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.

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

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 and camera system



Greensight is Groeneveld-BEKA's radar obstacle detection system which detects obstacles very accurately.

This system can easily be extended with cameras and/or a digital recorder system for additional safety around mobile equipment.

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.

Greensight

Obstacle detection and camera system



Greensight | Obstacle detection and camera system

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. The Greensight obstacle detection and camera systems offer an excellent solution to increase safety.

- Improved safety around the machine
- Less chance of damage
- Increased uptime
- Fully adjustable to the application and the customer's wishes
- Radar obstacle detection with acoustic warning system
- Fully integrated and modular system

Modular system

The Greensight radar obstacle detection and camera systems offers solutions for reducing blind spots around the vehicle with radar sensors, as a camera system or a combination of both. The modular range of radar sensors, cameras, monitors and recorders offer the possibility to improve safety, security and efficiency to suit the application best.

Radar detection system
Thanks to the radar technology, the system has a long detection range up to 20 or 40 meters, depending on the type of sensor. The radar will detect static and moving obstacles in a detection zone very accurately and will notify the driver or operator with an audible warning. 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 detection system can be extended with a high-quality camera and monitor system, which can improve the visibility for the operator significantly. Up to four cameras can be connected to a monitor, with all four of the camera images being able to be displayed synchronously.

High-quality camera and monitors are available to cover the rear, side and front blind spots. Different cameras can be combined with different kinds of monitors to suit the application. Additionally a digital recorder can be added to the system, which can provide evidence in case of an accident.

System overview



Radar system
The radar sensor is greatly helpful in alerting operators to avoid potential danger and take proper actions in advance. These radar sensors are built on millimeter wave technology and perform in all weather conditions.

It's very helpful for reversing or parking and widely used in large vehicles such as trucks, construction equipment, agricultural machinery and many more.

Camera
The range of cameras varies from single rear or side view cameras with different viewing angles up to a complete 360° surround view camera system.



Monitors
Groeneveld-BEKA offers a range of monitors consisting of 7 and 10.1" monitors with different specifications.

Recorder
Separate DVRs are available for recording footage of up to 4 mounted cameras in high definition.

Pedestrian detection camera

The pedestrian detection camera is especially developed to differentiate pedestrians from objects in real time to help make drivers more aware of pedestrians around a vehicle.



Typical applications

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

Truck & Trailer

Front and side view cameras
A front view camera can decrease the blind spots in front or besides a truck. The special pedestrian detection camera enhances safety in e.g. city centers or densly populated areas.



Rear view camera
A rear view camera lets you see the area immediately behind the vehicle.







Monitor
A high definition quad view monitor displays up to 4 cameras synchronously.



Radar sensor
A radar sensor alerts drivers about static or moving obstacles behind the vehicle so they can take proper actions.

Buses

360° surround view
With the 360° surround view the driver can get real surround vision around the bus, help to enhance driving safety. Four wide angle HD cameras fully cover the field of view and help eliminating blind spots.







Monitor and recorder
A high definition quad view monitor displays up to 4 cameras synchronously, display actual driving scenario, and achieve a surround view around the vehicle. The recorder records images from all 4 cameras.

Wheel loader

Front view camera
A front view camera provides the opportunity to look over a load or the bucket.



Rear view camera
A rear view camera lets you see the area immediately behind the machine. Not only safe reversing but also turning the machine.







Monitor
A high definition quad view monitor can display up to 4 cameras synchronously.



Radar sensor
Adding a radar sensor alerts operators for static and moving objects so they can take proper actions in advance.

Reachstacker

270° surround view
With a 270° surround view system the driver can get real surround vision of driving, help to avoid blind spots and secure driving safety. Three wide angle view HD cameras cover the field of view behind and besides the reach stacker and eliminate blind spots.







Monitor and recorder
A high definition quad view monitor displays up to 4 cameras synchronously. The recorder records images from all cameras.



Radar sensor
Adding a radar sensor alerts operators for static and moving objects so they can take proper actions in advance.

System specifications

Radar sensor

1080P 24 GHz radar sensor - 100°



- Frequency: 24~24.2 GHz
- Antenna beam angle: 100° horizontal, 40° vertical
- Detection range: 0.1~20 m.
- Detection distance and alarm mode adjustable
- Detection zone visualisation:
  Attention zone (zone 4 and 5) - green
  Danger zone (zone 2 and 3) - yellow
  Immediate collision danger (zone 1) - red
- Buzzer alarm
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- All weather operations
- Waterproof, IP66 (control box), IP69K (sensor)
- Available with 1 or 2 sensors

1080P 77 GHz radar sensor - 120°



- Frequency: 76~77GHz
- Antenna beam angle: 120° horizontal, 14° vertical
- Detection range: 0.2~40 m.
- Detection distance and alarm mode adjustable
- Detection zone visualisation:
  Attention zone (zone 4 and 5) - green
  Danger zone (zone 2 and 3) - yellow
  Immediate collision danger (zone 1) - red
- Buzzer alarm
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- All weather operations
- Waterproof, IP66 (control box), IP69K (sensor)
- Available with 1 or 2 sensors

All radar sensors can be used as a stand-alone item with buzzer or can be used in combination with a camera and a monitor.

Monitors

7” High Definition waterproof rear view monitor



- TFT LCD display
- Viewing angle: U 70°, D 75°, R/L 75°
- Resolution: 1024x600
- Single view
- Automatic back-light adjustment
- Picture image adjustable for vertical, mirror and normal viewing
- Touch buttons
- Support auto scan
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- Waterproof, IP66

7” High Definition single view monitor



- Touch screen LCD display
- Viewing angle: U 85°, D 85°, R/L 85°
- Resolution: 1024x600
- Single view
- Picture image adjustable for mirror and normal viewing
- Support auto scan
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)

7” High Definition quad view monitor



- Touch screen LCD display
- Viewing angle: U 70°, D 50°, R/L 75°
- Resolution: 1024x600
- Quad view, up to 4 cameras can be displayed synchronously
- Automatic back-light adjustment
- Picture image adjustable for vertical, mirror and normal viewing
- Support auto scan
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)

7” High Definition waterproof quad view monitor



- Touch screen LCD display
- Viewing angle: U 45°, D 70°, R/L 70°
- Resolution: 800x480
- Quad view, up to 4 cameras can be displayed synchronously
- Five trigger lines, once a trigger line is activated the image automatically switches to its corresponding camera
- Picture image adjustable for horizontal, vertical, mirror and normal viewing
- Support auto scan
- Operating temperature: --20 up to 70 °C (-4 up to 158 °F)
- Waterproof, IP66

10.1” High Definition single view monitor



- Touch screen LCD display
- Viewing angle: U 85°, D 85°, R/L 85°
- Resolution: 1024x600
- Single view
- Automatic back-light adjustment
- Picture image adjustable for mirror and normal viewing
- Support auto scan
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)

10.1” High Definition quad view monitor



- Touch screen LCD display
- Viewing angle: U 70°, D 50°, R/L 70°
- Resolution: 1024x600
- Quad view, up to 4 cameras can be displayed synchronously
- Automatic back-light adjustment
- Picture image adjustable for mirror and normal viewing
- Support auto scan
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)

Cameras

Infrared CMOS camera



- 1080P high definition CMOS
- Resolution: 1920(H) X 1080(V) pixels
- Lens angle: 110° or 130°
- IR night vision: 8~10 m.
- Mirror / normal image switch
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- Waterproof, IP69K

Infrared CMOS side view camera



- 1080P high definition CMOS
- Resolution: 1920(H) X 1080(V) pixels
- Lens angle: 150°
- IR night vision: 3~5 m.
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- Waterproof, IP69K
- Can be installed in any position

Infrared CMOS rear view camera



- 1080P high definition CMOS
- Resolution: 1920(H) X 1080(V) pixels
- Lens angle: 130° or 150°
- IR night vision: 3~5 m.
- Mirror image
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- Waterproof, IP69K

Pedestrian Detection camera



- 1080P high definition
- Resolution: 1920(H) X 1080(V) pixels
- Lens angle: 52° or 140°
- Detection distance: 0,5~20 m. 52° lens angle, 0,5~12 m. 140° lens angle
- Operating temperature: -20 up to 70 °C (-4 up to 158 °F)
- Waterproof, IP69K

360º surround view camera system



Cameras

- 4x 1080P 150º wide angle camera
- Horizontal viewing angle: >150º
- Vertical viewing angle: >90º
- Operating temperature: -20 up to 70 ºC (-4 up to 158 ºF)
- Waterproof, IP69K

Monitor

- 10.1 touch screen LCD display
- Viewing angle: U 85º, D 85º, R/L 85º
- Resolution: 1024x600
- Automatic back-light adjustment
- Picture image adjustable for mirror and normal viewing
- Support auto scan
- Operating temperature: -20 up to 70 ºC (-4 up to 158 ºF)

270º surround view camera system



Cameras

- 3x 1080P 150º wide angle camera
- Horizontal viewing angle: >150º
- Vertical viewing angle: >90º
- Operating temperature: -20 up to 70 ºC (-4 up to 158 ºF)
- Waterproof, IP69K

Monitor

- 10.1 touch screen LCD display
- Viewing angle: U 85º, D 85º, R/L 85º
- Resolution: 1024x600
- Automatic back-light adjustment
- Picture image adjustable for mirror and normal viewing
- Support auto scan
- Operating temperature: -20 up to 70 ºC (-4 up to 158 ºF)

Digital Recorder



4 channel 1080P mobile DVR

- 4 channel 1080P recording
- 128 GB SD card for recording
- Multiple trigger recording modes
- Built-in clock, calendar
- Operated by touch-screen and infrared remote control
- Wi-Fi
- Optional: GPS tracking
- Operating temperature: -20 up to 70 ºC (-4 up to 158 ºF)
- Waterproof version available, IP69K

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.

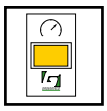
The second pre-programmed maximum speed can be activated with a switch or automatically with an electronic switch, depending on the application.

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.

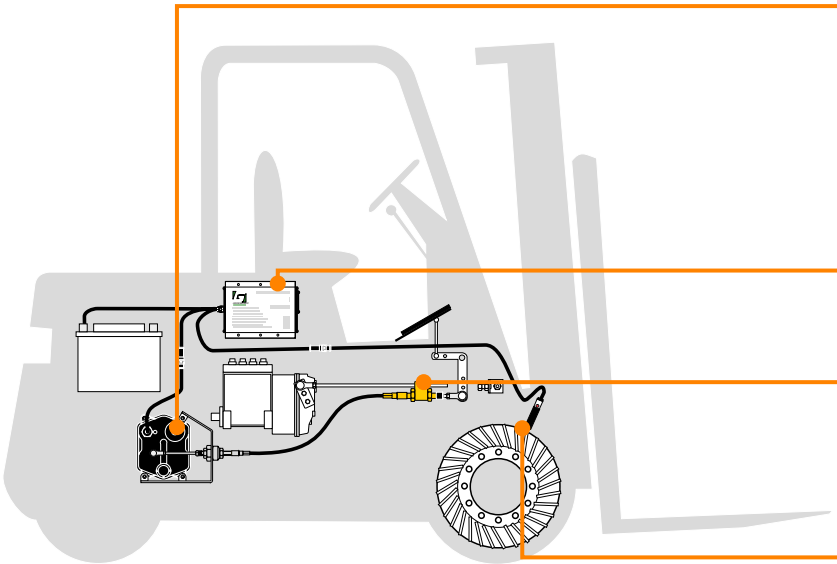
As a result, the position of the accelerator pedal remains unaltered. Conversely, the limiter also adapts the position of the ‘lever’ or throttle body, driving uphill or with a strong head wind. As a result, the driver is able to maintain a constant speed, in all conditions.

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



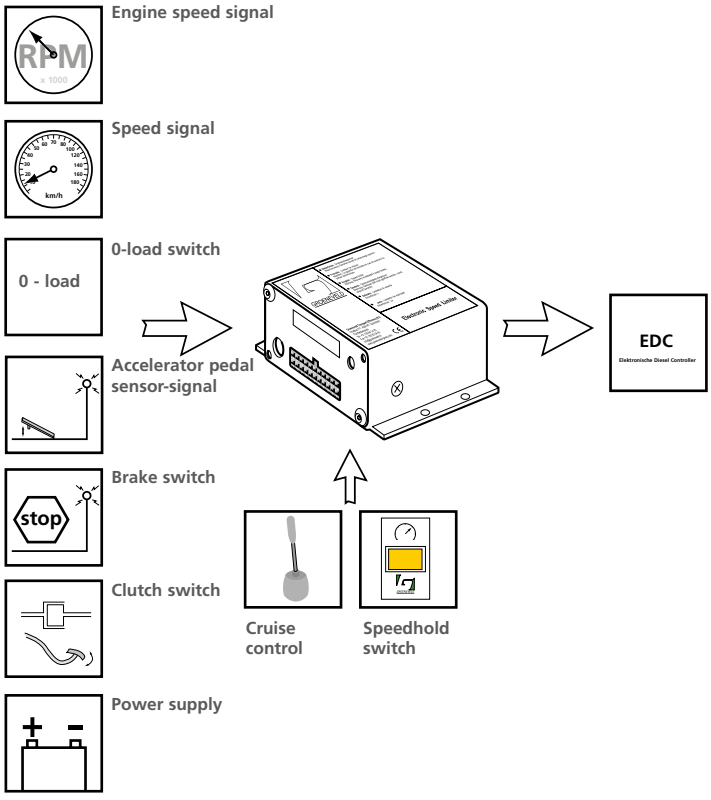
The Electronic Speedlimiter is an electronic control unit, specially developed for petrol and diesel engines with electronically controlled fuel injection systems. It is installed in the circuit between the electronic throttle pedal and the engine management system. No mechanical modifications need be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