

AutoLift HE

*Low-Profile Floor Scale With Pneumatic
Lifting Devices*

Installation Manual



An ISO 9001 registered company
©Rice Lake Weighing Systems. All rights reserved.

Rice Lake Weighing Systems® is a registered trademark of
Rice Lake Weighing Systems.

All other brand or product names within this publication are trademarks or
registered trademarks of their respective companies.

All information contained within this publication is, to the best of our knowledge, complete
and accurate at the time of publication. Rice Lake Weighing Systems reserves the right to
make changes to the technology, features, specifications and design of the equipment
without notice.

The most current version of this publication, software, firmware and all other product
updates can be found on our website:

www.ricelake.com

Contents

- 1.0 Introduction and System Setup..... 1**
 - 1.1 Safety 1
 - 1.2 Model Designations 2
 - 1.3 Operating Requirements 2
- 2.0 Installation 3**
 - 2.1 Site Selection. 3
 - 2.2 Pit Installation 3
 - 2.3 Unpacking 5
 - 2.4 Cylinder/Platform Installation 6
 - 2.5 Electrical Interface to Indicator 8
- 3.0 Adjustments and Calibration..... 10**
 - 3.1 Mechanical Adjustments 10
 - 3.2 Trimming the Load Cells 10
 - 3.3 Calibration Procedure 11
- 4.0 Service Information 12**
 - 4.1 Periodic Maintenance 12
 - 4.2 Load Cell Replacement 12
 - 4.3 Replacement Parts and Accessories 14
 - 4.4 Troubleshooting Guide 15



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.

© Rice Lake Weighing Systems. All rights reserved. Printed in the United States of America.
Specifications subject to change without notice.
Rice Lake Weighing Systems is an ISO 9001 registered company.
August 15, 2016



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 *AutoLift HE* floor scale is a fully electronic, low profile load receiver constructed of stainless steel and is designed for harsh wash down environments. The *AutoLift HE* is available in 48" × 48" and 60" × 60" deck sizes and 2000 lb, 5000 lb, and 10,000 lb capacities.

The *AutoLift HE* 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 *AutoLift HE* come pre-trimmed; no corner corrections should be needed.

The *AutoLift HE* can be ordered with holes drilled in the scale deck directly above each foot for adjusting the foot height, with a screwdriver, from above. See Section 4.3 on page 14 for replacement part and optional equipment part numbers.

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



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

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

1.1 Safety

Safety Signal Definitions:



DANGER Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death. 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 may 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 than weight taking.

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

Do not use any load bearing component 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.

1.2 Model Designations

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

The *AutoLift* is a RoughDeck HE with pneumatic lifting for raising the scale to allow for easy cleaning. The *AutoLift HE* is a wash down 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 3 Ω 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

2000–10,000 lb (1000–5000 Kg) models: 3.5" (89 mm)

2.0 Installation

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

- Select a site
- Install the pit
- Unpack the scale
- Adjust the scale feet
- Connect the pneumatic controls and cylinders
- Connect cable from the junction box to the indicator
- Calibrate the unit

2.1 Site Selection

The scale must not be loaded beyond its capacity, even momentarily. Select a site where overweight loads do not have to maneuver to avoid crossing the scale platform. Avoid areas where the scale could be damaged by side impacts from wheels or forklift tines, or receive shock damage from falling objects.

The interface cable between the scale and the indicator must be protected against crushing, cutting and moisture damage. Use a method of protection, such as running the cable in conduit, if the chosen site has potential risks for cable damage.

The scale must be level within 1/4" in operation.

2.2 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 the concrete periodically during this time



Note See Figure 2-1 on page 4 for an example of a typical pit installation. The dimensions shown are for reference only and will vary by site.

Installation Diagram

- The following platform dimension numbers apply to Figure 2-1 on page 4
- Length of the conduit pipe is determined on site
- Use concrete of minimum yield strength 5000 psi or 6-bag mix
- Slope pipe for water drainage
- Tie the pit in with the existing floor using re-bar, if required
- Ensure the underside is supported with concrete or grout (the plate is an integral part of the frame)
- Keep the pocket free of concrete
- Coping must sit level in floor to allow for 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 2-1. Platform Dimensions

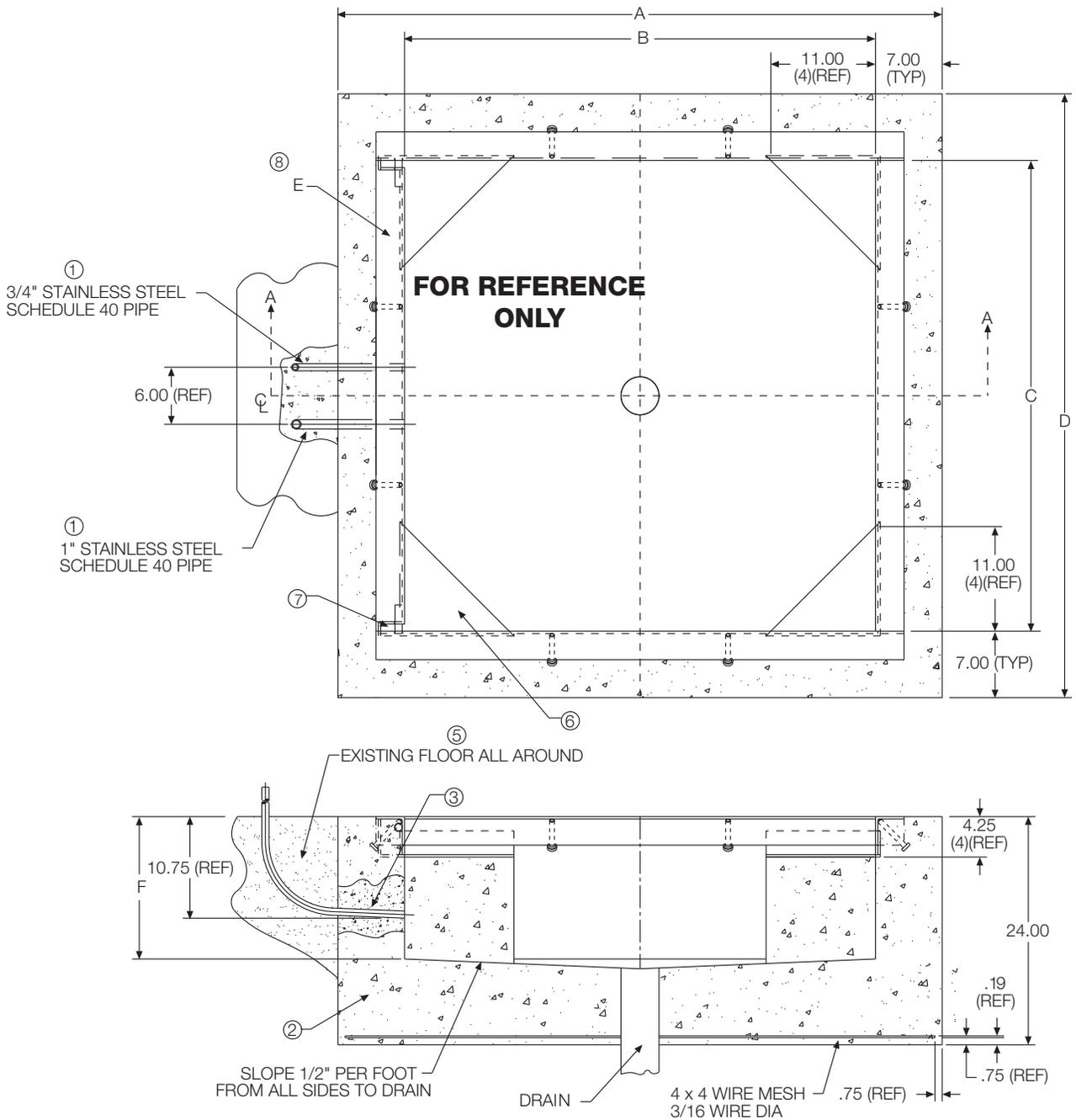


Figure 2-1. Example Pit Installation Drawing

! Important Figure 2-4 is included as an example of a typical pit. Do not use this drawing for construction purposes.

2.3 Unpacking

The scale is shipped with the following components:

- Four corner foot assemblies
- Cable ties and miscellaneous hardware

Remove all packing material and inspect the scale for visible damage caused during shipment. Notify Rice Lake Weighing Systems and the shipper immediately if the unit was damaged during shipment.

Units larger than 5' x 5' have threaded holes in opposite corners of the deck to allow for the installation of 3/4" eye bolts for use in lifting the scale with chains from a spreader bar. Units 5' x 5' or smaller have one centered hole for the eye bolt.

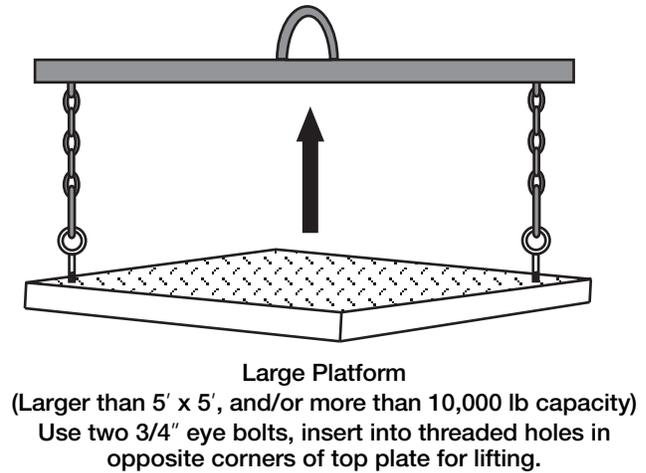
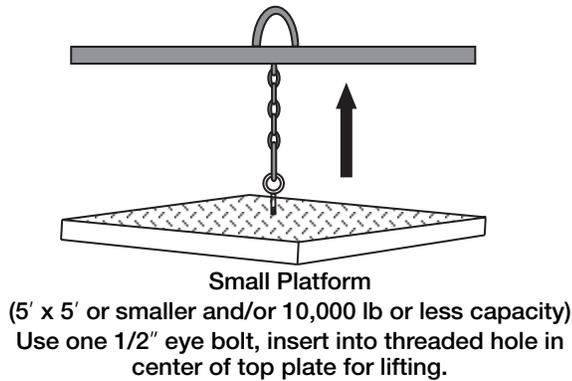


Figure 2-2. Proper Lifting Technique



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 be inserted into the top of the scale. Lifting must 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 the nuts to break loose and the scale to fall.

2.4 Cylinder/Platform Installation

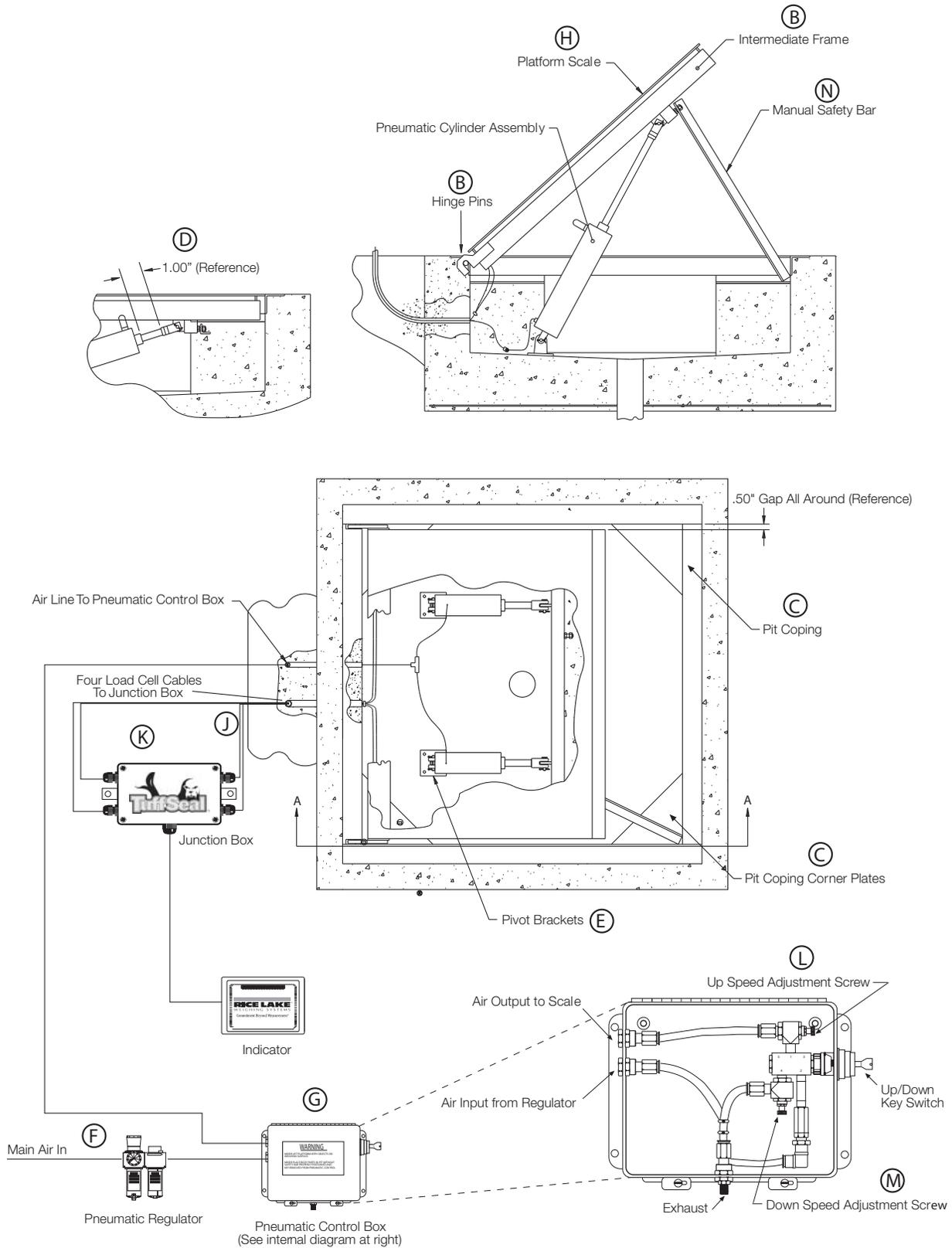


Figure 2-3. Installation Diagram.



Important During the installation add lubricant to the lubricators and adjust the lubricators in accordance with the instructions in the included manual for the pneumatic components.

Use the following procedure to install the cylinders and platform.

1. Fit the pivoting intermediate frame over the hinge pins (B). The intermediate frame must be seated on the pit coping corner plates.
2. Attach the rod end of each cylinder to the intermediate frame support tube. The cylinder muffler must face upward toward the scale.
3. Adjust each cylinder rod until it is approximately 1" from the fully-retracted position (D).
4. Place the pivot brackets (E) against the pit floor and use them as templates to mark the mounting hole locations. Ensure the air cylinders are parallel with one another and square with the intermediate frame support tube.
5. Drill holes, install anchors, and secure the cylinder pivot brackets to the pit floor.
6. Attach the main air line to the inlet side of the regulator (F).
7. Attach the air line from the outlet side of the regulator to the input fitting on the pneumatic control box (G).
8. Attach the air lines from the output fitting on the pneumatic control box to the cylinders. Apply 85-100 psi air pressure to the cylinders. Check for air leaks.
9. Place the platform scale onto the intermediate frame (H), making sure the feet sit on the corner pads without rocking.
10. Adjust the feet as necessary so the platform is level to within 1/4".
11. 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 (J).



Note *Route the load cell cables on the same side as the hinge mechanism.*

12. Route the load cell cables through the fittings in the junction box (K).
13. Wire the cables to the junction box according to the corner numbering diagram (Figure 2-4 on page 8) and load cell wiring chart (Table 2-2 on page 8). Coil and store excess cable prior to connecting to the junction box.



Note *Do not cut excess load cell cable. Do not store the excess cable in the scale pit.*

14. Adjust the speed of the lift cycle using the up speed adjustment screw (L) in the pneumatic control box. Tighten the lock nut once the desired lift speed is achieved.
15. Adjust the descent speed using the down speed adjustment screw (M). Tighten the lock nut once the desired descent speed is achieved.



Note *Make sure the scale opens and closes gently to prevent damage to the load cells.*



Do not work under a 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 2-3, N. Release the pressure on the cylinders to allow the frame to rest on the safety bar.

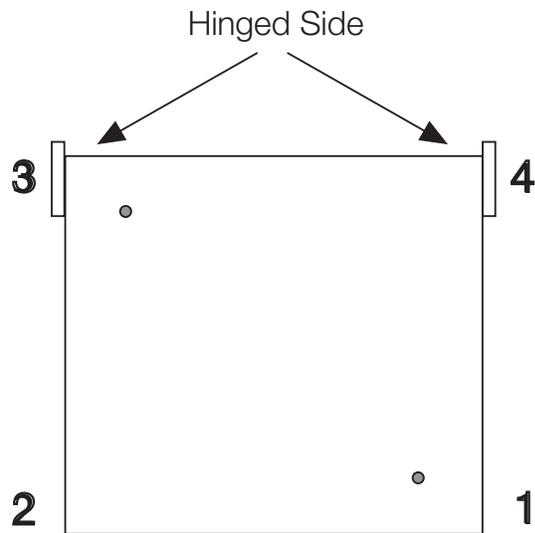


Figure 2-4. Corner Numbering - Top View

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

Table 2-2. Load Cell Wiring.

2.5 Electrical Interface to Indicator

Each scale kit includes 20' of 6-wire cable to connect the scale to the weight indicator.

1. Push one end of this cable into the junction box.
2. Connect the wires to the *INDICATOR* terminal.
3. Pull out excess and tighten the strain relief bushing to hold the cable snugly.

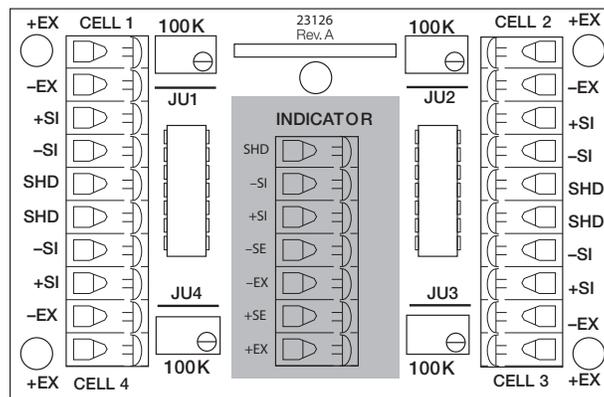


Figure 2-5. Junction Box Indicator Terminal

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 2-3. Junction Box Connections.

4. Route the cable to the indicator. The best method is to route the cable in conduit through the floor.
5. Leave a strain relief loop to facilitate future lifting of the scale for servicing or cleaning.

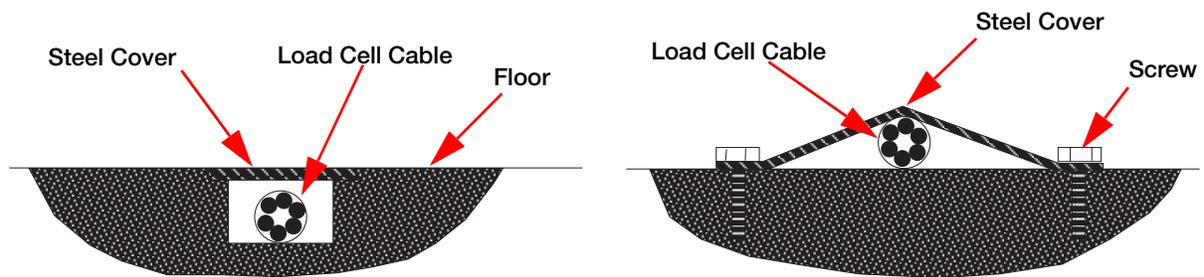


Figure 2-6. Cable Protection



Note Load cell cables from the scale platform to the junction box must be protected with conduit.

6. Complete the connections at the indicator once the interface cable is protected and in its final position. Refer to the indicator manual to determine the indicator input wiring leads.

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 a scale corner slightly and adjust the foot by hand until all four feet are contacting the 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. Jam nuts may be added to secure the feet, however, if the application requires. 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. In addition, the foot stem may be damaged by bending or stripping threads if extended beyond the maximum height adjustment.

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

3.2 Trimming the Load Cells

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; this process is 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 2-4 on page 8.
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 lbs for 2K-lb models.

3. Ensure there is no weight on the scale and zero the indicator.
4. Turn each of the four potentiometers (shaded areas of Figure 3-1) 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.

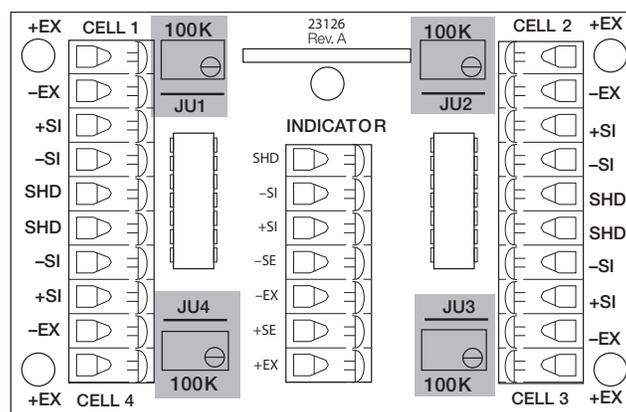


Figure 3-1. Trim Potentiometers.

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 remaining two high corners.
9. Adjustments are interactive, so adjusting the three higher outputs may affect the reference cell output. Re-zero the indicator and repeat the test until all corners are within $\pm 0.1\%$ of the test weight being used.

3.3 Calibration Procedure

Refer to the indicator operation manual to determine the indicator specific calibration procedures.

Exercising the scale before calibration is recommended to ensure everything is seated.

1. Load the scale to near capacity two or three times.
2. Ensure there is with no load on the scale and place the indicator into the calibration mode.
3. Perform a zero calibration.
4. Place test weights equal to 70% – 80% of the scale capacity on the platform. If 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 when using high pressure steam to washdown hermetically-sealed load cells. The steam may not damage the load cells, however, elevated temperatures may cause incorrect readings until the unit cools to room temperature.
- Add lubricant to the lubricators and adjust the lubricators in accordance with the instructions in the included manual for the pneumatic components.

4.2 Load Cell Replacement

Replacement load cells can be ordered from Rice Lake Weighing Systems. Refer to Table 4-1 on page 14 for part numbers.



Lift the scale only with a properly designed spreader bar. Lifting force must be vertical to avoid bending the eye bolts.

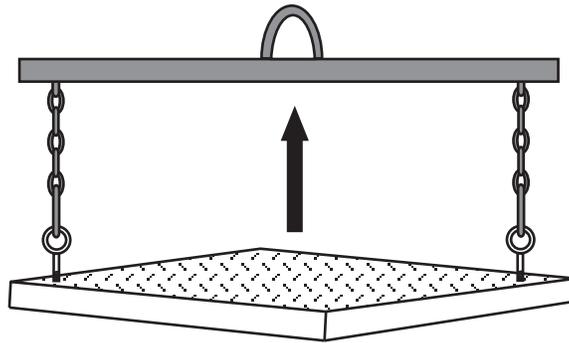


Figure 4-1. Proper Lifting Technique.

1. Remove the foot from the load cell.
2. Disconnect the load cell cable from the junction box and cut the cable ties.
3. Thread the load cell cable through the conduit tubing and wire it to the junction box. See Figure 2-5 on page 8 and Figure 2-4 on page 8.
4. Ensure the threaded holes for the load cell screws are free of debris. Use compressed air to clear the holes, if necessary.
5. Position the load cell with the alignment arrows pointed up toward the scale deck and loosely install the hex head cap screws provided, as shown in Figure 4-2 on page 13.

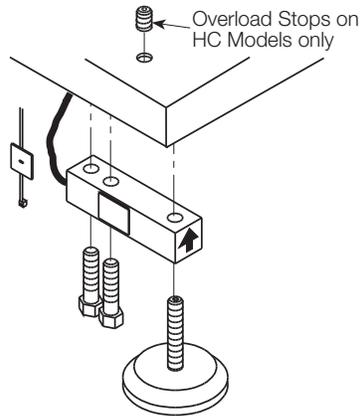


Figure 4-2. Load Cell Replacement.

6. Position the load cell to maintain the dimension shown in Figure 4-3.

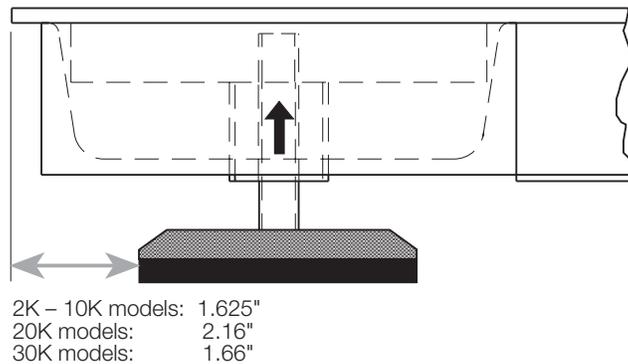


Figure 4-3. Foot Pad - Side View.

7. Route the load cell cable near the corner to ensure the cable does not come in contact with the foot.
8. Hold the cable in position with the adhesive-backed cable ties supplied in the scale kit. Do not cut excess load cell cable.
9. Make a strain relief loop before routing the cable through the conduit.
10. Coil extra cable before it enters the junction box.
11. After coiling the excess cable, pass the end of the load cell cable through the cable fittings in the NEMA Type 4X junction box.

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 11.

4.3 Replacement Parts and Accessories

AutoLift HE replacement parts and accessories.

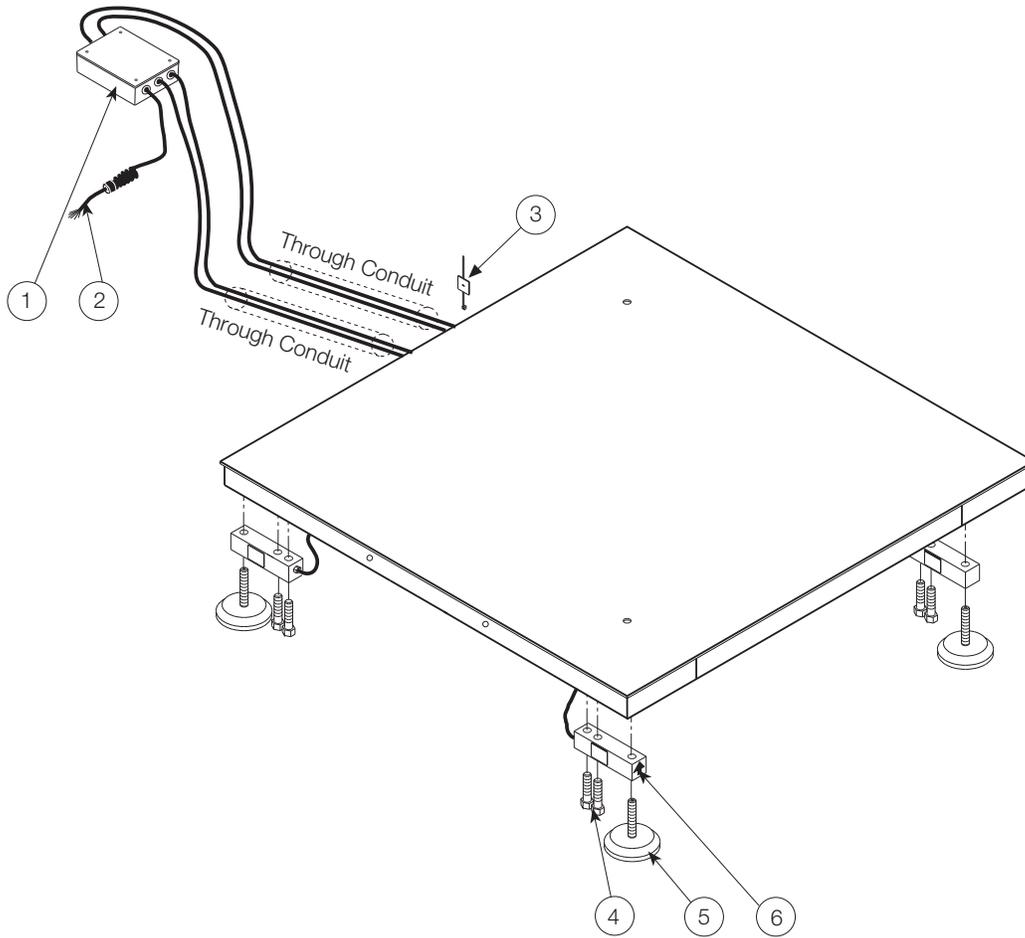


Figure 4-1. Replacement Parts and Accessories Diagram.

Ref	Description	Part Number
1	Junction Box, NEMA Type 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 4-1: Replacement Parts and Accessories.

4.4 Troubleshooting Guide

Symptom	Probable Cause	Solution
System does not operate--no display	Power is disconnected	Check and reconnect power
	Indicator fuse is blown	Replace the fuse, check for cause
	Interface cable is cut or disconnected	Repair or reconnect the cable
	Signal leads are incorrectly installed at indicator	Install according to indicator installation manual
Display stays at zero	Faulty load cell connections	Check the cable connections in J-box at indicator
	Faulty indicator	Service the indicator
Erratic weights	Vibration near the scale	Remove the source of vibration or move the scale
	Platform is not level to within 1/4"	Level the platform by adjusting feet or shimming
	Load cell or cable is water damaged	Replace the load cell or cable
	Debris under load cells or platform	Clear out debris and clean under the platform
	Indicator is faulty	Use a simulator to test indicator stability; service the indicator
Consistently high or low weights	Indicator is not properly adjusted to zero	Zero the indicator according to the indicator operation manual
	Platform is binding	Adjust clearance for free platform movement
	Indicator is not calibrated	Calibrate the indicator according to the indicator operation manual and Section 3.3 on page 11
	Faulty load cells	Test and, if necessary, replace the load cells
	Feet are touching deck's underside	Adjust feet downward to provide clearance

Table 4-2: Troubleshooting Guide.



© Rice Lake Weighing Systems Specifications subject to change without notice.
Rice Lake Weighing Systems is an ISO 9001 registered company.

230 W. Coleman St. • Rice Lake, WI 54868 • USA
U.S. 800-472-6703 • Canada/Mexico 800-321-6703 • International 715-234-9171 • Europe +31 (0)26 472 1319

www.ricelake.com