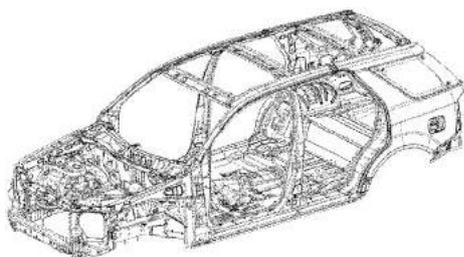


Keeping up with new construction methods and repair techniques

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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.



Ford Territory

Panel Repairs

When performing repairs it is essential that the straightening or correcting of stress will not create regions in the panel, which are stiff, brittle or weak when the metal has been returned back to its original position.

Particular attention must be given to mounting points for steering or suspension systems, when making the decision to straighten panel damage.

Generally, if there is a sharp crease across a mounting point, it is better not to attempt straightening. High Strength Low Alloy Steel (HSLA) should be treated as a special case. HSLA steel is heat sensitive, therefore excessive deformation and straightening could be detrimental to the material strength, where any doubt exists the relevant panel must be replaced.

The side door strainers must not be repaired under any circumstances.

Replacement Body Panels

The use of genuine Ford panels in all repair situations is desirable. Genuine Ford Original Equipment Manufacturer

(O.E.M.) parts are stamped from original sheet metal dies which ensure quality of size, fit, finish, strength and durability.

Sealants and Corrosion Protection

Various sealants and anti-corrosion treatments are used throughout the vehicle. Ensure the correct treatments are applied when performing body repairs. Refer to the Corrosion Protection section of the appropriate manual for sealant description and application.

Protection of Electronics

Welding:

Electric welding operations include resistance spot welding, MIG welding, TIG welding, conventional arc welding and plasma cutting. The following rules must be followed when any electric welding operation is performed in the repair of a vehicle.

1. Disconnect battery, both leads, earth lead first.
2. Remove connections to all electronic control units.
3. Where the welding is to be close to the electronic control unit, remove the ECU if there is any possibility that heat could affect the unit.

When Applying Heat:

Electronic control units are extremely heat sensitive, any operation that could raise the temperature of the unit or its surrounds to 80 degrees Celsius or above, should not take place until the Powertrain Control Module (PCM) is removed from the vehicle. Operations such as oxy welding, or plasma cutting, electric welding of all types and normal grinding operations could all be reasons for concern. The location of electronic control units is shown in the manual.

Precautions

1. Never start the engine without securely connected battery terminals, and never disconnect the battery whilst the engine is running or the ignition is turned on.
2. Never disconnect or reconnect the wiring harness plus

of an electronic control unit with the ignition turned on.

3. Be certain that all plugs of the wiring harness are properly connected before connecting the battery.
4. When disconnecting battery always remove earth lead first, connect in the reverse order.
5. Under no circumstances should the battery be shorted to earth.

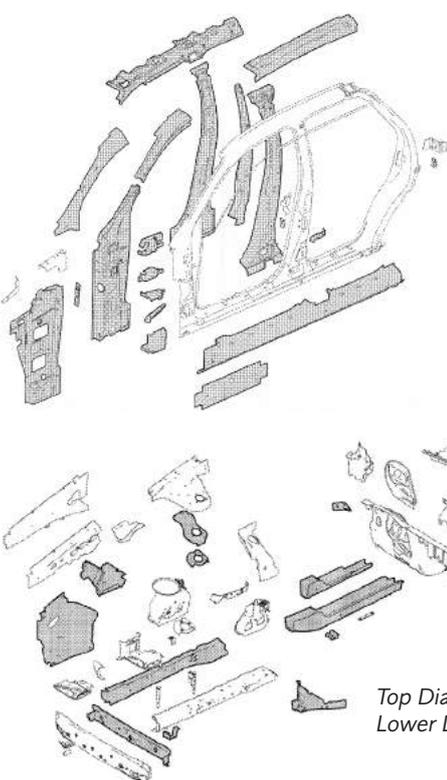
Steels

There are a number of different types of Steels used in the body and frame panels. In most cases the material can be repaired or welded in the same manner as normal mild steel panels. The exception to this is the heat sensitive High Strength Low Alloy Steels (HSLA).

WARNING: The Crash Severity Sensor mounting bracket on the front upper X member must be replaced if damaged. It must NOT be straightened or panel beaten. This is critical for correct function of the crash severity sensor, which plays a major part in activating the front airbags in a crash.

High Strength Low Alloy Steels (HSLA)

To reduce vehicle weight while maintaining structural strength, Ford Motor Company has used High Strength Low Alloy steels (HSLA). Whilst these steels appear to be the same as other steels, HSLA steels are thinner and they have a low alloy content, which makes them heat sensitive. The location of panels made from this material (HSLA parts are shaded) is shown below.



WARNING :
The door beam (side intrusion bar) fitted to side doors is manufactured from Ultra High Strength Low Alloy Steel (UHSLA) and must not be heated. These parts are

Top Diagramme: Body Side
Lower Diagramme: Front End

critical to driver/ passenger safety in both side impact and steering column rearward displacement. If a door beam is damaged, fitment of a new door shell is necessary.

Heating HSLA Steel

Cold working is best for straightening bent parts. The application of heat may anneal (soften) HSLA steel and should be avoided if possible. If heat must be applied to relieve stress in structural components, the steel must not be heated over 700-800°C (dull red) and this temperature can only be applied for a maximum of three minutes. A temperature sensitive crayon must be used for marking when heating this material, including all welding, cutting, grinding and buffing operations. It is recommended to replace assemblies of HSLA components rather than separate panels to restore the vehicle to original performance.

Welding HSLA Steels

The only methods of welding that are acceptable for this material are resistance spot, MIG and conventional arc welding. Oxyacetylene welding or cutting must never be used on this material. The recommended welding method is:

1. Spot welds should be replaced with spot welds where possible. Where spot welding equipment is not available or the location is not accessible, panels should be MIG puddle or plus welded.
2. MIG welding is preferred over conventional welding, when welding HSLA or mild steel panels. The wire used should be 0.8mm or 0.9mm and conform to the classifications AWS A5.18-69, E70S-6 or E70S-4.
3. Conventional arc welding must be carried out using 2.5mm diameter rods conforming to classification AS1552-73, E4841 or AWS A5.1-78, E7014.

NOTE: All areas to be welded must be treated with a zinc rich weld through primer to restore maximum corrosion resistance.

General Information - Welding Techniques

When welding is performed anywhere on the vehicle, safety precautions must be taken to prevent damage to electrical system wiring or components. Any parts which could be damaged by excessive temperatures or electronic surge should be removed or correctly shielded. Begin by disconnecting and covering the battery negative cable. Disconnect the vehicle control modules such as the ABS control module, the restraints control module (RCM) and the powertrain control module (PCM). Additionally, computer processors should be completely removed if welding is to be done within their proximity.

We acknowledge, with thanks, the assistance given by Ford New Zealand in preparing this material.