



# Force and load sensing for industrial vehicles

Construction market solutions



**VPG force sensors**

Celtron • Revere • Sensortronics • Tedeo-Huntleigh





## The experience you need

VPG Force Sensors has been providing weighing and force measurement products for decades. Our load cells and force sensors use the most advanced foil-based strain gage technology and are produced internally by VPG to ensure the highest quality. Due to our proven experience and well-established design capabilities, we can provide a wide range of standard and custom-made solutions. As always, we are committed to providing uncompromising quality, attention and service to all of our customers.

## Experts in your field

VPG Force Sensors sensors have been developed for many different applications, some of which are detailed below. For further information or to discuss your own specific needs, please contact your nearest VPG Force Sensors office.

## Telescopic handlers

Given the complex boom extension, boom angle and lifting load combinations, a reliable and foolproof overload monitoring system is essential. The fitting of load sensors to the rear axle assembly, to measure the reaction between the wheels and the ground, ensures that dangerous overload conditions are detected well in advance.

## Mobile cranes

Load distribution can be measured by incorporating force sensors in the telescopic stabilizers, while bending and twisting forces within the complex boom can be measured to provide important stability information. If there is any possibility of the crane becoming unstable, the system can prevent the crane operation from proceeding and only allows the operator to pull back to a secure position.

## Vehicle stability

By fitting load sensors to the rear axle assembly to measure the reaction between wheel and ground and comparing the load distribution across the axle, the control system can prevent the vehicle from tipping sideways if used on uneven or unstable ground.

## Electronic draft control

By fitting one or more shear pins into a tractor linkage, the force between the tractor and the implement being pulled can be measured. Using this data, the optimum mix of draft and position for a particular task, together with the drop rate relevant to the implement's weight, can be automatically controlled.

## Extensometers

VPG Force Sensors extensometers are used as safety overload sensors on the rear shaft of telescopic handlers. An integrated display unit is located in the cabin, constantly informing the operator of the machine load moment.

## Highest reliability and long term stability

Force sensors can be designed to measure tension and compression forces, bending and shear moments, torsion, torque pressure and weight.

Most force sensors are based on strain gage technology. In contrast to the explosive development of modern electronics, this technology has stood the test of time since it was first used for aircraft weight and balance measurement in the 1930s.

Although the technology has been refined considerably over the years, the fundamental principle remains. The reliability and performance of any such sensor is directly dependant upon the integrity and repeatability of the strain gage bonding procedure and the uniformity of the sensor material.

Precise clamping pressures and temperature curing are essential and we have pioneered a number of innovative techniques in the volume production of sensors, which ensures cost-effective products of the highest reliability and long-term stability.

## At the forefront of design

We have been at the forefront of load cell design for over 50 years. With a reputation second to none, our products are employed in every conceivable type of weighing and force measuring application throughout the world, from fish scales in Iceland to coal bunkers in Australia and tractors in Romania to hospital beds in the USA.

## Options

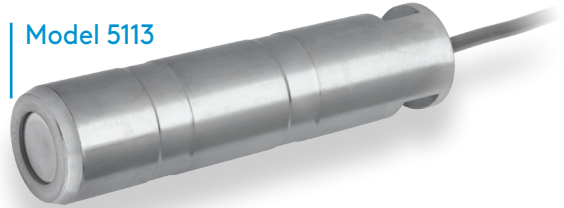
Options include sealing to IP68 for total liquid immersion, OIML certification, current matched outputs and an extensive range of mounting hardware to simplify installation and enhance performance.



Model 3510



Model 5113



Model 5117



Model 182



LMI plate

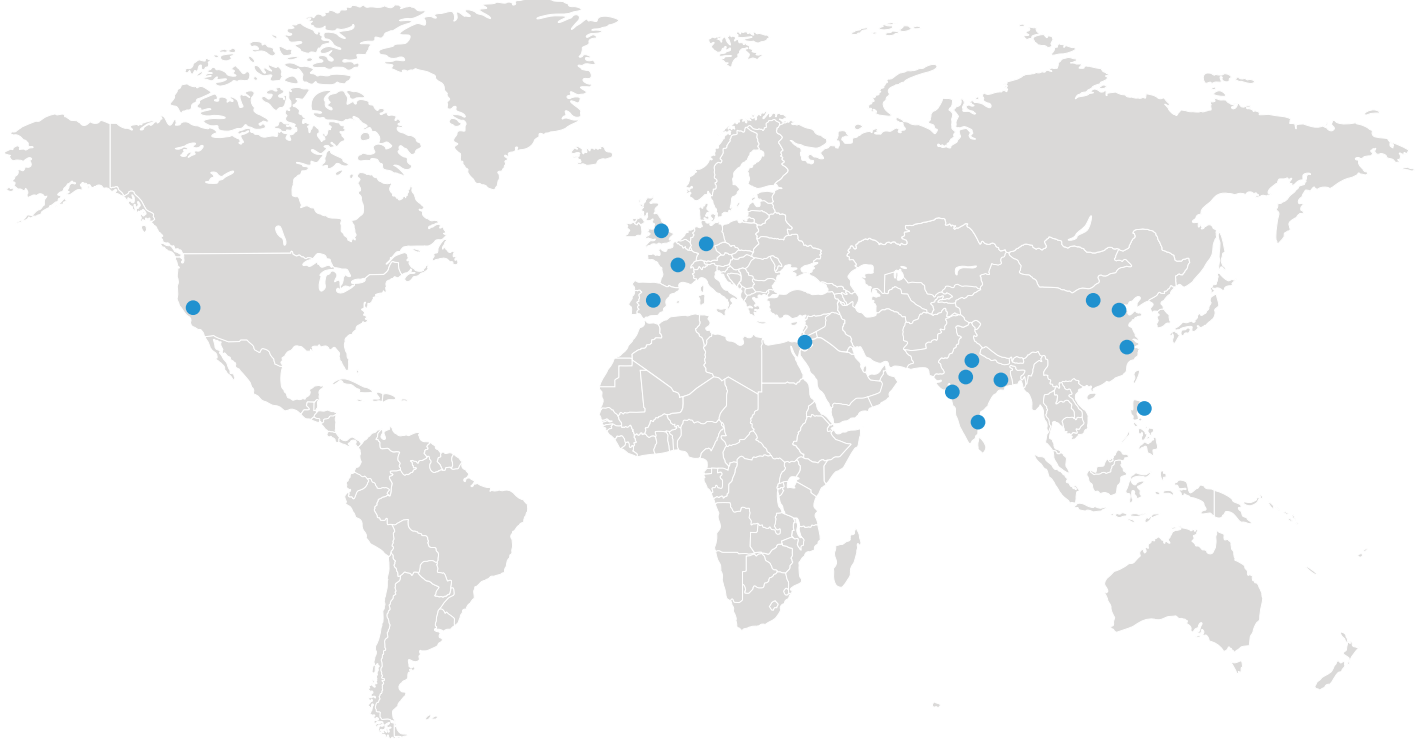


Model 178



## Robust sensors and low cost of ownership





VPG Force Sensors develops and manufactures the world's most advanced force measurement sensors and solutions, delivering optimal performance and empowering tomorrow's innovations. With our renowned brands, we offer the largest range of load cells, weighing instruments and accessories available from a single-source supplier. Chosen for their high accuracy, uncompromising quality and long-lasting reliability, our products are implemented in millions of machines, devices and systems around the world. Due to our large manufacturing capacity, fast turnaround on orders, high product quality and competitive cost structure, we are a leading load cell supplier to many industries and markets. VPG Force Sensors is part of VPG (Vishay Precision Group), a global leader in precision measurement sensing technologies.



## Sales contacts

vpgfs.americas@vpgsensors.com

vpgfs.asia@vpgsensors.com

vpgfs.emea@vpgsensors.com

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