OPERATION - FAULT FINDING

These vehicles are equipped with alternators with internal ventilation and integral regulator. There is also a warning light on the instrument panel which has the following functions:
– the warning light comes on when the ignition is switched on,
– the light goes out when the engine starts,
– if the warning light comes on while the engine is running it shows there is a **charging** fault.

FAULT FINDING

The warning light does not come on when the ignition is switched on

Check:
– that all electrical connections are sound;
– whether the bulb is blown (to do this, connect the circuit to earth; the bulb should light up).

The warning light comes on when the engine is running

This indicates a charging fault which could be caused by:
– broken alternator drive belt or charging circuit,
– damage inside the alternator (rotor, stator, diodes or brushes),
– regulator fault,
– overvoltage.

The customer complains of a charging fault but the warning light is operating correctly.

If the regulated voltage is less than **13.5 V**, check the alternator. The fault could be caused by:
– damaged diode,
– broken wire,
– charred or worn tracks.

Checking the tension

Connect a voltmeter to the battery terminals and read the battery voltage.

Start the engine and increase the engine speed until the voltmeter needle registers a stable regulated voltage.

This voltage should be between **13.5 V** and **14.8 V**.

Switch on as many power consumers as possible; the regulated voltage should be between **13.5 V** and **14.8 V**.

WARNING:
In the event of arc welding work on the vehicle, it is essential to disconnect the battery and the regulator.

IDENTIFICATION

Vehicle	Engine	Alternator	Current
XL0B XL0C	F9Q 760	Valéo SG 10B 050 Valéo SG 12B 017	125 A

CHECKING

After **15 minutes** warming up at a voltage of **13.5 volts**.

Rpm	125 Amps
800	64
2000	81
4000	118
6000	123

FAULT FINDING

Diagnostic tools make it possible to check the alternator by measuring the voltage and the output current, with or without electrical power consumers.

NOTE:
The station ampermetric clamp is inductive (range of measurement: **0** to **1000 A**). It is placed in position without disconnecting the battery, which allows computer memories and adjustment programs to be saved.

Fit the ampermetric clamp directly to the alternator output, with the arrow on the clamp pointing towards the alternator (the station will detect an incorrect position).

Measurement is carried out in three stages:
– measurement of the battery voltage, ignition off,
– measurement of the regulated voltage and the output current, without consumers,
– measurement of the regulated voltage and output current, with a maximum number of consumers.

On completion of the test, the values found will lead to the following diagnostic messages, where appropriate:
– battery voltage, no load **< 12.3 V** = battery discharged.

Without consumers:
– regulated voltage **> 14.8 V** ⇒ regulator faulty,
– (regulated voltage, no load **< 13.2 V**) or (charging current **< 2 A**) ⇒ charging fault.

With consumers:
– regulated voltage **> 14.8 V** ⇒ regulator faulty,
– regulated voltage **< 12.7 V** ⇒ it is necessary to check the alternator output against its specification:

Engine / **Current (amps)**	**F9Q**
Minimum current the alternator must supply with all power consumers switched on (**3000 rpm**)	80

If the measured output is too low, check:
– alternator wear (brushes, etc.),
– the battery connections,
– the engine earth strap,
– the alternator is functioning correctly,
– the belt tension.

If the measured output is correct but the regulated voltage is too low, the alternator is not faulty.

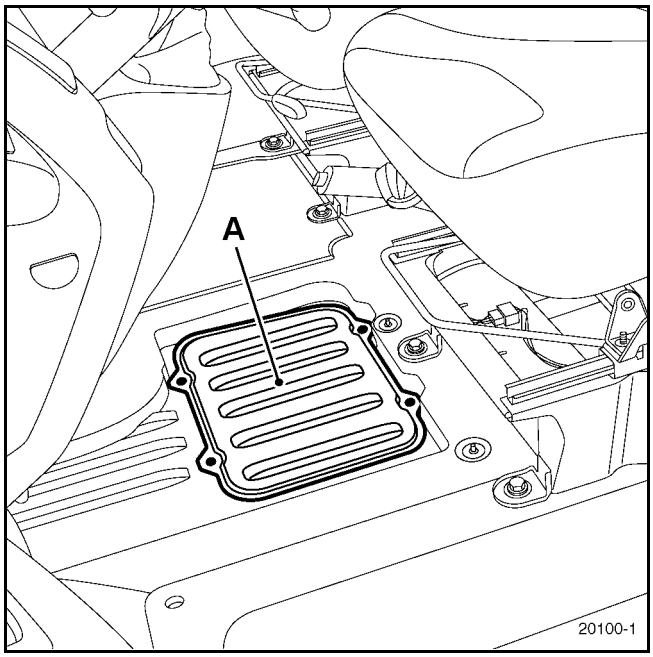
The cause of the problem can be attributed to one of the following sources:
– the vehicle has too many electrical power consumers,
– the battery is flat.

REMOVAL

Put the vehicle on four axle stands (see **Section 02 Lifting equipment** for the correct positions of the lifting jack and axle stands) or on a lift.

Disconnect the battery.

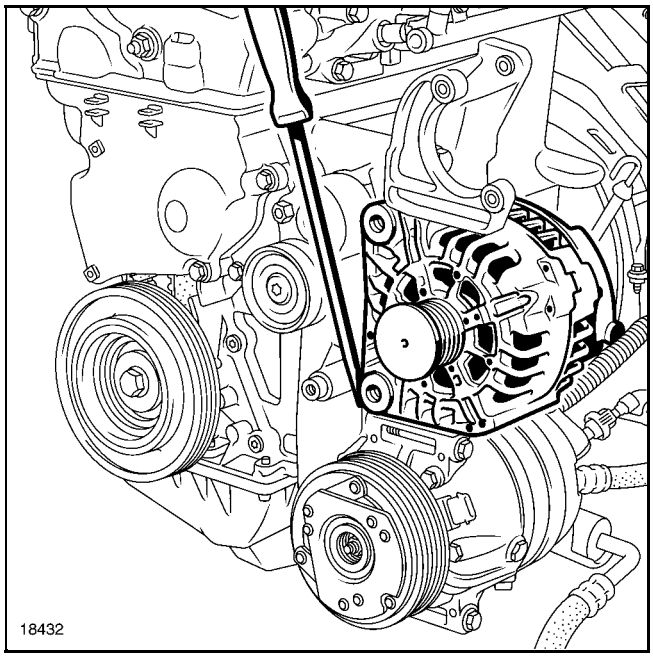
NOTE:
As the battery is located beneath the left seat, the carpet must be removed from the floor by unclipping it, then remove the battery flap (A) by loosening the bolts.



Remove:
– the engine undertray and the left-hand side protection.
– the radiator air deflector,
– the accessories belt (see **Section 07 Accessories belt tension**),
– the pulley.

Disconnect the electrical connections of the alternator and those of the air conditioning compressor (if fitted).

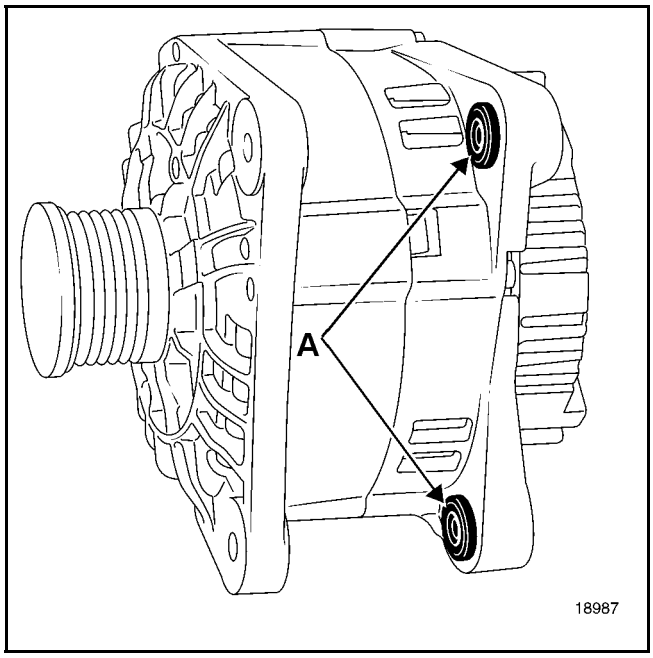
Remove:
– the alternator mounting bolts, then remove the alternator with the help of a screwdriver.



– the alternator, from above the vehicle.

REFITTING

To facilitate the installation of the alternator, compress the rings (A).



Refer to **Section 07 Accessories belt tension** for the tensioning procedure.

IDENTIFICATION

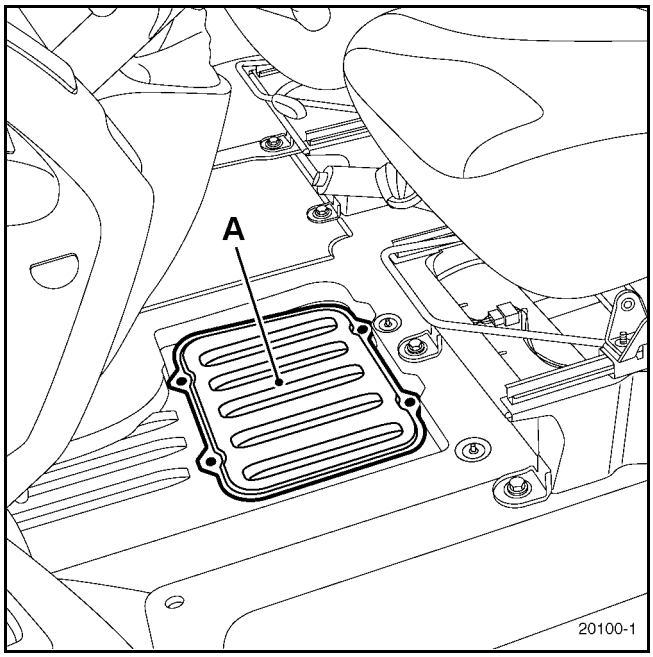
Vehicle	Engine	Starter
XL0B XL0C	F9Q 760	Valéo D7 R44

REMOVAL

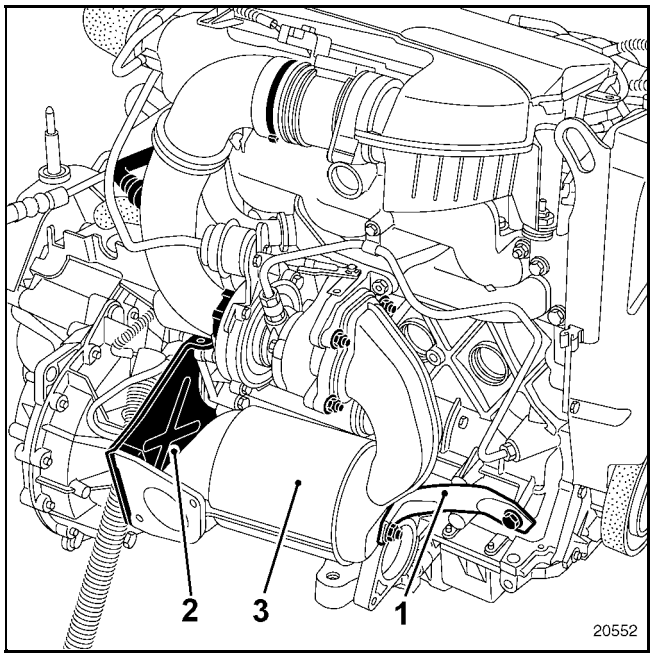
Put the vehicle on four axle stands (see **Section 02 Lifting equipment** for the correct positions of the lifting jack and axle stands) or on a lift.

Disconnect the battery.

NOTE:
As the battery is located beneath the left seat, the carpet must be removed from the floor by unclipping it, then remove the battery flap (A) by loosening the bolts.



Remove:
– the engine undertray,
– the turbocharger air outlet pipe,
– the expansion box,
– stays (1) and (2), then the catalytic converter (3),



– the starter electrical connections,
– the starter mountings,
– the starter motor.

REFITTING

Carry out the removal procedure in reverse.

Check for the presence of the centring dowel when refitting.