

TuffSeal®

Heavy Capacity Junction Box

JB8SP/JB8SPT

Installation Guide



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Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com or obtained by calling 715-234-9171 and asking for the training department

1.0 Introduction



Figure 1-1. TuffSeal Truck Scale Version Junction Box

The TuffSeal® eight-channel junction box is a signal trim junction box that can accommodate up to eight load cells and is used in truck scale installations. Additional load cells can be connected to the junction box by wiring additional junction boxes to the expansion terminal located on the main board. Both models have a new Prevent® breather vent. The breather vent inhibits the buildup of pressure caused by sudden temperature or environmental changes and should be changed every six months to one year as it will become dirty over time. When correctly installed, both models can withstand 900 PSI water pressure.

Both models will function properly without modification. However, load cell output can be individually trimmed with potentiometers which is further explained in Section 5.0 on page 7 of this manual.

Transient protection comes standard with the JB8SPT model junction box.

Model Designations

The TuffSeal eight-channel junction box comes in two different models. They include:

RLWS Part Number	Name	Description
91782	JB8SP	Truck Scale Signal Trim Version
91783	JB8SPT	Truck Scale Signal Trim Version with Transient Protection

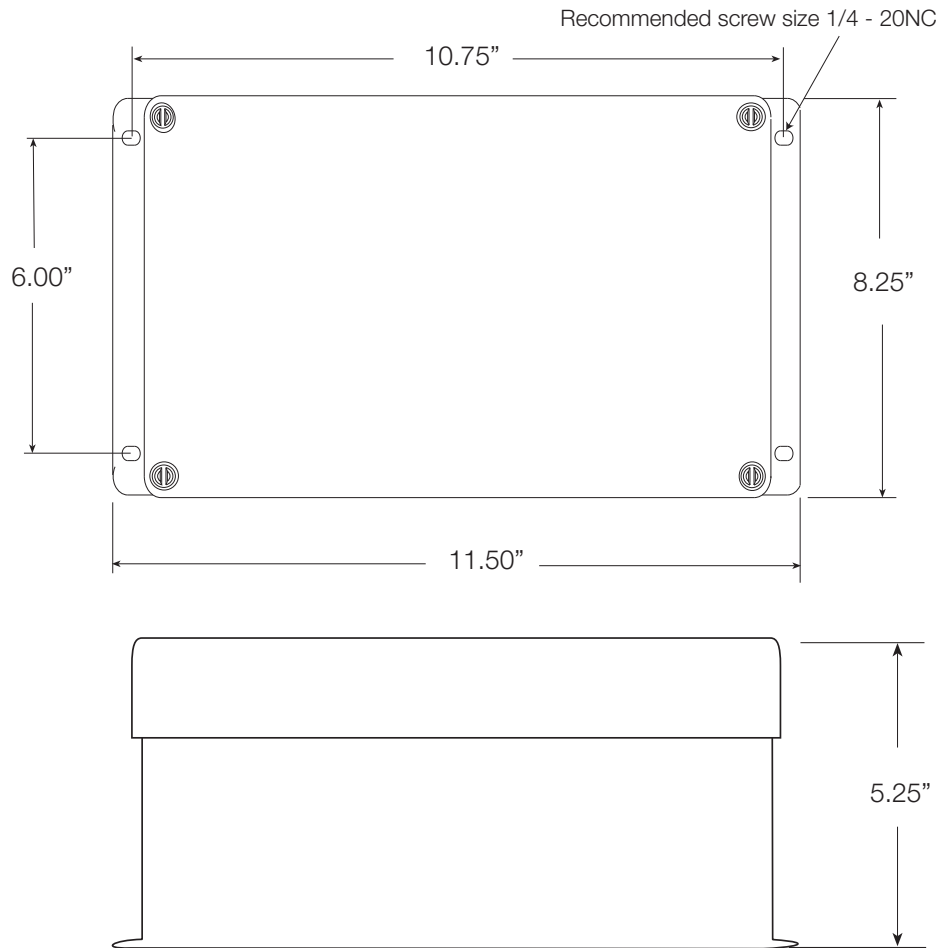
Table 1-1. Model Designations

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2.0 TuffSeal Truck Scale Version Mounting Procedure

The junction box should be mounted in a location that is convenient for servicing and away from standing water. Try to mount the enclosure in a location so that the load cell cable need not be cut, nor length added. Load cell output is temperature compensated for the supplied cable length. Altering the length can change the cell's signal output.

Depending on the mounting surface, the enclosure is attached using four pan-head screws, bolts, or other suitable fasteners (not included). Figure 2-1, shows the dimensions for mounting the enclosure.



(8) 3/8" NPT Cord Grips - Cable Diameter 0.157" - 0.314"
(2) 1/2" NPT Cord Grips - Cable Diameter 0.272" - 0.472"
Note: with reducing glands, the cable diameter changes to 0.295" - 0.353"

Figure 2-1. JB8SP and JB8SPT Enclosure Dimensions

3.0 Wiring the Junction Box

All TuffSeal junction box models have been designed to connect and trim up to eight load cells per board. However, it is possible to use this box with two, four, six and eight load cell combinations. Use the expansion port on the main board (shown below), to connect multiple junction boxes in series to accommodate applications that have ten or more load cells.

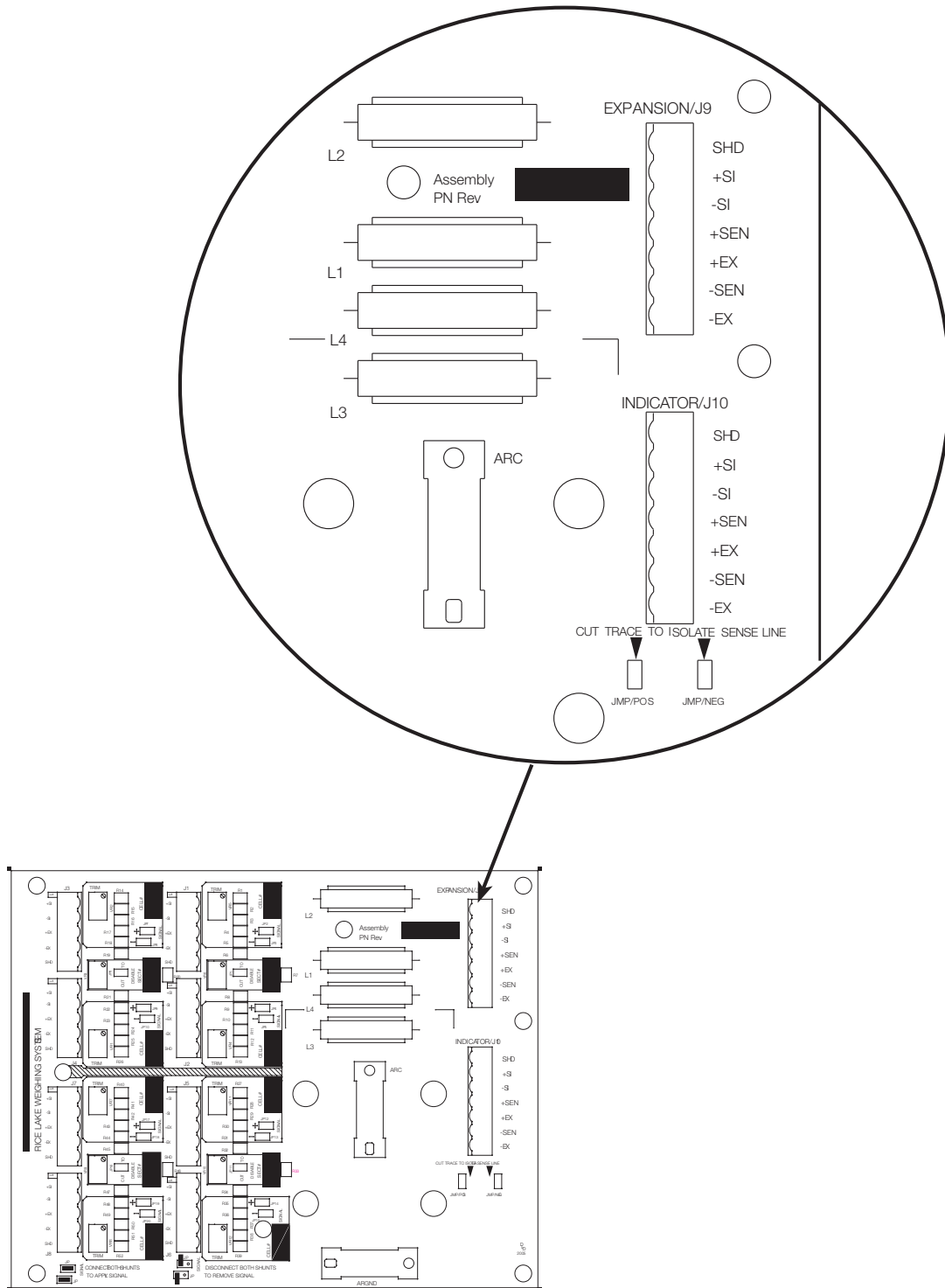


Figure 3-1. Expansion Port Wiring Location

After determining the wiring pattern, route the load cell cables through the cord grip assemblies and leave the grips loose until final closure. Before connecting the load cell wires to the terminals, strip the wire insulation back 1/4" to expose the wire. The pluggable connector will accommodate 12 to 28 gauge wire. To connect the load cell wires to the appropriate connectors, open each pole with a small screwdriver and insert the appropriate wire into the exposed wire opening. Tighten the end screw with the screwdriver to secure each wire into place. Plug the terminal to the appropriate header socket.

The indicator terminal is used to connect the main cable to the weight indicator. Determine the indicator's load cell input connections from the operating manual. Run a cable from your indicator terminal into the junction box through the larger cord grip and make the connections on the indicator terminal using the same procedure as inserting load cell cables to the appropriate connectors.

Note: If cables could be exposed to water or other liquids, bend a short downward loop in all cables near the cord grips so any fluids draining down the cables will drip off before reaching the junction box. See Figure 3-2 below.

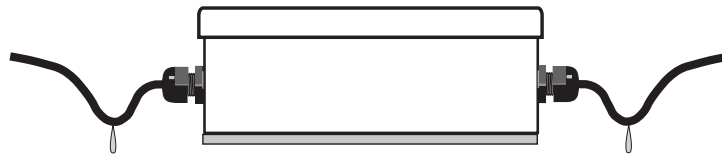


Figure 3-2. Drip Loop Cable

4.0 Transient Board Installation Procedure

The JB8SPT comes standard with transient protection (PN 89894). Figure 4-1 shows where the transient protection board plugs into the main CPU board.

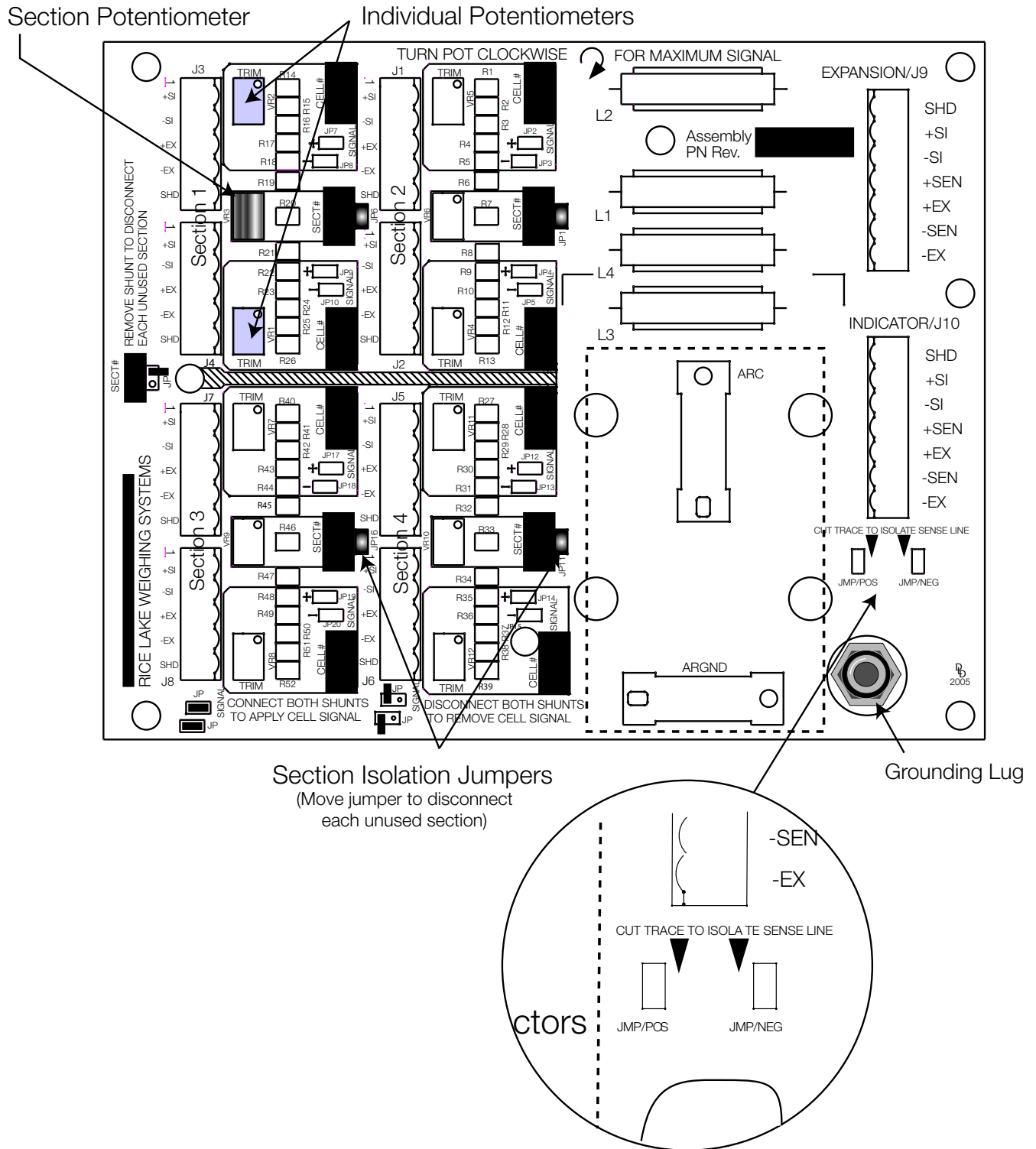


Figure 4-1. TuffSeal Junction Board, Showing the Transient Board Location

4.1 Grounding Transient Protection

To ensure proper operation, the JB8SP and JB8SPT must be grounded to protect the junction box from stray voltage and is essential for operation of the DC transient protection incorporated into the junction box.

A ground wire has already been attached to the grounding lug located on the main board and extends out of the junction box cord grip. Securely attach a 10 gauge ground wire to the ground wire that's already coming out of the junction box. The final ground wire connection must be at the AC power supply ground terminal and is separate from the truck scale ground.

Figure 4-2 illustrates an example of single point grounding of junction box and the truck scale.

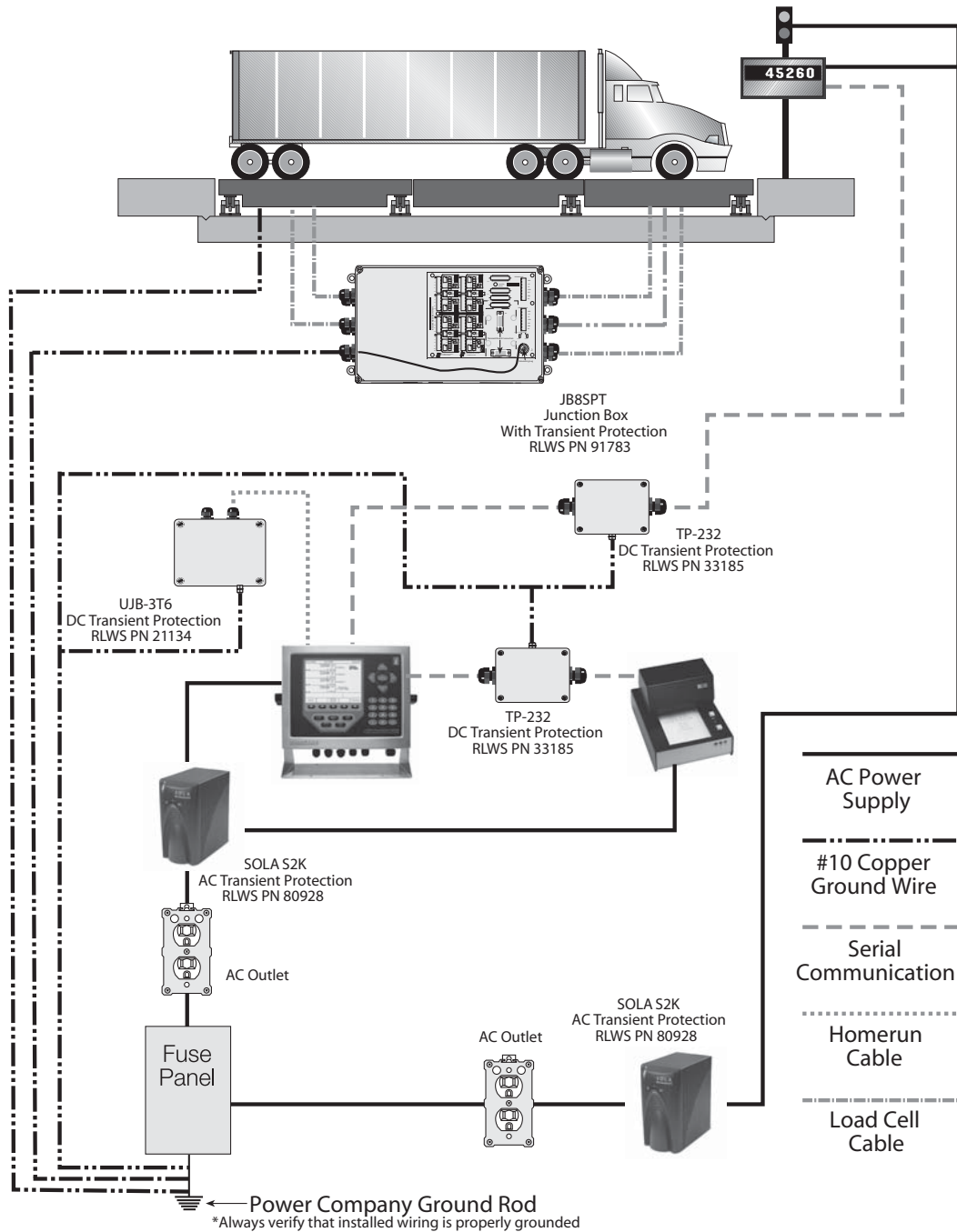


Figure 4-2. Single Point Grounding

5.0 Trimming Procedure

Trimming is a process of equalizing the output from multiple individual load cells. If needed, load cell output can be individually trimmed with potentiometers.

Whenever a substantial amount of trim (more than 7% of normal output), seems necessary to equalize output, check for other possible problems. The best trim is always the least amount of trim.

The JB8SP and JB8SPT is a signal trimming device with individual and section trimming potentiometers (see Figure 4-1 on page 5).

Use the following steps to properly trim the JB8SP and JB8SPT junction box.

Note: *If using two junction boxes with an expansion cable between them, make sure you cut the sense trace on the board that has the home run cable connected to it (see figure 4-1 on page 5). This ensures sensing out to the furthest junction box within the system. You must use sic conductor cable between the two junction boxes to ensure proper functioning of sense.*

1. Determine the number of load cells needed. It should be noted that when section trimming you can use combinations of load cells other than eight, but the combination must be an even number of cells.
2. Turn all the individual cell and section potentiometers that you are using fully **CLOCKWISE** to give maximum signal output from each section. Make sure you remove all shunt jumpers of the individual cells you are not using to disable them and ensure the section potentiometer for these is turned fully.
Note that if desired, all the potentiometers can be adjusted 3-5 turns counter-clockwise to allow trim capabilities both positive and negative.
3. Trim by turning potentiometers **COUNTER CLOCKWISE** to lower output to match lowest value.
4. Remove all weight from the scale and zero the indicator. Place calibrated test weights over each load cell or section. The amount of test weights to be used will depend on the scale configuration; for specific recommendations, refer to the *Handbook 44*, published by the National Institute of Standards and Technology (NIST).
5. Record the value displayed on the indicator after the test weight is placed in turn over each load cell, or over each section. Select the load cell or section that has the lowest value as your reference point. This cell or section will not be trimmed.
6. Place the same test load over each cell or section in turn. Using the corresponding potentiometer trim each cell or section down to equal the reference point. As load cell corrections are interactive, check zero after every adjustment to avoid zero shift. Also check cells or sections again and repeat steps six, seven, and eight as needed.

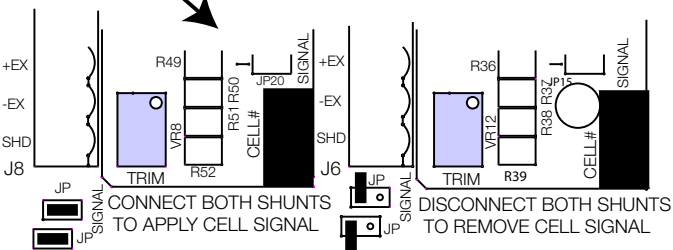
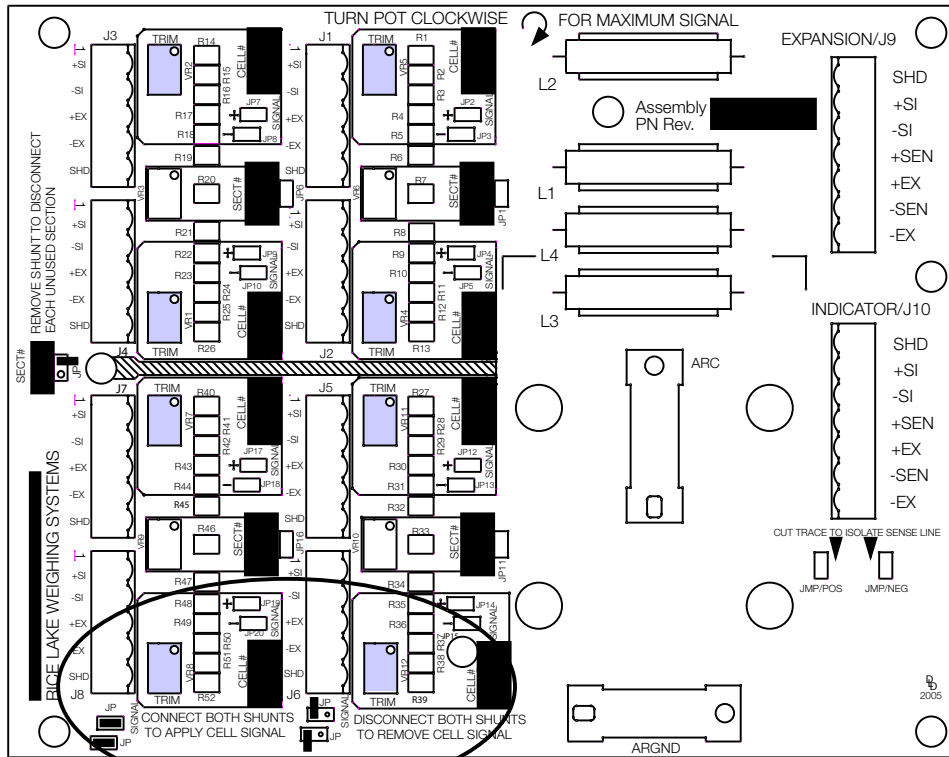


Figure 5-1. Shunt Locations

7. Pull excess cable out of the enclosure.
8. Using a wrench, tighten nut until the rubber touches the cable completely.
9. Then tighten the nut an additional 1/2 turn (180°). To be watertight, each cord grip must be tightened so the rubber sleeve begins to protrude from the hub.
10. Unused hubs must be properly plugged to prevent moisture entry. Extra hole plugs are provided to seal up any unused hubs.
11. Remove the desiccant from the plastic bag, and insert the desiccant bag into the junction box before closing. Inspect the desiccant during normal service and change desiccant as needed.
12. Replace the cover and torque the cover screws in an alternating pattern to 15 in/lb to be certain the gasket is compressed equally in all locations.

6.0 TuffSeal Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

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

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

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SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

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