

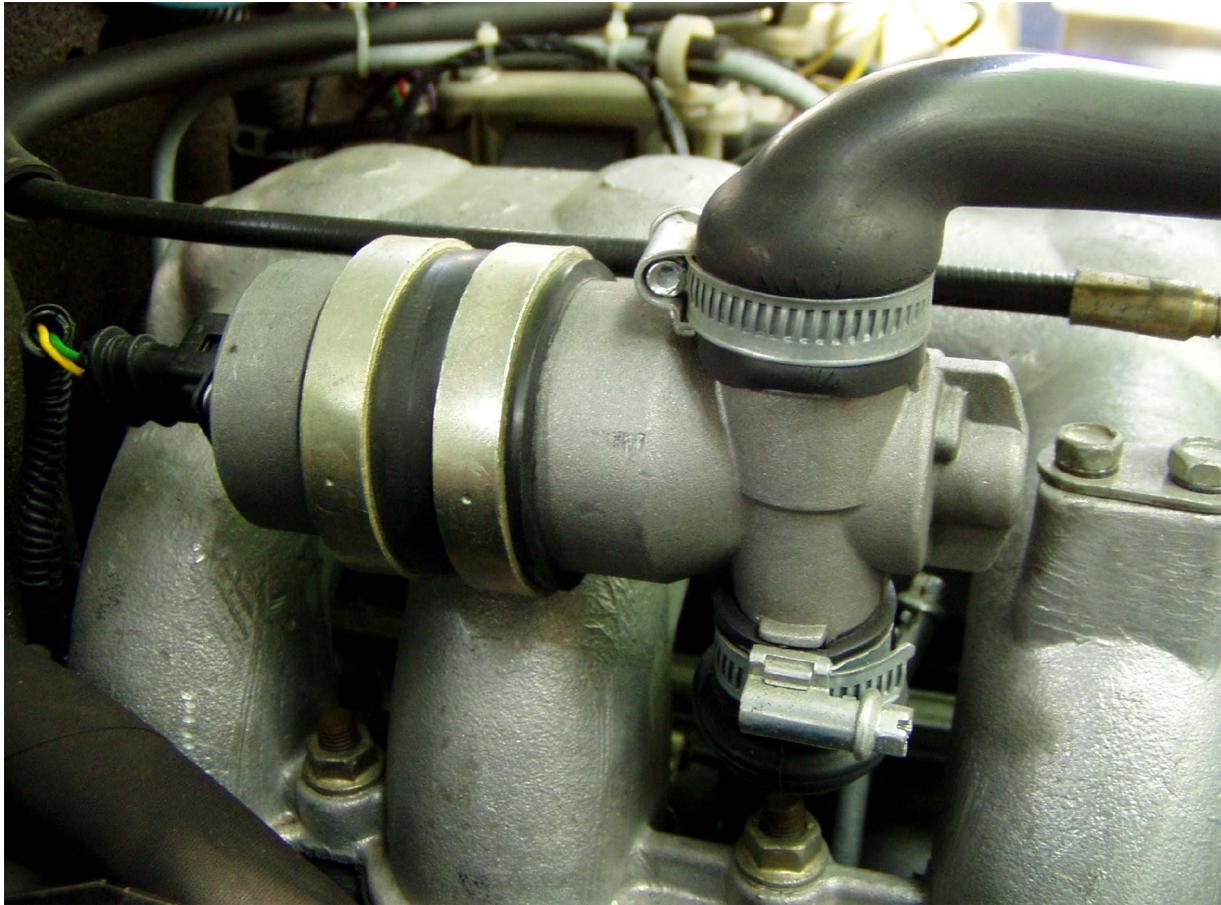
IDLING SPEED REGULATOR

ZWD-5 0 280 140 545 (BOSCH)

Purpose of the electromechanism. Principle of function

1. The Idling Speed Regulator is intended for giving additional air through a channel bypassing the throttle flap.
2. The Idling Speed Regulator air allows to carry out following basic functions:
 - Automatic start and warming up of the engine idling;
 - Stabilization of the minimal turns of idling;
 - Management of cyclic filling of air on partial loadings;
 - Moderating the air stream at sharp opening and closing throttle flap.
3. The Idling Speed Regulator is a rotary solenoid with a slot-hole aperture, the opening section is changed by the engine control unit.
4. Power supply for the 2 electromagnetic coils of the regulator is coming from the Engine Control Unit, and engaging the windings is made by shorting them to ground by 2 channels of the Engine Control Unit.
5. As an interaction of the constant magnetic field of the rotor with a variable magnetic field in the stator which is formed by impulses with a repetition frequency of 125 Hz, the rotor together with the valve turns in 240 steps and changes the passage section of the channel, through which air gets into the engine.
6. Both coils are engaged. The time for engaging them is different, but both times together always give 1/125 s. If the voltages on the coils are measured, use a slow acting voltmeter. Both voltages together give something about 12 Volts.
7. The degree of opening changes from full opening (240 steps) on start of the engine to complete closing (0 steps) in the mode of decelerating the car with the engine. The regulator is opened approximately on 85...100 steps (35...45 %) at an idling engine.

Installation of the electromechanism on the car



1. The Idling Speed Regulator is fastened to the intake air pipes of the engine by a metal holder and a rubber collar.
2. The connecton to the air-intake-system is made by rubber hoses secured with clamps.
3. Connection of the regulator to the wire harness is made by a three-contact socket with a latch.

Analogues of the electromechanism

The Idling Speed Regulator ZWD-5 0 280 140 545 (BOSCH) is intended for installation, basically, on automobile engines ZMZ-4062.10, 3M3-409.10 and 3M3-405.10.

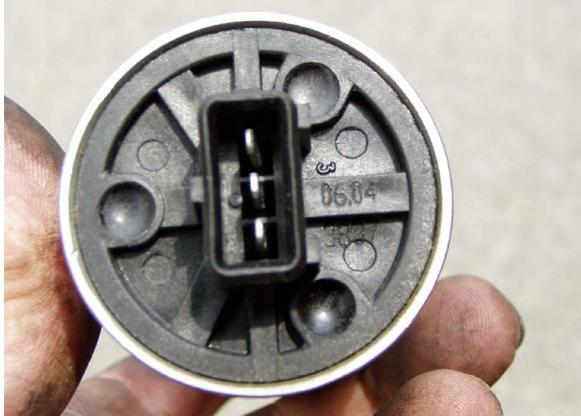
Analogues of a regulator are:

BMW 13.41 – 1 744 713

PXX-60 9E.573.000 (РЗП, Раменское);

PXX-60 (joint-stock company " ПЕГАС ", Кастрома).

Design of the electromechanism

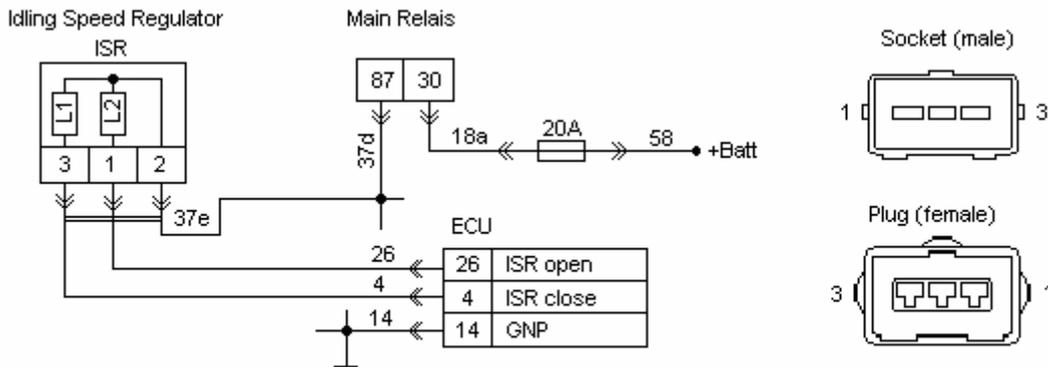


1. Structurally the electromechanism consists of following elements:
 - The cylindrical case with 90 degrees turned inlet and outlet, in which are placed the electric solenoid and the valve in the form of a slotted sector;
 - Three-pin connector plug, molded in the plastic case.
2. The direction of the air stream is specified by an arrow.

Parameters of the Regulator

1. The maximal Air Mass: 60Kg/h.
2. Resistance of the windings: 12 ± 1 Ohm.
3. Inductance of windings on frequency of 100 Hz: 12 ± 2 mH.
4. Voltage of power supplies: 6... 18 V.
5. Frequency of signals: 125 Hz.
6. Percentage of signals of management: 0...100 %

External displays of malfunctions of circuits of the electromechanism



1. The lamp of malfunction burns after switching the ignition on. Self-diagnostics of the ECU gives codes of malfunction 161...166.
 - Check up continuity of circuits of the regulator for additional air 37e, 4, 26.
2. The engine starts poor or is started only at partially pressed pedal of the accelerator. The lamp of malfunction does not burn (there are no malfunctions of system).
 - Check up the condition of the rubber hoses and, if necessary, wash out and clear them from dirt.
 - Check up and, if necessary, replace the regulator of the additional air.
3. The hot engine turns at raised speed. The lamp of malfunction does not burn (there are no malfunctions of system).
 - Check up, probably shutter of the regulator valve, wash out the regulator in kerosene and dry.
 - Press close a tube of the regulator and try to start the engine. If it starts, it takes air through a leak in the throttle or somewhere else. Adjust the drive and check the throttle for full closing.
 - Check the output rubber hose for leaks. If you find some, replace the hose.

Important note:

I have made this translation with great care, and I think that it is correct. But I'm neither Russian nor English nor am I a mechanic or electrical engineer for cars.

Mistakes in translation or understanding or mistakes in the original text might lead to damage of material or injury of individuals.

This translation must only be used by mechanics or electricians for cars trained in automotive work. Persons using this translation must be aware that there might be mistakes and should doublecheck each step they take.

Please understand that I refuse all claims that anybody puts against me because this translation is faulty or because of any damage of the car or of persons caused by this translation.

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If you find a mistake, or if you want to add remarks, please feel free to contact me: LUDWIGROMMEL@ARCOR.DE