Alternator diagnostics for Opels with Isuzu Engines

There are some common faults associated with the charging system on Opel applications using the Isuzu 1.5 and 1.7 diesel engines. Blue Print gives some pointers to correctly diagnosis charging system faults prior to replacing the alternator, and to assist in the prevention of further problems.

If the charge warning lamp is illuminated while the engine is running, it is strongly suggested that the following checks are made prior to the alternator being replaced (in addition to a basic battery test);

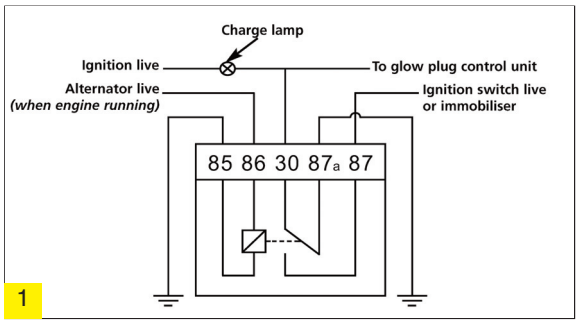
Charging voltage test

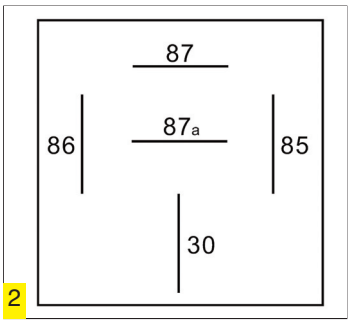
Test the battery voltage when the engine is running. The voltage should be between 13.7 and 14.7 volts at 1250 rpm. If it is within the above guidelines, the unit is charging correctly (see charge lamp relay test). Please note that the battery must be in good condition and be fully charged, with non-essential electrical loads switched off. A battery fault may cause overcharging, low voltage readings, or cause the alternator to 'burn out' after prolonged use.

Charging lamp relay test

The Charging Lamp Relay is prone to failure. The relay controls the dashboard charging light operation and alternator excitation. It also gives a signal to the diesel system self-diagnostics and glow plug control unit for post-glow operation. It is strongly recommended to change the relay when replacing the alternator, as it is possible for an internal alternator fault to damage the relay.

A quick and simple test involves separating the round 4-pin alternator loom connector (on the driver's side inner wing (see fig 5). With the ignition on (and the immobiliser cleared, if applicable), give a fused positive feed to the relay energising wire. This wire is normally Yellow/Red (male connector, vehicle side) and will correspond to terminal 86 at the charge lamp relay. Alternatively, apply a fused feed directly to terminal 86 at the relay (under the same conditions) to eliminate a harness fault. (see figs 1,2 for relay circuit wiring diagram).





Wiring diagram for the charging lamp relay circuit, on left, and the relay itself, on right

If the charge warning lamp on the instrument display goes out, the relay is functioning correctly and attention should be given to the alternator and loom. If the lamp does not go out, further tests at the relay holder are needed.

Alternator loom continuity

There are two common failure points. Firstly the large main alternator cable connector on the inner wing is very susceptible to severe corrosion (see fig 4). Partial contact here will restrict or stop alternator charge from reaching the battery, and in some cases cause the alternator to fail prematurely. This should be checked, cleaned or replaced as necessary.

Secondly, the wires in the alternator loom are prone to breakage (at the alternator end). Test with a multi-meter by measuring continuity between the inner wing connection and the alternator plug. Be aware that the wire positions in the connectors at each end of this loom will not be the same. The rubber 'bungs' in the back of the loom connectors should be removed to show the true wire location (see fig 10). Also, ensure that the terminals in all of the connectors are 'tight' and have no evidence of corrosion.

Other associated vehicle problems

Air bag warning light on - sometimes caused by an overcharging alternator.

Initial excitation - sometimes requires two minutes at 2,500 rpm to initially start from new.