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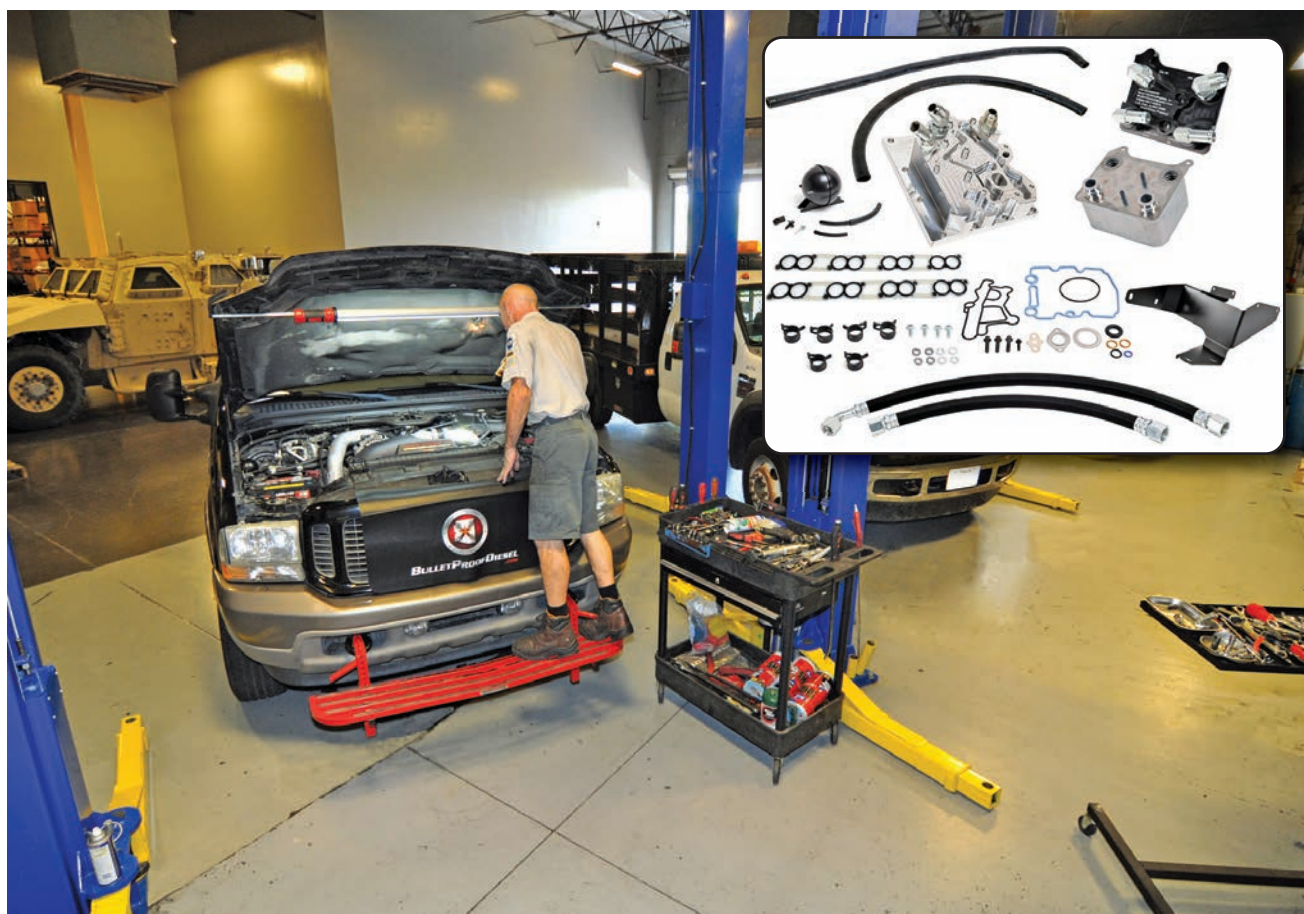
Bullet Proof Diesel's Remote Mount 6.0L Power Stroke Oil Cooler

BY ADAM BLATTENBERG

Over the last decade or so Bullet Proof Diesel in Mesa, Arizona, has become famous with making the unfortunately infamous 6.0L Power Stroke reliable again. The 6.0L was plagued with multiple issues from the word "go." One of these problems is with the engine's oil cooler. It's a stacked plate heat exchanger design that uses engine coolant to also cool the engine's oil. The coolant and oil run through multiple separate passageways that are extremely narrow and close together. It really does do a good job of keeping the oil cool, when clean. Unfortunately, due to left over sand from the casting process, excess gasket material and supplemental coolant additives among other contaminants found suspended within the cooling system, the oil cooler can clog fairly often. This will cause raised oil temperatures and reduced coolant flow to the EGR cooler which will eventually result in damage to the EGR cooler, injectors and more.

While the oil cooler is not an overly expensive part, changing it is extremely time consuming. It can be a multiple-day job. So Bullet Proof Diesel came up with yet another 6.0-liter fix and engineered a kit that would allow for the factory oil cooler to be mounted remotely, making servicing it a quick 30-45 minute job. The factory oil cooler will still function exactly as the manufacturer intended it to; it will just be mounted in an easily accessible location. The kit consists of an engine oil transfer block that

mounts in the valley of the engine where the oil cooler originally lived. This block is billet machined from high quality aluminum and takes the supply and return of oil and coolant and reroutes it to the new oil cooler location, which is near the passenger side battery. It's an impressive kit with very high-end parts. The install took roughly two days, and once done, it looked almost factory under the hood. **DW**





1 Here's a cutaway of a clogged factory 6.0L Power Stroke oil cooler. Here you can see the oil and coolant galleries stacked on top of each other. The narrow rows that are visibly clogged with orange material are for coolant, and the slightly wider rows are for oil. When a cooler clogs like this one, it becomes less efficient and can lead to EGR cooler issues and eventually injector problems.



2 A multitude of things need to be removed to access the oil cooler. The first thing Bullet Proof Diesel Technician Delwin Wamsley did was remove the grille to protect it from scratches. Wamsley then started draining the coolant, removed both inter-cooler tubes, air intake, Degas bottle, alternator and the FICM (still installed in this photo).



3 Mounted directly atop the oil cooler is the oil filter and fuel pressure regulator. This assembly needs to be removed to access the oil cooler but will also get in the way during turbo removal.



4 In just a few minutes, Wamsley had our Stage-2 turbo from KC Turbo out of the truck.



5 Next to come off the engine were the intake, turbo pedestal and EGR cooler. The intake was then taken to a local shop for sonic cleaning to rid the inside of any soot and oil build up. Just a smart extra step Bullet Proof Diesel takes to remove restriction in the intake and prevent contaminants from entering the cylinders after start up.



6 This is the factory oil cooler assembly. Most of it will be replaced with new Bullet Proof Diesel parts. The black tube is what the oil filter surrounds.



7 After removing the oil cooler assembly, Wamsley spent some time cleaning the engine valley until it was "surgically clean." The rags are there to make sure nothing accidentally falls into the engine intake. If that were to happen, the head—or heads—would most likely have to be removed.



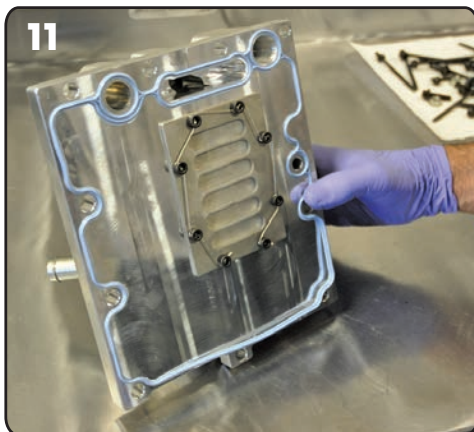
8 The oil cooler assembly comes apart in multiple pieces.



9 Here's the factory oil cooler found bolted to the bottom of the assembly.



10 Next Wamsley readied the new Bullet Proof Diesel engine oil transfer block for installation by bolting the factory oil filter assembly to it using some of the factory bolts and a few replacement ones provided by Bullet Proof. He also installed all new gaskets and swapped any sensors over.



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11 & 12 The new Bullet Proof block simply reroutes the oil and coolant to another location where the oil cooler sits. Used coolant and cooled oil then returns back to the factory Ford locations it did prior to the install. Cooled oil drops down below the unit through the HPOP filtration screen seen here. It's much more robust than the factory screen which is prone to failure. Photo 12 shows our clogged factory screen next to a new factory screen. Ours was pretty bad.



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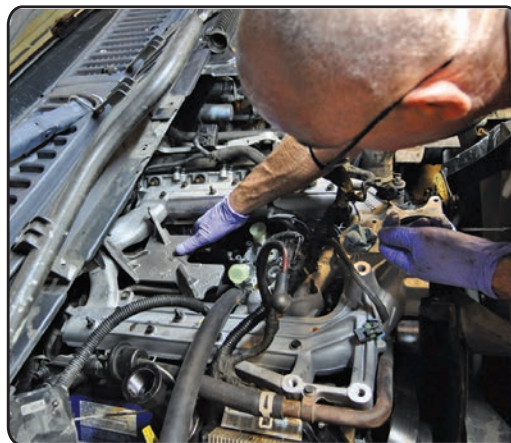
13 The new unit was then bolted back into the factory position in the engine valley.



14 Our EGR cooler had no issues (that we knew of) but in the interest of preventative maintenance, and because, well, we were at Bullet Proof Diesel (the inventors of the famous upgraded tube-style EGR coolers) we replaced ours with a Bullet Proof EGR Cooler.



15 The factory unit (NOT pictured here) is a tube-and-shell heat exchanger design. The passageways are very narrow and can fail easily sending coolant into the cylinders. If it leaks bad enough, it can bend a rod or worse. Bullet Proof Diesel's EGR cooler (seen here) uses 6 welded stainless steel tubes jacketed with coolant to lower EGT's into the intake. It's a much, much stronger unit.



16 With the Bullet Proof Diesel EGR Cooler in place, the intake and turbo pedestal were installed. Notice the attention to detail BPD takes; Del Wamsley even sand blasted the pedestal and hit it with a good coat of WD-40 to prevent any rust.



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17 & 18 Before reinstalling the turbo, Wamsley hooked up a coolant line that would be inaccessible after the turbo was in. He then installed the turbo and began running the remaining three out of four lines from the Bullet Proof oil transfer block to where the other end of the kit, the factory oil cooler and Bullet Proof Relocation Plate assembly would be mounted.



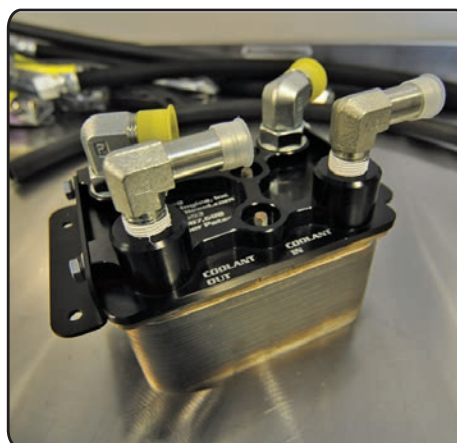
19 The new location for the oil cooler will be behind the passenger side battery. Removing the battery is step one of this half of the install.



20 After removing the battery, battery tray, and factory vacuum canister, Wamsley bolted this bracket that the new oil cooler assembly would mount to. It's rubber mounted to eliminate any noise transferred from the engine to the cab.



21 Wamsley then began to mount a new factory Ford oil cooler to the Bullet Proof Relocation Plate using new O-ring gaskets with a bit of assembly lube to aide in installation and to ensure they seal correctly.



22 Installed and ready to be bolted into its final resting place behind the passenger battery, the black relocation plate is made by Bullet Proof Diesel and simply takes a supply of coolant and oil, sending both through the Ford cooler and then back to the engine just like the factory intended.



23 The assembly then bolts onto the previously installed bracket using four bolts, two per side. All are easily accessible for future service as that's the point of this kit: to make servicing the oil cooler much easier than before.



24 Previously, the factory vacuum canister was removed to make room for the oil cooler's new home. It is replaced with this vacuum canister supplied by Bullet Proof Diesel. While it's substantially smaller, it did not affect any vacuum powered accessories at all.



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25 & 26 Next step: Wamsley ran all four lines (oil feed, oil return, coolant feed, and coolant return) across the engine to the new oil cooler assembly. The oil fittings were snugly tightened and aligned; then the jam nut was tightened to ensure a good leak-free seal. Coolant lines connect via push-on hoses and a pair of spring clamps just like Ford uses.



27 After reinstalling the intercooler tubes and few remaining factory parts Wamsley filled the engine with some fresh oil and coolant.

Note: You will need slightly more of both fluids as each system is now a quart or so larger due to the new lines from the cooler to the engine. The motor was then started and checked for leaks. None were found, so we took the truck out for a quick test drive.



28 After 20 miles or so in 108-degree weather, we stopped to check the engine oil and coolant temperatures with our ScanGauge 2. Both were perfect, indicating the system is doing its job correctly. Not that we expected anything less...

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