



# TECHNICAL FEATURE

## WHY REPAIR PLANNING MUST INCLUDE PRE-MEASURING & PRE-SCANNING

We are all well aware that we're currently living in an age of electronic gadgets, security cameras and mobile social media. We are seeing more and more vehicles that have the futuristic devices we saw in sci-fi movies only a few years ago. But in many respects, some in the very industry in charge of repairing collision-damaged vehicles may not be prepared for them. Vehicles constructed from advanced steels, aluminum, plastics, composites and carbon fiber are here, and they have some very advanced computerized systems installed in them. The industry – which includes shop owners, managers, damage assessors, technicians, insurance personnel and even the car owner – is being surprised daily by what vehicles can actually do and perform all by themselves. The European/Tesla Certified Collision Repair Facilities (CCRF) and mechanical repair side of the automobile world have been accustomed to checking vehicle computer systems for faults and relearning procedures for the past 10 to 20 years, and the CCRFs are also accustomed to pre-measuring a vehicle to ensure the structure is within specifications. These operations are generally outlined in the *"Repairs and Inspections Required After a Collision"* section of the body repair manual.

The two most important things a repair facility can do prior to starting the repairs to the vehicle are pre-measure and pre-scan. Pre-measuring is a must to accurately determine if the vehicle sustained any structural damage. A pre-scan of the vehicle's systems must also be performed to determine any and all malfunctions. Slight structural misalignment and the malfunction of computerized systems cannot be visually seen and require assistance from specific equipment. A large percentage of American collision repair facilities are under-tooled, under-equipped and under-trained to diagnose the variety of computer/electronically controlled systems in late-model vehicles and (in some cases) cannot accurately measure

the vehicle structure. Many shop estimators/technicians and insurance personnel assume that if there is no MIL illuminated, then the electrical systems must be working properly. They also commonly believe that if there is no visible misalignment to the outer panels, then the structure is in alignment. This is not only incorrect, but inherently dangerous and potentially costly to the shops and insurers.

Over the past 15 years, many of the European original equipment manufacturers (OEMs) and Tesla have formed Certified Collision Repair Facilities (CCRFs) to ensure that their program facilities are not only trained to repair their vehicles correctly (and use all OEM procedures, materials and replacement components), but can also give the best customer support to protect the name brand. These programs require the CCRFs to access the OEM repair information for each and every vehicle on each repair order. Many of the paint manufacturers conduct estimating training classes that use catchphrases like "blueprinting," "x-ray," "pre-costing" or "complete teardown." We have attended many of those courses and have found the information to be valuable; the only issue we have found is that none of the programs mention the process of pre-measuring or structural diagnosis.

We use the term "triage" to describe the process of diagnosing, which ensures the accurate inspection of the components and determines which components have and have not sustained damage from a collision event. As with any inspection, we must visually look over the vehicle first. Some pre-measuring quick checks with a tape measure and/or tram gauge will assist you in discovering if any misalignment is present. If misalignment is found, the vehicle should then be pre-measured with three-dimensional electronic measuring equipment. Conversely, no matter how thorough your inspection of the sustained damage is, you will never uncover if there are any issues with the

computer controlled electronic systems. For that diagnosis, you will require a computerized scanner. That would be the second most important step in the triage procedures.

There are many code readers and scanners on the market that will just read codes. Some can perform some resets, and a few can basically do whatever the dealer can do with their software programs. Pre-scanning is the process to determine if all systems are operating properly, if any malfunctions are present or if there are open systems (shorts). Remember, there will most likely not be an MIL illuminated to let you know there is an issue.

But you may be asking, "Why would I need to perform a pre-scan on collision-damaged vehicles in my shop?" We all need to remember that today's advanced automobiles are equipped with multiple computer-controlled systems that oversee a variety of safety, convenience, entertainment and autonomous systems that all require periodical maintenance and updates as part of their normal operation. In the event of a collision, a system(s) may have gone into a limp mode (and now don't operate properly), shut down or froze. What happens when your laptop or mobile device freezes? They generally require a restart. Vehicles are really no different.

Remember that applied collision impact forces can generate a great amount of G-force upon a vehicle. Additionally, most collisions occur between 20mph and 30mph. In some collisions, the modules (computers) are directly impacted (or power is cut off to a module by the wire harness being fractured) during the collision event. Once the vehicle arrives at your repair facility, your damage assessor or technician will need to visually inspect the vehicle, determine if pre-measuring is required and then scan it to see if any faults are present. The job file will be noted if structural damage is present and which electronic systems are inoperative.

BY LARRY MONTANEZ III, CDA  
& JEFF LANGE, PE

Additionally, a review of the OEM repair procedures will assist your technician/damage assessor in knowing which systems will require relearning, resetting or re-initialization after the repairs are completed. Another thing that insurers and repairers need to remember and understand is that during the repair process, the vehicle is obviously disassembled. Although the battery will be disconnected and reconnected many times, many systems that were disconnected (unplugged) may set fault codes. There is no automatic reset or the so-called mythical "sleep mode." This is the main reason vehicles must be post-scanned or even sent to the dealer for scanning. In many cases, post-scanning is even more important than pre-scanning. Post-scanning ensures the vehicle systems are operating properly and that systems that require aiming are aligned correctly.

Many systems in the vehicle require some sort of re-aiming or re-learning after they have been removed and reinstalled/replaced (or if the battery was disconnected for a certain period of time). What is unknown to most technicians, insurance company personnel and even the vehicle owner is that many vehicles hold diagnostic trouble codes (DTCs), commonly referred to as fault codes, and many late-model vehicles hold history codes (issues from the past). In many cases, they may or may not illuminate an MIL. Repair facilities must have the equipment and ability to read these codes to determine if they are a result of the collision event or an operational issue prior to the accident.

If post-scans are not performed, collision repair facilities may be unaware of any symptoms or inoperative functions and ultimately deliver an unsafe vehicle. Symptoms will sometimes be noticed by the consumer while operating the vehicle; in a worst-case scenario, the vehicle system doesn't operate properly and is involved in a subsequent collision event. Many times, the issue with not pre- and post-scanning is exacerbated by the damage assessors' and technicians' training on how these electronic systems operate and what checks need to be performed after a collision event. This lack of education on this topic leads to confusion, frustration and (in some cases) extra expenses for all parties involved. Here are two examples of why you must pre- and post-scan the vehicle, and these

are the two most popular (yet most unknown) issues:

■ Many OEMs require the reweighing of the passenger seat Occupant Weight System (OWS) for the passenger airbag discriminatory system. Generally, an MIL will not illuminate. This requirement is based generally on the following four scenarios:

1. The vehicle was involved in a collision event.
2. The passenger seat components were replaced.
3. The OWS bladder/sensors were replaced.
4. The seat was removed or the seat bolts were loosened.

■ Almost every OEM with a guided backup camera (with the guidance lines that move as you turn the steering wheel) requires the camera to be aligned with the steering angle sensor. Since the backup camera is attached to the decklid/trunk, tailgate or hatch, if they are removed and

installed (R&I) or replaced, the vehicle must have the camera aligned with the steering angle sensor.

These are just two examples, but how many more are there that you don't know about? Please remember that checking with OEM repair procedures will allow the damage assessors and insurance adjusters to not only know what needs to be done to the vehicle during repairs, but also what is required after the repairs are complete. Pre-measuring will ensure the structure is within specifications, the steering and suspension components have not sustained damage and the suspension can be aligned. Pre-scanning ensures that any inoperative systems are noted and addressed. Technicians and insurance adjusters must understand that there will be no so-called "idiot light," "malfunction lamp" or "warning lamp" illuminated for every system on late-model vehicles. If certain systems (such as pre-crash/accident avoidance, distance cruise control, backup cameras and lane departure

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systems, to name a few) are not re-aimed, reinitialized or reset, a collision event could occur due to the vehicle not identifying another vehicle or object in its path. This could be extremely dangerous and expose the repair facility and technician to liability. A damage assessor or technician who does not pre-measure and pre-scan a vehicle (and check with the OEM for the proper repair procedures) is not only negligent, but is also putting the consumer and the general motoring public at risk. The insurance adjuster or company refusing to pay for these operations is not only negligent, but this is also a breach of contract and bad faith. In some states, the shop owner, technician, damage assessor, insurance adjuster and/or any other person(s) involved in the claim could be charged with criminal negligence. For this reason, many OEMs are now producing position statements about the requirement to pre- and post-scan a vehicle.

**H&D**

Larry Montanez, CDA is co-owner of P&L Consultants with Peter Pratti Jr. P&L Consultants work with collision repair shops on estimating, production and proper repair procedures. P&L conducts repair workshops on MIG & Resistance Welding, Measuring for Estimating and Advanced Estimating Skills. P&L also conducts investigations for insurers and repair shops for improper repairs, collision reparability and estimating issues. Larry is ISO 9606-2 Certified for Audi and Mercedes-Benz and is a certified technician for multiple OEM Collision Repair Programs. P&L can be reached by contacting Larry at (718) 891-4018 (office), (917) 860-3588 (cell) or [info@PnLEstimology.com](mailto:info@PnLEstimology.com).

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### Executive Director's Thoughts

While asTech is one answer to scanning for independent repairers, it is a must that you know the operations being performed and what scanning versus recalibrating needs to be done. A recalibration is far from a scan check. Know the difference and get educated! Even asTech will tell you that their system does have gaps in these areas...

- Jordan Hendler