

VOITH

voith.com

Economic and com- fortable

Highly flexible couplings
for construction vehicles



Advantages

- > Smooth operation with noticeable more comfort when operating your vehicle
- > Low life-cycle costs improve the profitability of your vehicle
- > A maintenance free product gives your sensitive service area certainty

Modern engines with high torques and optimized fuel consumption are making significantly higher demands on today's drivelines. Wear on components increases. However, in the construction vehicle industry, the reliability of the entire driveline has high priority for manufacturers and customers.

Customers require drives which are more and more reliable yet require less and less maintenance. This is why increasing the service-life of all driveline components and connected equipment is a major topic.

The highly flexible coupling type H protects the driveline against overloads and increases the service-life of individual driveline components, resulting in a higher productivity and profitability. Furthermore the comfort while operating your vehicle is improved noticeably.

The challenge of a modern drive

The trend towards continuous increases of driveline performances is the central target of the model politics of all vehicle manufacturers. Especially in the lower speed range, torques are rising.

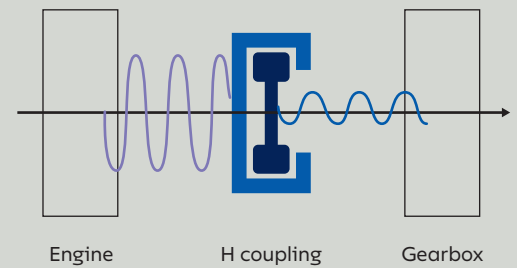
However, what presents an improvement to consumption and drivability, also has disadvantages: especially with low-consumption low speeds, unfavorable vibrations occur in the driveline. These increased torsional vibrations are perceived by the driver or the passenger as a noticeable loss in comfort.

The highly flexible coupling type H is a modern torsional vibration damper which reacts multi-functionally to complex vibration scenarios. It automatically recognizes the difference between the need for vibration damping and the need for vibration isolation during driving. To do this the coupling utilizes the hydraulic operating principle. With its hydraulic system, the coupling has been designed as a maintenance free unit for construction vehicles. It is located between engine and transmission.

The highly flexible coupling type H principle

The highly flexible coupling type H is a highly elastic vibration damper with a spring-mass system and a separately arranged hydraulic damping system. The low stiffness of the springs combined with favorable mass arrangements shift critical resonances into areas below the operating speed range. Independent of this, the hydraulic operating principle is selected according to the operating speed ranges, in order to provide vibration damping and isolation.

Active principle



Economy and comfort by damping and isolating in one single system

The hydraulic operating principle divides the coupling into a damping and an isolating system. The damping system increases the profitability of your vehicle by protecting all connected driveline components against shock loads. The isolating system improves the comfort of your vehicle by absorbing undesirable noises and vibrations. Operating your vehicle will be noticeably smoother.

If load amplitudes are increased: vibration damping

Increased vibration amplitudes that occur at passing through a resonance stage (e.g. starting or stopping the engine) or during shock loads are effectively dampened by the hydraulic damping system of the Voith highly flexible coupling type H.

Through the application of temperature-resistant damping grease, excess vibration energy is effectively removed from the system, even at higher temperatures.

Within normal operating range: vibration isolation

In order to avoid vibrations or undesirable noise development during driving, vibration amplitudes, however small, must be prevented from getting into the transmission. During this operating condition, optimum isolation is required. This is where the isolation system of the Hydrodamp becomes active: within the defined backlash range of the damping ring, vibrations are absorbed and isolated. As a result, optimum vibration isolation is ensured even in the lower operating speed range.

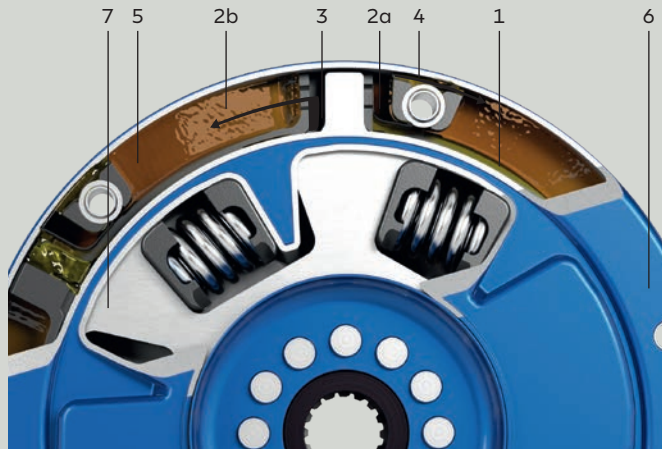


Used by leading manufacturers: The H-coupling in this wheel loader dampens the torsional vibrations that occur in a Cummins QSL9.



Tailored Solutions: Even in special vehicles the H-Coupling protects all connected drive line components – as in this underground loader with 336 kW engine power.

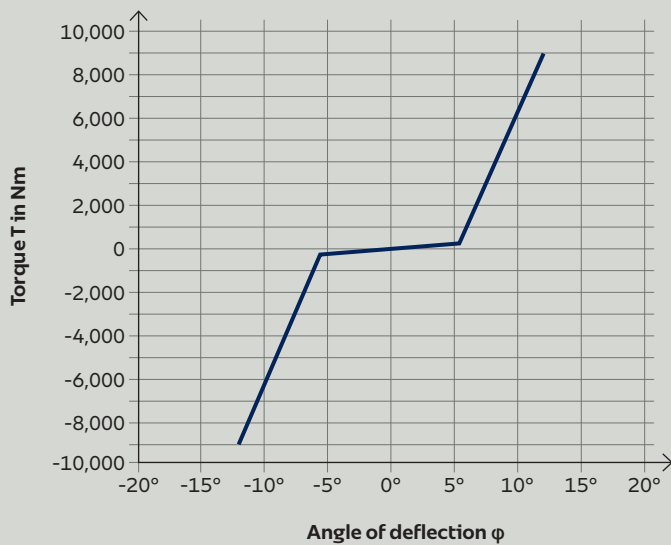
Function of vibration damping



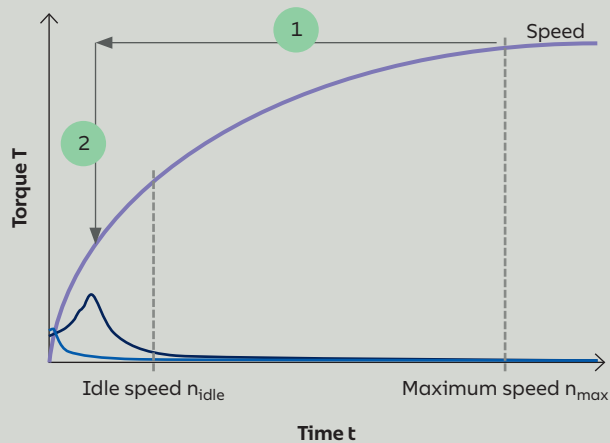
- 1 Floating damping ring with segments
- 2a Pressure side of the damping chambers
- 2b Suction side of the damping chambers
- 3 Free movement (backlash between damping ring and secondary mass)
- 4 Damping gap
- 5 Damping medium
- 6 Primary mass
- 7 Secondary mass

Stiffness characteristics dual stage progressive

Many adaptations for different applications are possible



Vibration behavior with H-coupling



- 1 Move of resonance frequency below idle speed
- 2 Dampen alternating torque peaks

Features of the highly flexible coupling type H

- > Speed up to 2,500 rpm
- > Torque up to 9,012 Nm
- > Heat-resistant up to 110 °C ambient temperature
- > Impervious to dirt ingress
- > Maintenance-free

