



Steering the Aftermarket in a New Direction

Dorman's all-new EPS rack and programming tool give power back to the repair shop.

The Ford F-150 is a hard-working vehicle that many owners count on daily for work. They simply can't afford to be without their vehicles for an extended repair, especially for something like a power steering failure. But when the steering rack on these models has problems, owners have had few choices but to replace it with an expensive new part from the dealer.

The power steering rack on F-150s from 2009 onward isn't a traditional hydraulically assisted steering assembly. In fact, there's no power steering fluid at all. Instead it uses an electric motor integrated into the steering mechanism to provide the needed assistance at the wheel. By combining mechanical components with electronic controls, this mechatronic steering system improves the overall efficiency of the engine since it's not continuously pumping hydraulic fluid even when the vehicle is moving straight ahead.



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Dave Stricker, ASE Certified Technician –
Godshall's Auto Service, Hatfield, PA

Electric power steering first came to market in the 1990s on a number of specialty vehicles, but the F-150 was one of the first high-volume, full-size vehicles to take advantage of this technology. It's no surprise that weaknesses in its original design would eventually start to show up on this workhorse vehicle.

In the case of the electric steering rack, moisture and debris can pass through the shaft seals causing the circuit board to fail. Debris that accumulates on the drive assembly can also lead to excess load on the drive motor, causing warning lights for high effort. When this happens, the system reverts to unassisted manual steering, something most drivers aren't prepared to deal with on a daily basis, especially when hauling a load.



AFTERMARKET CASE STUDY

Remanufactured versions of these failed original equipment racks offer a lower-cost alternative to new dealership parts, but a shortage of cores means an unreliable supply of reman racks.

"We've already replaced several of this type of rack on F-150s, and we've had to get new dealer parts for every one of them," says Dave Stricker, a technician at Godshall's Auto Service in Hatfield, Pennsylvania. "There just aren't enough cores in the system to worry about trying to source a reman unit."



Given the high demand and low supply, Dorman chose to invest in an all-new steering rack assembly to ensure ample availability.

"Committing to a new part also meant we could introduce some engineering improvements to address the known shortcomings in the original equipment design," said Dorman Innovation Product Manager Nate Bailey. "We figured, why not reduce the chance of future failure while we have the chance?"

Dorman's engineers determined the root cause of most failures was water and debris getting into the rack assembly and causing electrical issues on the circuit board, or built-up debris on the drive motor creating excess resistance in the system.

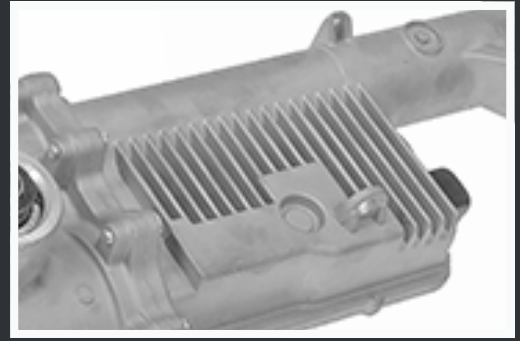
To address these problems, we redesigned the shaft seals to significantly reduce the amount of debris and moisture that can enter the rack, and they designed a more robust circuit board with a protective coating to prevent electrical failures.

The redesigned Dorman OE FIX electric power steering rack also addresses one particular point of contention for many technicians: setting up the replacement rack to the vehicle.

Ordinarily, an installer would have to take the vehicle to a dealership to calibrate the replacement rack or set it up with an expensive aftermarket diagnostic tool. Dorman designed an exclusive plug-and-play programming module to accompany the new rack. The installer simply plugs the programmer into the vehicle's OBD port and follows the instructions to ensure the rack is properly adapted to the vehicle. "This one-step programming module will be a life-saver for most techs," Godshall's Dave Stricker said.

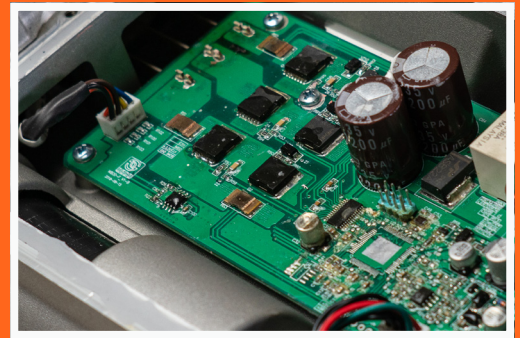
With improvements to the factory design, greater availability, and added convenience that eliminates OE programming costs, the new Dorman OE FIX EPS racks give shops the power to properly and easily repair their customers' vehicles.

ELECTRIC POWER STEERING



Problem:

The original equipment power steering rack fails when the circuit board and drive assembly become contaminated by moisture and debris, and dealership replacements require expensive programming.



Dorman's redesigned, brand new power steering rack incorporates improved seals to prevent future contamination, and includes a free programming tool.

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