



## **How-to: Fix a EGR valve on a 1.9 JTD Alfa Romeo 147**

### Version History:

Version 1.0: First Release

## Introduction:

This document describes how to remove and fix a EGR valve on a 1.9JTD Alfa Romeo. This document may be applicable for Saab, Vauxhall, Opel and other Fiat's that use the same or similar EGR Valve.

Over time the Exhaust Gas Recirculation valve (EGR) become sized causing the following symptoms:

- Loss of power up to 2000 RPM.

- Increase in fuel consumption.

- Increase in black exhaust smoke.

- Higher CO emissions.

- Motor Control System Failure Warnings / Check engine warning lights.

Only basic mechanical skills are required for this fix, if you can remove a wheel, then you can probably fix your own EGR valve !

Current prices for a EGR valve are approx £130 (April 2010) plus 30 minutes labour to fit.

## Tools Required:

Socket Set with the following: 8mm, 10mm & 13mm

8mm Spanner or Long reach socket

Hammer

Drill and 3mm to 4mm drill bit (HSS)

3mm or 4mm punch or similar.

Tub to clean the EGR body in

Vice or workbench.

## Consumables Required:

Carb Cleaner.

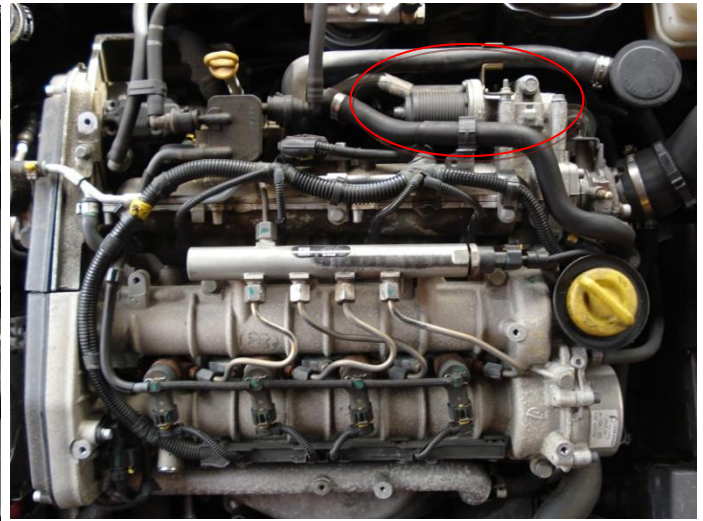
Grease.

Fine sandpaper / wet 'n' dry paper.

Highly recommended: some latex gloves, carbon dust is pain to get out from under your nails!

## Procedure:

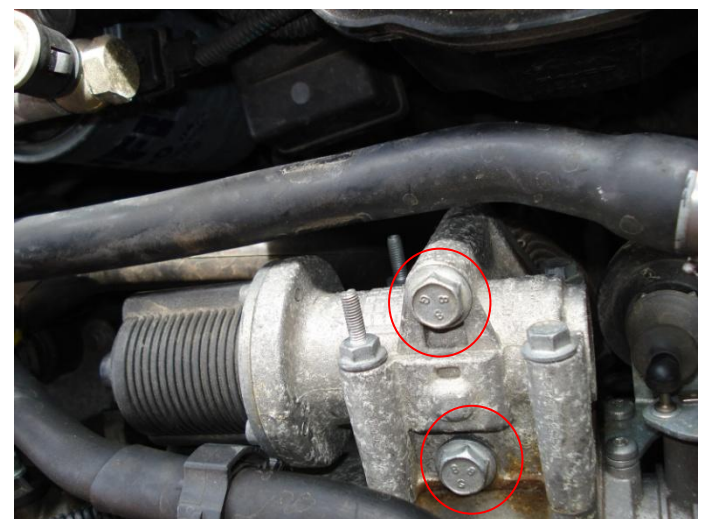
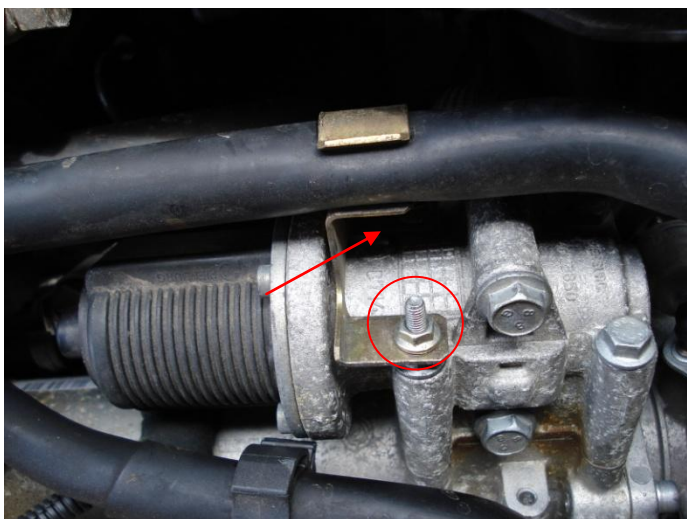
Unbolt the engine cover, 3 x 10mm Bolts (head size), Pull the cover off exposing the engine. (There is a popper type of retention device on the top right of the cover, give it a good pull)



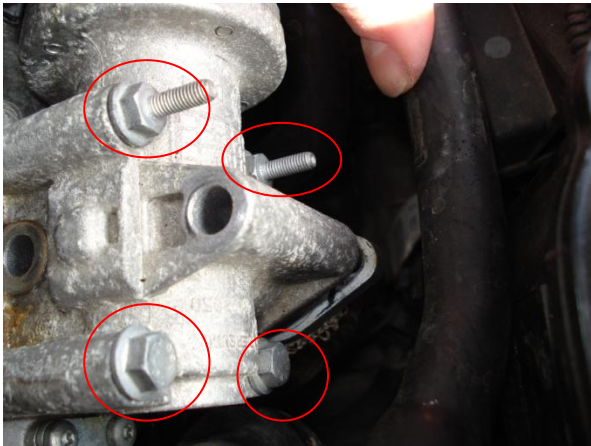
The EGR valve is located on the inlet manifold at the rear right of the engine.

Remove the electrical connector on the left and side of the EGR valve. Press the yellow clip downwards and the connector should pop off downwards.

Next remove the oil breather pipe bracket, the bracket is held on with 2 x 8mm nuts.

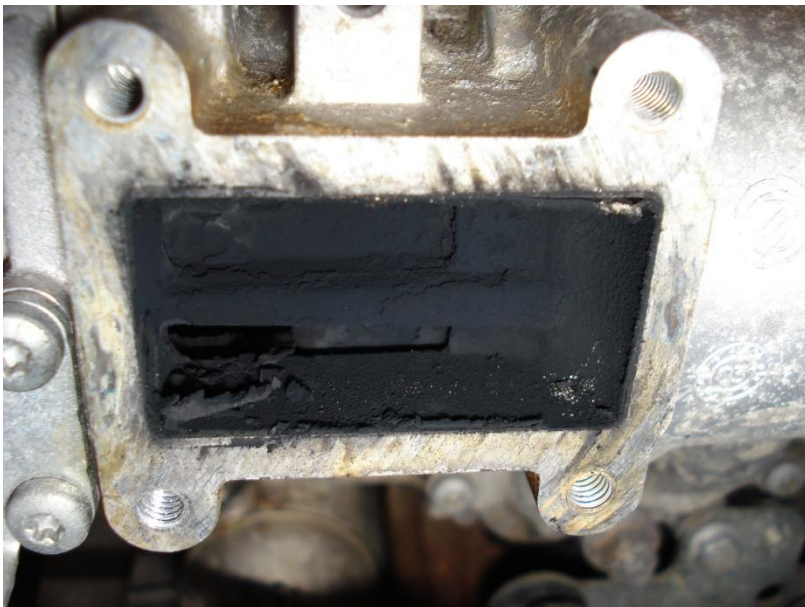


Remove the two long bolts (2x 13mm) bolts holding the pipe that runs from the EGR to the exhaust. It has a heat proof material on it. There is a thin alloy gasket between the pipe's flange and the EGR body, don't drop it down the back of the engine !



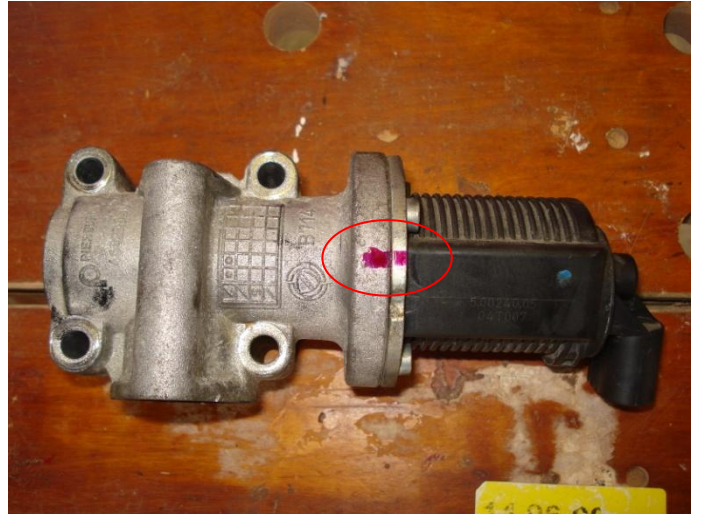
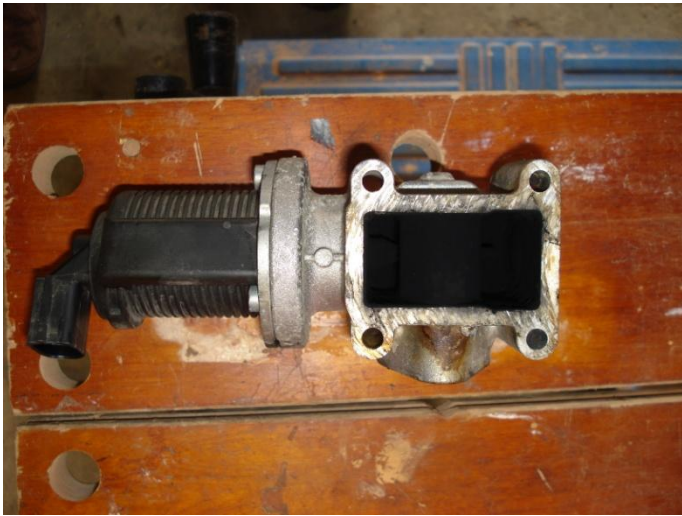
Next, remove the four bolts holding the EGR to the inlet manifold (4 x 10mm, 2 will require a spanner or long reach sockets). Two are regular bolts, two have short stubs for the oil breather pipe bracket.

The EGR should come easily off, the next photos show the soot and debris on the manifold side, and the pipe that leads to the exhaust. Clean out any loose soot and debris from the inlet manifold.

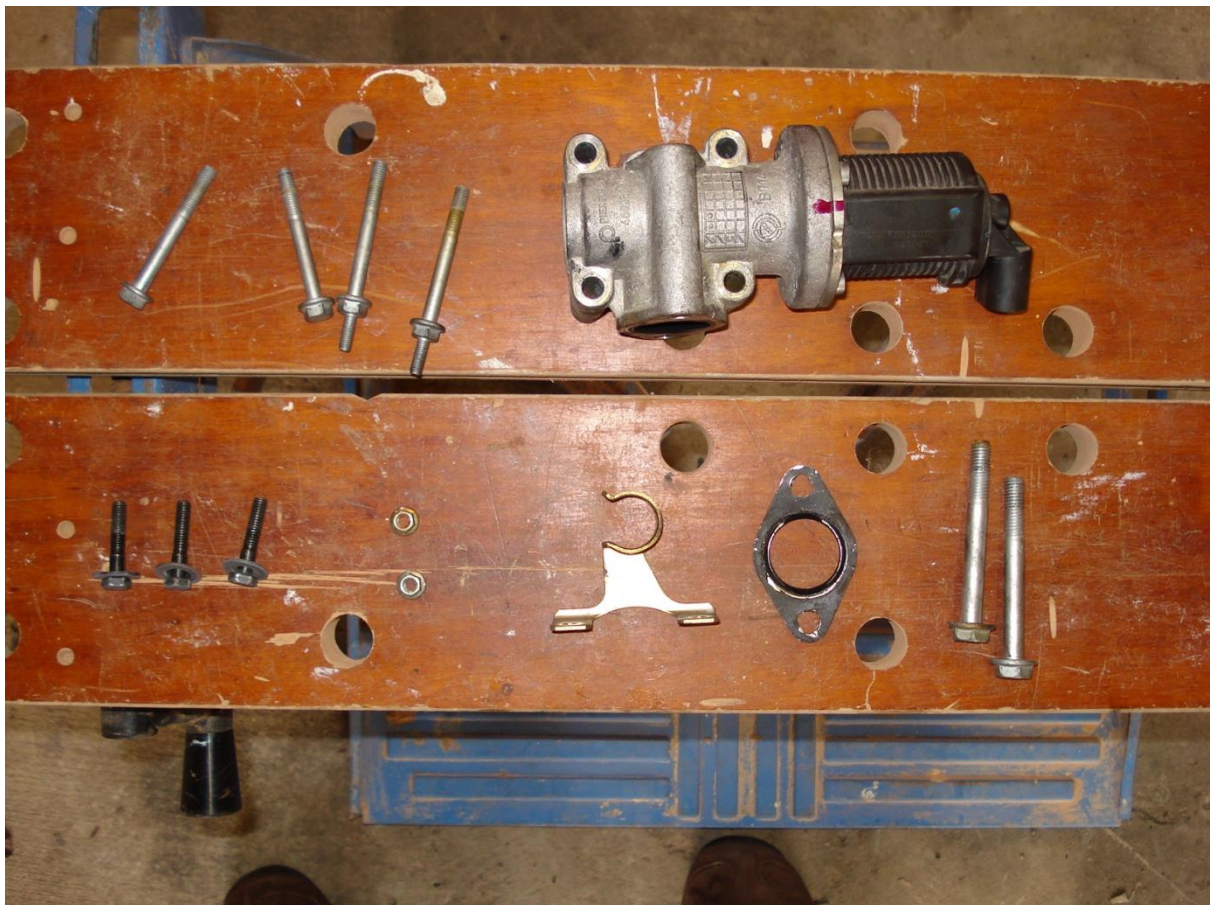




A picture of the EGR valve on the workbench. Mark the position between the EGR's solenoid and the EGR valve body, shown here with a red mark. (in hindsight, scribe a mark between the two, as the Carb cleaner will take the paint off !)



You should now have a small collection of parts..

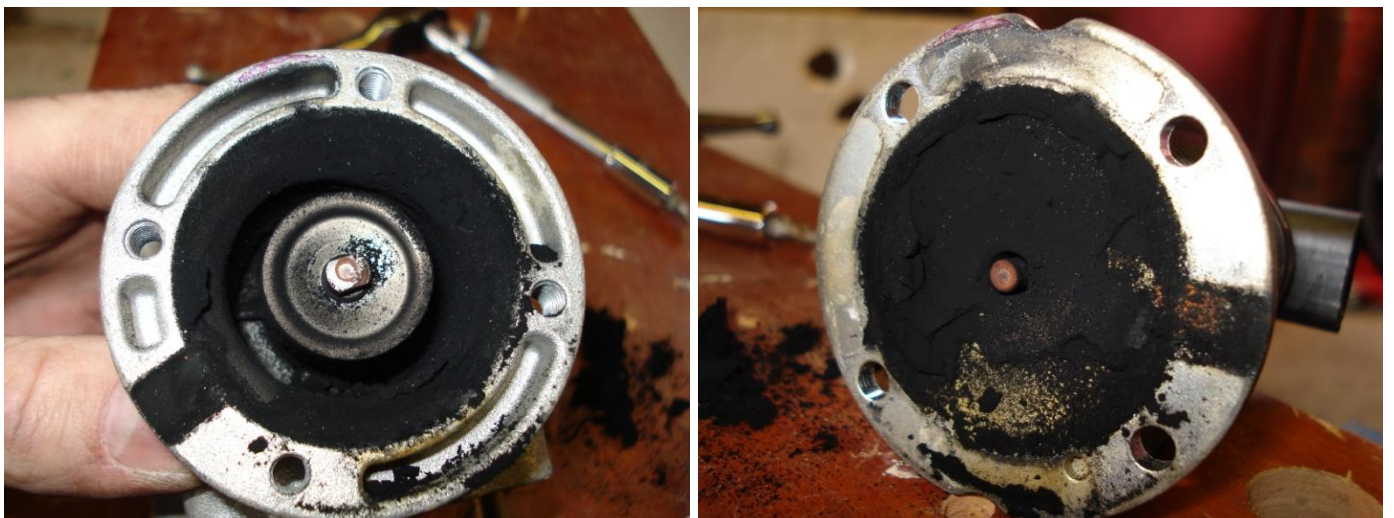




Next step is to remove the EGR solenoid from the EGR valve body, it's held on with 4 x T25 Torx bolts.



The next two pictures show the build up of soot both inside the EGR body and the end of the solenoid.

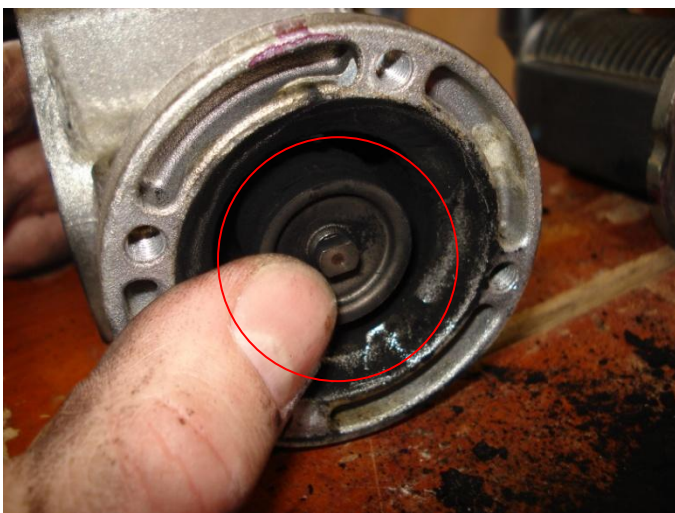




This is all the soot and muck that fell out, and scraped out between the EGR solenoid and EGR body !



Check that the spring loaded valve in the EGR body still moves freely, if it doesn't you may wish to soak the EGR valve in Carb Cleaner overnight, or attach it with tools!, mine still moved freely.





Next, find a suitable tub to put the EGR body into while it has a little bath. Give it a good dose of Carb cleaner, the Carb Cleaner comes out at quiet a pace, so it's idea for blasting away loose soot and dirt. (Don't go squirting yourself in the eye, like me ☺)



Next to the solenoid, while the valve is cleaning up..

You'll find the end of the solenoid is either stuck fast in the body, or requires a fair bit of force to move in and out. It's on a spring so should easily pop in and out. If it doesn't you'll know at this point that you have found a problematic EGR!





Securely hold the EGR solenoid in a vice or work bench. Drill a hole 3mm to 4mm in diameter in the plastic as shown in the picture. Next take a 3mm or 4mm punch to the inside of the solenoid, and knock out the insides. It might take quite a bit of force... be brave... and catch the insides when they come out !



Next, a couple of photos showing the insides of the solenoid. There are two springs, a large one at the end, and a very small one that fits snug on the solenoid pin.



Clean up all parts of the solenoid, with a little wet 'n' dry paper or similar. Clean out the inside of the solenoid casing. Smear the solenoid with grease, I used Ceratec, but I'm sure it doesn't make a huge difference, although I'd shy away from copper slip, it obviously not ferrous, so will not be affected by the electromagnet but, all the same..



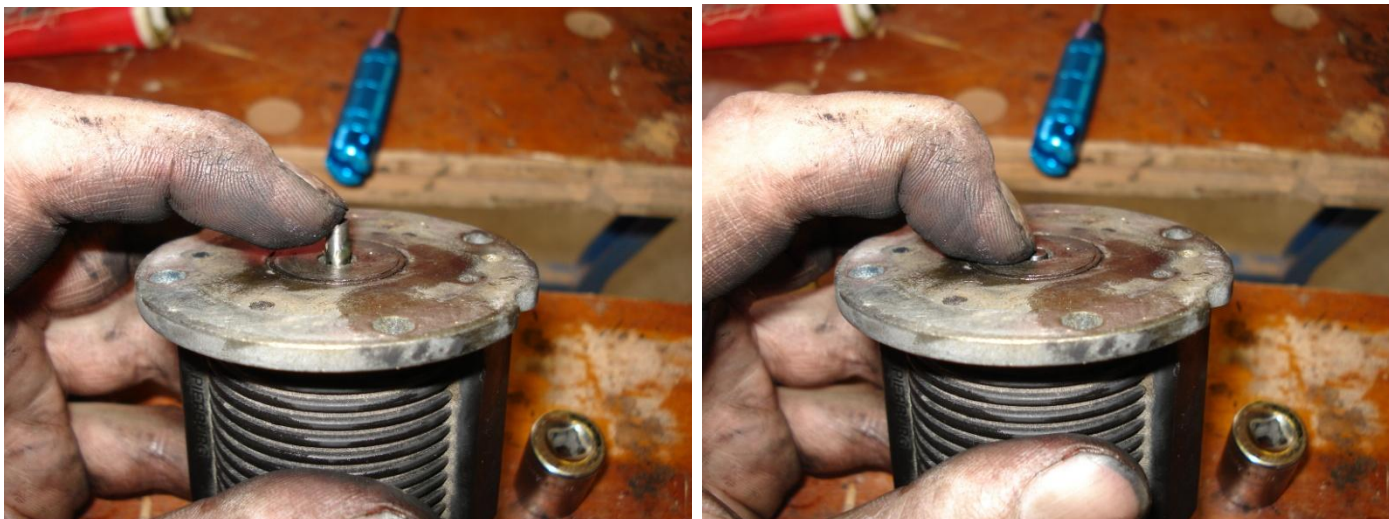


Fit all parts of the internals back together, and slide the solenoid body back over them. Turn the solenoid back over and hold again the vice or work bench, and using a socket knock down the end of the internals so they are flush with the housing.





Once it's all back in place, the pin on the solenoids internals should easily be able to move in and out, it should be sprung to the out position. If you can't push it in and out with minimal effort, a little more cleaning may be required.



Dry out the EGR body that has been soaking in Carb Cleaner, and re-attached to the Solenoid. Remember the mark you made earlier? Align the marks.

Bolt the EGR back on to the manifold, put the alloy gasket between the body and exhaust inlet pipe, and bolt the pipe flange to the EGR body.

Reconnect the electrical connection to the valve.. and your all done.

If you had a check engine light, or Motor Control System Failure warning, and are able to clear the code in the ECU, do this now, so any further problems can noted.

Take the car for a drive, and should feel a lot better on pickup, fuel consumption and lack of black smoke out the back.