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## **2013 Ram 1500 Features Best-in-class Fuel Economy, New Pentastar® VVT V6 and Segment Exclusive Eight-speed Transmissions**

- New 3.6-litre Pentastar® VVT V6 engine (a two-time winner of Ward's Automotive 10 Best Engines) with variable valve timing (VVT) offers best-in-class standard 305 horsepower with 269 lb.-ft. of torque and best-in-class standard fuel economy
- New V6 features 42 per cent more horsepower, up to 11 per cent more torque and up to 8.4 per cent better fuel economy when compared to the previous 3.7-litre V6
- Canada's best-selling V8 truck engine -- the 5.7-litre HEMI® V8 with fuel-saving cylinder shut-off technology and VVT provides 395 horsepower, 407 lb.-ft. of torque and best-in-class fuel economy for V8 trucks
- Class-exclusive eight-speed automatic transmission (TorqueFlite 8), standard equipment with 3.6-litre VVT V6 Pentastar, doubles the amount of gears compared to previously available four-speed automatic transmission to greatly improve fuel economy
- Coupled with TorqueFlite 8, 5.7-litre HEMI V8 achieves up to 12 per cent better fuel economy when compared to 2012 model
- The Company's first application of the new eight-speed with the 5.7-litre HEMI V8
- First-in-segment: stop-start system, eight-speed automatic transmission, thermal management system, pulse-width modulated fuel pump and cooling fan, active aerodynamics including grille shutters and air suspension
- Interactive Deceleration Fuel Shut-Off (iDFSO) improves fuel economy in both city and highway driving
- Outstanding powertrain warranty: 5 years/100,000 kilometres

April 4, 2012, New York, N.Y. - Major changes under the hood of the new 2013 Ram 1500 will help deliver best-in-class fuel economy and substantial increases in power and performance with the Chrysler Group's award-winning Pentastar® 3.6-litre VVT V6 engine coupled with the first use of an eight-speed TorqueFlite 8 transmission in a pickup truck.

Canada's best-selling V8 truck engine, the 5.7-litre HEMI® V8, will also benefit with the first use of an eight-speed automatic transmission. The new, TorqueFlite 8 is available with the V8 engine and features a higher capacity torque converter and is scheduled for availability in late 2012.

Coupled with the debut of an eight-speed transmission, select Ram 1500 models will offer a new stop-start feature that automatically shuts the engine off when the truck comes to a complete stop, conserving fuel. The engine restarts when driving is resumed.

"The coupling of our legendary 5.7-litre HEMI V8 and Ward's 10-best, 3.6-litre Pentastar V6 to a new eight-speed automatic transmission led the way to best-in-class fuel economy for the 2013 Ram 1500," said Bob Lee, Vice President, Powertrain and Electrified Propulsion Systems Engineering — Chrysler Group LLC. "Although the addition of a new eight-speed achieved double-digit percentage gains in fuel economy, we also added a number of segment exclusive technologies such as thermal management, stop-start and active grille shutters to further improve efficiency."

### **Best-in-class Standard V6 Horsepower and Fuel Economy – Pentastar V6 Engine**

With horsepower rated at 305 at 6,400 rpm and torque of 269 lb.-ft. at 4,175 rpm, the 2013 Ram 1500 goes from zero to 96 km/h, three seconds faster than the previous V6 powertrain. The new Ram 1500 becomes the latest vehicle to benefit from the advanced technology Pentastar engine. Features include Dual Overhead Camshafts (DOHC), high-torque over a broad band, low exhaust emissions, E85 capability, exceptional fuel economy, and best-in-class noise, vibration and harshness (NVH).

Introduced less than two years ago, the new V6 engine has become the workhorse engine across the Chrysler line-up and has replaced seven previous V6 engines. The Pentastar won Ward's 10 Best Engines award in its debut year of 2011 and repeated this honour in 2012.

The compact, 60 degree, all-aluminum block is constructed of high strength die-cast T380 aluminum with cast iron bore liners. Six bolt main bearing caps contribute to an extremely rigid lower reciprocating assembly. Cast aluminum pistons are fitted to forged connecting rods. Aluminum cylinder heads with dual overhead camshafts and four valves per cylinder include integral exhaust manifolds. High flow, tumble intake ports and a 10.2:1 compression ratio deliver an optimal balance of power, fuel efficiency and refinement.

Despite the high compression ratio, the Pentastar V6 is designed to run on regular 87 octane fuel to reduce the cost of ownership. The 3.6-litre Pentastar also is E85 compliant.

To help deliver better fuel efficiency and better volumetric efficiency across a wide torque band, the engine also includes variable valve timing (VVT) with dual-independent cam phasing. Nearly 90 per cent of the engine's peak torque is available from 1,800 to 6,400 rpm – an important consideration when towing or hauling a load.

With increases in both horsepower and torque, there is no shortage of capability. For 2013, customers can opt for a V6 with 4x4 powertrain.

Also, towing and payload capacity for the 2013 Ram 1500 with the New Pentastar V6 is truly impressive with towing up to 2554 kilograms (5,630 pounds) and payload up to 884 kilograms (1,948 pounds), when properly equipped.

#### **Best-in-class V8 Fuel Economy – 5.7-litre HEMI® VVT V8**

Long associated with power, enhanced fuel efficiency also is provided with the legendary HEMI® through the use of variable valve timing (VVT) and cylinder shut-off technology. The 2013 Ram 1500 is the first vehicle to combine the new eight-speed automatic and the HEMI V8 engine — late availability.

With 395 horsepower at 5,600 rpm and 407 lb.-ft. of torque at 3,950 rpm, the 5.7-litre HEMI V8 delivers performance and exceptional towing and payload — 4740 kilograms (10,450 pounds) and 787 kilograms (1,735 pounds) respectively, when properly equipped. Equipped with VVT, the engine is designed to deliver power across a wide torque band.

Fuel enhancing features with the HEMI include cylinder shut-off technology, which deactivates four cylinders of the engine during light acceleration or cruising situations on the highway when full V8 power is not needed. Depending on the driving, cylinder shutoff can increase fuel economy from 5 to 20 per cent. Transparent to the driver, the system operates between 1,000 and 3,000 rpm and provides V8 power for acceleration and heavy loads and four-cylinder operation when the torque requirement is less than the maximum available from four cylinders, saving fuel.

Additionally, VVT technology improves fuel economy by first, reducing the engine's pumping work by closing the intake valve later, and second by increasing the expansion process of the combustion event. This allows more energy to be transferred to the wheels instead of being lost out of the exhaust as heat. VVT also improves engine breathing, which improves engine efficiency and power.

Fuel savings also are realized through an Interactive Deceleration Fuel Shut Off feature (iDFSO), which expands opportunities for turning off fuel to the engine during deceleration events thereby improving fuel economy in both city and highway driving.

#### **TorqueFlite 8 Automatic Transmissions**

The new, 8HP45 8-speed automatic transmission is the new standard transmission for Ram 1500 with V6. For HEMI® V8 - equipped Ram 1500 models, the higher torque capacity version 8HP70 will be available in the first

quarter of 2013. Torque capacity for the 8HP45 is 332 lb.-ft. The heavy-duty 8HP70 has a torque capacity rating of 516 lb.-ft.

Fully electronic, both the 8HP45 and 8HP70 transmissions feature on-the-fly shift map changing. More than 40 individual shift maps for very specific conditions optimize shift quality and shift points for fuel economy, performance and drivability. The intelligent software takes into account variables including engine torque gradients, kick down events, longitudinal and lateral acceleration, hill detection, friction detection and downshift detection to determine the appropriate shift map. Additional parameters integrated into the control strategy include vehicle speed control, electronic stability control interaction and temperature. The result is automatic shifting ideally attuned to the performance requirements of almost any driving demand.

The transmission efficiency and wide ratio spread provide the best possible fuel economy by operating at a lower engine rpm in both city and highway environments. Driving at a lower rpm also helps to effectively reduce emissions by nearly 11 per cent. Internally, identical transmission gear ratios are used in both the 8HP45 and 8HP70 transmissions.

The addition of more gear ratios also helps reduce the gaps normally associated with upshifting and downshifting. Gear changes are nearly imperceptible due to the evenly spaced gear steps between each gear ratio. Internally, both transmissions have four gear sets and five shift elements (multi-disc clutches and brakes). Only two shift elements are open at any time. With fewer open shift elements, drag losses due to multiple parts rotating relative to one another are reduced, improving fuel efficiency.

High efforts in shifting have been eliminated with gear selection controlled by a shift-by-wire system. Shift positions, selected by the driver via a rotary e-shift dial on the instrument panel, are transmitted electronically with no mechanical linkage from the shifter to the outside of the transmission. Elimination of this linkage removes any shift effort from the driver's gear selection but maintains an intuitive operation with a direct and confident feel. Calibration also is improved for smoother shifting in garages or while parking.

### **Thermal Management System**

Making its introduction a segment exclusive on the 2013 Ram 1500 is a new thermal management system that is designed to quickly raise engine and transmission fluid temperatures. By raising fluid temperatures, parasitic losses resulting from low-viscosity transmission fluid are reduced, improving fuel efficiency by 1.7 per cent.

One of the system enablers is a new electronic thermostat. Unlike previous mechanical thermostats, the electronic version constantly monitors engine temperature, allowing shorter warm up time and maintaining the engine at the most efficient operating range. As the engine temperature increases to pre-determined levels, warm engine coolant is circulated through a thermal exchange unit, which also contains dedicated pathways for transmission fluid. As the thermal exchange unit heats up, it also heats up the transmission fluid. This action dramatically reduces warm up time for the transmission, improving fuel economy, drivability and shift quality. In most powertrain configurations, the transmission heats up independently of the engine, delaying warm-up time and reducing efficiency.

Standard on trucks with the TorqueFlite 8, the new thermal management system is primarily used to increase fuel efficiency but assists in preventing the transmission from exceeding operating temperatures in situations when towing or hauling — improving durability and performance.

### **Stop-start**

Adding to industry firsts in a pickup truck is the application of stop-start, another fuel-saving feature available on select 2013 Ram 1500 models. This new system improves fuel economy by up to 3.3 per cent, an increase of about 3.78 litres per 100 kilometres to the truck's city drive cycle.

Stop-start increases fuel efficiency by shutting the engine off when the truck comes to a complete stop. Amenities (radio, gauges, heating or air conditioning, etc.) continue to operate, making the operation transparent to the driver. The engine restarts automatically when the driver releases the brake, allowing seamless acceleration. The system monitors brake pedal position and vehicle speed over time to determine appropriate engine shut off, preventing frequent on/off cycling in heavy stop-and-go traffic situations.

Precise powertrain calibration and input from a number of systems determines when to engage the system. Due to additional high-use and electrical load demands placed on the starter, alternator and battery, these

components have been upgraded for heavy-duty operation on models equipped with the stop-start feature. This includes a high-durability starter housed in a stronger case, heavy-duty flywheel teeth and a more robust starter solenoid. During testing, the new starter was subjected to durability testing cycles more than 2.5 times that of a non-stop-start equipped unit – more than 300,000 on/off cycles. The new battery features 800 amps with Absorbed Glass Mat (AGM) technology. An upgraded 220-amp alternator also is included in the charging system.

System voltage is continually monitored through a battery sensor. If the battery's charge is reduced, the truck will discontinue stop-start until the battery is recharged to an acceptable level.

Stop-start is activated automatically and requires no input from the driver. A system disable switch is located on the dash if the operator wishes to suspend the feature.

### **Transfer Cases**

Two transfer cases are available on the 2013 Ram 1500: the Borg Warner 44-45, which enables part-time four-wheel drive operation with a two-speed gear system; and the Borg Warner 44-44, which enables an on-demand four-wheel drive system, also with a two-speed gear system. Both transfer cases are engaged with a dash-mounted dial or button, depending on transmission option.

The part-time transfer case provides three operating ranges 2HI (two-wheel drive), 4HI (four-wheel drive) and 4LO (low-range reduction four-wheel drive) plus a neutral position. The 2HI is designed for any road surface at any time. Both 4HI and 4LO are for off-road use or slick surfaces. Operating mode may be switched between 2HI and 4HI while the vehicle is in motion, but the vehicle's transmission must be in neutral to engage 4LO. The low-range reduction ratio for 4LO is 2.64:1, which provides increased low-speed torque capability for pulling power in off-road conditions.

The on-demand transfer case provides four operating ranges: auto, 2HI, 4HI and 4LO. The auto range provides optimum versatility by engaging two- or four-wheel drive depending on road conditions. 2HI, 4HI and 4LO function the same as in the part-time transfer case.

Driveshafts incorporate 1350 series universal joints, two-piece thrust washers with triple-lip seals and improved journal cross strength.

### **Axles**

Two final drive ratios, 3.21 and 3.55, are available on both the 2WD and 4WD models, reducing engine rpm throughout the operating range for better fuel economy.

Four-wheel drive models of the 2013 Ram 1500 use a front axle designed for optional air suspension or standard torsional independent front suspension, incorporating half-shafts that drive front hubs. The axle also has a disconnect system that automatically disengages the axle when four-wheel drive mode is disengaged, for increased fuel economy.

The rear axle uses a new optional air suspension or multi-link mounting design to facilitate a coil-spring setup, with forward-facing shock absorber brackets. Four gear ratios are available: 3.21, 3.55, 3.92 and 4.10.

In addition, an optional helical-gear, limited-slip rear axle is available. The limited-slip function instantaneously divides torque between the rear wheels in proportion to the traction available to each wheel. The system is consistently smooth when turning corners because it responds only to variations in traction.

### **Exceptional Powertrain Warranty – 5 Year/ 100,000 Kilometres**

The 2013 Ram 1500 is backed with a 5-Year / 100,000 Kilometres Powertrain Limited Warranty. The Powertrain Limited Warranty covers the cost of all parts and labour needed to repair a covered powertrain component — engine, transmission and drive system. Coverage also includes free towing to the nearest Ram dealer, if necessary. The warranty also is transferable allowing customers who sell their truck during the warranty period, to pass the coverage onto the new owner.

The standard 3-Year / 60,000 Kilometres Basic Limited Warranty provides bumper-to-bumper coverage for the Ram 1500, from the body to the electrical system.

### **About the Ram Truck Brand**

The Ram Truck brand continues to establish its own identity and clearly define its customer since its launch as a standalone vehicle brand. Creating a distinct brand for Ram trucks has allowed the brand to concentrate on how core customers use their trucks and what new features they'd like to see. Whether focusing on a family that uses its truck day in and day out, a hard-working Ram Heavy Duty owner or a business that depends on its commercial vehicles every day, Ram has the truck market covered.

#### **About Chrysler Canada**

Founded as the Chrysler Corporation in 1925, Chrysler Canada Inc. is based in Windsor, Ontario, and celebrates its 87th anniversary in 2012. Chrysler Canada is a wholly owned subsidiary of Chrysler Group LLC, one of the world's leading automotive companies. Chrysler Group LLC, formed in 2009 from a global strategic alliance with Fiat, S.p.A., produces Chrysler, Jeep, Dodge, Ram, SRT, Fiat and Mopar® vehicles and products. Chrysler Canada's product lineup features some of the world's most recognizable vehicles, including the Chrysler 300, Dodge Grand Caravan, Jeep Wrangler, Dodge Durango, Ram 1500, Jeep Grand Cherokee SRT8 and Fiat 500.

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