

Level 3 Diploma in Aviation Maintenance (Military Development Competence) - Weapons Overhaul (4608-60)

Version 2 (July 2019)

Unit Pack

Qualification at a glance

Subject area	Mechanical
City & Guilds number	4608
Age group approved	16-19, 19+
Entry requirements	None
Assessment types	Portfolio
Approvals	Automatic approval
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	GLH	TQT	City & Guilds qualification number	Ofqual accreditation number
Level 3 Diploma in Aviation Maintenance (Military Development Competence) - Weapons Overhaul	278	950	4608-60	603/2068/0

This unit pack must be read in conjunction with the main qualification handbook.

Version	Amendment	Section
2.0 July 2019	Formatting to unit 424 and 425. GLH to units.	Units

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1 Introduction

Level 3 Diploma in Aviation Maintenance (Military Development Competence) - Weapons Overhaul

Structure

Learners must complete 301,302, 304 & 455 plus one of 423 – 425, 456

City & Guilds unit number	Unit title	GLH
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Mandatory

301	Complying with statutory regulations and organisational safety requirements	35
302	Using and interpreting engineering data and documentation	25
304	Reinstating the work area on completion of activities	25
455	Working efficiently and effectively in engineering	25

Optional

423	Overhauling Aircraft Gun Systems	168
424	Overhauling Aircraft Assisted Escape Systems (AAES)	168
425	Overhauling Aircraft Armament Release Systems	168
456	ESA engineering operations	168

2 Units

Structure of the units

These units each have the following:

- City & Guilds reference number
- Title
- Level
- Guided learning hours (GLH)
- Learning outcomes, which are comprised of a number of assessment criteria

Centres must deliver the full breadth of the range. Specialist equipment or commodities may not be available to all centres, so centres should ensure that their delivery covers their use. This may be covered by a practical demonstration (e.g. video). For the practical assessments for this qualification, centres should ensure that there are sufficient resources to complete the task but are not required to use all the equipment or commodities in the range.

Please refer to the main qualification handbook for full information on the qualification and the shared mandatory units.

GLH: 168**Unit aim:**

This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.

This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out overhauling activities on aircraft gun systems, in accordance with approved procedures. It covers both fixed wing and rotary winged aircraft. They will be required to overhaul aircraft gun systems consisting of a variety of components, such as mechanical controls (plungers, springs and rollers), electrical mechanisms (solenoids, indicators, motors and switches) and other specific gun system equipment. This will involve dismantling, removing and replacing faulty equipment, at component or unit level, on a variety of different types of aircraft gun system and sub-assembly. They will be expected to use methods and techniques such as setting, aligning, torque loading and adjusting components before functionally testing the completed system.

Their responsibilities will require them to comply with organisational policy and procedures for the overhauling activities undertaken and to report any problems with these activities, or with the tools and equipment used, that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They must ensure that all tools, equipment and materials used in the overhauling activities are removed from the work area on completion of the activities and that all necessary job/task documentation is completed accurately and legibly. They will be expected to work with a minimum of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. Their underpinning knowledge will provide a good understanding of their work and will provide an informed approach to applying overhauling procedures to aircraft gun systems.

They will understand the dismantling and reassembly methods and procedures and their application. They will know how the equipment functions, the purpose of the individual components and associated defects; in adequate depth to provide a sound basis for carrying out the overhauling activities and ensuring that the overhauled equipment functions to the required specification. In addition, they will have sufficient in-depth knowledge of these components to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

They will understand the safety precautions required when carrying out the overhauling activities, especially those for isolating the equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall objectives of the organisation, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

Performance Requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines.
- P2 demonstrate the required behaviours in line with the job role and organisational objectives.
- P3 follow the relevant maintenance schedules to carry out the required work.
- P4 carry out the maintenance activities within the limits of their personal authority.
- P5 carry out the maintenance activities in the specified sequence and in an agreed timescale.
- P6 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule.
- P7 complete the relevant maintenance records accurately and pass them on to the appropriate person.
- P8 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome

The learner will:

- 1 Carry out **all** of the following during the overhaul of the aircraft gun systems:
 - 1.1. plan the overhauling activities to cause minimal disruption to normal working
 - 1.2. obtain and use the appropriate documentation (such as job instructions, technical publication and overhauling documentation)
 - 1.3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 - 1.4. provide and maintain a safe working environment for the overhauling activities
 - 1.5. ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
 - 1.6. obtain the correct tools and equipment for the activity and check that they are in a safe, tested and usable condition and within current certification/calibration date
 - 1.7. carry out the overhauling activities, using appropriate techniques and procedures
 - 1.8. dispose of waste items in a safe and environmentally acceptable manner
 - 1.9. return all tools and equipment to the correct location on completion of the overhauling activities
 - 1.10. leave the work area and equipment in a safe and appropriate condition, free from foreign object debris on completion of the activities.

Learning outcome

The learner will:

- 2 Carry out overhauling activities on **three** aircraft gun systems each overhauling activity to include seven of the following:
 - 2.1 recoil units
 - 2.2 clutch assembly
 - 2.3 barrel
 - 2.4 gun slides
 - 2.5 electronic firing units
 - 2.6 re-cocking components
 - 2.7 ammunition storage/feed
 - 2.8 cylinders/actuating mechanisms
 - 2.9 gun cradle assembly
 - 2.10 flash/ blast suppression unit
 - 2.11 gun mounting
 - 2.12 other specific components.

Learning outcome

The learner will:

- 3 Carry out **twelve** of the following overhauling activities:
 - 3.1 cleaning of parts prior to disassembly
 - 3.2 pre-disassembly checks and tests
 - 3.3 dismantling equipment to unit/sub-assembly level
 - 3.4 dismantling units to component level
 - 3.5 proof marking / labelling of components
 - 3.6 checking components for serviceability
 - 3.7 replenishing oils and greases
 - 3.8 replacing all 'lived' items (such as seals, filters, gaskets)
 - 3.9 replacing damaged/defective components
 - 3.10 reassembly of components/ sub-assemblies
 - 3.12 tightening fastenings to the required torque
 - 3.13 making mechanical connections
 - 3.14 making electrical connections
 - 3.15 setting, aligning and adjusting components
 - 3.16 bolt locking (such as split pins, wire locking, lock nuts).

Learning outcome

The learner will:

- 4 Replace a range of components, to include **twelve** of the following:

- 4.1 shafts
 - 4.2 springs
 - 4.3 cams and followers
 - 4.4 actuating mechanisms
 - 4.5 sealing rings
 - 4.6 housings
 - 4.7 levers and links
 - 4.8 electrical connectors
 - 4.9 pistons
 - 4.10 looms
 - 4.11 structural components
 - 4.12 seals
 - 4.13 solenoids
 - 4.14 micro switches
 - 4.15 locking and retaining devices
 - 4.16 shims
 - 4.17 rollers
 - 4.18 slides
 - 4.19 recoil washers
 - 4.20 roll pins
 - 4.21 gas operated components
 - 4.22 threaded fasteners
 - 4.23 other specific components.
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Learning outcome

The learner will:

- 5 Carry out checks and tests on the overhauled equipment, to include **three** of the following:
 - 5.1 visual inspection for damage or foreign objects
 - 5.2 freedom and range of movement/extension checks
 - 5.3 gauging checks
 - 5.4 functional checks
 - 5.5 specific measurement checks
 - 5.6 electrical tests
 - 5.7 pressure tests
 - 5.8 barrel test
 - 5.9 non-destructive testing (NDT).

Learning outcome

The learner will:

- 6 Overhaul aircraft gun systems in accordance with **one** of the following standards:
 - 6.1 Military Aviation Authority (MAA)
 - 6.2 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
 - 6.3 BS, ISO or BSEN standards and procedures
 - 6.4 Aerospace Quality Management Standards (AS)
 - 6.5 specific system requirements
 - 6.6 Federal Aviation Authority (FAA)
 - 6.7 organisation standards and procedures
 - 6.8 manufacturers' standards and procedures.

Learning outcome

The learner will:

- 7 Complete the relevant documentation, to include **one** from the following and pass it to the appropriate people:
 - 7.1 computer records
 - 7.2 record/history cards
 - 7.3 job cards
 - 7.4 aircraft service/flight log
 - 7.5 other specific recording method.

Learning outcome

Knowledge and understanding

Assessment criteria

The learner must know and understand:

- K1 the health and safety requirements of the area in which the overhauling activity is to take place and the responsibility these requirements place.
- K2 the specific health and safety precautions to be applied during the overhauling procedures and their effects on others.
- K3 hazards associated with carrying out overhauling activities on the aircraft gun systems (such as handling oils and greases, release of stored pressure/force, misuse of tools, using damaged or badly overhauled tools and equipment, not following laid-down overhauling procedures) and how to minimise them and reduce any risks.
- K4 The importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to.
- K5 the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the overhaul.

- K6 the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps).
- K7 what constitutes a hazardous voltage and how to recognise victims of electric shock.
- K8 how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers).
- K9 how to obtain and interpret drawings, specifications, manufacturers' manuals and other documents needed in the overhauling process.
- K10 how to carry out currency/issue checks on the specifications they are working with.
- K11 the procedure for obtaining replacement parts, materials and other consumables for the overhauling activities.
- K12 organisation policy on the repair/replacement of components during the overhauling process.
- K13 the sequence to be adopted for the dismantling/re-assembly of various types of assembly.
- K14 the methods and techniques used to dismantle/assemble equipment (such as release of pressures/force, extraction, alignment).
- K15 methods of checking that components are fit for purpose, how to identify defects and wear characteristics and the need to replace 'lived' items (such as seals and gaskets).
- K16 the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact.
- K17 the identification and application of different types of locking device.
- K18 the uses of measuring equipment (such as micrometres, verniers and other measuring devices).
- K19 how to make adjustments to components/assemblies to ensure that they function correctly (such as setting working clearance, setting travel).
- K20 how to check that tools and equipment are free from damage or defects, are in a safe and usable condition and are configured correctly for the intended purpose.
- K21 the importance of completing the overhaul documentation and/or reports following the overhauling activity and how to generate them.
- K22 the equipment operating and control procedures to be applied during the overhauling activity.
- K23 how to use lifting and handling equipment in the overhauling activity.
- K24 the problems associated with the overhauling activity and how they can be overcome.
- K25 the organisational procedure(s) to be adopted for the safe disposal of waste of all types of material.
- K26 the extent of their own authority and to whom they should report if they have a problem that they cannot resolve.

Unit 423

Overhauling aircraft gun systems

Supporting Information

Unit guidance

Assessment requirements for this have been developed by employers for the occupational competency units and qualifications for the Aerospace and Aviation Sector. These assessment requirements are set down in the Aerospace Engineering Employer Occupational Unit Assessment Strategy.

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

GLH: 168**Unit aim:**

This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.

This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out overhauling activities on Aircraft Assisted Escape Systems (AAES), in accordance with approved procedures. They will be required to overhaul a range of crew escape systems and sub-assemblies, consisting of a variety of components such as mechanical controls (plungers, springs and rollers), electrical mechanisms (solenoids, indicators, motors and switches) and other organisation-specific equipment. This will involve dismantling, removing and replacing faulty equipment, at component or unit level, on a variety of crew escape systems and sub-assemblies. They will be expected to use methods and techniques such as setting, aligning, torque loading and adjusting components before functionally testing the completed system.

Their responsibilities will require them to comply with organisational policy and procedures for the overhauling activities undertaken and to report any problems with these activities, or with the tools and equipment used, that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They must ensure that all tools, equipment and materials used in the overhauling activities are removed from the work area on completion of the activities and that all necessary job/task documentation is completed accurately and legibly.

Their underpinning knowledge will provide a good understanding of their work and will provide an informed approach to applying overhauling procedures to aircraft assisted escape systems. They will understand the dismantling and reassembly methods and procedures and their application. They will know how the equipment functions, the purpose of the individual components and associated defects; in adequate depth to provide a sound basis for carrying out the overhauling activities and ensuring that the overhauled equipment functions to the required specification. In addition, they will have sufficient in-depth knowledge of these components to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

They will understand the safety precautions required when working on the aircraft assisted escape system, especially those for isolating the equipment, for which personnel must be authorised and fully conversant. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall objectives of the organisation, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

Performance Requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines.
- P2 demonstrate the required behaviours in line with the job role and organisational objectives.
- P3 follow the relevant maintenance schedules to carry out the required work.
- P4 carry out the maintenance activities within the limits of their personal authority.
- P5 carry out the maintenance activities in the specified sequence and in an agreed timescale.
- P6 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule.
- P7 complete relevant maintenance records accurately and pass them on to the appropriate person.
- P8 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome

The learner will:

- 1 carry out **all** of the following during the overhaul of the crew escape system:
 - 1.1 plan the overhauling activities to cause minimal disruption to normal working
 - 1.2 obtain and use the appropriate documentation (such as job instructions, technical publication and overhauling documentation)
 - 1.3 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 - 1.4 provide and maintain a safe working environment for the overhauling activities
 - 1.5 ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
 - 1.6 obtain the correct tools and equipment for the activity and check that they are in a safe, tested and usable condition and within current certification/calibration date
 - 1.7 carry out the overhauling activities, using appropriate techniques and procedures
 - 1.8 dispose of waste items in a safe and environmentally acceptable manner
 - 1.9 return all tools and equipment to the correct location on completion of the overhauling activities
 - 1.10 leave the work area and equipment in a safe and appropriate condition, free from foreign object debris on completion of the activities.

Learning outcome

The learner will:

2 carry out overhauling activities on crew escape systems, to include:

2.1 Ejection Seat

and **eleven** of the following:

- 2.2 ejection gun
- 2.3 seat pan assembly
- 2.4 main beam assembly
- 2.5 canopy jettison/fragmentation system
- 2.6 aircrew services package
- 2.7 barostatic time release units
- 2.8 gas operated firing units
- 2.9 breech type time delay units
- 2.10 standard firing units
- 2.11 harness power retraction units
- 2.12 leg/arm restraint systems
- 2.13 drogue guns / deployment unit
- 2.14 parachute deployment units
- 2.15 seat mounted oxygen systems
- 2.16 mode selectors
- 2.17 personal equipment connectors
- 2.18 command ejection units
- 2.19 remote rocket initiators
- 2.20 seat sequencing computer
- 2.21 automatic back-up unit
- 2.22 power supply unit or battery units
- 2.23 other specific system component.

Learning outcome

The learner will:

3 carry out **twelve** of the following overhauling activities:

- 3.1 cleaning parts prior to disassembly
- 3.2 pre-disassembly checks and tests
- 3.3 dismantling equipment to unit/sub-assembly level
- 3.4 dismantling units to component level
- 3.5 proof marking / labelling of components
- 3.6 checking components for serviceability
- 3.7 replenishing oils and greases

- 3.8 replacing all 'lived' items (such as seals and diaphragm)
 - 3.9 reassembly of components/ sub-assemblies
 - 3.10 tightening fastenings to the required torque
 - 3.11 replacing damaged/defective components
 - 3.12 reassembling components
 - 3.13 making mechanical connections
 - 3.14 making electrical connections
 - 3.15 setting, aligning and adjusting components
 - 3.16 applying bolt locking methods (such as split pins, wire locking, lock nuts)
 - 3.17 fitting blanks to openings to prevent ingress of contamination.
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Learning outcome

The learner will:

- 4 replace a range of aircraft assisted escape system components, to include **twelve** of the following:
 - 4.1 flexible hoses
 - 4.2 sears
 - 4.3 bearings
 - 4.4 pinions
 - 4.5 rigid pipes
 - 4.6 micro switches
 - 4.7 seals
 - 4.8 geared wheels
 - 4.9 pistons
 - 4.10 springs
 - 4.11 structural components
 - 4.12 locking and retaining devices
 - 4.13 solenoids
 - 4.14 housings
 - 4.15 electrical connectors
 - 4.16 rollers
 - 4.17 levers
 - 4.18 seat pan actuators
 - 4.19 wiring
 - 4.20 linkages
 - 4.21 static cables
 - 4.22 other specific component

Learning outcome

The learner will:

- 5 carry out checks and tests on the overhauled equipment, to include **three** of the following:
 - 5.1 visual inspection for damage or foreign objects
 - 5.2 range of movement/extension checks
 - 5.3 function checks
 - 5.4 pull-off checks
 - 5.5 gauging checks
 - 5.6 soak test
 - 5.7 pressure checks
 - 5.8 leak checks
 - 5.9 electrical tests
 - 5.10 special-to-type tests.

Learning outcome

The learner will:

- 6 overhaul crew escape systems in accordance with **one** of the following standards:
 - 6.1 Military Aviation Authority (MAA)
 - 6.2 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
 - 6.3 BS, ISO or BSEN standards and procedures
 - 6.4 Aerospace Quality Management Standards (AS)
 - 6.5 specific system requirements
 - 6.6 Federal Aviation Authority (FAA)
 - 6.7 organisation standards and procedures
 - 6.8 manufacturers' standards and procedures.

Learning outcome

The learner will:

- 7 complete the relevant documentation, to include **one** from the following and pass it to the appropriate people:
 - 7.1 computer records
 - 7.2 record/history cards
 - 7.3 job cards
 - 7.4 aircraft service/flight log
 - 7.5 other specific recording method.

Learning outcome

Knowledge and understanding

Assessment criteria

The apprentice must know and understand:

- K1 the health and safety requirements of the area in which the overhauling activity is to take place and the responsibility these requirements place on them.
- K2 the specific health and safety precautions to be applied during the overhauling procedure and their effects on others.
- K3 hazards associated with carrying out overhauling activities on crew escape systems (such as handling oils and greases, release of stored pressure/force, misuse of tools, using damaged or badly overhauled tools and equipment, not following laid-down overhauling procedures) and how to minimise them and reduce any risks.
- K4 The importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to.
- K5 the requirements and importance of understanding and applying human factors as defined by the regulatory requirements and the potential impact if these are not adhered to.
- K6 the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the overhaul.
- K7 the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps).
- K8 what constitutes a hazardous voltage and how to recognise victims of electric shock.
- K9 how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers).
- K10 how to obtain and interpret drawings, specifications, manufacturers' manuals and other documents needed in the overhauling process.
- K11 how to carry out currency/issue checks on the specifications they are working with.
- K12 the procedure for obtaining replacement parts, materials and other consumables necessary for the overhauling activities.
- K13 company policy on the repair/replacement of components during the overhauling process.
- K14 the sequence to be adopted for the dismantling/re-assembly of various types of assembly.
- K15 the methods and techniques used to dismantle/assemble equipment (such as release of pressures/force, extraction, alignment).
- K16 methods of checking that components are fit for purpose, how to identify defects and wear characteristics and the need to replace 'lived' items (such as seals, filters and gaskets).
- K17 the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact.
- K18 the identification and application of different types of locking device.
- K19 the uses of measuring equipment (such as micrometres, verniers and other measuring devices).

- K20 how to make adjustments to components/assemblies to ensure that they function correctly (such as setting working clearance, setting travel).
- K21 how to check that tools and equipment are free from damage or defects, are in a safe and usable condition and are configured correctly for the intended purpose.
- K22 the importance of completing the overhaul documentation and/or reports following the overhauling activity and how to generate them.
- K23 the equipment operating and control procedures to be applied during the overhauling activity.
- K24 how to use lifting and handling equipment in the overhauling activity.
- K25 the problems associated with the overhauling activity and how they can be overcome.
- K26 the organisational procedure(s) to be adopted for the safe disposal of waste of all types of material.

Unit 424

Overhauling Aircraft Assisted Escape Systems (AAES)

Supporting Information

Unit guidance

Assessment requirements for this have been developed by employers for the occupational competency units and qualifications for the Aerospace and Aviation Sector. These assessment requirements are set down in the Aerospace Engineering Employer Occupational Unit Assessment Strategy.

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

GLH: 168**Unit aim:**

This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.

This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out overhauling activities on aircraft armament release systems, in accordance with approved procedures. It covers both fixed wing and rotary winged aircraft. They will be required to overhaul a range of aircraft armament release systems, consisting of a variety of components such as mechanical controls (plungers, springs and rollers), electrical mechanisms (solenoids, indicators, motors and switches) and other specific release system equipment. This will involve dismantling, removing and replacing faulty equipment, at component or unit level, on a variety of different types of armament release system and sub-assembly. They will be expected to use methods and techniques such as setting, aligning, torque loading and adjusting components before functionally testing the completed system.

Their responsibilities will require them to comply with organisational policy and procedures for the overhauling activities undertaken and to report any problems with these activities, or with the tools and equipment used, that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They must ensure that all tools, equipment and materials used in the overhauling activities are removed from the work area on completion of the activities and that all necessary job/task documentation is completed accurately and legibly. They will be expected to work with a minimum of supervision, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of their work and will provide an informed approach to applying overhauling procedures to aircraft armament release systems. They will understand the dismantling and reassembly methods and procedures and their application. They will know how the equipment functions, the purpose of the individual components and associated defects, in adequate depth to provide a sound basis for carrying out the overhauling activities and ensuring that the overhauled equipment functions to the required specification. In addition, they will have sufficient in-depth knowledge of these components to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

They will understand the safety precautions required when carrying out the overhauling activities, especially those for isolating the equipment. They will also understand their responsibilities for safety and the importance of taking the necessary safeguards to protect themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall objectives of the organisation, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

The learner will:

P Performance Requirements

Assessment criteria

The learner can:

- P.1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines.
- P.2 demonstrate the required behaviours in line with the job role and organisational objectives.
- P.3 follow the relevant maintenance schedules to carry out the required work.
- P.4 carry out the maintenance activities within the limits of their personal authority.
- P.5 carry out the maintenance activities in the specified sequence and in an agreed timescale.
- P.6 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule.
- P.7 complete the relevant maintenance records accurately and pass them on to the appropriate person.
- P.8 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome

The learner will:

- 1 carry out **all** of the following during the overhauling of the aircraft armament release systems:
 - 1.1 plan the overhauling activities to cause minimal disruption to normal working
 - 1.2 obtain and use the appropriate documentation (such as job instructions, technical publication and overhauling documentation)
 - 1.3 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 - 1.4 provide and maintain a safe working environment for the overhauling activities
 - 1.5 ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
 - 1.6 obtain the correct tools and equipment for the activity, and check that they are in a safe, tested and usable condition and within current certification/calibration date
 - 1.7 carry out the overhauling activities, using appropriate techniques and procedures
 - 1.8 dispose of waste items in a safe and environmentally acceptable manner
 - 1.9 return all tools and equipment to the correct location on completion of the overhauling activities

- 1.10 leave the work area and equipment in a safe and appropriate condition, free from foreign object debris on completion of the activities.
-

Learning outcome

The learner will:

- 2 carry out overhauling activities on **three** of the following types of aircraft release system equipment
 - 2.1 sonobuoy launchers
 - 2.2 cargo carriage/release
 - 2.3 ejector release unit
 - 2.4 mechanical release unit
 - 2.5 pneumatic release unit
 - 2.6 missile launch rail
 - 2.7 missile ejector launcher
 - 2.8 practice bomb carrier
 - 2.9 stores carrier
 - 2.10 bomb carriage/release
 - 2.11 missile carriage/ release
 - 2.12 pylon
 - 2.13 defensive aids dispenser
 - 2.14 gaseous generation system
 - 2.15 other specific release system components.
-

Learning outcome

The learner will:

- 3 carry out **twelve** of the following overhaul activities:
 - 3.1 cleaning parts prior to disassembly
 - 3.2 pre-disassembly checks and tests
 - 3.3 dismantling equipment to unit/sub-assembly level
 - 3.4 dismantling units to component level
 - 3.5 proof marking / labelling of components
 - 3.6 checking components for serviceability
 - 3.7 replacing damaged/defective components
 - 3.8 replenishing oils and greases
 - 3.9 replacing all lified items (such as seals, gaskets)
 - 3.10 setting, aligning and adjusting components
 - 3.11 reassembling components
 - 3.12 making mechanical connections
 - 3.13 making electrical connections.
 - 3.14 securing components using mechanical fasteners and threaded devices
-

- 3.15 fitting blanks to openings to prevent ingress of contamination
 - 3.16 tightening fastenings to the required torque
 - 3.17 applying bolt locking methods (such as split pins, wire locking, lock nuts)
 - 3.18 functionally testing the completed system.
-

Learning outcome

The learner will:

- 4 replace a range of armament release system components, to include **twelve** of the following:
 - 4.1 shafts
 - 4.2 springs
 - 4.3 cam followers
 - 4.4 actuating mechanisms
 - 4.5 valves
 - 4.6 housings
 - 4.7 levers
 - 4.8 electrical connectors
 - 4.9 valve seats
 - 4.10 looms
 - 4.11 linkages
 - 4.12 shims
 - 4.13 pistons
 - 4.14 micro switches
 - 4.15 structural components
 - 4.16 locking and retaining devices
 - 4.17 solenoids
 - 4.18 rails
 - 4.19 seals
 - 4.20 rollers
 - 4.21 cams
 - 4.22 pipes/ hoses
 - 4.23 other specific component.
-

Learning outcome

The learner will:

- 5 carry out checks and tests on the overhauled equipment, to include **three** of the following:
 - 5.1 electrical tests
 - 5.2 pressure tests
 - 5.3 extension tests
-

- 5.4 firing pin protrusions checks
 - 5.5 functional checks
 - 5.6 leak checks
 - 5.7 gauging checks
 - 5.8 soak test
 - 5.9 pull-off tests
 - 5.10 range of movement / extension checks
 - 5.11 visual inspection for completeness and freedom from damage or foreign objects
 - 5.12 other specific to type tests.
-

Learning outcome

The learner will:

- 6 overhaul aircraft armament release systems in accordance with **one** of the following standards:
 - 6.1 Military Aviation Authority (MAA)
 - 6.2 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
 - 6.3 BS, ISO or BSEN standards and procedures
 - 6.4 Aerospace Quality Management Standards (AS)
 - 6.5 specific system requirements
 - 6.6 Federal Aviation Authority (FAA)
 - 6.7 organisation standards and procedures
 - 6.8 manufacturers' standards and procedures.
-

Learning outcome

The learner will:

- 7 complete the relevant documentation, to include **one** from the following and pass it to the appropriate people:
 - 7.1 computer records
 - 7.2 record/history cards
 - 7.3 job cards
 - 7.4 aircraft service/flight log
 - 7.5 other specific recording method.

Learning outcome

The learner will:

Knowledge and understanding

Assessment criteria

The apprentice must know and understand:

- K1 the health and safety requirements of the area in which the overhauling activity is to take place and the responsibility these requirements place.
- K2 the specific health and safety precautions to be applied during the overhauling procedure and their effects on others.
- K3 hazards associated with carrying out overhauling activities on aircraft armament release systems (such as handling oils and greases, release of stored pressure/force, misuse of tools, using damaged or badly overhauled tools and equipment, not following laid-down overhauling procedures) and how to minimise them and reduce any risks.
- K4 The importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to.
- K5 the requirements and importance of understanding and applying human factors as defined by the regulatory requirements and the potential impact if these are not adhered to.
- K6 the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the overhaul.
- K7 the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps).
- K8 what constitutes a hazardous voltage and how to recognise victims of electric shock.
- K9 how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers).
- K10 how to obtain and interpret drawings, specifications, manufacturers' manuals and other documents needed in the overhauling process.
- K11 how to carry out currency/issue checks on the specifications they are working with.
- K12 the procedure for obtaining replacement parts, materials and other consumables necessary for the overhauling activities.
- K13 company policy on the repair/replacement of components during the overhauling process.
- K14 the sequence to be adopted for the dismantling/re-assembly of various types of assembly.
- K15 the methods and techniques used to dismantle/assemble equipment (such as release of pressures/force, extraction, alignment).
- K16 methods of checking that components are fit for purpose, how to identify defects and wear characteristics and the need to replace 'lived' items (such as seals, filters and gaskets).
- K17 the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact.
- K18 the identification and application of different types of locking device.

- K19 the uses of measuring equipment (such as micrometres, verniers and other measuring devices).
- K20 how to make adjustments to components/assemblies to ensure that they function correctly (such as setting working clearance, setting travel).
- K21 how to check that tools and equipment are free from damage or defects, are in a safe and usable condition and are configured correctly for the intended purpose.
- K22 the importance of completing the overhaul documentation and/or reports following the overhauling activity and how to generate them.
- K23 the equipment operating and control procedures to be applied during the overhauling activity.
- K24 how to use lifting and handling equipment in the overhauling activity.
- K25 the problems associated with the overhauling activity and how they can be overcome.
- K26 the organisational procedure(s) to be adopted for the safe disposal of waste of all types of material.
- K27 the extent of their own authority and to whom they should report if they have a problem that they cannot resolve.

Unit 425 Overhauling aircraft release systems

Supporting Information

Unit guidance

Assessment requirements for this have been developed by employers for the occupational competency units and qualifications for the Aerospace and Aviation Sector. These assessment requirements are set down in the Aerospace Engineering Employer Occupational Unit Assessment Strategy.

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

GLH: 168**Unit aim:**

This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.

This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out engineering operations on aircraft explosives and related systems in accordance with approved procedures in this highly specialised area. The storage, handling and transportation of explosive substances and articles are operations that present inherent risks to persons and property and any error made by those working with explosives can lead to immediate and massive consequences. Therefore this highly specialised area is tightly regulated, with all work being conducted under close supervision with frequent refresher training being mandated for all those employed on ESA engineering operations. It covers both fixed wing and rotary winged aircraft and includes items such as aircraft gun ammunition, missiles, torpedoes, guided bombs, countermeasures, depth charges and other explosively operated systems.

They will be required to select the appropriate tools and equipment to use, based on the operations to be performed and the aircraft explosives or related systems involved. The engineering operations will include assembly, inspection, test, dismantling and repacking of aircraft explosives and related systems components. Operations are to include making all necessary checks and adjustments to ensure that the aircraft explosives and related system components are correctly positioned, aligned, have appropriate working clearances and that the surface finish and markings are acceptable as per specifications.

Their responsibilities will require them to comply with organisational policy and procedures for the engineering operations undertaken and to report any problems with these operations that they cannot personally resolve, or that are outside their permitted authority, to the relevant people. They will be expected to ensure that all tools, equipment and materials used in the operation are correctly accounted for on completion of the operations and that all necessary job/task documentation is completed, accurately and legibly. They will be expected to work within the supervisory guidelines mandated by the safety legislation for the engineering operation being carried out, taking personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.

Their underpinning knowledge will provide a good understanding of their work, and will provide an informed approach to the engineering operations conducted on aircraft explosives and related systems in accordance with the relevant procedures. They will have an underpinning knowledge and understanding of aircraft explosives and related systems components that they are assembling/disassembling, allowing them to carry out all operations to the required specification and standard.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall objectives of the organisation, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

The learner will:

P Performance Requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines.
- P2 demonstrate the required behaviours in line with the job role and organisational objectives.
- P3 follow the relevant maintenance schedules to carry out the required work.
- P4 carry out the maintenance activities within the limits of their personal authority.
- P5 carry out the maintenance activities in the specified sequence and in an agreed timescale.
- P6 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule.
- P7 complete the relevant maintenance records accurately and pass them on to the appropriate person.
- P8 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome

The learner will:

- 1 carry out **all** of the following during ESA Engineering operations:
 - 1.1 plan the engineering operations to cause minimal disruption to normal working
 - 1.2 obtain and use the appropriate documentation (such as job instructions, technical publication and engineering documentation)
 - 1.3 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 - 1.4 provide and maintain a safe working environment for the engineering operations
 - 1.5 ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
 - 1.6 obtain the correct tools and equipment for the operation and examine to ensure that they are in a safe useable condition and within current certification/calibration date
 - 1.7 carry out the engineering operations, using appropriate techniques and procedures
 - 1.8 return all tools and equipment to the correct location on completion of the engineering operations
 - 1.9 certify articles and packages are free from explosives on completion of the engineering operation

- 1.10 leave the work area and equipment in a safe and appropriate condition, free from foreign object debris on completion of the engineering operation.
-

Learning outcome

The learner will:

- 2 confirm the suitability and safety of the working environment for the activities to be carried out including all of the following:
 - 2.1 explosive licence
 - 2.2 electrical inspection validity
 - 2.3 humidity
 - 2.4 temperature
 - 2.5 authorised tools and equipment
 - 2.6 other mandated safety requirements as appropriate to the specific work area.
-

Learning outcome

The learner will:

- 3 carry out engineering operations on aircraft explosives and their related system components from **four** of the following systems:
 - 3.1 missiles
 - 3.2 guided bombs
 - 3.3 countermeasures
 - 3.4 aircraft gun ammunition
 - 3.5 torpedoes
 - 3.6 depth charges
 - 3.7 pyrotechnics
 - 3.8 sonobuoys
 - 3.9 fire protection
 - 3.10 SAR equipment
 - 3.11 carriage & release equipment
 - 3.12 automatic deployment units
 - 3.13 other specific aircraft explosives and their related system components.
-

Learning outcome

The learner will:

- 4 carry out **three** the following types of activity:
 - 4.1 continuity test
 - 4.2 resistance test
 - 4.3 insulation test
-

- 4.4 system component test
- 4.5 functional test
- 4.6 position and alignment
- 4.7 fault identification
- 4.8 other specific activity

Using **three** of the below:

- 4.9 safety ohmmeter
- 4.10 digital multi-meter
- 4.11 insulation test set
- 4.12 bomb fuse test set
- 4.13 guidance test set
- 4.14 specific measuring instruments
- 4.15 special-to-type test set.

Learning outcome

The learner will:

5 carry out an inspection of the equipment to include **nine** of the following:

- 5.1 correct markings and identification
- 5.2 surface finish
- 5.3 damage and defects
- 5.4 corrosion
- 5.5 transparencies
- 5.6 safe/armed Indicators
- 5.7 weight
- 5.8 security of attachment
- 5.9 safety blanks/covers fitted
- 5.10 seals/gaskets condition
- 5.11 correct lubrication
- 5.12 completeness
- 5.13 record card compliance.

Learning outcome

The learner will:

6 preparation of aircraft explosive and related systems equipment, to include **seven** of the following actions:

- 6.1 use of mechanical fasteners (such as bolts, screws, quick release mechanisms)
- 6.2 torque loading
- 6.3 use of bolt locking devices (such as split pins, wire locking, lock nuts)

- 6.4 make electrical connections
 - 6.5 cable routing
 - 6.6 setting tolerance
 - 6.7 fitment of protective covers
 - 6.8 application of unit serial numbers & life expiry details
 - 6.9 lifting operations (manual or mechanical)
 - 6.10 interrogate constraint registers and ensure any conditions are applied
 - 6.11 calculate authorised lifing of articles and record correctly.
-

Learning outcome

The learner will:

- 7 dismantling of aircraft explosive and related system components, to include **five** of the following actions:
 - 7.1 removing mechanical fasteners (such as bolts, screws, quick release mechanisms)
 - 7.2 removing bolt securing devices (such as split pins, wire locking, lock nuts)
 - 7.3 making electrical disconnections
 - 7.4 covering/protecting exposed components or pipe ends
 - 7.5 restoration of surface finish
 - 7.6 removal of unit serial numbers & life expiry details, where appropriate
 - 7.7 repacking into correctly labelled, authorised containers iaw the engineering data and safety regulations
 - 7.8 segregation and reporting of life expired or unserviceable equipment.
-

Learning outcome

The learner will:

- 8 manage aircraft explosive and related system components, to include **all** of the following:
 - 8.1 putting aircraft explosive substances and/or articles into storage
 - 8.2 carry out stock checks of aircraft explosive substances and/or articles
 - 8.3 maintain stock control systems for explosive substances and/or articles
 - 8.4 maintain the quality of explosive substances and/or articles
 - 8.5 select and prepare explosive substances and/or articles for despatch
 - 8.6 lift transfer and position explosive substances and/or article loads
 - 8.7 despatch explosive substances and/or articles.

Learning outcome

The learner will:

- 9 undertake ESA Engineering Operations in accordance with **one** of the following standards:
 - 9.1 Military Aviation Authority (MAA)
 - 9.2 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
 - 9.3 BS, ISO or BSEN standards and procedures
 - 9.4 Aerospace Quality Management Standards (AS)
 - 9.5 specific system requirements
 - 9.6 Federal Aviation Authority (FAA)
 - 9.7 organisation standards and procedures
 - 9.8 manufacturers' standards and procedures.

Learning outcome

The learner will:

- 10 complete the relevant documentation, to include **one** from the following and pass it to the appropriate people:
 - 10.1 computer records
 - 10.2 record/history cards
 - 10.3 job cards
 - 10.4 other specific recording method.

Learning outcome

The learner will:

Knowledge and understanding

Assessment criteria

The apprentice must know and understand:

- K1 the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work.
- K2 the specific safety practices and procedures that they need to observe when working with aircraft explosive and related systems components (including any specific legislation, regulations/codes of practice for the operations, equipment or materials and locations)
- K3 the hazards associated with assembling aircraft explosive and related systems components and with the tools and equipment used and how to minimise them and reduce any risks.

- K4 the importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to.
- K5 the requirements and importance of understanding and applying human factors as defined by the regulatory requirements and the potential impact if these are not adhered to.
- K6 how to ensure the facilities for the engineering operation are compliant (fit for purpose) for the task being carried out.
- K7 the importance of correctly preparing the explosives process area and associated equipment.
- K8 the protective equipment that they need to use for both personal protection (PPE) and protection of the aircraft explosive substances, articles and related systems components.
- K9 how to obtain and interpret drawings, standards, quality control procedures and other documents needed for the engineering operation.
- K10 how to carry out currency/issue checks on the schedule they are working with and the importance of doing so.
- K11 procedures for ensuring that they have the correct tools, equipment, materials for the engineering operation.
- K12 the procedure for obtaining replacement parts, materials and other consumables necessary for the engineering operation.
- K13 how to implement and undertake corrective actions from reported discrepancies
- K14 why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the operations.
- K15 the recording documentation to be completed for the operations undertaken and where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation.
- K16 the aircraft explosive substances, articles or related system components involved and their function within the particular armament system.
- K17 the importance of using only the specified components for the particular assembly and why they must not substitute others.
- K18 the torque loading requirements of the fasteners and what to do if these loadings are exceeded or not achieved.
- K19 the techniques used to position, align, adjust and secure the aircraft explosive substance, article or related systems equipment without damage
- K20 how to conduct any necessary examinations to ensure the system integrity, functionality, accuracy, quality and overall safety of the aircraft explosive substance, article or related systems components.
- K21 the need to carry out part protection techniques and procedures including the importance of ensuring that any exposed components or pipe ends are correctly covered/protected.
- K22 the need to carry out inspections of the aircraft explosive or related system component and associated equipment during engineering operations to ensure that there are no significant defects or damage.
- K23 how to read, interpret and apply the test/inspection schedules and specifications.
- K24 the use and calibration of test and measuring equipment (where applicable), including any pre-use inspections to be applied.

- K25 the techniques, methods and procedures to be used during the tests and inspections.
- K26 the importance of segregating unserviceable or life expired aircraft explosive and related systems equipment components.
- K27 how to safely separate recoverable materials and waste produced by the explosives process and their safe disposal.
- K28 methods of lifting, handling and supporting the aircraft explosive articles, associated components and equipment, both manually and through the use of specialist equipment during the engineering operation.
- K29 how to safely move and store aircraft explosive substances and or articles.
- K30 the problems that can occur during the engineering operation and how they can be overcome.
- K31 the extent of their own authority and to whom they should report if they have a problem that they cannot resolve.

Supporting Information

Unit guidance

Assessment requirements for this have been developed by employers for the occupational competency units and qualifications for the Aerospace and Aviation Sector. These assessment requirements are set down in the Aerospace Engineering Employer Occupational Unit Assessment Strategy.

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Appendix 1 Useful contacts

UK learners

General qualification information

E: learnersupport@cityandguilds.com

International learners

General qualification information

F: +44 (0)20 7294 2413

E: intcg@cityandguilds.com

Centres

Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results

F: +44 (0)20 7294 2413

E: centresupport@cityandguilds.com

Single subject qualifications

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: singlesubjects@cityandguilds.com

International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

F: +44 (0)20 7294 2413

E: intops@cityandguilds.com

Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems

F: +44 (0)20 7294 2413

E: walledgarden@cityandguilds.com

Employer

Employer solutions, Mapping, Accreditation, Development Skills, Consultancy

T: +44 (0)121 503 8993

E: business@cityandguilds.com

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Logbooks, Centre documents, Forms, Free literature

F: +44 (0)20 7294 2413

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As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. We offer over 500 qualifications across 28 industries through 8500 centres worldwide and award around two million certificates every year. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

City & Guilds Group

The City & Guilds Group is a leader in global skills development. Our purpose is to help people and organisations to develop their skills for personal and economic growth. Made up of City & Guilds, City & Guilds Kineo, The Oxford Group and ILM, we work with education providers, businesses and governments in over 100 countries.

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Appendix 2 Relationships to other qualifications

Links to other qualifications

Centres are responsible for checking the different requirements of all qualifications they are delivering and ensuring that candidates meet requirements of all units/qualifications.

Literacy, language, numeracy and ICT skills development

This [these] qualification[s] can develop skills that can be used in the following qualifications:

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

Appendix 3 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.

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 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.

Centre Guide – Delivering International Qualifications 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.

Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre

- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Appendix 4 Useful contacts

UK learners

General qualification information

E: learnersupport@cityandguilds.com

International learners

General qualification information

F: +44 (0)20 7294 2413

E: intcg@cityandguilds.com

Centres

Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results

F: +44 (0)20 7294 2413

E: centresupport@cityandguilds.com

Single subject qualifications

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: singlesubjects@cityandguilds.com

International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

F: +44 (0)20 7294 2413

E: intops@cityandguilds.com

Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems

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City & Guilds Group

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