

RoughDeck[®] HE AutoLift

Low-Profile Floor Scale With Pneumatic Lifting Devices

Installation Manual



Contents

About This Manual	1
1.0 Introduction and System Setup	1
1.1 General Description	1
1.2 Model Designations	1
1.3 Operating Requirements	1
2.0 Safety	2
2.1 Safety Signals	2
2.2 Safety Precautions	2
3.0 Installation	3
3.1 Overview	3
3.2 Site Preparation	3
3.3 Unpacking	3
3.4 Electrical Interface to Indicator	3
3.5 Pit Installation	4
4.0 Cylinder/Platform Installation	6
5.0 Adjustments and Calibration	8
5.1 Mechanical Adjustments	8
5.2 Corner Correction	8
5.3 Calibration Procedure	8
6.0 Service Information	9
6.1 Periodic Maintenance	9
6.2 Load Cell Replacement	9
6.3 Replacement Parts and Accessories	10
6.4 Troubleshooting Guide	11
RoughDeck HE AutoLift Option Limited Warranty	12



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About This Manual

This manual is intended for use by service technicians responsible for installing and servicing *RoughDeck HE AutoLift Option™* low-profile floor scale with pneumatic lifting devices.



This manual can be viewed and downloaded from the Rice Lake Weighing Systems web site at www.ricelake.com.

Rice Lake Weighing Systems is an ISO 9001 registered company.

1.0 Introduction and System Setup

1.1 General Description

The RoughDeck™ HE AutoLift Floor Scale is a fully electronic low profile load receiver constructed of stainless steel and is designed for harsh washdown environments. The AutoLift is available in 48" × 48" and 60" × 60" deck sizes and 2K, 5K, and 10K capacities.

The AutoLift uses four corner-mounted, FM-approved load cells recessed into the frame channels for protection. A signal-trim summing board for any necessary corner corrections is enclosed in a NEMA Type 4X junction box mounted outside the scale. All AutoLifts come pre-trimmed. You should not need to make any corner corrections.

You can order AutoLifts with holes drilled in the scale deck directly above each foot for adjusting foot height with a screwdriver from above. See Section 6.3 on page 10 for replacement part and optional equipment part numbers.

1.2 Model Designations

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

The AutoLift is a RoughDeck HE with pneumatic lifting devices to allow you to raise the scale for easy cleaning. The HE is a washdown stainless steel, NTEP-certified model with hermetically-sealed load cells.

1.3 Operating Requirements

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 3Ω resistance throughout its length.

Load Cell Excitation

Rated Excitation: 10 VDC

Maximum Excitation: 15 VDC

Grade Level Requirements

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

Safe Static Overloading Capacity

Maximum: 150% of scale capacity

Nominal Scale Height

2K–10K lb (1000–5000 Kg) models: 3.5" (89 mm)

2.0 Safety

There are certain precautions that should be taken to prevent personal injury to the user and damage to your scale.

2.1 Safety Signals

Safety Signal Definitions:



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.



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



Important

Indicates information about procedures that, if not observed, could result in damage to equipment.

2.2 Safety Precautions



Do not operate or work on this equipment unless you have read and understand instructions in the manual. 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. Proper care is your responsibility.



Failure to heed may result in serious injury or death.

- Some procedures described in this manual require work inside the junction box. These procedures are to be performed by qualified service personnel only.
- DO NOT allow minors (children) or inexperienced persons to operate this scale.
- DO NOT jump up and down on the scale.
- DO NOT place fingers into slots or possible pinch points.
- DO NOT exceed the rated load limit of the scale.
- DO NOT make alterations or modifications to the scale.

3.0 Installation

3.1 Overview

Standard installation of an assembled scale consists of the following steps:

1. Select a site
2. Install pit
3. Unpack scale
4. Adjust scale feet
5. Connect pneumatic controls and cylinders
6. Connect cable from junction box to indicator
7. Calibrate the unit

3.2 Site Preparation

The scale must not be loaded beyond its capacity, even momentarily. Do not select a site where overweight loads would have to maneuver to avoid crossing the platform. Avoid areas where the scale might receive damaging side impacts from wheels or forklift tines, or shock damage from falling objects.

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, use some method of protection, such as running the cable in conduit.

In operation, the scale must be level within $\frac{1}{4}$ ".

3.3 Unpacking

The scale is shipped with the following components to install:

- Four foot assemblies for corners
- Cable ties and miscellaneous hardware

Remove all packing material and inspect scale for visible damage caused during shipment.

All RoughDeck models have threaded holes in opposite corners of the deck to allow installation of eyebolts for use when lifting the scale with chains from a spreader bar. Use $\frac{1}{2}$ " eyebolts.



Caution

Lift the scale only with a properly designed spreader bar as shown in Figure 3-1. Lifting force must be vertical to avoid bending the eye bolts.

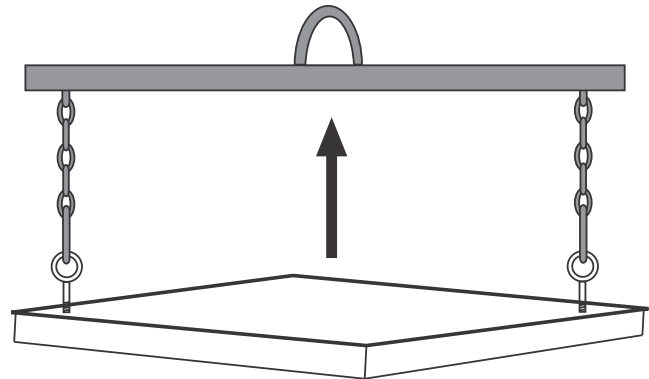


Figure 3-1. Proper Lifting Technique

3.4 Electrical Interface to Indicator

Each scale kit includes 20 feet of 6-wire cable to connect the scale to the weight indicator. Push one end of this cable into the junction box.

Connect the wires to the INDICATOR terminal (shaded area of Figure 3-2) as shown in Table 3-1. Pull out excess and tighten the strain relief bushing to hold the cable snugly.

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

Table 3-1. Junction Box Connections.

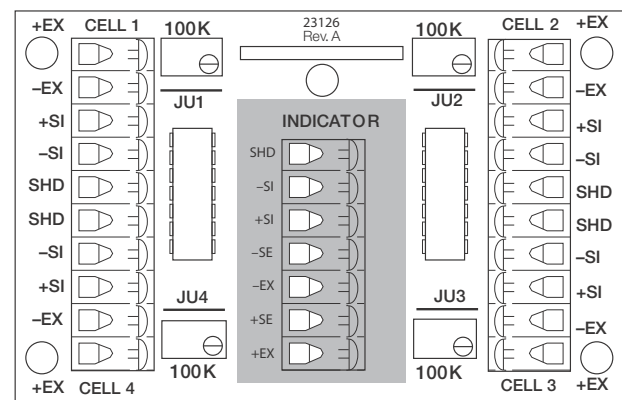


Figure 3-2. Junction Box Indicator Terminal.

Route the cable to the indicator in a manner that will protect the cable from damage. The best method is to route the cable in conduit through the floor. Leave a strain relief loop to facilitate future lifting of the scale for servicing or cleaning.

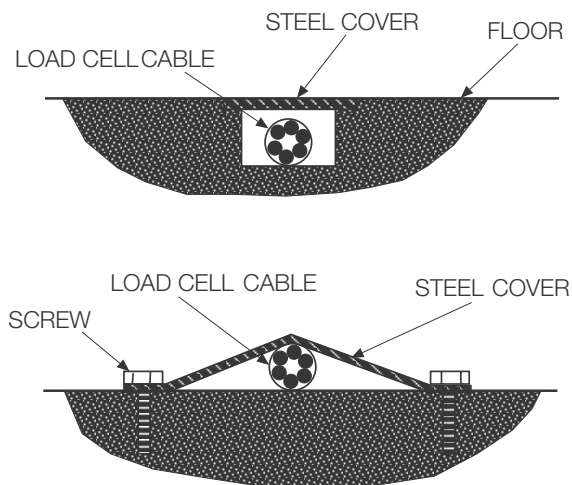


Figure 3-3. Cable Protection

NOTE: Load cell cables from the scale platform to the junction box should be protected with conduit.

When the interface cable is protected and in its final position, complete the connections at the indicator. See your indicator instruction manual to determine its input wiring leads.

3.5 Pit Installation

Each site has different concrete/foundation support requirements. Install the pit in a suitable poured-concrete foundation according to standard construction practices. Allow concrete seven days to cure; wet concrete periodically during this time

See Figure 3-4 on page 5 for an example of a typical pit installation.

NOTE: The dimensions shown may change according to your particular site.

Installation Diagram

- The following reference numbers apply to Figure 3-4 on page 5.
- Length of conduit pipe is determined on site.
- Use concrete of minimum yield strength 5000 psi or 6-bag mix.
- Slope pipe for water drainage.
- Tie pit in with existing floor with re-bar, if required.
- Ensure underside is supported with concrete or grout (plate is an integral part of the frame).
- Keep pocket free of concrete.
- Coping must sit level in floor to allow proper scale operation.

Size	A	B	C	D	E	F
4X4	63.06	49.06	49.00	63.00	41936	15.00
5X5	75.06	61.06	61.00	75.00	41397	16.75
4X6	63.06	49.06	73.00	87.00		15.00

Table 3-2. Reference to Figure 2-4 on page 5.

NOTE: Dimensions may change according to your particular site.

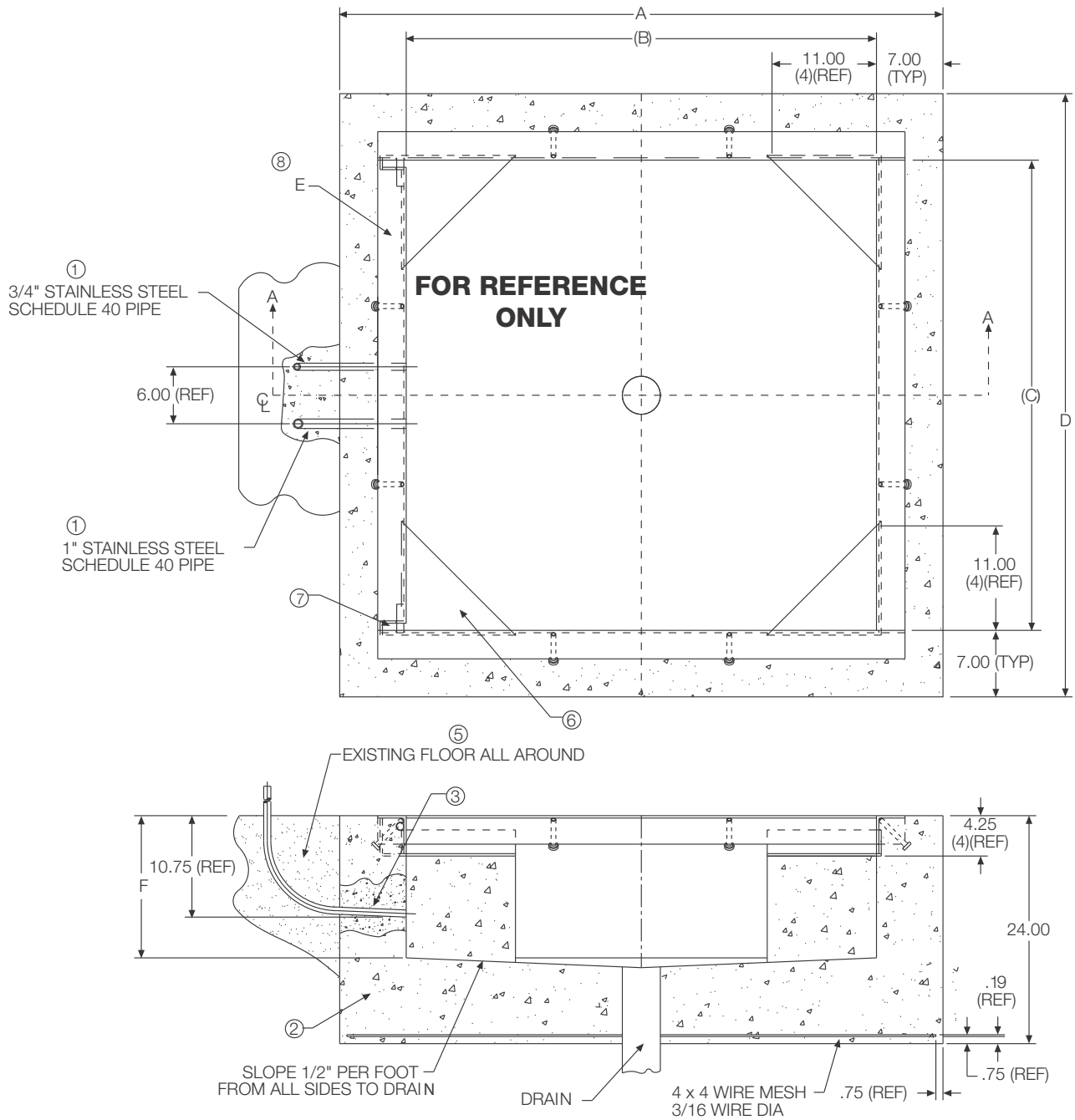


Figure 3-4. Example Pit Installation Drawing



Figure 3-4 is for reference only. This drawing is included as an example of a typical pit. Do not use this drawing for construction purposes.

4.0 Cylinder/Platform Installation

Use the following procedure to install the cylinders and platform.

1. Fit the pivoting intermediate frame over the hinge pins (Figure 4-2, B). The intermediate frame should be seated on the pit coping corner plates (Figure 4-2, C).
2. Attach the rod end of each cylinder to the intermediate frame support tube. The cylinder muffler should face upward toward the scale.
3. Adjust each cylinder rod until it is approximately 1" from the fully-retracted position (Figure 4-2, D). Place the pivot brackets (Figure 4-2, E) against the pit floor and use them as templates to mark the mounting hole locations. Be sure the air cylinders are parallel with one another and square with the intermediate frame support tube.
4. Drill holes, install anchors, and secure the cylinder pivot brackets to the pit floor.
5. Attach the main air line to the inlet side of the regulator (Figure 4-2, F). Attach the air line from the outlet side of the regulator to the input fitting on the pneumatic control box (Figure 4-2, G).
6. Attach the air lines from the output fitting on the pneumatic control box to cylinders. Apply 85-100 psi air pressure to the cylinders. Check for air leaks.
7. Place the platform scale onto the intermediate frame (Figure 4-2, H), making sure feet sit on corner pads without rocking. Adjust feet as necessary so the platform is level to within $\frac{1}{4}$ ".
8. Feed the load cell cables through the conduit. Leave a strain relief loop to allow enough cable for free movement of the scale in the lifted position without tension in the cables (Figure 4-2, J).

NOTE: Route the load cell cables on the same side as the hinge mechanism.

9. Route the load cell cables through the fittings in the junction box (Figure 4-2, K). Wire the cables to the junction box according to the corner numbering diagram (Figure 4-1) and load cell wiring chart (Table 4-1). Coil and store excess cable before hooking up to junction box.

NOTE: Do not cut excess load cell cable. Do not store the excess cable in the scale pit.

10. Adjust speed during the lift cycle using the up speed adjustment screw (Figure 4-2, L) in the pneumatic control box. Once you have achieved the desired speed, tighten the lock nut. Adjust descent speed using the down speed adjustment screw (Figure 4-2, M), then tighten lock nut.

NOTE: 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 in the corner of the pit coping as shown in Figure 4-2, N. Release the pressure on the cylinders to allow the frame to rest on the safety bar.

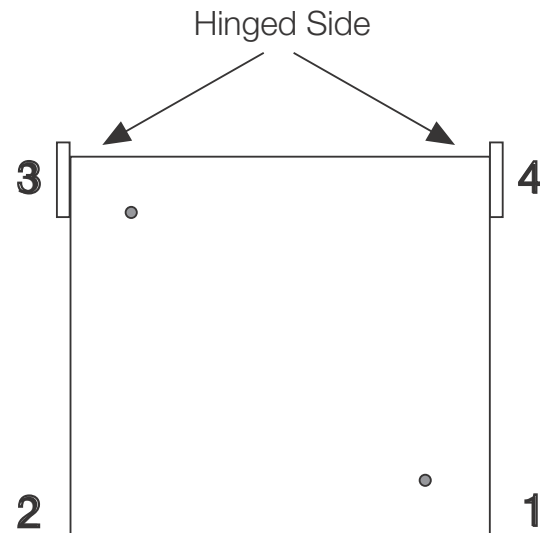


Figure 4-1. Corner Numbering - Top View

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

Table 4-1. Load Cell Wiring.

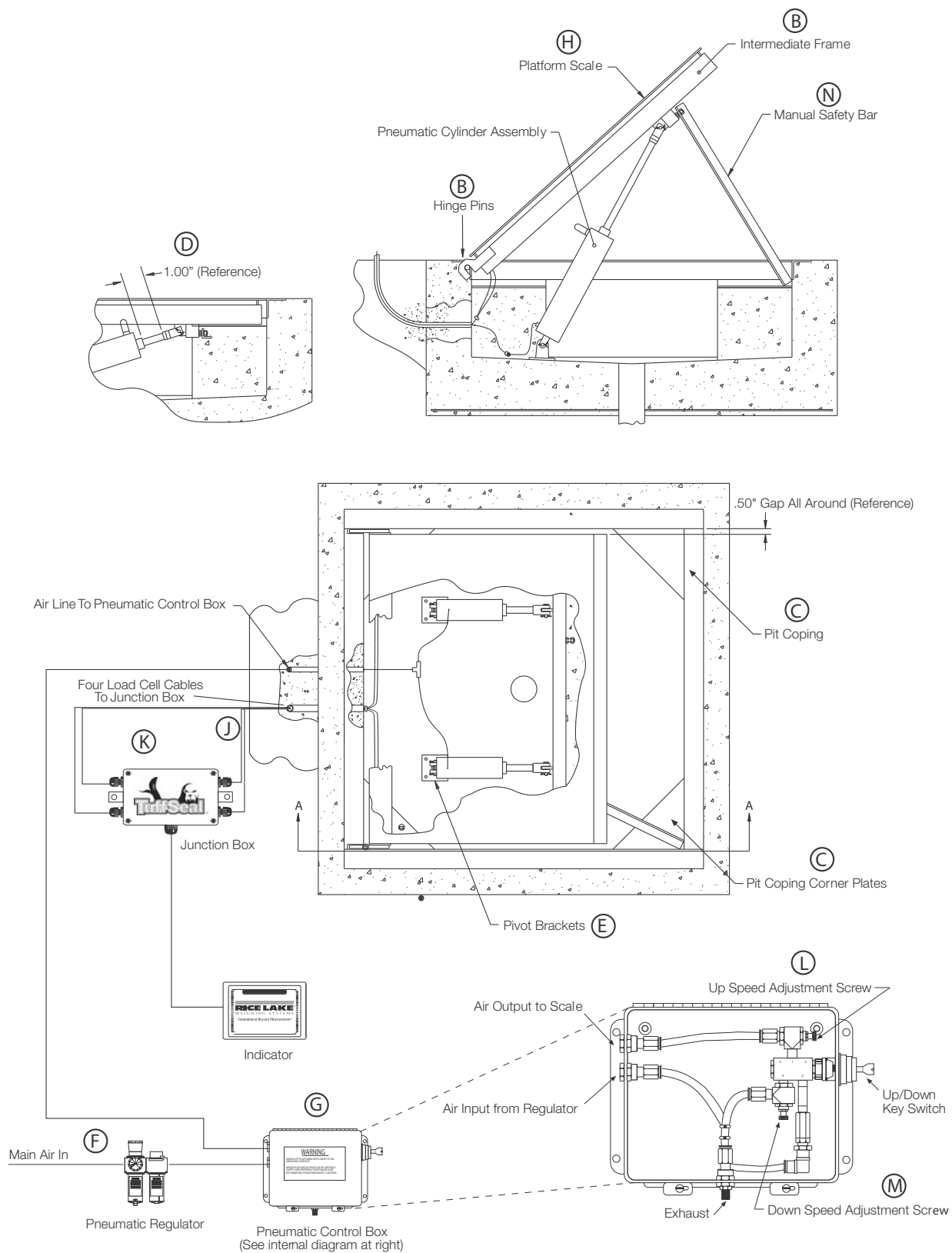


Figure 4-2. Installation Diagram.

5.0 Adjustments and Calibration

5.1 Mechanical Adjustments

To accommodate minor unevenness, adjust 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 corner pads equally.

NOTE: The scale kit does not supply jam nuts for locking the feet, as there is a slight decrease in accuracy when the jam nuts are tightened. If your application requires jam nuts to secure the feet, you can add them. You must unscrew the feet beyond the minimum height to allow room for the jam nuts between the foot pads and the load cells.



Caution

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

After you complete any height adjustments, recheck the levelness of the deck with a spirit level. The deck must be level within $\frac{1}{4}$ ".

5.2 Corner Correction

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

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 4-1 on page 6 for scale deck corner numbering.

Connect the indicator and calibrate using a test weight. The recommended test weight for all RoughDeck models is 25% of scale capacity: for example, 500 lbs for 2K-lb models.

With no weight on the scale, zero the indicator, then turn each of the four potentiometers (shaded areas of Figure 5-1) clockwise to increase the reading until you hear a clicking sound. This ensures the maximum signal from each load cell.

With all potentiometers at full signal, place the test weight on one corner and record the indicated weight. Repeat the process for each of the other three corners.

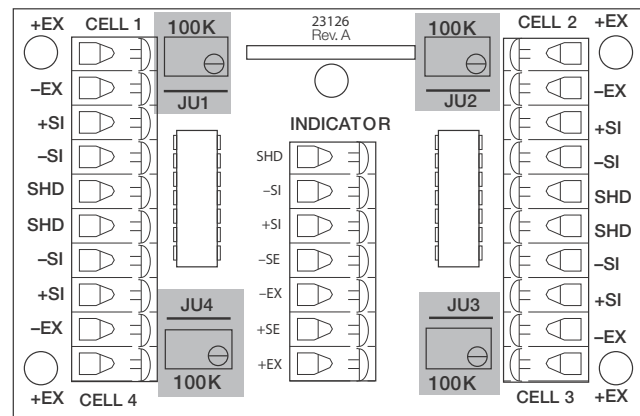


Figure 5-1. Trim Potentiometers.

Next, 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. Repeat this procedure with the other two high corners.

Adjustments are somewhat interactive; 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 are within $\pm 0.1\%$ of the test weight you are using.

5.3 Calibration Procedure

See your indicator operation manual to determine indicator calibration procedures.

We recommended that you “exercise” the scale 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. Place test weights equal to 70% – 80% of the scale capacity on the platform. If you use several weights, distribute them evenly around the platform. Perform a span calibration.

Remove the test weights and check the zero reading.

Repeat the calibration process if necessary.

6.0 Service Information

6.1 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 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.

6.2 Load Cell Replacement

You can order replacement load cells from Rice Lake Weighing Systems according to the part numbers in the table in Section 6.3.



Caution

Lift the scale only with a properly designed spreader bar as shown in Figure 6-1. Lifting force must be vertical to avoid bending the eye bolts.

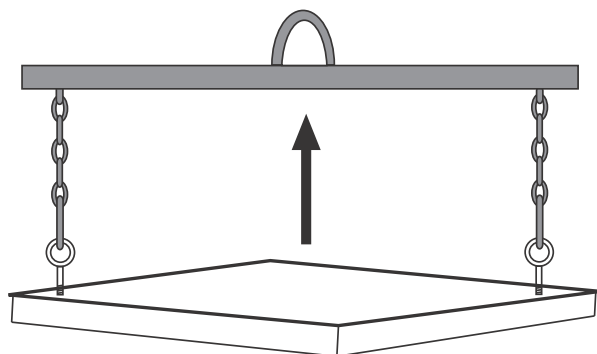


Figure 6-1. Proper Lifting Technique.

Remove foot from load cell. Disconnect load cell cable from the junction box and cut cable ties.

Lay the load cell near the corner where you will install it. Thread the load cell cable through the conduit tubing and wire to the junction box. See Figure 3-2 on page 3 and the corner numbering diagram in Figure 3-1 on page 5.

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 scale deck and loosely install the hex head cap screws provided, as shown in Figure 6-2.

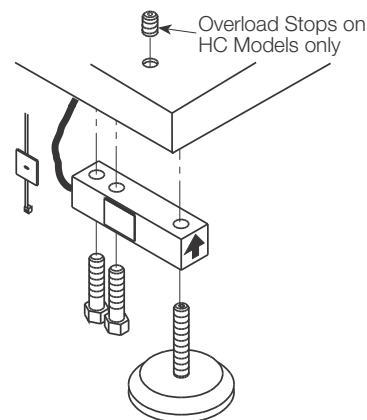


Figure 6-2. Load Cell Replacement.

Position the load cell to maintain the dimension shown in Figure 6-3.

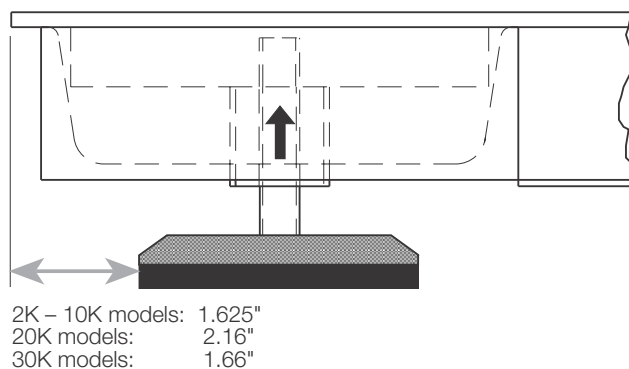


Figure 6-3. Foot Pad - Side View.

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

Do not cut excess load cell cables. Make a strain relief loop before routing the cables through the conduit. Coil extra cable before it enters the junction box. After coiling excess cable, pass the end of the load cell cable through the cable fittings in the NEMA 4X junction box.

Corner correction, trimming, and calibration are necessary after replacing a load cell. Follow the instructions in Section 5.2 and Section 5.3 on page 8.

6.3 Replacement Parts and Accessories

See Figure 6-4 and Table 6-1 below for AutoLift replacement parts and accessories.

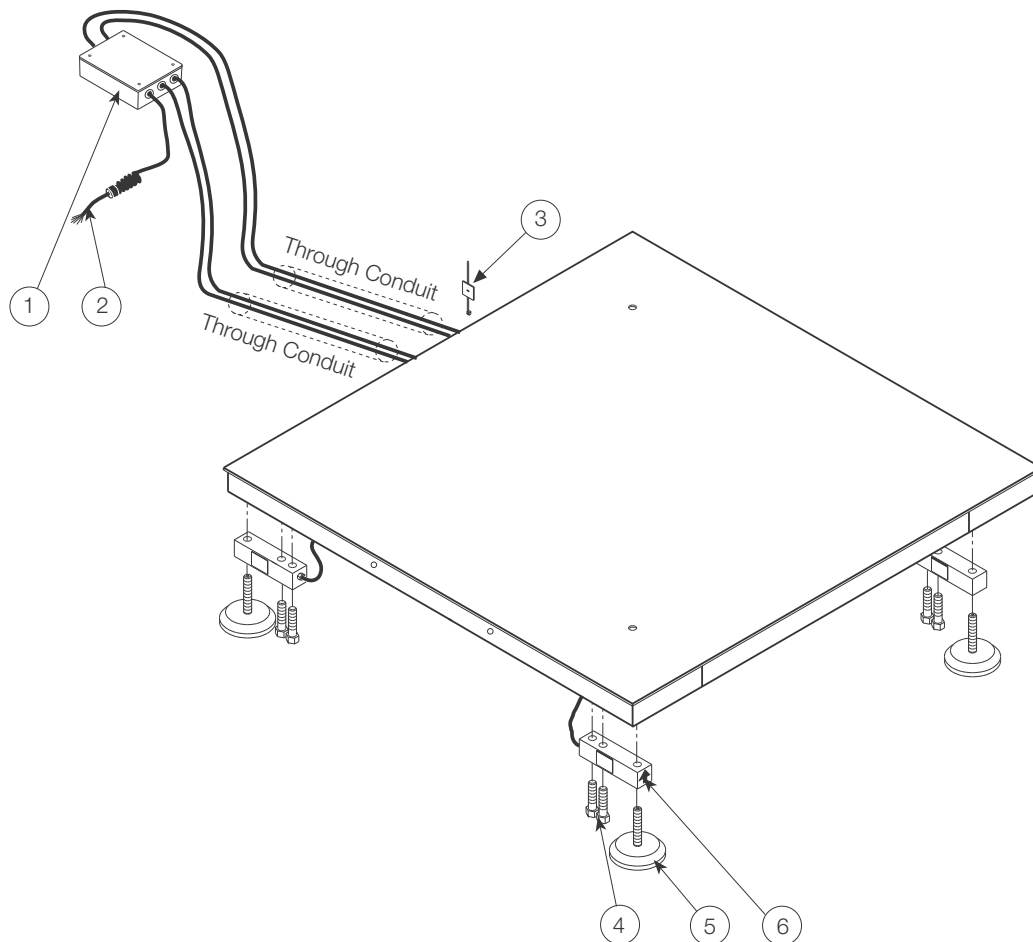


Figure 6-4. Replacement Parts and Accessories Diagram.

Ref	Description	Part Number
1	Junction Box, NEMA 4X, 4-Channel, Signal Trim	88956
2	Cable, 6-wire, Junction Box to Indicator	15611
3	Cable Ties, 8" (at back of assembly)	16141
4	Load Cell Screw	15075
5	Foot Assembly	18756
6	Load Cells	
	2K	31283
	5K	31282
	10K	31281
Options/Accessories		
n/a	4 drilled holes for scale height adjustment	44169
n/a	Floor stand for indicator: structural steel, suitable for IQ plus [®] 310, IQ700, UMC444, and UMC555	28740

Table 6-1. Replacement Parts and Accessories.

6.4 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
	Indicator faulty	Use simulator to test indicator stability; service indicator
Consistently high or low weights	Indicator not properly adjusted to zero	Zero the indicator according to operator's manual
	Platform binding	Adjust clearance for free platform movement
	Indicator not calibrated	Calibrate according to indicator's manual and Figure 4.3 on page 7
	Faulty load cells	Test and, if necessary, replace load cells
	Feet touching deck's underside	Adjust feet downward to provide clearance

Table 6-2. Troubleshooting Guide.

RoughDeck HE AutoLift Option 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 and all other components are warranted for two (2) 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.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS'S SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

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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RICE LAKE WEIGHING SYSTEMS • 230 WEST COLEMAN STREET • RICE LAKE, WISCONSIN 54868 • USA



230 W. Coleman St. • Rice Lake, WI 54868 • USA
U.S. 800-472-6703 • Canada/Mexico 800-321-6703
International 715-234-9171

www.ricelake.com
m.ricelake.com

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