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2014 Ram 1500's Breakthrough 3.0-liter EcoDiesel V-6 Delivers Best-in-Class Fuel Economy

- 2014 Ram 1500 becomes the first and only light-duty pickup to benefit from durable, efficient diesel technology with new 3.0-liter EcoDiesel V-6
- New turbo-diesel combines with the Ram 1500's segment-exclusive eight-speed automatic transmission, the TorqueFlite 8, to deliver best-in-class fuel economy and range
- EcoDiesel offers unsurpassed torque (420 lb.-ft.) among V-6 pickups
- Innovative MultiJet II common-rail fuel-injection system, state-of-the-art Selective Catalytic Reduction (SCR) and high-pressure cooled Exhaust Gas Recirculation (EGR) contribute to EcoDiesel's 50-state emissions compliance
- Unique Diesel Exhaust Fluid (DEF) system enables the new engine to maintain full power when fluid is low
- New EcoDiesel is compatible with B-20 biodiesel
- Award-winning 3.6-liter Pentastar V-6 combines with TorqueFlite 8 to deliver best-in-class fuel economy for a gasoline-powered pickup
- TorqueFlite 8 and 5.7-liter HEMI® offer best-in-class combination of power and fuel efficiency among pickups with V-8 engines
- 2014 Ram 1500 is the industry's only light-duty pickup to offer diesel, gasoline and flex-fuel engines

September 7, 2013, Auburn Hills, Mich. - The wait is over.

The 2014 Ram 1500 not only is the first light-duty, full-size pickup to offer durable, efficient diesel technology – it is the only one. And with the 3.0-liter EcoDiesel's historic debut, Ram customers can enjoy class-leading fuel economy and range, along with torque that is unsurpassed by any full-size truck with a V-6 engine.

“Light-duty pickup owners have long clamored for diesel technology and the time to deliver is now,” said Bob Lee, Vice President and Head of Engine, Powertrain and Electrified Propulsion Systems Engineering — Chrysler Group LLC. “Clean, efficient, prodigious torque and the promise of durability are the hallmarks of a superior truck engine. The EcoDiesel makes good on all counts.”

The new 3.0-liter 24-valve, dual-overhead-cam (DOHC) EcoDiesel is a turbocharged 60-degree V-6. It generates 240 horsepower at 3,600 rpm and makes torque like a V-8 – 420 lb.-ft. at 2,000 rpm – without V-8 fuel consumption.

The fuel-economy advantage inherent in diesel technology also enables the Ram 1500 to trump competitive trucks with turbocharged, direct-injected gasoline engines – especially under load, the driving condition most critical to pickups and their owners.

So expect the 2014 Ram 1500 to claim best-in-class range honors while retaining the pickup-segment fuel-economy crown won by its predecessor. The Ram 1500 topped all 2013 competitors with a 25-mpg highway rating when equipped with the award-winning gasoline-powered 3.6-liter Pentastar V-6.

Solid structure, superior design

The new turbo-diesel is designed and produced by VM Motori, a Chrysler Group diesel engine supplier since 1992.

The engine, with its 16.5:1 compression ratio, is shouldered by a bedplate and cylinder block of Compacted Graphite Iron (CGI).

CGI is engineered to ensure graphite is more uniformly dispersed, which delivers higher strength, enhances durability and reduces noise, vibration and harshness – a focus of many EcoDiesel design features, such as its structural aluminum oil pan.

The EcoDiesel's 60-degree cylinder-bank angle and 1-2-3-4-5-6 firing order are optimized to manage inertia and firing loads, eliminating the need for a balance shaft.

The engine's aluminum cylinder heads are heat-treated and feature individual bearing caps that help reduce friction and noise, vibration and harshness (NVH).

Durability is further ensured by the EcoDiesel's forged steel crankshaft and connecting rods – which provide additional NVH benefits – and its aluminum alloy pistons. These pistons, which benefit from cooling oil jets, reduce reciprocating mass inside the engine for enhanced efficiency and performance feel.

The dual overhead cams with chain-driven roller-finger followers and gear-to-gear meshing afford efficient valve operation, working in harmony with the variable-geometry, electronically controlled, water-cooled turbocharger. Special attention to this relationship helps to virtually eliminate “turbo lag” by providing increased turbine power at low engine speeds.

The system incorporates a new “pre-filter” on the transmission cross-rail and an engine fuel filter. The result is enhanced prevention of injector corrosion, an enabler of long-term durability, as well as protection from the vagaries of regional fuel quality.

A front-end accessory drive with automatic tensioning single-belt drive highlights the engine's versatility.

Raising the bar (Or psi) on efficiency

The EcoDiesel V-6 features Fiat's innovative MultiJet II common-rail fuel-injection system features 29,000-psi (2,000-bar) of line pressure.

High-dispersion nozzles and a new servovalve enable fuel-injection events, which occur with greater precision up to eight times per cylinder cycle. This ensures efficiency via clean, smooth combustion.

The interval between two consecutive injections also is better modulated to mitigate noise and benefit fuel consumption and emissions reduction. This is known as Injection Rate Shaping.

The resulting flexibility affords optimal efficiency, power on demand and exceptional low-speed throttle response. EcoDiesel's fast-acting, high-temperature glow plugs operate at higher temperatures than conventional metallic glow plugs. The result is enhanced performance and durability.

Putting the “Eco” in EcoDiesel

The new EcoDiesel V-6 achieves 50-state emissions compliance for both tier II and BIN 5. A key enabler is the engine's cooled Exhaust Gas Recirculation (EGR) system, which is controlled by electric valves instead of the conventional pneumatic variety. The system also contributes to rapid start-up.

A state-of-the-art Selective Catalytic Reduction (SCR) system also reduces emissions. It incorporates a unique Diesel Exhaust Fluid (DEF) system that, unlike competitive systems, alerts the driver to low DEF levels while also allowing the engine to maintain full power. Other features include:

- An insulated DEF tank with heated lines mitigates the effects of cold-weather operation
- A passive cooling system (one that does not require engine coolant) for the DEF injector
- Exhaust-system refinements to improve the utilization of DEF for NOx reduction while also mitigating harmful DEF crystalline build-up
- An exhaust-system design that requires less energy from the engine to achieve optimal emissions conversion temperatures
- An exhaust-system strategy that reduces soot output while also improving fuel economy and meeting emissions standards

The DEF tank holds eight gallons of fluid. Duty cycle determines refills, but the average interval is about 10,000 miles.

DEF is commonly available fuel stations and is also offered by Mopar and Chrysler Group's dealer network and Cummins dealers and distributors.

The standard engine oil cooler, when the EcoDiesel is used with 5W30 synthetic oil, contributes to a 10,000-mile oil-change interval. The use of B-20 biodiesel is validated and approved for the new 3.0-liter EcoDiesel.

Tried and true

The new 3.0-liter EcoDiesel joins an acclaimed powertrain lineup that includes the celebrated 3.6-liter Pentastar V-6 and the legendary 5.7-liter HEMI V-8.

The Pentastar, one of Ward's 10 Best Engines for three years running, generates 305 horsepower at 6,400 rpm and 269 lb.-ft of torque at 4,175 rpm. It also is compatible with E-85 fuel.

The HEMI makes 395 horsepower at 5,600 rpm and 410 lb.-ft. of torque at 3,950 rpm, while achieving fuel-economy ratings of 15 mpg in city driving and 22 mpg on the highway. No competitive truck beats the HEMI-equipped Ram in both horsepower and highway fuel economy, affording customers the best combination of efficiency among pickups with V-8 engines.

Both the HEMI and the Pentastar engines are available with the segment-exclusive TorqueFlite 8. The breakthrough transmission features five clutch packs, but only two are open in any gear to maximize efficiency. Its torque converter features turbine torsional damping, enabling low lock-up speeds in all eight gears. Depending on the axle pairing, the transmission affords final-drive ratios ranging from 2.15 to 2.63.

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