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RoughDeck® QC-X

Floor Scale With Gas Springs

Installation Manual



RICE LAKE®
WEIGHING SYSTEMS

April 25, 2018

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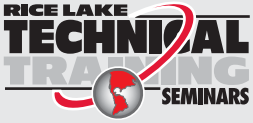
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www.ricelake.com

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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 and System Setup

The RoughDeck QC-X wash-down floor scale is designed to safeguard against microscopic bacteria and germs in food processing, pharmaceutical and hygienic applications. The QC-X is available in 48" × 48" and 60" × 60" deck sizes in 5 K and 10 K capacities.

This manual is intended for use by service technicians responsible for installing and servicing the floor scale.

Manuals are available for viewing and/or downloading from the Rice Lake Weighing Systems website at www.ricelake.com/manuals

Warranty information can be found on the website at www.ricelake.com/warranties

1.1 Features

- Rugged wash-down design, rigid 304 stainless steel frame constructed with continuous welds
- Manual drop-in-place safety bars
- Four stainless steel, welded seal IP69K, shear-beam load cells
- 20' of SURVIVOR® EL147HE hostile environment cable for connecting junction box to indicator
- Remote TuffSeal® JB4SS stainless steel NEMA Type 4X junction box can be mounted up to 15' away
- 1/4' top plate
- Four adjustable stainless steel SUREFOOT™ support feet
- Top plate opens 75°
- Tool-less top plate lock downs
- Top plate available with a smooth deck or diamond tread plate
- Two 1/2-20NF threaded eye bolt holes for lifting scale into pit frame

1.1.1 Options/Accessories

- Floor stand for indicator
- Access ramps to fit most scale sizes
- Pit frames

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1.2 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.

WARNING

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 use for purposes other then weight taking.

Do not place fingers, toes or other body parts into slots or possible pinch points.

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

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

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.

1.3 Model Designations

The model identification plate is located on the bottom frame of the scale deck. It includes both the model number and serial number needed when ordering replacement parts.

2.0 Installation

Use this section to unpack and install the scale.

2.1 Scale Location

IMPORTANT *The scale must never be loaded beyond its capacity, even momentarily.*

- Select a site where overweight loads can maneuver easily without crossing the platform.
- Avoid areas where damage could occur from side impacts of wheels or forklift tines.
- Avoid areas where falling objects could cause shock damage.
- Avoid areas where water may damage a scale not meant for a wash-down environment.
- The scale must be level within 1/4". Choose a site where the floor is level to this standard to avoid excessive shimming. The floor may require modification if unable to select and area up to standard.
- For systems where the scale is connected to a 120V AC circuit, the instrument must be directly connected to an earth ground with a ground interface cable of no more than 3 Ω resistance throughout its length.

2.2 Unpack Floor Scale

Remove all packing material and inspect scale for visible damage caused during shipment. Report any damage to the shipping company and Rice Lake Weighing Systems immediately.

CAUTION *Prior to lifting the scale, ensure the top plate is locked by securing the tool-less top plate lock down.*

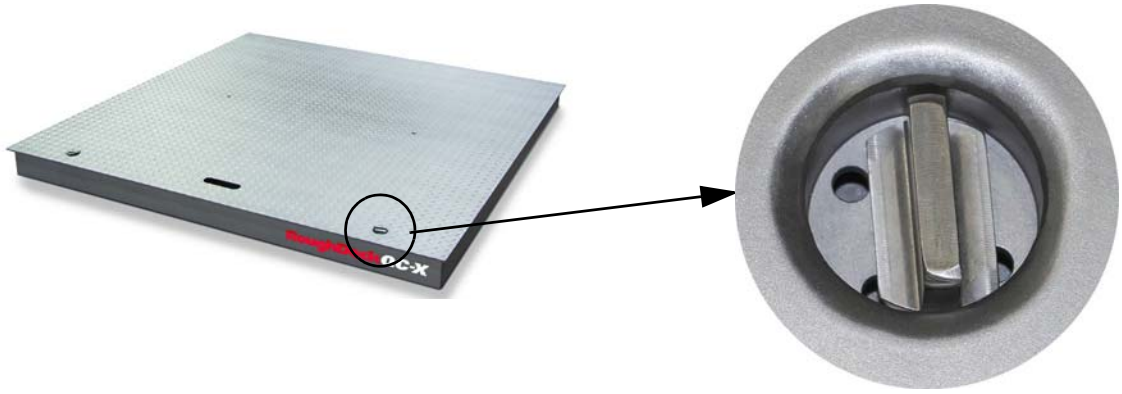


Figure 2-1. Top Plate Lock Down

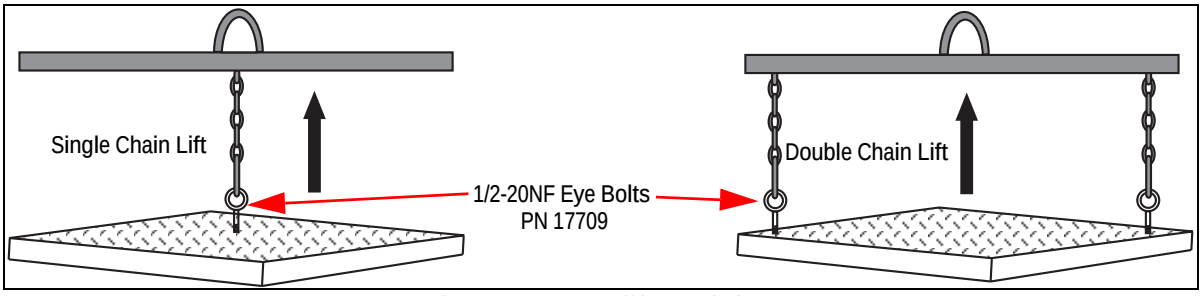


Figure 2-2. Proper Lifting Technique

IMPORTANT *Lift the scale only with a properly designed spreader bar as shown in Figure 2-2. Lifting force must be vertical to avoid bending the eye bolts.*

WARNING *Eye bolts must always be inserted into the top of the scale. Lifting should always occur with the top plate facing up and the eye bolts 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.*

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2.3 Junction Box Installation

Install the junction box in a convenient location, off from the floor, that is within 10' of the floor scale. See the junction box manual.

2.4 Cable Connections

Each scale kit includes 20' of 6-wire cable to connect the scale to an indicator. The interface cable between the scale and the indicator must be protected against crushing, cutting or moisture damage. See Figure 2-4.

2.4.1 Junction Box Connections

1. Insert one end of the 20' cable into the junction box.
2. Connect the wires to the indicator terminal as shown in Table 2-1.
3. Pull out excess and tighten the strain relief bushing to hold the cable snugly.

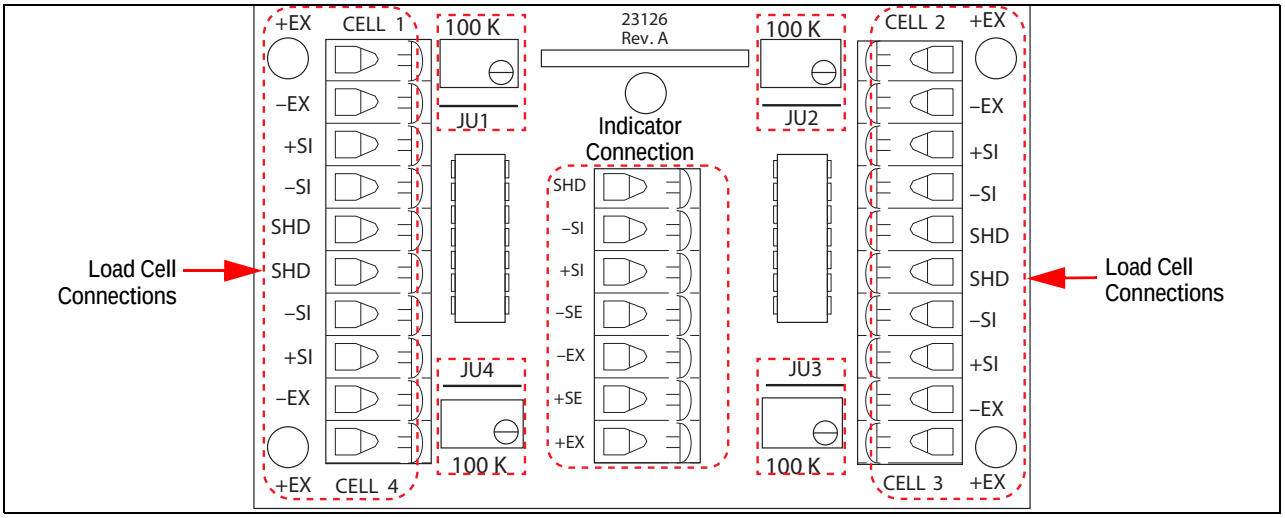


Figure 2-3. Junction Box Connections

Cable Color	Junction Box
Bare	#1 (Shield)
White	#2 (-Signal)
Green	#3 (+Signal)
Blue	#4 (-Sense)
Black	#5 (-Excitation)
Yellow	#6 (+Sense)
Red	#7 (+Excitation)

Table 2-1. Indicator Connection

4. Route the cable to the indicator considering the following:
   - Load cell cables from the scale platform to the junction box should be protected with conduit.
   - Leave a strain relief loop to facilitate future lifting of the scale for servicing or cleaning.
5. When the interface cable is in position, wire the cable to the indicator. See the indicator manual for correct wiring arrangement.

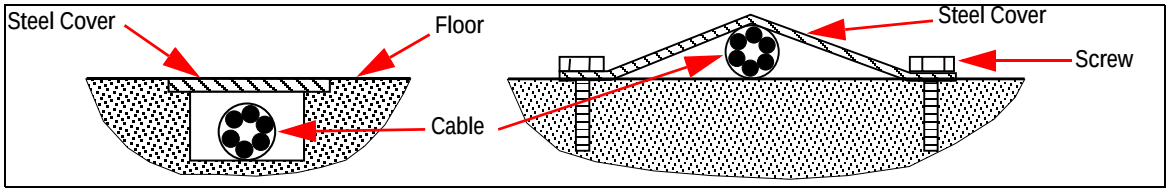


Figure 2-4. Cable Protection

IMPORTANT *If the site has potential dangers, a method of protection is required, such as running the cable in conduit.*

2.5 Safety Bar in Up Position

A safety bar is provided that, when in proper position, allows access to work/wash-down the area under the scale.

WARNING *Ensure safety bar is in the proper position when working under the top plate.*



Figure 2-5. Top Plate with Safety Bar in Position

1. Using the hand slot, raise the top.
2. Holding the top plate, bring the safety bar down and place the hook end over the bolt in the scale frame.
3. Release the pressure on the cylinders to allow the frame to rest on the safety bar.

CAUTION *When closing the RoughDeck QC-X top plate, gas cylinders are engaged most of the distance traveled. However, they disengage prior to closing all the way, therefore the hand slots must be used to guide the plate to its final closed position. Allowing the top plate to free fall, even a short distance, could cause personal injury or damage the scale.*

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2.6 Pit Installation (Optional)

Each site has different concrete/foundation support requirements. When installing the scale in a pit, ensure the foundation is poured-concrete and in accordance with standard construction practices. Allow the concrete seven days to cure and periodically wet the concrete during this time

See Figure 2-1 on page 7 for an example of a typical pit installation.

Note *The dimensions shown will change according to the site.*

Installation Diagram

- The following reference numbers apply to Figure 2-1 on page 7
- Length of the conduit pipe is determined on site
- Use concrete of minimum yield strength 5000 psi or 6-bag mix
- Slope the pipe for water drainage
- Tie the pit in to existing floor with re-bar, if required
- Ensure the underside is supported with concrete or grout (the plate is an integral part of the frame)
- The pit frame must sit level in floor to allow proper scale operation

Size	A	B	C	D
4X4	49.00	49.00	62.00	62.00
5X5	61.00	61.00	74.00	74.00

Table 2-2. Dimension Reference

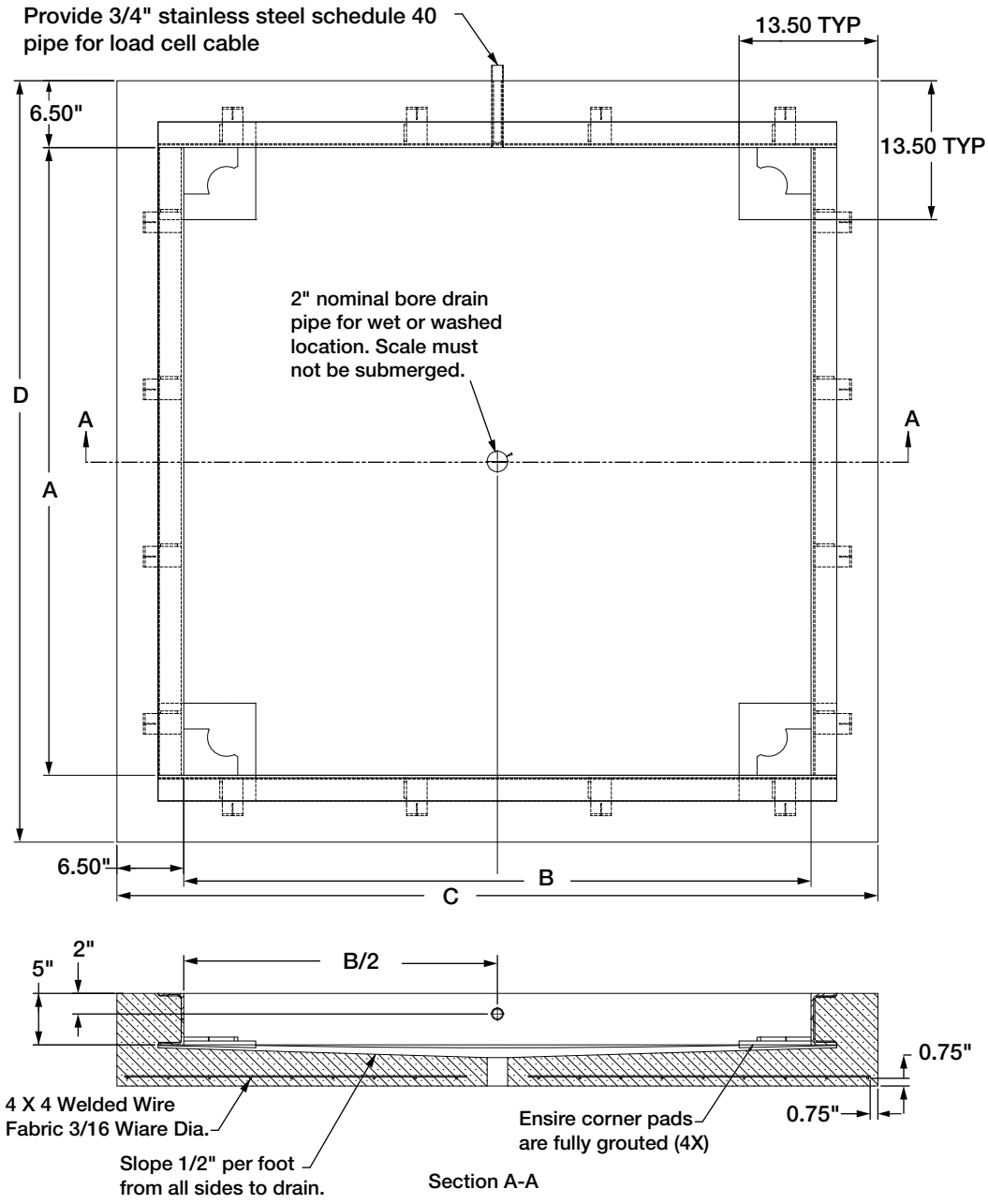


Figure 2-1. Example Pit Installation Drawing

IMPORTANT

Figure 2-1 is for reference only. This drawing is included as an example of a typical pit. Do not use this drawing for construction purposes.

Actual pit installation drawings can be found on the website at www.ricelake.com/en-us/

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2.7 Scale Installation (in Optional Pit)

Use the following procedure for installation of the scale into a pit.

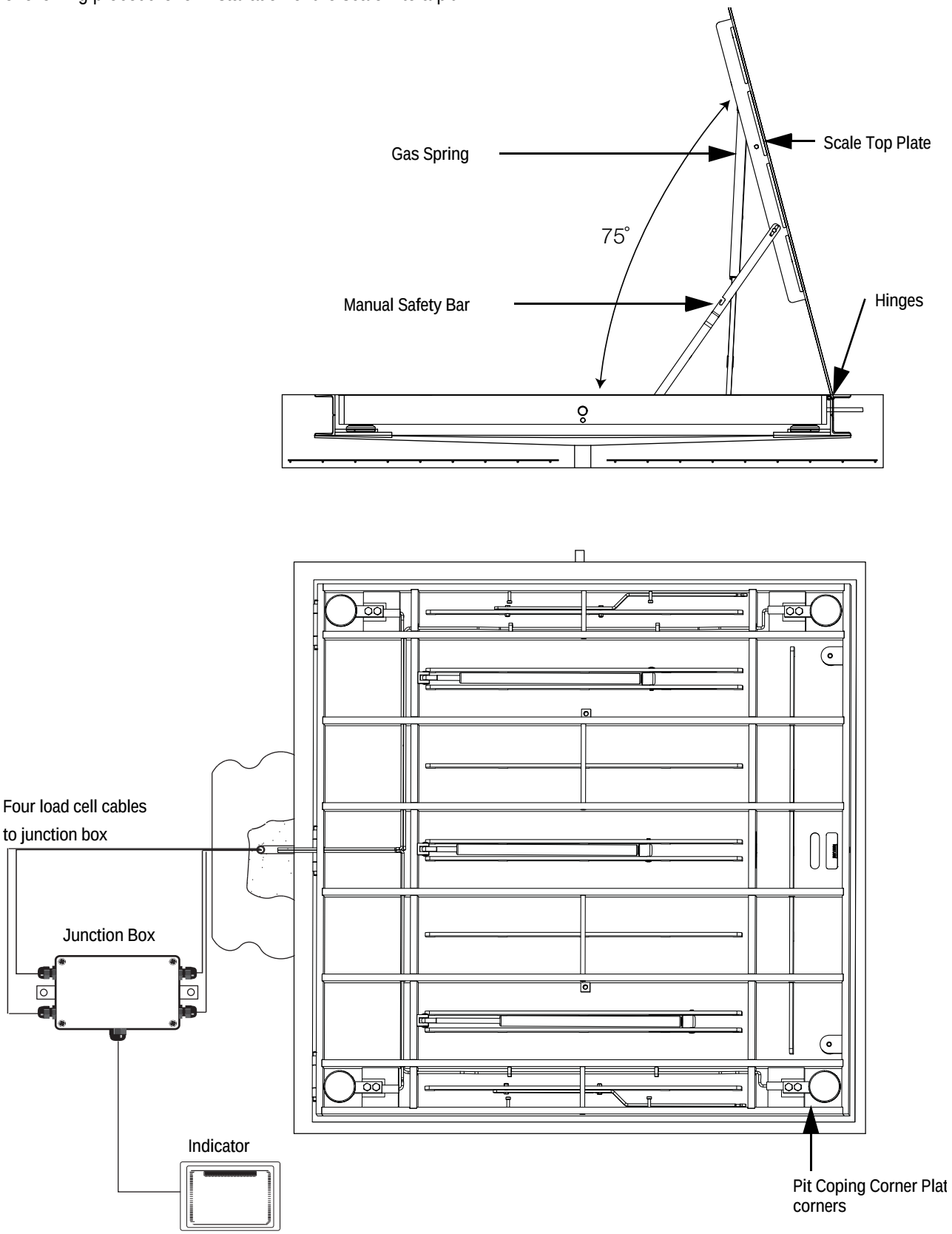


Figure 2-2. Installation Diagram

1. Place the scale into the pit. It should be seated on the pit coping corner plates.
2. Adjust feet as necessary until the platform is level to within $^{1}/_{4}$".
3. Feed the load cell cables through the conduit. Leave a strain relief loop; allow enough cable for free movement of the scale in the lifted position without tension in the cables.
4. Route the load cell cables on the same side as the hinge mechanism.
5. Route the load cell cables through the fittings in the junction box.
6. Wire the cables to the junction box according to the corner numbering diagram (Figure 2-3) and the load cell wiring chart (Table 2-3).
7. Coil and store excess cable before hooking up to the junction box.
   - Do not cut excess load cell cable. Do not store the excess cable in the scale pit.
   - Make sure the scale opens and closes gently to prevent damage to load cells.

WARNING *Do not work under the raised scale or place body parts under a raised scale without the safety bar properly positioned. Position the safety bar as shown in Figure 2-2.*

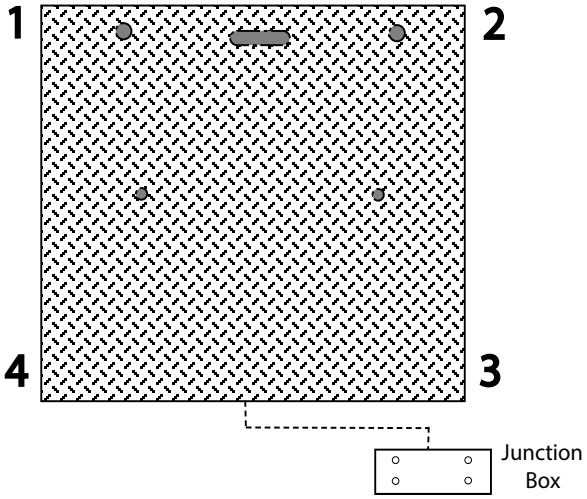


Figure 2-3. Corner Numbering - Top View

Cable Color Code	Junction Box Terminal
Red	+Excitation
Black	-Excitation
Green	+Signal
White	-Signal
Base or Clear	Shield

Table 2-3. Load Cell Wiring.

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2.8 Access Ramps (Optional)

Access ramps for *RoughDeck QC-X* floor scales are designed to bolt to the floor, with built-in anchor plates. When used with access ramps, side movement of the scale is automatically eliminated, and no other mounting plates are necessary.



Figure 2-4. Ramp Access

Optional access ramps are available in two different types;

- Front or rear access which attaches to the scale on the front or rear (hinged side) of scale
- Side access which attaches to the scale on either side of scale

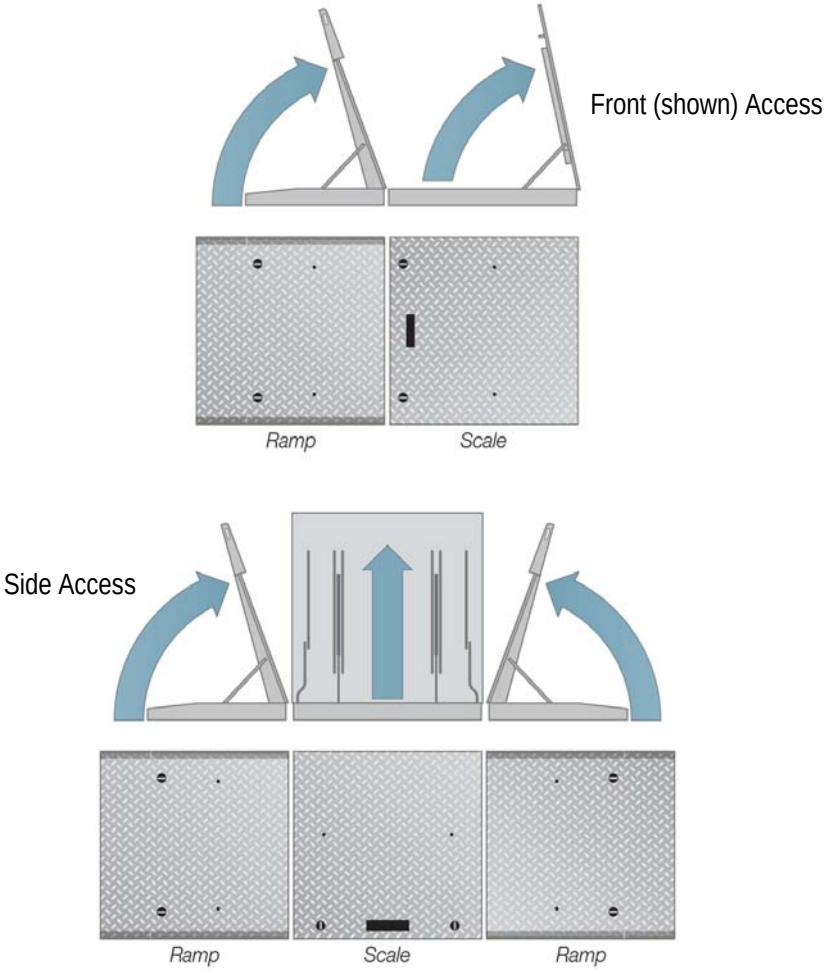


Figure 2-5. Optional Access Ramps

3.0 Adjustments and Calibration

3.1 Mechanical Adjustments

To accommodate minor unevenness, adjust the scale height up or down a fraction of an inch using the scale feet. Lift the scale corner slightly and adjust the feet by hand until all feet are contacting the corner pads equally.

After completing height adjustments, recheck the levelness of the deck with a spirit level. The deck must be level within 1/4".

CAUTION *When adjusting the scale feet, use care to prevent the scale foot from bottoming out against the underside of the load cell. The foot stem can also be damaged by bending or stripping threads, if extended beyond the maximum height adjustment.*

3.2 Corner Correction

To calibrate the scale, all four load cells must be adjusted so their output signals are equal. Adjust the signals using the potentiometers at the junction box—a process known as trimming.

1. Remove the junction box cover and identify the load cell terminals corresponding to each corner (labeled *CELL 1*, *CELL 2*, *CELL 3*, and *CELL 4*). See Figure 2-3 on page 4.
2. Connect the indicator and calibrate using a test weight. The recommended test weight for all RoughDeck models is 25% of scale capacity.

   Example – 500 lb for 2K-lb models.
3. Ensure there is no weight on the scale and zero the indicator.
4. Turn each of the four potentiometers clockwise to increase the reading until there is a clicking sound. This ensures the maximum signal from each load cell.
5. With all potentiometers at full signal, place the test weight on one corner and record the indicated weight.
6. Repeat the process for each of the other three corners.

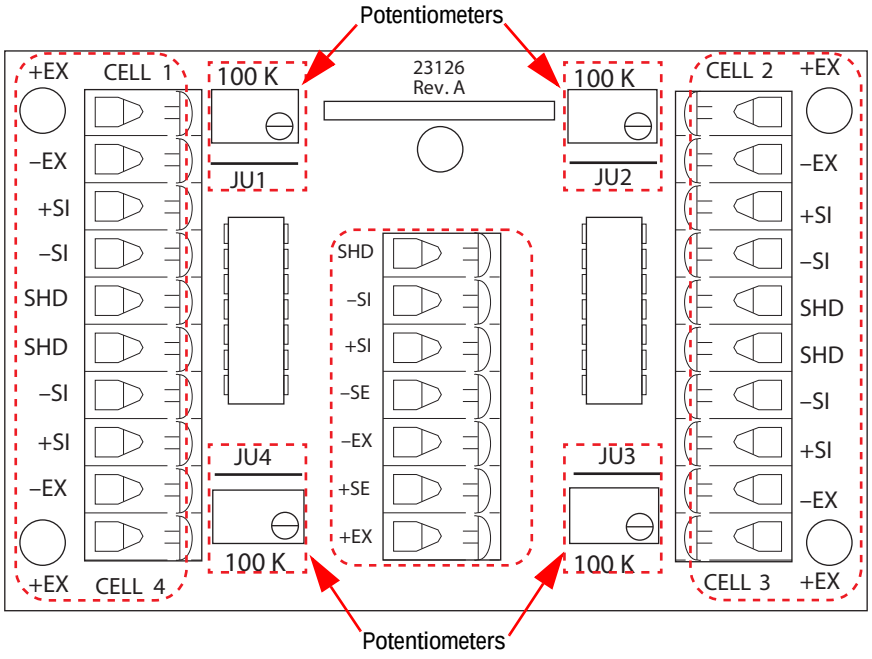


Figure 3-1. Trim Potentiometers.

7. Use the corner with the smallest output as a reference. Place the test weight on one of the other three corners and adjust that cell's potentiometer to match the output of the reference cell.
8. Repeat this procedure with the other two high output corners.
9. Adjustments are interactive, so adjusting the three higher output corners may affect the reference cell output. Re-zero the indicator and repeat the test until all corners are within ± 1% of the test weight used.

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3.3 Calibration

See the indicator operation manual to determine the indicator calibration procedures.

It is recommended that the scale be exercised before calibration ensure everything is seated.

1. Load the scale to near capacity two or three times.
2. Ensure there is no load on the scale and place the indicator in the calibration mode.
3. Perform a zero calibration.
4. Place test weights equal to 70% – 80% of the scale capacity on the platform. When using several weights, distribute them evenly around the platform.
5. Perform a span calibration.
6. Remove the test weights and check the zero reading.
7. Repeat the calibration process, if necessary.

4.0 Service Information

4.1 Periodic Maintenance

Clean the space between the platform side and pit frame and the surface beneath the platform to prevent debris build up.

Use care with high pressure steam wash downs for hermetically-sealed load cells. The steam may not damage the load cells, but elevated temperatures may cause incorrect readings until the unit cools to room temperature.

4.2 Load Cell Replacement

Order replacement load cells from Rice Lake Weighing Systems.

CAUTION *Lift the scale only with a properly designed spreader bar as shown in Figure 4-1. Lifting force must be vertical to avoid bending the eye bolts.*

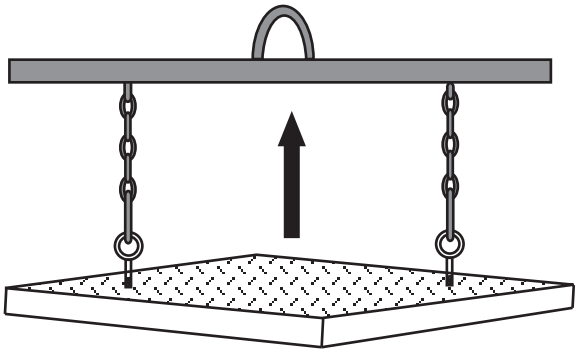


Figure 4-1. Proper Lifting Technique.

1. Remove the foot from the load cell to be replaced.
2. Disconnect the load cell cable from the junction box and cut cable ties.
3. Run the new load cell cable to the junction box
4. Wire the cable to the junction box.
5. Check that the threaded holes for the load cell screws are free of debris. Use compressed air to blow out the holes if necessary.
6. Position the load cell with alignment arrows pointed up toward the scale deck and loosely install the hex head cap screws provided.

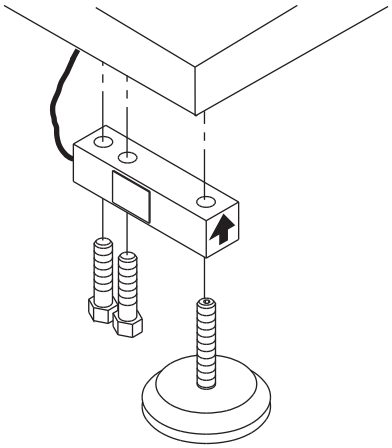


Figure 4-2. Load Cell Replacement.

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7. Position the load cell to maintain the dimension.
8. Route the load cell cables near each corner to ensure the cable is free from possible contact with each foot.
9. Do not cut excess load cell cables.
10. Make a strain relief loop before routing the cables through the conduit.
11. Coil extra cable before it enters the junction box.
12. Pass the end of the load cell cable through the cable fittings in the NEMA Type 4X junction box.
13. Corner correction, trimming, and calibration are necessary after replacing a load cell. Follow the instructions in Section 3.2 and Section 3.3 on page 12.

4.3 Troubleshooting Guide

Symptom	Probable Cause	Solution
System does not operate--no display	Power disconnected	Check and reconnect
	Indicator fuse blown	Replace fuse, check for cause
	Interface cable cut or disconnected	Repair
	Signal leads incorrectly installed at indicator	Install according to indicator installation manual
Display stays at zero	Faulty load cell connections	Check cable connections in J-box at indicator
	Faulty indicator	Service the indicator
Erratic weights	Vibration near scale	Remove source of vibration or move scale
	Platform not level to within 1/4”	Level the platform by adjusting feet or shimming
	Load cell or cable water damage	Replace load cell or cable
	Debris under load cells or platform	Clean
	Faulty indicator	Use simulator to test indicator stability; service indicator
Consistently high or low weights	Indicator not properly adjusted to zero	Zero the indicator according to operation manual
	Platform binding	Adjust clearance for free platform movement
	Indicator not calibrated	Calibrate according to indicator’s manual and Section 3.3 on page 12
	Faulty load cells	Test and, if necessary, replace load cells
	Feet touching deck’s underside	Adjust feet downward to provide clearance

Table 4-1. Troubleshooting Guide.

4.4 Specifications

End Load Capacity:

100% full scale at 5,000 lb
80% full scale at 10,000 lb

Warranty:

RoughDeck QC-X weldment five years, load cells two years, all other components one year

Electrical Grounding

For systems where the scale is connected to a 120 VAC circuit, the instrument must be directly connected to an earth ground with a ground interface cable of no more than 3 Ω resistance throughout its length.

Load Cell Excitation

Rated Excitation: 10 VDC Maximum Excitation: 15 VDC

Nominal Scale Height

5 K–10 K lb (2500–5000 kg) models: 4.625" (117.48 mm)

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