TECHNICAL NEWSLETTER

Fuel Pressure Regulator

ISO 9001

1 YEAR WARRANTY TOTAL DS

PRODUCTS TESTED ONE BY ONE

DS®

AUTOMOTIVE TECHNOLOGY

CONCEPT:

The fuel injection system is intended to provide the engine with better and more economic performance under all operating conditions, thus providing a more accurate fuel dosage with faster response.

PRINCIPLE:

The regulator adjusts the pressure in the entire fuel line, from the outlet of the pump to the injection nozzles. The most common models are provided with two chambers separated from each other by a diaphragm, in which a chamber is in contact with the fuel and the other with the vacuum of the intake manifold.

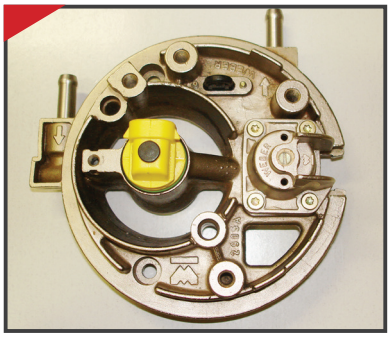
The regulator is comprised of a membrane (diaphragm) and a spring. This diaphragm controls a valve that opens and closes according to fuel pressure. When the pressure in the line is below the one calibrated in the regulator, the valve stays closed until the pump pressurizes the system; once the ideal pressure in the line is exceeded, the regulator opens the valve, allowing the excess fuel to return to the tank.

In the single-point system, there is usually a bypass, which enables pressure to drop in the line as soon as the fuel pump stops working. As for the multi-point system, this bypass does not exist, so the line pressure is maintained for a while, even after the fuel pump is turned off.

LOCATION:

The fuel pressure regulator may be mounted in three positions, depending on the fuel injection system used:

1



In the throttle body (single-point system), known as single-point diaphragm.

2

In the extremity of the manifold (multi-point system).

3

In the fuel module, next to the fuel pump (returnless multi-point system).

How can I test the fuel pressure regulator of Strada 1.5 (Fiasa engine)?

1- Measure the calibration pressure of the part

- Install the pressure gauge in the pressure line and start the engine;
- Remove the hose from the vacuum outlet port of the regulator;
- The pressure should be around 3.0 bar.

2 - Analyze the line pressure under normal conditions

- With the engine still on, reinstall the vacuum hose in the regulator;
- Check if the pressure shown in the pressure gauge is around 2.5 bar, i.e., 0.5 bar less than the pressure described in the part

3 – Check the diaphragm conditions

- With the engine still on, replace the vacuum hose with a transparent one;
- A regulator in good condition does not allow fuel to pass through the hose towards the collector.
  Note: should this occur, it means that the diaphragm is damaged.
- Reinstall the original hose.

4 - Check the tightness of the valve

- Turn off the vehicle;
- Check the pressure gauge for pressure drop;
- The drop must be slow, if it is not, that is a sign that the pres sure regulator valve is not properly sealed.

Defects and Causes:

- Hard to start the engine;
- Excessively rich mixture;
- High fuel consumption;
- Failure in accelerations.

WARNING:

- Depressurize the system before replacing the regulator;
- Apply lubricant to the o-ring to make it fit easier and avoid damages;
- Check the general condition of the clamps and hoses fixed to the components (if the hoses present strains, they must be replaced);
- Check the condition of the fuel filter, as impurities can affect the operation of the regulator;
- Work Pressure on the Single-Point System:
  Marelli: Gasoline 0.8 – 1.2 bar // Ethanol 1.3 – 1.7 bar
  Bosch: Gasoline 0.8 – 1.2 bar // Ethanol 1.3 – 1.7 bar
  Rochester: Gasoline or Ethanol 1.8 – 2.2 bar