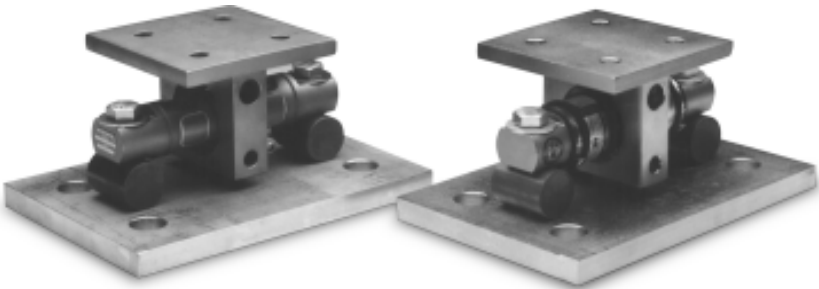


EZ Mount 1

Load Cell Mounting Kit

Installation Guide



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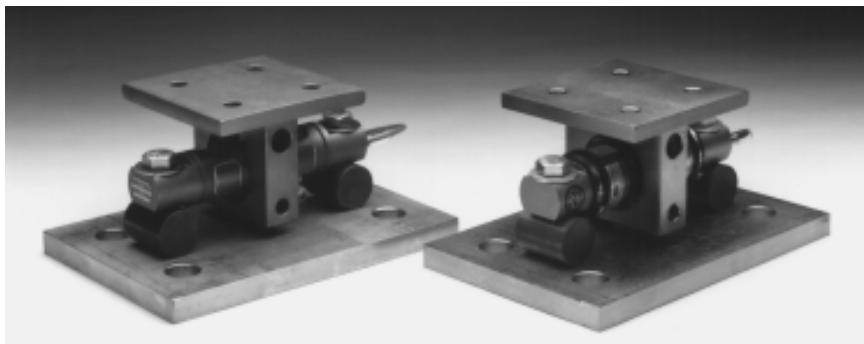
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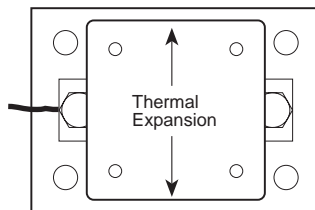
August 1998



1. Introduction

The EZ Mount 1 Load Cell Mounting Kit provides an extremely accurate method for weighing medium and large capacity tanks and hoppers that are subject to large thermal expansion/contraction or vibration forces. The design uses a double ended shear beam load cell (700 Ω bridge) and transmits the load with a sliding pin on the load-bearing groove of the cell. This design is very effective in providing for thermal expansion/contraction with little friction.

In the majority of applications, the assemblies are self-checking and held captive with no need for check or stay rods making this mount a good choice for areas with frequent seismic activity. The sliding pin design eases load cell installation and replacement without the need to raise the weighed vessel a large amount, which may disturb piping and other connections.



The EZ Mount 1 is available in mild steel or stainless steel in five sizes from 5,000-250,000 lb. The mount is compatible with RL70000 and RTI 5103 mild steel load cells in capacities from 5,000 lb to 250,000 lb. The EZ Mount 1 is also available in stainless steel with RL70000 SS, RTI 9103 and RL71000HE hermetically-sealed stainless steel load cells in capacities from 5,000 lb to 150,000 lb.

The installation should be planned by a qualified structural engineer. Each installation is unique, and this manual is meant to serve only as a general guideline for installation.



Authorized distributors and their employees can view or download this manual from the Rice Lake Weighing Systems distributor site at www.rlws.com.

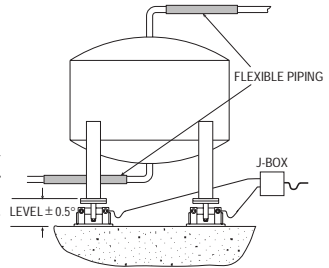
2. Mechanical Installation

2.1 General Installation Guidelines for Tank Mounts

1. The mounting surface for base and top plate must be level. After installation, the top and bottom plates must be level within $\pm 0.5^\circ$. If the mounting surfaces are not level, then shims and or grout may be used to level the mount.

If possible, check that the mount is level when the vessel is fully loaded because excessive deflections in legs and supporting structures may cause additional side forces which greatly affect accuracy. Deflection of the mount's top or base plate due to loading should not exceed $\pm 0.5^\circ$. Reinforcement of legs or other support structures may be necessary to correct this. Vessels with long legs should have cross bracing applied between adjacent legs to keep them from spreading under load.

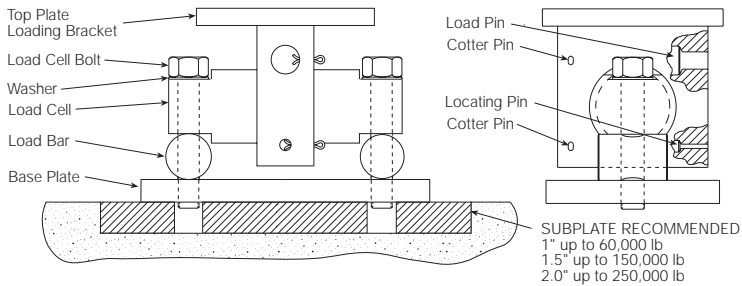
2. Compression mounting systems use three, four, or more mounts. More than eight-mount systems should be avoided as even weight distribution becomes extremely difficult to achieve. The load on each mount assembly should vary by no more than 20%. Add shims where necessary to achieve correct load distribution.
3. If the actual load cells are used during installation, take extreme care to prevent overload damage. A tank or hopper can exert huge forces when dropped only a fraction of an inch. Dummy load cells can be used during installation.
4. It is crucial that all piping or conduit be horizontal and flexible. If flexible piping is not used, make sure distance from vessel to the first pipe support is 20-30 times pipe diameter. For details, see the "Technical Information" section of the RLWS Load Cell Product Selection Guide. In smaller, lower capacity tanks and hoppers, isolating resultant forces becomes extremely critical.



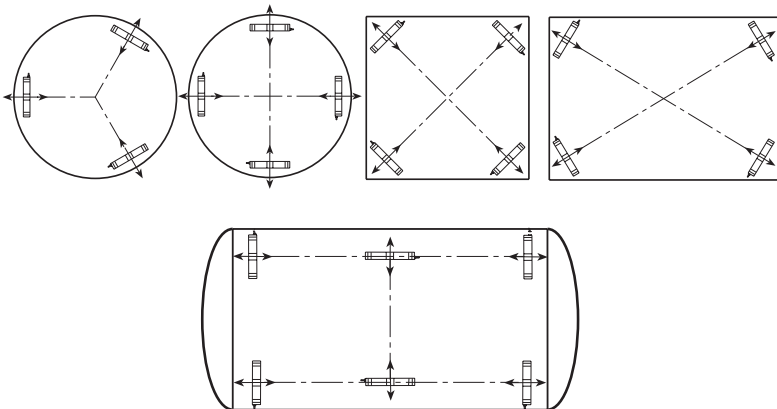
5. Load cells should not be installed in mounts until all welding is completed. The heat generated from welding current passing through a load cell can damage the adhesive holding the strain gauge to the body. If possible, use a dummy load cell when welding to maintain finished height. If welding is unavoidable after load cell installation, connect the ground in such a way that the current does not flow through the load cell. For example, if welding on the mount top plate, the ground must be connected to the vessel, not to the mount base or support structure. Also, protect the load cell and cable from weld splatter.
6. Use only "hermetically sealed" RL71000HE load cells in washdown applications. "Environmentally protected" load cells are not suitable for such applications and will be damaged. If tanks and surrounding equipment are frequently steam cleaned or if the load cell is subjected to direct washdown, a protective shroud for the weighing assembly is recommended. Proper drainage is necessary so the weighing assembly is not standing in water.
7. All support points should be equally stiff so that they deflect by the same amount as the vessel is loaded.

2.2 Installing the EZ Mount 1

1. The type of installation and strength of the mounting surface governs the method of locating, attaching, and assembling the EZ Mount 1 assembly. Carefully consider three areas which commonly cause accuracy problems:
 - Are the supporting legs adequately braced so they will not spread when the system is fully loaded?
 - Does the supporting structure have the necessary strength to prevent excessive deflection when the system is fully loaded?
 - Is there attached equipment such as skirting, venting, or piping which is likely to cause binding or lack of flexibility?



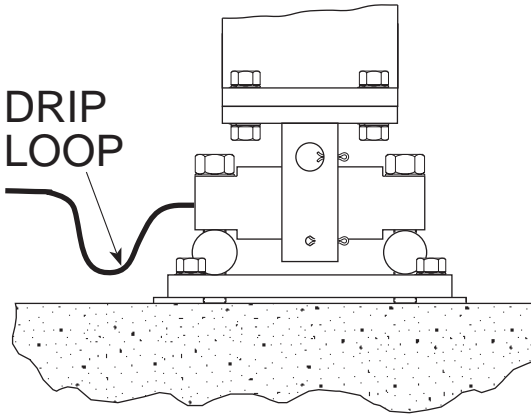
2. Determine where to position the mount and in which direction it should be oriented. The EZ Mount 1 is designed to allow for lateral movement in the direction perpendicular to the longitudinal axis of the load cell. These tank weighing units should be oriented so that the movement due to thermal expansion/contraction is perpendicular to the longitudinal axis. Sample mounting orientations to accommodate expansion for different vessel shapes are as follows:



3. Make necessary preparations to the mounting surfaces noting that the LOAD CELL BOLTS protrude beyond the BASE PLATE.
4. Assemble the mounts by inserting either a dummy load cell or the actual LOAD CELL into the hole in the TOP PLATE LOADING BRACKET then installing the LOAD PIN and LOCATING PIN. The LOAD CELL BOLTS are then passed through the ends of the LOAD CELL and LOAD BARS and threaded into the BASE PLATE and hand tightened.
5. Lift and block the vessel to the same height as the assembled mounts.
6. Remove the block from one support point and slide that mount into position.
7. If the mount is being fitted under the leg of a vessel, verify that the leg's center line passes through the center of the top plate (through the center of the load cell).
8. Lower the corner or side of the vessel carefully onto the top plate. The force of a vessel weighing several tons can damage a load cell if dropped only a fraction of an inch.
9. With the top plate positioned approximately level, mark holes for attaching the top plate to the vessel's mounting surface. Drill holes and attach top plate loosely to vessel with suitable fasteners.
10. Repeat steps 4-10 for the mounting assemblies at the remaining corners or sides.
11. Verify that there is no initial misalignment between the BASE PLATE and TOP PLATE and that the LOAD CELL is in the center of the hole in the TOP PLATE LOADING BRACKET. Relocate if necessary.
12. Attach the base plates to the foundation using suitable anchors for concrete or by bolting or welding to a steel structure or subplate. Verify that the base plates are no more than $\pm 0.5^\circ$ out of level. Shim as necessary.
13. Check that the top plates are no more than $\pm .5^\circ$ out of level. Shim if necessary and fully tighten mounting bolts.
14. If dummy cells are used, replace with actual LOAD CELLS. Refer to step 4.
15. To achieve equal load distribution, final height adjustments can be made with shims between the TOP PLATE LOADING BRACKET and the weighing vessel. The variation in load among the cells should be no more than 20%. The load distribution can be checked accurately by exciting each load cell in turn and measuring the output with a voltmeter.
16. Check that the bolts securing the load cell to the BASE PLATE are tight. Torque the LOAD CELL BOLTS to only 20 foot-pounds. This allows the double-ended load cell to flex under load.

3. Load Cell Wiring

1. Route the load cell cables so they will not be damaged or cut. Cable should not be routed near heat sources greater than 150 °F. **Do not shorten any load cell cable.** The load cell is temperature compensated with the supplied length of cable. Cutting the cable will affect temperature compensation. Coil and protect excess cable so it will not be mechanically damaged or be sitting in water.
2. Provide a drip loop in all cables so that water or other liquids will not run directly down the cables onto either the load cells or the junction box. Attach load cell cable to the dead structure, not the vessel.
3. If conduit protection is necessary against mechanical or rodent damage to the load cell cables, use flexible conduit and conduit adapters at the load cells.
4. Connect cables for standard RL70000, RL70000 SS, RTI 5103, RTI 9103 load cells or RL71000HE hermetically sealed load cells to the summing board in the junction box according to the guide shown below and the labels on the terminal strips of the junction box. To verify the wiring scheme, see the certification shipped with each load cell.
5. For better performance, use positive and negative remote sense lines if the wiring running from the junction box to the indicator is longer than 25 feet.



LOAD CELL WIRE COLOR	FUNCTION
Red	+EXC
Black	- EXC
Green	+SIG
White	- SIG
Gray or Bare	SHIELD

4. Junction Box Connections, Adjustments & Calibration

1. Refer to Junction Box manual for trimming details.
2. Refer to indicator manual or “Technical Information” section in Rice Lake Weighing Systems’ Load Cell Product Selection Guide for system calibration details.

5. Troubleshooting

If the system powers up and gives some type of stable digital readout that varies with the load on the system, any system problems are probably caused by factors other than the load cells. The load cells are often blamed for a malfunctioning system, but 90% of the time, the problem lies elsewhere. Look for mechanical causes for your problem first.

If the system can be calibrated but doesn’t return to zero, loses calibration, or demonstrates non-linearity or non-repeatability, see the following chart for possible causes and do the following checks.

Symptom	Possible Cause
No return to zero	Mechanical binding or debris in seals or under load cells; may have lost system calibration
Non-linearity	Thermal expansion or deflection under load causing binding or side load
Non-repeatability	Loose load cell mount; drifting caused by moisture, load cell overload or shock damage; mechanical binding
Lost calibration	Out of level or plumb; moisture problem; mechanical binding
Drifting readout	Moisture in junction box, cables, or load cell; mechanical binding

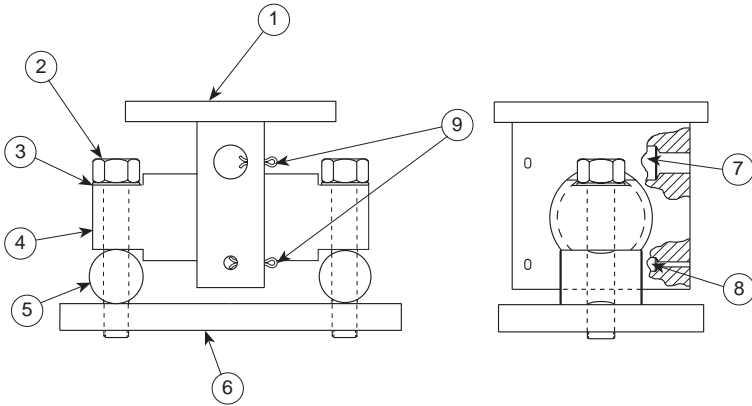
1. Check load cell mount for debris restricting load cell movement or debris between scale and structure.
2. Check that tank/vessel and mounts are plumb, level, and square at critical areas.
3. Check all piping and conduit for connections which restrict vessel movement.
4. If check rods are used, loosen all connections to finger tight only for testing.
5. Check load cell cables for physical or water damage.
6. Check all electrical connections, especially in the junction box.

If the problem still is not found:

7. Check possible indicator malfunction by using a load cell simulator to input a known good signal into the indicator.
8. Disconnect each load cell’s signal leads at the junction box and check individual load cell outputs with a multimeter. Then check input/output impedances for comparison with load cell manufacturer’s specifications.

If after all these checks the problem still cannot be isolated, reconnect all but one load cell. Replace load cell with a load cell simulator. Alternate so that each load cell is individually disconnected and replaced with a simulator. If there is a problem with a particular load cell, the symptom should disappear when that load cell is disconnected and replaced with simulator.

6. Maintenance and Replacement Parts



EZ Mount 1 Mild Steel Mounts

No.	Description	Reqd.	Replacement Part Numbers				
			A*	B*	C*	D*	E*
1	Top Plate Loading Bracket	1	18273 ...	18274 ...	18275 ...	29014 ...	26061
2	Load Cell Bolt	2	14773 ...	14795 ...	14797 ...	14797 ...	26071
3	Washer	2	15177 ...	15184 ...	15184 ...	15184 ...	26070
4	Double-Ended Shear Beam Load Cell	1	See Load Cell Selection Guide				
5	Load Bar	2	18267 ...	18268 ...	18269 ...	18269 ...	26073
6	Base Plate	1	18264 ...	18265 ...	81266 ...	82166 ...	26074
7	Load Pin	1	18270 ...	18271 ...	18272 ...	18272 ...	26067
8	Locating Pin	1	18261 ...	18262 ...	18263 ...	18263 ...	26076
9	Cotter Pins	2	15229 ...	15251 ...	15257 ...	15257 ...	26069

EZ Mount 1 Stainless Steel Mounts

No.	Description	Reqd.	Replacement Part Numbers			
			A*	B*	C*	D*
1	Top Plate Loading Bracket	1	18376	18377	18378	29013
2	Load Cell Bolt	2	14774	14796	14798	14798
3	Washer	2	15178	15187	15187	15187
4	Double-Ended Shear Beam Load Cell	1	See Load Cell Selection Guide			
5	Load Bar	2	18267	18268	18269	18269
6	Base Plate	1	18370	18371	18372	18372
7	Load Pin	1	18270	18271	18272	18272
8	Locating Pin	1	18373	18374	18375	18375
9	Cotter Pins	2	15230	15252	15258	15258

*A-size mounts use load cells with capacities from 5,000-20,000 lb.

*B-size mounts use load cells with capacities from 30,000-60,000 lb.

*C-size mounts use load cells with a capacity of 100,000 lb.

*D-size mounts use load cells with a capacity of 150,000 lb.

*E-size mounts use load cells with a capacity of 200,000 lb. and 250,000 lb.

7. EZ Mount 1 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS brand load cells properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications. All load cell products are warranted against defects in materials and workmanship for two (2) years. Products marked as “waterproof” are warranted against defects in materials and workmanship relating to moisture ingress.

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 non-conformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Examination of such equipment by RLWS confirms that the non-conformity 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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