

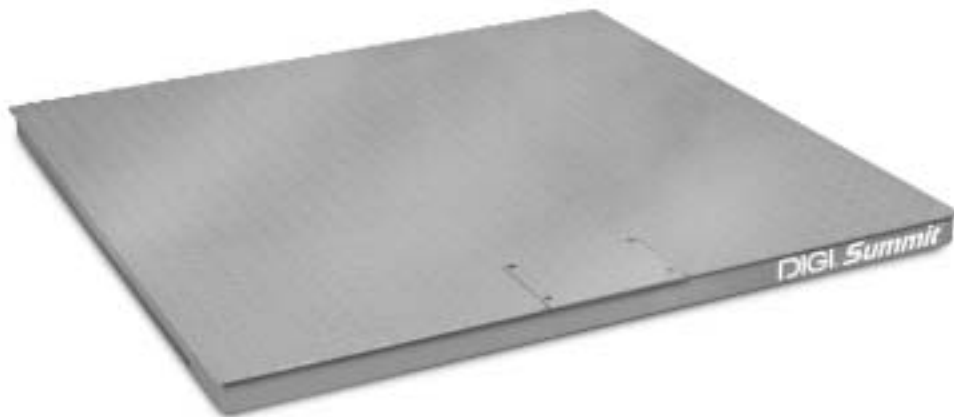


When Accuracy Counts

# Summit 3000

*Low-Profile Floor Scale*

## Installation Manual



**RICE LAKE WEIGHING SYSTEMS**

Industrial Solutions on a Global Scale®



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Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at [www.rlws.com](http://www.rlws.com), [www.digiscales.com](http://www.digiscales.com), or obtained by calling 715-234-9171 and asking for the training department.

# 1.0 Introduction and System Overview

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The DIGI Summit 3000 floor scale provides exceptional performance and serves as an economical solution in light industrial applications.

The Summit 3000 floor scale is a fully electronic, low profile floor scale that comes in sizes from 36 in x 36 in (.91 m x .91 m) to 60 in x 60 in (1.52 m x 1.52 m), and capacities from 2K- to 10K-lbs (1000–5000 kg). All models use four corner-mounted, NTEP-certified, alloy steel shear beam load cells, with the cells recessed into the frame channels for protection. Also included signal-trim summing board enclosed in a durable ABS enclosure that has a convenient top-access for any necessary corner corrections. All models come pre-trimmed so corner corrections should not be necessary.

Load cell cables are run through the main channels, and held down with replaceable cable ties near each corner, eliminating the possibility of cable damage in portable applications. One threaded hole, located in the center of the deck, is another useful feature for portable applications. This allows for placement of a removable eyebolt to lift the scale from above with chains. Because of the possibility of foot and load cell damage from forklift tines, the scale should always be lifted from above with chains through the eyebolt.

The adjustable feet are used to allow leveling the scale to make up for minor floor irregularities. For permanent installations, two of the four feet can be held in place on the floor with optional floor anchor plates to guard against deck movement.

Other available options include custom frames for pit installations and access ramps for all sizes of the Summit 3000. Decks designed for use in pits can be ordered with holes drilled in the deck directly above each foot for adjusting foot height with a screwdriver from above. See Section 5.0 on page 12 for replacement part numbers.



*Figure 1-1. The DIGI Summit 3000 Floor Scale*



Authorized distributors and their employees can view or download this manual from the DIGI distributor site at: [www.digiscales.com](http://www.digiscales.com) or the Rice Lake distributor site at: [www.rlws.com](http://www.rlws.com).

## 1.1 Operating Requirements

### Electrical Grounding

For systems where the scale is connected to a 115 VAC circuit, the indicator must be directly connected to an earth ground with a ground interface cable of no more than 3W resistance throughout its length.

### Load Cell Excitation

Rated Excitation: 10 VDC

Maximum Excitation: 15 VDC

### Grade Level Requirements

The supporting surface for the four feet of the scale must be level within 1/4 inch of horizontal.

### Safe Static Overloading Capacity

Maximum: 150% of scale capacity

### Nominal Scale Height

3.625 inch (92 mm)

### Approvals



NTEP CoC Number 03-014

## 2.0 Installation

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The following sections describe the correct installation procedures when installing the Summit 3000 floor scale.

### 2.1 Overview

Standard installation of the Summit 3000 floor scale consists of the following steps:

1. Select a site
2. Check levelness and smoothness of site
3. Unpack the floor scale
4. Adjust the four feet on the scale
5. Install mounting plates to the floor (optional)
6. Connect cable to the indicator
7. Calibrate the unit

Pit installations and access ramps are described in Sections 2.6 and 2.7 on pages 5 and 6.

### 2.2 Site Preparation

The scale must not be loaded beyond its capacity, even momentarily. Avoid areas where the scale might receive damaging side impacts from wheels or forklift tines, or shock damage from falling objects. Avoid areas where water may damage a scale not meant for a washdown environment.

The interface cable between the scale and the indicator must be protected against crushing, cutting, or moisture damage. If the chosen site has such potential dangers, some method of protection, such as running the cable in conduit, is necessary.

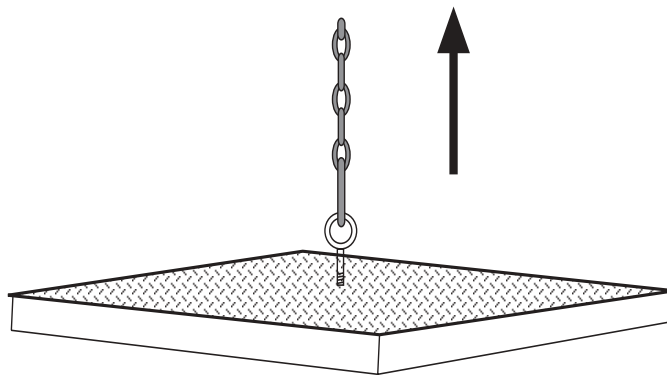
In operation, the scale must be level within 1/4". Either choose a site where the floor is close to this standard to avoid excessive shimming, or modify the floor at the chosen site to meet this standard.

### 2.3 Unpacking

Remove all packing material and visually inspect the floor scale for visible damage caused during shipment. The shipping container should contain the floor scale, floor scale feet, this manual, and a 20-ft length of load cell cable.

All Summit 3000 models have one threaded eyebolt hole located in the center of the deck to allow installation of an eyebolt hook for use when lifting the scale with chains.

It's recommended to use a 1/2 in-13NC eyebolt in 2K–10K-lb capacity scales.



*Figure 2-1. Proper Lifting Technique*

## 2.4 Assembly

The following paragraphs give instructions for installing and adjusting the scale feet and anchor plate.

### 2.4.1 Installing and adjusting feet

For load cell protection during shipping, the scale feet are shipped separately from the floor scale.

Screw one foot into each load cell and turn all the way in until the foot touches either the load cell or the underside of the deck. Then unscrew each foot three complete turns.

Place a spirit level on the deck. Adjust any “high” corners not in contact with the floor by further unscrewing the feet on those corners until they just contact the floor surface. When all feet are in contact with the floor, check the deck with the spirit level to be sure the scale is within 1/4 inch of level.

### 2.4.2 Anchor Plate Installation

For permanent applications, the scale should be secured to the floor to prevent sideways movement. Two mild steel, floor anchor plates, with holes that slightly exceed the foot diameter, are available as an option for that purpose.

Lift the scale so that the feet are approximately one inch off the floor. Slide mounting plates under two diagonally opposed feet. Lower the scale back to the floor, and position the plates as shown in Figure 2-2 so that the bolt-down holes are accessible from above.

Using the mounting plates as templates, drill pilot holes into the floor for suitable anchor bolts. Bolt the plates to the floor using 1/2-in anchor bolts. Recheck foot adjustment and deck level after this operation.

**Note:** For installations using access ramps, mounting plates are not necessary as the ramps have built-in mounting plates to secure the scale feet.

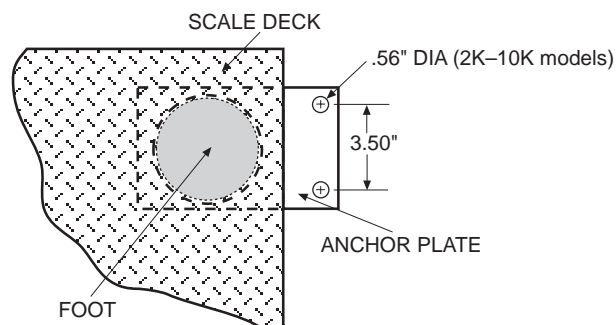


Figure 2-2. Anchor Plate Installation

## 2.5 Electrical Interface to Indicator

Twenty feet of 6-wire cable to connect the scale to the weight indicator is supplied with each scale. The junction box is easily accessible through a top access plate located on the top of the DIGI Summit 3000. Use the following steps to wire up the junction box.

1. Remove the four screws using an allen wrench.
2. Slide the faceplate/junction box assembly out of the deck.
3. Open and remove the top of junction box.
4. Push the cable end into the junction box through a cord grip.
5. Connect the wires to the indicator terminal (Figure 2-3) as shown in Table 2-1.
6. Pull out excess and tighten the cord grip to hold the cable snugly.

Cable Color Code	Junction Box
Red	+ Excitation
Black	- Excitation
Green	+ Signal
White	- Signal
Bare	Shield
Yellow	+ Sense
Blue	- Sense

Table 2-1. Junction Box Connections

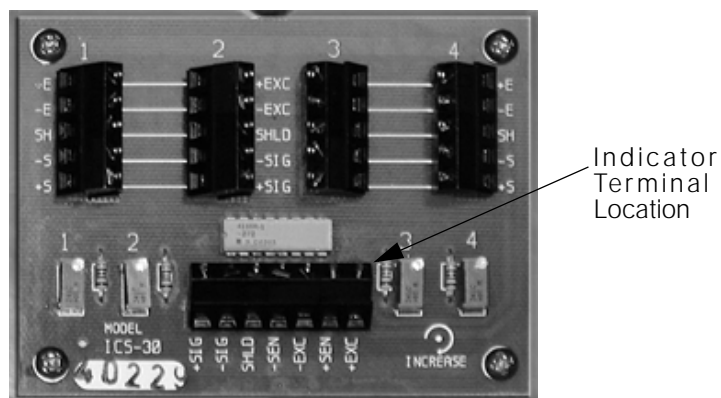


Figure 2-3. Junction Box Wiring Diagram

The cable must be routed to the indicator in a manner that will protect the cable from damage. This method of cable protection in non-washdown applications are shown in Figure 2-4. When planning cable routing, leave a loose coil of excess cable under the scale to facilitate future lifting of the scale for servicing or cleaning.

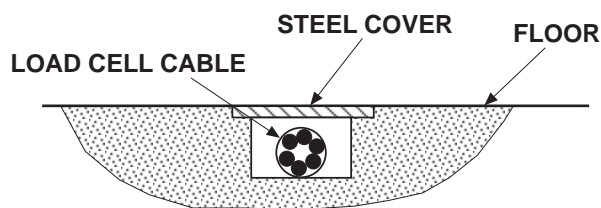


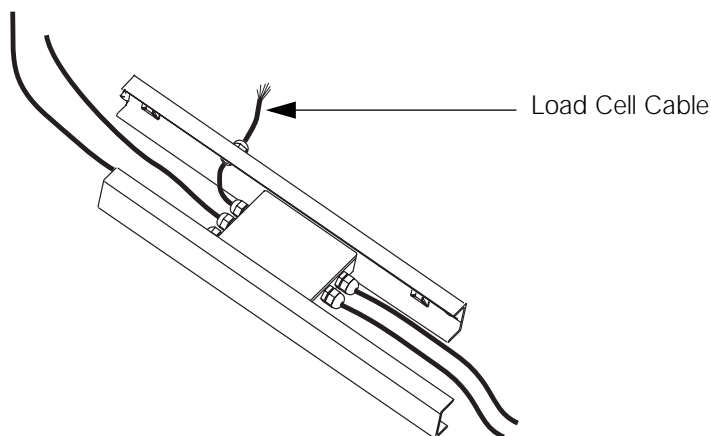
Figure 2-4. Load Cell Protection

When the interface cable is protected and in its final position, complete connections to the indicator. See the indicator installation manual for wiring information.

If necessary, trim corners as described in Section 3.2.

Check all strain relief fittings for tightness.

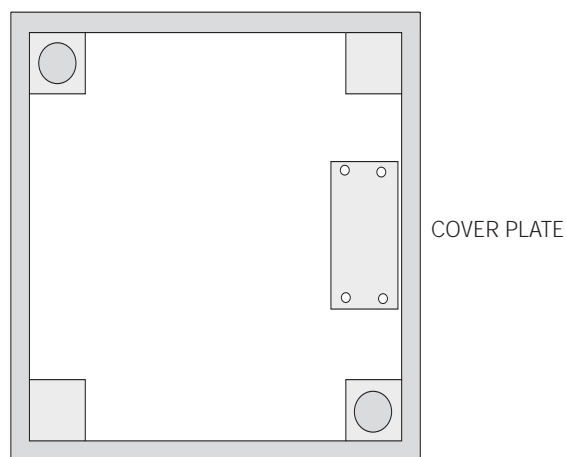
Put the cover back onto the junction box assembly and place the junction box back into the floor scale cutout. Secure the Summit 3000 floor plate.



*Figure 2-5. Junction Box Diagram*

## 2.6 Pit Installation

The Summit 3000 can be installed in a shallow pit using the optional Summit 3000 pit frame. Optional height-adjustment holes are available. The following site considerations and pit frame drawings are meant only as a brief overview of the principles involved with mounting the scale in a floor-level pit. The pit must be installed in a suitable poured-concrete foundation according to standard construction practices.



*Figure 2-6. Pit Frame Diagram*

### Site Considerations

Debris, floor sweepings, or material spills may accumulate in the pit and interfere with scale operation. You should periodically clean the pit. All sizes of the Summit 3000 have a threaded hole centrally located for eyebolts so the scale can be easily lifted from the pit.

Weight overloads, even momentary ones such as driving a loaded forklift over a scale corner, will damage load cells. Plan the pit location out of main traffic areas to prevent such accidental damaging overloads.

A 1:24 slope is recommended for the pit, with full grouting under the corner pads as shown in Figure 2-7.

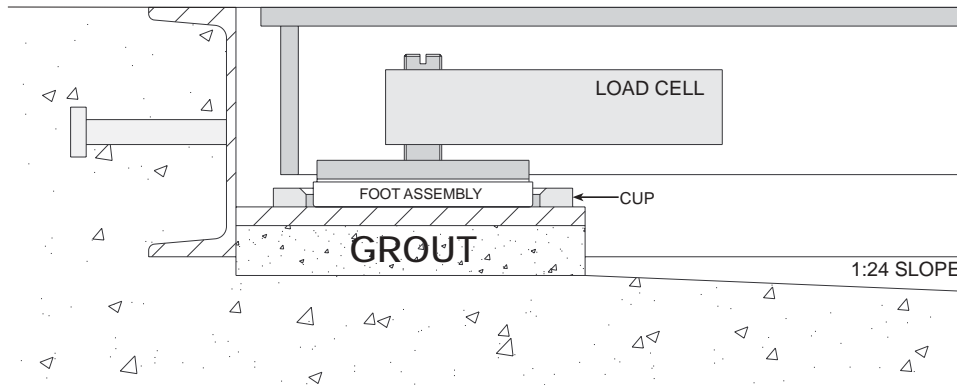


Figure 2-7. Section Showing Installed Summit 3000 and Pit Frame

## 2.7 Access Ramps

Access ramps for Summit 3000 floor scales are designed to bolt to the floor, with built-in mounting plates that attach to the scale feet. When used with access ramps, side movement of the scale is automatically eliminated, and no other mounting plates are necessary.

Access ramps can only be attached to the scale on one of the two scale sides that are perpendicular to the longitudinal axis of the load cells. For example, the scale shown in Figure 2-8 could have an access ramp on the left side as shown, and/or on the right side. The top and bottom sides, however, will not accept the ramp mounting plates.

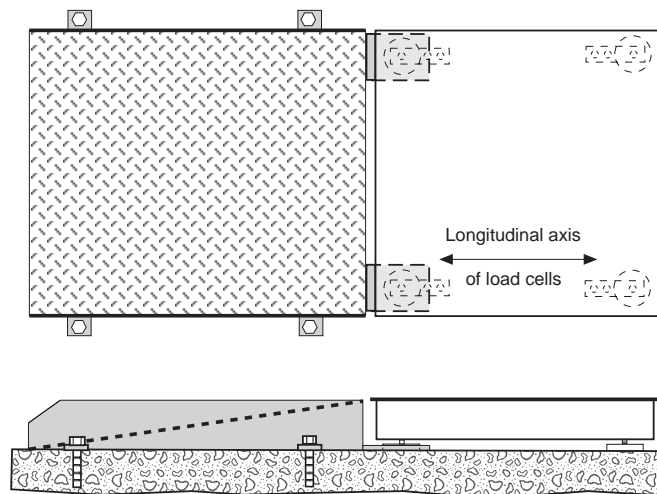


Figure 2-8. Optional Access Ramp



## 3.0 Adjustments and Calibration

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The following sections describe adjustments that need to be made to the Summit 3000 floor scale.

### 3.1 Mechanical Adjustments

To accommodate minor floor unevenness, the scale feet can be used to adjust scale height up or down a fraction of an inch. Adjust the feet by hand (lift the scale corner slightly with a pry bar) until all feet are contacting the floor equally. No jam nuts are supplied for locking the feet, as there is a slight decrease in accuracy when jam nuts are tightened. However, if you feel that your application requires you to secure the feet, we suggest using Teflon® tape or Loctite®.

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

When height adjustments are complete, recheck level of the deck with a spirit level. The deck must be level within 1/4".

### 3.2 Corner Correction

All assembled Summit 3000 scales are delivered with the junction box corner-trimmed. Corner trimming is only necessary after replacing a load cell.

To calibrate the scale, the output from each load cell must be matched by adjusting the signals with potentiometers at the junction box—a process known as trimming.

Remove the junction box cover and identify the correct load cell terminal corresponding to each corner (labeled CELL 1, CELL 2, and so on). See Figure 4-4 on page 11 for scale deck corner numbering.

The indicator must be connected and calibrated approximately, but it need not indicate the exact weight value. A test weight is required. The recommended test weight for all Summit 3000 models is 25% of scale capacity: for example, 500 lbs for 2K-lb models, 2500 lbs for 10K-lb models.

With no weight on the scale, zero the indicator. Then turn all four potentiometers (Figure 3-1) clockwise to increase the reading until a clicking sound is heard from each potentiometer. This ensures the maximum signal from each load cell.

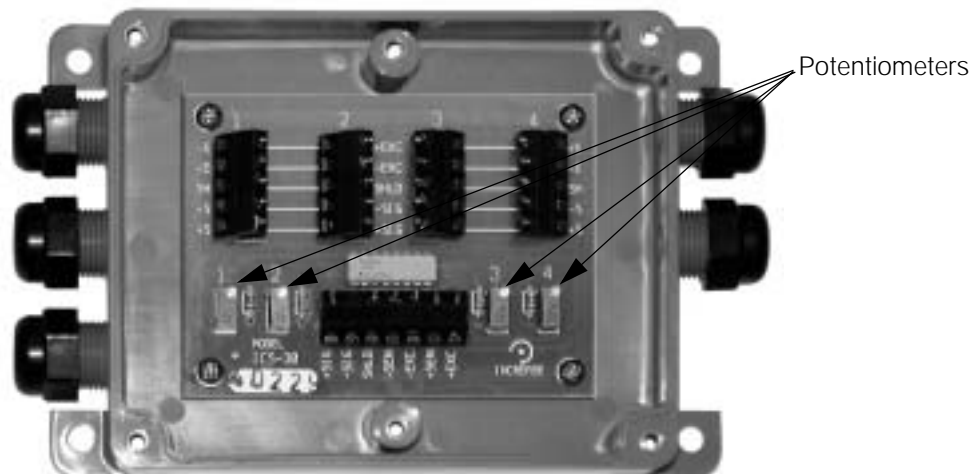


Figure 3-1. Summing Board Diagram

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With all potentiometers at full signal, place the test weight over one corner and record the indicated weight. Repeat the process for each of the other three corners. The load cell with the lowest corner reading is used as a reference point and will not be trimmed.

Next, place the test weight over one of the other three corners and use that cell's potentiometer to adjust the cell output down to the reference cell output. Repeat this procedure with the other two high corners.

Adjustments are somewhat interactive, and adjusting the three higher outputs may affect the reference cell output, especially in smaller scale decks. Rezero the indicator and repeat the test until all corners read within  $\pm 1\%$  of the test weight used.

### **3.3 Calibration Procedure**

Refer to the indicator manual to determine correct calibration procedures.

It is recommended that the scale be "exercised" before calibration to be certain that everything is seated. Load the scale to near capacity two or three times.

Then, with no load on the scale, place the indicator in its calibration mode and perform a zero calibration. Now place test weights on the platform equal to 70% - 80% of the scale's capacity. If several weights are used, they should be evenly distributed around the platform. Perform a span calibration.

Remove the test weights and check the zero reading. Repeat the calibration process if necessary.

## 4.0 Service Information

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The following sections describe basic service and maintenance procedures.

### 4.1 Troubleshooting Guide

The following table lists some of the common problems and their suggested solutions.

Problem	Symptom Description	Solution
System does not operate - no display	Power disconnected	Check and reconnect
	Indicator fuse blown	Replace the fuse. Check for cause
	Interface cable cut or disconnected	Repair
	Signal leads incorrectly installed at the indicator	Install according to indicator installation manual
Display stays at zero	Indicator faulty	Service indicator
	Load cell connections faulty	Check cable connections in junction box and at indicator
Erratic weight readings	Vibration near scale	Remove source of vibration or move scale
	Platform not level to within 1/4 in.	Level scale by adjusting feet or shimming if necessary
	Load cell or cable water damage	Replace
	Debris under load cells or platform	Clean
	Indicator faulty	Use simulator to test indicator for stability. Service indicator
Consistently high or low weights	Indicator not properly adjusted to zero	Zero the indicator according to the indicator manual
	Platform binding	Obtain adequate clearance for free platform movement
	Indicator not calibrated	Calibrate according to indicator manual and Section 3.3 on page 8
	Load cells faulty	Test and replace load cells if necessary
	Feet touching deck underside	Adjust feet downward to provide clearance

*Table 4-1. Troubleshooting Table*

### 4.2 Periodic Maintenance

The space between the platform side and pit frame, and the surface beneath the platform must be periodically cleaned to prevent debris build up. More frequent cleaning of these areas is necessary with scales mounted in pits.

Do not attempt to use scales with load cells that are not hermetically sealed in washdown applications. Water damage is a common cause of failure in non-hermetically-sealed load cells. Use care with high pressure steam washdowns for hermetically-sealed load cells. The steam may not damage the load cells, but the elevated temperatures may cause incorrect readings until the unit cools to room temperature.

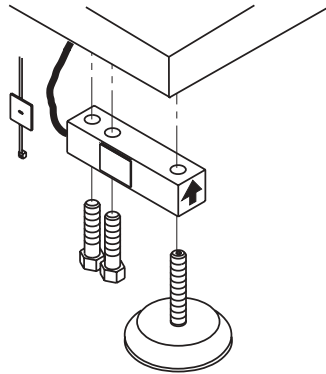
### 4.3 Load Cell Replacement

Replacement load cells can be ordered from Rice Lake Weighing Systems according to the part numbers listed below.

Rice Lake PN	Summit Model #	Load Rating
30106	2K models	1000 lb (453.6 kg)
30112	5K models	2500 lb (1134.0 kg)
30270	10K models	4000 lb (1814.4 kg)

*Table 4-2. Load Cell Replacement Numbers*

Lift the scale with a chain and remove foot, then remove the defective load cell. Disconnect load cell cable from the junction box and cut cable ties. When the cable is freed, pull cable out of the scale frame channels.

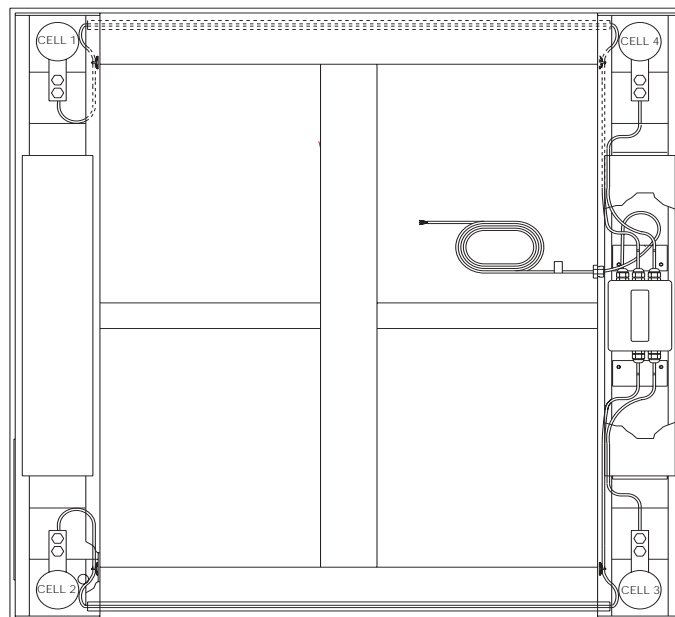


*Figure 4-1. Load Cell Assembly*

Follow the directions given below to install new load cells.

Lay out the four load cells near the corners where they are to be installed. Thread the cable from each load cell through the conduit tubing in the frame and into the junction box according to the wiring diagram in Figure 4-2.

Note that in Figure 4-2 both the scale and the junction box are viewed from the bottom. To verify correct load cell/junction box terminal matching, see the numbers on the terminals inside the junction box and the corner numbering diagram in Figure 4-4 on page 11.



*Figure 4-2. Bottom View of Scale*

Check that the threaded holes for the load cell screws are free of debris. Use compressed air to blow out holes if necessary. Position load cells with alignment arrows pointed up toward the deck and loosely install the hex head cap screws provided, as shown in Figure 4-1. If the base is used with a pit frame or access ramp, position the load cell to maintain the dimension shown in Figure 4-3. With the torque wrench, tighten all bolts to 75 ft-lbs.

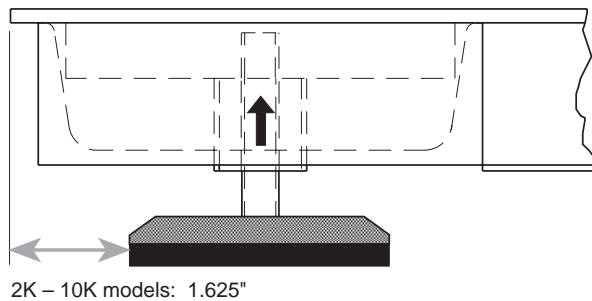


Figure 4-3. Foot Pad - Side View

Route the load cell cables near each corner so that the cable is free from possible contact with each foot. Hold the cable in position with the supplied adhesive-backed cable ties.

Do not cut load cell cables. Coil extra cable before it enters the junction box, tie with cable ties, and insert the coils into the channel near the junction box.

After coiling excess cable, pass each individual end of load cell cable through its grommet in the junction box cover (or through cable fittings in the NEMA 4X junction box).

Corner correction trimming and calibration is necessary after load cell replacement. Follow instruction in Sections 3.2 and 3.3.

#### 4.3.1 Load Cell Wiring to Junction Box

The four load cells are each wired to their respective terminals in the junction box according to the corner numbering system shown in Figure 4-4, and the coloring code in Table 4-3.

Pull excess cable out of the junction box enclosure and tighten the cable grips with a wrench. To be watertight, the cable grips must be tightened to the point where the rubber sleeving begins to protrude out of the hub. Finally, pull on each of the four cables to make sure that they do not slip.

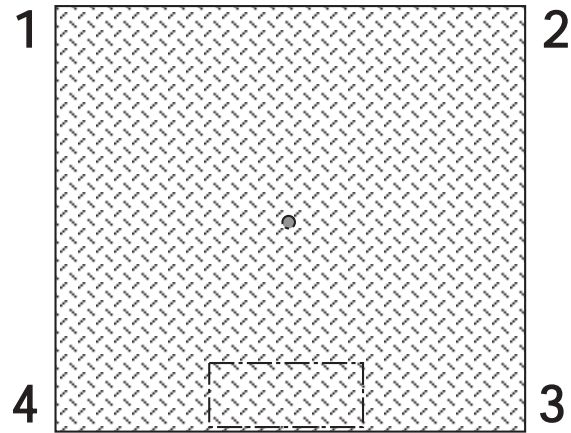
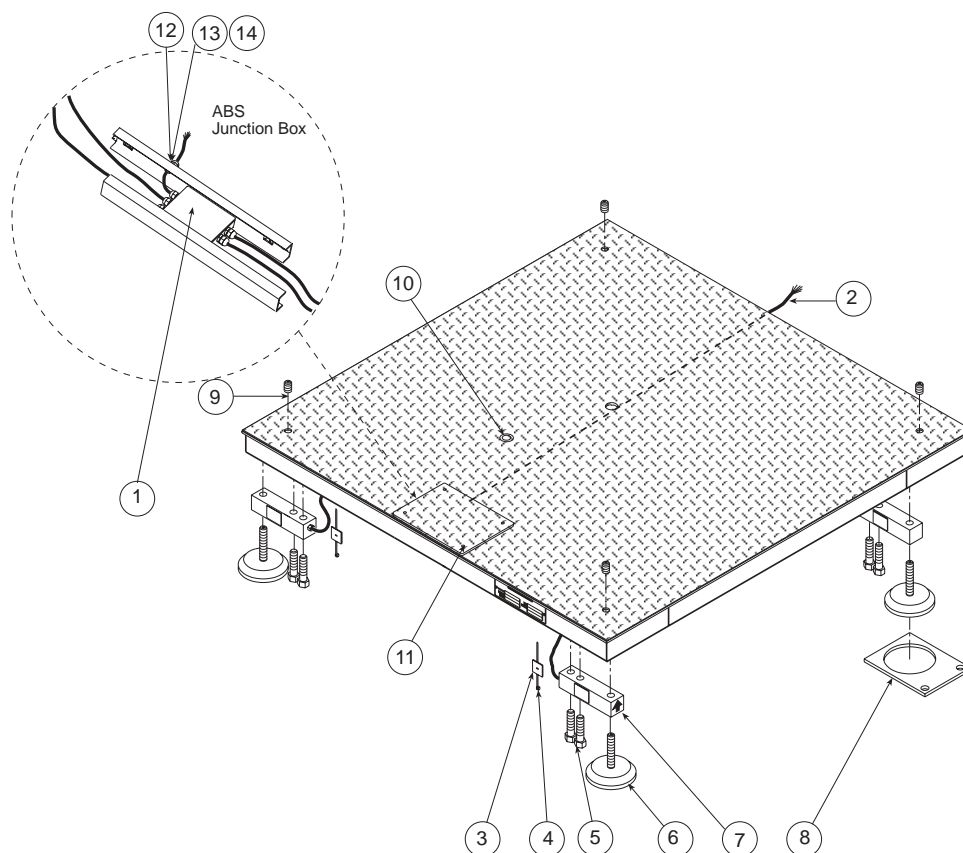


Figure 4-4. Corner Numbering - Top View

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

Table 4-3. Load Cell Wiring

## 5.0 Replacement Parts List



Reference #	Description	RLWS PN
1	Junction Box, ABS Plastic -- 4 Channel, Signal Trim	73428
2	Cable, 6 Wire, Deck to Indicator	76015
3	Cable Tie Mount, 1" Square	15658
4	Cable Ties, 3"	15631
5	Load Cell Screw	15071
6	Foot Assembly	73801
7	Load Cells - 2K	30106
	Load Cells - 5K	30112
	Load Cells - 10K	30270
8	Mounting Plate, set of two plates (optional)	75819
9	Overload Stops (Canadian legal-for trade model only)	15051
10	Bubble Level (Canadian legal-for-trade model only)	15410
11	J-Box Cover Screws	14957
12	Cord Grip (Snap In) (3x3 and 4x4 models only)	66454
13	Cord Grip, Black 1/2" (4x4 and 5x5 models only)	15628
14	Nut, Cord Grip 1/2"	15630

Table 5-1. Summit 3000 Replacement Parts

## Summit 3000 Limited Warranty

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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. All systems and components are warranted against defects in materials and workmanship for two years.

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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