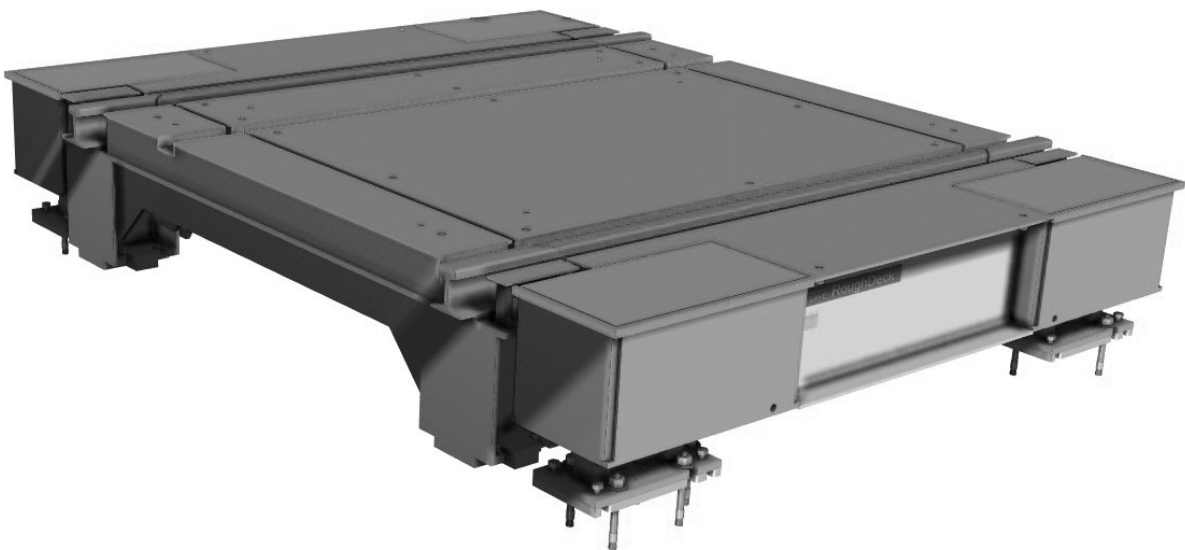


RoughDeck[®] CS Rail Car

Coil Scale

Installation Manual



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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 service technicians installing and servicing the RoughDeck® CS Rail Car Coil Scale.



Manuals, detailed warranty information and additional resources are available on the product pages of the Rice Lake Weighing Systems website at www.ricelake.com.

If this product page does not have specific warranty information listed, Rice Lake Weighing Systems' full Warranty and Limitation of Liability can be found at www.ricelake.com/warranties.

Contact customer service at 800-472-6703 for any additional warranty information or product questions.

1.1 Safety

Safety Signal 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.



Failure to heed could result in serious injury or death.

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

Do not operate without all shields and guards in place.

Do not jump on the scale.

Do not use for purposes other than weight taking.

Do not place fingers into slots or possible pinch points.

Do not use any load bearing component that is worn beyond 5% of the original dimension.

Do not exceed the rated load limit of the unit.

Do not make alterations or modifications to the unit.

Do not remove or obscure warning labels.

Keep hands, feet and loose clothing away from moving parts.

1.2 Scale Components

The RoughDeck CS Rail Car Coil Scale has major components including;

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

2.0 Installation

The following sections give a recommended equipment list and explain how to properly install the RoughDeck CS Rail Car Coil Scale. The general order for assembling the RoughDeck CS Rail Car Coil Scale is summarized below:

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

2.1 Recommended Equipment and Tools

- Crane with a minimum of 5000 lb capacity
- Four lifting straps (8' minimum length each) with hooks and clevises for lifting
- 3/4" rotary hammer drill
- 3/4" x 24" masonry carbide drill bit
- One low-profile 4-ton bottle jack
- 3" minimum setting blocks (4 - one for each corner of the scale)
- Torque wrench to 100 ft-lb
- Socket wrenches to 1-1/2" (drive compatible with torque wrench)
- Box end wrenches to 1-1/4"
- Open end wrench set (7/16" and 1-1/4")
- 4' bubble level
- Small torpedo level
- Hammers, maul, pry bar
- Hand tools for pulling and connecting electrical wiring
- Wire feed welder
- 4-1/2" Angle grinder

2.2 Lifting and Handling

The deck module is lifted using four lifting straps (8' minimum length each), attached to the four lifting straps mounted on the top of the weighbridge. The lifting straps provide balanced lifting of the module.

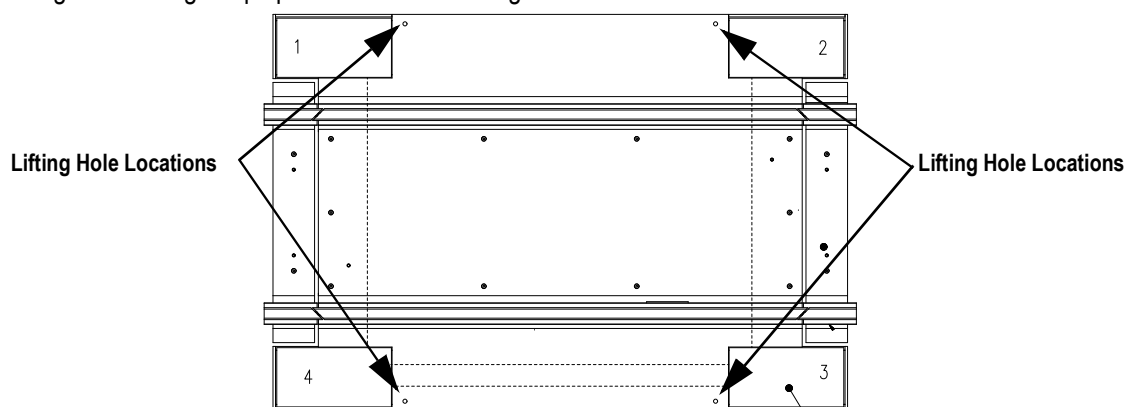


Figure 2-1. Lifting Hole Location



Note A set of lifting lugs are provide 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" high for the initial placement and connecting of the deck module. Use leveling bolts in the base plate to level the scale. Setting blocks are only used in the corners of the module where the load cell mounts are installed.



Note

When placing modules on setting blocks, place the blocks in a location close to, but not at the load cell pocket (to allow room for mount).

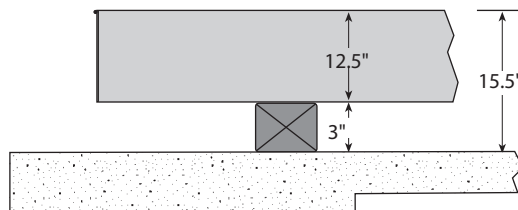
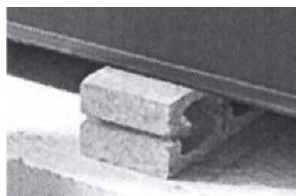


Figure 2-2. Setting Blocks Under Weighbridge Module

3.0 Load Cell Mount Installation

Load cell mount components are shipped in the hardware box and need to be assembled while in the load cell pocket. Load cell mount components include:

- Baseplate
- Mount blocks
- anchor bolts
- Link
- Load cell
- Upper mount blocks

IMPORTANT

Remove the printed load cell Certificate of Conformance (CC) forms (which are included with the 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 Baseplate and Load Cell Installation

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

1. Remove the load cell components from the packing box and position one set at each mount location.
2. Remove the four load cell pocket covers.

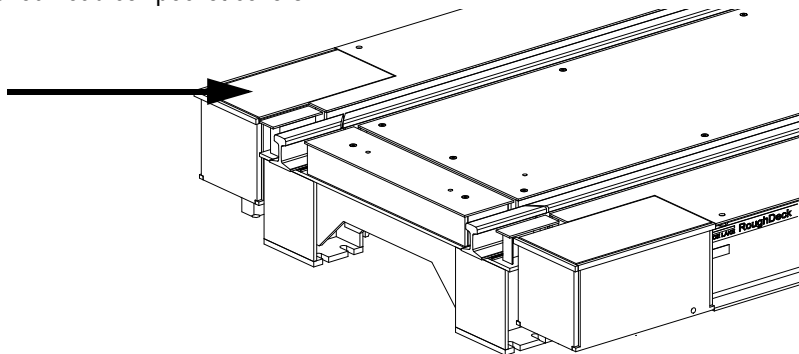


Figure 3-1. Load Cell Pocket Covers

3. Working with the baseplate first, lower the baseplate through the pocket opening and onto the concrete foundation. Load cell mount base plates are to be level and within 1/4" height of each other.



Figure 3-2. Baseplate

4. Place the load cell link over the end of the cell and install the load cell/link assembly onto the top of the baseplate.
5. Place the load link on top of the load cell and the upper mount block on top of the load link.

- Place the load cell and load link assembly onto the two stands of the base stand and screw in the load cell mounting bolts (finger tight). The loose bolts allow free movement for better weighing accuracy.



Figure 3-3. Cut-Out View of Load Cell Access Area Shown with Optional Flexible Conduit

- Adjust the load link so it is vertical and centered side to side (in a balance condition). If the load link is not vertical and centered side to side, adjust the base stand.
- Apply anti-seize compound to the threads of the load cell bolts before installing. Torque load cell bolts 40 ft-lb lubricated or 55 ft-lb dry.

2.2 Mount Block and Grout Installation

Use the following steps to install mount blocks and baseplate grout.

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



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

- Use an individual hammer drill to drill a 3/4" hole into the concrete at least 6" deep on one side of the mount frame.
- Drill a second anchor bolt hole on the opposite side of the mount frame.
- Each mount requires two anchor bolts to prevent longitudinal motion of the baseplate. Anchor bolts (7" x 3/4") with expansion heads are supplied with the scale.
- Insert the bolts into drilled holes in the foundation.
- 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 the anchor bolts against the baseplate.



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.

- Attach one end of the ground strap to the upper block.
- 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.
- 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.
- Grout should be allowed to set for a minimum of 24 hours before removing the wooden forms.
- After the grout has hardened, tighten anchor bolt nuts.

4.0 Load Cell Wiring

Before the weigh module wiring can be completed, all load cell cables have to be routed through the conduit before beginning at the load cell outlet. Use the following steps to route the load cell cables through conduit to the junction 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 junction box corner (either pocket 2 or 4), insert a fish tape or similar tool and pull each load cell cable through the rigid conduit until all access cable is taken in.

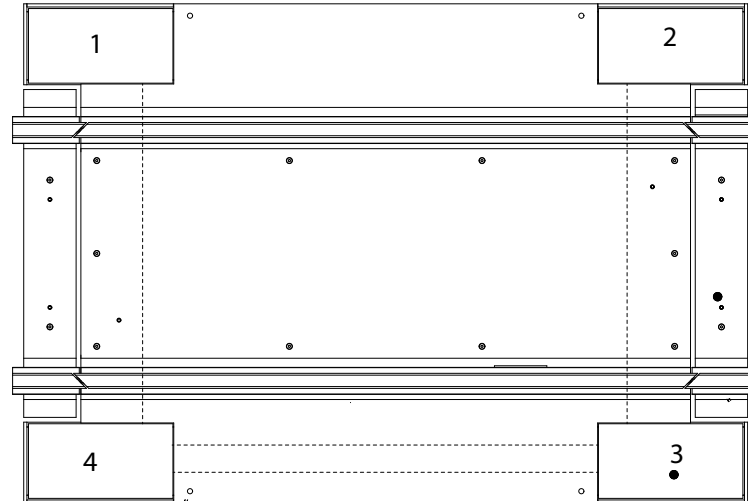


Figure 4-1. Load Cell Pocket Numbering

3. Wire each load cell to the junction box terminal strip in accordance with the wiring code contained in the Certificate of Conformance (CC).



Note Load cell pockets are numbered to clarify wiring of load cells to the junction box (Table 4-1 on page 8).

4. The cable should not be routed near heat sources greater than 400°F (204°C). 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.

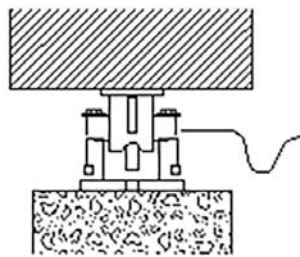


Figure 4-2. Load Cell Wiring Drip Loop

- If conduit protection is necessary against mechanical or rodent damage to the load cell cables, use flexible conduit and conduit adapter at the load cells.



Note *Flexible conduit and conduit adapters are an optional item and not included with the standard setup.*

- Connect cables for load cells to the summing board in the junction box according to the guide shown in [Table 4-1](#) and the labels on the terminal strips of the junction box. To verify the wiring scheme, see the Certificate of Conformity (CC), shipped with each load cell.

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

Table 4-1. Load Cell Wiring

- For performance, use positive and negative remote sense lines if the wiring running from the junction box to the indicator is longer than 2'.

4.1 Trimming and Calibration

Refer to the JB4SS TuffSeal junction box manual (PN184803) for trimming details.

Refer to the indicator manual for connection and calibration details.

5.0 Load Cell Replacement

Use the following steps to replace load cells in the RoughDeck CS Rail Car Coil Scale.

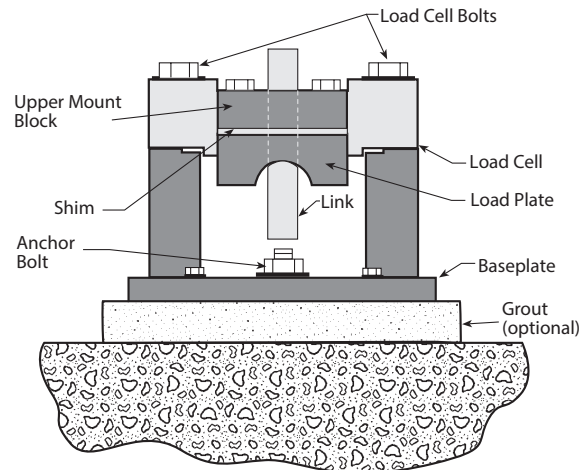


Figure 5-1. Load Cell Mount

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

WARNING As a safety precaution, always use setting blocks when jacking up a scale module.

3. Disconnect the load cell terminal connections in the junction box. Pull the load cell cable out of the conduit.



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

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

6.0 Troubleshooting

If the system powers up and give some type of stable digital readout that varies with the load on the systems, any system problems are probably caused by factors other than load cells. The load cells are often blamed for a malfunctioning system, but the majority of the time, the problems exists 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 [Table 6-1](#) for possible causes and do the following checks.

Symptom	Possible Cause
No return to zero	Mechanical binding or debris in the seals or under load cells; may have lost system calibration
Non-linearity	Thermal expansion or deflection under the 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 the load cell mount for debris restricting load cell movement or debris between the 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 tightening only for testing.
5. Check load cell cables for physical or water damage.

If, after all these checks, the problems 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 system should disappear when that load cell is disconnected and replaced with the simulator.

7.0 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS.

- RoughDeck fabricated platforms and weldments are warranted against defects in materials and workmanship for five (5) years.
- Load cells are warranted for two (2) years.
- All other components are warranted for one (1) year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

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SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

No terms, conditions, understanding or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.



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