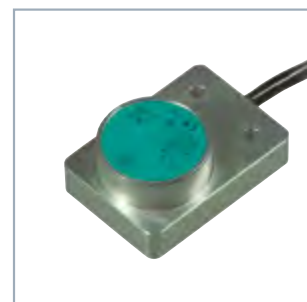




RUGGED BY DESIGN

SENSING SOLUTIONS FOR MOBILE EQUIPMENT



Automation Is Our World. A Perfect Application Solution Is

A willingness to take entrepreneurial risks, a pioneering spirit, and a firm belief in their own inventive powers – these were the assets that Walter Pepperl and Ludwig Fuchs started out with when they opened their Mannheim radio repair shop in 1945. Their invention of the proximity switch a few years later proved their strength. It was also the starting point in a successful history defined by close customer relationships as well as innovative automation technologies and procedures.

Then as now, our focus is directed squarely on the individual requirements of each customer. Whether as a pioneer in electrical explosion protection or as a leading innovator of highly efficient sensors, close communication with our customers is what allowed us to become the leader in automation technology. Our main objective is combining state-of-the-art technologies and comprehensive services to optimize our customers' processes and applications.

For more information, please visit our website: www.pepperl-fuchs.com





Our Goal.

Contents

Mobile Equipment Applications	04
Norms and Standards	06
Agriculture and Forestry	10
Construction Machinery	14
Municipal Vehicles	22
Logistics	28
Technology Overview	30
Sensor Selection for Mobile Equipment	34

Sensors that Impress. The Right Solution for Mobile Ma

Mobile machinery requires special sensor solutions. Pepperl+Fuchs' mobile equipment sensors are configured for mobile equipment applications that include agricultural and forestry machinery, municipal vehicles, construction equipment, or logistics vehicles.



- Agricultural Sprayer
- Agricultural Harvester
- Wood Harvester



- Excavator
- Mobile Crane
- Dump Truck
- Concrete Mixer
- Concrete Pump

chines.



MUNICIPAL VEHICLES

- Bus
- Garbage Truck
- Fire Truck



LOGISTICS

- Forklift

Highest Quality and Performance Reliable Operation. At All Times.

To meet the demanding electrical and environmental requirements of mobile machines in outdoor applications, sensors must be qualified to standards far beyond those of conventional applications.

Pepperl+Fuchs' mobile equipment sensors are tough enough to survive extreme and abusive environments day after day. They satisfy the world's most stringent performance standards and are characterized by long service life, and outstanding reliability.

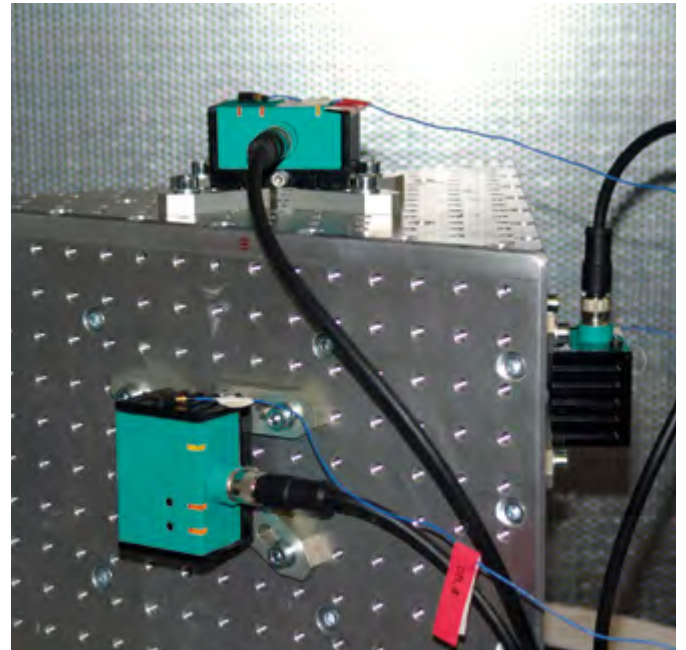
Whether it's ISO 13766 for earth moving equipment, ISO 14982 for agricultural and forestry machinery, ISO 13309 for construction machinery, or ISO 16750 for road vehicles – it all comes down to meeting the increased mechanical and electrical requirements for sensors that are used in heavy-duty equipment.

Additionally, the European Automotive Directive 2004/104/EC and the American SAE standards for trucks, buses, and public service vehicles have specific electrical specifications for products used in these areas.

Pepperl+Fuchs provides the toughest and most versatile sensors on the market. Qualified to the world's most stringent performance standards, they provide unprecedented service life and reliability. When your equipment has to operate in extreme environments, choose a sensor that's guaranteed to withstand the abuse.

Upon request customized sensors with preassembled cables and connectors will be provided. With years of experience, Pepperl+Fuchs also manufactures crimps and cables under a detailed qualification process.

Standards for



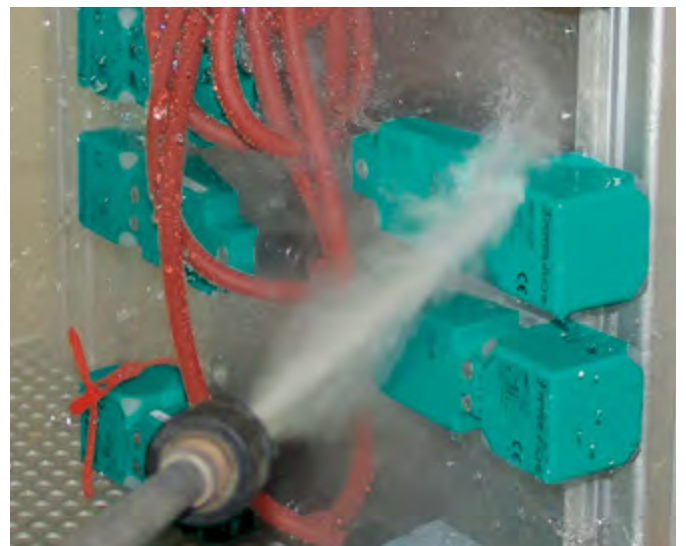
Vibration test

Pepperl+Fuchs' mobile equipment sensors are designed and tested to withstand environmental threats. High performance is verified by water ingress tests (DIN 40050), by extensive humidity testing (EN 60068-2-38), and repeated temperature cycles.

Chemical resistance is verified by exposing the sensors to vehicle oil, hydraulic oil, fuel/diesel, transmission oil, brake fluid, battery acid, road salt, and sour gas.

In addition, all mobile equipment sensors are subjected to a 28-day salt spray test according to DIN EN 60068-2-52. Many other tests, including shock and vibration, damp heat, and prolonged hot and cold storage, are carried out under difficult conditions.

For further information on specific qualification tests, please contact us.



Water ingress test



Prolonged cold and hot storage test

Tested for Reliable Operation

In addition to mechanical testing, Pepperl+Fuchs' mobile equipment sensors must also pass an intensive array of high-level electrical qualification tests. These tests ensure optimum functionality of the sensors in daily use under difficult environmental conditions.

Electrostatic Discharge (ESD) Testing

ESD is an important aspect of a sensor's functionality and its resistance to electrostatic interference according to EN 61000-4-2. Two different discharge tests are required – contact and air. For contact discharge, a high-voltage potential of 8 kV is directly applied to the sensor housing. For air discharge, the high-voltage potential of 15 kV is applied to a plate at a specific distance from the sensor.

Testing for Electrical Fast Transient Disturbances and Surge Voltage

If circuits with inductive loads are interrupted, this can cause very high voltage surges. Pepperl+Fuchs' mobile equipment sensors are qualified for burst immunity according to EN 61000-4-4.

Surge voltage signals create high energy levels that can damage electronic circuits. Faults of this kind are typically caused by power control devices and lightning strikes. Similarly, harmful interference can occur in the circuitry of mobile machines when starting up the vehicle. Pepperl+Fuchs' sensors are tested according to EN 61000-4-5 and can withstand this load.

Testing for Radiated and Conducted Interference

Radiated Noise (ISO 11452-2): All forms of radio transmitters have the potential to interfere with electronic equipment. Pepperl+Fuchs' sensors are immune to false actuation when exposed to field strengths of 100 V/m.

The test for conducted interference (EN 61000-4-6) is also known as "Bulk Current Injection." Sensors are immune to both damage and spurious output signals when subjected to conducted RF limits of 10 V.

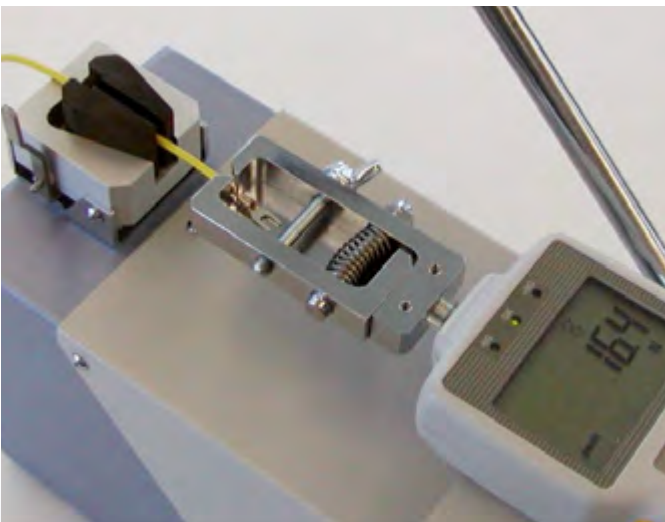
Testing for Electrical Interference

If a battery is disconnected from a current circuit with an AC generator, an almost endless variety of damaging voltage surges can occur, regardless of whether the disconnection was caused intentionally, caused by a loose connection, or due to corrosion. Pepperl+Fuchs' mobile equipment sensors are fully protected against such occurrences. Pepperl+Fuchs tests its sensors according to IEC and SAE standards and also performs the load dump test specified by the SAE.

When testing for electrical interference (ISO 7637-2), the sensor must be subjected to seven potentially destructive test pulses for a defined time period.

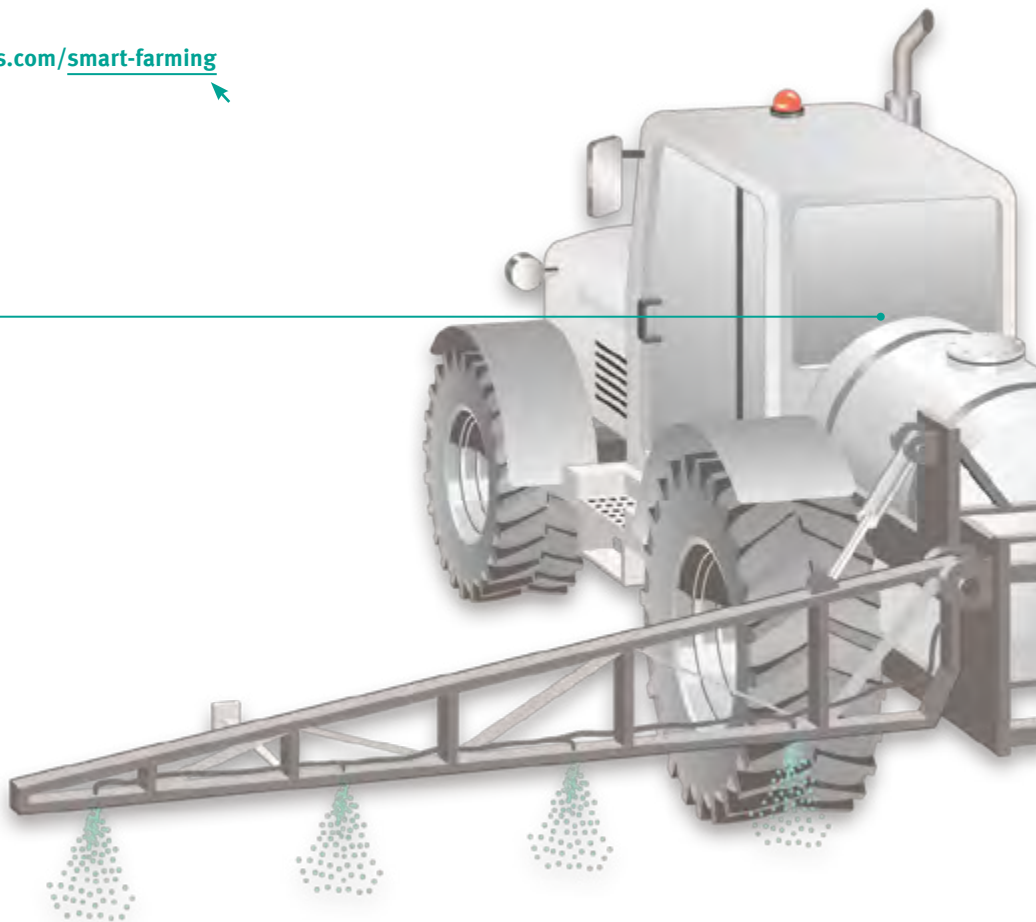
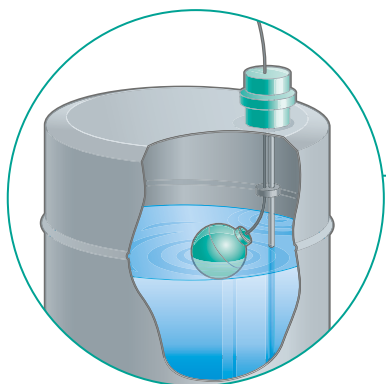


Testing for radiated and conducted interference



Cable tensile testing

For more information, see: www.pepperl-fuchs.com/smart-farming



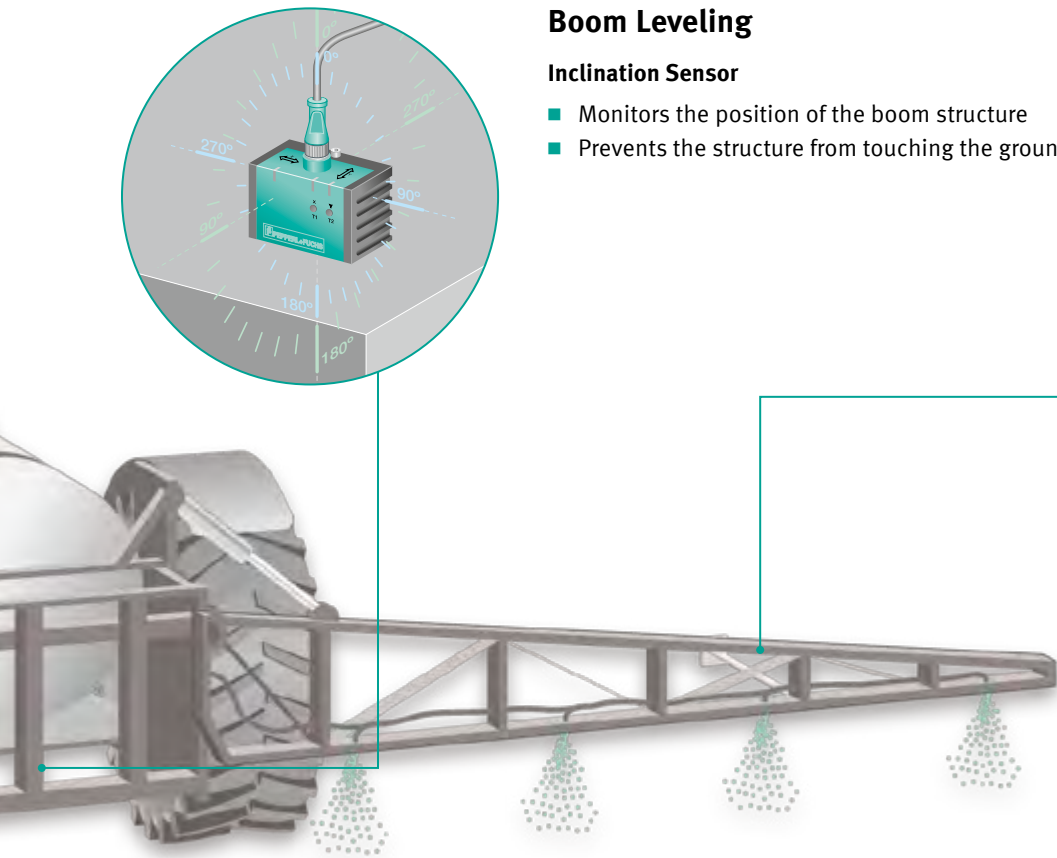
Fill Level Detection

Float Switch

- Fill level measurement of liquid fertilizer
- Prevents overflow and running dry

Agriculture and Forestry

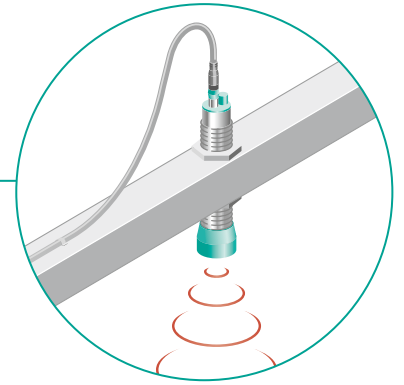
Productivity and efficiency are particularly important in the agricultural and forestry sectors. Modern sensor solutions, specifically designed for the various requirements of harvesting machines, crop sprayers, or wood processing machines, guarantee efficiency and safety, even under difficult environmental conditions.



Boom Leveling

Inclination Sensor

- Monitors the position of the boom structure
- Prevents the structure from touching the ground



Spray Height Monitoring

Ultrasonic Sensor

- Automatic spray height adjustment for consistent distance to plants
- Optimized fertilizer usage
- Prevents spray boom damage

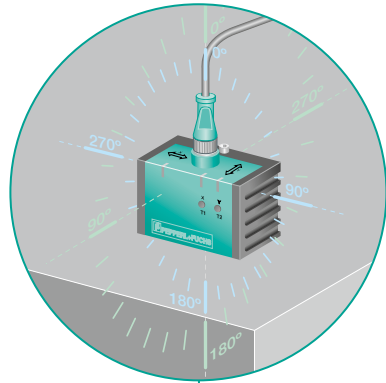


AGRICULTURAL HARVESTER

Vehicle Leveling

Inclination Sensor

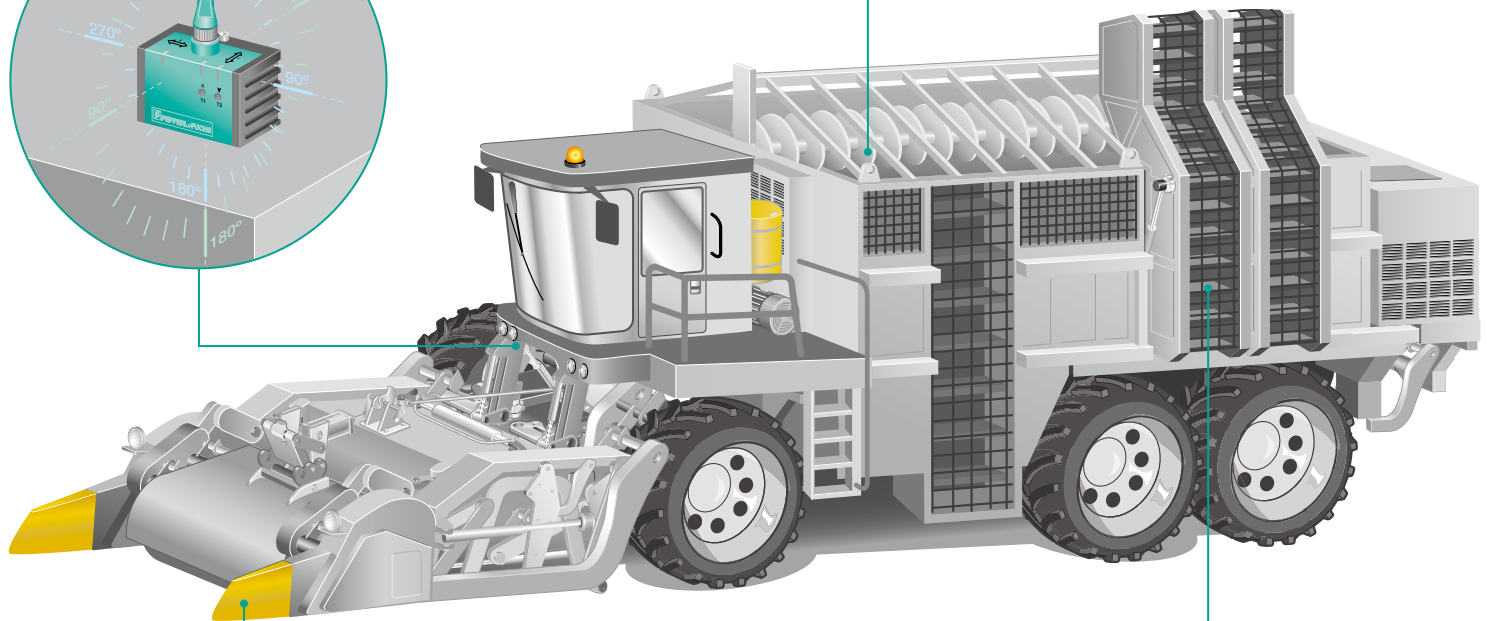
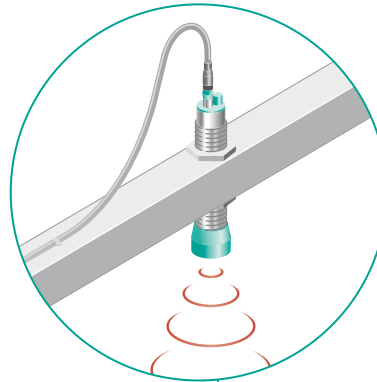
- Detects the vehicle's degree of tilt or angle of inclination



Fill Level Detection

Ultrasonic Sensor

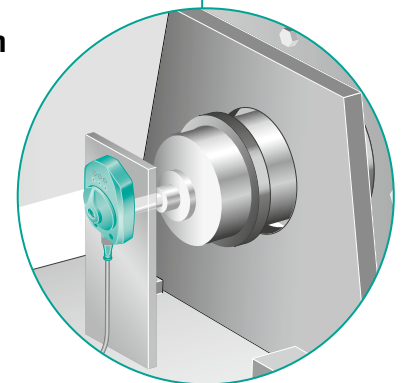
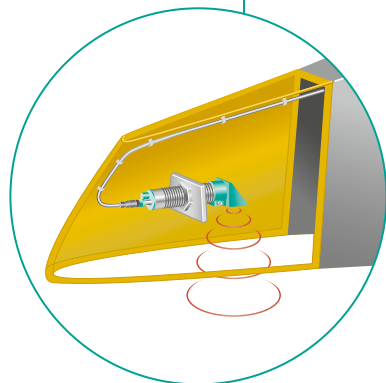
- Monitors the fill level



Rotational Position Detection

Positioning System

- Evaluates the absolute angular position of the boom



Harvesting Unit Height Monitoring

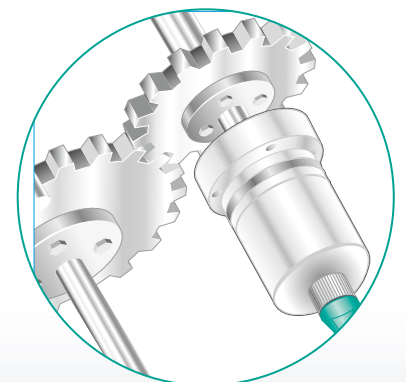
Ultrasonic Sensor

- Automatically adjusts the harvesting unit to the proper height

Speed Monitoring

Heavy-Duty Encoder

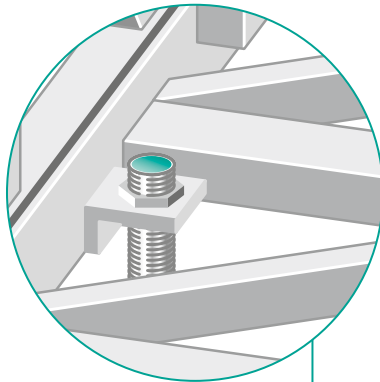
- Monitors the speed of the boom conveyor belt



Saw Attachment Home Position

Inductive Sensor

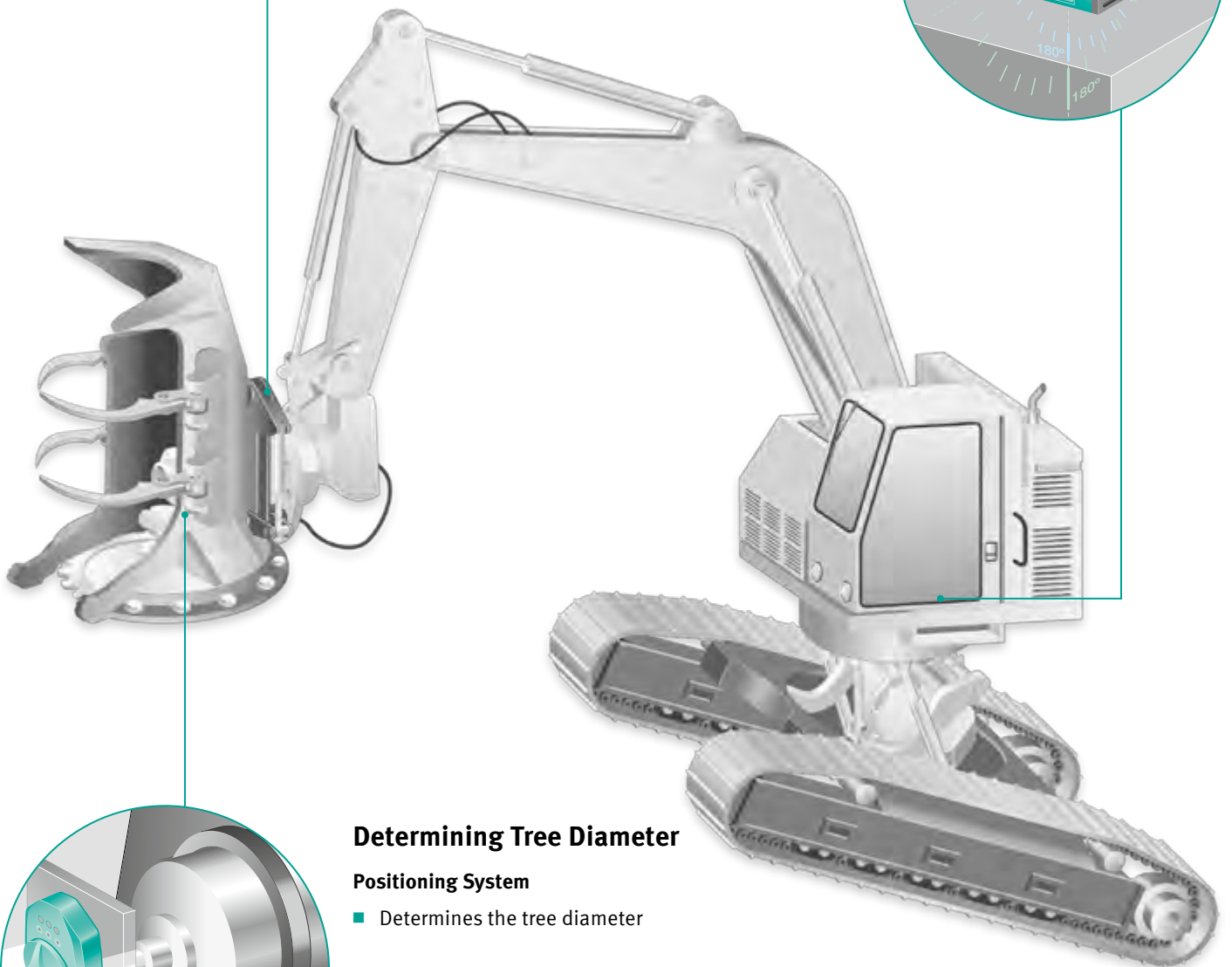
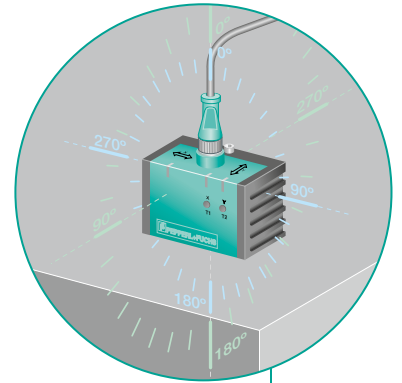
- Ensures the safe home position



Horizontal Cab Alignment

Inclination Sensor

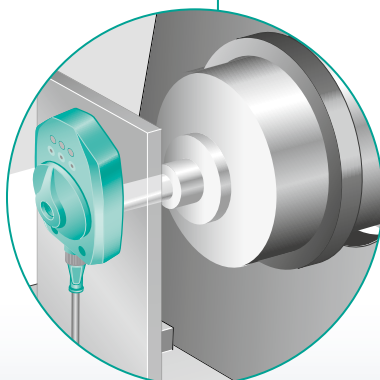
- Detects the degree of tilt or angle of inclination
- Automatic cab leveling



Determining Tree Diameter

Positioning System

- Determines the tree diameter



Construction Machinery

Hard-working construction machinery like dump trucks, excavators, and heavy-duty cranes require sensors that can withstand severe shocks, high levels of vibration, extreme weather conditions, and corrosive chemicals. That means they need the toughest and most versatile sensors on the market.

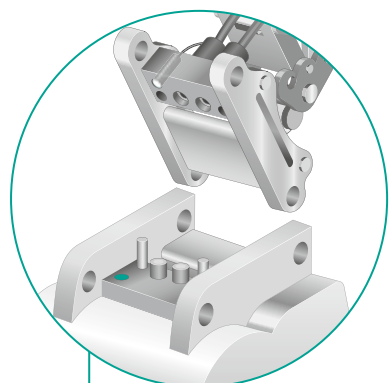


EXCAVATOR

Attachment Detection

RFID, Inductive Sensor

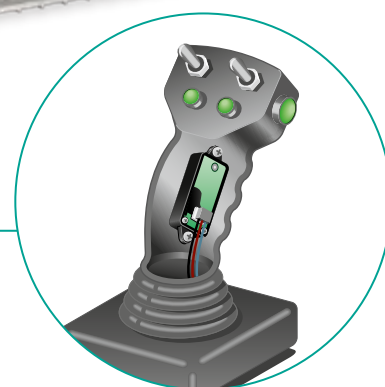
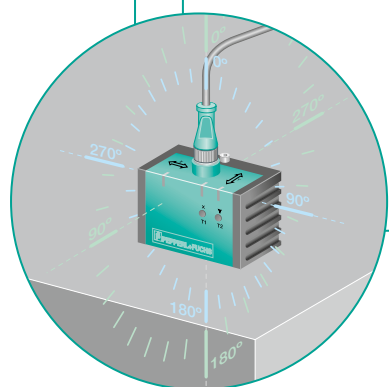
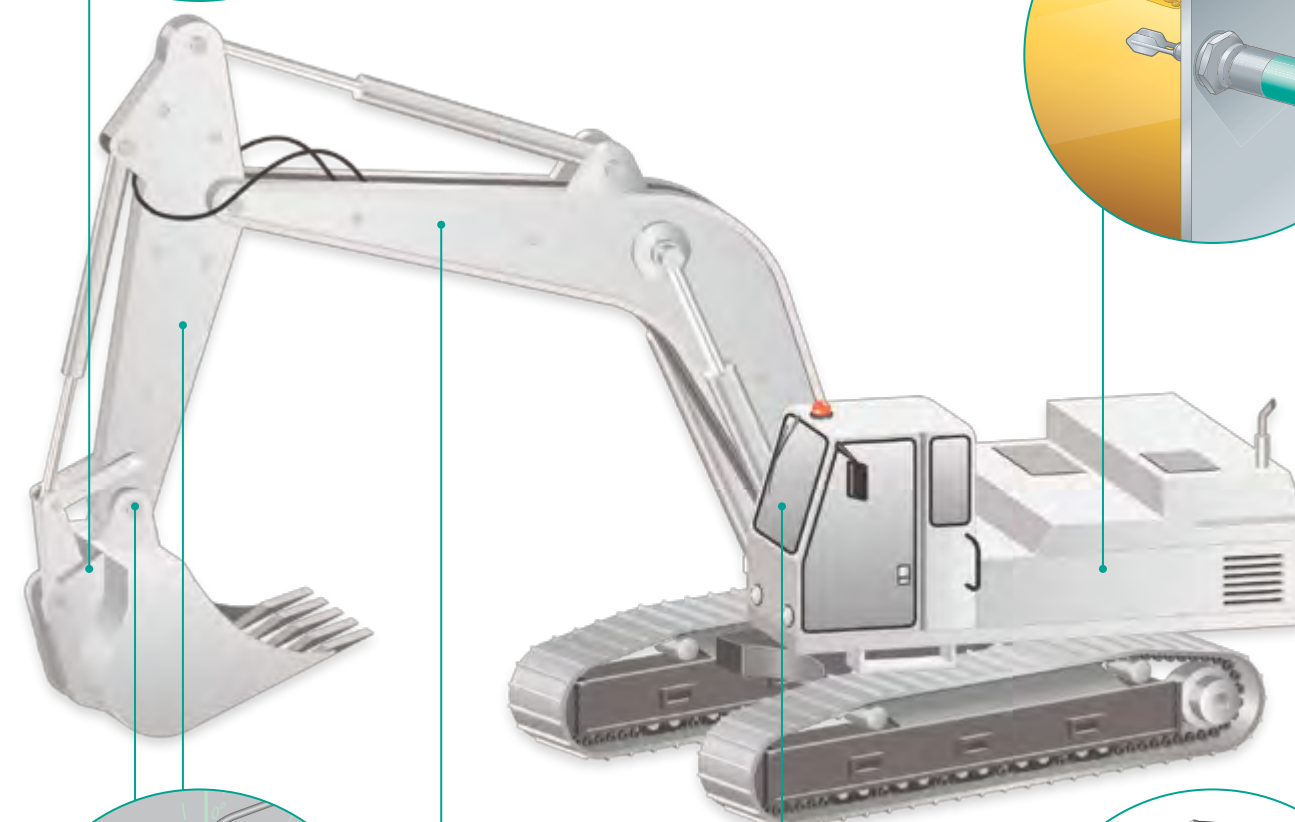
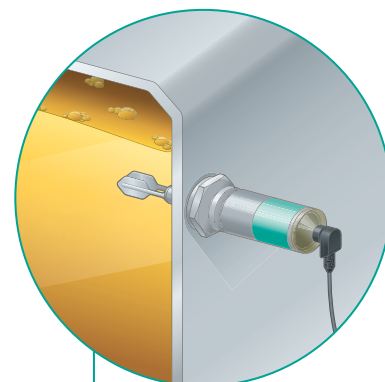
- RFID identifies correct attachment tool
- Inductive sensor verifies the correct position of the attachment tool



Fill Level Detection

Vibration Limit Switch

- Measures the hydraulic fluid level
- Warns if the level is too low



Bucket Position Monitoring and Boom Angle Detection

Inclination Sensor

- Measures the exact angular position of the bucket
- Immediate position information via bus communication

Nonmechanical Hand Detection

Capacitive Grip Sensor

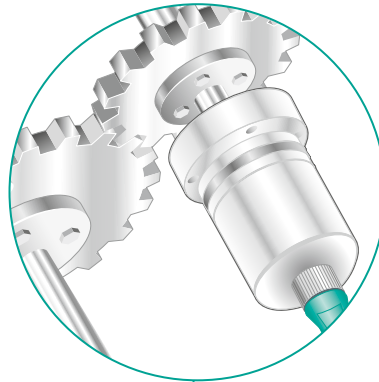
- If the hand is removed from the joystick, the engine is stopped and hydraulic pressure is lowered
- Inadvertent joystick actuation is virtually impossible

For more information, see: www.pepperl-fuchs.com/mobile-crane

Crane Carriage Position Monitoring

Heavy-Duty Encoder

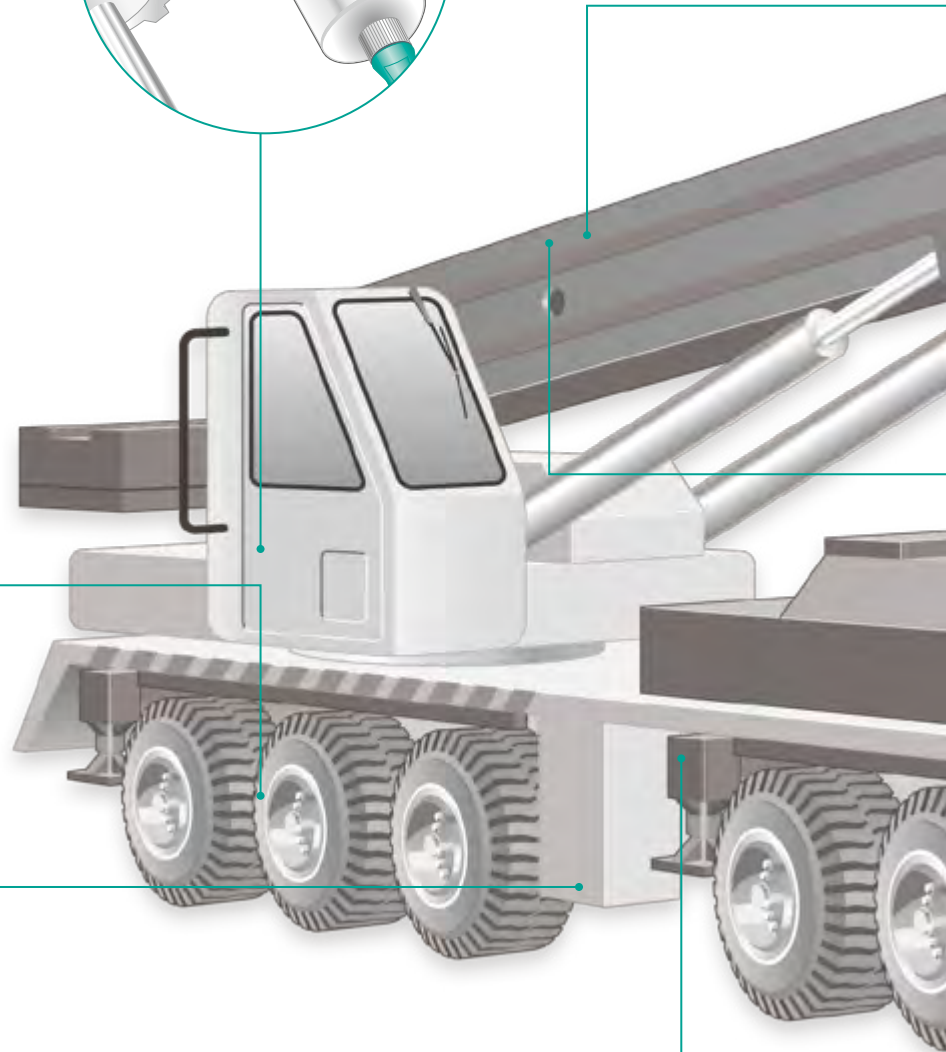
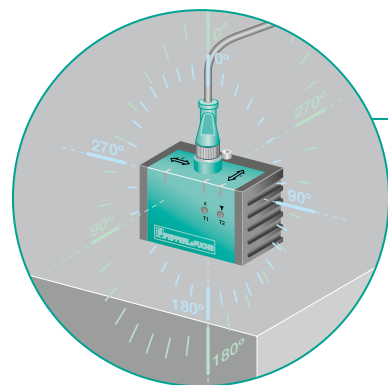
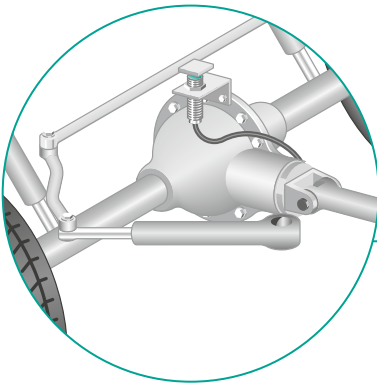
- Precise monitoring of the crane carriage position
- Absolute position monitoring as part of the load moment monitoring



Wheel Steering Home Position

Inductive Sensor

- End position detection – ensures rear wheels are in the center position



Vehicle Leveling

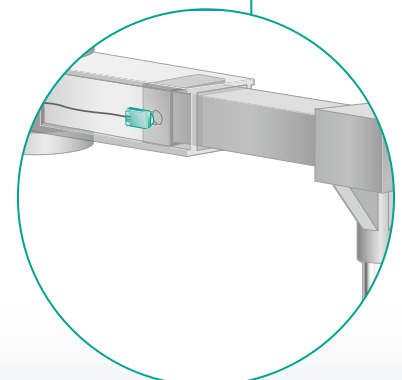
Inclination Sensor $\pm 15^\circ$

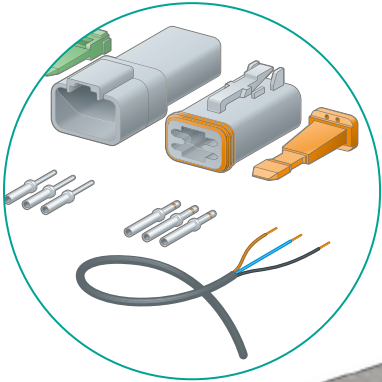
- Precise monitoring of horizontal position for load moment monitoring
- Optimized angular range and resolution for precise leveling

Outrigger Monitoring

Inductive Flat Sensor

- Detects if outrigger is extended or retracted
- Space-saving installation with special slim housing design





Cable Solutions

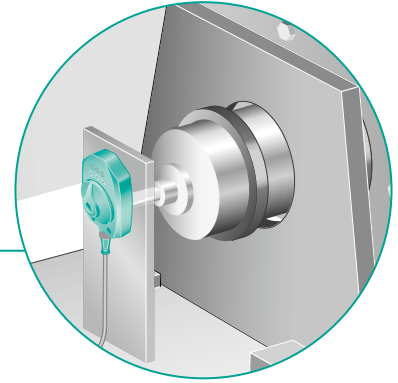
Customized Cables and Connectors

- Standard automotive connectors are available
- Custom cable lengths and cable types are available

Boom Position Detection

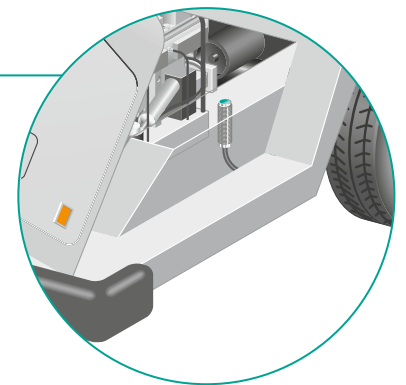
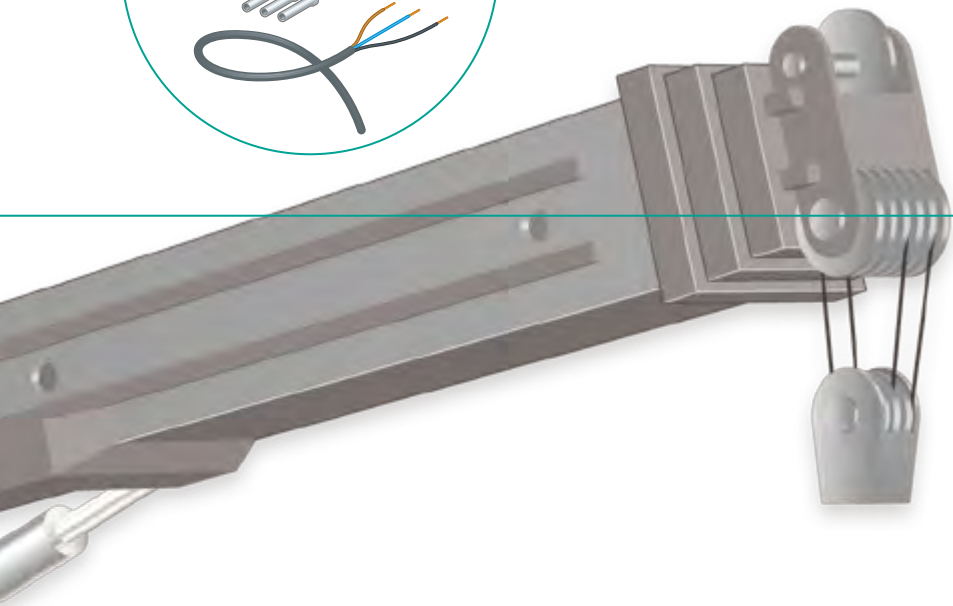
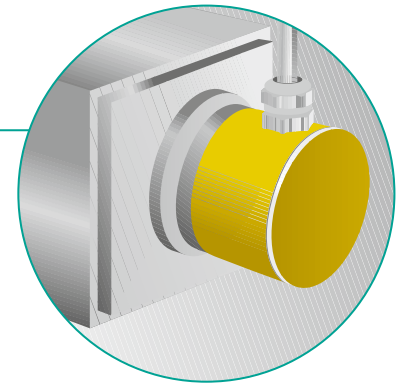
Positioning System

- Measures the absolute angular position of the boom



Safety Rotary Encoder

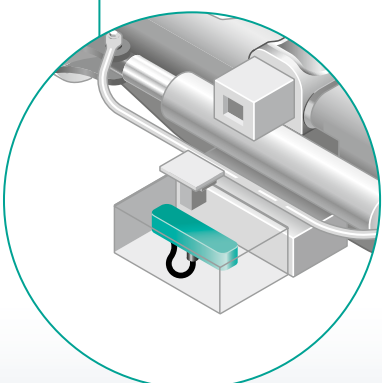
- Measures the absolute angular position of the boom
- Singleturn/multiturn encoder



Wheel Steering Positioning

Positioning System

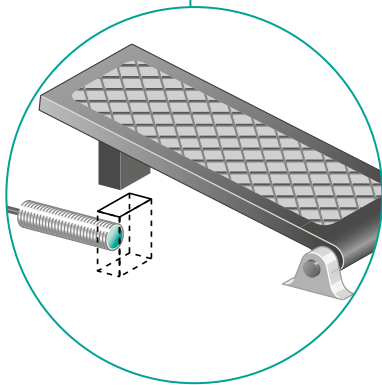
- Exact position of steer angle at 120 mm measurement range



Cab Home Position

Inductive Sensor

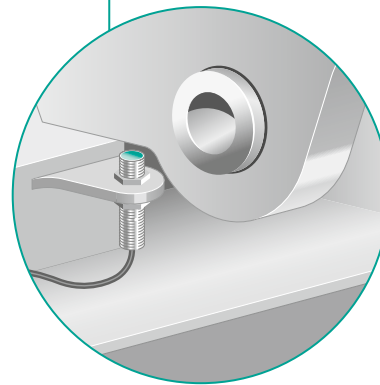
- Monitors the cab home position



Brake Pedal Position Detection

Inductive Sensor

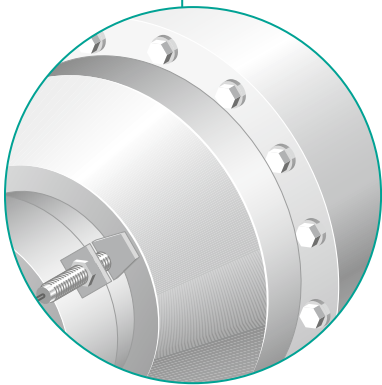
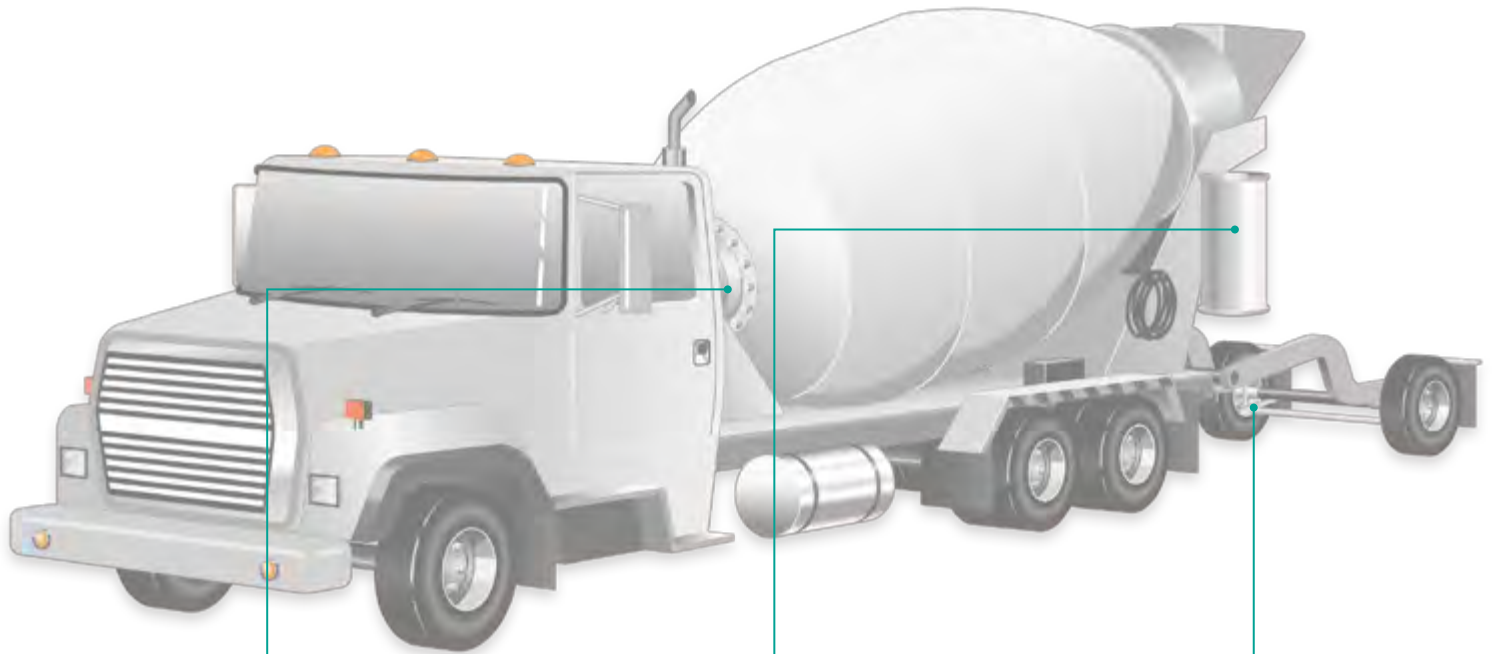
- Prevents transmission engagement during braking
- Turns on the brake light



Dump Bed Position

Inductive Sensor

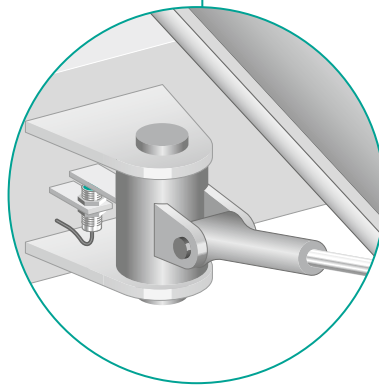
- Provides feedback when dump bed is down



Drum Rotation

Inductive Sensor

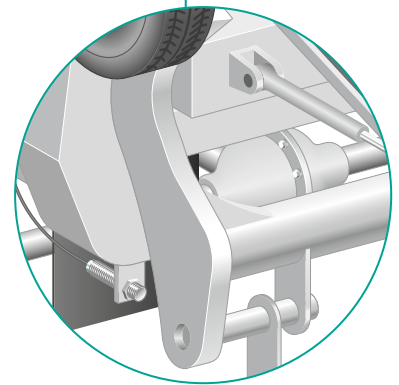
- Counts drum revolutions
- Ensures proper mixing



Chute Position Detection

Inductive Sensor

- Confirms if the chute is centered



Fifth Wheel Position Detection

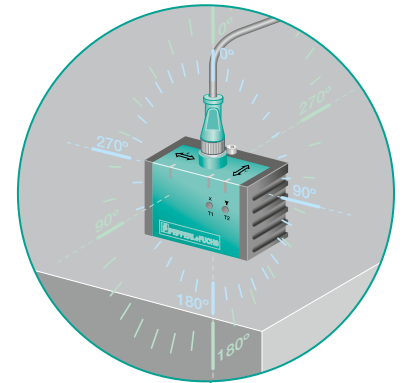
Metal Face Sensor

- End position detection when raising or lowering the fifth wheel

Boom Angle Monitoring

Inclination Sensor

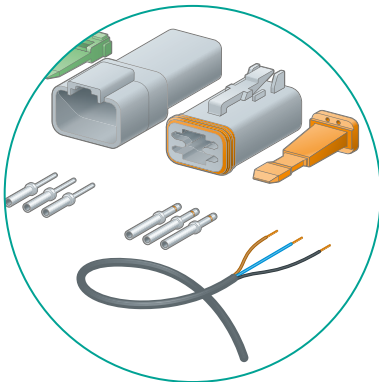
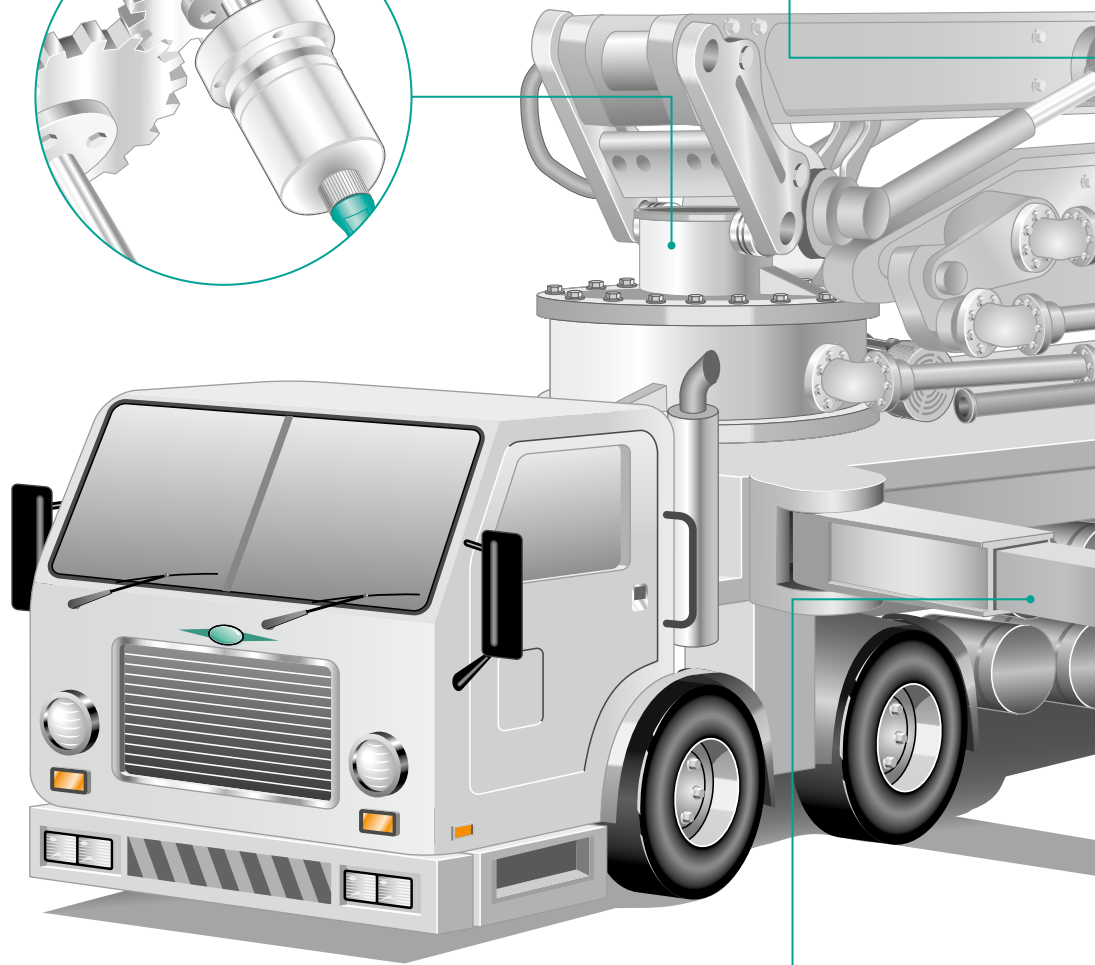
- Measures the exact angular position of the extension arm for load moment monitoring



Boom Position

Heavy-Duty Encoder

- Measures the absolute angular position of the boom



Cable Solutions

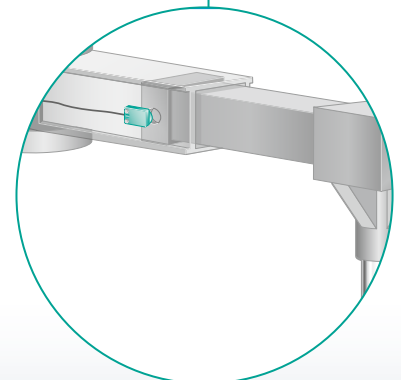
Customized Cables and Connectors

- Standard automotive connectors are available
- Custom cable lengths and cable types are available

Outrigger Monitoring

Inductive Flat Sensor

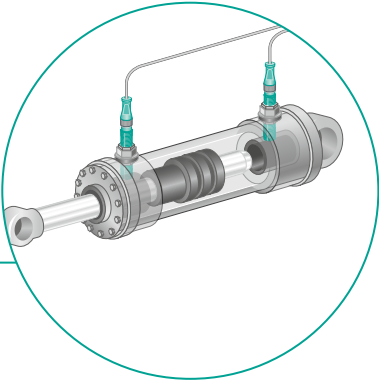
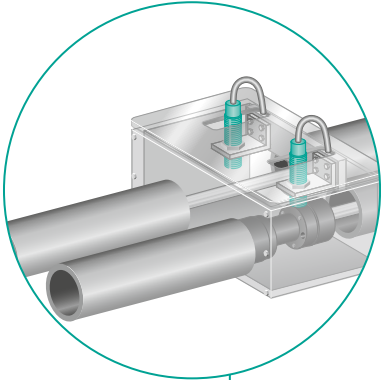
- Detects if outrigger is extended or retracted
- Space-saving installation with special slim housing design



Water Box Cylinder Monitoring

Inductive Sensor

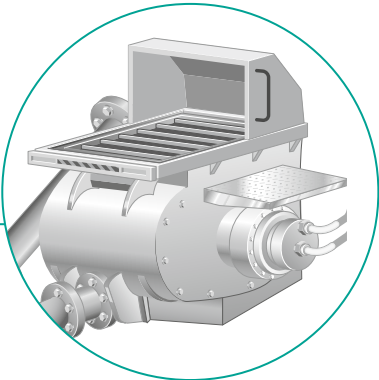
- Monitors the concrete pump piston



Pump Cylinder Monitoring

Pressure-Resistant Sensor

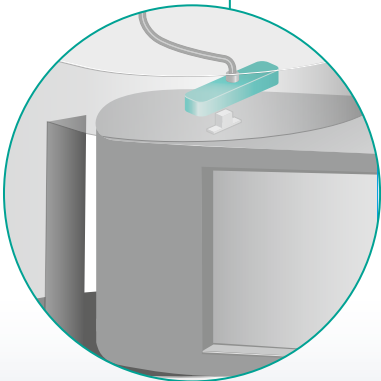
- Monitors the cylinder end position



Outrigger Position Detection

Positioning System

- Precise measurement of outrigger position as part of load moment limitation ensures safety




Hopper Gate Closed Position

Inductive Sensor

- Monitors the closed position of the metal gate
- Tamperproof monitoring prevents accidents

Municipal Vehicles

A photograph of a city street scene. In the foreground, several orange and white striped traffic barrels are lined up on the right side of the road. The street is paved and appears to be under construction or maintenance. In the background, there are several tall, modern buildings with many windows. A street sign is visible on one of the buildings. The sky is clear and blue.

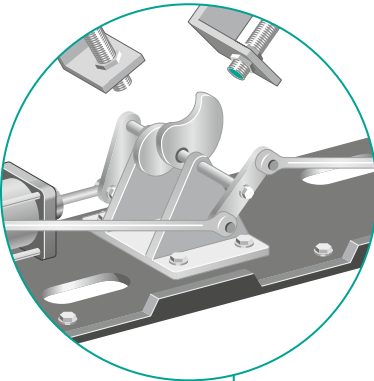
Buses, garbage trucks or fire service vehicles need durable, long-lasting, and accurate sensors for reliable, day-to-day operation in difficult conditions. Safety and precise control are a top priority for reliable use on roads around the world.

BUS

Door Position Monitoring

Inductive Sensor

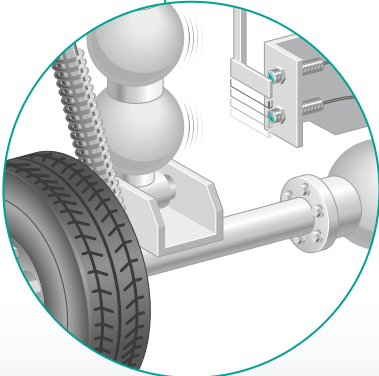
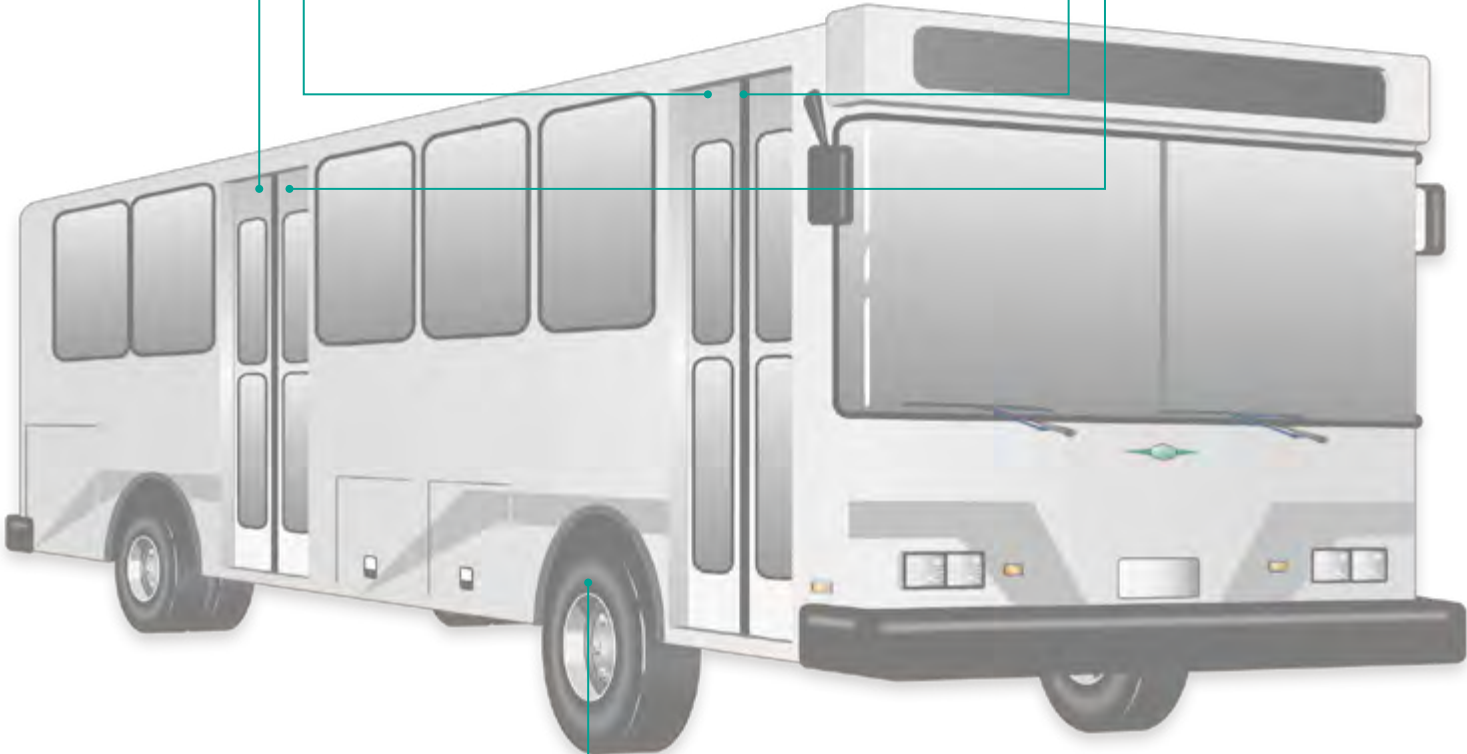
- Precise, fully opened and closed position detection



Safety in Door Area

Photoelectric Scanner

- Recognizes people in the doorway
- Protection against being trapped in the door as it closes



Kneeler Position

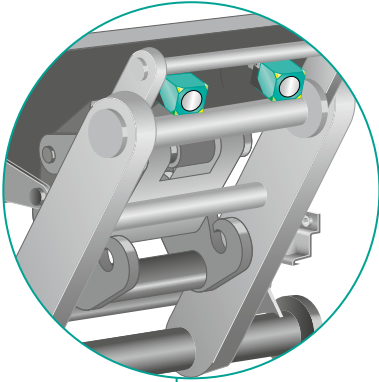
Inductive Sensor

- Lowers bus suspension for easy step up
- Full extension and retraction verification

Dump Monitoring

Ultrasonic Sensor

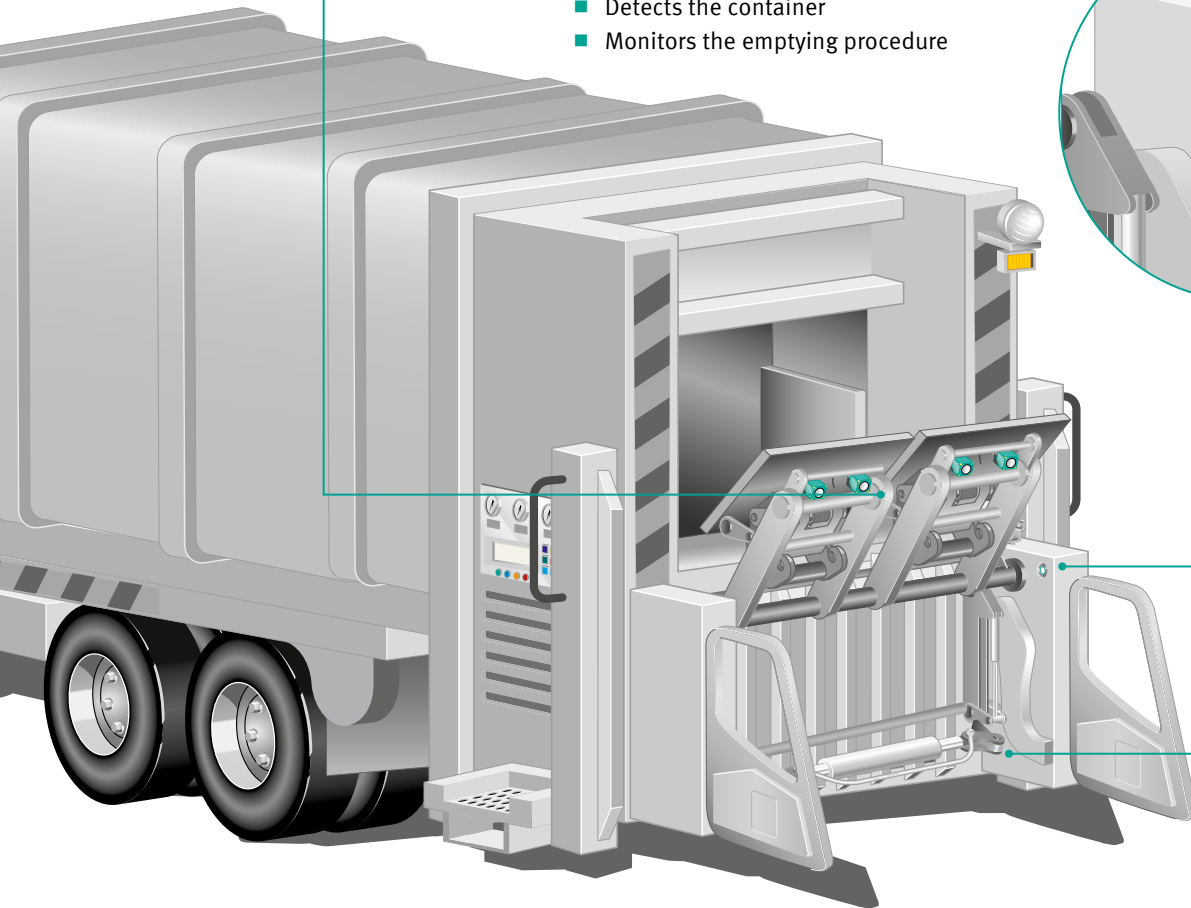
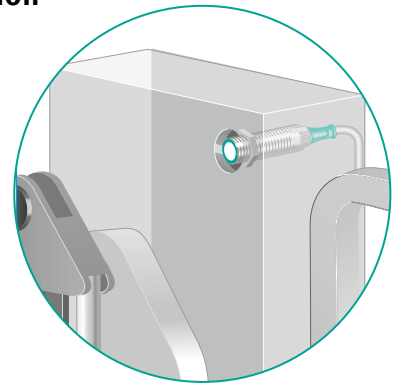
- Monitors the free area during operation



Waste Container Emptying Detection

Ultrasonic Sensor

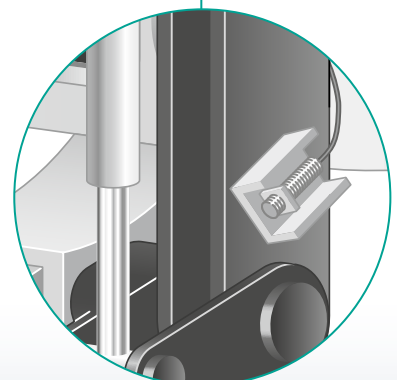
- Detects the container
- Monitors the emptying procedure



Dump End Position Monitoring

Inductive Sensor

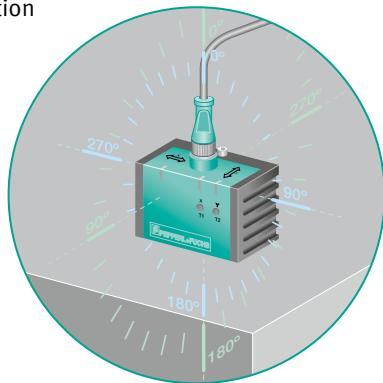
- Confirms dumping reset for safe operation



Hinged Arm Position Monitoring

Inclination Sensor

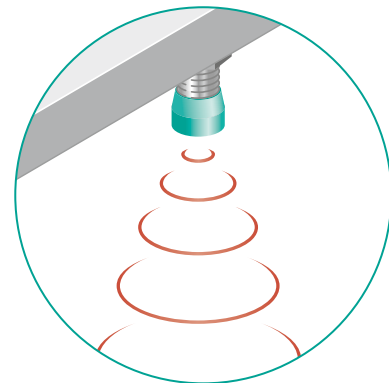
- Measures the angular position of the lift arm system



Positioning of Gripper Arm Relative to Waste Container

Ultrasonic Sensor

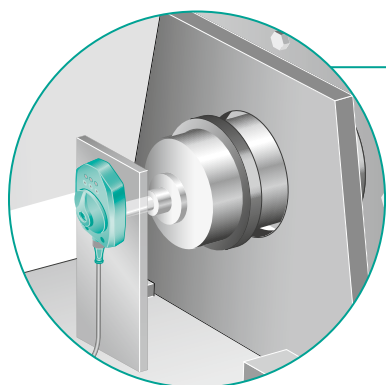
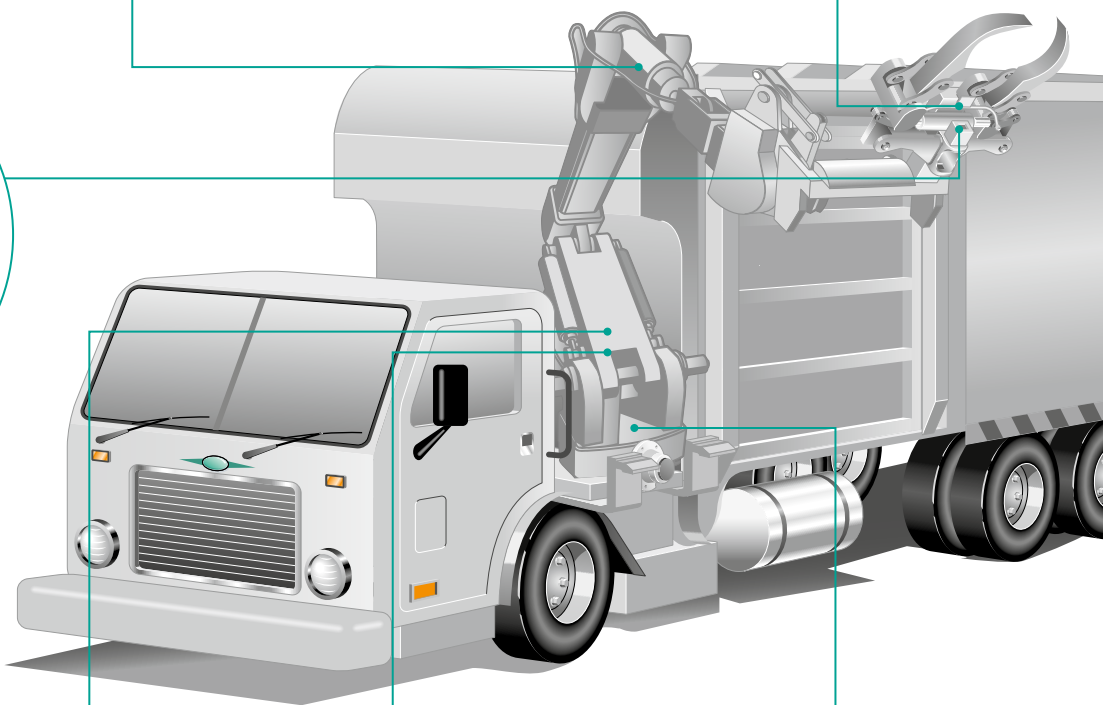
- Container detection
- Control of the speed and position of the gripper arm



Gripper Arm Position

Heavy-Duty Encoder

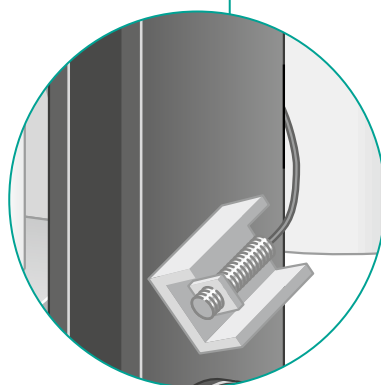
- Precise position monitoring of container gripper



Hinged Arm Rotational Position

Positioning System

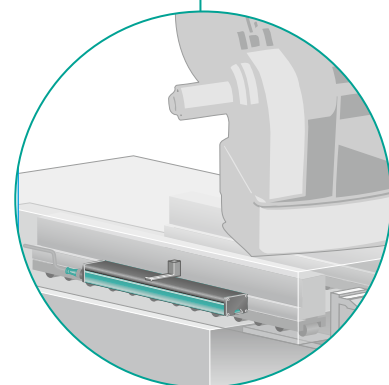
- Monitors the angle of the hinged arm for precise movement and gripping of containers



Gripper Arm End Position

Inductive Sensor

- Monitors the gripper arm end position
- Prevents accidents caused by the gripper arm



Gripper Arm Module Position Monitoring

Positioning System

- Monitors the linear position of the gripper arm during operation

Equipment Compartment Door Sensing

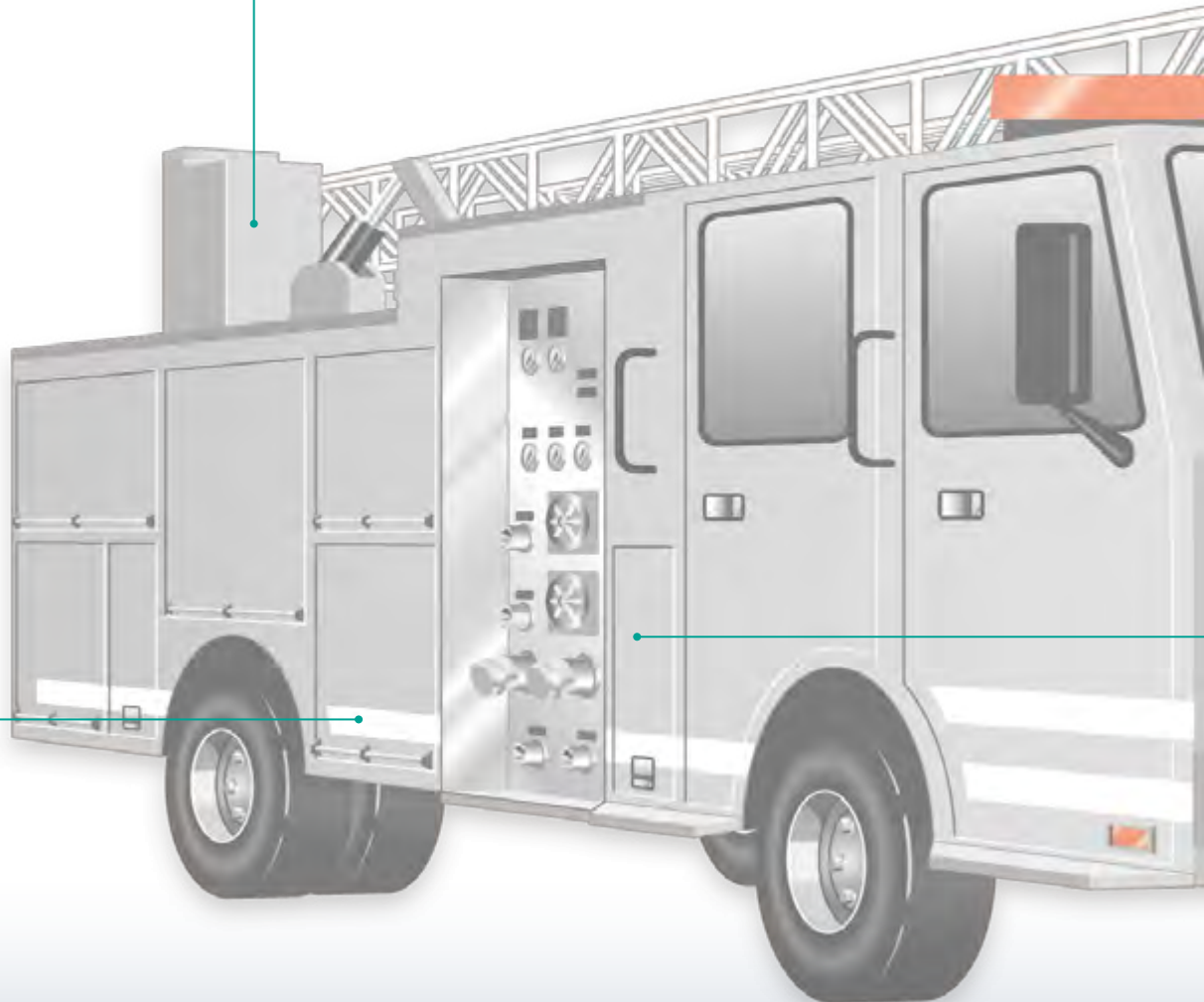
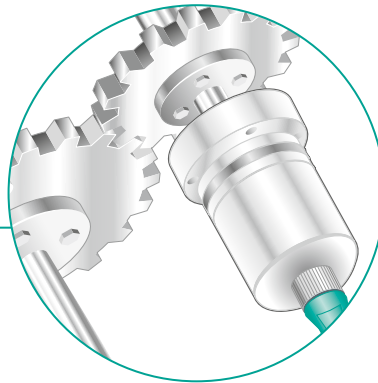
Inductive Sensor

- Ensures that the equipment compartment door is closed

Boom Position Detection

Heavy-Duty Encoder

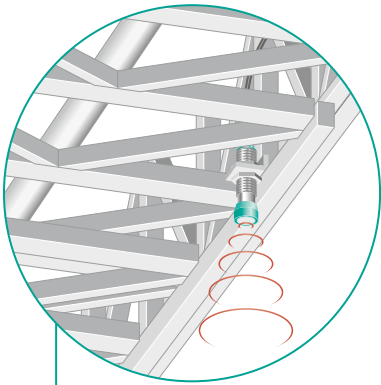
- Measures the absolute angular position of the ladder



Collision Prevention

Ultrasonic Sensor

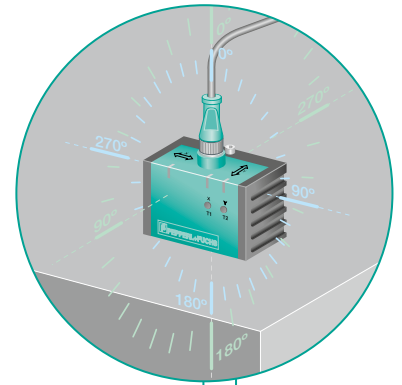
- Prevents ladder collision by monitoring the operating range



Vehicle and Basket Position Leveling

Inclination Sensor

- Detects whether the basket is in a horizontal position
- Monitors vehicle leveling to prevent tipping



Logistics

Mobile machines in the logistics sector, such as forklifts, elevating work platforms, or container stackers, require precise positioning of heavy loads and effective control of rapid movements for transporting materials. Heavy-duty, resilient sensors guarantee precision and reliability both in warehouses and in outdoor applications.

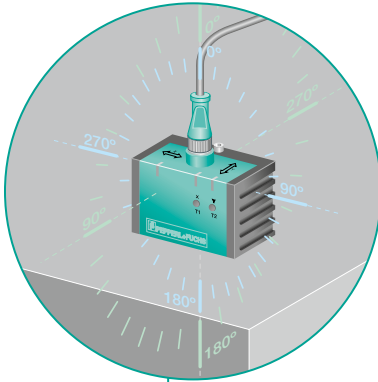


FORKLIFT

Fork Inclination Monitoring

Inclination Sensor

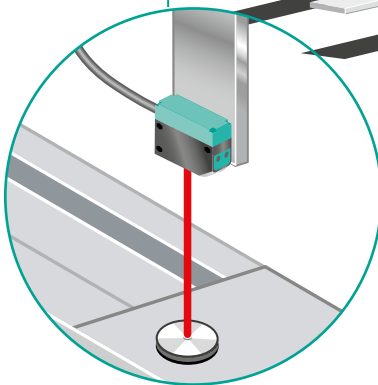
- Detects the horizontal angle of the fork while the truck is in motion
- Prevents the truck tipping when transporting heavy loads



Nonmechanical Hand Detection

Capacitive Grip Sensor

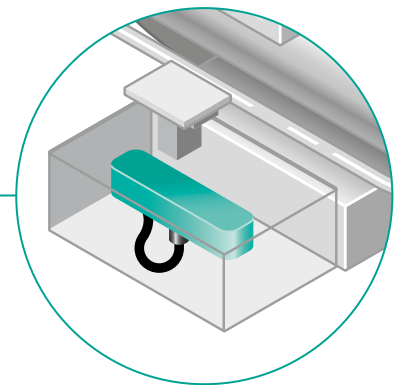
- If the hand is removed from the joystick, the engine is stopped and hydraulic pressure is lowered
- Inadvertent joystick actuation is virtually impossible



Fork Height Monitoring

Laser Distance Sensor

- Height monitoring for safe fork movement
- Forklift speed can be adjusted according to fork height



Fork Extension Monitoring

Positioning System

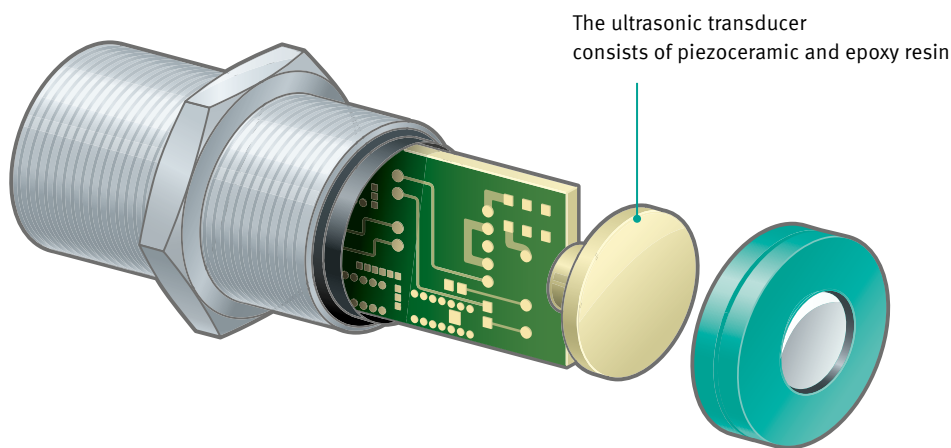
- Monitors the fork position for controlled fork extension

Ultrasonic Sensors – A Finger on the Pulse of Automation

Ultrasonic sensors detect objects made from various materials with millimeter precision, regardless of their shape, color, or surface contour. The ultrasonic sensors use high-frequency acoustic pulses that are inaudible to the human ear.

A piezoelectric transducer, also known as a piezoceramic, is used to generate ultrasonic waves. A patented decoupling layer is glued to the piezoelectric transducer with epoxy resin to couple and decouple the ultrasonic waves to the surrounding air.

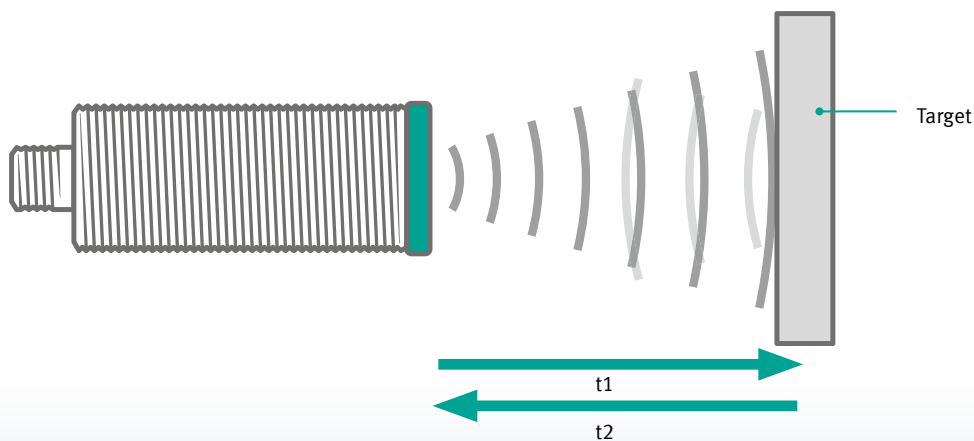
Ultrasonic sensors are extremely resistant to environmental influences making them ideal for applications in harsh environments, such as construction machines or agricultural equipment.



Echo Transit Time Method for Reliable Object Detection

The sensor emits ultrasonic pulses which are then reflected by an object. The generated echo is received again by the sensor and converted into an electric signal via the piezoelectric transducer. This is known as the propagation time of sound.

The sensor measures the time lag between the emitted ultrasonic pulse and the received echo and calculates the distance to the object using the speed of sound.

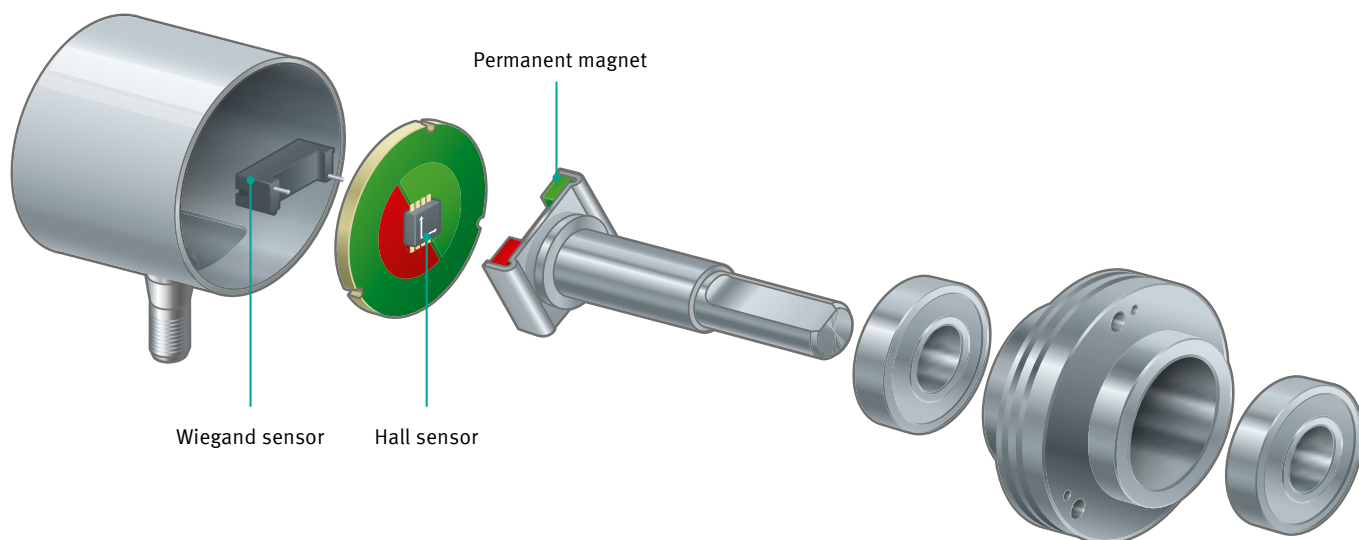


Magnetic Rotary Encoders – Precise and Robust

Pepperl+Fuchs magnetic absolute rotary encoders are ideal for precise positioning and speed detection in the most difficult environmental conditions. The noncontact magnetic measurement principle offers new advantages in rotational machine feedback.

The integrated Wiegand sensor is used to replace temperamental mechanical gears. This makes magnetic heavy-duty rotary encoders wear-free, maintenance-free, and guarantees a long service life.

Rugged applications in difficult conditions, such as contamination, temperature, impact, and vibration, are no problem for magnetic rotary encoders.



Wiegand Sensor Ensures Optimum Reliability

The Wiegand sensor eliminates the need for an internal battery to power the electronics and retain angular position when power is removed. The rotary encoder remains independent of voltage drops and power-down situations while providing

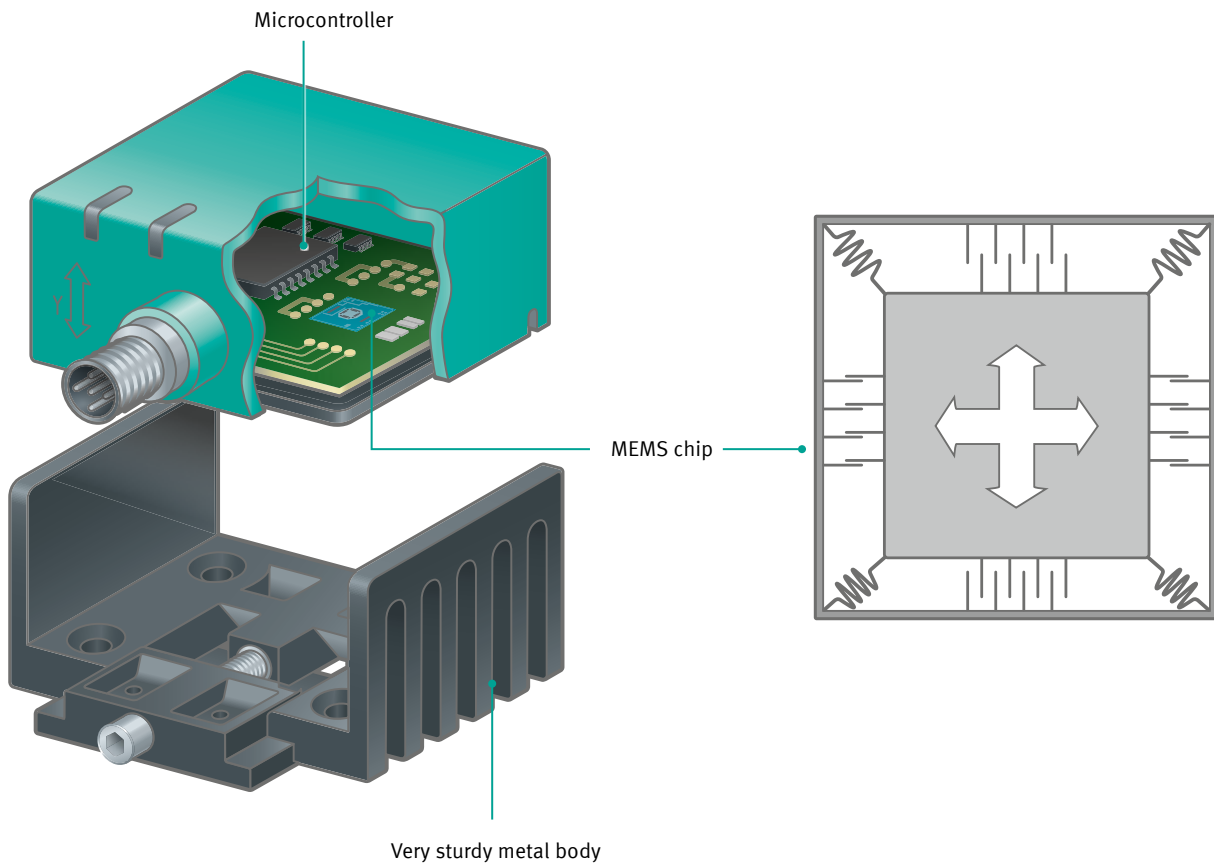
continued positional data security. The Wiegand sensor is therefore instrumental in increasing reliability and in reducing maintenance and service work.

Accurate Leveling with Inclination Sensors

The F99 Series inclination sensors are used for continuous monitoring of inclination angles and tilt in a freely selectable angular range between 0° and 360° using a noncontact, wear-free, micromechanical functional principle.

Either one or two independent, orthogonal axes are independently detected. It is configured via CANopen, SAE J1939, or using Teach buttons, depending on the type of sensor.

Measuring ranges and switching outputs can also be custom configured, allowing for adjustable monitoring limit angles and switchpoint output states.



The Heart – MEMS chip

The MEMS chip contains stacked plates connected to one another by spring elements. The outer plates are fixed and the central plates can move with the seismic mass. This configuration creates a series connection of multiple capacitors with variable capacity.

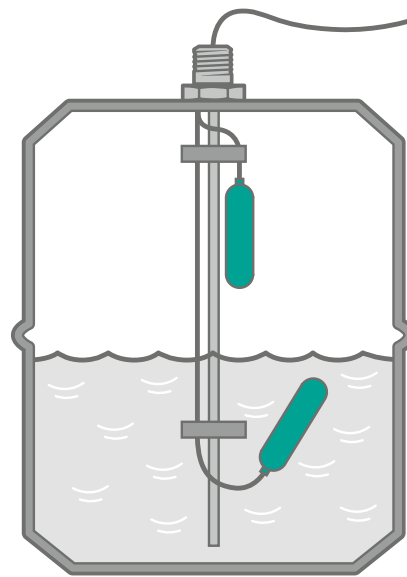
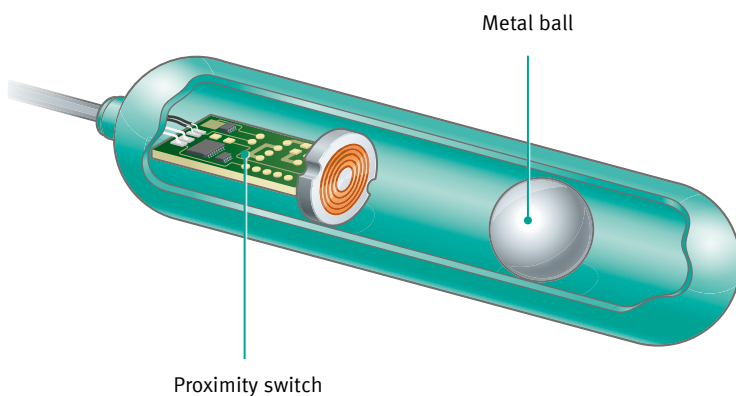
The capacity is variable because the distance between the capacitive micro-elements changes with the acceleration of the mass. This change in capacitance is measured and used along with the restoring force of the spring elements to calculate the acceleration or inclination.

Reliable Fill Level Detection – Floating or Vibrating

In applications such as overflow prevention, min./max. regulation, or dry run protection, Pepperl+Fuchs' float and vibration switches signal whether the specified level has been reached, exceeded, or fallen short.

As Simple as Useful – The Float Switch

The tilting motion of the float switch as it floats up or down on the surface of the liquid is detected by an integrated switch and provides output for user level detection. These float sensors do not contain mercury and are a robust and inexpensive solution for many level applications.



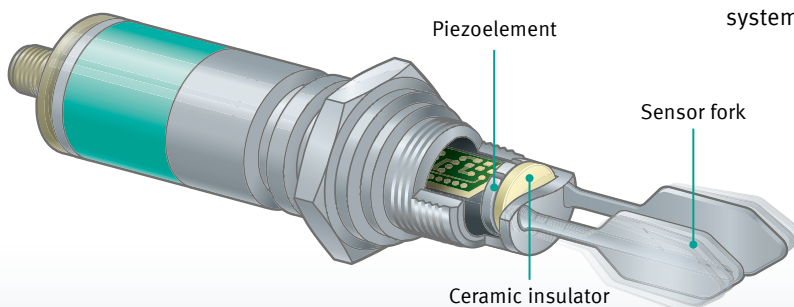
The float switch changes its position when it floats up or down. This change of position causes a metal ball to activate the internal proximity switch.

Reliable Level Measurement Using Vibration




Vibration limit switches provide a proven method for detecting limit levels of liquids and loose materials. A piezoelectric element causes the sensor fork to vibrate at its resonance frequency, with a second piezoelectric element functioning as a receiver element.

The frequency of the vibrating fork is attenuated when it comes into contact with the material, and evaluation electronics convert this change into an output switching signal.




Vibracon sensors are the smallest vibration forks on the market. They are pressure resistant up to 40 bar and temperature resistant up to 150 °C, making them ideal for use in hydraulic systems.



Select the Sensor Suited to Your




Sensor Technology	Series	Features	Benefits
<p>Inclination and acceleration sensors</p>  <p>e1</p> <p>SAE J1939</p> <p>CANopen</p>	<p>IN...-F99 inclination sensor AC...-F99 acceleration sensor</p>	<ul style="list-style-type: none"> Extremely durable design Up to 360° inclination range Up to ±2 g acceleration range High impact resistance of 100 g Temperature range -40 °C ... +85 °C IP68 and IP69K degree of protection e1 certification 2006/28/EC 100 V/m immunity according to DIN ISO 11452-2 CANopen and J1939 interface 	<ul style="list-style-type: none"> Reliable inclination measurement guarantees the safety of mobile machines Unrestricted applications in global road transport
<p>Ultrasonic sensors</p> 	<p>UC..., UB... M12, M18, M30 VariKont L2</p>	<ul style="list-style-type: none"> Noncontact distance measurement Robust design Temperature range -25 °C ... +70 °C Stainless steel housing Wear-free and contamination-resistant Sensing ranges up to 6000 mm Small blind zone, rapid response times Temperature compensation 	<ul style="list-style-type: none"> Reliable distance and object detection regardless of shape, color, or surface contour Prevention of accidents using noncontact monitoring
<p>Inductive sensors</p>  <p>e1</p>	<p>F148...-M VariKont L2, L2M F33...-M NBx...12GM...-M NBx...18GM...-M NBx...30GM...-M</p>	<ul style="list-style-type: none"> Robust design Temperature range -40 °C ... +85 °C IP68 and IP69K degree of protection e1 certification 2006/28/EC 100 V/m immunity according to DIN ISO 11452-2 	<ul style="list-style-type: none"> Unrestricted applications in global road transport Prevention of accidents using noncontact, tamperproof monitoring

Application





Sensor Technology	Series	Features	Benefits
<p>Metal face sensors</p> 	<p>NMB...12GM NMB...18GM NMB...30GM</p>	<ul style="list-style-type: none"> ■ Robust design ■ Stainless steel housing ■ IP69K degree of protection ■ PUR cable 	<ul style="list-style-type: none"> ■ Universal use, particularly in very dirty and oily applications
<p>Pressure-resistant sensors</p> 	<p>NCB...D</p>	<ul style="list-style-type: none"> ■ Resistant to high pressure ■ 500 bar working pressure ■ 800 bar peak pressure 	<ul style="list-style-type: none"> ■ Reliable end position detection in hydraulic cylinders
<p>Magnetic heavy-duty encoders</p>  <p>SAE J1939 CANopen</p>	<p>CVM42H Multiturn CVS42H Singleturn</p>	<ul style="list-style-type: none"> ■ Robust design in stainless steel housing ■ Magnetic principle for reliable operation ■ Highly resistant to impact, vibration, and dirt ■ Accuracies of 1° to 0.1° ■ Temperature range -40 °C ... +85 °C ■ Increased shaft load capacity ■ IP69K degree of protection ■ Small housing designs ■ CANopen and J1939 interface 	<ul style="list-style-type: none"> ■ Long service life and low maintenance thanks to extremely robust and wear-free magnetic technology ■ Highly accurate for reliable position and speed detection

For detailed information and additional models, please refer to our catalog and our website at

www.pepperl-fuchs.com

Sensor Technology	Series	Features	Benefits
Safety rotary encoders 	CVM58S Multiturn CVS58S Singleturn RVS58S Singleturn	<ul style="list-style-type: none"> ■ Certified functional safety ■ Suitable for systems up to SIL3 according to IEC 061508 ■ PLe-certified according to ISO 13849 ■ Singleturn and multiturn models ■ Incremental and absolute rotary encoders 	<ul style="list-style-type: none"> ■ Provides safety-approved design for operator and machine
Capacitive sensors 	CBN...F46	<ul style="list-style-type: none"> ■ Noncontact presence detection ■ Slim design ■ High EMC stability 	<ul style="list-style-type: none"> ■ Reliable presence detection regardless of object or material
Inductive positioning systems 	PMI...F90 PMI...F110 PMI...F130	<ul style="list-style-type: none"> ■ Noncontact inductive measurement ■ Linear measuring ranges (in mm): 40, 80, 120, 210, 360, 510, 810 ■ Rotary measuring range: 360° ■ Wear-free and contamination-resistant ■ Fully encapsulated for use in demanding environmental conditions ■ Wide range of functions thanks to configurable measurement range and switching positions 	<ul style="list-style-type: none"> ■ Exact positioning for safety in linear or rotary applications

For detailed information and additional models, please refer to our catalog and our website at www.pepperl-fuchs.com
 Customized cable types, cable lengths, and connectors are available on request.

Sensor Technology	Series	Features	Benefits
Level measurement technology 	LVL vibration limit switch LFL float switch	<ul style="list-style-type: none"> ■ Robust design ■ Small housing designs ideal for confined mounting conditions ■ Fill level monitoring using float or vibration principle ■ LVL in robust stainless steel housing ■ LFL in spherical or cylindrical housing, mercury-free 	<ul style="list-style-type: none"> ■ Reliable fill level measurement regardless of medium type ■ Reliable min./max. detection prevents overflowing and running dry
Photoelectric sensors 	VDM28 laser distance sensor	<ul style="list-style-type: none"> ■ Extremely rapid distance measurement in 10 ms ■ Measurement distances of 8 m, 15 m, 50 m ■ Immune to ambient light ■ Object color irrelevant 	<ul style="list-style-type: none"> ■ Extremely accurate and rapid measurements ensure reliable application
	ProScan-T energetic light scanner	<ul style="list-style-type: none"> ■ e1 certification in line with standards for rail and motor vehicles ■ Fan-shaped detection field with up to 12 beams ■ Adjustable detection fields for different door widths ■ Automatic longterm drift compensation 	<ul style="list-style-type: none"> ■ Reliable monitoring of large surfaces and door areas for guaranteed safety
RFID identification systems 	IDENTControl Compact	<ul style="list-style-type: none"> ■ Robust metal housing with IP67 degree of protection ■ High EMC protection ■ The control interface supports read/write heads of all frequency ranges ■ 1 channel or 2 channel ■ RS232, RS485, PROFIBUS, and Ethernet interfaces 	<ul style="list-style-type: none"> ■ Reliable detection and tracing of components



Staying in Touch. The World Over.

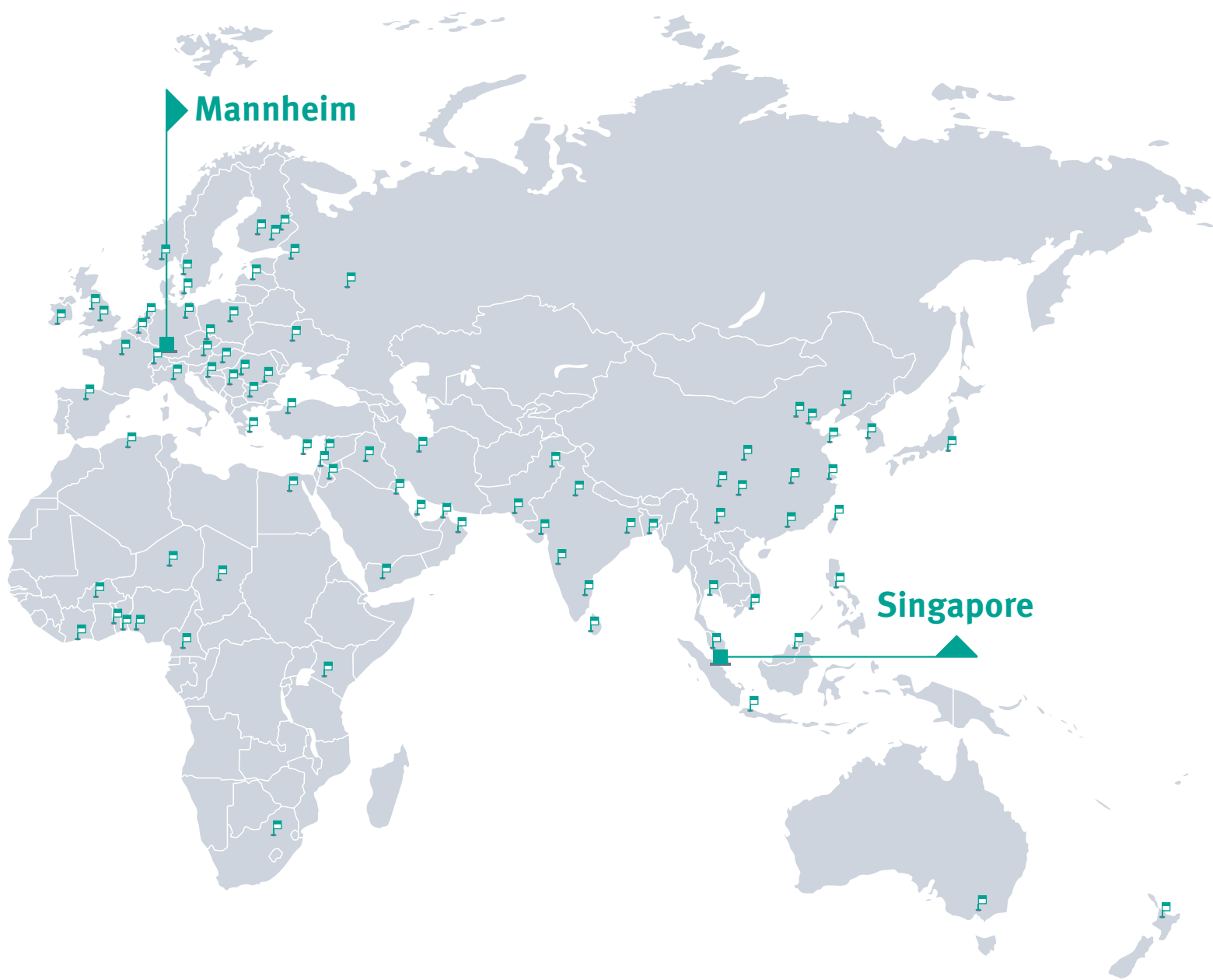
Good customer relationships need care and attention. They are an indication of genuine interest, trust, and a cooperative spirit: the foundation of Pepperl+Fuchs' strengths. No matter where you might be, we are always nearby. And we speak your language – in more than 140 countries the world over.



At Home on All Continents

Our customers are at the center of all our activities. Our worldwide network ensures that we provide them with the best possible service and support. Our world headquarters in Mannheim services Europe through a network of more than 40 affiliates. Asia is handled by our office in Singapore, with more than 1,000 employees in manufacturing, service, and sales. And our North American headquarters in Twinsburg, Ohio, is responsible for a comprehensive network of offices and sales partners in the USA, Canada, and Mexico.

No matter where in the world you may be, Pepperl+Fuchs is right nearby – and always there for you.



Mannheim

Singapore

YOUR APPLICATION. OUR CHALLENGE.

PROCESS INTERFACES

- Intrinsically safe barriers
- Signal conditioners
- Fieldbus infrastructure
- Remote I/O systems
- HART interface solutions
- Wireless solutions
- Level measurement
- Purge and pressurization systems
- Industrial monitors and HMI solutions
- Explosion protection equipment
- Solutions with process interfaces

INDUSTRIAL SENSORS

- Proximity sensors
- Photoelectric sensors
- Industrial vision
- Ultrasonic sensors
- Rotary encoders
- Positioning systems
- Inclination and acceleration sensors
- AS-Interface
- Identification systems
- Logic control units

