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Light, rigid and twice as strong as a Formula One car, our advanced hand-welded aluminium spaceframe is the core of every Rolls-Royce.

To this spaceframe we attach the body panels. Most are made from aluminium, except the front wings, which are a composite material, and the bootlid, which is made from steel.

Though hidden in the finished car, the aluminium spaceframe - the largest of its kind ever made in the automotive sector - is one of the undoubted engineering highlights of a Rolls-Royce. Made-up of some 200 extruded aluminium sections and more than 300 parts made of alloy sheet, highly-skilled craftsmen weld the structure together by hand, completing some 150 metres of weld in 2,000 separate locations on the spaceframe. Designed to be immensely strong, for safety, and rigid, to provide a solid platform around which the rest of the car can be built, the spaceframe is much lighter than if it were made from steel.

Precision is another key element of the Phantom. Once completed, every key area of the body is machined to provide the highest levels of accuracy and perfect positioning of the car's most critical elements, such as the suspension units, doors, windscreen, seat mounts, one-piece instrument carrier and the front wings.

Clever design means the spaceframe is also adaptable, making it possible to build new Rolls-Royce models without the need for a radical re-design. It's an extremely advanced and efficient piece of engineering. A good example of what this flexibility enables us to do is the Extended Wheelbase Phantom, which gains an extra 250mm of rear legroom without compromising the styling or engineering integrity of the standard car.

Though aluminium is clearly the predominant material used in the construction of the Phantom, when it comes to the body panels a variety of materials are used, each being chosen as the most appropriate for the job. For example the highly complex shape of the front wings can't be achieved in pressed aluminium, so a composite material is employed instead.

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