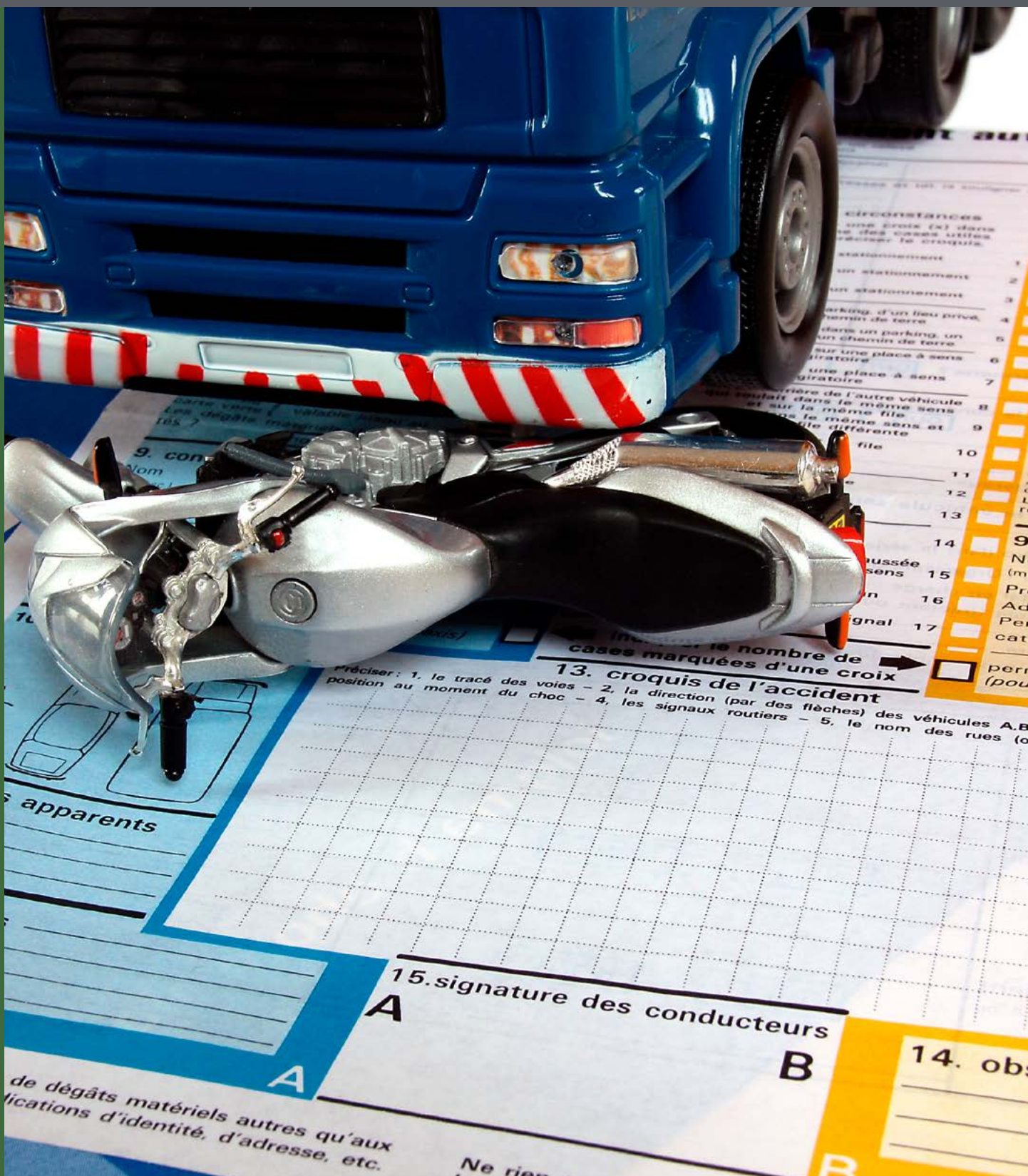
GROENEVELD-BEKA
LUBRICATION SYSTEMS BY TIMKEN

Safety Support Systems

Increase safety, prevent damage



Groeneveld-BEKA

Reducing customers' operational costs and at the same time increasing uptime, productivity, efficiency and safety of their vehicles and machines. That is what it's all about at Groeneveld-BEKA. We accomplish this by developing, producing, supplying and servicing industry-leading automatic lubrication, fluid control and safety support systems.

Groeneveld-BEKA, part of The Timken Company, is the world's second largest producer of automatic lubrication systems, fluid management and safety support systems. Groeneveld-BEKA products improve equipment lifetime and reliability, while reducing the total cost of ownership.

Groeneveld-BEKA was formed through the merger of two well-established companies: Groeneveld and BEKA. Groeneveld was founded in 1971 and acquired by Timken in 2017. BEKA was founded in 1927 and acquired by Timken in late 2019. Groeneveld has also incorporated Interlube into their brand. Interlube was acquired by Timken in 2013.

Groeneveld-BEKA products are supplied for ex-factory installs to leading manufacturers of trucks, trailers, buses, wind turbines, industrial applications, agricultural, mining and construction equipment. In addition Groeneveld-BEKA systems are installed in the after-market for a wide variety of transport, construction, agricultural, port equipment and industrial applications. Groeneveld-BEKA strives to develop and manufacture all of its products in-house according to World Class Manufacturing principles.

Automatic Lubrication Systems

Groeneveld-BEKA offers dedicated automatic lubrication systems for all kinds of equipment in a wide variety of market segments, from the smallest excavator to the largest trucks and industrial applications. The application of our high-end systems leads to decreased wear and tear of critical components resulting in extended lifetime, less downtime and reduced repair and maintenance costs. In short: higher productivity and lower operational costs. As maintenance technicians no longer have to climb on or crawl under the equipment, Groeneveld-BEKA's automatic lubrication systems also contribute to safety.

For optimal greasing in all circumstances Groeneveld-BEKA also offers the right type of grease for every application and every system. This is your guarantee for many years of trouble-free operation of your system and perfect lubrication of your valuable equipment.

Fluid Control

Groeneveld-BEKA's fluid management systems reduce daily maintenance and minimize the risk of unexpected downtime by controlling engine oil levels or removing contamination. Next to the oil management systems, Groeneveld-BEKA also offers systems which easily convey hydraulic power from fixed to moving points.

Safety Support Systems

For many years, Groeneveld-BEKA supplies safety support systems for a wide range of applications. Speedlimiters as well as obstacle detection and camera systems by Groeneveld-BEKA increase safety in many segments from road transport to construction, port, terminal and internal transport.

The World of Lubrication

Groeneveld-BEKA is a global enterprise with a worldwide coverage. In many countries, the company is also represented by independent distributors and dealers – all just as driven as our own organisation to offer added value to the customer's company.

With decades of experience providing reliability services to a range of industries, Groeneveld-BEKA offers complete automated maintenance solutions for all your needs. Groeneveld-BEKA's reliability products maintain your equipment, helping you increase uptime and improve profitability.

Visit the Groeneveld-BEKA website for contact details of our subsidiaries, distributors and service dealers.

Increase safety, improve uptime and reduce costs

Wherever you are, vehicles and mobile machines continue to be a danger. Whether you're working in road transport, construction, in container handling or in the agricultural industry, safety is a major topic everywhere. Blind spots are a contributory factor in many incidents, but also speed limits are continuously debated because of its impact on safety.

Groeneveld-BEKA's safety support systems have been proven to increase safety and to create safer and more secure workplaces around the world.

Problems within different industries

- Collisions due to rear, front and side blind spots
- Collisions due to poor visibility (darkness, fog, dust etc.)
- Damage to vehicles or machines when manoeuvring in tight spaces
- Site workers being stuck by vehicles and mobile machines
- Ear defenders reducing site workers' ability to clearly hear approaching vehicles or alarms
- Collisions with speeding being the primary factor
- More powerful engines entice drivers to drive faster causing more speeding tickets, higher fuel consumption, increased insurance costs and increased maintenance

Range of safety support systems

In general Groeneveld-BEKA offers three types of safety support systems for different applications.

Obstacle detection system



Greensight is Groeneveld-BEKA's ultrasonic acoustic obstacle detection system which detects obstacles in the pre-set zones very accurately. The system can be extended with extra sensors and/or a camera system for additional safety.

Speed limiters



The Speedlimiter increases safety and contributes to a cost-effective deployment of, for instance, trucks, forklifts, terminal tractors and vans.
The Speedlimiter is available in an electronic and mechanical version and can be used to limit speed or RPM.

Safety support systems for all kinds of applications

The safety support systems from Groeneveld-BEKA are designed for a diverse range of applications.



Trucks & Trailers



Refuse trucks



Buses



Railway maintenance



Agricultural equipment



Forestry equipment



Dozers



Excavators



Wheel loaders



Forklifts



Telehandlers



Reachstackers

Groeneveld Greensight

Ultrasonic detection system



Groeneveld Greensight

The highest priority within different industries is safety. With large blind spots around mobile equipment and the tight time schedules, guaranteeing safety is a continuous challenge. Groeneveld's Greensight obstacle detection and camera system offer an excellent solution to increase safety.

- Ultrasonic acoustic warning system
- Improved safety around the machine
- Less chance of damage
- Increased uptime
- Fully integrated and modular system
- No information overload for the driver
- Fully adjustable to the application and the customer's wishes
- Can be enhanced with a smart alarm

Modular system

Greensight is available as an ultrasonic acoustic obstacle detection system, as a camera system and as a combination of both. The system can be set up modularly. Moreover, it is an integrated solution that can be adapted to the application perfectly.

Ultrasonic detection system
Thanks to the ultrasonic operation the system will detect obstacles in the pre-set zones very accurately. The system can also be extended with sensors either on the sides or on the top of the vehicle or machine. As soon as an obstacle is detected, an acoustic signal is sounded for the operator in the cab, so he can check on the display which zone the obstacle is in.

The detection zones can be adapted entirely according to the wishes of the customer and the working conditions, even when the system has been put into operation.

Camera system
The ultrasonic detection system can be extended with a high-quality camera system, which can improve the visibility for the operator significantly. This could be a solution for blind spots. Four cameras can be connected to the monitor, with all four of the camera images being able to be displayed on a split screen. The Groeneveld camera system can be used on its own, or in combination with the Greensight ultrasonic detection system – a combination that increases safety greatly.

System overview

Camera
Groeneveld's Greensight system can be extended with up to 4 CMOS full color cameras. They are available with a 104° and 116° viewing angle.

The cameras have a high sensitivity of 0.025 lux, have an automatic heated lens and a temperature range of -40 °C up to +70 °C.



Additional sensor
Expanding the obstacle detection system by adding top or side sensors increases the detection area of the system.

7" Monitor
The Greensight monitor can show up to four cameras at the same time. The monitor is made of a sturdy material and has a high LCD luminance.

The TFT display has an automatic back-light control and will dim itself gradually depending on the ambient light level and system settings.

Ultrasonic sensor
The Greensight ultrasonic sensors are based on military technology and therefore very sturdy.

The detection areas are adjustable and cover up to 97 % of detection behind the application.

1. Control unit
The control unit is the core of each Greensight system. On this basis, each system can be built up modularly.

For smaller systems, a control unit with six connections is available. For more extensive systems, there is a control unit with 15 connections.

2. Sensors
The basic components of the Greensight ultrasonic detection system are the two sensors on the rear of the application. The sensors detect objects with a minimum dimension of 75 mm.

When an object is detected, the driver is alerted by means of distance dependent visual and audible signals on the in-cab display or monitor.

3. In-cab display
If the system is used without cameras, the in-cab display warns the driver by means of light and acoustic signals. Alerts become increasingly frequent as an object gets nearer to the application.

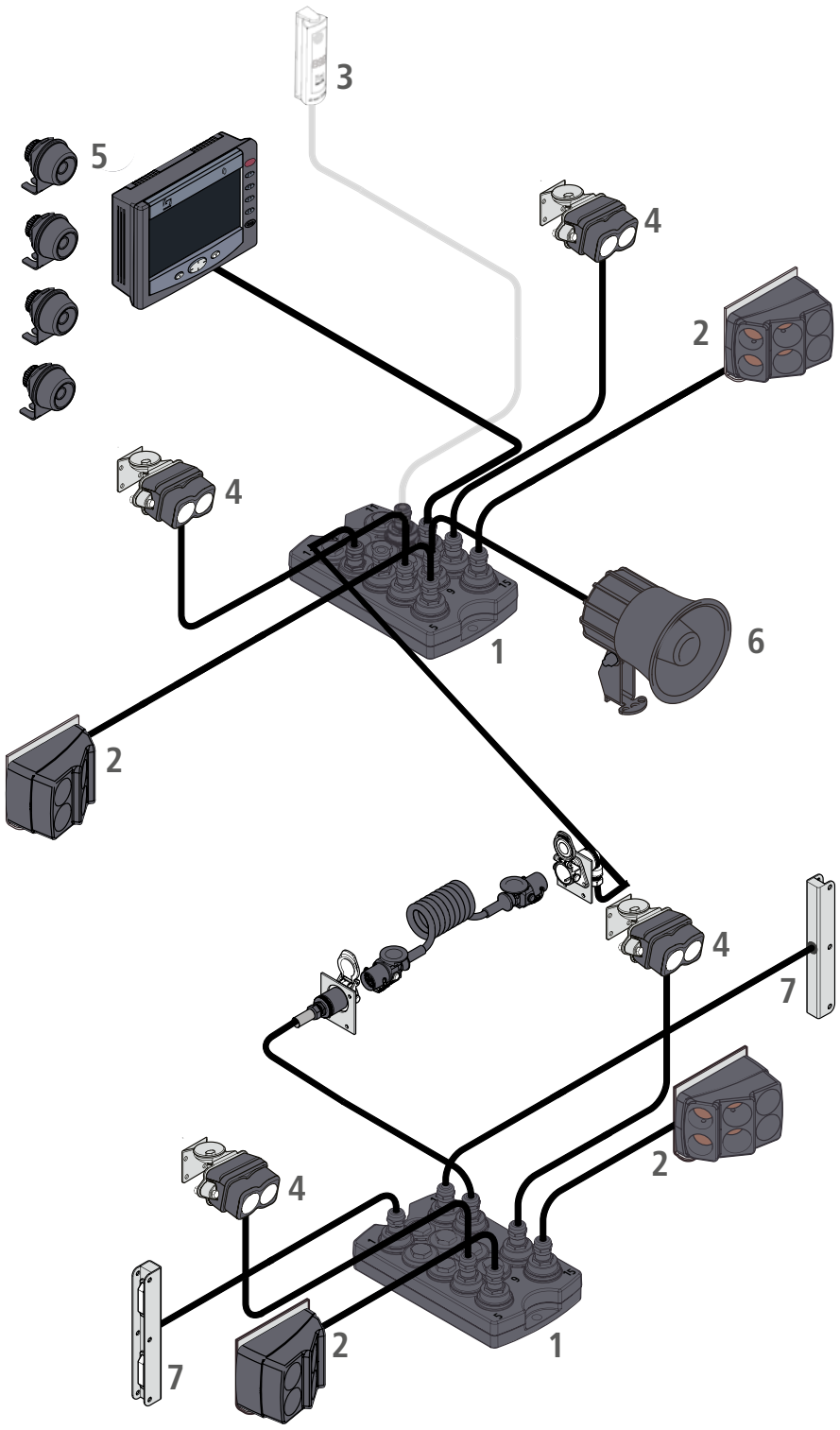
4. Additional sensors
To expand the obstacle detection system, sensors are available to mount on top of or on the sides of the application.

By mounting two extra top sensors higher obstacles such as signs or half-open roller doors can be detected. The side sensors help to prevent damage during complex manoeuvres.

5. Camera system
The obstacle detection system can be expanded with a camera system.
Up to 4 cameras can be connected to the system to reduce blind spots.

Unique characteristics:
- Clear and sharp view under all conditions
- No problems with condensation or frost due to automatically heated lens surface
- High sensitivity at 0.025 lux (good visibility with less light)
- Switches easily between different camera images

The camera system can also be used as an independent system.



6. Smart alarm
By adding a smart alarm, people located near the application are also warned as soon as Greensight observes them or an obstacle. An acoustic signal is given only when it is necessary, warning bystanders to stay alert.

The volume of the smart alarm is automatically adjusted depending on the amount of noise in the background.

7. External lights
External lights are to be mounted at the left and right side of a trailer when equipped with a Greensight stand-alone system. The system replaces the monitor with camera or the in-cab display unit.

Typical applications

The Greensight obstacle detection and camera system can be applied on different applications, varying from trucks to busses, from wheel loaders to reachstackers and many more.

Truck & Trailer

Top or side sensors
Additional sensors increase the detection area behind beside of the trailer.



Front view camera
A front view cameras can decrease the blind spot in front of the truck. Additional cameras can be added to cover the blind spots beside or behind the trailer.



Bottom sensor units
The ultrasonic sensors offer the driver information about the free space behind the trailer.



Monitor
Up to four cameras can be connected to the monitor, with all four of the camera images being able to be displayed on a split screen.

Wheel loader

Top sensor
The top sensor increases the detection area behind the machine.



In-cab display
The in-cab display warns the driver by means of light and acoustic signals when an obstacle is detected.







Bottom sensor units
The ultrasonic sensors offer the driver information about the free space behind the machine.

Reachstacker



Bottom sensor units
The ultrasonic sensors offer the driver information about the free space behind the machine.





In-cab display
The in-cab display warns the driver by means of lights and acoustic signals when an obstacle is detected.

Forklift truck

Smart alarm
By adding a smart alarm people located near the vehicle are also warned as soon as Greensight observes them or an obstacle.



Top sensor
The top sensor increases the detection area behind the machine.





Rear view camera
By adding a rear view camera the blind spots behind the stapler truck are made visible.





Monitor
The camera is connected to the monitor in the cabin. The combination of sensors and camera(s) offers the driver both passive and active safety information about the free space behind the forklift.

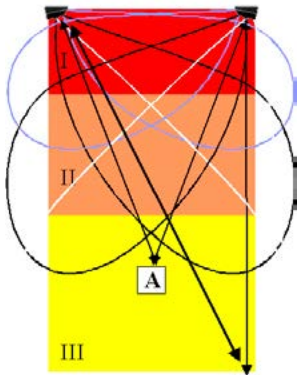


Bottom sensor units
The ultrasonic sensors offer the driver information about the free space behind the machine.

Signalling zones

The signalling zones of the sensors are divided into 3 zones, which are adjustable to custom specifications. The sensors detect obstacles with a minimum dimension of Ø 75 mm.

Zone 1	Attention zone	1.70 to 3.00 m.
Zone 2	Danger zone	0.70 to 1.70 m.
Zone 3	Immediate collision danger	0.00 to 0.70 m.



System specifications | Sensors

Signalling zones and detection area	Customizable
Min. dimension of obstacle	Ø 75 mm
Protection class	IPX7
Vibration resistance	20 - 500 Hz

System specifications | Camera

Viewing angle	104° or 116°
Light sensitivity	0.025 lux
Heated lens glass	15 °C / 59 °F
Temperature range	-40 up to 70 °C (-40 up to 158 °F)
Protection class	IP69K

System specifications | Monitor

Size	7” TFT display with Automatic Back-light Control
Resolution	High resolution 800x480
View options	Multiple view options up to quad view
Acoustic warning signal	Max. 85 dB(A)
Protection class	IPX7
Temperature range	-25 up to 80 °C (-13 up to 176 °F)

Type approval:

- ECE R10 - Automotive regulation (E4-10R-04 2806)
- ISO13766:2006 - Earth moving machinery standard
- EN 12895:2000 - Industrial truck standard
- EN 50121-3-2:2006 - Railway standard
- RDW installation approval concerning transport of dangerous goods (ADR), VR154734

Applications

Greensight can be used for a wide variety of applications. It is suitable for different kind of mobile applications like trucks, busses, construction equipment, port equipment and many more.


Transport


Bus & Coach


Construction


Port Equipment

Groeneveld Speedlimiter

Reduce risks, enhance safety



Groeneveld Speedlimiter

Excessive speeding costs a lot of money. Speeding tickets, higher fuel consumption, increased insurance cost and increased maintenance. Rash driving behavior causes both your profits and your company's image to suffer. Groeneveld-BEKA supplies speed limiters for all kind of mobile equipment. The speed limiter has been designed as such that it will not affect the comfortable driving characteristics of the vehicle in any way. The speed is limited but the full engine power and torque remains available.

The Speedlimiter is available in an electronic and mechanical version and can be used to limit speed and RPM. It also has a speedhold function, by means of which the driver himself will be able to set a temporary maximum speed. Optionally, the Speedlimiter can be used as a cruise control and there is the possibility to set up a second maximum speed.

- Increased safety
- Lower fuel consumption
- Increase service life
- Lower maintenance and repair costs
- Lower insurance costs
- More comfort for the driver
- Reduced environmental impact

Speed limiter functions

In its standard version, the Speedlimiter offers three functions: speed limiting, engine speed limiting and speed hold. The system can be expanded to include the additional features of cruise control and Power Take Off (PTO).

Speed limiting



The basic function of the electronic speed limiter is to limit the maximum speed. the system takes account of changing circumstances such as descending, climbing and headwind, without the driver noticing. The total engine capacity and torque remain available under all circumstances, whilst the interaction between driver and vehicle, for example for selecting shift moments and accelerating - remains fully intact.

On request: Second Final Speed

In certain situations or applications, it may be desirable, or even compulsory, to limit speed to a much lower level. On certain sites, for example on airfields or factory sites, a local maximum speed is applicable in particular areas.

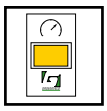
The second pre-programmed maximum speed can be activated with a switch or automatically with an electronic switch, depending on the application.

Engine speed limiting



Limiting engine speed to a maximum, as requested by the customer. This prevents the driver accelerating up to maximum engine speed, thus reducing the risk of engine damage. The alternator supplies the control signal. Engine speed limiting - unlike vehicle speed limiting - could affect the vehicle's acceleration (this is a standard option, programmable).

Speed hold



By pushing a switch on the dashboard, the driver can temporarily have the system limited to a lower speed, for example for driving in a congested area, or where there is road construction, with a minimum of 40 km/h.

The temporary maximum speed is the current driving speed at the moment the system is activated. The system continues to limit the speed to this level, until the speed-hold function is disabled, or the engine switched off.

Optional: Cruise Control / Power Take Off



Using cruise control, the driver can continue to drive at a preset speed (minimum 40 km/h) without keeping his foot on the accelerator pedal. It does of course remain possible to accelerate, for example when overtaking. The cruise speed is the current speed at the moment the system is switched on.

Cruise control automatically switches itself off, if the brake or clutch pedal is depressed. When he switches the system back on, the driver can opt for a new cruise speed or - by simply pressing the memory buttons - the previously selected cruise speed.

In the PTO (Power Take Off) application the engine is able to drive an external power unit at a constant engine speed, for example for a dump truck or chassis-mounted crane. Speed hold and cruise control operation are integrated in a single control lever.



Speedlimiter for mechanically controlled engines

For both petrol and diesel engines the existing mechanism on the carburetor and/or /fuel pump is extended or adapted in such a way that the ‘lever’ on the pump can be controlled by an actuator, irrespective of the position of the accelerator pedal.

The electronics in the control unit receive the speed signal pulses, and continuously compare this signal with the pre-set maximum. As the speed approaches the maximum, the control unit activates the actuator. The actuator in turn adjusts the position of the ‘lever’ on the fuel pump, in time to control the speed.

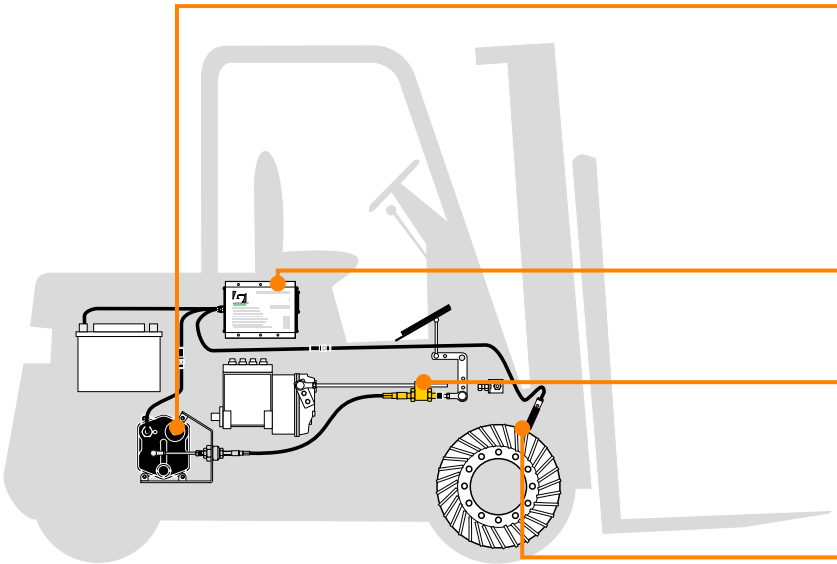
As a result, the position of the accelerator pedal remains unaltered. Conversely, the limiter also adapts the position of the ‘lever’ or throttle body, driving uphill or with a strong head wind. As a result, the driver is able to maintain a constant speed, in all conditions.

In order to prevent unnecessary engine wear and raised fuel consumption, it is also possible to limit the engine speed. In this case, the engine speed signal is supplied by the alternator.



Actuator

System overview



(Electric) accelerator actuator
In order to limit the speed of the vehicle, the Speedlimiter controls the position of the lever on the fuel injection pump. The actuator, controlled by the electronic control unit continuously receives the command to supply more or less throttle in order to maintain a steady limited speed.

Digital control unit
The Speedlimiter is controlled by an electronic control unit.

Clamping block for accelerator rod or coupling bracket for accelerator cable
A clamping block or coupling bracket connects the limiter cable (from the actuator) to the original throttle mechanism.

Speed sensor (proximity switch)
The speed sensor measures the peripheral velocity of the crown wheel in the differential

Speedlimiter for electronic controlled engines



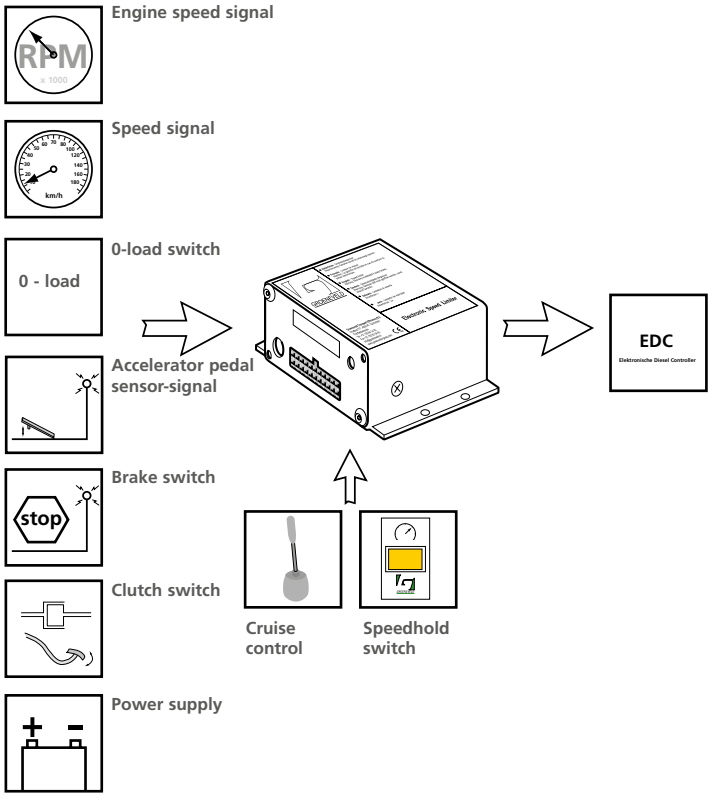
The Electronic Speedlimiter is an electronic control unit, specially developed for petrol and diesel engines with electronically controlled fuel injection systems. It is installed in the circuit between the electronic throttle pedal and the engine management system. No mechanical modifications need be made to the vehicle.

The Electronic Speedlimiter controls the electronic engine management by constantly comparing current driving speed with the preset maximum speed. As the current driving speed approaches the preset maximum, the system generates a reduced throttle pedal signal to the electronic engine management, taking into account changing conditions such as gradients both uphill and down and headwinds, preventing any fluctuation in driving speed.

Working principle

In common-rail injection, the fuel pump as applied on older diesel engines is in fact entirely absent, and has been replaced by electronically-controlled fuel injectors. The Electronic Diesel Controller (EDC) determines how much fuel should be injected, and at what moment, by means of a number of sensors. The accelerator pedal is fitted with one or more sensors for measuring the pedal position. Depending on this signal, the EDC determines how much fuel should be injected. The electronic speed limiter interrupts the signal from the accelerator sensor(s) and, depending on the situation, sends the required accelerator pedal signal to the EDC.

As long as no influencing is required, the signal is passed on unchanged. Only if intervention is desired or necessary (speed-hold, cruise control or limiting), the signal is adapted in such a way that the EDC regulates the injection and as a consequence, the speed, according to the desired situation.



Applications

The Speedlimiter can be used for a wide variety of applications. It is most suitable for trucks, busses, construction equipment and forklift trucks.


Transport


Bus & Coach


Construction


Lift trucks

System specifications | Electronic control unit for mechanically controlled engines

Power supply voltage	10 - 32 Vdc
Input signal	Speed: speedometer or separately installed sensor Engine speed: alternator
Temperature range	-35 up to +85 °C (-31 up to 185 °F)
Protection class	IP20 (optional IP67)

System specifications | Actuator

Power supply voltage	12 - 24 Vdc
Current consumption	0.8 - 0.14 A
Input signal	Electrical control unit
Temperature range	-30 up to +120 °C (-22 up to 248 °F)
Protection class	IP67

System specifications | Electronic control unit for electronic controlled engines

Power supply voltage	8 - 32 Vdc
Input signal	Speed: signal from tachograph / pulse emitter Engine speed: alternator
LED indication	Speed hold, cruise control, PTO
Temperature range	-35 up to +85 °C (-31 up to 185 °F)
Protection class	IP20 (optional IP67)

Groeneveld speed limiters are compliant to the following directives:
- EU: 92/24/EC and 95/54/EC.
- VN: Regulation 89 and regulation 10



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Groeneveld-BEKA | info@groeneveld-beka.com | www.groeneveld-beka.com

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