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## Engineering the All-new Jeep® Grand Cherokee

### Legendary Jeep Capability Rises to New Heights

- New Quadra-Lift™ air suspension system provides height control to a maximum ride height of 269.5mm (10.6 in.) of ground clearance, delivering legendary Jeep® off-road capability
- New Selec-Terrain™ system offers five terrain settings to match conditions
- First application of company's all-new 3.6-liter Pentastar V-6 engine with over 10-percent improvement in fuel consumption
- Choice of two 4x4 systems: Quadra-Trac II® and Quadra-Drive® II with rear Electronic Limited-slip Differential (ELSD)

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Among the numerous features in the all-new Jeep® Grand Cherokee, there are three that hit the ideal balance between real-world capability and on-road refinement.

First is the all-new Quadra-Lift™ air suspension system that lifts the vehicle up to 105.0mm (4.1 in.) from Park mode to a maximum off-road height of 269.5mm (10.6 in.) and delivers legendary Jeep off-road capability and on-road performance.

Second is the all-new front and rear independent suspension with improved on-road ride and handling.

Third is an all-new V-6 engine that offers improved fuel consumption, performance and refinement.

"Our all-new Jeep Grand Cherokee provides everything you expect in an SUV and more - more capability, technology, innovation and amenities," said Phil Jansen, Chief Engineer Model Responsible - Grand Cherokee, Chrysler Group LLC. "Grand Cherokee is about premium on-road performance and legendary Jeep capability. We listened to our customers and took it to the next level, adding significantly improved on-road performance while maintaining the Jeep brand's legendary four-wheel-drive capability."

### All-new Air Suspension

The all-new Jeep Grand Cherokee rises above the road and rocks with the all-new Quadra-Lift air suspension system. For the first time on a Jeep vehicle, the Quadra-Lift system features five height settings for optimum ride performance:

- Normal Ride Height (NRH): 204.5mm (8.1 in.) of clearance offers improved fuel consumption as well as improved aerodynamics during on-road driving
- Off Road 1: Lifts the vehicle an additional 32.5mm (1.3 in.) to 237.0mm (9.3 in.) for added height in clearing obstacles
- Off Road 2: Delivers legendary Jeep off-road capability and provides an additional 65.0mm (2.6 in.) over NRH for 269.5mm (10.6 in.) of ground clearance
- Park Mode: Lowers the vehicle 40.0mm (1.6 in.) from NRH for easy ingress/egress. NRH and Park mode are driver selectable, allowing the driver full control over vehicle ride height
- Aero Mode: Lowers the vehicle 15.0mm (0.6 in.) from NRH. Aero mode is controlled by vehicle speed and adjusts for optimal performance and fuel economy

Quadra-Lift adds up to 105.0mm (4.1 in.) of lift span supported by four-corner air springs that provide a cushioned, premium ride. Quadra-Lift operates automatically, or may be controlled manually with console controls.

In addition to the Quadra-Lift air suspension system, the all-new Selec-Terrain™ traction control system allows customers to choose the on- and off-road setting for optimum performance. Standard on all Jeep Grand Cherokee models for markets outside of North America, this all-new feature electronically coordinates up to 12 different powertrain, braking and suspension systems, including throttle control, transmission shift, transfer case, Hill-start Assist and Hill-descent Control.

The new Selec-Terrain system offers five different driving conditions to achieve the best driving experience on all terrains:

- Sand/Mud: Traction control and Quadra-Lift operate with sensitive response to wheel spin, and torque is tuned for optimal performance
- Sport: Provides enhanced on-road "fun-to-drive" capability
- Auto: Automatically adapts to any on- or off-road situation
- Snow: Vehicle traction adjusts for ultimate performance over snow-covered roads
- Rock: Quadra-Lift air suspension system raises to maximum height of 269.5mm (10.6 in.), while the transfer case, differentials and throttle coordinate to provide low-speed control

Selec-Terrain, coupled with the all-new Quadra-Lift air suspension system, offers drivers an adjustable suspension span that delivers world-class capability.

With the front air dam removed and the available Quadra-Lift air suspension system, the all-new Jeep Grand Cherokee features a 34.3-degree approach angle, a 27.3-degree (to rear recovery tow hook) departure angle and 23.1-degree breakover angle.

The all-new front and rear independent suspensions feature isolated front and rear suspension cradles along with variable-rate rear springs to deliver improved on-road handling and comfort while complementing the vehicle's legendary off-road capability. The new rear suspension also allows the spare tire to be stored inside the vehicle as opposed to underneath.

The Jeep Grand Cherokee is also available with load-leveling shocks. Shocks react to payload levels and mechanically increase vehicle height when the vehicle has added rear payload. Advantages to load-leveling shocks include improved load handling and trailer-tow performance. Load-leveling shocks are available with trailer-tow packages that do not already have the Quadra-Lift air suspension system.

### **Premium Powertrains**

The all-new Jeep Grand Cherokee is available with two leading engine options for markets outside of North America: the NEW 3.6-liter Pentastar V-6 and a 5.7-liter V-8.

Jeep Grand Cherokee features the first application of the all-new 3.6-liter Pentastar V-6 engine. This all-new 3.6-liter V-6 engine is standard on the Grand Cherokee and features an all-new design with double overhead camshafts (DOHC) and a high-pressure die-cast aluminum cylinder block in a 60-degree configuration. It features Variable-valve Timing (VVT) and delivers 210 kW (286 hp DIN) of power at 6,350 rpm and 347 N•m (256 lb.-ft.) of torque at 4,300 rpm, providing customers more than a 10-percent improvement in fuel consumption.

The all-new Jeep Grand Cherokee offers trailer tow capability of up to 2268kg (5,000 lbs.) on models equipped with the Pentastar V-6 engine.

The reduction of noise, vibration and harshness (NVH) was a key objective for every component during the design phase of the engine and was achieved by utilizing advanced computer-aided engineering techniques. Structural, intake and exhaust areas of the engine are designed to deliver low levels of overall noise and achieve specific sound quality goals. The result is a refined engine in all applications. Idle quality refinement is improved due to use of the dual-independent cam phasing.

An environmentally friendly oil filter element and optional integrated oil cooler are used to aid service and enhance reliability. The use of long-life spark plugs and a high-energy, coil-on-plug ignition system also help to reduce cost of ownership.

In addition to the all-new V-6 engine, the Jeep Grand Cherokee is available with the legendary 5.7-liter Multi-displacement System (MDS) V-8 engine. Featuring VVT, it delivers 259 kW (352 hp DIN) of power at 5,200 rpm and 520 N•m (384 lb.-ft.) of torque at 4,200 rpm. This engine delivers performance and towing capability, and fuel efficiency with the fuel-saving MDS.

The 5.7-liter engine's fuel-saving MDS seamlessly alternates between smooth, efficient four-cylinder mode when less power is needed and V-8 mode when more power is in demand. This optimizes fuel economy when V-8 power is not required, without sacrificing vehicle performance or capability.

The engine's VVT improves fuel economy in two ways. First, it reduces the engine's pumping work by closing the intake valve later. Second, it increases the expansion process of the combustion event. This allows more work to be transferred to the crankshaft instead of being rejected out of the exhaust port as heat. VVT improves engine breathing, which improves engine efficiency and power.

The all-new Jeep Grand Cherokee offers unsurpassed trailer tow capability of up to 3500kg (7,717 lbs.) when equipped with the 5.7-liter V-8 engine.

For international markets, the all-new Jeep Grand Cherokee will be available in right-hand drive in late 2010.

### **Transmissions**

Paired with the all-new 3.6-liter V-6 engine is the proven W5A580 five-speed automatic transmission that delivers smooth shifts and optimum fuel economy. The five-speed W5A580 transmission includes Electronic Range Select (ERS) driver-interactive manual control and an electronically modulated torque converter clutch.

The 5.7-liter V-8 engine is mated to the 545RFE multi-speed automatic transmission. The five-speed transmission includes three planetary gear sets, one over-running clutch with ERS driver interactive control and an electronically controlled torque converter clutch.

### **Go Anywhere 4x4 Systems**

The Jeep Grand Cherokee offers two 4x4 systems in markets outside of North America: standard Quadra-Trac II<sup>®</sup> and available Quadra-Drive<sup>®</sup> II.

Quadra-Trac II's two-speed transfer case uses input from a variety of sensors in order to determine tire slip at the earliest possible moment and take corrective action. The system uses Throttle Anticipate to sense quick movement in the throttle from a stop and maximizes traction before slippage occurs. When tire slippage is detected, as much as 100 percent of available torque is instantly routed to the axle with the most traction.

Quadra-Drive II, with a rear Electronic Limited-slip Differential (ELSD), delivers industry-leading tractive capability. The system instantly detects tire slip and smoothly distributes engine torque to tires with traction. In some cases, the vehicle will anticipate low traction and adjust in order to proactively limit or eliminate slip.

### **Body Structure**

Continuing to build on the Jeep brand's legendary off-road capability, the all-new Grand Cherokee adds premium on-road performance to complete the package.

The all-new Jeep Grand Cherokee's premium SUV on-road manners and legendary Jeep ruggedness are achieved with more than 5,400 welds in the body alone. The all-new body structure's torsional stiffness is 146-percent stiffer than the previous Grand Cherokee for improved durability and reduced NVH, with more than 3,700mm of arc welding and 100mm of structural adhesive augment welding. This marks a 53-percent increase in spot welds, a 42-percent increase in arc welds and a 38-percent increase in structural adhesive compared to the previous Jeep Grand Cherokee.

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