# Level 2 Certificate in Aircraft Maintenance (2680-02)

February 2020 Version 1.0

## Qualification Handbook

# Qualification at a glance

| | |
|---|---|
| **Subject area** | Engineering and Manufacturing |
| **City & Guilds number** | 2680-02 |
| **Age group approved** | 16-19, 19+ |
| **Assessment** | Centre Devised |
| **Approvals** | Fast track approval |
| **Registration and certification** | Consult the Walled Garden/Online Catalogue for last dates |

| Title and level | City & Guilds number | Accreditation number |
|---|---|---|
| Level 2 Certificate in Aircraft Maintenance | 2680-02 | 603/5494/X |

# Contents

# 1 Introduction

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

| Area | Description |
|---|---|
| Who is the qualification for? | This qualification is aimed at learners who work in the Aerospace and Aviation sector as an aircraft maintenance mechanic. |
| What do the qualifications cover? | The qualification allows learners to learn, develop and practise the knowledge and skills required for employment and/or career progression in the maintenance and ground handling of military and civil aircraft in the Aerospace and Aviation sector. |
| What opportunities for progression are there? | On successful completion of the standard, learners are able to progress to the Higher Technician Family of Apprenticeships, such as the Engineering Technician. |
| Who did we develop the qualification with? | These qualifications were developed by the Aerospace Engineering Trailblazer Employer Group led by the MOD and BAE systems. |
| Is it part of an apprenticeship framework or initiative? | The qualification is included in the Engineering and Manufacturing route of Apprenticeship standards e.g. Aviation Maintenance Mechanic Standard. |

## Structure

To achieve the Level 2 Certificate in Aircraft Maintenance, learners must achieve all the mandatory units 201, 202, 203, 204 and **one** optional unit from 205 or 206. Unit 207 is an elective unit and is not mandated in any combination

## Level 2 Certificate in Aircraft Maintenance

| City & Guilds unit number | Unit title | GLH |
|---|---|---|
| Learners must achieve the 4 Mandatory units, plus **one** optional unit | | |
| **Mandatory** | | |
| 201 | Human factors in aviation | 40 |
| 202 | Fundamentals of aircraft maintenance practices and policy | 35 |
| 203 | Fundamentals of aircraft documentation | 25 |
| 204 | Flight line maintenance of aircraft | 40 |
| **Optional – one from either unit 205 or unit 206** | | |
| 205 | Fundamentals of aircraft construction | 40 |
| 206 | Fundamentals of airframe structural inspection and husbandry | 40 |
| **Elective Unit** | | |
| 207 | Working safely with aircraft armament systems | 40 |

## 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.

| Title and level | GLH | TQT |
|---|---|---|
| Level 2 Certificate in Aircraft Maintenance | 180 | 220 |

# 2 Centre requirements

## Approval

If your Centre is approved to offer the qualification Level 2 Certificate in Aircraft Maintenance (2675-01) then you can apply for the new Level 2 Certificate in Aircraft Maintenance (2680-02) approval using the fast track approval form, available from the City & Guilds website. Centres should use the fast track form if:

- there have been no changes to the way the qualifications are delivered, and
- they meet all of the approval criteria in the fast track form guidance notes.

Fast track approval is available for 12 months from the launch of the qualification. After 12 months, the Centre will have to go through the standard Qualification Approval Process. The centre is responsible for checking that fast track approval is still current at the time of application.

To offer these qualifications, new centres will need to gain both centre and qualification approval. Please refer to the Centre Manual - Supporting Customer Excellence for further information

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

## Resource requirements

### Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the area[s] for which they are delivering training and/or have experience of providing training. This knowledge must be to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Centre staff may undertake more than one role, e.g. tutor and assessor or internal verifier, but cannot internally verify their own assessments.

## Learner entry requirements

City & Guilds does not set entry requirements for these qualifications. However, centres must ensure that candidates have the potential and opportunity to gain the qualifications successfully.

### Age restrictions

City & Guilds cannot accept any registrations for candidates under 16 as these qualifications are not approved for under 16s.

# 3 Delivering the qualification

## Initial assessment and induction

An initial assessment of each candidate should be made before the start of their programme to identify:

- if the candidate has any specific training needs,
- support and guidance they may need when working towards their qualifications.
- any units they have already completed, or credit they have accumulated which is relevant to the qualifications.
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the candidate fully understands the requirements of the qualification, their responsibilities as a candidate, and the responsibilities of the centre. This information can be recorded on a learning contract.

# 4 Assessment

## Summary of assessment methods

Each unit is assessed via a minimum of one centre devised assessment. These assessments will consist of either multiple-choice or short answer tests or a combination of both.

All centre devised assessments need to be approved by the appointed EQA for the centre, prior to delivery of the scheme. Following scheme approval, centre devised assessments will be continually monitored as part of the normal EQA process.

# 5 Grading

## Grading of individual assessments

Individual assessments are graded Pass/Merit/Distinction and contribute equally to the overall qualification grade. For the qualification to be achieved all assessments must be achieved at a minimum of Pass as per the centre devised marking scheme.

## Grading of qualification

The Aerospace Engineering Apprenticeship Employer Group has taken the decision to grade the qualification Pass/Merit/Distinction, through the aggregation of individual assessments which are graded Pass/Merit/Distinction.

Grading can be of use both as a motivational tool within the learning environment and also to learners presenting evidence of their knowledge to prospective employers.

All assessments must be achieved at a minimum of Pass for the qualification to be awarded. All assessments graded Pass/Merit/Distinction contribute equally to the overall qualification grade.

Centres will need to calculate the qualification grade as follows:

- Centre will mark and grade each graded assessment
- The grade achieved by a learner will need to be converted into points as follows:

| Individual assessment grade | Grade points |
|---|---|
| Pass | 4 |
| Merit | 6 |
| Distinction | 8 |

Grade points for each assessment need to be added together and the overall qualification grade determined using the following conversion table:

| Total grade points | Overall qualification grade |
|---|---|
| 20-25 | Pass |
| 26-35 | Merit |
| 36-40 | Distinction |

Overall qualification grades must be entered using **one** of the following overall grading modules on the Walled Garden:

- 901 Pass
- 902 Merit
- 903 Distinction

***Example***

*Learner A has achieved the following:*

| Assessment | Grade achieved | Grade points |
|---|---|---|
| **Mandatory** | | |
| 2680-201 | Merit | 6 |
| 2680-202 | Pass | 4 |
| 2680-203 | Pass | 4 |
| 2680-204 | Pass | 4 |
| **Optional** | | |
| 2680-205 or 206 | Merit | 6 |
| **Total grade points** | | **24** |
| **Overall qualification grade** | | **Pass** |

# 6 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).

# Unit 201 Human Factors in Aviation

| | |
|---|---|
| **Level:** | Level 3 |
| **GLH:** | 40 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS Unit 001 and Level 3 NOS Unit 003 |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to give the learner a comprehensive knowledge of human factors within the aircraft industry to assist them in living and working safely. It is a mandatory subject within the industry. The unit covers the complete syllabus of EASA Module 9 for Category B1 and B2 licences. |
| **Assessment type** | Centre devised multiple choice/short answer tests |

## Learning outcome:

The learner will:

1. Understand why human factors are important in aviation

## Assessment criteria

The learner can:

1.1 explain the term 'Human Factors' and how it is used in aviation
1.2 explain why human factors are important in the aeronautical engineering workplace
1.3 explain categories of human factor that are important to aeronautical engineering staff.

## Range

**AC 1.1**

Meaning of the term
SHEL Model, 'Murphy's Law', anthropometry

**AC 1.2**

Safety of employees, passengers, people on the ground
Safety of assets (e.g. aircraft, equipment)
Long-term health of employees
Efficiency of the organisation

**AC 1.3**
Working environment
Work patterns
Social habits
Work-load
Communication
Employee health

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## Learning outcome

The learner will:

2. Understand features and limitations of human performance

## Assessment criteria

The learner can:

2.1 explain how images are seen and interpreted by humans
2.2 explain how sounds are heard and interpreted by humans
2.3 describe how variations in an individual's sight and hearing can affect their behaviour
2.4 explain limitations of human memory
2.5 describe factors that affect mental attention span
2.6 explain how working in challenging environments presents risks to airworthiness.

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## Range

**AC 2.1**
Main parts of the eye
How each part of the eye reacts to light
Rods and cones
Seeing in high and low light
Peripheral vision
Interpretation by the brain

**AC 2.2**
Main parts of the ear
Vulnerable parts of the ear
Effect of noise – percussive, prolonged high intensity, varying pitch
Noise Induced Hearing Loss (NIHL)
Legal requirements for hearing protection
Correct protection for frequency range

**AC 2.3**
Individually and I combination (such as in older people)
Sight including

- Long and short sight
- Optical illusion including the strobe effect

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- Persistence
- Moving from light area to work in the dark
- Optimum lighting for typical tasks
- Long and short sight
- Use of spectacles and magnifiers

Hearing including

- High and low tone deafness
- Tinnitus
- Hearing damage, poor communication
- Social isolation (at work and at home)

**AC 2.4**

Limitations of human memory includes:
Time from exposure to information
Form that information is in (audio, visual, words, pictures etc.)
Fatigue
Age
Complexity of information
Artificial stimulants/depressants
Types (iconic, echoic, episodic, semantic)

**AC 2.5**

Factors that affect attention span:
Overconfidence
Boredom
Fatigue
Complexity of information
Artificial stimulants/depressants

**AC 2.6**

At height and in confined spaces e.g.
Claustrophobia
Fear of heights
Limited access/egress to a large space
Confined space
Specific tasks (e.g. inspections on fuselage crown or in equipment bays)
Low concentration
Rushing the task
Cutting corners
Poor vision

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## Learning outcome

The learner will:

3. Understand aspects of social psychology

## Assessment criteria

The learner can:

3.1 explain areas of individual and group responsibility in aircraft engineering environments
3.2 explain motivation and de-motivation
3.3 explain 'peer pressure'
3.4 explain company culture
3.5 explain the concepts of team working
3.6 identify the primary responsibilities of engineering managers and supervisors
3.7 discuss the basic concept of leadership.

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## Range

**AC 3.1**

Outline of a typical organisation (must include maintenance)
Typical roles and responsibilities
Individuals and groups or teams
Individual responsibility when working alone and within a team
Group or team responsibilities
Overview of group and inter-group dynamics e.g. rivalry, polarisation, 'social loafing'

**AC 3.2** To include an overview of

Fulfilling individual needs
Maslow's Hierarchy of Needs
Individual motivation
Motivation by management
Characteristics of motivation and de-motivation
How they are affected by internal and external factors (e.g. Management decisions, personal situation)

**AC 3.3**

Conformity and non-conformity
Pressure from co-workers, not management
Advice and pressure from more experienced colleagues to adopt particular work practices
How it can affect performance of maintenance tasks

**AC 3.4**

Overview of different types of culture (e.g. safety, organisational, shift, team, social)
More detailed knowledge of safety culture and the individual
How company culture can compromise best working practices

**AC 3.5**

What is a team?
Advantages and disadvantages of team working
Team identity

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Working with other teams
Ownership of tasks
Communication
Co-operation
Mutual support

**AC 3.6**

Difference between management and supervisor roles

What should an employee expect from a supervisor? (e.g. motivation, support, guidance)

Engineering organisations (e.g. Part 145, military maintenance organisation)

**AC 3.7**

What is a leader?

The basic characteristics of a leader.

How and when any individual might provide leadership (e.g. passing on knowledge and experience to colleagues, organising and directing group tasks, inspection and reporting on the work of others)

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## Learning outcome

The learner will:

4. Understand personal factors that affect human performance

## Assessment criteria

The learner can:

4.1 explain effects of personal health and fitness on work performance
4.2 identify types and sources of stress
4.3 explain how stress can affect individual performance at work
4.4 explain effects of setting time deadlines on individual work performance
4.5 explain the concept of work overload and underload
4.6 explain the effects of shift work on sleep and fatigue
4.7 explain the effects of alcohol, medication and substance abuse
4.8 explain the personal legal obligations of individuals in the aviation industry.

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## Range

**AC 4.1**

Legal requirement for individual physical and mental fitness while at work

Types of medical condition that might affect work such as

- Minor illness (e.g. cold, 'flu, sickness etc.)
- Major physical illness (e.g. heart attack, stroke, cancer etc.)
- Mental illness (e.g. depression etc.)
- Minor physical injury (e.g. sprained wrist, pulled muscle, cramp etc.)
- Major physical injury (e.g. broken bones, lacerations etc.)

- Effects of toxins and other substances (e.g. carbon monoxide, alcohol, drugs etc.)
- Gradual deterioration in physical condition

**AC 4.2**

Define 'stress' (eustress, distress, acute stress, chronic stress, hypo stress, hyper stress)
Types of stress:

- Acute and chronic stress
- Signs of stress (physical, health, behaviour, cognitive, other)

Sources of stress:

- Home (e.g. family illness, divorce etc.)
- Work (organisational, task related)

**AC 4.3**

Lack of Motivation
Difficulty in concentrating
Defensiveness
Interpersonal conflicts

**AC 4.4**

Actual, perceived and self-imposed deadlines
Effects of time pressure and deadlines
Managing time pressure and deadlines

**AC 4.5**

Definition of work overload and underload
Results of work overload and underload
Factors determining workload
Workload management

**AC 4.6**

What is sleep?
Five stages of sleep
Circadian rhythms
Fatigue (causes, symptoms)
Advantages and disadvantages of shift work
Working at night
Types of shift pattern

**AC 4.7**

Effects of alcohol
Removal of alcohol from the blood
Effects while fatigued, hungry or combined with medication
Types, effects, short and long-term consequences of abuse of:

- Alcohol
- Prescription medication
- Over-the-counter medication

- Illegal drugs
- Effects on individual work performance

**AC 4.8**
Alcohol limits and legal requirements for aircraft engineers
CAP 562/AN47
Transport legislation/AN45
Health and Safety legislation

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## Learning outcome

The learner will:

5. Understand how physical aspects of the working environment affect human performance

## Assessment criteria

The learner can:

5.1 explain effects of noise on individuals and groups
5.2 explain effects of fumes on individual performance
5.3 explain effects of varying illumination on an individual performance
5.4 explain effects of variations in climate on an individual performance
5.5 explain effects of exposure to constant motion and vibration while working
5.6 explain the three components of the working environment and the effect of layout on individual performance.

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## Range

**AC 5.1** effects on:
Concentration
Communication

**AC 5.2** effects on:
Concentration
Communication
Longer term effects
Safe oxygen levels

**AC 5.3**
Ability to see detail
Moving between areas of different illumination, including well-lit hangar and night flight line
Strobe effect and propellers

**AC 5.4**
Cold/wet, warm/dry, hot/humid environments

**AC 5.5**
Working at height on scissor platforms and cherry picker
Unsteady platforms
Use of rotating or percussive tools
Vibration White Finger (VWF)

**AC 5.6**
The three components of a working environment as taken directly from the EASA Syllabus and itemised in CAA CAP715:

- Social Environment e.g. Individual & team responsibilities, motivation, culture, management
- Physical Environment e.g. Noise, illumination, temperature, confined spaces, workplace layout, fumes, cleanliness
- Tasks: Physical work, repetitive tasks

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## Learning outcome

The learner will:

6. Understand how categories of tasks can affect human performance

## Assessment criteria

The learner can:

6.1 explain the importance of planning the execution of a task
6.2 explain effects of physically demanding work on individual performance
6.3 explain effects of repetitive tasks on individual performance
6.4 explain aspects of visual inspection
6.5 explain aspects of working on complex systems.

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## Range

**AC 6.1**
Defining the task
Defining the resources
Personal skills and proficiency
Information

**AC 6.2**
Health and physical condition, effects of ageing
Work environment
Physical effort
Effects of ageing

**AC 6.3**
Ignoring manuals, job cards etc.
Complacency

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Making assumptions

**AC 6.4**
Importance of good eyesight
Knowledge of the inspection area
Illumination
Concentration
Systematic search

**AC 6.5**
Simple system: transparent to the engineer
Complex system: opaque to the engineer
Clear understanding of the purpose of the system
System-specific training
Pooling of knowledge and skills
Clear and comprehensive information and guidance

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## Learning outcome

The learner will:

7. Understand communication in the workplace

## Assessment criteria

The learner can:

7.1 explain the importance of good communication in the workplace
7.2 explain the importance of accurate work logging
7.3 explain modes of communication between individuals and teams
7.4 explain the importance of maintaining individual professional currency
7.5 explain the importance of information dissemination.

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## Range

**AC 7.1**
Within and between groups
Prevention of accidents
Maintaining good working relations
Organisational efficiency

**AC 7.2**
Formal work logging
Shift logging
Shift handover
Task staging
Duplicate
Inspection
Stage sheets/check

**AC 7.3**
Verbal
Written
Body language
Workplace social culture
Communication between all levels of an organisation

**AC 7.4**
Refresher training
Reading briefing material
Notices and amendments to maintenance procedures
Reading professional journals
Undertaking up-skilling and further licence training

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## Learning outcome

The learner will:

8. Understand the causes of human error

## Assessment criteria

The learner can:

8.1 explain the error models and theories used in aeronautical engineering
8.2 explain types of error that occur during work on aircraft
8.3 describe the error-incident-accident chain
8.4 describe methods of managing and avoiding errors.

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## Range

**AC 8.1**
Induced
Variable
Reversible/irreversible
Slips, lapses and mistakes
The 'Swiss Cheese Model'

**AC 8.2**
Complacency
Environmental capture
Rule-based errors
Violations
Individual practices and habits
Errors associated with visual inspection
Latent/active errors

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**AC 8.3**
Self-discipline
Safety Management System
Anonymous and blame-free reporting
Training
Logging and analysis

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## Learning outcome

The learner will:

9. Understand the human factor aspects of aircraft incidents

## Assessment criteria

The learner can:

9.1 analyse an incident report to extract information
9.2 identify a sequence of events from a narrative report
9.3 identify human factors contributing to an incident
9.4 draw conclusions from incident data.

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## Range

**AC 9.1**
Using extracts from an actual report or a realistic example
Filter out irrelevant detail

**AC 9.2**
How, why, when where, who
Use presentation aids such as flow diagrams
Identify what should have been done

**AC 9.3**
Analyse the information and identify contributing factors
Including where possible:
Personal behaviour
Environmental conditions
Management
Organisational culture
Using e.g. Maintenance Engineering Decision Aid (MEDA), Maintenance Error Management System (MEMS)

**AC 9.4** To include brief details of:
Environment
Personal issues
Organisation
Nature and mix of allocated tasks

Recommendations for preventative action

# Unit 201 Human Factors in Aviation

Supporting Information

## *Guidance*

The teaching of the knowledge content of this unit should be referenced to the Civil Aviation Authority (CAA) publication CAP715 or its military equivalents.

This unit contains the complete syllabus of EASA 2042/2003 part 66 Basic Knowledge Requirements Module 9 – Human Factors. The equivalent EASA knowledge level indicators for each of the above outcomes are listed below with an abridged description of each level:

Level 1 – "A familiarisation with the principal elements of the subject"

Level 2 – "A general knowledge of the theoretical and practical aspects of the subject"

Level 3 – "A detailed knowledge of the theoretical and practical aspects of the subject"

Outcome 1: EASA Level 2
Outcome 2: EASA Level 2
Outcome 3: EASA Level 1
Outcome 4: EASA Level 2
Outcome 5: EASA Level 1
Outcome 6: EASA Level 1
Outcome 7: EASA Level 2
Outcome 8: EASA Level 2
Outcome 9: EASA Level 2

Note: the above list equates to the EASA requirement for category B licences and is for guidance only. It is primarily for those learners wishing to sit the CAA examination in this subject.

# Unit 202 Fundamentals of Aircraft Maintenance Practices and Policy

| | |
|---|---|
| **Level:** | Level 2 |
| **GLH:** | 35 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS Units 001, 003. |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to provide learners with a detailed understanding of aircraft maintenance practices and policies. |
| **Assessment type** | Centre devised multiple choice/short answer tests |

## Learning outcome:

The learner will:

1. Understand maintenance procedures

## Assessment criteria

The learner can:

1.1 explain the structure of maintenance lines
1.2 explain preventative and corrective maintenance
1.3 explain non-routine maintenance procedures.

## Range

**AC 1.1**

Define the term maintenance

Explain the depths of aircraft maintenance including

- Forward and depth support

**AC 1.2**

Explanation of maintenance cycles including

- Flight, Primary, Minor and Major maintenance

Preventative maintenance including

- Servicing, Scheduled, Condition based,

Corrective maintenance including

- Inspect and Repair as Necessary (IRAN)

**AC 1.3**
Out-of-phase maintenance
Servicing instructions
Special technical instructions
Urgent technical instructions
Routine technical instructions
Modifications
Aviation local technical instructions

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## Learning outcome

The learner will:

2. Understand the requirements of environmental protection and health and safety legislation

## Assessment criteria

The learner can:

2.1 explain requirements of environmental legislation as applicable to engineering environments
2.2 explain requirements of health and safety legislation.

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## Range

**AC 2.1**
Define environmental protection
Purpose and responsibilities of individuals
Chain of command
Identify hazards associated with spillages and pollution
Actions to prevent spillages and pollution
Action in event of spillages and pollution
Procedures for dealing with typical Dangerous Engineering Substances (DES)

**AC 2.2**
The Health and Safety at Work Act 1974 (HASWA) and its regulations including:

- The responsibilities of employers and employees
- Chain of command

Implementation of HASAW including:

- Safety policy statement
- Station H&S organisation
- Responsibilities of individuals dealing with Control of Substances Hazardous to Health (COSHH)
- Different types and correct use of PPE

Typical Dangerous Engineering Substances (DES) including:

- Typical symbols and signs associated with DES
- First Aid for typical DES
- Action to be taken by individuals whenever danger is perceived

Working at Height (WAH) Regulations including:

- Definitions, responsibilities and precautions
- Safety equipment associated with WAH: responsibilities of people concerned, correct usage

Working in confined spaces

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## Learning outcome

The learner will:

3. Understand the purpose of quality management systems

## Assessment criteria

The learner can:

3.1 explain the purpose of quality systems
3.2 describe operation of quality systems.

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## Range

**AC 3.1**

With particular reference to the primary organisation or associated organisation including:

- RN, RAF, MOD contractor organisation that is holder of Air Operators Certificate,
- Authorised Part M organisation
- Supplier
- Auditing body supplier
- Auditing body

Need for a quality system
Aim of quality management systems

**AC 3.2**

Within the primary organisation or associated organisation including:
Typical responsibilities
Techniques and methods
Implications of quality failures
Corrective action
Quality audits

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## Learning outcome

The learner will:

4. Understand the need for the prevention of Foreign Object Damage (FOD)

## Assessment criteria

The learner can:

4.1 explain causes of FOD
4.2 describe effects of FOD
4.3 describe methods to prevent FOD.

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## Range

**AC 4.1**
Definition
Typical causes

**AC 4.2**
Effect on aircraft including:
Damage to engines and airframes, expensive to repair and replace
Potential for personal injury loss of life

**AC 4.3**
Prevention methods including:
Responsibilities of individuals
Promotion of FOD prevention culture including:

- Continuous positive attitude
- Work operational procedures that promote FOD prevention such as:
  - Tool control
  - Maintenance & personal debris
  - Aircraft and workplace husbandry
  - Regular FOD sweeps
  - Sufficient, and accessible, waste receptacles

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## Learning outcome

The learner will:

5. Understand responsibilities of individuals for flight safety

## Assessment criteria

The learner can:

5.1 explain the meaning of flight safety
5.2 explain individuals' responsibilities for maintaining flight safety.

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## Range

**AC 5.1**
Definition and aims of flight safety
The principle of a 'Just culture'/'No blame culture'

**AC 5.2**

Responsibilities of individuals
Actions to report flight safety accidents/incidents
Personal attitude within a flight safety culture
Identify, flight safety posters, pamphlets and magazines
Identify aircraft hazard warning symbols
Identify typical hazards, and safety precautions to be observed when moving around aircraft e.g.

- Taxing aircraft propellers and rotors
- Jet engine exhausts
- Aircraft Assisted Escape Systems (AAES)
- Armed aircraft
- Moving surfaces
- Movement of ground equipment including baggage trains, replenishment wagons and waste lorries
- Movement of passengers embarking/disembarking
- High vapour areas such as: refuelling
- FOD

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## Learning outcome

The learner will:

6. Understand aircraft Usage Monitoring Systems (UMS)

## Assessment criteria

The learner can:

6.1 explain the need for Usage Monitoring Systems
6.2 describe the operation of Usage Monitoring Systems.

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## Range

**AC 6.1**

Definition of Life Measuring Unit
Purpose of Usage Monitoring Systems
Airworthiness

**AC 6.2**

Data types fatigue monitoring
Effects of inaccurate or corrupt data
Techniques for monitoring wear debris
Magnetic chip detectors

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## Learning outcome

The learner will:

7. Understand fire safety precautions

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## Assessment criteria

The learner can:

7.1 describe sources and locations of fire associated with aircraft
7.2 explain precautions to prevent and control fire.

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## Range

**AC 7.1**

Typical causes of fire including

- Naked flames
- Static electricity
- Spark generators e.g. steel tools, metal-studded footwear
- Substances e.g. Flammable liquids
- Compressed gases e.g. gaseous and liquid oxygen

Possible locations of fire including

- Petroleum, oils and lubricants (POL) storage areas
- High vapour areas such as fuel tanks
- Vicinity of spillages such as fuel leaks
- Refuelling points such as flight line, outside hangars

**AC 7.2**

Fire precautions e.g. prohibition of smoking, naked flame
Typical fire-safe working practices e.g. work procedures, workplace husbandry
Actions to take in the event of a fire e.g. raise alarm, evacuation
Methods of reporting a fire e.g. standard phone, emergency phone, radio

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## Learning outcome

The learner will:

8. Understand safety precautions for corrosive fluids

## Assessment criteria

The learner can:

8.1 explain the term 'corrosive'
8.2 explain the dangers of working with corrosive fluids
8.3 explain safety precautions/procedures for working with corrosive fluids.

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## Range

**AC 8.2**

Examples of different types of corrosive fluids e.g. acids, alkalis, mercury, cleaning and etching fluids
The requirements for use
Where they might to be found e.g. cargo, cleaning kits, repair kits
Associated dangers e.g. mercury on aluminium, battery acid in contact with structure

**AC 8.3**
Safety precautions/procedures for dealing with corrosive chemicals:

- Detection
- PPE
- Exposure e.g. inhalation
- Aircraft surface protection
- Disposal of waste products
- Immediate response to corrosive material spills

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## Learning outcome

The learner will:

9. Understand hangar and workshop safety precautions

## Assessment criteria

The learner can:

9.1 describe engineering hazards present in a hangar or workshop
9.2 describe hazards when working at height
9.3 explain the safe use of maintenance steps and access platforms
9.4 explain the safe use of support equipment.

---

## Range

**AC 9.1**
Prevention of explosive ignition
Noise hazards
Electrical hazards
Pressurized gases
Manual handling
Slips, trips and falls

**AC 9.2**
Responsibilities of individuals
Checking barriers and kick boards
Prevention of falling objects
Use and maintenance of safety harnesses
Fall arrest devices

**AC 9.3**
Selection process
Typical maintenance platforms and ladders
Pre-use inspection
Safe-use procedures
Storage

**AC 9.4**
Pre-use inspection
Power supplies and connection
Safety precautions associated with their use e.g. usage limitations

## Learning outcome

The learner will:

10. Understand tool control methods

## Assessment criteria

The learner can:

10.1 explain the reasons for controlling the use of tools and equipment
10.2 explain tool control methods.

## Range

**AC 10.1**
Implications of resourcing and planning
Dangers of FOD

**AC 10.2**
Responsibilities and procedures
Control methods such as:

- Tool stores, composite tool kits
- Tool tally systems
- Shadow boards
- RFIS and barcode scanner tool cabinets
- Continuous positive attitude

# Unit 202 Fundamentals of Aircraft Maintenance Practices and Policy

Supporting Information

## *Guidance*

This unit has been produced to meet aviation training requirements and the learner will be able to show a comprehensive knowledge of the policies and procedures used in the maintenance of aircraft.

Assessment will be designed to demonstrate underpinning knowledge of relevant documentation.

# Unit 203 Fundamentals of Aircraft Documentation

| | |
|---|---|
| **Level:** | Level 2 |
| **GLH:** | 25 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS Unit 002. |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to give the learner a detailed understanding of Aircraft Documentation |
| **Assessment type** | Centre devised multiple choice/short answer tests |

## Learning outcome:

The learner will:

1. Understand aircraft documentation

## Assessment criteria

The learner can:

1.1 describe the documentation system for aircraft
1.2 describe information contained in an aircraft document system,
1.3 explain definitions and abbreviations contained in an aircraft document system
1.4 describe systems for supplying aircraft spares and equipment
1.5 explain how to identify items of technical equipment from aircraft documentation

## Range

**AC 1.1**

The need for an aircraft document system
Layout of a typical document
Available formats e.g. paper, CD ROM, Microfiche
Maintenance information contained within a typical documentation set e.g. Regulatory Articles, Air Publications (Topic 1 to 6 and 10), approved data
Amendment action and recording

**AC 1.2**

Documentation systems could include (military) Aircraft Topics 1 and 5A2 or (civilian) Aircraft maintenance manuals/approved data and maintenance management systems

Information including:

General and technical information e.g. Topic 1

Safety and servicing notes, e.g. 5A2

Aircraft maintenance manuals/approved data (including electronic systems) and maintenance management systems

Typical written and graphical information e.g. equipment schedules and scales, illustrated parts catalogue

Structure such as: Repair and conditioning instructions e.g. Topic 6

Block schematics, wiring diagrams e.g. Topic 10

Maintenance procedures

**AC 1.3**

Definitions and abbreviations used for MAA-02 or5A2 (Safety and Servicing Notes) or Aircraft maintenance manuals/approved data and maintenance management systems

Correct terminology

Glossary of terms e.g. check, disconnect, replace, operate etc.

Define serviceable, unserviceable and qualified/competent person common definitions e.g. authorisations, licenced

**AC 1.4**

Typical supply organisation

The basic function of a typical supply system

Typical procedures for obtaining spares, material and equipment

Information and process media (e.g. paper, IT systems)

**AC 1.5**

Explain by demonstration how to identify and extract information from the Topic 3 or Aircraft maintenance manuals/approved data (including electronic systems) and maintenance management systems

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## Learning outcome

The learner will:

2. Understand documentation and quality control in aircraft maintenance

## Assessment criteria

The learner can:

2.1 explain the need for documentation to record aircraft maintenance tasks
2.2 explain the relative responsibilities in the maintenance organisational structure
2.3 explain the function and responsibilities of a producer (tradesperson).

## Range

**AC 2.1**

Maintenance history
Life limited components
Recording who did the work
Need for legally binding declaration of actions taken by individuals

**AC 2.2**

Legal implications of signatures
Levels of authority and/or licencing
Role of tradesperson
Role of supervisor
Role of management

**AC 2.3**

Working in accordance with e.g. APs, Aircraft maintenance manuals/approved data (including electronic systems) and maintenance management systems, maintenance procedures
Trade practices
Quality of work
Loose article checks
Tool control
Documentation

## Learning outcome

The learner will:

3. Understand aircraft maintenance work recording documentation

## Assessment criteria

The learner can:

3.1 explain electronic recording of aircraft maintenance data.
3.2 explain the function of an Aircraft maintenance form cover e.g. F700C or Technical log (Tech Log) system, e.g. AutoLoG
3.3 explain the function of a maintenance work order e.g. 707B or maintenance recording page on the Tech log
3.4 explain the actions required to place an aircraft unserviceable
3.5 explain the documentation required to record aircraft flight servicing.

## Range

**AC 3.1**

Requirement for electronic recording systems
Basic structure and operation of aircraft maintenance data e.g. auto log, asset tracking such as: Logistical IT System (LITS)

Terminology
Procedures
Access
Updating systems
Security e.g. usernames and passwords, protection of software and data accuracy

**AC 3.2**
Current statement of the condition of the aircraft
Record of aircraft and equipment configuration
Placing an aircraft unserviceable
Accurate and timely reporting of faults
Brief explanation of the task
Technical history of the aircraft/equipment
Controlled forms

**AC 3.3**
Detail, record and certify all work done on the aircraft
Details of components replaced
Time spent on task
Continuation sheets
Signature responsibilities
Levels of authority
Countersignature

**AC 3.4**
Responsibilities such as: tradesperson, authoriser, supervisor, manager, certifying engineer
Legibility: pen, colour, writing
Job Number e.g. Originators Reference Number (ORN), Serial Number of Work (SNOW)
Form MOD F707A or Tech Log
Authorisation to clear entries

**AC 3.5**
Purpose of documentation e.g. to record all flight servicing
Responsibility for correct completion
Flight servicing schedule
Form MOD F705 or Tech Log (Flight Servicing Certificate)
Fault reporting

# Unit 203 Fundamentals of Aircraft Documentation

Supporting Information

## *Guidance*

This unit aims to give the learner a comprehensive knowledge of aircraft documentation from the point of view of a producer in an aircraft operational/maintenance environment.

This will allow the learner to study and develop an understanding of the documentation and systems prior to a practical assessment in the workplace.

# Unit 204 Flight Line Maintenance of Aircraft

| | |
|---|---|
| **Level:** | Level 2 |
| **GLH:** | 40 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS 006 |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to provide learners with a detailed understanding of aircraft flight line maintenance and associated practical tasks |

**Assessment type** Centre devised multiple choice/short answer tests

## Learning outcome:

The learner will:

1. Know hydraulic oil replenishment

## Assessment criteria

The learner can:

1.1 state the need to control the use of replenishment equipment
1.2 describe pre-use checks preparations for replenishment equipment.

## Range

**AC 1.1**

Storage and labelling

How to operate approved replenishment equipment such as Risbridger replenishment gun including:

- Restriction to a single type of fluid
- Fluid type
- Identification tags
- Contaminated fluid
- Reporting action in suspected contamination incidents

**AC 1.2**

Date checks

Potential of cross contamination

How to prepare for use, approved replenishment equipment such as Risbridger gun including:

- Blanking caps
- Cleanliness
- Piston locking pins
- Fitment to fluid container
- Fluid quantity dispensed

## Learning outcome

The learner will:

2. Know the different types of aircraft flight servicing

## Assessment criteria

The learner can:

2.1 identify different types of aircraft flight servicing
2.2 understand when and why flight servicing's are carried out and their validity once completed
2.3 describe additional tasks commonly undertaken with a flight servicing.

## Range

**AC 2.1**

Operational servicing such as:
Before Flight (BF), Turn Round (TR), After Flight (AF)
Non Scheduled Flight servicing such as:
Operational Readiness (ORS), Operation Re-arm (ORA), Post Taxi Recovery (PTR), Replenishment Servicing (RS), Essential Check (EC).

**AC 2.2**

Operational servicing e.g. Before Flight (BF), Turn Round (TR), After Flight (AF)
Non-Scheduled Flight servicing e.g. Operational Readiness (ORS), Operation Re-arm (ORA), Post Taxi Recovery (PTR), Replenishment Servicing (RS), Essential Check (EC).

**AC 2.3**

Ice and snow operations
Role/ Role equipment change

## Learning outcome

The learner will:

3. Know gas turbine engine and gearbox oil replenishment

## Assessment criteria

The learner can:

3.1 state the purpose of the engine and gearbox oil system and components
3.2 state where information of oil specification can be found

3.3 describe safety precautions necessary when using synthetic oils
3.4 describe methods of checking and replenishing oil levels
3.5 describe typical aircraft documentation for recording oil replenishment.

## Range

**AC 3.1**

Lubrication and cooling
Adequate supply of oil
Oil tank
Sump system
Minimum oil level

**AC 3.2**

Information sources including:

- Air publication Topic 1 or systems such as Trilogy for Typhoon
- Aircraft F700
- Tech Logs
- Aircraft Maintenance Manuals – paper based or electronic
- NATO symbol for replenishment point/Label next to replenishment points

**AC 3.3**

Correct oil grade
Cleanliness
Blanking caps
Oil caps fitted correctly
Personal protection; barrier cream, gloves, goggles
Spillages

**AC 3.4**

Minimum oil level
Sight glass, dipstick, contents indicator, drop stick
Time oil levels checked after shutdown
Aircraft Topic 1 or Aircraft Maintenance Manuals – paper based or electronic
COSHH
Equipment pre-use checks
Oil leaks

**AC 3.5**

Tech Logs or Aircraft Maintenance Manuals – paper based or electronic
Procedure for excess use of engine oil
Loss or gain in oil level
Reporting action

## Learning outcome

The learner will:

4. Know aircraft refuelling and defuelling

## Assessment criteria

The learner can:

4.1 state the hazards associated with engine fuels
4.2 list types of fuels available
4.3 describe methods of refuelling/defuelling aircraft
4.4 describe safety precautions applied during refuelling/defuelling operations
4.5 describe aircraft fuel contents checks
4.6 describe the documentation process following refuelling/defuelling operations.

## Range

**AC 4.1**

Fuel vapour
Type of fuel
Fuel/air concentration
Ingestion
Contact

**AC 4.2**

Military:

- 100LL AVGAS – NATO No F 18
- AVTUR FSII - NATO No F34
- AVTAG FSII – NATO No F40

Civilian:

- Jet A or Jet A1 fuel
- Jet B (for cold weather)

**AC 4.3**

Open line/gravity refuelling
Pressure refuelling
Gravity and pressure hose units
Fuel drain points
Aircraft Topic 1 or Aircraft Maintenance Manuals – paper based or electronic
Fuel identification and earth points
Fuel control panel

**AC 4.4**
Correct grade of fuel
Fuel bowser water sediment check
Clean refuelling equipment
Earthing: aircraft and bowser in correct sequence
No naked flame, starting ground equipment
Sequence of filling aircraft tanks

**AC 4.5**
Aircraft fuel contents gauges
Fuel quantity and weight
Specific gravity

**AC 4.6**
Fuel Certificate e.g. F705 or Tech Log
Fuel discrepancies

## Learning outcome

The learner will:

5. Understand hydraulic accumulator re-charging

## Assessment criteria

The learner can:

5.1 explain actions prior to checking nitrogen pressure
5.2 explain the effect of adiabatic heating on the charging pressure
5.3 explain the process to recharge accumulator gas pressure on a typical aircraft.

## Range

**AC 5.1**
Hydraulic pressure dissipation
Accumulator base pressure
Inflation adapter e.g. Mark 6A
Pre-use checks on inflation adapter
Safety precautions
PPE

**AC 5.2**
Heat build-up in compressed gases
Thermal expansion of gas
Inaccurate reading of gas pressure
Gas charging trolley pre-use checks, correct operation

**AC 5.3**
Inflation adapter: pre-use checks, correct operation
Gas charging trolley, pre-use checks, correct operation
Purge hose
Slow charging to prevent thermal expansion

## Learning outcome

The learner will:

6. Understand the visual checking of aircraft tyres and tyre pressures

## Assessment criteria

The learner can:

6.1 explain why aircraft tyres must be maintained at the correct pressure
6.2 describe the correct procedures for checking tyre pressures
6.3 explain the purpose of visual checks on aircraft wheel and tyre assemblies

## Range

**AC 6.1**
Keep tyre wear and damage to minimum
Air Publication Topics 1, 5 and Flight Maintenance Schedule or Aircraft Maintenance Manuals – paper based or electronic and (Some) Tech Logs

**AC 6.2**
Tyre pressures to be checked when tyres are cold
Visual inspection of tyre and wheel before start (see AC 6.3)
Valve cap
Tyre pressure gauge: ensure calibration in date
Charging equipment (nitrogen bottle)

**AC 6.3**
Visual checks on tyre regions: crown, shoulder, sidewall, bead
Embedded objects
Cuts in rubber and cords
Bulges and blisters
Tyre creep
Skid damage
Scalding
Contamination
Ageing
Excess wear

Visual checks on wheels:
Impact damage

Cracks
Corrosion
Missing locking devices
Leaking fusible plugs

## Learning outcome

The learner will:

7. Understand aircraft flight servicing procedures

## Assessment criteria

The learner can:

7.1 Explain procedures for prepare replenishment gun for use
7.2 Outline methods of replenishing hydraulic fluid
7.3 State how to check and replenishment of a windscreen wash system
7.4 Explain procedures for gas turbine engine and gearbox oil replenishment
7.5 Explain refueling/defueling operations on aircraft
7.6 State the types of checks carried out on wheel and tyre assemblies.

## Range

**AC 7.1**

Pre-use checks on the replenishment gun e.g. Risbridger
Blanking caps
Cleanliness
Piston locking pins
Check fluid type
Fitment to fluid container

**AC 7.2**

Using approved replenishment equipment e.g. Risbridger
Appropriate safety precautions e.g. PPE, cleanliness, check correct fluid
Connection of replenishment equipment
Replenishment level
Disconnection of replenishment equipment
Documentation completion

**AC 7.3**

Appropriate safety precautions e.g. PPE, cleanliness, check correct fluid
Replenishment level
Documentation completion

**AC 7.4**

Information source e.g. Aircraft topic 1 and Topic 12 or Aircraft Maintenance Manuals – paper based or electronic

Safety:
Personal protection; barrier cream, gloves, goggles
COSHH procedures
Confirm correct oil grade
Preserve cleanliness
Deal with spillages
Minimum oil level
Replenishment:
Equipment pre-use checks e.g. Risbridger gun
Check and note oil leaks
Measure contents using e.g. sight glass, dipstick, contents indicator, drop stick
Note the time oil levels checked after shutdown
Remove blanking caps as necessary
Replenish
Remove replenishment equipment e.g. Risbridger gun
Fit blanking caps as necessary
Correctly fit aircraft engine oil replenishment caps
Refit access panels
Complete documentation

**AC 7.5**
Safety e.g. No naked flame, Earthing:
Aircraft and bowser in correct sequence
No starting ground equipment or cycling of aircraft power
Confirm correct grade of fuel
Fuel bowser water sediment check
Aircraft water sediment check
Clean refuelling equipment
Sequence of filling aircraft tanks

Refuel and/or defuel, open line or pressure e.g.
Calculate existing load, fuel to be uplifted/removed
Confirm correct fuel type
Earth aircraft and bowser in correct sequence
Connect pressure hose or access gravity fuelling point
Upload/download fuel
Move fuel to correct tanks
Remove fuelling connection
Remove earthing
Complete Fuel Certificate e.g. F705
Report fuel deficiencies

**AC 7.6**
Pressure check
Visual check of wheels and tyres

# Unit 204 Flight Line Maintenance of Aircraft

Supporting Information

## *Guidance*

This unit has been produced to meet aviation training requirements.

On completion of this unit the learner will be able to show a comprehensive knowledge of, maintenance procedures and the flight line maintenance of aircraft.

# Unit 205 Fundamentals of Aircraft Construction

| | |
|---|---|
| **Level:** | Level 2 |
| **GLH:** | 40 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS Units 006, 007. |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to give the learner a basic understanding of the construction of airframes and their associated systems. |
| **Assessment type** | Centre devised multiple choice/short answer tests |

## Learning outcome:

The learner will:

1. Know the general concepts of airframe structures

## Assessment criteria

The learner can:

1.1 describe the need for structural strength
1.2 describe the construction methods used for major aircraft components
1.3 describe the construction and operation of entry and exit systems
1.4 describe the use of adhesives and sealing compounds in aircraft construction.

## Range

**AC 1.1**
Airframe design
Airworthiness
Types of loads
Drains and ventilation

**AC 1.2**
Major component construction including:
Mainplanes, tail unit, flying controls and undercarriage
Anti-corrosion protection

Simple composite construction methods

**AC 1.3**
Entry and exit systems
Doors
Emergency exits
Windscreens and windows
Canopies

**AC 1.4**
Use of adhesives and sealing compounds
Faying surfaces
Waterproofing
Weather proofing
Sealing integral fuel tanks
Prevent ingress of fumes
Typical sealing and jointing compounds e.g.
Chromate jointing compounds
Thiokol based compounds, sealants
Safety precautions

## Learning outcome

The learner will:

2. Understand structural husbandry procedures for aircraft

## Assessment criteria

The learner can:

2.1 explain the need for structural husbandry
2.2 describe the warning signs and decals used on aircraft
2.3 explain the importance of reporting incidents involving composite aircraft structure
2.4 describe actions to be taken on finding damage on aircraft.

## Range

**AC 2.1**
Need for structural husbandry
Aircraft safety
Prevention of damage
Reduced fatigue life
Cost
Loss of aircraft use
Aircraft washing and cleaning

**AC 2.2**
Warning signs typical examples e.g.
AAES and/or cut here for escape/emergency access
No step
Hand holds
Footsteps
Maintenance symbols
Fluid codes
Aircraft nationality and identity code
Logos

**AC 2.3**
Importance of not reporting incidents
Consequences of not addressing hidden damage
Barely Visible Impact Damage (BVID)
Non-visible impact damage (composite material)

**AC 2.4**
Reporting procedures
Documentation

---

## Learning outcome

The learner will:

3. Understand types of locking and fastening devices used in aircraft

## Assessment criteria

The learner can:

3.1 explain the purpose of locking and fastening devices
3.2 describe typical locking and fastening devices used on an aircraft
3.3 describe checks required for locking and fastening devices
3.4 describe flight safety implications of using unsuitable locking and fastening devices.

---

## Range

**AC 3.1**
Purpose:
Securing components, access panels etc.
Preserve structural integrity
Safety implications

**AC 3.2**
Locking and fastening devices:
Screws

Quick release fasteners
Latching mechanisms
Pins and clips
Wire locking
Tell-tale wire

**AC 3.3**
Examination of typical devices for:
Correct fitment
Correct engagement
Wear
Damage
Being flush

**AC 3.4**
Flight safety implications of incorrect type, damage or wear e.g.
Loss of life or personal injury
Aircraft loss
Engine damage
Airframe damage
Panel loss
Loss of fluids

---

## Learning outcome

The learner will:

4. Know the operation of aircraft hydraulic power systems

## Assessment criteria

The learner can:

4.1 describe the basic concept of a hydraulic actuation
4.2 describe the typical layout of an aircraft hydraulic power system
4.3 describe basic properties of a hydraulic fluid
4.4 describe basic indication and warning systems used in hydraulic systems.

---

## Range

**AC 4.1**
Concept of hydraulic actuation:
Fluid pressure
Force
Area
Fluid flow

**AC 4.2**
A typical layout:
Hydraulic components e.g.
Reservoir, pumps, filters, jacks and actuators, control valves, accumulators, pipelines
Interface with other hydraulically powered systems

**AC 4.3**
Properties of hydraulic fluid:
Low compressibility
Low freezing point
Lubrication
Low foaming
Good heat transfer
Compatibility with seals

**AC 4.4**
Indication and warning systems:
Pressure gauges
Pressure switches
Pressure transducers
Warning panel indication
Attention getters

---

## Learning outcome

The learner will:

5. Know the operation of aircraft flight control systems

## Assessment criteria

The learner can:

5.1 describe primary flying controls used on aircraft
5.2 describe the meaning of the term 'instinctive control'
5.3 describe methods of moving flying controls.

---

## Range

**AC 5.1**
Flying controls:
Ailerons – roll
Elevators – pitch
Rudder – yaw
Spoilers – increase/decrease lift, roll
All moving tailplane – pitch
Canards (foreplanes) – pitch

Flaps/slats – increase lift
Airbrakes – increase drag

**AC 5.2**
Define instinctive control e.g. pilot-initiated control movements in response to a disturbance or a requirement for a change in aircraft attitude'
Examples:
Aircraft moves in direction of control column
Control column-left/right: aircraft rolls left/right
Control column-back/forwards: aircraft pitches nose up/pitches nose down
Rudder pedal- left pedal forwards: aircraft nose yaws left
Rudder pedal- right pedal forwards: aircraft nose yaws right
Trim control
Automatic flight control

**AC 5.3**
Manual
Hydraulic
Pneumatic
Electric
Fly-by-wire.

## Learning outcome

The learner will:

6. Know aircraft landing gear systems

## Assessment criteria

The learner can:

6.1 describe configurations of aircraft landing gear systems
6.2 describe components of aircraft landing gear systems
6.3 describe how aircraft landing gear systems absorb loads
6.4 describe how landing gear systems are retracted and extended
6.5 describe undercarriage steering systems
6.6 describe wheels and braking systems
6.7 describe aircraft complimentary landing systems

## Range

**AC 6.1**
Typical systems:
Undercarriage configurations: tail wheel, tricycle, bicycle, floats, skids
Wheel configurations e.g. single, double, tandem and bogie

**AC 6.2**
Components:
Jacks, actuators, micro switches, locks, torque links

**AC 6.3**
Functions of
Shock absorber and damping

**AC 6.4**
Functions of
Extension and retraction systems: normal and emergency, sequence of operation

**AC 6.5**
Undercarriage steering:
Nosewheel steering systems
Bogie steering systems

**AC 6.6**
Wheels and braking systems:
Wheels
Brakes: normal, antiskid and autobraking
Tyres: types; wear and damage limits

**AC 6.7**
Aircraft complimentary landing systems:
Brake parachute systems or Arrestor systems e.g. hooks or runway catchment (RHAG or foam)

---

## Learning outcome

The learner will:

7. Know the operation of aircraft ice and rain protection systems

## Assessment criteria

The learner can:

7.1 describe aircraft ice protection systems
7.2 describe aircraft rain protection systems.

---

## Range

**AC 7.1**
Typical ice protection systems:
How ice forms
Effect on aircraft
Difference between anti-icing and de-icing

Airframe ice protection e.g. electrical
Pitot and instrument system ice protection
Windscreen ice protection

**AC 7.2**
Typical rain protection systems:
Rain protection
Chemical rain protection
Windscreen wiper systems
Blown air rain clearance systems.

---

## Learning outcome

The learner will:

8. Understand the operation of aircraft oxygen systems

## Assessment criteria

The learner can:

8.1 explain the purpose of an oxygen system
8.2 describe the layout of aircraft gaseous oxygen supply systems
8.3 describe safety precautions for working with oxygen systems.

---

## Range

**AC 8.1**
Purpose:
Oxygen content of air reduces at altitude
Breathing difficulties at altitude
Oxygen needs for aircrew and passengers
Emergency oxygen bottles
Oxygen walk round sets for transport aircraft

**AC 8.2**
Typical system layout:
Normal and emergency supply systems
Oxygen storage bottles
Charging valves
Pipeline supply to cabin/cockpit
Breathing oxygen pipeline markings
Typical oxygen regulators

**AC 8.3**
Safety precautions in relation to:
Fire
Oils and greases
High pressures

---

Hazards e.g. fire, explosion, physiological problems, embrittling effect, pressure increase
Very low temperatures
High temperatures (chemical generators).

## Learning outcome

The learner will:

9. Know the operation of aircraft air systems

## Assessment criteria

The learner can:

9.1 describe aircraft supply sources
9.2 describe aircraft cabin pressurisation systems
9.3 describe aircraft air sub-systems.

## Range

**AC 9.1**

Air supply sources e.g. direct charge air, indirect charge air, ram air
Air bottles
Ground supply trolley

**AC 9.2**

Typical cabin pressurisation systems:
Physiological effects of low oxygen at high altitude
Purpose
Operation

**AC 9.3**

Typical sub-systems:
Ice and rain dispersal
Wing slot seals
Fuel pressurisation
Canopy operating system
Anti-G

## Learning outcome

The learner will:

10. Know the operation of aircraft assisted escape systems (AAES)

## Assessment criteria

The learner can:

10.1 describe the operation of a typical aircraft AAES

10.2 describe the components in a typical AAES
10.3 describe safety precautions to be followed for AAES
10.4 describe systems which interact with AAES.

---

## Range

**AC 10.1**
Relating to different AAES systems (RN or RAF or Civilian)

**AC 10.2**
Components in a typical AAES either:
Military (combat) aircraft:

- Emergency ejection handles
- Rocket powered seats
- Canopy jettison system
- Miniature detonating cord
- Command ejection
- Parachute pack
- Leg restraints
- Parachute/seat harness
- Seat raising handle

**Or**
Civilian (transport) aircraft:

- Escape slide LRI and covering (gert bar)
    - LRI contains activation device and compress gas
- Cabin door/ window hatch/panel
- Door handle/window lever etc.

Emergency pull toggle on slide LRI

**AC 10.3**
Typical AAES safety precautions either:
Military aircraft:

- Safe for parking
- Safe for maintenance
- Pin stowage
- AAES maintenance and responsibilities

**Or**
Civilian aircraft:

- On ground inert
- In air active
- LRI isolated and rendered inoperable for removal/transport

LRI deactivated

**AC 10.4**
Systems which interact with AAES:
Communications
Oxygen supply
Emergency oxygen

---

Emergency lighting
SLBs

## Unit 205 Fundamentals of Aircraft Construction

Supporting Information

### *Guidance*

This unit has been produced to meet aviation training requirements.

On completion of this unit the learner will be able to show a comprehensive knowledge of the airframe construction and systems used in aircraft.

Assessment is to be designed to demonstrate underpinning knowledge and relevant documentation.

# Unit 206 Fundamentals of Airframe Structural Inspection and Husbandry

| | |
|---|---|
| **Level:** | Level 2 |
| **GLH:** | 40 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS Units 006, 007 |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to give learners a basic understanding of airframe structural husbandry, inspection and associated simple repair techniques. |

**Assessment type** Centre devised multiple choice/short answer tests

## Learning outcome:

The learner will:

1. Know the general concepts of airframe structures

## Assessment criteria

The learner can:

1.1 describe need for structural strength in aircraft
1.2 describe construction methods used for major aircraft components
1.3 describe aircraft zonal surveys.

## Range

**AC 1.1**

Airframe design requirements
Airworthiness
Simple loads on an aircraft structure
Structure classification: primary, secondary and tertiary
Importance and classification of damage assessment

**AC 1.2**

Major component construction including:
Mainplane, tail unit, flying controls and undercarriage
Simple composite construction methods

**AC 1.3**
Purpose
Training and authority levels
Zone reference system
Typical possible defects.

## Learning outcome

The learner will:

2. Know environmental damage to airframe structures

## Assessment criteria

The learner can:

2.1 describe the meaning of the term 'environmental damage'
2.2 describe the effect of environmental damage
2.3 describe environmental damage control measures
2.4 Explain the use of anti-erosion materials on aircraft structures
2.5 describe how to identify environmental damage to an aircraft surface finish
2.6 describe how to restore surface finishes with environmental damage.

## Range

**AC 2.1**
Physical degradation of material properties including: corrosion and erosion
Surface finish, composite materials

**AC 2.2**
Loss of structural strength
Reduction in fatigue life
Increased aircraft downtime
Increased costs: time and materials

**AC 2.3**
Control measures including:
Good design
Material selection
Surface treatments
Coatings
Tapes and corrosion preventative compounds
Report faults and defects immediately
Timely repairs and preventative maintenance
Minor damage documented

**AC 2.4**
Prolonging structure integrity
Leading edge protection,
Aircraft radomes, nose cones and aerials
Application (replacement)

**AC 2.5**
Paints, Oils & Lubricants (POL) contamination
Scuffing
Erosion
Abrasion
Reporting procedure and documentation

**AC 2.6**
Define level of repair, e.g. depth A Structural Repair Manual as guidance
Touch up kit e.g. SEMPAK
Safety precautions
Temporary protective treatments e.g. PX24, PX28, PX32

---

## Learning outcome

The learner will:

3. Know the effects of corrosion on aircraft and components

## Assessment criteria

The learner can:

3.1 describe the nature of corrosion
3.2 describe the adverse effect of corrosion on aircraft
3.3 describe the areas where corrosion is likely to occur
3.4 describe early signs of corrosion in aircraft materials
3.5 describe preservation methods to prevent corrosion on aircraft.

---

## Range

**AC 3.1**
In simple terms including how it forms:
Dry oxidation
Electro-chemical galvanic action
Oxygen
Moisture
Dirt and contaminates
Lack of protective finish
Environment

**AC 3.2**
Loss of structural strength
Effect on highly stressed components
Fatigue life
Cost

**AC 3.3**
External skins
Undercarriage bays/Skids
Battery compartments
Fuel tanks; Fugal and bacterial growth
Toilet and galley areas
Bilges and water traps e.g.
Exhaust area fairings and skins
Rocket and gun blast areas
Leading edges and intakes
Dissimilar metal contact

**AC 3.4**
Early signs of corrosion in
Ferrous materials
Alloys e.g. Aluminium, Magnesium, Copper
Paint blistering
Discolouring of protective finish
Loose rivets at seams or joints
Powdery deposits

**AC 3.5**
The importance of effective aircraft husbandry
Precautions including:
Aircraft cleanliness - regular washing and cleaning with appropriate cleaning compounds
Good engineering and trade practices
Prompt repair action for damage
Fitting protective blanks and covers
Correct cleaning and degreasing agents
Wearing approved footwear when on the aircraft
Cadmium and other protective coatings.

## Learning outcome

The learner will:

4. Understand the implications of unseen damage to aircraft composite structures

## Assessment criteria

The learner can:

4.1 describe where composite materials are used in aircraft construction
4.2 describe damage found in composite materials
4.3 explain health and safety risks associated with composite materials

---

## Range

**AC 4.1**

Examples used in aircraft e.g.

Glass reinforced plastic (GRP) (e.g. radomes, aerial cover panels)

Carbon fibre reinforced plastic (CFRP) (e.g. fuselage, skin support structure, wings, flying control surfaces, cabin floors, helicopter blades)

Kevlar reinforced plastic (KRP) (e.g. wing and fuselage fairings, leading and trailing edges, landing gear doors, propellers, engine blade containment shields)

**AC 4.2**

Typical damage found in aircraft composites e.g.

Damage by chemical e.g. POL and aircraft cleaning compounds can soften or degrade resins

Erosion and abrasion of surface

Barely visible impact damage (BVID)

Delamination

**AC 4.3**

Airborne fibres when working with material

Respiratory problems

Skin irritation and dermatitis

Eye irritation

Headaches, nausea,

Solvents and resins

Use of Personal Protective Equipment (PPE)

---

## Learning outcome

The learner will:

5. Know the inspection process for aircraft transparencies

## Assessment criteria

The learner can:

5.1 identify sources of information about damage to aircraft transparencies
5.2 describe damage found to aircraft transparencies.

## Range

**AC 5.1**

Such as:
Damage limitation tables
Topic 1
Topic 6
Aircraft Maintenance Manuals (specifically Structural Repair Manual)
Supervisor/technician

**AC 5.2**

Distortion
Crazing
Scratching and scores
Delamination
Chemical contamination

## Learning outcome

The learner will:

6. Know inspection processes for gas turbine engines and its intakes

## Assessment criteria

The learner can:

6.1 describe major visible components of a gas turbine engine
6.2 describe safety precautions for examining gas turbine engines
6.3 describe types of damage found on compressor and turbine blades.

## Range

**AC 6.1**

Components such as:
Intake
Compressor
Combustion chambers
Turbine
Jet pipe
Reheat manifold
Nozzle
Nozzle guide vanes

**AC 6.2**

Safety assistant
Prevent FOD in intake

Confined space –claustrophobia
Fumes
Heat
Correct inspection light source
Personal protective equipment

**AC 6.3**
Typical damage to

- Intake e.g. FOD/bird strike damage, pulled rivets, auxiliary door damage, oil or fuel pooling, leading edge damage, anti-icing mat damage
- Compressor blades e.g. nicks and dent in the blade, cracks at blade root, bent or twisted blades, FOD/bird strike impact, tip rubbing/blade creep
- Turbine blades e.g. discolouration, metallic deposits, signs of stretched blades
- Reporting process and documentation

---

## Learning outcome

The learner will:

7. Know inspection processes for aircraft pipes, ducts and connectors

## Assessment criteria

The learner can:

7.1 describe the purpose of rigid pipelines, flexible hoses, ducting and couplings
7.2 describe the routine inspection of aircraft pipes, hoses, ducts and connectors.

---

## Range

**AC 7.1**
Purpose of:
Hydraulic
Fuel
Air
Gas
Coolant
Oxygen
Couplings and connectors: e.g. join pipelines together, make positive seal, and allow change of direction

**AC 7.2**
Inspecting for:
Kinking
Twisting
Correct routing and fastening
Chafing and cuts
Corrosion

Damage to flared ends
Flexible hose lay lines
Heat damage
Minimum bend radii
Braided hose damage to outer covering
Contamination
Blistering and/or bulging
Leaks
Over-tightening of couplings and connectors

## Learning outcome

The learner will:

8. Know the inspection process for aircraft wiring and cables

## Assessment criteria

The learner can:

8.1 describe the need for husbandry of all aircraft wiring
8.2 describe typical aircraft wiring damage

## Range

**AC 8.1**

Reasons for husbandry:
Preserve the electrical wiring
Assure the integrity of the electric system
Good husbandry:

- Visual checks
- Draw attention to suspect faults
- Use correct repair or replacement process
- Provide 'Drip Loops'

Bad Husbandry:

- Over-tightening
- Using damaged P clips
- Pull on cables

**AC 8.2**

Chafing
Fluid contamination
Heat/arcing damage
Broken/exposed conductors
Minimum bend radius
Internal non-visible damage

## Learning outcome

The learner will:

9. Understand the purpose of aircraft panels, doors and fasteners

## Assessment criteria

The learner can:

9.1 describe the various types of panels and doors commonly used on aircraft
9.2 explain the importance of using the correct tools to remove / replace aircraft fasteners
9.3 explain the importance of correct storage of removed panels, doors and fasteners and the potential FOD hazards.

## Range

**AC 9.1**

Access panels
Stress panels
Door types (flight deck/passenger/cargo/crew/toilet)
Uses
Seals

**AC 9.2**

Use of correct tools to avoid potential damage to

- Fastener
- Panel
- Surface finish

**AC 9.3**

Use of racking to prevent damage
FOD dangers:

- Taping plastic bags of fasteners to panels
- Number of Fasters
- Different sizes
- Replacing U/S fasteners immediately

## Learning outcome

The learner will:

10. Understand the removal and neutralisation of corrosive fluid contamination

## Assessment criteria

The learner can:

10.1 explain the need to protect aircraft structure and components from contamination

10.2 explain in procedures for detecting and neutralising contamination.

---

## Range

**AC 10.1**

Requirement to protect from:
Dangerous air cargo
Severe corrosion
Damage to protective surfaces
Acids
Alkalis
Mercury
Organic chemicals
Aircraft batteries
Vehicles
Communication equipment
Ground equipment
Fuel tanks
Galley and toilet areas
Medical equipment

**AC 10.2**

In simple terms the importance of immediate treatment (e.g. rapid and aggressive attack by some substances e.g. mercury, battery electrolyte, etching agents etc.)
Safety precautions e.g.
PPE
Prevention of spread
Procedures e.g.
Visual signs of attack from substances
Rapid ingress into small gaps (capillary action)
Immediate action
Rapid rate of attack from some substances
Confirmation by litmus paper
Correct neutralising solutions
Testing to ensure surfaces correctly cleaned
Renewing protective coatings of surfaces
Mercury capillary brush kit

# Unit 206 Fundamentals of Airframe Structural Inspection and Husbandry

Supporting Information

## *Guidance*

This unit has been produced to meet aviation training requirements.

On completion of this unit the learner will be able to show a comprehensive knowledge of the airframe structural husbandry and inspection to the servicing of aircraft.

Assessment is to be designed to demonstrate underpinning knowledge and use of relevant documentation.

# Unit 207 Working Safely with Aircraft Armament Systems

| | |
|---|---|
| **Level:** | Level 2 |
| **GLH:** | 40 |
| **Relationship to NOS:** | This unit is linked to the Aeronautical Engineering Level 2 NOS Units 7 and 8 |
| **Endorsed by:** | This unit is endorsed by SEMTA |
| **Unit aim:** | The aim of this unit is to give learners a solid grounding in safe working on aircraft fitted with armament systems and assisted escape systems (AAES). |

**Assessment type** Centre devised multiple choice/short answer tests

**Assessment and grading** Note: due to the safety implications of this unit, and its product-specific content, the assessment must be centre-set. The pass-mark will be 100% in this case, which is the industry standard.

## Learning outcome:

The learner will:

1. Understand explosive safety

## Assessment criteria

The learner can:

1.1 describe what explosives are and how they are categorized
1.2 describe the explosive train
1.3 explain explosive lifing
1.4 describe the dangers of static electricity and explosive devices
1.5 define thunderstorm risk categories and actions
1.6 describe general explosive safety rules
1.7 describe dangers involving armed aircraft
1.8 state the use of role colours and hazard application bands on explosive devices
1.9 describe the united nations classification of explosives
1.10 describe the dangers in relation to radio frequency hazards and explosive devices.

## Range

**AC 1.1**

Define the term ‘explosive’
Define terms related to explosives:
Velocity of Detonation
Figure of Power
Figure of Insensitivity
Describe the hierarchy of explosives
Describe the difference between Low and High Explosive

**AC 1.2**
Step-up-System of Detonation:
Low explosive train (e.g. primer – igniter – propellant)
High explosive train e.g.
Two-step (e.g. detonator – explosive)
Three-step (e.g. detonator – booster – main charge)

**AC 1.3**
How explosives deteriorate over time:
Effects of environment (temperature, humidity etc)
Labelling and recording of manufacture and expiry dates

**AC 1.4**
Dangers:
Potential to detonate when in contact with static discharge

**AC 1.5**
Thunderstorm category & definition:
Category 1 (High) - Thunderstorms will develop / have developed in the area
Category 2 (Moderate) - Thunderstorms may develop in the area
Category 3 (Low) - Thunderstorms are not expected in the area. Category & Definition

**AC 1.6**
General and organisation-specific rules contained in e.g.
BAe Systems Explosive & Prohibited Weapons Safety (QMS)
JAP 100A

**AC 1.7**
Armed aircraft danger areas potential risks:
Front – Guns, Missiles & Rockets.
Rear – Missiles, Rockets, Chaff & Flare, Towed Decoy, Smoke Marker/Sonar buoy Discharger.
Generally- Bombs, Ejector Release Units, Drop Tanks, Explosive Start Valves

**AC 1.8**
Colour coding and marking of stores:
Explosive stores carry markings used to indicate:
Primary role

Degree of danger or hazard to personnel who come in contact or handle them

**AC 1.9**
Classification of explosives:
Reasons e.g. to facilitate fire fighting
Explosives and ammunition divided according to their behaviour when involved in a fire
Symbols: orange coloured with black numerals denoting the fire division

**AC 1.10**
Spontaneous detonation of EEDs in the presence of external RF radiation
Define 'intrinsically safe'

---

## Learning outcome

The learner will:

2. Understand aircraft assisted escape systems (AAES)

## Assessment criteria

The learner can:

2.1 describe ejection seats fitted to fast-jet aircraft
2.2 describe ejection seat major assemblies
2.3 describe the purpose of ejection seat components
2.4 describe Command Ejection systems
2.5 describe Canopy Jettison and Fragmentation Systems.

---

## Range

**AC 2.1**
One or more seats e.g. Tornado, Typhoon
Including safety pin positions and other device selections for:
Safe for Parking
Safe for Maintenance

**AC 2.2**
Major assemblies:
BTRU
Drogue Gun
Head Box
Top Latch Assembly
Firing Units
Cartridges
Main Gun
QRF

---

Rocket Pack

**AC 2.3**
Purpose of:
Main beam assembly
Main Gun Assembly
Top Latch Assembly
Seat pan Assembly
Parachute harness and head box
Quick Release Fittings (QRF)
Barostatic Time Release Unit (BTRU)
Drogue Gun/Parachute Deployment Unit (PDU)
Emergency Oxygen System (EO2)
Leg/Limb Restraint Systems
Harness Power Retraction Unit (HPRU)
Personal Equipment Conector (PEC)
Personal Survival Pack (PSP)
Auto Deployment Unit (ADU)
Auto Liferaft Inflation Unit (ALIU)
Trip rods
Armed/Safe/Egress Handle

**AC 2.4**
For specific aircraft e.g. Tornado, Typhoon:
Command Control Valve
Command Ejection Controller
Command Mode Selector

**AC 2.5**
For specific aircraft such as Tornado, Typhoon e.g.
Miniature Detonating Cord (MDC)
Charge Linear Cutting (CLC)

## Learning outcome

The learner will:

3. Know aircraft armament role equipment

## Assessment criteria

The learner can:

3.1 identify types of suspension lugs
3.2 identify items of carriage and release equipment used on aircraft
3.3 explain the purpose and operation of carriage and release equipment.

## Range

**AC 3.1**
Bail Lugs
MACE Lugs

**AC 3.2**
Including:
Wing Pylons
Fuselage Pylons
Twin Store Carrier (TSC)
Carrier Bomb Light Store (CBLS)
Ejector Release Units (ERU): No.122EX; LDERU; HDERU; ALDERU; AHDERU
Fuzing Units

**AC 3.3**
Operation including:
Wing Pylons
Fuselage Pylons
Twin Store Carrier (TSC)
Carrier Bomb Light Store (CBLS)
Ejector Release Units (ERU)
Fuzing Units

## Learning outcome

The learner will:

4. Know aircraft stores management systems

## Assessment criteria

The learner can:

4.1 state the purpose of a SMS
4.2 identify the components of the SMS.

## Range

**AC 4.1**
For typical aircraft:
Requirement for managing armament stores
Basic function of the SMS

**AC 4.2**
Components including:
Weapon Programming Unit
Weapon Control Panels

Attack / Weapon Release Button
Master Armament Safety Switch (MASS)
Late Arm Switch
Selective / Emergency Jettison
Trigger
Armament System Ground Test Switch (ASGTS)

## Learning outcome

The learner will:

5. Know aircraft gun systems

## Assessment criteria

The learner can:

5.1 state the purpose of aircraft gun systems
5.2 identify components of aircraft gun systems
5.3 explain the operation of aircraft gun systems.

## Range

**AC 5.1**
Specific aircraft e.g. Tornado, Typhoon

**AC 5.2**
Identify and name components
Breech
Barrel
Cocking mechanism

**AC 5.3**
Aircraft gun systems
Loading ammunition tanks
Cocking
Firing
Spent case ejection
Ammunition feed
Live round insertion

## Learning outcome

The learner will:

6. Know aircraft missiles

## Assessment criteria

The learner can:

6.1 identify air-to-air & air-to-ground missiles
6.2 identify components of an air-to-air missile
6.3 explain the operation of an air-to-air missile.

---

## Range

**AC 6.1**

Identify and name missiles including:
Sidewinder
ASRAAM
Brimstone
ALARM

**AC 6.2**

Identify and name components of e.g. Sidewinder

**AC 6.3**

Explain the purpose and operation of e.g. Sidewinder

---

## Learning outcome

The learner will:

7. Understand aircraft countermeasure systems

## Assessment criteria

The learner can:

7.1 identify countermeasure systems used on aircraft
7.2 state the purpose of countermeasure systems
7.3 explain the operation of countermeasure systems.

---

## Range

**AC 7.1**

Countermeasure systems:
Chaff
Flare

**AC 7.2**

Purpose:
To disrupt and distract enemy airborne target acquisition systems

---

**AC 7.3**
Operation including:
Chaff dispensers and the action of chaff
Flare dispensers and the action of flares

---

## Learning outcome

The learner will:

8. Know aircraft weapons

## Assessment criteria

The learner can:

8.1 identify bomb types including
8.2 identify major bomb components
8.3 identify role and hazard colour coding.

---

## Range

**AC 8.1**
Bomb types:
3kg and14kg practice bombs

**AC 8.2**
Bomb components including:
Tail units
Shear Wires
Lead Electrical Fuzing and Arming (LEFA)

**AC 8.3**
Role and hazard colour coding including:
Colour Coding and Marking of Stores

---

## Learning outcome

The learner will:

9. Understand safety precautions for armed aircraft.

## Assessment criteria

The learner can:

9.1 Understand safety precautions relating to armed aircraft.

---

## Range

**AC 9.1**

Safety precautions including:
Aircraft Armed signs
Safe Approach to the aircraft
Angle of approach
Check the Master Armament Safety Switch
Undercarriage locks and earthing leads.

# Unit 207 Working Safely with Aircraft Armament Systems

Supporting Information

## *Guidance*

This unit has been designed to cover the essential safety knowledge required by all personnel working on or near aircraft that are fitted with any weapon or device that includes explosive charges. The nature of the subject requires a clear, unambiguous understanding of all of the safety rules, instructions and procedures and this unit allows recognition of an individual's achievement of that understanding.

# Appendix 1 Relationships to other qualifications

Links to other qualifications

This qualification has connections to the:

- Level 2 Aeronautical Engineering National Occupational Standards

# 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 C**entres and Training Providers homepage** on **www.cityandguilds.com**.

City & Guilds Centre Manual 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:

- Regulatory Arrangements for the Qualifications and Credit Framework (2008)
- 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.

### *Linking to this document from web pages*

We regularly update the name of documents on our website, therefore in order to prevent broken links we recommend that you link to our web page that the document resides upon, rather than linking to the document itself.

# Useful contacts

| | |
|---|---|
| **UK learners**<br>General qualification information | **E: learnersupport@cityandguilds.com** |
| **International learners**<br>General qualification information | **E: intcg@cityandguilds.com** |
| **Centres**<br>Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results | **E: centresupport@cityandguilds.com** |
| **Single subject qualifications**<br>Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change | **E: singlesubjects@cityandguilds.com** |
| **International awards**<br>Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports | **E: intops@cityandguilds.com** |
| **Walled Garden**<br>Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems | **E: walledgarden@cityandguilds.com** |
| **Employer**<br>Employer solutions including, Employer Recognition: Endorsement, Accreditation and Quality Mark, Consultancy, Mapping and Specialist Training Delivery | **E: business@cityandguilds.com** |

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