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BY MIKE MCGLOTHLIN ■ PHOTOS: MIKE MCGLOTHLIN

Bullet Proof Diesel's FICM is a power supply side upgrade (the power supply half of the FICM is what fails 99.9 percent of the time) that bolts to the logic board half of your existing FICM. Units start at $495.95 for 48-volt versions, and $695.95 for six-phase versions (which is what we tested). FICMs are available in anodized black or blue, and either a four-pin or seven-pin configuration.

BULLETPROOF 6.0L FICM

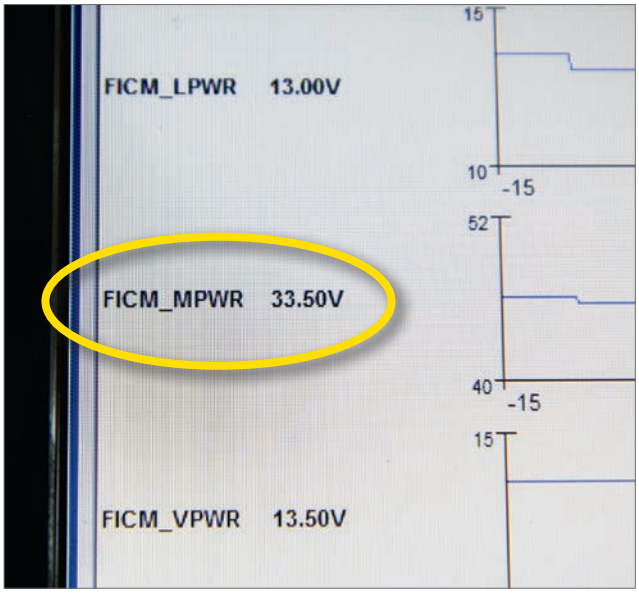
THE LAST INJECTOR MODULE YOU'LL EVER NEED

The onset of fall and winter usually ushers in a host of cold-weather problems for 6.0L Power Stroke owners. One well-documented issue that's often masked during warmer months but surfaces when cooler weather arrives, is fuel injection control module (FICM) failure. The FICM is in charge of sending the precise, 48-volt pulse that each injector solenoid needs in order to fire its respective injector, and when one goes south, the voltage sent to fire the injectors drops. This causes hard starts, poor cold-engine idling, lack of performance, and a decrease in fuel economy. Weak or dying batteries, as well as the 6G alternators found on '03 to '07 Super Dutys, are to blame for most FICM failures.

Going a step beyond the external causes of FICM failure, the folks at Bullet Proof Diesel took a closer look at the unit's internal weak points and came up with a host of improvements. First, the power supply

Randall's Performance sourced us a 6.0L Power Stroke with an ailing FICM: this '03 Ford Excursion. To show just how detrimental a dying FICM can be to overall performance, the guys at Randall's strapped it to their SuperFlow chassis dyno for some before and after horsepower numbers.

side of the FICM was completely redesigned and fitted with an upgraded circuit board that features much better heat transfer capability. High-quality, military-grade electrical components replace the factory, failure-prone pieces. A billet, anodized-aluminum case with added fins is utilized to better dissipate heat. To further increase durability, Bullet Proof also created the six-phase FICM, which offers two extra phases over its standard four-phase unit. The extra phases share the workload, so the circuits are never overworked. Read on to see our experience with one of the company's six-phase FICMs.



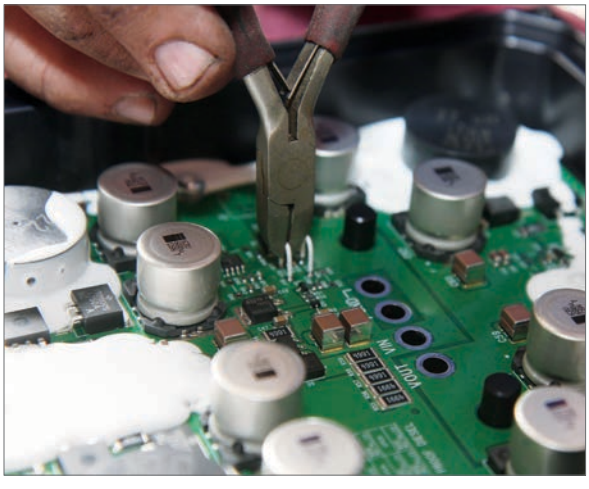
While the Excursion was hooked up to Ford's Integrated Diagnostic System (IDS), Randall's logged FICM voltage to show us exactly what was going on. At key-on and idle, we were seeing 40 to 41 volts where we should've seen 47 to 48 volts, and once under load on the chassis dyno, voltage fell to 33.5 volts (circled).

In order to access the FICM, the degas bottle was unbolted and moved up just enough to clear the mounting bracket. After the four bolts that secure the FICM were removed, it was unplugged from the FICM harness and ready for dissection.

Looking at the build date (February 16, 2003), this was the original FICM the Excursion came with. Surprisingly, it had lasted 198,000 miles, which is about double the lifespan of most of the factory FICMs we've seen. After more than 10 years of use, it had definitely earned its keep, but it was time for a new unit.

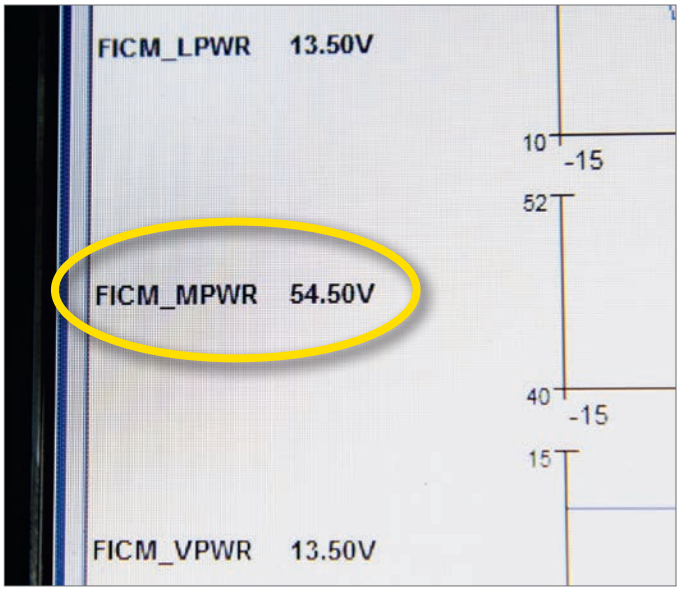
Using a T20 and T10 Torx bit, the inspection cover, four pan head screws, and all eight perimeter screws that hold the FICM halves together were removed. From there, the factory FICM halves were carefully pried apart.

The first thing you notice with the Bullet Proof Diesel FICM is the redesigned circuit board (shown). When compared to the OE unit, it takes up the entire space within the power supply half of the FICM—not just the top portion.

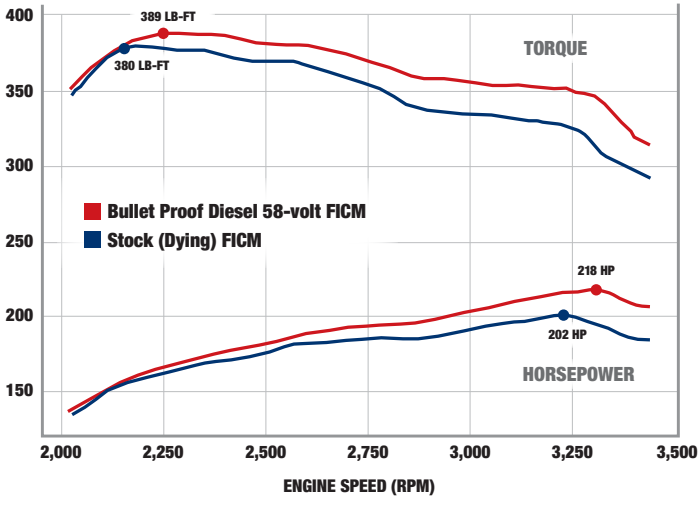


Bullet Proof Diesel's six-phase FICM is unique in that you can choose whether or not you want it to have a 48-volt, 53-volt, or 58-volt output to the injectors. The FICM comes preset at 48 volts, so nothing is required if you choose to stick with a 48-volt unit. However, considering higher-voltage FICMs have been known to increase throttle response, overall performance, and, in many cases, fuel economy, we opted for the 58-volt option. Following the voltage selection chart printed on the circuit board, we clipped the appropriate wire. (Note: Cutting the other wire would've effectively made the FICM a 53-volt module.)

With the factory perimeter gasket retained, the Bullet Proof Diesel power supply was fastened to the old logic board. After that, the entire unit was installed and the Excursion fired right up.



Immediately, we saw 54.5 volts present during key-on, cranking, and idling (circle). It's important to note that a typical scan tool (or even IDS, in this case) might not show FICM voltage accurately. The best way to check for correct voltage is to check the FICM with a volt meter, which we did (and it showed 58 volts). FICM voltage held steady under load as well, and we picked up a noticeable amount of horsepower on the dyno.



In these two overlaid dyno graphs, you can see that a dying FICM definitely leaves horsepower on the table. In the '03 Excursion's case, the fresh, 58-volt FICM picked up 16 hp and 9 lb-ft of peak torque. Also notice that considerably more horsepower is being made throughout the engine's rpm range now, and that the torque curve holds out longer. In addition to the added power, the Excursion benefits from quicker startups and better throttle response.

Sources

Bullet Proof Diesel
(888) 967-6653 • www.bulletproofdiesel.com

Randall's Performance
(309) 627-2500 • www.randallsperf.com