

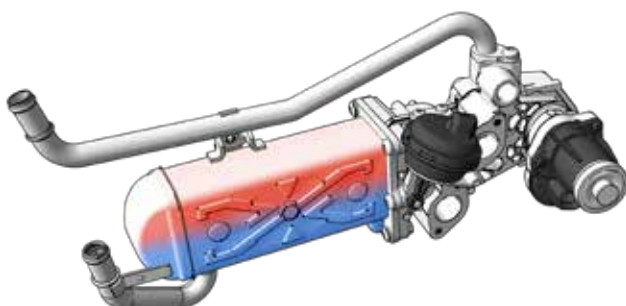
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# BRIEF INFORMATION

## EGR

- OE quality applied for an exact fit
- Lower emissions, improved engine efficiency, lower fuel consumption
- Including mounting instructions for proper installation
- Continuous product range extension

## PRODUCT FEATURES



### Actuation and function type

- Vacuum operated – earliest developments of EGR systems.
- Electronically operated – second generation of EGRs with more precise and on the spot exhaust gas regulating.
- Electronic operated with integrated cooling function – modern depollution systems capable of reducing exhaust gas temperature before entering engine intake.

### Application

HELLA provides a wide range of application for European, Japanese and North American manufacturers.

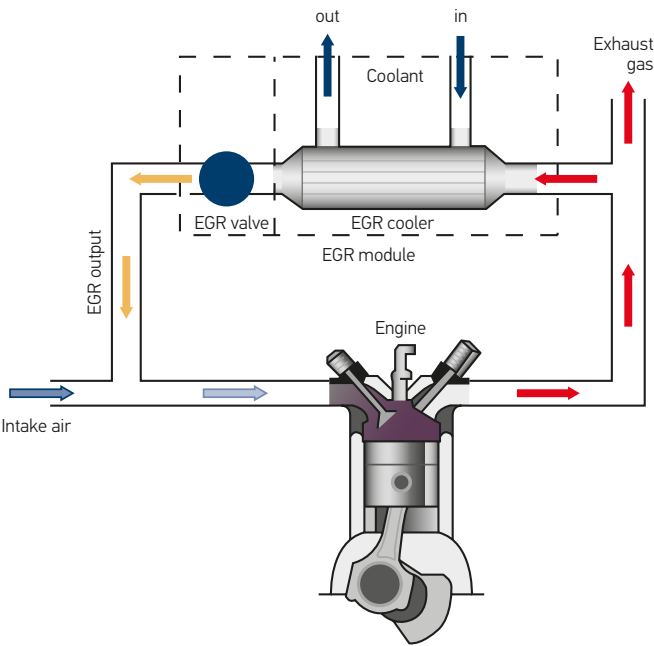
### Design and function

With the rising prominence of CO<sub>2</sub> emissions and reaching the Euro-VI thresholds in September 2014, the EGR valve is becoming increasingly important. Nitrous oxides are dramatically reduced by channeling off part of the exhaust gas into the induction air. There is also reduced soot formation in the diesel engine, and a drop in fuel consumption for petrol engines. In this process, the EGR valve regulates the amount of exhaust gas that is returned and are designed to reduce the amount of NO<sub>x</sub> resulting from the functioning of the internal combustion engine. HELLA's vehicle-specific EGR valves are tailored to the precise needs of the engines, thus making an important contribution to protecting the environment.

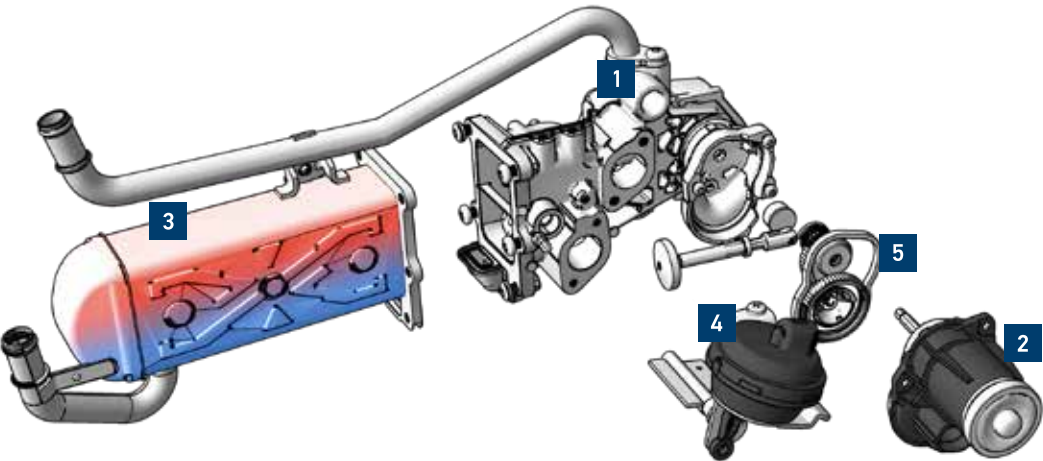
# FUNCTIONAL DIAGRAM

EGR valves are installed in a bypass channel between the intake manifold and the exhaust manifold. Recirculating part of the exhaust gas volume can reduce emissions of nitrogen oxides (NO<sub>x</sub>), through the effect of cooling the combustion chamber.

The EGR valve is controlled by the engine control unit (ECU) through information received from multiple sensors related to engine management. The exhaust gas recirculation rate is controlled depending on the engine speed, coolant temperature and engine load.



# TECHNICAL DETAILS

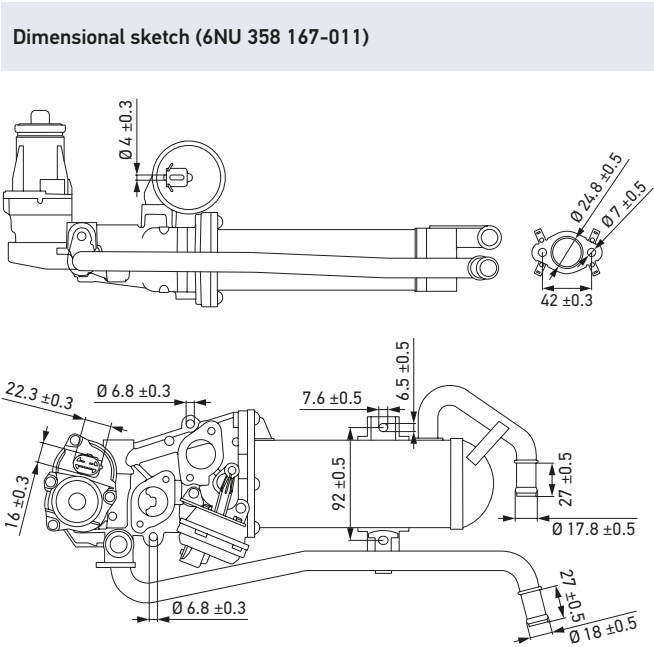


- [1] **Housing with valve mechanism:** Developed to house all internal EGR parts and provide optimum gas flow during all engine operating conditions.
- [2] **Drive motor:** Controls the EGR valve movement via a toothed gear drivetrain.
- [3] **Heat exchanger:** Allows efficient heat transfer between coolant circuit and passing exhaust gases.

- [4] **By-pass valve vacuum control:** Regulates the amount of exhaust gases which pass through the cooler considering engine operating temperature and load.
- [5] **Mash gear mechanism:** Transfers the movement from the motor to the valve.

Technical data (6NU 358 167-011)	
Operating voltage	≤ 14 V
Rated voltage	12 V
Vibration resistance	Yes
Installation location	Engine

Pin assignment (6NU 358 167-011)	
1	Pin 1: 12 V (+)
2	Pin 2: 12 V (-)
3	Pin 3: V <sub>out</sub>
4	Pin 4: GND
5	Pin 5: VDD +5 V



# Q&A

## – EGR –



**1** Why is the modern EGR such an important part in today's exhaust depollution systems?

The EGR has the important role of balancing the exact amount of exhaust gases needed for the engine to achieve maximum performance and efficiency while keeping the lowest level of NOx emissions possible.

**2** Is the use of the EGR limited to the type of the internal combustion engine?

No, the EGR is used in both modern gasoline and diesel engines.

**3** Are modern vehicles able to self diagnose the EGR component, thus warning the driver?

Although many users wrongly associate the “check engine” warning light with EGR function, it is important to know that only specialised workshops can fully diagnose an EGR problem, mechanical and electrical wise.

**4** What are the main obvious signs of a faulty EGR?

Most common symptoms of a bad EGR relate to engine knocking sound, stalling or rough idling, smell of unburnt fuel, loss of engine performance, check engine warning light present.

**5** Do other parts linked to the depollution system of a vehicle have an influence on EGR behaviour?

Yes, actually the working condition of parts like the turbocharger, the DPF, the intake and exhaust manifolds can have direct effect on EGR behaviour.

**6** Can we avoid any expensive spare parts replacement or major repairs by replacing a bad EGR at first signs of malfunction?

Yes, driving with a stuck EGR valve in either open or closed position can influence the lifespan of parts directly linked to it, such as the turbocharger or the DPF. In some cases, a defective EGR can even lead to permanent engine damage as well.