

## **Disc Damper Requirements for NVH Control**

### **Background**

Since the early 1990s, the use of electronically controlled diesel engines in Heavy Trucks has risen dramatically. These engines are capable of producing very high torques at low engine speed and as a result have generated concern over drivetrain noise and vibration.

Traditionally, the torsional natural frequency or resonance point of a drivetrain as typically spec'd has been well below the normal operating range of truck diesel engines and has been of little concern to the truck market. Now, the new electronic engines are often capable of highway cruising at engine speeds close to the drivetrain resonance point. The result can be damage to drivetrain components such as the clutch disc damper, transmission, universal joints or axle.

Concern over this condition has prompted The Maintenance Council of the American Trucking Associations to issue Recommended Practice RP 633 (T) which offers advice as to how to avoid powertrain specifications which can result in the problem. Their primary suggestion is to use a clutch disc mounted damper with a lower spring rate ("soft rate") and with internal friction damping.

### **Valeo GD Damper**

Our field experience in both North America and Europe validates these suggestions. We feel that the best way to accomplish this is to adopt a new long travel "soft rate" damper model known as the GD as standard for all 16" and 17" heavy truck clutches. Therefore, the GD damper replaced the older W model damper for all new vehicle builds. The GD is also used on all field service applications except for 16" installations on certain older Cummins L10/M11 engines which have a small 7" diameter damper recess in the flywheel (Cummins flywheel number 3039231). These applications use a special "soft rate" LB model damper that can fit into the small recess of this flywheel.

The new GD damper is easily recognizable due to its use of 6 large diameter springs in open damper windows whereas the W model damper used 9 smaller springs in closed or covered windows (spring coils not visible).



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### **Internal Friction Damping**

Valeo has long recognized the importance of internal friction damping in controlling drivetrain noise and vibration. It plays a role analogous to shock absorbers on a vehicle's suspension system. The GD damper, like the W model before it, has internal damping as standard.

For further information on this topic, please call Valeo at (888) 71-VALEO.