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What Shops Need to Know About the Impact of ADAS on Maintenance and Basic Repairs



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What Shops Need to Know About the Impact of ADAS on Maintenance and Basic Repairs



By Ben Johnson, director of product management, Mitchell 1

If you are a shop owner or work for a shop that has made the decision to “wait and see” how ADAS progress, this article is for you! I know the feeling. Investing in new tools to address new technologies found on cars has stung all of us at some point. So it naturally seems prudent to wait until we see

enough vehicles equipped with it before we take it on as part of our offered services.

But ADAS is a bit different — whether you like it or not, you’re impacted!

First, let’s ground ourselves in what the term “ADAS” means. It refers to the industry-invented category of Advanced Driver Assistance Systems. And while the category may seem fairly new, the features and components that are included have been around for a while.

Blind spot monitoring, pedestrian detection, adaptive cruise control and emergency braking are just a few features that fall into this category. Forward-collision warning systems were appearing as early as 2001 on low production, high-end vehicles. By 2008 (the older end of the aftermarket sweet-spot), ADAS-related features were found on some mainstream as well as luxury models from 18 manufacturers. And it continues to grow in popularity, spreading into more models every year. That trend is

expected to continue, since much of this technology enables future features like autonomous driving-capable vehicles.

Still not convinced you need to get in the game? Consider this: making all these features work requires an elaborate ecosystem of sensors, cameras and radar/laser-assisted radar (LIDAR) units along with traditional inputs like vehicle speed, throttle position, etc. These inputs are fed into some pretty powerful on-board computers that leverage AI (Artificial Intelligence) technologies to sort out what’s going on around the vehicle and if any warnings or other countermeasures need to be engaged.

For these systems to function as intended, many of these sensors must be kept in calibration. We’re used to that in our industry — we’ve been dealing with precise calibrations ever since the throttle position sensor first appeared. ADAS technologies are a bit more challenging because these components are mounted behind grills, windshields, rearview mirrors and bumpers.

Many times they are “in the way” and have to be moved to gain access to a non-ADAS-related component for repair. There are multiple examples of non-ADAS work that requires calibration of sensors because the sensors have been disturbed while the non-ADAS job was performed. Even seemingly non-intrusive jobs like wheel alignments can alter the thrust angle of the vehicle, which can require recalibration of certain components. If they are out of calibration, the technician may not be aware of it (no warning lights or other indication may be present).

Unfortunately, the only way a customer may find out is when their vehicle improperly reacts to a situation. This can have a catastrophic result.

Despite the complexity, at this point I hope you’re seeing this as an opportunity more than a hindrance. All these features that the driving public loves so much are going to carry additional costs to maintain the vehicle properly. But before you add a bunch of additional revenue to your 2019 plans, you need to consider what it really means to be ADAS-support-ready.

First, there’s an investment required to get into the game. Many of the calibration procedures require specific targeting systems. Several companies now market such kits, with good vehicle coverage, but they’re not inexpensive. You should evaluate the expense/revenue opportunity to gauge the right time to purchase.

And before you pull out the checkbook, you need to ensure you have the dedicated space in your shop required to perform the calibrations.

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The screenshot displays the Mitchell 1 software interface for ADAS calibration. The top window shows the 'Front View Camera Module Calibration' procedure, including a note: 'NOTE: Do NOT swap cameras between vehicles, it is not approved and a VIN mismatch will occur.' Below this, it details the calibration process for the front view camera system, mentioning that it is necessary when a front view camera module is replaced by a new one. It also lists conditions for calibration, such as clean windshield, avoid lane changes, and maintain vehicle speeds between 55-90 km/h (35-55 MPH). The bottom window shows a table of components requiring calibration.

Component	Also Requiring Calibration	Special Tool (eg. Calibration Target) Required?	See 'Tool Needed'?
Inside view camera	-	-	-
Outside view camera	-	-	-
Adaptive Cruise Control System	-	-	-
Advanced Parking System	-	-	-
Lane Assist System	-	-	-
Wheel alignment	-	-	-
Steering rack assembly	-	-	-
Steering knuckle	-	-	-
Steering knuckle sensor	-	-	-
Steering rack sensor	-	-	-
Steering rack assembly	-	-	-
Steering knuckle	-	-	-
Steering knuckle sensor	-	-	-
Steering rack sensor	-	-	-
Steering rack assembly	-	-	-

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The average space required for proper calibrations is about 32 feet long by about 45 feet wide. And that means empty space – you can't have posts of lifts or other objects in that space, because during a calibration the components being calibrated could "lock on" to the wrong object, resulting in an improper calibration. Some vehicles with 360-degree camera systems require much larger spaces. And many of the calibrations can't be done outside as sunlight adversely affects the calibration.

This problem of space isn't unique to the aftermarket; many new car dealerships are also struggling to meet the space requirements. Collision shops, which see the biggest need for ADAS calibrations after a fender-bender, are also struggling to dedicate the space required.

So if you have the space in the shop, you can rest assured that some of your competitors won't, which puts you in an enviable position to drive new revenue for your shop. In fact, "hub and spoke" relationships where certain shops invest in performing these services for neighboring shops are already blossoming from these needs. As mentioned, collision shops can become your best friends, as many of them sublet these services and are eagerly looking for providers to perform these calibrations.

If you're not convinced, read on — you're still impacted. As mentioned earlier, many of those sensors, cameras and radar/LIDAR components need to be kept in calibration. And many of those components are (or are nearly) in plain sight and in the way of non-ADAS repairs. So, even non-ADAS repairs or maintenance procedures can be affected by ADAS.

Let's say you have a 2017 Cadillac in the shop. A rock has hit the A/C condenser and the refrigerant has leaked out. Because it's not a defect, it's not covered by warranty, so it's in your bay. You have the correct parts in hand and you're performing the R&I procedures. Referring to the manufacturer's service information, you follow the proper steps to get at it, and there it is – Step #7:

"Remove the forward range radar module, if equipped."

It seems straightforward, but let's look at the detailed instructions. The R&I actually is pretty easy – especially in the context of the rest of the job on this particular car. The fun comes during the reassembly. The last step states, "For programming and set up, refer to Control Module References." And there are the steps to perform the recalibration when needed. You're lucky with this one — no special targets or fixtures are needed. The calibration is "dynamic," meaning it will self-learn if the calibration procedure is carried out correctly. It is kicked off using a scan tool, but then reality hits. Per the manufacturer instructions:

"Drive the vehicle within the following conditions for 10-30 minutes or until calibration is complete. The 'Service Driver Assist' message will turn off when calibration is complete.

- Drive at speeds greater than 56 kph (35 mph)
- Minimize tight curves
- Avoid extreme acceleration or deceleration
- Follow one or multiple vehicles (typical vehicle

traffic is sufficient, but vehicles 30m- 50m (100-165 feet) away are most effective at decreasing the calibration time

- Drive in an environment that has stationary objects on the side of the road (street signs, guard rails, mail boxes, fences, etc.)

Verify proper calibration by observing that the 'Service Driver Assist' message turns off within 10-30 minutes of normal driving."

While the conditions outlined likely work well in much of the country, I can think of many places where it's going to be very difficult meeting those requirements. Ever try to stay above 35 mph in Los Angeles or D.C. – or a number of other high-density areas in the U.S.? And, how many shops have someone they can dedicate to 10-30 minutes per car to carry out the required "calibration drive"?

And this is just one example of many different scenarios possible. However, ignoring the calibration step is not an option. Consequences could be disastrous – to the occupants of the vehicle, vehicles around it and ultimately to the shop that performed the last service, which could have compromised the system.

So, whether you want to engage directly in ADAS calibration and repair, or if you want to sub that work out to someone else, you need a plan. An immediate issue is to understand before you tackle the job is WHEN a calibration might need to be performed, and WHAT it takes to do it.

Mitchell 1 has introduced a new feature into its ProDemand repair information product that can help. There is a new button called "Driver Assist ADAS" in the Quick Reference ribbon. Selecting it will present a table listing the different components and features that may be installed on the vehicle in your bay. It also indicates if and when those components might need calibration, and links to information about how to perform the calibration if one is needed. In addition, diagnostic, R&I procedures, wiring diagrams, etc. are all available. While it doesn't solve every challenge, it educates technicians before they get into the job, helping to ensure an efficient and accurate procedure.

Once you understand what is needed, you'll then need to either pony up and perform those calibrations yourself, or have a shop identified that can perform those services for you. You'll want to establish those relationships early on so you don't inconvenience your customer while you try to locate a provider of these services. Either way, ADAS repairs present an opportunity to generate additional revenue and keep your customers safe and loyal to your shop. ■

Ben Johnson is director of product management at Mitchell 1 and is responsible for managing Mitchell 1's portfolio of products for the motor vehicle industry. Johnson joined Mitchell 1 in March 2012. He currently serves on the Auto Care Association's Tool & Equipment and Emerging Technologies committees, the multi-association Telematics Task Force, and the Automotive Aftermarket Suppliers Association (AASA) Telematics Working Group. He is a frequent presenter at industry events on the topic of ADAS and emerging automotive technologies.