

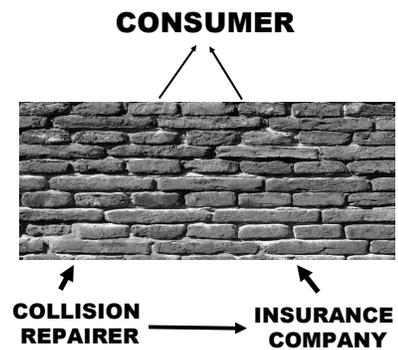
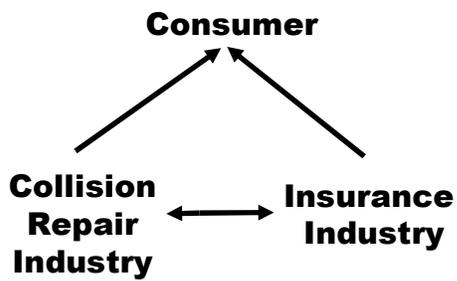


**Technical Committee**

**Washington, D.C.  
July 29, 2009**



**When Repairs Go Wrong-  
It is the Consumer who suffers**





## Here is the scenario

Two Mercedes Benz vehicles were referred to a Certified M/B Collision Repair Center. Both vehicle owners were asked by their respective insurance companies to allow the cars to be sent to their recommended body shops. Both cars were taken out of the M/B Certified shop & sent to two separate body shops.



## Here is the scenario for vehicle 1

The owner was told that the car was total loss, but the insurance carrier wanted to re-inspect it at their approved body shop. After re-inspection, the vehicle was deemed repairable. In one year's time, the owner of the vehicle had to replace 2 sets of front tires. The vehicle was finally taken to a Mercedes dealer for an alignment, but failed due to improper repairs. The car was sent to the certified repair shop for post repair inspection and this is what was observed.



**The vehicle was mounted on a Celette Bench (one of two bench systems approved by MB for its certification program—the other is Car Bench). Body parts and mechanicals were removed for jig access.**



The first area to be checked out was the upper mounting position of the suspension on the passenger's side.

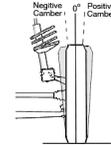


This picture was taken showing the passenger's side upper control arm positioning jib with the locating pin installed.



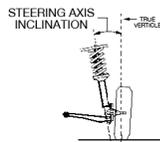
### Camber

Camber is the angle of the wheel, measured in degrees, when viewed from the front of the vehicle. If the top of the wheel is leaning out from the center of the car, then the camber is positive, if it's leaning in, then the camber is negative. If the camber is out of adjustment, it will cause tire wear on one side of the tire's tread. If the camber is too far negative, for instance, then the tire will wear on the inside of the tread.



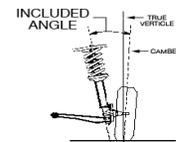
### Camber Wear Pattern

If the camber is different from side to side it can cause a pulling problem. The vehicle will pull to the side with the more positive camber. On many front-wheel-drive vehicles, camber is not adjustable. If the camber is out on these cars, it indicates that something is worn or bent, possibly from an accident and must be repaired or replaced



### Steering Axis Inclination (SAI)

SAI is the measurement in degrees of the steering pivot line when viewed from the front of the vehicle. This angle, when added to the camber to form the included angle (see below) causes the vehicle to lift slightly when you turn the wheel away from a straight ahead position. This action uses the weight of the vehicle to cause the steering wheel to return to the center when you let go of it after making a turn. Because of this, if the SAI is different from side to side, it will cause a pull at very slow speeds.



### Included Angle

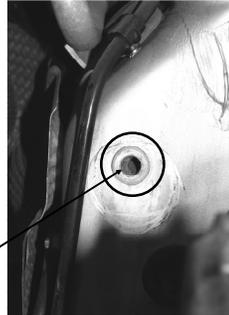
Included angle is the angle formed between the SAI and the camber. Included angle is not directly measurable. To determine the included angle, you add the SAI to the camber. If the camber is negative, then the included angle will be less than the SAI, if the camber is positive, it will be greater. The included angle must be the same from side to side even if the camber is different. If it is not the same, then something is bent, most likely the steering knuckle.



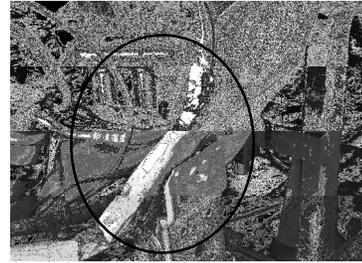
Jig showing the upper control arm on the driver's side of the vehicle



Note that the body is inward of the factory position by 5mm



The estimate called for a repair and refinish on left apron. Note that the apron was hammered out, but had no plastic filler or paint.



Front bumper reinforcement is still bent after the repairs had been completed.

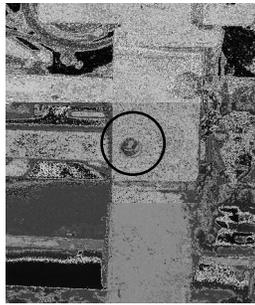


To get the hood to align to the body, the hood hinge holes were slotted to allow for adjustment.





The driver's front rail jig demonstrates that the front lower rail is down by 4mm and inward by 5mm.



#### Other Problems with the repair:

- The door gap on the driver's side door was out of specification.
- The head lamps were used instead of remanufactured.
- The core support was missing the necessary decals.
- How was the car mounted to the frame equipment because the vehicle does not have pinch welds



#### Scenario 2 for Vehicle 2

The second vehicle was a 2006 MB CLK 350 and it arrived at the same time as the first CLK. The vehicle has been repaired by a facility without the proper training, equipment, etc. After the repairs had been completed, the vehicle was sent to a MB dealer for an electrical problem (the body tech cut a wire in the rear during the repairs). The service manager and service technician looked at the repairs and notified the customer that he needed to come to the dealership and see the horrible repairs done to his car. The owner sent the vehicle to certified shop for re-inspection.

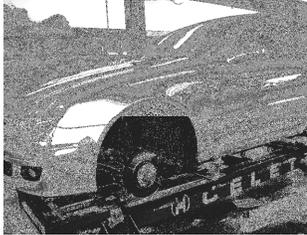


The carrier wrote for frame set up and pulls correct unibody on the estimate of record. Mercedes states in the repair manuals that the car needs to be mounted with jigs in 4 specific holes on the bottom of the vehicle. The DRP shop used pinch weld clamps to secure the vehicle, which is evident by the pinch weld marks left by the clamps. MB Bulletin # states that the pinch welds should not be used to secure the vehicle to bench.

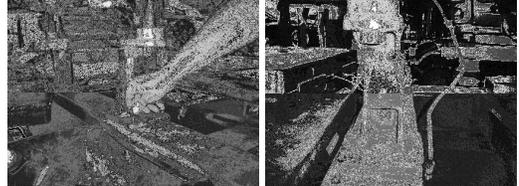




The vehicle mounted on the OEM approved bench system.



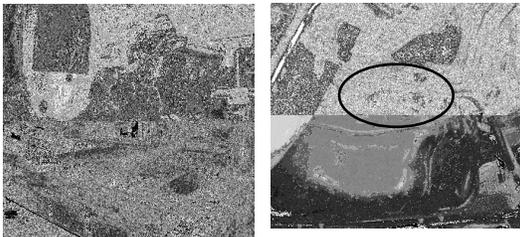
This picture was taken showing the jig on the passenger's side of the vehicle in the rear suspension area with the technician trying to install the bolt .



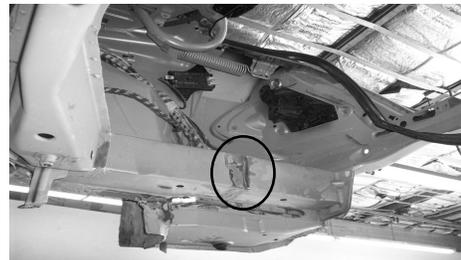
Note the bolts will not align and that the jig sits forward compared to the specified holes. The vehicle is still misaligned on the passenger's side of the vehicle .



After removing the rear suspension, the gas tank was exposed revealing damage to the unit.

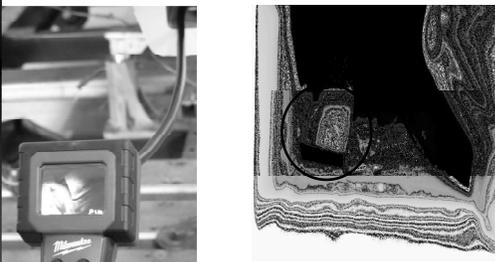


The estimate called for a complete passenger's side rail to be replaced, but the technician sectioned in the rail (MB does not allow sectioning of this rail).

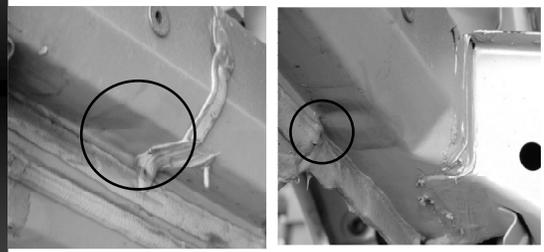




Looking inside the rail, the internal reinforcement had broken loose, rust had formed at the weld sites, no cavity wax had been installed and no epoxy primer applied.



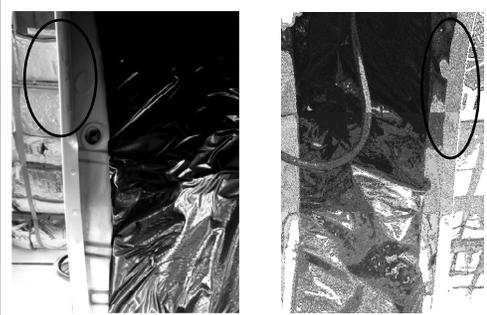
The driver's side rear rail was still bent & the seam sealer had separated from the impact.



At position C, the factory repair manual calls for rivets and adhesive for attachment of the quarter panel to the rocker. The DRP shop plug welded the quarter panel in this area.



The factory repair manual calls for the quarter panel lip to be rolled with a special tool. The replacement quarter panel was not rolled as evident in the picture.

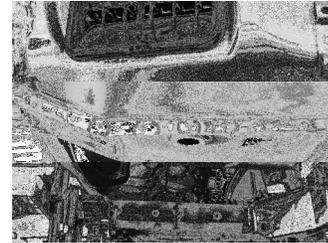




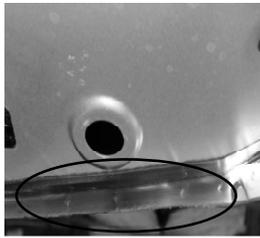
- What is diameter of the spot weld when when spot welding two 1MM panels together?
- What will happen to a STR Weld with metal imbedded in the electrode tip.
- Why is a mushroomed electrode tip bad?



The factory manual called for spot welds at the bottom of the quarter panel where it joins the floor and inner quarter panel.



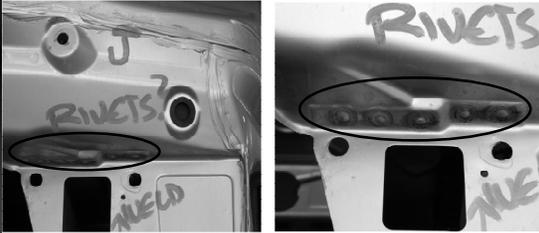
Note the lack of weld penetration on the back side of the three panel. It should be noted the technician did not know how to set up the welder for proper weld penetration.



This picture was taken showing the rear quarter panel where it is attached to inner quarter panel and truck floor extension. There was no evidence on spot weld penetration in this area and when a separation tool was inserted between the panel joints, the panel separated with one strike from the hammer. There was also no weld thru primer applied and this was evident by the formation of rust at the weld sites.



The M/B Factory repair bulletin calls for rivets at this location, but the technician MIG welded the replacement rear body panel. It should also be noted that the panel was not refinished in this area.

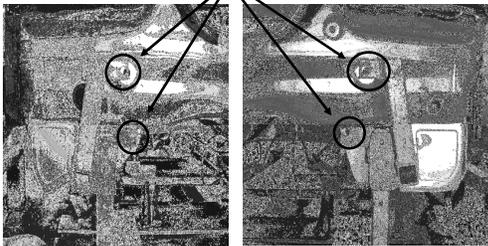


This picture shows the rear rail positioning jigs in the proper length, height & width

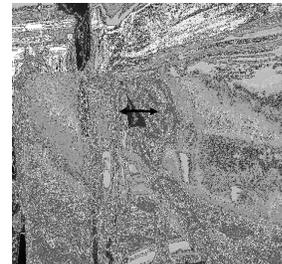


Note that the bolt holes are still misaligned after the pull on the driver's side rear rail.

Note that the bolt holes are still misaligned after the pull on the passenger's side rear rail.

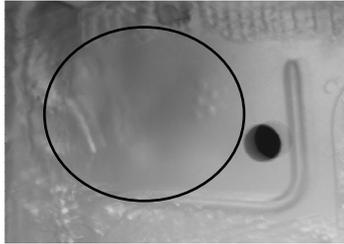


The rear rail positioning jig should be within 2MM tolerance, but at this position, the gap was 5 mm.





Both the collision repair center and carrier missed damage behind plastic tank located at the rear portion of the passenger's side quarter panel. If the tank was removed prior to writing an estimate, the damage could have been estimated.



The deck lid gaps were also out of specs by as much as 2mm. The leading edge of the deck lid on the passenger's side of the vehicle was 4mm forward and 3m higher than the driver's side of the vehicle.

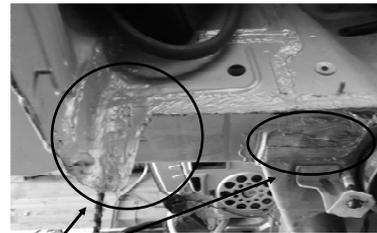


To compensate for the vehicles misalignment, the holes in the deck lid hinges were slotted in order to get the deck lid to align better, which did not happen. It should also be noted that Mercedes does not apply sealant on the hem of the deck lid. It is suppose to be applied by the body shop prior to painting.

Slotted Hole



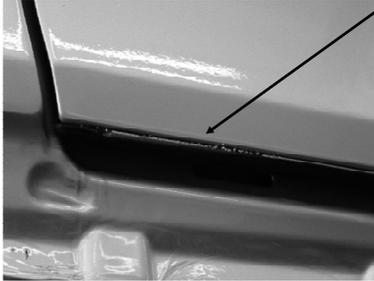
Note how that technician brushed on the sealant and made not effort to try and duplicate the factory applied sealant.



Brushed on sealant



Note the paint overspray on the passenger's side door seal.



Final out come on these two vehicles.



2003 Mercedes CLK



2006 Mercedes CLK



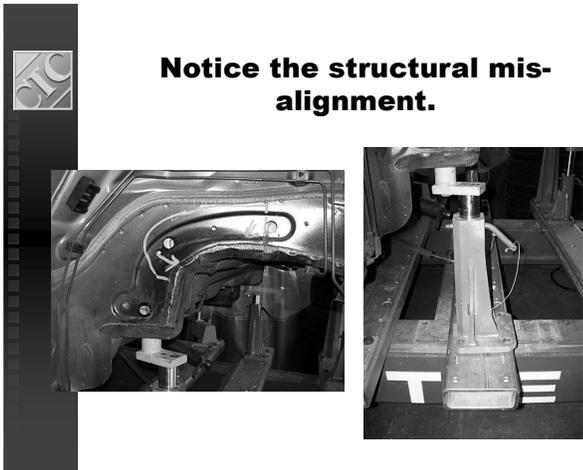
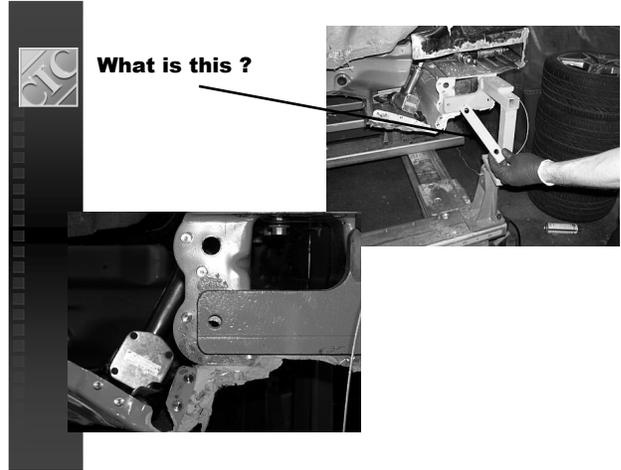
### Conclusion

The ultimate loser is the consumer. The insurance company will make the body shop purchase the car back and with all related expenses. They (the body shop) will turn around and sell the car to recoup their losses, but the next person (new consumer) will purchase a car that should have deemed a structural total loss and crushed, with no idea of the problems that they will subjected too.



### Repairs to a 2008 Mercedes Benz C63



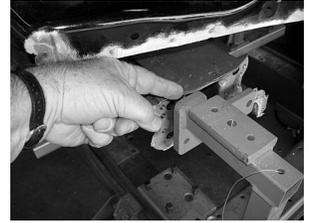
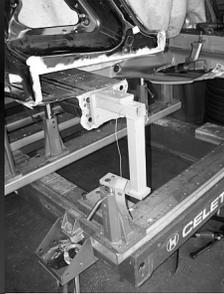




**Damage to the interior seat back area.**



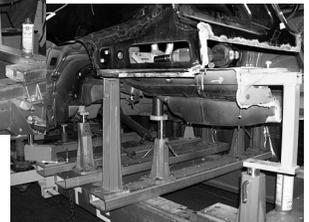
**More Mis-alignment to the driver's side rear frame rail.**



**3 Pulls simultaneously**

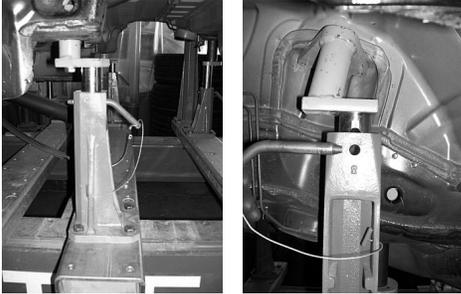


**Final structural checking for factory Specified length, width and height.**





**Final structural checking for factory Specified length, width and height**



Attachment of the quarter panel to outer wheelhouse assembly.



It is a constant and determined effort that breaks down all resistance to change. Thusly, it is necessary to sweep away those obstacles for change to occur.”