



# Load Cell Buyer's Guide

CHOOSING THE RIGHT LOAD CELL FOR THE JOB



**RICE LAKE**<sup>®</sup>  
WEIGHING SYSTEMS

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# How Do I Know What Load Cell I Need?

Choosing the right load cell for your application can be overwhelming. There are as many types of load cells as there are applications to use them. When you call to place an order for a load cell, the first question you may be asked is:

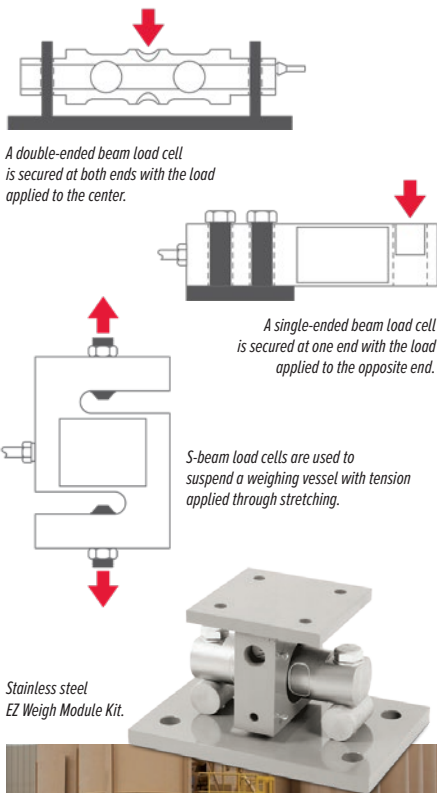
What is the application, or what is being weighed?

This first question will help decide which follow-up questions to ask, such as:

- Is the load cell a replacement, or is it for a new system?
- What type of weighing system is the load cell for: a scale system or an integrated system?
- Is it static or in-motion?
- What is the application environment?
- Does it need to be Legal for Trade approved?



Having a general understanding of load cells will help you answer some of these questions before contacting your scale dealer to make the load cell buying process easier.



A double-ended beam load cell is secured at both ends with the load applied to the center.

A single-ended beam load cell is secured at one end with the load applied to the opposite end.

S-beam load cells are used to suspend a weighing vessel with tension applied through stretching.

Stainless steel EZ Weigh Module Kit.



## What Are Load Cells?

All digital scales use load cells to measure an object's weight. Electrical current runs through load cells and when a load, or force, is applied to the scale, the load cells will bend or compress slightly. This changes the electrical current in the load cell. A weight indicator measures the electrical current change and displays it as a digital weight value.

## What Are Weigh Modules?

Weigh module kits are integrated weighing systems that include load cells, load cell cables, load cell mounts and a junction box. The wide variety of Rice Lake weigh modules we manufacture and distribute may leave you wondering what the differences are between certain models and, most importantly, which modules are best suited for your needs.



Stainless steel RL1800 Weigh Module Kit.

Suspended weigh modules use S-beam load cells and measure weight through tension as the cell is stretched. These weigh modules are ideal for hanging or suspended tanks and hoppers.

Vessel weigh modules are available in several different configurations and capacities. This type of integrated weighing system can be used with a variety of fixed containers, including vessels, tanks and conveyor weighing.

Truck scale weigh modules are primarily used in vehicle weighbridges to measure the weight of trucks over the scale. Designed for vehicle scale applications, truck scale weigh modules can be used in a range of industrial applications, including bulk material management, ingredient batching, and vibration mixers and tanks.

Corrosive environment weigh modules for chemical and fertilizer plants requires systems that withstand the challenges of corrosive environments. These weigh modules combine multi-layer coated (MLC) steel load cells, stainless steel mounts and junction boxes designed for demanding conditions.

## What Type of Seal Does the Load Cell Need?

There are a variety of techniques to seal a load cell, protecting the electrical parts inside. Your application will determine which of the following seal type is needed:

- *Environmentally Sealed*
- *Welded Seal*
- *Hermetically Sealed*

Load cells also have an IP rating indicating what type of protection the load cell enclosure gives the electrical parts. The IP rating is determined by how well the enclosure protects against outside elements such as dust and water.

## What Material Is A Load Cell Constructed From?

Aluminum load cells have relatively thick web sections. This is necessary to provide the proper amount of deflection in the element at capacity.

Load cells manufactured from alloy steel can be consistently manufactured to specifications, which means that minor load cell design changes don't have to be made every time a new lot or steel vendor is selected.

Stainless steel load cells are made from the best overall performance qualities that allow for cell to perform at peak levels. They can be fitted with hermetically sealed web cavities, making them an ideal choice for any application that requires extra protection because of the metal's environmental resistance properties.

Multi-layer coated (MLC) steel load cells undergo a two-step finishing process that protects them from the damaging effects of corrosive environments, while also easily distinguishing them from stainless steel load cells

## What Approvals Are Needed?

The type of load cell approval you need depends on what you will be weighing and why. If a product is being sold by its weight, the load cell must be Legal for Trade approved. If you are unsure of the approval type needed, discuss the application with your scale dealer to determine what approvals you need. Rice Lake's load cells have one or more of the following approvals:



- *NTEP: Approval for equipment used in Legal for Trade applications (specific to the USA)*



- *FM Approved: Approval for property loss prevention and safety equipment in commercial/industrial facilities*



- *FM Approved cUS: Approval for equipment meeting the requirements of FM Approvals and the Standards Council of Canada*



- *OIML: Approval for equipment used in Legal for Trade applications (International)*



- *ATEX: Approval for equipment in explosive environments*

## Different Types of Load Cells

While all load cells work the same way, different applications require specific finishes, styles, ratings, approvals, sizes and capacities.



S-beam



Single-ended Beam



Double-ended Beam



Single Point



Rocker Column



Compression Canister



Tension Compression



Planar Beam





## Scale System vs. Integrated System

In an integrated system, load cells are added to a structure, like a hopper or a tank, turning the structure into a weighing system. A traditional scale system usually includes a dedicated platform where objects are placed to be weighed, then removed, such as a bench scale at a deli counter. Both systems will measure the weight of items, but only one was originally built to do so.

Knowing how you will weigh items will help your scale dealer determine if you'll need load cells for a scale system or load cells for an integrated system.

## What to Know Before You Purchase a Load Cell

The next time you need to order a load cell, have answers to the following questions ready when contacting your scale dealer to help guide your decision.

*What is the application?*

*What type of weighing system will I need?*

*What material does the load cell need to be constructed of?*

*What is the minimum resolution and maximum capacity I need?*

*What approvals does my application require?*

Choosing the right load cell can be complicated, but it doesn't have to be. You are the expert on your application—you don't need to be a load cell expert, too. Having a general understanding of load cells will help you know how to begin the search, making the entire process easier.

Rice Lake has the largest selection of load cells available to meet the needs of any application and our knowledgeable technical support representatives help make the process even easier. To go [www.ricelake.com/lcwm](http://www.ricelake.com/lcwm) to learn more about load cells.

## Need a Custom Solution?

Some applications will require an engineering consult. A few questions to consider when discussing a custom solution are:

*Will the load cell be exposed to strong or frequent vibrations?*

*Will the equipment be exposed to corrosive materials?*

*Will the load cell be exposed to high heat?*

*Will this application require extreme weight capacities?*



Your dealer will know if your application isn't standard and you would benefit from an engineering consult.