

Glider Airworthiness

CofA, ARC, CAMO, ADs and other codes!

Subjects

- Regulatory Framework
- Owner's Role and Responsibilities
- ADs and SBs
- Annual Inspection and ARC renewal
- Key Paperwork
- Sources of Information

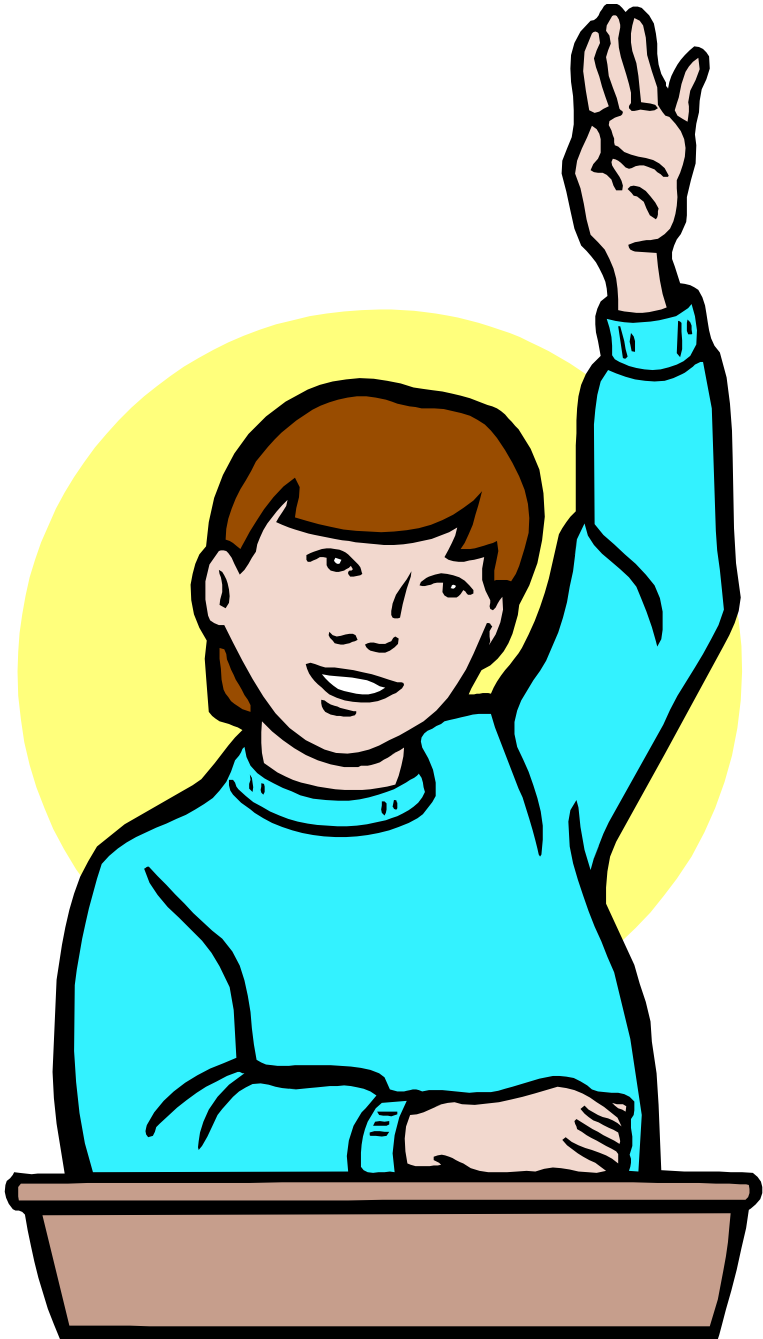
Who makes and enforces the rules?

- European Aviation Safety Agency - **EASA**
EC regulation 2042/2003 as amended, a.k.a. "Part M"
- National Airworthiness Authorities - in the UK the Civil Aviation Authority - **CAA**
- **BGA?**

CAMO

Continuing Airworthiness Management Organisation

- CAA approved body which assists airworthiness
- CAMO has to have:
 - Qualified Key Staff
 - Maintenance and QA Procedures
- CAMO ensures compliance with the EASA rules
- Can issue ARC for ELA.1 aircraft
- BGA is a CAMO for G- registered EASA gliders



WOT
ABAHT
ANNEX
2??

Annex II to Regulation 1592/2002

- EASA have decided they will not regulate some aircraft
primarily those not to a certified design
- Responsibility of National Airworthiness Authority in country of operation
- CAA delegate gliders to the BGA

Basic principles of airworthiness are the same!

Airworthiness in EASA land

Rule M.A.201

Airworthiness is the owner's responsibility when operating in the “*uncontrolled environment*”

The BGA and its inspectors are not required to remind you when action is due.

Owner's Responsibilities

M.A. 201, 301, 302, 304

The aircraft must

- Conform to an EASA recognised type design, and have
Certificate of Airworthiness – *this is non-expiring*. Validated by
Airworthiness Review Certificate (ARC) – *renewed annually*
- Have all modifications and repairs to approved standards
- Be maintained in a safe condition to an approved
programme
Annual inspection + periodic checks
- Be operated within the flight manual limitations

Airworthiness in Annex II land

~~EASA and CAA~~

- Owner still responsible for airworthiness
- BGA annual inspection required
- BGA issue Certificate of Airworthiness, valid for one year

There are still airworthiness procedures to be followed!

Maintenance



What is meant by “Maintenance”?

EASA Part M covers:

Inspection

Routine servicing

Repairs

Modifications

Overhauls

..... all are classed as “Maintenance”

Who can maintain gliders?

Certificate of Release to Service

“Certifies that the work specified, except as otherwise specified, was carried out in accordance with Part-M and in that respect is considered ready for release to service”

The qualifications required to sign the CRS depend on the complexity of the task.

Who can maintain gliders?

If it is in the Flight Manual no CRS is required

Qualified pilot (see Laws and Rules) can undertake

- Daily inspection – *schedule is in DI book*
- Rigging and De-rigging

Record work and faults in DI book (mandatory for club aircraft)

Report faults in club aircraft to the office!

Who can maintain gliders?

Limited Pilot-Owner maintenance (M.A.803) – *AMP 2-1*
for qualified pilots, and only on their own aircraft

BGA Inspectors

All can do basic inspections and minor repairs

Additional ratings for engines, structural repairs

Separate rating for ARC issue

Can an inspector sign for work done by the owner?

YES

But....

BGA Inspectors should only certify maintenance where they have actually been involved either as a participant or in a supervisory role. Please remember that, when certifying, the signatory is confirming that maintenance has been carried out to a recognised and satisfactory standard. *BGA Chief Technical Officer, 20 March 2014*

YES

But...

When issuing a Certificate of Release to Service for work performed by others, the certifying engineer assumes responsibility. The certifying engineer must have inspected a sufficiently representative sample of the work and the associated documentation, and be satisfied with the competence of the persons who have performed the work. *CAP 562 H-20 para 1.5*

Some further twists...

BGA inspectors are only authorised to work on gliders registered with the BGA CAMO

Owner should provide MWO (Form 273) as authorisation to work on EASA gliders

Independent inspections require two inspectors

Moving in to the real world...



Scheduled Maintenance

- Daily Inspection (power “A” Check) – *pilot task (FM)*
- 50 hour check? [*e.g. SZD*]
- *50 hour can be pilot-owner maintenance*
- 150 or 200 hour check? [*e.g. SZD, DG*]
- Annual
- Life extension inspections (1000 - 3000 hours)

Lifed Items

- Some items may have a finite life – *keep a register!*
- Calendar life: *Oxygen bottle; brake & fuel hoses*
- Re-weigh required every 8 years by BGA
- Launches: *Release hooks – see TNS 02/05*
- Flying hours: *Control cables*
- *and the aircraft itself!*

Spare Parts and Repair Materials

- Have to be to approved standards
- Have to be traceable – Release Note or similar
 - Most will have to come from the glider maker*
- Proprietary and standard parts are available from independent suppliers
- Carry-on items do not need approval
- Keep the paperwork!

Can I make changes to my glider?

- Generally EASA doesn't like changes! A Design Authority has to propose the change, EASA has to agree.
- German glider makers have issued Service Bulletins for panel changes. If this is followed then a BGA inspector can sign off.
- EASA have issued CS-STAN for Standard Changes and Standard Repairs. An inspector sign off is required.
- BGA approve modifications to Annex II aircraft – *see AMP 3-3*

Important EASA Terminology

“Replace” means remove a (defective?) item and fit an identical item in its place - *for example replace release hook*

“Change” means remove an item and substitute one of a different design which performs the same function – *for example change 25 kHz radio to 8.33 kHz type*

“Install” means fit a new item which adds to existing function – *for example install strobe anti-collision light*

A pilot-owner may be permitted to undertake replacement (see Annex VIII/ AMP 2-1). Changes and installations will almost always require inspector involvement.

More Legalities
and some advice

ADs and SBs - 1

- AD – Airworthiness Directive

 - Issued by EASA

 - Compliance is Mandatory

 - Timescale set for compliance. May be recurring!

 - Non compliant? CofA invalid and aircraft grounded

- BGA Inspections

 - Some are mandatory for BGA CAMO gliders

ADs and SBs - 2

CAUTION: Equipment ADs and Inspections

There are generally applicable ADs and BGA inspections which may not be on manufacturers' lists!

SB – Service Bulletin, or TN – Technical Note

Can be general advice or notification of optional improvement

Provides details of work required by an AD

Many available free on internet but some do cost!

The Annual



“The Annual”

Two separate activities are needed each year:

- Annual inspection, which includes routine servicing
- Airworthiness Review Certificate renewal (*EASA only*)

These are usually undertaken simultaneously but at present the dates on which they are due may not coincide.

Separation is acceptable but both must be current.

Annual Inspection and GMP

- The EASA “approved programme” is currently the BGA Glider Maintenance Programme (GMP) which defines the work to be done.
- GMP is generic. Must be customised to each individual EASA glider. Add maker’s tasks and mandatory inspections. *See AMP 2-14*
- Form 267 is the Inspector’s checklist. Aligns with GMP but has to be expanded to match the individual GMP.
- Form 267 is used both for EASA annual inspection and for issue of BGA CofA. There is no difference between EASA and Annex II
- Can do EASA inspection up to 90 days early without loss of validity

Scope of Inspection – simplified!

- Condition of structure and equipment
- Signs of wear – control cables/linkages, control hinges, safety harness, wheel brake, tyres
- Check ASI calibration, altimeter datum
- AD compliance. Lified items “in date”
- Placards and markings correct
- Lubrication and adjustments, to maker’s schedule

Airworthiness Review and ARC

- An independent quality control check
- Primarily concerned with paperwork
- Physical inspection – is condition as reported ?
- Can do review up to 90 days early without loss of validity
- Remember: annual and ARC renewal dates do not necessarily coincide (at present)

Living with Paperwork



Paperwork you need – *see BGA Form 276 for details!*

- Logbook(s) - up to date for both annual inspection and ARC review. Hours and launches at least monthly.
- Registration documents, Cof A, ARC, radio licence
- Manuals– matching your aircraft and fully up to date
- GMP (tailored)
- Maintenance records
- Records of ADs, lified items, weighing.....

Keeping it tidy - 1

Display book or folder of pockets

- ARC
- Certificate of Registration
- Certificate of Airworthiness
- CAMO letter of agreement
- Insurance certificate
- Radio licence
- Weighing report

Keeping it tidy - 2

Display book or folder of pockets

- Flight manual supplements (if any)
- TCDS, latest version
- Competition number registration
- + If you are using the old style logbook*
- AD Status Report (BGA Form 280) *See AMP 2-14*
- Lifer Items register

Keeping it tidy - 3

Box file, to hold

Display book

Aircraft logbook + completed DI books

Flight, maintenance, repair manuals

Engine and propeller manuals, if applicable

GMP (tailored!)

Instruction books for installed equipment – radio, vario, etc

Keeping it tidy - 4

...and finally

Lever arch file with pockets for maintenance records

Each maintenance activity has a workpack, of one or many sheets

- Check lists
- Defect rectification and inspection worksheets
- Material release notes

Inspector compiles the workpack but owner must retain it

Preparing for the Annual

Get your documents organised

Do your own AD and lified items compliance check

Order any parts for known repairs or changes

Bring the logbook up to date

Clean the glider

Talk to your inspector!

HELP!

Sources of Information - 1

- BGA Website: Member Area, home page → Airworthiness

Maintenance Programme, Annual and ARC

remember, you to have to tailor GMP

Airworthiness Instructions and Compendium

Airworthiness and Maintenance Procedures Manual (AMP)

standard forms, rules for maintenance, modifications, etc

Type Certificate Data Sheets – *links to EASA website*

BGA Glider Data sheets – *most relevant to Annex II aircraft*

Technical News Sheets (TNS) – *cited in Compendium lists*

Sources of Information - 2

Glider Manufacturer Websites:

Guidance on AD and SB and their applicability

Some are good for SBs! Check for “General” SBs also.

You may have to register, and some SBs cost money

EASA Website – for Type Certificate Data Sheets (TCDS)
and Part M (334 pages....)

Any Questions?

Annex II Aircraft

- There is now no EASA published list
- Guidelines:
 - Historic
 - ex-military
 - Prototypes
 - Amateur built
 - Designed before 1955
 - Production ended before 1975

Annex II Gliders

- Probably of wooden construction – *but wooden gliders are not necessarily Annex II*
- Slingsby designs up to T50 (Skylark 4)
- EoN Olympia family
- Schleicher designs only up to Ka-2b
- “Oddballs” such as Swales SD3, Birmingham Guild BG series

N.B.: Does NOT include “Orphan” aircraft

Orphan Aircraft

- Aircraft are “orphan” when there is no longer a Type Certificate holder to continue oversight of the design
 - *Holding company no longer exists*
 - *Holding company no longer meets the EASA regulations*
 - *Type Certificate holder surrenders the certificate*
- Orphan aircraft cannot have a full Certificate of Airworthiness – Restricted CofA or Permit to Fly only
- May have Specific Airworthiness Specification (SAS)