

# 2008 F-Series Super Duty Chassis

## **ALL-NEW 2008 SUPER DUTY CHASSIS PROVIDES INCREASED STRENGTH AND DURABILITY WITH IMPROVED RIDE AND HANDLING**

- The 2008 Super Duty rides on a refined, stronger chassis.
- Every Super Duty frame is now e-coated for improved corrosion protection
- All new rear leaf spring suspension design for the F250, F-350 and F-450 pickup improves ride and handling without compromising capability
- Class-exclusive patented engine-torque traction control system is more precise than competitors brake-based systems
- Patented hydroformed steel front structure creates a strong foundation for engine compartment components. Modular construction eases assembly and delivers a more dimensionally accurate truck

The 2008 Super Duty's tough truck capability starts with a solid foundation. From the F-250 pickup, F-350 pickup, F-450 pickup, right up to the F-450 and F-550 chassis cab, each chassis is custom-tailored to provide the utmost in strength, flexibility and durability.

Every Super Duty frame is E-coated for improved corrosion protection. The new, fully boxed front section has been optimized to meet the government's standards for vehicle compatibility without the need for an added blocker beam. The unique front frame horn design lowers the frame by seven inches, improving vehicle cooling and providing a solid footing for the hydroformed body structure.

Robust, 6.7 mm steel outer rails (8.1 mm on the chassis cabs) utilize cross members that have been modified to help with powertrain noise isolation. Super Duty's cross members are riveted and welded for added strength.

"Some trucks have welded cross members and some have riveted cross members," said Bruce Arnold, Chassis Systems Integrator. "Only Super Duty has both."

Reinforcements have been added to several areas for increased cargo and towing capacity. Massive 27mm enclosed tow hooks, "the strongest tow hooks in the industry," are designed to support one-and-a-half times the trucks gross vehicle weight – up to 33,000 pounds.

### **Proven front suspensions are tweaked for added capability**

Super Duty combines a proven front suspension with an all-new rear leaf-spring suspension to deliver a more refined and confident ride without compromising on capability.

All F-250 and 350 4x4 pickups utilize a moonbeam, coil-spring front suspension geometry that provides better steering feel and response and enables class-leading braking. The 4x4 suspension enables a dramatically reduced turning circle and the front radius arms act as "anti-wind-up" bars improving traction and reducing wheel hop under hard acceleration.

The proven twin I-beam front suspension remains the choice for all 4x2 F-250 and F-350 models. Front bushings were stiffened and the front stabilizer bars were redesigned with new links for improved ride and handling. Front Gross Vehicle Weight Rating (FGAWR) has been increased from 4,800 to 5,250 pounds. A new steering damper reduces vibration for a confident feel.

"We actually have a new process in how the steering gear goes together," said Dan Gompper, vehicle dynamics supervisor, "to help with isolation."

The F-450 utilizes the more-capable, wide-frame monobeam front suspension from the F-450

chassis cab and features a large 35 mm front stabilizer bar, new for 2008. The large, square axle tubes not only look strong, but are also design to deliver improved towing performance and capability.

“These are some really tough, impressive looking axles,” said Gompper. “They add to the performance and the look of the F-450 pickup.”

### **New rear leaf spring suspension results in confident ride and handling under all load conditions**

All Super Duty pickups including the F-450 pickup, feature a new rear leaf-spring suspension design that provides the same high levels of capability with increased levels of refinement. The eight-inch longer springs attach farther forward on the frame and contribute to the confident feel of the vehicle.

The new design reduces power hop and brake hop and enables more “wind-up” stiffness with no degradation in ride. The suspension uses stiffer bushings all the way around with a redesigned rear linkage. As an added benefit, the rear suspension was specifically designed to keep the rear end lower to optimize the towing of taller gooseneck and fifth-wheel trailers.

“The longer leaf springs, stiffer bushings and position of the front attachment, give the vehicle more balance, more control,” said Gompper. “Super Duty’s road manners make it a pleasure to drive when towing for long distances.”

The redesigned leaf springs and stiffer bushings also help to improve front and rear roll control during cornering, keeping the suspension underneath the truck relative to the frame.

“By controlling that initial reaction, you reduce the chance that the body will build momentum sideways relative to the axle,” said Gompper. “The axle has grip, the body is stuck firmly to the axle and they both carve smoothly around the turn.”

The staggered rear shocks, feature new tuning across the board, and bolt to new upper and lower shock mounts. An improved ratio provides for a smoother ride. The F-450 pickup has its own unique tuning designed specifically to compliment the truck’s increased towing capacity. Diesel trucks have a new boost curve on the diesel power steering gear to improve parking efforts.

Gompper’s team set high targets for gain linearity. As a vehicle is driven into a corner, the steering wheel will send feedback to the driver. Gain linearity is the measurement of how the steering communicates to the driver from the initial turn of the wheel until the vehicle exits the corner.

“Good gain linearity delivers a smooth transition, keeping the driver in complete control,” said Gompper. “With all the Super Duty pickups including the F-450, we’ve managed to combine light steering efforts and good response linearity. That contributes to the confidence you get, especially when towing a heavy trailer.”

### **Patented engine-torque traction control delivers precision handling**

The 2008 Super Duty is the only vehicle in its class to utilize a sophisticated type of patented engine torque traction control that's optional on all models. While most competitors use brakes to manage torque, Super Duty’s state-of-the-art diesel uses engine torque to manage wheel spin. Super Duty’s system computes wheel speed from the differential and reduces torque to match the best traction to the wheels for that terrain. The system works in 4x2 only and offers the option of shutting it off when it’s not needed

“Engine torque traction control is much more precise than brake-controlled traction control,” said Gompper, “because it drives you to the best friction point for tires to surface.”

## **Hydroformed front structure builds strength and accuracy**

The Super Duty is the first truck in the industry to use a high-strength steel front body structure. The patented structure not only serves to create a very rigid and strong foundation, the systems modular construction eases assembly and delivers a more dimensionally accurate truck, increasing quality and providing a more precise fit and finish.

The front structure, made up of two side rails that are welded to the bulkhead and frame. The front-end module, housing the cooling system, bolts to the front of the rails to form a rigid, solid structure. The fenders bolt firmly to the modular structure that also houses the rest of the front end and under hood components, such as headlamp assemblies, battery, air box and fluid reservoirs for the windshield washers and cooling system.

All the framing is done at one station in the body shop. The rails are loaded with the dash panel and body side and securely welded to the dash panel and A-pillar for added strength, providing both a dimensionally accurate and exceptionally strong structure.

What's most impressive is that the body engineering team had to create a new set of development procedures, as they had nothing in the industry to benchmark. Much of the initial development work was done in the computer using a computer-aided drafting (CAD) program, producing some very tough prototypes.

“We got a letter from the guys at the Arizona Proving Ground, commending us on the design of the truck,” said Dragan Stojkovic., body structures engineer “They were impressed, because they couldn't break it.”