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www.anyload.com

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Revision History:

Record with brief description of all revisions made to product or manual

Version	Date	Description
1.0.0	September 5, 2025	First public release version.

The most current version of this document, along with any software, firmware, and other product updates, can be found on our website:

www.anyload.com

1. Introduction

This manual provides information on installation, configuration, calibration and servicing of the 101NHM3 [Category].

For questions regarding this manual or the operation of ANYLOAD products, please contact your authorized ANYLOAD distributor or visit our website at www.anyload.com for support resources and service information.

1.1 Safety

READ this manual BEFORE operating or servicing this equipment or systems with this equipment incorporated.






FOLLOW these instructions carefully.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or modify this equipment.

SAVE and distribute this manual for future reference.

Failure to follow the instructions or heed the warnings could result in injury or death. Contact any ANYLOAD dealer or distributor for replacement manuals.

Indicative Markings:

Symbol	Significance
 WARNING 	Warns of a potentially dangerous situation which can result in serious physical injury or death
 CAUTION	Warns of a potentially dangerous situation which can result in slight or moderate physical injury
Notice	Failure to comply to information with this marking may lead to damage to property
 Important	Important information about the product
 Tip	Application tips and other information that may be helpful
<i>For emphasis (Italics)</i>	Italics are used to emphasize key information

General Safety:

⚠ WARNING ⚠

ONLY qualified professionals approved should carry out intrinsically safe installations. This work involves extensive knowledge of the product, specific safety standards, and the potentially hazardous environment in which it will

1. Do not allow minors or inexperienced individuals to operate this unit.
2. Ensure the unit is fully assembled before operation.
3. Keep hands and fingers away from slots, openings, or any potential pinch points.
4. Do not use this product if any component appears cracked or damaged.
5. Avoid making alterations or modifications to the unit.
6. Do not remove or obscure any warning labels.
7. Do not submerge the unit in water.
8. Before opening the unit, ensure the power cord is disconnected from the power source. Disconnect all power sources before servicing, as multiple power sources may be present. Failure to do so may result in property damage, personal injury, or death.
9. For permanently connected equipment, incorporate a readily accessible disconnect device in the building's installation wiring.
10. Pluggable units must be installed near an easily accessible socket/outlet.
11. Use only copper or copper-clad aluminum conductors when wiring.

Recommendations for Proper Use:

- Keep the instrument away from heat sources and direct sunlight.
- Protect the instrument from rain unless it is a special IP-rated version.
- Do not clean with water jets unless specified for IP-rated models.
- Avoid dipping the instrument in water or spilling liquids on it.
- Use a soft, dry cloth for cleaning; do not use solvents or abrasive materials.
- Do not install the unit in areas with explosion hazards unless with specially rated models.
- If the working environment reaches the unit's temperature limits, ensure proper airflow around the instrument to prevent malfunctions such as sudden shutdowns or disconnections.

Disposal Guidelines:



Product Disposal: Dispose of this product at authorized waste collection centers at the end of its life cycle. Proper disposal prevents environmental and health risks and supports recycling. Illegal disposal may result in legal penalties.

Battery Disposal: Dispose of batteries at designated centers as per local laws. Batteries may contain harmful substances (e.g., Cd, Li, Hg, Pb) and must not be discarded with household waste. Improper disposal may result in legal penalties.

1.2 Features

- Capacities range from 500lb-10Klb
- Spherical mount reduces friction found within Rod End Bearings w/ Clevises
- Enables high accuracy tension loading & repeatability

1.3 Options & Add-Ons

- NTEP certified load cells from 500lb-10Klb
- OIML certified load cells from 200kg-5t
- Intrinsically Safe (FM, ATEX, IECEx)
- Stainless steel load cell available (101NSGS)

2. General Guidelines for Weigh Module Installation

2.1 Site, Structural, and Environmental Preparation

- **Check Structural Integrity:** The installation site should meet all structural requirements before beginning installation work of the vessel and associated weigh modules.
- **Minimum Support Modules:** Incorporate at least three weigh modules evenly spread apart across the structure for basic vessel support.
- **Exposure Protection:** Load cells should be protected from moisture, corrosive substances, extreme temperatures, and debris as much as possible given the environmental circumstances.
- **Grounding and Cable Integrity:** Proper system grounding is essential for accurate weighing. Do not cut or extend load cell cables, as this will compromise calibration and system reliability.

■ Important

Cutting or modifying the load cell cable will void the warranty.

2.2 Welding and Modification

- **Avoid Welding Near Live Load Cells:** Structural welding should be performed without the load cells installed. If welding is still necessary and the load cells cannot be removed:
 - Disconnect the load cells from all electronics
 - Place the welding clamp/earth as close as possible to the weld to avoid a current path through the load cells.

ⓘ Tip

Dummy load cells can also be used if modifications must be made with the full installation of the weigh module in place.

2.3 Final Checks and Alignment

- **Confirm Alignment:** All modules should be properly aligned to ensure the load is evenly distributed across the system using a digital or bubble level.

■ Important

No torque should be induced into the load cell from the threaded fixtures.

3. Weigh Module Assembly

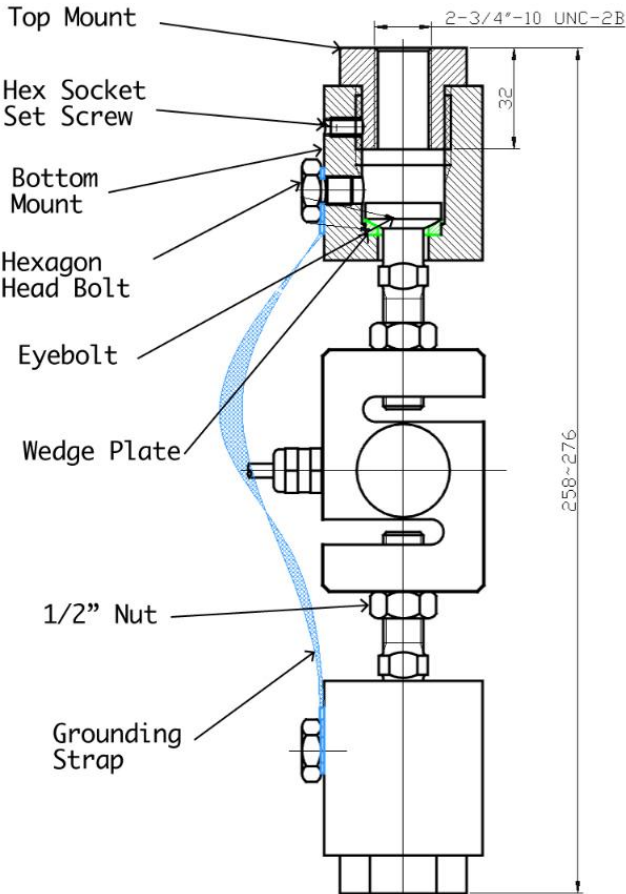


Figure 1: Weigh Module Parts Illustration

Table 1: Weigh Module Components

Part Name	Quantity
Top Mount	2
Hex Socket Set Screw	2
Bottom Mount	2
Hexagon Head Bolt	2
Eyebolt	2
Wedge Plate	2
1/2" Nut	2
Grounding Strap	1

3.1 Assembly Instructions

- 1. Secure Bottom Mount:** Insert the Wedge Plate first, then the Eyebolt.
- 2. Assemble Mounts:** Insert the Top Mount into the assembled Bottom Mount, and using a Hex Socket Screw, tighten the assembly together.

Tip

Ensure to align the holes while assembling to make the assembly faster and easier.

- 3. Repeat:** Create total of two assemblies of the mounts, for each side of the load cell.
- 4. Connect the Load Cell:** Tighten the 1/2" Nut on to the Eyebolt, then tighten the Eyebolt into the hole on the Load Cell.
- 5. Attach Grounding Strap:** Using the Hexagon Head Bolt, securely tighten the Strap.

Important

Care must be taken to install the load cell with the load direction arrow facing the item creating tension and being weighed, or else the output signal will be incorrect, and the load cell can be damaged.

4. 101NHM3 Weigh Module Installation

For heavier installations, a minimum of three weigh modules is recommended for load levelling and managing higher capacities.

- To maintain maximum accuracy, make sure the support structure will not deflect excessively at the maximum expected working load.
- Due to the nature of tension installations, it's important to incorporate a safety backup (i.e. chains, rods, etc.) to prevent the scale from falling if the module fails.

4.1 Site Preparation

- 1. Survey the Site:** Ensure it is level and capable of supporting the intended load.
- 2. Plan Module Orientation:** Determine the direction and mounting location of the 101NHM3 assemblies.

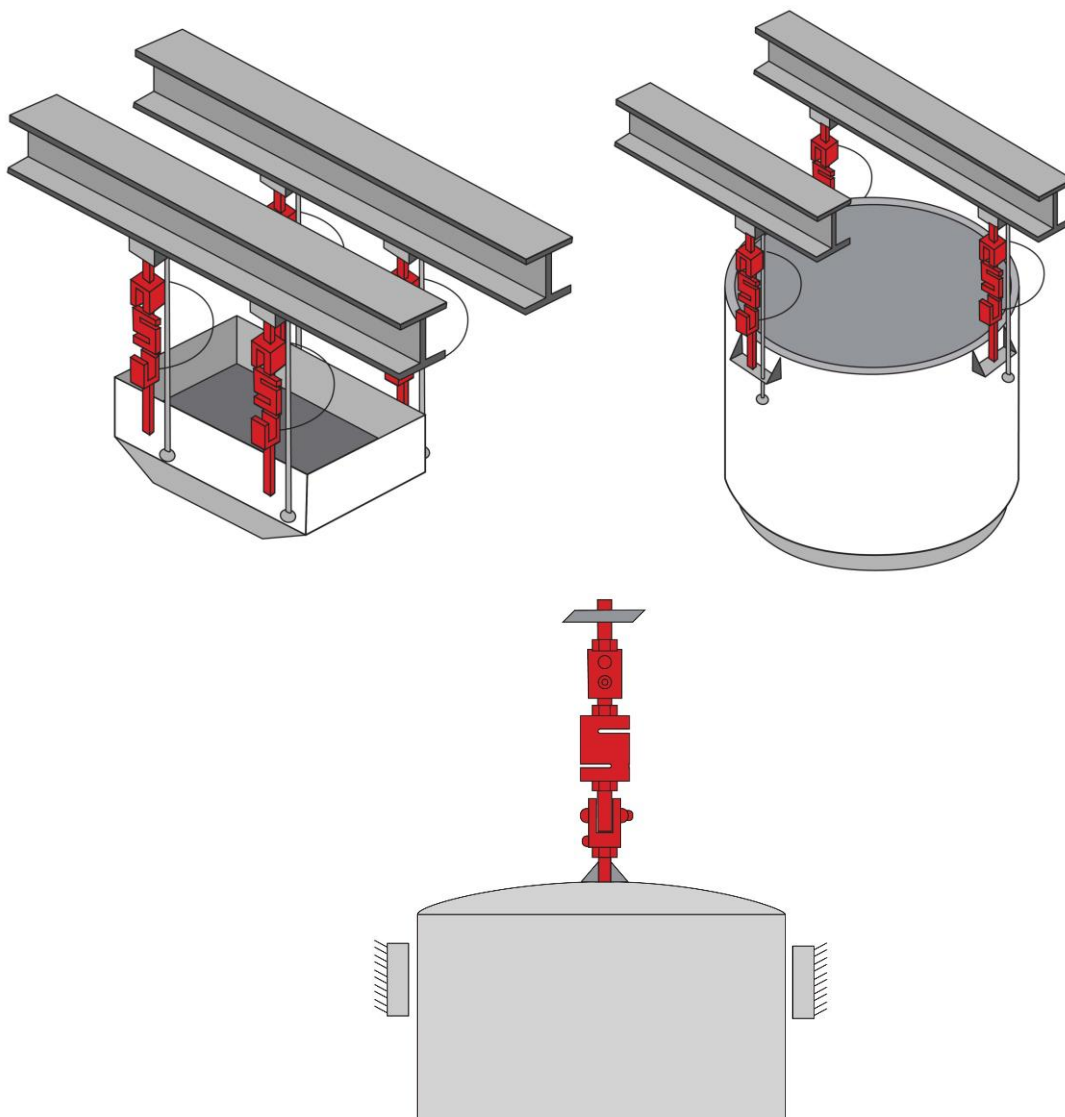


Figure 2: Weigh Module Configuration Examples

4.2 Weigh Module Installation

- 3. Attach modules to the Vessel:** Make sure the overhead support brackets on the structure are aligned properly. Ensure the weigh modules are oriented correctly (dead end fixed above, live end attached to the vessel).
- 4. Connect the Weigh Module Clevis:** Using an adequately size and strength threaded rod, (facing the vessel) connect to the load cell and tighten the jam nut to prevent unwanted turning of the threaded rod.
- 5. Threaded Rod Installation:** On the side facing the support structure, install a threaded rod that passes through the hole in the upper support bracket.

Tip

Always use a pair of wrenches or other supports to avoid introducing unwanted torque onto the load cell.

- 6. Install Safety Protection Adjacent:** Leave clearance on the end so it does not impede the tension measurement of the system even at its maximum capacity.

5. Calibration

Calibration ensures the system can read accurately at various weight increments. The two most common types of calibration are used depending on the capacity of the scale. The method of *test weights* and the method of *substitution*.

5.1 Lower Capacity Scale Calibration Steps

1. **Zero the Scale:** Ensure the hopper is empty and perform the zero calibration as instructed by the connected indicator manual.
2. **Apply Known Test Weights:** Place certified test weights on a platform connected to the weigh modules or suspended safely from the hopper structure.
3. **Record and Adjust Calibration:** Compare the indicated weight to the applied weight and adjust the calibration factor in the indicator or follow span calibration procedure.

Tip

Span calibration can be performed in one or more steps depending on the performance of the system and accuracy required - although more time consuming, multi-point calibration can improve linearity and accuracy at multiple intermediate capacities.

4. **Repeat if Necessary:** If performing multi-point calibration, repeat in even increments until complete.

5.2 Alternative High Capacity Scale Calibration Steps

1. **Zero the Scale:** Ensure the hopper is empty and perform the zero calibration as instructed by the connected indicator manual.
2. **Apply and Record Test Weights:** Place certified test weights on a platform connected to the weigh modules or suspended safely from the hopper structure and record the readout on the indicator.
3. **Record and Adjust Calibration:** Compare the indicated weight to the applied weight and adjust the calibration factor in the indicator or follow span calibration procedure.

Tip

Similar to the method only using test weights, material substitution can also be used for multi-point calibration.

4. **Add Bulk Material:** Remove the test weights and add bulk material until the indicator readout matches the recorded value with the test weights.
5. **Add Test Weights:** With the bulk material in place, add more certified test weights and record the indicator display again.
6. **Repeat Material Substitution:** Continue substituting material as needed until satisfactory calibration has been completed with the whole system.

6. Load Cell & Junction Box Wiring

General Guidelines: All cables should be routed so they are not damaged or cut during operation. Cables should not run near heat sources greater than 65°C. For areas where wires must be shielded from mechanical or rodent damage, use of a flexible conduit is recommended. It can also protect against moisture and other debris ingress into the load cell.

- 1. Mount the Junction Box:** Install it in a location free from excessive heat and water exposure. *Do not* mount the junction box on the scale as the cables can affect accuracy if crossing from the foundation to the live scale element.

■ Important

Load cells are calibrated and supplied with a fixed cable length that should never be shortened or lengthened. If there is excess cable length, it should be coiled and placed near or inside the junction box. Custom cable lengths can be ordered for specific applications.

- 2. Wire the Load Cells:** Connect the load cells to the junction box following the load cell wiring layout.
- 3. Connect to Instrumentation:** Wire the junction box to the appropriate scale indicator or amplifier.
- 4. Trim the Signals:** Use the trimming controls to balance the load cell signals as needed following the instructions provided with the junction box to ensure all weigh modules are reading evenly.
- 5. Calibrate the Scale:** Complete system calibration following the indicator's procedures, confirming the readings are stable and accurate.

Table 2: Load Cell Wiring

Signal	Wire Colour
Excitation +	Red
Excitation -	Black
Signal +	Green
Signal -	White
Shield	Silver/Bare

7. Troubleshooting

This section will provide a basic overview of common troubleshooting procedures for load cell systems. Many issues associated with load cells are often caused by installation or mechanical factors, not the load cell itself. Always verify that the system is correctly installed, securely mounted, levelled, and properly wired before suspecting load cell failure.

7.1 Initial Checks

1. Inspect for debris

- Ensure there is no debris obstructing the load cell movement or wedged between the structure and scale.

2. Verify mechanical alignment

- Confirm the tank, frame, or vessel is level and all mounting points are aligned with each other.

3. Check for mechanical binding

- Examine piping, flextures, and any other connections that could restrict vessel movement.
- If check rods are used, loosen all hardware to *finger-tight* for testing.

4. Inspect load cell cables

- Look for any visible damage or pinched wires.

5. Verify electrical connections

- Check all terminal connections and shield grounds are properly installed.

If the system can be calibrated but continues to exhibit persistent issues like drift or inconsistent readings, refer to the following chart.

Table 3: Common Load Cell Symptoms

Symptom	Possible Cause
Fails to return to zero	- Mechanical interference or damaged load cell - Loss of calibration
Non-linearity (deviation from a straight output curve)	- Thermal expansion, side loads, mounting deformation
Poor repeatability (inconsistent output under identical conditions)	- Loose mounts, moisture ingress, (electrical) noise, load cell fatigue
Lost Calibration	- Off-level base, moisture, mechanical shift/binding
Drifting or unstable output	- Cable damage, moisture in connectors/junction box, mechanical shift

7.2 Further Testing

1. Check the indicator

- Use a load cell simulator or known working weighing system to verify the indicator is responding correctly to known inputs

2. Isolate the problem

- Disconnect signal leads at the junction box
- Measure each load cell using a multimeter
- Compare the multimeter measurements to the factory manufacturer specifications

3. Replace a load cell with a dummy load cell

- Temporarily substitute a live load cell to isolate mechanical issues from load cell errors

7.3 Isolation Procedure




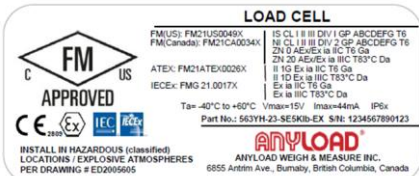
1. Disconnect all load cells from the junction box
2. Reconnect one load cell at a time, using a load cell simulator in place of others
3. Alternate and repeat until all load cells have been tested individually

Tip

If disconnecting a specific load cell eliminates the problem, the fault is likely caused by that load cell.

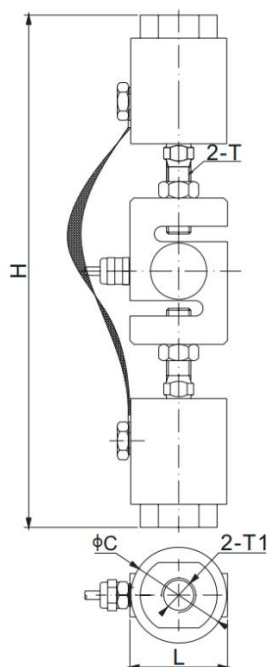
8. Compliance

Indicative Markings:

CE Certification 	The CE mark indicates that the manufacturer guarantees that the product complies with the requirements of the relevant EU Directives.
NTEP (US Legal-for-trade) Certification 	The NTEP mark denotes that the product is legal-for-trade certified in the US and other recognizing jurisdictions by meeting the National Type Evaluation Program (NTEP) requirements set by the National Conference of Weights and Measures (NCWM) in the United States of America.
OIML MAA Certification 	The OIML Mutual Acceptance Arrangement (MAA) mark indicates that the product is legal-for-trade certified in the EU, Australia, New Zealand, Canada, and other recognizing jurisdictions by meeting the standards set by the International Organization of Legal Metrology (OIML).
FM / Explosive Atmospheres Certification 	<p>Important</p> <p>Every single certified non-incendive / intrinsically safe product MUST bear this label, which shall indicate that the product is FM (US & Canada), ATEX, and IECEx-approved for use in potentially explosive environments in recognizing jurisdictions.</p> <p>The model should also have an "-EX" suffix in its part number.</p>

9. Specifications

9.1 Weigh Module Dimensions



DIMENSIONS

LOAD CELL CAPACITY	H _{Min/Max}	C	L	T	T1
Klb/inches					
0.5-3	10.16/10.87	1.97	2.00	1/2-20 UNF	3/4-10 UNC-2B
5-10	13.15/13.78	2.48	3.00	3/4-16 UNF	1-8 UNC-2B
kg/mm (conversion of above dimensions)					
226-1,360	258.0/276.0	50.0	50.8	1/2-20 UNF	3/4-10 UNC-2B
2,267-4,535	334.0/350.0	63.0	76.2	3/4-16 UNF	1-8 UNC-2B

Figure 3: Weigh Module Drawing and Dimensions

9.2 Load Cell Specifications

Table 4: 101NH S-beam Load Cell Specifications

Full Scale Output	3.0 mV/V \pm 1%	Output Resistance	350 Ω \pm 3
Zero Balance	\pm 0.02 mV/V	Recommended Excitation	10V (15V Maximum)
Non-linearity	$< \pm$ 0.017%	Insulation Resistance	>2 (50V DC) G Ω
Repeatability	$< \pm$ 0.017%	Compensated Temperature Range	-10° C to 50° C / 14°F to 122° F
Hysteresis Error	$< \pm$ 0.017%	Safe Overload	150% of full scale
Creep in 30 min.	$< \pm$ 0.023%	Breaking Overload	300% of full scale
Input Resistance	350 Ω \pm 7	Seal Type/IP Rating	Cap. \leq 500lb: Environmentally Sealed / IP66 Cap. \geq 750lb: Environmentally Sealed / IP67

Please **Contact Our Authorized Dealer** for Technical Assistance:

Notes:

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