voith.com

VOITH

Torsional vibration damping for modern commercial vehicles

Hydrodamp

Improve your performance with vibration dampers from Voith

Designed with maximum fuel efficiency in mind, state-of-the-art high-torque engines place considerably more load on drivetrains than ever before. Through our range of Hydrodamp vibration dampers, you can protect the drivetrains of tractors, construction machines, buses, trucks and railway vehicles from over-load while increasing the service life of individual components.

Safety and comfort for man and machine

The Hydrodamp is a highly flexible vibration damper with a spring-mass system and a separately arranged hydraulic damping system. The low stiffness of the springs combined with favorable mass ratios shift critical resonances into areas below the operating speed range. Regardless of this, the hydraulic operation principle for vibration damping and isolation is designed to match your vehicle's operating speed ranges.

Vibration dampers: Damping and isolation in a single system

No sticking phases followed by breaking free meaning no vibration stimulation as with conventional friction damping

The damping effect can be matched to operating ranges by way of the torsion angle, gap geometries and the viscosity of the damping medium

Efficiency and comfort through damping and isolation in a single system

The hydraulic operation principle divides Hydrodamp into a damping system and an isolation system. The Hydrodamp is equipped with a float-mounted and decoupled damping ring, which is arranged between the primary and secondary masses of the damper with a specific amount of play.

In the operating range: Vibration isolation

In order to eliminate vibration or annoying noises when driving, small vibration amplitudes should not be allowed to reach the transmission. As a result, optimal isolation is required. This is where the Hydrodamp's isolation system comes: Vibration is intercepted and isolated. This guarantees optimal vibration isolation, even in the lower operating speed range.

In case of increased load amplitudes: Vibration damping

Increased vibration amplitudes that occur when passing through a resonance stage (e. g. when the engine is switched on and off) or during load surges are significantly absorbed by the Voith Hydrodamp's hydraulic damping system. With the use of temperature-stable damping oils or greases, the system effectively removes surplus vibration energy, even at higher temperatures.

Damping is proportional to speed meaning that higher frequencies or amplitudes result in greater damping

Damping is wear-free


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Our Hydrodamp range for off-road, road and rail applications

The Hydrodamp ranges have been developed based on a modular principle. The connection to the customer's own individual drivetrain is achieved by means of solution variants for primary and secondary side, such as SAE centering flanges, hubs and cardan shaft connections. Within the series, by adjusting the characteristic curve and damping characteristics, the Hydrodamp can be precisely adapted to the drivetrain's requirements.





	Hydrodamp 300 / 300 LS	Hydrodamp 365	Hydrodamp 365 P	Hydrodamp 400
Application for vehicles with powershift transmissions and automatic transmissions	Light to medium-weight tractors and special-purpose vehicles	City buses and rail vehicles	Special-purpose vehicles	Rail vehicles and special vehicles
Application for hybrid drive vehicles	Buses, trucks and special-purpose vehicles	Buses, trucks and special-purpose vehicles	Trucks and special-purpose vehicles	Trucks and special-purpose vehicles
Engine torque	Up to 1 650 Nm	Up to 2 650 Nm	Up to 2 900 Nm	Up to 3 700 Nm
Hydraulic damping system with damping greases	●	●	●	●
Hydraulic damping system with damping oils	–	●	–	●
Connection to the transmission	Hub or cardan shaft connection	Hub or cardan shaft connection	Hub or cardan shaft connection	Hub or cardan shaft connection
Special features	Weight-optimized sheet-metal forming technology	Weight-optimized sheet-metal forming technology	Weight-optimized sheet-metal forming technology	–

Our Hydrodamp range for agricultural tractors

The Hydrodamp agricultural range has been specifically developed for the drivetrains of state-of-the-art, powerful agricultural tractors. The higher torque capacity caters for the increased requirements of modern engines. Optimal reduction of torsional vibration maximizes vehicle operation efficiency.

	Hydrodamp 365 AG
Application for vehicles with power shift transmissions and automatic transmissions	Heavy agricultural tractors
Engine torque	Up to 3 000 Nm
Hydraulic damping system with damping greases	●
Hydraulic damping system with damping oils	–
Connection to the transmission	Hub or cardan shaft connection
Special features	Weight-optimized sheet-metal forming technology

Benefit from our experience and development know-how

The Hydrodamp is the result of decades of competence and many years of experience in the field of hydrodynamics. Our long-term international project partnerships with customers and universities along with our highly qualified experts enable us to continue to set new standards in the development of innovative, benefit-oriented products to serve your needs.

Simulation-based design saves time and money

Simulations reduce the iteration loops in road tests – this in turn lowers costs and shortens development times. In this process, the spring characteristics, rigidity and mass ratios of the spring-mass system and the hydraulic damping and isolating system are all adapted to each other to meet the customer-specific drivetrain requirements.

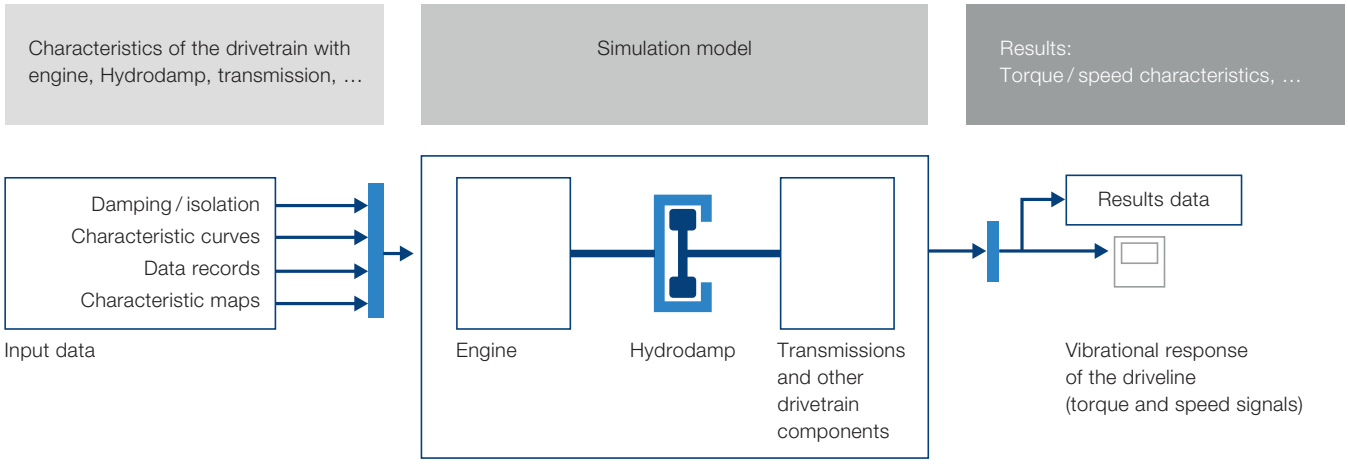
Operational stability ensures increased safety

Fit-for-purpose, reliably stable designs for structural elements that use FEM and lifetime calculations along with rig testing increase and secure customer benefits.

In-vehicle measurements in the development phase

Making vibration measurements in the relevant driving states during the development phase enables a functionally secured adaptation of the Voith Hydrodamp in your drivetrain.

Simulation model



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