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SERVICE INFORMATION

IN THE EVENT OF PROBLEMS WITH FUEL PUMPS: CHECK CONTACT

In the event of problems in the fuel system, the system pressure and volumetric flow of the fuel pump should be measured first.

If the measured values do not match the manufacturer's specifications, it is sometimes the case that the supposedly faulty fuel pump is replaced with a new one prematurely.

Before you replace a pump, you should ensure that a corroded electrical connection is not the cause of loss of power.

Depending on the flow rate and system pressure, the current consumption of a fuel pump is 5 – 8 amperes or more.

In the case of such high currents, clean and reliable contact points are important, since any type of corrosion or poor contacts increase the ohmic resistance across the contact.

However, increased resistance necessarily means a drop in voltage at the fuel pump.

The typical circuit of a fuel pump in Fig. 1 shows a number of detachable connections due to screwed-in or plugged-in contacts.

In addition, there are switching contacts within the ignition switch and the fuel pump relay as well as possible additional installations in the system, such as anti-theft devices.

Each of these contacts may have increased resistance due to oxidation, corrosion and an inadequate connection.

This results in an undesired drop in voltage in this circuit. A drop in voltage may result in lack of performance of the fuel pump. The consequences are a reduction in pressure and flow rate.

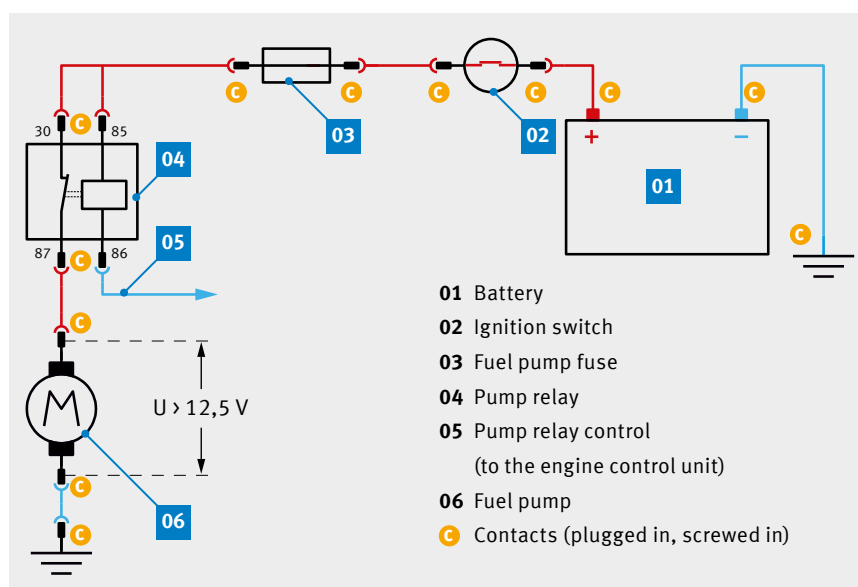


Fig. 1: Circuit of an electric fuel pump (schematic)

All content including pictures and diagrams is subject to change. For assignment and replacement, refer to the current catalogues or systems based on TecAlliance.

**NOTES**

In modern vehicles, the fuel pump is located in the fuel tank and usually takes the form of a fuel delivery module.

In this case, it is difficult to carry out measurements directly at the terminals of the fuel pump.

However, it is necessary that the drop in voltage is measured as close as possible to the fuel pump.

It is therefore recommended that measurement is carried out at the electrical plug contacts, which are usually located in the cover of the fuel delivery module (Fig. 2).

It is only possible to receive a correct result if the circuit is closed, i.e. if voltage is present. For this reason, you have to keep the engine running during measurements.

Loss at the contacts is unavoidable, even if the contacts are clean and tightly connected. The voltage at the terminals of the fuel pump is therefore always lower than the on-board voltage. The value should be as close as possible to the on-board voltage of the vehicle. However, the difference should not exceed 1 – 1.5 volts.

RECOMMENDED PROCEDURE:

- Determine system pressure and flow rate
- Measure drop in voltage at the fuel pump:
with the plug plugged in, connect the measuring instrument with the corresponding measuring tips to the rear of the plug (Fig. 3).
Never "puncture" the cables (Fig. 4)!
- A voltage of at least 12.5 – 13.0 volts must be present when the engine and pump are running.
- If the measured voltage at the terminals or the plug of the pump is significantly lower than the on-board voltage, e.g. lower than 11 volts, there is a malfunction.
- In this case, check the condition of all contacts in the circuit, e.g. to see whether corrosion is present at the contacts (Fig. 5).

**NOTE**

In modern vehicles that are equipped with a "regulated" or "demand-based" fuel supply, the fuel pump is actuated by its own control unit with a pulse width modulation signal.

A conventional digital multimeter is not sufficient to test these types of systems, as you simply measure the average voltage over a period here.

In this case, you need an oscilloscope.



Fig. 2: Electrical plug contact on the cover of the fuel delivery module



Fig. 3: Measuring tips on the rear of the plug

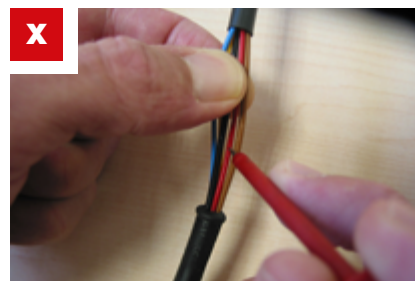


Fig. 4: Measuring tip on the cable

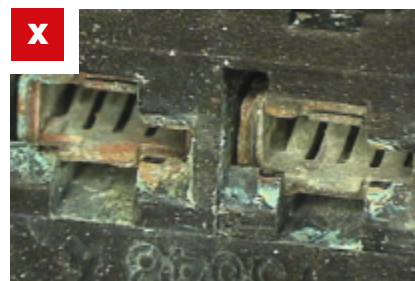


Fig. 5: Corrosion on the contacts