

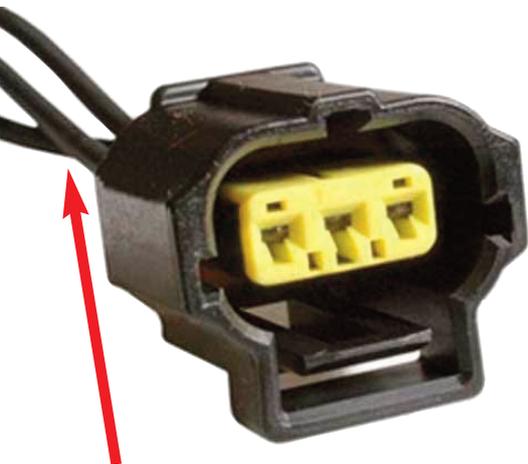
# Ford Smart Charge alternator problems

There are a few things that a mechanic should know when diagnosing and testing Ford Smart Charge alternators. Rotating electrics specialist Rhino Automotive details a few things to look for when dealing with this slightly different charging system.

## Ford Smart Charge alternators in Focus and Transit Connect models

These vehicles use Ford's "Smart Charge" system. This system uses two-way communication between the Powertrain Control Module (PCM) and the alternator to vary the charging output depending on factors such as temperature, battery state, load, etc.

The alternator plug has three connections, one for PCM to alternator commands, one for command acknowledgement signals from the alternator back to the PCM and the third is a battery voltage sensor.



Check for chuffed or broken wires when replacing the alternator

The alternator has an integrated voltage regulator that will, in theory, continue to operate conventionally should communication with the PCM be lost.

Although these alternators do sometimes fail, a very common problem is with the actual wiring loom from the three pin plug. Ford uses thin wall cable, which is housed inside nylon convoluted sleeving.

Over time, and with engine vibration, the insulation on the cables can become chuffed by the inside of the sleeving, leading to broken or corroded conductors. This will cause the warning lamp to illuminate and the alternator may or may not stop charging.

The loom can be tested for continuity with a meter but should also be visually inspected carefully and replaced or repaired if faults are found. A quick test is to measure voltage on the two outside terminals, one will have battery voltage, the other, with ignition on, will have between 5 and 9V.

## 2000 - 06 Transit Charging System

While this van has an identical plug to the smart charge systems, it is actually a conventional alternator, with a warning lamp terminal and a battery sensor, the third (centre) cable is terminated in the loom a short distance from the plug.



Focus diesel alternator



Focus petrol alternator



Transit Connect alternator

