

Check flight handbook

CAP 1038



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Revision history

This publication at Issue 2 replaces Issue 1 of the CAA Flight Check Handbook, dated 29 November 2013 and previously available on the CAA website.

Glossary

AD	Airworthiness Directive
ADD	Aircraft Deferred Defect
ADF	Automatic Direction Finder
AFM	Aircraft Flight Manual
AFT	Airworthiness Flight Test (Airworthiness Flight Testing)
AFTS	Airworthiness Flight Test Schedule
AGL	Above Ground Level
AIC	Aeronautical Information Circular
AMC	Acceptable Means of Compliance
AMO	Aircraft Maintenance Organisation
ANO	Air Navigation Order (CAP 393)
AoA	Angle of Attack
AOC	Air Operator's Certificate
APU	Auxiliary Power Unit
ARC	Airworthiness Review Certificate
ARI	Additional Requirement for Import
ASI	Air Speed Indicator
ATC	Air Traffic Control
ATPL	Airline Transport Pilots License
AUW	All-Up Weight
AWD	Airworthiness Division
BITE	Built In Test Equipment
BCAR	British Civil Airworthiness Requirements
BMAA	British Microlight Aircraft Association
C of A	Certificate of Airworthiness
C of V	Certificate of Validity
CAMO	Continued Airworthiness Management Organisation
CAP	Civil Aviation Publication
CAS	Calibrated Airspeed
CFS	Check Flight Schedule
CG	Centre of Gravity
CRM	Cockpit Resource Management
CTP	Chief Test Pilot

DLS	Design Liaison Surveyor
DME	Distance Measuring Equipment
DR	Dutch Roll
EAS	Equivalent Airspeed
EASA	European Aviation Safety Agency
ECL	Engine Condition Lever
EGT	Exhaust Gas Temperature
ELA	European Light Aircraft
EPR	Engine Pressure Ratio
FADEC	Full Authority Digital Electronic Control
FM	Flight Manual
FTE	Flight Test Engineer
FW	Fixed Wing
IAS	Indicated Air Speed
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
ITT	Inter-Turbine Temperature
JAR	Joint Aviation Requirements
LAA	Light Aircraft Association
LAMS	Light Aircraft Maintenance Schedule
LSA	Light Sport Aircraft
MAUW	Maximum All-Up Weight
MEL	Minimum Equipment List
MMEL	Master Minimum Equipment List
Mmo	Maximum Operating Mach Number
MOR	Mandatory Occurrence Report
MTOW	Maximum Weight
MTWA	Maximum Weight Authorised
Nf	Free Turbine Speed
Ng	Gas Generator RPM
Nr	Rotor RPM
OAT	Outside Air Temperature
OEI	One Engine Inoperative
POH	Pilots Operating Handbook
RFM	Rotorcraft Flight Manual
RNAV	Area Navigation



ROC	Rate of Climb
RPM	Revolutions Per Minute
RRPM	Rotor RPM
RW	Rotary Wing
SARG	Safety and Airspace Regulation Group
SFC	Specific Fuel Consumption
SHINE	Second Hand Imported aircraft from a Non EC state
SOP	Standard Operating Procedure
TLS	Type Liaison Surveyor
TOT	Turbine Outlet Temperature
Tp	Test Pilot
V2	From BCAR Section D
VFR	Visual Flight Rules
V mc(power on)	Gyro Minimum Control Speed with power applied
V mc(power off)	Gyro Minimum Control Speed with no power applied
Vmca	Minimum Control Speed (Air)
Vmin	On aircraft with full low speed protection, the speed at which the aircraft stabilizes with full nose-up pitch control and the engines at idle.
Vmo	Maximum Operating Speed
Vne	Never Exceed Speed
Vno	Normal Operating Limit Speed
VOR	VHF Omni directional Radio
Vtoss	Take Off Safety Speed
Vy	Climb Speed
ZFW	Zero Fuel Weight

Introduction

1. This Handbook was originally produced by the Civil Aviation Authority as a reference work for those pilots and FTEs carrying out Check Flights on UK registered aircraft; as such, it was intended for use by those pilots who have previously received adequate familiarisation with check-flight techniques and safety precautions and fully understood the significance and intent of the tests as well as the techniques used to minimise the risk associated with some tests. Furthermore, it has only ever been intended as an aide-memoire/refresher for pilots who have already been briefed: **it is not a stand-alone training document.**
2. The scope of this edition of the Handbook is reduced from earlier editions. This is because the CAA is no longer able to support the level of detailed information and guidance that has previously been provided. Nevertheless, it explains who should carry out Check Flights and offers a number of technical guides to the various aspects of the Check Flight. It is not intended to replace the contents of an aircraft's Flight Manual (or Permit to Fly) and where there is conflict between this handbook and the equivalent documentation provided by the aircraft manufacturer, the manufacturer's documentation is always overriding.
3. This Handbook does not apply to experimental or certification flight testing, whether on prototype or modified established types. Such flights are carried out under 'B Conditions', 'E Conditions' or a Permit to Fly.
4. This Handbook will not be subject to any further amendment, because the CAA is no longer able to offer up-to-date guidance on check flight procedures. There are a number of flight-test accredited organisations which can provide guidance, as well as courses offered by the aircraft manufacturers that cover the safe conduct of check flights.

Chapter 1

The policy and background behind check flights

Introduction – The purpose of check flights

- 1.1 The ICAO Airworthiness Manual, Volume 1, states the purpose of airworthiness Check Flights is to ensure that the aircraft's flight characteristics and its functioning in flight do not differ significantly from the normal characteristics for the type and to check the flight performance against the appropriate sections of the flight manual.
- 1.2 The principles and safety considerations that follow are applicable for both required and elective Check Flights for continuing airworthiness management. These Check Flights do not include maintenance Check Flights for specific items; these are being covered by EASA through its rulemaking task (MDM.097 (a) & (b))¹.
- 1.3 The purpose of this Handbook is to advise owners and operators and organisations involved in the management of the airworthiness of UK registered aircraft of the current CAA policy for flight-checking both EASA and non-EASA aircraft. It is only intended as an aide-memoire/refresher for pilots who have already been briefed: **it is not a stand-alone briefing document**. This Chapter gives a summary overview of the present policy for import and the continued airworthiness requirements for aircraft on the UK Register. More detail on particular flight-checking techniques and requirements is given in the rest of this Handbook.
- 1.4 For the purpose of this Handbook, applicable EC Regulations will be referred to as the EASA Regulations and aircraft subject to these Regulations will be referred to as EASA aircraft. For non-EASA aircraft (which are defined in Annex II to Regulation (EC) No 216/2008), British Civil Airworthiness Requirements (BCAR) remain applicable (see below).

¹ <https://www.easa.europa.eu/document-library/notices-of-proposed-amendments/npa-2012-08>

General

Background - terminology

- 1.5 Flight testing of aircraft provides a basis to establish compliance with certification requirements for new aircraft and changes to aircraft. Other check flights referred to as Check Flights or in-flight surveys, can be carried out periodically on in-service aircraft as one of the processes to ensure that an aircraft continues to comply with the applicable airworthiness requirements. Additionally, maintenance Check Flights may be carried out following a maintenance activity on an aircraft to provide reassurance of performance or establish the correct functioning of a system that cannot be fully established during ground checks.

EASA

- 1.6 EASA is the European Union organisation responsible for aviation safety. The main activities of the organisation include strategy and safety management, certification of aviation products and oversight of approved organisations and EU Member States. In order to identify when a flight test or Check Flight is necessary reference should be made to the respective part of the EASA Regulations – Part 21 for certification related flights, and Part M for flights relating to continuing airworthiness. The UK requirements for flight checking in BCARs do not apply to EASA aircraft.
- 1.7 The EASA Regulations introduced a non-expiring Certificate of Airworthiness (C of A), which is underpinned by a prescriptive continuing airworthiness management system. Owner-operators of aircraft are responsible for ensuring the continuing airworthiness of their aircraft; Part M M.A.201 refers. These responsibilities require owner-operators or their contracted organisations under Part M subpart G to analyse the airworthiness status of the aircraft, including reported flight defects and performance issues. In fact this is nothing more than owners or operators at any level should already be doing. Each aircraft has to have a current Airworthiness Review Certificate (ARC) in order to continue to operate. This will initially be issued by the CAA with the issue of the C of A, for a

validity period of 12 months. The renewal of the ARC will be performed by an organisation approved under Part M, Sub-Part G.

- 1.8 EASA aircraft are not subject to the systematic programme of Check Flight, previously carried out at the time of C of A renewal or to an agreed flight test-sampling programme. Owners/operators who establish a need to carry out periodic Check Flights, as part of their own airworthiness assurance process, should ensure that their Check Flight schedules and procedures are developed in accordance with current best practices. They may achieve this by consulting with the aircraft manufacturer or with flight-test accredited organisations for advice on content and safety procedures.
- 1.9 Aircraft carrying out military, customs, police, search and rescue, fire-fighting, coastguard or similar activities or services are considered to be “State Aircraft” and as such are not subject to EASA Regulations. However, for the purpose of flight checking, those State Aircraft that are of a type issued with an EASA type certificate can be treated as EASA aircraft. Further information on this subject is to be found in CAP 562, Civil Aircraft, Airworthiness Information and Procedures, Chapter B, Leaflet B-60.
- 1.10 As discussed above, the term ‘flight testing’ has historically been a generic description of an activity associated with ensuring that an aircraft is airworthy. Although Part 21 continues to make reference to the term flight testing, Part M refers to ‘Check Flights’ and ‘in-flight surveys’. In the following paragraphs therefore, the term ‘flight testing’ will be used when discussing pre-certification actions; ‘Check Flight’ will refer to required or elective verification activities that take place post type certification, such as for the issue of a C of A, or post maintenance; and ‘in-flight surveys’ are another form of Check Flight.

Types of check flights

- 1.11 Check Flights are required for fundamentally two different purposes, maintenance checks and continuing airworthiness management.

Maintenance Check Flight (MCF)

- 1.12 A MCF will often be required as part of a maintenance procedure to diagnose a fault or to ensure a fault has been rectified. This airborne test may be



“prescribed” by a maintenance procedure, or it could be “elective” where an organisation deems it good engineering practice.

Airworthiness Check Flights (ACF)

- 1.13 ACFs are flights that may be conducted before or after a period of maintenance or at any convenient stage in an aircraft’s Airworthiness Certificate revalidation cycle. These flights are flown to an appropriate Check Flight Schedule and, should be flown by a suitably briefed pilot (see paragraph 1.25 below).

The scope of the Airworthiness Check Flight

- 1.14 **Aircraft Performance:** The aircraft’s performance must meet the scheduled performance contained within the Aircraft Flight Manual (AFM) or Operations Manual (OM). The performance should not have significantly degraded since the last Check Flight and any measured degradation should be accounted for. For example one-engine-inoperative climb performance should meet scheduled figures; stall speeds should match AFM figures; helicopter autorevs should be within limits etc.
- 1.15 **Handling Qualities:** The aircraft should handle/fly as intended. Stall characteristics should be benign or normal for the type. The aircraft should fly in balance and within designed trim conditions. In the case of rotorcraft the low speed handling should be benign in addition to that of forward flight, etc.
- 1.16 **Systems:** All aircraft systems should be serviceable and fit for purpose or, if permissible, clearly labelled as inoperative. Systems used in the resolution of emergencies should also be operated, e.g. emergency lowering of undercarriage. Autopilots and Flight Control Systems, particularly on helicopters, should be comprehensively tested to ensure they perform as intended with degraded modes assessed where possible.

Check flight schedules

The objectives and content of check flight schedules

- 1.17 The purpose of airworthiness Check Flights is to ensure that the aircraft’s flight characteristics and its functioning in flight do not differ significantly from the normal characteristics for the type and to check the flight performance against

the appropriate sections of the flight manual. These flights must only be conducted in accordance with schedules that have been reviewed and accepted by the manufacturer or an organisation approved in accordance with EASA Part 21 Subparts G or J or `BCAR A Chapter A8-21 (Approval of Organisations Responsible for Design or Production suitably qualified for the type. The principles and safety considerations that follow are applicable for both required and elective Check Flights for continuing airworthiness management. These Check Flights do not include maintenance Check Flights for specific items.

1.18 It is important that the content and conduct of Check Flights is standardised as far as possible to ensure that the appropriate checks are always made. In order to achieve the objectives of Check Flights, they should be flown in accordance with a Check Flight Schedule that includes climb performance checks and handling checks that include checks on various flight characteristics.

1.19 Extensive CAA experience has shown that Check Flights flown in accordance with appropriate schedules will establish whether:

- 1) the handling characteristics are satisfactory and typical of the type;
- 2) the climb performance equals or exceeds the scheduled data; (Note that data is necessary in order to assess any future deterioration of performance in service.)
- 3) the aircraft and its equipment function satisfactorily and the aircraft continues to comply with its type design standard.

1.20 To be appropriate, the schedules should cover the following:

- 4) Handling checks, which include checks on various flight characteristics:
 - a) A qualitative assessment of the take-off;
 - b) An assessment of the trim of the aircraft and the effectiveness of primary flight controls and trimmers, in steady flight;
 - c) Hover manoeuvres for helicopters;
 - d) Flight at maximum speed;
 - e) Stalls in the take-off and en-route landing configurations;
 - f) A qualitative assessment of the landing.

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- 5) Performance checks - simple, free air pressure rate-of-climb measurements under known and predicted configurations and conditions.
- 6) Tests to check functioning of the aircraft equipment in flight and safe, recoverable functioning of back-up systems e.g. emergency gear lowering, use of alternate braking systems. Controls, systems and equipment, which are used regularly, may be considered, for the purpose of the Schedule, to have been checked on the basis of normal usage.

- 1.21 Schedules for required Check Flights for EASA and non-EASA aircraft, which meet the above criteria are no longer available on the CAA website. This is because the CAA can no longer guarantee the applicability of a given CFS on an EASA aircraft due to the increasing number of different aircraft standards and large number of Supplementary Type Certificates appearing on EASA aircraft types.
- 1.22 For certain categories of aircraft below 5700 kg MAUW, generic CAA schedules, which can be used for a range of aeroplane types, can still be obtained on a case-by-case basis on application to the CAA at the address given in Chapter 5 Appendix B.
- 1.23 If a Check Flight is planned on an aircraft for which a generic CFS is not applicable, the CFS must be agreed by the manufacturer, or an organisation approved in accordance with BCAR A Chapter A8-21 (Approval of Organisations Responsible for Design or Production suitably qualified for the type. The Check Flight Schedule should incorporate all the elements discussed above and in particular, a Check Flight Certificate.

Check flight results

- 1.24 After each Check Flight, the pilot who conducted the flight should complete the post-flight certificate, which lists all the defects found during the flight. This together with the completed Schedule comprises the Check Flight Report. Each defect should be classified according to its impact on safety. For required Check Flights, items requiring rectification before the issue, renewal or re-validation of the Airworthiness Review Certificate (ARC) or National Permit to Fly should be

marked 'R'. Those items that require re-checking in-flight following rectification (such as inadequate climb performance) should, in addition, be marked 'FT'.

Pilots conducting check flights

- 1.25 To ensure that appropriate levels of safety are maintained, Check Flights should only be conducted by pilots who have satisfactory experience with the appropriate CFS, and have received adequate familiarisation of check-flight techniques and safety precautions. For both required and elective Check Flights, it is necessary that the pilot concerned fully understands the significance and intent of the tests as well as the techniques used to minimise the risk associated with some tests (See Chapter 2).
- 1.26 Pilot acceptance criteria and procedures for conducting Check Flights should be included in the continuing airworthiness management exposition where applicable. Though it is not feasible to lay down absolute experience and ability requirements for pilots, guidelines are provided in this Handbook. In all cases, the organisation responsible for the check flight should be satisfied that the pilot concerned fully understands the significance and intent of the checks as well as the techniques used to minimise the risk associated with some checks.

Implementation: Non-EASA aircraft

Introduction

- 1.27 British Civil Airworthiness Requirements (BCARs) continue to be applicable to non-EASA aircraft. For a C of A or Permit to Fly to be issued to a non-EASA aircraft it is necessary for the CAA to determine that the individual aircraft conforms to its type certification standard and is airworthy. To establish this, a Check Flight is required to be completed satisfactorily prior to the initial issue of the C of A or Permit to Fly.
- 1.28 However, it is no longer mandatory for a Check Flight to be conducted for the renewal of an expiring C of A, a National ARC or C of V. Nevertheless, the need for regular Check Flights as part of the aircraft's continuing airworthiness assurance process still needs to be considered, in accordance with the criteria in this handbook.

Initial issue of C of A or National Permit to Fly

- 1.29 The Check Flights will be conducted in accordance with a CAA Check Flight Schedule as detailed below:
- For new aircraft**, the Check Flight shall be conducted under the supervision of the aircraft Type Design Organisation, if applicable.
- For used aircraft**, it shall be conducted under the supervision of the applicant or operator.

Renewal of a C of A or Permit to Fly

- 1.30 It is no longer mandatory for a Check Flight to be conducted for the renewal of an expiring National C of A, a National ARC or C of V. The responsibility for deciding when a Check Flight is required now falls upon the aircraft pilot-owner, maintainer or continuing airworthiness management organisation (as applicable). Guidance to assist in the determination of when a Check Flight is necessary is contained in Chapter 2, and details as to who can perform it are in Chapter 3.

Check Flight Schedules (CFS)

- 1.31 It is important that the content and conduct of Check Flights is standardised as far as possible to ensure that the appropriate checks are always made. In order to achieve the objectives of Check Flights outlined above, the Check Flights should be flown in accordance with a CFS agreed with the CAA. These include climb performance checks and handling checks that combine checks on various flight characteristics.
- 1.32 It is the responsibility of the Airworthiness Review Signatories and the pilot conducting the Check Flight to ensure that the CFS is appropriate and correct for the type of aircraft to be flown. The CAA agreed generic schedules used on Annex II aircraft, e.g. CFS 2 for single-engine piston aircraft are available on the CAA website. If a non-generic CFS is planned to be used, the CFS must be agreed by the CAA.

Check flight results

- 1.33 After each Check Flight, the pilot who conducted the flight should complete the post-flight certificate, which lists all the defects found during the flight. This together with the completed Schedule comprises the Check Flight Report. Each defect should be classified according to its impact on safety. Items requiring rectification before the issue or renewal of the C of A or C of V should be marked 'R'. Those items that require re-checking in-flight following rectification (such as inadequate climb performance) should, in addition, be marked 'FT'.

Implementation: EASA aircraft

C of A issue – New aircraft

- 1.34 As part of a production assurance programme, a Check Flight for an individual aircraft to determine conformity with the type certification standard will have been carried out by the manufacturer prior to the issue of their statement of conformity (EASA Form 52)/export C of A. No Check Flight is subsequently required for C of A issue of new aircraft.

C of A Issue – Used aircraft from an EU Member State

- 1.35 The EASA Regulations are legally binding in each Member State and facilitate equal recognition of certificates issued in any Member State. When an aircraft with a valid C of A, including where applicable a valid associated ARC issued by an EU Member State transfers to the UK Register, no Check Flight is required for C of A issue.

C of A Issue – Used aircraft from a non-EU Member State

- 1.36 EASA Part M, M.A.904 and the AMC refers to the airworthiness review that is required to be carried out on used EASA aircraft being imported from Non-EU Countries (currently referred to as (Second Hand Imported aircraft from a Non-EU state (SHINE)) and includes reference to a Check Flight report, if applicable, as part of the documentation needed to support the airworthiness review. The responsibility for satisfying M.A.904 rests with the Continuing Airworthiness Maintenance Organisation (CAMO) or with the certifying staff of an ELA1

aircraft who is approved by the CAA to carry out airworthiness reviews and to make recommendations to the CAA.

1.37 The CAA will not normally be involved in these Check Flights. These organisations and individuals will therefore need to arrange for the Check Flight to be carried out and guidance material to assist in the determination of when a Check Flight is necessary and who can perform it, can be found in Chapter 2.

1.38 Note that there are three exceptions where a Check Flight may not be necessary:

- **Aircraft returning from short-term lease.** A number of owner or operators lease out aircraft at seasonal periods to reduce capacity. In certain cases the aircraft are transferred from the UK register to the register of a non-EU operator. In cases when the aircraft return to the UK register within 12 months and the owner or operator has arrangements in place to monitor the continuing airworthiness arrangements with the lessee, a Check Flight may not be necessary on its return.
- **Aircraft from Non-EU States having entered into arrangement with EASA.** A number of non-EU States have entered into a formal agreement with EASA and have committed to comply with the essential regulations as far as airworthiness procedures and practices are concerned. Switzerland, Norway and Iceland have signed such agreements. Therefore, aircraft transferred from such states will be classified as if they are being transferred from an EU member state and will be treated accordingly for the purposes of Check Flight considerations.

Light sport aircraft with an EASA Permit to Fly

1.39 EASA has agreed that UK oversight will include Check Flights as part of the EASA process. During a number of such flights the CAA has identified significant issues on some LSA types primarily relating to the aircraft performance and the content of the Flight Manual (or Pilot Operating Handbook).

- 1.40 Consequently, for initial issue of the Permit to Fly for the first-of-type on the UK Register, or subsequent aircraft with significant differences, a Check Flight will be required.

C of A Issue – Export C of A from UK to a third country

- 1.41 EASA regulations do not make provisions for the issue of an Export C of A when aircraft transfer registration to another EU Member State. The CAA will continue to accept applications for the issue of an Export C of A for aircraft to be exported to non-EU Member States. For the present the general provisions of BCAR Section A, Chapter A3-6 “Certificates of Airworthiness for Export” will apply with the exception that no Check Flight will be required unless specified by the importing State.

Maintenance check flights

- 1.42 The EASA Part M Regulations in M.A.301 paragraph (8) identify maintenance Check Flights as part of the continuing airworthiness tasks necessary to ensure the serviceability of operational and emergency equipment. Maintenance organisations and licensed engineers are required to carry out maintenance and rectification in accordance with applicable current maintenance data. As part of this, the final function checks, measurements and assessment of operational adequacy will determine the acceptability of the work done and any associated performance.
- 1.43 For some maintenance tasks, the manufacturer prescribes in the aircraft’s Maintenance Manual the need for Check Flights to be carried out. For other tasks involving, for example, work carried out on a system or component the correct functioning of which is affected by flight dynamics, air loads, airflows, or low temperatures and pressures, the certifying engineer will need to determine if a maintenance Check Flight is required to verify its operation. This decision will be influenced by the maintenance organisation’s quality system, which is required by Part M to ensure that all maintenance is properly performed.
- 1.44 Note: EASA is developing Acceptable Means of Compliance and Guidance Material to help to determine when a maintenance Check Flight be performed and under which protocol and responsibilities. It is also establishing operational

requirements and crew competence criteria for the performance of these flights. In the UK, these new criteria will be applicable to all operators performing maintenance Check Flights both on EASA and non-EASA aircraft alike and thus supersedes the material given for other types of Check Flights. The latest information can be found in the comment-response document to EASA NPA 2012-08 Maintenance Check Flights (paragraph SPO-SPEC.MCF.115 Flight Crew Requirements), which can be accessed directly using the following link: www.easa.europa.eu/document-library/comment-response-documents/crd-2012-08. This is due to be finalised by the end of 2016.

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Chapter 2

Airworthiness guidance - when to perform check flights

When a check flight is necessary and who can perform it

Introduction

- 2.1 As part of the continuing airworthiness oversight of an aircraft, the need for a Check Flight should be considered. The following paragraphs provide guidance to assist in the determination of when a Check Flight is necessary and who can perform it.

Individual responsibility

Pilots, owners, licensed engineers, approved organisations

- 2.2 The responsibility of deciding when a Check Flight is required either because of a maintenance requirement or for airworthiness issue rests with the pilot-owner, operator, engineer, maintenance or continuing airworthiness management organisations. Once the decision is made, the responsibility for ensuring that the Check Flight is carried out cannot be delegated. The responsible person will also need to ensure that it is satisfactorily completed and the results recorded in an appropriate CFS.

Airworthiness review signatory

- 2.3 It is the responsibility of the Airworthiness Review Signatory, when conducting an airworthiness review, to decide whether a Check Flight was required during the review period, and if so, that it was carried out satisfactorily. Should it be identified that either a required Check Flight has not been performed or satisfactorily completed, including the accomplishment of any rectification action, then the airworthiness review should be considered as incomplete until such time as the issues are resolved.

- 2.4 For used EASA aircraft being imported from non-EU Countries, the Airworthiness Review Signatory should be aware of the requirement in EASA



Part M, M.A.904 and AMC that refers to the airworthiness review for these aircraft. The review includes a Check Flight report as part of the documentation needed to support the airworthiness review. The responsibility for satisfying M.A.904 rests with the Airworthiness Review Signatory who will need to arrange for the Check Flight to be carried out.

- 2.5 Note that the Airworthiness Review Signatory includes all authorised individuals who are approved to carry out an Airworthiness Review for an aircraft with an EASA C of A, a National C of A or a National Permit to Fly for the purposes of making a recommendation to the CAA for the renewal of the Airworthiness Certificate, or, who are renewing the Airworthiness Certificate under their Organisation Approval. This also includes CAA personnel when they carry out the airworthiness review.

When check flights should be performed

- 2.6 Prescribed Maintenance Check Flights: A prescribed maintenance Check Flight should be performed in accordance with recognised rectification/maintenance schedules.
- 2.7 Elective Maintenance Check Flight – in accordance with best engineering practice and considering:
- Engine(s) including control systems disturbance, overhaul or replacement;
 - Propeller(s) including control systems disturbance, overhaul replacement;
 - Main and tail Rotor systems disturbance, overhaul replacement;
 - Any flying control surface change, repair or re-rig (including trim tabs);
 - Accident-related structural repair;
 - Undercarriage replacement, repair or re-rig;
 - Any pitot-static, Air Data Computer or associated component replacement or repair;
 - Alpha probe repair or replacement;
 - Any significant Fuel, Electric, Hydraulic or Pneumatic repair or replacement;
 - Any Flight Control System disturbance or repair;

- For pressurised aircraft, any pressurisation system component replacement or repair;
- Significant or multiple gyroscopic flight instrument repair or replacement;
- Periods in storage;
- Following dismantling and re-assembly of aircraft.

Airworthiness Check Flights (ACF)

- 2.8 An aircraft's airworthiness may degrade over time. A number of factors affect the rate of degradation, e.g. flying hours, operating cycles, operating environments, hangarage, operational use etc. In the past, the CAA required that airworthiness Check Flights be conducted on a calendar-based cycle aligned with the renewal of the airworthiness certificate. It is the responsibility of the pilot-owner, operator, engineer, or approved organisation to determine when an airworthiness Check Flight is necessary. Therefore the individual or approved organisation should ensure that valid and consistent decisions regarding the need for a Check Flight are made and recorded. The CAA will review an organisation's procedures and decision making regarding Check Flights as part of the normal oversight process.
- 2.9 Evidence of abuse or neglect should indicate the need for an ACF. Equally, usage in a harsh environment may indicate the need to conduct Check Flights more often.
- 2.10 When considering the need for a Check Flight and, in particular the length of time between Check Flights, the traditional tried and tested calendar based periodicities should be considered. The one- and three- year cycle of ACFs has been demonstrated to serve the UK fleet well for many years. A decision to extend this period should be carefully considered and the following circumstances are examples of where consideration may be given to extending the period between airworthiness Check Flights:
- A low flying rate. Note that minimal or zero flying would be expected to warrant a Check Flight as part of the Airworthiness Review;
 - Lower than expected number of cycles;
 - Fewer operating cycles per flying hour;

- Good hangarage (warm and dry). Note that aircraft left outside for long periods with minimal flying would be expected to warrant a Check Flight as part of the Airworthiness Review;
- Gentle operational use with low payloads, reduced power requirements, routine low all-up weight operation etc.;
- Benign operating environment – not sea spray or salt laden air or extremes of hot/cold temperature, precipitation etc.;
- Owner/Operator regular “in-house” power performance checks;
- Operated in accordance with a benign spectrum of usage – e.g. long cruise flights rather than regular training sorties including circuits, repeated landings, autorotations, engine relights, etc.

2.11 In the past, completed airworthiness CFSs have been submitted to the CAA Flight Department to allow oversight of the process and to monitor the performance of a fleet of aircraft types. It is no longer required to submit completed schedules. However a record of all Check Flights and their results should be kept with the aircraft records, so that there is auditable evidence available to indicate that appropriate action, including resolution of any defects, has taken place.

Check Flight Schedules (CFS) (See Chapter 5)

2.12 Owners, operators, licensed engineers or approved organisations who establish a need to carry out periodic Check Flights as part of their own airworthiness assurance process, or are required for commercial reasons to do so, should ensure that their Check Flight schedules and procedures are developed in accordance with current best practices. They may achieve this by consulting with the aircraft manufacturer or with an accredited flight test organisation for advice on content and safety procedures. It is important that the content and conduct of Check Flights is standardised as far as possible. It is the responsibility of the pilot conducting the Check Flight to ensure that the CFS is appropriate and suitable for the type of aircraft to be flown.

Approved Pilots (See Chapter 3)

- 2.13 To date, maintenance organisations and operators have been responsible for the oversight and selection of pilots used to conduct maintenance Check Flights (MCF). The suitability of pilots conducting MCF and appropriate safety precautions must be addressed. EASA is finalising Acceptable Means of Compliance and Guidance Material relating to MCFs, which include crew competence criteria for the performance of these flights. Although this criteria will only apply to EASA aircraft, the CAA will adopt the EASA criteria for non-EASA aircraft. The latest information can be found in the comment-response document to EASA NPA 2012-08 Maintenance Check Flights (paragraph SPO-SPEC.MCF.115 Flight Crew Requirements), which can be accessed directly using the following link: www.easa.europa.eu/document-library/comment-response-documents/crd-2012-08. This is expected to be finalised by the end of 2016.
- 2.14 For ACF, when the operator or maintenance organisation has decided that a check flight is needed, arrangements should be made to ensure that the check flight is carried out safely and in accordance with industry best practice. It is necessary that the pilot concerned fully understands the significance and intent of the tests to be conducted, as well as the techniques used to minimise the associated risk. There are two fundamental components to this requirement:
- The pilot has to be briefed about, and has often demonstrated, specific techniques required e.g. the conduct and documentation of the certification stall.
 - The pilot must be briefed on safety and risk to ensure the pilot can perform the task safely and can exercise their own judgement.
- 2.15 The LAA and the BMAA will continue with their own current arrangements for approving pilots to carry out Check Flights.
- 2.16 Additionally, this briefing procedure allows clear guidance to be given on all administrative aspects of the process. It is the responsibility of the Airworthiness Review Signatory to ensure that pilots conducting ACFs have been approved and are within their four year currency and documented procedures should be

put in place to ensure that this always happens. In making this assessment it should be noted that the CAA's programme of check flight pilot briefings had a four-year currency limit associated with it, which lapsed if an ACF had not been completed in that period. More recently, the emerging EASA requirements for maintenance check flights specify a 36 months recency requirement. Consideration should therefore be given to this revised limitation.

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Chapter 3

Eligibility of pilots to carry out check flights

Introduction

- 3.1 Conducting Check Flights is a significantly different activity from engineering or experimental testing and given adequate briefing and boundaries to the activity, it may be carried out by the operator or maintenance organisation. As part of that process, the operator or maintenance organisation will have to be satisfied that the proposed Check Flight pilot is eligible to conduct Check Flights. Best practice suggests that a suitably qualified and experienced pilot should be used when it has been determined that a check flight is necessary.
- 3.2 The CAA no longer briefs pilots for conducting airworthiness check flights. Consequently, when it has been decided that a check flight is needed, arrangements should be in place to ensure that it is carried out safely and in accordance with industry best practice.
- 3.3 This Chapter **does not apply to Maintenance Check Flights**. EASA is finalising Acceptable Means of Compliance and Guidance Material relating to MCFs, including protocols and responsibilities. These include operational requirements and crew competence criteria for the performance of these flights. Although this criteria will only apply to EASA aircraft, the CAA will adopt the EASA criteria for non-EASA aircraft. The latest information can be found in the comment-response document to EASA NPA 2012-08 Maintenance Check Flights (paragraph SPO-SPEC.MCF.115 Flight Crew Requirements), which can be accessed directly using the following link: www.easa.europa.eu/document-library/comment-response-documents/crd-2012-08. This rulemaking is due to be finalised by EASA by the end of 2016.

Procedures

- 3.4 Pilots intending to carry out Check Flights must be properly qualified and prepared for the task. To ensure that appropriate levels of safety are