

# Level 2 and 3 NVQ Certificate in Rail Engineering Traction and Rolling Stock (7597-05/10)

February 2018 Version 1.3



## Qualification at a glance

<b>Subject area</b>	<b>Rail Engineering, Traction and Rolling Stock</b>
<b>City &amp; Guilds number</b>	7597
<b>Age group approved</b>	16-18, 19+
<b>Entry requirements</b>	None
<b>Assessment</b>	Portfolio
<b>Fast track</b>	Automatic approval available
<b>Support materials</b>	Centre handbook
<b>Registration and certification</b>	Consult the City & Guilds website for information

<b>Title and level</b>	<b>City &amp; Guilds number</b>	<b>Accreditation number</b>
Level 2 NVQ Certificate In Rail Engineering Traction and Rolling Stock	7597-05	600/0956/1
Level 3 NVQ Certificate In Rail Engineering Traction and Rolling Stock	7597-10	600/0964/0

<b>Version and date</b>	<b>Change detail</b>	<b>Section</b>
1.2 September 2017	Duplicate assessment criteria removed from learning outcome 1 in unit 317	Units
1.3 February 2018	Added TQT & GLH details  Removed QCF	Introduction  Appendix 2



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# 1 Introduction

This document tells you what you need to do to deliver the qualifications:

Area	Description
Who are the qualifications for?	They are for anyone working in railways engineering, including those preparing for a specialised role or management responsibility.
What do the qualifications cover?	These qualifications prove competence of industrial performance, knowledge and understanding and recognise the ability of individuals working in traction and rolling stock within the rail sector.
Are the qualifications part of a framework or initiative?	The level 3 is part of the Rail Traction and Rolling Stock Engineering Advanced Apprenticeship Framework.
What opportunities for progression are there?	Candidates who are successful will be able to progress in employment or to a range of further education and professional body qualifications. For example: <ul style="list-style-type: none"> <li>• Supervisory or team leader roles</li> <li>• Institute of Leadership and Management qualifications.</li> </ul>

## Structure

To achieve the **Level 2 NVQ Certificate in Rail Engineering Traction and Rolling Stock**, learners must achieve **18** credits from the mandatory units and a minimum of **2** credits from the Optional Group 1, and a minimum of **8** credits from Optional Group 2.

Unit accreditation number	City & Guilds unit	Unit title	Credit value
<b>Mandatory</b>			
F/601/7815	201	Prepare to undertake duties in the rail industry	2
L/502/6507	202	Contribute to the security of the work environment in the rail industry	1
L/601/7820	216	Maintain effective working relationships with colleagues in the rail industry	5
F/502/7511	217	Identify and deal with defects and discrepancies in railway traction and rolling stock	10

<b>Unit accreditation number</b>	<b>City &amp; Guilds unit</b>	<b>Unit title</b>	<b>Credit value</b>
<b>Optional</b>	<b>Group 1</b>		
Y/601/7819	215	Obtain and communicate information in the rail industry	5
D/601/7823	218	Maintain and develop personal knowledge, understanding and skills in the rail industry	2
J/502/6506	219	Work with tools, equipment, drawings and specifications in the rail engineering environment	3
F/502/6505	220	Contribute to safe working practices in the rail engineering industry	3
R/502/6119	302	Support learners by mentoring in the workplace	3
<b>Optional</b>	<b>Group 2</b>		
J/502/7512	221	Carry out routine adjustments to railway traction and rolling stock	3
L/502/7513	222	Carry out checks and tests to confirm that railway traction and rolling stock assets comply with operational specifications	3
R/502/7514	223	Carry out planned maintenance of railway traction and rolling stock assets	2
D/502/7516	224	Undertake the removal and replacement of railway traction and rolling stock components	4
K/502/7518	225	Prepare and move railway traction and rolling stock assets, components and equipment	2
M/502/7519	226	Modify railway traction and rolling stock components using tools	4
H/502/7520	227	Overhaul railway traction and rolling stock components	3

To achieve the **Level 3 NVQ Certificate in Rail Engineering Traction and Rolling Stock**, learners must achieve **20** credits from the mandatory units and a minimum of **2** credits from the Optional Group 1, and a minimum of **10** credits from Optional Group 2.

<b>Unit accreditation number</b>	<b>City &amp; Guilds unit</b>	<b>Unit title</b>	<b>Credit value</b>
<b>Mandatory</b>			
F/601/7815	201	Prepare to undertake duties in the rail industry	2
L/502/6507	202	Contribute to the security of the work environment in the rail industry	1
Y/601/7819	215	Obtain and communicate information in the rail industry	5
K/502/7521	313	Identify and assess defects and discrepancies in railway traction and rolling stock assets	9
T/502/7523	314	Establish compliance with railway traction and rolling stock specifications	3
<b>Optional Group 1</b>			
J/502/6506	219	Work with tools, equipment, drawings and specifications in the rail engineering environment	3
F/502/6505	220	Contribute to safe working practices in the rail engineering industry	3
R/502/6119	302	Support learners by mentoring in the workplace	3
K/601/7825	315	Plan for further professional development in the rail industry	2
<b>Optional Group 2</b>			
D/502/7516	224	Undertake the removal and replacement of railway traction and rolling stock components	4
F/502/7525	317	Diagnose faults in railway traction and rolling stock assets	8
J/502/7526	318	Plan railway traction and rolling stock engineering activities	9
L/502/7527	319	Allocate and supervise railway traction and rolling stock resources	4
Y/502/7529	320	Supervise the movement of traction and rolling stock assets, components and equipment	2
R/502/7531	321	Diagnose faults in ancillary systems on railway traction and rolling stock	8
Y/502/7532	322	Install and test railway traction and rolling stock assets and components	4

<b>Unit accreditation number</b>	<b>City &amp; Guilds unit</b>	<b>Unit title</b>	<b>Credit value</b>
D/502/7533	323	Accept and return responsibility for the control of railway traction and rolling stock assets	3
H/502/7534	324	Provide operational support to users of railway traction and rolling stock assets	5

### **Total Qualification Time**

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

<b>Title and level</b>	<b>GLH</b>	<b>TQT</b>
Level 3 NVQ Certificate In Rail Engineering Traction and Rolling Stock	150	320





## 2 Centre requirements

### Approval

This section outlines the approval processes for centres to offer these qualifications and any resources that centres will need in place to offer the qualifications including qualification-specific requirements for the staff delivering the qualifications.

### Centres already offering City & Guilds qualifications in this subject area

Centres approved for the current (7588-12) Level 2 NVQ in Railway Engineering (Traction and Rolling Stock) (7588-13) Level 2 NVQ in Railway Engineering (Traction and Rolling Stock) which have been active during the last two years have already been automatically approved for this qualification at the same level so they can start registering candidates under these new qualification immediately.

For any other cases, our general qualification approval process applies.

### Resource requirements

#### Assessors and internal verifiers

Assessors' and internal verifiers' requirements have been specified by GoSkills in their assessment strategy. The full document is available from our website.

Centre staff may undertake more than one role, assessor and/or internal verifier, but must never internally verify their own assessments.

The primary responsibility of the assessor is to assess candidates to the required quality and consistency against the national occupational standard. It is important that an assessor can recognise occupational competence as specified by the national standard. Assessors therefore need to have a thorough understanding of assessment and quality assurance practices, as well as in depth technical understanding related to the qualifications for which they are assessing candidates.

It will be the responsibility of the approved centre to select and appoint assessors. Potential assessors should:

- hold (or be working towards) an appropriate qualification, as specified by the appropriate regulatory authority, confirming their competence to assess NVQ candidates,
- have the necessary and sufficient experience of the role for which they intend to undertake assessments and actual experience of the functions described by the occupational standards that comprise the qualification.

A primary responsibility of the internal verifier is to assure the quality and consistency of assessments carried out by the assessors for whom they are responsible. Internal verifiers therefore need to have a thorough understanding of quality assurance and assessment practices, as well as sufficient technical understanding related to the qualifications they are internally verifying.

It will be the responsibility of the approved centre to select and appoint internal verifiers. Potential internal verifiers should:

- hold (or be working towards) an appropriate qualification, as specified by the appropriate regulatory authority, confirming their competence to internally verify NVQ assessments,
- hold (or be working towards) an appropriate qualification, as specified by the appropriate regulatory authority, confirming their competence to verify NVQ candidates,
- have the necessary and sufficient experience of the role for which they intend to verify assessments. This experience will have provided potential verifiers with detailed knowledge of the functions described by the occupational standards that comprise the qualification.

Trainee assessors and internal verifiers must have a plan, which is overseen by the recognised assessment centre, to achieve the internal verifier qualification within an agreed timescale.

### **Continuing Professional Development (CPD)**

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

### **Candidate entry requirements**

Candidates should not be entered for a qualification of the same type, content and level as that of a qualification they already hold. In addition, centres must ensure that candidates have the potential and opportunity to gain the qualifications successfully.

There are no formal entry requirements for candidates undertaking this qualification.

### **Age restrictions**

These qualifications are **not** approved for use by learners under the age of 16 and City & Guilds cannot accept any registrations for candidates in this age group.



## 3 Course design and delivery

### Initial assessment and induction

Centres will need to make an initial assessment of each candidate prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

### Recommended delivery strategies

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Centres may design course programmes of study in any way which:

- best meets the needs and capabilities of their candidates
- satisfies the requirements of the qualification.

When designing and delivering the course programme, centres might wish to incorporate other teaching and learning that is not assessed as part of the qualification. This might include the following:

- literacy, language and/or numeracy
- personal learning and thinking skills
- personal and social development
- employment rights and responsibilities

Where applicable, this could involve enabling the candidate to access relevant qualifications covering these skills.



## 4 Assessment

### Summary of assessment methods

Candidates will be required to complete a portfolio of evidence for **each** unit.

### Evidence requirements

The evidence requirements have been specified by GoSkills in their assessment strategy. The full document is available from our website. The evidence requirements have been identified for each of the units in section 5 of this handbook.

Evidence of occupational competence must be generated and collected through performance under workplace conditions. The evidence collected under these conditions must also be as naturally occurring as possible.

The optimum method of collecting evidence of a candidate's competence is by direct observation of naturally occurring activity in the workplace. This observation must be carried out by a qualified assessor.

Simulation is **not** permitted for units within this qualification.

Witness testimony can be gathered from a candidate's colleagues, managers, customers, suppliers, etc. They should:

- be specific to the activities or product
- give a brief description of the circumstances of the observation
- give a brief description of the background of the witness and the observed activity
- identify the aspects of the competence demonstrated.

Product evidence must be assessed in order to ensure that:

- the evidence meets the required standard
- the candidate has followed the correct processes to generate the product
- the evidence is authentic.

In regards to the acceptability of knowledge evidence, the optimum method of collecting evidence of a candidate's knowledge is by oral questioning following direct observation in the workplace.

This questioning must be carried out by a qualified assessor.

In section 5 of this handbook we have listed all units and identified for each one of them:

- those performance statements for which evidence must be collected by direct observation of naturally occurring activity in the workplace,
- those performance statements for which evidence may be collected by a range of alternative assessment methods,
- when the use of simulation is allowed.

### **Recording forms**

Candidates and centres may decide to use a paper-based or electronic method of recording evidence.

To support the delivery of vocational qualifications we offer our own e-portfolio, Learning Assistant, an easy-to-use and secure online tool to support and evidence learners' progress towards achieving qualifications.

Further details are available at: [www.cityandguilds.com/eportfolios](http://www.cityandguilds.com/eportfolios).

**Recording forms** are available on the City & Guilds website.

Centres may devise or customise alternative forms, which must be approved for use by the External Verifier before they are used by candidates and assessors at the centre.



## 5 Units

### Availability of units

Below is a list of the learning outcomes for all the units. If you want to download a complete set of units, go to [www.cityandguilds.com](http://www.cityandguilds.com)

### Structure of units

These units each have the following:

- City & Guilds reference number
- Unit Accreditation Number (UAN)
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria
- notes for guidance.

## Unit 201

## Prepare to undertake duties in the rail industry

<b>UAN:</b>	<b>F/601/7815</b>
<b>Level:</b>	2
<b>Credit value:</b>	2
<b>GLH:</b>	18
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 1 – Prepare to Undertake Duties in the Rail Engineering Industry
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about identifying the rules, regulations, instructions and procedures that you must comply with to make sure you are fit for duty. It outlines the requirements that enable you to commence duties in a safe and knowledgeable manner and to ensure safe lines of communication within the working environment.

<b>Learning outcome</b>
The learner will: 1. be able to complete personal preparation
<b>Assessment criteria</b>
The learner can: 1.1 meet organisational standards for appearance and conduct 1.2 comply with organisational procedures relating to fitness for duty 1.3 possess the required documentation and equipment as specified by the organisation.

<b>Learning outcome</b>
The learner will: 2. know how to complete personal preparation
<b>Assessment criteria</b>
The learner can: 2.1 list the standards of appearance and conduct required by the organisation 2.2 describe the importance of appearance, conduct and fitness in relation to the role 2.3 describe organisational procedures relating to fitness for duty

- 2.4 list the type of equipment required for duty
- 2.5 describe how to access and use required equipment
- 2.6 list the documents required when completing personal preparation
- 2.7 describe the standards of behaviour required by the organisation.

<b>Learning outcome</b>
The learner will: 3. be able to prepare for duty
<b>Assessment criteria</b>
The learner can: 3.1 communicate to the relevant person any necessary information relating to personal duties 3.2 access and confirm information relating to the work to be undertaken 3.3 comply with organisational procedures relating to personal safety 3.4 complete preparations for duty within the allocated time 3.5 complete required documents accurately and process them correctly.

<b>Learning outcome</b>
The learner will: 4. know how to prepare for duty
<b>Assessment criteria</b>
The learner can: 4.1 describe organisational procedures relating to booking on and booking off duty 4.2 list the duties that are to be undertaken and describe organisational procedures relating to them 4.3 describe organisational and legal requirements relevant to personal duties 4.4 list the people within the organisation who are relevant to the work role 4.5 describe the relevant documentation completion requirements within the organisation.



## Unit 202

## Contribute to the security of the work environment in the rail industry

<b>UAN:</b>	<b>L/502/6507</b>
<b>Level:</b>	2
<b>Credit value:</b>	1
<b>GLH:</b>	5
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 2 – Contribute to the Security of the Work Environment in the Rail Industry
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about making sure you understand the importance of maintaining the security of the work environment. It outlines the rules, regulations and procedures which ensure a secure work environment and identifies how to respond to security breaches and emergencies which may arise.

<b>Learning outcome</b>
The learner will: 1. be able to contribute to the security of the work environment in the rail industry
<b>Assessment criteria</b>
The learner can: 1.1 comply with security systems and procedures 1.2 obtain confirmation of visitor credentials 1.3 respond to breaches of security within the limits of own personal authority 1.4 report any actions taken to the relevant person(s) in line with organisational procedures.

<b>Learning outcome</b>
The learner will: 2. know how to contribute to the security of the work environment in the rail industry
<b>Assessment criteria</b>
The learner can: 2.1 describe how to maintain a secure work environment 2.2 describe organisational security procedures 2.3 list the types of security breaches that may occur 2.4 describe the organisation's emergency situation procedures in relation to security 2.5 describe the security systems and procedures in the local facilities and work areas 2.6 describe the organisation's policy for receiving visitors 2.7 describe the limits of own authority in relation to security.

## Unit 215

## Obtain and communicate information in the rail industry

<b>UAN:</b>	<b>Y/601/7819</b>
<b>Level:</b>	2
<b>Credit value:</b>	5
<b>GLH:</b>	40
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 3 – Obtain and Communicate Information in the Rail Engineering Industry.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about ensuring that you can identify, store and retrieve relevant information in an effective and timely and manner and that you can communicate information effectively, including information relating to technical content. The information may come from within your organisation or from sources external to your organisation, such as suppliers, manufactures etc

<b>Learning outcome</b>
The learner will: 1. be able to obtain and store information
<b>Assessment criteria</b>
The learner can: 1.1 collect and update specified information as and when required 1.2 prioritise the nature of the information and respond accordingly 1.3 obtain assistance promptly where information received is unclear or insufficient 1.4 store information so that it can be promptly retrieved when required 1.5 maintain confidentiality of information when obtaining and storing information.

<b>Learning outcome</b>
The learner will: 2. know how to obtain and store information
<b>Assessment criteria</b>
The learner can: 2.1 describe organisational lines and methods of effective communication 2.2 describe organisational policy on storing information 2.3 describe own personal responsibilities regarding collecting and storing information 2.4 describe organisational requirements relating to confidentiality of information.

<b>Learning outcome</b>
The learner will: 3. be able to communicate information
<b>Assessment criteria</b>
The learner can: 3.1 communicate information at an appropriate time and place 3.2 communicate information using the appropriate method 3.3 communicate information that is relevant and accurate 3.4 present information in a way that can be clearly understood 3.5 communicate information that is consistent with organisational policy 3.6 maintain confidentiality of information when communicating.

<b>Learning outcome</b>
The learner will: 4. know how to communicate information
<b>Assessment criteria</b>
The learner can: 4.1 describe organisational policy for the provision and communication of information 4.2 describe organisational policies and procedures for communicating information 4.3 describe the lines and methods of effective communication within the organisation 4.4 describe the limits of own personal authority in relation to communicating information 4.5 describe how to use the relevant communication systems within the organisation 4.6 describe how to communicate effectively.

## Unit 216

## Maintain effective working relationships with colleagues in the rail industry

<b>UAN:</b>	<b>L/601/7820</b>
<b>Level:</b>	2
<b>Credit value:</b>	5
<b>GLH:</b>	36
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 4 - Maintain Effective Working Relationships with Colleagues in the Rail Engineering Industry
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about maintaining effective positive working relationships with your colleagues and recognising the importance of equality and diversity in the workplace. You should know and understand the effects of negative behaviour on working relationships. Effective communication with colleagues is an important part of this unit.

<b>Learning outcome</b>
The learner will: 1. be able to maintain effective working relationships with colleagues
<b>Assessment criteria</b>
The learner can: 1.1 maintain an atmosphere of professionalism and mutual support 1.2 behave towards colleagues in a polite way in line with organisational guidelines 1.3 respond to requests from colleagues with minimal disruption to own work 1.4 meet any undertakings given to colleagues within the agreed way and timescale 1.5 provide information asked for by colleagues that is accurate, clear and given promptly.

<b>Learning outcome</b>
The learner will: 2. know how to maintain effective working relationships with colleagues
<b>Assessment criteria</b>
The learner can: 2.1 describe the need for effective working relationships and goodwill in the workplace 2.2 describe organisational standards and guidelines relating to behaviour in the workplace 2.3 describe how to balance giving help to colleagues with own personal workload 2.4 describe the limits of personal and colleagues responsibilities 2.5 list the learning needs of colleagues who are being trained 2.6 describe organisational procedures for dealing with and discussing difficulties in working relationships 2.7 describe organisational procedures for dealing with conflict within the workplace 2.8 describe the skills that could be used to sort out conflicts and deal with aggressive behaviour in the workplace.

<b>Learning outcome</b>
The learner will: 3. be able to maintain effective communications with colleagues
<b>Assessment criteria</b>
The learner can: 3.1 obtain information needed from colleagues in line with organisational procedures 3.2 give information to colleagues that is relevant and will meet their needs 3.3 communicate information in a format that is appropriate to the work 3.4 confirm personal authorisation to give the information provided 3.5 obtain help in cases where there are difficulties in communicating effectively with colleagues.

<b>Learning outcome</b>
The learner will: 4. know how to maintain effective communications with colleagues
<b>Assessment criteria</b>
The learner can: 4.1 describe the need for accurate and relevant information to be communicated within the workplace 4.2 describe the methods of getting and giving information between colleagues 4.3 describe the limits of personal authority relating to providing information 4.4 describe the different formats and their uses in which information can be communicated

4.5	describe the need for providing, and the ways to provide, colleagues with opportunities to communicate freely and openly
4.6	describe organisational procedures for dealing with and reporting difficulties in communicating freely and openly
4.7	describe how to identify and deal with weaknesses with own personal communication skills

<b>Learning outcome</b>	
The learner will:	
5.	be able to promote equality and diversity in the workplace
<b>Assessment criteria</b>	
The learner can:	
5.1	behave in a way that promotes equality and diversity in the workplace.

<b>Learning outcome</b>	
The learner will:	
6.	know how to promote equality and diversity in the workplace
<b>Assessment criteria</b>	
The learner can:	
6.1	describe why equality and diversity in the workplace is important
6.2	describe what can cause prejudice and discrimination in the workplace
6.3	describe organisational policy on equality and diversity
6.4	outline relevant legislation and codes of conduct aimed at achieving equality and diversity
6.5	describe own personal responsibility regarding equality and diversity in the workplace.

## **Unit 216            Maintain effective working relationships with colleagues in the rail industry**

### Guidance notes

When assessing this unit the following definition should be used:  
Colleagues – include co-workers, supervisors or managers, and possibly trainees



## Unit 217

# Identify and deal with defects and discrepancies in railway traction and rolling stock

<b>UAN:</b>	<b>F/502/7511</b>
<b>Level:</b>	2
<b>Credit value:</b>	10
<b>GLH:</b>	36
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 201 – Identify and Deal with Defects and Discrepancies in Traction and Rolling Stock.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in dealing with defects and discrepancies on railway traction and rolling stock

<b>Learning outcome</b>
The learner will: 1. be able to identify and deal with defects and discrepancies in traction and rolling stock
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the appropriate engineering diagram and related specification for the traction and rolling stock 1.3 identify defects against the specification 1.4 establish the action required to return the product/asset to the specified condition 1.5 deal with defects and discrepancies within own authority 1.6 report recommendations for action to the appropriate persons in line with the organisation's procedures 1.7 record details of defects and discrepancies in line with the organisation's procedures.

**Learning outcome**

The learner will:

2. know how to identify and deal with defects and discrepancies in traction and rolling stock

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to follow engineering diagrams and relevant specifications
- 2.3 list the types of defects and discrepancies which are seen when carrying out own role
- 2.4 describe how to identify defects and discrepancies
- 2.5 describe the impact of defects and discrepancies on the safety and performance of traction and rolling stock
- 2.6 describe the organisation's methods and procedures for dealing with defects and discrepancies including when urgent action is required
- 2.7 describe the organisation's documentation and quality control procedures
- 2.8 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.9 describe the organisation's reporting lines and procedures

# **Unit 217            Identify and deal with defects and discrepancies in railway traction and rolling stock**

## **Guidance notes**

The defects and discrepancies will be straightforward and identifiable in a simple process but may vary in type depending on the products or assets involved. A key feature to this element is identifying when the defect or discrepancy requires urgent attention.

The types of products or assets will be all aspects of traction and rolling stock. They may include:

- Mechanical components and systems
- Electrical components and systems
- Hydraulic components and systems
- Pneumatic components and systems
- Electronic components and systems

When assessing the unit the following points should be covered as appropriate:

### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 218

## Maintain and develop personal knowledge, understanding and skills in the rail industry

<b>UAN:</b>	<b>D/601/7823</b>
<b>Level:</b>	2
<b>Credit value:</b>	2
<b>GLH:</b>	8
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 5 – Maintain and Develop your Knowledge, Understanding and Skills in the Rail Engineering Industry.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about understanding your own work role and maintaining and developing your own knowledge, understanding and skills. You will appreciate the way in which knowledge, understanding and skills contribute to the service you provide. You will seek feedback from others and use this to identify training needs. Knowing how your performance in your work role may vary and when to obtain feedback are key to this unit.

<b>Learning outcome</b>
The learner will: 1. be able to develop within the work role
<b>Assessment criteria</b>
The learner can: 1.1 identify the need to maintain knowledge, understanding and skills 1.2 agree and record realistic and achievable objectives with the relevant person(s) in line with organisational procedures 1.3 evaluate own performance against the knowledge, understanding and skills within the job role 1.4 seek and analyse feedback from others 1.5 review progress and performance regularly and use the results as a basis for future development within the work role 1.6 identify and describe any training needs required to develop skills and knowledge within the work role

<b>Learning outcome</b>
The learner will: 2. know how to develop within the work role
<b>Assessment criteria</b>
The learner can: 2.1 describe how to maintain and develop the knowledge, understanding and skills needed to carry out the role 2.2 describe organisational and legal requirements related to the work role 2.3 describe how to evaluate personal performance 2.4 describe how and when personal performance may vary 2.5 describe how to obtain, record and evaluate feedback on personal performance 2.6 describe how to react positively to feedback 2.7 describe how gaps in personal skills and knowledge can effect personal and organisational performance 2.8 describe organisational procedures relating to staff development

## Unit 219

# Work with tools, equipment, drawings and specifications in the rail engineering environment

<b>UAN:</b>	<b>J/502/6506</b>
<b>Level:</b>	2
<b>Credit value:</b>	3
<b>GLH:</b>	10
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 7 – Working in a Rail Engineering Environment.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This element is about identifying and using the relevant tools and equipment found in a rail engineering and maintenance workshop. You must be able to carry out a range of visual safety checks to ensure that the tools and equipment are fit for the purpose intended. You must be able to select the correct tool or equipment for the task and be able understand and check the relevant operating specifications. At all times your responsibilities will require you to comply with your organisation's procedures for the inspection and safe use of tools and equipment.

<b>Learning outcome</b>
The learner will: 1. be able to identify and use a range of hand tools and equipment
<b>Assessment criteria</b>
The learner can: 1.1 set a safe system of work for the activity and work to the system 1.2 Identify the relevant tools and equipment needed to undertake duties 1.3 check tools and equipment for safe operation 1.4 check tools and equipment to ensure they operate to specification 1.5 select and safely use the correct tool or type of equipment 1.6 record and interpret data from a range of measuring tools 1.7 report any tool defects to the appropriate person(s) 1.8 clean and store tools and equipment for future use or operation 1.9 use hand tools and equipment within the limits of own responsibility

- 1.10 maintain tools and equipment within limits of own responsibility
- 1.11 clean the work area and safely dispose of waste materials in line with safe working practices and own organisation's procedure
- 1.12 complete work records in line with own organisation's procedures

**Learning outcome**

The learner will:

- 2. know how to identify and use a range of hand tools and equipment

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe own organisation's procedures for the care and use of hand tools and equipment
- 2.3 describe how to select and use the correct tools and equipment for relevant activities
- 2.4 list the range of tools and equipment required for own role
- 2.5 describe how to use the range of tools and equipment required in own work area
- 2.6 describe how to check tools and equipment to ensure they operate to specification
- 2.7 describe how to clean and safely store basic hand tools and equipment relevant to own work role
- 2.8 list the type and kind of waste materials that may arise from tools and equipment
- 2.9 describe the importance of disposing of waste materials safely and the consequences of not doing so to others and the environment
- 2.10 describe how to read, calculate and interpret data from tools and equipment
- 2.11 describe the importance of reporting defects and discrepancies to tools and equipment and the consequences of not doing so
- 2.12 describe how to maintain the tools and equipment used in own work role within limits of own responsibility

**Learning outcome**

The learner will:

- 3. be able to obtain and use schedules, procedures and specifications

**Assessment criteria**

The learner can:

- 3.1 obtain the required drawings and specifications using own organisation's approved sources
- 3.2 follow the relevant drawing and specifications
- 3.3 identify, extract and interpret the required information
- 3.4 confirm the work output meets the required specification
- 3.5 deal promptly and effectively with any problems within own control and report those which cannot be resolved
- 3.6 report any inaccuracies or discrepancies in drawings and specifications

**Learning outcome**

The learner will:

4. know how to obtain and use schedules, procedures and specifications

**Assessment criteria**

The learner can:

- 4.1 describe the type of information and documentation systems that are available and approved by own organisation
- 4.2 list the types of engineering drawing and specifications that are approved by own organisation
- 4.3 describe how to check that the information is current, complete and accurate
- 4.4 describe own organisation's procedures for reporting discrepancies in information
- 4.5 list the types of conventions, symbols and abbreviations used in own organisation in engineering drawings and specifications
- 4.6 describe how to ensure sources of information are accurate, current and approved
- 4.7 describe how to identify and select the required data for the work to be undertaken
- 4.8 describe own organisation's procedures for document care and control and why its important to follow them
- 4.9 describe the relevant reporting lines and procedures that are approved by own organisation



## Unit 220

## Contribute to safe working practices in the rail engineering industry

<b>UAN:</b>	<b>F/502/6505</b>
<b>Level:</b>	2
<b>Credit value:</b>	3
<b>GLH:</b>	10
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 10 – Contribute to Safe Working Practices in the Rail Engineering Industry.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about your responsibilities for health and safety and good housekeeping practices at work. It covers meeting health and safety requirements, maintaining safe practices in the work area and using equipment, tools and substances hazardous to health in a safe manner as well as lifting and handling equipment safely. This unit is also about ensuring that tools and equipment are cleaned, maintained and checked to ensure they are fit for use. You will be able to take responsibility for your working practices as well as identifying your responsibilities for the health and safety of others with whom you have contact.

<b>Learning outcome</b>
The learner will: 1. be able to contribute to safe working practices in rail engineering
<b>Assessment criteria</b>
The learner can: 1.1 identify an appropriate safe system of work 1.2 choose appropriate personal protective clothing to wear and relevant equipment to use to carry out the task 1.3 undertake an inspection of the required safety equipment to ensure that it is fit for purpose and is used in accordance with suppliers', manufacturers' and organisational recommendations and instructions 1.4 safely isolate equipment before making any adjustments 1.5 ensure that the work environment is, so far as possible, free from hazards

1.6	use equipment, machinery and materials safely and in accordance with statutory regulations and the manufacturer's and own organisation's recommendations and instructions
1.7	demonstrate how to lift and handle equipment and materials safely
1.8	implement the relevant controls for substances which are hazardous to self, other employees and the general public in accordance with Control Of Substances Harmful to Health (COSHH) regulations and manufacturers' and organisational recommendations and instructions
1.9	undertake safe working practices within limits of own responsibility
1.10	clearly and effectively communicate health and safety issues
1.11	clearly and accurately report potential hazards to the appropriate person
1.12	report any accidents, incidents and emergencies in accordance with organisational policies and procedures
1.13	correctly use emergency equipment within own area of responsibility
1.14	comply with the fire alarm and evacuation systems
1.15	accurately report damaged or out of date safety equipment

<b>Learning outcome</b>	
The learner will:	
2.	know and understand how to contribute to safe working practices in rail engineering
<b>Assessment criteria</b>	
The learner can:	
2.1	describe the relevant safe working procedures when working with equipment, materials and tools
2.2	describe what makes up a safe working environment
2.3	describe warning signs and their meanings appropriate to own role
2.4	describe the different types of personal protective clothing and equipment available for: <ul style="list-style-type: none"> <li>• head</li> <li>• eyes</li> <li>• ears</li> <li>• breathing</li> <li>• skin</li> <li>• hands</li> <li>• feet</li> </ul>
2.5	list what safety equipment is available to protect individuals, work colleagues and/or the general public
2.6	describe the relevant supplier and manufacturer instructions for the safe use and storage of tools, equipment, materials and products
2.7	describe the correct safe lifting and handling techniques for the size, mass and shape of the load
2.8	explain the importance of removing pollution
2.9	clarify the concept and definition of a hazard and risk
2.10	explain the importance of reporting hazards and risks
2.11	describe the differences between an incident, near miss, accident and emergency

- 2.12 explain the importance of communicating health and safety matters and the different methods which can be used to do this
- 2.13 describe where different types of emergency equipment can be located including
  - alarms
  - extinguishers
  - first aid equipment
- 2.14 describe the procedures for emergencies and evacuation

<b>Learning outcome</b>
The learner will:
3. be able to contribute to safe housekeeping practices
<b>Assessment criteria</b>
The learner can:
3.1 demonstrate how to keep immediate work area in a clean, tidy and hazard free state reporting where appropriate any hazards which need to be dealt with
3.2 take action to ensure that all emergency exits and designated walkways in immediate work area are free from obstructions at all times, reporting obstructions where appropriate
3.3 demonstrate how to deal with spillages promptly and effectively
3.4 take action to store materials, tools and equipment safely in approved locations
3.5 assess all tools and equipment to ensure they are fit for purpose
3.6 report faults to tools and equipment accurately and promptly in accordance with organisational procedures
3.7 isolate machines, equipment and tools from the power source ensuring that moving parts are stopped prior to cleaning operations in line with organisational procedures
3.8 using the appropriate cleaning agents clean equipment in accordance with manufacturers' instructions
3.9 dispose of waste material, used cleaning agents and debris safely and in line with relevant legislation and organisational procedures
3.10 demonstrate how to store or dispose of substances and discharges which are hazardous to health safely and in accordance with COSHH regulations and organisational procedures
3.11 implement housekeeping practices within limits of own responsibility

<b>Learning outcome</b>
The learner will:
4. know and understand how to contribute to safe housekeeping practices
<b>Assessment criteria</b>
The learner can:
4.1 explain the importance of cleaning, servicing, storing and maintaining tools and equipment
4.2 illustrate how to detect tool and equipment defects
4.3 explain the importance of storing expensive, fragile and vulnerable tools and equipment safely

- 4.4 explain why it is important to report defects and discrepancies to tools and equipment
- 4.5 explain the reporting procedure for tool and equipment defects
- 4.6 explain why it is important to keep all emergency exits and walkways clear from obstructions
- 4.7 explain the cleaning schedules and the types of warnings which are appropriate for cleaning operations
- 4.8 explain why it is important to deal promptly with spillages
- 4.9 explain the range and limitations of cleaning methods, materials and equipment available
- 4.10 describe the hazards associated with particular cleaning materials and the reporting procedures associate with them
- 4.11 explain the procedures for isolating machinery
- 4.12 explain organisational and statutory requirements for the storage, disposal, discharge or containment of substances
- 4.13 explain the relevant supplier and manufacturer instructions for the safe cleaning of tools, equipment, materials and products
- 4.14 explain the limits of own authority in the rail engineering context related to house keeping

# Unit 220      Contribute to safe working practices in the rail engineering industry

## Guidance notes

The learner may be working in a range of environments including

- workshop
- site
- possession
- depot

When assessing the unit the following points should be covered as appropriate:

**Assessment criterion 1.1** the learner may be working in

- overhead electrified areas
- conductor rail areas

**Assessment criterion 1.3** the types of equipment may be

- electrical
- electronic
- pneumatic
- hydraulic

**Assessment criterion 1.5** the materials may contain gases

**Assessment criterion 2.1** the learner should cover the following:

- Organisational health and safety policy and procedures
- Health and Safety at Work Act 1974
- COSHH regulations
- PPE regulations
- Confined space regulations
- Working at Height regulations
- Fire regulations
- First Aid regulations
- Vibration regulations
- Role of safety representatives

**Assessment criterion 2.8** the pollutants may include

- toxic gases
- explosive gases
- chemicals
- general waste

## Unit 221

## Carry out routine adjustments to railway traction and rolling stock

<b>UAN:</b>	<b>J/502/7512</b>
<b>Level:</b>	2
<b>Credit value:</b>	3
<b>GLH:</b>	12
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 202 – Carry Out Routine Adjustments to Traction and Rolling Stock.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in routine adjustments to railway traction and rolling stock

<b>Learning outcome</b>
The learner will: 1. be able to carry out routine adjustments to traction and rolling stock
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the appropriate maintenance schedules and related specifications 1.3 carry out adjustments in the specified sequence and in agreed timescale within limits of own authority 1.4 confirm the adjusted equipment meets the required operating specification 1.5 report any instances where the equipment fails to meet the required performance after adjustments or where there are identified defects outside the required adjustments 1.6 maintain documentation in line with the organisation's procedures

**Learning outcome**

The learner will:

2. know how to carry out routine adjustments to traction and rolling stock

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to follow maintenance schedules and related specifications as approved by own organisation
- 2.3 describe the methods, techniques and procedures for the adjustment of traction and rolling stock components and equipment
- 2.4 describe the organisation's maintenance records and documentation procedures
- 2.5 describe the organisation's policies and procedures on the use, care and control of tools and equipment including calibration
- 2.6 describe the implications of not following the policies and procedures for the use, care and control of tools and equipment
- 2.7 describe the organisation's maintenance authorisation procedures
- 2.8 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.9 explain the appropriate reporting lines and procedures

## **Unit 221**                    **Carry out routine adjustments to railway traction and rolling stock**

### Guidance notes

The learner will work to a plan which may include carrying out several simple adjustments in sequence within the system. Once the adjustment has been made the learner will be required to confirm that the asset or component meets the required operating specification.

The type of assets, components or equipment to be adjusted will cover all aspects of traction and rolling stock. They may include:

- Mechanical components and assemblies
- Electrical components and assemblies
- Electronic components and assemblies
- Hydraulic components and assemblies
- Pneumatic components and assemblies

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)



## Unit 222

# Carry out checks and tests to confirm that railway traction and rolling stock assets comply with operational specifications

<b>UAN:</b>	<b>L/502/7513</b>
<b>Level:</b>	2
<b>Credit value:</b>	3
<b>GLH:</b>	12
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 302 - Establish Compliance with Traction and Rolling Stock Specifications.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competence in carrying out checks and tests to confirm that railway traction and rolling stock assets comply with operational specifications.

<b>Learning outcome</b>
The learner will: 1. be able to carry out checks and tests to confirm that traction and rolling stock assets comply with operational specifications
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the specifications for the product or asset being checked 1.3 use the correct tools and inspection equipment and check they are in useable condition 1.4 carry out the checks in an appropriate sequence using approved methods and procedures 1.5 identify and record any defects or variations from the specification and take appropriate action 1.6 report completion of activity in line with organisational procedures

**Learning outcome**

The learner will:

2. know how to carry out checks and tests to confirm that traction and rolling stock assets comply with operational specifications

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to follow related specifications
- 2.3 describe how to check engineering specifications are up to date and accurate
- 2.4 list the methods and techniques for testing and checking assets to meet operational specifications
- 2.5 describe how to identify defects in products and assets and how they can affect the safety and performance of traction and rolling stock
- 2.6 describe how to use test equipment so as to ensure true and accurate measurements are taken
- 2.7 describe the organisation's policies and procedures for the use, care and control of inspection tools and equipment including as appropriate calibration procedures
- 2.8 describe the organisation's reporting lines
- 2.9 explain the limits of own authority and responsibility and those of others involved in the activity

## **Unit 222**

# **Carry out checks and tests to confirm that railway traction and rolling stock assets comply with operational specifications**

### Guidance notes

The learner will be able to select the correct tool or inspection equipment and confirm it is appropriate for use. The learner will be able to accurately record information including whether any defects or variations have been identified. The type of assets to be checked will be aspects of traction and rolling stock. It may include:

- Mechanical systems
- Electrical systems
- Electronic systems
- Hydraulic systems
- Pneumatic systems

The inspection, test and record-keeping procedures to be followed will be approved by the learner's organisation. They must be carried out at set times. It will involve checking work in progress as well as completed work. The aspects and characteristics of the checks to be made will depend on the assets involved. The checks will be of a straightforward nature.

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 223

## Carry out planned maintenance of railway traction and rolling stock assets

<b>UAN:</b>	<b>R/502/7514</b>
<b>Level:</b>	2
<b>Credit value:</b>	2
<b>GLH:</b>	10
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 204 - Carry Out Planned Maintenance of Traction and Rolling Stock Assets.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in carrying out planned maintenance of Traction and Rolling Stock assets

<b>Learning outcome</b>
The learner will: 1. be able to carry out planned maintenance of traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the relevant maintenance schedules to carry out the required work 1.3 select and use the correct tools and equipment 1.4 carry out the maintenance activities within the limits of own authority 1.5 carry out the maintenance activities in the specified sequence and in an agreed time scale 1.6 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule 1.7 complete relevant maintenance records accurately and pass them on to the appropriate person(s) 1.8 dispose of waste materials in line with own organisation's procedures

<b>Learning outcome</b>
The learner will: 2. know how to carry out planned maintenance of traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity 2.2 describe how to follow maintenance schedules and related specifications 2.3 list the methods, techniques and procedures for maintenance of traction and rolling stock assets 2.4 describe how to ensure authorisation is in place prior to undertaking maintenance activities 2.5 describe own organisation's procedures for paper based and computer based maintenance records and documentation, including: <ul style="list-style-type: none"> <li>• how to access</li> <li>• version control</li> </ul> 2.6 describe own organisation's procedures for the use, care and control of tools and equipment including calibration 2.7 describe the implications of not following the policies and procedures for the use, care and control of tools and equipment 2.8 describe how to check the maintenance activity to ensure compliance with the original specification 2.9 describe own organisation's procedures for waste disposal 2.10 describe the relevant reporting lines and procedures that are approved by own organisation 2.11 explain the limits of own authority and responsibility and those of others involved in the activity

## **Unit 223**

# **Carry out planned maintenance of railway traction and rolling stock assets**

### Guidance notes

The planned maintenance will be routine and could include:

- Mechanical components and assemblies
- Electrical components and assemblies
- Electronic components and assemblies
- Hydraulic components and assemblies
- Pneumatic components and assemblies
- Internal fixtures and fittings

The quality standards and accuracy to be achieved will be in line with the specifications and your organisation's procedures. It must include reinstating assets to within operational tolerances.

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 224

# Undertake the removal and replacement of railway traction and rolling stock components

<b>UAN:</b>	<b>D/502/7516</b>
<b>Level:</b>	2
<b>Credit value:</b>	4
<b>GLH:</b>	20
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 205 - Undertake the Removal and Replacement of Traction and Rolling Stock Components.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in undertaking the removal and replacement of railway traction and rolling stock components

<b>Learning outcome</b>
The learner will: 1. be able to undertake the removal and replacement of traction and rolling stock components
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the relevant diagrams and related specifications to carry out the required work 1.3 ensure correct component orientation 1.4 ensure that any stored energy or substances are released safely and correctly 1.5 remove the required components using tools and techniques in line with organisational procedures 1.6 take precautions to prevent damage to components, tools and equipment during removal or replacement 1.7 check the condition of the removed components and record those that will require replacing 1.8 label and store the removed components in an appropriate location in line with organisational procedures 1.9 store or discard the removed components in line with organisational procedures

- 1.10 obtain all the required replacement components and check that they are in a suitable condition and fit for purpose
- 1.11 check replacement components meet the required specification
- 1.12 replace the components in the correct sequence using appropriate tools and techniques
- 1.13 make any necessary settings or adjustments to the components to ensure they will function correctly
- 1.14 deal promptly and effectively with problems within own control and report those that cannot be resolved
- 1.15 maintain documentation in accordance with own organisation's procedures

### **Learning outcome**

The learner will:

- 2. know how to undertake the removal and replacement of traction and rolling stock components

### **Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to follow engineering diagrams and related specifications that are approved by own organisation and the manufacturer, and how to check for currency and accuracy
- 2.3 describe the safe working practices for the release of stored energy and the prevention of re-charging
- 2.4 list the methods and techniques for component removal
- 2.5 list the methods and techniques for component replacement
- 2.6 describe the methods and techniques for handling equipment
- 2.7 describe how to identify component defects
- 2.8 describe how defects in components can affect the safety and performance of traction and rolling stock
- 2.9 explain how and when to label and store components
- 2.10 explain how and when to dispose of unwanted components
- 2.11 describe own organisation's procedures for the use, care and control of tools and equipment including calibration
- 2.12 describe the implications of not following the policies and procedures for the use, care and control of tools and equipment
- 2.13 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.14 describe the relevant reporting lines and procedures that are approved by own organisation



## **Unit 224            Undertake the removal and replacement of railway traction and rolling stock components**

### Guidance notes

The learner will work to a plan taking into account local maintenance instructions and also be able to interpret the appropriate diagrams and specifications.

The equipment to be worked on could be all aspects of traction and rolling stock. It may include:

- Mechanical systems and assemblies
- Electrical systems and assemblies
- Electronic systems and assemblies
- Hydraulic systems and assemblies
- Pneumatic systems and assemblies

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

#### **Assessment criterion 2.3**

The systems should include as appropriate:

- Mechanical
- Electrical
- Electronic(including the method for providing electrostatic protection

**Assessment criterion 2.6**

The equipment should include as appropriate:

- Use of lifting equipment.
- Use of moving equipment.
- Avoiding damage to the components

The type of components to be removed could be all aspects of traction and rolling stock. They may include:

- Mechanical components
- Electrical components
- Electronic components
- Hydraulic components
- Pneumatic components

## Unit 225

# Prepare and move railway traction and rolling stock assets, components and equipment

<b>UAN:</b>	<b>K/502/7518</b>
<b>Level:</b>	2
<b>Credit value:</b>	2
<b>GLH:</b>	12
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 206 - Prepare and Move Traction and Rolling Stock Assets, Components and Equipment.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in preparing and moving railway traction and rolling stock assets, components and equipment

<b>Learning outcome</b>
The learner will: 1. Be able to prepare and move traction and rolling stock assets, components and equipment
<b>Assessment criteria</b>
The learner can: 1.1 Set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 Establish the weight of the load to be moved 1.3 Check all necessary documentation is in place prior to the movement of the load 1.4 Establish the method and select suitable equipment to move the load 1.5 Check that the equipment to be used is capable of moving the load safely 1.6 Determine a suitable route for moving the load minimising risk to people and property 1.7 Ensure that the load is secured and protected before moving operations start 1.8 Ensure all documentation is in place before moving operations start, as approved by own organisation 1.9 Move the load over the selected, suitable route

- |   |
|---|
| 1.10 Position and release the load in its intended final location<br>1.11 Deal promptly and effectively with problems within own control and report those that cannot be resolved |
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<b>Learning outcome</b>
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The learner will:
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| 2. Know how to prepare and move traction and rolling stock assets, components and equipment |
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<b>Assessment criteria</b>
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The learner can:
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| 2.1 List the organisation's procedures that define the appropriate safe system of work for the activity  |
| 2.2 List the methods and techniques for lifting, moving and handling components, assets and/or equipment |
| 2.3 Describe the methods for establishing the weight of loads  |
| 2.4 Describe the methods and techniques for slinging and lifting   |
| 2.5 Describe the methods and techniques for securing and protecting a load                               |
| 2.6 Explain how to check for and what constitutes an uneven load   |
| 2.7 Describe own organisation's procedures for the use, care and control of lifting equipment            |
| 2.8 Describe how to check all the necessary documentation is in place                                    |
| 2.9 Describe own organisation's procedures to follow when documentation is unavailable                   |
| 2.10 Describe the methods and techniques for route planning  |
| 2.11 Describe how to identify and use lifting, moving and handling equipment                             |
| 2.12 Explain how to check and confirm the load is safely in its final location                           |
| 2.13 Describe the methods and techniques for the safe release of the load                                |
| 2.14 Explain the limits of own authority and responsibility and those of others involved in the activity |
| 2.15 Describe the relevant reporting lines and procedures as approved by own organisation                |

## **Unit 225            Prepare and move railway traction and rolling stock assets, components and equipment**

### Guidance notes

The loads to be moved are generally of an even weight distribution, of a robust nature but with some fragile parts and have easy to access lifting points. The location and final destination of the load will be within the railway environment and will normally be in a depot or workshop.

The type of lifting, moving and handling equipment to be used could include manually controlled equipment such as:

- Pallet trucks
- Barrows
- Hydraulic platforms and fixed plant such as hoists

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 226

# Modify railway traction and rolling stock components using tools

<b>UAN:</b>	<b>M/502/7519</b>
<b>Level:</b>	2
<b>Credit value:</b>	4
<b>GLH:</b>	12
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 207 - Modify Traction and Rolling Stock Components Using Tools.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in modifying railway traction and rolling stock components using tools

<b>Learning outcome</b>
The learner will: 1. Be able to modify traction and rolling stock components using tools
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the relevant drawings and related specifications for the component to be produced 1.3 obtain and use the appropriate tools and equipment for the shaping operations in line with organisational procedures 1.4 check the tools and equipment are in a safe and usable condition 1.5 shape the materials using appropriate methods and techniques 1.6 check that all the required modifications have been completed to within operational tolerances 1.7 deal promptly and effectively with problems within own area of responsibility and report those that cannot be resolved

**Learning outcome**

The learner will:

2. know how to modify traction and rolling stock components using tools

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to access and follow engineering drawings and related specifications that are approved by own organisation and the manufacturer, and how to check for currency and accuracy
- 2.3 describe the methods and techniques for tool shaping
- 2.4 describe the methods for preparing and handling of materials
- 2.5 describe how to locate and use tools
- 2.6 describe own organisation's procedures for the use, care and control of tools and equipment
- 2.7 describe the methods and techniques for checking that all required modifications have been completed within operational tolerances
- 2.8 describe the implications of not following the policies and procedures for the use, care and control of tools and equipment
- 2.9 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.10 describe the relevant reporting lines and procedures that are approved by own organisation

# Unit 226      **Modify railway traction and rolling stock components using tools**

## Guidance notes

The learner will work to a plan and/or local instruction where the complexity of shape will be defined. It may involve:

- Rounding
- Angling
- Flattening

When assessing the unit the following points should be covered as appropriate:

### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

### **Assessment criterion 2.3**

The shaping could include:

- Cutting
- Filing
- Drilling
- Grinding



**Assessment criterion 2.4**

The methods could cover:

- Ferrous metals
- Non-ferrous metals
- Wood
- Plastic
- Man made composites

**Assessment criterion 2.5**

The tools could include:

- Portable electric or pneumatic grinders / sanders
- Files
- Rasps
- Saws
- Drills
- Chisels
- Abrasive materials of various grades

The quality, standards and accuracy to be achieved will be in line with the plan and the learner's organisational procedures. It must include reinstating assets to within operational tolerances.

## Unit 227

## Overhaul railway traction and rolling stock components

<b>UAN:</b>	<b>H/502/7520</b>
<b>Level:</b>	2
<b>Credit value:</b>	3
<b>GLH:</b>	14
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 208 - Overhaul Traction and Rolling Stock Components.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in <b>overhauling railway traction</b> and rolling stock components

<b>Learning outcome</b>
The learner will: 1. be able to overhaul traction and rolling stock components
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 follow the relevant instructions, diagrams and any other specifications for overhauling traction and rolling stock components 1.3 ensure that the specified components are available and that they are in a usable condition and comply with own organisation's procedures for quality control 1.4 use the appropriate methods and techniques to disassemble/assemble the components 1.5 secure the components using the specified connectors and securing devices 1.6 check the completed disassembly/assembly to ensure that all activities have been completed and the finished disassembly/assembly meets the required specification/operational tolerances 1.7 deal promptly with problems within own area of responsibility and report those that cannot be resolved.

**Learning outcome**

The learner will:

2. know how to overhaul traction and rolling stock components

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to access and follow overhaul diagrams and related specifications that are approved by own organisation and the manufacturer, and how to check for currency and accuracy
- 2.3 describe the methods and techniques for overhaul of traction and rolling stock components
- 2.4 describe own organisations quality control procedures relating to the use of components
- 2.5 explain how to comply with quality control procedures
- 2.6 describe how to recognise defects and discrepancies in components
- 2.7 describe how to confirm that components are in a usable condition
- 2.8 describe the procedures for handling equipment and components
- 2.9 List the preparation methods and techniques for the tasks to be undertaken
- 2.10 describe own organisation's procedures for the use, care and control of tools and equipment
- 2.11 describe the methods and techniques for checking that all activities have been completed to within operational tolerances
- 2.12 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.13 describe the relevant reporting lines and procedures that are approved by own organisation

# Unit 227      Overhaul railway traction and rolling stock components

## Guidance notes

The learner will work to a plan whilst performing a straightforward process or connection. They will take into account relevant maintenance instructions and also be able to follow the appropriate diagrams and specifications.

The type of assembly to be produced will be aspects of traction and rolling stock that involve single or simple connections, including as appropriate:

- Mechanical systems
- Electrical systems
- Electronic systems
- Hydraulic systems
- Pneumatic systems

The disassembly/assembly methods and techniques to be used will be in accordance with relevant maintenance instructions and the specifications.

The type of components used may include:

- Mechanical components
- Electrical components
- Electronic components
- Hydraulic components
- Pneumatic components
- Internal fixtures and fittings

The quality standards and accuracy to be achieved will be in line with the organisation's approved procedures. It must include reinstating assets to within operational tolerances.

When assessing the unit the following points should be covered as appropriate:

### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book

- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 243

## Employment rights and responsibilities in the passenger transport sector

<b>UAN:</b>	<b>L/602/5934</b>
<b>Level:</b>	2
<b>Credit value:</b>	3
<b>GLH:</b>	18
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by Go Skills
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate understanding of employer and employee statutory rights and responsibilities within own organisation and industry under Employment Law.

### Learning outcome

The learner will:

1. know employment rights and responsibilities of the employee and employer

### Assessment criteria

The learner can:

- 1.1 identify the main points of legislation affecting employers and employees and their purpose relevant to own role, organisation and within own industry
- 1.2 identify where to find information and advice on employment rights and responsibilities both internally in own organisation and externally
- 1.3 identify sources of information and advice on own industry, occupation, training and own career pathway
- 1.4 identify sources of information on the different types of representative bodies related to own industry and their main roles and responsibilities
- 1.5 identify any issues of public concern that may affect own organisation and own industry

### **Learning outcome**

The learner will:

2. understand employment rights and responsibilities and how these affect organisations

### **Assessment criteria**

The learner can:

- 2.1 describe organisational procedures, policies and codes of practice used by own organisation on employment rights and responsibilities
- 2.2 explain the purpose of following health, safety and other procedures and the effect on own organisation if they are not followed
- 2.3 describe employer and employee responsibilities for equality and diversity within own organisation
- 2.4 explain the benefits of making sure equality and diversity procedures are followed
- 2.5 describe the career pathways available within own organisation and own industry

# **Unit 243      Employment rights and responsibilities in the passenger transport sector**

## Supporting information

### **Evidence requirements**

You must provide your assessor with evidence for all the learning outcomes and assessment criteria. The evidence must be provided in the following ways taking into account any of the special considerations below.

### **Special considerations**

This unit should be assessed predominately in the workplace. Observation, witness testimony, questioning, professional discussion, written and product evidence are all sources of evidence which can be used.



## Unit 302

## Support learners by mentoring in the workplace

<b>UAN:</b>	<b>R/502/6119</b>
<b>Level:</b>	3
<b>Credit value:</b>	3
<b>GLH:</b>	20
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 8 - Support Learners by Mentoring in the Rail Engineering Workplace.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about making sure that the nature of mentoring in the workplace is properly understood and that an appropriate environment is created in which this function can take place. It covers the skills and competences required to give learners information, advice and guidance on their work roles and expectations together with giving them encouragement and support to stay motivated. In particular it covers planning the mentoring process, setting up and maintaining the mentoring relationship, and giving mentoring support. Applying relevant safe working practices will be a key theme throughout.

<b>Learning outcome</b>
The learner will: 1. be able to support learners by mentoring in the workplace
<b>Assessment criteria</b>
The learner can: 1.1 take action to identify learners' needs and the resources and facilities required to undertake the mentoring role to help them meet these needs 1.2 identify what sources of information and support there are to help perform the role of mentor 1.3 take action to agree how progress and any problems will be reviewed during the mentoring process 1.4 within limits of own responsibility plan and maintain the mentoring process

<b>Learning outcome</b>
The learner will: 2. know and understand how to support learners by mentoring in the workplace
<b>Assessment criteria</b>
The learner can: 2.1 explain relevant health and safety legislation, regulations and working procedures relevant to the workplace 2.2 describe the role of a mentor 2.3 explain the mentoring procedures to include rules on confidentiality and their role in the training policy 2.4 explain the mentoring process, including how to: <ul style="list-style-type: none"> <li>• identify the benefits of a mentoring programme</li> <li>• provide opportunities in the workplace for learners to reflect on their performance, develop skills and increase confidence</li> <li>• plan and monitor mentoring activity</li> </ul> 2.5 describe the personal attributes of effective mentors 2.6 describe the different problems that can be experienced by all new entrants 2.7 explain the extent of own responsibility and who problems that cannot be solved should be reported to.

## **Unit 302**                    **Support learners by mentoring in the workplace**

### Guidance notes

Learners should be able to provide coaching activity to a range of individuals to include, as appropriate:

- New starters
- Individuals unfamiliar with a particular technical matter
- Individuals undertaking training to increase workplace skills
- Individuals experiencing difficulty in specific technical aspects of their work
- Trainees and other on development programmes

Learners should be able to communicate in the following ways:

- Face-to face verbal communication
- Written communication

Mentoring is to support and encourage people to reflect on their performance and manage their own learning in order that they may maximise their potential, develop their skills and improve their performance.

Examples of problems may include those from overseas needing language skills, as well as experienced staff requiring further development in workplace skills

## Unit 313

# Identify and assess defects and discrepancies in railway traction and rolling stock assets

<b>UAN:</b>	<b>K/502/7521</b>
<b>Level:</b>	3
<b>Credit value:</b>	9
<b>GLH:</b>	44
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 301 - Identify and Assess Defects and Discrepancies in Traction and Rolling Stock Assets.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in Identifying and assessing defects and discrepancies in railway traction and rolling stock assets

<b>Learning outcome</b>
The learner will: 1. be able to identify and assess defects and discrepancies in traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 source and interpret the relevant engineering diagrams and related specifications 1.3 identify defects and discrepancies with regard to the product or asset specification 1.4 assess and analyse the defects and discrepancies and determine action required to return the products and assets to specified condition 1.5 report recommendations for action to the appropriate person(s) promptly and in line with own organisation's procedures, taking into account any implications to the safety and performance of the traction and rolling stock 1.6 record details of defects in line with quality assurance and control systems and procedures.

<b>Learning outcome</b>
The learner will: 2. know how to identify and assess defects and discrepancies in traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity 2.2 explain how to source and interpret engineering diagrams and related specifications that are approved by own organisation and the manufacturer, and how to check for currency and accuracy 2.3 list the range of product and asset information and documentation systems available that are approved by own organisation 2.4 explain how to identify discrepancies in information on traction and rolling stock assets 2.5 explain how defects and discrepancies in products and assets can affect the safety and performance of the traction and rolling stock 2.6 describe the methods and procedures for identifying defects and discrepancies in products or assets 2.7 explain the methods and procedures for assessing defects and discrepancies in products or assets including how to determine if urgent attention is required 2.8 explain the methods of dealing with defects and discrepancies that are approved by own organisation and how their incorrect application can affect the safety and performance of the traction and rolling stock 2.9 describe own organisation's procedures for the quality control of documentation 2.10 describe the relevant reporting lines and procedures that are approved by own organisation 2.11 explain the limits of own authority and responsibility and those of others involved in the activity

## **Unit 313      Identify and assess defects and discrepancies in railway traction and rolling stock assets**

### Guidance notes

The defects and discrepancies will be complex and identifiable in a multi stage process and may involve interaction between two or more traction and rolling stock assets and components. A key feature to this element is assessing when the defect or discrepancy requires urgent attention.

The types of products or assets will be all aspects of traction and rolling stock. They may include:

- Mechanical components and systems
- Electrical components and systems
- Electronic components and systems
- Hydraulic components and systems
- Pneumatic components and systems
- Combinations of these systems
- Fixtures and fittings

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

**Assessment criterion 2.2**

The documents include as appropriate:

- Wiring diagrams
- Electrical schematics
- Pneumatic schematics
- Mechanical drawings
- Electronic schematics
- Technical illustrations
- Engineering illustrations
- Hydraulic schematics

## Unit 314

## Establish compliance with railway traction and rolling stock specifications

<b>UAN:</b>	<b>T/502/7523</b>
<b>Level:</b>	3
<b>Credit value:</b>	3
<b>GLH:</b>	12
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 302 - Establish Compliance with Traction and Rolling Stock Specifications.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in establishing compliance with railway traction and rolling stock specifications

<b>Learning outcome</b>
The learner will: 1. be able to establish compliance with traction and rolling stock specifications
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 source and interpret the relevant engineering diagrams and related specifications for the product or asset being checked 1.3 use all the correct tools and inspection equipment and check that they are in useable condition 1.4 carry out the checks in an appropriate sequence using approved methods and procedures 1.5 assess and analyse any defects or variations from the specification and take appropriate action 1.6 report completion of compliance activities in line with organisational procedures



<b>Learning outcome</b>
The learner will: 2. know how to establish compliance with traction and rolling stock specifications
<b>Assessment criteria</b>
The learner can: 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity 2.2 describe how to source and interpret engineering diagrams and related specifications 2.3 explain how to confirm engineering drawings and specifications are up to date and accurate 2.4 describe the methods and techniques for compliance checking with traction and rolling stock specifications 2.5 describe how to interpret information from measuring instruments, including as appropriate, performing calculations 2.6 explain how to use test equipment to ensure true and accurate measurements are taken 2.7 describe how to source and interpret approved manuals and related information, including products or asset tolerances 2.8 explain how to identify defects and variations in traction and rolling stock products and assets 2.9 describe how defects and variations can affect the performance and safety of traction and rolling stock 2.10 describe own organisation's procedures for the control of a non-conforming component or asset 2.11 explain the correct modes of operation of equipment including acceptable operational variances 2.12 explain own organisation's procedures for the quality control of documentation 2.13 describe own organisation's procedures for the use, care and control of inspection tools and equipment including the appropriate calibration procedures 2.14 describe the relevant reporting lines and procedures that are approved by own organisation 2.15 explain the limits of own authority and responsibility and those of others involved in the activity

# Unit 314      Establish compliance with railway traction and rolling stock specifications

## Guidance notes

The learner must ensure that they comply with specifications by carrying out integrity checks and tests prior to the traction and rolling stock system returning to service. They will be able to source and interpret the engineering specification relating to the product or asset and identify any defects or variations. They will assess the defect and variation, taking in to account acceptable operational tolerances and the effect on the performance and safety of the traction and rolling stock. They will be able to report their findings and take responsibility for the quality of the completed check or test.

The type of assets to be checked will be aspects of traction and rolling stock. It may include:

- Mechanical systems
- Electrical systems
- Hydraulic systems
- Pneumatic systems
- Electronic systems
- Combinations of these systems

When assessing the unit the following points should be covered as appropriate:

### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 315

## Plan for further professional development in the rail industry

<b>UAN:</b>	<b>K/601/7825</b>
<b>Level:</b>	3
<b>Credit value:</b>	2
<b>GLH:</b>	4
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 6 – Plan for Further Professional Development in the Rail Engineering Industry.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about taking responsibility for your own further professional development. You will appreciate the way in which knowledge, understanding and skills contribute to the service you provide and also to your own personal success and the success of your organisation. Knowing how to keep up to date and striving to continually improve your performance in the workplace are central to this unit.

<b>Learning outcome</b>
The learner will: 1. be able to plan for further development
<b>Assessment criteria</b>
The learner can: 1.1 agree a personal development plan, for developing knowledge, understanding and skills to meet personal objectives 1.2 set objectives for further development of knowledge, understanding and skills 1.3 demonstrate current awareness of industry issues 1.4 recognise how changes in the industry affect them and the changes that need to be made to carry out their role 1.5 identify learning opportunities relevant to personal professional development 1.6 establish a system for recording training and development activities and show how the impact of any training will be evaluated 1.7 discuss and agree, where relevant, with the appropriate person(s) in the organisation how the development activities will be received and how to get feedback

**Learning outcome**

The learner will:

2. know how to plan for further development

**Assessment criteria**

The learner can:

- 2.1 describe how to agree a personal development plan to take account of the types of development opportunities that are available including formal and informal opportunities
- 2.2 describe how to set realistic objectives and priorities for the further development of knowledge, understanding and skills
- 2.3 list the relevant and current sources of information on the industry
- 2.4 describe the benefits of training and other forms of development and how to evaluate their impact
- 2.5 describe how to monitor progress against the development plan
- 2.6 outline organisational and legal requirements relevant to personal professional development

## Unit 316

## Support learners by coaching in the workplace

<b>UAN:</b>	<b>L/502/6118</b>
<b>Level:</b>	3
<b>Credit value:</b>	4
<b>GLH:</b>	26
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards for Rail Engineering Unit 9 - Support Learners by Coaching in the Rail Engineering Workplace.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	This unit is about making sure the nature of coaching in the workplace is properly understood and that an appropriate environment is created in which this function can take place. It covers the skills and competences required to give learners information and guidance on their work roles. In particular it covers the provision of job-related coaching. Applying relevant safe working practices will be a key issue throughout.

<b>Learning outcome</b>
The learner will: 1. be able to support learners by coaching in the workplace
<b>Assessment criteria</b>
The learner can: 1.1 take action to identify learners' needs and the resources and facilities required, including IT based resources, to undertake the coaching role to help them meet these needs 1.2 identify what sources of information and support there are to help perform the role of coach 1.3 take action to agree how progress and any problems will be reviewed during the coaching process 1.4 within limits of own responsibility plan and maintain the coaching process

**Learning outcome**

The learner will:

2. know how to support learners by coaching in the workplace

**Assessment criteria**

The learner can:

- 2.1 describe the role of a coach
- 2.2 explain the coaching process, in particular how to:
  - provide appropriate coaching activities for particular situations including IT based programmes
  - provide opportunities in the workplace for learners to develop skills and increase confidence
  - plan and monitor coaching activity
  - support structures available to learners
- 2.3 explain the different techniques of coaching, including how to:
  - set goals and targets
  - analyse tasks
  - develop a plan
  - instruct by sharing knowledge and skills
  - communicate to learners in the most effective way, for example face-to-face, small groups
  - obtain and give feedback
  - analyse learners' strengths and weaknesses and help them to correct defects
- 2.4 describe the personal attributes of effective coaches
- 2.5 explain the benefits that can be gained from coaching
- 2.6 explain the factors that can inhibit learning
- 2.7 describe the different problems that can be experienced by all new entrants
- 2.8 explain the extent of own responsibility and who problems that cannot be solved should be reported to

## **Unit 316**      **Support learners by coaching in the workplace**

### Guidance notes

Learners should be able to provide coaching activity to a range of individuals to include, as appropriate:

- New starters
- Individuals unfamiliar with a particular technical matter
- Individuals undertaking training to increase workplace skills
- Individuals experiencing difficulty in specific technical aspects of their work

Learners should be able to communicate in the following ways:

- Face-to face verbal communication
- Small group discussion
- Presentation on technical issues to small groups
- Written communication
- IT based coaching programmes

Examples of problems may include, where relevant, those from overseas needing for example language skills, as well as experienced staff requiring further development in workplace skills

## Unit 317

## Diagnose faults in railway traction and rolling stock assets

<b>UAN:</b>	<b>F/502/7525</b>
<b>Level:</b>	3
<b>Credit value:</b>	8
<b>GLH:</b>	28
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 303 - Diagnose Faults in Traction and Rolling Stock Assets.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in diagnosing faults in railway traction and rolling stock assets

<b>Learning outcome</b>
The learner will: 1. be able to diagnose faults in traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 review and interpret all relevant information on the symptoms and problems associated with the products or assets 1.3 investigate, analyse and determine the causes of the faults 1.4 select, use and apply diagnostic techniques, tools and aids to locate faults 1.5 complete the fault diagnosis within the agreed time and inform the appropriate person(s) when this cannot be achieved 1.6 use the evidence gained to draw valid conclusions about the nature and probable cause of the fault 1.7 record details on the extent and location of the faults in an appropriate format.



**Learning outcome**

The learner will:

2. know how to diagnose faults in traction and rolling stock assets

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 explain how to source and interpret relevant information on the symptoms and problems associated with the products or assets
- 2.3 describe the range of fault diagnostic aids that are approved by own organisation, and are appropriate for the work to be undertaken, and how they should be applied
- 2.4 explain the methods and techniques for fault finding including
  - the use of 'breaking in'
  - intrusive investigation
- 2.5 explain how to analyse and determine diagnostic results
- 2.6 describe own organisation's procedures for the care, control and operation of test equipment
- 2.7 describe how to assess the likely risks arising from faults and how such faults could affect the safety and performance of traction and rolling stock
- 2.8 describe how to prioritise the importance of faults
- 2.9 explain the importance of completing the fault diagnosis within the agreed time and the accurate reporting of own diagnostic conclusions
- 2.10 explain the requirements for independent testing
- 2.11 describe the relevant reporting lines and procedures that are approved by own organisation
- 2.12 explain the limits of own authority and responsibility and those of others involved in the activity

## **Unit 317          Diagnose faults in railway traction and rolling stock assets**

### **Guidance notes**

The learner will work to an agreed specification and, if in the course of the diagnosis, this specification requires changing or modifying, it is expected that they would use their knowledge, skills and experience to initiate an alternative route without compromising the quality of the diagnosis and the safety of themselves and others.

The type of diagnostic techniques, procedures and equipment to be used will be approved by their organisation and will depend on the assets being tested and the type of fault being investigated. The fault diagnosis will include continual and intermittent faults and may involve interaction between two or more traction and rolling stock assets, systems and components.

The level and extent of responsibility will include examining faults in other peoples work as well as their own. They will be responsible for the quality of the completed diagnosis.

The type of asset investigated will be aspects of traction and rolling stock may include:

- Mechanical systems
- Electrical systems
- Electronic systems
- Hydraulic systems
- Pneumatic systems
- Combinations of these systems
- Fixtures and fittings

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines

- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 318

## Plan railway traction and rolling stock engineering activities

<b>UAN:</b>	<b>J/502/7526</b>
<b>Level:</b>	3
<b>Credit value:</b>	9
<b>GLH:</b>	30
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 304 - Plan Traction and Rolling Stock Engineering Activities.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in planning Traction and Rolling Stock engineering activities

<b>Learning outcome</b>
The learner will: 1. be able to plan traction and rolling stock engineering activities
<b>Assessment criteria</b>
The learner can: 1.1 source and interpret information required for the activity 1.2 identify health and safety issues and safe working practices and own organisation's procedures that must be followed 1.3 identify the activities to be carried out and determine their sequence 1.4 establish which methods are required and what resources are to be used to plan traction and rolling stock engineering activities 1.5 identify any special requirements and incorporate them in the plan 1.6 identify where technical documentation, resources, equipment, materials or tools are not available and deal with the deficiency in line with own organisation's procedures 1.7 estimate the timescales required for the activities in line with organisational procedures 1.8 prepare and record the plan and communicate the plans to all involved 1.9 ensure all required documentation is complete in accordance with own organisation's policies and procedures 1.10 deal effectively with problems within the limits of own authority and report those that cannot be resolve

1.11 discuss and agree with the relevant person(s) effective and efficient alternatives where planned activities cannot be achieved

**Learning outcome**

The learner will:

2. know how to plan traction and rolling stock engineering activities

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe own organisation's planning methods and techniques including:
  - allowing for the safe and proper use of resources
  - the types of resources to be used
  - how to check their availability
- 2.3 explain how to prepare and record a plan
- 2.4 describe how to prioritise work activities to achieve objectives whilst taking into account cost and efficiency
- 2.5 describe how to source and interpret information and document systems relevant to the engineering activity
- 2.6 describe own organisation's procedures and guidelines for presenting and communicating the plan
- 2.7 explain how and when planned activities cannot be achieved
- 2.8 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.9 describe the relevant reporting lines and procedures that are approved by own organisation

# Unit 318 Plan railway traction and rolling stock engineering activities

## Guidance notes

The learner will know the type and range of plans to be produced and will ensure that the information gathered is relevant to the work to be carried out. They will be able to take into account the activities to be undertaken and the limitations of the work environment. The complexity of the plan will depend on the nature or size of the activity to be undertaken.

The plans may be for, as appropriate:

- Routine situations
- Out of course situations
- Rapid response

The types of resources to be used may include as appropriate:

- People (including skill requirements)
- Materials
- Tools, equipment and plant
- Workshop facilities
- Support facilities

When assessing the unit the following points should be covered as appropriate:

### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

**Assessment criterion 2.2**

The methods could include:

- Maintenance procedures
- Safety of staff and others
- Prioritisation
- Time constraints

## Unit 319

## Allocate and supervise railway traction and rolling stock resources

<b>UAN:</b>	<b>L/502/7527</b>
<b>Level:</b>	3
<b>Credit value:</b>	4
<b>GLH:</b>	14
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 305 – Allocate and Supervise Traction and Rolling Stock Resources.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in allocating and supervising railway traction and rolling stock resources

<b>Learning outcome</b>
The learner will: 1. be able to allocate and supervise traction and rolling stock resources
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 source and interpret information and document systems relating to the engineering activity 1.3 make sure that sufficient resources are available 1.4 ensure resource information and documentation is up-to-date and in line with organisational procedures 1.5 supervise the use of resources 1.6 identify when changes to the planned use of resources may occur 1.7 deal with actual and predicted changes to the planned use of resources 1.8 advise the appropriate person(s) where changes to resources have occurred or are likely to occur and the implications involved 1.9 make sure that those using resources are aware of their responsibilities for the care and use of the resources 1.10 record details on the use of resources including where appropriate any changes that have occurred



<b>Learning outcome</b>
The learner will: 2. know how to allocate and supervise traction and rolling stock resources
<b>Assessment criteria</b>
The learner can: 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity 2.2 describe the types of resources available for the activity 2.3 explain the methods and techniques for allocating resources 2.4 explain how to source and interpret information and document systems relating to the engineering activity 2.5 describe the types of problems that can occur when obtaining resources and how these problems can be overcome 2.6 explain how to respond to changes arising to the planned use of resources and the implications that may follow 2.7 describe the methods and techniques for effective monitoring of resources 2.8 describe own organisation's methods and techniques for effective communication including: <ul style="list-style-type: none"> <li>• the appropriate method for communicating changes,</li> <li>• when a plan may need changing</li> </ul> 2.9 describe the relevant reporting lines and procedures that are approved by own organisation 2.10 explain the limits of own authority and responsibility and those of others involved in the activity

## **Unit 319            Allocate and supervise railway traction and rolling stock resources**

### **Guidance notes**

The learner will be able to work to a plan, identify and allocate the resources required and source information regarding those resources. They will monitor the use of resources and ensure that there are sufficient resources available for the activities to be undertaken and that resources are used in a safe, appropriate and timely manner. Where changes in resources or activities occur the learner will be able to identify when a plan or resource allocation may need amending. They will be aware of their own responsibility for the care and use of resources and will be able to advise team members of their responsibilities for the care and use of resources. Identifying inaccuracies and the non-availability of resources and being able to take appropriate remedial action are key to this element

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

#### **Assessment criterion 2.2**

The resources could include:

- People (including skill requirements)
- Materials
- Vehicles
- Workshop facilities
- Tools, equipment and plant
- Support facilities

**Assessment criterion 2.3**

The methods and techniques will cover as appropriate:

- Maintenance procedures
- Safety of staff and others
- Prioritisation
- Time constraints

## Unit 320

# Supervise the movement of traction and rolling stock assets, components and equipment

<b>UAN:</b>	<b>Y/502/7529</b>
<b>Level:</b>	2
<b>Credit value:</b>	2
<b>GLH:</b>	12
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 306 - Supervise the Movement of Traction and Rolling Stock Assets, Components and Equipment.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competence in supervising the movement of Traction and Rolling Stock assets, components and equipment.

<b>Learning outcome</b>
The learner will: 1. be able to supervise the movement of traction and rolling stock assets, components and equipment
<b>Assessment criteria</b>
The learner can: 1.1 Set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 Establish the weight of the load to be moved 1.3 Assess the suitability of the load for movement 1.4 Determine the method and select suitable equipment to move the load 1.5 Confirm that the equipment to be used is capable of moving the load safely 1.6 Determine a suitable route for moving the load minimising risk to people and property 1.7 Ensure that the load is secured and protected before moving operations start 1.8 Check and confirm all documentation is in place before moving operations start, as approved by own organisation 1.9 Correctly position the moving equipment and confirm the weight of the load is evenly distributed

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| <p>1.10 Attach the appropriate handling equipment securely to the load, using approved methods</p> <p>1.11 Move the load over the selected, suitable route</p> <p>1.12 Take action when changes to the planned movement activity occur</p> <p>1.13 Advise the appropriate person(s) when changes to the planned movement activity have occurred and the implications involved</p> <p>1.14 Position and release the load safely in its intended final location</p> <p>1.15 Deal promptly and effectively with problems within your control and report those that cannot be resolved</p> <p>1.16 Discuss and agree with the relevant person(s) effective and efficient alternatives where planned movement activities cannot be achieved</p> |
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<b>Learning outcome</b>
<p>The learner will:</p> <p>2. know how to supervise the movement of traction and rolling stock assets, components and equipment</p>
<b>Assessment criteria</b>
<p>The learner can:</p> <p>2.1 list the organisation's procedures that define the appropriate safe system of work for the activity</p> <p>2.2 describe the methods and techniques for lifting, moving and handling assets, components and equipment</p> <p>2.3 explain the methods for establishing the weight of loads</p> <p>2.4 explain how to source and interpret information relevant to the loads to be moved and the moving equipment</p> <p>2.5 explain how to check for and what constitutes an uneven load</p> <p>2.6 describe the methods and techniques for securing loads, including how to eliminate slippage</p> <p>2.7 describe the methods and techniques for slinging and lifting</p> <p>2.8 describe own organisation's procedures for the care and control of lifting equipment</p> <p>2.9 describe the methods and techniques for route planning including</p> <ul style="list-style-type: none"> <li>• safety considerations</li> <li>• obstructions</li> <li>• fouling other assets and components</li> <li>• most direct route</li> </ul> <p>2.10 describe the methods and techniques for moving loads</p> <p>2.11 explain the methods and techniques for effective monitoring of the movement activity</p> <p>2.12 describe how and when movement activities cannot be achieved</p> <p>2.13 explain how to check and confirm the load is safely in its final location</p> <p>2.14 explain the methods and techniques for the safe release of the load</p> <p>2.15 explain the limits of own authority and responsibility and those of others involved in the activity</p> <p>2.16 describe the reporting lines and procedures as approved by own organisation for the activity</p>

## **Unit 320            Supervise the movement of traction and rolling stock assets, components and equipment**

### Guidance notes

The learner will ensure that the correct licences or permits are in place prior to moving. They will be able to monitor the movement activity and be able to recognise when the planned movement of activities cannot be carried out and have the ability to suggest alternative solutions.

The type of lifting, moving and handling equipment to be used may include manually controlled equipment such as:

- Pallet trucks
- Jacks
- Hydraulic platforms
- Barrows and fixed plant such as:
- Cranes
- Hoists

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 321

## Diagnose faults in ancillary systems on railway traction and rolling stock

<b>UAN:</b>	<b>R/502/7531</b>
<b>Level:</b>	3
<b>Credit value:</b>	8
<b>GLH:</b>	28
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 307 – Diagnose Faults in Ancillary Systems on Traction and Rolling Stock.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in diagnosing faults in ancillary systems on railway traction and rolling stock

<b>Learning outcome</b>
The learner will: 1. be able to diagnose faults in ancillary systems on traction and rolling stock
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 Review and interpret all relevant information on the symptoms and problems associated with the system 1.3 Investigate and establish the causes of the faults 1.4 Select, use and apply diagnostic techniques, tools and aids to locate faults 1.5 Complete the fault diagnosis within the agreed time and inform the appropriate person(s) when this cannot be achieved 1.6 Determine the implications of the fault for other work and for safety considerations 1.7 Use the evidence gained to draw valid conclusions about the nature and probable cause of the fault 1.8 Record details on the extent and location of the faults in an appropriate format

<b>Learning outcome</b>
The learner will: 2. know how to diagnose faults in ancillary systems on traction and rolling stock
<b>Assessment criteria</b>
The learner can: 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity 2.2 describe the diagnostic aids available to diagnose a range of faults based on an accurate interpretation of work instructions 2.3 explain how to source and interpret relevant information for planning and progressing own work 2.4 describe the possible causes of faults in ancillary systems and their relationship to the most logical method of fault diagnosis 2.5 explain the preparation procedures required to ensure accuracy of the diagnosis 2.6 describe the relationship between the ancillary systems and the traction and rolling stock assets 2.7 describe the diagnostic methods and techniques employed to diagnose faults 2.8 explain how to analyse and determine diagnostic results including understanding the implications of the fault for other work and safety implications 2.9 describe the operation and care of workshop test equipment used to diagnose faults and, the appropriate state to leave the equipment in 2.10 describe the control procedures for reporting defects 2.11 explain the risk assessment procedures that have to be adopted when undertaking a diagnostic task 2.12 describe the importance of completing the fault diagnosis within the agreed time and the accurate reporting of own diagnostic conclusions 2.13 describe the way different forms of diagnostic information is reported and presented to ensure clarity of detail and understanding 2.14 explain the limits of own authority and responsibility and those of others involved in the activity 2.15 describe the relevant reporting lines and procedures that are approved by own organisation for the activity



## **Unit 321            Diagnose faults in ancillary systems on railway traction and rolling stock**

### Guidance notes

The learner will know and understand where ancillary systems store electronic data and where there may be software interaction to a centralised database. They must comply with their organisation's relevant policy and procedures and statutory requirements for the complex diagnostic activities undertaken and to report any problems to the relevant authority.

The learner will work to an agreed specification. If, in the course of the diagnosis, this specification requires changing or modifying, it is expected that they would use their knowledge, skills and experience to initiate an alternative route without compromising the quality of the diagnosis.

A diagnosis can be defined in this unit as one which may involve interaction between two or more systems. The systems may include as appropriate:

- Security cameras, CCTV
- Digital recording systems
- Passenger facilities (safety comfort and convenience)
- Audio/visual equipment
- Two way radio
- Air conditioning units
- Route information systems as appropriate
- GPS

The learner must be able to extract and interpret diagnostic information on continual and intermittent faults and breakdowns.

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines

- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

### **Assessment criterion 2.2**

The documents include as appropriate:

- Technical data
- Test procedures
- Repair procedures
- Troubleshooting charts and tables

### **Assessment criterion 2.3**

The sources include as appropriate:

- Information from the manufacturers of ancillary equipment
- Downloading/uploading electronic data

### **Assessment criterion 2.5**

The procedures include as appropriate:

- Checking the accuracy of test instruments
- Calibration
- Operating temperature
- Component or system access

## Unit 322

## Install and test railway traction and rolling stock assets and components

<b>UAN:</b>	<b>Y/502/7532</b>
<b>Level:</b>	3
<b>Credit value:</b>	4
<b>GLH:</b>	20
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 308 - Install and Test Traction and Rolling Stock Assets and Components.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in installing and testing railway traction and rolling stock assets and components

<b>Learning outcome</b>
The learner will: 1. be able to install and test traction and rolling stock assets and components
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 source and interpret all relevant diagrams and specifications for the installation being carried out 1.3 use the correct tools and equipment for the installation operations and check that they are in a safe and usable condition 1.4 install, position and secure the components in line with the specification 1.5 ensure that all necessary connections to the components are complete 1.6 carry out tests to components as required in line with own organisation's policies and procedures 1.7 deal with problems within own control and report those that cannot be resolved 1.8 check that the installation is complete and that all components are free from damage

1.9 discuss and agree with the relevant person(s) effective and efficient alternatives where installation activities cannot be achieved

**Learning outcome**

The learner will:

2. know how to install and test traction and rolling stock assets and components

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe the methods and techniques for component, product or asset installation
- 2.3 explain how to source and interpret the relevant installation diagrams and related specifications
- 2.4 describe the methods and techniques for handling installation equipment
- 2.5 describe own organisation's procedures for the use, care and control of tools and equipment including calibration
- 2.6 describe the implications of not following the policies and procedures for the use, care and control of tools and equipment
- 2.7 explain how incorrectly installed components can affect the safety and performance of traction and rolling stock
- 2.8 describe how and when installation activities cannot be completed
- 2.9 explain the methods and techniques for testing a component, product or asset prior to, during and after an installation activity
- 2.10 explain the importance of testing installed components prior to use
- 2.11 explain the limits of own authority and responsibility and those of others involved in the activity
- 2.12 describe the relevant reporting lines and procedures that are approved by own organisation.

# Unit 322      Install and test railway traction and rolling stock assets and components

## Guidance notes

The learner will work to a plan taking into account local maintenance instructions and also be able to interpret the appropriate diagrams and specifications. They will be able to recognise when the planned installation and testing cannot be carried out and have the ability to suggest alternative solutions.

The type of asset or component to be installed may include as appropriate:

- Mechanical components
- Electrical components
- Electronic components
- Hydraulic components
- Pneumatic components
- Internal fixtures and fittings

The type and complexity of connections to be made may include as appropriate:

- Mechanical components and assemblies
- Electrical components and assemblies
- Electronic components and assemblies
- Hydraulic components and assemblies
- Pneumatic components and assemblies
- Combinations of these systems
- Internal fixtures and fittings

The quality standards and accuracy to be achieved will be in line with the set specifications and approved procedures. It must include reinstating assets to within operational tolerances

When assessing the unit the following points should be covered as appropriate:

### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets

- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 323

# Accept and return responsibility for the control of railway traction and rolling stock assets

<b>UAN:</b>	<b>D/502/7533</b>
<b>Level:</b>	3
<b>Credit value:</b>	3
<b>GLH:</b>	10
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 309 - Accept, and Return, Responsibility for the Control of Traction and Rolling Stock Assets.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competence in accepting and returning responsibility for the control of traction and rolling stock assets.

<b>Learning outcome</b>
The learner will: 1. be able to accept and return responsibility for the control of traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 check and confirm that the condition of the engineering products or assets are in an acceptable hand-over condition in line with organisational procedures 1.3 clearly define and obtain agreement on the moment of transfer of responsibility 1.4 make sure that the information received at hand-over is accurate, up-to-date and complete in line with organisational procedures 1.5 seek additional information if there are any areas of doubt or lack of clarity in line with organisational procedures 1.6 provide support and co-ordination to those transferring control in line with organisational procedures 1.7 confirm and record acceptance of responsibility and control in line with own organisation's procedures 1.8 produce and maintain records of the hand-over in line with organisational procedures.

**Learning outcome**

The learner will:

2. know how to accept and return responsibility for the control of traction and rolling stock assets

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe own organisation's procedures for the hand-over of assets
- 2.3 describe own organisation's procedures for recording and documenting information
- 2.4 explain how to check and confirm the condition of products or assets prior to hand-over
- 2.5 explain what constitutes an unacceptable product or asset condition
- 2.6 describe own organisation's methods and techniques for effective communication of the hand-over procedure
- 2.7 describe the relevant reporting lines and procedures that are approved by own organisation for the activity
- 2.8 explain the limits of own authority and responsibility and those of others involved in the activity



## **Unit 323**

# **Accept and return responsibility for the control of railway traction and rolling stock assets**

### Guidance notes

The type of assets handed over could be any aspect of traction and rolling stock and its associated information and it includes deciding if the asset is in a fit state for the required work.

The hand-over procedures will be determined by the learner's organisation and will take account of the railway environment. The learner will take account of approved local arrangements.

The assets may be handed over internally to colleagues or other departments or they may be handed over externally to other organisations or customers.

The complexity of the hand-over will vary from being straightforward if the hand-over is internal, to complicated procedures if external organisations are involved. This latter case particularly applies if warranty issues are involved.

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Unit 324

## Provide operational support to users of railway traction and rolling stock assets

<b>UAN:</b>	<b>H/502/7534</b>
<b>Level:</b>	3
<b>Credit value:</b>	5
<b>GLH:</b>	28
<b>Relationship to NOS:</b>	This unit is linked to National Occupational Standards For Rail Engineering Unit TRS 310 - Provide Operational Support to Users of Traction and Rolling Stock Assets.
<b>Endorsement by a sector or regulatory body:</b>	This unit is endorsed by GoSkills.
<b>Aim:</b>	The purpose of this unit is for learners to demonstrate occupational competency in providing operational support to users of traction and rolling stock assets

<b>Learning outcome</b>
The learner will: 1. be able to provide operational support to users of traction and rolling stock assets
<b>Assessment criteria</b>
The learner can: 1.1 set up a safe system of work for the activity in line with organisational procedures and work to the system 1.2 provide operational support within agreed timescales and working arrangements set by own organisation 1.3 make sure that operational support is appropriate and based on accurate and current information 1.4 obtain feedback on the support provided 1.5 produce and maintain records in accordance with own organisation's procedures 1.6 deal with problems relating to the provision of operational support in line with organisational procedures

**Learning outcome**

The learner will:

2. know how to provide operational support to users of traction and rolling stock assets

**Assessment criteria**

The learner can:

- 2.1 list the organisation's procedures that define the appropriate safe system of work for the activity
- 2.2 describe how to source and interpret traction and rolling stock engineering specifications
- 2.3 describe own organisation's procedures for operational support
- 2.4 explain the type and range of information and document systems available
- 2.5 describe own organisation's procedures and methods for effective communication
- 2.6 describe the ways of obtaining feedback that support the gathering of useful information for future action in a cost effective manner
- 2.7 describe the reporting lines and procedures that are approved by own organisation for this activity

## **Unit 324      Provide operational support to users of railway traction and rolling stock assets**

### Guidance notes

The types of engineering assets involved can be any aspect of traction and rolling stock.

The level of technical information provided will depend upon the nature of the enquiry/incident but will include the provision of detailed advice following breakdowns.

The methods of communicating information will be in accordance with procedures approved by the learner's organisation.

The type and range of support provided will include advice provided remotely and on site technical assistance following a call-out.

When assessing the unit the following points should be covered as appropriate:

#### **Assessment criterion 2.1**

- The organisation's safety management system
- Relevant sections of the health and safety at work act
- Control of Substances Hazardous to Health (COSHH)
- Track access restrictions
- Track work instructions
- Task risk control sheets
- Current rule book
- Regulations for working under Overhead Line Equipment (OHLE) and in vicinity of Direct Current (DC) lines
- Manual handling regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Safety sign regulations
- Personal Protective Equipment (PPE)
- Health and Safety at Work Act (HASWA)

## Evidence requirements

Evidence must be collected by observation of naturally occurring activity in the workplace, in respect of the assessment criteria outlined below, supporting evidence and evidence for the remaining assessment criteria can be gathered from sources including observation, questioning, professional discussion, simulation, witness testimony, written and product evidence as outlined at unit level.

Unit	Unit title	Assessment Criteria
201	Prepare to undertake duties in the rail industry	1.1, 1.3, 3.1, 3.2, 3.4.
202	Contribute to the security of the work environment in the rail industry	1.1, 1.2, 1.6, 3.1
215	Obtain and communicate information in the rail industry	1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 3.5.
216	Maintain effective working relationships with colleagues in the rail industry	1.2
217	Identify and deal with defects and discrepancies in railway traction and rolling stock	1.1, 1.3, 1.5, 1.7
218	Maintain and develop your knowledge, understanding and skills in the rail industry	Range of assessment methods to be used
219	Work with tools, equipment, drawings and specifications in the rail engineering environment.	
220	Contribute to safe working practices in the rail engineering industry	
221	Carry out routine adjustments to traction and rolling stock	1.1, 1.3, 1.4, 1.6
222	Carry out checks and tests to confirm that traction and rolling stock assets comply with operational specifications	1.1, 1.2, 1.3, 1.4, 1.6
223	Carry out planned maintenance of traction and rolling stock assets	1.1, 1.3, 1.4, 1.5, 1.7
224	Undertake the removal and replacement of railway traction and rolling stock components	1.1, 1.5, 1.12, 1.13
225	Prepare and move railway traction and rolling stock assets, components and equipment	1.1, 1.5, 1.7, 1.9, 1.10
226	Modify railway traction and rolling stock components using tools	1.1, 1.3, 1.5, 1.6
227	Overhaul traction and rolling stock components	1.1, 1.2, 1.3, 1.4, 1.6
313	Identify and assets defects and discrepancies in railway traction and rolling stock assets	1.1, 1.2, 1.3, 1.6
314	Establish compliance with railway traction and rolling stock specifications	1.1, 1.3, 1.4, 1.6

<b>Unit</b>	<b>Unit title</b>	<b>Assessment Criteria</b>
315	Plan for further professional development in the rail industry	
316	Support learners by coaching in the workplace	
317	Diagnose faults in railway traction and rolling stock assets	Range of assessment methods to be used
318	Plan railway traction and rolling stock engineering activities	1.1, 1.2, 1.3, 1.8
319	Allocate and supervise railway traction and rolling stock resources	Range of assessment methods to be used
320	Supervise the movement of traction and rolling stock assets, components and equipment	1.1, 1.5, 1.7, 1.9, 1.10, 1.11, 1.14
321	Diagnose faults in ancillary systems on railway traction and rolling stock	Range of assessment methods to be used
322	Install and test railway traction and rolling stock assets and components	1.1, 1.3, 1.4, 1.8
323	Accept and return responsibility for the control of railway traction and rolling stock assets	1.1, 1.2, 1.3, 1.4, 1.7, 1.8
324	Provide operational support to users of railway traction and rolling stock assets	1.1, 1.2, 1.5



## Appendix 1 Relationships to other qualifications

### Literacy, language, numeracy and ICT skills development

This qualification can develop skills that can be used in the following qualifications:

- Functional Skills (England) – see [www.cityandguilds.com/functionalskills](http://www.cityandguilds.com/functionalskills)
- Essential Skills (Northern Ireland) – see [www.cityandguilds.com/essentialskillsni](http://www.cityandguilds.com/essentialskillsni)
- Essential Skills Wales – see [www.cityandguilds.com/esw](http://www.cityandguilds.com/esw)



## Appendix 2 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **[www.cityandguilds.com](http://www.cityandguilds.com)**.

***Centre Manual - Supporting Customer Excellence*** contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

***Our Quality Assurance Requirements*** encompasses all of the relevant requirements of key regulatory documents such as:

- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

***Access to Assessment & Qualifications*** provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.



The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** how to register for e-assessments.

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## Useful contacts

<b>UK learners</b> <b>General qualification information</b>	<b>E: <a href="mailto:learnersupport@cityandguilds.com">learnersupport@cityandguilds.com</a></b>
<b>International learners</b> General qualification information	F: +44 (0)20 7294 2413 E: <b><a href="mailto:intcg@cityandguilds.com">intcg@cityandguilds.com</a></b>
<b>Centres</b> Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	F: +44 (0)20 7294 2413 E: <b><a href="mailto:centresupport@cityandguilds.com">centresupport@cityandguilds.com</a></b>
<b>Single subject qualifications</b> Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: <b><a href="mailto:singlesubjects@cityandguilds.com">singlesubjects@cityandguilds.com</a></b>
<b>International awards</b> Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	F: +44 (0)20 7294 2413 E: <b><a href="mailto:intops@cityandguilds.com">intops@cityandguilds.com</a></b>
<b>Walled Garden</b> Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	F: +44 (0)20 7294 2413 E: <b><a href="mailto:walledgarden@cityandguilds.com">walledgarden@cityandguilds.com</a></b>
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