


Dear Mr. Danielson

My name is [REDACTED]. I am a [REDACTED], and Ford Electronic Engine Control Specialist. About 3 years ago, I purchased a 2013 Hyundai Veloster Base 1.6L Non Turbo, for my wife to commute back and forth to work. From the first day I purchased it, every time it drove up even a Slight Incline the MIL Light came on. I checked for Trouble Codes with my Handheld Scanner, and would find a Code P0325: Knock Sensor Malfunction (Bank1, Sensor 1). Knowing what that Code means I decided to change the way it was driven, by downshifting the 6 Speed Manual Transmission to a lower gear when going up Inclines. I also switched to a Full Synthetic GDI Specific Motor Oil, instead of the Conventional which was Factory Recommended by Hyundai. The Veloster had 55,000 miles on it when I purchased it. Everything was "pretty good" after that for about the next 50,000 miles, with an occasional MIL Light coming on and setting a P0325 Code. A few weeks ago, I started to hear a Ticking Noise (Pinging) coming from the Engine while driving the Pinging became more rapid, and the MIL Light came on as I drove down an Incline. Suddenly Blue Smoke was pouring out the exhaust, and the Vehicle started bucking. Knowing what was happening, (Pre Ignition And Possible Catastrophic Engine Failure) I put it in Neutral and shut the Engine off. I coasted down the Incline, and turned into a Gas Station. There I checked the Oil Level, and all other Essential Engine Fluids. I found all the Fluids to be at their proper level, so I restarted the engine. Blue Smoke initially came from the tailpipe, but cleared up. The engine appeared to be okay, so I cleared the MIL Code P0325 and drove home. I have done Extensive Research on these GDI engines since then, and have switched to using Premium Fuel. The Engine stopped making the Pinging Noise, and the MIL Light has not come on. Even though the Engine has suffered some damage, (Burnt Pistons, And Particles Of Metal In The Oil) it can still be driven more Safely. I feel an Immediate Safety Notice needs to be sent to All Owners Of Any Vehicles with a GDI Engine. The Safety Notice Should State: All GDI Engine Vehicle Owners, Should Immediately Switch From The Factory Recommended Regular Fuel To Premium. Premium Fuel has a Higher Flash Point, (Igniting Temperature) because it contains a Higher Octane. Meaning the temperature in the Cylinder Head Combustion Chamber, is less likely to Ignite the Fuel Air Mixture causing Pre-Ignition. Pre-Ignition in most Engines, is normally caused by the Ignition Timing being too Far Advanced. In these Engines, it is caused by a Compression Ratio that is Much Higher than recommended for Regular Fuel. GDI Engines (Gas Direct Injection) directly injects Raw Fuel into the Cylinder Head Combustion Chamber, to mix with the Airflow from the Intake. This is done by a High Pressure Injector Pump, pumping fuel to the Injectors. The fuel sprays directly into the Combustion Chamber, causing the Low Octane Regular Fuel to Pre-Ignite while the Piston is in its Upward Travel in the Cylinder. All Combustion Engines are designed to Ignite the Fuel Air Mixture when the Piston reaches Top Dead Center, causing the Piston to be Forced Downward in the Cylinder. The

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Crankshaft then Rotates, and brings the next Piston in the Firing Order to TDC. The Spark Plug then Fires in that Cylinder, causing the Fuel Air Mixture to Ignite. That Piston is then Forced Down, and the Crankshaft Rotates to bring the next Piston in the Firing Order to TDC. Pre-Ignition without the Piston being at TDC, causes Excessive Pressure On The Pistons, Rods, And Crankshaft. Also when the PCM see's the Engine Misfire, it increases the Pulsation Signal to the Injectors, causing more Raw Fuel to enter the Combustion Chamber. The Raw Fuel collects on the top of the Pistons, causing the Engine to Hydrolock. This Causes The Type Of Problems We Are Seeing With All The GDI Engines! All of these GDI Engines need to be Recalled, And Replaced with Lower Compression Ported Fuel Injection Engines. Those type of Engines mix the Fuel And Air together in the Intake Runner, allowing the Fuel Air Mixture to enter the Combustion Chamber as a Gas instead of a Liquid. Liquids Can Not Be Compressed, Causing The Engine To "Lock Up" And Internal Engine Parts To Break! Hyundai has a Safety Recall: 19V-204, but all that does is Retard The Ignition Timing, (Reducing Engine Performance) and make the Engine go into "Limp Mode" (Restricting Engine RPM'S) when the Knock Sensor detects Pre-Ignition. The Dealership's will then Tell The Customer They Need To Buy A New Engine. These GDI Engines Are Not Safe For Anyone Driving A Vehicle Equipped With One Or Those Around Them. Using Premium Fuel Instead Of Regular Fuel Is Not A Permanent Fix For The GDI Engines, But It May Prolong The Life Of The Engine (Until They Are All Recalled) And Maybe Even Save Human Lives!

Thank you for your concern in this matter,

 Ford EEC Specialist