



STRESSED OUT: Nissan Tiida's new engine has a number of special features

Stress aids engine

While many think there is nothing new that can be done with the internal combustion engine, car makers are still finding ways to improve its performance and reliability.

Nissan has changed the way it makes engines with the launch of its new MR18DE unit in the new Tiida.

The inline four cylinder is built a little bit differently and Nissan says there are performance and reliability advantages.

It's an all-alloy unit and is the first engine for use in a mass-produced vehicle to have its bores machined under tension.

Normally this stage in the production of the engine is done when the

engine is not under stress. But Nissan says when the engine later has the head torqued down on to the block the bolt tension then distorts the cylinder bores. It's an almost imperceptible change but enough to result in increased oil consumption in the worst cases.

So Nissan uses a torque plate to support the block and put it under stress while the cylinders are bored. When the head is later torqued down to the same level the cylinder returns to exactly the shape it was when it was bored.

The new engine design is also slightly different from a conventional unit, with the cylinder bores offset by

10mm from the crankshaft centreline. In most engines the cylinder bore centreline is directly in line with the crankshaft.

Nissan says having the crank offset reduces rotating friction and makes the engine more efficient.

In another move to make the engine more durable the big ending bearing and cap is produced in one piece. It is cooled and snapped at the bearing cap join for a tighter, more exact fit later. The engine is designed to be run more efficiently with an improved cooling system around the long thread spark plug.