

SACHS Workshop Tip: Multi-Stage Torsional Dampers for Commercial Vehicles.

Torsionsdampfer mit mehrstufiger Dampfwirkung werden zur Vermeidung von Resonanzschwingungen im Antriebsstrang eingesetzt.

Clutches with a permanent PTO

Misunderstandings regularly occur when installing clutches with a permanent PTO as, for design reasons, the springs of the torsional damper sit loosely in the spring recesses. ZF Services would like to point out that this is not a fault.

Preventing resonance vibrations



Occurring vibrations in the driveline and in the driven unit (e.g. hydraulic pump) cause noises and increase component wear in the driveline. In order to prevent resonance vibrations from overlapping vibrations from the driveline and driven unit, torsional dampers with a multi-stage damping effect are used.



Torsional damper with a multi-stage damping effect

Noises when not installed are not a fault



Coil springs with different dimensions (length, material thickness, and number of coils) are inserted into the torsional damper in pairs opposite each other. Due to the different dimensions, the springs have sufficient play in the spring recess. The springs belonging to the first stage sit suitably in the spring recess, the springs belonging to the respective next stage are slightly shorter and, accordingly, have more play. When the clutch is not installed, the springs therefore move in the spring recess of the carrying plate and, as a result of the large play, may cause rattling noises. This is design related and is not a fault.



Spring recesses with springs

Excellent damping with high load capacity

It is not possible for the springs to rattle during operation as the springs fit closely to one end of the spring recess as a result of the rotational forces. Depending on the rotation angle between the torsional damper and the clutch disk, the spring pairs grasp the respective damping stage one after the other which achieves a multi-stage damping effect. Torsional dampers designed in this way that belong to PTO clutches ensure a high level of noise and vibration damping combined with a high load capacity.