

# 2012 Jeep® Wrangler Engineering

## Engineered for the Toughest Trails and a Comfortable Daily Drive

- **Jeep® Wrangler continues tradition of unmatched capability with advanced 4x4 systems and addition of the Pentastar V-6 engine and five-speed automatic transmission**
- **2012 Jeep Wrangler features optimal ride and sound characteristics for quieter cabin**
- **Standard electronic stability control, Trailer-sway Control, electronic roll mitigation, brake traction control system and Hill-start Assist**
- **Wrangler maintains a fully boxed frame, live axles front and rear, locking differentials and a disconnecting front sway-bar to continue as the most capable production off-road vehicle on the market**
- **A superbly engineered five-link suspension system and wheel placement delivers unsurpassed capability**

Along with a new powertrain, Jeep® engineers have thoroughly optimized ride and sound characteristics of the 2012 Wrangler's body-on-frame design. New motor and transmission adaptation and revised suspension calibrations contribute to overall improvements that are immediately evident both on- and off-road.

"The 2012 Jeep Wrangler is more than simply replacing the engine," said Scott Kunselman, Senior Vice President — Engineering, Chrysler Group LLC. "We've taken an already capable vehicle and made improvements to ensure that we remain true to 70 years of off-road excellence, while the on-road dynamics, power and sound quality will delight and surprise all Wrangler owners with dramatic improvements."

### **Sound Quality and Refinement**

The interior sound quality is greatly improved through refinements in the powertrain mounting system, noise damping in the firewall and the inclusion of the first Wrangler engine cover to effectively isolate the cabin from noises emulating from the engine and road surfaces.

On the outside, engine noise is barely perceptible at idle. With Chrysler Group's new 3.6-liter Pentastar V-6, all accessories are mounted directly to the engine with no accessory brackets. This helps ensure that all accessories, including the power steering pump, alternator and air conditioning compressor, are anchored firmly and less susceptible to vibration and noise.

## **Braking System and Electronic Stability Control**

Four-wheel disc brakes with anti-lock are standard on all Jeep Wrangler models. As part of Jeep's commitment to safety, electronic stability control (ESC) also is standard. Designed to work with the anti-lock brake system (ABS), the system includes sensors at all four wheels that are continually monitored, independently, for wheel slip, particularly on low friction surfaces including snow, ice, mud and wet pavement conditions. If wheel slip is detected, brakes are applied to ensure that wheel slip is reduced and the vehicle remains on its intended path.

Both the ABS and ESC have been specifically calibrated for both on- and off-road conditions. Additionally, the ESC system features three modes – “full on,” “full off” and “partial on.” This allows the driver to disconnect the system through a dash-mounted switch when wheel slippage occurs, and the ability to “rock” the vehicle in deep snow or mud is desired.

Wrangler offers a number of standard features under the ESC umbrella. Electronic roll mitigation uses sensors located at the center of the vehicle to measure yaw and apply brakes when needed. Trailer-sway Control reduces trailer sway and improves handling in adverse towing conditions caused by crosswinds and traffic. Hill-start Assist helps drivers when starting a vehicle from a stop on a hill by maintaining the level of brake pressure applied for a short period of time after a driver's foot is removed from the brake pedal. And the Brake Traction Control System reduces driving wheels from spinning during acceleration from a stop or during slow speeds by applying individual brakes to the slipping wheel(s).

All Jeep Wrangler models are equipped with standard power assist braking systems. Front brakes for all models include 11.9-inch x 1.1-inch vented rotors and cast iron, 2.6-inch single piston, floating calipers. Total swept brake area is 234.3 inches.

At the rear, solid rotors measuring 12.4 inch x .47 inch with cast iron, floating calipers fitted with 1.9-inch single piston are standard. Total swept brake area for the rear is 202.6 inches. The parking brake is a drum-in-hat design.

## **Chassis and Suspension**

The body-on-frame design is bolstered by 10 body mounts on Jeep Wrangler and 12 on Wrangler Unlimited. The fully boxed frame features high strength steel in all critical areas and hydroformed sections of the front rails ensure a strong foundation for the front suspension load and crushable front rail tips. Rails are spaced to enable placement of the fuel tank between the rails, providing excellent impact integrity. Seven boxed cross members are used on Wrangler, while Wrangler Unlimited, with a longer wheelbase, has eight cross-sectional rails.

For off-road protection of critical components, including the fuel tank, transfer case and automatic transmission oil pan, Wrangler and Wrangler Unlimited are equipped with three skid plates/bars. Rubicon models include heavy gauge tubular steel rock rails to minimize potential body damage on severe off-road trails.

Jeep Wrangler continues with its proven five-link coil suspension configuration. Wrangler's front suspension includes a lateral control arm and four trailing control arms. Constructed of forged steel, the full width track bars provide lateral location of the axle with minimal angle change during suspension travel. Spring rates have been tailored to provide a comfortable ride when driving around town.

The five-link suspension at the rear also includes two upper and two lower forged steel control arms for longitudinal control and a track bar for lateral axle control. To help facilitate the central location of the fuel tank, control arms are located outside of the frame rails. To provide consistent damping at all loads levels, rear shocks are splayed – angled inboard, at the top.

Shocks have been retuned for 2012 and are designed for optimum balance between advanced on-road handling and rugged off-road capability. All models are equipped with high pressure monotube shocks and include Low Speed Tunable (LST) valve technology. At low speed suspension motions, LST provides firm control. As speed increases, valve stiffness decreases preventing an overly stiff ride.

An electronic front sway bar disconnect is featured on Jeep Wrangler Rubicon models to help provide additional wheel travel in difficult terrain conditions.

Able to tackle the steepest grades and deepest ruts, approach angle for Wrangler is up to 44.6 degrees (44.4 Unlimited), breakover angle is 25.5 degrees (20.9 Unlimited) and departure angle is up to 40.6 degrees (40.7 Unlimited) depending on tire size. Ground clearance of the front axle is 9.1 to 10.5 inches depending on tire size. At the rear, axle-to-ground clearance is 8.8 to 10.2 inches.

### **Steering**

Equipped with a robust, two-link, cross-car steering linkage system, the Jeep Wrangler's recirculating ball steering provides one of the stiffest possible steering linkages in a solid-axle vehicle. Precise on-center feel and steering efforts are tuned specifically for both on- and off-road driving conditions.

Steering knuckles are located outboard into the wheel envelopes and help reduce scrub radius. With the reduced scrub radius, steering stability under braking conditions is enhanced and steering wheel inputs, including bump steer from uneven road surfaces, is reduced.

Curb-to-curb turning circle diameter for Jeep Wrangler is a tight 34.9 feet. Jeep Wrangler Unlimited, with a longer wheelbase, requires a turning diameter of 41.2 feet.

Power assist steering is standard on both models and with a 16.7:1 steering ratio. Lock-to-lock for the steering wheel is accomplished in 3.5 turns.

