

*Feature of this version with intake manifold pressure:*

The connection for the vacuum hose of the fuel pressure regulator is located in the intake manifold after the throttle.

*Test precondition:*

The correct fuel pressure regulator is fitted.

- Using the EPC, check whether the fuel pressure regulator suitable for the car is fitted:  
Connect test adapter,  
refer to 13 31 029.

**Description of operation: fuel pressure regulator**

Depending on requirements, the fuel pressure regulator regulates a low or high fuel pressure. This requirement is set with the help of the pressure regulator.

Depending on the engine's operating state, less or more fuel is needed:

- at idle speed, less fuel
- at full load, considerably more fuel.

The injection rate is precision-adjusted by means of the injection time; the injection time is controlled by the DME.

The partial vacuum in the intake manifold serves as engine load information for pressure regulation. The diaphragm of the pressure regulator is actuated with this partial vacuum.

A partial vacuum builds up in the intake manifold during idling operation or in overrun mode. Depending on the partial vacuum value, the fuel pressure decreases starting out from the nominal value. The nominal value is stamped in the fuel pressure regulator housing.

At full load, the partial vacuum in the intake manifold is approximately equal to zero. The fuel pressure regulator regulates the fuel pressure to the nominal value stamped in the housing.

**Description of operation: fuel pump**

The control function of the fuel pressure regulator must be ensured in all operating states. The fuel pump must therefore always be able to generate a higher fuel pressure than the pressure regulated by the pressure regulator.

**Description of operation: fuel return line**

When the engine is at a standstill and the ignition key is in position 0, the fuel return line after the pressure regulator is at zero pressure.

**Description of operation: pressure retaining function**

The pressure regulator closes when the engine is at a standstill and the ignition key is in position 0. The fuel pressure in the delivery line is retained over an extended period. A non-return valve closes in the fuel pump. These measures help to retain the fuel pressure in the fuel system. Extended starting times are thus avoided.

**Complaint: drive characteristic faults, lack of power**

- Run engine at idle speed and measure fuel pressure.
- In order to simulate "full load" state:  
Disconnect vacuum hose from fuel pressure regulator and measure fuel pressure.

The measured value must increase by 0.4 to 0.7 bar depending on the engine. Note down measured value.

- If the measured value does not increase:  
Replace vacuum hose and measure fuel pressure again
- If the measured value still does not increase:  
Replace pressure regulator

- Measure fuel pressure again and note down measured value.
- Compare the measured value with the nominal value stamped in the pressure regulator housing.

If the specified measured value is still not achieved, you must carry out the following checks depending on the measured value.

*If the measured value is less than the nominal value - 0.2 bar:*

- The cross-sections in the fuel feed line are contracted or the fuel filter is clogged,  
or
- the fuel pump voltage supply is not O.K., e.g. due to high contact resistance (corrosion) in the plug connection between wiring harness and fuel pump

*If the measured value is greater than the nominal value + 0.2 bar:*

- Switch off engine and then observe measured value.
- If the measured value drops to the nominal value, the cross-sections in the fuel return line are contracted or clogged.
- Check the fuel lines for kinks.

If no kinks are visible:

- Replace return lines.

If the measured value remains too high, the pressure regulator is most probably faulty.

### **Caution!**

With less likelihood, the return line may be completely blocked. When the pressure regulator is removed, fuel could escape under pressure!

- As a precaution, have a cleaning cloth ready and collect and dispose of any escaping fuel.
- Replace the return line but not the pressure regulator.

### **Complaint: starting problems**

- Run engine briefly at idle speed and switch off.
- Note measuring value when engine is stationary.
- Read off measured value again after approx. 20 to 30 minutes with engine stopped.

The special tool 13 3 010 (hose clip) is needed for the following check.

*If the measured value has dropped by more than 0.5 bar:*

- Start engine and wait briefly for a stable pressure increase.
- Switch off the engine and immediately pinch off the delivery line just before the pressure gauge with the special tool 13 3 010.
- Note down measured value.
- Read off measured value again after approx. 20 to 30 minutes with engine stopped.

*If the measured value has now dropped by less than 0.5 bar, the following faults may be present:*

- Fault in delivery lines
- Fault in in-tank delivery hose
- Faulty pressure-holding non-return valve in fuel pump

Check components. Replace faulty components.

*If the measured value has again dropped by more than 0.5 bar:*

- Replace pressure regulator

**Note:**

- All the fuel hoses and hose clips which were detached within the framework of the checks must be replaced.
- Fault messages may be stored in the fault memory of the DME control unit if the vehicle is operated in the intervening period. The fault messages "Incorrect lambda control" or "Lambda control at stop" must be cleared after the check is completed:

Interrogate fault memory of DME control unit. Check stored fault messages. Rectify faults. Now clear the fault memory.