

Alternator, Check

Note: This check comprises a measurement of the output current and the regulated voltage. Check the regulated voltage first. Use an oscilloscope suitable for simultaneous testing of the electronic components.

The alternator can either be tested in installation position in the vehicle or removed from the vehicle on an alternator test bench. The following description is for an alternator test in the vehicle, but the steps are the same for a test on an alternator test bench.

A fully-charged battery is required for this test.

Warning!

Observe the following safety measures:

1. The battery, alternator and the voltage regulator must be connected to the same negative terminal.
2. The alternator must not be operated with an open circuit.
3. Never short-circuit the terminals on the alternator and the voltage regulator.
4. Do not reverse the polarity of the alternator.
5. When connecting an additional battery (e.g. a starting aid), always make sure that the same terminals are connected to each other.
6. Observe the polarity of the charger when charging the battery. The ground cable must be connected when charging a battery in the vehicle.

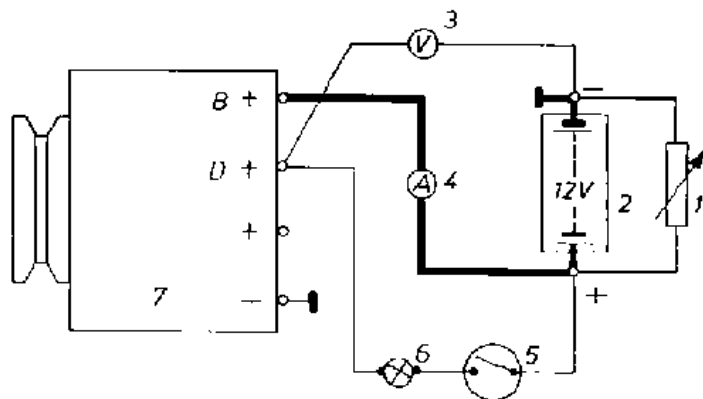


Inspect

Check the alternator power:

Current flow diagram:

1. Ballast resistor, connected in parallel to the battery
2. Battery
3. Voltmeter
4. Ammeter
5. Ignition lock
6. Charge warning lamp
7. Alternator



C 6226

Disconnect the battery and the connecting cable from the "B+" alternator terminal. Connect an ammeter (measuring range 100 A) to the disconnected cable.

Connect a variable ballast resistor to the battery terminal. Set the resistance to "0" before connecting. First connect to the battery, then to the resistor. Connect a revolution counter. Connect the oscilloscope in accordance with the manufacturer's instructions. Connect the battery.

Start the engine and measure the output voltage at different engine speeds.

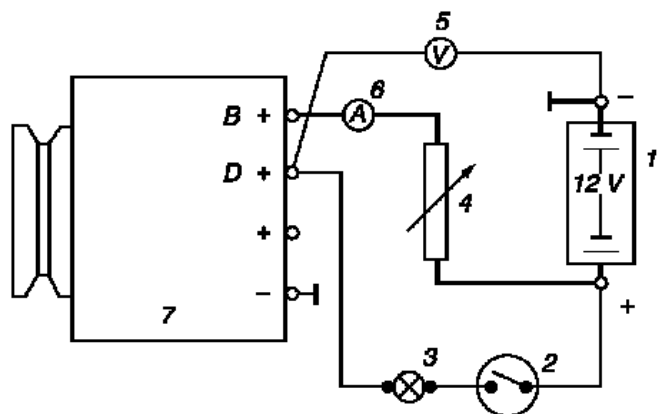
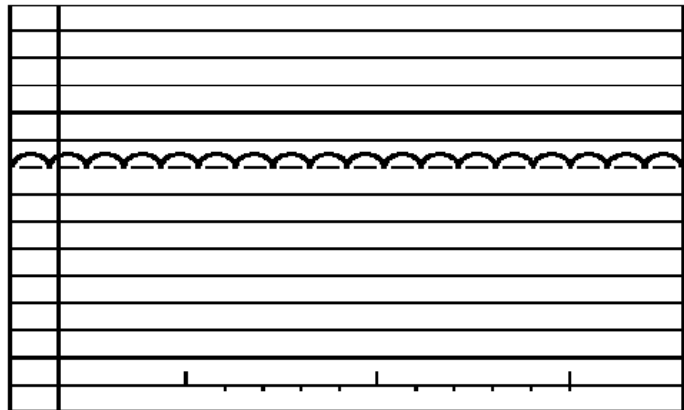
Check the alternator power:

If the required load currents are not achieved, adjust the ballast resistor. The voltage curves on the oscilloscope must be uniform. Test value: 5 to 7 A.

If the required minimum current is not achieved or if the display on the oscilloscope fluctuates, overhaul the alternator.

Regulated voltage: current flow diagram

1. Battery
2. Ignition lock
3. Charge warning lamp
4. Resistor, connected in series with the battery for measurement of the charging current
5. Voltmeter
6. Ammeter
7. Alternator



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Check the regulated voltage:

Connect the revolution counter, voltmeter, ammeter and ballast resistor in accordance with the manufacturer's instructions.

Disconnect battery. Disconnect the connecting cable from the "B+" alternator terminal. Connect an ammeter (measuring range 100 A) between the disconnected cable and the "B+" alternator terminal. Connect a series resistor in series with the battery.

Start the engine. Adjust the ballast resistor until the ammeter displays the specified value. Read off the regulated voltage – test values: refer to the "Technical Data".

Warning!

The alternator must only be tested with a fully-charged battery connected in parallel. Do not disconnect the ballast resistor or the battery until the alternator has come to a standstill.

Disconnecting the ballast resistor with the battery not connected in parallel leads to voltage surges which can damage the alternator diodes.