A Cylinder Head Gasket failure on your engine is very costly in down time and dollars to repair. This type of failure is extremely difficult to diagnose and pinpoint the true cause. Almost all Head Gasket failures are a RESULT of an engine system or vehicle problem. The gasket itself is not the root cause for loss of coolant or low compression in an engine.

In evaluating engine concerns there is very little that the engine manufacturer can do to cause a head gasket failure, if their manufacturing processes are under control. On the other hand, there is a myriad of possibilities related to vehicle systems and engine installation practices that will cause a head gasket failure. That aspect of diagnosis is what is addressed here. DAMAGE TO YOUR ENGINE FROM THE RESULTS OF OVERHEATING IS NOT COVERED UNDER THE LIMITED WARRANTY.

A failed head gasket is not one thing. Head gaskets fail in several different ways. Each failure type has its own symptoms depending on where the head gasket fails. There are other components of an engine that can exhibit the symptoms of a failed head gasket and some that will actually cause the head gasket to be compromised. Diagnosing the root cause of the problem requires experience and a logical approach.

For example:

• A restricted radiator can cause overheating which, if not addressed in a timely manner, will damage the head gasket seal.

• Intake and front cover gaskets can leak coolant externally or into the crankcase, mimicking the symptoms of a head gasket concern.

Head gaskets fail in various ways and cause different symptoms:

• External coolant loss – Failure between a coolant passage and the outside of the engine
• External oil loss – Failure between an oil passage and the outside of the engine
• Internal coolant loss into the oil – Failure between a coolant passage and the crankcase
• Internal coolant loss into a cylinder or compression into the cooling system – Failure between a coolant passage and a cylinder
• Loss of performance and misfire – Failure between two cylinders
• Excess crankcase pressure – Failure between a cylinder and the crankcase
• Internal oil loss, oil in the coolant – Failure between a pressurized oil passage and a coolant passage
An external oil leak from a head gasket is not common and is most times misdiagnosed. A dye test and some diligent investigation will reveal that there is another source for the oil leak. A valve cover gasket, intake gasket, gallery plug or external oil supply tube usually being the culprit.

Cooling system maintenance is extremely important to the longevity of a head gasket. Electrolysis and low coolant pH will result in corrosion that quickly compromises the ability of the head gasket to seal properly. The correct coolant type, coolant level and coolant mixture must be maintained at all times. The radiator, radiator cap, coolant hoses, water pump, heater core, drive belts and thermostat must all be functioning at their optimum levels to protect the engine from head gasket failure.

Engine performance and vehicle usage conditions must also be closely monitored. Low grade fuel, inoperative gauges / sensors and vehicle overloading are the most common reasons an engine will develop concerns that begin to affect the head gasket. If Detonation or Preignition are present and not controlled, they will immediately begin to alter the engines ability to maintain normal temperatures. The head gasket will be one of the first items that will show signs of failure due to the increased cylinder temperatures and pressures.

**Some quick tips to prevent head gasket problems**

- At the first indication of engine overheating – Shut off the engine **IMMEDIATELY** and call for service.

- Repair any coolant loss or overheating concerns at the first sign – Waiting may result in head gasket failure and internal engine damage.

- Replace engine coolant before the pH drops below 7 – A good rule of thumb is change coolant every 2 years, but **ALWAYS** follow your vehicle manufacturer’s maintenance recommendations for your specific driving habits.

- Maintain the proper coolant level, mixture and type – Check the coolant regularly.

- Address any signs of Detonation or Preignition immediately – Waiting will result in engine failure.