



## What exactly is a 'tub'?

### *Finite Element Analysis*

Once again before we can consider building a model of the tub we need to understand what it is, - what does it do and how does it interact with other components on the car? We'll begin with Lewis describing the component.

This is the chassis which is of carbon fibre composite construction and this does many jobs. If we go through them in turn: one is to try and receive all the suspension loads from the wheels and carry them into the tub or the chassis and then out into the rest of the car; so the suspension members here you see mounted, they carry all the forces from the wheel into this part; the second of which is to receive loads from impact structures on the front and side of the car; and the third is for roll over incident where there is two main areas of the car to try and resist those loads. There are many regulations we need to try and sort of satisfy basically which come in via impact tests, on the front and the side of the car which is the nose box, which isn't shown here, but the forces obviously are reacted by this component.

And the side of the car and also adjacent to the driver to give him some protection in the side impact. And the seatbelt mountings are obviously in here, and also there are roll hoops which again for the regulations we need to satisfy two load tests; one of which is at the front of the cockpit here, you can only see this fin here, but they're of actually a considerable reinforcement under here to take the forces. Another one up here which protects his head in a roll over incident, which protects the driver in the event of rolling over. And then between the driver and the rear bulkhead is the fuel cell and the rear bulkhead is basically where the chassis finishes and the rest of the car begins and it's held on just using a hand full of fasteners only.

So now we know quite a bit about the tub. We know it is made from Carbon Fibre composites. As a cocoon for the driver, it needs to be immensely strong and is subject to a range of impact tests to ensure that it meets the standards stipulated by the governing bodies of Formula One.

We also know that all the car's major components such as the engine are mounted directly onto the tub. And that the suspension members carry the forces generated by the wheels into the tub and out into the rest of the car.