When Ford introduced the 6.0L version of the Power Stroke back in 2003, Ford diesel enthusiasts were ecstatic that Ford had upgraded its diesel offering, which had many more advanced features and more power.

And the changeover came in the nick of time with Dodge and Cummins entering the diesel wars along with GM and their new Duramax. Ford’s reliable and sturdy 7.3 liter Power Stroke was well behind the completion at the time, so Navistar developed its replacement, the 6.0 Power Stroke featuring more sophistication and emissions upgrades such as the variable-vane turbo. Critics were quick to point out that Navistar rushed the 6.0-liter to market under mounting pressure from Ford and over time, the design weaknesses of 6.0L Power Stroke began to surface.

Topping the list was the repetitive failure of the EGR cooler. Since most trucks were under warranty when the EGR cooler failed, the fix was to take the truck back to the dealer where the same style EGR cooler was installed. Unfortunately, for 6.0L owners, that wouldn’t be their only trip back to the dealer for the same problem. And when the warranty ran out, those trips got REALLY expensive. Ironically, many diesel shops have and continue to thrive on the 6.0L Power Stroke repair business.

According to the folks at Bullet Proof Diesel, one of the industry’s foremost experts on the 6.0L Power Stroke, the EGR cooler failures were symptomatic of a much larger problem and replacing the cooler with another factory one only prolonged the agony and owner frustration. According to Bullet Proof Diesel, which is a division of Neil Technologies, the real culprit behind

Bullet Proofing the 6.0L Ford Power Stroke

The truth about EGR and oil cooler failures

BY RON KNOCH
PHOTOGRAPHY BY JOE DANIELS AND COURTESY OF BULLET PROOF DIESEL

When introduced in 2003, Ford’s 6.0L Power Stroke was deemed more advanced than the 7.3L version. But the powerplant has been plagued with problems including failures of both the EGR cooler and oil cooler along with head gasket issues.
On 6.0L Power Strokes, the question is not if the EGR cooler is going to fail, but when. Take a look at the gunk build up inside this EGR cooler. Not much flow going on here.

Located at the front of the block, just under the intake manifold, the water to oil intercooler sits in an oil-filled recess in the valley of the motor, and supposedly is used to cool the truck’s hot oil by circulating coolant through the cooler. Unfortunately, the sandwich style design of the cooler features tiny water passages which eventually get clogged with debris from the cooling system.

The EGR cooler is located slightly to the left and downstream of the oil cooler and receives its coolant from the output side of the oil cooler. When the coolant flow in the oil cooler is reduced, temps inside the EGR cooler go up, way up. So high, enough to cause a failure of the cooler itself, which allows hot exhaust gases to bubble into the cooling system. Bullet Proof Diesel has a great symptom diagnosis on their website (bulletproofdiesel.com) so we borrowed it to help you understand the symptoms of a bad EGR cooler.

(continued)
How To Tell If the EGR Cooler is Bad

• Symptom 1: The unexplained loss of coolant from your degas (overflow) bottle or cooling system. This can easily be explained when you have a bad EGR cooler - the EGR cooler is simply leaking the coolant back into the exhaust system, not outside of the engine. Most people make an expensive mistake of ignoring this warning sign. They assume that since they cannot find or see the leak, it must not actually be a leak. The longer they ignore it, the more coolant that leaks out of the engine and quickly creates warning sign number two.

• Symptom 2: All that white smoke coming out of the tailpipe is actually steam. As the coolant is dumped into the exhaust system, it quickly vaporizes and turns from liquid to steam and comes out of the exhaust.

• Symptom 3: That “puking” of coolant out of your degas bottle is actually not a sign, necessarily, of a bad EGR cooler. It’s more likely a sign that your engine oil cooler is plugged and is restricting the flow of coolant getting to your EGR cooler.

The EGR cooler is not getting enough coolant flowing through, so the coolant that is inside it quickly begins to boil. When the coolant boils, it creates high-pressure steam pockets which billow out through your degas bottle, pushing and forcing coolant out of the lid. The EGR cooler should be replaced in this instance because it’s already been overheated and stressed, and is very likely to fail in the near future.

Engine Oil Cooler Issues

As we said earlier, according Bullet Proof Diesel, the root of many of the 6.0L problems can be traced to a poor oil cooler design. Among the common issues on 6.0L Power Strokes are EGR cooler failures, high engine oil temperatures and overheating, injector failure, turbo failure, high-pressure oil pump failure and blown head gaskets. And, according to Bullet Proof Diesel, nearly all of these problems are related to the stock engine oil cooler.

According to the Bullet Proof Diesel website, the problem with the stock engine oil cooler stems from reduced coolant flows through the tight passages of the engine oil cooler.

(continued)
These pathways are so small; they catch and stop any large particles suspended in the coolant, blocking the coolant channel and consequently the coolant flow. While the mileage varies, it typically takes about 50,000 miles before the coolant can no longer flow through the cooler on its way to the EGR cooler, according to Bullet Proof Diesel, leaving less and less coolant flow to keep the engine oil cool and dramatically reduced coolant flow to the EGR cooler.

A plugged engine oil cooler can lead to a ruptured EGR cooler, overheated engine oil, overheated fuel injectors, loss of coolant, ruptured engine oil cooler and blown

A cutaway of the factory cooler shows how tiny the factory oil and coolant passages are. Bullet Proof Diesel asserts when these coolant passages plug up with debris, it leads to EGR failures and eventual failure of the oil cooler, not to mention bigger problems down the road.

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head gaskets, they add. Replacing the Ford engine oil cooler with another Ford engine oil cooler is the usual fix, but all that does is put off the problem for another 50,000 miles.

**Solutions to Both Problems**
The above-described problems are all common to the 6.0L Power Stroke, so the issue is not if your oil cooler and EGR cooler are going to fail, but when. Countless owners have replaced their EGR coolers two, three or more times in the first 100,000 miles, and have installed at least one oil cooler in the truck.

Bullet Proof Diesel has designed solutions to address both problems. The first is their own tubular-designed EGR cooler. Instead of using an internal radiator-style fin design, Bullet Proof Diesel uses a tubular setup inside the EGR cooler than is stronger and less prone to cracking. In fact, Bullet Proof Diesel is so confident their street-legal EGR cooler is superior to the factory part; they offer a lifetime warranty on it. The unit is a direct replacement so it bolts in place of the stock part.

**Remote Oil Cooler**
Since we now know the root of many problems is the factory oil cooler, replacing that cooler with a remote-style cooler is the long-term fix. Bullet Proof Engine Diesel says their oil cooler kit offers more effective engine oil cooling, which translates into improved cooling of the EGR cooler, leading to increased EGR cooler longevity. They also say the remote setup reduces engine oil temperatures.

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BULLET PROOFING THE 6.0L FORD POWER STROKE

BY RON KNOCH

The Bullet Proof Engine Oil Cooler kit utilizes a larger, remote-mount oil filter setup, for better oil filtration, and is offered with an optional oil-bypass filtration kit as well for even more filters. Cooler, better-filtered oil for the injectors and high pressure oil pump increases their longevity and performance as well. The setup also eliminates engine oil in your coolant by way of a ruptured engine oil cooler. For those folks in colder climates, the Bullet Proof Oil Cooler Kit can also be ordered with an in-line thermostat for quicker engine warm up.

Installation
Ok, now that you know what the problems are, how do you fix them? Both the EGR cooler and factory oil cooler are located on the same neighborhood, in the valley of the engine under the intake manifold. That’s the good news.

The bad news is you have to basically take off the whole top of the engine to get at them. That’s why Bullet Proof Diesel recommends if you’re going to do the labor for the EGR cooler replacement, you might as well fix the oil cooler while you’ve got the motor torn down. You have the option of replacing it with a new factory unit or upgrading to the Bullet Proof Diesel oil cooler kit. Since the R&R process can be fairly complicated, Bullet Proof has a list of professional installer on their website so you know the job gets done right.

Problem #3: Torque to Yield Cylinder Head Bolts
And while you’re at it since the 6.0’s were plagued with head gasket issues as well, and while the top of the motor is disassembled, you might want to consider replacing the head gaskets and ditch the factory “torque to yield” head bolts. They have a tendency to stretch under higher than stock boost pressures. Hardened head studs are the way to go here since they offer more even and substantial clamping power.

If you own a 6.0L Power Stroke, you’re all too familiar with some of its issues and have probably sent it to the dealer a few times for warranty work.

Now that the repairs are coming out of your pockets, and you better understand the issues, contact your local diesel shop. A qualified diesel shop can be found near you on www.DIESELMotorsports.US in their “Shop Locator” on the right side of the front page.

Ron Knoch is the president of the National Association of Diesel Motorsports, which sanctions diesel motorsports events throughout the United States. He is also the president of Diesel Motorsports Company (from October 2007 to present).

Author’s Note: