

EGR System Explained

Exhaust Gas Recirculation

In internal combustion engines, exhaust gas re circulation (EGR) is a nitrogen oxide (NOx) emissions reduction technique used in petrol/gasoline and diesel engines. EGR works by recirculating a portion of an engine's exhaust gas back to the engine cylinders. In a gasoline engine, this inert exhaust displaces the amount of combustible matter in the cylinder. In a diesel engine, the exhaust gas replaces some of the excess oxygen in the pre-combustion mixture. Because NOx forms primarily when a mixture of nitrogen and oxygen is subjected to high temperature, the lower combustion chamber temperatures caused by EGR reduces the amount of NOx the combustion generates (though at some loss of engine efficiency). Gasses re-introduced from EGR systems will also contain near equilibrium concentrations of NOx and CO; the small fraction initially within the combustion chamber inhibits the total net production of these and other pollutants when sampled on a time average. Most modern engines now require exhaust gas re circulation to meet emissions standards.

Egr Valve Failure

Here are some of the common faults/reasons as to why an EGR Valve could fail -

Faults in the crankcase breather/oil separator/engine vent valve Increased blow by a result of wear on the piston and cylinders Turbocharger faults ie: worn bearings or blocked oil return pipe Not changing oil - oil filters or Oil level to high

If the Egr valve is failing to open then you could be experiencing symptoms like - Nitrogen oxides increase considerably Incorrect engine performance characteristics Possibly Limp Mode Poor/No idle Increased fuel consumption

Possible causes for the Egr Valve not be open - EGR valve stuck in position because it is gummed up Leakage/Secondary air on the vacuum side Vacuum connections disconnected or incorrectly fitted Faulty electric pressure switch converter valve

Problems you could be experiencing when the egr valve will not close - Black/Blue smoke Poor acceleration Top speed is not reached EGR valve damaged through over heating - due to incorrect control - due to high exhaust back pressure - due to non-opening blow-off valve (for turbocharger) Air flow meter or other sensor signal faulty Intake pipe in the area of the exhaust gas recirculation system partly constricted by deposits/Turbocharger could have an oil leak

1 - Close EGR physically with plate or EGR blanking kit

2 – Check tuningbot.com site for instructions about egr connector plugged/unplugged