

Keeping up with new construction methods and repair techniques

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Previous technical features in PanelTalk have made reference to model-specific vehicle repairs. Well once again, we remind repairers how important it is to be aware of model-specific issues, and this is reinforced by the manufacturer featured in this technical bulletin.

New Discoveries

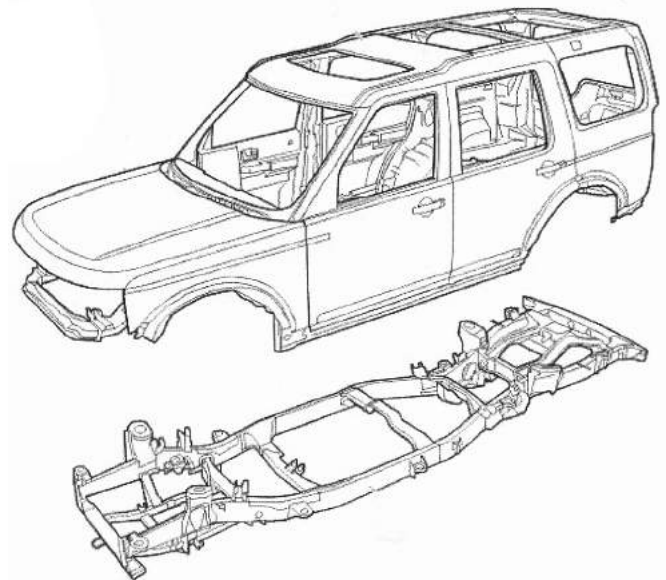
The all new Land Rover Discovery 3 is another new age body structure built from different steels, aluminium and magnesium. This requires repairs to be done according to the manufacturer's instructions. Yes, that word again that repairers hate to hear... INSTRUCTIONS. Who needs to read the instructions? Only wallies need instructions don't they? Well, if you are clever enough to proceed with repairs and think you know how each and every new vehicle is constructed you're too good for this industry

The following article briefly covers one topic from the body repair manual for this new Land Rover. It expresses the manufacturer's recommendations and highlights some of the new materials used for the body structure.

The body plays a significant role in the increasing trend of ever more rapidly changing model variants. At the same time the stability of the body plays the most important part in ensuring passenger and driver safety. Lightweight construction, alternative materials, composite materials, plastics and appropriate joining processes are all design features that characterise modern Land Rover vehicle bodies.

In terms of manufacturing technology, modern safety cell bodies can be produced almost without any problems. Land Rover guarantee high quality standards by ensuring that mechanical strength properties are tried and tested in numerous computer simulations, crash tests, by testing materials and by employing sophisticated manufacturing

technologies. In the event of repairs it is vital that the production quality standards are upheld. This requires a well-equipped workshop, and places particular emphasis on the qualifications of the workshop technicians. Up-to-date knowledge of current manufacturing technologies and continuous training on new repair methods and techniques are vital for high-quality body repairs. The model-specific repair manuals and the general repair techniques provide valuable support when undertaking body repairs.



Always follow the repair instructions published in the manual. Failure to observe these instructions can result in serious impairment of vehicle safety. All specified safety requirements must be met after the work has been carried out.

High Strength Steels

Land Rover vehicles are constructed from a number of different steels, partly to obtain an optimised body (collision, safety, rigidity, fuel economy, etc).

Steels are divided into several groups according to their tensile and yield strength, that is to say the force necessary to bring about plastic deformation of the material.

Yield Summary

Yield is the strength at which the metal changes from elastic to plastic in behaviours, the point of no return.

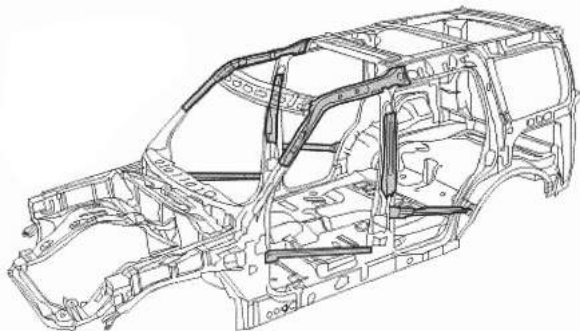
Tensile Summary

Tensile strength is the breaking strength of a material when subjected to a tensile (stretching) force, the point of no return.

Abbreviation	Steel Type	Yield Point
SS	Soft Steel	Maxium Yield point of 220 MPa
DP	Dual Phase Steel	Steel With a Yield Point up to 400 MPa
HS	High Strength Steel	Steel with a Yield Point 220
EHS	Extra High Strength Steel	Steel with a Yield Point 450 - 800 MPa
UHS	Ultra High Strength Steel	Steel With a Yield Point up to 1400 MPa

Ultra High Strength steel in body structure.

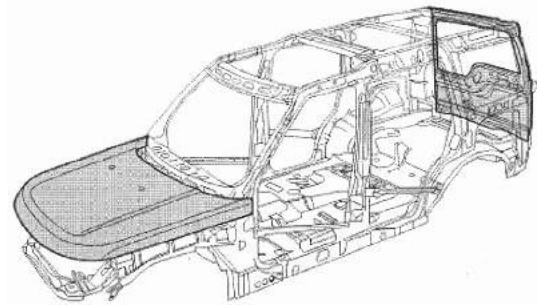
The addition of Ultra Hight Strength steel in the A Pillar, B Pillar and cantrail gives the body greater strength in a front or side impact.



No attempt should be made to straighten Ultra High Strength steel, due to its brittleness.

Aluminium in body structure

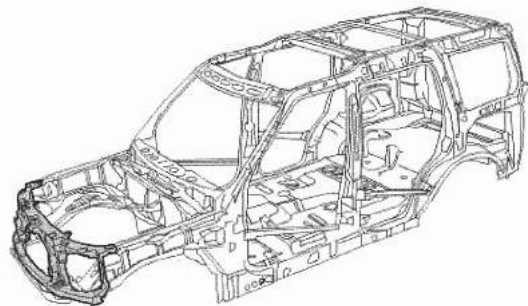
Aluminium 6000 series is used in the hood, tailgate and liftgate. It is made from magnesium/copper aluminium alloy and is heat treated during manufacturing/paint bake process resulting in a panel with increased strength and dent resistance.



When repairing aluminium you must use tools that have been used on aluminium and never on steel panels, this is to prevent cross-contamination.

Magnesium in body structure.

Magnesium AM60B is used to make the hood latch panel. It has good ductility and energy absorbing properites. It is also used on the instrument panel mounting beam.



No attempt should be made to weld or straighten the hood latch panel and it should be replaced in the event of an accident. If the corrosive coating is damaged it must be repaired using 'Land Rover Low Temperature Anti-Corrosion Coating', service part no VEP 501 840 PMA

Accident damage and diagnosis

General notes

- Exact diagnosis of the extent of damage enables proper repair planning.
- All body repairs must be carried out in accordance with the guidelines in the Body Repair Manual.
- The stability and strength properites of the body must be taken into account during body repairs. The body has exactly defined deformation patterns that must not be affected by any repair work.

For instance, the crumple zones absorb the bulk of the impact energy. If any unprofessional repair techniques or methods are used in these areas then this can pose a fundamental threat to vehicle safety.