

# EXHAUST GAS RECIRCULATION

## ADVICE ON TROUBLESHOOTING

A11801

One of the most common reasons for errors in the EGR system are sticky or coked EGR valves.

The recirculated exhaust gas contains an increased amount of soot particles, especially in diesel vehicles. In addition, oil contained in the intake air can promote the formation of adhesion and coking. This means that after a period of time the performance of the valve can no longer cope with the deposits, and stays in an open position or does not open anymore. This can be felt through bad performance, jerking or rough idling.

The root causes for an increased proportion of oil in the intake air or intercooler can be due to inconsistencies in the crankcase ventilation, worn bearings, a clogged oil return line on the turbocharger, worn valve stem seals or valve stem guides, using unsuitable engine oil quality, or a too high engine oil level. Extraordinarily strong residues can also be caused by an error in the fuel injection. EGR valves are designed for high temperatures in the exhaust system. However, heat damage can occasionally occur. The reasons for this may be due to bad control, too high exhaust gas back pressure, or due to a non-opening thrust recirculation valve of the turbocharger („Wastegate“). Manipulation to increase the boost pressure may also be a reason.

Moreover, with pneumatic EGR valves, a possible cause can be found due to defects in the entire vacuum pump control area (vacuum pump, vacuum lines, and solenoid valves). Electric EGR valves and solenoid valves can mostly be performed by an actuator diagnosis through the engine tester.

The switching of a working valve is easy to hear with the engine at standstill.

If a new EGR valve was installed and the vehicle behaves as if the valve was not changed, the correct data necessary for operation must be „fine-tuned“ again. This can be done either through a longer test drive or through specific programming by the engine tester, e.g. „Basic setting“.

### IMPORTANT!

Return consignments will not be accepted where adaption of the EGR valve cannot be proven!



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DEFECT	CAUSE	PROPOSED SOLUTION
<b>EGR VALVE</b>		
<ul style="list-style-type: none"> <li>rough idling</li> <li>jerking</li> <li>lack of Power</li> <li>emergency operating mode</li> <li>MIL lights / error code set</li> <li>lack of power in the lower -rpm range or in - old modus (Otto)</li> <li>lack of power in the upper rpm range (Diesel)</li> </ul>	<ul style="list-style-type: none"> <li>general: coked/sticky EGR valve               <ul style="list-style-type: none"> <li>poor, unclean combustion</li> <li>engine management fault</li> <li>frequent short journeys</li> </ul> </li> <li>leaks in the vacuum system               <ul style="list-style-type: none"> <li>defective solenoid valves</li> <li>disturbances in the vacuum system</li> </ul> </li> <li>very oily intake or charged air:               <ul style="list-style-type: none"> <li>disturbances in the crankcase ventilation</li> <li>too high engine oil level</li> <li>poor engine oil quality</li> <li>worn valve stem seals or valve stem guides</li> </ul> </li> <li>air flow signal or other sensor signal error</li> </ul>	<ul style="list-style-type: none"> <li>check the engine control</li> <li>check software version of the engine control unit</li> <li>avoid only short distance operation</li> <li>replace the valve</li> <li>check the function, electrical actuation and impermeability of the vacuum system</li> <li>check oil separator, check engine ventilation valve</li> <li>check pistons, piston rings, cylinders, valve stem seals or valve stem guides for wear and tear</li> <li>check turbocharger for clogged oil return line</li> <li>perform professional oil and oil filter change</li> <li>check sensors on correct values, replace if necessary</li> </ul>
<ul style="list-style-type: none"> <li>P0401 „Flow rate too low“</li> <li>P0103 „Air mass too high“</li> </ul>	<ul style="list-style-type: none"> <li>EGR valve does not open or is not actuated</li> <li>EGR system has been shut down</li> </ul>	<ul style="list-style-type: none"> <li>check connectors and control</li> </ul>
<ul style="list-style-type: none"> <li>P0402 „Flow rate too high“</li> <li>P0102 „Air mass too low“</li> </ul>	<ul style="list-style-type: none"> <li>EGR valve does not close / is permanently open</li> <li>uncontrolled, permanent EGR</li> </ul>	<ul style="list-style-type: none"> <li>replace EGR valve</li> <li>check connectors and control</li> </ul>
<ul style="list-style-type: none"> <li>EGR valve has temperature damage, visible discoloration, partial melting (Otto)</li> </ul>	<ul style="list-style-type: none"> <li>false triggering</li> <li>excessive exhaust backpressure</li> <li>not opening turbocharger outlet valve</li> </ul>	<ul style="list-style-type: none"> <li>replace EGR valve</li> <li>check control of the EGR valve</li> <li>check exhaust backpressure</li> <li>thrust recirculation valve of turbocharger („Wastegate“) and its actuation</li> </ul>
<ul style="list-style-type: none"> <li>new EGR valve without function</li> <li>high idling after installment</li> </ul>	<ul style="list-style-type: none"> <li>new EGR valve was not adapted</li> </ul>	<ul style="list-style-type: none"> <li>adjust basic setting of the EGR valve through engine tester</li> </ul>
<b>SOLENOID VALVES / PRESSURE SYSTEM</b>		
<ul style="list-style-type: none"> <li>sawing engine</li> <li>misfirings</li> <li>emergency operating mode</li> <li>deteriorating brake performance</li> </ul>	<ul style="list-style-type: none"> <li>defective hoses (porous, marten bites)</li> <li>leaking connectors on pneumatic valves</li> <li>leaking non-return valves / vacuum tank</li> <li>defective / porous diaphragms or gaskets at pneumatic actuators</li> <li>leakages in suction pipe</li> </ul>	<ul style="list-style-type: none"> <li>in case of damage check the impermeability of all components in the vacuum system and replace broken part</li> </ul>
<b>AIR FLOW METER</b>		
<ul style="list-style-type: none"> <li>P0401 „Flow rate too low“</li> <li>black smoke</li> <li>lack of Power</li> <li>emergency operating mode</li> </ul>	<ul style="list-style-type: none"> <li>air flow meter damaged / contaminated by               <ul style="list-style-type: none"> <li>dirt particles with the intake air</li> <li>leaks in the intake duct, spray water</li> <li>uncleanliness when changing the air filter</li> <li>clogged air filter</li> <li>oil-coated high performance air filter</li> </ul> </li> <li>damage to the turbocharger</li> </ul>	<ul style="list-style-type: none"> <li>avoid water and particle entry in the intake duct</li> <li>check turbocharger</li> </ul>

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