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REPAIR MYTHS AND MISINFORMATION

TRAINING AND EDUCATION MUST BE AN ESSENTIAL PART OF OUR BUSINESS PLAN

BY **LARRY MONTANEZ** | CONTRIBUTING TECHNICAL EDITOR

BMW DMG rear quarter panel

I remember a good friend of mine, Mark Olson from VeriFacts, giving a presentation and he said, "You don't know what you don't know." If you really think about that statement, you will realize how true it is. That was 15 years ago and that statement is even more meaningful today, as we are seeing some of the greatest advancements in the collision repair industry. We all need to embrace, understand and even convince one another that training and education must be an essential part of our business plan and future.

In this article we are going to break down the collision repair shop into departments and dispel the more common myths and misinformation.

Estimating department

MYTH: Plastic radiator core supports (plastic and fiber reinforced composite) are not structural.

REALITY: Composite radiator core supports are a structural component. The substrate or attachment method used does not make a difference; a radiator core support is structural. Com-

Plastic radiator core support

posite or hybrid design (composite and steel) core supports are utilized by many manufacturers for many reasons — to lighten the overall weight of the vehicle for fuel economy; to lessen the transfer of collision energy from the applied impact forces to limit the damage sustained to the upper and lower uni-rails; to allow more design options and features. Additionally, most ductile fractures on composite radiator supports cannot be repaired due to the orientation and calibration of the satellite airbag crash sensor, generally affixed to the component.

MYTH: Measuring of the vehicle is not necessary for estimating.

REALITY: Any collision-damaged vehicle must be measured to ensure the applied forces did not penetrate through the vehicle and cause collateral damage to other components. Almost every vehicle produced in the last eight years contains advanced high strength steels (AHSS) in the rear area of the front lower uni-rails and passenger compartment reinforcements (boron alloyed steel, martensite, dual phase, etc.), such as pillar, rocker and roof rail reinforcements. AHSS are designed to "hold open" and transfer collision energy pulse around the passenger compartment. In a minor frontal collision event, many times the rear suspension components will flex and become deformed. This misalignment of the suspension components may go unnoticed until the vehicle goes for a wheel alignment; if it doesn't, the drivability of the vehicle may be altered.

It is imperative to pre-measure mild- to medium-damaged vehicles to determine if any structural damage has been sustained. Even severely damaged vehicles must be pre-measured. The only way to truly know the extent of the damage is to measure the vehicle, and the most advantageous time is during the blueprinting (estimating) of the vehicle.

The process you use for measuring can vary based on the stage in your process. Look at it this way: you wouldn't want your house built by eye and opinion without a ruler and level, would you? And remember, a house is not impacted by another house at 20-plus miles per hour. The only way to rule out damage and misalignment is to measure the vehicle. Remember, many of today's vehicle designs will not show panel gap misalignment even though structural components are misaligned.

There are multiple methods to consider, and I will detail just a few of your many options. First is visual inspection of the vehicle. Panel gaps will not always tell the full story that they once did in the past. Sometimes gaps are acceptable, but the structure could still be misaligned.

Second is testing the opening and closing effort of the closure panels and looking for abnormal movement and/or operation. Do a quick check by placing your fingers between the rear edge of the rocker panel and the rear tire on one side of the vehicle and comparing it to the other side, or on the leading edge of the rocker to the rear edge of the front tire, to see if there has been movement. A tape measure or a tram gauge can be used for

comparative quick checks. Obtain the vehicle dimensions from the OEM or an information provider, and you can then take measurements on the vehicle to compare them to the specifications to determine the extent of collateral damage.

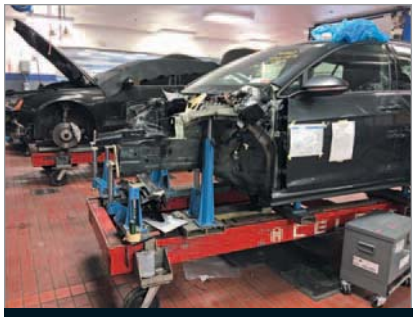
A third option is to use an electronic, three-dimensional measuring system. The best way to determine structural misalignment is to put the damaged vehicle on a two-post lift and measure the vehicle. Systems like Car-O-Liner, Celette, Chief and Spanesi — to name a few — are set up to allow diagnostic measuring on a two-post lift with a three-dimensional printout. Much of the three-dimensional measuring equipment will allow suspension component comparative measurements, and Spansei has a wheel alignment option with their equipment that allows the technician to perform a pre-alignment check to determine if there is any sustained damage.

Car-O-Liner's 3D measuring tool

Structural department

MYTH: I can "tie" the vehicle down using hooks attached directly to the formed holes in the underbody of the vehicle.

REALITY: Although the AHSS found in today's vehicles are three to 10 times stronger than the materials used a few years ago, AHSS is one and a half to two times thinner. By attaching a hook into a formed hole in an AHSS component on the underbody of the vehicle to secure the vehicle to the structural realignment apparatus (frame machine), you can cause ductile fractures to that area once force is applied by the hydraulic ram (pulling tower). You have now caused collateral structural damage, and the damaged component will most likely require replacement.



Celette set up and measure jigs

MYTH: If I heat the component to "cherry red," the component will soften, and I can fix it.

REALITY: Since the introduction of the mass-produced GM X Type monocoque body construction (Chevrolet Citation), manufacturers have created rules for heating times for steels. No manufacturer has ever recommended heating a panel to a cherry red color (approximately 1,700°F), which is too hot and starts to temper the steel. This changes the metallurgical properties (tensile and yield strength). Basically, you have made the component stronger but more brittle, and the component may not react the

same way in a subsequent collision event. Heating rules from the manufacturers are generally for mild steel (MS) or low-grade high strength steel (HSS); the recommendations generally call for heating to a dull red (700°F to 1,500°F) for 90 seconds in two applications, cumulative (three minutes in two applications, forever). But almost every manufacturer (except Ford, Nissan and GM on some select full frames) prohibits the use of heat due to the high-grade HSS and AHSS found in today's vehicle frames and monocoque designs.

Aluminum A8 rocker sectioning

MYTH: Aluminum structural components can be structurally realigned.

REALITY: Most aluminum-intensive vehicles, such as the Audi A8, A8L, R8 and S8, 2004 – 2008 BMW 5 and 6 series (front Graf components), Ferraris, Lamborghinis, Mercedes-Benz (SLS, GT-S, SL, S Class), Porsches and McLaren/Mercedes-Benz SLR prohibit any structural realignment, while Jaguar XK and XJ and the Audi TT allow only some structural realignment to specific structural components. For the F-150, Ford will allow straightening attempts. Generally, attempting to structurally realign an aluminum-intensive vehicle will cause micro-fractures to form in the component that cannot be seen with the naked eye. These can affect the reaction of the component(s) in a subsequent collision event or even during normal driving operations.

MYTH: Drilling holes and slap-hammering deformities in outer body panels is a proper procedure.

REALITY: Drilling holes into outer body panels will cause the panel to become weaker and create corrosion hot spots. Deformities to outer body panels should be repaired using hammer and dolly techniques in areas where the backside of the panel is accessible; in areas where the backside is inaccessible, weld-on dent removal pins are acceptable. Additionally, the proper corrosion-resistant primers and rustproofing products must be applied after repairs are completed.

MYTH: Full-body sectioning, commonly referred to as clipping, is a good way to save a vehicle from a total loss and preserve more factory welds and corrosion protection.

REALITY: This is completely incorrect and dangerous. There are a multitude of reasons why this is a very dangerous and liable procedure to attempt. Additionally, no OEM has or supports this procedure. In many cases, the vehicle designs prohibit this procedure due to the amount of windows that would have to be cut to access the multiple inner panels and reinforcements, along with the AHSS that cannot be cut and re-welded back together.

MYTH: Undercoating is a corrosion protection product.

REALITY: Rubberized undercoating is not considered corrosion protection; it is considered a corrosion-resistant product. Corrosion can be defined as the degradation of a material due to a reaction with its environment. Many structural alloys corrode merely from exposure to the moisture in

the air (electrolytes), but the process can be strongly affected by exposure to certain substances, such as dirt, road salt and chemicals. Corrosion can be concentrated locally to form a pit or crack, or it can extend across a wide area, more or less uniformly corroding the surface. These pits or cracks can cause a degradation of the area. Degradation implies deterioration of the physical properties of the material. Corrosion hot spots are formed by the collision event itself through the crushing of the metal (causing the paint material to loosen and detach from the substrate), from unprotected dissimilar metals contacting each other (galvanic; steel and aluminum), from the collision repair process itself through the hammering and welding to the components and finally from lack of application of the proper products to protect the repaired or replaced areas. Corrosion protection can simply be described as something that cures or dries. Products that are used to protect bare metal would be acid or self-etch primers, followed by a coating of epoxy primer.

Corrosion protection and seam sealer

In the collision repair industry, the acid etch primer replaces the zinc coating or galvanizing on the steel that is applied at the steel mill and the zinc-phosphate coating applied to the vehicle at the factory. The epoxy primer replaces the electrodeposition primer or "e-coat" applied to the steel components at the factory.

Again in the collision industry, after the application of the acid and epoxy primers, collision repair technicians then apply primer surfacer, sealer primer and then the top coats (color coat and clear coat) to the outer panels and the accessible backside areas of the inner panels. In inaccessible areas, rustproofing products are applied. Rustproofing products can simply be described as something that does not fully cure. In collision repair, technicians would use a wax or petroleum-based product that has a creeping capability (can creep into crevices). Rustproofing is necessary because collision repair facilities cannot "dip" the vehicle into a vat or bath pool and electrostatically apply the corrosion-resistant and rustproofing products.

Silicone bronze weld overhead

On the underside of the vehicle (underbody) and in wheel-well recesses, some manufacturers apply undercoating on top of topcoats, but most manu-

facturers are going to use a urethane type of sprayable seam sealer that is either black in color or requires a black paint to be applied after application. The one problem with undercoating is that, when applied to the underbody of the vehicle, road debris (stones, rocks, nuts, bolts, twigs, etc.) impact the underbody. Just from the use of the vehicle, the torsional movement (twisting) of the components will cause small ductile fractures (chips) in the undercoating. These chips allow moisture to creep into the area and then seep between the undercoating and the underbody, allowing corrosion to form quickly.

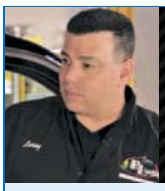
MYTH: Steel MAG (Metal Active Gas), GMAW (Gas Metal Arc Welding) or what is incorrectly referred to as MIG (Metal Inert Gas) are the proper procedures to install a welded-on component.

REALITY: Depending on the OEM's repair procedure, this could be true or false. Most OEMs allow MAG/MIG/GMAW for installation of welded-on panels, either as part of the procedure, as an option when Squeeze Type Resistance Spot Welding (STRWS/RSW) is not available, or both sides of the panel flanges are inaccessible. RSW is the accepted procedure by most OEMs; some OEMs only allow RSW; and other select OEMs only allow rivet bonding (structural rivets and structural bonding adhesive) to attach the panels and MAG/MIG/GMAW on the sectioned butt joints (generally open butt joints, but some require an insert or backer). Mercedes-Benz requires STRSW on flanges where both sides of the flanges are accessible, rivets in inaccessible flanges and Silicone Bronze MIG welding at the section joints, while BMW requires rivet bonding to replace OEM RSW and bonded-only sectioning joints with inserts.

MYTH: I am aluminum certified by one OEM, so I am certified to repair all aluminum-type vehicles.

REALITY: This is not only incorrect, but an irresponsible way to think. Each OEM has very specific repair procedures, equipment and training requirements. Although there is some similar overlap with tools, equipment and even procedures, each OEM still has proprietary procedures. Most OEMs with aluminum-intensive vehicles have parts restrictions to ensure their vehicles are repaired at their Certified Collison Repair Facility (CCRF) Program shops. Additionally, they also restrict parts to protect the CCRF investment, which can be upwards of $200,000 for one OEM and $30,000 to $50,000 for each additional OEM program.

Hopefully, this article has brought to your attention some of the myths and misinformation that currently exist in the collision repair industry. Feel free to contact me at any time if you have questions.



LARRY MONTANEZ
CONTRIBUTING TECHNICAL EDITOR

Montanez is co-owner of P&L Consultants, which works with collision shops on estimating, production and proper repair procedures. He is also a certified technician for multiple OEM collision repair programs.

Email Larry at info@PnLEstimology.com