

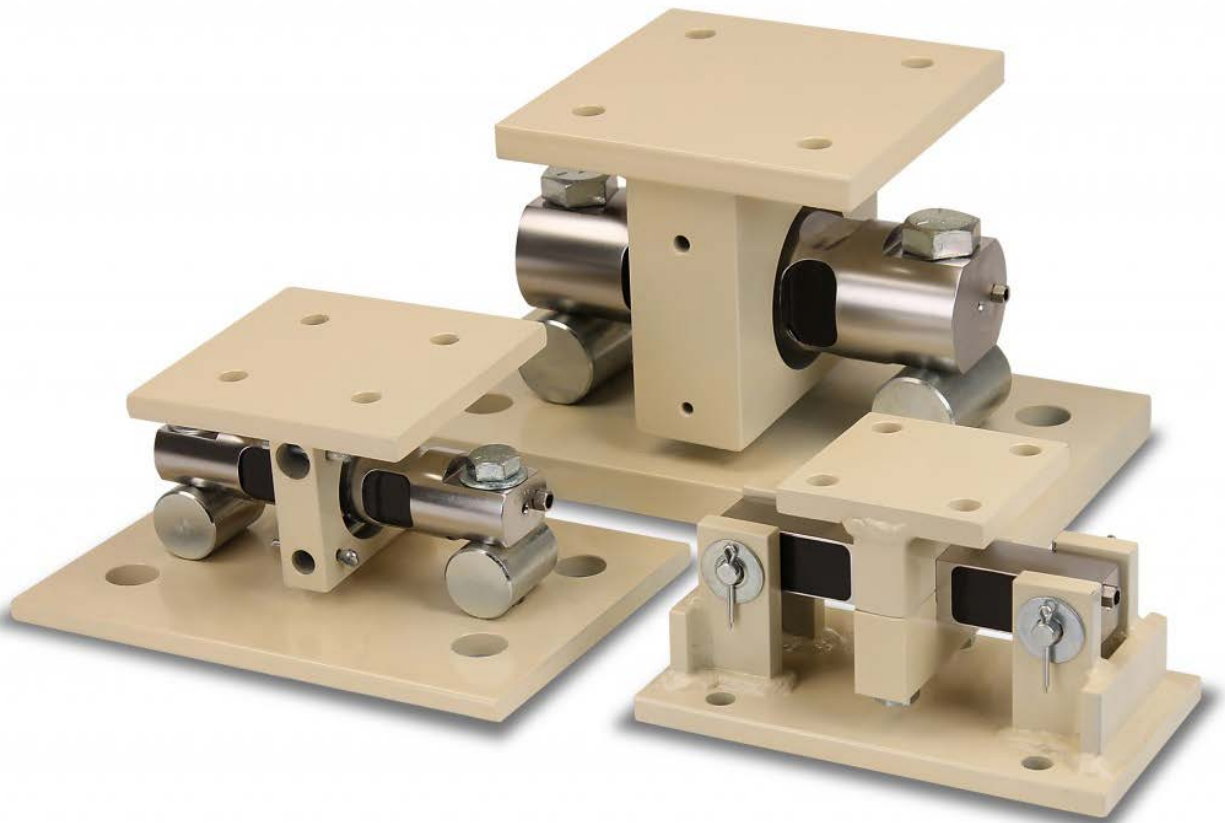


# CARDINAL®



## CenterPoint

SELF-CHECKING SHEAR BEAM STANDS




# CenterPoint Load Cell Kits Technical Manual



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<b>Serial Number</b> _____
<b>Date of Purchase</b> _____
<b>Purchased From</b> _____
_____
_____
RETAIN THIS INFORMATION FOR FUTURE USE

<h2>PRECAUTIONS</h2> <p>Before using this product, read this manual and pay special attention to all "NOTIFICATION" symbols:</p>  <p><b>DANGER!</b> <b>WARNING!</b> <b>CAUTION!</b></p>
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While every precaution has been taken in the preparation of this manual, the Seller assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from use of the information contained herein. All instructions and diagrams have been checked for accuracy and ease of application; however, success and safety in working with tools depend largely upon the individual accuracy, skill, and caution. For this reason, the Seller is not able to guarantee the result of any procedure contained herein. Nor can they assume responsibility for any damage to property or injury to persons occasioned from the procedures. Persons engaging the procedures do so entirely at their own risk.

## **FCC Compliance Statement**

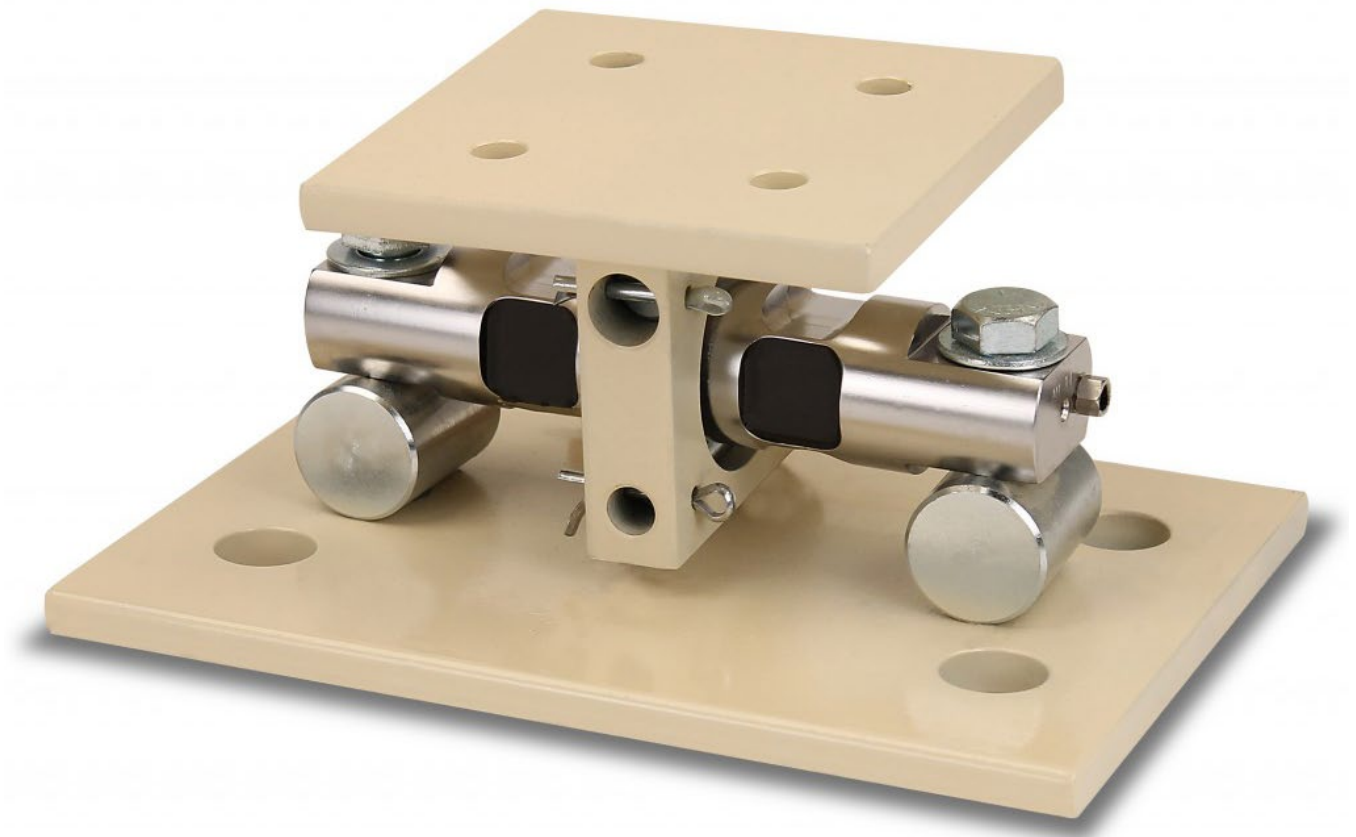
This equipment generates uses, can radiate radio frequency, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been designed within the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user will be responsible to take whatever measures necessary to correct the interference.

You may find the booklet “How to Identify and Resolve Radio TV Interference Problems” prepared by the Federal Communications Commission helpful. It is available from the U.S. Government Printing Office, Washington, D.C. 20402. Request stock No. 001-000-00315-4.

## INTRODUCTION

Cardinal Scale's CenterPoint Tank/Hopper Scales utilize double-ended shear beam stainless steel load cells with center load design. The bolt-in-place mounting assembly with articulating top plate makes them ideal for indoor or outdoor weighing applications. Available in three or four-legged mounting assemblies with mild or stainless steel stands and self-checking sliding pin design, the CenterPoint load cell kits are perfect for mixing, blending, batching, inventory control, and general weighing. Combine them with one of Cardinal's state-of-the-art 200 series weight indicators for a complete digital weighing system.

The CLDB series feature stainless steel, environmentally-sealed, center-load, double-ended shear beam load cells, in capacities that range from 7,500 to 200,000 lbs.



This manual should be studied thoroughly before attempting to install the load cell kit, and must be used in conjunction with certified drawings of the particular scale being installed.

***In case of conflict, the certified drawings will govern.***

Safety should always be the prime consideration during all phases of the installation. Failure to comply with the instructions in this manual will void all warranty implied or stated.

*All systems need to be safety-checked or chained to prevent failure. A qualified engineer should be consulted that has determined that the vessel to be used is structurally sound and capable of being supported by three or four points when filled to capacity.*

## SPECIFICATIONS

Specification	Description
Load Cell Model:	CLDB series
Load Cell Type:	Stainless steel, center-load, double-ended shear beam load cells
Load Cell Protection Class:	IP68
Load Cell Capacities:	2,500 lb (1,135 kg) up to 50,000 lb (22,700 kg)
Load Cell Cable:	30 ft / 9 m
Stand Type:	Self-checking, bolt-in-place design
Stand Construction:	Stainless steel or powder-painted mild steel
Stand Construction:	Mild or stainless steel, bolt-in-place stands
Junction Box Type:	Stainless steel 4-cell trim box
Junction Box Cable Length to Indicator:	30 ft / 9 m with 9-pin D connector
Included:	Each kit consists of three or four stand assemblies, load cells, self-checking load cell stands, stainless steel NEMA 4 junction box, and load cell cable. Bolts and lock washers are included
System Capacities:	7,500 lb (3,405kg) to 200,000 lb (90,800 kg)
Indicators:	A wide selection of digital weight indicators are also available from Cardinal Scale
Weighing Applications:	Tanks, hoppers, silos, bins, and mixers scales. New installations or existing conversions

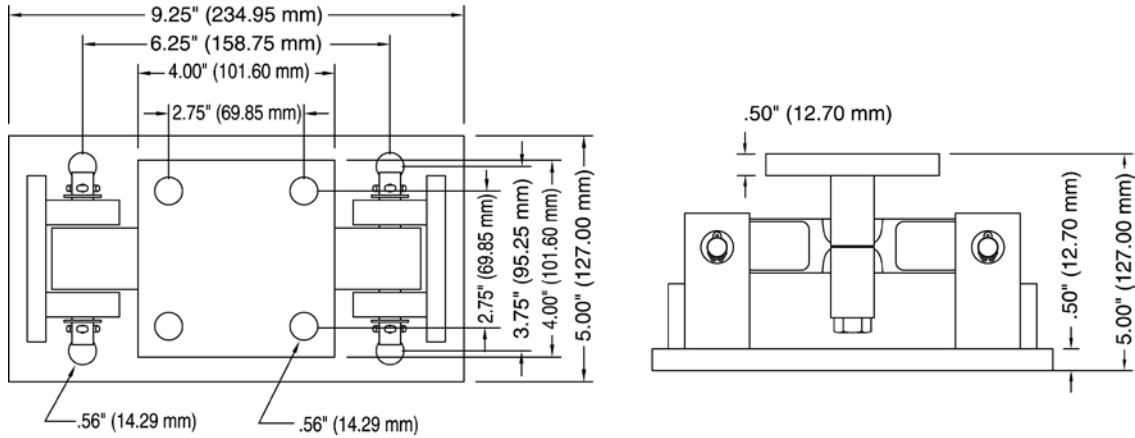
### Load Cell Capacities

MODEL	SHAPE	CONSTRUCTION	CAPACITY	SHIPPING WEIGHT
<b>CLDB2.5K</b>	Square	Stainless Steel	2,500 lb / 1,135 kg	3.5 lb / 1.5 kg
<b>CLDB5K</b>	Square	Stainless Steel	5,000 lb / 2,270 kg	3.5 lb / 1.5 kg
<b>CLDBR5K</b>	Rounded	Stainless Steel	5,000 lb / 2,270 kg	5.5 lb / 2.5 kg
<b>CLDBR10K</b>	Rounded	Stainless Steel	10,000 lb / 4,535 kg	5.5 lb / 2.5 kg
<b>CLDBR20K</b>	Rounded	Stainless Steel	20,000 lb / 9,070 kg	5.5 lb / 2.5 kg
<b>CLDBR30K</b>	Rounded	Stainless Steel	30,000 lb / 13,605 kg	20.5 lb / 9 kg
<b>CLDBR50K</b>	Rounded	Stainless Steel	50,000 lb / 22,700 kg	20.5 lb / 9 kg

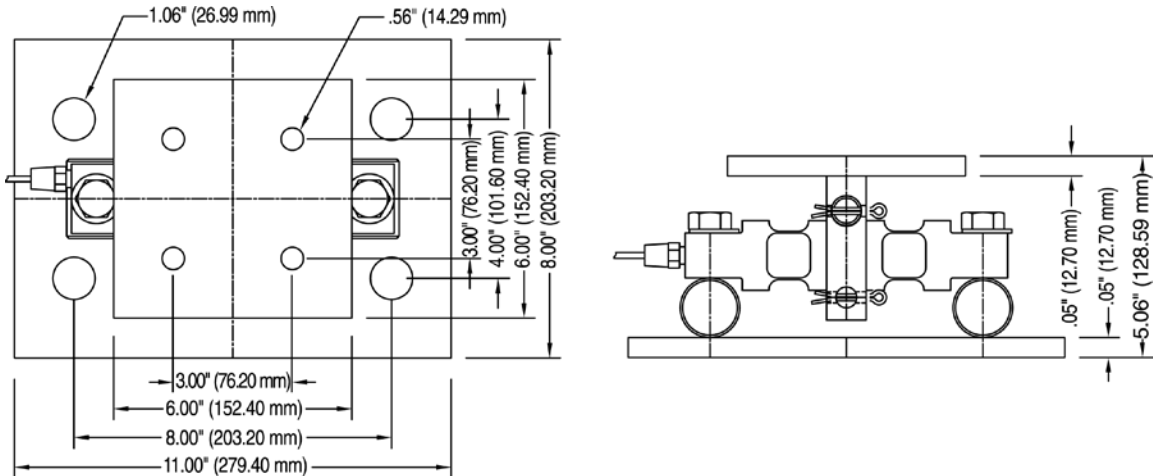
# SPECIFICATIONS, CONT.

## Stand Dimensions

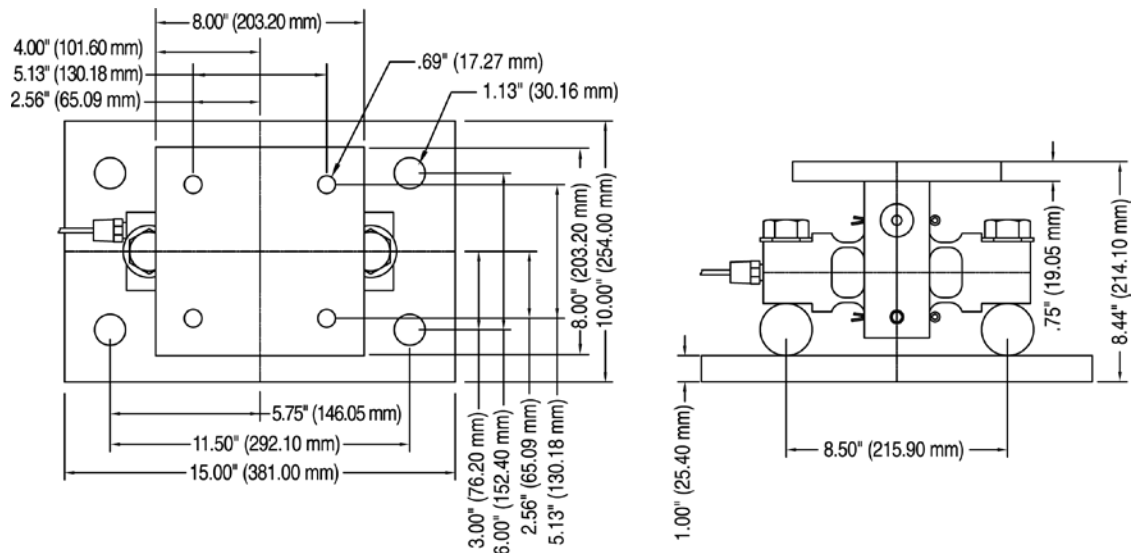
### CLDB 2.5K / 5K



### CLDBR 5K / 10K / 20K



### CLDBR 30K / 50K



# SPECIFICATIONS, CONT.

## System Capacities

### 3 LOAD CELL SYSTEMS | Mild Steel Stands

MODEL	CELL SHAPE	CELL CONSTRUCTION	CELL CAPACITY	SYSTEM CAPACITY	SHIPPING WEIGHT
CLDB2.5K-3	Square	Stainless Steel	2,500 lb / 1,135 kg	7,500 lb / 3,405 kg	67 lb / 30 kg
CLDB5K-3	Square	Stainless Steel	5,000 lb / 2,270 kg	15,000 lb / 6,810 kg	67 lb / 30 kg
CLDBR5K-3	Rounded	Stainless Steel	5,000 lb / 2,270 kg	15,000 lb / 6,810 kg	94 lb / 43 kg
CLDBR10K-3	Rounded	Stainless Steel	10,000 lb / 4,535 kg	30,000 lb / 13,605 kg	94 lb / 43 kg
CLDBR20K-3	Rounded	Stainless Steel	20,000 lb / 9,070 kg	60,000 lb / 27,210 kg	94 lb / 43 kg
CLDBR30K-3	Rounded	Stainless Steel	30,000 lb / 13,605 kg	90,000 lb / 40,824 kg	343 lb / 156 kg
CLDBR50K-3	Rounded	Stainless Steel	50,000 lb / 22,700 kg	150,000 lb / 68,040 kg	343 lb / 156 kg

### 3 LOAD CELL SYSTEMS | Stainless Steel Stands

MODEL	CELL SHAPE	CELL CONSTRUCTION	CELL CAPACITY	SYSTEM CAPACITY	SHIPPING WEIGHT
CLDBS2.5K-3	Square	Stainless Steel	2,500 lb / 1,135 kg	7,500 lb / 3,405 kg	67 lb / 30 kg
CLDBS5K-3	Square	Stainless Steel	5,000 lb / 2,270 kg	15,000 lb / 6,810 kg	67 lb / 30 kg
CLDBRS5K-3	Rounded	Stainless Steel	5,000 lb / 2,270 kg	15,000 lb / 6,810 kg	94 lb / 43 kg
CLDBRS10K-3	Rounded	Stainless Steel	10,000 lb / 4,535 kg	30,000 lb / 13,605 kg	94 lb / 43 kg
CLDBRS20K-3	Rounded	Stainless Steel	20,000 lb / 9,070 kg	60,000 lb / 27,210 kg	94 lb / 43 kg
CLDBRS30K-3	Rounded	Stainless Steel	30,000 lb / 13,605 kg	90,000 lb / 40,824 kg	343 lb / 156 kg
CLDBRS50K-3	Rounded	Stainless Steel	50,000 lb / 22,700 kg	150,000 lb / 68,040 kg	343 lb / 156 kg

### 4 LOAD CELL SYSTEMS | Mild Steel Stands

MODEL	CELL SHAPE	CELL CONSTRUCTION	CELL CAPACITY	SYSTEM CAPACITY	SHIPPING WEIGHT
CLDB2.5K-4	Square	Stainless Steel	2,500 lb / 1,135 kg	10,000 lb / 4,540 kg	87 lb / 39 kg
CLDB5K-4	Square	Stainless Steel	5,000 lb / 2,270 kg	20,000 lb / 9,080 kg	87 lb / 39 kg
CLDBR5K-4	Rounded	Stainless Steel	5,000 lb / 2,270 kg	20,000 lb / 9,080 kg	124 lb / 56 kg
CLDBR10K-4	Rounded	Stainless Steel	10,000 lb / 4,535 kg	40,000 lb / 18,140 kg	124 lb / 56 kg
CLDBR20K-4	Rounded	Stainless Steel	20,000 lb / 9,070 kg	80,000 lb / 36,280 kg	124 lb / 56 kg
CLDBR30K-4	Rounded	Stainless Steel	30,000 lb / 13,605 kg	120,000 lb / 54,420 kg	456 lb / 207 kg
CLDBR50K-4	Rounded	Stainless Steel	50,000 lb / 22,700 kg	200,000 lb / 90,800 kg	456 lb / 207 kg

### 4 LOAD CELL SYSTEMS | Stainless Steel Stands

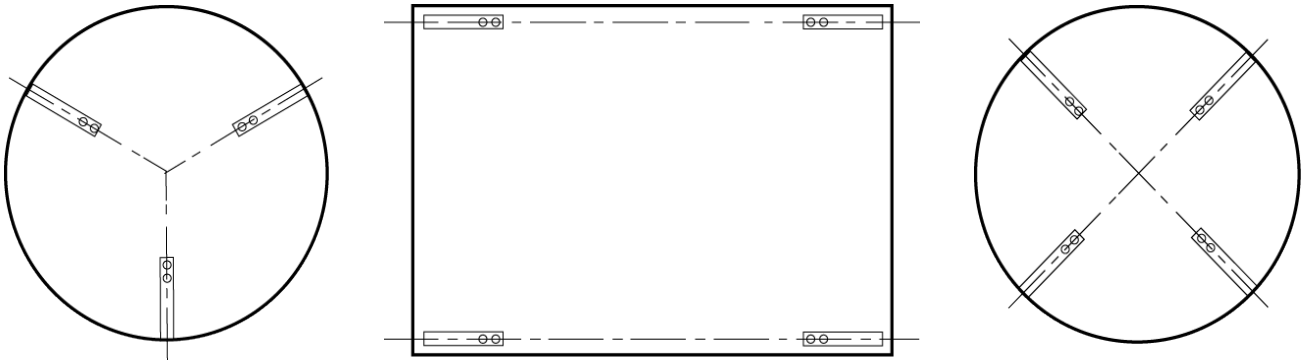
MODEL	CELL SHAPE	CELL CONSTRUCTION	CELL CAPACITY	SYSTEM CAPACITY	SHIPPING WEIGHT
CLDBS2.5K-4	Square	Stainless Steel	2,500 lb / 1,135 kg	10,000 lb / 4,540 kg	87 lb / 39 kg
CLDBS5K-4	Square	Stainless Steel	5,000 lb / 2,270 kg	20,000 lb / 9,080 kg	87 lb / 39 kg
CLDBRS5K-4	Rounded	Stainless Steel	5,000 lb / 2,270 kg	20,000 lb / 9,080 kg	124 lb / 56 kg
CLDBRS10K-4	Rounded	Stainless Steel	10,000 lb / 4,535 kg	40,000 lb / 18,140 kg	124 lb / 56 kg
CLDBRS20K-4	Rounded	Stainless Steel	20,000 lb / 9,070 kg	80,000 lb / 36,280 kg	124 lb / 56 kg
CLDBRS30K-4	Rounded	Stainless Steel	30,000 lb / 13,605 kg	120,000 lb / 54,420 kg	456 lb / 207 kg
CLDBRS50K-4	Rounded	Stainless Steel	50,000 lb / 22,700 kg	200,000 lb / 90,800 kg	456 lb / 207 kg



# GENERAL INSTALLATION GUIDELINES

The mounting surface for base and top plate must be level, and clear of debris and rough spots. After installation, the top and bottom plates must be level within  $\pm 0.5$  degree. If the mounting surfaces are not level, then shims and or grout may be used to level the mount.

1. The mounting surface for base plate and top plate must be level within  $\pm 0.5$  degree to minimize side loads and extraneous forces. If the mounting surfaces are not level, then shims or grout may be used to level the module. Because deflections in legs and supporting structures may cause additional side forces that greatly affect accuracy, check if level and plumb again when container is fully loaded. Cross bracing of legs or other support structures may need reinforcement to correct this. Deflections of the module's top or base plate due to loading should not exceed  $\pm 0.5$  degree.



2. Mounting systems use three or four mounts. The load on each mount assembly should vary by no more than 20 percent. Add shims where necessary to achieve correct load distribution.
3. During installation, dummy load cells can be used to prevent overload damage.



**NOTE:** If the actual load cells are used during the installation, extreme care must be taken to prevent overload damage. A tank or hopper weighing several tons can exert huge forces when dropped only a fraction of an inch.

4. All piping or conduit should be horizontal and flexible. If flexible piping is not used, make sure the distance from tank to the first pipe support is 20-30 times pipe diameter. In smaller, lower capacity tanks and hoppers, isolating resultant forces becomes extremely critical. When possible, flexible conduit piping should be used close to the tank instead of the rigid variety.
5. Load cells should not be installed in the modules until all welding is completed. If possible, use a dummy load cell when welding to maintain finished height. If welding is unavoidable after load cell installation, ground in such a manner as to prevent welding current from passing through the load cell. Ground the welder as closely as possible to the point of welding.

# INSTALLATION

The type of installation, structure of the tank supports, and strength of the mounting surface governs the method of locating, attaching, and installing the load cell assembly. Carefully consider three areas that 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 flexing 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?
1. Determine where to position the load cell assembly, as well as which direction it should be orientated.
  2. Make necessary preparations to the mounting surfaces.
  3. Lift and block the vessel to the same height as the load cell assembly.
  4. Lift one corner or side of the vessel enough to slide the load cell assembly into place.
  5. If the load cell assembly is being fitted under the leg of the vessel, verify that the leg's centerline passes through the center of the top plate (through the center of the load cell's load hole).
  6. Attach the top plate by bolting. Do not fully tighten because shimming may be necessary to level.
  7. Repeat steps 4, 5, and 6 for the remaining load cell assemblies. The vessel should now be supported on the load cell assemblies alone.
  8. If necessary, move the vessel to its final position. Verify that there is no initial misalignment between the base plate and top plate by lifting the vessel slightly at each support point in turn. This will also indicate if the load is evenly distributed on all load cell assemblies. Install shims if necessary.
  9. Attach the base plates to the foundation using anchor bolts for concrete, or by bolting or welding to a steel structure. Verify that the base plates are no more than  $\pm 0.5$  degree out of level. Install shims if necessary.
  10. Check that the top plates are no more than  $\pm 0.5$  degree out of level. Shim if necessary and fully tighten the bolts.
  11. The load distribution can be more accurately checked by connecting each load cell to the junction box and indicator and measuring the output with a voltmeter. To verify wiring, check the load cell and junction box wiring section of this manual. The variation in the load among the cells should be no more than 20%. Install shims if necessary.

# LOAD CELL WIRING

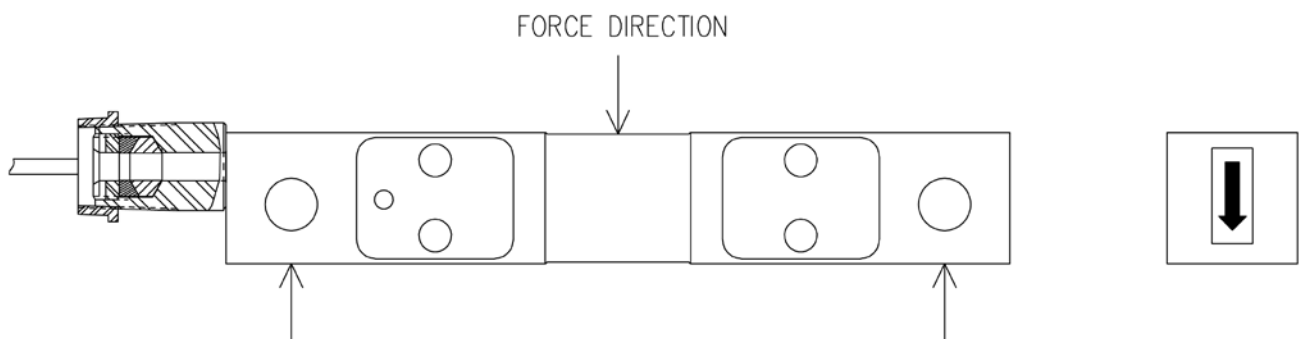
**NOTE:** Cardinal Scale Mfg. Co. recommends that the customer install protective conduit/cover for the load cell cables whenever the condition is present that can result in damage or abrasion to the load cell cables.

1. Route the load cell cables so they will not be damaged or cut. Cable should not be routed near heat sources. 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 excess cable and protect it so it will not be damaged or sitting in water.
2. Provide a dip 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 structure, not the tank.
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 to the summing board in the junction box according to the illustration shown on the next page and the labels on the terminal strips of the junction box. To verify the wiring, refer to the documentation shipped with each load cell.

## CLDB and CLDBR Wiring Color Code

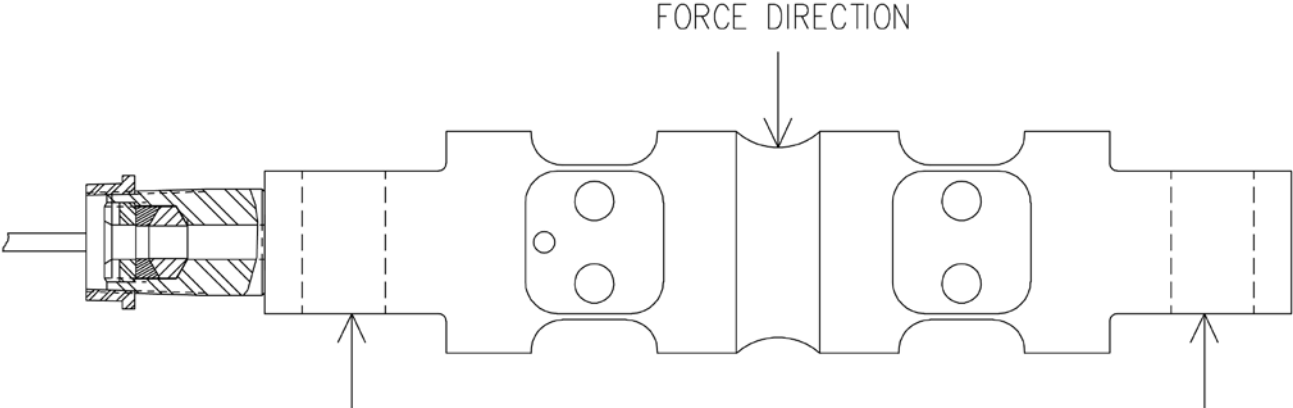
FUNCTION	WIRE COLOR
+EXCITATION	RED
-EXCITATION	BLACK
+SIGNAL	GREEN
-SIGNAL	WHITE
SHIELD	YELLOW

### CLDB2.5K / CLDB5K

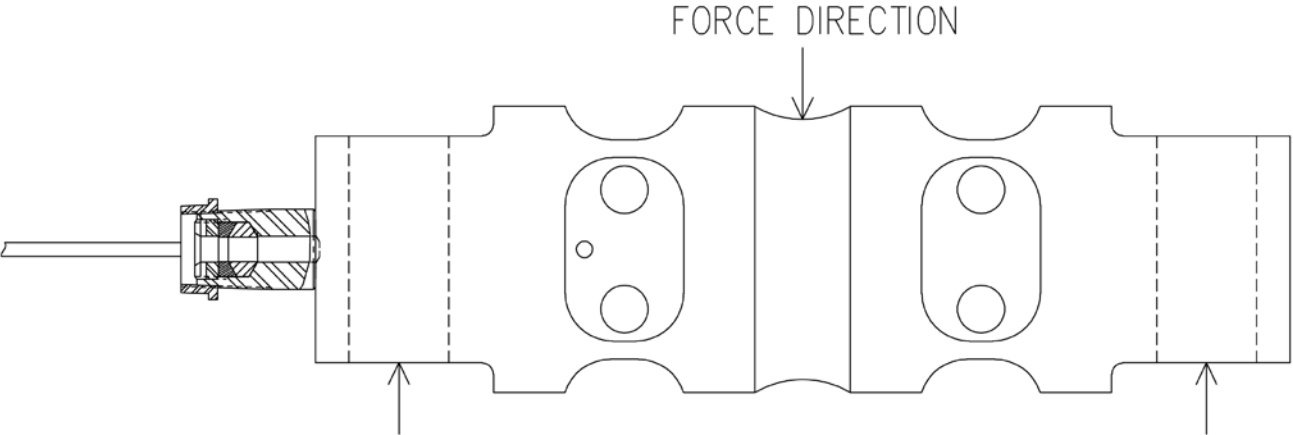


# LOAD CELL WIRING, CONT.

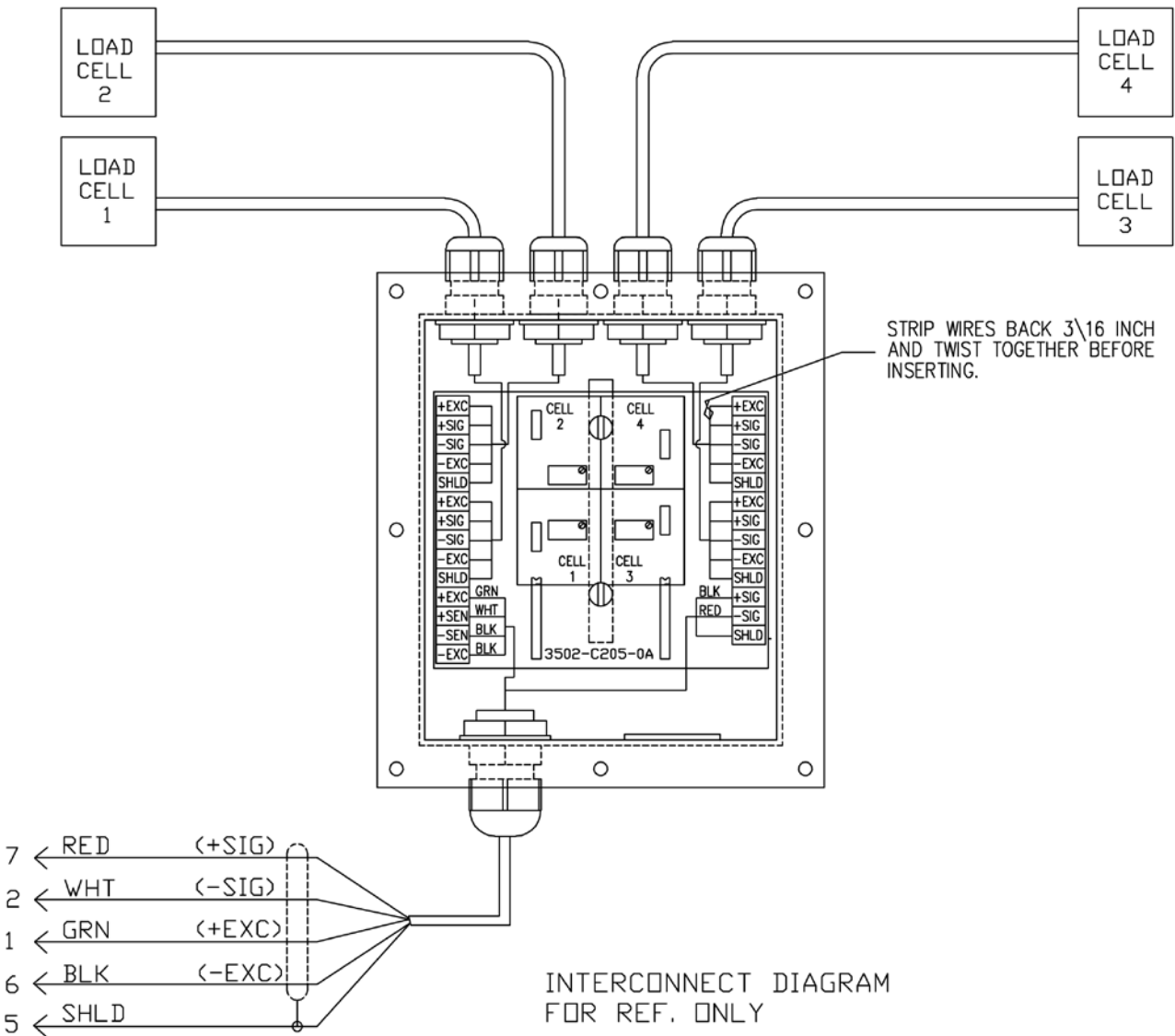
CLDBR5K / CLDBR10K / CLDBR20K



CLDBR30K / CLDBR50K



# JUNCTION BOX WIRING



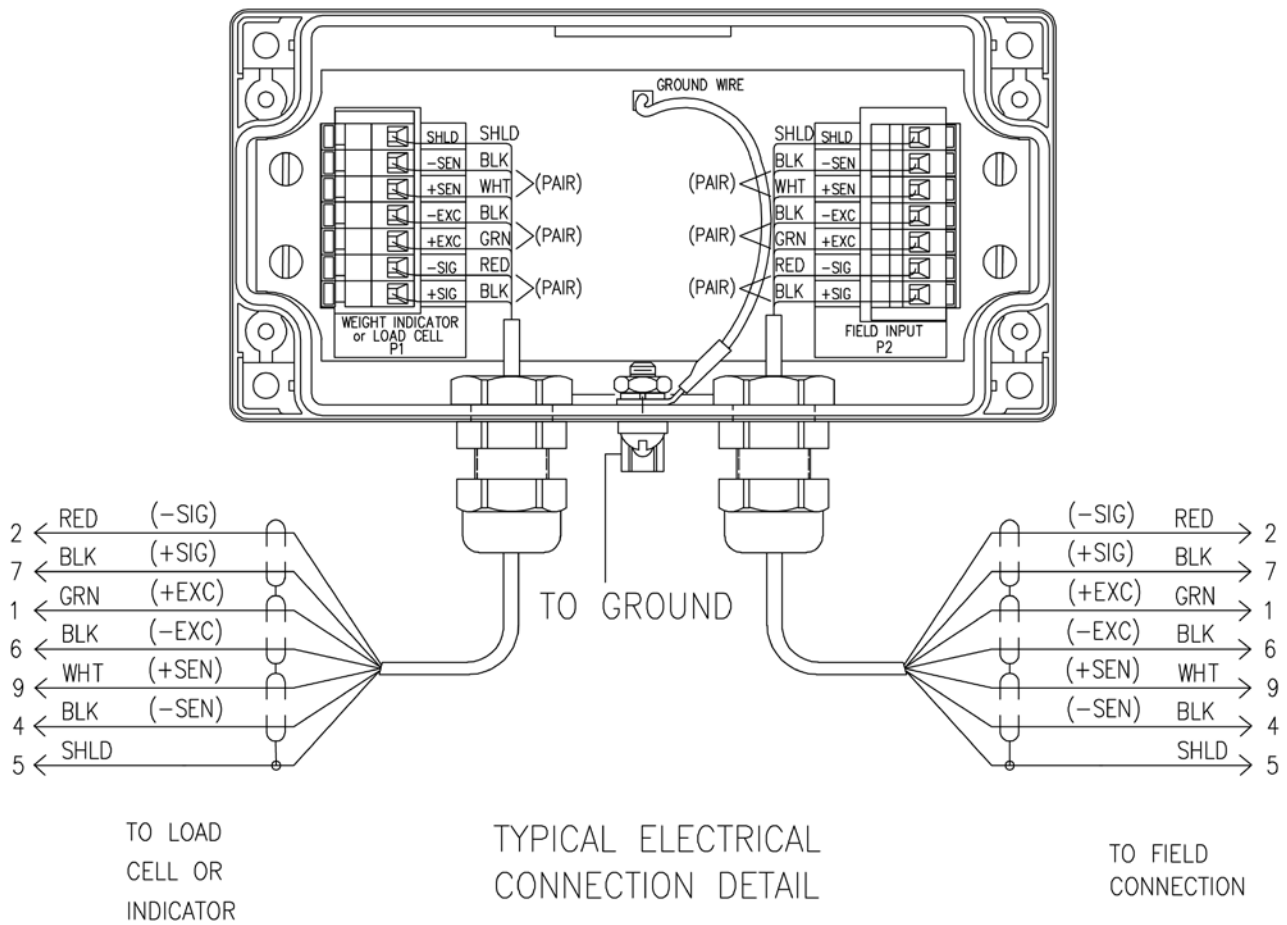
## Load Cell Wiring Color Code

FUNCTION	CARDINAL COLOR CODE	WEST COAT COLOR CODE
+EXCITATION	GREEN	RED
-EXCITATION	BLACK	BLACK
+SIGNAL	RED	GREEN
-SIGNAL	WHITE	WHITE

**NOTE:** For 2 to 4 load cell trimming, connect 2, 3, or 4 load cells to trim board as shown. There are no jumpers that need to be set or additional terminations to be made.

# TRANSIENT SUPPRESSION BOX WIRING

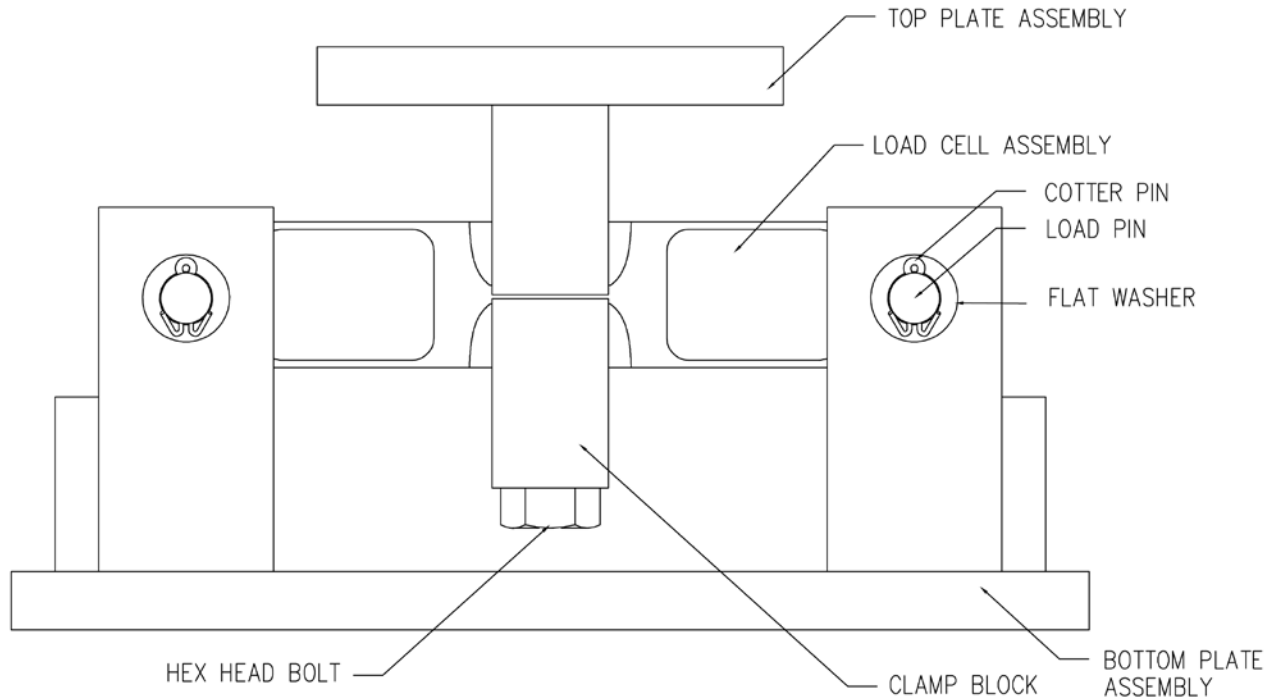
## TRANSIENT SUPPRESSION BOX



# LOAD CELL REPLACEMENT

## CLDB 2.5K / 5K Load Cell

The following procedure describes changing a load cell in a CLDB 2.5K / 5K CenterPoint, self-checking, low-profile stand.



**DANGER!** TO PREVENT TIPPING OF THE VESSEL, SUPPORT THE VESSEL WITH BLOCKS OR BY OTHER MEANS TO ENSURE THE STABILITY OF THE VESSEL, BEFORE LIFTING IT OFF THE LOAD CELL ASSEMBLY.

1. Disconnect the load cell from the junction box. Refer to the JUNCTION BOX WIRING section of this manual for wiring information.
2. Loosen the bolts securing the clamp block and top plate assembly to the load cell assembly, and then remove the bolts, washers, and nuts securing the vessel legs to the top plate assembly.
3. **ONLY** if the vessel is empty, using a chain or cable slings, lift and block the vessel to the same height as the load cell assembly to remove the load off the load cell assembly.  
**NOTE:** If emptying the vessel is impractical, it can be raised with external jacks to remove the load off the load cell assembly.
4. Remove the cotter pins and flat washers from one end of the load pins, and then slide the load pins out of the bottom plate assembly.
5. Remove the load cell assembly (with attached top plate assembly and clamp block) from the bottom plate assembly.
6. Remove the bolts securing the clamp block and top plate assembly to the load cell assembly, and then remove the clamp block and top plate assembly.

## LOAD CELL REPLACEMENT, CONT.

### CLDB 2.5K / 5K Load Cell, Cont.

7. To reinstall the load cell, position the clamp block and top plate assembly on the load cell assembly, and then install and tighten the bolts sufficiently to hold the clamp block and top plate assembly in place on the load cell assembly.
8. Position the load cell assembly (with attached top plate assembly and clamp block) into the bottom plate assembly.
9. Align the holes in the bottom plate assembly with the holes in the load cell assembly, and then insert the load pins into the bottom plate assembly, passing through the load cell assembly and out the other side of the bottom plate assembly.
10. Place the flat washers over the portion of the load pin protruding from the side of the bottom plate assembly, and install **new** cotter pins to secure the load pins and load cell assembly in place.
11. Lower the vessel onto the top plate assembly and install bolts, washers, and nuts removed earlier to secure the vessel to the top plate assembly.

**NOTE:** The bolts securing the clamp block and top plate assembly to the load cell assembly may need to be loosened when attaching the vessel legs to the top plate assembly.

12. Completely tighten the bolts securing the clamp block and top plate assembly to the load cell assembly, and then torque to 20 ft/lb. Apply LOCTITE as required.

**NOTE:** Insufficient torque may allow the clamp block and top plate assembly to shift on the load cell assembly; too much torque may cause bolt failure.

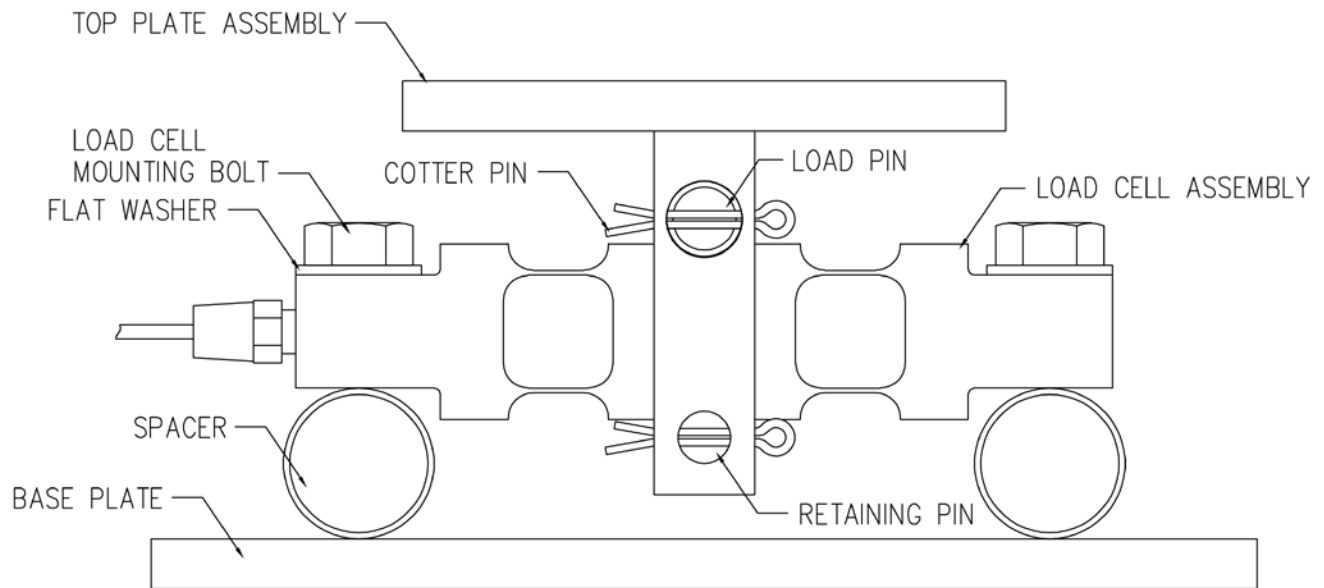
13. Reconnect the load cell to the junction box. Refer to the LOAD CELL WIRING and JUNCTION BOX WIRING sections of this manual for wiring information.



# LOAD CELL REPLACEMENT, CONT.

## CLDBR 5K / 10K / 20K Load Cell

The following procedure describes changing a load cell in a CLDBR 5K / 10K / 20K CenterPoint, self-checking, low-profile stand.



**DANGER!** TO PREVENT TIPPING OF THE VESSEL, SUPPORT THE VESSEL WITH BLOCKS OR BY OTHER MEANS TO ENSURE THE STABILITY OF THE VESSEL, BEFORE LIFTING IT OFF THE LOAD CELL ASSEMBLY.

1. Disconnect the load cell from the junction box. Refer to the JUNCTION BOX WIRING section of this manual for wiring information.
2. Remove the bolts, washers, and nuts securing the vessel to the top plate assembly.
3. **ONLY** if the vessel is empty, using a chain or cable slings, lift and block the vessel to the same height as the load cell assembly to remove the load off the load cell assembly.  
**NOTE:** If emptying the vessel is impractical, it can be raised with external jacks to remove the load off the load cell assembly.
4. Remove the load cell mounting bolts and flat washers, slide the load cell spacers from under the load cell assembly, and then remove the load cell assembly (with attached top plate assembly) from under the vessel and away from the base plate.
5. Remove the cotter pins from the load pin and retaining pins, and then slide both pins out of the top plate assembly.
6. Remove the load cell assembly from the top bottom plate assembly by sliding it out of the opening in the top plate assembly.

## LOAD CELL REPLACEMENT, CONT.

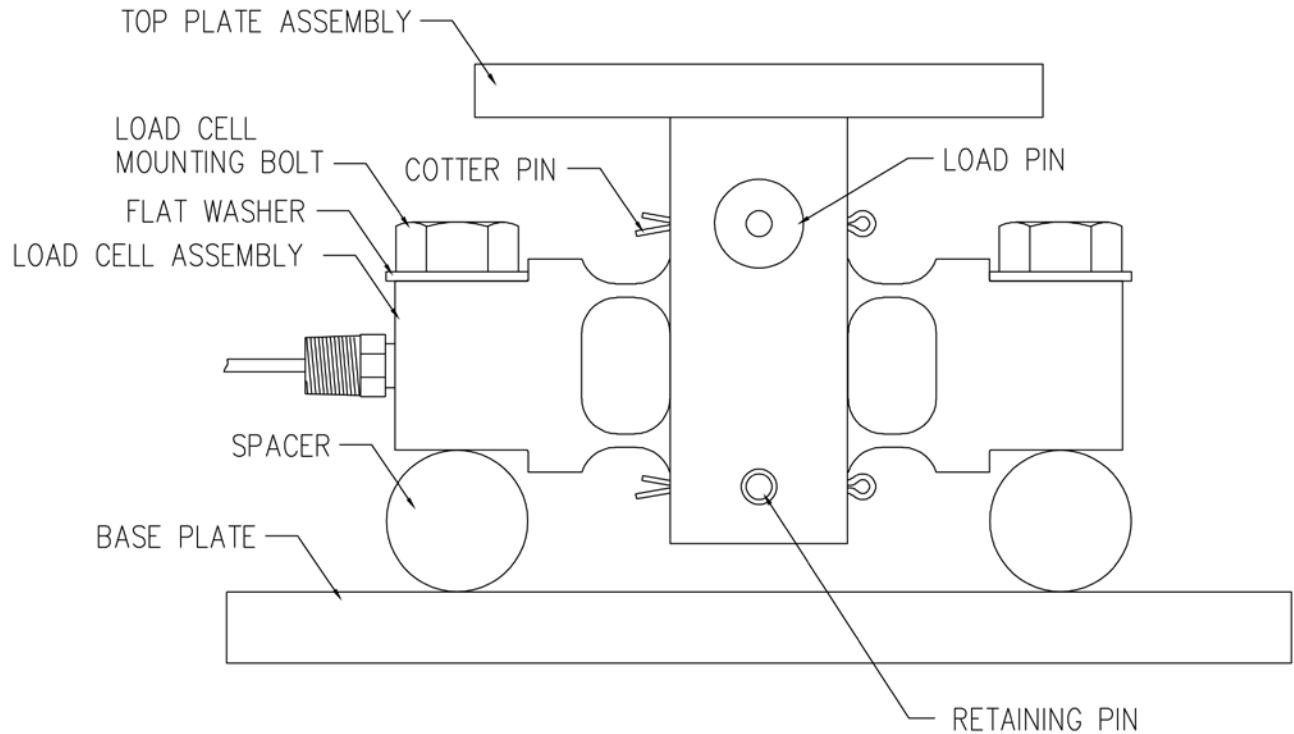
### CLDBR 5K / 10K / 20K Load Cell, Cont.

7. To reinstall the load cell, slide it through the opening in the top plate assembly, and then aligning the holes in the top plate assembly with the notch in the center of the load cell assembly, insert the load pin and retaining pins into the top plate assembly, passing them through the center notch in the load cell assembly.
8. Align the holes in the load pin and retaining pins with the holes in the top plate assembly, and then install **new** cotter pins to secure the load pin, retaining pin, and load cell assembly in place.
9. Position the load cell assembly and spacers on the base plate, aligning the holes in the load cell assembly and spacers with the holes in the base plate.  
**NOTE:** The spacer must not rotate under the load cell.
10. Install the load cell mounting bolts and washers removed earlier to fasten the load cell assembly and spacers in place.
11. Torque the load cell mounting bolts to the 20 ft/lb. Apply LOCTITE as required.  
**NOTE:** Insufficient torque may allow the rear of the load cell to lift; too much torque may cause bolt failure.
12. Lower the vessel onto the top plate assembly and install bolts, washers, and nuts removed earlier to secure the vessel to the top plate assembly.
13. Reconnect the load cell to the junction box. Refer to the LOAD CELL WIRING and JUNCTION BOX WIRING sections of this manual for wiring information.

# LOAD CELL REPLACEMENT, CONT.

## CLDBR 30K / 50K Load Cell

The following procedure describes changing a load cell in a CLDBR 30K / 50K CenterPoint, self-checking, low-profile stand.



**DANGER!** TO PREVENT TIPPING OF THE VESSEL, SUPPORT THE VESSEL WITH BLOCKS OR BY OTHER MEANS TO ENSURE THE STABILITY OF THE VESSEL, BEFORE LIFTING IT OFF THE LOAD CELL ASSEMBLY.

1. Disconnect the load cell from the junction box. Refer to the JUNCTION BOX WIRING section of this manual for wiring information.
2. Remove the bolts, washers, and nuts securing the vessel to the top plate assembly.
3. **ONLY** if the vessel is empty, using a chain or cable slings, lift and block the vessel to the same height as the load cell assembly to remove the load off the load cell assembly.  
**NOTE:** If emptying the vessel is impractical, it can be raised with external jacks to remove the load off the load cell assembly.
4. Remove the load cell mounting bolts and flat washers, slide the load cell spacers from under the load cell assembly, and then remove the load cell assembly (with attached top plate assembly) from under the vessel and away from the base plate.
5. Remove the cotter pins from the load pin and retaining pins, and then slide both pins out of the top plate assembly.
6. Remove the load cell assembly from the top bottom plate assembly by sliding it out of the opening in the top plate assembly.

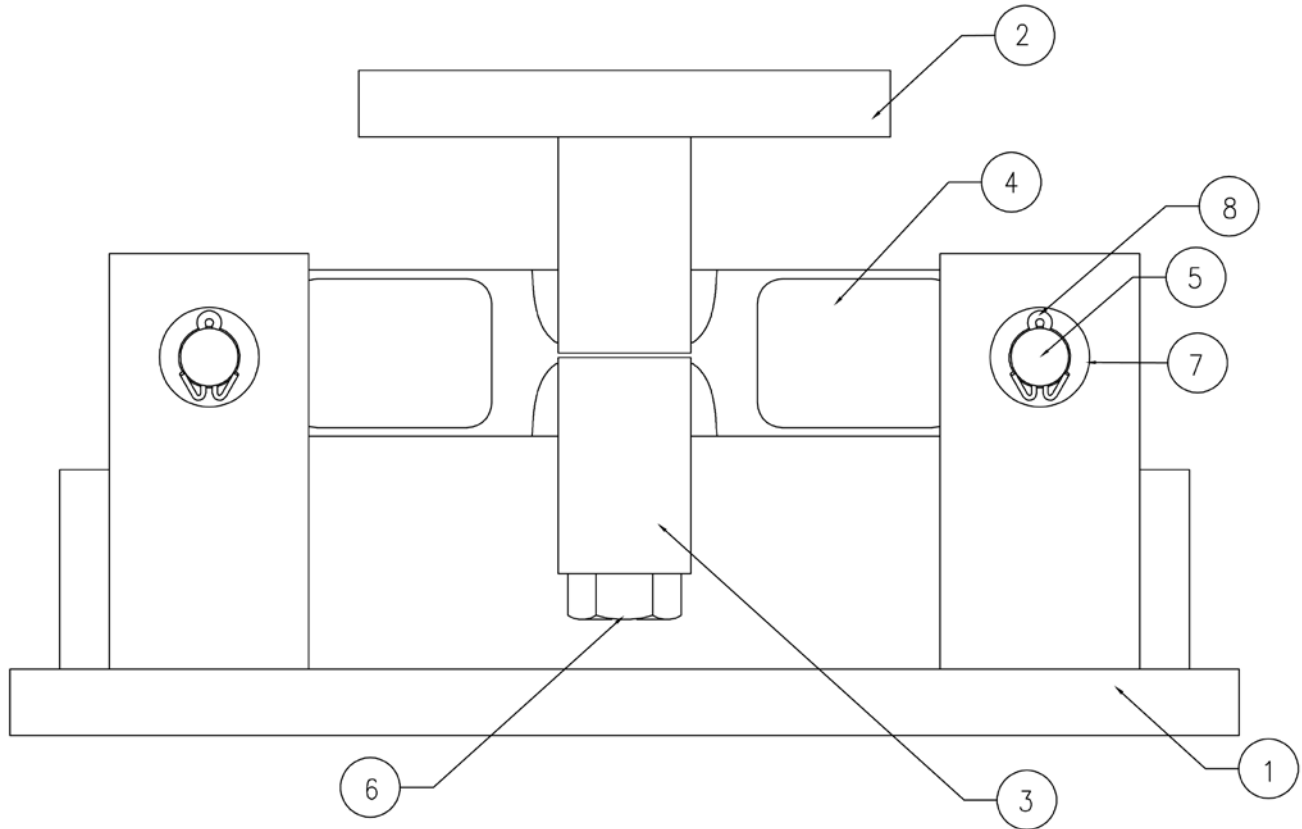
## LOAD CELL REPLACEMENT, CONT.

### CLDBR 30K / 50K Load Cell, Cont.

7. To reinstall the load cell, slide it through the opening in the top plate assembly, and then aligning the holes in the top plate assembly with the notch in the center of the load cell assembly, insert the load pin and retaining pins into the top plate assembly, passing them through the center notch in the load cell assembly.
8. Align the holes in the load pin and retaining pins with the holes in the top plate assembly, and then install **new** cotter pins to secure the load pin, retaining pin, and load cell assembly in place.
9. Position the load cell assembly and spacers on the base plate, aligning the holes in the load cell assembly and spacers with the holes in the base plate.  
**NOTE:** The spacer must not rotate under the load cell.
10. Install the load cell mounting bolts and washers removed earlier to fasten the load cell assembly and spacers in place.
11. Torque the load cell mounting bolts to the 20 ft/lb. Apply LOCTITE as required.  
**NOTE:** Insufficient torque may allow the rear of the load cell to lift; too much torque may cause bolt failure.
12. Lower the vessel onto the top plate assembly and install bolts, washers, and nuts removed earlier to secure the vessel to the top plate assembly.
13. Reconnect the load cell to the junction box. Refer to the LOAD CELL WIRING and JUNCTION BOX WIRING sections of this manual for wiring information.

# PARTS IDENTIFICATION

## Mild Steel and Stainless Steel Self-Checking Stand for CLDB2.5K / CLDB5K Load Cells



### Notes:

1. Floor stand tank scales are designed for static concentric loading.
2. Vertical tanks shall be checked to prevent tipping.
3. The purchaser of a floor stand tank scale is advised to install safety piers or other devices to restrict the vertical movement to one inch or less in case of accidental or other disarrangement of the scale assembly.
4. The purchaser shall provide physical checking to limit the horizontal movement of weight receiver to 1/4" maximum.
5. The contractor shall contact the state Weight and Measures Division for state installation and calibration requirements.
6. Loosen 1/2-13 UNC-2A X 2 1/2" hex head bolt (item 6) to attach tank legs to top plate assembly (item 2), and then retighten.

## PARTS IDENTIFICATION, CONT.

### Mild Steel Self-Checking Stand for CLDB2.5K / CLDB5K Load Cells

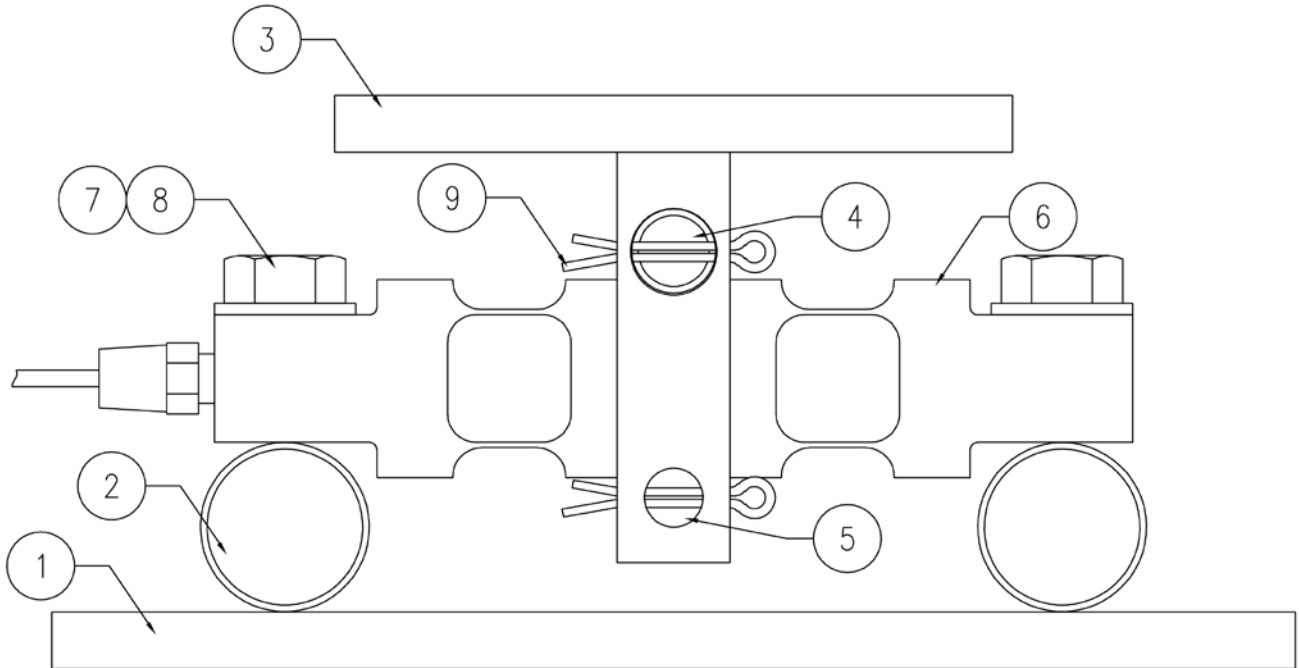
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3500-C178-0A	BOTTOM PLATE ASSEMBLY
2	1	3500-C179-0A	TOP PLATE ASSEMBLY
3	1	3500-B180-08	CLAMP BLOCK
4	REF	CLDB2.5K	2,500 LB / 1,135 KG LOAD CELL ASSEMBLY
		CLDB5K	5,000 LB / 2,270 KG LOAD CELL ASSEMBLY
5	2	3500-B181-18	LOAD PIN, 7/16 DIA X 3.5"
6	2	6007-0500	BLT HEX HEAD, 1/2-13 UNC-2A X 2 1/2"
7	4	6024-0013	WASHER FLAT, 7/16 (.46)
8	4	6009-5000	PIN COTTER, 1/8 X 1"

### Stainless Steel Self-Checking Stand for CLDB2.5K / CLDB5K Load Cells

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3500-C178-1A	BOTTOM PLATE ASSEMBLY, S.S.
2	1	3500-C179-1A	TOP PLATE ASSEMBLY, S.S.
3	1	3500-B180-18	CLAMP BLOCK, S.S.
4	REF	CLDB2.5K	2,500 LB / 1,135 KG LOAD CELL ASSEMBLY
		CLDB5K	5,000 LB / 2,270 KG LOAD CELL ASSEMBLY
5	2	3500-B181-18	LOAD PIN, 7/16 DIA X 3.5"
6	2	6007-0426	BLT HEX HEAD, 1/2-13 UNC-2A X 2 1/2" , S.S.
7	4	6024-0021	WASHER FLAT, 7/16 (.46) , S.S.
8	4	6009-5086	PIN COTTER, 1/8 X 1" , S.S.

## PARTS IDENTIFICATION, CONT.

### Mild Steel and Stainless Steel Self-Checking Stand for CLDBR5K / CLDBR10K / CLDBR20K Load Cells



#### Notes:

1. Torque the 1/2-13 UNC-2A X 2 1/2" hex head bolts (item 8) to 20 ft/lb, and apply LOCKTITE as required.
2. The spacer (item 2) must not rotate under the load cell (item 6).

## PARTS IDENTIFICATION, CONT.

### Mild Steel Self-Checking Stand for CLDBR5K / CLDBR10K / CLDBR20K Load Cells

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3500-B198-08	BASE PLATE
2	2	3500-B199-18	SPACER
3	1	3500-B196-0A	TOP PLATE ASSEMBLY
4	1	3500-B200-18	LOAD PIN
5	1	3500-B201-18	RETAINING PIN
6	REF	CLDBR5K	5,000 LB / 2,270 KG LOAD CELL ASSEMBLY
		CLDBR10K	10,000 LB / 4,535 KG LOAD CELL ASSEMBLY
		CLDBR20K	20,000 LB / 9,070 KG LOAD CELL ASSEMBLY
7	2	6024-0015	WASHER FLAT, 5/8
8	2	6007-0161	BLT HEX HD, 5/8-18 UNF-2A X 3 1/4
9	2	6009-5002	COTTER PIN, 3/16 X 1 1/2"

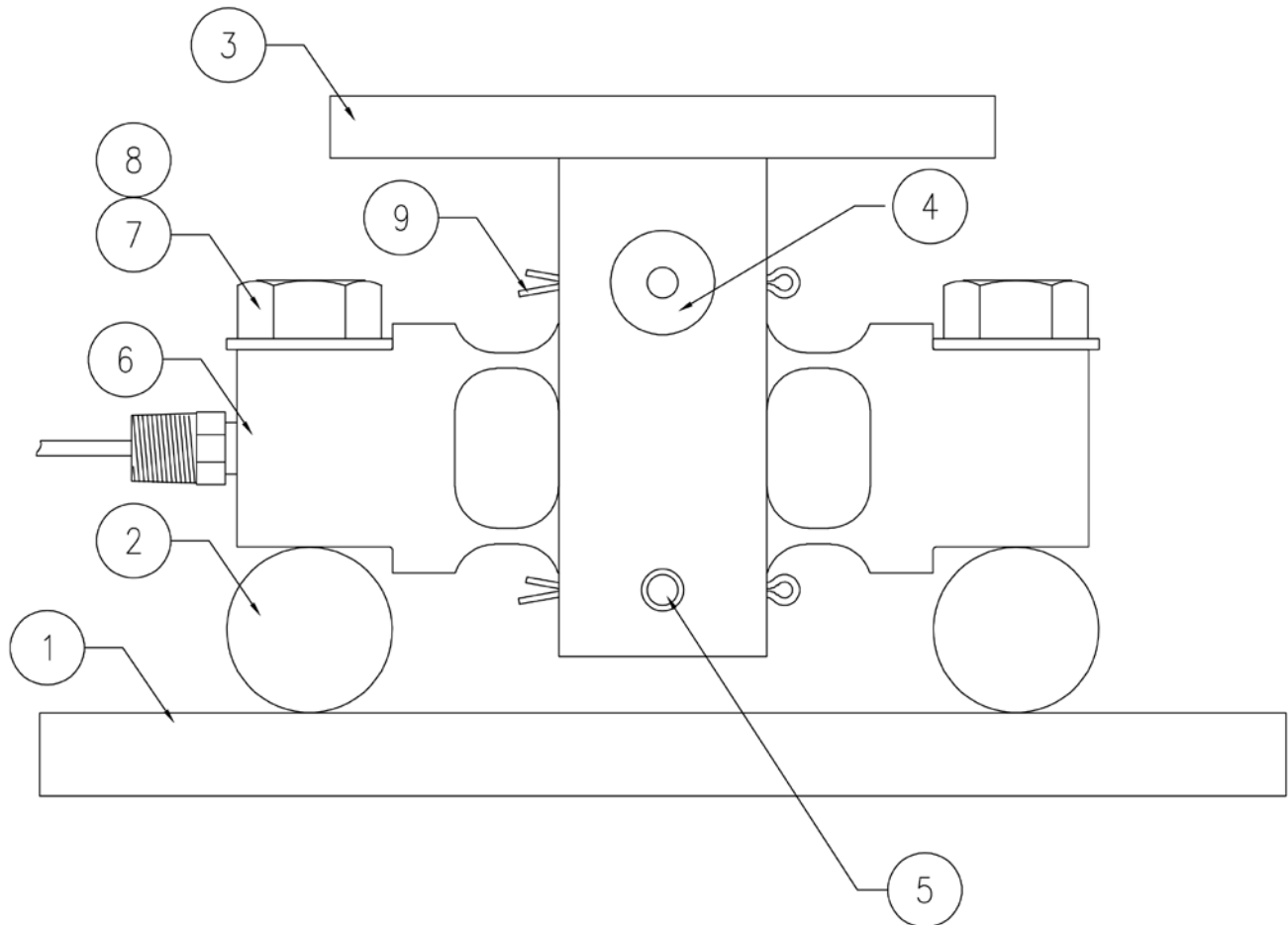
### Stainless Steel Self-Checking Stand for CLDBR5K / CLDBR10K / CLDBR20K Load Cells

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3500-B198-18	BASE PLATE, S.S.
2	2	3500-B199-18	SPACER
3	1	3500-B196-1A	TOP PLATE ASSEMBLY, S.S.
4	1	3500-B200-18	LOAD PIN
5	1	3500-B201-18	RETAINING PIN
6	REF	CLDBR5K	5,000 LB / 2,270 KG LOAD CELL ASSEMBLY
		CLDBR10K	10,000 LB / 4,535 KG LOAD CELL ASSEMBLY
		CLDBR20K	20,000 LB / 9,070 KG LOAD CELL ASSEMBLY
7	2	6024-0025	WASHER FLAT, 5/8, S.S.
8	2	6007-0171	BLT HEX HD, 5/8-18 UNF-2A X 3 1/4, S.S.
9	2	6009-5003	COTTER PIN, 3/16 X 1 1/2" , S.S.



## PARTS IDENTIFICATION, CONT.

### Mild Steel and Stainless Steel Self-Checking Stand for CLDBR30K / CLDBR50K Load Cells



#### Notes:

1. Torque the 1/2-13 UNC-2A X 2 1/2" hex head bolts (item 8) to 20 ft/lb, and apply LOCKTITE as required.
2. The spacer (item 2) must not rotate under the load cell (item 6).

## PARTS IDENTIFICATION, CONT.

### Mild Steel Self-Checking Stand for CLDBR30K / CLDBR50K Load Cells

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3500-B187-08	BASE PLATE
2	2	3500-B188-18	SPACER
3	1	3500-B189-0A	TOP PLATE ASSEMBLY
4	1	3500-B190-18	LOAD PIN
5	1	3500-B191-18	RETAINING PIN
6	REF	CLDBR30K	30,000 LB / 13,605 KG LOAD CELL ASSEMBLY
		CLDBR50K	50,000 LB / 22,700 KG LOAD CELL ASSEMBLY
7	2	6024-0100	WASHER FLAT, 1" (N)
8	2	6007-0452	BLT HEX HD, 1-8 UNC-2A X 5 1/4
9	2	6009-5001	COTTER PIN, 3/16 X 3"

### Stainless Steel Self-Checking Stand for CLDBR30K / CLDBR50K Load Cells

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3500-B187-18	BASE PLATE, S.S.
2	2	3500-B188-18	SPACER
3	1	3500-B189-1A	TOP PLATE ASSEMBLY, S.S.
4	1	3500-B190-18	LOAD PIN
5	1	3500-B191-18	RETAINING PIN
6	REF	CLDBR30K	30,000 LB / 13,605 KG LOAD CELL ASSEMBLY
		CLDBR50K	50,000 LB / 22,700 KG LOAD CELL ASSEMBLY
7	2	6024-0035	WASHER FLAT, 1" (N), S.S.
8	2	6007-0442	BLT HEX HD, 1-8 UNC-2A X 5 1/4, S.S.
9	2	6009-5004	COTTER PIN, 3/16 X 3", S.S.

# STATEMENT OF LIMITED WARRANTY

## WARRANTY TERMS

Cardinal Scale Manufacturing Company warrants the equipment we manufacture against defects in material and workmanship. The length and terms and conditions of these warranties vary with the type of product and are summarized below:

PRODUCT TYPE	TERM	MATERIAL AND WORKMANSHIP	LIGHTNING DAMAGE See note 9	WATER DAMAGE See note 7	CORROSION See note 4	ON-SITE LABOR	LIMITATIONS AND REQUIREMENTS
<b>WEIGHT INDICATORS</b>	90 DAY REPLACEMENT ----- 1 YEAR PARTS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
<b>LOAD CELLS</b> (Excluding Hydraulic)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
<b>HYDRAULIC LOAD CELLS</b> (When purchased with Guardian Vehicle Scale)	LIFETIME	YES	YES	YES	YES	90 DAYS	1, 5, 6, 8 A, B, C, D
<b>HYDRAULIC LOAD CELLS</b> (When purchased separately)	10 YEARS	YES	YES	YES	YES	NO	1, 5, 6, 8, 9 A, B, C, D
<b>VEHICLE SCALE</b> (Deck and Below Excl. PSC Series)	5 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6 A, B, C, D, E
<b>LSC SCALE</b> (Deck and Below)	3 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6, 11 A, B, C, D
<b>GUARDIAN FLOOR SCALES</b>	10 YEARS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6, 9, 10 A, B, C, D
<b>ALL OTHER CARDINAL PRODUCTS</b>	1 YEAR	YES	YES	YES	YES	NO	1, 2, 5, 6 A, B, C, D, E
<b>REPLACEMENT PARTS</b>	90 DAYS	YES	YES	YES	YES	NO	1, 2, 4, 5, 6 A, B, C, D
<b>SWIM AND 760 SERIES VEHICLE SCALES</b>	1 YEAR	YES	YES	YES	YES	90 DAYS	1, 2, 5, 6 A, B, C, D
<b>SOFTWARE</b>	90 DAYS	YES	N/A	N/A	N/A	NO	1, 6 B, C, D
<b>CONVEYOR BELT SCALES</b> (including Belt-Way)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D, E, F



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Webb City, MO 64870

04/24  
Printed in USA  
315-WARRANTY-CAR-M

## APPLICABLE LIMITATIONS AND REQUIREMENTS

1. This warranty applies only to the original purchaser. The warranty does not apply to equipment that has been tampered with, defaced, damaged, or had repairs or modifications not authorized by Cardinal or has had the serial number altered, defaced or removed.
2. This warranty is not applicable to equipment that has not been grounded in accordance with Cardinal's recommendations.
3. This equipment must be installed and continuously maintained by an authorized Cardinal / Belt-Way dealer.
4. Applies only to components constructed from stainless steel.
5. This warranty does not apply to equipment damaged in transit. Claims for such damage must be made with the responsible freight carrier in accordance with freight carrier regulations.
6. Warranty term begins with date of shipment from Cardinal.
7. Only if device is rated NEMA 4 or better or IP equivalent.
8. Lifetime warranty applies to damages resulting from water, lightning, and voltage transients and applies only to the hydraulic load cell structure itself (does not include pressure transducers, rubber seals, o-rings, and associated wiring).
9. 10-Year prorated warranty on hydraulic load cells.
10. 1-Year warranty for scale structure.
11. PSC models' warranty coverage applies only to agricultural installations on farms up to 3,000 acres (LSC models not limited in this manner).
12. Load cell kits MUST be installed in accordance with Cardinal Scale instructions. Failure to follow these instructions will void the warranty.

## EXCLUSIONS

- A.) This warranty does not include replacement of consumable or expendable parts. The warranty does not apply to any item that has been damaged due to unusual wear, abuse, improper line voltage, overloading, theft, fire, water, prolonged storage or exposure while in purchaser's possession or acts of God unless otherwise stated herein.
- B.) This warranty does not apply to peripheral equipment not manufactured by Cardinal. This equipment will normally be covered by the equipment manufacturer's warranty.
- C.) This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of our product. Cardinal will not be liable for consequential damages of any nature, including but not limited to loss of profit, delays or expenses, whether based on tort or contract. Cardinal reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate said improvements in equipment previously manufactured.
- D.) This warranty is in lieu of all other warranties expressed or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Cardinal products installed in the forty-eight contiguous United States and Canada.
- E.) This warranty does not cover paint coatings due to the variety of environmental conditions.
- F.) Do not cut load cell cables on load cells returned for credit or warranty replacement. Cutting the cable will void the warranty.
- G.) Software is warranted only for performance of the functions listed in the software manual and/or the Cardinal proposal.
- H.) The software warranty does not cover hardware. Warranties on hardware are provided from the hardware vendor only.
- I.) The software warranty does not cover interfacing issues to non-Cardinal supplied hardware.
- J.) The software warranty does not include automatic software upgrades unless purchased separately.



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