TECHNICAL BULLETIN
HOLDEN VE-WM SEDAN, SPORTSWAGON & UTE
FRONT CHASSIS RAILS NOT REPLACEABLE
JUNE 2012

There is no approved procedure to replace the front chassis rails on VE/WM series vehicles.

Damage to the front of the rail can be repaired by sectioning in accordance with the Holden Body Repair Procedure.

The remaining rear section of the rail(s) should not be used.

Deviation from the Body Repair Procedures is unacceptable and failure to follow the correct repair procedures could compromise the structural integrity of the vehicle. Vehicles should only be repaired using the procedures outlined in the GM-Holden Body Repair information available online.

http://www.acdelcotds.com/acdelco/action/home

Parts numbers applicable for the front rail repair are as follows:

LHS P/N 92194474  
RHS P/N 92194473

For further assistance contact the IAG Research Centre on (02) 9292 6840
TECHNICAL BULLETIN
MY12 VE COMMODORE
SIDE IMPACT SENSOR LOCATION CHANGE
APRIL 2012

Body side assemblies for MY12 VE/WM vehicles have an internal difference compared to all production up to and including MY11.

MY 11 and prior body side assemblies cannot be used to repair a MY12 vehicle, due to changes in the side impact sensor and the sheet metal in the lower B pillar area.

When stock of the earlier body side assemblies is exhausted, repair of MY07, 08, 09, 10, 11 VE/WM vehicles will require the MY12 body side assembly plus an adaptor piece for mounting the side impact sensor. Part numbers are shown on the table below.

The original part numbers can be used for MY07 to MY11 vehicles until stock is exhausted.

<table>
<thead>
<tr>
<th>Original body side part number for MY07- MY11</th>
<th>Replacement body side part number and adaptor part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ute: 92242467</td>
<td>92420903 and 92260178</td>
</tr>
<tr>
<td>Ute: 92242471</td>
<td>92420904 and 92260177</td>
</tr>
<tr>
<td>Wagon: 92198736</td>
<td>92420897 and 92260177</td>
</tr>
<tr>
<td>Wagon: 92198737</td>
<td>92420898 and 92260177</td>
</tr>
<tr>
<td>LWB: 92195896</td>
<td>92420895 and 92260178</td>
</tr>
<tr>
<td>LWB: 92195899</td>
<td>92420896 and 92260177</td>
</tr>
<tr>
<td>Sedan: 92214637</td>
<td>92420901 and 92260178</td>
</tr>
<tr>
<td>Sedan: 92214638</td>
<td>92420902 and 92260177</td>
</tr>
</tbody>
</table>

Note that GM-Holden does not authorise replacement of the outer quarter panel skin on VE utility by cutting the door aperture. (There is an authorised method for VE Sedan, VE Sportwagon and WM sedan.)

Holden is currently working on a solution for VE utility to contain replacement costs.

For further information please contact the IAG Research Centre on (02) 9292 6840

Acknowledgement: Information supplied by GM-Holden
It is important to refer to the GM Holden repair manual to ensure the sectioning procedure is carried out as per GM Holden specifications.

Once the damaged front chassis rail section has been cut and removed, the new chassis rail will need to be trimmed to suit. A staggered joint repair method has to be performed between the new chassis rail section and the rear section of the existing chassis rail.

Once the new chassis rail section has been trial fitted and aligned to the existing rear section of chassis rail, welding can be carried out.

Spot welding is the preferred method for attaching panels and should be used wherever possible. A plug weld should be performed where the spot welder is unable to reach.

When performing seam-welding, care must be taken to minimize excessive heat buildup. This is to avoid distortion. Also, excessive heat can alter the structure and integrity of HSS panels.

We suggest an allowance of 4.91 hours, which includes the removal and replacing of the skirt brace.

Should you have any further enquiries regarding this bulletin please contact the IAG Research Centre (02) 9292 6840.
The Holden VE Commodore Ute Body side outer panel was recommended to be replaced as a whole assembly until recent revisions of the procedure.

Now there is a new recommended procedure in the replacement of the body side outer panel. If the Body side outer panel damage is from the wheel arch at a specified point rearward on vehicle, the panel can be replaced as a Quarter panel outer section (picture shown on next page).

However, if the Body side outer panel is damaged forward of the specified point the complete Body side panel assembly still requires replacement (picture shown on next page).

Holden’s procedure is to avoid the front section of the Body side outer panel replacement if not necessary. Within the front section of the Body side outer panel are sealers and panels designed to eliminate the chance of exhaust gas to enter the cabin of the vehicle (picture shown on next page). These sealers/panels should not be tampered with, or must be restored to manufacturer’s specifications if need be.

Continued on next page...
A Body Repair manual with the recommended replacement procedure can be found at http://www.acdelcotds.com/acdelco/action/home

A Body side outer panel short section part is available through Holden Dealers.

For any further information please contact the IAG Research Centre on (02) 9292 6840.

Acknowledgement: Information supplied by General Motors/Holden.
TECHNICAL BULLETIN
HOLDEN VE COMMODORE/ CALAIS SEDAN AND SPORTWAGON/ WM STATESMAN/ CAPRICE SEDAN/ HSV E-SERIES SEDAN AND TOURER
HOLDEN-APPROVED ADHESIVE FOR SPARE WHEEL WELL
JANUARY 2009

A urethane adhesive is now available through Holden dealers for use when replacing spare wheel wells.

The adhesive meets GM Holden Specifications GMW3041 or Dow Betaseal 15685N as outlined in the Holden VE/WM body repair manual.

Use of the recommended urethane adhesive is crucial in maintaining the vehicle manufacturer’s design features for safety and structural integrity. Refer to the Holden VE/WM body repair manual (DVD Part Number 95710313) for the recommended replacement procedures.

The Dow Betaseal urethane adhesive 15685N is packaged and distributed in a 310ml size cartridge.

The product can be dispensed by using a general multi-purpose caulking gun. A single cartridge has sufficient material to re-bond one wheel well.

The Dow Betaseal urethane adhesive can be purchased through any Holden dealer:

<table>
<thead>
<tr>
<th>Part number</th>
<th>92146444</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price</td>
<td>$45.75 + GST</td>
</tr>
</tbody>
</table>

For further information please contact the IAG Research Centre on (02) 9292 6840.
Low speed rear impacts can easily damage the spare wheel wells on Holden VE/WM-series and HSV E-series sedans and sportwagons.

Damage can occur to one or more of three (3) protruding lugs.
The lower edge of the rear bumper fascia is attached to these lugs with plastic retainers. Minor rear impacts can transfer high loadings to the lugs, which will then typically fail. The lugs cannot be plastic welded because they are fibre-reinforced composite. The wheel well itself is bonded into the rear of the body shell. It is difficult and time consuming to remove and replace. The IAG Research Centre has designed metal brackets which can be fitted over the damaged lugs to avoid having to remove and replace the entire wheel-well. These brackets reduce the cost of repairs enormously and also preserve the integrity of the original factory wheel well installation.
The following steps outline the method developed at the IAG Research Centre to restore damaged lugs to their original strength and function.

These steps should be followed closely to ensure similar future impact performance is achieved.

Note:

- Latex gloves should be worn during this operation
- The work can be done with the vehicle at ground level, or raised on a hoist

There are 14 steps:

1. Detach the rear bumper bar plastic facia and the plastic clips from the lug(s) to be repaired.

2. Remove any broken or hanging debris from the damaged lug(s).
3. Using a panel file or similar, carefully remove the ‘lip’ on the back edge of the lug(s). Ensure that the lug itself is not filed.
4. Using 180-200 grit abrasive paper, scuff each exterior surface of the damaged lug(s).

5. Clean the exterior of the damaged lug(s) with Prepsol or similar solvent to remove dust, grease or fibres.

6. Using a 180-200 grit abrasive paper, scuff each interior surface of the replacement bracket(s).

7. Clean the interior of the replacement bracket(s) with Prepsol or similar solvent to remove dust, grease and paint powder.

8. Check-fit the lug(s) to the appropriate bracket(s). To achieve a better fit with the lug(s), bend the sides of the bracket(s) in or out, as required. There should be a 1-2mm gap between the bracket and the lug surfaces for adhesive.

9. Apply Sika® Sikaflex-206 G&P surface primer to the interior surfaces of bracket(s) and exterior surfaces of lug(s) and allow to dry, according to product instructions.

10. Apply Sika® Sikaflex-206 adhesive to the interior bracket bonding surface.

11. Push bracket(s) onto lug(s) and remove excess adhesive.

12. Insert a plastic fascia fastener into the lug, to hold the bracket in place.

13. Apply the adhesive tape over the bracket(s) whilst Sika flex is curing. Allow the adhesive 48 hours to cure completely.
14. After the adhesive has completely cured, remove the adhesive tape and plastic fastener. Inspect the repair by checking for movement of the bracket. The bracket should feel quite rigid, but with a very small amount of flex (from the adhesive). The rear bar can now be reattached to the vehicle in the normal manner.
Following discussions with the IAG Research Centre, Holden has approved the availability of end plates for the front chassis rails on VE/WM series vehicles.

The plates are now available through Holden dealers under the following part numbers:

P/N 92199226 Bracket, Front Compartment Side Rail Right Hand list price $8.40 + GST
P/N 92199227 Bracket, Front Compartment Side Rail Left Hand list price $9.65 + GST

Prices current as at September 2012

The replacement procedure for the end plates is in the current VE/WM body repair manual. This can be found at

http://www.acdelcotds.com/acdelco/action/home

Acknowledgement: Line drawing supplied by Holden Ltd

The availability of the end plate will have numerous advantages when carrying out front structural repairs:

- Removal of the end plate improves accessibility of the damaged area and allows a higher standard of repair.
- Availability of the chassis rail end plate will have a significant effect on reducing the labour and parts required for a typical front end repair.
• A chassis rail end plate procedure is estimated to cost less than $400 for labour and parts, compared to a chassis rail sectional replacement procedure for which the estimated cost is around $2,000.

• Prior to the chassis rail end plate availability, the only option was to purchase a complete chassis rail assembly at a recommended list price of $450.

There are important points of a structural repair that motor assessors and repairers need to consider when damage has been sustained to any parts of the vehicle which are manufactured from High Strength Steel or Ultra High Strength Steel. These areas are crucial to maintaining the safety integrity of the vehicle and therefore careful consideration must be given when choosing the correct method of repair.

We recommend that in these situations, assessors and repairers should refer to the Holden VE/WM body repair manual for Holden’s recommendation on correct body repair methods.

For any further assistance please contact the IAG Research Centre on (02) 9292 6840.

NOTE. There are 6 spot welds attaching the chassis rail end plate to the chassis rail assembly.
The Research Centre receives frequent enquiries regarding the supply of the rivets retaining the body option plate to the radiator support panel on late model Holden Commodores.

These differ from conventional rivets by having a serration around the outside edge. Some owners have identified the difference and requested their replacement. Unfortunately Holden have not made them available since 1997. They believe doing so increases the risk of thieves re-birthing Holden vehicles.

Genuine Holden rivet. Note the serrations around the edge.

Non genuine rivet.

Should you have any further enquiries, please contact the IAG Research Centre Help Desk on (02) 9292-6843 or internally on 26843.
A copy of the body repair manual for the VE Commodore has been obtained by Industry Research. Its contents may be a useful tool when performing inspections or repairs on this model. Copyright laws restrict producing copies of the manual however Industry Research may be contacted for specific repair information.

Some information recognised to be specifically important is as follows;

**Spot Welding:**
Holden recommend spot welding always be used in accessible areas on a one removal one replace basis. Their placement should be in approximately the same locations as those being removed. This maintains the vehicle’s “designed” structural integrity. Inaccessible areas should be metallic inert gas (MIG) plugged as is the traditional practice.

Tables are provided recommending the weld nugget diameter by the total thickness of the metals being joined. Copies of these tables can be supplied upon request. It further suggests that a weld and destruction test be performed on damage/waste panels to ascertain the correct settings of the machine.

The manual does not state that spot welding must be performed using an inverter spot welder therefore it is assumed that a conventional spot welder may be used.

**Plug Welding:**
Plug welding should only be performed using a MIG, (plug brazing is not acceptable). Areas to be plug welded are identified in the manual as solid black dots as shown in figure 1. This example shows the welding of the rear deck panel to the quarter panel.

**MIG Welding:**
MIG welding should be performed for butt joints, lap joints and plug welding. In the case of butt joints on panel steel, care should be taken to ensure minimal distortion on the panel by a mixed sequence of stitch welding.

The following paragraph is an extract from the body repair manual regarding silicon bronze welding.

“Bronze welding should not be used in the VE/WM repair procedures as it not considered strong enough for the welding of body sections or panels.”

Panel Replacement

Rear Panels:
Parts contained within the encircled area are available as individual components.
Should rear end damage extend into the main cabin floor and is beyond repair, Holden recommend a body shell replacement.

Spare Wheel Well:
The spare wheel well is manufactured from a plastic composite material and is retained to the vehicle body with a urethane adhesive. It is bonded on 4 sides including the rear edge which adheres directly to a lip on the beaver panel. For this reason the well has to be removed when replacing the beaver panel. Tools similar to those used to cut out windscreens can be used for this operation.

The following paragraph is an extract from the body repair manual regarding the spare wheel well replacement.

“The spare wheel well is a single use item. The spare wheel well panel must be discarded after use.”

Body Side Panel: The body side incorporates the “A” pillar, “B” pillar, sill panel and quarter panel and is available as the outer skin or the inner and outer assembly which includes the inner quarter, wheel arch, inner sill, inner centre pillar, etc.

Holden specify a procedure for replacing the quarter panel individually of the body side. Their suggested cut points are shown by the lines through the “C” pillar and the dogleg in the diagram below.
Heat Application

Holden make the following statement regarding using heat in repairs.

“The application of heat can degrade the mechanical properties of certain high strength steel panels. With the exception of welding processes, do not use heat to repair/straighten the following panels:

- Centre pillar reinforcement
- Rocker outer panel
- Rocker inner panel
- Instrument panel carrier
- Door impact beam

If required the use of heat (maximum 650 degrees C for up to 90 sec) is acceptable for other steel body panels.”

Should you have any further enquiries, please contact the IAG Research Centre on 02 9292-6840.
Holden are the first Australian manufacturer to produce a vehicle with a composite (modular) radiator support panel. The VE Commodore features this new design which was developed with input from the IAG Research Centre’s staff. It is the product of substantial computer aided design (CAD) focused on the key objective of reducing collision repair time and subsequent costs.

The information below details the removal and replacement procedures of the front bumper bar, module, rear bumper, and boot floor pan.

**Front Bar Cover**

**Step 1** Remove the 2 clips and 2 x 6 mm bolts retaining the top of the bar cover/grille to the lock panel.

**Step 2** Remove the 3 clips that retain the splash tray to the bar cover and the engine.

**Step 3** The bar cover slots to the guard with caged nuts secured with 2 x 6 mm bolts.

**Step 4** Remove the 4 self tapping screws securing the bottom of the bar cover to the engine tray.
Step 5  The bar cover clips into a stay below each headlamp. The tabs can be released by wedging a screw driver between the stay and the cover and gently levering apart. This can be seen in the encircled area in photo 2.

Photo 2

Note - The grille removes with the cover and detaches separately from the vehicle.

The bar cover is now ready to be removed.

Photo 3

Photo 4

Step 6  The front bar impact absorber is attached to the reinforcement by a 6 mm bolt and clip either side. Their location is shown in the encircled area in photo 5.

Photo 5
Radiator Support / Front End Module (FEM)

*NOTE¹ - The reinforcement beam and windscreen washer bottle remove with the module and can only be separated when detached from the vehicle.

*NOTE² - The radiator and air conditioning core can remain in position when replacing the module.

*NOTE³ - The module is manufactured from a composite material and cannot be repaired.

**Step 1** Remove the 4 x 8 mm bolts securing the top of the module to the skirts.

**Step 2** Remove the headlamps to access the 8 mm bolts on either side skirt.

Windscreen washer bottle.

**Step 4** The wiring harness is clipped in several places on the top of the module and below the headlamps. Release the clips and pull the harness back.

Disconnect horns and bonnet lock.

**Step 3** Remove the 6 x 8 mm bolts securing the bar reinforcement module to the chassis rail face.

**Step 5** The radiator is secured at 4 points: at the bottom - the left and right sides of the engine cradle and at the top - the left and right sides of the module. To release the radiator from the module, place a screwdriver under the tab as shown in photo 7 and manipulate upwards.

Remember, it is not necessary to remove the radiator to replace the module.

The module is now ready to be removed.
Photo 8 shows the front of the vehicle with the module removed.

Dismantling The Module

Remove the 2 bolts either side of the module to release the bar reinforcement.

Remove the 2 bolts on the vehicle’s right and the single bolt on the left to release the washer.
Rear Bar

*NOTE - Rear bar can be removed with the tail lamps left in the vehicle.

Step 1 Remove the 3 clips retaining the bottom of the cover to the vehicle.

Lamp removed to show how the cover is retained at this point. Clips will release when slight pressure is applied.

Step 2 From inside the wheel arch, remove the phillips headed screw securing the bar to the quarter panel and the 2 clips securing the bar to the inner splash tray.

Rear Bar Reinforcement

The reinforcement is retained to the brackets with 2 x 8 mm nuts either side of the vehicle. The brackets are retained to the vehicle body with 2 x 8 mm bolts.
Boot Floor/Spare Wheel Well

The boot floor/spare wheel well is urethaned in position. No time has been allowances have been constructed for its removal however, a time similar to windscreen replacement could be considered.

Battery Location

The battery is located in the nearside of the boot compartment as shown in photo 12.

The engine may be jump started by connecting to the 12-volt battery jumper cable connections located in the near side of the engine compartment.

If you have any further enquiries, please feel free to contact the IAG Research Centre on 02 9292 6840.