Forced Performance 2004-2007 Subaru 2.5l Bulletin 12/1/07, UPDATE 9/1/08

Oil Starvation of Turbos on Subaru Vehicles: Why and How.

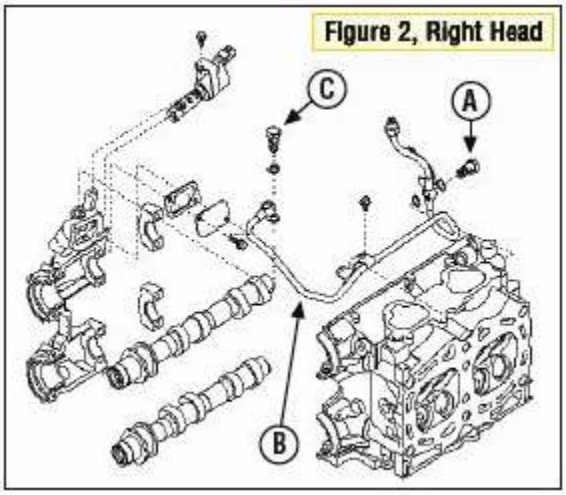
Mysterious “oil starvation” problems are a nightmare for power junkies with expensive turbochargers. The last thing anybody wants to hear from their turbo shop is “this thing is ruined; it looks like you don’t have any oil getting to your turbo”.

But as sure as you are that your engine runs fine and has perfect oil pressure, Mr. Turbo Shop Guy is even more certain that the turbo bearings burned up due to a lack of sufficient lubrication. What is the answer? How can both be correct? How can an engine that is running fine and has perfect oil pressure destroy a turbocharger due to oil starvation or lack of sufficient oil supply? Well, Subaru has figured it out, and has issued a series of Service Bulletins that explains how it happens and what to do about it.

Turns out that there is an oil filter screen built into the factory oil feed banjo bolt at the cylinder head, and Subaru wants it removed completely in order to avoid turbocharger oil starvation and failure. The Subaru Service Technicians (from dealerships) we interviewed on this subject reported recurring turbocharger failures even on completely stock 2.5 WRX, STi, Forrester and Baja vehicles due to this problem, prompting an Official Subaru Service Bulletin in October 2007. Material collected in these screens consisted of mainly gummy sludge and carbon with flakes of metal from various internal engine components. In one reported case in Alabama, even a low mileage 05 Baja which had all its regular 3k mile oil changes at the dealership experienced a stock turbocharger failure due to this oil filter becoming plugged with sludge.

This turbo screen is not to be confused with the screen that filters the oil for the AVCS valve which does not affect turbo oil supply since it is after the “tee” that splits off the oil supply line to the turbo. The AVCS filter can also become plugged and affect the performance of the AVCS solenoid, but luckily when the AVCS filter becomes clogged there is no catastrophic failure of a $1000+ component as in the case of the turbocharger filter, just a check engine light due to the non functioning AVCS.

The turbocharger filter can be seen in the diagram below, it is marked “A”



Most enthusiasts are not aware that they even have a turbo oil filter in their oil supply line; much less that it requires periodic cleaning with each oil change. The following text is from the Service Bulletin titled “Turbocharger Oil Supply Mesh Screen #02-103-07”;

“the mesh screen which is located inside the banjo bolt that secures the turbo-charger oil supply pipe to the back of the right side cylinder head should be checked to make sure it is not clogged or restricted especially if the condition of the oil is questionable or as to when the last oil change was performed. If clogged or restricted, it will reduce or cut off the oil supply to the turbo resulting in failure. The oil supply pipe should also be checked to make sure that there are no obstructions.”

The Bulletin goes on to point out that this is even more critical that this filter be checked frequently when the car is ***“used under severe driving conditions, such as moderate to hard acceleration and engine braking on a somewhat regular basis”.*** HA! Moderate to hard acceleration is the understatement of the century for all of the Subaru performance enthusiasts out there!

For some time we have been looking for the cause of these “random” unusual oil starvation failures in otherwise perfectly running vehicles that are usually very well maintained with high quality oils and service. We have finally found official Subaru documentation of this problem to support our observations that somehow, somewhere, turbo oil supply can get cut off or restricted within the oil supply system of the vehicle and destroy the turbocharger, and that this is a known and recognized problem by Subaru.

Forced Performance recommends REMOVING this “Turbocharger Oil Supply Mesh Screen” in all vehicles running our FPGreen and Red model turbochargers. The thrust bearing used in these turbochargers has very little tolerance for reduced or limited oil supply. In fact this bearing actually requires approximately TWICE the oil volume as a stock IHI turbocharger and can die a quick and sure death if fed its life giving oil through one of these restricted filters. It is also completely possible that a slightly restricted filter will

destroy your FPGreen model, but not destroy your stock turbo when installed back onto the car after the failure of the FPGreen, this is due to the fact that the factory turbochargers do not have the same high volume flow requirements of the FPGreen and Red Model Turbos and are therefore the stock turbo is less sensitive to partially restricted oil supply. This made diagnoses even more difficult since in some cases, stock turbos were installed after a failed FPGreen or Red model and an immediate failure of the stock turbo was not observed.

We also wish to point out that the picture of the banjo bolt and filter shown in the Service Bulletin appears to have the filter oriented BACKWARDS. To avoid confusion about which way to install the filter, simply eliminate the filter by picking it out of the banjo bolt and discarding it as soon as possible.

With this problem now fully documented and explained, we hope to reduce the number of customers who damage and destroy their turbos by lack of lubrication. At the very minimum we hope to advise those who care to listen how to avoid this problem. Subaru considers this problem a “warranty” problem when it affects the operation of the AVCS valve and stock turbo. We doubt that generosity will extend to replacing your expensive aftermarket turbocharger when it fails due to the same problem. It is every car owner’s responsibility to check and verify that his turbo filter is either removed (FPGreen or Red) or perfectly clean (all other turbos) at all times. Do not assume that since you had a “Professional Shop” or “Tuner” install your turbo that your filter has been removed or checked, most people do not even know that the filter exists! We have been looking for this problem for almost a year before finding documentation of it; documentation that has only existed since October 2007. Do not assume that since your FPGreen or Red has not failed that you are immune to this problem, you are not – remove your filter now.

At Forced Performance, we take turbos very seriously. We are constantly searching for ways to help our customers build successful project cars and avoid unknown pitfalls, problems and failures; and in this case that concern extends as deep as researching and resolving unusual problems like little known turbo oil supply mesh screens found in the oil supply system of your car.

So don’t kill your turbo, pull your filter.

To clarify – REMOVE THE FILTER SCREEN FROM ALL BANJO BOLTS.

Boost ON!
Robert Young
President – Forced Performance Inc.