

# Points to Check

## What points should be looked at when investigating a starter motor problem?

Some of the cases of starter motor failure are actually vehicle related, not unit related. The most common vehicle fault is unacceptable voltage to the starter motor or Voltage Drop.

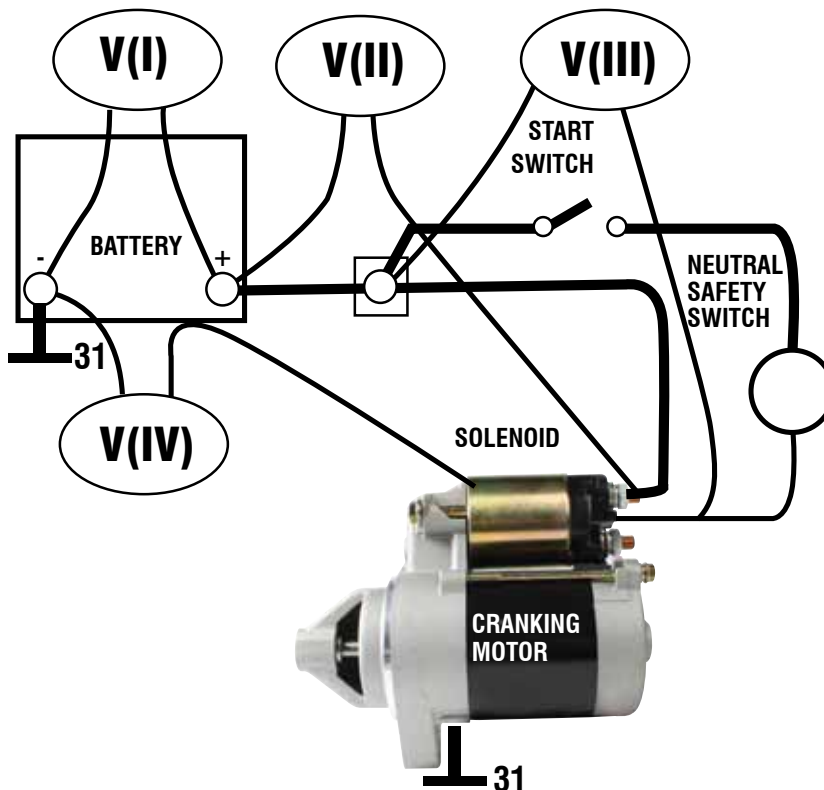
### Voltage Drop can affect a starter motor in many ways:

- Burning of brushes and the commutator,
- Solenoid contacts burning or sticking,
- Starter motor is not engaging or cranking.

If a customer is continually having problems with starting of a vehicle, or returning several starter motors from the same vehicle, further checks on the vehicle may be required.

### Points to check

- All cable connections, both positive and negative, should be clean and tight, and there should be no corrosion on the battery terminals.
- The battery itself should be checked (with a hydrometer and load meter) to ensure that it is in good condition. A voltmeter is required to check voltage.
- Check the voltage (VI) when cranking, if this is less than 10V there may be a poor connection between the battery post and terminals, the battery may be low of charge, or the battery may be weak.
- When cranking the engine, voltmeter readings should be taken at point (VII). Ideally this voltage should be the 0V, if there is a reading of more than 0.5V, further investigation will be required, possibly changing cable lugs or replacing battery and earth cables as required.
- If the voltage at the start terminal (VIII) is more than 1.4V (when cranking) a start solenoid relay may be required.
- A voltmeter reading (V IV) between the negative post of the battery, and the body of the starter motor is required to ensure there is minimal voltage drop (less than 0.5V) on the negative (earth) side of the starter motor.



**Note:** Every vehicle is different, due to cable lengths, cable size, starter motor type and battery types, so this is a rough guide only.

- The vehicles service manual should be referred to for specific vehicle information. The above measurements are for a standard automotive system (12V).
- A starter motor should not crank for more than 30 seconds. If a starter is cranked for 15-30 seconds a cool down time of 2.5 minutes will be required.

The above "Points to check" should be completed for every vehicle with a starting problem.