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I COULD'VE HAD A V8

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This guy was serious. And even though he was a first time customer, I could see he was very frustrated. *"The car idles rough and it sometimes feels like it has a miss. If you can't fix it, I'm getting rid of it!"*

The car in question was a 1995 740il with the V8 motor. From an outward appearance it was a pristine car. He was the original owner and had logged 65,000 miles over the past 6 years. The car appeared to have been cared for both cosmetically and mechanically. So how could the owner be so upset with the car?

Now, in all fairness, I must admit at the beginning of this article that having cut my teeth on BMW engines of the late 60's and early 70's, I have always been partial to the outright durability of the 4 and 6 cylinder engines. These well engineered, smooth revving Munich power plants, in one variety or another, have always been a major draw for myself and many others I know. So I was very skeptical when BMW dropped the venerable M30 in-line big six cylinder engine from the US product line in 1993 and replaced it with a V8. What on earth was BMW thinking discarding an engine that had evolved over decades and had proved itself time and again over the last 30 years? The answer of course was simple - market competition. BMW could never achieve the idle quality and smooth torque of a V8 with the older in-line 6 cylinder engines. With growing competition, BMW had to find the right engine befitting the new generation of luxury BMW's.

Admitting BMW was concerned about competition is something relatively new for me. I believed for decades that BMW's were built the way Munich wanted and if you didn't get it, you had no business owning one. But those days have changed, and the all-mighty market share demands fresh ideas and a broader focus. Don't get me wrong, this isn't a bad thing, it's just that there will be teething pains along the way. At least BMW hasn't stooped to dissuading new buyers by running sleazy TV comparison ads like other car companies. The proof is in the car and if you don't recognize it, don't buy it but don't give me some sales hype! But I digress...

So back to the guy with the 740. After several hours of testing and checks, I arrived at an all too familiar diagnosis. The engine block had damaged cylinder walls and was worn beyond the allowable tolerance. A resulting loss of compression in the affected cylinders was causing an imbalance and an excessively rough idle. This was impossible. The car company that was world renowned for its engine building had a real problem with its initial line of V8's. After almost 7 years since BMW first released the V8's, I look back and examine what went wrong and how you, as the consumer, can profit by BMW's good faith corrections.

For some of you, an article about the ill-fated original line of V8's might be old news. However, for others of you who own a 5,7, or 8 series car that is almost 6 years old, you might be interested to read on. If you are contemplating buying a second hand 530, 540, 740, or 840, you definitely want to read on.

In late 1993 BMW introduced 2 all aluminum V8 engines. One was a 3.0 liter engine designated as the M60 B30. This engine was only available in the 5 series sedan and touring cars. The other engine was a 4.0 liter designated as the M60 B40, available in the 5, 7 and 8 series. Both engines ran through the 1995 model year when the M60 B30 was dropped and the M60 B40 was upgraded to a 4.4 liter designated as the M62 B44.

Amidst all the rumors about why the V8 engines failed, there is only one true reason. These engine were susceptible to the higher sulfur content found in U.S. gasoline. This sulfur detrimentally affected the cylinder walls of the aluminum block. Although the blocks were cast with a high grade aluminum know as Nikasil (aluminum impregnated with nickel and silicone), the sulfur adversely reacted with the nickel content in the block. This "reaction" took place in the upper portion of the cylinder bores, blemishing the original cylinder wall machining pattern known as "crosshatch". Without adequate crosshatch, the piston rings would not remain sealed properly and compression would suffer.

Originally, while BMW was investigating the cause and correction of the ill fated V8, several different methods of repair were initiated. The first attempt was an e-prom reprogram to raise the operating temperature of the combustion chamber. In theory, the hotter burn would yield less residual sulfur and therefore lessen the problem. The benefits of this procedure proved to be negligible. The second attempt involved disassembly and repair of the engine by fitting new pistons and rings. After only a limited number of engine repairs, the idea was dismissed as not viable. The third attempted repair required short block replacement entirely. Unfortunately at that time, the real cause of the problem had not been completely diagnosed (as a means of keeping cars on the road). Short blocks were replaced with the identical type of Nikasil block. This is the reason you may see some cars that have had 2 and sometimes 3 replacement engines.

With its reputation tarnished, BMW made a decision to change its engine warranty for all V8 cars from the 4 year/50,000 mile limit to 6 years or 100,000 miles as a good faith gesture. By early 1997, the problem had been fully diagnosed and the solution was fairly simple, albeit expensive. All future V8's and all replacement short blocks were to be made from the same material used in the V12 engine. This high grade aluminum, called Alusil, is not susceptible to sulfur damage. For those of you whose V8 is a late delivery 95 and you think you have an excessively rough idle, time is running out because the dealer is the only one who can provide you with a free engine. Make an appointment with any dealer and have an idle quality check performed.

However, before running to the dealer with dreams of a new engine for free, it must be clearly understood that there are a host of other possibilities that could cause a rough idle on these V8's that your own mechanic can verify. It will not be accurate to test for a cylinder leak down problem if you have other engine problems that will mask the suspected cylinder wall problem. To name a few such V8 problems, the number one rough idle contributor is an un-metered air leak at the vacuum diaphragm plate on the back of the intake manifold. Intake manifold to cylinder head profile gaskets can also fail causing a vacuum leak. Injector misfire, valve carboning, low ignition coil output, an valve cover oil leaks into spark plug holes can all be possible idle quality issues. The point here is your engine must be in good otherwise condition before you can claim you need a new short block.

For those of you who are thinking of purchasing a previously owned 1995-1996 5, 6, or 8 series, it is imperative that you find out what kind of block is in the car. Just think, a 90,000 mile 95 540i might really only have 12,000 miles on the motor. Finding out what block is in the car is easy once you know what to look for. All M60 and M62 blocks have casting numbers on the right hand side of the block (passenger side) in front of the starter. It is easiest to put the car in the air but you can certainly crawl under the car with a flashlight. The casting numbers are actually the last 2 digits of the part number and are as follows:

Nikasil M60 B30 - 1 725 970 or 1 741 212
Nikasil M60 B40 - 1 725 963 or 1 742 998
Alusil M60 B30 - 1 745 871
Alusil M60 B40 - 1 745 872
Alusil M62 B44 - 1 745 873

Obviously, Alusil numbers are what you would like to see but it should also go without saying that not every Nikasil block is a bad one. I see some very healthy 100,000 plus mile Nikasil blocks running around. These casting numbers are also helpful to refer to if in the event you need any other internal repairs because for example, parts such as pistons and rings are different and not interchangeable between Nikasil and Alusil blocks.

As for the frustrated 740il owner, he is ecstatic. We took care of a host of engine problems and then assisted him in having his engine block replaced under warranty. Not bad when you consider by the time the car is ten years old, he will have less that 50,000 miles on the motor. The same thing could happen for you but if you miss out because you ignore these numbers, well, remember the old V8 juice commercial - just don't smack yourself in the forehead too hard.