Curing Supercharger Leaks

There are two seals on a common centrifugal supercharger: the input shaft seal (behind the drive pulley) and the impeller shaft seal (aka the high-speed seal). Specifically, Vortech uses a face seal OEM on the impeller shaft, and we use a twin-lip seal.

As you know, they both eventually fail. The seals are a consumable service item, and they all will wear out.

However: *be sure that the seal is the real problem, and not just a symptom of a different problem.*

Suggestion: Attach a boost pressure gauge to your crankcase temporarily *under load* and see how much crankcase pressure you are building. You might find the underlying cause for why your impeller shaft seals are weeping.

The Vortech supercharger (except the V3 model) receives oil from the engine at about 60 to 80 psi while the engine is running. Yet the drain is by gravity only. Further, the oil in the supercharger is now entrained with air making it even more sluggish and difficult to drain. If the crankcase has pressure, the oil in the supercharger cannot drain, the supercharger case builds pressure, and the seals will leak.

Some tips:
1) Be sure that your oil drain out of the supercharger is in the 6:00 (straight down) position
2) be sure that the oil drain is at least 3/4" in diameter. Nothing smaller.
3) be sure that the PCV system has been modified since the supercharger was installed, and is not pressurizing the crankcase with boost.
4) be sure that you don't have a scratched cylinder wall - one bad cylinder can build more boost in the crankcase than you can possibly evacuate. An ordinary compression test is all you need to check this. If you do find a low cylinder, then run a cylinder leak-down test on that cylinder to determine if it is going past the rings.

Both the face seal and the twin-lip seal require that the impeller shaft be flawless or the seal cannot seal against it. Sometimes I have to tell a customer that their impeller shaft is so worn at the seal surface that they must get a new shaft from Vortech. It happens.

Here's a story: in a case where the supercharger was weeping oil, and we had replaced the seals and the customer reported it was *still* weeping oil; we asked the customer to run this experiment. With the car on jack stands, he removed the drain hose from the nipple they had installed in the top of his oil pan. We had him attach a boost gauge to that nipple in the oil pan, and aim the supercharger drain hose at a bucket on the floor.

Then he ran the motor and revved the engine a few times. Not really a full-load test, but good enough for this test. He reported that the oil streamed out of the drain hose from the supercharger into the drain pan nicely, but the crankcase pressure climbed to more than 2 psi just over 3000 rpm. Under load, this would be much higher. He learned that his crankcase was pressurizing and that his supercharger could drain, if the crankcase would let it.

His search for a cause found him to a "vacuum line" from the PCV system (it *was* a vacuum line when the car was NA, now it's a pressurized line) that was still hooked up, and manifold pressure was being routed to the crankcase and pressurizing it. Shunting that line lowered the crankcase pressure, he gained HP, and the oil seals stopped weeping. (PS: just because you installed a "kit" don't assume the kit developer took this into account. You have to check. If you don't remember modifying the PCV system when you installed your supercharger, assume it hasn't been done.)

There is more on this topic, but this should give you a clearer picture as to what other issues can make a supercharger seal weep or leak.

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