
Overview

This standard is about recalibrating sensors in Advanced Driver Assistance Systems (ADAS) following removal and replacement of vehicle units/panels to facilitate vehicle fitting activities.

ADAS includes systems for driver safety, pedestrian safety, motion/stability control and collision avoidance systems.

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Performance criteria

- You must be able to:*
- P1 use appropriate personal and vehicle protective equipment when carrying out recalibration activities
 - P2 support the identification of **Advanced Driver Assistance Systems** by reviewing vehicle technical data
 - P3 confirm and record presence and type of **Advanced Driver Assistance Systems and sensors**
 - P4 follow up-to-date and relevant industry codes of practice at all times
 - P5 prepare and check the required calibration **equipment** following manufacturer's instructions prior to use
 - P6 use all tools and **equipment** required for your recalibration activities, correctly and safely throughout
 - P7 use **recalibration techniques** which are relevant to the ADAS system type
 - P8 identify and record any system deviation from acceptable limits
 - P9 carry out all recalibration activities following:
 - P9.1 manufacturer's instructions
 - P9.2 recognised recalibration methods
 - P9.3 health, safety and environmental requirements
 - P10 work in a way that minimises the risk of:
 - P10.1 damage to other vehicle systems
 - P10.2 damage to other components and units
 - P10.3 contact with leakages
 - P10.4 contact with hazardous substances
 - P11 ensure the **calibration environment** is as identified by the manufacturer's instructions
 - P12 **recalibrate** ADAS **sensors** correctly to ensure that they operate to meet vehicle system requirements and function to the vehicle manufacturer's specified tolerances
 - P13 record the recalibration has been successfully completed and meets vehicle manufacturer's specified tolerances

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- P14 ensure your records are accurate, complete and passed to the relevant person(s) within the agreed timescale and in the format required
 - P15 complete all recalibration activities within the agreed timescale
 - P16 promptly report any anticipated delays in completion to the relevant person(s)

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Knowledge and understanding

You need to know and understand:

- K1 the current health and safety legislation and workplace procedures relevant to workshop practices and personal and vehicle protection when recalibrating ADAS **sensors**
- K2 legal requirements relating to the **Advanced Driver Assistance Systems** and sensors
- K3 your workplace procedures for:
 - K3.1 recording recalibration activities
 - K3.2 completing and storing documentation relating to ADAS verifiable calibration
 - K3.3 the referral of problems
 - K3.4 reporting delays to the completion of work
 - K3.5 the **calibration environment** as identified by the manufacturer's instructions
- K4 types of ADAS recalibration equipment
- K5 the importance of documenting recalibration information
- K6 the importance of working to agreed timescales and keeping others informed of progress
- K7 the importance of customer interaction relating to which systems can/can't be calibrated
- K8 the relationship between time, costs and productivity
- K9 the importance of promptly reporting anticipated delays to the relevant person(s)
- K10 types of ADAS **sensors** and their function
- K11 identifying the types of **vehicle calibration**
- K12 features of **ADAS system operation**
- K13 how to prepare and check the accuracy of **recalibration** equipment
- K14 the types and causes of Advanced Driver Assistance System failures
- K15 the circumstances which will necessitate recalibration of ADAS **sensors** and other possible courses of action
- K16 how to find, interpret and use sources of information on Advanced Driver Assistance System operating specifications, recalibration procedures and legal requirements
- K17 how to select the most appropriate **recalibration** method for the ADAS system being worked upon
- K18 how to **recalibrate** ADAS **sensors**

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- K19 the need to continually keep up to date with emerging ADAS system technology
 - K20 the legal requirements of dynamic calibration activity on the road
 - K21 the risk and potential legal implications of returning an uncalibrated vehicle to the customer
 - K22 the value of providing the customer with evidence of successful calibration
 - K23 the industry agreed autonomous vehicle capability levels

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Scope/range

1. **Advanced Driver Assistance Systems** include:
 - 1.1. driver safety
 - 1.2. pedestrian Safety
 - 1.3. motion/stability control
 - 1.4. collision Avoidance Systems

2. **Tools and equipment** include:
 - 2.1. hand tools
 - 2.2. special purpose tools
 - 2.3. general workshop equipment
 - 2.4. dedicated and computer based diagnostic equipment
 - 2.5. fault code readers
 - 2.6. ADAS recalibration equipment

3. **Calibration environment** includes:
 - 3.1. targets
 - 3.2. lighting
 - 3.3. radar boards
 - 3.4. static, dynamic and combinations of static and dynamic

4. **Sensors** include:
 - 4.1. optical
 - 4.2. radar
 - 4.3. lidar
 - 4.4. ultra-sonic
 - 4.5. sound
 - 4.6. GPS

5. **Recalibrate** to include:
 - 5.1. static
 - 5.2. dynamic
 - 5.3. hybrid systems

6. **ADAS system operation** to include:
 - 6.1. steering
 - 6.2. braking
 - 6.3. lane departure
 - 6.4. driver assistance
 - 6.5. parking

Glossary

This section contains examples and explanations of some of the terms used but does not form part of the standard.

Driver safety:

For example, night vision, glare-free high beam and pixel light, automatic parking, blind spot monitor, driver drowsiness detector, driver monitoring system, traffic sign recognition.

Pedestrian safety:

For example, pedestrian detection and warning systems.

Motion/stability control:

For example, lane change assistance, hill descent control

Collision avoidance system:

For example, forward collision warning, surround view sound, night vision, lane departure warning, AEB (Autonomous emergency braking), adaptive cruise control and stability control.

Agreed timescales:

Examples include manufacturers' recommended work times, job times set by the company or a job time agreed with the customer.

Vehicles:

These can be any of the following – light vehicles and commercial vehicles. Additionally, these vehicles may be SI, CI, Hybrid, Electric or Alternative fuel vehicles.

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