

Assist in the replacement of signalling equipment

Overview

This standard identifies the competences you need to assist in the replacement of signalling systems and equipment under direction, including the use of correct tools and equipment in accordance with your organisation's procedures. Replacement of the equipment can be as a result of maintenance or fault finding activities. The signalling equipment in this standard can be for over ground or underground rail transportation systems and can be applicable for the new European Train Control System (ETCS).

You will be required to use the appropriate tools and equipment throughout the replacement activities, and to apply a range of removal and installation methods and techniques to replace the equipment, and to make connections as appropriate to the equipment installed. Where appropriate, you may also assist in working with computers or electronic controllers, making connections, installing hardware and loading and updating software. The replacement activities will include making checks and adjustments, in line with your permitted authority, and assisting others to ensure that the replaced equipment functions to the required specification.

Your responsibilities will require you to comply with organisational policy and procedures for the replacement activities undertaken, and to report any problems with the activities, tools or equipment used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You must check that all tools, equipment and materials used in the replacement activities are removed from the work area on completion of the work, and that the relevant job/task documentation is completed accurately and legibly. You will be expected to work to instructions in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

The replacement activity may be carried out as a team effort, but you must demonstrate a significant personal contribution to the activities, in order to satisfy the requirements of the standard, and you must demonstrate competence in all the areas required by the standard.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will enable you to adopt an informed approach to applying procedures for the replacement of signalling equipment. You

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will have an understanding of the equipment being removed, and its installation requirements, in adequate depth to provide a sound basis for carrying out the process safely and effectively.

You will understand the safety precautions required when carrying out the replacement activities, especially those for ensuring the safe isolation of services. 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.

Safety is a key theme throughout this standard and you will be able to identify all the necessary safety requirements and take the relevant action to ensure the safety of yourself, others and railway operations.

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Performance criteria

You must be able to:

1. work safely at all times, complying with your organisation's procedures
2. identify any necessary changes to safety requirements on arriving at site, including prompt reporting to the relevant person(s)
3. obtain the required equipment and ensure that it is in a suitable condition for replacement and fit for purpose
4. follow all relevant diagrams and specifications
5. assist in the replacement of the equipment in the correct sequence using appropriate tools and techniques
6. take suitable precautions to prevent damage to equipment during the replacement activity
7. make any necessary settings or adjustments to the equipment to ensure it will function correctly
8. ensure that the replacement is complete and that all components are free from damage including checking that all necessary connections to the equipment are complete
9. observe sufficient operations of the equipment to confirm it is functioning correctly
10. report completion of activities in line with your organisation's procedures
11. deal promptly and effectively with problems within your control and report those that cannot be resolved

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Knowledge and understanding

You need to know and understand:

1. the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity such as the Safe System of Work (SSOW)
2. how to locate and safely access the site
3. how to locate and identify the equipment to be replaced
4. the isolation and lock-off procedure or permit-to-work procedure that applies to the system (such as electrical isolation, locking off switchgear, placing of warning notices, proving the isolation has been achieved and secured)
5. the classification of different voltage levels and the authority requirements for working on them
6. what constitutes a hazardous voltage/current and how to recognise victims of electric shock
7. how to reduce the risks of an electric shock (such as insulated tools, rubber mating and isolating transformers)
8. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the activities
9. hazards associated with carrying out signalling replacement activities (such as stored energy, radio frequency radiation, electrical supplies, electrical/electronic interfaces, using damaged or badly maintained tools and equipment, not following laid-down procedures), and how to minimise these and reduce any risks
10. the relevant methods, techniques and procedures for removal and installation activities
11. how to source and follow relevant technical information, standards, diagrams, instructions, specifications and schedules for replacement of signalling equipment
12. your organisation's procedures for the use, care and control of tools and equipment
13. the procedures and precautions to be adopted to eliminate electrostatic discharge (ESD) hazards when working with and handling electronic devices
14. how and when damage may occur to equipment during replacement
15. how to select the correct tools for the activity, including how to confirm that they are calibrated and stored correctly after use
16. how to identify the various types of connectors used and the

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correct tools and equipment to make the disconnection and connections correctly

17. the different types of mounting, connecting and cable supporting systems used in the replacement of the signalling equipment
18. the correct mode of operation of the equipment relevant to the activity
19. the relevant reporting lines and procedures that are approved by your organisation
20. the limits of your own authority and responsibility and those of others involved (Safe Work Leader)

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**Scope/range related
to performance
criteria**

1. Follow the health and safety legislation, regulations and safe working practices and procedures, from the following as applicable to the work location and activities:
 1. your organisation's safety management system
 2. relevant sections of the HASWA
 3. COSHH
 4. safe work plans
 5. SWL (Safe Work Leader)
 6. track access restrictions
 7. track work instructions
 8. track possession
 9. task risk control sheets
 10. current rule book
 11. regulations for working under OHLE and in the vicinity of DC lines (where appropriate)
 12. equipment disconnections
 13. manual handling regulations
 14. RIDDOR
 15. safety sign regulations
 16. PPE

2. Identify the access requirements related to **one** of the following types of equipment site locations:
 1. trackside
 2. internal (such as signal box, equipment room)
 3. areas to which the public have access
 4. confined spaces
 5. elevated structures

3. Assist in the replacement of **one** of the following types of signalling equipment:
 1. points
 2. train control (such as signals, balises or other method of authorising train movements)
 3. train detection (such as track circuits or axle counters)
 4. power supplies
 5. ETCS
 6. other industry specific signalling equipment

4. Use the following types of approved/calibrated tools and

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equipment as applicable to the equipment being replaced:

1. power tools
2. hand tools
3. wire and cable strippers/cutters
4. IDC tools (such as punch down tool)
5. crimping tools
6. soldering irons
7. torque wrenches
8. measuring equipment
9. levelling equipment

5. Make **two** of the following types of connections during the replacement:

1. crimping
2. mechanical
3. fluid power
4. soldering
5. IDC
6. optical
7. other specific type of termination/connection

6. Ensure that replacement activities comply with **one** of the following:

1. infrastructure guidelines and standard operating procedures
2. equipment manufacturer's documents
3. BS, ISO and/or BS EN standards
4. other industry specific signalling standards/specifications

7. Assist in the completion of the relevant records, to include **one** of the following, and pass it to the appropriate people:

1. job card
2. installation log and action report
3. company reporting procedures
4. other industry specific removal/installation records

Glossary

COSHH

Control of Substances Hazardous to Health Regulations

COSS

Controller of Site Safety

DC

Direct Current

ETCS

European Train Control System

ERTMS

European Train Traffic Management System

HASWA

Health and Safety at Work Act

IDC

Insulation Displacement Connection

OHLE

Overhead Line Equipment

PPE

Personal Protective Equipment

PTS

Personal track safety certificate

RIDDOR

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations

SSOW

Safe System of Work

SWL

Safe Work Leader

SMTH

Signalling Maintenance Testing Handbook

Your organisation

This is the company you work for or are contracted to, or, if you are self-employed, the rules you have set for yourself to ensure that you comply with relevant legal and licensing requirements

Organisation's procedures

These are the procedures your organisation has in place to ensure compliance to the relevant rules, regulations, instructions, policies, procedures and laws relevant to the activity

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