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## **All-new 2014 Jeep® Cherokee – Legendary Jeep Off-road Capability Meets Superior On-road Driving Dynamics**

Segment-first nine-speed automatic transmission and fuel economy improvements of more than 45 percent equal a “no-compromise” mid-size SUV

- All-new 2014 Jeep® Cherokee boasts best-in-class Jeep capability in all weather conditions compliments of three new four-wheel-drive systems that raise the standard for mid-size sport-utility vehicles (SUV)
    - Jeep Active Drive I with one-speed power transfer unit (PTU)
    - Jeep Active Drive II with two-speed PTU and low range
    - Jeep Active Drive Lock with two-speed PTU, low range and locking rear differential
  - All three systems feature a rear-axle disconnect – an industry first – resulting in reduced energy loss when 4x4 capability isn't needed – improving fuel efficiency
  - 2014 Jeep Cherokee is the first vehicle in its segment to deliver a standard nine-speed automatic transmission
- Modern, state-of-the-art engines power the Jeep Cherokee
- New 2.4-liter MultiAir2 Tigershark I-4 producing 184 horsepower and 171 lb.-ft. of torque and achieving a fuel economy rating of up to 31 miles per gallon (mpg) highway
  - New 3.2-liter Pentastar V-6 engine producing 271 horsepower and 239 lb.-ft. of torque
- Jeep Cherokee is derived from Chrysler Group's Compact U.S. Wide (CUS-wide) platform – the basis for the superior, smooth on-road performance
  - Innovative Jeep Selec-Terrain system with up to five selectable modes providing best four-wheel-drive performance for any road or weather condition
  - Crawl ratios of 56:1 with the 2.4-liter MultiAir2 Tigershark I-4 engine and 47.8:1 when powered by the new 3.2-liter Pentastar V-6 engine, help ensure the Cherokee is the most capable vehicle in its segment
  - Improved aerodynamics aid in the improved fuel economy of up to 31 mpg and helps reduce noise, vibration and harshness
  - Best-in-class V-6 towing capability of 4,500 pounds

September 8, 2013, Auburn Hills, Mich. - No compromises. True to the Jeep® brand. The all-new 2014 Jeep Cherokee is engineered to be the most capable mid-size sport-utility vehicle (SUV) while providing premium on-road driving dynamics and improved fuel economy of up to 31 miles per gallon (mpg) – a more than 45-percent improvement compared with the outgoing Jeep mid-size SUV.

“With the all-new Jeep Cherokee we’ve engineered several groundbreaking attributes that will redefine how consumers think about mid-size SUVs,” said Chris Barman, Vehicle Line Executive, C and D Segment Vehicles — Chrysler Group LLC. “Innovative new 4x4 systems with rear-axle disconnect ensure the new Cherokee is the most capable mid-size SUV while delivering a superior on-road driving experience and vastly improved fuel economy of up to 31 mpg.”

## **Go anywhere Jeep capability**

The all-new 2014 Jeep Cherokee provides a choice of three innovative 4x4 systems for best-in-class 4x4 capability in all weather conditions. The Jeep Cherokee is the first mid-size SUV to feature rear-axle disconnect, resulting in reduced energy loss when 4x4 capability isn't needed – improving fuel efficiency. The rear-axle disconnect seamlessly switches between two- and four-wheel drive for full-time torque management and does not require input from the driver.

### **Jeep Active Drive I**

Available on the Cherokee Sport, Latitude and Limited models, Jeep Active Drive I features a single power transfer unit (PTU) which is fully automatic and delivers seamless operation in and out of four-wheel drive at any speed. The system does not require any driver intervention or feedback, delivers yaw correction during dynamic events and improves both understeer and oversteer conditions. Jeep Active Drive I offers balanced torque distribution with brake traction control. The four-wheel-drive performance results from a fully variable wet clutch housed in the rear drive module. The clutch supplies the proper amount of torque for any driving condition, including slippery conditions, aggressive starts and dynamic driving. Sophisticated algorithms enable the system to contribute to the driving dynamics while interacting with the electronic stability control (ESC) system when approaching the traction limits of the road surface.

### **Jeep Active Drive II**

Available on the Cherokee Sport, Latitude and Limited models, Jeep Active Drive II includes a two-speed PTU with torque management and low range. 4-Low mode locks the front and rear drive shafts for low speed power or towing. Low range provides a 2.92:1 gear reduction. The gear reduction allows for enhanced climbing ability as well as outstanding crawl ratios for severe off-road conditions. The 2014 Jeep Cherokee with Jeep Active Drive II gives the off-road adventurer a crawl ratio of 56:1 when powered by the 2.4-liter MultiAir2 Tigershark I-4 engine, and 47.8:1 when powered by the new 3.2-liter Pentastar V-6 engine, which is as much as a 90-percent improvement versus the outgoing Liberty. Jeep Active Drive II works in conjunction with the Selec-Terrain system to aggressively modify the torque distribution while monitoring the engine transmission and ESC system, providing power to the wheels that will deliver the most traction.

### **Jeep Active Drive Lock**

Jeep Active Drive Lock includes all the features of Jeep Active Drive II and adds a locking rear differential for superior low-speed power for rock crawling or severe off-road conditions. The locking rear differential is selectable in any low-range terrain mode, but will lock automatically when in certain modes, such as "Rock," to maximize tractive effort, which the tire patch can support. Jeep Active Drive Lock is standard on all Trailhawk models.

All 4x4 systems feature the Jeep brand's Selec-Terrain traction control system. Selec-Terrain allows the driver, with a push of a button on the Selec-Terrain dial, to choose the on- and off-road setting for optimum performance. Up to five customized settings are offered: Auto, Snow, Sport, Sand/Mud and Rock.

Selec-Terrain is designed to optimize the four-wheel-drive systems for unsurpassed control and capability. Selec-Terrain electronically coordinates and optimizes up to 12 systems on any terrain providing enhanced vehicle control, including: drivetrain control module, electronic brake controller, ESC, transmission controller, powertrain controller and Selec-Speed Control (Hill-ascent and Hill-descent Control).

## **Auto**

- Standard Drive mode
- Standard electronic brake controls
- Automatically detects need for four-wheel-drive engagement
- Front/rear torque split is fully active and variable depending on the driving conditions

## **Sport**

- For enhanced on-road driver control
- Traction control is limited
- ESC slip thresholds are raised
- Driveline torque bias for improved cornering
- Allows for a target front/rear torque split of up to 40/60 percent

## **Snow**

- Second gear launch
- For use in inclement weather
- Slick surface electronic brake controls
- Full-time four-wheel drive
- Allows for a target front/rear torque split of up to 60/40 percent

## **Sand/Mud**

- For enhanced driver control in off-road conditions
- Off-road electronic brake controls
- Full-time four-wheel drive
- Allows for a front/rear torque split of up to 100 percent rear

## **Rock** (available with Jeep Active Drive Lock)

- For use on obstacles
- Off-road electronic brake controls with increased brake lock differential capacity
- Available in 4-Low only
- Allows for a front/rear torque split of up to 100 percent rear

In addition, the ESC system will change mode in coordination with the Selec-Terrain mode chosen:

- ESC remains full on with Auto and Snow modes
- ESC is off when in 4-Low
- ESC is in Partial mode for Sport, and Sand/Mud modes
  - Partial mode means aid from traction control and stability control are reduced, but anti-lock braking system (ABS) and electronic roll mitigation remain fully enabled

In 4-Low, the Selec-Terrain system shifts front and rear axles to a 2.92:1 gear set for increased torque and control off-road.

When in neutral, the 2014 Jeep Cherokee equipped with Jeep Active Drive II disconnects the driveline for flat towing behind another vehicle, such as a recreational vehicle (RV).

The all-new 2014 Jeep Cherokee offers a new, segment-exclusive, important capability feature – Selec-Speed Control. Selec-Speed Control features both Hill-descent Control and Hill-ascent Control, allowing the Cherokee to climb and descend steep grades with minimal driver input. The ESC system controls engine torque and brake pressure to maintain target speed while driving off-road on uphill, level and downhill surfaces and over obstacles. The feature enables the driver to focus on steering while navigating technical off-road terrain. Selec-Speed Control is activated by a dedicated button on the Selec-Terrain switch. The driver-selectable target speed, ranging from 1 to 5 miles per hour, can be adjusted by using the +/- shifter input. Selec-Speed Control is only available in 4-Low.

## **Trail Rated**

The all-new 2014 Jeep Cherokee Trailhawk model with the standard off-road package is Trail Rated. The “Trail Rated” badge on the Jeep Cherokee Trailhawk indicates that the vehicle is designed to perform in a variety of challenging off-road conditions identified by five key consumer-oriented performance categories: traction, ground clearance, maneuverability, articulation and water fording.

The Jeep Cherokee Trailhawk boasts an approach angle of 29.8 degrees, a departure angle of 32.1 degrees and breakover angle of 23.3 degrees. Running ground clearance is 8.7 inches.

The Jeep Cherokee delivers best-in-class V-6 towing capability of 4,500 pounds.

## **Segment-first nine-speed transmission, world-class engines**

The all-new 2014 Jeep Cherokee is the first mid-size SUV to feature a standard nine-speed automatic transmission, the first ever featured in a production vehicle, the 948TE transmission.

“We are witnessing a milestone with the introduction of Chrysler Group’s first all-new nine-speed transmission which debuts in the 2014 Jeep Cherokee,” said Mircea Gradu, Vice President and Head of Transmission, Powertrain and Driveline Engineering. “Its wide 9.81 ratio spread generates greater efficiency, elevates refinement and enables the

kind of capability Jeep customers demand."

Cherokee's nine-speed transmission delivers numerous benefits customers will appreciate, including aggressive launches, smooth power delivery at highway speeds and improved fuel efficiency versus a six-speed automatic transmission.

The new transmission's gear ratios afford the right response at the right time, from aggressive launches to smooth power delivery at highway speeds, a product of smaller ratio steps between the gears. The ratios are:

<b>1st</b> – 4.71	<b>6th</b> – 0.81
<b>2nd</b> – 2.84	<b>7th</b> – 0.70
<b>3rd</b> – 1.91	<b>8th</b> – 0.58
<b>4th</b> – 1.38	<b>9th</b> – 0.48
<b>5th</b> – 1.00	

The Jeep Cherokee's all-new nine-speed transmission provides a more responsive driving experience with quicker acceleration and smoother shifting. The wide ratio spread delivers an aggressive first gear ratio of 4.71 for low-end performance and small gear ratio steps which provide smooth transitions for gear-to-gear while offering a unique set of four overdrive ratios to benefit highway fuel economy and reduce overall noise, vibration and harshness (NVH) levels.

Flexible enough to accommodate the Jeep Cherokee engine's full range of torques, the all-new gearbox delivers not only the durability customers expect but a ride quality near luxury car levels complements of the precise shift schedules.

The all-new, fully electronic nine-speed automatic features on-the-fly shift map changing, with Auto Stick manual shifting capability via Electronic Range Select. More than 40 individual shift maps for specific conditions optimize shift quality and shift points maximizing fuel economy, performance and drivability. To determine the appropriate shift mode, the sophisticated software takes into account variables, including engine torque gradients, kick-down events, longitudinal and lateral acceleration and grade changes. For improved driving comfort and refinement, additional parameters integrated into the transmission control strategy include: temperature, speed and electronic stability control. The result is automatic shifting ideally attuned to the performance requirements of almost any driving demand.

The automatic transmission increased vehicle fuel economy through the ratio spread and mechanical efficiency by operating at lower engine revolutions per minute (rpm) in both city and highway environments. The addition of more gear ratios also helps reduce the perceived speed changes normally associated with upshifting and downshifting.

Gear changes are nearly imperceptible due to the evenly spaced gear steps between each gear ratio. Internally the transmission has four gear sets and six shift elements – multi-disc clutches, dog clutches and brakes. Only three 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.

The all-new nine-speed transmission's shift schedule also contributes to an anticipated city-cycle fuel-economy boost of up to 2 mpg, compared with a conventional six-speed automatic transmission, when mated with the new 3.2-liter Pentastar V-6.

But a Jeep isn't a Jeep unless it delivers superior off-road performance. So the new standard-equipment nine-speed gearbox helps demonstrate that the new Jeep Cherokee definitely belongs in the storied brand's lineup. The tall 4.71:1 first gear ratio, when coupled to the 4.08:1 final drive in the 2.4-liter MultiAir 2 Tigershark engine and the 3.52:1 final drive ratio in the 3.2-liter Pentastar V-6 engine contribute to the class-leading off-road crawl ratio capability when paired with Jeep Active Drive II.

#### **Pentastar pedigree**

The new dual overhead-cam 3.2-liter Pentastar V-6 engine makes its debut in the 2014 Jeep Cherokee. It is the first derivative of the celebrated 3.6-liter Pentastar V-6 named one of Ward's 10 Best Engines three years running – producing 271 horsepower and 239 lb.-ft. of torque and fuel economy improvements of up to 30 percent compared

with the model it replaces.

“Chrysler Group’s Pentastar V-6 engines are the epitome of efficient design,” said Bob Lee, Vice President and Head of Engine and Electrified Propulsion Engineering. “The all-new Jeep Cherokee will benefit greatly from the 3.2-liter Pentastar’s power and refinement – compelling attributes that complement efficiencies gained from design elements such as an integrated exhaust manifold, high compression ratio pistons and variable-displacement oil pump.”

The available new 3.2-liter Pentastar V-6 engine benefits from the same innovations that earned its larger displacement predecessor industry-wide acclaim for efficiency, power and refinement. For the driver, that means a refined driving experience with reduced NVH and an exceptional balance of higher specific power output (84.2 horsepower per liter) while delivering EPA fuel economy ratings of 19 mpg city, 28 mpg highway and 22 mpg combined for 4x2 models.

Individual exhaust-manifold runners are integrated into the aluminum cylinder-head casting, a key Pentastar-family differentiator. This feature not only reduces weight and produces packaging benefits; it also increases manufacturing efficiency.

The 24-valve engine’s 10.7:1 compression ratio aids in lowering fuel consumption and improves performance while the variable-displacement oil pump further reduces parasitic losses to maximize fuel economy. The pump is programmed to operate as needed, staying in low pressure mode at rpms below 3,500, and then bumping up pressure as demand follows engine-speed.

The benefits of the E85-compatible 3.2-liter extend beyond the Jeep Cherokee’s engine compartment to the environment. A unique paper cartridge replaces a conventional spin-on oil filter. Squeeze the oil from the cartridge and it can be incinerated.

To further reduce its environmental impact and reduce the cost of ownership, the 3.2-liter Pentastar V-6 engine uses organic acid technology (OAT) coolant, which provides superior corrosion resistance compared with conventional antifreeze and lasts up to 10 years or 150,000 miles.

The new V-6 engine features a centrifugal oil separator that reduces oil consumption and operating costs while precious-metal spark plugs offer a service life of 100,000 miles without degradation before replacement.

The new 3.2-liter Pentastar V-6 carries over all the design features that make smooth power delivery one of the most captivating traits of the 3.6-liter engine.

A 60-degree, deep-skirt, die-cast-aluminum cylinder block with six-bolt main caps afford optimal stiffness for mitigation of NVH. Also contributing to NVH reduction are:

- a structural windage tray to complement block stiffness
- a structural aluminum oil pan
- direct-mounted alternator and A/C compressor that increases stiffness
- select-fit pistons with polymer-graphite-coated piston skirts
- “silent chain” timing drive with inverted teeth for minimal sprocket contact
- contoured composite cylinder-head covers
- glass-reinforced nylon composite intake manifold

Further enhancing the driving experience is the specially designed intake manifold, which also features low-rumble tuning.

The Jeep Cherokee’s V-6 engine boasts forged-steel connecting rods and piston-squirter jets, and its cam drive and valve-train components require no scheduled maintenance.

The new 3.2-liter Pentastar V-6 engine was subjected to 3.3 million customer-equivalent miles prior to production.

### **The Tigershark advantage**

Efficiency and refinement also are hallmarks of Chrysler Group’s 16-valve, 2.4-liter Tigershark MultiAir 2 I-4 engine, which comes standard in the all-new 2014 Jeep Cherokee. The 2.4-liter Tigershark engine delivers an EPA highway

fuel economy rating of 31 mpg for 4x2 models, a more than 45-percent improvement versus the outgoing model. The 2.4-liter MultiAir 2 Tigershark I-4 engine produces 184 horsepower and 171 lb.-ft. of torque.

The acclaimed electro-hydraulic fully variable valve-lift system uses a column of oil in place of the traditional mechanical link between the camshaft and intake valves. As a result, it delivers precise control of the intake-valve events – beginning and end – delivering reductions in engine-pumping losses and increases in volumetric efficiency.

In addition to reducing carbon-dioxide emissions, MultiAir accounts for a fuel-economy boost of up to 7.5 percent, compared with engines with conventional valve trains.

Refinement was a key consideration in the design of every Tigershark feature, from its fully isolated aluminum head cover with integrated oil-separation system, to its high-pressure, die-cast aluminum block.

Sandwiched between the block and the steel oil pan is a lightweight, lost-foam aluminum ladder frame with integral oil filter and oil cooler adapter. This lends additional structural rigidity. The oil pan itself benefits from refinement. Acoustic material is sandwiched between its outer and inner stampings.

Friction mitigation also contributes to reduced NVH, with the added benefit of enhancing durability. The Tigershark's polymer-coated piston skirts accommodate tighter piston-to-bore tolerances. Cast-aluminum pistons with a compression ratio of 10:1 are designed specifically for the engine and MultiAir system. Each bore is fitted with individual piston oil-squirters in the block that spray oil on the bottom of the pistons and bore walls to maintain cylinder-wall and piston temperatures. This feature also helps prevent hot spots that could lead to knock and improve performance and fuel economy.

Fitted to the forged-steel crankshaft are new powder-forged-steel connecting rods that feature a full-floating piston pin with diamond-like carbon coating. This further reduces friction and improves fuel efficiency.

Vibration is minimized with the use of a balance shaft module. And to maintain adequate oiling at all engine speeds, the 2.4-liter Tigershark features a two-stage oil-pressure relief system that reduces engine-oil pumping loads at low engine speeds for better fuel efficiency.

Other key features of the 2.4-liter I-4 include:

- 360-degree engine-to-transmission attachment
- Coil-on-plug ignition with dual precious-metal spark plugs
- Front-end accessory drive with automatic tensioning single-belt drive

Similar to the Pentastar, the Tigershark delivers reduced operating costs because its cam drive, cam-phasing and valve-train components require no scheduled maintenance. Its spark plugs have a service life of 100,000 miles and the engine's corrosion-inhibiting coolant is expected to last 150,000 miles or 10 years of normal use.

### **World-class architecture**

FIAT Group architecture is the basis for the underpinnings of the all-new 2014 Jeep Cherokee. The Compact U.S. Wide (CUS-wide) platform's proven modular architecture means many models can be built using the same basic underpinnings. The result is better quality and reliability, as well as lower costs, less development time and tooling. The architecture Cherokee is built on is comprised of common, modular and interchangeable components and allows for modularity of the wheelbase, front track, rear track, front overhang, length and width across vehicle lines.

The 2014 Jeep Cherokee's body structure has a high-strength steel content of roughly 65 percent. Hot stamped-, high-strength- and ultra-high-strength steel are used to construct a strong, lightweight, solid vehicle architecture.

### **Superior on-road performance**

The 2014 Jeep Cherokee premium on-road manners are a result of a number of efforts by Jeep engineers. The front independent suspension with MacPherson struts provides 6.7 inches of travel while the rear independent multi-link suspension provides up to 7.8 inches of travel for better articulation. The isolated rear cradle, aluminum front cross member and superior torsional rigidity deliver customers a quieter, smoother ride with improved handling characteristics.

The electronic power steering system (EPS) improves fuel efficiency and contributes to the Jeep Cherokee's

nimbleness with a turn circle radius of approximately 36 feet in 4x2 models, approximately 38 feet in 4x4 models and roughly 39 feet for the Trailhawk model.

With EPS all of the power assist is provided via an electric motor system rather than a traditional hydraulic system. Because the system is fully electronic, the driver experiences optimal steering effort at all vehicle speeds, and there is less noise and better fuel efficiency since there is no parasitic loss from a power steering pump.

The boost, or assist, is variable and speed sensitive, responding to sensors monitoring steering torque, steering wheel speed and angle and vehicle speed. The steering system is fully integrated with the vehicle's ESC system and helps to compensate in split-traction, torque steer and pull-drift (crowned road) situations.

The Cherokee's 17- or 18-inch tires and wheels offer drivers confident traction in snow and wet conditions.

Drivers and passengers will enjoy conversations when traveling in the all-new Cherokee, complements of premium NVH insulation.

Fuel economy in the 2014 Jeep Cherokee improves more than 45 percent when compared with the outgoing Jeep Liberty. The Cherokee's rear-axle disconnect seamlessly switches between two- and four-wheel drive for full-time torque management, resulting in reduced energy loss when 4x4 capability isn't needed, improving fuel efficiency without sacrificing capability in all weather conditions.

The all-new 2014 Jeep Cherokee offers outstanding heating and cooling performance including heat up, cool down and defrost, as well as quiet performance.

Engineers used Computational Fluid Dynamics to deliver just the right amount of airflow through the ductwork. A variable displacement compressor continually matches the requested cooling load, which keeps the system stable and helps it operate quietly and efficiently. The central unit doors of the system are electronic; there are no cables, so drivers and passengers experience a more consistent feel when the system is on.

The air outlets are adjusted with rack-and-pinion vane adjusters, which make them both feel pleasant to the touch and give a consistent feel when they're repositioned in a different direction. Models equipped with automatic temperature control also include a humidity sensor, which creates an automatic de-fog capability.

#### **Customer-focused vehicle development**

The all-new 2014 Jeep Cherokee was developed and engineered to exceed expectations for customer satisfaction, quality and reliability. Engineers used Design for Six Sigma (DFSS) to ensure the voice of the customer was captured during the vehicle development process. DFSS folds in voice of the customer data along with lessons learned to ensure every vehicle is of the highest quality possible.

The all-new 2014 Jeep Cherokee is the no-compromise solution for the adventurous customer who wants legendary Jeep capability without sacrificing fuel economy or a premium on-road driving experience.

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