

Mitchell1®

UNDERHOOD
FUSE BLOCK
(ON LEFT SIDE)
ENGINE CO

ow Help

69.7%

Find

Select Vehicle:

Chevrolet

Malibu

2004

Color

Descriptions

Locations

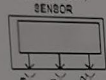
Procedures

Diagrams

SENSOR

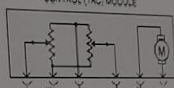
Fig 4: 2.4L VIN 5, Engine Controls Circuit (c

(ABOVE STARTER,
NEXT TO ENGINE
OIL PRESSURE SWITCH)
CRANKSHAFT
POSITION (CKP)
SENSOR



YEL
LTGRN
PPL

(ON THROTTLE BODY)
THROTTLE ACTUATOR
CONTROL (TAG) MODULE



PPL
GRY
TAN
GRN

(BELOW INTAKE
MANIFOLD,
ABOVE STARTER)
PNEUMATIC
SENSOR (KPS)



BLK
RED

G109
(NEAR WINDSHIELD
FLUID RESERVOIR)

PNK/BLK
PNK/BLK
PPL
LT GRN

Daniel

Prepare vehicles and your shop for ADAS calibration

Think of any upfront costs as an investment, leading to greater service opportunities as well as continuous ROI.

By Barry Hoyland, Contributing Editor, PTEN Magazine

CHECK VEHICLE MAKE AND MODEL

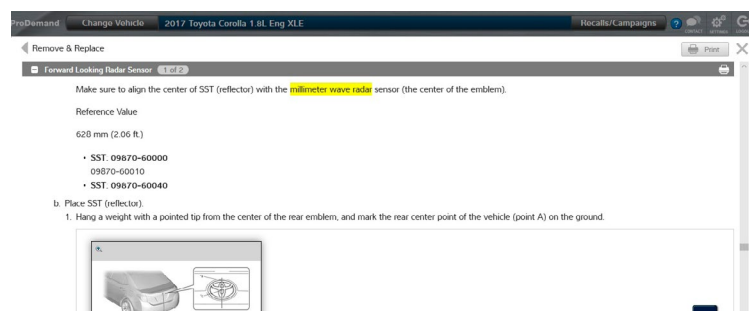
You have undoubtedly heard a lot about advanced driver assistance systems (ADAS) the past few years, but are you sufficiently aware of the impact it will have on your business today and in the future?

With virtually every vehicle manufactured the past few years having some aspect of ADAS as part of its safety and driver convenience systems, the probability that you will need to either diagnose, repair, or at a minimum interact with these components is inescapable. These interactions can include being aware of sensors, cameras, and other components in order to avoid disturbing them, or diagnosing, repairing, replacing, and even calibrating these components or systems.

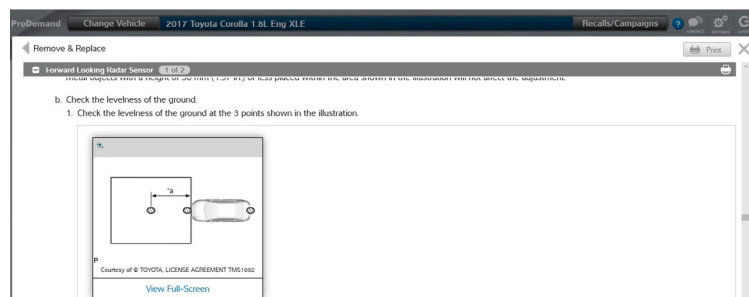
The make and model of vehicles that visit your shop, as well as the services your shop performs, will determine how often you and your technicians will interact with ADAS components. It will surprise you how many times you see these systems in your shop going forward. To fully understand how many times you see them, perform a little experiment. This experiment could take time, but the investment will be worthwhile when you understand how many vehicles require some type of additional service of the ADAS after normal repairs. This effort can not only save you time and frustration in the long

run, but it can become a profit center.

Make a brief list of the vehicles and the repairs they need that are currently in your shop. Using the list, find out which ADAS components will need to be disturbed then subsequently calibrated. This can be done in one of a few ways. In your vehicle repair information system, look up the recommended repair process and the required tools to complete the job. If you have




▲ This image from Mitchell 1 shows how to use a plumb bob to calibrate a forward looking radar sensor on a Toyota.



▲ This image from Mitchell 1 shows how to check the floor level prior to calibrating a forward-facing radar sensor on a Toyota.

ProDemand from Mitchell 1, there is a button near the top banner of the screen that is labeled ADAS. This button takes you directly to a section that lists the different ADAS on the vehicle and the repairs that will require a calibration or other action after or during the repair.

I spoke with Ben Johnson, director of product management at Mitchell 1, and he told me according to their usage information, this ADAS shortcut 

is being used approximately 30 percent of the time in collision shops, but only around 2 percent of the time in after-market repair shops. This is interesting from both the collision and repair shop perspectives. First off, collision centers will probably see damaged components more often than repair shops, creating more need to look up ADAS procedures. Secondly, most insurance companies are now adding the time for repairing and calibrating these systems in their estimating software, possibly helping the collision shop to become more aware of these systems. Lastly, once collision shops repair an ADAS component on a vehicle, the need to look up calibration or repair procedures diminishes, especially if the shop sees consistent makes and models.

WHY CALIBRATION AFTER REPAIR IS SO IMPORTANT

When it comes to ADAS and repair shops, I am somewhat concerned that there are not enough shops paying attention to the need to calibrate these systems after completing traditional repair services. Most late model vehicles will require an ADAS calibration after a thrust alignment.

Since it seems as though most shops are not looking up the procedures for repairing or calibrating ADAS, the likelihood that these repairs are incomplete is quite high. My concern is if your shop is not calibrating a system, or even making sure the components are realigned properly, will the safety aspect of ADAS your customer is relying on be functioning when they need it? From a potential liability standpoint, can you afford to not complete the repair to make sure everything is working as designed?

Even the smallest misalignment of a forward-facing radar or camera can cause the system to misjudge objects by a full lane, making the collision warning/avoidance aspect of the system ineffective. I am sure you have heard the cost of ADAS aligning and calibrating equipment is enormously

expensive. Here is the reality: some of the calibration equipment could be considered expensive, but the tools required to perform some of the small adjustments, and in some cases adjustments prior to calibrating a system, are relatively inexpensive.

These tools include a laser or digital level which you will use to make sure the components are level to the vehicle, and a plum bob required to find the center of the vehicle. A note of caution here – you need to make sure to compensate for any floor slope when you are leveling components to make sure their alignment is accurate.

Replacing steering or suspension components will require ADAS alignment due to possible ride height and wheel alignment changes. After a wheel alignment, especially a rear thrust adjustment, the forward or rear facing camera angles

TOOLS USED:

- Vehicle information
- Wheel aligner
- Digital or laser level
- Plumb bob
- Scan tool
- ADAS calibration equipment

can have substantial changes, so their re-positioning is essential.

WHAT YOU'LL NEED, AND NEED TO KNOW

There are basically three methods to re-align or calibrate ADAS. One is adjusting individual components using a designated tool from the vehicle manufacturer, or a level to make sure the position of the component is aligned properly in

CHECK OUT THIS RELATED MITCHELL 1 PRODUCT

Quick access to ADAS information

Components	Jobs Possibly Requiring Calibration	Special Tools (e.g., Calibration Targets) Required?	Scan Tool Needed?
blind spot monitoring indicator	-	-	-
blind spot monitoring system	calibrate blind spot sensor	Y	-
blind spot sensor	replace blind spot sensor	Y	-
cruise control actuator	-	-	-
cruise control module	-	-	-
cruise control system	replace forward looking radar sensor	-	Y
forward looking radar sensor	replace forward looking radar sensor	Y	Y
lane recognition system	-	-	-
outside view camera	calibrate outside view camera	Y	Y
outside view camera system	replace outside view camera	Y	Y
park assist buzzer	-	-	-
park assist indicator	-	-	-
park assist sensor	replace park assist sensor	Y	Y
park assist switch/button	-	-	-
parking aid module	-	-	-

▲ The ADAS Quick Reference in ProDemand auto repair information software displays a consolidated overview of all ADAS features and related components on the selected vehicle. Techs can instantly see which jobs require calibration and special tools like targets and scan tools. Click the component links to access all the related repair information and start the job quickly without performing multiple lookups.

Mitchell1
In your shop, at your side

To read more, visit:
VehicleServicePros.com/21032964

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the vehicle. The other two methods are either a static calibration, meaning the vehicle is stationary in the shop, or a dynamic calibration, meaning a specific drive cycle is performed after the vehicle is placed in a calibration mode.

There is and has been a lot of speculation about how long car makers will continue to use static calibrations, but based on conversations I have had with experts in the field, the challenges of dynamic calibrations all but guarantee that static calibrations are here to stay. Some of the challenges of dynamic calibrations include the ability to perform them year-round, as they need to be driven on a clear day without the sun shining too brightly into a camera. Additionally, most dynamic calibrations require clearly marked lanes, and the vehicle needs to be driven at a steady speed over 45 mph, which depending on traffic in your locale, may be nearly impossible.

The largest objections to shops performing static calibrations are two-fold: the cost of the equipment and the space required to perform them. Let's discuss the space requirement first. With some exceptions, the space required for static calibrations is a fully open bay, measuring approximately 30' by 16'. Some wheel aligners can be about the same size, and some alignment machines have ADAS adaptability. The EZ-ADAS recalibration system from Snap-on Tools is fully mobile and able to be folded when not in use, reducing space needed for storage. The next objection is cost, which could be considered in one of two ways. Shop owners might view cost as a very expensive piece of equipment or as an investment opportunity to the future with a pretty good ROI. If you have had to send a vehicle out for a calibration, you have most likely had to deal with a few things. One is the inconvenience of sending, possibly towing, a vehicle out to a dealer that has the calibration equipment. Then there is the time to get the vehicle scheduled at the dealer, which can be a couple of weeks depending on their backlog. There is also the



cost of the calibration, which can run anywhere from \$150 to \$500 depending on the system.

The alternative is to invest in your future with a system of your own. I'm not saying that every shop can afford to jump into the calibration business, but there is an opportunity for many of you to do so. Think about this: If you were to market to other repair shops and collision centers in your area, how many calibrations could you perform for them? These opportunities, along with the results of the survey you did on vehicles in your shop now, could give you a fairly good idea of the size of the market. Another thing to consider is if you purchased a top-of-the-line alignment machine, you may have spent around \$40,000, about the same as ADAS calibration equipment. The ROI on an aligner does not pencil out as well as ADAS calibration equipment if you consider you can do just as many alignments in a day as you could calibrations, being that calibrations can be sold at almost twice the rate of an alignment service.

The newest wave of ADAS equipment includes lower cost innovations like printing your own targets and DIFM (Do it for Me) remote calibration systems. These systems are installed in the shop where your trained technician connects the vehicle and sets up the system. The calibration is then performed by a

remote technician from the calibration system manufacturer. The system performs a calibration quickly and frees up your technician during the process so they are able to continue to be productive elsewhere. Another advantage of a remote system is that as vehicle manufacturers update software, the responsibility of staying current with such software falls on the tool manufacturer rather than you and your technicians..

When it comes to billing your customer for a necessary calibration, you will most likely need to educate them on what ADAS is and why it is necessary to maintain the system by performing calibrations. In order to do so, you and your service advisors will need to educate yourselves on the various systems, the issues that could arise from not calibrating them, and which repairs require ADAS calibration.

Be sure to address calibration aspects specifically within a repair order to protect yourself in a potential liability case. For example, you should think twice about just writing, "ADAS calibration." Consider writing the specific component calibrations performed, such as, "Performed forward facing radar calibration. System is performing as designed at this time."

Face it, ADAS is here to stay. The sooner you jump in to do the repairs, the sooner you can take advantage of a relatively open market. **PTEN**