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## Chrysler Group Meets Customer Needs with 2.8-liter Common Rail Diesel Power Plant

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- The 2.8-liter Turbo Common Rail Diesel (CRD) is Quieter and Cleaner than Diesel Engines of the Past
- Chrysler Group's 2.8-liter CRD Has Best-in-class Torque, Driving Range and Towing Capacity

The Chrysler Group 2.8-liter Common Rail Diesel (CRD) engine is an advanced powerplant with the torque of a small V-8, the acceleration of a V-6 and the fuel economy of a 4-cylinder gasoline engine. It is designed to be an efficient, smooth-running engine that gives customers improved fuel economy and produces lower carbon dioxide (CO<sub>2</sub>) emissions without sacrificing performance.

"The 2.8-liter Common Rail Diesel gives our customers added benefits over a gasoline engine without the negative aspects diesels carried just a few years ago," said Bob Lee, Vice President Powertrain Product Team, Chrysler Group.

Customer benefits of the Chrysler Group 2.8-liter CRD:

Approximately 30 percent better fuel economy than equivalent gasoline engines

Twenty percent lower CO<sub>2</sub> emissions than equivalent gasoline engines

Higher torque rating

Reduced noise, vibration and harshness

Fun to drive

The advanced diesel engine will be available in the 2005 Jeep<sup>®</sup> Liberty, and will mark the first use of a diesel engine in a mid-size sport-utility vehicle in the United States. The 2.8-liter CRD has three best-in-class statistics: 295 lb.-ft. of torque (400 N•m) @ 1,800 rpm, greatest driving range (480 miles) and highest towing capacity (5,000 pounds). The engine produces 160 horsepower and the Jeep Liberty has an estimated fuel economy of 22 mpg city and 27 mpg highway.

The Chrysler Group 2.8-liter uses an advanced common rail direct injection fuel system. The injection process in the 2.8-liter CRD operates at fuel pressures nearly 70 percent greater than previous distributor pump systems, producing finer atomization of the fuel, leaner combustion and increased power. Direct injection also provides inherently lower hydrocarbon exhaust emissions and lower nitrogen oxides (NOx). The high-pressure pump is driven directly off the engine and supplies fuel at pressures up to 24,000 psi. The pump's electronic control system responds to fuel demand and delivers the optimal fuel pressure, injection timing and injection duration.

The injectors on the 2.8-liter CRD have been improved compared to previous diesel engines. The result is that fuel burns more thoroughly, producing fewer particulates. An electronically controlled, variable geometry turbocharger (VGT) improves the control of boost pressure, reducing CO<sub>2</sub> emissions and improving full-load engine power and torque. To minimize turbo lag, the unit on the 2.8-liter features a vacuum reservoir. The reservoir also improves cold launch performance by allowing the turbo to spool up faster from idle.

Built into the turbo unit are variable vanes that allow it to act like a small turbocharger under launch conditions, but have the desirable characteristics of a larger turbocharger at higher engine speeds. The added benefit to customers is the enhanced low-end and high-end torque.

The 2.8-liter CRD engine uses two pilot injections prior to the main injection. This system prepares the cylinders for the main injection of fuel, helping to smooth out the combustion and quiet the engine. The 2.8-liter uses electronically controlled ceramic smart glow plugs with a warm-up time of at most two seconds. They assist with low ambient-temperature start conditions and only operate when needed. Glow plugs in earlier diesels required up to 10 seconds of warm-up prior to engine start.

"The Chrysler Group is working hard to improve the image of the diesel engine," said Lee. "New technology provides a direct benefit to our customers."

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