



**THE
BASIC
AEROBATIC
CERTIFICATE
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 Basic Aerobatic Certificate and the Part-FCL Aerobatic Rating.

This revision takes into account the requirements for the Aerobatic Rating (AR) needed to fly aerobatics in EASA aircraft from 8 April 2018, published by EASA in FCL.800, and in the Acceptable Means of Compliance No. 1 to FCL.800. It is compliant with, but also makes explicit interpretation of some of the non-standard terminology used in, these EASA documents. See also UK CAA publication CAP 804: Part I, Section 4, part 1.

The issue of the EASA AR requires only the completion of 5 hours of aerobatic instruction, without any specific proficiency test. In order that standards are seen to be maintained, the issue of the appropriate AOPA Aerobatic Certificate will remain subject to a flight during which the applicant will demonstrate his or her competency. This will continue to ensure the value and status of the AOPA Certificates and will enable the pilot to gain greater reward and more justifiable self-confidence, thereby more certainly achieving the flight safety goals of the AOPA certificate training programme.

Applicant's Name:

CAA reference no:.....

Address:

.....

Date Training Commenced.....

INTRODUCTION

Aerobatic flight encompasses a very large repertoire of manoeuvres, much more than can be taught in a single course of training. The introduction of the EASA AR, for pilots flying EASA certificated aircraft, should not mislead pilots into thinking that simply holding such a Rating represents full completion of their aerobatic training.

This Syllabus and Guide to the AOPA Basic Aerobatic Course covers the learning of the basic aerobatic manoeuvres required to take part in Beginners' events organised by the British Aerobatic Association (BAeA). However, it is appreciated that some pilots will wish to progress to more advanced manoeuvres and to the more specialised areas of competition and display aerobatics. Further training will be required before undertaking these more advanced aerobatics. Therefore AOPA and the BAeA have formulated a series of courses which make up a programme of progressive aerobatic training. Adherence to this philosophy of continual self-improvement by all aerobatic pilots will make a much more significant contribution to flight safety than the concept that holding an AR means that they have now learned everything that they need to know.

The purpose of this publication is to give guidance to pilots who wish to obtain the AOPA Basic Aerobatic Certificate and the EASA AR. The information it contains will also be needed by those training organisations and instructors who intend to conduct this training.

A copy of the syllabus must be held by the pilot undergoing the aerobatic training course 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 five hours of aerobatic flying with an instructor who is qualified to give aerobatic instruction. These five hours do not include the portions of any particular flight that are dedicated to taking off, climbing to height and returning to land after aerobatic training is complete. Pilots who already have some previous logbook evidence of aerobatic training should refer to the conversion report published in CAP 804: Part I, Section 4, Part P, pages 48/49; this also describes accreditation for AR issue to AOPA Aerobatic Certificate holders.

After April 2018, pilots will not be permitted to fly aerobatics in EASA aircraft unless they have the Part-FCL Aerobatic Rating included in their licences.

THEORETICAL KNOWLEDGE TRAINING

The theoretical knowledge section of the course will consist of a minimum of eight hours. Four 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 applicant 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 basic aerobatic manoeuvres to undertake appropriate training through a properly structured formal course.

Satisfactory completion of the course will enable the applicant to obtain the AOPA Basic Aerobatic Certificate and to apply to the CAA for the Part-FCL Aerobatic Rating.

PROCEDURE TO OBTAIN THE CERTIFICATE AND RATING

An applicant may commence the course at any time after qualifying for a pilot's licence entitling the pilot to fly as PIC on the class of aeroplane used for the course. Sufficient familiarisation or differences training appropriate to the specific variant used for the course should also be included in the course. There are no minimum pre-entry hour or time requirements to enter the course of training. However, pilots who do not meet the national conversion report criteria described in CAP 804 may not apply for the inclusion of an AR in a Part-FCL pilot licence until they have completed 40 hours as pilot-in-command since licence issue. After April 2018, the AR will be required for pilots who wish to undertake aerobatic flying in EASA aircraft, but will not be required in the UK for pilots flying non-EASA aircraft irrespective of the type of aeroplane pilot licence which they hold.

The course of training is reflected in the syllabus contents shown on the following pages and upon completing the course applicants who already have 40 hrs PIC since licence issue will be able to apply to the CAA for the issue of an AR. For the issue of the AOPA Basic Certificate, pilots are required to have their competence assessed in the air. The application forms for the issue of the certificate must be completed by the applicant and the instructor(s) conducting the course. The airborne assessment of competency must be conducted by an instructor registered with AOPA for this purpose. This flight is additional to the 5 hours of aerobatic instruction 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 must be paid to AOPA to cover the cost of administering the issue of the certificate. However, if the applicant is a pilot member of AOPA, this fee will be reduced to £10. For the issue of the AR, applicants who meet the PIC requirement should apply to the CAA using Form SRG Form 2157 together with the relevant fee under normal CAA payment methods.

The application form for the AOPA Certificate 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 applicant, instructor and the person conducting the assessment of competency. 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 applicant will be issued with the AOPA Basic Aerobatic Certificate.

ENVIRONMENTAL CONSIDERATIONS

Repetitive aerobatics can cause considerable annoyance to people living or working beneath. Instructors and applicants 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 1500 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 prudent until adequate experience has been gained.

EXEMPTIONS

An applicant who already has reasonable aerobatic experience and who wishes to obtain an AOPA Basic Aerobatic Certificate may apply for a flight competency test with any suitably 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 may only be undertaken if the Owner's/Flight Manual/Pilot's Operating Handbook specifically states that these manoeuvres are permitted on the specific aeroplane type.

PRIMARY REFERENCE MATERIAL

EASA FCL.800 and AMC No 1 to FCL.800

The Air Navigation Order

CAP 804

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

“**Basic Aerobatics**”, Campbell and Tempest, 1984; Granada Technical Books,
ISBN 0-246-11705-2

“**Better Aerobatics**”, Alan Cassidy, 2003; Freestyle Aviation Books, ISBN 0-9544814-0-2

www.aopa.co.uk

www.aerobatics.org.uk

Aresti Notation Catalogue and Software:

www.arestisystem.com

www.freestyleaviation.co.uk

BASIC SYLLABUS (STAGE ONE)

THEORETICAL KNOWLEDGE INSTRUCTION

SUBJECTS	Instructor's Name and Signature
<p style="text-align: center;">PHYSICAL LIMITATIONS</p> <p>Body stresses – 'g' forces, +ve and -ve. Symptoms of excess 'g'. Spatial disorientation. Airsickness.</p>	
<p style="text-align: center;">TECHNICAL SUBJECTS</p> <p>Legislation affecting aerobatic flying. Environmental considerations. Airframe and engine limitations – revision. Stalling and spinning – principles of flight.</p>	
<p style="text-align: center;">LIMITATIONS APPLICABLE TO THE SPECIFIC AEROPLANE TYPE</p> <p>Load factors, symmetrical and rolling. Airspeed limitations. Engine (including inverted flight limitations).</p>	
<p style="text-align: center;">AEROBATIC MANOEUVRES AND RECOVERY</p> <p>Entry and exit parameters, expected height gain or loss. Sequences and their analysis of height and speed. Rolling, looping and combination manoeuvres. Entry and recovery from developed spins, upright and inverted, including flat and accelerated rotation.</p>	
<p style="text-align: center;">EMERGENCY DRILLS</p> <p>Recovery from unusual attitudes. Use of parachutes. Aircraft abandonment.</p>	
<p style="text-align: center;">ARESTI SYSTEM</p> <p>Notation for basic aerobatic manoeuvres. (http://www.arestisystem.com)</p>	

Note: The Aresti System (Condensed) is an internationally agreed standard of aerobatic notation and has formed the basis of common understanding between pilots since the early 1970s. Teaching of the Aresti System is not required in EASA FCL.800 or its AMC. However, teaching of its basic structure and organisation remains part of the AOPA aerobatic syllabuses.

FLIGHT TRAINING

LONG BRIEFINGS

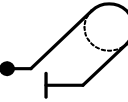

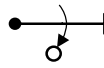
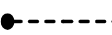
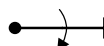
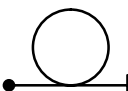
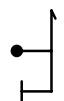

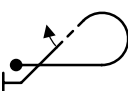
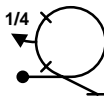
MANOEUVRE	Instructor's Name and Signature
<p>Airmanship considerations – location, height environment and lookout.</p> <p>Revision of general handling manoeuvres: Advanced turning (including max rate turns) Slow flight – level, climbing and descending in combination with turns.</p>	
<p>Stalling – entry and recovery from various flight attitudes and accelerated manoeuvre stalls.</p> <p>Recovery from the spiral dive.</p>	
<p>Developed spins with emergency, non-precision, recovery.</p>	
<p>Recoveries from markedly unusual attitudes including 'near vertical' and 'semi-inverted'</p> <p>Importance of avoiding 'tail slides' and not exceeding the V_{ne} and the 'rolling pull' "g" limitations.</p> <p>Restarting the engine in flight; causes of rich and lean cuts.</p>	
<p>Looping manoeuvres.</p>	
<p>Rolling manoeuvres. Inverted Flight (according to type restrictions).</p>	
<p>Yawing manoeuvres: stall turns (including forces on the aircraft in vertical flight).</p>	
<p>Combination manoeuvres and safe manoeuvre entry parameters (height and speed).</p>	

FLIGHT EXERCISES

MANOEUVRE	Instructor's Name and Signature
<p>Airmanship – Considerations as applicable to the flight exercise.</p> <p>General handling – revision:</p> <ul style="list-style-type: none"> • Advanced turning (including maximum rate turns) • Slow flight – level, climbing and descending in combination with turning flight at steeper bank angles. 	
<p>Stalling – entry and recovery from stall entries made in various flight attitudes.</p> <p>Accelerated manoeuvre stalls and recoveries.</p> <p>Spin recoveries at the incipient stage from various flight attitudes.</p> <p>Recoveries from spiral dives.</p>	
<p>Developed spins with emergency, non-precision recoveries.</p>	
<p>Recoveries from markedly unusual attitudes including 'near vertical' and 'semi-inverted'</p> <p>Restarting the engine in flight (touch drills).</p>	

BASIC 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, although this progression is designed to introduce more complex situations gradually. In all cases, safe entry parameters, height and speed, must be considered.

MANOEUVRE	Symbol	Instructor's Name and Signature
1. Chandelle and Lazy Eight; climbing at 30° - 45°, turning, descending; 180° heading change. Repeated with opposite turn for Lazy Eight. Bank angle at top between 90° and 135°.		
2. Aileron (Ballistic) Roll ≈ zero 'g'.		
3. Positive Barrel Roll; (heading change 60° to 90° at top).		
4. Inverted Flight (according to type).		
5. Straight and Level Roll.		
6. Loop; pitch rate proportional to air speed (circular with no wind).		
7. Stall Turn (Hammerhead); vertical attitude climbing and descending rudder applied "with" the slipstream		
8. Half roll at the top of a half loop. (Immelmann)		
9. Half Cuban Eight; rolling on down line; descent angle 30° - 45°.		
10. Half Loop up, half Barrel Roll down. (Quarter Clover rolling downwards) 90° heading change.		

In the build-up to the assessment of competency sequence, students should learn to fly combinations of two or three of these basic aerobatic figures. Manoeuvres 9 and 10 are not required for the EASA AR, but form part of the BAeA Beginners' repertoire.

APPLICATION FOR THE BASIC AOPA AEROBATIC CERTIFICATE

Applicant's Name in full (BLOCK CAPITALS).....

Address.....

.....

AOPA Membership No. (if applicable)

Home Telephone No.: E-mail:.....

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 applicant has received a minimum of 5 hours aerobatic flight instruction and 8 hours theoretical knowledge training in accordance with the requirements of the AOPA Syllabus for the Basic Aerobatic Certificate and has reached the skill level required for an Assessment of Competency. All other information on this application is correct.

Instructor's Name Signature.....

Aircraft Type:.....

ASSESSMENT OF COMPETENCY

Instructor's Name (BLOCK CAPITALS).....

Signature Date.....

I certify that the above named applicant has successfully completed the Assessment of Competency for the AOPA Basic Aerobatic Certificate. It is my recommendation that AOPA may issue an aerobatic certificate to the applicant.

AN INCOMPLETE APPLICATION MAY CAUSE A DELAY IN ISSUING THE CERTIFICATE. PLEASE ENSURE THAT YOUR RECORDS ARE ACCURATE

AOPA Office use only

	YES	NO	
Assessment of Competency Form plus copies of pages 7-10	<input type="checkbox"/>	<input type="checkbox"/>	
Fee received	<input type="checkbox"/>	<input type="checkbox"/>	Letter sent.....
Log book required	<input type="checkbox"/>	<input type="checkbox"/>	
Recommended for issue	<input type="checkbox"/>	<input type="checkbox"/>	

Signed

Date



AOPA BASIC AEROBATIC CERTIFICATE ASSESSMENT OF COMPETENCY FORM



General Handling & Manoeuvres	Pass	Fail	Comments & Queries for Debriefing
Engine/airframe – knowledge of limitations and safety aspects			
Pre-flight Procedures			
Slow Flight: Level, climbing, turning & descending			
Stall Entries and Recoveries from various flight attitudes			
Advanced (Maximum Rate) Turns			
Spins with non-precision recoveries			
Recoveries form Unusual Attitudes			
Loop			
Aileron (Ballistic) Roll			
Barrel Roll			
Slow (Level) Roll			
Stall Turn			
Half Roll off the top of a Loop			
Half Cuban (rolling on down line), or Quarter Clover rolling downwards			
Combination Sequence§			
Overall Airmanship			

FINAL ASSESSMENT

PASS

FAIL

Signed.....

Date.....

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