FB Series

Flexure Base Floor Scales

Installation Manual

RICE LAKE®
WEIGHING SYSTEMS
To be the best by every measure®

16940 RevA

Contents

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1.0 Introduction

The SURVIVOR® FB Floor Scale has a unique flexure design that transmits load force through stainless steel flexures to the levers. The load is transferred from the levers to an S-beam load cell by a wire rope assembly. This design results in greater stability, increased accuracy, and a more shock-resistant base than other designs.

End loading capacity of the scale is 100% of capacity, and maximum overload is 150% of capacity. The 350Ω load cell requires 10VDC - 15VDC excitation, and puts out a 3.0 mV/V signal.

1.1 Safety

Safety Symbol Definitions

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

WARNING *Indicates a potentially hazardous situation that, if not avoided could result in serious injury or death, and includes hazards that are exposed when guards are removed.*

CAUTION *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 or corruption to and loss of data.*

General Safety

Do not operate or work on this equipment unless you have read and understand the instructions and warnings in this 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.

WARNING

Before attempting to operate this unit, make sure every individual who operates or works with this unit has read and understands the following safety information.
Failure to heed may result in serious injury of death.
DO NOT allow minors (children) or inexperienced persons to operate this unit.
DO NOT operate without all shields and guards in place.
DO NOT jump on the scale.
DO NOT use for purposes other then weight taking.
DO NOT place fingers into slots or possible pinch points.
DO NOT use any load bearing component that is worn beyond 5% of the original dimension.
DO NOT 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.
DO NOT use near water.
Before opening the unit, ensure the power cord is disconnected from the outlet.
Keep hands, feet and loose clothing away from moving parts.

2.0 Installation

Installation can be done in a matter of minutes with six main steps:

1. Place scale in final position and carefully remove it from the packing skid.
2. Level the corners by shimming under the corner gusset plates.
3. Back off all shock-stop bolts that were tightened down for shipping safety and adjust them to 1/16" clearance for weighing.
4. Route the load cell cable to the digital weight indicator and connect.
5. Drill anchor holes, and bolt or lag the scale to the floor using the tie downs.
6. Calibrate with test weights.

A troubleshooting guide is included in this manual, as is information on load cell replacement, and corner correcting after load cell replacement or other major service work.

2.1 Unpacking the Scale

The FB scale will arrive on a packing skid. Place the skid near the final installation area. Cut the shipping bands and remove the shipping cover.

Important ***The deck assembly, deck plate, and base assembly are all match-marked near the I.D. tag on the base assembly. Note the marks and always replace the deck with the marks matching.***

The deck assembly can be removed safely with hooks placed into the tube ends and lifted with overhead chains.

2.2 Scale Setup

The installation area should be firm and fairly level.

1. Lift the base assembly off the skid with hooks and chains in the same manner as the deck assembly, position it in the desired location.
2. Add shims as necessary under corner gusset plates until all corners are firm and the base does not rock.

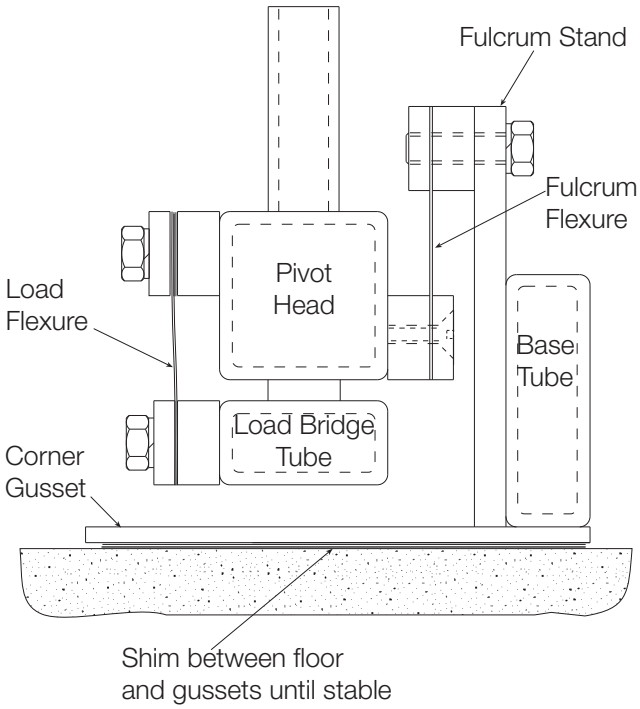

Figure 2-1. Side View - Pivot Head

To prevent damage during shipping, six shock-stop bolts are tightened down.

3. Locate these shock-stop bolts (see Figure 2-2), loosen and set the clearances as indicated.
4. Lock into position with the lock nuts.

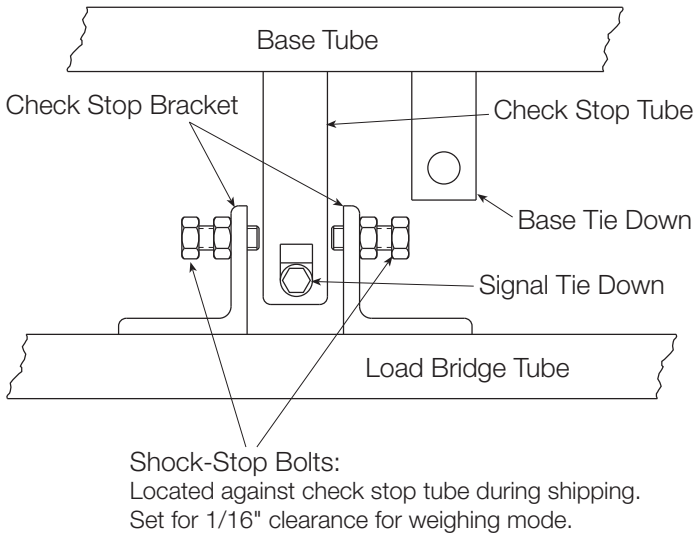

Figure 2-2. Top View - Check Stops and Tie Downs

5. Remove the plate covering the signal cable access hole.
6. Cut the plastic ties holding the load cell cable against the levers.
7. Pass the signal cable through the access hole.
8. Remove the split rubber grommet from the cover plate and place it around the signal cable.
9. Slide the grommet back into the cover plate and install the cover plate back on the base assembly.
10. Attach the signal cable to the digital weight indicator in the following manner:

    Red= +Excitation
    Black= -Excitation
    Green= +Signal
    White= -Signal
    Bare= Shield
11. Ground the scale base to the earth ground terminal of the same AC power source that is used to power the indicator.
12. Locate two floor tie down brackets on the inside of the base assembly, located diagonally across from each other just off the centerline. These brackets are raised off the floor a little to handle uneven floors.
13. Fill the space with washers until snug.
14. Drill pilot holes into the floor through the holes and washers in the tie downs.
15. Fasten the tie down brackets to the floor with lag bolts or suitable masonry fasteners.

Important ***Watch the indicator display as the tie down bolts are tightened down to ensure that the bottom frame is not pulled out of alignment.***

16. Replace the deck assembly carefully using the match marks to ensure corners are not changed.

3.0 Calibration

Important *Power up the indicator and allow the load cell to warm up for 20 minutes before calibrating.*

1. With the deck in place and no additional weights on the scale, set zero on the digital indicator according to the procedure described in the indicator's operating manual.
2. Place certified test weights on the scale, using 75-100% of the scale capacity.
3. Span the meter to actual capacity using the procedure in the operating manual.
4. Remove the test weights and re-zero the indicator.
5. If required, repeat the above procedure until the unit is correctly calibrated.

4.0 Appendix

4.1 Troubleshooting

Problem	Possible Cause
Zero shift	• Improper shimming under base corners. • Loose fastener. • Crooked flexures. • Obstruction under live section. • Damaged load cell or indicator.
Unstable readings	• Improper shimming under base corners. • Load cell cable ground-shield not connected. • Moisture in load cell or signal cable. • Crooked flexures. • Obstruction under live section. • Indicator configured inappropriately. • Damaged load cell or indicator.
Different corner readings	• Improper shimming under base corners. • Loose fastener. • Crooked flexures. • Obstruction under live section. • Corner correction shimming required.
Non-linearity	• Primary lever too high or too low. • Central flexure misalignment. • Crooked flexures. • Obstruction under live section. • Damaged load cell or indicator.
Readings differ when same weight is placed on different sides of deck	• Central flexure misalignment. • Improper shimming under base corners. • Primary lever too high or too low. • Obstruction under live section. • Corner correction shimming required.

Table 4-1. Troubleshooting

4.2 Load Cell Replacement

1. Remove the deck assembly (see section 2.1 on page 2).
2. Loosen the lock nut on the shock-stop bolts shown in Figure 4-1 and turn them down against the angle until finger-tight. This locks in the correct lever height for the load cell.

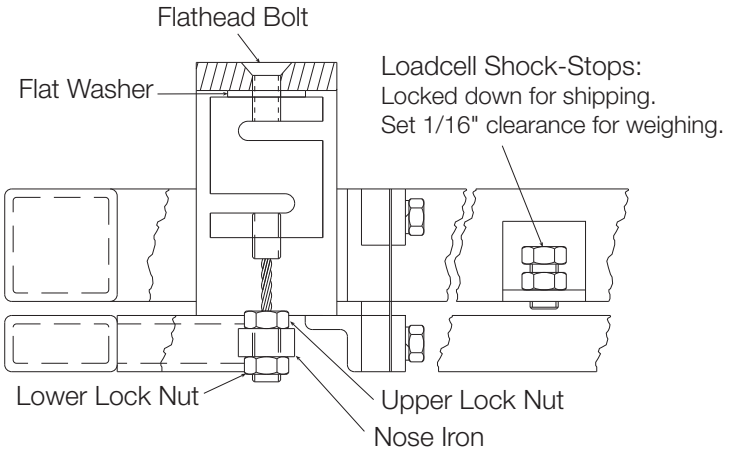

Figure 4-1. Load Cell Mounting

3. Remove the signal cable access hole cover plate. Pull the cable from the plate and pass it through the base.
4. Remove the lower lock nut from the wire rope and back off the upper lock nut.
5. Using a hex allen wrench in the flathead bolt, and an adjustable wrench to hold the load cell body, remove the load cell.
6. Keep track of the washer above the load cell.
7. Remove the wire rope from the defective load cell and screw it into the new load cell to the approximate position it was in the old load cell.
8. Insert the wire rope into the nose iron hole and turn the lower nut on loosely.
9. Hold the flat washer in place, and screw the flathead bolt into the top of the load cell. Tighten the flathead bolt securely using the hex allen wrench and adjustable wrench.
10. Tighten the lower lock nut on the wire rope against the nose iron finger tight only. Lock the upper nut down against the nose iron.
11. Release the load cell shock-stop bolts and set the clearance to 1/16".
12. Lock into place with the lock nuts so the bolts do not loosen and contact the frame during weighing.
13. Pass the signal cable through the access hole and follow Steps 6-11 on page 2.
14. Replace the deck assembly and recalibrate according to Section 3.

4.3 Corner Corrections

For the current tolerances that apply for shift tests, see NIST Handbook 44 Field Manual, sec. 2.2, par. TN 4.4. Conduct a shift test on each corner with 25% of the scale capacity. Each FB floor scale is factory sealed to NIST specs. However, if major repairs have been performed on the unit, corner corrections may be required. Following is an explanation of that process.

1. Locate various shims at the top of each pivot head and behind the load flexures.
2. Add shims to increase a corner's reading, subtract shims to decrease a corner's reading. See Figure 4-2.

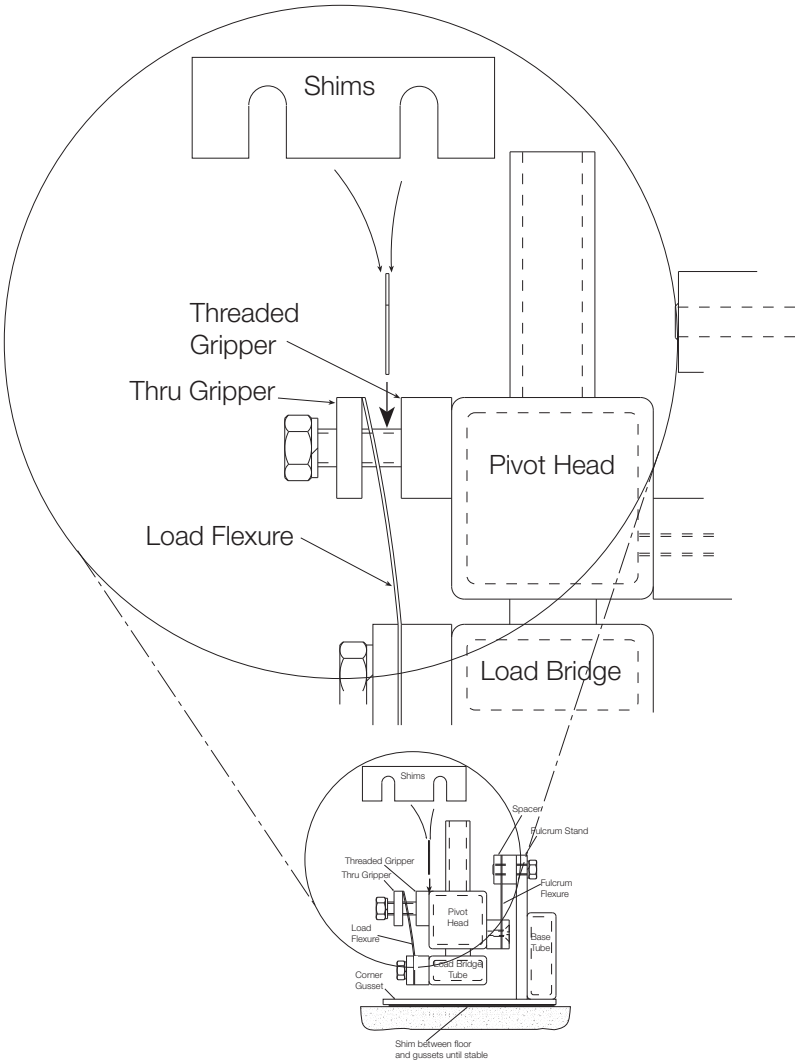

Figure 4-2. Adding Shims

Note ***As FB scales have various lever ratios, the number and/or thickness of shims needed to achieve a proper corner correction may vary. However, the ratio of change will be linear. If one .020'' shim changes a corner 2 lbs, then two 0.20'' (or one .040'') shim will change the corner 4 lbs.***

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. All systems and components are warranted against defects in materials and workmanship for one year.

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

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

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' 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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