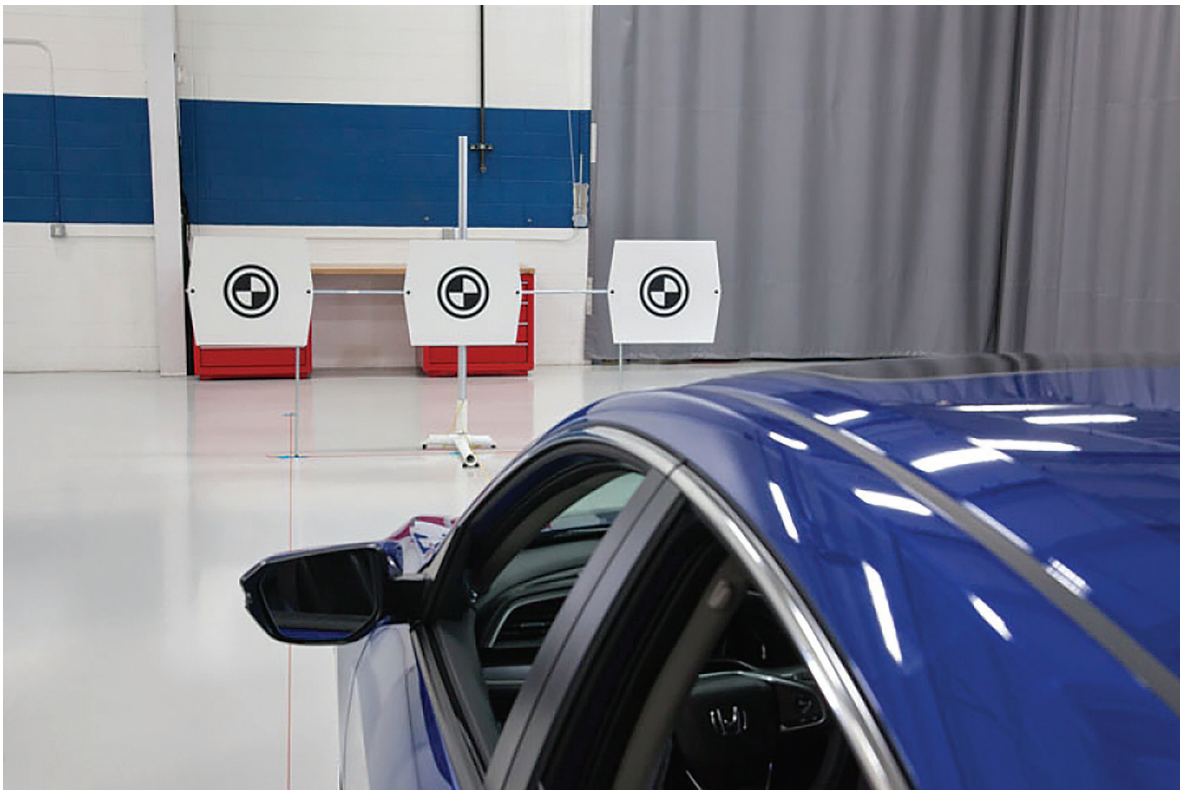


“WHICH IS WHAT” WITH ADAS, CALIBRATION, AND SCANNING.

Following on from the last I-CAR NZ Technical Report of “Which is What with ADAS Calibration and Scanning” we will look at a few more examples of ADAS.

Understanding Advanced Driver Assistance Systems (ADAS)



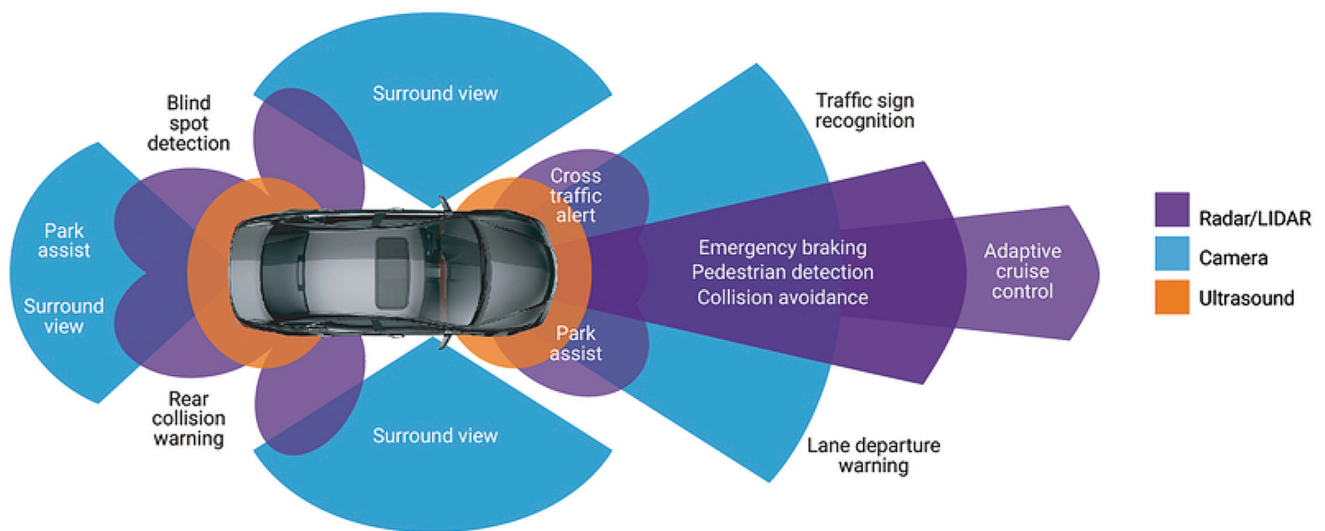
A key part of being able to diagnose a problem with advanced driver assistance systems (ADAS) is understanding how the system works. Knowing what is happening inside the system will help you properly diagnose why the system may be failing. This will prevent replacing parts that are not causing the system issue.

The different cameras and sensors (inputs) that communicate with ADAS are located on almost all sides of the vehicle. Many of the inputs have multiple functions and talk to more than one system. This means that if one of the inputs fails, it might influence more than one system.

The inputs can communicate with many modules in the vehicle. Depending how the vehicle is equipped, the ADAS can take over and control many different functions of the vehicle. This includes some drivability functions, like braking and steering.

Understanding how the systems function can shorten diagnostic times. Knowing what part of the system to test will help prevent installing parts that don't actually fix the problem.

When ADAS Can't See



Collision repairs on vehicles equipped with advanced driver assistance systems (ADAS) can have more restrictions than vehicles without ADAS. Items that historically would be a simple repair may now need to be replaced. The ADAS needs to be able to see/sense in some way, whether it be by radar, camera-view, ultrasonic, etc. Repairers need to keep sensor/camera field of vision clear to avoid system malfunctions. For example, repair material that would normally be used to repair a gouge in a bumper cover is now a problem because it can block the sensor's field of vision and may not allow the sensor to function properly.

Some OEMs have warnings against making repairs in front of sensors/cameras or a certain distance from the sensors/cameras. However, many times there is also a list of other items that can block the sensor/camera view. Let's take a look at some common things or materials that can interfere with ADAS.

Mother nature is probably the biggest contributing factor when it comes to impeding a sensors or camera's ability to see. Precipitation, dirt, bugs, and blinding sunlight are all factors that can block ADAS, that repair technicians will not be able to control. We can, however, prevent blocking ADAS by being aware of restrictions on where repairs are allowed to be made.

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To prevent impeding the ability of the ADAS to function and potentially fail, check OEM repair information to identify what restrictions may apply to the repairs you are

considering. Always verify that the ADAS is functioning properly after completing repairs.

Typical Calibration Requirements



Technicians should be aware of what's required to keep advanced driver assistance systems (ADAS) running safely after a collision. Whether that be aiming a camera, which can cause a system to not function as intended, or checking for diagnostic trouble codes (DTCs). For a basic understanding of what's required, these series of articles provide general information on what's required to repair the system after a collision.

We know that there can be sensors or cameras on all sides of a vehicle. If a vehicle is involved in a collision that is equipped with ADAS, a calibration will more than likely be required. The calibrations vary by OEM but can

require the use of special alignment tools, along with targets. Most vehicles will require the use of a scan tool to perform a calibration. Also, calibrations can be both static (in-shop) or dynamic (on-road).

Being informed on these systems is important to a complete, safe, and quality repair. Many consumers are purchasing a certain vehicle specifically for these driver assistance features. The consumer knows the system is on their vehicle and they are relying on it to help keep them safe. Therefore, technicians also need to be aware when driver assistance systems exist and have the knowledge to properly repair the system.

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Dynamic Calibrations Compared to a Test Drive



Many advanced driver assistance systems (ADAS) require a dynamic calibration procedure, or a static calibration followed by a dynamic calibration. A dynamic calibration requires the vehicle to be driven, often with two technicians and a scan tool. Though it can be easy to think of dynamic calibration as a test drive, they are not one in the same. Let's explore the difference between the two.

First and foremost, if a vehicle requires a dynamic calibration, a test drive isn't done simultaneously. While both require the vehicle to be on the road, there are different stipulations required for dynamic calibration than most test drives require. A test drive should be performed following all dynamic (and static) calibrations, often as a separate and final step before the vehicle is delivered. This is done to confirm that everything is functioning as intended, including ADAS. The test drive

has to be last because you may not be able to test the functionality of an ADAS before it is calibrated.

During a dynamic calibration, certain conditions may be required. This could include the speed the vehicle is traveling, road conditions, clear road markings, and the time of day. During a test drive, you normally will want to travel multiple speeds to check for air leaks, vibrations, noises, or other issues. Though road conditions can affect the ability to perform both test drives and dynamic calibrations, calibrations are more sensitive to weather and objects in or near the roadway. Dynamic calibrations may require straight empty roads, as well as curvy roads with vehicle lined streets. It depends on the system and the manufacturer.

While both operations will require the vehicle to be driven, they should be treated differently.

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