

2006 Fusion Chassis

FUSION DELIVERS AGILE, NIMBLE HANDLING AND BALANCED DRIVING DYNAMICS

- Based on Ford's solid CD3 architecture
- Independent front and rear suspension
- Standard 16-inch wheels and tires, available 17-inch package

Fusion is designed to be a born-to-drive mid-size sedan – with acceleration, braking, handling and ride traditionally associated with pricier segments.

"Fusion does what you want it to do," says Kerry Baldori, Fusion vehicle engineering manager. "It's light and nimble, with responsive steering, yet it always feels planted."

To make Fusion fun, responsive and responsible to drive, Ford engineers utilized some important tools:

- Ford's all-new CD3 architecture was chosen as the base
- Aggressive targets were set for every key attribute, including braking, wind noise, NVH and climate control
- Computer-aided engineering was used to test every phase of the design to ensure tight body-shell tolerances and class-leading torsional rigidity

STIFF CHASSIS DELIVERS BETTER RIDE AND HANDLING

With the help of extensive computerized "digital" development, it is anticipated that the Fusion will have class-leading torsional rigidity – a measure of vehicle stiffness. In fact, Fusion has 12.7 percent higher torsional stiffness than its already solid base architecture, without adding weight – and despite the fact that Fusion is 30 millimeter (1.18 inches) wider and 55 millimeter (2.17 inches) longer.

A stiff structure allows the suspension to absorb more of the harshness of daily driving before it can reach the passenger compartment. A rigid chassis also delivers distinct handling benefits.

HARMONIOUS BRAKING AND STEERING

Fusion's precise ride, handling, steering and braking all were developed to be in mutual harmony and balance. For example, braking prowess was a key target – but equally important to shorter stopping distance was a feeling of assurance to the driver that the braking action is controlled and predictable.

To get the right combination of low brake dust, low noise and firm, repeatable stops, engineers increased the thickness and diameter of the brake rotors. Engineers selected 299 x 25-millimeter ventilated front rotors and 279 x 10-millimeter solid rear rotors. The calipers also were engineered to very tight tolerances to help assure that initial pedal travel is short and that the brakes feel firm when applied.

Taking advantage of the car's stiff structure, Fusion employs a rack-and-pinion steering system, with its gear mounted to the front perimeter sub-frame for reduced noise and vibration. That allows the

driver to better experience the car's relationship to the pavement via the steering wheel – no matter if it's a power-assisted parking maneuver or a high-speed lane-change action.

"The car does what you want it to do, and it goes where you want it to go," says Baldori. "Everything is in harmony. Everything flows. Fusion is a very rewarding car to drive."

NIMBLE, COMPOSED RIDE AND HANDLING

Keeping the Fusion's tires firmly planted is a fully independent front and rear suspension, which is a key enabler for confident handling.

Fusion employs a multi-link independent rear suspension that works like a double-wishbone setup by limiting lateral forces on the springs for more composure. It also keeps suspension movement at a lower plane relative to the trunk floor, eliminating the need for large shock towers that reduce trunk cargo space.

In the front, Fusion uses an advanced short- and long-arm (SLA) design, with a double ball-joint lower control arm and coil-over-shock suspension. Compared to the more common MacPherson strut, the Fusion system puts the effective kingpin axis farther outboard. This contributes to a reduced scrub radius and helps to isolate the steering system from undesirable feedback.

Rebound springs in the front shocks help reduce harshness at the extremes of wheel travel, while helping decrease vehicle pitch under acceleration and reducing roll during cornering. Like the rear, the design helps maintain a more constant camber angle – meaning less understeer and better tire contact with the road, even while cornering at higher speeds. Stabilizer bars (24 millimeter in front, 16 millimeter in the rear of Duratec 23 I-4 models, 17 millimeter in the rear of Duratec 30 V-6 models) further help to reduce body roll.

Another factor aiding in the car's exceptional driving dynamics is the base 16-inch wheels with 60-series tires, and optional 17-inch wheels and low-profile 50-series tires. Both tires are tuned for comfort and grip. Despite their size, they also have relatively low rolling resistance to help deliver good fuel economy.

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