

TURBOCHARGERS



Ralph Seekins

I recently discussed turbochargers with a friend who was considering a new vehicle with a turbocharged engine. She was hesitant - having heard rumors both in support of and critical about these devices. Let's talk about it.

The simplest definition of a turbocharger I've heard is that it's a short rod with a fan on each end. One of the fans is spun around by the hot exhaust gases that are pushed out of the engine during the combustion process. That exhaust driven fan then spins the fan on the other end of the rod which blows extra air into the combustion process. More air going in means more fuel can be burned. Hence, the engine produces more power when it is needed. Many automobile manufacturers are producing turbocharged engines (Ford, GM and some other manufacturers have been producing turbocharger equipped engines for close to 30 years) with even more being introduced all the time. Using turbochargers allows manufacturers to produce smaller displacement engines that get

better fuel economy without sacrificing power. For example, the car I'm driving right now has what is called the ECOBOOST® engine - a twin turbocharged 6 cylinder power plant that has more head-snapping power than the 8 cylinder previously used in that size vehicle. Yet this great little engine gets nearly 30 miles per gallon cruising down the highway. FANTASTIC!

But one thing all turbocharged vehicle owners need to know is that this little device operates in one of the most hostile environments an internal combustion engine can produce. One fan is powered by extremely hot exhaust gasses. The other end, only an inch or so down the shaft, is pulling ice cold air into the engine. And, in order to make it work, the rod and fans are spinning at speeds somewhere near 20,000 revolutions per minute. If not properly lubricated or if it becomes imbalanced in any way, the whole thing comes apart inside the housing - a very expensive proposition.

Because of the operating environment, turbocharged engines require a high performance type of engine oil that can safely carry away the extreme heat created by the exhaust gases. Not just any engine oil will do the job properly. It absolutely must have the right properties and additives - additives that don't break down under extreme heat. And, on top of having the right engine oil, that

oil must be kept clean. Any coking on (from oil breakdown) or scratching of (by dirty oil) of the turbocharger bearings will result in bearing failure - sometimes melting the bearings in just a few minutes time. AGAIN: High quality clean motor oil is absolutely necessary in turbocharged engines.

Now, here's where I normally suggest you consult with your vehicle's operating manual to make sure you are using the right oil and changing oil and filter based on the manufacturer's recommended intervals. NOT HERE! Because of our extreme variances in operating temperatures and our hostile operating environment in Interior Alaska, I believe it is extremely dangerous to the longevity of the turbocharger to operate a turbocharged engine for more than 5,000 miles without an oil and filter change. My recommendation is to change every 3,000 miles or 90 days, whichever comes first. Think about that turbocharger - red hot at one end and ice cold on the other spinning millions of times between oil changes. Proper care and feeding of this little machine will help keep it happily spinning for years to come.

Good luck and good motoring.

Ralph Seekins has more than 40 years' experience in the automotive industry. He started as a mechanic, worked in sales, and for the past 32 years, has been the owner of Seekins Ford Lincoln Mercury.