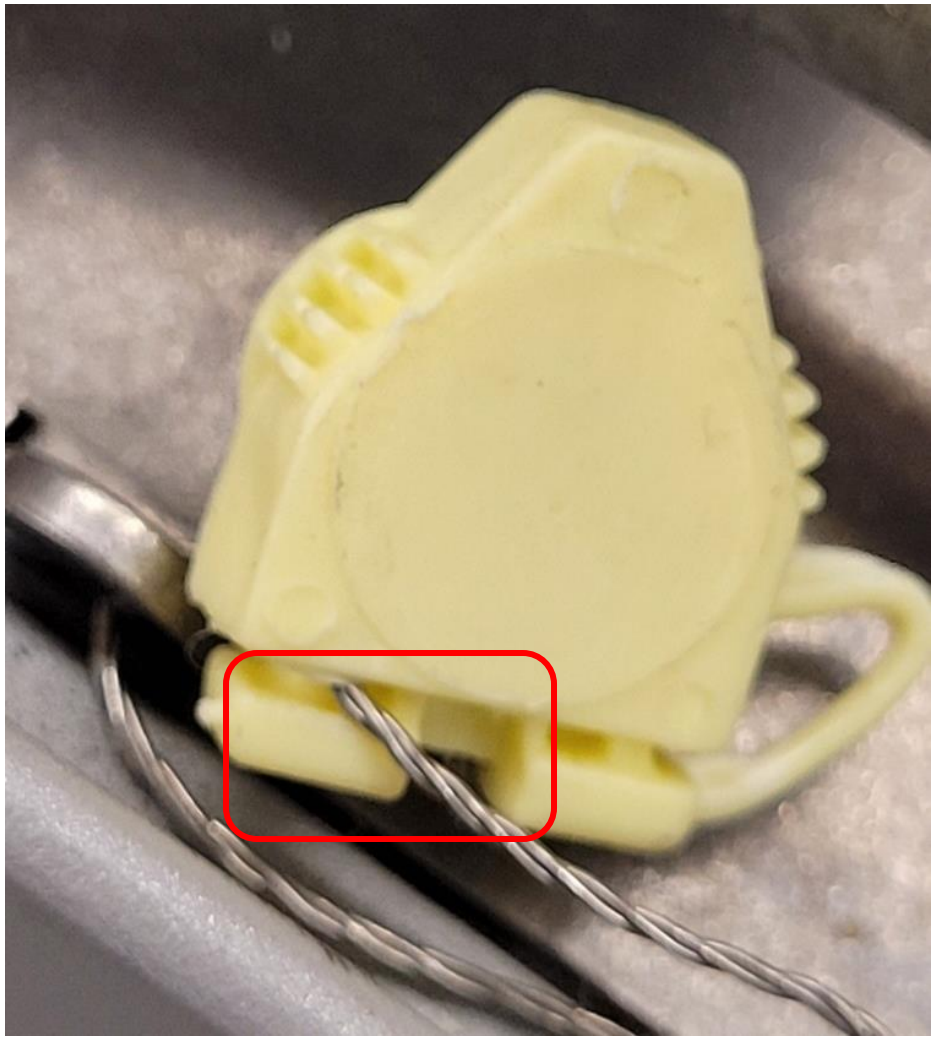
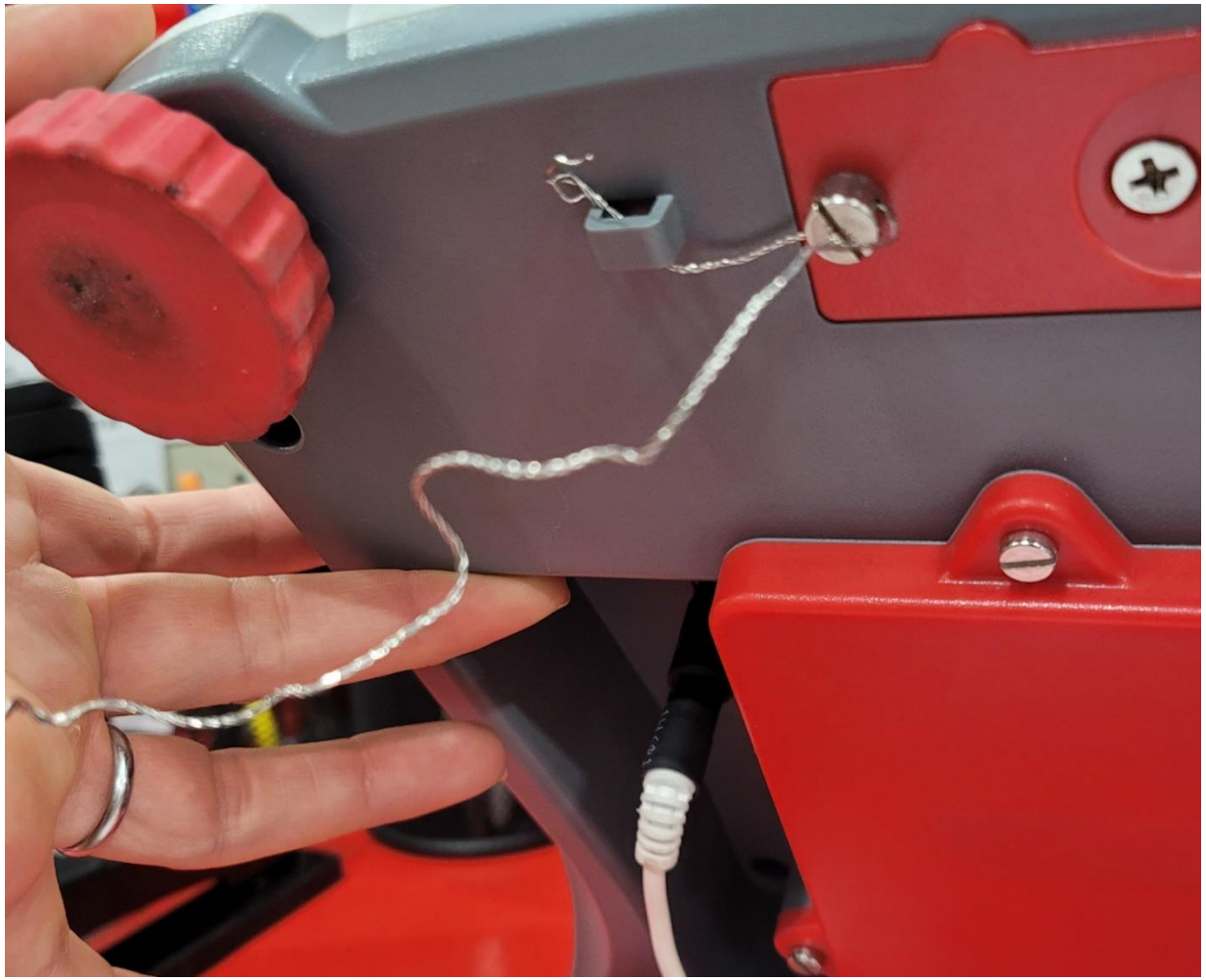
Provisions for Sealing

Improperly Sealed: Official rejection. Red tag.





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EPO 1 Pretest Determinations

2024

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

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 scale divisions)				
Tolerance in Scale Divisions				
	1	2	3	5
Class	Test Load			
I	0 - 50 000	50 001 - 200 000	200 001 +	
II	0 - 5 000	5 001 - 20 000	20 001 +	
III	0 - 500	501 - 2 000	2 001 - 4 000	4 001 +
IIII	0 - 50	51 - 200	201 - 400	401 +
III L	0 - 500	501 - 1 000	(Add 1 d for each additional 500 d or fraction thereof)	

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Tolerance Values

Class III Multi-interval Scale in Maintenance Tolerance

- 0-30lbs/d=0.01lbs and 30-60lbs/d=0.02lbs
- At 50lbs this scale is off by three scale divisions (3d)
- At 50lbs n=2500
- According to table 6, when n=2500 the number of division this scale can be off is 3
- This scale is within maintenance tolerance

Table 6.
Maintenance Tolerances
(All values in this table are in scale divisions)

	Tolerance in Scale Divisions			
	1	2	3	5
Class	Test Load			
I	0 - 50 000	50 001 - 200 000	200 001 +	
II	0 - 5 000	5 001 - 20 000	20 001 +	
III	0 - 500	501 - 2 000	2 001 - 4 000	4 001 +
IIII	0 - 50	51 - 200	201 - 400	401 +
III L	0 - 500	501 - 1 000	(Add 1 d for each additional 500 d or fraction thereof)	

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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 Test

2024

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
    - ❑ 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. (Added 1986)

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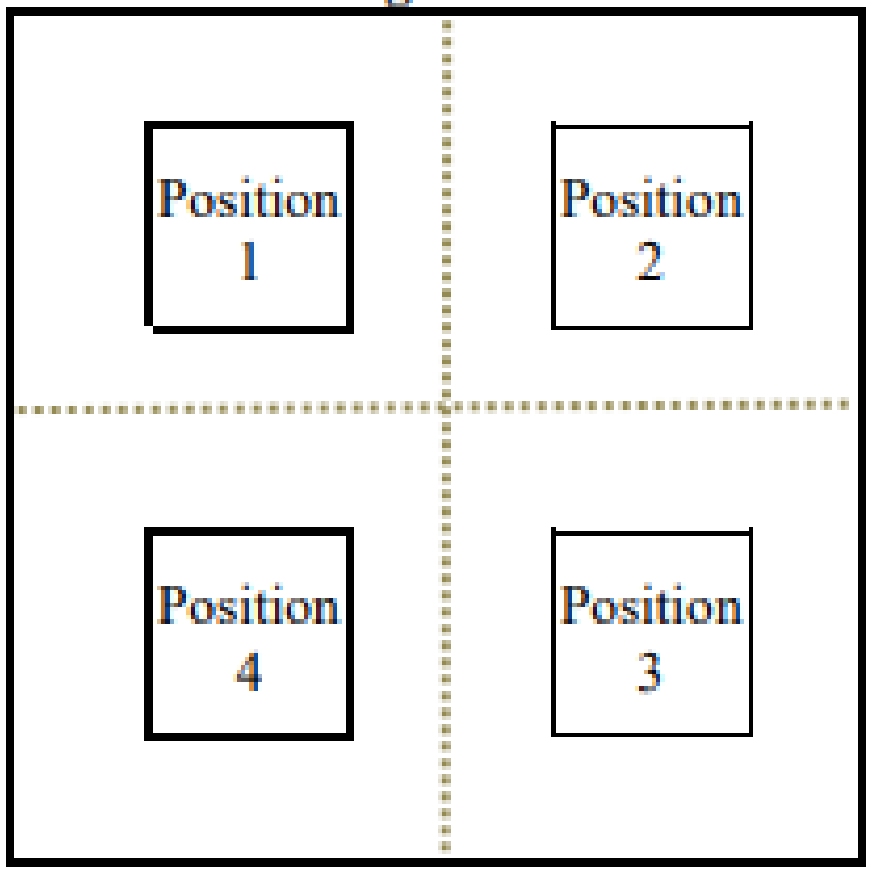
Test for Electronic Scales

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

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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.

Example: for a Class III scale with 3000 scale divisions and 0.01 scale division test at 4000d, 2000d, 500d. Checkpoints on decreasing load test will be 30lbs, 20lbs, and 5lbs.

- ❑ Recheck zero-load balance

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 are accountable for any issues at the site.
  - Do not work in the State if your Registration has expired.

    -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
- Renew Registration before it expires (Service Manager).
- We require your full cooperation in correcting nonconformities in expediting manner.
- Your work represents our office and the State of Arkansas.