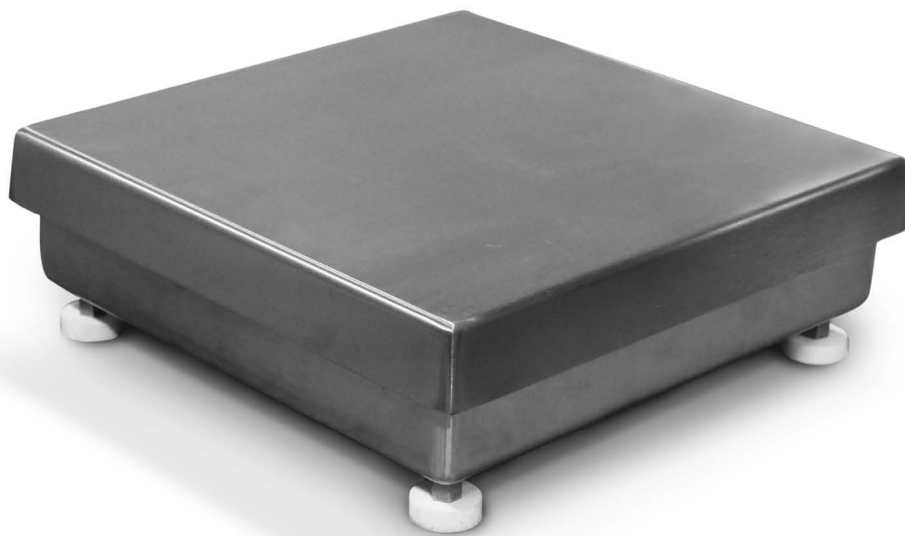


CW-90B and CW-90XB

Light-Capacity Bench Scales

Technical Manual



© 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

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
C	January 16, 2025	Revisions to color code and load cells in 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.

Contents

1.0 Introduction	5
1.1 Safety	5
2.0 Installation	6
2.1 Unpacking	6
2.2 Leveling the Scale	6
2.3 Connecting the Load Cell Cable	6
2.4 Grounding the Scale Base	7
2.5 Calibration	7
2.6 Replacement Parts	8
2.6.1 CW-90B and CW90XB 10 in x 10 in Replacement Parts	8
2.6.2 CW-90B and CW90XB 12 in x 12 in Replacement Parts	10
3.0 Appendix	12
3.1 Options	12
3.2 Troubleshooting	12
3.3 Dimensions	12
3.4 Load Cell Replacement	13
3.5 Limited Warranty	14
4.0 Specifications	15



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.

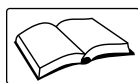


CAUTION: Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.



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
Yellow	- 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

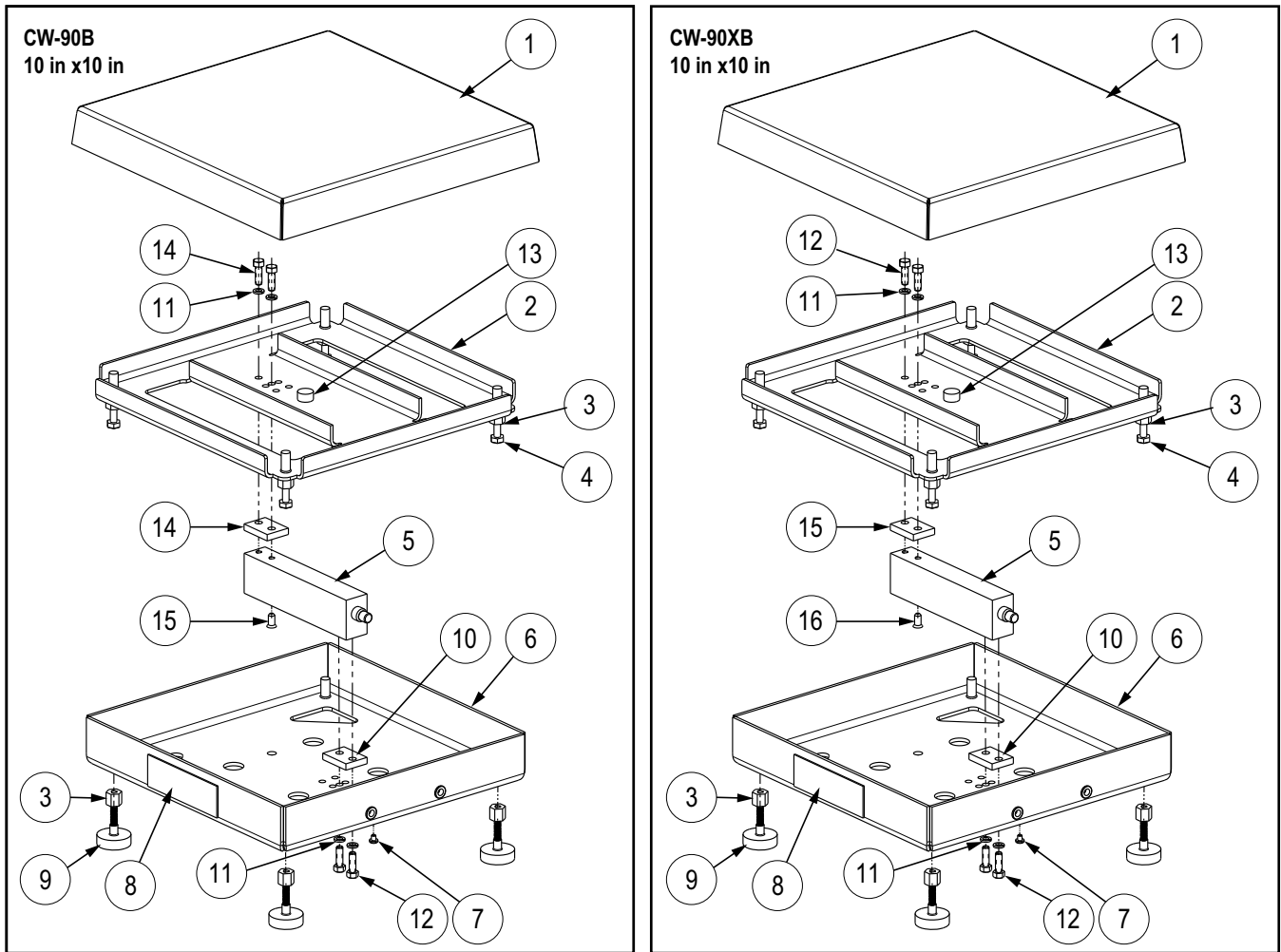


Figure 2-1. 10 in x 10 in Parts Illustration

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 RL42018A, 34" Cable, 5 lb Scale CW-90B (PN 106137)	1
	207930	Load Cell, SPT RL42018A, 34" Cable, 10 lb Scale CW-90B (PN 106138)	
	207931	Load Cell, SPT RL42018A, 34" Cable, 25 lb Scale CW-90B (PN 106139)	
	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 112603)	
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

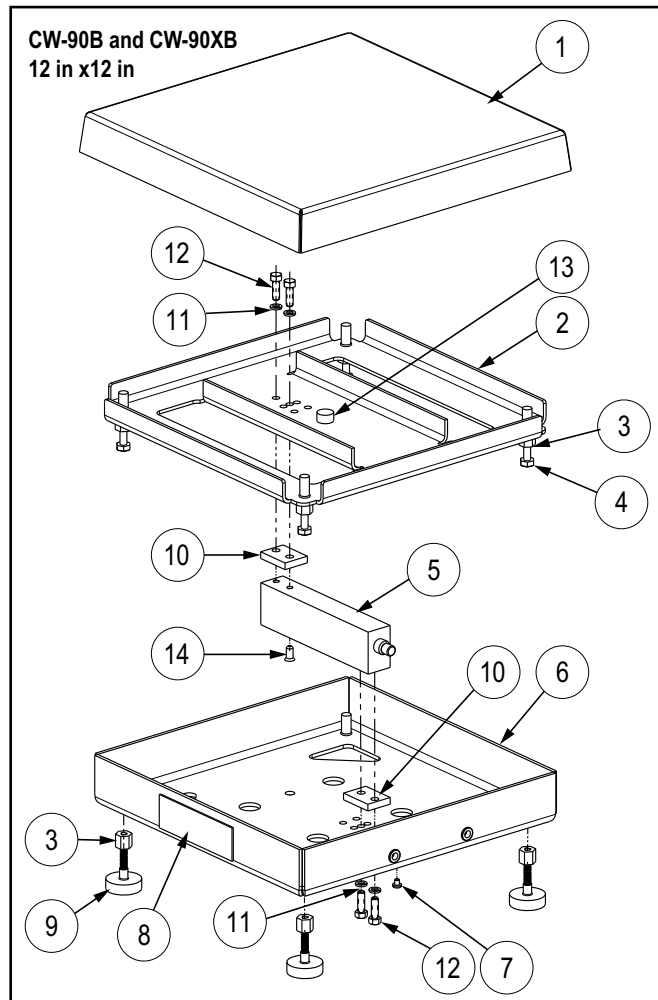


Figure 2-2. 12 in x 12 in Parts Illustration

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 RL42018A, 34" Cable, 25 lb Scale CW-90B (PN 106140)	1
	207932	Load Cell, SPT RL42018A, 34" Cable, 50 lb Scale CW-90B (PN 106141)	
	207933	Load Cell, SPT RL42018A, 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 RL42018A, 10' Cable, 50 lb Scale CW-90B (PN 112607)	
	188681	Load Cell, SPT RL42018A, 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:

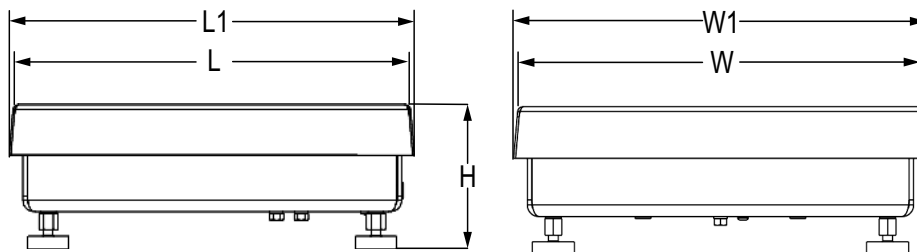


Figure 3-1. CW-90B and CW-90XB Dimensions

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:

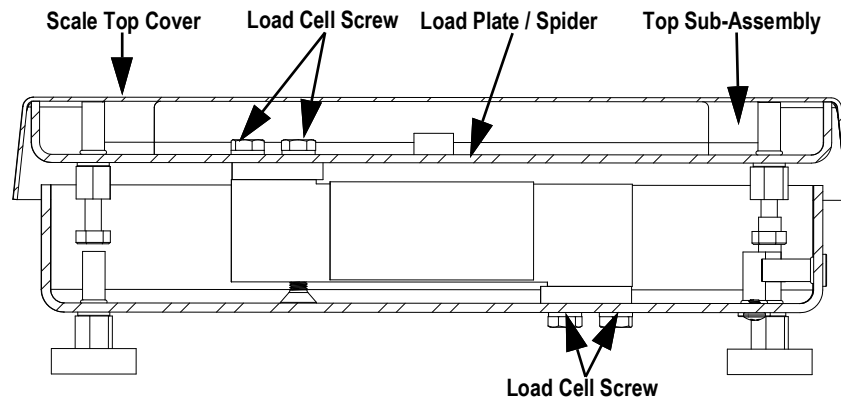


Figure 3-2. Load Cell Mount Diagram

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



© Rice Lake Weighing Systems Content subject to change without notice.

230 W. Coleman St. • Rice Lake, WI 54868 • USA USA: 800-472-6703 • International: +1-715-234-9171