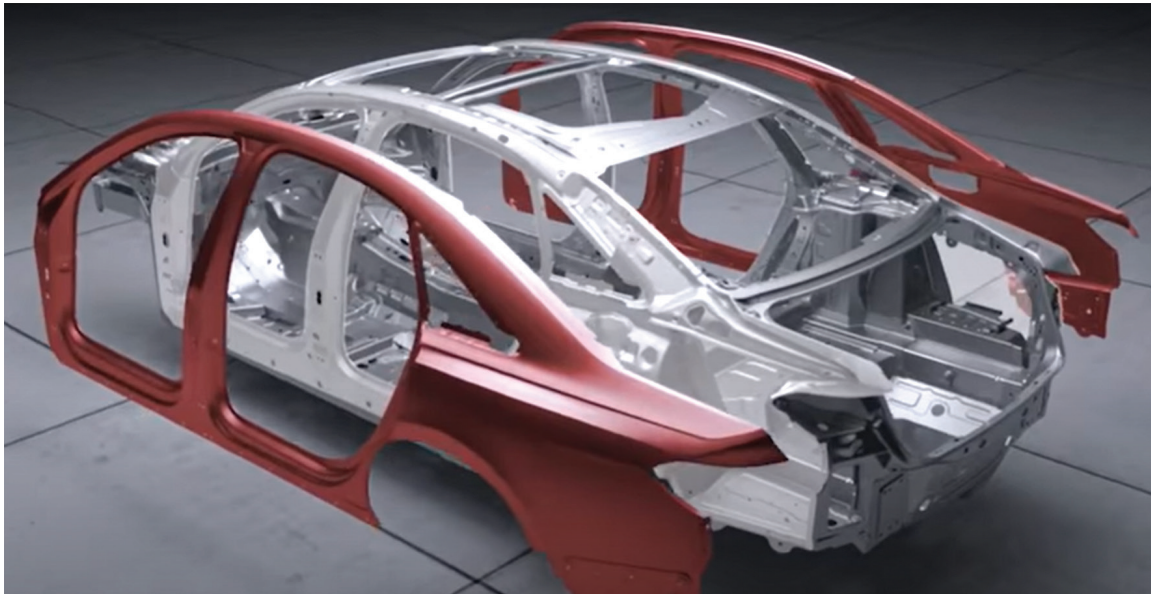


TECHNICAL REPORT



BUILD SEQUENCE AND ACCESS

- THE ADDITIONAL PROCESSES OFTEN REQUIRED WHEN REPLACING UNIBODY WELD-ON PARTS



Without doubt vehicle-makers continue to develop unibody structures that are lighter and stronger, with the strategic use of Advanced High Strength Steels (AHSS), and advanced joining techniques such as laser welding, brazing, adhesives and so on.

In addition to the modern collision repair technician understanding that re-attachment techniques demanded by many vehicle-makers in many instances will, by necessity, be different to the original processes, is the added complexities of removing other, often undamaged parts.

This is brought about by several factors, namely: -

- Inner structures (reinforcements) being replaced that cannot be sectioned – OEM connection points are often concealed behind other (usually exterior) panels.
- The build sequence – where the **layering** of panels at the factory prevents direct access to the targeted damaged part.

The most common area where we identify additional procedures / operations may be required, is the side aperture – and in particular, the **B Pillar**: -

- Cant rail and sill/rocker cutouts on the outer panels to gain access to the weld points of the reinforcements where they connect to the inner structures.
- Removal of the roof panel to access inner connections.

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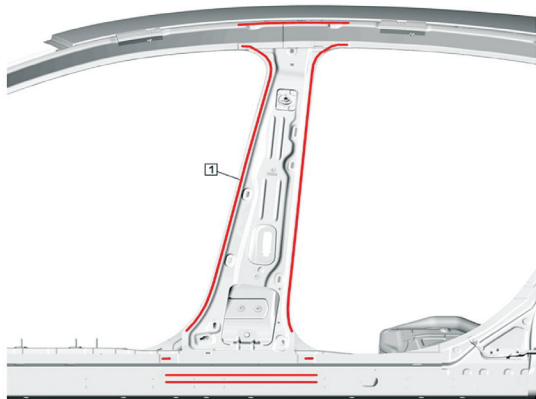
TECHNICAL REPORT



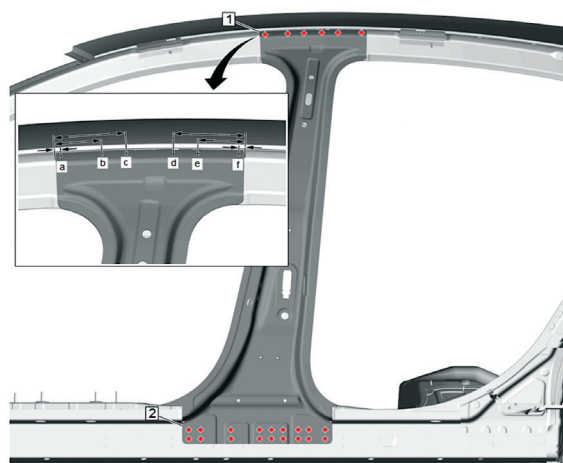
Often both of these additional operations will be specified by an OEM.

Further requirements may also include an adhesive bonding schedule (weld – bond or rivet- bond) of the inner structural parts: -

COURTESY OF HOLDEN (ZB COMMODORE)

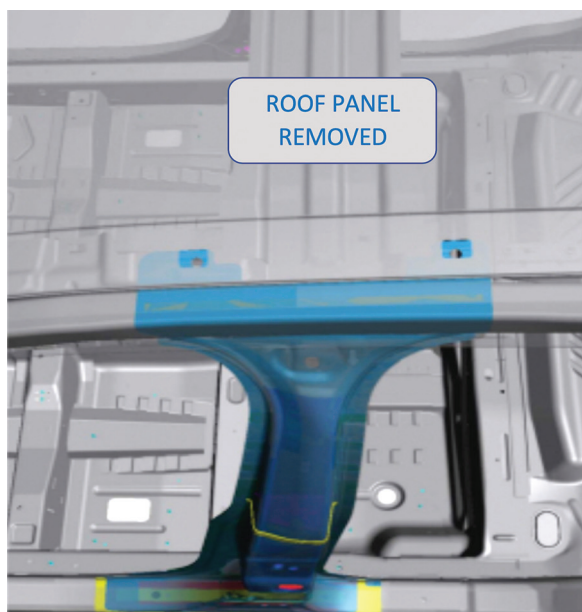


Apply structural adhesive.(1) [Metal Panel Bonding](#)



Drill holes for the high strength rivets A1.(2) [18x]

COURTESY OF FORD (2019 ENDURA B PILLAR)



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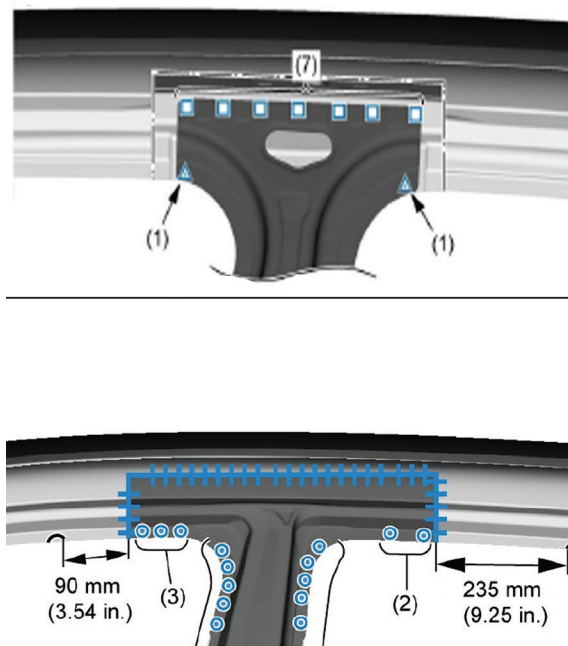
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TECHNICAL REPORT



SUZUKI EXAMPLES



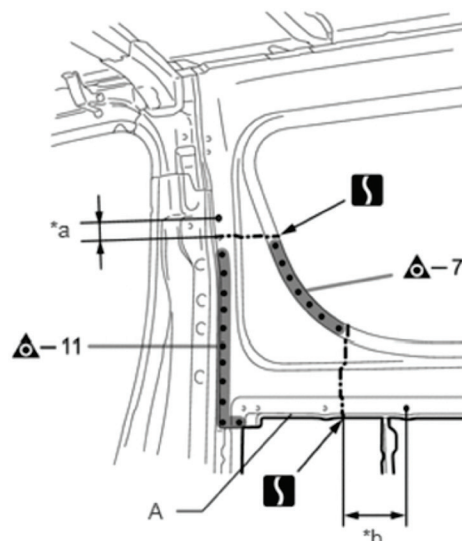
Now that we have a basic understanding of why vehicle-makers develop procedures that consider the restrictions of replacing inner structures, a recent model release from Toyota has highlighted additional operations required for **outer** panel replacement also –

COURTESY OF TOYOTA

2019 TOYOTA HI-ACE VAN (GDH30)

Excerpts from the quarter / side panel replacement procedure:

Cut out upper portion of inner frame:



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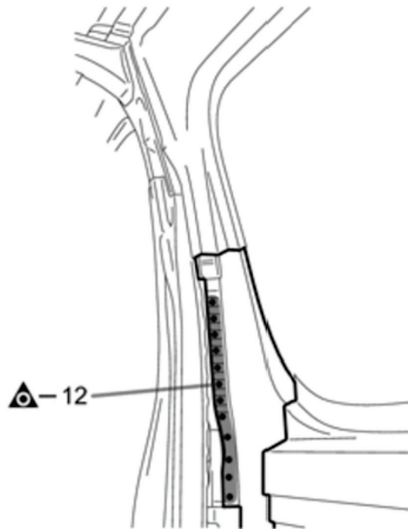
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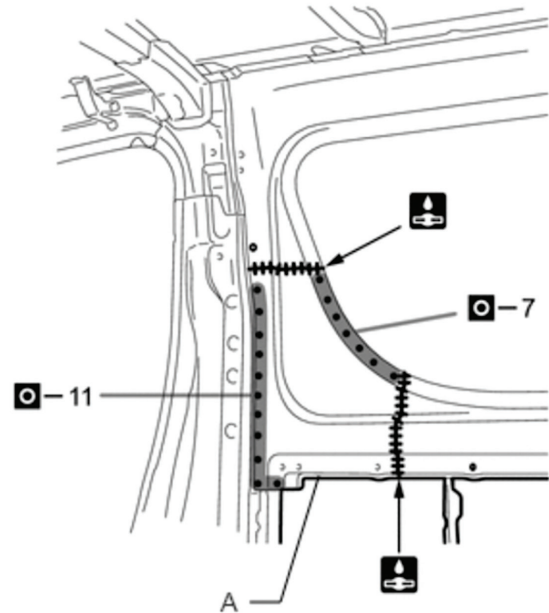
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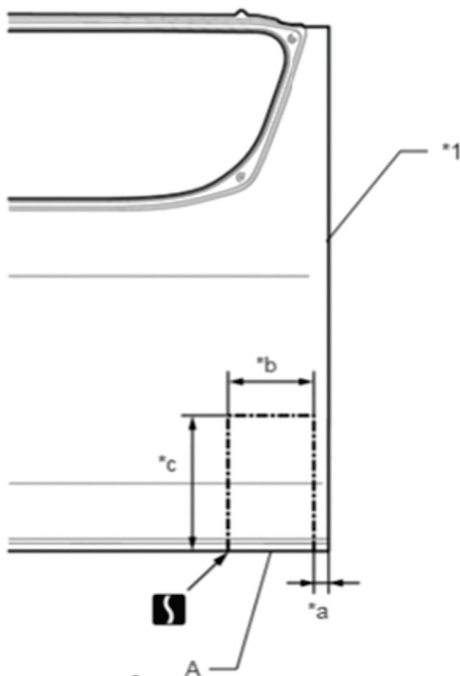
To access weld points:



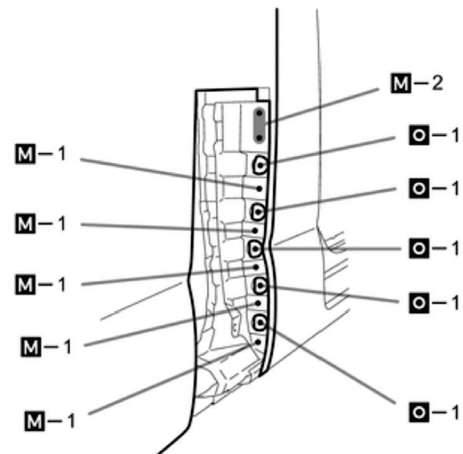
Weld-in cut out portion of inner frame:



Remove lower front portion of new outer panel:



To access weld points:



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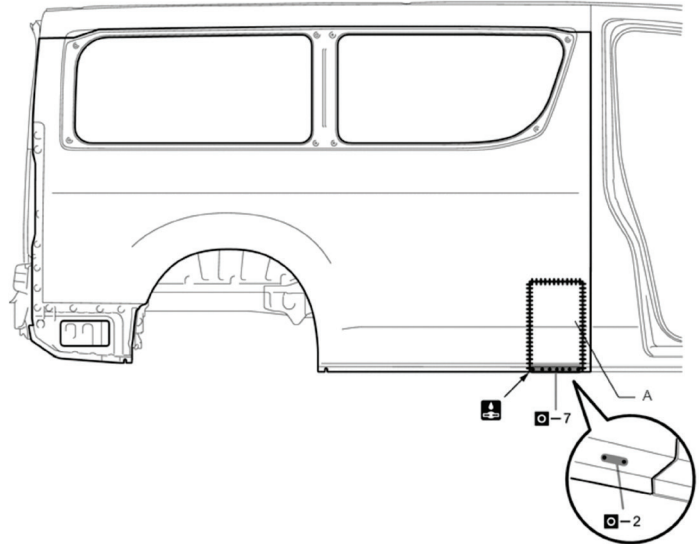
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Weld-in cut out portion of new side panel:

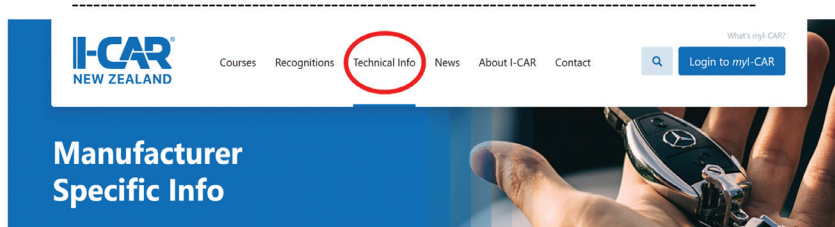


This outer panel replacement procedure is obviously a lot more complex than its predecessor and will require a high skill level from the technician when re-welding the cut-out portions (to minimize the Heat Affect Zone HAZ) as well as controlling distortion. On its own, the total length of the outer panel open butt weld joint is 715 mm!!!


To add to the complexity of this procedure is the specification of adhesive at strategic locations along the flange joint to the B pillar.

If you require collision repair information: -

Visit the I-CAR NZ website (i-car.co.nz) and click on Technical Info for comprehensive collision repair information for **Suzuki, Toyota, Holden & Ford** vehicles, as well as OEM position statements & other reference materials.



These articles have been written by Martyn Lane: I-CAR Instructor, Weld Test Administrator and Technical Specialist to the auto body industry



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