

Inspecting a motorsport vehicle during a competition

Overview

This standard identifies the basic competences that you need, to inspect a motorsport vehicle, in a recognised sequence, and to a high standard, during a race meeting or competition. It will prepare you for entry into the Motorsport sector, creating a progression between education and employment, or it will provide a basis for the development of additional skills and occupational competences in the working environment.

The activities will involve inspecting a motorsport vehicle immediately before it enters the competition, and checking the vehicle for system leaks, low fluid levels, loose fastenings and fixings, arming of the fire extinguisher system, checking driver/rider safety equipment, and checking correct fuel levels, correct cold tyre and damper pressures and other potential problem areas. It covers motorsport vehicles such as single seat, rally cars, sports cars, karts, historic vehicles, motor cycles and other specific approved competition vehicles.

In carrying out the activities, you will be required to use a range of inspection techniques, tools and equipment. You must be able to use recognised methods of checking components for wear, chafing, damage and 'play', within the team's guidelines. You will be expected to follow the team's procedures for inspecting the motorsport vehicle during a competition. You must also understand and use the correct coolants, oils, fluids and agents for the system being inspected.

Your responsibilities will require you to comply with recognised procedures for the inspection activities undertaken, to take account of any potential difficulties or problems that may arise, and to seek appropriate help and advice in determining and implementing a suitable solution. You will be expected to work with either a high level of supervision or as a member of a team. Where team working is involved, you must demonstrate a significant personal contribution during the team activities in order to satisfy the requirements of the standard, and competence in all the areas required by the standard must be demonstrated.

On completion of the inspection activities, you must show that you can competently clean the work area that you are responsible for, including tidying up bays or garages to a standard that will reflect the professional image of the team. You must show that you can use and maintain the tools and equipment needed for the inspection activities, and return them to their recognised storage area ready for further use.

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Your underpinning knowledge will be sufficient to provide a broad understanding of your work, and will enable you to apply the appropriate inspection procedures during a motorsport event or competition. You will know how the equipment functions, the common faults that can occur, the purpose of the individual components and associated defects, in adequate depth to carry out the inspection activities, identify and correct faults and ensure that the vehicle is to the required standard.

You will understand the safety precautions required when carrying out motorsport inspection activities, especially those for lifting and supporting vehicles. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety legislation, regulations, directives and other relevant guidelines
2. obtain all the information you need for the motorsport vehicle inspection activities to be carried out
3. plan the inspection activities before you start them
4. obtain and prepare tools and ancillary equipment necessary for the inspection work to be carried out
5. carry out the inspection activities, using approved tools and techniques, and within the limits of your personal authority
6. take suitable precautions to prevent damage to components and surrounding systems
7. report any instances where the inspection activities cannot be fully met, or where there are identified issues outside the planned activities
8. record the results of the inspection activities
9. use the evidence you have gained to during the inspection activities to improve future reliability and performance of the motorsport vehicle
10. tidy up on completion of the inspection activities

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that you need to observe when inspecting motorsport vehicles and when using lubricants and fluids (including lifting and handling techniques; safe working practices with regard to inspecting motorsport vehicles; procedures which satisfy current regulations - such as HASAWA, COSHH, PUWER and other related legislation and guidelines)
2. the hazards associated with inspecting motorsport vehicles, and with the tools and equipment used, (such as the safe support of the vehicle at the correct working height and position, the safe release of fuel and other liquids, handling hot or damaged components, misuse of tools), and how they can be minimised
3. the protective equipment that you need to use for both personal protection (PPE) and protection of the vehicle
4. the importance of good housekeeping within the working area (such as leaving the work area free of debris and used materials, cleaning and maintaining tools and equipment, returning equipment to designated storage area, leaving the work area in a safe and tidy condition), and of good personal presentation to ensure quality representation of the team or organisation
5. the need to ensure that suitable storage space is readied for all bodywork, panels, fairings and covers once the vehicle has been stopped after its initial running period and before any checks are made
6. preparations to be carried out on the vehicle (such as removing bodywork or fairings, covers and panels, cleaning away dirt, dust, oil or track debris; making visual checks of the systems and components for obvious signs of damage, insecurity and leaks)
7. the importance of communicating with others and using inspection check sheets or other relevant documentation to ensure that the inspection is carried out in a systematic way, within the times restraints, and determining what consumables and or components may be needed
8. how the information is recorded and returned to the relevant person, once all inspection work has been completed
9. the techniques used to check components and systems without damaging the motorsport vehicle or disabling it from immediate use
10. how to use a range of hand tools (such as spanners, sockets, screwdrivers, torque wrenches, pressure gauges) to check the security of a range of vehicle

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systems and sub-assemblies (such as engine, transmission, suspension, steering, cooling, lubrication, electrical)

11. how to pressurise tyres, dampers, cooling systems and fuel systems; how to check for leaks and understand the specifications of fluids, fuels and lubricants to top up the vehicle systems following a leak or other problems

12. the various mechanical fasteners to be removed and replaced, and their method of removal and replacement (such as threaded fasteners, special securing devices)

13. how to make adjustments to components/assemblies to ensure that they function correctly (such as travel and working clearance, timing and sequence)

14. why securing devices need to be tightened to the correct torque and locked, and the different methods used

15. the tools and equipment used in the inspection activities, and their calibration/care and control procedures, and the need to control and account for all tools and equipment used during the inspection activities at an event or competition

16. how to deal with problems (such as what to do when components are damaged or insecure, the correct equipment, fluids or lubricants not available, when to act on your own initiative and when to seek help from others)

17. reporting any alterations that you have made, or losses of fluids, lubricants, pressures, or abnormally excessive wear of components - to the relevant person

18. how to complete the relevant documentation, stating the tasks completed and any adjustments made (such as setting of pressures, levels, geometry changes)

19. the procedure for the safe disposal of waste materials, scrap components, hydraulic fluids, contaminated fuel

20. when to act on your own initiative and when to seek help and advice from others

21. the importance of leaving the work area and vehicle in a safe and clean condition on completion of the inspection activities (such as returning tools and equipment to the designated location, cleaning the work area, and removing and disposing of waste)

Scope/range related to performance criteria

1.

Carry out **all** of the following in preparation for the inspection of the motorsport vehicle:

- 1.1 ensure that there is enough time available to complete the inspection
- 1.2 obtain all the required tools and equipment, and check that they are in a safe and usable condition
- 1.3 ensure that the motorsport vehicle is safely supported on the appropriate stands
- 1.4 ensure that all bodywork, fairings, covers and hatches have been removed (where appropriate)
- 1.5 obtain and wear the correct personal protective equipment for the tasks being undertaken
- 1.6 obtain the appropriate fluids and lubricants
- 1.7 obtain the correct auxiliary engine starting devices (where appropriate)
- 1.8 obtain the relevant inspection documentation

2.

Inspect **one** of the following types of motorsport vehicle during a motorsport event or competition:

- 2.1 single seater
- 2.2 karts
- 2.3 motorcycles (such as circuit and off-road)
- 2.4 rallying
- 2.5 historic
- 2.6 sports cars
- 2.7 other specific approved competition vehicle

3.

Carry out inspections and checks, to include **ten** of the following, as appropriate to the motorsport vehicle being inspected:

- 3.1 using a torque wrench to spanner-check wheel nuts, bolts and other critical fastenings
- 3.2 ensuring that fuel tanks are filled to their correct capacity
- 3.3 checking that suitable tyres are fitted, that they are free from damage and are at the correct cold pressures
- 3.4 checking for correct oil pressure prior to engine warm-up
- 3.5 checking engine temperatures and pressures during warm-up
- 3.6 pressurising the cooling system after initial start-up
- 3.7 testing that the throttle operation reaches 100% opening
- 3.8 checking that power steering fluid levels are correct and free from leaks
- 3.9 checking that hydraulic brake and clutch fluids are at the correct levels, and that the brake balance is set
- 3.10 inflating damper bump canisters, using the appropriate gases

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- 3.11 checking that clutch operating clearance is correct, and that gear selection is satisfactory through all gears
- 3.12 testing that electrical systems are operating correctly
- 3.13 checking spherical bearings and wheel bearings for play

4.

Carry out **three** of the following before the vehicle leaves the 'pit' area:

- 4.1 checking that all bodywork, fairings, wings, covers and hatches are correctly secured
- 4.2 checking that the driver is fitted correctly into the seat, and that seat belts are securely fastened
- 4.3 ensuring that the fire extinguisher bottle is full and the system is armed
- 4.4 ensuring that wheels are correctly torqued, and locking mechanisms are in place
- 4.5 ensuring that the driver has the appropriate vehicle information prior to entering the vehicle or competition (such as amount of fuel, type of tyres and pressures, track conditions, vehicle geometry changes, brake balance, brake condition)
- 4.6 cleaning the bodywork, fairings, windscreen and other relevant areas of the vehicle
- 4.7 checking that the work area/vehicle track access lane is free from tools, equipment and foreign objects

5.

Complete the relevant paperwork and pass it to the appropriate person, to include **one** from:

- 5.1 driver/rider
- 5.2 team manager
- 5.3 chief mechanic
- 5.4 No1 mechanic
- 5.5 other appropriate person

Behaviours

Additional Information

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

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