

RoughDeck® CS

Coil Scale

Operator Installation Manual



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www.ricelake.com

Revision History

This section tracks and describes manual revisions for awareness of major updates.

Revision	Date	Description
C	May 12, 2025	Updated illustrations, installation section, format and warning/note icons

Table i. Revision Letter History



Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com/training or obtained by calling 715-234-9171 and asking for the training department.

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Rice Lake continually offers web-based video training on a growing selection of product-related topics at no cost. Visit www.ricelake.com/webinars

1.0 Introduction

This manual is intended for use by technicians responsible for installing and servicing the RoughDeck® CS.



Manuals are available from Rice Lake Weighing Systems at www.ricelake.com/manuals

Warranty information is available at www.ricelake.com/warranties

Safety Definitions:



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



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



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



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

General Safety



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



WARNING

Failure to heed could result in serious injury or death.

Ensure every individual who operates or works with this unit has read and understands all safety information.

Do not transport the scale while someone is on the scale.

Do not allow minors (children) or inexperienced persons to operate this scale.

Do not use in the presence of flammable materials.

Do not use this product if any of the components are loose or cracked.

Do not use near water.

Do not use the scale on slippery surfaces, such as a wet floor.

Do not use this scale when a person's body or feet are wet, such as after taking a bath.

Do not place fingers into slots or possible pinch points.

To avoid cross contamination, the scale should be cleaned regularly.

Prior to cleaning, make sure the scale is disconnected from the power source.

People with disabilities, or who are physically frail, should always be assisted by another person when using this scale.



IMPORTANT

Do not drop the scale or subject it to violent shocks.

Do not jump on the scale.

For accurate weighing, the scale must be placed on a flat, stable surface.

Operating at voltages and frequencies other than specified could damage the equipment.

Avoid contact with excessive moisture.

Do not make alterations or modifications to the scale.

Rice Lake Weighing Systems offers optional AC adapters; utilizing an adapter not supplied by Rice Lake Weighing Systems voids all warranties and approvals.

Weight exceeding the maximum capacity may damage the scale.



CAUTION: Site Consideration: If using a V-top coil cradle, the V of the cradle should run perpendicular to the rocker link of the scale (see [Figure 3-16 on page 17](#)).

Package includes:

- Assembled weighbridge module
- Weighbridge fasteners
- Load cells
- Load cell mounts with leveling bolts and anchor bolts
- Junction box
- Homerun cable to indicator (20 ft long)

1.1 Disposal



Product Disposal

The product must be brought to appropriate separate waste collection centers at the end of its life cycle.

Proper separate collection to recycle the product helps prevent possible negative effects on the environment and to health, and promotes the recycling of the materials. Users who dispose of the product illegally shall face administrative sanctions as provided by law.

2.0 Installation

The general assembly order is summarized below:

1. Set deck module into position on setting blocks.
2. Install load cell mounts in pockets and anchor bolts in baseplates.
3. Run cabling and connect electrical wiring to J-box.
4. Connect indicator and peripheral devices.

2.1 Recommended Equipment and Tools

- Crane with a minimum 5000 lb. capacity
- Four chains or cables (8 ft minimum length each) with hooks or clevises
- 3/4 in rotary hammer drill
- 3/4 in x 24 in masonry carbide bit
- One low-profile 4-ton bottle jack
- 3 in minimum setting blocks
- Torque wrench to 100 ft-lb
- Socket wrenches to 1 1/2 in (drive compatible with torque wrench)
- Box end wrenches to 1 1/4 in
- Open end wrench set (7/16 in – 1 1/4 in)
- 4 ft bubble level
- Small torpedo level
- Hammers, maul, pry bar
- Hand tools for pulling and connecting electrical wiring

2.2 Lifting and Handling (Steel Deck)

Deck modules are lifted using four chains or cables attached to the four lifting straps mounted on the top of the weighbridge. The lifting straps provide balanced lifting of the modules.



NOTE: A set of lifting lugs are provided with the scale.



WARNING: Lifting straps must always be inserted into the top of the scale. Lifting should always occur with the top plate facing up and the lifting straps securely attached through the nuts welded to the bottom side of the top plate. Lifting from the bottom of the plate could cause nuts to break loose and the scale to fall.

2.3 Temporary Setting Blocks

Most installers use setting blocks that are approximately 3 in high for the initial placement and connecting of the deck module. Use leveling bolts in base plate to level the scale. Setting blocks are only used in the corners of the module where the load cell mounts are installed.

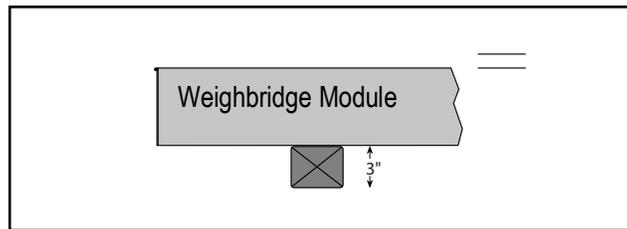


Figure 2-1. Setting Blocks Under Weighbridge Module



NOTE: When placing module on setting blocks, place blocks in locations close to, but not at, the pocket (to allow room for mount).

It is important to consider the orientation of the scale if using the V-Top coil cradle option. The V of the cradle should run perpendicular to the rocker link of the scale (see [Figure 3-16 on page 17](#)).

3.0 Load Cell Mount Installation

Load cell mount components (baseplate, mount blocks, anchor bolts, link, load cell, and upper mount blocks) are shipped in the hardware box and need to be assembled while in the load cell pocket. Remove the printed load cell Certificate of Conformance (COC) forms (included with load cells) and store them in a safe place for future reference.

The following sections contain step-by-step instructions on mount installation, including the baseplate, load cells, upper mount blocks, ground straps, and anchor bolts.

3.1 Install Baseplate and Load Cell

Use the following steps for installing the mount baseplate and load cell in the load cell mount pockets:

1. Remove load cell mount components from the packing box and position one set at each mount location.
2. Remove load cell pocket covers.
3. Partially thread the three leveling bolts into baseplate.

 **NOTE:** Thread leveling bolts prior to baseplate installation. Do not thread completely through the baseplate (see [Figure 3-1](#)). Omit leveling bolt installation if NOT grouting the scale.

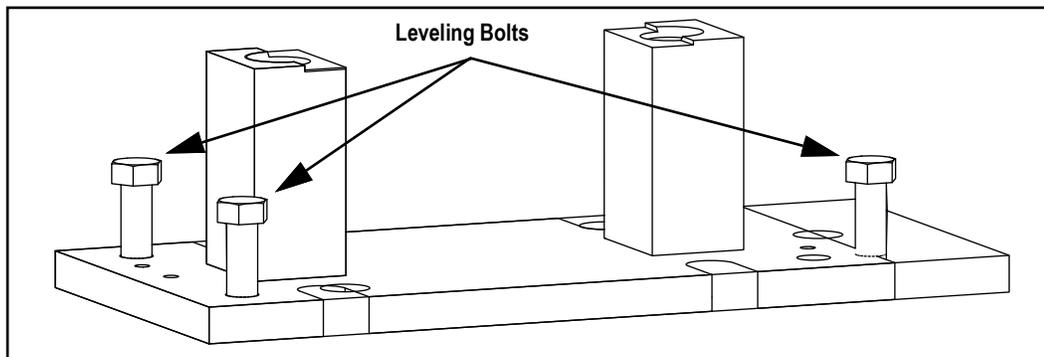


Figure 3-1. Partially Thread Leveling Bolts

4. Lower baseplate through pocket opening and onto concrete foundation.

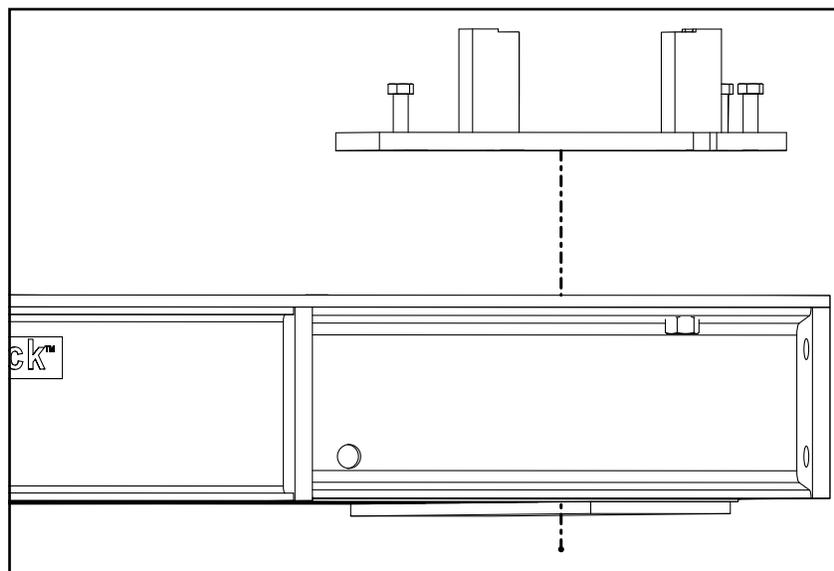


Figure 3-2. Lowering Baseplate into Pocket

5. Place the load cell link over the end of the cell and rest load cell/link assembly onto the top of the baseplate.

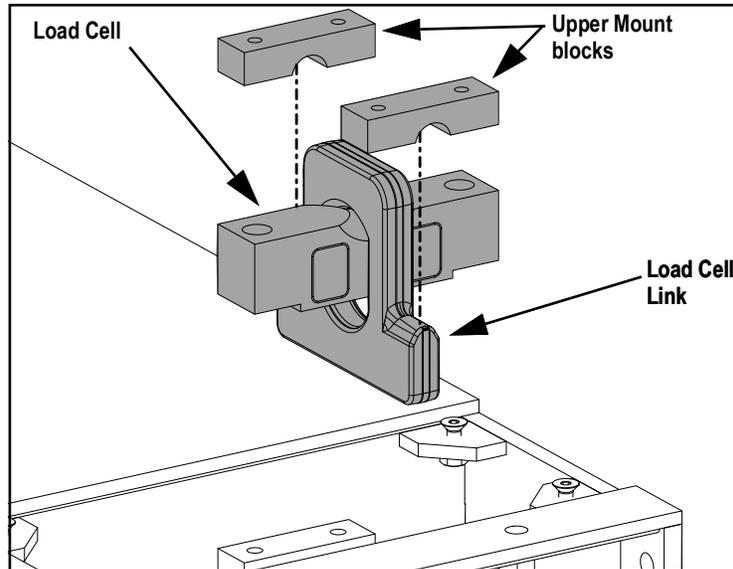


Figure 3-3. Upper Mount Block Placement

6. Place the load link on top of the load cell and the upper mount block on top of the load link.

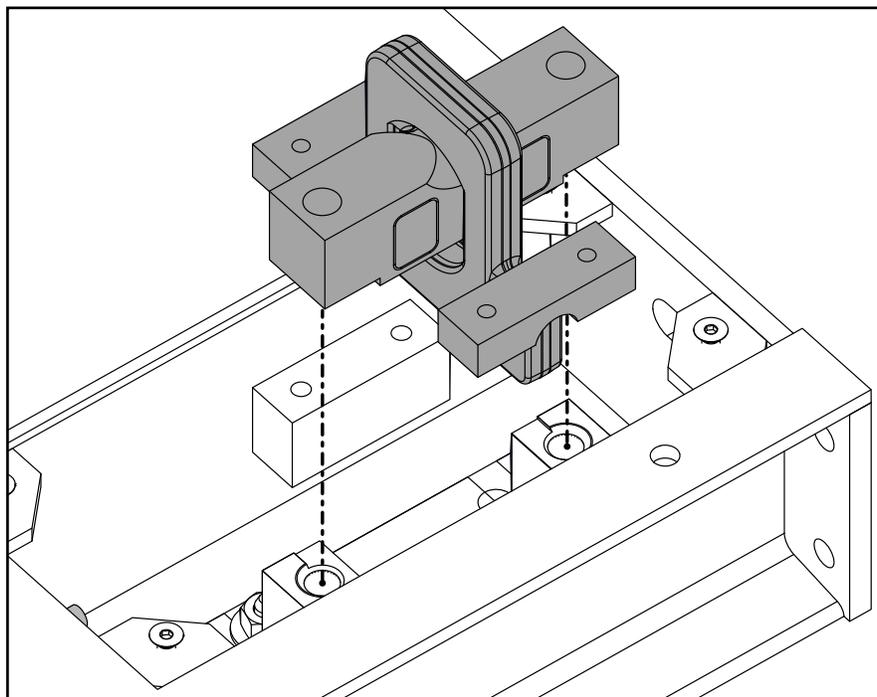


Figure 3-4. Load Cell and Upper Mount Block Installation

7. Screw in the load cell mounting bolts (finger tight). The loose bolts allow freer movement for better weighing accuracy.

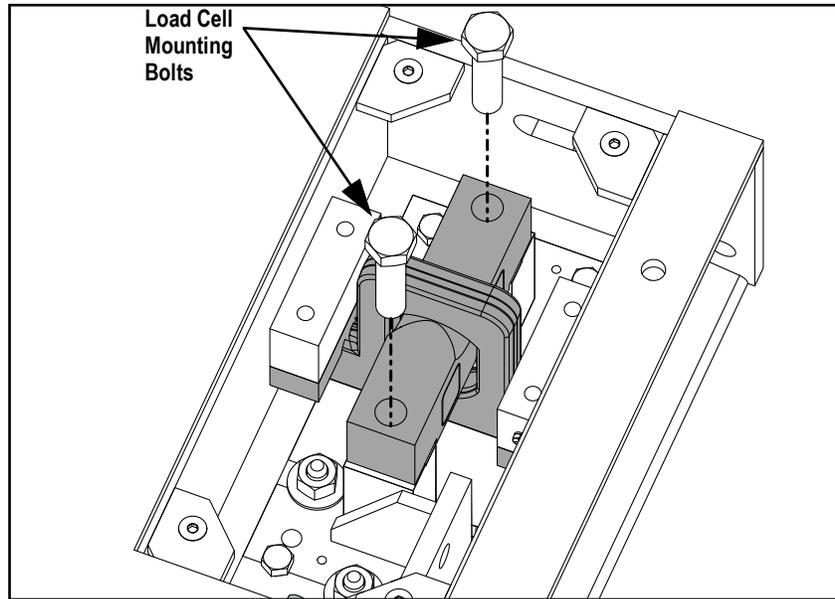


Figure 3-5. Load Cell Mounting Bolt Installation

8. Screw partially threaded hex bolts into upper mount block.

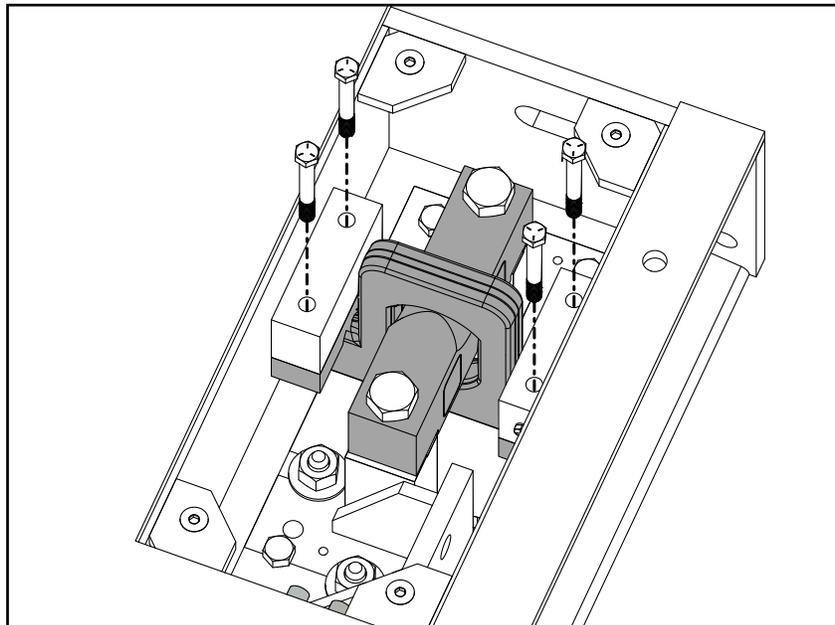


Figure 3-6. Upper Mount Block Bolt Installation

9. Adjust the load link so it is vertical and centered side to side (in a balanced condition). If the load link is not vertical and centered side to side, adjust.
10. Apply anti-seize compound to threads of load cell bolts before installing. Torque load cell bolts 55 ft-lb.
11. Remove temporary setting blocks.

3.1.1 Install Bumper Bolts

1. Install first hex nut onto the end of the bumper bolt.
2. Push bumper bolt through the mounting plate.
3. Install second hex nut onto the end of the bumper bolt.
4. Adjust to leave a 1/8 in gap between the bumper bolt and the load cell enclosure (see Figure 3-8).
5. Tighten hex nuts and repeat for the rest of the load cell mounts.

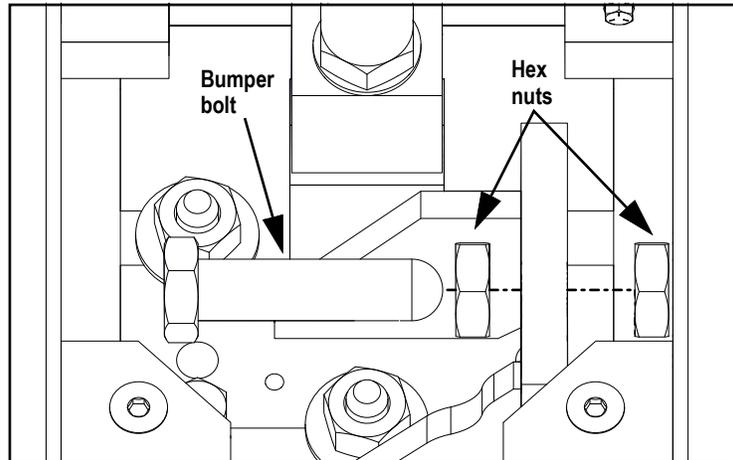


Figure 3-7. Bumper Bolt Installation

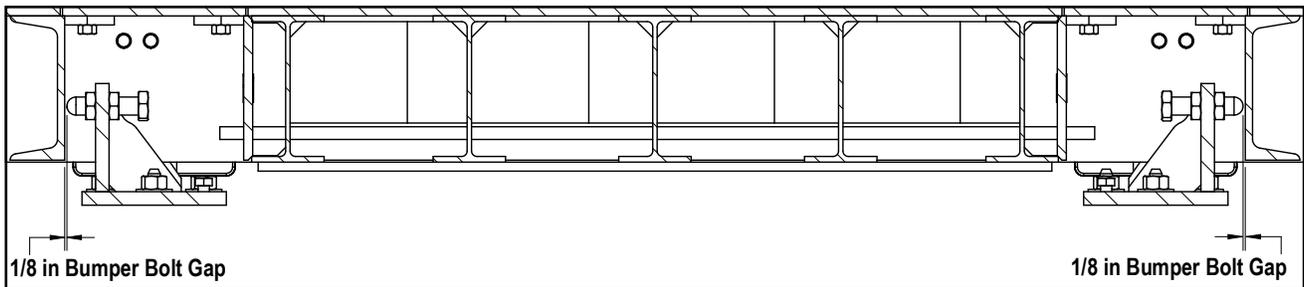


Figure 3-8. 1/8 in Bumper Bolt Gap

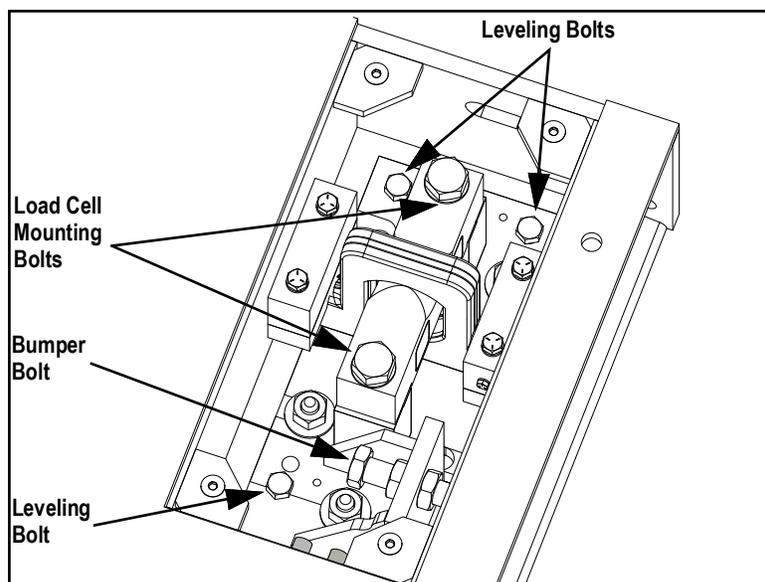


Figure 3-9. Load Cell Access Area (after installation)

3.2 Mount Block and Shim (Groutless) Installation

Use the following procedure to install mount blocks and shims for leveling:



NOTE: The kit provides 8 1/16 in (67291) and 8 1/8 in (67294) shim plates. Do not exceed over 3/4 in of shims combined. If more is necessary, contact Rice Lake Weighing Systems for other options.

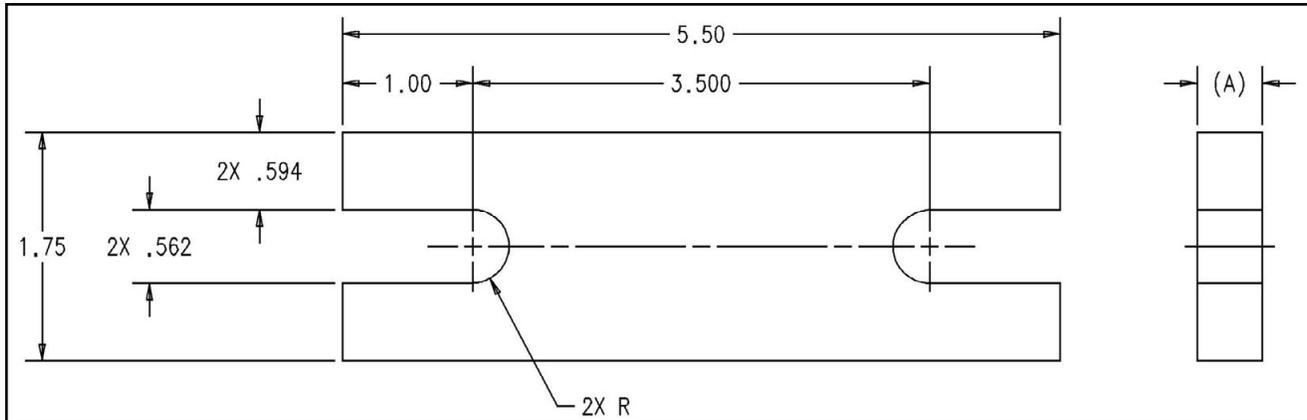


Figure 3-10. Example Shim Dimensions

1. Apply anti-seize compound to threads of mount block bolts.
2. Apply grease to link contact points where the link touches the load cell and both radius blocks.
3. Install one bolt through welded block into upper mount block.
4. Add or remove shims above upper mount block until radius of block comes in contact with rocker link radius.

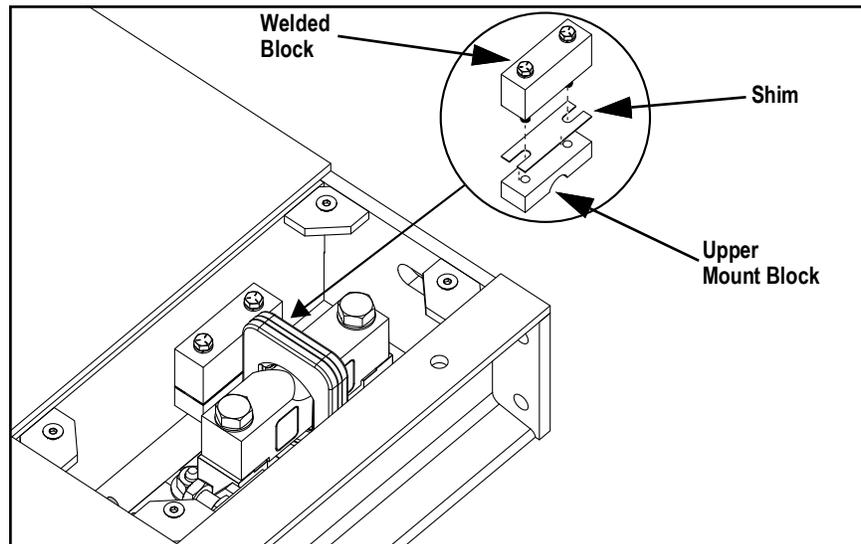


Figure 3-11. Shim Installation

5. Install second bolt assembly through blocks and shims, then torque to 40 ft-lb.
6. Repeat [Step 5](#) on all load cell pockets.
7. Ensure the link for any binding or misalignment and the link is plumb in respect to the upper blocks.



NOTE: If needed, tap the edge of the baseplate with a hammer to make minor adjustments in alignment.

8. Jack the weigh module and remove the setting blocks.
9. Slowly lower the weigh module until it rests on the load cell links.

10. Use a torpedo level to set rocker plumb.



Figure 3-12. Recheck Link for Binding

11. Use an industrial hammer drill to drill a 3/4 inch hole into the concrete at least 6 inches deep on one side of the baseplate.

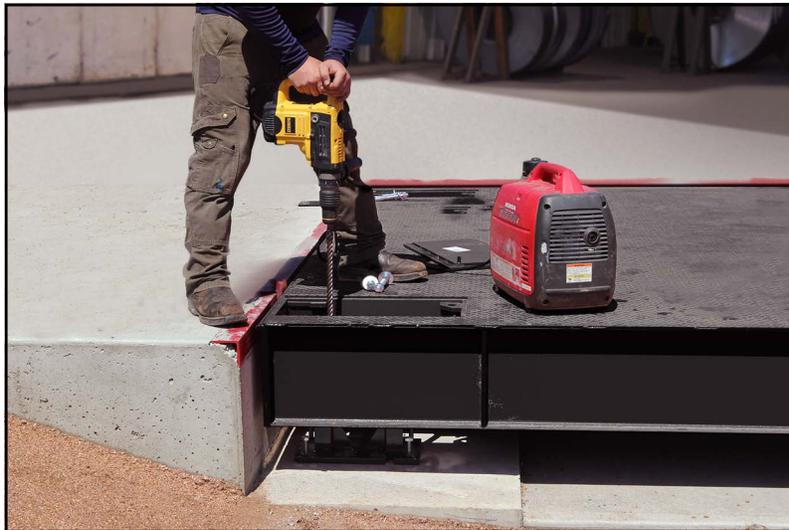


Figure 3-13. Drill Anchor Bolt Holes

12. Drill a second anchor bolt hole on the opposite side of the baseplate. Each mount requires two anchor bolts to prevent longitudinal motion of the baseplate.
 - Anchor bolts (7 in x 3/4 in) with expansion heads are supplied with the scale.



Figure 3-14. Anchor Bolts with Washers

13. Insert bolts into holes drilled in the foundation.
14. Install one washer and one nut on each anchor bolt. Place a driver pipe on top of the bolt and use the long punch to seat the anchor bolts against the baseplate. Tighten anchor bolt nuts.

15. Attach one end of the ground strap to the upper block.
16. Insert a bolt through the wire terminal on the loose end and thread the bolt into the hole on the baseplate.
17. Tighten the bolt securely with a wrench.



Figure 3-15. Ground Strap

3.3 Mount Block and Grout Installation

Use the following procedure to install mount blocks and baseplate grout:

1. Adjust leveling bolts until radius of block comes in contact with rocker link radius.
2. Jack the weigh module and remove setting blocks.
3. Slowly lower the weigh module until it rests on the load cell links.



NOTE: After the weigh module is lowered into final position, check each load cell mount assembly to ensure that the link is plumb and that there is no binding or misalignment.

4. Use an industrial hammer drill to drill a 3/4 inch hole into the concrete at least 6 inches deep on one side of the mount frame (see [Figure 3-13 on page 14](#)).
5. Drill a second anchor bolt hole on the opposite side of the mount frame.
6. Each mount requires two anchor bolts to prevent longitudinal motion of the baseplate. Anchor bolts (7 in x 3/4 in) with expansion heads are supplied with the scale (see [Figure 3-14 on page 14](#)).
7. Insert bolts into holes drilled in foundation.
8. Install one washer and one nut on each anchor bolt. Place a driver pipe on top of the anchor bolt and use the long punch to seat anchor bolts against baseplate.



NOTE: Do not apply excessive force to the anchor bolts - bending of the baseplate could occur.

When installing anchor bolts, make sure that there is adequate bolt length to extend into the concrete foundation.

9. Attach one end of the ground strap to the upper block (see [Figure 3-15 on page 15](#)).
10. Insert a bolt through the wire terminal on the loose end and thread the bolt into the hole on the baseplate. Tighten the bolt securely with a wrench.
11. Pour 9000 PSI, non-shrinking, epoxy or cement grout under and around the baseplate. A funnel with a long tube can be used to pour grout under and around the baseplate while working from above the access hole.
12. Grout should be allowed to set for at least 24 hours before removing the wooden forms.
13. After grout has hardened, tighten anchor bolt nuts.

3.4 V-Top Coil Cradle Option Installation



IMPORTANT: Proper orientation of the V-Top Coil Cradle is determined by how the cradle is loaded onto the scale. If Front-Loading with a forklift, the V of the cradle should run perpendicular to the rocker link of the scale (see [Figure 3-16](#)). If Top-Loading with a crane, the cradle should run parallel (see [Figure 3-17](#)).

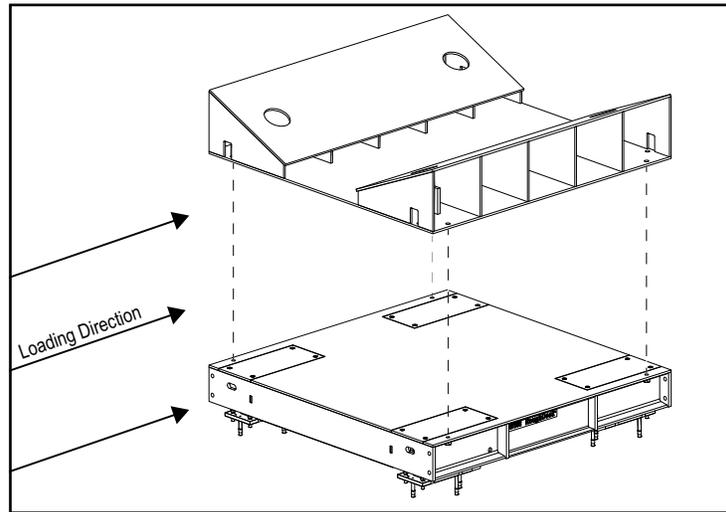


Figure 3-16. Orientation of V-Top Coil Cradle Option (Front-Loading)

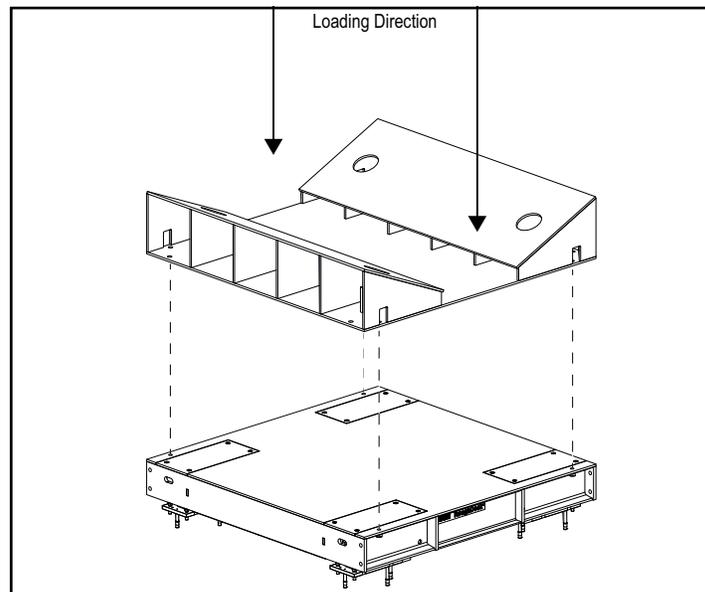


Figure 3-17. Orientation of V-Top Coil Cradle Option (Top-Loading)

1. Insert mounting bolts through each corner of the V-Top coil cradle into each corner of the scale.
2. Install hex nuts onto the end of each bolt.
3. Tighten hex nuts so that the cradle is securely bolted onto the scale.

4.0 Load Cell Wiring

Before the weigh module wiring can be completed, all load cell cables have to be routed through the conduit beginning at the load cell outlet. Use the following steps to route load cell cables through conduit to the J-box:

1. Before routing load cell cables, mark each load cell cable at the end to help identify each load cell.
2. Working from the J-box corner, insert a fish tape or similar tool and pull each load cell cable through the rigid conduit until all excess cable is taken in.

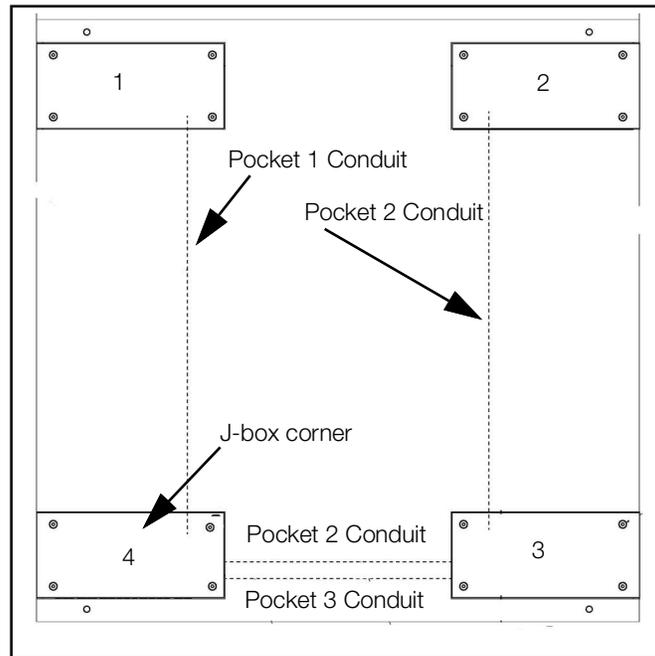


Figure 4-1. J-box location

3. Wire each load cell to the J-box terminal strip in accordance with the wiring code contained in the Certificate of Conformance.
4. Cable should not be routed near heat sources greater than 150 degrees Fahrenheit. Do not shorten any load cell cable. The load cell is temperature compensated with the supplied length of cable. Cutting the cable will affect temperature compensation. Coil and protect excess cable so it will not be mechanically damaged or sit in water.
5. Provide a drip loop in all cables so that water or other liquids will not run directly down the cables onto either the load cells or the junction box.
6. If conduit protection is necessary against mechanical or rodent damage to the load cell cables, use flexible conduit and conduit adapters at the load cells.



NOTE: Flexible conduit and conduit adapters are an optional item and not included with the standard setup.

7. Connect cables for load cells to the summing board in the junction box according to the guide shown below and the labels on the terminal strips of the junction box. To verify the wiring scheme, see the certification shipped with each load cell.

8. For better performance, use positive and negative remote sense lines if the wiring running from the junction box to the indicator is longer than 25 feet

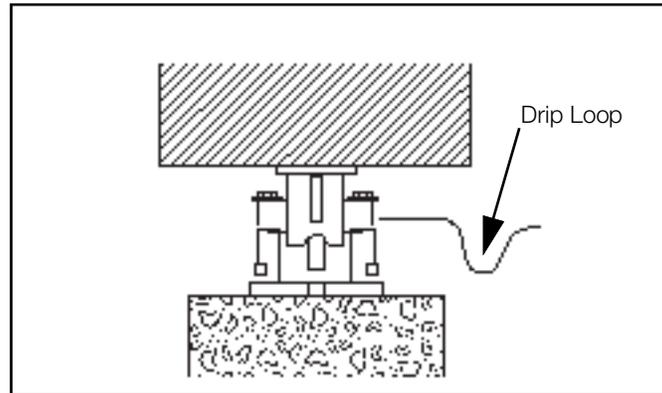


Figure 4-2. Load Cell Wiring Drawing

Load Cell Wire Color	Function
Red	+ EXC
Black	- EXC
Green	+ SIG
White	- SIG
Gray or Bare	Shield

Table 4-1. Load Cell Wiring

4.1 Trimming & Calibration

Refer to the JB4SS TuffSeal™ Signal Trim Junction Box manual for trimming details.

Refer to indicator manual for connection and calibration details.

5.0 Load Cell Replacement

Use the following steps to replace load cells in the RoughDeck® CS coil scale:

1. Position jack on the concrete foundation beneath one of the weighbridge's main frame members close to the load cell mount. (Allow room for load cell removal and installation.) Raise jack approximately 1/2 in and put setting block(s) under the scale deck.

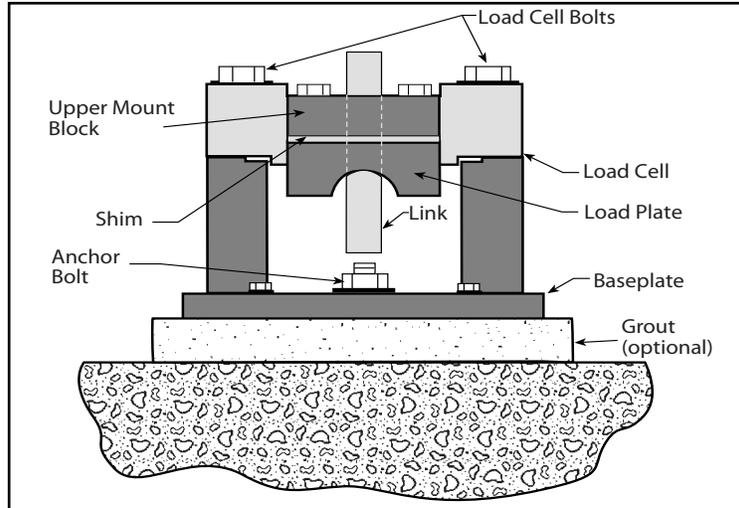


Figure 5-1. Load Cell Mount



NOTE: As a safety precaution, always use setting blocks when jacking scale module.

Attach a pull cord to the load cell cable at the junction box before pulling the cable through the conduit.

2. Disconnect the load cell terminal connections in the junction box. Pull the load cell cable out of the conduit.
3. Remove the two load cell bolts and lift out load cell and link assembly.
4. Install link over new load cell. Reinstall load cell and link assembly onto the baseplate. Install load cell mount bolts. Torque bolts to 55 ft-lb.
5. Pull load cell cable through conduit using pull cord.
6. Remove setting blocks and lower scale module so that it rests on the link. Check link to verify that it is centered and plumb.
7. Connect wiring to terminals in junction box.

6.0 Troubleshooting

If the system powers up and gives some type of stable digital readout that varies with the load on the system, any system problems are probably caused by factors other than the load cells. The load cells are often blamed for a malfunctioning system, but the majority of the time, the problem lies elsewhere. Look for mechanical causes for your problem first.

If the system can be calibrated but doesn't return to zero, loses calibration, or demonstrates non-linearity or non-repeatability, see the following chart for possible causes and do the following checks.

Symptom	Possible Cause
No return to zero	Mechanical binding or debris in seals or under load cells; may have lost system calibration.
Non-linearity	Thermal expansion or deflection under load causing binding or side load.
Non-repeatability	Loose load cell mount; drifting caused by moisture, load cell overload or shock damage; mechanical binding.
Lost calibration	Out of level or plumb; moisture problem; mechanical binding.
Drifting readout	Moisture in junction box, cables, or load cell; mechanical binding.

Table 6-1. Troubleshooting

1. Check load cell mount for debris restricting load cell movement or debris between scale and structure.
2. Check that tank/vessel and mounts are plumb, level, and square at the critical areas.
3. Check all piping and conduit for connections that restrict movement.
4. If check rods are used, loosen all connections to finger tight only for testing.
5. Check load cell cables for physical or water damage.

If after all these checks the problem still cannot be isolated, reconnect all but one load cell. Replace the load cell with a load cell simulator. Alternate so that each load cell is individually disconnected and replaced with a simulator. If there is a problem with a particular load cell, the symptom should disappear when that load cell is disconnected and replaced with the simulator.

7.0 Specifications

Capacities

Scale, Load cell mount:

40,000 lb: Qty 4 50,000 lb each

60,000 lb: Qty 4 50,000 lb each

80,000 lb: Qty 4 75,000 lb each

Understructure Clearance

Minimum: 1.91 in

Cable Length

20 ft (6.1 m) for connecting junction box to indicator

Junction Box

TuffSeal® JB4SS stainless steel, NEMA Type 4X junction box with signal trim card

Welding

Stitch

Warranty:

Weldment: Five-year

Load cells: Two-year

Other components: One-year

Certifications and Approvals



NTEP

CC Number: 11-068

Accuracy Class: III; n_{\max} : 5000



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