



## Smoother Ride with Sachs CV Multi-Stage Torsional Dampers

- **Sachs torsional dampers for PTO clutches ensure a smoother ride**
- **ZF Aftermarket explains the special features of multi-stage damping**

**Vibrations are common in the commercial vehicle driveline. Resonance vibrations occur if they superimpose with those created by driven units, such as hydraulic pumps, winches or compressors. The design of clutches with permanent power take-off (PTO) means that the springs of the torsional damper sit loosely in the spring apertures before installation – which to the uninitiated could appear to be a problem. Here, ZF Aftermarket clarifies that this isn't a design defect, explains why this happens and how multi-stage damping works.**

Torsional dampers are usually installed behind the engine as vibration dampers. Their objective is to prevent engine torque peaks and to keep the driveline and coupled units running evenly. In addition, modern commercial vehicles with powershift transmission or hydrostatic drive also have an individually tuned torsional damper, which dampens noise from the drive train and significantly minimizes wear of the drive components.

### Noises when part isn't installed are not a design defect

The torsional damper features pairs of coil springs. They sit opposite each other and have different dimensions – their length, material thickness and number of coils differ. In addition to the conventional coil springs, double coil springs (containing a second, smaller coil spring) can also be used. With multi-stage torsional dampers, there is a correspondingly large clearance in the spring aperture: springs of the first stage fit exactly, and those of the respective next damping stage are a bit shorter and thus have more freedom of movement.



When removed, or prior to installation, in new clutches with permanent power take-off, the springs of the torsional damper lie loosely in the spring apertures of the backing plate; which can lead to rattling noises coming from the part itself. It is impossible for these noises to occur during operation, as following installation the springs are always in contact outside on the spring aperture due to the rotational forces.

### **Outstanding damping with high load capacity**

Depending on the rotation angle of the torsional damper, the corresponding damping spring pairs engage in succession, that is, they act in multiple stages. In this way, progressive characteristics can easily be implemented to correspond to exact requirements. Torsional dampers of PTO clutches that are designed in this way effectively minimize noise and vibrations – and at the same time, are very resilient.

Fast availability of spare parts is a high priority, especially in the commercial vehicle sector, because vehicle downtime means loss of revenue. ZF Aftermarket offers the independent aftermarket (IAM) an extensive range of special driveline technology. Currently, the Sachs brand of commercial vehicle parts includes nearly 90 references across a number of construction equipment applications. This includes: wheeled and crawler excavators, wheel loaders, and tractors and commercial vehicles with special bodies or special applications. All parts are individually adapted to the application to ensure the greatest convenience and maximum cost-effectiveness.

### **Caption:**

Sachs torsional dampers ensure a smoother ride with several damping stages

Photo: ZF



**Press Information**  
**PRESS RELEASE**

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**ZF Friedrichshafen AG**

ZF is a global leader in driveline and chassis technology as well as active and passive safety technology. The company has a global workforce of 146,000 with approximately 230 locations in some 40 countries. In 2017, ZF achieved sales of €36.4 billion. ZF is one of the largest automotive suppliers worldwide.

ZF allows vehicles to see, think and act. The company invests more than six percent of its sales in research and development annually – in particular for the development of efficient and electric drivelines and also in striving for a world without accidents. With its broad portfolio, ZF is advancing mobility and services in the automobile, commercial vehicles and industrial technology sectors.

With integrated solutions and the entire ZF product portfolio, the ZF Aftermarket Division of ZF Friedrichshafen AG guarantees the performance and efficiency of vehicles throughout their life cycle. Its combination of established product brands, digital innovations, customized products and services, and a worldwide service network has made ZF a sought-after partner and number two in the global automotive aftermarket.

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