



Australian Government

AVIY4061 Perform aerobic manoeuvres

Release: 1

AVIY4061 Perform aerobatic manoeuvres

Modification History

Release 1. This is the first release of this unit of competency in the AVI Aviation Training Package.

Application

This unit involves the skills and knowledge required to perform aerobatic manoeuvres, in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority and national operating standards.

It includes preparing for aerobatic manoeuvres, performing looping manoeuvres, performing rolling manoeuvres, and performing advanced aerobatic manoeuvring.

This unit addresses aviation technical skill requirements (physical, mental and task-management abilities) related to aircraft operational duties of flight crew, and contributes to safe and effective performance in complex aviation operational environments.

Operations are conducted as part of recreational, commercial and military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed independently or under limited supervision within a single-pilot or multi-crew environment.

Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Use for Defence Aviation is to be in accordance with relevant Defence Orders, Instructions, Publications and Regulations.

Pre-requisite Unit

Not applicable.

Competency Field

Y – Aircraft Operation and Traffic Management

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for aerobatic manoeuvres

- 1.1 Operating area within suitable airspace is selected that allows for completing all aerobatic manoeuvres above the authorised minimum altitude
- 1.2 Pre-manoeuve checks are performed and aircraft is configured for aerobatic manoeuvres
- 1.3 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility or terrain

2 Perform looping manoeuvre

- 2.1 Entry airspeed is achieved that will ensure completion of looping manoeuvre
- 2.2 Aircraft is pitched vertically through 360 degrees in balanced flight
- 2.3 Wings are maintained parallel to the earth's horizon while applying positive 'g', without stalling
- 2.4 Alignment with nominated line feature is maintained
- 2.5 Engine, airframe and physiological limitations are complied with
- 2.6 Direction, altitude control and height loss are maintained within prescribed limits, or as appropriate to aircraft type
- 2.7 Safe entry and recovery heights are observed
- 2.8 Exit airspeed/height is achieved at completion of looping manoeuvre

3 Perform rolling manoeuvre

- 3.1 Entry airspeed is achieved that will ensure completion of rolling manoeuvre
- 3.2 Aircraft is rolled from a nominated airspeed around the fore and aft axis through 360 degrees
- 3.3 Direction, altitude control and height loss are maintained within prescribed limits, or as appropriate to aircraft type
- 3.4 Engine, airframe and physiological limitations are complied with
- 3.5 Safe entry and recovery heights are observed

4 Perform advanced

- 4.1 Entry speed for aerobatic manoeuvre is achieved

aerobatic manoeuvre

- 4.2 Control inputs are applied to achieve advanced aerobatic manoeuvre
- 4.3 Exit airspeed/height is achieved at completion of advanced aerobatic manoeuvre
- 4.4 Engine, airframe and physiological limitations are complied with
- 4.5 Direction, altitude control and height loss are maintained within prescribed limits, or as appropriate to aircraft type
- 4.6 Safe entry and recovery heights are observed

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

This unit replaces and is equivalent to AVIY4061A Perform aerobatic manoeuvres.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816>

Assessment Requirements for AVIY4061 Perform aerobatic manoeuvres

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- achieving entry airspeed for completion of all aerobatic manoeuvres
- adapting to differences in equipment and operating environment in accordance with standard operating procedures
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant aeroplane aeronautical knowledge
- applying unusual attitudes, fully developed and incipient spin and spiral dive recovery techniques
- communicating effectively with others
- compensating for the secondary effects of controls
- completing relevant documentation
- conducting maximum rate turning
- following relevant legislation and workplace procedures
- identifying symptoms of loss of control
- implementing contingency plans
- implementing work health and safety (WHS)/occupational health and safety (OHS) procedures and relevant regulations
- maintaining lookout using appropriate systematic scan technique
- managing aircraft energy to achieve safe manoeuvre entry and recovery heights
- manoeuvring aircraft on the buffet
- modifying activities depending on workplace contingencies, situations and environments
- monitoring and anticipating operational problems and hazards and taking appropriate action
- monitoring work activities in terms of planned schedule
- observing safe entry and recovery heights for all aerobatic manoeuvres
- operating aircraft within its limitations, achieving optimum performance
- operating electronic communications equipment to required protocol
- performing advanced aerobatic manoeuvring:
 - spin
 - incipient spin
 - porteous loop

- wing-over
- cuban eight
- roll off the top
- split S
- vertical eight
- lazy eight
- derry turn
- stall turn
- slow loop
- flick (snap) rolls
- hesitation roll
- performing pre-manoevre checks and configuring aircraft for aerobatic manoeuvres
- performing rolling manoeuvres:
 - barrel rolls
 - aileron roll
 - slow rolls
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- recognising approaching maximum performance limitations of aircraft
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- selecting and correctly using relevant equipment
- selecting and using required personal protective clothing and equipment conforming to industry and WHS/OHS standards
- selecting operating area within suitable airspace that allows for completion of all aerobatic manoeuvres above the authorised minimum altitude
- setting local or area barometric pressure adjusted for sea level (QNH) at appropriate stages of flight
- using instruments to monitor aircraft performance
- working collaboratively with others
- working systematically with required attention to detail without injury to self, others or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- advanced aerobatic manoeuvre flight techniques:
 - spin
 - incipient spin
 - porteous loop
 - wing-over
 - cuban eight
 - roll off the top
 - split S
 - vertical eight
 - lazy eight
 - derry turn
 - stall turn
 - slow loop
 - flick (snap) rolls
 - hesitation roll
- 'g' limitations for aircraft being flown
- aerodynamic principles for performing aerobatic manoeuvres
- aircraft limitations for aircraft flown including environmental factors
- CASR Part 61 Manual of Standards Schedule 3 Aeronautical Knowledge relevant to aeroplane aerobatic manoeuvres
- energy management as applied to aerobatic routines
- factors that lead to increased density altitude
- in a Defence context, relevant Defence Orders and Instructions
- maximum rate turn criteria
- minimum height required to complete a pull through manoeuvre, remaining within the structural limits of the aircraft, from inverted flight at 80 kts in aircraft type being flown
- minimum height required to recover from a spin in aircraft type being flown
- minimum radius turn criteria
- Mueller-Beggs emergency spin recovery technique
- physiological effects applicable to maximum performance flight
- potential dangers associated with conducting aerobatics below 500 feet (ft) above ground level (AGL) over unfamiliar terrain
- precautions that should be taken with regard to radius of turn when operating at a high-density altitude
- pre-manoeuve check procedures
- recovery technique to regain physiological and aircraft control when disorientation is experienced
- regulatory requirements applicable to performing aerobatic manoeuvres
- relevant sections of Civil Aviation Safety Regulations and civil Aviation Orders
- relevant WHS/OHS and environmental protection procedures and regulations
- rolling 'g' limitations for the aircraft being flown
- rolling manoeuvre flight techniques:

- barrel rolls
- aileron roll
- slow rolls
- safe manoeuvre entry and recovery heights
- techniques for entry to and control of, aerobatic manoeuvres.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

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Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- acceptable means of simulation assessment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in industry.

Links

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