



BROWN & GAMMONS LTD

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HIGH TORQUE STARTER MOTOR FITTING INSTRUCTIONS (TC101HT)

This high torque starter is a brand new direct replacement to the original application. It is based on a modern high torque gear reduction design which is pre-engaged, meaning it has a solenoid as part of the starter motor. It can be wired in two ways to suit either a modern 'pre-engaged' type wiring arrangement or alternatively can be run in conjunction with an original bulkhead mounted type solenoid in applications still running an inertia type starter.

Our signature Denso based OSGR starter is available to suit over 700 applications so there is an array of terminal types and positions available and the starter offers an infinite number of positions it can be mounted in due to its ability to spin 360 degrees on its mounting flange plate. We have provided a scribe line on the front mounting flange plate which shows the correct PCD to re-drill and re-mount the starter if necessary. These are available as a 'multi-hole' version however we prefer not to offer this as standard as it can greatly reduce the strength of the mounting and will not always offer you the exact position you may require.

As a general rule, these starters will all come with two available connections. 1 x large M8 stud type post with a 13mm flange nut and alongside 1 x 6.5mm male lucar terminal housed in a plastic insulator block. The large stud post is for the heavy duty battery cable and the smaller terminal for the ignition 'exciter' wire.

Fitting as a replacement for a pre-engaged type starter:

This starter operates in a way that the battery positive is always connected to the large stud on the side of the solenoid and it merely takes a small positive feed from the ignition switch or starter button to energise the unit in order for it to operate. The design of the unit means that it will fully engage before it begins to crank. The shaft extends on a helical spline that rotates the pinion gear as it throws forward. We also machine a chamfer onto the leading edge of the pinion gear in order to aid the pinion meshing with the ring gear. There is also a spring built in within the pinion gear enabling it to compress if it strikes a tooth on the ring gear and mesh once it has rotated enough.

- Disconnect the battery in order to prevent a short circuit
- Remove all wiring from the original starter and then remove the starter
- Fit the high torque starter in place of the original item.
- Fit the main power feed cable to the M8 stud post ensuring not to over-tighten this nut. Over-tightening can twist the internal solenoid reducing the efficiency of the unit or causing it to fail altogether.
- Fit the solenoid trigger wire to the 6.5mm male lucar post located in the black housing.

If there is an additional wire that was attached to an even smaller terminal on your existing starter motor solenoid then this is most likely to be what is known as a 'cold-start' terminal or ballast feed for the ignition system. This is so in extreme circumstances when the engine is particularly hard to turn over the starter will feed the ignition with a



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live feed whilst cranking in order to aid the engine in firing. Due to our high torque starter drawing less current from the battery re-connecting this terminal is not strictly necessary and it can be merely insulated and not re-connected. If attaching this wire is required then a cold start terminal can be supplied at the customer's request - it is a quick and simple fix. Merely connect the supplied loom on to the black plug on the starter solenoid and wire your existing wire on to the black or yellow wire leading from the loom. Connect the 'cold-start' wire to the red or blue wire and you are now ready to go.

Fittings as a replacement for an inertia type starter:

Where our starter directly replaces an inertia type original fitment starter motor we will fit the unit with a link wire between the ignition trigger terminal and the battery stud post. This can also be done internally prior to purchasing the unit however linking these two terminals externally enables you to convert your vehicle's wiring to suit a pre-engaged starter at any time therefore bypassing your bulkhead mounted solenoid.

- Remove the main power cable from your existing inertia type starter and then remove the unit from your vehicle.
- Fit the high torque starter in place of the original item. Fit the main power feed cable to the M8 stud post ensuring not to over-tighten this nut. Over-tightening can twist the internal solenoid contact reducing the efficiency of the unit or causing it to fail altogether.
- Retain the black insulated link wire which is fitted between the ignition trigger terminal and the main battery stud. This means the original bulkhead solenoid is still in use.
- If you wanted to bypass your original solenoid you can dispose of the black insulated link wire supplied attached to the unit and re-route the trigger wire going to your current solenoid down to your new starter motor. This will then convert the wiring arrangement to 'pre-engaged type'.

The starter motors earth through their mounting flange plate. They can be fitted on positive and negative earth applications. Please ensure the starter has a good earth connection particularly if the vehicle has been recently painted.

Permanent Magnet gear reduction or PMGR units are the 'exception to the rule'. These magnetic units cannot run a 'link wire' when replacing an inertia type starter and **MUST** be wired as per a standard pre-engaged unit. The polarity of the vehicle is also critical, as standard all PMGR units will be to suit conventional negative earth vehicles.