

EM165 Repair-overhaul instrumentation and control equipment used in food and drink operations

SQA Unit Code

HD6C 04

Level 3

SCQF Level 6

Credit value 54

Unit Summary

This standard identifies the competences you need to carry out repairs or overhauling activities on instrumentation and control equipment used in food and drink operations, in accordance with approved procedures. The instrumentation to be repaired or overhauled will have been removed from service, and the overhauling activities may take place in a workshop or the equipment may have been returned to the manufacturer for overhaul. This standard covers instrumentation equipment including pressure, flow, level and temperature instruments; fiscal monitoring equipment; smoke, heat, gas, water, chemical and metal detection and alarm systems; industrial weighing systems; linear and rotational speed measurement and control; vibration monitoring equipment; photo-optic instruments; analysers recorders and indicators; telemetry systems; emergency shutdown systems and other specific instrumentation. Food and drink operations is a term used in this standard to cover the following sub sectors of Meat, Drinks, Confectionery, Fresh Produce, Bakery, Seafood and Dairy.

The repair or overhauling activities will include carrying out all necessary safety and decontamination activities, dismantling the equipment to unit or component level, inspecting and checking all components for damage and wear, replacing all 'lived' and consumable items and worn/faulty components or units, reassembling the equipment and carrying out all necessary quality checks.

You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

In order to be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements set out below. Your performance evidence must include at least one observation by your assessor.

You must be able to:	You need to show: Evidence must be work-based, simulation alone is only allowed where shown in bold italics
<p>1. Repair/overhaul instrumentation and control equipment used in food and drink operations</p> <p>This means you:</p> <p>Work safely at all times, complying with health and safety and other relevant food and drink</p>	<p>Evidence of repairing/overhauling instrumentation and control equipment used in food and drink operations as part of your role in accordance with workplace procedures and within the limits of your own responsibilities.</p>

<p>regulations, directives and guidelines</p> <p>Follow the relevant repair/overhauling schedules to carry out the required work</p> <p>Establish and, where appropriate, mark/label components to aid re-assembly</p> <p>Carry out the repair/overhaul to the agreed level, using the correct tools and techniques</p> <p>Ensure that all removed components are correctly identified and stored in the correct location</p> <p>Report any instances where the repair/overhauling activities cannot be fully met, or where there are identified defects outside the planned repair/overhauling schedule</p> <p>Complete the relevant documentation, in accordance with organisational requirements</p> <p>Dispose of unwanted components, waste materials and substances, in accordance with safe working practices approved procedures</p> <p>Deal promptly and effectively with problems within your control and report those that cannot be solved</p>	
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You need to know and understand:

Evidence of knowledge and understanding should be collected during observation of performance in the workplace. Where it cannot be collected by observing performance, other assessment methods should be used.

1. the health and safety requirements of the area in which the repair/overhaul activity is to take place, and the responsibility these requirements place on you not to compromise food safety
2. the isolation and lock-off procedure or permit-to-work procedure that applies to the equipment, including the critical control points
3. the specific health and safety food and drink precautions to be applied during the repair/overhaul activity, and their effects on other
4. the requirements of the British Retail Consortium (BRC) guidelines and standards in

- relationship to the repair/overhaul activities
5. the specific requirements of your customer/client specifications in relationship to the repair/overhaul activities
 6. your responsibilities in relationship to Hazard Analysis and Critical Control Points (HACCP, TACCP, VACCP) during the repair/overhaul activities
 7. what constitutes a hazardous voltage and how to recognise victims of electric shock
 8. how to reduce the risks of a phase to earth shock (including insulated tools, rubber mating and isolating transformers)
 9. the protective equipment that you need to use for both personal protection (PPE) and protection of the instrumentation and control equipment being repaired
 10. the hazards associated with repairing/overhauling instrumentation and control equipment, and with the tools and equipment used, and how to minimise them and reduce any risks
 11. how to extract and use information from equipment manuals, history/maintenance reports, charts, circuit and physical layouts, specifications, symbols used in instrumentation and control circuits, and other documents needed in the repair/overhaul process
 12. terminology used with instrumentation and control equipment, and the use of system diagrams and associated symbols
 13. the basic principles of operation of the instrumentation and control equipment being repaired/overhauled, and the performance characteristics and function of the components within the equipment
 14. the principles of the equipment's design features for safe operation in a food or drink environment including minimising the chance of contaminants or foreign bodies in the final product
 15. the techniques used to remove components from the instrumentation and control equipment without damage to the components or surrounding structure (including de-soldering components, applying electrostatic discharge (ESD) protection procedures)
 16. the various types of electrical connector that are used, their methods of unlocking, orientation indicators and locating and locking-in of the connections
 17. the various mechanical fasteners that are used, and their methods of removal and replacement (including threaded fasteners, special securing devices)
 18. the importance of using the specified components for the particular instrument, and why you must not substitute others
 19. the need to label and store components correctly, and to check that replaced components have the correct part/identification markings
 20. the procedure for obtaining replacement parts, materials and other consumables necessary for the repair/overhaul, including their safe/hygienic storage before use
 21. the techniques used to position, align, adjust and secure the replaced components to the equipment without damage to the components or surrounding structure
 22. the quality control procedures to be followed during the repair/overhauling operations
 23. procedures for ensuring that you have the correct tools, equipment, components and fasteners for the activities
 24. the processes in place to segregate the tools and equipment used into high or low risk areas
 25. the checks required to ensure that all tools, materials and components are all accountable before operating the equipment
 26. how to conduct checks of the instruments to ensure the integrity, accuracy and quality of the repair/overhaul
 27. the cleaning requirements/policies in place before returning the equipment into full

operational service

28. the problems that can occur with the repair/overhauling operations, and how these can be overcome
29. how to recognise defects (including poor seals, misalignment, incorrectly seated plugs and sockets, ineffective fasteners, foreign object damage or contamination)
30. the recording documentation to be completed for the activities undertaken
31. the procedure for the safe disposal of waste materials and scrap components, including any spoiled food or drink products
32. the extent of your own responsibility, and to whom you should report if you have problems that you cannot resolve

Evidence of performance may employ examples of the following assessment:

- observation
- written and oral questioning;
- evidence from company systems (e.g. Food Safety Management System)
- reviewing the outcomes of work
- checking any records of documents completed
- checking accounts of work that the candidate or others have written