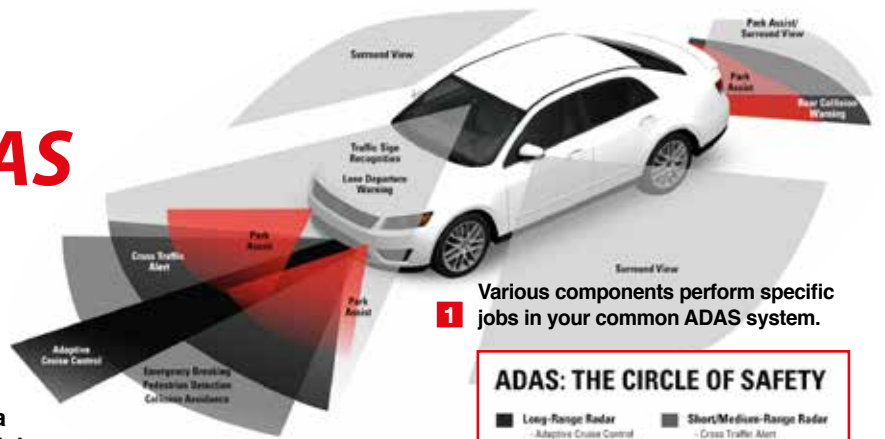




Preparing for the ADAS battle

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1 Various components perform specific jobs in your common ADAS system.

When faced with today's seemingly endless barrage of new technology, sometimes you need to pick your battles. This means researching which emerging technologies provide a business opportunity to dive head-first into and which ones should be waited and watched on as you gather your troops.

Advanced driver-assist system (ADAS) technology is currently the buzz-talk in overseas repair markets. In this article I hope to increase talk of it here in Australia and get you thinking about the battle ahead.

Features such as the anti-lock braking system (ABS) and electronic stability control (ESC) have now become mandatory and these more advanced driver-assist systems – which are already rolling out as selling features on higher spec models – are headed the same way.

You likely already have ADAS-equipped vehicles coming into your workshop for routine oil changes and repairs, sometimes without you even knowing of the technology that lurks beneath.

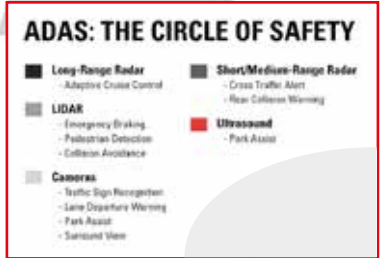
People are driving cars equipped with ADAS technology and do not understand or know what is going on with their vehicle. This is leading to driveability complaints that are actually just part of normal operation.

We've lived through this all before – who hasn't experienced a customer complaining about the brake pedal pulsing and making a weird noise when they brake hard in the wet? We see this as an opportunity to educate them that the ABS is operating as it should and it should be the same with ADAS.

Even if you don't plan to dive into ADAS calibration – and, hey, I wouldn't blame you at this early stage – it's important to start preparing. A fundamental knowledge of the system will give you the confidence to help educate that customer who never indicates their lane changes and is now complaining about their haptic-feedback steering wheel shaking occasionally.

ADAS is touching almost every module of the modern car and this article would be a novel if we were to discuss each and every system at length. To brush up on your base-level knowledge, go to www.wikipedia.org/wiki/Advanced_driver-assistance_systems. Here you'll find an easy-to-digest and comprehensive list of current ADAS systems, with links to listed items that will give you a basic knowledge of the system and manufacturer-specific acronyms and nuances. It's the perfect start to your research.

ADAS technology relies on components uncommon to the general workshop and these all need to be understood. Along with cameras, one of the most commonly used technologies is radio-detection and ranging, which we all know as radar.



This sends out radio waves and uses the returning frequencies to measure and map out surrounding objects and landscapes.

Most manufacturers are putting their research and development dollars into light-detection and ranging (LIDAR) technology, which uses invisible lasers to build a digital image that is then interpreted by the vehicle's artificial intelligence (AI).

One of the biggest advantages of LIDAR is the ability of its sensors to create an incredibly precise image, offering accuracy within a few centimetres even at long distances. This makes it useful for pedestrian-detection systems, collision-warning systems and cross-traffic alert technology.

LIDAR, however, doesn't work quite so well in the case of closer objects or in the rain, snow or fog, so radar, ultrasound, cameras and thermal imaging will all play a part in ADAS and the progression to autonomous vehicles.

Tesla's Elon Musk, as ever against the grain, has branded LIDAR a 'fool's errand', saying anyone relying on the technology will be 'doomed'.

Deeper investigation shows heavy-hitting researchers such as Cornell University agree with his vision of a LIDAR-less ADAS future, saying they have achieved LIDAR-like resolution using multiple cameras.



2 Physical faults are common. This bracket for the forward radar is badly bent, causing a warning message and disabling the intelligent cruise control (ICC) system.



3 The bracket was bent back for diagnostic purposes. Proper repair required a new bracket and recalibration of the radar using specific targets.

Many manufacturers are fumbling their way through the implementation of ADAS and mandating repairs in a learning-on-the-run fashion. My advice for the general workshop, however, would be to wait, watch and prepare.

Start your training and research on this technology but to be profitable in this sector and recoup your investment as an ADAS calibration shop the bulk of your entire workload needs to ADAS calibrations, mainly for trade customers.

While I'm sure tech-savvy TaT members such as yourself are capable of performing the necessary diagnostics and calibrations on these systems, the price of targets and equipment – which usually differ from manufacturer to manufacturer and are often run up to the tens of thousands of dollars – is a limiting factor.

Many aftermarket targets and scan-tool functionalities are becoming available in this area but they also open a can of worms about liability in the event of an accident.

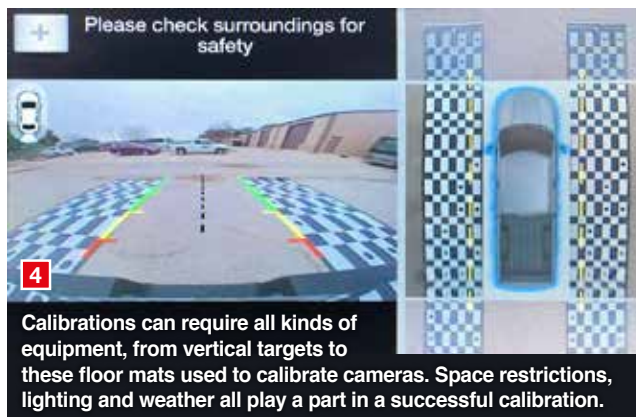
You can achieve an incorrect calibration with an OEM scan tool and an OEM target, and proper calibration with an aftermarket tool and target – and vice versa. More important factors in the successful repair of these technologies are the technician reading and following the proper service information, and their attention to detail.

With ADAS the industry now faces a large challenge to become competent at many of the basic services it's performed for decades, from alignments and brake servicing to steering and suspension repair. Correct operation of ADAS technology assumes that all of these fundamental systems are in factory working order – the lack of accuracy from less than perfect workmanship or aftermarket parts that was once tolerated won't slide with these systems.

Many modern technicians are relying on what has got them by before – experience-based information. You punch out a quick Facebook post saying 'Hey, have you aligned this Honda radar before?'. Someone responds, 'Sure mate, draw some squares on some paper and mount it about waist height three steps in front of the car, that got the light out for me.'. That kind of scenario just isn't going to fly on these future vehicles.

A misaligned ADAS system may well still appear to function but is akin to a drunk driver not seeing straight. You need to be fine telling a customer, 'No, I don't have the tooling to complete this repair safely' or subcontracting the calibrations out to an ADAS specialty shop or dealer.

At this early stage this technology has an inherent conflict. On one hand, if you are able to complete the repair, you can charge accordingly and word will spread that you are the high-tech shop in town. But if procedures are not followed and completed to exact specifications, you may find yourself liable for serious property damage or personal injury in the event of an accident.

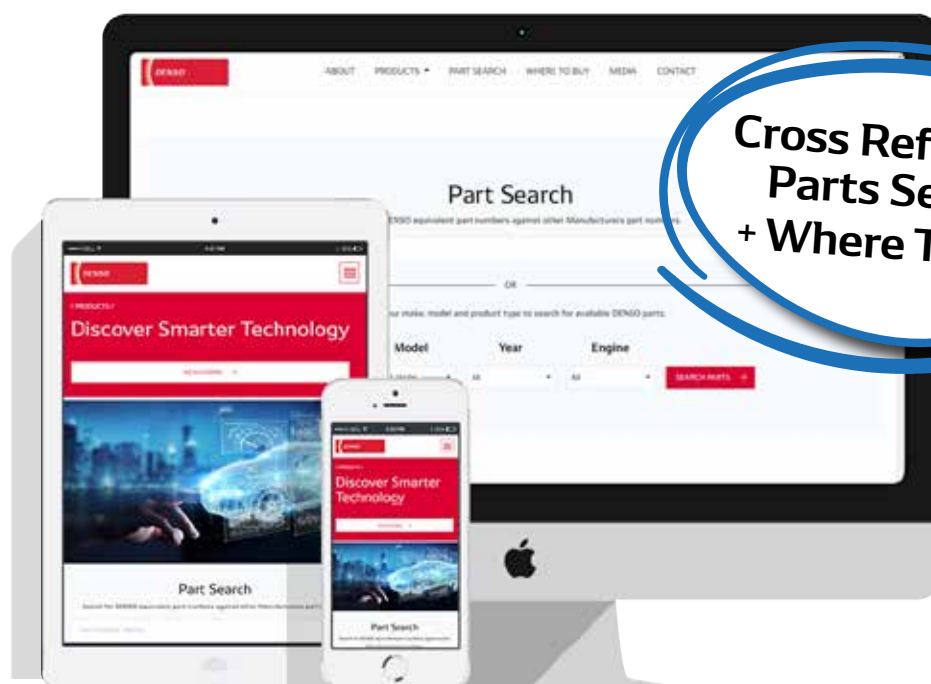


The main gamechanger we should all be hoping for before ADAS calibration becomes truly mainstream is the introduction of industry standards across manufacturers, much like the mandate of the OBDII diagnostic connector compared to OBD1 and prior systems.

The ongoing push for factory service information – which we are making inroads on thanks to the 'Right To Repair' work of industry groups such as the Australian Automotive Aftermarket Association (AAAA) and Automotive Repairers Council of Australia (ARCA) – will become an absolute necessity rather than just a convenience.

I urge you to utilise the great resources of aftermarket data suppliers such as Autodata. They have vast libraries beyond what you see online, and have always been happy to dig up relevant vehicle data whenever I've made the call to them. Online resources such as www.diag.net offer education and discussion on high-level subjects such as ADAS. There are also training opportunities to take advantage of – Bosch, for one, runs an ADAS training course, which you'll find listed on our training page near the back of the magazine.

Thanks to www.diag.net for images used in this article.



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