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Testing Times

Issue 20 March 2006

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Rear Wings

These are clearly not technically essential on most vehicles [except perhaps on a race track] and this means that if fitted, they cannot make the vehicle less safe to any road user. This includes unfortunate pedestrians who may be struck by the vehicle or other roads users who may collide with the vehicle. So how do we judge whether a wing makes a vehicle less safe? Well, wings are fitted to some models by OE manufacturers and the manufacturer has had to go through the process of demonstrating ADR compliance.

Therefore, the OEM examples provide a good guide as to what is acceptable and how they must be made and fitted so that they do not reduce the safety of the vehicle in any way.

You will see from the examples that they do not project sideways beyond the profile of the vehicle, all edges are thick and well rounded and they are usually shaped to closely follow the contours of the vehicle so that it is unlikely that a person's limb could get caught between the vehicle body and the wing.

Acceptable Wings

Some wings are also fixed in a way that would allow them to break off without producing sharp edges in a serious impact.

Aftermarket wings that do not have these features would certainly increase the risk of injury in a crash and must be removed before a RWC can be issued. Also, any holes left by the removal of the wing that could allow exhaust gases to get into the vehicle interior must be sealed off.

Un-acceptable Wings

The sharp rigid aluminium and carbon fibre wings pictured above are examples of an unacceptable design.

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Intercoolers

Turbochargers and superchargers are devices that compress air so that more of it can be squeezed into the engine. More air means more oxygen to support combustion and with a suitable fuel delivery, it means more power for a given engine size. You don't get anything for nothing however and a major issue created by squeezing the air is that it makes it hot. Hot air, as well as being less dense than cold air, introduces heat load inside the engine which reduces efficiency and may lead to pre ignition and detonation.

One way to reduce the temperature is to pass the heated air through a heat exchanger. Heat exchangers can be air to water or air to air. In cars we usually see air to air types and we know them as intercoolers.

Manufacturers design vehicles for many situations and sometimes the intercoolers they provide are not the most efficient ones available. Changing to a larger or better quality unit or re-mounting one into a more effective air stream can assist temperature control at or near full power. (None of this stuff really matters at part throttle as you are not developing high boost pressure)

Is it an issue for roadworthiness? Yes and No, depending on what has been done. Because cooling the air more effectively is the same as driving on a colder day, and the manufacturer has already calibrated the vehicle for a wide range of operating temperatures, fitting a more efficient intercooler alone should not affect the emissions compliance of the vehicle. However, if the more effective cooling of the air has been gained by relocating or fitting a larger intercooler, it should not create a dangerous protrusion or compromise ground clearance or affect any SRS sensor.

However modifying the front structure of the vehicle as above to fit that larger unit will definitely affect the compliance of the vehicle as well as making it potentially unsafe and this will attract a defect notice.

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