SURVIVOR® EZ

Flattop Truck Scale

Assembly Instructions

This booklet covers all EZ–Series truck scale installations. Use these instructions as general installation guidelines unless the blueprints furnished with the specific scale ordered directly contradict this instruction booklet. Blueprints furnished with the specific scale always take priority over these generic EZ–Series installation guidelines.

Refer to the blueprints furnished with the scale for all component numbering sequences.

RICE LAKE WEIGHING SYSTEMS
Industrial Solutions on a Global Scale®
ISO 9001 REGISTERED

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Contents

1.0 Overview

Congratulations on your decision to purchase and install a SURVIVOR® EZ Truck Scale. You will find that scale components have been designed and packaged in ways that reduce your on-site installation time wherever possible. A well-organized, experienced installation crew should be able to completely install a typical 12' x 70' scale in one day.

The modular sections of the SURVIVOR® EZ truck scales are shipped pre-assembled and ready to be placed into position on temporary setting blocks using a crane capable of handling 8,000 lbs. These deck modules are then bolted together and leveled into final position flush with the approaches. Mounts are shipped pre-assembled with load cells, adapters, and flexible conduit sections attached. Mounts are set to the level of the deck, then anchored and grouted to the foundation. Fibermesh concrete is then poured and cured for the final deck surface. Cabling is run in conduit and electronic equipment connected to finish the installation.

The general assembly order is summarized below.

1. Set deck modules into position on setting blocks and bolt deck modules together.
2. Level deck with shims into final position even with approaches.
3. Set mounts with load cells to deck; remove setting blocks.
4. Install mount anchor bolts and grout beneath mount plates.
5. Pour, finish, and seal concrete deck.
6. Run cabling and conduit; make electrical connections.
7. Connect indicator and peripheral devices.

1.1 Foundation Slab Cure Period

Standard concrete reaches full strength after a 28-day cure. Note that the concrete foundation slab must cure in a moist state for at least seven days (three days for quick-early concrete) before driving on it with even moderate loads. At seven days, standard concrete is at approximately 75% of its maximum strength and can handle moderate loads. Maximum loading of a slab before it reaches 75% of maximum strength may damage the foundation.

1.2 Assembly Time Estimates

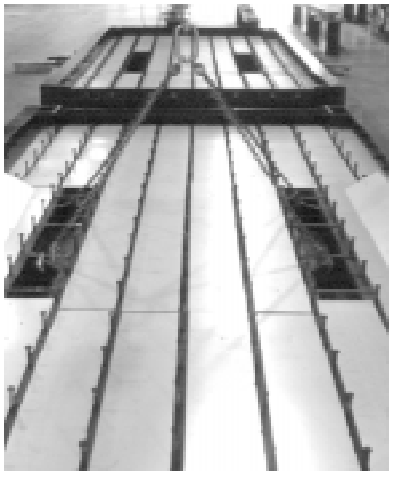
When scheduling installation for a typical three-section, 70' truck scale, plan for a minimum two-hour crane rental to set the sections. A two-man crew, aided by a crane operator, can unload modules from the truck, place them into position, and bolt them together in 1-2 hours.

Mount and load cell installation should require approximately 2 hours. A concrete crew of three or four can normally pour, finish, and seal-cure the concrete deck surface of a 70-foot scale in 2-3 hours. Conduit, electrical wiring, and final connections can normally be completed the same day while the concrete is curing.

1.3 Recommended Equipment and Tools

- Crane with a minimum 8,000 lb capacity
- Four chains (8' minimum length each) with hooks
- 3/4" rotary hammer drill
- 3/4" x 30" masonry carbide bit
- Two low-profile (7" ht.) 4-ton hydraulic jacks
- 7-1/2" setting blocks and shims to total 7-3/4" height
- Torque wrench to 700 ft. lbs.
- Socket wrenches to 1-5/8" (drive compatible with torque wrench)
- Box end wrenches to 1-1/2"
- Open end wrench set (7/16"-3/4")
- 4' bubble level
- Small torpedo level
- Hammers, maul, pry bar
- Concrete vibrator (optional)
- Concrete screed board, bull float, hand trowels, edger, broom
- Long-handled paint roller or spray gun for applying epoxy curing agent
- Hand tools for pulling and connecting electrical wiring
- Optional jacking jig (RLWS P/N 49523) to provide clearance for jacks over 7" in height

1.4 Lifting Options

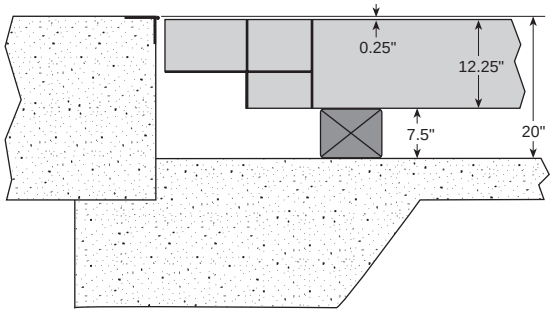


Deck modules can be lifted by four chains and hooks set in the integral lifting plates in the deck.The plates are located to provide balanced lifting of the modules. The galvanized support sheets have been left off in these areas to allow access to the lifting plates during installation. Once the module is in final position and bolted, the lifting plates are no longer needed and the open areas can be covered with the galvanized sheets provided in preparation for concrete. The extra sheets will all be shipped in one module.

Modules can also be lifted using four longer chains to clevises set in the lifting holes near each corner. These four holes will still be accessible after concrete is poured, so can be used to relocate the filled scale module if necessary in the future.

Rigid 3/4" metal conduit is attached to the bottom of each module. The weight of the modules is carried by 8" x 12" I-beam sections during shipping. Six 1" x 2" spacer blocks are welded to the bottom of the main beams to protect the conduit from damage if the module needs to be temporarily set upon a flat surface.

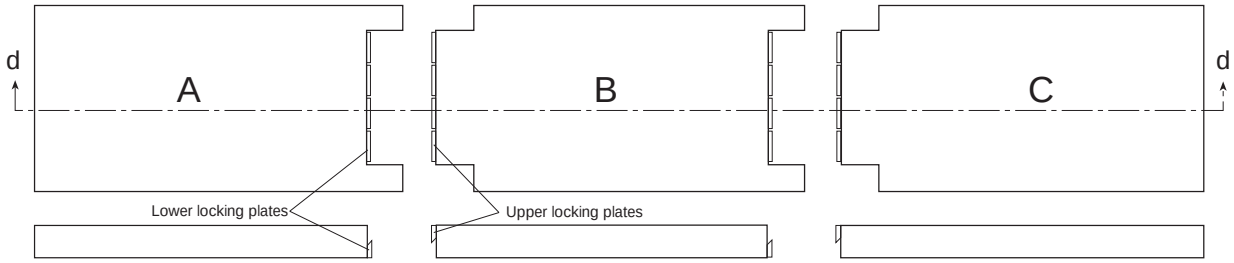
1.5 Temporary Setting Blocks



When the deck is level with the approaches, the finished scale will have 7-3/4" clearance between the bottom of the weighbridge and the concrete foundation. Most installers use setting blocks that are approximately 7-1/2" high for the initial placement and connecting of the deck modules. That places the deck surface approximately 1/4" below the approaches. Shims are added during final leveling to raise the deck surface the last 1/4" to be level with the approaches. Some installers may prefer to use the 8" x 12" I-beam sections for setting blocks, then lower the deck 1/4" onto the load cells to achieve the 7-3/4" final deck height.

2.0 Assemble Deck Modules

Deck modules are designated as A, B, or C. All two-module scales have an A and C module, while longer scales with more than two modules have one or more B modules in addition.



Section dd

An A module is an end module and is the first one placed. The straight end has no locking plates and is placed next to the approach. The far end (right end in the diagram above) has two corner extensions for load cell mounts, while the rest of the end plate has lower locking plates to accept the next module's upper locking plates.

A B module is a middle module and is placed next to the A module. The near end (left end in the diagram) has corner cutouts to accept the corner extensions on the adjoining A module and has upper locking plates which mate with the lower plates on the A module. The far end has two corner extensions for load cell mounts, while the rest of the end plate has lower locking plates to accept the next module's upper locking plates. More than one B module can be connected together in longer scales.

A C module is an end module that is the last one placed. The mating end has upper locking plates and corner cutouts for attaching to either an A or B module. The far end is straight with no locking plates and is placed next to the approach.

Modules have been stacked on the truck for shipping in the order they will be installed on the foundation. The A module will be on top, followed by any B modules, and the C module will be on the bottom.

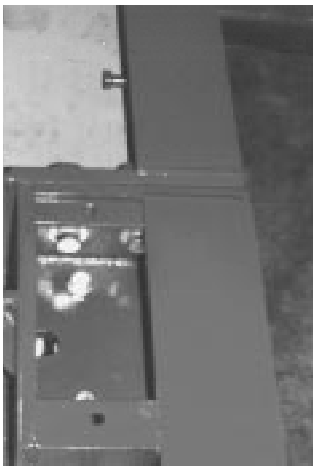
The following directions assume 7-1/2" setting blocks are being used.

2.1 Place End Module A

Place four temporary setting blocks so they will not contact the conduit installed under each module. With 7-1/2" setting blocks placed under each corner to support the outside main beams, place module A with the straight end 1-1/2" from the concrete approach (1" from the round rock guard welded onto the bulkhead). With 7-1/2" blocks, the deck surface will be approximately 1/4" below the level of the approach. Square this module with the approach. Check that no debris has fallen into the angled surface of the locking plates on the end that will mate with the next module.

2.2 Place and Attach Adjoining Modules B and C

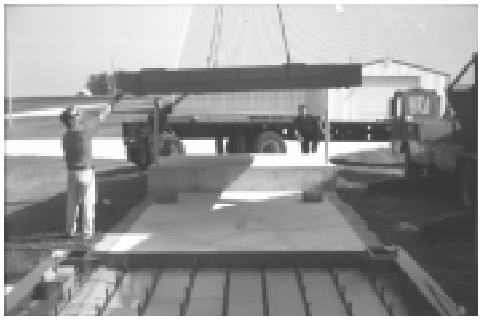
Place two 7-1/2" setting blocks to support the far corners of the main beams of the next module. In a scale with more than two modules, the next module will be a B module; if the scale has only two modules, it will be a C module. Place the next module so its upper locking plates engage the lower locking plates of module A and the top surfaces of the two modules are even.



When both modules are aligned, start the six bolts which connect the modules. A long pry bar can be used to make small adjustments in module alignment, but it is easier to leave the second module attached to the crane for making small alignment changes. The two bolts on the outer side of the main beam flanges are each held with two flat washers, a lock washer, and a hex nut. The four bolts on the inside of the flanges are inserted through the load cell access cavities (beneath the access plates) as shown at right. These bolts turn into hex nuts welded onto the B module or C module inside concrete shields that allow future disassembly. Tighten all six bolts to 640 ft-lb.

Place and set any other B modules in the scale in a similar manner. It is more difficult to align modules A and B for bolts if module C has been placed and connected to B before bolting A/B.

The final module will be a C module. Place it on setting blocks with the mating surface aligned to the adjoining module, and the straight end approximately 1-1/2" from the concrete approach (1" from the rock guard). Install and tighten all six bolts to 640 ft-lb as in previous operations.



2.3 Raise Deck Level with Approaches

Beginning at the approach end of module A, raise the scale deck with low-profile hydraulic jacks and add shims on the setting blocks until the deck surface is at the same height as the approach and level in all directions. An optional jacking jig can be purchased from RLWS to aid jack clearance when raising or lowering the deck.

Raise, level, and shim any B module(s) and the C module in the same manner.

Check the edge alignment of the modules with a stringline along one main beam. Make any necessary adjustments with the crane. The deck is now at its final position and ready for load cell mounts.

3.0 Set Load Cell Mounts

Mounts, load cells, and conduit adapters have been assembled at the factory to save on-site installation time. Mount installation consists of sliding the complete unit into place beneath the deck, raising the mount with the leveling screws to the deck, and connecting the grounding strap.

3.1 Position Mount Assembly

Mount assemblies and upper chairs with attached grounding straps are shipped in the hardware box. File the printed load cell CC forms in a safe place for future reference. Carry a mount assembly and upper chair to each mount location.

Turn the four baseplate leveling screws so they protrude approximately 1" through the bottom side. This raises the baseplate 1", giving 1/4" clearance for sliding the mount into place.

Set the mount (with leveling screws extended 1”) on the concrete foundation directly in front of its final position. Position the baseplate so the 1/4”-20 threaded hole and bolt in the baseplate (to secure the grounding strap) is toward the outside of the scale.

Each mount must be oriented so the cable exit from the load cell is facing the interior of the module to which it will be attached. The correct orientation will place the flexible conduit section on the load cell near the rigid conduit attached to the weighbridge. If a load cell must be reversed to achieve this orientation, you may take off a load cell and reverse its direction in the field. When retightening load cell screws, torque to at least 50 foot-pounds. The 90 degree fitting on the flexible conduit attached to a load cell can rotate 180 degrees to allow for correct conduit placement.

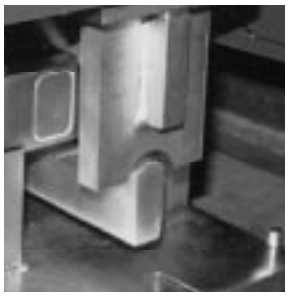
3.2 Position Upper Chair and Slide Mount into Place

Set and hold the upper chair of the mount on the link as shown at right. Holding the upper chair level, slide the entire mount assembly into position under the deck.

Start the four screws that hold the upper chair to the deck into the threaded holes in the chair. Two screws are located on the outside of the main beam while the other two are inside the load cell access cavity. Tighten the four screws in sequence to prevent binding as the upper chair raises into position. Torque the four screws to 260 ft-lb.

3.3 Raise and Align Mount Baseplate to Deck

The baseplate must now be centered and aligned in all directions and raised with the leveling screws until the deck bears on the load cell. You can tell if the baseplate is centered under the chair by how the top convex surface of the link is aligning with the concave bearing surface of the upper chair. Approximately 1/4" of link should protrude beyond each side of the upper chair. Move the baseplate sideways to improve alignment.

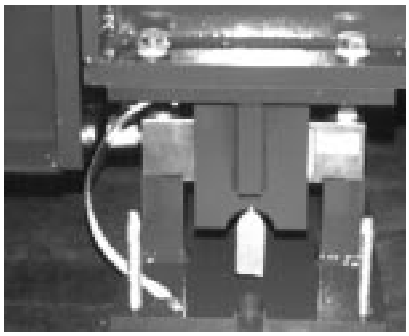


As the final alignment and raising is done, use a torpedo level to check that the link is hanging exactly plumb, and that the baseplate remains level in both directions.Turn the leveling screws to raise the baseplate until the link is lightly touching the upper chair bearing surface and aligned correctly. If adjustment is necessary, tap the baseplate edges lightly with a hammer to slide the entire mount sideways. Recheck the link for plumb and the baseplate for level in all directions.

When all mounts are set, jack the deck at each mount just enough to remove shims and setting blocks. Gently lower the weighbridge onto the load cell at each mount

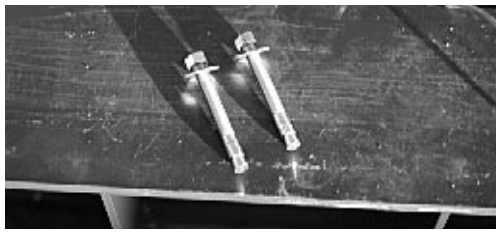
3.4 Attach Grounding Strap

One end of the ground strap is attached to the upper chair. The other end must be attached to the baseplate. Remove the 1/4" bolt from the mount baseplate. Insert the bolt through the fitting on the loose end of the ground strap and replace the bolt into the threaded hole on the baseplate as shown at right. Tighten the bolt securely with a wrench.



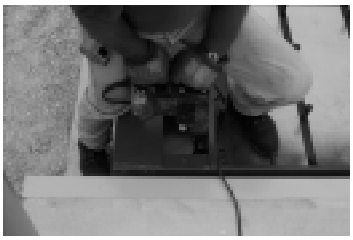
4.0 Install Anchor Bolts and Grout

Each mount requires two anchor bolts to prevent lateral motion or uplift. 7" x 3/4" anchor bolts with expansion heads as shown at right are supplied with the scale.



4.1 Anchor Bolts

Use an industrial hammer drill with a 3/4" carbide masonry bit at least 30" long to drill anchor bolt holes. Hold the bit as close to vertical as possible and drill a 3/4" hole at least 6" into the concrete beneath the anchor bolt slot on the outside of the baseplate as shown left.



On the inside of the baseplate, the inner anchor bolt is drilled through the cutout slot in the load cell access cavity as shown above right.

Place a washer and nut on each anchor bolt and drive the outer anchor into the drilled hole until the washer is solid against the baseplate. Note that in the photo at left, a dam has been added in preparation for grouting. To drive the inner anchor as shown at right, use a 24" long driver pipe with an inside diameter slightly larger than the 3/4" bolt. When bolts are driven, tighten nuts until the heads expand.

4.2 Grouting

Erect 1-1/2" high temporary wooden forms around each baseplate and pour 9,000 psi non-shrinking, epoxy/cement grout into the forms beneath the baseplate. Tap the form several times with a hammer, vibrating the grout to remove any air voids beneath the baseplate; it must have even support from continuous grout contact.

5.0 Pour, Finish, and Cure Concrete Deck

The scale deck is now ready for the concrete. Install the access plates over each load cell location to prevent concrete from spilling into the load cell access cavities. Cover the top of the junction box with cardboard or plastic to protect it from concrete splatters.

5.1 Concrete Specifications

Fibermesh® brand concrete or its equivalent is required to meet the standards necessary to replace steel mesh reinforcing. If Fibermesh or its equivalent is not available, standard 4000 psi concrete (6 bags/yd^3) may be used with the additional reinforcing of 6" x 6" x 10 gauge welded wire mesh.

Fibermesh is a brand name concrete mixture with the addition of 1.0 – 1.5 pounds of fibrillated polypropylene fibers per cubic yard of concrete. Uniform dispersion of the fibers throughout the mix prevents surface cracking from plastic shrinkage, replacing the traditional welded wire reinforcing. Fibermesh concrete also provides increased resistance to surface damage from impact and abrasion, and to water migration through the concrete. Fibermesh does not increase the ultimate compressive strength of the concrete to any significant degree. If using Fibermesh, order a 6 bags/yd^3 concrete mix and have fibrillated polypropylene fibers added at the redi-mix plant.

Normal quantity of polypropylene fibers in Fibermesh concrete is 1.5 pounds per cubic yard. For maximum protection from shrinkage cracks, abrasion, and impacts, up to 3.0 pounds per yd^3 of concrete may be added to the mix. If using a brushed final finish, fibers will not be visible in the completed surface.

In climates subject to freeze/thaw cycles, the mix should also contain up to 6% entrained air.

5.2 Pour and Finish Concrete Deck

The strength of Fibermesh, like other concrete, is largely dependent on the water/cement ratio. Adding extra water to make the concrete easier to pour and work will reduce the ultimate strength and increase the size and number of shrinkage cracks. **Mix the concrete no wetter than a standard 4" slump.** To increase plastic flow, consider using an electric concrete vibrator as shown at right rather than adding extra water to the mix.

Begin pouring at one of the end modules, vibrating the concrete well to work it into the inside of the main beams and around the shear connectors. Strike off and screed the concrete with a back-and-forth sawing motion to further settle the concrete and level the surface.

The first module can be bull floated to final level while the second module is being poured. Edge all concrete/metal frame joints.

Pour, screed, float, and edge any remaining modules.

After the concrete deck surface has hardened enough to support foot traffic, give it a brushed finish with a broom to provide safe traction.

Clean concrete splatters from the painted frame members with a wet sponge before they dry, and before applying a liquid curing agent.

5.3 Moist-Cure Concrete Deck

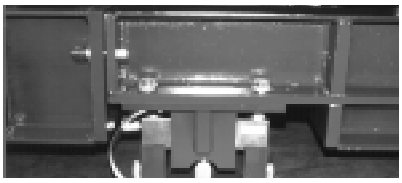
For proper curing, the surface must be kept moist for seven days. If the top surface is allowed to dry out during this time, the finished surface will be prone to unsightly spalling and surface cracking. Hot weather, full sun, and windy conditions all accelerate surface drying.

The easiest way to keep the surface moist for seven days is to roll or spray on an epoxy-based concrete curing solution immediately after final finishing. These epoxy-based curing products are available at contractor-supply companies. They both seal in moisture for slow curing and protect the surface from salt and corrosion when the scale is in use.

Alternately, the surface can be covered with continuous plastic and kept moist by frequent flooding beneath the plastic for the seven day cure period.

5.4 Retighten Module Connection Bolts

You may find that the weight of the concrete settled the individual modules and tightened the locking plates somewhat. Retighten the connection bolts at each module joint to 640 ft-lb to take up any slack caused by such settling.



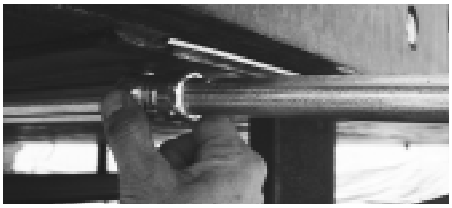
6.0 Install Cabling in Conduit

Rigid metal conduit is attached to the bottom of the scale deck. As the conduit plan is designed for several possible scale lengths and configurations, you may find extra conduit runs on your scale that are not required for your particular application. These extra runs can be ignored.

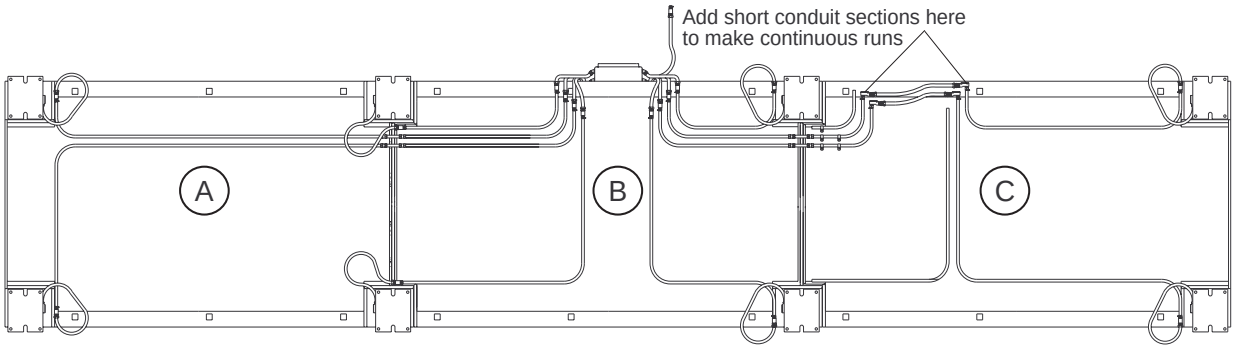
Scales with only 2 modules (A and C) mount the junction box on the C module and cables are run to the junction box entirely in the attached conduit.

Scales with 3 or more modules mount the junction box on a B module. In this case, certain conduit runs on the C module may require field splicing with short conduit sections to obtain continuous runs from the C module load cells to the junction box on the B module.

Conduit runs between deck modules are precisely aligned and can be connected with the short conduit sections and compression couplers included as shown at right.



6.1 Load Cells to Junction Box



Typical Conduit Runs on 3-Module Scale

Each load cell is equipped with 60' of load cell cable, sufficient to reach a centrally-located junction box on most scales of 3 modules or less. A watertight conduit adapter and a 30" section of flexible conduit is supplied for both ends of each load cell cable—at the load cell and at the junction box. To eliminate any possibility of conduit piping affecting load cell flexing, make a complete circular loop of the flexible conduit at the load cell as shown in the diagram above when connecting the load cell flexible conduit to the rigid conduit.

6.2 Junction Box to Indicator

60' of 6-wire homerun cable is supplied. It is to be run in 3/4" galvanized metal conduit from the junction box to the indicator. Galvanized metal conduit for this purpose is to be obtained locally. A 30" flexible conduit section and watertight conduit connector is provided where this cable exits the junction box. Do not run any other electrical cables in or near the conduit to the indicator.

6.3 Indicator to Peripherals

All 3/4" metal conduit for cabling from the indicator to remote displays and other peripheral devices is to be obtained locally. Conduit runs may be buried in a trench or secured above ground. Use separate conduit runs for AC power and DC data lines to avoid interference. As a general guideline, run AC and DC cables in separate trenches if possible. When DC data cables must run in the same trench as AC power lines, separate cables as much as possible.

6.4 Single-Point Ground Conductor

A bare 10 gauge solid wire is to be run from the scale frame to the grounding lug on the junction box then underground to the main AC power earth ground. If the optional DC transient protection board is installed, the ground conductor should also be connected to the transient protection board’s ground lug.

6.5 Junction Box Connections

Each NEMA 4 junction box is large enough to hold the summing board, optional transient protection devices, packaged desiccant, and extra load cell cable coiled inside the enclosure. An industrial corrosion inhibitor and desiccant such as the RLWS Industrial Corrosion Inhibitor (P/N 16037) should be added to the junction box enclosure before final closure.

In a truck scale up to 70 feet long, the single junction box location is determined by the length of the load cell cables and the junction box mounting studs on the outside main beams. A summing card mounted within the junction box is used to make all cable terminal connections. All terminal pins are clearly marked as to function.

On scales over 70 feet long with four or more modules, two or more junction boxes are necessary.

6.6 Electrical Ground Connections

Improper grounding systems on outdoor truck scales are often a cause of corrupted data from ground-loop current flows and costly lightning damage to electronics.

Always strive for a **single-point grounding** system. Do not drive ground rods at the scale location which establishes separate earth grounds for the scale. These separate earth grounds will not share the same zero reference as the existing earth ground for the AC power system. This

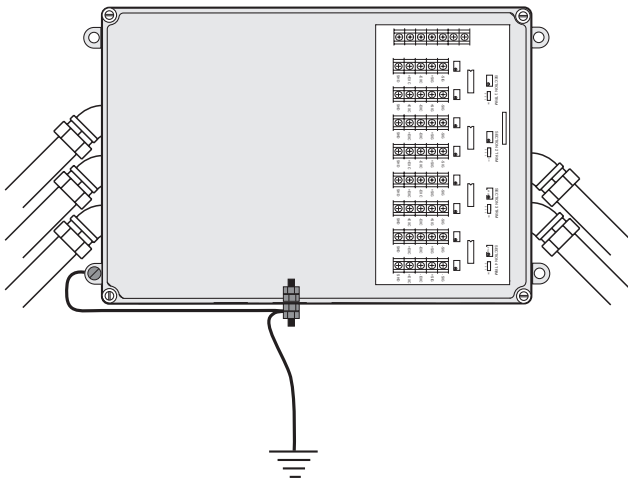
difference in electrical potential invites ground-loop current flow between the separate grounds, often corrupting serial data like RS-232 which depends on a stable zero reference.

In addition, a separate earth ground system at the scale can actually invite lightning or power surge damage:

- A minor powerline surge in the scale house electrical supply should immediately be shunted to ground. If a separate ground system exists at the scale with a lower potential than the main ground, the surge may travel out to the scale ground rod, damaging load cells on its way.
- A nearby lightning ground strike may instantly raise the zero potential of a ground rod at the scale location, while leaving the scale house ground rod unaffected less. That lightning surge will now take the easiest path to the lower-potential ground—through the scale wiring and back to the scale house ground, possibly damaging the indicator on its way.

Therefore, the best grounding system for the scale is the same grounding system used for the incoming AC power system.The 120 VAC power source used to power the indicator will be connected to an existing earth grounded rod system at the scale house or other building where the indicator is located. This should consist of a double ground rod system of two 5/8" x 8' copper rods driven 8' deep at the service entrance where the local utility company brings their lines into the building. The local utility company can test the resistance of the existing ground rods with a clamp-on megohmeter that measures zero resistance. A reading of 3Ω or less is acceptable as a ground. If the test determines that the grounding system is inadequate, the utility company can suggest methods to improve the system. It’s crucial that the scale owner authorize and make the recommended improvements to assure an adequate electrical ground. Do not connect the scale to the AC power supply until the grounding system is adequate.

Be certain each load cell grounding strap is securely connected to the top plate and bottom plate of each load cell mount. This strap is designed to channel power surges on the deck around—rather than through—the load cell to ground. These, and all, ground connections must be torqued tightly and retightened at regular service intervals. A thick coating of anti-oxidant grease should be maintained on all ground connections to prevent corrosion.



A separate grounding system conductor must extend uninterrupted from the main service panel ground to the scale to protect load cells and scale wiring from lightning and other transient damage. This ground wire conductor must be an unsheathed #10 copper wire or larger. Run the bare ground wire conductor intact from the AC power ground rod to the scale in a separate trench**.** Bring the wire up from the trench near the junction box and attach it to the ground lug of the junction box. A #10 bare ground wire is run from the ground lug of the junction box to one of the junction box mounting studs on the scale frame, thus grounding the scale frame to the same single-point ground as the AC power for the indicator.

6.7 Install Optional Transient Protection

A lightning protection package is available as an option for all EZ scales. The individual components of this comprehensive package are designed to protect AC and DC portions of the system, as well as any serial communication lines. The optional lightning protection package includes:

- DC transient protection board(s) mounted within the junction box(es). This DC transient protector handles up to eight load cells and also protects serial communication lines. Scales with more than eight load cells will require a DC transient protection board in each junction box.
- Self-contained DC transient protection unit in the homerun cable at the indicator.
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- A 115 VAC uninterruptable power supply/surge protector in the AC line before the indicator.
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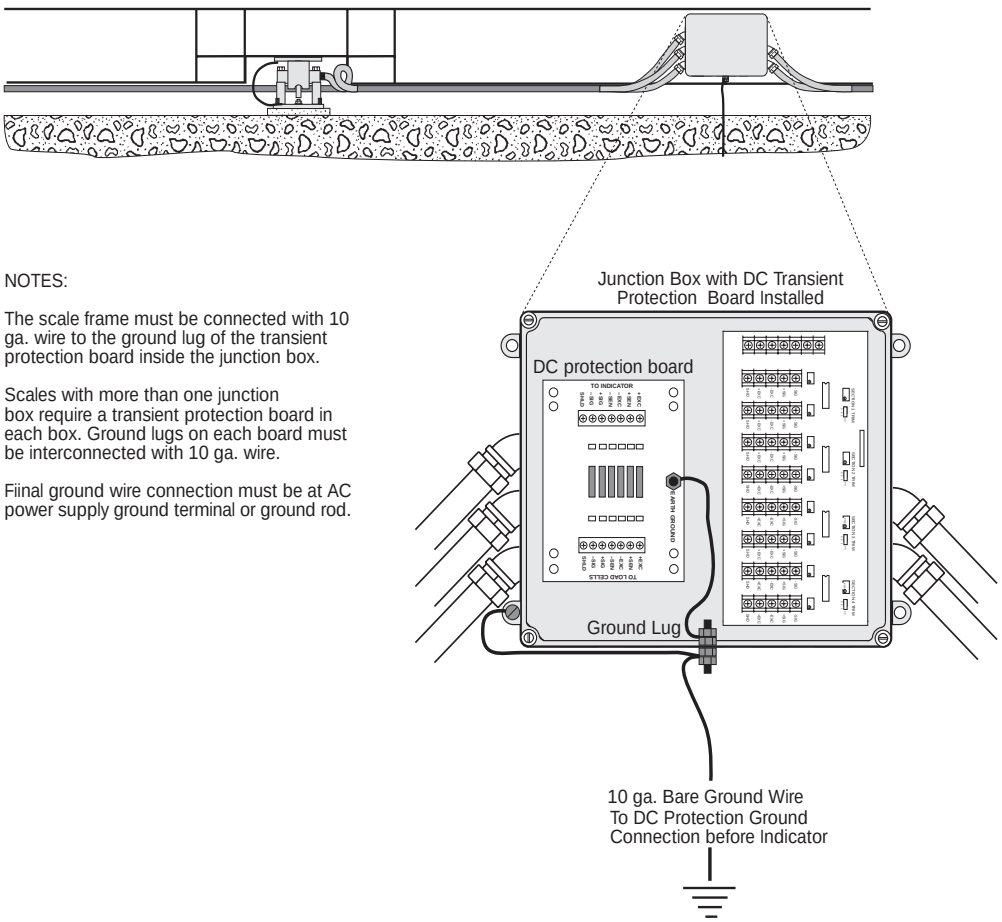
- #10 bare ground conductor cable buried in earth from scale frame to DC transient board in junction box to DC transient board at indicator and finally to the AC power ground lug.

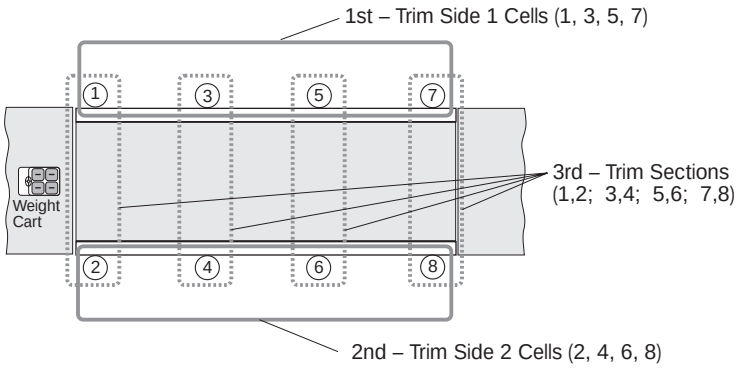
Grounding and Transient Protection on Typical EZ Scale



7.0 Trimming and Calibration

7.1 Overview and Equipment Required

Load Cell Trimming. *Individual* load cell signal trimming (equalizing the signal output from each load cell) must be done first along each side of the scale so all cells on a side have equal signal output. Adjustments are somewhat interactive, so each side should be done at least twice.



Once that is done, load cell *pairs*—one from each side—are trimmed as paired sections until each sectional output is equal. Adjustments to each section should also be done at least twice.

Equipment Required. Both of these trimming operations can be done using only a weight cart parked in various locations on the scale. Final verification of equal output trimming, however, will require test weights to be placed on the deck in various locations.

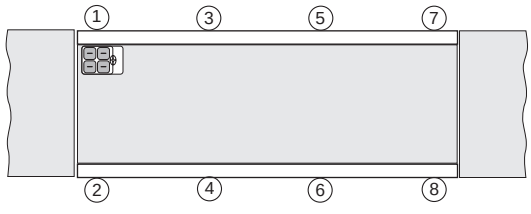
7.2 Trimming Individual Cells

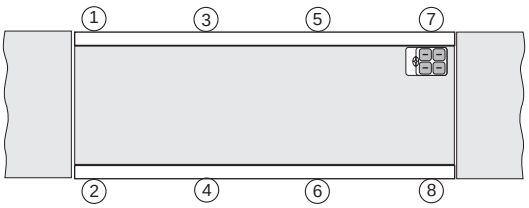
Connect all load cells to the summing board terminals in the junction box, and connect the main interface cable from the junction box to the indicator. Power up the indicator.

Turn all load cell potentiometers (individual and section) in the junction box counterclockwise until a clicking noise is heard when you continue turning. This eliminates any initial resistance so all signals are at full strength. You're now ready to do **individual signal trimming**.

Side 1. The first objective is to adjust individual load cells along one side of the scale for equal signal output when equal weight is put on those cells. For convenience, that side of the scale will be referred to as side 1. The trimming weight you will use will be the loaded weight cart.

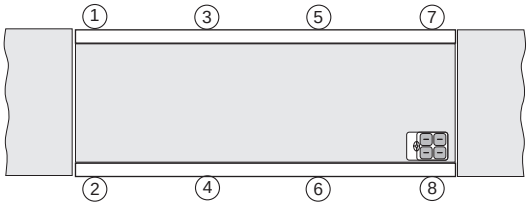
1. Park the cart as close as possible to side 1 being trimmed with the wheels centered over the end load cell mount (no. 1 in drawing to right). Record the indicator reading. Remember that the scale is still uncalibrated, so the indicator readings are simply raw counts rather than weight units.
2. Move the cart directly over mount no. 3 and record that reading. Move the cart directly over mount no. 5 and record that reading. Move the cart so the wheels are centered directly over mount no. 7 (you



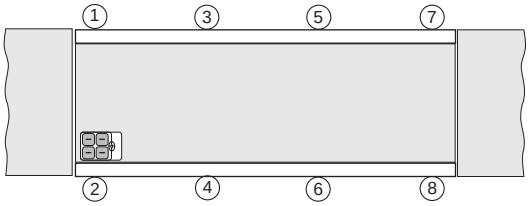


may have to turn the weight cart around so all wheels remain on the scale) and record the reading.

3. The lowest reading of the four will be your reference cell. You won't change that cell's signal. Instead you'll use the individual cell potentiometers for the other three cells to reduce those signals to match your reference cell. Remember that you turned all pots to full signal (0 resistance) before starting. So you can't increase the signal from any cell—you can only decrease signal by trimming with the pots.
4. Note that the best trim is always the least trim. If one of the four readings differs from the others by more than 5% of the displayed counts, there is probably a mechanical problem with that load cell mount causing the large difference. Find it and correct it before going on. Check for binding, an out-of-level or misaligned link, or similar problems with the load cell and mount. *Do not* try to trim down large signal differences with resistance pots—you'll only add larger problems for yourself later because of interaction between mounts.
5. Park the loaded weight cart over one of the high-reading cells on side 1. Turn that cell's individual potentiometer until the displayed reading equals your recorded reference cell reading. Repeat for the other two high-reading cells on side 1.
6. As adjustments are somewhat interactive, repeat the process in steps 1-5 until all four cells on side 1 read within 1% of each other.
7. **Side 2.** Move to the side 2 of the scale. Load each cell in turn with the weight cart and record readings on those four cells in the same way. The cell which *reads the closest to the side 1 reference cell* will be used as your reference cell for trimming the other cells on side 2.



8. **NOTE**: The reference cell on side 2 should be the same as the side 1 readings. Move the weight cart over the cell chosen for the side 2 reference cell. Adjust the cell's individual pot to equal the final side 1 readings. In the example at left, cell 2 has been chosen as the side 2 reference cell.

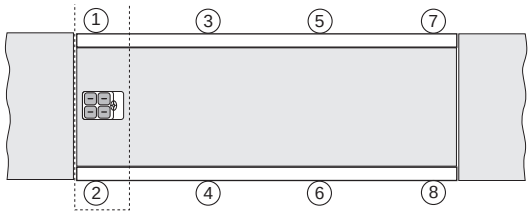


9. Reload the other side 2 cells (4, 6, 8 in the example) in turn with the weight cart and adjust their individual pots so their readings are equal to the side 2 reference cell (2 in the example).
10. Repeat steps 7-9 if needed to get all side 2 cells reading within 1% of each other and within 1% of the side 1 reference cell.

7.3 Trimming Paired Sections

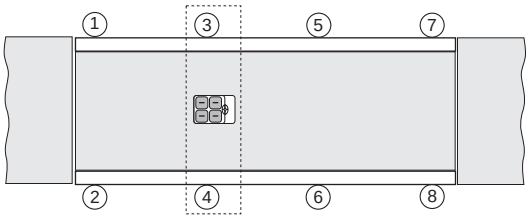
Now that you've trimmed all individual load cells for equal output, pairs of load cells on opposite sides of the scale must be trimmed for equal sectional output. This process is called **section signal trimming**.

1. Park the loaded weight cart in the middle of the scale and directly over an imaginary line connecting an end pair of cells (1 and 2 in the example at right). Record the indicator reading.



2. Move the weight cart directly over the next paired cell section (3, 4 in the example) and record the indicator reading.

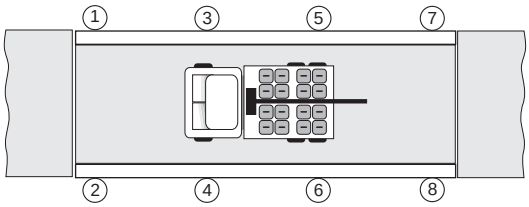
   Do the same for the last two paired sections (cells 5, 6 and 7,8),



3. Choose the lowest reading of the four as your reference section, which will not be adjusted. Using the *section* potentiometers, reload the other three sections in turn and trim the sections to match the reading of the reference section. Recheck section readings a second time as the adjustments made may be somewhat interactive.
4. As a final verification of the load cell trimming, do a final corner check. Place a 1,000 lb. weight on one corner of the platform and record the raw-count reading on the indicator. Move the weight to all the other corners in turn and record those readings. The readings should be within 1% of each other.

7.4 Calibration with Test Weights

The calibration procedure can only be done after all trimming as described above has been completed. A qualified scale technician with a test weight truck and the expertise to access the scale indicator's Setup or Calibration mode must perform the calibration procedure.



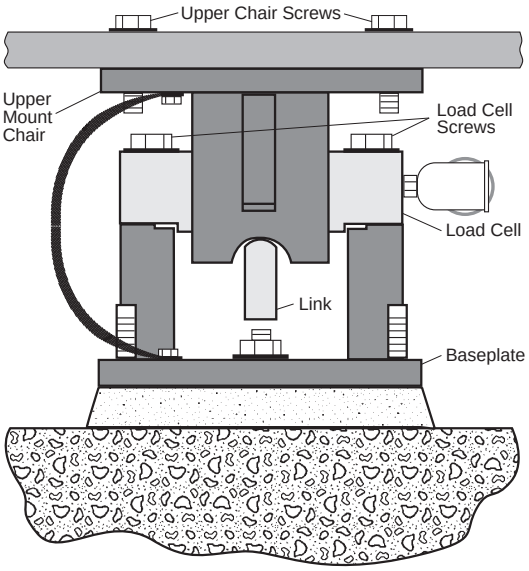
Equipment Required. Truck scales are routinely calibrated using 25% of the capacity weight of the scale. Certified Class F test weights equaling at least 12.5% of the scale's capacity will be required for calibrating a commercial legal-for-trade truck scale. In addition, some type of weight for a substitution test of an additional 12.5% of the capacity will be required. This can be the test-weight truck, bags of sand, or any convenient items easy to load onto the scale. This total calibration weight of 25% of scale capacity (12.5% test weights, 12.5% substitution weight) is required by weights and measures officials for commercial truck scales in most states. Check with your local weights and measures officials for the requirements in your jurisdiction.

Industrial scales not used for legal-for-trade transactions do not require certified test weights. Weight equal to 25% of scale capacity is recommended for calibrating such scales.

See *Handbook 44* for detailed calibration requirements and procedures.

8.0 Load Cell Replacement

8.1 Overview



Load cells are replaced on the EZ scale by jacking up the scale deck approximately 1/4" at the location of the load cell mount and removing the upper mount chair, load cell, and link as a unit.

After loosening the load cell screws so they clear the threads in the baseplate columns, the four screws holding the upper chair to the deck are removed, allowing the chair, load cell, and link to be slid out as an assembly. The load cell is replaced and reassembly takes place in the reverse order.

If a low-profile hydraulic jack under 7-1/2" in height is not available, a bracket may be ordered from RLWS (P/N 49523) to provide clearance for higher jacks.

8.2 Replacement Procedure

1. Remove the upper bolt and washer holding the grounding strap onto the upper chair.
2. Disconnect the 30" flexible conduit section from the rigid metal conduit.
3. Disconnect the load cell terminal connections in the junction box and pull the cable out of the rigid conduit to free the load cell cable from the scale deck.
4. Loosen the two load cell screws completely until they disengage from the column threads.
5. Remove the four screws that hold the upper mount chair to the deck frame.
6. Jack up the scale deck approximately 1/4" at the load cell location. Install blocking for safety.
7. Hold the loosened load cell screws up to clear the threaded holes in the column and slide the upper chair, load cell, and link straight out as an assembly.
8. Set the chair aside until reassembly.
9. Lift the load cell screws out of the damaged load cell and remove the cell from its link.
10. Remove flexible conduit section from right-angle LB conduit connector.
11. Remove two small screws on the side of the LB connector and remove the access plate.
12. Pull the cable out the access hole. The LB connector can now be removed from the load cell.
13. Install the LB connector and flexible conduit section on the new load cell.
14. Complete reassembly by following steps 1-9 in reverse order.

9.0 Vehicle Scale Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS brand equipment and systems properly installed by a Distributor will operate per written specifications as confirmed by the Distributor and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one (1) year, unless otherwise stated.

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:

- Upon discovery by Buyer of such non-conformity, 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 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.
- Vehicle scale products are eligible for warranty labor and mileage charges with pre-approval by RLWS Service Department, and only to the limits described in the vehicle scale reimbursement program.
- RLWS will not 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 BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS’ SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES 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.

9.1 Vehicle Scale Labor and Travel Reimbursement Program

IMPORTANT NOTE: All labor and warranty claims must be authorized by Rice Lake Weighing Systems. A Return Materials Authorization (RMA) number will be required to submit warranty reimbursement claims.

The following chart outlines labor and warranty reimbursement components for vehicle scale warranty support. Warranty claims are for defects in materials and workmanship only. This labor reimbursement program is only available for vehicle scales.

Labor claims are effective for 90 days after shipment of the vehicle scale from RLWS

Labor (on site): 16 hours maximum on site labor

Labor (travel time): 6 hours maximum travel time, maximum rate $25.00 per hour

Mileage charges: Test truck – $1.25 per mile, maximum 120 miles
Pickup – $0.45 per mile, maximum 120 miles

This reimbursement program only applies to vehicle scale products shipped from RLWS. Ancillary equipment provided by others is the responsibility of others.

Rice Lake Weighing Systems will specify particular components, actions, and material to be used in the installation and completion of a vehicle scale. The provided components must meet the RLWS specifications, or warranty reimbursement may not occur.

Parts Replacement under Vehicle Scale Limited Warranty

Component Parts: 100% replacement cost

This reimbursement program only applies to vehicle scale products shipped from RLWS. Ancillary equipment provided by others is the responsibility of others.

Rice Lake Weighing Systems will specify particular components, actions, and material to be used in the installation and completion of a vehicle scale. The provided components must meet RLWS specifications or warranty reimbursement may not occur.