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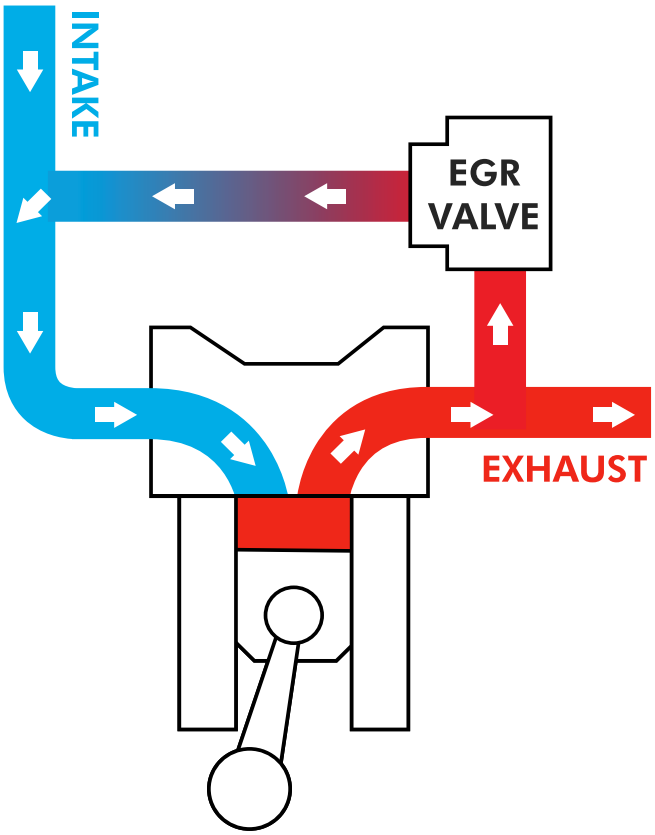
TECHASSIST BULLETIN

EGR Valves

The Exhaust Gas Recirculation Valve

Do you notice a higher than average EGR valve return rate? Do your customers report symptoms reoccurring prematurely after replacement?

In this TechAssist bulletin we look at how the EGR valve works, the causes and symptoms of failure and how to ensure longevity of the replacement valve.



What is it for?

Fundamentally the EGR valve reduces harmful nitrogen oxides (NOX) emissions from our exhausts.

How does it work?

NOX is produced when combustion temperatures exceed 2500°F and nitrogen begins to react with oxygen.

The EGR valve helps keep temperatures below the NOX threshold by recirculating a small amount of exhaust gas back through the combustion process.

This dilutes the incoming air/fuel mixture and cools combustion temperatures resulting in reduced NOX emissions.

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Why does it fail?

The most common cause of EGR valve failure is carbon deposits that cause clogging or sticking. The valve may stick open or closed.

Symptoms of failure

If the EGR is stuck in the open position, a continuous flow of exhaust gases will be sent back to the inlet manifold resulting in a rough idle when the engine is cold and stalling when the engine idles.

Fuel economy will decrease and you may notice an increased smell of fuel. Lower temperatures caused by continuous recirculation can increase emissions resulting in MOT failure.

If the EGR is stuck in the closed position, fuel may ignite early as it reaches higher temperatures and a pinging or knocking may be heard from the engine at low RPM. Loud detonations may be heard when a second ignition happens, this can cause serious engine damage.

Higher temperatures resulting from no recirculation will increase NOX emissions and may cause MOT failure.

In both cases, the engine check or malfunction indicator light may switch on.

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Replacing EGR Valves

Remember these three steps to ensure the new EGR valves performs and lasts as expected.

1. Clean the system

Before replacing the EGR valve ensure that the system is cleaned. This step is commonly overlooked and a clean EGR valve is put on to a dirty system. The existing carbon deposits quickly recontaminate the valve causing premature failure.

We recommend using an EGR/Turbo cleaning aerosol to clean the combustion chambers and ducting to the EGR valve. Always follow the instructions given on the cleaning product. Variable-geometry turbocharger systems should also be cleaned as carbon fouling here can also contaminate the EGR valve.

Heavily contaminated systems would benefit from a more thorough clean using a Terraclean or similar system.

2. Replace the EGR Valve

Once the system is clean, the new EGR valve can be fitted.

3. Reset the ECU

This will ensure that the ECU recognises the new component and that it operates correctly.