



**THE
INTERMEDIATE
AEROBATIC
CERTIFICATE
COURSE AND AEROBATIC
RATING COURSE GUIDE**



FOREWORD

This Syllabus and Guide, produced by the Aircraft Owners and Pilots Association, in collaboration with the British Aerobatic Association, is issued with the approval of the BLAC Board of Management and AOPA Instructor Committee for courses leading to the issue of the AOPA Intermediate Aerobatic Certificate

Applicant's Name:

Address:

.....
Date Training Commenced

INTRODUCTION

The discipline of aerobatic flying is not so simple that all of its complexity can be mastered in a short time. There is a great deal more that can be learned than is included in the Basic Syllabus that leads to the issue of the EASA Aerobic Rating (AR). This Syllabus follows on from the AOPA Standard Aerobatic Syllabus and is intended to facilitate structured post-graduate aerobatic training to those who wish to gain increasing levels of skill. The information it contains will also be valuable to those training organisations and instructors who intend to supervise such training. Those flying aerobatics in non-EASA aircraft can do so without holding an AR. They are nonetheless encouraged to undertake structured training using this syllabus as a guide.

This document covers the aerobatic manoeuvres required to take part in Intermediate Class events organised by the British Aerobic Association (BAeA) and gives guidance to pilots who wish to obtain the AOPA Intermediate Aerobic Certificate. Further training will be required before undertaking more advanced manoeuvres.

A copy of the syllabus must be held by the pilot undergoing the aerobatic training and should be used as a record to ensure that all parts of the course have been satisfactorily completed prior to application for the Certificate. A signature block is incorporated after each relevant section for the instructor to sign when it has been completed.

FLYING TRAINING

The course consists of a minimum of eight hours dual flying with an instructor who is qualified to give aerobatic instruction and who has suitable experience of Intermediate manoeuvres. (Pilots who already have some aerobatic experience may qualify for a reduction in the flying hour requirement of this course).

AOPA recommends that pilots undertaking the Intermediate Aerobatics course do not practise Intermediate figures solo until they have been trained and proved competent in inverted spin recognition and recovery.

AIRCRAFT CAPABILITIES

To be capable of fulfilling all the requirements of this syllabus, the training aircraft must be capable of sustained inverted flight. It must be approved for flick rolling and inverted spinning.

THEORETICAL KNOWLEDGE TRAINING

The theoretical knowledge section of the course will consist of a minimum of six hours. Three hours of briefings/lectures must be given by a person qualified to instruct in aerobatic flying and the remaining hours may be carried out through self study under supervision.

Note: Due to the content of the course and the minimum number of flying hours required, it is particularly important that adequate theoretical knowledge instruction be given to the candidate prior to the instruction in the air.

COURSE OBJECTIVES

AOPA and the BAeA have designed this syllabus of instruction in order to encourage those pilots who wish to become proficient in the Intermediate aerobatic manoeuvres to undertake the right training through a properly structured formal course.

Satisfactory completion of the course will enable the candidate to obtain the recognized AOPA Intermediate Aerobic Certificate.

PROCEDURE TO OBTAIN THE CERTIFICATE

A candidate may commence the course at any time after qualifying for the AOPA Standard Aerobic Certificate. There are no minimum pre-entry hour or time requirements to enter the course of training.

The course of training is reflected in the syllabus contents shown on the following pages and upon completing the course candidates will be required to have their competence assessed in the air. The application forms for the issue of the certificate must be completed by the candidate and the instructor(s) conducting the course.

The flight test must be given by an aerobatic instructor registered with AOPA for this purpose and it should be noted that this flight is additional to the 6 hours required for the course.

Payment for the test has to be arranged between the candidate and the instructor giving the test, but a fee of £15 will have to be paid to AOPA to cover costs of administering the issue of the certificate. However, if the candidate is a pilot member of AOPA, this fee will be reduced to £10.

The application form consists of pages 11 and 12 of this syllabus. When the test has been satisfactorily completed, these pages should be removed and completed by the candidate, instructor and the person conducting the flight test section. Following this, the completed form, together with the appropriate fee, should be sent to the Administrative Secretary, AOPA, 50a Cambridge Street, London, SW1V 4QQ. Provided that the necessary requirements are met the candidate will be issued with the AOPA Intermediate Aerobatic Certificate.

ENVIRONMENTAL CONSIDERATIONS

Repetitive aerobatics can cause considerable annoyance to people living or working beneath. Instructors and candidates should be aware that this can lead to complaints, which in turn may lead to enforcement action and operating restrictions. AOPA is committed to defending the rights of General Aviation pilots, and can do so only if all concerned take into account the needs of other people. In this respect, pilots are advised to abide by the advice in the leaflet 'More Considerate Flying' produced by the General Aviation Awareness Council.

Recoveries from all manoeuvres must be completed by a minimum of 1000 feet above the surface, and a maximum height must also be observed of 500 feet below the base of regulated airspace. Greater margins are likely to be wise until adequate experience has been gained.

EXEMPTIONS

A candidate who already has reasonable aerobatic experience and who wishes to obtain an AOPA Intermediate Aerobatic Certificate may apply for a flight competency test with any qualified instructor who is registered with AOPA for the purpose of conducting such tests. A satisfactory standard of performance on this test will be accepted as meeting the requirements for the issue of the Certificate. An application form completed by the candidate and signed by the instructor must be sent to AOPA together with the appropriate fee before the Certificate can be issued.

Important Note: The aerobatic manoeuvres covered in this syllabus must only be undertaken if the Owner's/Flight Manual/Pilot's Operating Handbook specifically states that these manoeuvres are permitted on the aeroplane type.

PRIMARY REFERENCE MATERIAL

The Air Navigation Order

LASORS -	Safety Sense Leaflet 19	Aerobatics
	Handling Sense Leaflet 2	Stall/spin awareness
	Handling Sense Leaflet 3	Safety in Spin Training

Owner's/Flight Manual/Pilot's Operating Handbook – for specific type

"Better Aerobatics", Alan Cassidy, 2003; Freestyle Aviation Books, ISBN 0-9544814-0-2

www.aopa.co.uk

www.aerobatics.org.uk

INTERMEDIATE SYLLABUS (STAGE THREE)

THEORETICAL KNOWLEDGE INSTRUCTION

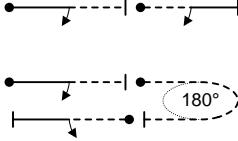
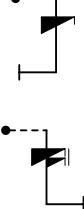
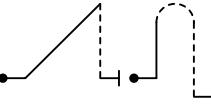
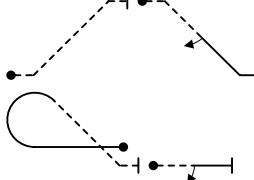
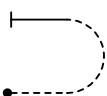
SUBJECTS	Instructor's Name and Signature
TECHNICAL SUBJECTS Inverted flight systems Inverted stalling and spinning Accelerated spins	
AIRCRAFT - SPECIFIC CHARACTERISTICS Permitted manoeuvres Inverted flight limitations Negative G limitations	
EMERGENCY DRILLS Use of parachutes. Aircraft abandonment	
ARESTI Notation for Intermediate aerobatic manoeuvres Aresti System (Condensed) (http://www.arestisystem.com)	
HUMAN FACTORS Effects of negative G Positive G tolerance following negative G manoeuvres Disorientation in inverted flight	

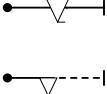
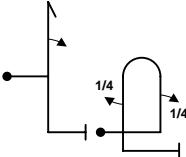
FLIGHT TRAINING

LONG BRIEFINGS

MANOEUVRE	Instructor's Name and Signature
Sustained inverted flight, including inverted turns and steep turns. Segments of inverted loops.	
Inverted stalling Precision recoveries from intentional inverted spins Rotational changes during recovery Effects of relative wind on recovery attitude	
Positive flick rolls (level and 45° descending) Entry speeds and unloading Half flicks (Restricted to aircraft with full aerobatic clearance to +6/-3G)	
Rolling turns to the inside and to the outside	
Advanced loops square rolling avalanche	
Rolling in the vertical, up and down Zero G Elevator neutral point Lack of adverse yaw at Zero G	

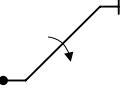
FLIGHT EXERCISES

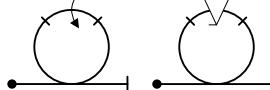
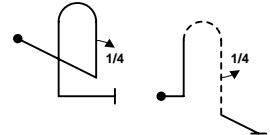
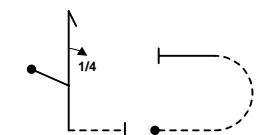
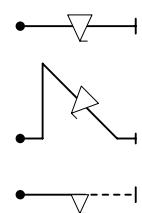
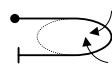
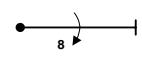
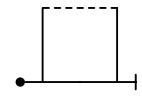
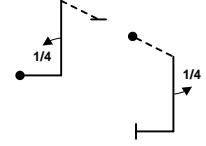
MANOEUVRE	Symbology	Instructor's Name and Signature
<p>Airmanship – Considerations as applicable to the flight exercise.</p> <p>Standard Aerobatics – revision</p> <ul style="list-style-type: none"> Hesitation loops Hesitation rolls Precision upright spins Half cuban eights Half roll, half loop down. 		
<p>Straight and level inverted flight</p> <p>Inverted turns</p> <p>Inverted steep turns (60° of bank)</p> <p>Recovery form inverted spiral dive</p> <p>roll wings level, push to level inverted flight, half roll to upright</p>		
<p>Inverted stall from level deceleration</p> <p>minimum loss recovery to level inverted</p> <p>Inverted spins entered from level inverted</p> <p>Non-precision recovery</p> <p>Precision spin recoveries</p> <p>including 1 and $1\frac{1}{2}$ turns.</p>		
<p>Low speed inverted flight</p> <p>half square loop</p>		
<p>Pushing at low speed</p> <p>slipstream + gyro + torque!!</p>		
<p>Outside looping segments (1)</p> <p>45° segments, up and down</p> <p>Avoid periods of negative G followed by a positive looping segment of more than 90°.</p>		
<p>Outside looping segments (2)</p> <p>half loop up</p>		

Outside looping segments (3) stall turn, push out		
Flick rolls entry speeds unloading effects of aileron stopping after $\frac{1}{2}$		
Rolling turns (1), inside optimum speeds flat turning aspects spatial orientation rythm		
Rolling turns (1), outside differences from inside		
Vertical rolling, up and down		

INTERMEDIATE AEROBATIC MANOEUVRES

The sequence in which these are taught does not necessarily have to follow the order in which they are listed in the syllabus. In all cases, safe entry parameters, height and speed, must be considered.

MANOEUVRE	Symbol	Instructor's Name and Signature
Climbing roll, 45° up		
Climbing half roll, 45° up		
Inverted 1½-turn spin		

Modified loops		
Humpties with $\frac{1}{4}$ rolls		
Outside looping figures $\frac{1}{4}$ roll up, stall turn, push out half outside loop upwards		
Flick rolls level 45° down half flick		
Inward rolling 180 turn		
Outward rolling 90 turn		
Eight-point roll		
Square loop		
Half square loop $\frac{1}{4}$ roll up and down		

Combinations of Aerobatic Manoeuvres

Many combinations of these figures are possible. Instructors should work with students to design short 3-figure mini-sequences which suit the characteristics of the training aircraft.

APPLICATION FOR THE INTERMEDIATE AOPA AEROBATIC CERTIFICATE

Candidate's Name in full (BLOCK CAPITALS)

Address

AOPA Membership No. (if applicable)

Work Telephone No:..... Home Telephone No:

Pilot's Licence No.: Total Flying Hrs: Hrs in Command

THIS FORM SHOULD BE ACCOMPANIED BY THE ADMINISTRATION FEE OF £15 (£10 FOR AN AOPA MEMBER). DO NOT SEND YOUR FLYING LOG BOOK UNLESS REQUESTED.

To be completed by the Instructor who has given the training.

Name of Training Organisation:

Address:

..... Telephone No:

I certify that the above named candidate has received a minimum of 8 hours flight instruction and 6 hours theoretical knowledge training in accordance with the requirements of the AOPA Syllabus for the Intermediate Aerobatic Certificate and has reached the skill level required for a Competency Test.

Instructor's Name..... Signature.....

Aircraft Type:.....

FLIGHT COMPETENCY TEST

Instructor's Name (BLOCK CAPITALS)

Signature Date

I certify that the above named candidate has successfully completed the Flight Competency Test for the AOPA Intermediate Aerobatic Certificate.

AOPA Office use only

	YES	NO	
Fee received	<input type="checkbox"/>	<input type="checkbox"/>	
Log Book required	<input type="checkbox"/>	<input type="checkbox"/>	Letter sent.....
Recommended for issue	<input type="checkbox"/>	<input type="checkbox"/>	

Signed Date

**AOPA INTERMEDIATE AEROBATIC CERTIFICATE
COMPETENCY TEST FORM**

General Handling & Manoeuvres	Pass	Fail	Comments & Queries for Debriefing
Engine/airframe – knowledge of limitations and safety aspects			
Pre-flight Procedures			
Full Roll on Climbing 45° line			
Precision Inverted Spin from level deceleration or after climbing line			
Inverted Steep Turn through at least 180°			
Half Outside Loop upwards			
Stall Turn with half vertical roll			
Humpty-Bump with quarter rolls up/dn			
Rolling Turn in or out			
Flick Roll, Half Flick			
Eight-point Roll			
Avalanche			
Square Loop			
Intermediate Sequence – recommended 8 to 10 Figures§			
Overall Airmanship			

FINAL ASSESSMENT

PASS

FAIL

§ Ideally this will be the current BAeA Intermediate Known sequence, see:
<http://www.aerobatics.org.uk/sequences/sequence.htm>