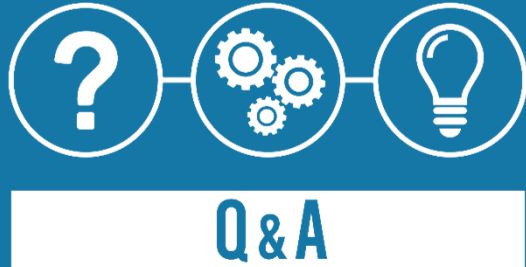


QUESTION TIME



A selection of the best Q&A.

LAUMAS[®]
Innovation in Weighing



A GUIDE TO THE SELECTION OF LAUMAS LOAD CELLS

Webinar 2021



#LAUMASKNOWHOW



Q&A

The questions of the participants, our answers.

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Q Which type of load cell has the longest **life cycle**?
Shear beam, bending beam, or compression?

A The **life cycle** indicates how many work cycles a load cell can sustain. A **work cycle** means that a cell is taken from 0 to full scale, but this rarely occurs.

Shear beam and compression load cells reach approximately **8 million** work cycles. Bending beam load cells instead reach approximately **4 million**. We have also built custom load cells that can reach up to **100 million** cycles





Q&A

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Q

Is there a way to know when a **load cell** is **damaged** and loses linearity?

A

There are **3 possibilities**, depending on the weighing system and the type of instrument used:

- **multichannel instrument with integrated diagnostics**: read the value of the incoming mV of each individual load cell and check whether it is within the parameters;
- **single-channel instrument in single-cell systems**: perform the **CELL INPUT TEST** as per the procedure indicated in the manuals;
- **single-channel instrument with one or more load cells connected in parallel**: disconnect the cells and measure the value in mV using a multimeter, as per the **LOAD CELL VERIFICATION** procedure indicated in the manuals.

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Q&A

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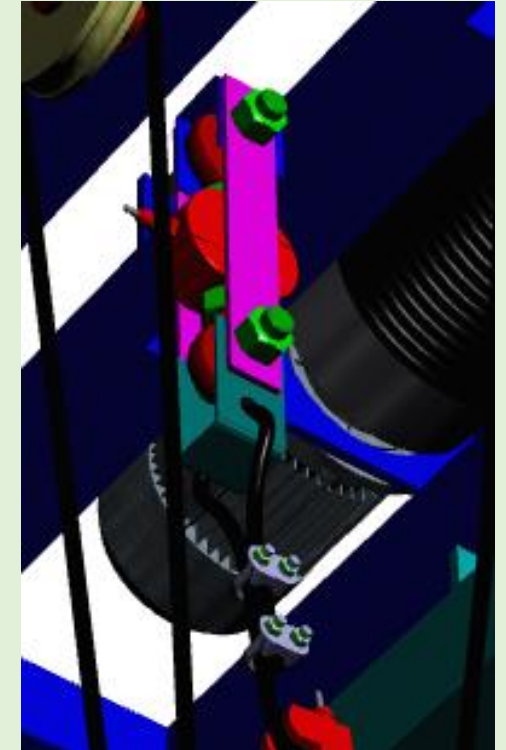
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Q Do load cells used as **load limiters** in lifting systems have to follow special criteria?

A In this type of system, the advice is always to **oversize** the load cells. It is also important to remember that the load cell is not a safety system, but a sensor that measures force. It is therefore essential to provide **mechanical safety systems** to safeguard the system in the event of the load cell breaking.





Q&A

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Q

Can a **dynamic load** be applied to a cell?

A

Yes. However, it is necessary to calculate the force generated by the dynamic load in order to size the cell accordingly and avoid damaging it.





Q&A

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Q

Is the [LCB 1 Universal Digitizer](#) only used in applications with a single load cell?

A

No, it can also be used in scales with multiple load cells connected in parallel. However, LCB is primarily designed to be connected to a single load cell and make it digital.

It can thus be mounted in **two ways**:

- completely **integral** with the **body** of the **load cell**;
- away from the cell if there is a lack of space.

If instead it is used in systems with multiple load cells, LCB loses its special features. In this case, we recommend using one of the classic [weight transmitters](#) of the **LAUMAS** line.





Q&A

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Q

Is a **system** composed of an **analog load cell** connected to **LCB, approved** only with your weight indicators?

A

No. LCB, besides **not** being **OIML R76 approved**, is generally connected to the PLC and not to the weight indicator.





Q&A

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Q To **calibrate** the load cells of a **tank**, what loads should I use? And with what **nominal value** (kg)?

A It depends on the capacity of the tank. The closer the value of the sample loads used is to the net weight of the tank, the more accurate the calibration will be.





Q&A

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Q How can I **equalize** the **angles** when I weigh a high capacity **silos** and cannot use sample weights?

A For **high capacity** silos, it is not necessary to have the same weight value at every point. Just **monitor the load** inside. This is why we use **unequalized junction boxes** and **load cells connected in parallel** in weighing systems for silos, hoppers and tanks.





Q&A

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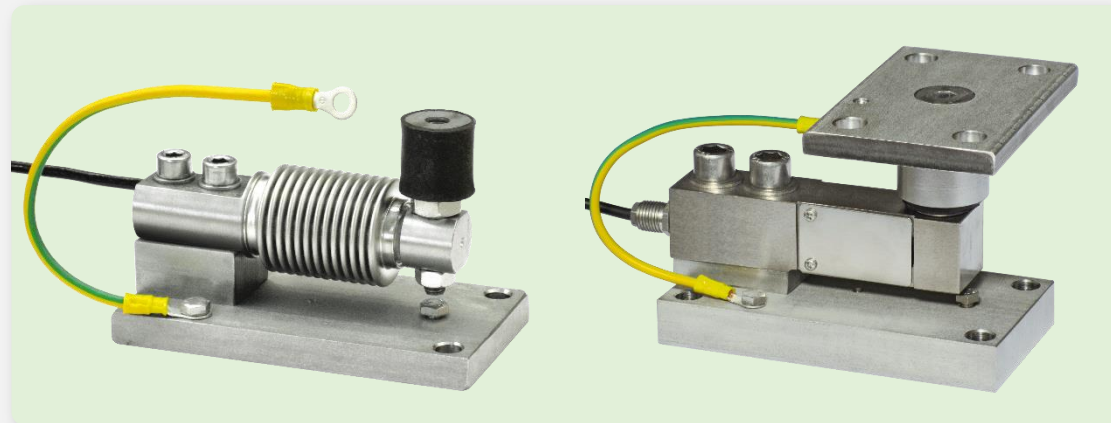
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Q

Can I use an **ANTIV40** to weigh a silo?

A

Yes, but we recommend it to be used only on **small silos** and in **closed places**. [ANTIV](#) is an accessory in the **mounting kit TF** which is not provided with **anti-tilt constraints**, which are necessary in situations in which the weighing system on a silo is potentially subject to wind thrust, earthquakes and accidental impact. In these cases the most suitable **mounting kit** is the [PV](#). ([see the video on constraints against horizontal forces and overturning](#))



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Q Silos with **3 or 4 supports** can be weighed either with shear beam or bending beam load cells or with compression load cells. According to which **criterion** do I choose one type rather than the other?

A The **capacity** is the first criterion to consider. The **compression load cells** support **greater capacities** and are ideal for large silos that have very high capacities. They are easy to install and, combined with their [V series mounting kit](#), they contrast the lateral thrusts caused by wind (a fundamental requirement in the case of very tall silos).

For silos of **small size** and **not of high capacity**, **both** types of load cells are fine. The choice depends on **the system's requirements** in terms of: **Materials - IP protection rating - certifications.**

Compression load cells with low capacities, for example, are not OIML R60 approved. If approval is a necessary requirement, then approved shear beam load cells must be chosen.

Another aspect to consider is the **financial one**. The **shear beam or bending beam load cells**, combined with their mounting kit, are more competitive for **medium to low capacities**; while the **compression** load cells, combined with the V series mounting kit, are more cost-effective for **medium to high capacities**.





Q&A

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Q I have a **tank with 4 supports** and a maximum **capacity of 7000 kg** (including the tare). What **capacity** do you recommend for each single load cell?

A Our advice is always to **oversize** the **load cells** in relation to the maximum load to be applied on the weighing system and not to load **more than 70/80%** of the rated capacity of the load cell.

Taking as an example the tank with 4 supports and full scale 7000 kg, 3 load cells will bear more weight than the fourth one.

To select the correct capacity for each individual load cell, you will therefore need to consider the weight supported by only 3 load cells.

At this point, by using 4 load cells all with a capacity of 2500kg, with 3 load cells you will be able to cover the total capacity of 7000 kg.

Pay attention also to the type of product to be weighed: if this is subject to accumulation, for example if dusty, it is possible that all the weight falls on one or two load cells, therefore a higher capacity for each single load cell must be considered.



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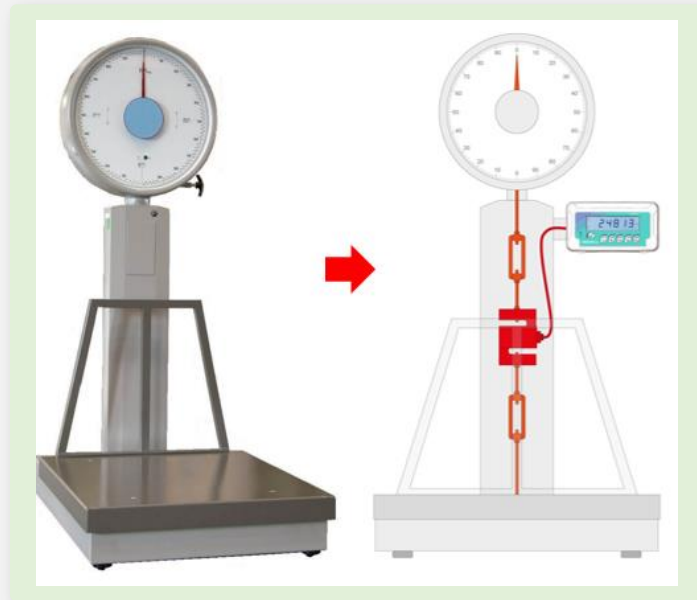
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To modernize a **mechanical scale**, what capacity should the tension load cell placed on the needle of the scale have?



The tension load cell (S-shaped, such as [SA](#) or [SL](#)) **should not be placed on the needle, but on the tie-beam** and must be connected to a weight indicator that will act as a digital display. The **capacity** of the load cell is chosen by calculating on the tie-beam the **zero pull** (pre-pull) and the **pull on the full scale**. The load cell must be sized accordingly.



Example: If the zero pull is 5 kg and the full-scale pull is 40 kg, the load cell should have a capacity of 50/60 kg.

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Q

What **maximum immersion depth** can your **custom load cells** reach?

A

Thanks to special cables and connectors, we have so far reached a depth of **3000 m** and **300 bar** of pressure. However, following a detailed study of the case, the possibilities are potentially unlimited.

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Q

In the **food sector**, in which applications is **3A certification** required?

A

The **3A certification**, valid in the U.S.A., is voluntary and certifies that the component, in this case the load cell, is constructed in such a way that it can be **sanitized and disinfected** and not foster the proliferation of bacteria. In the food sector, depending on the type of industry, certification may be important in all applications where the weighing system is subject to periodic sanitization.

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