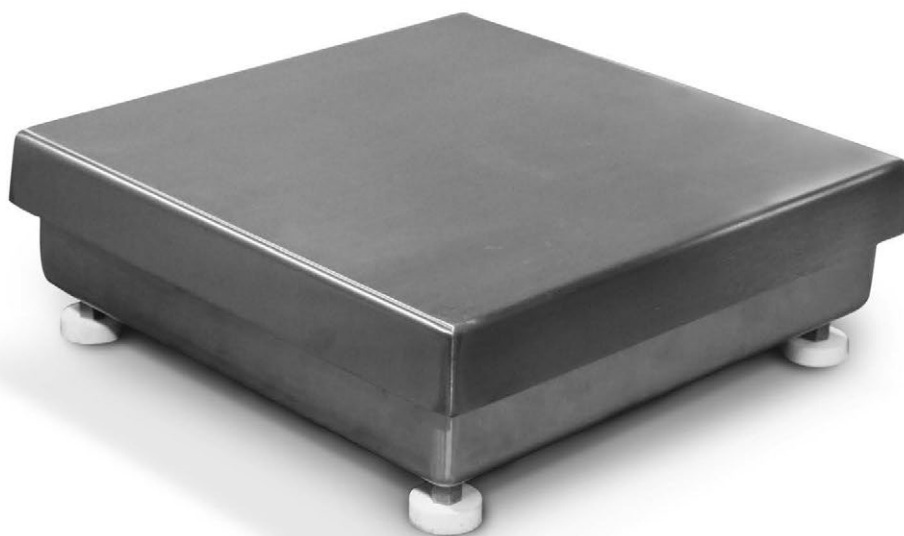


CW-90B and CW-90XB

Light-Capacity Bench Scales

Technical Manual



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www.ricelake.com

Revision History

This section tracks and describes manual revisions for awareness of major updates.

| Revision | Date | Description |
|----------|----------------|--|
| A | May 19, 2020 | Initial manual release with product launch |
| B | August 1, 2024 | Update to parts list |
| | | |

Table i. Revision Letter History



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

This manual provides reference information to install and wire the CW-90B and CW-90XB Light-Capacity Bench Scales.



Manuals are available from Rice Lake Weighing Systems at www.ricelake.com/manuals

Warranty information is available at www.ricelake.com/warranties

1.1 Safety

Safety 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 jump on the scale.

Do not use for purposes other than 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.

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

This section provides an overview of the CW-90B and CW-90XB installation procedure and grounding information.

2.1 Unpacking

Immediately after unpacking, visually inspect the scale to ensure that the unit is undamaged. The shipping carton should contain the bench scale and this manual. If the bench scale was damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

2.2 Leveling the Scale

1. Place the scale in the desired location that is reasonably level and free of unnecessary vibrations and air currents.
2. Lift off the scale top cover and locate the level bubble.
3. Adjust the four corner feet on the scale base until the level bubble and all feet contact the support surface so the scale does not rock.
4. Lock the jam nuts on the feet when the final level is correct.

2.3 Connecting the Load Cell Cable

All models come with 10' or 34" color-coded load cell cable.



IMPORTANT: Do not cut this cable. Cutting this cable voids the warranty.



NOTE: See the indicator manual to determine the proper load cell cable input connectors. Use the following color codes to wire the load cell cable to the indicator.

| Color Code | Function |
|------------|--------------|
| Green | + Excitation |
| Black | - Excitation |
| Blue | + Sense |
| Brown | - Sense |
| Red | + Signal |
| White | - Signal |

Table 2-1. CW-90B Load Cell Wiring - 6 Wire

| Color Code | Function |
|------------|--------------|
| Green | + Sense |
| Black | - Excitation |
| Blue | + Excitation |
| Red | - Signal |
| White | + Signal |
| Grey | - Sense |

Table 2-2. CW-90XB Load Cell Wiring - 6 Wire



NOTE: Connect Sense and Excitation wires together if using 4-wire system without sense leads.

2.4 Grounding the Scale Base

The CW-90B and CW-90XB can build up static electricity charge during weighing operations. If powerful enough, the charge can travel through the load cell cable to the indicator. The unit should be adequately grounded so static charges and transient electrical surges can drain directly to the ground.

A chassis ground screw is located on the bottom of the platform. Within the replacement parts tables in [Section 2.6 on page 8](#) the 8-32 NCx3/16 screw is used to facilitate grounding. Use a ground wire of at least 18 gauge copper to connect this screw to the same earth ground as the attached indicator.

2.5 Calibration

It is recommended that the scale be exercised by loading it to near capacity two or three times before calibration to ensure everything is seated. See the specific indicator manual for the proper calibration procedure.

To calibrate, see the following procedure:

1. With no load on scale, place the indicator in its calibration mode and perform a zero calibration.
2. Place certified calibration weights on platform equal to 70%–100% of scale's capacity. If several weights are used, distribute them evenly around the platform.
3. Perform a calibration.
4. Remove certified calibration weights and check the zero reading. If necessary, repeat the calibration process.



NOTE: See the indicator manual for the specific indicator calibration procedure.

2.6 Replacement Parts

See the following information for replacement parts details:

2.6.1 CW-90B and CW90XB 10 in x 10 in Replacement Parts

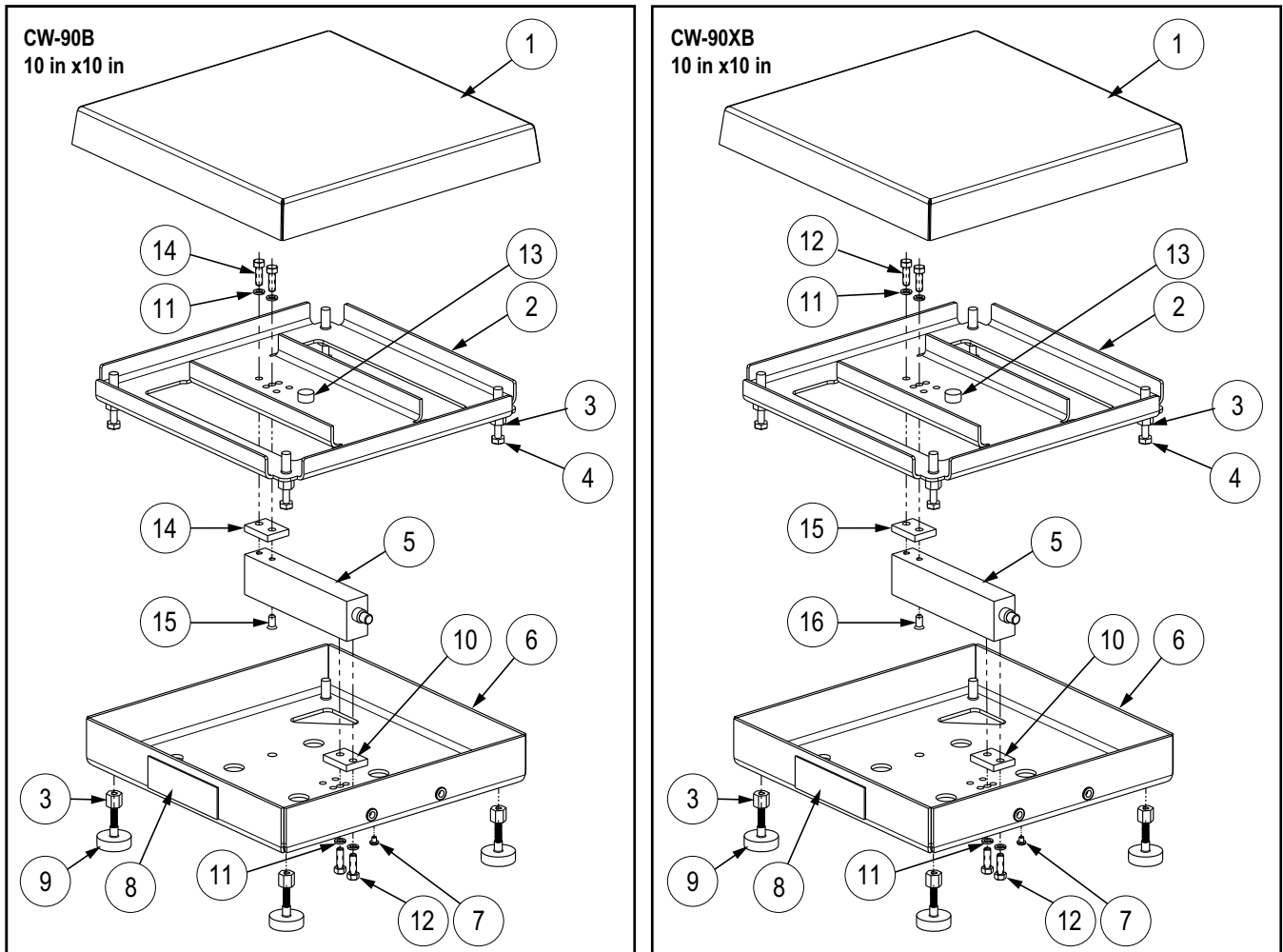


Figure 2-1. 10 in x 10 in Parts Illustration

| Item No. | Part No. | Description | Qty. |
|----------|----------|--|------|
| 1 | 107144 | Top Cover, 10 x 10 | 1 |
| 2 | 107140 | Spider Plate, 10 x 10 | 1 |
| 3 | 105555 | Nut, 1/4-20NC | 8 |
| 4 | 106462 | Screw Cap, 1/4 -20NC, Hex Head | 4 |
| 5 | 207928 | Load Cell, SPT RL1040, 34" Cable, 5 lb Scale CW-90B (PN 106137) | 1 |
| | 207930 | Load Cell, SPT RL1040, 34" Cable, 10 lb Scale CW-90B (PN 106138) | |
| | 207931 | Load Cell, SPT RL1040, 34" Cable, 25 lb Scale CW-90B (PN0106139) | |
| | 32860 | Load Cell, SPT RL1040, 10' Cable, 5 lb Scale CW-90B (PN 112599) | |
| | 32861 | Load Cell, SPT RL1040, 10' Cable, 10 lb Scale CW-90B (PN 112601) | |
| | 32864 | Load Cell, SPT RL1040, 10' Cable, 25 lb Scale CW-90B (PN 122603) | |
| 6 | 105452 | Base Plate, 10 x 10 | 1 |
| 7 | 45329 | Screw, 8-32NC x 3/16 | 1 |
| 8 | 52342 | Label, 4.00 x 1.25 | 1 |
| 9 | 107476 | Foot, 1/4 - 20NC | 4 |
| 10 | 52383 | Load Cell Shim .25 x 1 x 1.34 SST | 1 |
| 11 | 15148 | Washer, Lock 1/4 Regular | 4 |
| 12 | 14963 | Screw, Cap 1/4-20NC x 3/4 Hex Head SST | 2 |
| 13 | 15410 | Level, Spirit Bubble Plastic | 1 |
| 14 | 21948 | Screw, Cap 1/4-20NC x 5/9 Hex Head SST | 2 |
| 15 | 35082 | Shim, Load Cell .125 x 1 x 1.34 SST | 1 |
| 16 | 163794 | Cap, Screw 1/4-28NF x 1/2, Flat Head SST | 1 |

Table 2-3. CW-90B 10 in x 10 in Parts List

| Item No. | Part No. | Description | Qty. |
|----------|----------|---|------|
| 1 | 107144 | Top Cover, 10 x 10 | 1 |
| 2 | 107140 | Spider Plate, 10 x 10 | 1 |
| 3 | 105555 | Nut, 1/4-20NC | 8 |
| 4 | 106462 | Screw Cap, 1/4 -20NC, Hex Head | 4 |
| 5 | 107174 | Load Cell, SPT RLPWM15HE, 34" Cable, 5 lb and 10 lb Scales CW-90XB (PN 106143 and PN 106144) | 1 |
| | 107175 | Load Cell, SPT RLPWM15HE, 34" Cable, 25 lb Scale CW-90XB (PN 106145) | |
| | 108685 | Load Cell, SPT RLPWM15HE, 10' Cable, 5 lb and 10 lb Scales CW-90XB (PN 112600 and PN 112602)) | |
| | 108686 | Load Cell, SPT RLPWM15HE, 10' Cable, 25 lb Scale CW-90XB (PN 112604) | |
| 6 | 107142 | Base Plate, 10 x 10 | 1 |
| 7 | 45329 | Screw, 8-32NC x 3/16 | 1 |
| 8 | 52342 | Label, 4.00 x 1.25 | 1 |
| 9 | 107476 | Foot, 1/4 - 20NC | 4 |
| 10 | 52383 | Load Cell Shim .25 x 1 x 1.34 SST | 1 |
| 11 | 92168 | Washer, Lock Split M6 | 4 |
| 12 | 85624 | Screw, Cap M6-20Hex Head SST | 4 |
| 13 | 15410 | Level, Spirit Bubble Plastic | 1 |
| 14 | 35082 | Shim, Load Cell .125 x 1 x 1.34 SST | 1 |
| 15 | 213084 | Screw, Cap M6-1.0x12 Flat Head Hex Socket A2 18-8 SST | 1 |

Table 2-4. CW-90XB 10 in x 10 in Parts List

2.6.2 CW-90B and CW90XB 12 in x 12 in Replacement Parts

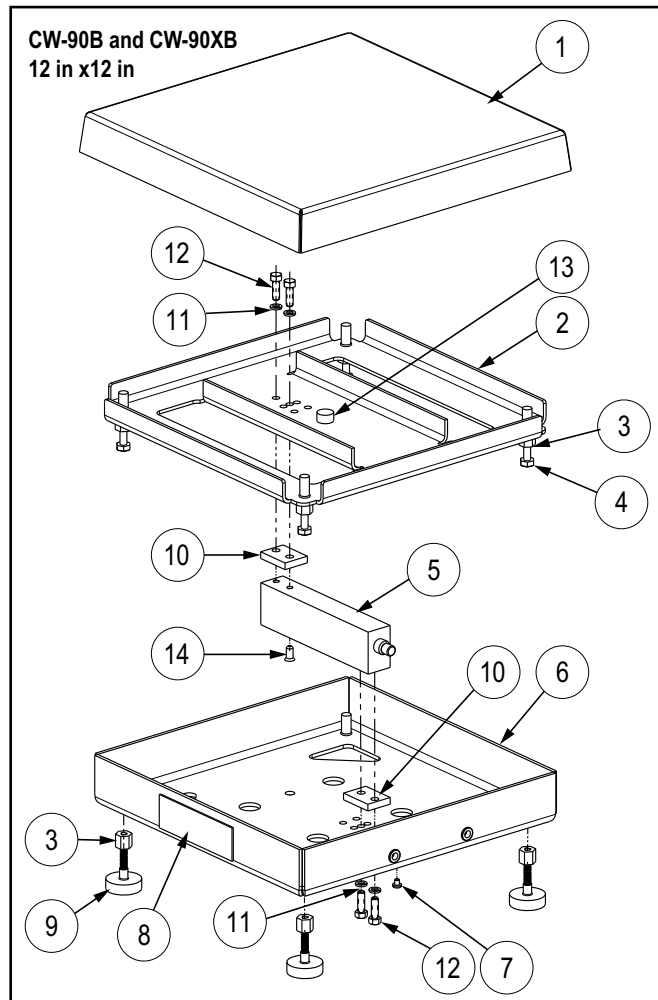


Figure 2-2. 12 in x 12 in Parts Illustration

| Item No. | Part No. | Description | Qty. |
|----------|----------|---|------|
| 1 | 105457 | Top Cover, 12 x 12 | 1 |
| 2 | 105450 | Spider Plate, 12 x 12 | 1 |
| 3 | 105555 | Nut, 1/4-20NC | 8 |
| 4 | 106462 | Screw Cap, 1/4 -20NC, Hex Head | 4 |
| 5 | 207931 | Load Cell, SPT RL1040, 34" Cable, 25 lb Scale CW-90B (PN 106140) | 1 |
| | 207932 | Load Cell, SPT RL1040, 34" Cable, 50 lb Scale CW-90B (PN 106141) | |
| | 207933 | Load Cell, SPT RL1040, 34" Cable, 100 lb Scale CW-90B (PN 106142) | |
| | 32864 | Load Cell, SPT RL1040, 10' Cable, 25 lb Scale CW-90B (PN 112605) | |
| | 188679 | Load Cell, SPT RL1040, 10' Cable, 50 lb Scale CW-90B (PN 112607) | |
| | 188681 | Load Cell, SPT RL1040, 10' Cable, 100 lb Scale CW-90B (PN 112609) | |
| 6 | 105452 | Base Plate, 12 x 12 | 1 |
| 7 | 45329 | Screw, 8-32NC x 3/16 | 1 |
| 8 | 52342 | Label, 4.00 x 1.25 | 1 |
| 9 | 107476 | Foot, 1/4 - 20NC | 4 |
| 10 | 52383 | Load Cell Shim .25 x 1 x 1.34 SST | 2 |
| 11 | 15148 | Washer, Lock 1/4 Regular | 4 |
| 12 | 14963 | Screw, Cap 1/4-20NC x 3/4 Hex Head SST | 4 |
| 13 | 15410 | Level, Spirit Bubble Plastic | 1 |
| 14 | 163794 | (PN 112605 only) Cap, Screw 1/4-28NF x 1/2, Flat Head SST | 1 |
| 14 | 14960 | Screw, Cap 1/4-20NCx1/2 Hex socket Flat Countersunk 18-8 SST | 1 |

Table 2-5. CW-90B 12 in x 12 in Parts List

| Item No. | Part No. | Description | Qty. |
|----------|----------|---|------|
| 1 | 105457 | Top Cover, 12 x 12 | 1 |
| 2 | 105450 | Spider Plate, 12 x 12 | 1 |
| 3 | 105555 | Nut, 1/4-20NC | 8 |
| 4 | 106462 | Screw Cap, 1/4 -20NC, Hex Head | 4 |
| 5 | 107175 | Load Cell, SPT RLPWM15HE, 34" Cable, 25 lb Scale CW-90XB (PN 106146) | 1 |
| | 107176 | Load Cell, SPT RLPWM15HE, 34" Cable, 50 lb Scale CW-90XB (PN 106147) | |
| | 107177 | Load Cell, SPT RLPWM15HE, 34" Cable, 100 lb Scale CW-90XB (PN 106148) | |
| | 108686 | Load Cell, SPT RLPWM15HE, 10' Cable, 25 lb Scale CW-90XB (PN 112606) | |
| | 108687 | Load Cell, SPT RLPWM15HE, 10' Cable, 50 lb Scale CW-90XB (PN 112608) | |
| | 108688 | Load Cell, SPT RLPWM15HE, 10' Cable, 100 lb Scale CW-90XB (PN112610) | |
| 6 | 105452 | Base Plate, 12 x 12 | 1 |
| 7 | 45329 | Screw, 8-32NC x 3/16 | 1 |
| 8 | 52342 | Label, 4.00 x 1.25 | 1 |
| 9 | 107476 | Foot, 1/4 - 20NC | 4 |
| 10 | 52383 | Load Cell Shim .25 x 1 x 1.34 SST | 2 |
| 11 | 92168 | Washer, Lock Split M6 | 4 |
| 12 | 85624 | Screw, Cap M6-20Hex Head SST | 4 |
| 13 | 15410 | Level, Spirit Bubble Plastic | 1 |
| 14 | 213084 | Screw, Cap M6-1.0x12 Flat Head Hex Socket A2 18-8 SST | 1 |

Table 2-6. CW-90XB 12 in x 12 in Parts List

3.0 Appendix

This section provides additional information about the CW-90B and CW-90XB Bench Scales.

3.1 Options

Optional ball transfer, roller conveyor tops and custom height columns for attaching indicators to the scale are available. Consult the factory for available options.

3.2 Troubleshooting

For troubleshooting details, see the following information:

| Issue | Cause | Solution |
|--------------------------------------|---|---|
| No display on indicator | Power disconnected | Connect power |
| | Cable cut or disconnected | Repair cable |
| | Signal leads incorrectly wired at indicator | Connect according to the manual |
| Indicator display remains at zero | Incorrect load cell cable connections | Connect according to the manual |
| | Faulty indicator | Service indicator |
| Erratic weight displays on indicator | Vibration near the scale | Remove the source of the vibration or adjust digital filtering of indicator to minimize erratic display |
| | Scale not level | Level the scale |
| | Water damage to the load cell or cable | Replace the load cell |
| | Faulty indicator | Service the indicator |
| | Loose load cell screws | Tighten to correct torque |
| | Faulty load cell | Test and replace if necessary |
| Consistently low weight | Indicator not properly adjusted to zero | Zero indicator correctly |
| | Scale cover binding | Obtain adequate clearance |
| | Overload stops set too high | Reset the stops correctly |
| | Indicator not calibrated for scale | Calibrate the scale |
| | Faulty load cell | Test and replace if necessary |

Table 3-1. Troubleshooting

3.3 Dimensions

For CW-90B and CW-90XB bench scale dimensions see the following information:

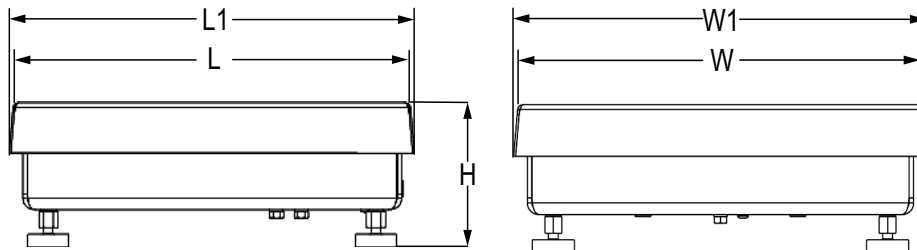


Figure 3-1. CW-90B and CW-90XB Dimensions

See Figure 3-1 for Table 3-2 dimension references.

| Capacity | Product Dimensions (L x W x H) | L1 x W1 |
|-----------------|---|--|
| 5 lb (2.5 kg) | 10 in x 10 in x 4.25 in (254 mm x 254 mm x 108 mm) | 10.25 in x 10.25 in (260 mm x 260 mm) |
| 10 lb (5 kg) | | |
| 25 lb (12.5 kg) | | |
| 25 lb (12.5 kg) | 12 in x 12 in x 4.25 in (305 mm x 305 mm x 108 mm) | 12.25 in x 12.25 in (311 mm x 311 mm) |
| 50 lb (25 kg) | | |
| 100 lb (50 kg) | | |

Table 3-2. Dimensions and Capacities

3.4 Load Cell Replacement

Use the following steps to replace load cells:

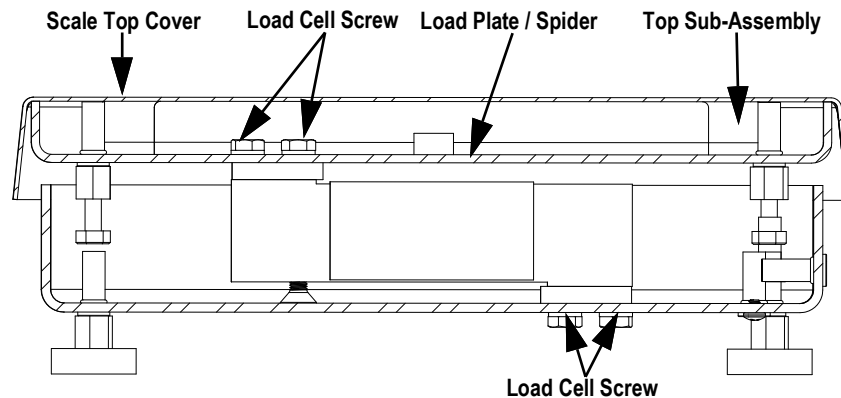


Figure 3-2. Load Cell Mount Diagram

1. Unplug AC power from indicator and disconnect load cell cable from indicator.
2. Lift off scale top cover.
3. Locate four upper load cell screws. Use a wrench to unscrew and remove the upper load cell screws.
4. Remove the scale's spider plate.
5. Remove the upper spacer and set it aside.
6. Loosen the four overload stop screws and turn each screw in one turn to provide clearance for the new load cell.
7. Turn the scale over and back off the overload protection screw one complete turn to provide clearance.
8. Remove the lower load cell screws.
9. Carefully turn the base plate upright to remove the load cell and cable from the scale. Discard load cell.

Installing a Load Cell



NOTE: Reference figures in [Section 3.4](#). Reverse steps when reinstalling load cell.

1. Retrieve the bottom shim and align it, with the new load cell, to the scale base.
2. Holding the load cell and shim in place, carefully turn the scale over and secure to base plate using lower load cell screws and washers.



NOTE: Torque bolts to 200 in-lbs.

3. Turn the scale upright. Position the spacer plate on the load cell, then place the top frame into position.
4. Screw in the upper load cell screws.
5. Connect the load cell cable to the indicator.
6. Recalibrate the scale ([Section 2.5 on page 7](#)).
7. Adjust the load cell overload protection screws on the bottom of the scale by loading the scale to 125% capacity. Place this weight on the top cover, centered on the platform. Use a hex wrench to screw in the load cell overload protection screw until it touches the load cell, the back off 1/6 turn.
8. Recheck calibration.
9. To reset corner overload stop screws, load the top spider over one corner with approximately 30% of scale capacity.
10. Adjust the screw under that corner to just touch the top frame.
11. Place a drop of a non-permanent, high-strength locking compound on the thread.
12. Back screw off slightly so it is not touching the top frame.
13. Repeat for each corner.
14. Replace the top cover and re-level the scale if necessary.

3.5 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 two years for the CW-90B and three years for the CW-90XB.

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.

4.0 Specifications

Load Cell

CW-90B IP67 aluminum and environmentally sealed
 CW-90XB IP69k stainless steel and hermetically sealed

Available Sizes

10" x 10", 12" x 12"

Rated Output

0.91 mV/V

Maximum Overload

180 – 200% (capacity dependent)

Overload Protection

Five point, independently adjusted

Cable Length

10' (3 m)

Output Impedance

350 Ω

Compensated Temperature Range

14° F – 104° F (-10° C – 40° C)

Safe Temperature Range

-22° F – 158° F (-30° C – 70° C)

Certifications and Approvals

CW-90B



NTEP

CoC 95-072
 Accuracy Class III; 5000 d

Measurement
 Canada
 Approved

Measurement Canada
 AM-5082, Class III 5000 d



Load cell is cFMus approved

CW-90XB



NTEP

CoC 95-072
 Accuracy Class III; 5000 d

Measurement
 Canada
 Approved

Measurement Canada
 AM-5082, Class III 5000 d



Load cell is FM approved



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