

BALANCES

COUNTING SCALES

BENCH SCALES

CHECKWEIGHERS

CONVEYOR SCALES

FLOOR SCALES

INDICATORS

TRUCK SCALES

RAILROAD SCALES

TECHNOLOGY

SOFTWARE

JUNCTION BOXES

FORKLIFT SCALES

MONORAIL SCALES

PRINTERS

REMOTE DISPLAYS

Avery Weigh-Tronix
Technology



THE ULTIMATE LOAD CELL ALTERNATIVE

Weigh Bar®

Avery Weigh-Tronix

The Weigh Bar® was designed to overcome the shortcomings of the load cell and to provide the user with a rugged, highly reliable and linear load sensing device at reasonable cost. More than twenty years of extensive use in industrial, farm and transportation applications has demonstrated that the Weigh Bar has met these requirements. The unique, robust design of the Weigh Bar is the primary reason for this success.

Weigh Bar®

The Ultimate Load Cell Alternative

PHYSICAL FEATURES

Inherent Protection

The unique design of the Weigh Bar eliminates the need for external mechanical protection or ball feet, extending the life of the scale and foundations.

Potting Material

Fully welded NEMA 4X (IP68) cans on stainless steel Weigh Bars and 5 point sealing (IP67) potting compound on alloy steel Weigh Bars for protection in severe environments.

Hazardous Environments

Atex/Factory Mutual approved for use in instrumentally safe hazardous environments.

Sensors

Sensors mounted to a robust area of the sensor for high reliability and overload protection.

Sealed

The Weigh Bar is well protected against harsh environments by an exclusive 5-layer sealing process: Acrylic, Polysulfide, Primer, Polyurethane and Metal Shield.

Wiring

All wiring is routed inside the Weigh Bar's internal structure. No sensor wiring is exposed to the elements.

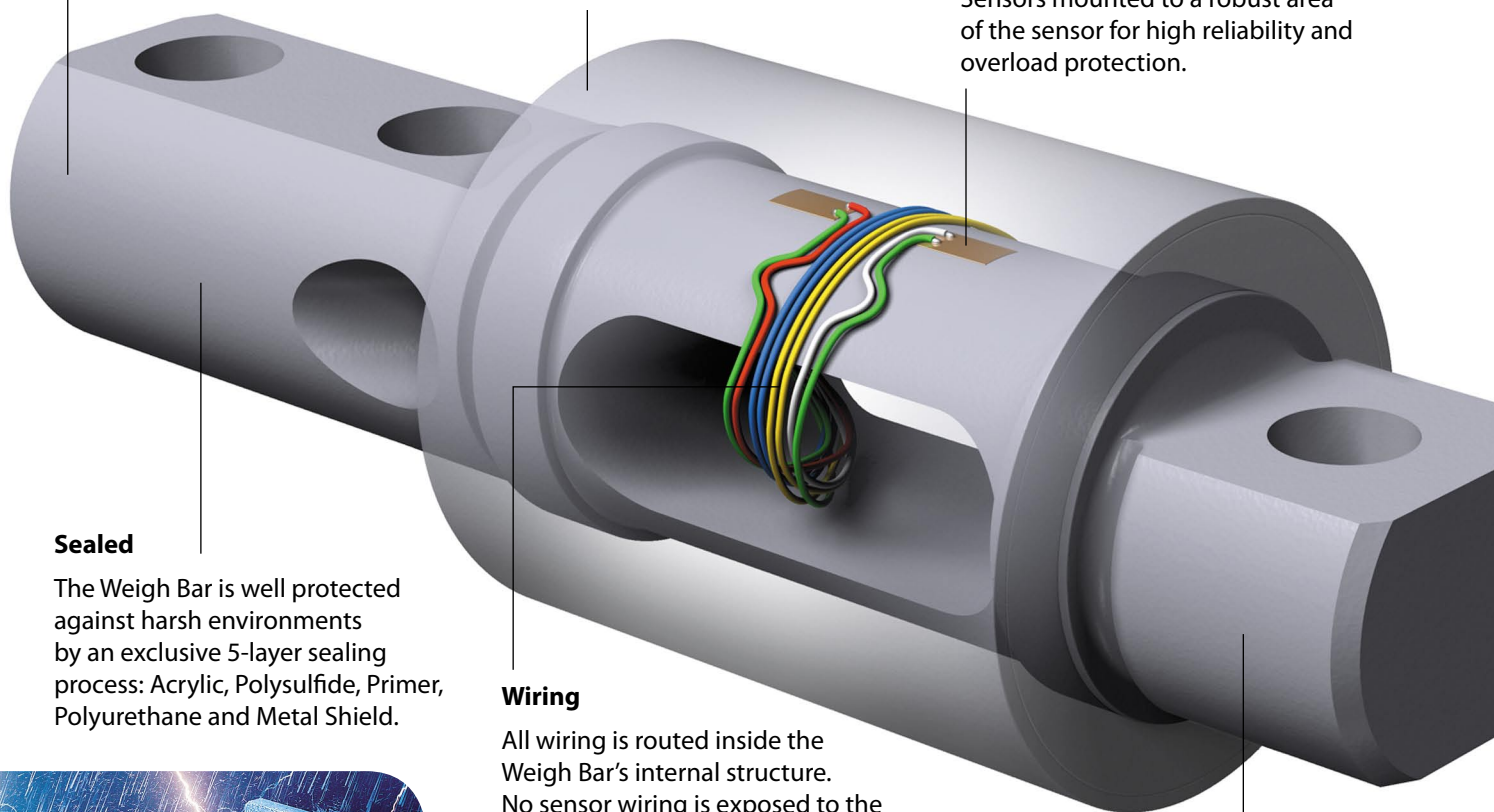
Accuracy

NTEP: Class III, 5,000 d;
Class IIIL, 10,000 d

OIML: R60 7,000 d performance.

Steel Construction

Each Weigh Bar is milled from a solid piece of aircraft-quality alloy or stainless steel. Stainless steel Weigh Bars are welded with a pulse tig process.



INDUSTRY APPLICATIONS

The Weigh Bar has proven itself over the past 20 years to be one of the world's most robust weight transducers manufactured today with over 500,000 installations world-wide.

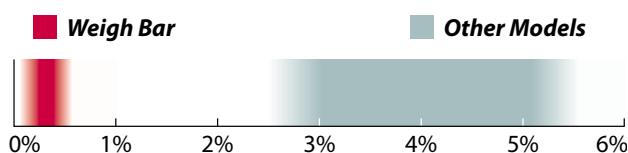
- **Truck scales**
- **Floor and deck scales**
 - Petro/chemical
 - Food processing
 - Pharmaceuticals

- **Bin, hopper, tank weighing**
 - Petro/chemical tanks
 - Agricultural applications
 - Food processing

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LOW FAILURE RATE

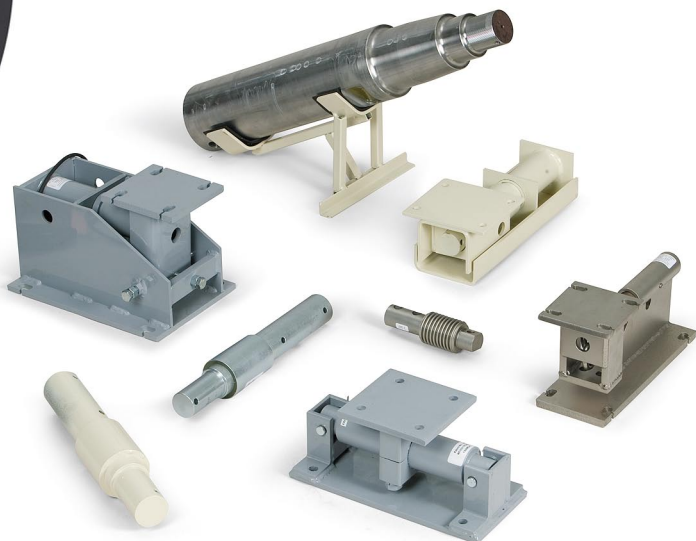


The IP67 Weigh Bar design provides inherent strength and overload protection, while also providing accuracy and high reliability. A significant contributor for this is the positioning of the gauges on the outside of the Weigh Bar.

More robust than a shear beam load cell for a given output – a shear beam load cell will reach its peak fatigue point much sooner than a Weigh Bar.

100 LBS TO 1,000,000 LBS

The Weigh Bar design makes it possible to produce sensors for a wide variety of applications. We've made highly accurate Weigh Bars with capacities of 100 lbs, all the way up to massive Weigh Bars for the petrochemical industry with 1,000,000 lbs of capacity.



WEIGH BAR HISTORY

In 1965 the company Art's-Way Manufacturing, Inc. of Armstrong, Iowa approached New Jersey engineer Dick Bradley about designing a transducer and on-board weighing system for livestock feed grinder/mixers. By 1968 Bradley had developed the Weigh Bar, and in 1969 Art's-Way marketed the first grinder/mixer with a working scale system.

In 1971 Weigh-Tronix incorporated as a subsidiary of Art's-Way, and began selling scale systems to farm equipment manufacturers.

In 1973 a Weigh-Tronix deck scale was the first all electronic scale to be approved for trade by the National Bureau of Standards.

Today the Avery Weigh-Tronix Weigh Bar is still ahead of its time, with an unmatched reputation for robust reliability and accuracy.

PRINCIPLES OF OPERATION

Measuring Applied Load

The Weigh Bar steel structure acts as a cantilever, unsuspended on one end and fixed on the other. A load is applied to the unsuspended end. The pair of sensors attached to the outside of the Weigh Bar detect strain in the bar. This strain is interpreted by indicator electronics to display a weight.

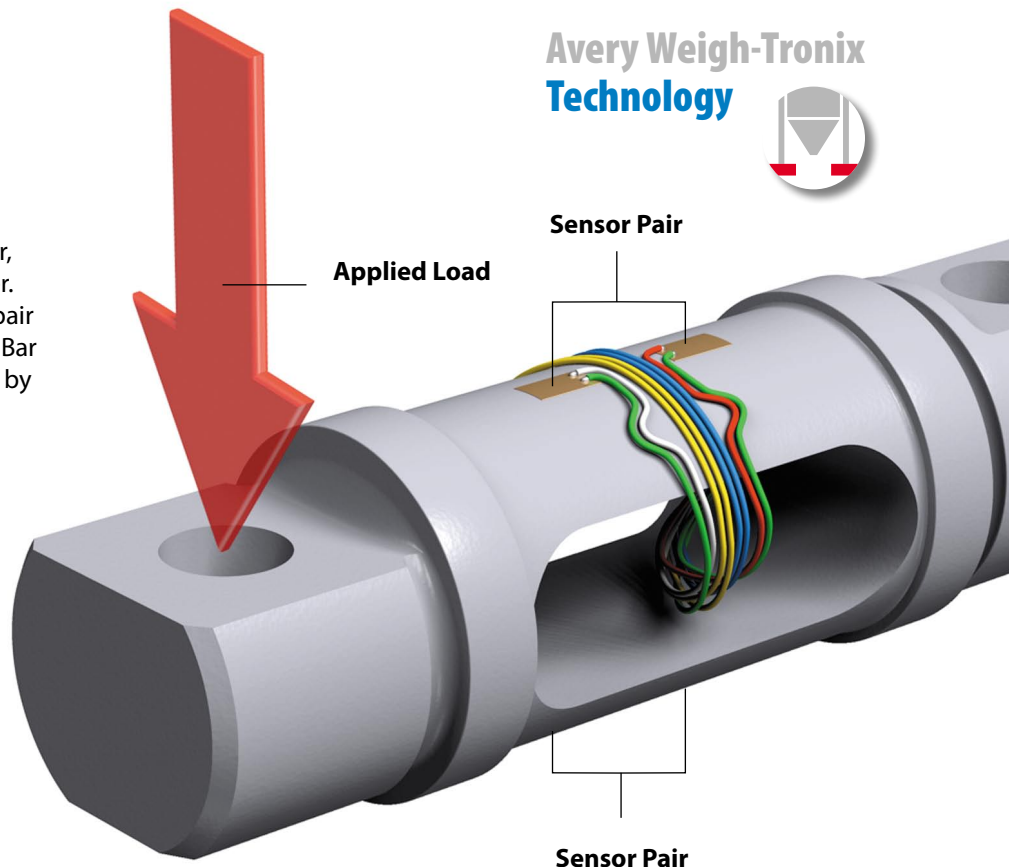
Note that most Weigh-Bars have two sensor pairs, top and bottom to provide an amplification factor and simplify electronics.

Error Reduction

The unique design of the Weigh Bar allows simple calculations to be made by the indicator, eliminating several types of errors:

- **End Loading** – When an end load is applied to the Weigh Bar, it is subjected to a uniform compressive strain throughout its length – all sensors detect the same strain.
- **Torsion Effects** – When torque is applied to the Weigh Bar, a uniform torsional shear strain is developed through the length of the bar – both sensors detect the same strain.
- **Side Loading** – When a side load is applied to the Weigh Bar, it acts as a beam, but at a 90-degree angle. When this occurs, the neutral axis of the beam (the point in the beam where neither tension or compression occur) falls directly under the center of the strain gauges. No apparent strain is seen by the gauges.
- **Vibration** – The fine grain structure of aircraft quality steel is resistant to vibration fatigue and induced error. The strain gauges and adhesive used are also vibration and fatigue proven.

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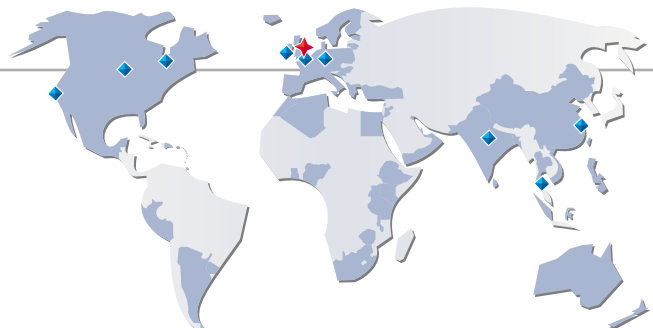


The Weigh Bar is used globally in a wide range of weighing applications.



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