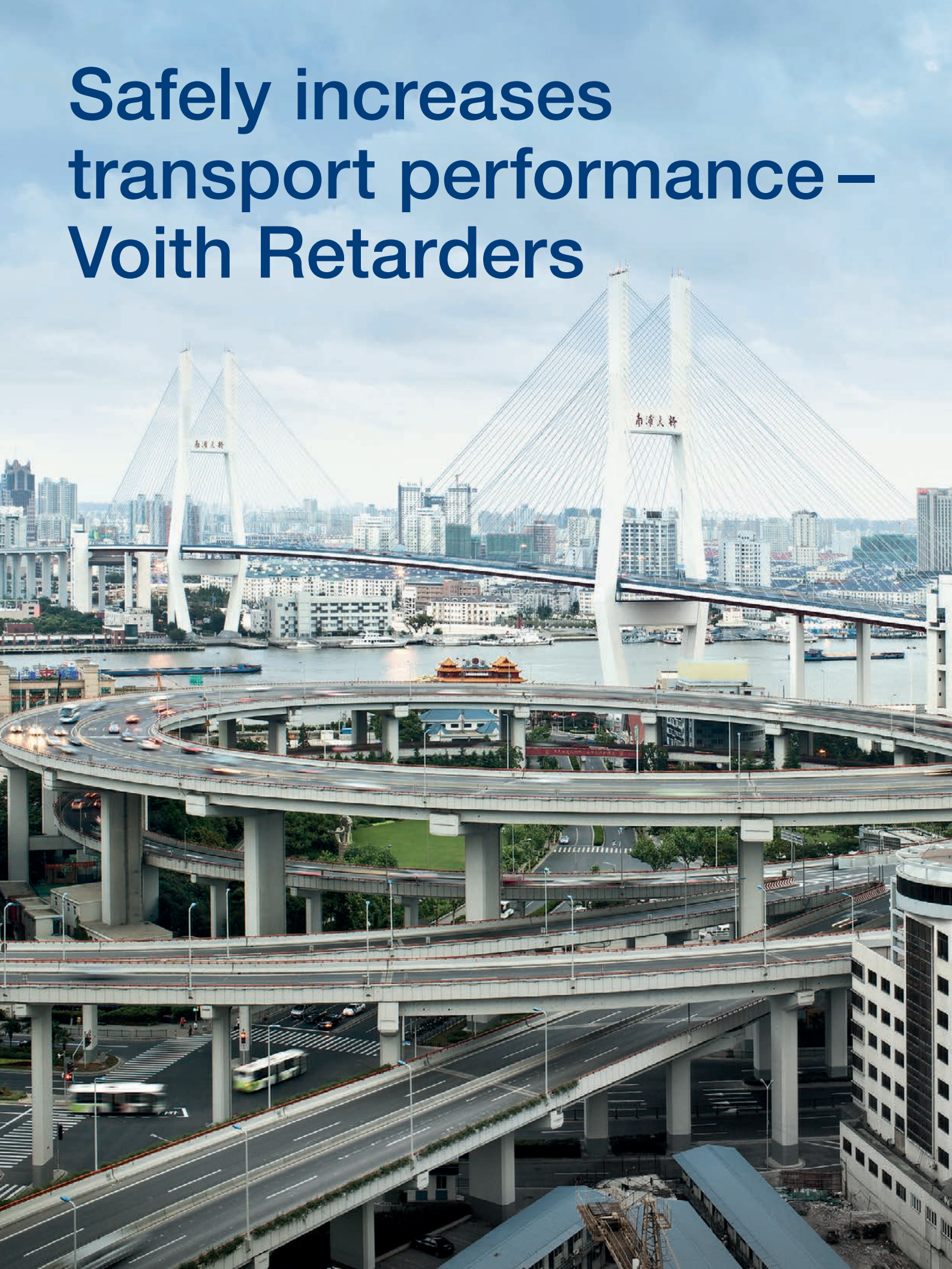
voith.com

VOITH

Enhanced safety, efficiency and sustainability

Voith Retarders

Safely increases transport performance – Voith Retarders



Pressure on the commercial transportation industry has been increasing for years, resulting in demand for greater payloads, higher mileage and higher average speeds. This requires a continuous increase in engine performance. Subsequently, service brakes are pushed to their limits, and safety for drivers, vehicles and loads suffers.

With Voith Retarders, up to 90 percent of all brake operations can be carried out wear-free and thus environmentally friendly. This is a clear added value in terms of safety and at the same time reduces emissions. In addition, Voith Retarders protect the service brakes, reducing the cost of spare parts and maintenance.

Increase safety and reduce operating costs

Voith Retarders have an extremely high braking performance, particularly when they are needed most – at high speeds (up to 700 kW / 950 hp). With their high braking torques and low unit weight, they convert huge amounts of energy effectively. And because the Voith Retarders have its own oil supply, the operating medium can be utilized to reach the highest acceptable operating temperature range.

Reliable endurance brakes which pays off

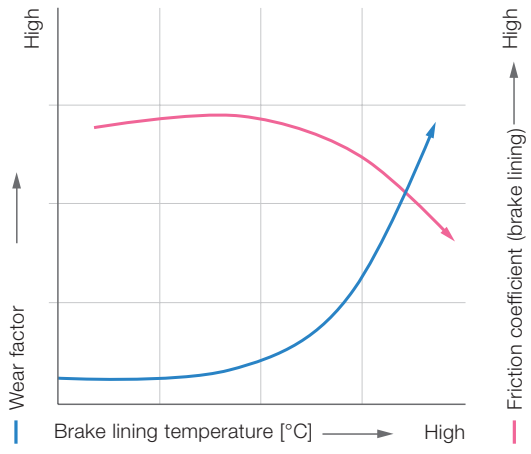
Voith Retarders provide clear advantages: they offer virtually wear-free braking and are fully operational even on long descending routes. As a result, they increase both the safety and transport performance of your vehicle – and ultimately your economic efficiency.

In case of long periods of use, friction brakes reach temperatures up to 1 000 °C. As a result, their braking effect falls off rapidly, cracks may occur on the brake disk, and brake linings wear out.

As true endurance brakes, the Voith Retarders offer enormous safety reserves when it really matters: on demanding motorways and in urban areas with stop-and-start traffic.

The engine brake and Voith Retarder complement each other perfectly, because their braking effect adds up. You get optimal braking power at both low and high speeds.

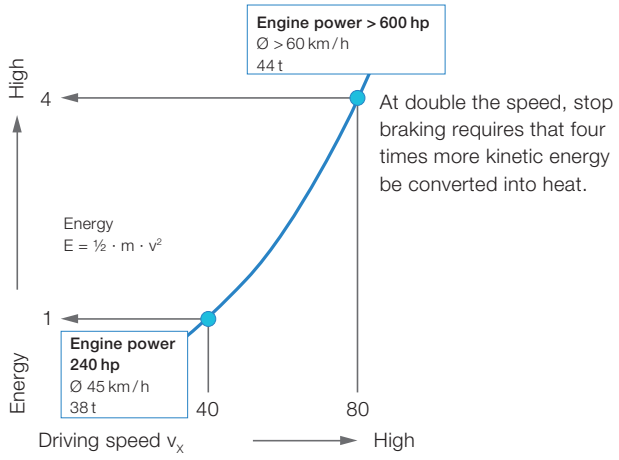
With increasing brake lining temperature wear and cost increase rapidly



Voith Retarders offer you decisive advantages

As a long-term and close partner of vehicle manufacturers (OEMs), forwarding companies and coach operators, we know where the resources for greater economic efficiency lie: in the reduction of complexity, repairs and material costs. Our retarders fulfill these prerequisites in exemplary fashion, which is why our development partners and customers rely on the performance and durability of our products, along with the expertise and friendliness of our service.

Energy in relation to vehicle speed



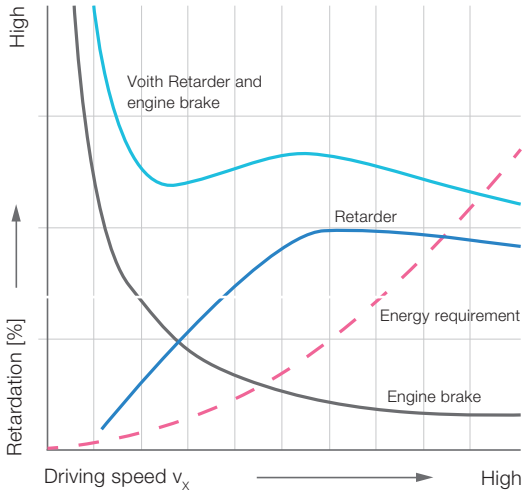
Benefits for the operator

- The retarder pays for itself, often in less than two years
- Voith Retarders are lightweight among continuous braking systems, capitalizing fully on payload capacity
- Higher and more even average speeds with increased safety reserves
- The service brake is protected, preserving brake linings by many times longer
- Active retarder utilization saves fuel and time
- Improved reliability and punctuality
- Lower operating costs
- Increased vehicle availability

Benefits for the driver

- Increased safety on descents and during adaptation braking
- Cold and thus fully operational brakes in an emergency
- Increased driving comfort
- Constant driving speed (downhill cruise control)
- Smooth, continuous braking force

Combination of engine brake and retarder



Get there faster with Voith Retarders

Heavy truck with Voith Retarders
Test route: Guadix to Granada (Spain)

The maximum gradient of the 4.8 km test route from Guadix to Granada is 7 %; the difference in altitude is 290 m.

- 85 % reduction in service brake operations
- 56 % increase in average speed

Conclusion

On downward gradients, the retarder allows significantly higher average speeds with less activation of the service brake, hence lower wear.

Heavy truck with Voith Retarders customer application: long-distance freight transport

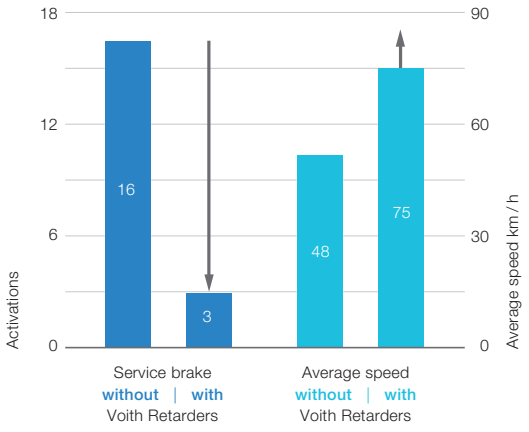
Route: Italy to Germany, total distance: 3 164 km

- 70 % reduction in service brake operations
- 36 % fewer shifting operations
- 5.9 % increase in average speed

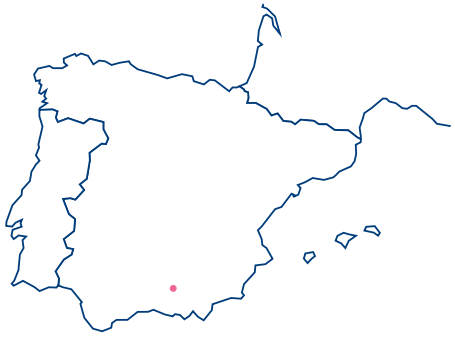
Conclusion

For long-distance driving, the retarder requires reduced service brake operations, fewer gear changes and noticeably higher average speeds. Driving is more economical, safe and comfortable with the Voith Retarders.

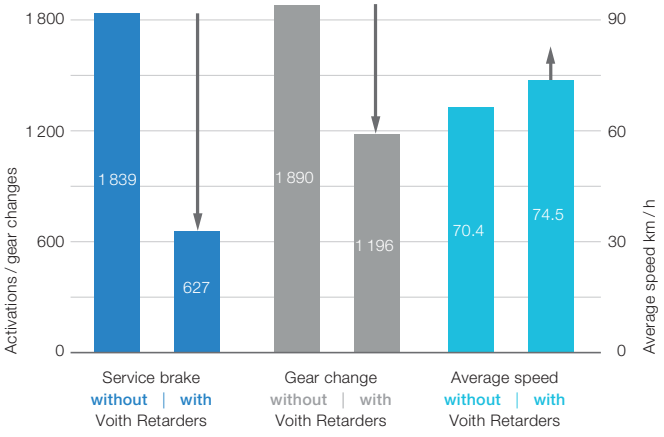
Test route* 4.8 km: Guadix to Granada (Spain)

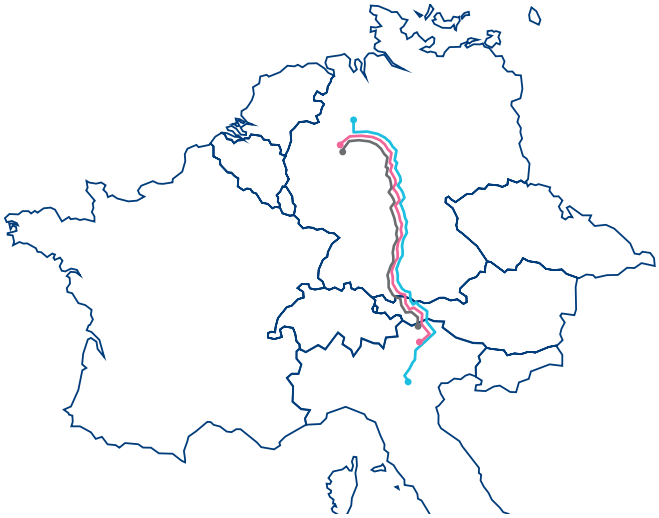


*In comparison tests with and without Voith Retarders, there are clear differences in speed, gear-shifting comfort and brake wear.



Test route* 3 164 km: Italy to Germany





Safety – hands on or foot-operated

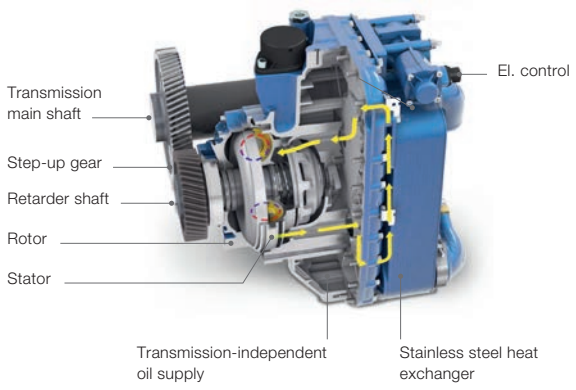
Simple, reliable, effective – this is how the Voith Retarders work

The hydrodynamic retarder has two bladed wheels opposite each other. Via a step-up gear the rotor is connected to the propshaft of the vehicle via the retarder input shaft; the stator is fixed to the retarder housing. In braking mode, oil circulates between the bladed wheels. The oil is accelerated by the rotor and decelerated in the stator. As a result, the rotor is also decelerated, and the vehicle is slowed down. The heat generated by the braking system is quickly and efficiently dissipated via the vehicle cooling system without negative impact on the surrounding components.

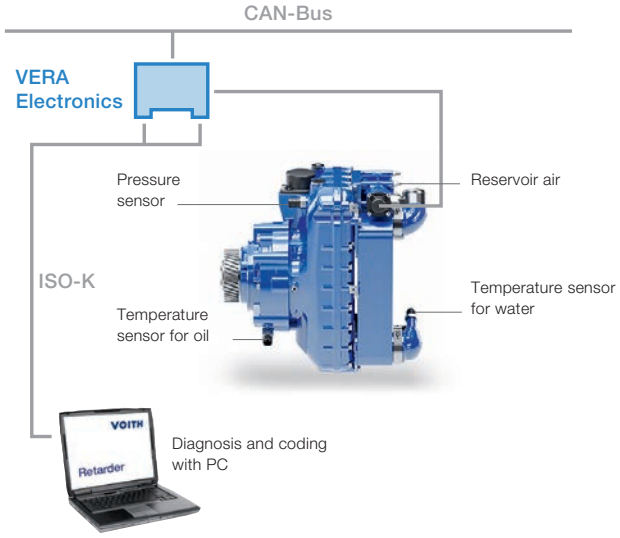
Perfect integration into the vehicle brake management

Today, retarders are integrated into the braking systems of a vehicle via the vehicle electronics. The activation of the retarder occurs automatically via the foot brake pedal or the hand lever on the steering wheel. The v-constant function (downhill cruise control) keeps the vehicle at a constant speed determined by the driver on the descent. Combining the v-constant function of the retarder with the cruise control function is the ideal set-up.

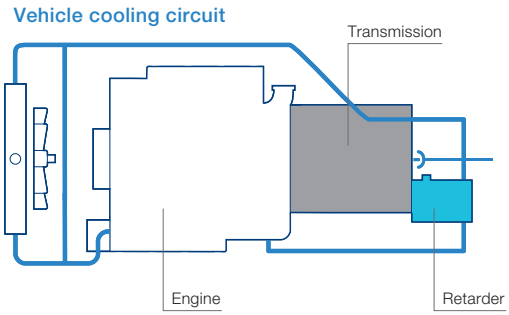
Cross-section view of Voith Retarder 115 CT



Electronic retarder control system



Integration of the retarder into the vehicle cooling system (example)



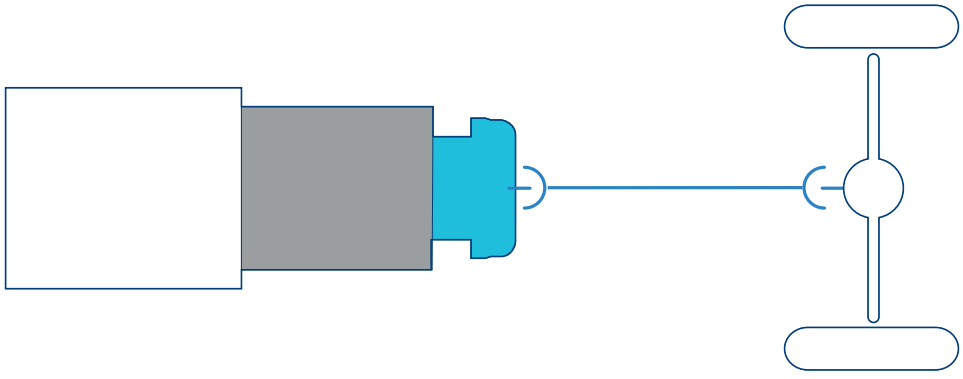
Logical, flexible and comprehensive

Based on broad experience, we have developed a retarder program that offers optimal solutions for all known commercial vehicle types. We are the only manufacturer with both inline and offline retarders.

Inline retarders

Inline retarders are mounted directly to the gearbox and are connected to the vehicle's transmission.

Inline retarder principle



Voith Retarder 123 L/R

The robust and powerful Voith Retarder 123 L/R ensures more safety, efficiency and comfort in bus operation. The retarder has its own transmission-independent oil supply and can be customized for different transmission types.

Technical data

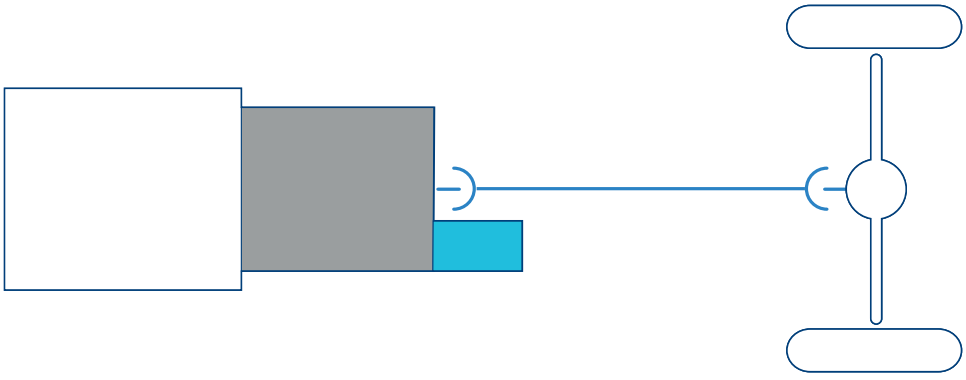
	VR 123 L/R
Max. nominal retarder braking torque propshaft (Nm)	2 000
Max. speed at propshaft (rpm)	3 600
Weight without operating medium approx. (kg)	59.5
Specific braking torque (Nm / kg)	34

VR 123 L/R

Offline retarders

With offline retarders, the speed is increased in relation to the propshaft speed with a step-up gear. Offline retarders are extremely compact and provide enormously high braking outputs even at low driving speeds. As with all Voith Retarders, oil supply is independent from the transmission.

Offline retarder principle



Voith Retarder 115 CT

The Voith 115 CT is a step-up retarder with a high braking torque. It has a self-sufficient oil balance and is integrated into the braking management of the vehicle. In combination with the service brake, it ensures optimal braking performance. At the same time, the retarder increases ride comfort with its v-constant function, maintaining constant “downhill cruise control” without activation of the service brake.

Voith Retarder 115 HV

The Voith Retarder 115 HV is a powerful step-up retarder with its own transmission-independent oil supply. It is used in Mercedes-Benz commercial trucks Actros and Axor. It is integrated into the vehicle management system via the VERA retarder control and offers, among other things, the functions of driving speed limitation (limiter) and cruise control.

Voith Retarder 3250

The VR 3250 is a powerful and energy efficient step-up retarder with its own oil supply. It is used in the Volvo FH and FM truck series with Volvo transmissions. In combination with the Renault Optidriver transmission, the VR 3250 comes in Renault Trucks in the T-Range and C & K-Range. In addition, the VR 3250 is also available in UD Quon & Quester Trucks in combination with the Ascot transmission.

Voith Eco Retarder

The Eco Retarder is a systematically and efficiently developed upgrade in the established Voith retarder series for alternative drives. It can be disconnected in an idle state. The rotor can be mechanically decoupled from the drivetrain when the retarder is switched off, preventing power dissipation when the rotor shaft is stationary. This means that the Eco Retarder not only contributes to maximum safety, low operating costs and environmental protection, but it also helps to further reduce the vehicle’s fuel consumption and emissions in the future.

Technical data

	VR 115 CT	VR 115 HV	VR 3250	ECO Retarder
Max. nominal retarder braking torque propshaft (Nm)	3 200	3 500	3 250	3 500
Max. speed at propshaft (rpm)	2 500	2 480	2 500	2 480
Weight without operating medium approx. (kg)	52	62	59	62
Specific braking torque (Nm / kg)	62	56	55	56

VR 115 CT

VR 115 HV

VR 3250

ECO Retarder

Please scan QR-Code to get further information of Retarders for busses:

Please scan QR-Code to get further information of Retarders for trucks

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