

Carbon Build Up on 1995-1998 BMW V8 Converter Head Pipes

Over the past few months we have noticed a recurring problem with BMW V8 converters being returned for warranty due to the MIL or DTC light coming on. The problem in fact, is not the cat but the carbon build up on the head pipes.

We have conducted an independent laboratory test on many of the returns effected by this problem. We first tested the converter assembly with all the pipes attached. We got an efficiency average of 30% on all the assemblies.

We then cut the converter out of the system to test it without the carbon coated head pipes attached. What we found is a major efficiency change. Without the head pipes they averaged 85 % efficient.

From the information gathered from these tests we now know that the head pipes being coated in carbon adversely effect the emission reduction. The reason for this is, carbon stores oxygen and oxygen levels are a major factor in emission reduction. If there is too much oxygen in the system the vehicle's computer will believe it is running lean and will adjust the Air Fuel Ratio to add more fuel into the system. This will quickly ruin a cat and will also cause the MIL or DTC to come on because the post oxygen sensor reads that there is too much oxygen in the exhaust stream. This would also show in a smog test as the NOx levels being too high.

Major causes of excessive carbon buildup in the head pipe are:

1. Breather valve needs replacement. OEM # 11 617 501 563
2. Intake manifold O ring worn or not seated properly. It leaks oil into the cylinder which causes carbon buildup in the exhaust. The O ring leak also sucks cold air into the system which causes the pre and post O2 sensor to richen the mixture.
3. There is a problem with small cracks in the manifold, head pipes or intake plate at the throttle body. The small leak is not noticeable to the car owner and it sucks extra oxygen into the system. The front O2 reads more oxygen then it is suppose to which also gives too much oxygen in the rear O2. The computer on the car is being told that the car is running too lean and in turn richens the mixture into the engine, dumping excess fuel into the system and coating the system with carbon. This keeps the problem continuing.

We have found that a fuel injection cleaning service being run at idle, (the one we used was made by BG products) and being injected into a vacuum line will be able to burn off some of the excess carbon that has been built up on the exhaust walls. There is also an engine flush that will flush the carbon out of the cylinder heads. (Bilstein Engine Flush) After doing a carbon cleaning there was a major jump in the percentage of efficiency as well as a drop in the oxygen level with the problematic converter assemblies.

If excessive carbon is the problem, replacing the catalytic converter will cure the symptom not the cause. If the problem is not solved the carbon will build up again and cause the new catalytic converter to fail and illuminate the MIL. In other words, "Back to square One". The solution is to fix the problem the first time by finding the cause of the carbon build up and correcting it.