# Keeping up with **new repair techniques**

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**(ZC Vectra information prepared from material supplied by Holden New Zealand Ltd)**

Rapid advancements in construction methods and materials now being used by vehicle manufacturers, require the collision repair industry to keep abreast of new technologies and to understand the correct procedures specific to different makes and models. For example, repairers need to be aware of some interesting developments of the new Holden Vectra:

1. The overall torsional stiffness of the ZC Vectra, compared to its predecessor, has increased by 74% by using different materials and hardening techniques.
2. The bonnet and integrated grill are made of aluminium.
3. The dashpanel crossmember (as shown in figure 1.), is a lightweight magnesium alloy part. This significantly increases the vehicles' rigidity and also improves the crash behaviour. However side impact collision could damage or crack the crossmember and magnesium cannot be repaired or welded.

Repairers need to be aware of this when analysing damage following a collision, not once the repair is completed.

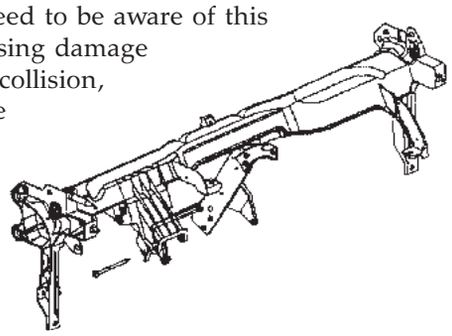

***Figure 1. Dashpanel crossmember.***

4. The front and rear crossmembers (as shown in figure 2.), are made of aluminium. The front crossmember is bolted to the chassis via High Strength Steel (HSS) deformation elements. The deformation elements, consisting of a chamber profile and crash boxes, are bolted to the front frame and absorb the crash energy in low-speed accidents. This limits the vehicle deformation of the front body structure. They serve as the bumper beam support and if damaged are most often 'replacement only' so they need to be checked following even a minor collision.
5. Welding of the new Vectra body structure requires some special attention, as some parts of the body require MIG brazing when replacing panels.

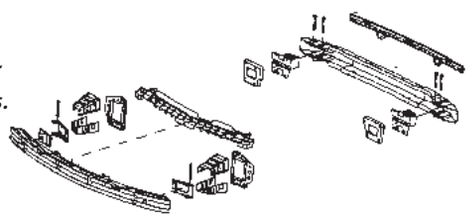

***Figure 2. Front and rear crossmembers.***

6. On a positive outlook, economy (particle) panels will be available for the front chassis rails, A & B Pillars, rear chassis rails and rear guards.

Let's look at the VT series from 98 on body structure and the manufacturer's recommended methods for particle (sectioning) replacement of the front structural rails, as shown in figure 1.

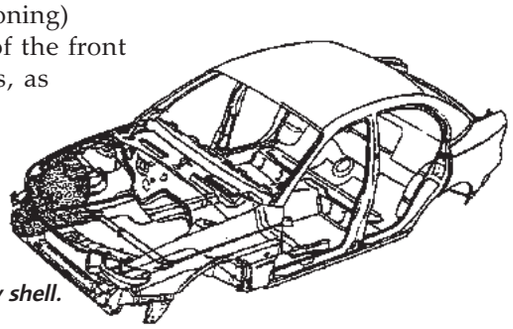

***Figure 1. VT Holden body shell.***

## Manufacturer's cautions

- The integrity of the front longitudinals (chassis rails) is critical to the function of the SRS. If the front rails are incorrectly repaired following damage, it is possible the seatbelt pretensioner and airbag system will not function as intended; allowing deployment when not intended and vice versa.
- If significant kinking, creasing or crumple of the front structural rail has occurred and continues rearward of the front of the front suspension crossmember, the full rail must be replaced.

### Step 1

Following the removal of all bolt-on parts to allow access, mount vehicle on a suitable jig or chassis machine to ensure support of the front body structure.
Check body dimensions and realign if required.

### Step 2

Remove part of or complete headlamp, radiator support and slam panels by drilling out spot welds at manufacturer's seams. Then remove front crossmember at manufacturer's seams.
NOTE: Right hand side replacement will require the ABS modulator bracket removed by drilling out spot

welds.
Then cut away the inner guard and rail to allow access, ensuring enough of the panels remain for a more accurate cut and clean up later. Refer to figure 2 to show where final cuts will be.

## Step 3

Measure accurately half way between the engine crossmember mounting bolt holes and cut the rail halfway through its depth, see figure 2.

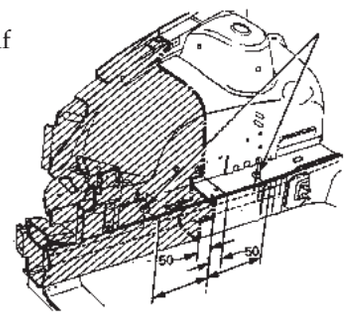


*Figure 2. Inner guard and rail.*

Measure 50mm forward from the cut and cut horizontally through the complete rail. Then trim to create a step midway through the rail.
Cut the inner guard in a straight horizontal line 50mm rear of the upper cut of the front rail, as shown in figure 2.

## Step 4

Recheck frontal body dimensions and realign if necessary.

## Step 5

To replace the particle inner guard - clean surrounding area. Using a suitable tool joggle the edge of the inner guard towards the outside of the vehicle, see figure 3.

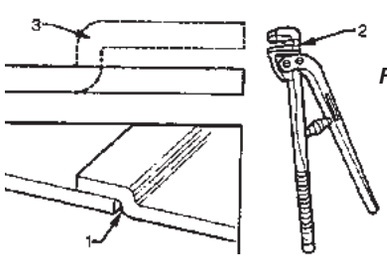


*Figure 3. Joggle edge.*

## Step 6

Accurately step cut a section of the replacement chassis rail (2) to align with the existing rail, as shown in figure 4, then clamp into position.
Fit up and clamp the front crossmember (3) into position and recheck that all body dimensions are correct. Then fully weld the stepped rail joint into place using a MIG butt weld. The front crossmember is then welded into place using Holden approved spot welds or tested MIG plug welds.
NOTE: Duplicate the same number of spot welds used as O.E.M.

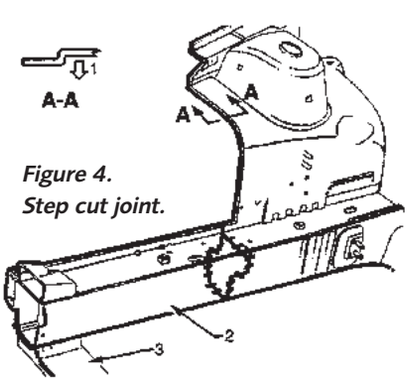


*Figure 4. Step cut joint.*

## Step 7

Prepare the replacement inner guard panel (as shown in figure 5) allowing for a lap joint. Drill 8mm holes 35mm apart (3). O.E.M. spacing should be duplicated at the inner guard rail joint (2). Prepare any bare steel and treat with weld through primer.

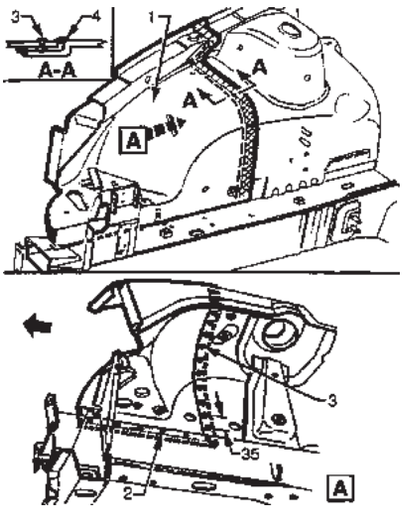


*Figure 5. Inner guard particle replacement.*

## Step 8

Clamp prepared inner guard into position and check fit up of other panels. Then plug weld pre-drilled holes and fully fillet weld the lap joint on the engine compartment side, as shown in figure 5.

## Step 9

Dress welds to an acceptable appearance and treat area with approved paint system primers, then reattach the ABS modulator bracket.
Install the front panels, duplicating the same number of welds as used by manufacturer.

## Step 10

Clean underside of inner guard joints and apply paint system primers. Then thoroughly seal with a quality seam sealer to prevent moisture penetration. Finally apply spray on deadener underseal and body wax into inner chassis rail.

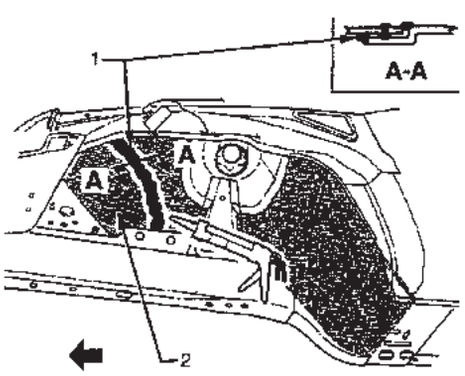


*Figure 6. Sealing and corrosion protection.*

PanelTalk will endeavour to bring more information of this kind as it comes to hand for other makes and models. Manufacturers widely agree that the biggest single issue facing the collision repair industry is the training of those who repair vehicles. Readers are advised that I-Car training courses are probably the best means of keeping your skills up to date.

*We acknowledge, with thanks, the assistance given by Holden New Zealand Ltd in presenting this information.*