

**FAE-8 Spinning****1 Unit description**

This unit describes the skills and knowledge required to execute and recover from an upright spin manoeuvre.

**2 Elements and performance criteria****2.1 FAE-8.1 – Recover from spin**

- (a) perform pre-manoeuvre checks;
- (b) enter and establish an upright spin;
- (c) identify upright spin and direction of yaw;
- (d) close throttle;
- (e) stop yaw;
- (f) unstall wing by reducing AOA;
- (g) recover to controlled flight;
- (h) recover within the number of turns normally required for upright spin recovery in the aircraft type, within the aircraft and height limitations.

**3 Range of variables**

- (a) activities are performed in accordance with published procedures;
- (b) day VFR flight in VMC;
- (c) within the lateral and vertical limitations of the planned manoeuvring airspace using an approved aerobatic aeroplane.

**4 Underpinning knowledge of the following:**

- (a) actions required to recover from an incipient spin (wing drop at point of stall);
- (b) what control inputs, with an aeroplane in any attitude, at the point of stall, are likely to cause a spin;
- (c) blanketing effects the elevator can have on the rudder during spin recovery;
- (d) significance of stick and control wheel position with respect to spin recovery;
- (e) aerodynamic causes of a spin;
- (f) what aerodynamic factor determines the direction of a spin;
- (g) how to recognise a stable spin;
- (h) difference between a stable spin and an unstable spin;
- (i) effects of C of G position on spin performance and acceleration;
- (j) difference between a spin and spiral dive;
- (k) factors which may lead to a flat spin;
- (l) difference between an upright and an inverted spin;
- (m) visual indications used to determine the direction of a spin;
- (n) instrument indications used confirm the direction of a spin;
- (o) standard spin entry and recovery techniques for the aircraft being flown;
- (p) number of turns normally required for spin recovery in the aeroplane type;
- (q) height normally required entering and recovering from a stable spin;
- (r) Mueller-Beggs spin recovery action and limitations on its application;
- (s) 'g' and any other limitations applicable to spinning for the aeroplane type.

## SECTION 6 FLIGHT ACTIVITY ENDORSEMENT STANDARDS

### FAE-1 Aerobatics — 3,000 ft AGL

#### 1 Unit description

This unit describes the skills and knowledge required to perform aerobatic manoeuvres not below 3,000 ft AGL.

#### 2 Elements and performance criteria

##### 2.1 FAE-1.1 – Prepare for aerobatic flight

- (a) select suitable airspace that allows the completion of all aerobatic manoeuvres above the authorised minimum altitude;
- (b) perform pre-manoeuve checks and select appropriate aircraft configuration;
- (c) maintain lookout using a systematic scan technique at a rate determined by traffic density, visibility or terrain.

##### 2.2 FAE-1.2 – Perform looping manoeuvre

- (a) pitch the aircraft vertically at a continuous rate through 360° in balanced flight, maintaining wings parallel to the Earth's horizon, positive 'g', without stalling and maintaining alignment with a nominated line feature from a nominated airspeed that will ensure completion of a loop;
- (b) comply with engine, airframe and physiological limitations;
- (c) observe entry and recovery heights.

##### 2.3 FAE-1.3 – Perform rolling manoeuvre

- (a) roll the aircraft from a nominated airspeed around the fore and aft axis through 360° while maintaining direction and altitude, or a height loss appropriate to the aircraft type;
- (b) observe entry and recovery height.

##### 2.4 FAE-1.4 – Perform stall turn-hammerhead (vertical yaw reversal)

- (a) pitch aircraft from a nominated airspeed to the vertical in balanced flight with the wings parallel to the horizon and terminate the pitch at the vertical;
- (b) maintain the aircraft vertical and yaw through 180°, descending vertically in balanced flight and recover the aircraft from the dive to straight and level flight, aligned with a nominated line feature 180° to the original heading;
- (c) observe entry and recovery height.

##### 2.5 FAE-1.5 – Recover from unusual attitudes

- (a) recover aircraft to controlled flight, in the height available, from any attitude, bank angle or speed within the limitations of the aircraft;
- (b) recover aircraft to controlled flight, in the height available from any inverted negative 'g' attitude, bank angle or speed within the limitations of the aircraft.

##### 2.6 FAE-1.6 – Recover from spin

- (a) perform pre-manoeuve checks;
- (b) enter and establish an upright spin;
- (c) identify upright spin and direction of yaw;
- (d) close throttle;
- (e) stop yaw;
- (f) unstall wing by reducing AOA (aeroplane);
- (g) recover to controlled flight;

- (h) recover within the number of turns normally required for upright spin recovery in the aircraft type, within the aircraft and height limitations.

### 3 Range of variables

- (a) activities are performed in accordance with published procedures;
- (b) day VFR;
- (c) aeroplanes approved to conduct aerobatic flight.

### 4 Underpinning knowledge of the following:

- (a) meaning of the terms positive and negative 'g';
- (b) symmetrical positive and negative 'g' limits for the aircraft flown;
- (c) meaning of the term rolling 'g';
- (d) rolling 'g' limits for the aircraft flown;
- (e) how to calculate the rolling 'g' limitation of an aircraft;
- (f) relationship during rolling manoeuvres between pitch angle required on commencement of a roll and rate of roll;
- (g) engine RPM limitations for the aircraft flown;
- (h) physiological effects of positive and negative 'g';
- (i) the 'g' figure that a normal person may experience 'g' induced loss of consciousness (G-LOC);
- (j) differences between grey out, black out, and G-LOC;
- (k) conditions under which G-LOC is likely to occur;
- (l) time period that disorientation may occur for after recovery from G-LOC;
- (m) factors that can reduce G-LOC tolerances;
- (n) physiological effects of sustained and rapid changes of 'g' loading;
- (o) relationship between tunnel vision and loss of consciousness;
- (p) hazards and consequences of performing aerobatics with blocked eustachian tubes;
- (q) physiological factors that can reduce 'g' tolerance;
- (r) physical actions that may increase 'g' tolerance;
- (s) minimum altitude to perform aerobatic manoeuvres;
- (t) relationship between pre-stall buffet and rate of turn or rate of pitch;
- (u) effect of increasing airspeed on stick force;
- (v) structural irregularities that indicate an aircraft has been overstressed;
- (w) effect of increased 'g' loading on stall speed;
- (x) airspeed limitations;
- (y)  $V_A$ ,  $V_{NE}$  and  $V_{NO}$ ;
- (z) effect of aircraft weight on  $V_A$  and what precautions must be taken;
- (za) recovery from manoeuvre-induced disorientation;
- (zb) how to assess personal fitness for aerobatic flight;
- (zc) maximum rate turn criteria;
- (zd) minimum radius criteria.