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TRADING AS GLIDING AUSTRALIA**

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**MANUAL OF STANDARD PROCEDURES  
PART 3, AIRWORTHINESS**

**AIRW-M01**

**Version 9.2, April 2024**

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## INTRODUCTION

MOSP 3 provides the rules and guidance for Registered Operators, GFA airworthiness officers and maintenance authority holders to enable members to maintain our sailplanes correctly. Airworthiness is carried out to documented and approved procedures to maintain standards. MOSP 3 provides clear guidance to meet Australian Regulations and take into account our exemptions and our own rules. By having our own rules, we enable work in the way that simplifies mainstream airworthiness for sailplanes. As a member of the GFA you agree to abide by these procedures.

GFA has to comply with the general aviation regulations. GFA has negotiated some exemptions and for these we can define our own system. MOSP 3 defines these rules but also tries to put this together with all the applicable regulations so Australian Gliding only has one document of primary reference. Whilst MOSP 3 is a comprehensive reference manual, it is not designed as a handbook for easy reading: the AIRW-M02 Registered Operator's Handbook, should be read as a concise and simpler introduction to Airworthiness (AW) within GFA.

While MOSP 3 has been written to be complete and clear, if there is any uncertainty or clarification needed it is essential to refer to the original Australian Regulations from which it derives its authority. All the Australian Civil Aviation Regulations 1988 (CARs) and Civil Aviation Safety Regulations 1998 (CASRs) are available on the web and must be complied with, with the exception of CAR Part 4 and 4A, from which GFA airworthiness in Australia is exempt.

This is not a static document: with any large and complex body of work there may be errors and omissions in this manual. In addition, better methods of performing actions may come to light. Regulations will change. All these things mean that the manual will change. To help in this process we request your feedback and comments. Updates will be performed annually, or in the interim if judged necessary. You must ensure you work with updates and latest versions which will always be up to date on the GFA website. Comments to [returns@glidingaustralia.org](mailto:returns@glidingaustralia.org) are welcome.

Anthony Smith

GFA Chairman of the Airworthiness Panel

## DOCUMENT CHANGE PROPOSAL

Document Title: (If for a manual or document to be changed, use the manual/document title)	Tracking Details (Office use only)	
	Number:	Date Received:
Name of person submitting change proposal:		
Email Address:	Phone:	Membership Number:
What should be changed? <i>(Include Section or Chapter reference if for a document. Add attachments if required)</i>		
Description and Reason: <i>(Provide a brief description and supporting comment as to why the change is needed, and how it will benefit Gliding Australia).</i>		
Source for supporting data or details that may assist the review:		
<p><b>NOTE:</b> Please ensure a clear description of the issue / opportunity has been given, supporting data if available has been identified and / or attached.</p> <p>This form may be sent to Gliding Australia by the following means:</p> <p>Email:     <a href="mailto:returns@glidingaustralia.org">returns@glidingaustralia.org</a></p> <p>Mail: Gliding Australia, C4/1-13 The Gateway, Broadmeadows, Vic 3047</p>		

## MOSP Part 3 – Airworthiness Handbooks Index

Available from Gliding Australia website:

MANUAL / Handbook	CASA Approved	Mandatory
AIRW-M01 MOSP 3: Procedures (this manual)	Yes	Yes
AIRW-M02 Registered Operator's Handbook	No	No
AIRW-M03 Daily Inspector Handbook	No	No
AIRW-M04 DI Handbook - Powered Sailplanes	No	No
AIRW-M05 Basic Sailplane Engineering (BSE)	No	No
AIRW-M06 Powered BSE	No	No
AIRW-M07 Sailplane Inspector Training Syllabus	No	No
AIRW-M08 Design Approval Procedure Manual (DAPM)	Yes	Yes
AIRW-M09 Airworthiness Delegation Procedures Manual (ADPM)	Yes	Yes
AIRW-M10 Amateur Built Sailplanes	No	No
AIRW-M11 Gliding Australia Approved Workshops Application	No	No
AIRW-M12 Airworthiness Officers Duty Statement	No	No
AIRW-M13 Gliding Australia Airworthiness Audit Manual	No	No
AIRW-M14 Administration Manual	No	No
AIRW-M15 Schedule of Permissible Unserviceabilities	Yes	Yes
AIRW-M16 Guidelines for Annual Inspections of Gliders	No	No

These are all the Airworthiness Handbooks available to date. Some are mandatory as noted, others are for advice. Some of the manuals provide approved data for repair and maintenance, as are manufacturer manuals and engineering orders.

## REVISION RECORD

Prepared by	Approved by		Version	Date
CAD			Version 9	29/05/2023
Update of Experimental Certificate for Part 91 requirements. Update of Weight and Balance Sections 10.12 and 20. Changes to Section 10.5 on Recognition of Prior Learning Update to Oxygen Sections 13.9 and 18 to allow high pressure oxygen plumbing. Integrates MTARS 1-2019, 1-2021, 1-2022, 2-2022, 1-2023 into MOSP 3. Many small corrections to grammar, spelling and formatting.				
CAP	Gliding Australia Board		Version 9.1	25/01/2023
Changes in response to feedback from CASA for Part 149. Changes to position names. Changes to position responsibilities in line with Part 149				
CAP	Gliding Australia Board		Version 9.2	29/04/2024
Minor typo corrections Insertion of 18.8 for Installation of Visual Awareness Lights Changes to Section 18.11 for Lithium Ferrous Phosphate batteries.				

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# 1. AIRWORTHINESS ADMINISTRATION

## 1.1 CASA Delegations

- 1.1.1 The responsibility for the airworthiness and operation of all civil aircraft operating in Australia ultimately lies with the Australian Federal Government. The Civil Aviation Safety Authority (CASA) has been empowered by the federal government through the Civil Aviation Act, via *Civil Aviation Regulations (CARs) 1988* and *Civil Aviation Safety Regulations (CASRs) 1998*. The CASRs are superseding the CARs as they are brought into effect. If there are conflicts between the regulations during this transition period then the CASRs take precedent. However, the transitional regulations (CASR Part 202.AJ) that apply to CASR Part 21, provide for the carry-over of Type Certificates (TC) and Certificate of Airworthiness (CoA) that were accepted under the CARs; a reference to 1 October 1998 in this Manual of Standard Procedures (MOSP) indicates the effect of these Transitional Provisions.
- 1.1.2 Gliding Federation of Australia (GFA) operates autonomously under the CARs and CASRs but has:
- Exemptions (CAO95.4 and 95.4.1) to operational and airworthiness regulations
  - Delegation and Authorities to perform certain functions
- from CASA, the National Airworthiness Authority (NAA) under which Australian sailplanes are registered and operated.
- 1.1.3 All GFA members must comply with the requirements of this Manual of Standard Procedures for all sailplanes, powered sailplanes and power assisted sailplanes registered in Australia including Australian registered aircraft operating overseas. ie they must be maintained to GFA standards and signed off by GFA Inspectors.
- 1.1.4 In this manual the following terms are used:
- Sailplane means a glider as defined in CASR 1998 Dictionary. Sailplane or glider refers to powered or non-powered sailplanes. LSA regulations refer to gliders, not sailplanes. Sailplane is used to distinguish Gliding Australia registered fixed wing, high performance sailplanes from hang-gliders etc, but sailplane and glider are equivalent terms in this manual.
  - Powered Sailplane is used in this manual as a generic term for all sailplanes equipped with power plants of any form. CAO 95.4 and CAO 95.4.1 refer to these as Powered Sailplanes.
  - Self-Launching Sailplane has an engine of sufficient power and is certified to self-launch.
  - Power-assisted Sailplanes have an engine but insufficient power or are not certified to self-launch.
  - Touring Motor Gliders (TMG) are self launching sailplanes that are designed to cruise on power for long distances and are equipped and maintained to do so.
- 1.1.5 Sailplanes are registered under CASR Part 47 by Gliding Australia personnel who are also CASA Delegates. Sailplanes are operated and maintained as either certified, experimental, or Light Sport Aircraft under the Gliding Australia system as described below.
- 1.1.6 Certain Gliding Australia officers provide services to Gliding Australia on behalf of CASA via a series of instruments of delegation and authorisations. These instruments of delegation are renewed periodically and issued by CASA. Each Gliding Australia officer must be in possession of a valid instrument of delegation/ authorisation in order to exercise any powers or functions conferred by that CASA delegation. Gliding Australia officers must only operate within the scope and context of their delegations.

- 1.1.7 Collectively, these instruments (delegations, authorisations and exemptions) allow specifically delegated Gliding Australia officers to perform the following tasks on behalf of CASA:
- a. Issue Type Acceptance Certificates (TAC)
  - b. Issue (and remove) Certificates of Airworthiness (CoA)
  - c. Issue (and remove) Certificates of Registration (CoR)
  - d. Design, Implement and approve maintenance systems for the airworthiness of sailplanes operated in Australia
  - e. Implement training systems and issue maintenance qualifications to Gliding Australia members for the conduct of sailplane airworthiness activities
  - f. Implement a Design Approval (DA) process to support authorised engineers under the CASA Part 21.M regulations to enable modifications, repair schemes and replacement of components.

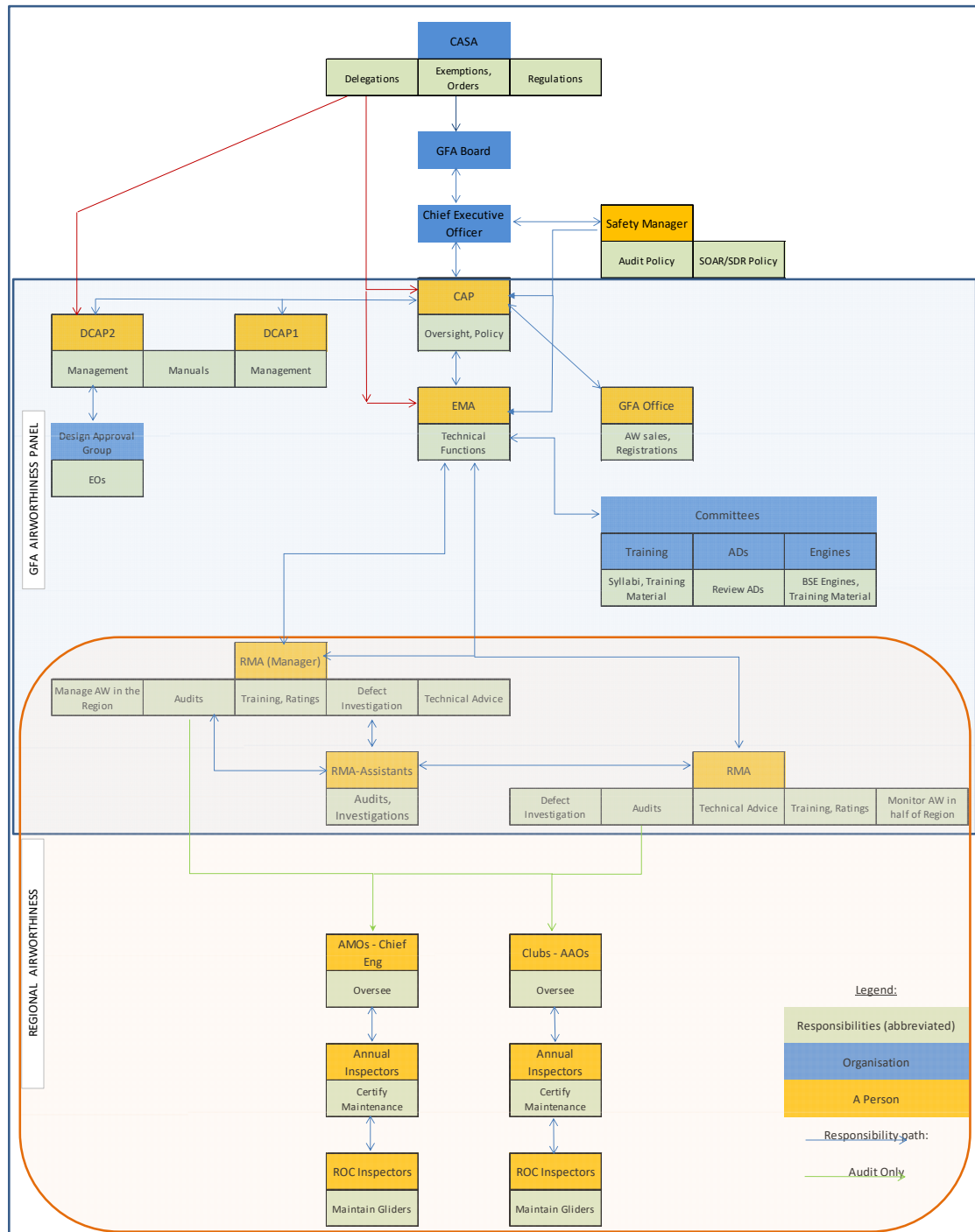
## 1.2 The Role of Gliding Australia in Sailplane Airworthiness

- 1.2.1 Gliding Australia Airworthiness Panel is responsible for all airworthiness related functions of Gliding Australia. This document prescribes the member processes and procedures required for the administration of sailplane airworthiness.
- 1.2.2 Gliding Australia administers the following functions:
- a. The issue of the CoR for sailplanes and powered sailplanes.
  - b. Appointment of the Registered Operator.
  - c. The issue of CoA.
  - d. The issue of sailplane and powered sailplane airworthiness qualifications.
  - e. The approval of airworthiness training and qualification systems.
  - f. Surveillance activities of members of the organisation conducting airworthiness activities.
  - g. Enforcement action where members are in breach of the regulations.
  - h. The recording of aircraft logbook statements.
- 1.2.3 The Airworthiness Delegations Procedures Manual (ADPM) given in Handbook AIRW-M08 details the administrative procedures that Gliding Australia personnel will follow in exercising their Airworthiness delegations and authorities. The Design Approval Procedures Manual, AIRW-M09 details procedures for engineering design approvals. Registration Delegations are carried out using CASA manuals.
- 1.2.4 Gliding Australia issues airworthiness ratings that cover the full spectrum of airworthiness related activities on sailplanes and powered sailplanes, ranging from servicing, inspection, and modifications to major repair and life extension activities.
- 1.2.5 Within this approved framework, only an appropriately authorised inspector may perform airworthiness activities. Airworthiness activities are required, recommended and authorised by:
- a. MOSP 3: Airworthiness requirements
  - b. Airworthiness Directives issued by the NAA of the state of design, CASA or Gliding Australia

- c. Service Bulletins, Technical Bulletins and Technical Notices issued by the TC or STC holder for the aircraft, engine, propeller, or installed equipment
  - d. Servicing, Inspection and Maintenance manuals generated by the TC or STC holder
  - e. Damage, wear and Time between overhaul (TBO) requirements
  - f. Other tasks as requested by the registered owner or operator (within their level of authorisation).
- 1.2.6 These documents are the primary source of technical information. Normal periodic inspection and maintenance activities must be carried out according to the maintenance manuals and servicing schedules promulgated by the TC holder for that particular component unless Gliding Australia has authorised otherwise. (See Section 9)
- 1.2.7 In the absence of specific information regarding airworthiness activities for any particular task by either the TC holder or Gliding Australia, appropriate standards must be adopted.
- 1.2.8 It is prudent that all Gliding Australia members to be vigilant of unauthorized airworthiness activities being conducted. Many Gliding Australia members are not aware of the requirements regarding sailplane maintenance and inspection so they should be directed to these rules. If members are concerned they should advise their Airworthiness Administration Officer (AAO) or Regional Manager Airworthiness (RMA).
- 1.2.9 Gliding Australia promotes self-help and help each other system of maintenance, mainly by volunteers. We also support professional Authorised Maintenance Organisations for those that prefer to pay for services.
- 1.2.10 All actions carried out by Gliding Australia will be with due regard to Gliding Australia Complaints, Discipline and Appeals Policy and Procedures Manual and Gliding Australia Members Protection Policy Manual, see MOSP Part 1. This allows for an appeals process to all decisions.

### 1.3 Gliding Australia Airworthiness Administration

- 1.3.1 Gliding Australia relies on many dedicated volunteers for the administration of Airworthiness. All Gliding Australia positions at the National Level (except the Executive Manager Airworthiness (EMA)) are recruited from Gliding Clubs through each state and exercise certain authority as required by the Instruments of Delegation. The EMA is appointed after a competitive interview process.
- 1.3.2 The airworthiness administration structure is shown at **Error! Reference source not found..** This organisation works well and has been in place within Gliding Australia for decades, reducing costs substantially. However, the system relies on enthusiastic, dedicated individuals to train, mentor and support each other to achieve the necessary outcomes. But some small changes were needed; to spread the workload so no individual is overloaded and ensure a clear management structure so the responsible managers ensure their sphere of responsibility is organised and required tasks get completed. Additionally audit and oversight is possible throughout.
- 1.3.3 In all instances, within the requirements of this document, airworthiness related issues are to be resolved at the local level wherever possible. Local club inspectors are to pool resources and knowledge to assist each other and work closely with the Club AAO to meet the club's needs and those of fellow club members.
- 1.3.4 The RMAs are available to assist Club AAOs and local Inspectors when further advice is sought, perhaps when a third opinion is needed relating to an airworthiness matter or simply to provide direction during complex airworthiness issues.



**Figure 1-1: Gliding Australia Airworthiness Panel – Responsibility Diagram**

- 1.3.5 Each RMA is a member of Gliding Australia Airworthiness Panel. They have access to many experienced inspectors and other RMAs and have the capacity to resolve issues at a state level. From time to time, one or two inspectors disagree with a particular outcome or determination at club level and seek RMA clarification before releasing the aircraft back to operational status.

- 1.3.6 Many of Gliding Australia's Airworthiness responsibilities are assigned to the appointed RMAs. The RMAs oversee the activities of the endorsed annual inspectors within each gliding club and the Approved Maintenance Organisations (AMO).
- 1.3.7 The EMA is responsible for compliance audit of Approved Maintenance Organisations to ensure acceptable standards of workmanship and airworthiness are maintained. The EMA can assign this to RMAs as appropriate. Refer to Section 21 for detail on AMOs.
- 1.3.8 Where anyone obtains airworthiness information which may be useful to other Gliding Australia members they are required to forward it to their regional RMA.

## **1.4 Responsibility at the National Level**

- 1.4.1 The final accountability for airworthiness within Gliding Australia rests with the Chief Executive Officer (CEO). The CEO appoints the Airworthiness Panel the day-to-day responsibility for the airworthiness of Australian sailplanes.
- 1.4.2 Gliding Australia Airworthiness Panel comprises the following positions:
  - a. Chairman Airworthiness Panel (CAP)
  - b. Deputy Chairman Airworthiness Panel (DCAP)
  - c. Executive Manager Airworthiness (EMA)
  - d. Gliding Australia Airworthiness Secretariat
  - e. Regional Manager Airworthiness (RMA)
- 1.4.3 It is the responsibility of these officers to ensure compliance with CASA requirements and those of Gliding Australia, including MOSP 3.
- 1.4.4 Detailed descriptions, requirements and responsibilities of these positions can be found within Gliding Australia document ADMIN 0019 Gliding Australia Position Descriptions. This document can be found on the Gliding Australia website.
- 1.4.5 Gliding Australia personnel with delegated powers and responsibilities are to follow the procedures outlined in the document "Gliding Australia Delegation Procedures Manual"; a part of MOSP 3. All Gliding Australia Officers with delegated powers and responsibilities are to comply with this manual at all times. They are not to exercise these powers until properly trained and authorized by CASA.
- 1.4.6 The delegations or authorisations issued by CASA are currently issued to individual persons not to a position within Gliding Australia. If the person changes, the delegations and authorisations do not transfer. The individual holding the position will need training as outlined in paragraph 1.4.5 and authorizations and delegations for the task.

## **1.5 Chair Airworthiness Panel**

- 1.5.1 The CAP is nominated by the RMAs, appointed by the CEO and ratified by Gliding Australia Board. The CAP is responsible to the CEO for the oversight of policy and standards.

## **1.6 Deputy Chair Airworthiness Panel**

- 1.6.1 The DCAP is a senior member of Gliding Australia Airworthiness Panel and is responsible to the CAP for the development of policies and implementation of projects. The position of DCAP is the understudy to the CAP. The DCAP is part of the succession planning for a future CAP position. Ideally, this position is filled by a senior RMA or someone with significant airworthiness and management skills and experience.



- 1.6.2 The DCAP is nominated by the Airworthiness Panel, appointed by the CEO and ratified by Gliding Australia Board annually.

## **1.7 Executive Manager Airworthiness**

- 1.7.1 The EMA is a staff position. The EMA is appointed by the CEO and is responsible to the CAP. The EMA is the Aircraft Maintenance Key Person under Part 149 and is responsible for the technical functions of the Airworthiness Dept on a day to day basis, monitoring airworthiness, issue of ADs and the Certification of Sailplanes.
- 1.7.2 The EMA provides technical advice to RMAs and members if the RMA cannot.
- 1.7.3 The EMA exercises the authority by appointment of the CEO and any that the EMA holds personally from CASA as per Item 1.4.6.

## **1.8 Gliding Australia Office Staff**

- 1.8.1 Gliding Australia Office staff are paid employees of the Federation. They are responsible to the CEO and perform many of the administrative functions of the Airworthiness Panel. Some members of the office staff hold a CASA delegation and are responsible to CASA for those delegated functions e.g., sailplane registration.

## **1.9 Regional Manager Airworthiness**

- 1.9.1 Gliding Australia Regional Associations nominate one or more RMA. The RMAs are responsible to the EMA and are to ensure that airworthiness practices within each Regional Association conform to the MOSP and appropriate regulations. Biennial club audits are to be arranged and reported to the EMA.
- 1.9.2 The RMAs and their regional association and arrange training courses in their area to assist the members being sufficiently trained and qualified in maintenance. They have authority to recommend to the EMA the issue maintenance authorities and ratings to a member based on training and experience.
- 1.9.3 One RMA is responsible for the management of the region. A second RMA (if nominated) shares the workload of half the region and otherwise has the same duties and responsibilities for his clubs and AMOs.
- 1.9.4 If the member holding the position of RMA is involved in commercial sailplane maintenance, inspection or repair, they must declare a conflict of interest and not audit other AMOs. An alternate audit officer is to be arranged in these instances.
- 1.9.5 Each Gliding Australia Regional Association annually submits nominated RMAs to the Airworthiness Panel who recommends the nominations to the Gliding Australia Board for approval.
- 1.9.6 RMA Assistants are experienced Annual Inspectors to whom the RMAs appoint for audit or investigation responsibilities. RMA Assistants may assist with training as well. This is to share the workload.

## **1.10 The Club Airworthiness Administration Officer**

- 1.10.1 Each gliding club affiliated with Gliding Australia must appoint an AAO. Commercial Gliding Operations must also appoint an AAO. The AAO acts as the Registered Operator on behalf of the club.
- 1.10.2 Although not compulsory, the AAO should be a qualified Gliding Australia Annual Inspector.
- 1.10.3 The tasks and responsibilities of a club AAO include:
- To act as the club airworthiness contact for the RMA and to coordinate surveillance

audits with the RMA.

- b. Coordinate all club owned aircraft life extension inspections and survey inspections with the RMA.
- c. Ensure all airworthiness activities being performed on club aircraft are certified by authorised inspectors.
- d. To obtain Airworthiness Directives (AD) and Airworthiness Notifications (AN) from Gliding Australia and TC holder for all club sailplanes, to ensure that they are actioned appropriately.
- e. To liaise with club management and ensure all MOSP 3 requirements are met for club aircraft.
- f. To manage the airworthiness documentation for club sailplanes.
- g. To maintain a list of Inspectors operating within the club and to arrange training with the RMA.
- h. Ensuring their contact details are listed with Gliding Australia office.
- i. The AAO monitors all private sailplanes operated by club members and assists private owners on airworthiness matters. The AAO is responsible to advise owners and inspectors if incorrect practices are observed and to advise the RMA if appropriate. The AAO has authority to ask for and inspect documentation for private gliders operating on the club facilities.
- j. The AAO is responsible for ensuring that club towplane towing releases are maintained appropriately.

## 1.11 Private Owner Responsibilities

- 1.11.1 The Registered Operator (RO) of a privately owned sailplane is the nominated person for receiving all relevant airworthiness information and is responsible for ensuring that all maintenance, inspections and repairs are carried out, that all work is certified by appropriately qualified inspectors, and that proper records of that work are kept. There are several responsibilities of the RO and these are outlined in Section 4.14. Most importantly, the RO is responsible for the continuing airworthiness of the aircraft, in accordance with the maintenance system specified in the aircraft's Logbook Statement (see Chapter 9).
- 1.11.2 A handbook; AIRW-M02 Registered Operator's Handbook, is available from Gliding Australia website to educate Registered Operators and Inspectors in their airworthiness duties.
- 1.11.3 There are seven methods of sailplane certification (see AC 21.1) and similarly for maintenance and repair rules. MOSP 3 defines the differences and the Registered Operator must understand which applies to their aircraft and maintain it accordingly. Gliding Australia aligns airworthiness requirements as much as possible, but there are differences and the RO must manage this. The seven certification methods are;
  - a. Certified Sailplanes (most). See AC 21.2 and AC 21.3.
  - b. Experimental Modified Certified Sailplanes (a few). See AC 21-10.
  - c. Experimental Non-Compliant Production (many from non-approved countries similar to certified sailplanes). See AC 21-10.
  - d. Experimental Amateur-built or Kit-Built. See AC 21-4.
  - e. Light Sports Aircraft (LSA Special Certificate of Airworthiness.) See AC 21-41.
  - f. Light Sports Aircraft (LSA Experimental Non-Compliant Production.) See AC 21-41.

- g. Light Sports Aircraft (LSA Experimental Kit-built.) See AC 21-41.
- 1.11.4 There is a chain of responsibility for the airworthiness of certified aircraft from the designer, certification, manufacture, the National Airworthiness Authority, and finally to the RO, the Inspector, the Daily Inspector, and finally the pilot. Each is a vital link in the chain, and each is responsible by law for their part.
- 1.11.5 Certified Aircraft must therefore all be rigidly maintained the same or must have engineering approval of any modification. They remain Certified even if issued an Experimental Certificate and may only be modified with Engineering Approval. They do not become Experimental Aircraft. Only very minor changes to optional equipment and cosmetic changes are allowed. Most of these require approval by an inspector and recording in the logbook.
- 1.11.6 Experimental aircraft take a few forms dependent on the purpose of the EC. ECs come with strict requirements and limitations on the aircraft's use and operation. Experimental aircraft may not be used for commercial operations, which means that they cannot be used for club training, and may not be "placed on the line". They may only be used for strictly private operations. Therefore, Gliding Australia cannot authorize all owner intentions. MOSP 3 Chapter 7 covers the requirements for Experimental Certificates and Clause 2.6 and the RO Handbook clarifies it further. See also CASR 21.191 (purposes for which an Experimental Certificate can be issued) and CASR Part 91 Division 91.T.4 - Experimental Aircraft - Operating Requirements. Because they have no approved type design, Experimental aircraft may sometimes be modified or repaired without approval under CASR Subpart 21.M or 21.E (Note not including EC issued for R&D), but major changes may invalidate the Experimental Certificate. Changes to the aircraft may alter that risk, so any changes must be referred to the person who issued the Experimental Certificate so that if necessary conditions can be altered or imposed. Any applicable ADs including those from CASA, Gliding Australia and the State-of-Design of the aircraft, engine, propeller and other equipment must be complied with.
- 1.11.7 LSA; a new simplified, economical method of aircraft certification is accepted in Australia, Light Sports Aircraft (LSA). Refer to CASA AC 21-41 and AC 21-42 for more details. Specific Gliding Australia personal are authorized by CASA to provide a Special CoA and experimental certificates (EC) for LSA gliders. The cost saving has been achieved by making the manufacturer totally responsible for all phases of development (to a standard acceptable to CASA), production, and Continuing Airworthiness. In return the National Aviation Administrations have reduced their involvement and so costs to a minimum. The Gliding Australia rules on LSA gliders are given in Sections 5.7 and 5.8 and the differences mentioned elsewhere. Essentially Gliding Australia will rule on the operation of LSA gliders the same as other Sailplanes except that the manufacturers must supply all Data, including the equivalent of Airworthiness Directives and Engineering Orders for modifications and repairs. The responsibility for the airworthiness is based on whoever the manufacturer permits and authorises to conduct any airworthiness tasks, this usually allows Gliding Australia Inspectors to carry out maintenance and repairs as for other gliders. This information is contained in the maintenance manuals issued with the aircraft and is a requirement of LSA standards that this information is included. Gliding Australia cannot provide these and cannot authorize alternative methods of maintenance or repair ie the Registered Operator is responsible to maintain the aircraft to these slightly different methods but the Annual Inspectors and Repairers have the same Authority (as listed in the Maintenance Manual) to certify the maintenance of LSA sailplanes to the manufacturer's directions. CASA and Gliding Australia can issue ADs for LSA gliders.

## 1.12 Gliding Australia Administrative Charges

- 1.12.1 Gliding Australia Board sets, from time to time, a range of charges for many airworthiness services applicable to all sailplanes. These charges can be varied without notice.

### 1.13 Inspector Supervision and Insurance

- 1.13.1 All Gliding Australia Inspectors and repairers, other than those mentioned in Clause 1.13.5, must fall under the supervision of a club or an AMO. They may not work independently.
- 1.13.2 All Gliding Australia inspectors working under a club, "Club Inspectors" are covered by Gliding Australia's Contingent Liability insurance policy when conducting sailplane airworthiness certifications. They must be working under a club as the supervising body however they are personally responsible for their work on sailplanes. This includes Inspectors offering their time and skills on a cost recovery basis during airworthiness activities on all club and privately owned Gliding Australia aircraft.
- 1.13.3 Club Inspectors are expected to recover expenses.
- 1.13.4 Gliding Australia inspectors who are engaged in airworthiness activities for profit or income are not covered by Gliding Australia insurance and should seek their own insurance cover. They must fall under the supervision of an AMO who is then the responsible body and so independent of any club supervision.
- 1.13.5 The holders of Gliding Australia maintenance or inspection authorities that are issued exclusively for a particular experimental sailplane may only work on their own aircraft and are responsible for themselves. They are also covered by Gliding Australia's Contingent Liability insurance policy when conducting sailplane airworthiness certifications. Refer Clause 6.5.1 for training.

## 2. AIRWORTHINESS DOCUMENTS

### 2.1 Certificate of Registration and Certificate of RO

- 2.1.1 The Certificate of Registration documents the existence of the sailplane, its registration mark, and in whose name it is registered.
- 2.1.2 The Registered Operator (RO) certificate records the person or organisation responsible for the airworthiness of the sailplane. The registered operator is responsible for ensuring that all necessary maintenance is performed and documented.
- 2.1.3 The RO must maintain up to-date contact details in compliance with CASR 47.115, as they are the primary means of contact for all airworthiness matters relating to the sailplane.
- 2.1.4 The Registration Holder is responsible for the selection of the aircraft's maintenance system, which is then specified in the Logbook Statement and guides the RO on maintaining the aircraft. (See Chapter 9 and the RO Handbook for guidance)
- 2.1.5 The RO is responsible for ensuring all airworthiness activities being performed on the sailplane are conducted to approved standards by approved persons.

### 2.2 Type Certificate

- 2.2.1 A Type Certificate is a certification made by the responsible national aviation authority (NAA), to the effect that the type design of the aircraft, aircraft engine or propeller complies with the relevant specified design standard. For most modern sailplanes this is the European standard CS-22 (but the standard applicable to the original design remains applicable).
- 2.2.2 The Type Certificate is a certificate that contains basic data detailing the certification basis. Attached to the Type Certificate is a Type Certificate Data Sheet (TCDS) which contains limitations, conditions and other information related to the type certification of the aircraft, aircraft engine or propeller. It specifies the limits within which the aircraft, engine or propeller was type certificated, and usually specifies other documents such as flight and maintenance manuals, cg limits, control limits, and engine and propeller limits (if appropriate). The TCDS is the primary data reference for all aircraft of the type. The TCDS lists the Maximum Take-Off Weight MTOW and Centre of Gravity (CG) limits, manoeuvre limits and maintenance standards to be complied with.
- 2.2.3 The State-of-Design issues the first Type Certificate for a type. Any other states where the aircraft is to be operated (Called States-of-Registry) will "accept" the State-of-Design's type certificate. There are a number of ways of doing this, but the most common is a Type Acceptance Certificate issued by the State-of-Registry.

### 2.3 Type Acceptance Certificate

- 2.3.1 Since October 1, 1998, Australia validates aircraft certificated by the NAA of any of the seven recognised countries or EASA as defined in CASR 21.010B by the issue of a TAC. Prior to October 1, 1998, this was not required by regulations; and TCs and CoAs in force on that date continue to be in force unless suspended or cancelled. All certified aircraft, First of Type in Australia after 1 October 1998 require a TAC.
- 2.3.2 TACs relate to the aircraft type and model, not individual aircraft, so only one TAC is required for each type and must list the included models. EMA can advise if one already exists, and applications for a TAC may also be made to EMA. He can have models added to an existing TAC.

- 2.3.3 The TAC is issued for all variants or models on a type certificate. However, it may exclude some of the variants for which full data is not available. These could be added later if the data is obtained.

## 2.4 Standard Certificate of Airworthiness

- 2.4.1 The Certificate of Airworthiness (CoA) certifies that at the time of issue an individual sailplane complies with the original TC or TAC, or any STC incorporated, with all Australian type requirements, meets all continuing airworthiness requirements including any requirements of the NAA, and subject to the issue of a Maintenance Release, is in a safe condition for flight.
- 2.4.2 The CoA does not attest to the day to day, detailed airworthiness of the sailplane. That is the purpose of the Maintenance Release (MR). The Standard CoA attests that the aircraft meets its certificated or certified Type Design. It in effect certifies that the aircraft is eligible to be "Airworthy" if correctly maintained. Thus, a valid CoA can be taken as indicating that, if operated inside the specified limits and maintained to the specified standards, the sailplane is safe to fly. The mechanism of the CoA and the MR in conjunction, satisfy the "airworthiness" requirement for a form of consumer protection for persons flying in the aircraft. Parts 11 and 21 of the CASRs detail the regulations pertaining to CoAs.

### NOTE

The term "safe" implies a reasonably practical level of safety performance appropriate to the aviation activity, not absolute safety. Readers wishing to understand this more deeply are referred to the International Civil Aviation Organisation (ICAO) Safety Management Manual (ISBN 978-92-9249-214-4.)

- 2.4.3 Sailplane CoAs are issued by persons who hold the appropriate CASA delegation. Standard CoAs issued by Gliding Australia personnel holding a CASA delegation are normally valid for an indefinite period. If appropriate, the delegate may place an expiry date on a CoA.
- 2.4.4 A CoA may be cancelled or suspended (refer Clause 5.10) as a result of major damage, or where the sailplane is found to be in an unacceptable airworthiness condition. Only Gliding Australia officers who hold the CASA delegation or CASA may suspend or cancel a CoA. A CoA will automatically be cancelled if the TC or TAC stops being in force. See CASR 21.181.
- 2.4.5 The CoA is no longer in force when a sailplane is deregistered.
- 2.4.6 Modification of a certified sailplane may only be done according to appropriate design approval, see Section 18 or subject to the limitations imposed by an Experimental Certificate (EC).

## 2.5 Export Certificate of Airworthiness and Foreign Registration

- 2.5.1 Export CoA are no longer required for importing an aircraft into Australia. All aircraft must be registered in Australia and go through the application process for a CoA. They may only be registered in one country at a time.
- 2.5.2 Sailplanes exported from Australia may be required, by the receiving country, to have an Australian Export CoA. Gliding Australia does not have a delegation to issue Export CoAs, but the EMA will assist in obtaining one.
- 2.5.3 Foreign registered sailplanes with a foreign CoA from any of the contracting states may be operated in Australia without further approval. Sailplanes with an Experimental Certificate (EC) require approval by CASA if their EC does not meet the requirements of ICAO Annex 8 (usually does not). Special Flight Authorisations (SFA) are issued under CAR 135A by

CASA, and are required for foreign registered aircraft that do not have a CoA or acceptable EC and wish to operate in Australian airspace. Sailplanes with a Permit to Fly, which is not regarded as a CoA, require a SFA from CASA.

## 2.6 Experimental Certificate

- 2.6.1 Flying in an aircraft under an EC is entirely on the basis of voluntary acceptance of risk by the persons who elect to do so. This implies that such persons should ensure they have sufficient knowledge to understand the nature of the risk. The operating restrictions that are placed on an EC are based on an assessment of the risk; and also on minimising the hazard to other airspace users and persons on the ground. Gliding Australia promotes innovation and some member's desire to build, modify and service their own aircraft. The provision for operation under an EC is an administrative function that Gliding Australia provides and arranges with CASA for Gliding Australia members.
- 2.6.2 An EC can be issued by a member of Gliding Australia who holds a current CASA instrument of appointment. ECs may only be issued for a small number of specific purposes, and these are listed on the member's Instrument of Appointment and may change from time to time.
- 2.6.3 ECs may only be issued in accordance with CASR Part 21.191 to 21.195B. All ECs will clearly list the terms and limitations applicable to the allowed flight(s), including the period of validity of the EC. General operational limitations for all Experimental Aircraft are listed in CASR Part 91 Division 91.T.4 - Experimental Aircraft – Operating Requirements with specific operational limitations for the individual aircraft listed in the Annex to the EC.
- 2.6.4 A copy of the EC must be kept with the MR in the sailplane at all times and a daily inspection must not be certified without sighting the EC to ensure it has not expired and to ensure that they are aware of the operational limitations contained therein.
- 2.6.5 Pilots flying the sailplane are strictly limited to the terms of the EC and the limitations in CASR Part 91 Division 91.T.4 - Experimental Aircraft – Operating Requirements.

## 2.7 Manufacturer's Maintenance Manuals

- 2.7.1 An up-to-date flight manual and maintenance manual is required before an Australian TAC can be issued.
- 2.7.2 All approved sailplane manufacturers must nowadays provide adequate inspection and servicing information for the ongoing airworthiness of the aircraft and components that they produce. The manufacturer's manuals for some older types may not be considered adequate by themselves. Gliding Australia default maintenance procedures were originally developed to cover this situation.
- 2.7.3 Normal periodic inspection and maintenance activities must be carried out according to the Aircraft Maintenance Manuals (AMM) unless Gliding Australia has authorised a concession (See Chapter 9). Maintenance may only be carried out by appropriately authorised Gliding Australia inspectors.
- 2.7.4 The AMM is the primary source of maintenance information. ADs and other published reference material may supplement the manual as applicable.
- 2.7.5 It is the responsibility of the RO to ensure that the most current Aircraft Maintenance Manual and the current Aircraft Operators Manual are used during all Airworthiness (and Operational) activities. These documents are regularly updated by the manufacturers and must be checked for currency at each annual inspection.

## 2.8 Logbook Statement

- 2.8.1 The Logbook Statement defines the aircraft's maintenance system, as selected by the Registration Holder from the available options and accepted by Gliding Australia. It takes



the form of a page inserted in the logbook at the start of the maintenance log. See Chapter 9 for details.

## 2.9 Schedule of Permissible Unserviceabilities

- 2.9.1 From time to time, certain aircraft unserviceabilities are encountered that do not alter the safety or operation of the aircraft. Should the unserviceabilities remain, the safety and operation of the sailplane must not be compromised.
- 2.9.2 Gliding Australia has an exemption to CAR 37 which governs on Permissible Unserviceabilities (PUs). Therefore Gliding Australia has developed a system of PUs specific to suit gliding, be much simpler, but provide the same intended function; to allow sailplanes to take off with sensible and safe defects.
- 2.9.3 In the past Gliding Australia has operated with a system allowing flight with minor defects (Clause 19.5.6) which are recorded in the maintenance release and do not affect safe flight. This is still in effect and allows flight with minor defects considered safe by the Daily Inspector. Refer MOSP 3, AIRW-M03 DI Handbook. The PUs are beyond this allowing certain equipment that is not required for safe execution of the planned flight to be inoperative or deactivated. PUs are to legally enable operation with sensibly unserviceable equipment.
- 2.9.4 The Handbook AIRW-M15 Permissible Unserviceabilities provides a schedule of PUs allowed in Gliding Australia sailplanes at the time of take-off for the listed flight conditions. ie they are not always allowed but are permissible if the flight is intended to not require these items. The list also specifies whether the equipment is allowed to remain functional.
- 2.9.5 Defects listed in the Schedule of Permissible Unserviceabilities are allowed to remain when a new Maintenance Release is issued.
- 2.9.6 For sailplanes all optional equipment, correctly installed as per the MOSP, such as a flight computer, may be unserviceable. Optional equipment do not require a PU is entered in the Maintenance Release.
- 2.9.7 Required PUs must be listed in the Maintenance Release Minor Defects Part 2 and it is the pilots responsibility and decision whether to operate as such and to remain within the restrictions imposed by the Permitted Unserviceability Clause.
- 2.9.8 The EMA may modify the Schedule of Permissible Unserviceabilities to allow other conditions.

## 2.10 Noise Certificates

- 2.10.1 Under the Air Navigation (Aircraft Noise) Regulations most aircraft including some sailplanes require a Noise Certificate issued by Airservices Australia. At the moment, sailplanes are not exempt, but Gliding Australia have received agreement that only sailplanes that self-launch have to comply. Refer to <http://www.airservicesaustralia.com/services/aircraft-noise-certification/> for further details.
- 2.10.2 All civil aircraft operating in Australia are required to comply with the Air Navigation (Aircraft Noise) Regulations regardless of size, purpose, or ownership. Aircraft operators need to complete and submit the Aircraft Noise Assessment form in order to:
  - a. Add an aircraft to the Australian Civil Register,
  - b. Operate an already noise assessed aircraft that has been modified which may affect its noise characteristics, or
  - c. Operate a foreign registered aircraft in Australia.



- 2.10.3 If your aircraft has a foreign approved Noise Certificate this may be easily obtained, online, and submitted for approval.
- 2.10.4 The Registered Operator must confirm that the aircraft's Noise Certificate has been issued by Airservices Australia if the sailplane is a powered self-launch type.
- 2.10.5 Jet powered sailplanes will need an exemption or are automatically compliant if they do not self-launch.
- 2.10.6 Noise Certificates are not transferable to a new owner. A new owner must re-apply.

## 3. SAILPLANE CERTIFICATION

### 3.1 Design Requirements

- 3.1.1 All sailplanes, with the exception of experimental aircraft, must comply with recognised design standards. CASR Part 22 prescribes the regulations currently pertaining to sailplanes and powered sailplanes. Most modern sailplanes and powered sailplanes are designed in accordance with EASA CS 22. A copy of the current version can be obtained from the EASA website via the following link:
- 3.1.2 The transitional provisions of CASR 202AJ have the effect that sailplanes that were accepted in Australia prior to CASR Part 22, may be designed in accordance with earlier standards; and this acceptance continues to be in force.
- 3.1.3 For aircraft designed and approved under other standards and certain authorities such as the FAA the procedures are similar.
- 3.1.4 For aircraft designed and built to non-approved standards and under non-approved authorities the process gets more difficult but it is usually possible to issue them an Experimental Certificate. An alternative is to certify them in Australia but this becomes extremely expensive and onerous.
- 3.1.5 Personnel of Gliding Australia who hold CASA instruments of appointment can issue Experimental Certificates, (only for specific purposes), for amateur built sailplanes entering service in Australia.
- 3.1.6 Gliding Australia can accept Light Sport Aircraft (LSA) designed and approved gliders for use in Australia. Refer to Section 5.7.

### 3.2 Type Acceptance

- 3.2.1 A First of Type (FOT) factory-built sailplane being imported into Australia after 1 October 1998 and requiring an Australian Standard CoA must be issued a Type Acceptance Certificate (TAC). In the case of a FOM, the model may need to be added to a previously existing TAC.
- 3.2.2 The FOT/FOM are also subject to an initial CoA survey by Gliding Australia qualified and approved members. A Gliding Australia Form 300 CoA/ EC Application & Survey Checklist will be completed and submitted to Gliding Australia secretariat with the application for CoA issue. The full procedure is detailed in the ADPM.
- 3.2.3 Any sailplane or powered sailplane imported into Australia and holding a TC from a NAA listed below (at Clause 3.2.5) can be issued a TAC based on the fact that it has been issued a TC by a recognised country.
- 3.2.4 Gliding Australia will automatically accept the TC and associated TCDS and raise a TAC referencing the TC and TCDS once the requirements of CASR 21.029A are met.
- 3.2.5 CASR 21.029A allows Gliding Australia under CASA delegation to issue Australian TAC for aircraft types that has a current TC issued to it by one or more of the seven recognised overseas authorities as listed in CASR 21.010B:
  - a. The Federal Aviation Authority (FAA) of the United States of America (USA)
  - b. Transport Canada (Civil Aviation)
  - c. The Direction Generale de l'Aviation Civile (DGAC) of France
  - d. The Civil Aviation Authority of New Zealand
  - e. The Civil Aviation Authority of the United Kingdom (CAA UK)

- f. The Rijks Luchtvaart Dienst (RLD) of the Kingdom of the Netherlands
  - g. The Luftfahrt-Bundesamt (LBA) of the Federal Republic of Germany.
- 3.2.6 The RO of any imported sailplane or powered sailplane that is certificated in a country whose NAA is not listed above as having automatic acceptance may apply to CASA for type certification.
- 3.2.7 Gliding Australia issues TACs for all sailplanes and powered sailplanes imported since 1 October 1998. The TAC will be effective until cancellation. Certificates of Type Approval (Gliding Australia CTA) and Gliding Australia issued Type Certificates (Gliding Australia TC) issued under prior regulations remain valid.
- 3.2.8 Where there is no longer a Type Certificate Holder who is responsible for the ongoing airworthiness of the sailplane or powered sailplane type, but the sailplane or powered sailplane is Type Certified to acceptable requirements, CASA may allow the type to remain in service, if deemed safe and airworthy, on condition that the sailplane is issued an annual Maintenance Release (MR), is subject to surveys as per Chapter 14 and any other requirements as specified by CASA. If an airworthiness issue arises which would require TC Holder support, Gliding Australia will issue an AD which either grounds the type, or provides a fix.

## **4. CERTIFICATE OF REGISTRATION PROCEDURES**

### **4.1 General**

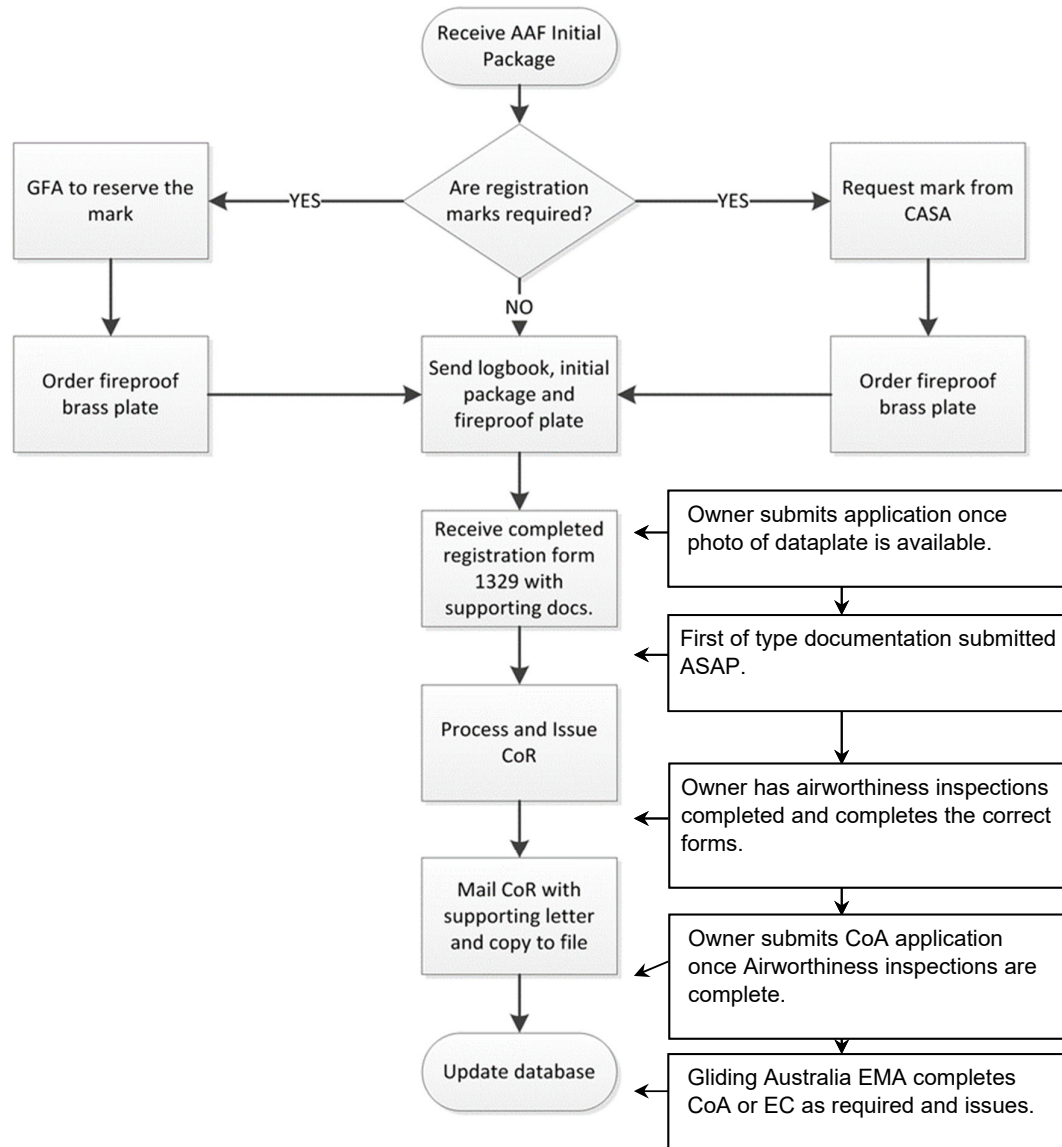
- 4.1.1 GFA administers the registration of sailplanes in accordance with CASR Part 47 on behalf of CASA via an instrument of delegation. These functions include the registration of sailplanes and the maintenance of a portion of the Australian Aircraft Register set aside for sailplanes. Members apply through the GFA Office and using information provided on GFA and CASA websites.
- 4.1.2 Detailed information and the CASA forms specific to the registration of sailplanes can be found on the CASA website.

### **4.2 Sailplane Importation**

- 4.2.1 Gliding Australia should be advised in advance that a sailplane is to be imported. It is the responsibility of the importer to ensure that all the relevant documentation is available and that all Gliding Australia and CASA requirements are met to enable the sailplane to be certified for use in Australia.
- 4.2.2 Detailed guidelines for the importation of sailplanes and their trailers into Australia are available from Gliding Australia office. The information contained in the guidelines is (to the best knowledge of Gliding Australia) correct and accurate at the date of its publication (a copy can be obtained from Gliding Australia website).

### **4.3 Initial Registration**

- 4.3.1 Before any sailplane can be entered onto the Australian register, proof that it is not registered in any other country must be provided. Until the sailplane is registered in Australia it cannot be issued with a CoA or an EC. It may be issued with a Special Flight Permit (SFP) without being registered, but SFPs are only available for a small range of specific purposes.
- 4.3.2 In the case of newly manufactured sailplanes, the foreign manufacturer normally provides a document stating that the aircraft is not registered in any other State. In the case of second hand sailplanes this will have to be obtained by the importer from the Airworthiness Authority of the country where it is was previously registered.
- 4.3.3 It is essential to make sure the second-hand sailplane will arrive in Australia with a Certificate of De-registration or similar approved.
- 4.3.4 If the sailplane is ex-military a similar document from the military authority selling the sailplane must be obtained.
- 4.3.5 Gliding Australia Form 1329 must be completed and submitted to Gliding Australia office for initial registration procedures to commence.



**Figure 4-1: Gliding Australia CoR Administrative Process and Parallel Submissions by the Owner for the CoR**

- 4.3.6 The Registration and Certificate of Airworthiness are two independent processes as shown above. The First of Type or First of Variant is an extra process required early in the process for first models to be issued with a Type Acceptance Certificate. Refer to Chapter 5 for details on these airworthiness procedures.

#### 4.4 Transfer of Ownership

- 4.4.1 The CASA Transfer of ownership Form 1327 should be used by both the seller (former owner) and the buyer (new owner) to transfer the ownership of a currently registered sailplane in accordance with CASR 47.110. If the aircraft is not currently VH registered and the owner is applying for an initial registration, CASA Form 1329 (Registration Application – CASA.) should be used.
- 4.4.2 Gliding Australia is to be notified of a change of ownership within 14 days

## **4.5 Appointment or Cancellation of Registered Operator**

- 4.5.1 CASA Form 1332 should be used by the Registration Holder of a registered aircraft when nominating or cancelling the appointment of a registered operator under CASR 47.100. A nomination must also be signed and accepted by the nominated registered operator.

## **4.6 Change of Aircraft Details**

- 4.6.1 CASA Form 1330 should be used by the CoR holder to notify Gliding Australia under CASR 47.115 of a change in sailplane details or a change in personal details for the holder or the registered operator.
- 4.6.2 If notifying Gliding Australia of an appointment of a new RO or about a change of ownership (rather than just a change to a name or address), CASA Form 1332 (Appointment / Cancellation of Registered Operator under CASR Part 47–Gliding Australia) or CASA Form 1327 (Transfer of Ownership–Gliding Australia) must be used.

## **4.7 Cancellation of Aircraft Registration**

- 4.7.1 CASA form 1326 should be used by the CoR holder of a sailplane when applying for the cancellation of the registration under CASR 47.130.

## **4.8 Sailplane Register**

- 4.8.1 All sailplanes operated in Australia by Gliding Australia members must be registered in the Australian Aircraft Register. A copy of the register is maintained by Gliding Australia Secretariat. Each sailplane which is entered into the Australian Aircraft Register will be allocated an individual File Number used only for that sailplane.
- 4.8.2 This file number is referred to as the Aircraft G number. It remains allocated to the aircraft, regardless of changes to registration marks, changes of ownership or exportation. This G number is unique to that aircraft and will not change.

## **4.9 Registration Marks**

- 4.9.1 The CASA allocates blocks of three letter registration marks for use on sailplanes to Gliding Australia.
- 4.9.2 It is mandatory that registration marks are applied according to Gliding Australia AN 84.

## **4.10 Competition Marks**

- 4.10.1 A competition mark comprising two or three characters may be placed on the fin and rudder of a sailplane. Competition marks must be numeric or alpha numeric to avoid confusion with the registration mark.
- 4.10.2 It is mandatory that competition marks are applied according to Gliding Australia AN 84. Gliding Australia AN 84 also contains an application form which must be submitted to Gliding Australia for approval.

## **4.11 The Aircraft Registration Process**

- 4.11.1 CASA Advisory Circular (AC) 47-01 provides guidance for the registration of aircraft and related matters. However, this AC is written for non-sailplanes and the information is presented in this section of MOSP to suit sailplanes.
- 4.11.2 The document can be found via the following link:

4.11.3 [http://www.casa.gov.au/wcmswr/\\_assets/main/rules/1998casr/047/047c01.pdf](http://www.casa.gov.au/wcmswr/_assets/main/rules/1998casr/047/047c01.pdf)

## 4.12 Reservation of Registration Marks

- 4.12.1 When a person intends to register a sailplane, they may apply to have one of the registration marks which have been allocated to Gliding Australia, provided it has not already been allocated to another aircraft. Gliding Australia will reserve marks for a maximum period of 12 months, and it is the responsibility of the person who has reserved the marks to renew the reservation.
- 4.12.2 CASA has other registration marks available and any person who wishes to use these marks should contact CASA and request they be allocated to Gliding Australia, they may then reserve them through Gliding Australia.

## 4.13 Change of Registration Marks

- 4.13.1 If the Registration Holder wishes to change the registration marks of a sailplane the following procedure should be followed:
- Reserve a new registration mark.
  - Apply to Gliding Australia Secretariat via a written (email to [returns@glidingaustralia.org](mailto:returns@glidingaustralia.org)) request to change the registration marks. Send into Gliding Australia secretariat together with the CoR, the CoA, the Registration Plate and the appropriate fees.
  - The CoA and the CoR will then be reissued with the new marks. The old CoR and CoA will be cancelled and the new certificates issued as per the ADPM.
  - Gliding Australia Airworthiness Panel will then update the aircraft file accordingly
  - Have the MR altered to reflect the new marks by the same inspector who completed the last Annual Inspection.
  - Remove the old registration marks from the aircraft and apply the new marks in accordance with Gliding Australia AN 84.
  - Install a new Registration Plate.
  - Complete a Logbook entry stating that the registration marks have been changed and quoting the old and new marks.
- 4.13.2 Until the certificates are received and all the above items are completed the sailplane cannot be flown, as its registration status is unclear.

## 4.14 Registered Operator

- 4.14.1 The RO is responsible under CASR Part 47 for ensuring that all required maintenance on the sailplane is completed by appropriately qualified persons (see Section 9.3 of CASA AC 47-01) and to approved standards.
- 4.14.2 The responsibilities of the RO includes:
- Ensuring that all airworthiness activities are conducted by authorised and qualified individuals to approved standards
  - Ensuring that all maintenance records and servicing history is retained for the aircraft
  - Ensuring that annual inspections, periodic and non-periodic maintenance are completed at the appropriate time in service or due date
  - Ensuring all mandatory maintenance as specified by the Aircraft documentation,

including foreign data such as the Type Certificate and sailplane manuals is completed

- e. Ensuring all applicable ADs are obtained and applied. This includes Gliding Australia, CASA, and the Type Certificate Holder's National Aviation Authority ADs for the sailplane and all its certified equipment
  - f. Completing any other tasks for which the RO is identified as being responsible elsewhere in this Manual.
- 4.14.3 Refer to the Registered Operator Handbook, MOSP Part 3, for information, guidance and further details.

#### **4.15 Loss or Damage to the CoR**

- 4.15.1 If the CoR is lost, stolen, destroyed or damaged so that particulars are no longer legible, the Registration Holder must notify Gliding Australia Secretariat in writing of the circumstances of the loss, theft, destruction or damage within 14 days.
- 4.15.2 If the CoR is damaged, the damaged certificate must accompany the notice. A statutory declaration from the Authorized representative of the Registration Holder is required to state the reason for replacement. For a club the authorized representative must be an officer of the club.
- 4.15.3 Gliding Australia will submit the application for replacement to CASA. (Gliding Australia do not have the authority to replace CoR.)

#### **4.16 Display of Registration Marks**

- 4.16.1 Full registration marks must be displayed in accordance with the requirements of CASR Part 45 on the exterior of the sailplane. Gliding Australia has certain exemption as detailed in Gliding Australia AN 84. Registration mark must be sized and applied in accordance with the guidelines given in Gliding Australia AN 84.
- 4.16.2 The CASA document AC45-01 provides further details of the requirements specified in CASR 45 and can be found via the following link: <https://www.casa.gov.au/nationality-and-registration-marks>



## 5. CERTIFICATE OF AIRWORTHINESS PROCEDURES

### 5.1 CoA General

- 5.1.1 The Airworthiness Delegations Procedures Manual (ADPM), AIRW-M08, details the procedures, instructions and information required. Gliding Australia will operate as per this Handbook.
- 5.1.2 The CoA is issued to confirm that at the time of issue the aircraft conforms to the applicable type design, that maintenance and alterations have been performed in accordance with the applicable regulations and the sailplane or powered sailplane is in a safe condition for flight. After 1 October 1998, an initial issue of a standard CoA may only be made to an aircraft of a type for which an Australian TC or TAC has been issued. This does not apply to renewal of a CoA that was in force prior to on 1 October 1998.
- 5.1.3 For non-type certified sailplanes or powered sailplanes, an EC, refer Chapter 6, is issued if an eligible person applies for an EC as set out in AC21.10, for a purpose for which a Gliding Australia officer holds a delegation, but there will be limitations placed on the attached annex to ensure the safety of people and other airspace users. Another route is LSA gliders, refer sections 5.7 and 5.8.
- 5.1.4 ICAO, Article 31, states every aircraft engaged in International navigation shall be provided with a CoA issued or rendered valid by the state in which it is registered. The requirements for a CoA are stated in ICAO Annex 8, Part II, Chapter 3.
- 5.1.5 Australia is a contracting state of ICAO; this responsibility is set out in the Civil Aviation Act 1988.
- 5.1.6 For the issue of a CoA for a sailplane or powered sailplane, the following is required:
  - a. Type Certificate
  - b. Type Certificate Data Sheet
  - c. Australian issued Type Acceptance Certificate (TAC), for aircraft models first registered in Australia after 1 October 1998. For aircraft types for which an Australian CoA was in force on 1 October 1998, an Australian TAC is not required.
- 5.1.7 For a CoA to be issued all applicable Airworthiness Directives are to be completed and certified as completed in the aircraft logbook.
- 5.1.8 The CAP or his appointee will nominate a Gliding Australia Approved Maintenance Organisation or Gliding Australia inspector to carry out the initial inspection for a First of Type or First of Model for the issue of a CoA. Gliding Australia requires a selection of forms to be completed as contained in the initial package.
- 5.1.9 The RO is to ensure that all work is completed as detailed above and submitted to Gliding Australia office for processing and that all work required has been entered in the aircraft's logbook by an appropriately qualified and designated Gliding Australia airworthiness inspector.
- 5.1.10 A Gliding Australia Form 2c Annual Maintenance Return is issued and a copy accompanies the supporting paperwork for the issue of the initial CoA or Experimental Certificate.
- 5.1.11 All sailplanes and powered sailplanes which meet the standards and qualify for a Standard CoA in accordance with ICAO Annex 8, and which hold an Australian TC or a TC of a recognised country may be issued a CoA in one of the following categories:
  - a. Normal
  - b. Utility
  - c. Aerobatic

- 5.1.12 If there is no Australian TC or TAC or prior CoA, an EC may be issued by Gliding Australia for a period of time as detailed in AC21-10 or AC21-4 detailing one or more of the listed prescribed purposes. Refer Chapter 6.
- 5.1.13 An EC can be issued for those sailplanes which do not conform to a type.
- 5.1.14 A time frame for the issue of a CoA will generally be five to ten working days from receipt of completed documentation and all appropriate fees and charges have been received.
- 5.1.15 Before CoA issue, the sailplane or powered sailplane must hold an Australian CoR. The ICAO requirements are that an aircraft may only be registered in one country and that country issues the CoA.
- 5.1.16 Documents attesting to the airworthiness of an Australian aircraft are:
- a. Type Certificate/ Type Certificate Data Sheet (TC/TCDS)
  - b. Type Acceptance Certificate (TAC) (For aircraft first registered after 1 October 1998)
  - c. Maintenance Release (MR)
  - d. Aircraft logbook
- Explanation:** There was a system of "Certificate of Type Acceptance" issued in CAO 101.26 dated 22 Dec 1981. This no longer exists, therefore all TAC or similar prior to 1 October 1998 are no longer required. But all CoA issued prior to this date remain in force and all subsequent aircraft of the same model may be issued with a CoA. All new First of Model after the date must have a TAC to obtain a CoA. Gliding Australia can arrange TAC and CoA in both cases.
- 5.1.17 Renewal of CoA; must be done through Gliding Australia prior to expiry. Renewable CoA are unusual.
- 5.1.18 Replacement of lost or damaged CoA is required. Apply to Gliding Australia.

## 5.2 Certificate of Airworthiness Processing

- 5.2.1 For sailplanes or powered sailplanes Gliding Australia recommends that the initial package should be purchased from Gliding Australia office and the aircraft registered as soon as possible. This will allow sufficient time and planning so as to perform maintenance requirements and fireproof registration plate procurement.
- 5.2.2 If requiring a competition mark, an application according to Gliding Australia AN 84 and the Sporting Rules must be completed and submitted for approval to Gliding Australia. Competition marks must not cause confusion with the aircraft's registration mark.
- 5.2.3 The Annual Inspector completes the Form 2 and/or survey documentation and carries out the authentication as required on behalf of Gliding Australia. For FOT or FOM, Gliding Australia requires the inspection for the issue of a CoA at a Gliding Australia AMO or by a Maintenance Authorisation holder. A list of AMOs can be found on Gliding Australia website.
- 5.2.4 For first CoA in Australia ROs shall complete Gliding Australia Form 300 CoA/ EC Application & Survey Checklist with the other supporting documentation. The authentication must be carried out by the inspector performing the CoA/EC inspection. All components and serial numbers must be checked against the aircraft's Data Plate and Logbook. This includes the wings, fuselage, tailplane and possibly the flight controls. The engine and engine components including the propeller must also be checked and recorded on Gliding Australia Form 300.
- 5.2.5 The inspector must confirm that:
- a. All Gliding Australia ADs, general and specific and ADs issued by CASA or the state of design (NAA) must be complied with.

- b. Gliding Australia Form 300 must be completed and returned for inclusion in the aircraft file. Gliding Australia CoA checklist is available from Gliding Australia website.

5.2.6 The processing officer may request digital photographs of the aircraft.

### 5.3 Conformance with Type Design

5.3.1 Gliding Australia will refer to the TC/TCDS or TAC to establish the airworthiness standard for the sailplane or powered sailplane and the details of the type design.

5.3.2 For LSA Special CoA applications please see section 5.7 and check list.

### 5.4 First of Type and First of Model Inspections

5.4.1 The Gliding Australia Form 300 CoA/ EC Application & Survey Checklist must be completed by the RO and checked and certified by an Maintenance Authorisation holder or Gliding Australia Approved Maintenance Organisation.

5.4.2 The inspector must:

- a. Confirm details of the aircraft and Registered Operator are correct.
- b. View the logbook and review modification status including incorporated STC
- c. View the logbook for major repairs and certifications
- d. Where possible inspect the standard of any repairs
- e. Identify un-authorised modifications not listed in the logbook
- f. List and report defects (Service Difficulty Reports) on Gliding Australia website SOAR system
- g. List all modifications approved and not approved which have non-conformance with the Type Design for evaluation
- h. Ascertain and list in the aircrafts logbook all lifed components
- i. Complete Weight And Balance (W&B)
- j. Assess Flight Manual, supplements and aircraft placards against the maintenance manual
- k. Setup the logbook statement with the RO and approval by EMA as per Chapter 9.
- l. Carry out the Annual inspection
- m. Carry out any survey inspections deemed necessary by the CAP, EMA or DCAP
- n. Carry out a compass swing, check the instruments comply with CAO 20.18 and Gliding Australia MOSP 3 Chapter 8.
- o. Ensure minimum equipment is present.

5.4.3 The compass will be a southern hemisphere compass or the compass card will be re-balanced, where applicable. A compass swing must be carried out.

5.4.4 The above compass swing results will be included on Gliding Australia Form 300 CoA Application & Survey Checklist.

5.4.5 Supplemental Type Certificates and modifications carried out in accordance with engineering orders issued by the NAA of a recognized state will be automatically accepted by Gliding Australia.

5.4.6 Reference can be made to CASR 1998 and associated AC. These ACs are:

- a. AC21-1(CoA Overview),
- b. AC21-2 (CoA)
- c. AC21-3 (Special CoA overview)
- d. AC21-4 (Amateur-Built Experimental Aircraft — Certification)
- e. AC21-9 (SFP)
- f. AC21-10 (ECs)
- g. AC21-41 (LSA)
- h. AC21-42 (LSA manufacturing)

## 5.5 CoA Issue when Aircraft is Overseas

- 5.5.1 A CoA may be issued for a sailplane or powered sailplane when the aircraft is physically outside Australia. The Authorised Person reserves the right not to issue a CoA when the aircraft is outside Australia. The applicant must apply in writing to Gliding Australia requesting the issue of a CoA providing:
  - a. The reasons and justification.
  - b. Details of the location of the aircraft.
  - c. Aircraft type or model.
  - d. Details of Gliding Australia airworthiness engineer or maintenance organisation performing the maintenance for the CoA issue
- 5.5.2 Gliding Australia may state conditions and requirements in regard to the maintenance which assures the airworthiness of the sailplane or powered sailplane before the CoA issue. The costs involved in the above process will be met by the applicant and/or the aircraft's RH. No action may be initiated by the RH until receiving written notification of approval from Gliding Australia.
- 5.5.3 Additional Registration Marks are required if flying outside Australian Territory – refer CASR Part 45 and Gliding Australia AN 84.
- 5.5.4 Permission from all foreign states is required if intending to operate in another country's airspace on an Experimental Certificate.

## 5.6 Export CoA

- 5.6.1 An export CoA is a Certificate of Type Conformance and must incorporate all requirements of the country to which the sailplane is being exported.
- 5.6.2 Applications for an Export CoA must be submitted to CASA prior to shipping the aircraft.

## 5.7 LSA Special CoA Procedures

- 5.7.1 LSA gliders or powered gliders that have a maximum take-off weight (MTOW) of no more than 600kg. The Regulations apply to both production built and kit built gliders. The LSA manufacturer certifies they have been designed and manufactured to approved standards. These standards also include provisions for acceptance testing and continued airworthiness. Operating guidelines are in CASA AC21-41 and AC21-42, they are different to Standard Certified gliders, mainly in that the manufacturer is responsible and must provide all support and approvals as discussed throughout this MOSP. However, they are otherwise maintained the same, if the Maintenance Manual permits this, by any Gliding Australia Inspector.

- 5.7.2 Production LSA are eligible for issue of a Special CoA-LSA which allows operation of such in accordance with CASR 1998 Division 91.T.6 – 91.895 and 91.900
- 5.7.3 Kit built aircraft are eligible for the issue of an LSA Experimental Certificate limited to private operations. Legislation for LSA can be found in CASR sub part 21H. Operating rules are in CASR 1998 Division 91.T.6 – 91.895 and 91.900. AC21-41 and AC21-42 also apply.
- 5.7.4 A Special CoA-LSA may only be issued by a Gliding Australia officer holding an Instrument of Appointment (IoA) for this purpose or CASA.
- 5.7.5 The Special CoA-LSA checklist is available on Gliding Australia website for the RH/RO to ensure all required documents supporting the application are submitted.

## 5.8 Special LSA CoA for Production Aircraft

- 5.8.1 These are sailplanes or powered sailplanes that have been manufactured solely by the manufacturer and delivered to the owner in a fly away condition.
- 5.8.2 Prior to the issue of a Special CoA-LSA, Gliding Australia will:
  - a. Obtain from the applicant the manufacturer's Statement of Compliance CASA Form 681 (in accordance with CASR 21.186(2))
  - b. Confirm the manufacturer has certified compliance with the requirements of a "qualified manufacturer" as specified in CASR 21.186(2)(b)
  - c. Confirm the applicant has copies of the documents listed in CASR 21.186(1)(b)(ii)
  - d. Appoint a Gliding Australia inspector to inspect the aircraft and ensure it is in airworthy condition
  - e. Confirm the aircraft complies with all safety directions issued by the manufacturer, this includes all ADs applicable including ADs "General" and "Equipment" including the engine, propeller, oxygen system, etc.
  - f. Confirm any modifications or repairs to the aircraft have been approved by the manufacturer. An aircraft that incorporates modifications/repairs not approved by the manufacturer is not eligible for a Special CoA-LSA under CASR 21.186
  - g. For used sailplanes and powered sailplanes, confirm that all maintenance has been carried out in accordance with all manufacturer's requirements and that they have been properly certified under Australian Regulations; or in the case of an imported sailplane, in accordance with the requirements of the exporting country
  - h. For imported aircraft, verify the written information required by CASR 21.186 (1)(b)(iii) has been provided, CASA Form 681.
  - i. Confirm the warning placard specified in CASR Part 91 has been fixed to the sailplane or powered sailplane.
- 5.8.3 Once Gliding Australia and the Authorised Person is satisfied the aircraft complies with the requirements for issue of the Special CoA-LSA the certificate can be issued.
- 5.8.4 The annexure to a Special CoA-LSA shall be issued with the following statement:

This Special Certificate of Airworthiness shall remain in force provided:

- Only modifications and repairs approved by the manufacturer are incorporated on this aircraft;
- The aircraft complies with all safety directions issued by the manufacturer;
- The aircraft has been maintained in accordance with the manufacturer's requirements, and
- The continued continuing airworthiness functions are continued by the manufacturer or person appointed by CASA.

- 5.8.5 If the LSA aircraft no longer complies with one or more of the above conditions, the CoA stops being in force (CASR 21,181 (4)(c)). It is permissible, however, for the registration holder of the non-compliant aircraft to apply for an Experimental Certificate.
- 5.8.6 If the Special CoA-LSA is subject to any conditions, such conditions shall be listed on the annexure.

## 5.9 Duration of a CoA

### NOTE

In this context, CoA does not include an Experimental Certificate.

- 5.9.1 Subject to Clause 5.9.3, a CoA continues in force:
- a. if a period is specified in the certificate — until the end of the period or until it is cancelled, whichever occurs first; or
  - b. in any other case — until it is cancelled.
- 5.9.2 The holder of a CoA must, on request by a Gliding Australia Official or CASA authorised person, make it available for inspection by Gliding Australia or CASA.
- 5.9.3 A CoA for a sailplane stops being in force if:
- a. the sailplane ceases to be registered in Australia; or
  - b. any type certificate or type acceptance certificate for the type of sailplane concerned stops being in force; or
  - c. in the case of a CoA issued for an LSA sailplane, a modification is made to the sailplane and the modification:
    - i. is not authorised by the manufacturer; or
    - ii. if the manufacturer was no longer existing at the time of the modification or could not have authorised the modification at that time and no suitable persons or organisations have taken over the continuing airworthiness functions for the aircraft; and such suitable persons or organisations have not approved the modification
    - iii. does not comply with the LSA standards.
- 5.9.4 A CoA is deemed to be suspended whilst a sailplane is operating under an Experimental Certificate.

## 5.10 CoA Cancellation or Suspension

- 5.10.1 Gliding Australia EMA, DCAP, or CAP may suspend or cancel a certificate of airworthiness for an Australian sailplane, by written notice given to its holder, if they hold a CASA authorisation to do so and if:
- any maintenance carried out on the sailplane is not carried out in accordance with approved data, or
  - Gliding Australia EMA, DCAP, CAP or the RMA otherwise considers that it is necessary to do so in the interests of aviation safety. Grounds for suspension include:
    - Major non-conformance with the certification basis against which the CoA was issued
    - Major defects on the aircraft that could result in the safety of the aircraft being in doubt
    - The aircraft documentation is not at the correct status or falsified
    - In any other circumstance that cannot be corrected by normal procedures.
- 5.10.2 A notice under Clause 5.10.1 must set out:
- the grounds for the suspension or cancellation; and
  - in the case of a suspension — when the suspension stops having effect.
- 5.10.3 A CoA is not in force during any period of suspension, but, if the certificate was issued for a specified period, the period of suspension counts as part of the period for which the certificate was issued.
- 5.10.4 When a sailplane for which a CoA exists is modified in such a manner that an EC is required for any purpose that does not require a finite limit to the duration of the EC, the CoA must be surrendered by the RO to Gliding Australia EMA, DCAP, CAP or an RMA within fourteen days of the issue of the EC.
- 5.10.5 A CoA may be re-instated by Gliding Australia EMA, DCAP, or CAP (if they hold a CASA authorisation to do so) when Gliding Australia EMA, DCAP, or CAP is satisfied that the conditions that resulted in suspension no longer exist.

## 5.11 Flight Manual

- 5.11.1 Whether a flight manual is required is determined by what the manufacturer was required to supply in accordance with the airworthiness standards when the aircraft was delivered. This can be determined by reference to the manufacturer, the Type Certificate holder, the authorised distributor, or in most cases the TCDS for the aircraft.
- 5.11.2 LSA will have a Flight manual or Pilot's Operating Handbook as it is a requirement of the LSA standards. LSA do not have a TCDS because they don't have a TC.

## 5.12 RO/RH Responsibilities

- 5.12.1 The RO/RH has the responsibility to ensure that all required information in the form of an AFM, placards, or other documents, is provided in the aircraft for the pilot and operating crew and the data:
- Is approved by the manufacturer and the relevant NAA or by the Authority
  - Is applicable to the particular serial number aircraft
  - Contains the limitations and conditions for safe operation

- d. Includes in the folder containing the AFM, any required supplement to reflect the actual configuration of the aircraft
  - e. The RO/RH is required to keep the AFM current.
- 5.12.2 The RO/RH also has the responsibility to ensure that all required maintenance information, in the form of the current aircraft logbook, manufacturer's maintenance manuals and, service bulletins or other maintenance documents, are provided to the glider inspector who will be performing the annual inspection or other maintenance on the aircraft. The RO/RH is required to keep the aircraft logbook current.



## 6. EXPERIMENTAL CERTIFICATE PROCEDURES

### 6.1 Conditions for EC Issue

- 6.1.1 An Experimental Certificate (EC) may be issued by a CASA Authorised Person for a period of time as detailed in AC21-10 or AC 21-4 and regulation CASR 21.195B, detailing one or more of the listed prescribed purposes. The EC annex will list the operational conditions, which can include condition for flight and maintenance, which are usually more limiting than for a certified aircraft. This EC must be attached to the sailplane's Maintenance Release so it is available to the pilot for reference.
- 6.1.2 The Airworthiness Delegations Procedures Manual (ADPM), AIRW-M08, details the procedures, instructions and information required. Gliding Australia will operate as per this Handbook.
- 6.1.3 Authorised Gliding Australia personnel may only issue an EC for the purposes specified in the CASA Delegation Instruments. These are limited. CASA may be able to issue an EC for other purposes as per the regulations. Some purposes are by election of the Registered Operator, others are the only way to register say a homebuilt or a sailplane from an unapproved country.
- 6.1.4 Refer to the ADPM and the regulations, CASR 21.191 for more details.

#### NOTE

Type Certified sailplanes can be issued with an EC for specific purposes such as research and development. It is important to note whilst a type certified sailplane is operating on an EC, the Standard CoA is suspended and the sailplane must be operated in accordance with the limitations contained in the EC.

### 6.2 DURATION OF EXPERIMENTAL CERTIFICATES

- 6.2.1 The duration of ECs is limited by regulation. Refer to the ADPM.

### 6.3 Operating Limitations

- 6.3.1 Operating limitations may be imposed. Any condition or operating limitation annexed to the EC will be in writing and clearly listed in the Annex. These conditions will be listed considering the scope of CASA's instrument of authorisation and may be imposed only in the interests of safety.
- 6.3.2 The word EXPERIMENTAL must be displayed on the aircraft near each entrance to the cockpit, or in the cockpit as appropriate, in letters not less than 5cm or more than 15 cm in height (CASR 45.125). The letters should be block capitals of a style that is conspicuous and legible, and easy to read by each person entering the aircraft.
- 6.3.3 For multi-seat aircraft, a warning placard (in accordance with CASR Part 91 Chapter 97 Experimental and Light Sport Aircraft Placards) must be displayed in the cockpit at a location in full view of the passenger.
- 6.3.4 Permission from all foreign states is required if intending to operate in another country's airspace on an Experimental Certificate.

### 6.4 Cancellation or Suspension of Experimental Certificates

- 6.4.1 As specified in CASR 21.195 B an EC for an aircraft stops being in force if the aircraft ceases to be registered in Australia.

- 6.4.2 Gliding Australia personnel are to follow the Section 5.10 guidance material detailed in paragraphs (b), (c) and (d) relating to the cancellation or suspension of a CoA, when cancelling or suspending an EC.

**NOTE**

Modifications and repairs to experimental aircraft are not required to be carried out in accordance with approved data (general exemption for Limited Category and Experimental aircraft in Current CASA instrument CASA EX51/15). However, the risk analysis upon which the conditions of the EC were based may need to be reviewed in the light of any such modifications or repairs. The conditions may be issued separate to the EC but must be attached. A Type Certified aircraft operating on an EC for CASR 21, purpose 191 (a) or (b) is not an experimental aircraft as discussed in Section 6.1.

- 6.4.3 The holder of the EC must surrender the EC when requested on cancellation/suspension.

## **6.5 Maintenance of Experimental Sailplanes.**

**NOTE**

The following provisions are made in recognition of the liability issues that may arise when a Gliding Australia maintenance authority holder performs maintenance or inspection functions on an amateur-built or kit built experimental sailplane.

- 6.5.1 For the original owner/builder of amateur or kit built sailplanes:
- a. The owner/builder may apply for a maintenance authority specific to that sailplane to carry out maintenance on the sailplane, if the owner/builder is the primary builder of the sailplane. Gliding Australia requires they attend a Basic Sailplane Engineering course (refer to AIRW-M07 Sailplane Inspectors Training Syllabus). Thereafter, the owner/builder is fully responsible for the maintenance and may carry out that maintenance as prescribed by this MOSP. All owner/builders performing maintenance are advised to make themselves fully aware of their legal responsibility under the aviation legislation and this MOSP 3. Guidance as to the maintenance required for experimental sailplane that are not based on a certificated type, may be developed from documents such as Gliding Australia BSE, FAA AC 43.13-1A "Acceptable Methods, Techniques, and Practices — Aircraft Inspection and Repair" and the UK CAA Civil Aircraft Inspection Procedures (CAIPs).
- 6.5.2 For subsequent owners of amateur or kit built sailplanes:
- a. If an experimental amateur-built sailplane is sold, the new owner cannot certify for the maintenance unless he holds appropriate Gliding Australia maintenance authorities. All maintenance must be certified by a Gliding Australia maintenance authority holder, or the holder of an appropriately endorsed maintenance authority.
  - b. Amateur-built sailplane constructed outside Australia and purchased by Australian citizens once registered are maintained the same as Clause 6.5.2 a.
- 6.5.3 In the case of an experimental sailplane based on a certificated type, maintenance on parts of the sailplane that are not affected by experimental modifications may only be carried out to the certified sailplane approved data and all maintenance must be certified for by the owner/builder.
- 6.5.4 Noise certification as per Clause 2.10 is required.

- 6.5.5 General and Type Specific ADs from Gliding Australia or CASA are mandatory as well as ADs from the NAA of the State of Design. Refer Section 15.

## 7. SPECIAL FLIGHT PERMITS

### 7.1 Special Flight Permits

- 7.1.1 Refer AC21-9 and the ADPM. A sailplane must be deemed safe for flight. Applications for SFP will be assessed on application and will be issued by a Gliding Australia member who holds the CASA Delegation, usually with conditions. These conditions may be the route to fly, flight not over a built up area, the configuration of the sailplane, e.g., gear extended or speed requirement.
- 7.1.2 SFPs can be issued to an unregistered sailplane in accordance with CASR 21.197(3).
- 7.1.3 Typical purposes of a Special Flight Permit are ferry flights of a damaged sailplane for repair or a ferry flight for maintenance. A valid maintenance release for the duration of the flight is not required. It may permit flight with outstanding ADs in place, if approved by CASA. A Gliding Australia inspector may be required to inspect the sailplane or powered sailplane before flight to ascertain the flight and sailplane is safe for the flight for which the SFP is issued.
- 7.1.4 Considerations also will be the equipment fitted for the flight, ADs completed and certified, oxygen requirements (refer CAO 20.4) and any other maintenance requirements required. An annex to the Special Flight Permit shall be completed with conditions as stated above.
- 7.1.5 Only the CAP, DCAP, EMA or RMA, with a valid CASA delegation, may issue a Special Flight Permit.
- 7.1.6 The Airworthiness Delegations Procedures Manual (ADPM), AIRW-M08, details the procedures, instructions and information required. Gliding Australia will operate as per this Handbook.
- 7.1.7 Special Flight Permits are no longer issued for test flying of modified sailplane. This requires an Experimental Certificate.

## 8. SAILPLANE MINIMUM EQUIPMENT AND PLACARDING

### 8.1 Minimum Equipment

- 8.1.1 Each sailplane must have certain minimum equipment, and that equipment must meet appropriate standards. The minimum equipment for all Australian registered sailplanes, except LSA, is:
- a. One Air Speed Indicator (ASI). The instrument must be able to indicate at least 5% above the manufacturer's Maximum Allowable Speed in Smooth Air ( $V_{NE}$ ). The ASI must be in full view of the pilot in command. Sailplanes used for training are to be fitted with an ASI marked in knots.
  - b. For operations in Australia: one altimeter, calibrated in feet. Altimeters with a three thousand feet per rotation of the large pointer are not acceptable. For operations in a foreign country which measures FLs or altitude in meters: the altimeter must be calibrated in metres or fitted with a conversion placard or device; and have an adjustable datum scale calibrated in millibars or hectopascals.
  - c. Magnetic compass.
  - d. A time piece (This requirement may be met by a pilot wearing a watch).
  - e. One aviation four or five point harness for each pilot.
  - f. An adequate canopy jettison system or a Ballistic Recovery System, for any operations for which the wearing of a parachute is mandatory.
  - g. A Clear View panel, operable with a gloved hand, on any side of the cockpit adjacent to each pilot, to allow vision at 45 degrees to the line of flight in the case of canopy fogging.
- 8.1.2 For LSA the minimum equipment is specified by the manufacturer and only the manufacturer may authorise other equipment.
- 8.1.3 The placards must be in the same units as the instruments.
- 8.1.4 For non-training sailplanes Gliding Australia strongly recommends Knots for airspeed for consistency and familiarity. It is difficult and error prone to convert kilometres per hour to knots when communicating to other sailplane.
- 8.1.5 The installed electrical system must have:
- a. A two position master switch.
  - b. Each instrument or power bus must be able to be switched off independently
  - c. A fuse or circuit breaker for each item of electrical equipment
  - d. A fuse or circuit breaker for each battery on a separate circuit, located as close as possible to the battery and preferably on it. Starter motor battery excluded.
  - e. If multiple batteries are installed a separate battery selector switch is required
  - f. Rotary switches are acceptable however they must have an OFF position and each battery must be selectable independently.
- 8.1.6 All toggle switches must be installed so that moving the switch up turns the equipment on.
- 8.1.7 All equipment specified in the original TC documentation and the Flight and Maintenance manuals must be included.

## 8.2 Minimum Equipment for Powered Sailplanes

- 8.2.1 In the case of powered sailplane, the above items must be supplemented with:
- An engine tachometer
  - A carbon monoxide detector for engine installations fixed into the fuselage
  - A cylinder head temperature or water temperature gauge. (Not required if the powered sailplane type was originally Type Approved without, but strongly recommended)
  - An oil pressure and temperature gauge if applicable
  - A fuel contents gauge or dip stick
  - Static earthing point for re-fuelling purposes.
  - For LSA the minimum equipment is specified by the manufacturer and only he may authorize other equipment.

## 8.3 Minimum Cockpit Placarding

- 8.3.1 For LSA gliders refer to the manufacturer's manuals and Clause 5.7 and 5.8 for required placarding as these may override the following.
- 8.3.2 Gliding Australia policy is that the flight manual need not be carried in the sailplane; therefore there must be a minimum level of cockpit placarding to ensure that operating limits are available to the pilot. All cockpit controls, except the control column and rudder pedals, must be labelled with their function and their sense of operation. The placards required and their locations are generally found in the sailplane flight manual.
- 8.3.3 For flapped sailplane, the flap settings must be visible to the pilot.
- 8.3.4 An airspeed limitation placard must be displayed in full view of the pilot in command. The placard must display the following Indicated Airspeed in the units of the Airspeed Indicator (ASI):
- The never exceed speed ( $V_{NE}$ )
  - The maximum rough air speed ( $V_{RA}$ )
  - The maximum manoeuvring speed ( $V_A$ )
  - The maximum aero tow speed
  - The maximum airspeed positive flap extended
  - The maximum winch/auto tow speed if approved winch/auto tow launching.
- 8.3.5 The ASI does not require to be colour coded unless the Flight and Maintenance Manuals specify colour coding. In those cases, the ASI must be colour coded in accordance with those manuals.
- 8.3.6 Where a colour coded ASI is not required by the Flight or Maintenance Manuals and is fitted it must comply with the following convention:
- Velocity Never Exceed ( $V_{NE}$ ) is shown by a radial red line
  - The upper caution range a yellow arc extending from rough-air speed  $V_{RA}$  to  $V_{NE}$
  - For the normal operating range, a green arc with the lower limit at  $V_S$  at maximum weight with wing-flaps neutral and landing gear retracted and the upper limit at the rough-air speed  $V_{RA}$

- d. For the wing-flap operating range, a white arc with the lower limit at the stall speed  $V_{SO}$  for maximum weight, landing configuration and the upper limit at the allowable wing-flaps extended speed  $V_{FE}$
  - e. The best rate-of-climb speed  $V_Y$  must be displayed by a blue "I" radial line (for powered sailplanes only).
- 8.3.7 A pilot and baggage weight limitation placard showing the maximum and minimum pilot weights in kilograms for each seat, including removable ballast requirements, must be displayed. Multiple placards can be used to detail specific pilots or conditions.
- 8.3.8 For two seat sailplanes a placard showing the maximum and minimum pilot weights for the rear seat for a range of pilot weights on the front seat is highly recommended. A sample placard is shown below:

<b>VH-XXX</b>		
<b>NORMAL CATEGORY</b>		
<b>Front Kg</b>	<b>Rear Min</b>	<b>Rear Max</b>
45	95	110
50	75	110
55	60	110
60	40	110
65	20	110
70	0	110
75	0	110
80	0	110
85	0	105
90	0	100
95	0	95
100	0	90
105	0	85
110	0	80
Minimum Solo 70 kg		
Maximum Solo 110 kg		
Max Fuse Load 190 kg		

- 8.3.9 Water ballast limitations placarding must be displayed showing:
- a. Maximum wing ballast permitted
  - b. Maximum permitted fin ballast (if fitted)
  - c. Maximum All Up Weight of the sailplane.
- 8.3.10 The Canopy Jettison system operating placards must be displayed.
- 8.3.11 Where oxygen systems are installed, a placard showing the  $V_{NE}$  reduction with altitude is required.
- 8.3.12 A weak link placard for aero tow and winch/auto tow must be displayed for sailplanes with a tow release.
- 8.3.13 A placard stating "Cloud Flying Prohibited".
- 8.3.14 If a sailplane is approved for winch launching however the belly hook is disconnected, a placard stating 'No Winch Launching' is required.

## 8.4 Powered Sailplane Placarding

- 8.4.1 Powered sailplanes which are capable of self-launching must have a placard which shows ground roll to lift off (short dry grass) and total distance to clear 50 feet under standard sea level conditions extrapolated to 5000 ft above sea level and 30 degrees Celsius, ambient temperature.
- 8.4.2 All powered sailplanes must also have a placard stating 'NO SMOKING'
- 8.4.3 Powered sailplanes operated under CAO 95.4 must carry engraved placards in the cockpit in full view from every control seat. These placards must bear the following words:

THIS POWERED SAILPLANE MUST BE OPERATED IN  
ACCORDANCE WITH THE PROVISIONS OF CAO 95.4 AND  
THE GLIDING AUSTRALIA OPERATIONAL REGULATIONS

- 8.4.4 Powered sailplanes which have not been certified as capable of self-launching (power assisted sailplanes) must carry engraved placards in the cockpit in full view from every control seat. These placards must bear the following words:

THIS POWER ASSISTED SAILPLANE MUST BE OPERATED  
IN ACCORDANCE WITH THE PROVISIONS OF CAO 95.4  
AND THE GLIDING AUSTRALIA OPERATIONAL  
REGULATIONS. TAKE-OFFS USING ONLY INSTALLED  
ENGINE POWER ARE PROHIBITED.

## 8.5 Powered Sailplane Placarding when Operated Under CAO 95.4.1

- 8.5.1 Powered sailplanes operated under CAO 95.4.1 (Charter Operations) must ensure that it has engraved placards bearing the following words in the cockpit in full view of, and legible from, each seat:

THIS POWERED SAILPLANE MUST BE OPERATED IN  
ACCORDANCE WITH THE PROVISIONS OF CIVIL AVIATION  
ORDER 95.4 AND 95.4.1

- 8.5.2 Powered sailplanes which have not been certified as capable of self-launching (power assisted sailplanes) must ensure that it has engraved placards bearing the following words in the cockpit in full view of, and legible from, each seat:

THIS POWER ASSISTED SAILPLANE MUST BE OPERATED  
IN ACCORDANCE WITH THE PROVISIONS OF CIVIL  
AVIATION ORDER 95.4 AND 95.4.1.  
TAKE-OFFS USING ONLY INSTALLED ENGINE POWER ARE  
PROHIBITED.

## 8.6 Cockpit Control Identification

- 8.6.1 Sailplanes controls shall have the following colour coding in accordance with EASA CS 22.780:



- |    |                              |   |
|----|------------------------------|---|
| a. | Tow Release                  | Yellow                                  |
| b. | Dive Brake Control           | Blue                                    |
| c. | Longitudinal Trimmer         | Green                                   |
| d. | Canopy normal opening handle | White or white with a red ring or band* |
| e. | Canopy jettison handle       | Red                                     |

**\*Note:** only required if multiple handles are used for normal canopy opening and jettison.

- 8.6.2 Other controls must be clearly marked but may not be yellow, blue, green or red except where other emergency handles are also coloured red (fire suppressant systems, NOAH systems etc).

## 9. SAILPLANE MAINTENANCE POLICY

### 9.1 Background

- 9.1.1 Like any man made structure, sailplanes deteriorate over time due to a range of factors such as the operating environment, operating conditions, storage (hangar or trailer), airfield conditions, launch method, and pilot skills. Hence, sailplane maintenance systems are intended to serve several purposes, primarily:
- To maintain the sailplane in an airworthy condition through preventative maintenance,
  - To detect deterioration in time to prevent airworthiness problems, and
  - To provide data on which to base life extension decision.
- 9.1.2 Maintenance systems are based on experience and engineering judgement, and depend on a number of assumptions which may, or may not, be accurate. An example of such an assumption is the ratio of aero-tow launches to winch launches and the amount of aerobatics. Winch launches place different, and generally higher loads, on critical parts of the sailplane structure. Another assumption is the average flight time. The expected life of a type is another assumption, and it is unlikely that designers ever expected that their designs would still be in regular use 40 or more years after production finished.
- 9.1.3 As a result, maintenance systems need to change to keep pace with the ageing of the sailplane that they are intended to support. It is most unlikely that a maintenance system published in 1965 to support an early generation FRP sailplane is still adequate 45 years later. In particular, moving parts in locations where they cannot be readily inspected (ie, sealed inside the wing) were never intended to last for 45 years without inspection. That is why TC holders/manufacturers publish Life Extension Inspections, and maintain and develop them on the basis of feedback from operators.
- 9.1.4 Maintenance systems are also evolving in response to more stringent requirements, requiring more comprehensive maintenance data from the manufacturer. The original Gliding Australia airworthiness system was developed in an era when manufacturers largely ignored the issue of supplying maintenance data for their products. The awareness of issues such as structural fatigue has been slowly (since 1947) percolating down from large Transport sailplane, through General Aviation aircraft, and has now reached sailplanes in general, whereas in the past it did so only in the form of isolated ADs that affected particular types; and for these reasons, the traditional Gliding Australia maintenance system also must evolve. In the past, the exemption for gliders in CAO 95.4 from Part 4 & 4A of the CARs had the effect that the manufacturer's maintenance instructions could largely be regarded as advisory material (except as listed in Clause 9.6), to supplement the alternative methods set out in Gliding Australia MOSP and Gliding Australia ADs. However, when the manufacturer's instructions include such matters as component retirement lives or inspection or modification procedures that are essential in order to achieve the expected component lives, this is no longer the case. The maintenance requirements for a particular sailplane can also be affected by its modification status; for example, it's component retirement lives or inspection procedures can be altered by modifications.
- 9.1.5 CAO 100.5 "General requirements in respect of maintenance of Australian aircraft" is a comprehensive part of General Aviation requirements. However, Gliding Australia members are exempt to CAR 1988 Parts 4 and 4A. This means Gliding Australia must define a system of maintenance and MOSP 3 achieves this, replacing all parts of CAO 100.5. There are parts of CAO 100.5 that are similar and parts that are different, to suit sailplanes and to simplify the system.
- 9.1.6 Within Gliding Australia rules, as derived from Australian Regulations, there is flexibility to allow variation of the Maintenance System for each glider. The following sections clarify the

rules around this. Some aspects are mandatory, some may be changed. The Registration Holder may elect an alternative system of maintenance in accordance with Clause 9.7.

## 9.2 Maintenance Systems

- 9.2.1 Maintenance systems contain information which can be broadly divided into three categories:
- What maintenance has to be done
  - When that maintenance has to be done (often referred to as the Maintenance Schedule)
  - How that maintenance is to be done (disassembly/assembly instructions, lubrication requirements, inspection methodology to be used, etc.)
- 9.2.2 Changes to a maintenance system can affect all three of these. An inspection can be added, an existing inspection can be made more (or less) frequent, an NDI inspection substituted for a visual inspection, or lubrication requirements added or changed. For these reasons it is important that Registered Operators be in possession of the latest maintenance documentation for their sailplane.
- 9.2.3 These factors mean that the maintenance system is no longer automatic; there is no longer a “one size fits all” situation. It also provides the RH some flexibility that is allowed for recreational aircraft but not commercial aircraft by Australian Regulations. The maintenance system needs to be tailored to suit the sailplane type; and may need to be amended for a specific sailplane as a consequence of modifications. For these reasons, the maintenance system for each registered sailplane must be specified in the sailplane logbook; fortunately there is an established way to do this, which is the use of a “Logbook Statement”, which takes the form of a brief (usually one page) insertion at the front of the logbook. (See the RO Handbook for further information.)
- 9.2.4 The clubs may also elect a Logbook Statement for their sailplanes as they are not commercial operators.

## 9.3 Gliding Australia Maintenance System (Default System of Maintenance)

- 9.3.1 For all Australian sailplanes, the default system of maintenance system is:
- Daily Inspections (Form 1),
  - Annual Inspections (Form 2), and
  - Periodic Surveys.
- 9.3.2 Maintenance falls into two categories, namely scheduled maintenance, and unscheduled maintenance. Periodic inspections play a major part in discovering any matters that need attention, and are the principal means by which the necessity for unscheduled maintenance is monitored under Gliding Australia system. Therefore, Gliding Australia Daily and Annual Inspections are mandatory as a minimum for all Gliding Australia sailplanes unless they have an approved variation (see Section 9.7). These also contain some basic scheduled maintenance items that can be conveniently done in the course of the inspection.
- 9.3.3 A Daily Inspection must be carried out on a sailplane before flight each day.
- 9.3.4 An Annual Inspection must be performed every 12 months or 250 hours time-in-service, whichever comes first.
- 9.3.5 Periodic surveys are defined in Section 14. These procedures vary according to the sailplane's form of construction and also for specific sailplane types. In general, these procedures are a combination of inspection at a greater depth than the annual inspection,

combined with specific routine maintenance items, based on experience and the manufacturer's data. The RO may apply to use these procedures in lieu of such routine inspection and scheduled maintenance procedures specified in the manufacturer's manuals if not mandated as described in Section 9.6 or mandated by an Airworthiness Directive. Alternatively, the RO may opt to follow the Manufacturer's Maintenance Manual as described in Section 9.7.

## 9.4 Manufacturer's Maintenance Manual

- 9.4.1 Manufacturer's maintenance requirements are published in the type manual set. Sometimes these can be in a separate Maintenance Manual, but are often in a section of the type's Flight Manual. The Type Certificate (TC) holder/ manufacturer maintains and updates these manuals as feedback from operators accumulates. That is why defect reporting is such a critical function of Registered Operators and sailplane inspectors; this is the feedback that TC holders rely on to keep their types safe. As a result of feedback from operators and maintainers, TC holders change their maintenance programs by:
- a. Amending their maintenance program
  - b. Issuing Technical Notes, Service Bulletins, or similar documents
- 9.4.2 Requirements published in manufacturer's manuals may be mandatory. Refer to Section 9.6.
- 9.4.3 While Technical Notes, Service Bulletins, etc, are not normally mandatory, Registered Operators are advised to consider all such documentation issued by the manufacturer/TC holder. The Registration Holder may elect an alternative system of maintenance in accordance with Clause 9.7 and may elect to perform TNs, SBs etc. He must record his decision for the history in the Logbook Statement.
- 9.4.4 If Gliding Australia, CASA or the NAA of the State-of-Design believe that compliance with a Technical Note, Service Bulletin, or similar document should be mandatory, an AD will be issued. Compliance is then mandatory. (See Section 15).

## 9.5 Annual Inspections

- 9.5.1 All Australian sailplanes are to have an Annual Inspection and Section 9.6 inspections every 12 months or 250 hours time-in-service, whichever comes first, unless the EMA has approved a variation. Refer Section 11.3 for details on the Annual Inspection.
- 9.5.2 Many older sailplanes, regardless of origin, have very few, if any, maintenance requirements in their manual set. It was for this reason that Gliding Australia established the annual inspection schedule specified in Gliding Australia Form 2. Gliding Australia Form 2 specifies what maintenance is required, and when it must be done (annually, 12 months from the date of the last annual inspection or after 250 hours time in service from the last annual inspection). Gliding Australia Form 2 does not specify HOW maintenance is to be done. All work must be performed in accordance with (in priority order):
- a. Airworthiness Directives issued by the State-of-Design, CASA, or Gliding Australia.
  - b. Manufacturer's Maintenance Manual instructions as to how the maintenance is to be performed. Refer Section 9.6.
  - c. Standard industry and Gliding Australia practice (i.e. in accordance with Gliding Australia publication Basic Sailplane Engineering).
- 9.5.3 Unfortunately, the combination of Manufacturer's Maintenance Program and Gliding Australia Form 2 can result in over-maintaining a sailplane. Over-maintaining can result in increased wear and tear, accidental damage, maintainer complacency, and increased risk. Where a Registered Operator believes that their sailplane is being over maintained, they may apply to the EMA for a variation to their sailplane's maintenance program, see below.

- 9.5.4 If the sailplane has a mandatory maintenance schedule then this schedule cannot be varied by Gliding Australia. In this case perform the schedule at the hours or times specified and annually submit the Annual Maintenance Return, Gliding Australia Form 2c, to certify the sailplane is airworthy and include the required data and defect reports.
- 9.5.5 If the manufacturer's maintenance schedule is not mandatory then the RO may elect which schedule to follow. LSA gliders must follow the manufacturer's schedule.

## **9.6 Airworthiness Limitation Section and Certification Maintenance Requirements**

- 9.6.1 The Airworthiness Limitation Section and Certification Maintenance Requirements describe respectively, a section of the manufacturer's maintenance manual which may specify mandatory maintenance actions, such as component life limits; or a part of the Type Certificate Data Sheet (TCDS) or Supplemental Type Certificate Data Sheet which may specify mandatory maintenance that must be done or complied with in addition to other maintenance such as Gliding Australia Form 2 Inspection schedule.
- 9.6.2 If the Maintenance Manual contains an Airworthiness Limitation Section (ALS) or the TCDS contains Certification Maintenance Requirements (CMR), these are approved by the NAA of the State of Design. These sections are both mandatory and cannot be varied for Australian aircraft. Any type certified components e.g., airframe, engine, propeller, may have an ALS or CMR. ALS and CMR requirements are mandatory unless superseded by other approved data, e.g., an STC life extension.
- 9.6.3 Other than these the maintenance manual is not mandatory but is good advice that should be followed, but can be varied by Section 9.7.
- 9.6.4 Only National Aviation Authorities approved CMR and ALS are mandatory to private operation sailplanes. Manufacturers may say other items are required, but these are not mandatory.
- 9.6.5 LSA gliders must follow the manufacturer's schedule.

## **9.7 Variation of Maintenance Requirements - Logbook Statements**

- 9.7.1 The EMA may approve variations to maintenance systems except for CMRs and ALS. Approval is required to ensure that sailplanes are adequately maintained. Applications are to be made, in writing, to EMA, and must:
- Specify what sailplane, by type, registration mark and serial number the application is for (the application may address multiple sailplanes, but only one type)
  - Specify what variation is requested
  - Provide details of alternate maintenance actions proposed (if any)
  - Justify that variation in terms of safety.
  - The Registered Operator applies for and authorises the Logbook Statement.
- 9.7.2 Proposals must provide at least an equivalent level of safety to the requirements against which the variation is sought. The EMA will check compliance with mandatory maintenance and verify that there is sufficient justification to maintain safety. The EMA will advise the applicant accordingly.
- 9.7.3 Applications may ask for variations in:
- What maintenance is to be carried out (for example, removing or changing an inspection)
  - When that work is to be done (for example, changing the periodicity of an inspection)

- c. How that works is to be done (for example, substituting one lubricant for another, more suitable product).
- 9.7.4 If approved, the changed maintenance system becomes the maintenance system for the sailplane for which it was approved. The sailplane's Logbook Statement must be amended or re-issued to reflect any changes to the maintenance system and for records purposes the old Logbook Statements are to be kept affixed in the Logbook.
- 9.7.5 If an approval is granted, Gliding Australia may use the approval as the basis for an approval covering all sailplanes of that type in Australia.
- 9.7.6 The sailplane must then be maintained in accordance with the Logbook Statement (LS). A new LS may be issued but the old LS must remain affixed in the logbook for the history.
- 9.7.7 When the sailplane is sold the new Registered Operator must certify acceptance of the previous Logbook Statement or arrange a replacement.

## 9.8 Operating Engines "On Condition"

- 9.8.1 If the ALS or CMR conditions (Section 9.6) limit the engine hours or calendar life, then the engine may not be operated on condition.
- 9.8.2 The EMA is authorized to approve "Operation on Condition" if the engine meets the guidelines specified in AIRW-F002 Appendix A.
- 9.8.3 An annual approval request is to be submitted to the EMA. The EMA will use the past Appendix A records to verify a stable condition and advise the Engine Inspector. If suitable the EMA will approve Operation on Condition until signs suggest the engine should be overhauled. The EMA is involved to provide the inspector advice and assist him in making good decisions.
- 9.8.4 The Registered Operator is advised that there are additional risks in operating beyond the specified life and care is to be taken to monitor the engine for changes, e.g., oil uplifts increasing excessively or if the engine is making metal.

## 9.9 Use of Approved Maintenance Data

- 9.9.1 Approved Maintenance Data for a sailplane, component or material consists of the requirements, specifications and instructions that are defined in CAR 1988 Regulation 2A and as follows. Note that LSA sailplanes must generally get all data from the manufacturer.
- 9.9.2 The order of precedence of approved data is as follows, first to last:
  - a. Data approved by CASA for the purpose (such approvals may be general or specific)
  - b. An Engineering Order approved by a CASR 21.009/CASR 21.M Authorised Person or equivalent LSA document to modify a specific sailplane. Or an approved repair scheme. (Not applicable to Experimental aircraft.)
  - c. The approved implementation instructions for a Supplemental Type Certificate modification and Data approved by the holder of the Supplemental Type Certificate (Not applicable to LSA sailplanes or experimental aircraft that are not based on a certificated sailplane.)
  - d. Data approved by a CASA authorized person under CAR 1988 Regulation 2A, a National Aviation Authority of a recognised foreign country or EASA if clearly relevant. If there is any uncertainty, the EMA is to be asked and will determine the applicability of the document.
  - e. An AD on a particular aspect of a sailplane. If it states it overrides an EO or STC then it takes precedence. (LSA sailplanes have Service Directions from the manufacturer as well as CASA or Gliding Australia general ADs.)

- f. Data approved by the holder of the Type Certificate (normally, but not always, the manufacturer). This is normally in the type's maintenance manual, repair manual, or other manufacturers documentation such as Service Letters, Technical Notes, Service Bulletins, Approved Repair Schedules, etc (Not applicable to LSA sailplanes or experimental aircraft that are not based on a certificated sailplane.)
  - g. Data approved by the manufacturer of an LSA sailplane or a person appointed by CASA.
  - h. Data approved by the component manufacturer. Where the manuals do not cover an aspect of the sailplane the procedures in Basic Sailplane Engineering should be followed.
  - i. Other approved manuals of standard repair listed below.
- 9.9.3 If inspectors are unsure then the RMA should be contacted.
- 9.9.4 All LSA sailplane work is to be performed in accordance with manufacturers approved maintenance data. See the following chapters for further details.
- 9.9.5 Sailplanes for which an experimental certificate is in force are exempt from some maintenance and modification requirements. (Ref. CASA EX 65/22 or the latest version in force). However, as far as possible, previously certificated sailplane are to be maintained to Approved Maintenance Data. The Registered Operator is to clearly define what and why Approved Maintenance Data was not used. If this may influence the conditions of the Experimental Certificate this is to be reported to the issuing person.
- 9.9.6 The use and source of Approved Maintenance Data is to be recorded in the work records and logbook certification.

## 10. SAILPLANE INSPECTORS AND MAINTENANCE AUTHORISATION HOLDERS

### 10.1 Overview

- 10.1.1 Appropriately trained and assessed Gliding Australia members may be issued with a Maintenance Authority (MA) which allows them to certify that inspections, maintenance, repairs and other airworthiness activities within their ratings and competency, have been correctly completed. MA holders must self regulate and only work within their own competency. Self development by research, study and working with others is recommended.
- 10.1.2 A Maintenance Authority records an individual's ratings against the Field of Expertise, as illustrated below: Note that this differs from the format of form CA 1109 which remains valid. (This section is for airframe only; engine aspects are discussed separately).

TYPE OF FUNCTION	FIELD OF EXPERTISE				
	Wood	Sheet Metal	FRP (composite)	Steel Tube	Fabric
REPLACEMENT OF COMPONENTS					
ANNUAL INSPECTIONS					
DAILY INSPECTION EXAMINER					
MINOR REPAIRS <sup>2</sup>					
MAJOR REPAIRS <sup>2</sup>					
LIFE EXTENSION AND SURVEY					
WEIGHT & BALANCE: BASIC					
WEIGHT & BALANCE: ADVANCED					
REFINISHING					

NOTE 1: Normal ratings may be qualified by conditions added to the authority.

NOTE 2: To decide whether a modification or repair is "minor" or "major", refer to Clause 18.3.5

NOTE 3: Any non-standard repair constitutes a modification. So the classification "Minor modifications" also includes minor non-standard repairs.

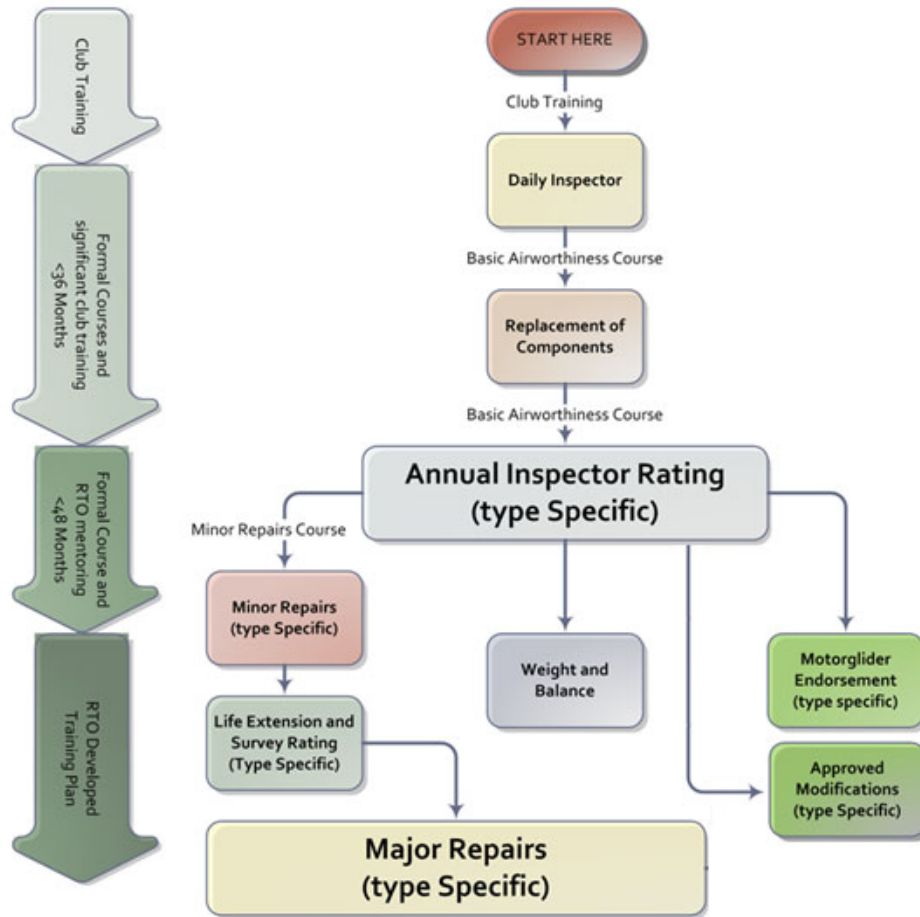
NOTE 4: Daily Inspection authority is issued in the form of a pilot's log-book endorsement, so it does not appear in this matrix. The DI training and rating is generic. For complex types and those requiring specific expertise the inspector must obtain additional training. The initial DI authority may be limited to make this clear and, if so, this must be extended by another DI Examiner.



- 10.1.3 On application for an airworthiness rating other than Daily Inspection, the members credentials will be validated by the RMA against the requisite syllabi. If considered valid, the RMA will recommend the EMA approve the rating and issue the Maintenance Authority. They must update Gliding Australia records within 24 hours and notify the person. Daily Inspector authorisations will only be issued by DI Examiners and Annual Inspectors, on approval, by Logbook endorsement.
- 10.1.4 The EMA may approve an MA holder to conduct specific airworthiness activities that they would otherwise be insufficiently authorised to perform. In each case, written approval must be provided by the issuing authority. The MA holder in each case will be notified in writing of the following:
- a. The scope of their authority
  - b. The duration of their authority
  - c. Any limitations and special requirements.
- 10.1.5 To certify any airworthiness work or inspection that has been conducted, the inspector must be a financial member of Gliding Australia. Associate membership is adequate for this purpose.

## **10.2 Maintenance Authority Ratings and Authorisations**

- 10.2.1 A Gliding Australia member may be assigned a Maintenance Authority to perform or supervise the inspection and/or physical work of repairs and modifications, as shown in the matrix in Clause 10.1.2. A Gliding Australia member may also be granted a Powered Sailplane Maintenance Authority (Inspection, Servicing or Overhaul). See Section 10.17 for more detail.
- 10.2.2 The progression of airworthiness ratings and prerequisites for each are shown below in Figure 10.1. The EMA or RMA may modify this process if specific circumstances or skills are present that warrant special consideration.
- 10.2.3 All Maintenance Authority Ratings are registered in Gliding Australia central database. This is the authoritative record, but paper Maintenance Authorities will still be valid.



**Figure 10-1: Gliding Australia airworthiness rating progression**

### 10.3 Gaining Airworthiness Qualifications

- 10.3.1 Gliding Australia shall take into account relevant prior learning. The EMA (or their appointed RMA) may assess prior qualifications and issue Gliding Australia ratings based on an assessment IAW Section 10.5.
- 10.3.2 Gliding Australia Airworthiness Panel periodically runs airworthiness training courses throughout the country. These cover the syllabi defined in AIRW-M07 Sailplane Inspectors Training Syllabi. Attendance at these courses is the primary method for gaining further airworthiness ratings. Airworthiness courses promote a national teaching standard and help to maintain national airworthiness standards.
- 10.3.3 The airworthiness courses are conducted with the assistance of the Regional Associations to meet the demands of the Gliding Australia members. All inspectors wishing to conduct training at an airworthiness course should register their interest with their state RMA. These regional requests are collated periodically and the planning for the next course is determined by this data.
- 10.3.4 Each airworthiness course has minimum attendance requirements to justify the expense of running the courses. These requirements are set by each airworthiness course coordinator.
- 10.3.5 The following courses are routinely offered:
- Replacement of Components
  - Annual Inspector

- c. Minor Repairs (construction method specific eg Wood, FRP)
- d. Fabric Repairs
- e. Powered Sailplane Inspection and Maintenance.
- f. Weight and Balance.

Other courses are available if sufficient demand in a region is present.

- 10.3.6 Basic Sailplane Engineering (BSE) and other manuals are available for purchase through Gliding Australia Office and are available for download from the Gliding Australia website for free. The study material will be specified in the syllabus and should be obtained in advance of any course activity to allow course preparation and pre-course study.
- 10.3.7 The regional associations are strongly encouraged to support airworthiness courses both financially and from a resource perspective. Each airworthiness course may be financially sponsored by Gliding Australia Airworthiness Panel or Regional Association.
- 10.3.8 At the conclusion of an airworthiness course candidates must pass an exam and practical evaluation to be eligible for the issue of any subsequent ratings. This exam is reviewed annually by Gliding Australia Airworthiness Panel in accordance with the AIRW-M07 Sailplane Inspectors Training Syllabi. Ratings are validated by the RMA based on the evaluation results. The rating is approved by the EMA.

## 10.4 Mentoring

- 10.4.1 Mentoring is an important part of Gliding Australia Airworthiness training program. Mentoring is used to supplement the training of an inspector outside formal airworthiness courses. Course coordinators and RMAs may supplement training after an airworthiness course to consolidate learning objectives.
- 10.4.2 There is provision for the granting of airworthiness ratings without the attendance at a training event. Inspectors may be trained to a certain level of competence and authorised accordingly under the Mentoring system. The RMA must be notified prior to the commencement of any mentoring activity. In all cases:
  - a. The RMA for the members home club will supervise the mentoring process.
  - b. The study material is available for purchase through Gliding Australia Office or downloaded from Gliding Australia website. This will be specified and is required.
  - c. The RMA will nominate the mentor and specify all requirements.
  - d. A comprehensive Schedule of Experience (SOE) is required to be completed and signed by your mentor throughout the mentoring process and made available to the issuing authority at the completion of training.
  - e. The mentoring process should be the equivalent of 3 supervised Annual Inspections.
  - f. The relevant exam must be successfully completed and passed for the candidate to be eligible for any rating.

## 10.5 Recognition of Prior Learning

- 10.5.1 Recognition of Prior Learning (RoPL) is an assessment process for recognising relevant formal and informal learning by collecting evidence and making judgments on the extent to which a member has achieved the required units of competency within a training syllabus. RoPL recognises that members can gain necessary skills and knowledge through other aviation and non-aviation organisations, not just through Gliding Australia.

10.5.2 RoPL requires sufficient evidence to validate the members knowledge and skills against the syllabus. Suitable evidence includes, but is not limited to:

- a. Certificates of formal qualifications,
- b. Training certificates,
- c. Licenses,
- d. Workplace journals, logbooks or schedules of experience,
- e. Position descriptions or duty statements,
- f. Third party reports from previous or current employers and / or supervisors,
- g. Examples of work or demonstrations of skills.

Generally, it is better to provide excess evidence rather than not enough. Ensure that any third-party reports are signed by the individual providing the report and includes their name, title and contact details so that they can be contacted by the RoPL assessor to seek further information where required.

10.5.3 Application for RoPL for a particular airworthiness rating, including all of the supporting evidence, is made to the EMA. The EMA can assess the evidence or assign the assessment to an RMA.

10.5.4 The assessor will:

- a. Review the evidence in its entirety rather than individual items of evidence,
- b. Review the evidence using Table 10-1 below,
- c. Review the evidence to the same standards as assessment against the syllabus for a formal course or for mentoring, and be focused on ensuring that competency is demonstrated within the available evidence,
- d. Request additional evidence from the member if there is any gap or doubt over the competency against the syllabus,
- e. Identify any competency gaps and recommend tailored training to meet the required competency for which there is a gap, and
- f. Provide a recommendation to the EMA (if assessed by an RMA) and notify the member whether they have been recommended for the rating or require additional training.

Characteristic	Definition
Validity	<p>The assessor is assured that the member has the skills, knowledge and attributes as described in the syllabus.</p> <p>The assessor is to:</p> <ul style="list-style-type: none"> <li>- Ensure that the evidence is directly related to the competency being assessed.</li> <li>- Ensure there is a direct relationship between the assessment task or activity the member undertakes, the evidence presented by the member, and the competency requirements.</li> </ul>
Sufficiency	<p>The assessor is assured that the quality, quantity and relevance of the evidence presented for assessment enables a judgement to be made of a member's competency.</p> <p>The assessor is to:</p> <ul style="list-style-type: none"> <li>- Gather enough evidence to make a valid judgement of competence or</li> </ul>

	<p>otherwise. The quantity of evidence may vary between members. Some members may take longer or need to complete a greater number of tasks to demonstrate competence. Evidence is considered sufficient when it proves the member can perform the task correctly on a repeated basis and across the range of variables.</p> <p>- Be flexible in approach to types of suitable evidence – the question to ask is “does this evidence add up to proof of competence?”</p>
Authenticity	<p>The assessor is assured that the evidence presented for assessment is for the member, and/or that the evidence has been provided by a suitably qualified person. It is essential that the evidence provided is reliable and authentic.</p> <p>Verification of authenticity may require direct verbal or face-to-face contact with the person providing the report or affirmation for the member.</p>
Currency	<p>The assessor is assured that the evidence presented for assessment is recent and it demonstrates current competency:</p> <p>- Decide how valid the evidence is, given the time that has passed since the evidence was generated. Currency is important in determining if a member is competent.</p> <p>- The assessor must determine whether the evidence is recent enough to show the member is competent at the time the assessor makes an assessment decision.</p>

**Table 10-1: Evidence Verification**

## 10.6 Airframe Maintenance Authority Classification

10.6.1 Airworthiness ratings are classified by sailplane construction type.

- a. FRP, Metal, Wood, and Steel Tube classifications authorize you to work on sailplane components of the specified construction type. For sailplanes of two types of construction e.g., FRP and Metal Tube then you must have ratings for both types.
- b. Fabric classified ratings authorize work on fabric components on any sailplane type. Inspector ratings allow inspections and certification of fabric components. “Minor Repairs, Fabric” authorizes you to certify small patches in non-critical areas within your competence and training. This may be extended with competence. “Major Repairs, Fabric” authorizes all fabric work. A structure independent inspection and certification is still required.

10.6.2 A maintenance authority may be granted for any or all of the following ratings subject to the above fields of expertise:

## 10.7 Daily Inspector

10.7.1 The Daily Inspector syllabus is in the AIRW-M07 Sailplane Inspectors Training Syllabi. The rating is authorised by a logbook endorsement which will be classified by sailplane construction type. The conduct of Daily Inspections is outlined in Gliding Australia Daily Inspectors Handbook which is available online from Gliding Australia website.

10.7.2 Daily Inspectors are authorised to :

- a. Prepare a sailplane for daily operations, including relevant tasks listed below;
- b. Perform daily inspections and certify, i.e., ‘sign off’, in the Daily Inspection Record within the Maintenance Release;

- c. Assemble a sailplane, connecting and safetying the structure and the controls, i.e., 'rig the sailplane', following the completion of maintenance, or following transport or storage in a trailer. This includes lubrication of mating surfaces on assembly of sailplane components and controls and applying simple gap tapes across fixed surface to fixed surface, e.g., wing roots.
- d. Perform second person independent inspections for correct assembly and safetying of structure or controls as precautionary checks on the work conducted by another inspector with prime responsibility. This includes the reconnection of control circuits and reinstallation of control surfaces where these have been disturbed during maintenance, including at annual inspection or following repair.

This includes certifying the second inspection by signing their name:

- i. in the Daily Inspection record within the MR in the case of second inspections following rigging the sailplane, and recording the signature as 'Second inspection' or 'Duplicate inspection' to avoid confusing it with a 'DI completed' signature; or
  - ii. in the sailplane logbook record in the case of maintenance, repair or annual inspection activities.
- e. Install serviceable batteries and connect via simple plug and socket;
  - f. Inflation of tyres;
  - g. Fitment of removable ballast;
  - h. Filling of water ballast; and
  - i. Wash and clean canopies.

10.7.3 Daily Inspectors can extend their capability to include carrying out and certifying significant 'pilot maintenance' tasks. With specific training the 'pilot maintenance' person can carry out and sign-off for the tasks they have been trained for as recorded in the logbook sign-off page.

- b. Change main wheels, tyres, and tubes;
- c. Change nose and tail-wheels, tyres and tubes;
- d. Adjust cable actuated wheel brakes for better braking;
- e. Replenish brake fluids (except where removal of structure is needed);
- f. Change worn skid shoes and plates;
- g. Remove or replace instruments (other than the ASI and altimeter) where this does not affect the pitot-static system, e.g. TE driven variometer; g meter, navigation display;
- h. Perform periodic lubrication in accordance with manufacturers schedule;
- i. Remove and replace external control seals;
- j. Replace broken canopy window rails;
- k. Polish small scratches to canopies;
- l. Repair chips, gouges and scratches to gelcoat;
- m. Update instrument software e.g., FLARM, digital varios, excluding digital ASI and altimeter;
- n. Replace and refill oxygen bottles.

10.7.4 Additional training is required for a Daily Inspection for powered sailplanes (refer to Section 10.17). Examination requires study of the handbook; AIRW-M04 DI Handbook - Powered

Sailplanes and a DI Examiner or Annual Inspector who is rated for the power-sailplane classification being issued. With this rating you may:

- a. Replacement of bulbs, reflectors, glasses, lenses or lights.
- b. Replacement, cleaning, or setting gaps of spark plugs.
- c. Service and replacement of batteries.
- d. Changing oil filters or air filters.
- e. Changing or replenishing engine oil or fuel.
- f. Lubrication not requiring disassembly or requiring only the removal of non-structural parts, or of cover plates, cowlings and fairings.
- g. Replenishment of hydraulic fluid.
- h. Application of preservative or protective materials, but only if no disassembly of the primary structure or operating system of the sailplane is involved.
- i. Removal or replacement of sailplane tow hooks on tow planes or motorgliders.

10.7.5 The minimum age for a Daily Inspector authorisation is 15 years old.

## **10.8 Replacement of Components Inspectors**

10.8.1 Component and sub-assembly replacement can only be certified by authorized inspectors. To obtain an airworthiness authority for Replacement of Components, the applicant must successfully complete a Gliding Australia Replacement of Components Course or sufficient mentoring as described in Section 10.4.

10.8.2 It is a requirement that all ROC candidates sit and pass the exam. All exam results will be recorded by Gliding Australia to validate the rating. The candidate will be mentored to explain the errors.

10.8.3 There are strict limitations imposed upon the Replacement of Components Inspectors. Persons endorsed for Replacement of Components may carry out all aspects of sailplane inspection with the following limitations:

- a. Where an ASI or Altimeter is replaced the connections of that instrument to the pitot-static systems must be checked by an Annual Inspector.
- b. If a control surface is removed and replaced then the Independent Inspection must be performed by an Annual Inspector.
- c. If a Flight Control Circuit is broken and reassembled (other than normal rigging and de-rigging) then the Independent Inspection must be performed by an Annual Inspector.
- d. They may not certify Annual Inspections.
- e. They may not certify Airworthiness Surveys.
- f. They may not certify Dye Penetrant Inspection.
- g. They may not certify control surfaces balance and mass.
- h. They may not certify weight and balance.
- i. They may not certify repairs.

10.8.4 Component Replacement Inspectors are responsible for the quality of the work performed and components used. They shall certify all work completed by signing a logbook entry



which details the work. Where that work has been the subject of Independent Inspection, the other Inspectors involved must also certify by logbook entry.

## 10.9 Annual Inspectors

- 10.9.1 To be considered for an Annual Inspector rating the applicant should first hold a Replacement of Components rating unless the candidate has adequate previous qualifications or experience (see Section 10.5). An ROC Maintenance Authorisation holder must then demonstrate competence with the Annual Inspectors training syllabus in AIRW-M07 Sailplane Inspectors Training Syllabi.
- 10.9.2 It is a requirement that all Annual Inspector candidates sit and pass the exam. All exam results will be recorded by Gliding Australia to justify the rating. The candidate will be mentored to explain the errors.
- 10.9.3 It is possible for Gliding Australia members to be trained and achieve a suitable level of competence under a mentoring process in accordance with Section 10.4. Similarly foreign qualified members can be assessed by the EMA IAW Section 10.5. All ratings require knowledge of Gliding Australia administrative system before being issued.
- 10.9.4 The Annual Inspector authorisation allows a person to certify periodic maintenance and issue Maintenance Releases for the type rating held.
- 10.9.5 Persons endorsed for Annual Inspections may carry out all aspects of sailplane inspection with the following limitations:
  - a. They may not certify Surveys.
  - b. They may not certify Weight and Balance.
  - c. They may not certify non-standard repairs or modifications.
  - d. They may not certify for specialised non-destructive inspection procedures (e.g. Fluorescent dye crack detection) unless their authority is endorsed for this (refer to Section 10.10).
- 10.9.6 All work must be performed in accordance with manufacturer's requirements and Basic Sailplane Engineering or other relevant approved data.
- 10.9.7 Only those holding a Daily Inspector Examiner or Annual Inspector authority may examine DI candidates.
- 10.9.8 The Annual Inspector is responsible for the quality of the work performed and components used. Annual Inspectors will certify all work they completed by signing a logbook entry which details the work. If an Annual Inspector performs only some aspects of the work, they certify for that work by signing an item on a checklist such as a Form 2.
- 10.9.9 Activities that are allowed as a result of attaining an Annual Inspector rating that are similar across different construction types, such as replacing primary flight instruments or removing control surfaces, are allowed to be performed across the various construction types. For example: an Annual Inspector is rated for FRP construction; however, the club's K13 (metal tube and fabric sailplane) has a new pushrod to be fitted in the aileron circuit as a result of the previous annual inspection. This work can be done by the FRP Annual Inspector as long as the appropriate logbook entry and certification is made.
- 10.9.10 Annual Inspectors (AI) may work on and certify powered-sailplane airframe maintenance and inspection. However, they may only work on engines if they have an appropriate engine rating. Two inspectors could therefore work on and certify the different parts. The airframe inspector certifies the logbook certification and is ultimately responsible and must make sure all aspects were performed by a qualified inspector.



- 10.9.11 An AI working on a powered-sailplane must however respect his limitations with the increased complexity and variations in wiring and instrumentation. This may require the engine rated inspectors input. Similarly, this also applies to special areas such as fireproofing, or the engine compartment, retract mechanism, etc.

## 10.10 Non-Destructive Inspection

- 10.10.1 Specialist training by an approved expert in the method of testing is required to achieve a rating in particular disciplines of inspection.
- 10.10.2 An Annual Inspector authority may be endorsed to allow the inspector to perform NDI testing such as Fluoro-Dye Penetrant inspection. Skill and experience is required to achieve a high degree of confidence in finding or disproving cracking. Your RMA can assist in arranging training.

## 10.11 Survey Inspectors

- 10.11.1 A Survey rating may be granted to an Annual Inspector that has extensive experience on type. It is an advanced rating that is designed to carry out infrequent deep level maintenance, often for life extensions, that is usually beyond the scope of the Annual Inspection. This often results in accessing bearings and components that are inaccessible without cutting holes in skins and fuselage structures.
- 10.11.2 For this reason, this rating is closely coupled with the minor repairs rating specific to that type.

## 10.12 Weight and Balance Authorisations

- 10.12.1 A Weight and Balance (W&B) authorisation is required to certify sailplane weight and balance and generate operational data limits for the sailplane. These certifications are required as a result of changes to the mass or centre of gravity of the sailplane through modification, repairs or changes to the sailplane's equipment. Certification of changes to sailplane weight and balance may require the sailplane to be reweighed or can be calculated from previous data as per Chapter 20.
- 10.12.2 There are two classes of Weight and Balance Authority, namely:
- Basic Weight and Balance authority, and
  - Advanced Weight and Balance authority.
- 10.12.3 A W&B Basic rating is limited to simple sailplanes with no more than two seats, baggage, wing only ballast tanks and pre-fitted removable ballast weights.
- 10.12.4 A W&B Advanced Authority is required for the weighing of complex sailplanes. Complex sailplanes include:
- All sailplanes fitted with engines
  - All sailplanes equipped to carry disposable tail ballast (i.e., other than spin kits for training sailplanes).
  - Sailplanes with an unconventional configuration, such as canards and flying wings,
  - Any sailplane which does not meet the definition of a simple sailplane, and
  - Any other type that Gliding Australia may nominate as complex.
- 10.12.5 The Basic Authority allows the weighing and preparation of weighing records and placards for simple sailplanes. All other sailplanes require an Advanced Authority.

- 10.12.6 Weight and Balance is a vital and complex subject. Authorisations are only issued to competent and experienced inspectors. Significant practical experience and training based on the syllabus in AIRW-M07 Sailplane Inspector Training Syllabus is required. This will often require multiple weight and balance evaluations under supervision. Candidates are first issued a Basic rating and once they show understanding in complex situations (tail ballast, fuel, etc), and have completed the relevant training in accordance with the Advanced Weight and Balance Syllabus (AIRW-M07 Sailplane Inspector Training Syllabus) and passed to associated examination they may be issued an Advanced rating.
- 10.12.7 The mandatory prerequisite for a Weight and Balance authorisation is Annual Inspector. A strong confidence and ability in physics and mathematics is required to be eligible for a Weight and Balance authorisation. Applicants for an Advanced rating are to provide a Schedule of Experience showing involvement in at least 10 weight and balance evaluations of sailplanes.
- 10.12.8 A Gliding Australia member seeking a Weight and Balance Authority must complete a course that meets the requirements of the Weight and Balance Syllabus (AIRW-M07 Sailplane Inspector Training Syllabus) and achieve a pass mark in the associated examination. A very high standard will be required to pass the examination. Candidates who do not achieve a pass mark may not re-sit the exam for 30 days and should use this time to rectify the shortcomings identified by the instructor. In addition to achieving a pass in the examination, the applicant must obtain a satisfactory practical evaluation as described in the course syllabus by the course instructor.
- 10.12.9 After passing the Basic Course, candidates must perform at least 3 supervised sailplane weighs before they are awarded a Basic Weight and Balance authority.
- 10.12.10 The instructor of the Weight and Balance course must hold an Advanced level Weight and Balance Authority.
- 10.12.11 The instructor will administer and mark the examination papers and inform the appropriate RMA of the results. The course instructor may recommend the applicant complete a number of weighs under the supervision of an approved mentor in addition to the minimum specified in 10.12.9 before a rating is issued. The member's RMA is to monitor compliance with this process.
- 10.12.12 A sailplane Weight and Balance Authority is valid for a period of three years after which time it must be revalidated by application to the relevant RMA.
- 10.12.13 Only the EMA may issue a Weight and Balance Authority, but an RMA may extend an authority for an additional three year period upon being provided with a Schedule of Experience or similar logbook showing the member has carried out, participated in or reviewed at least three weighs or other weight and balance activities during the previous three years. This extension can only be granted once before a revalidation is required.
- 10.12.14 Revalidation of a Weight and Balance Authority is achieved by passing a revalidation examination consisting of a random selection of the questions from the Weight and Balance exam.

## 10.13 Refinishing Authorisation

- 10.13.1 The term "Refinishing" is the complete replacement of the surface finish in accordance with either the manufacturer's instructions or standard aeronautical practice, of a major component or assembly of a sailplane e.g., control surface, wing, fuselage. It does not apply to the making good of the surface finish in the course of a repair or modification. The authority to make good the finish in a local area affected by a repair or modification in order to protect the structure is implicit in any authority for repair or modification.
- 10.13.2 Other than as allowed by the above, refinishing of composite sailplane components requires a Refinishing rating to supervise and certify approval. The skill can be easily learnt however the risks are high and it must be correctly done for safety and longevity. Refinishing of other

than composite airframe components also requires knowledge of risks and correct methods. Ratings are given to persons demonstrating sufficient understanding and should be limited to a particular project dependent on knowledge.

- 10.13.3 Refinishing of any control surfaces requires a check to confirm that the surface mass-balance is within the permissible limits. Reconnecting controls requires an Annual Inspector Authorisation and a competent inspector must certify the control mass-balance is correct.
- 10.13.4 Refinishing, removing or adding significant mass from the sailplane's external surface, requires the sailplane to be re-weighed and its empty centre of gravity re-established. Re-weigh requires a Weight and Balance Authorisation.
- 10.13.5 To obtain a refinishing rating you must understand Section 18.4. It may be issued independent of other ratings as long as the limitations are understood.

## 10.14 Repair Authorisations

- 10.14.1 Authorisation to certify repairs will be made according to construction type and according to whether the repair is considered major or minor (refer to Section 18.3 for definitions).

## 10.15 Minor Standard Repairs

- 10.15.1 An Annual Inspector may be granted the rating of Standard Repairs (Minor) after the successful completion of a Minor Repair course or sufficient mentoring to meet the requirements of the syllabus.
- 10.15.2 Standard Repairs (Minor) ratings may be issued to foreign or equivalent trained and qualified persons in accordance with Section 10.5.
- 10.15.3 The training involves extensive theory and practical exercises and often involves the conduct of a number of supervised repairs prior to the issue of the rating. There are strict limitations imposed upon the Standard Repairs (Minor) rating. Specifically, they may not:
  - a. Certify repairs on any flight control surface or support structure
  - b. Certify any structural repairs
  - c. Certify any modifications, unless expressly permitted to do so by AD or EO
  - d. Exceed the limitations of a Minor Repair (Clause 18.3)
  - e. Certify weight and balance.
- 10.15.4 They must record details of the repair in the logbook certification and refer to a more detailed filed report if required.

## 10.16 Major Standard Repairs

- 10.16.1 Standard Repairs (Major) authorisations are generally reserved for those individuals that conduct sailplane repair work on a semi-full time basis. The knowledge required and skills needed are extensive and take many years to attain. Considerable training and experience is required to be eligible for the granting of this rating. As major repairs are largely a matter of experience, candidates must record a comprehensive Schedule of Experience (SOE) which details the work performed and their level of responsibility for the repair under supervision. The supervisor must sign off each item.
- 10.16.2 For the issue of any Major Repair rating, the RMA will validate the members training and make a recommendation to the EMA who will determine suitability of the candidate. The EMA or RMA may generate a training system tailored for each candidate to build upon perceived knowledge shortfalls or gaps in knowledge and/or skills.

- 10.16.3 Major repairs may be carried out by skilled persons under supervision of a Major Repair rated inspector. For the airworthiness documentation requirements, they must maintain detailed records of their work.
- 10.16.4 Major Repairers must work within their experience and competence and are responsible to limit themselves as their competence grows. They must develop themselves by study and practice.

## 10.17 Powered Sailplane Authorisations

- 10.17.1 A member may be granted the powered sailplane authorisations after the successful completion of a training course or sufficient mentoring to meet the requirements of the syllabus. Powered sailplane authorisations may be issued to foreign or equivalent trained and qualified persons in accordance with Section 10.5. Authorisations may be restricted to certain engine models or types if the training is focussed on a particular model. These limitations may be removed on further experience and training to be more general.
- 10.17.2 Airframe ratings may be exercised on sailplanes or motorgliders but not beyond the inspector's ratings or competency. Inspectors must limit themselves to their competency as often an engine type requires additional skills and knowledge, for example a Rotax 914 turbo engine requires more than a cursory understanding of turbocharged engines or the Rotax 912 engine. Airframe ratings without engine rating authorizes airframe maintenance but not the engine components of a motorglider (and vice versa).
- 10.17.3 Authorities may be granted in one or more of the following classes and abbreviated to the category codes:
- a. Four Stroke Engines = Eng4S
  - b. Four Stroke Turbo Engines = Eng4STurbo
  - c. Two Stroke Engines = Eng2S
  - d. Two Stroke Turbo Engines = Eng2STurbo
  - e. Radial Engines = EngRad
  - f. Rotary Engines = EngRotary
  - g. Electric Motor = ElecMot
  - h. Turbine = JetTur
  - i. Fixed Pitch Propellers = Prop
  - j. Variable Pitch Propellers = Prop(VP)
  - k. Folding Propellers = PropFold
  - l. Propulsion System Retraction Mechanisms = PropSysRetMech
  - m. Magnetos = Magnetos.
- 10.17.4 The authority is limited to the following Airworthiness rating codes specific to the applicant's knowledge and experience, and in this priority order, (first to highest):
- a. Routine Inspections approval (annual and manufacturer's periodic inspections) = RI
  - b. Replacement of component approval = ROC
  - c. Top End inspection and overhaul approval = MinOhaul
  - d. Unrestricted engine inspection and overhaul approval = MajOhaul

10.17.5 Routine Inspections (RI). With this rating you may:

- a. Carry out periodic inspections listed by the manufacturer in the engine manuals and service bulletins. These are normally specified at 20, 50 , 100 hourly or annual intervals and include the inspection of serviceability and the replacement of filters, lubricants, and coolants.
- b. Carry out testing such as oil sampling, compression or bearing evaluation to decide Operation on Condition approval.
- c. Wire-locking and other security of fixtures.

10.17.6 Replacement of Component (ROC). With this rating you may:

- a. Replacement of ancillary components such as carburettors, alternators, starter motors, magnetos and similar components on an engine.
- b. Servicing and repair of ancillary components or supervision of qualified auto mechanics in the repair of such components. The ROC inspector must ensure the person doing the work is competent in the type of component and must certify the work was done in the Logbook.
- c. Removal and installation of propellers and retraction systems if endorsed on those systems (see below).
- d. Removal and installation of complete engines in the airframe.

10.17.7 Minor Overhaul (MinOH). With this rating you may:

- a. Evaluation and replacement of cylinder heads, cylinders, pistons, rings, and pistons/conrod bearings of the engine.
- b. Evaluation and replacement of coolant components and instrumentation.
- c. All other work on the engine without splitting the crankcase.

10.17.8 Major Overhaul (MajOH). With this rating you may carry out all overhaul of the engine:

- a. Splitting the crankcase.
- b. Blueprinting the engine to determine suitability for continued operation of components.
- c. Replacement of bearings and internal components.
- d. Rebuilding the complete engine.
- e. The certification for continued operation and the zero time of the engine if rebuilt to standards.

10.17.9 By combining the category code with the airworthiness rating code, the MA listing is interpreted e.g., Eng2SRI (Two Stroke Engine Routine Inspection) or Eng4SMajOhaul (Four Stroke Engine Major Overhaul). Limitations to certain types of engine or propeller may be imposed. Authorisations listed with PropROC (or VPROC or PropFoldROC) can remove and install propellor systems for which they are endorsed.

10.17.10 Persons who will be assessed as powered sailplane inspectors will generally be Annual Inspectors for normal sailplanes, or will have appropriate other experience, and will also have experience and training in the type of engine for which the rating is sought.

10.17.11 Propeller ratings extend only to inspection, removal and replace, and minor repair or adjustment allowed in the propeller manuals. This could be extended with experience and training but requires a removal of limitations by the EMA.

10.17.12 Training and work is to be performed in accordance with the latest version of "AIRW-M06 BSE Engines and Systems" and the manufacturer's documentation.

## 10.18 Daily Inspector Examiner

- 10.18.1 Daily Inspectors are a very important part of the airworthiness system. They are the person that must find major problems each day and prevent an unsafe sailplane flying. And they certify it safe for the day for all pilots. As such the DI standard needs to be high and therefore the DI Examiners must ensure this standard. Therefore, only people who will instil this high standard can achieve an examiner rating and only they may issue a DI rating. Instructors are authorized to train but not examine Daily Inspectors.
- 10.18.2 Eligible persons who wish to become DI Examiners should obtain a recommendation from their Club Airworthiness Administration Officer and an assessment will be made by a RMA, EMA, DCAP, or CAP. The assessor will issue a Daily Inspector Examiner rating for Airframe and motor glider Types for which they have demonstrated competence. Annual Inspectors are trained as DI Examiners and have an automatic DI Examiner rating.
- 10.18.3 DI Examiners and Annual Inspectors can only approve Daily Inspectors for the sailplane construction type for which they are rated themselves i.e., a DI Examiner (FRP) can only approve Daily Inspectors for FRP construction sailplanes, not wood, steel tube or metal construction types.
- 10.18.4 For powered sailplanes, DI Examiners and Annual Inspectors can only approve Daily Inspectors for the sailplane construction type and the engine type for which they are rated themselves. For example: A DI Examiner for an ASK-21Mi would need airframe Annual Inspector FRP plus Engine Routine Inspector for Rotary engines. A DI Examiner for Grob G109 would need airframe Annual Inspector FRP plus Engine Routine Inspector 4 Stroke.

## 10.19 CASA Approved Repair Workshops

- 10.19.1 CASA approved organizations may perform the overhaul and repair of sailplane components within the scope of their CASA authorisation.
- 10.19.2 When an approved CASA workshop is involved in the repair or overhaul of sailplane components, the repairs and repair schemes shall be in accordance with the manufacturer's instructions or other approved data.
- 10.19.3 On completion, the part is certified as repaired in the same way as the manufacturer by means of a release note or certificate of conformance. The certificate must clearly identify the item and the standard to which the item was inspected, repaired, or serviced. After the item has been fitted to the sailplane, the certificate must be placed either in the logbook or in the maintenance file for the sailplane.
- 10.19.4 The reassembly of the sailplane is then certified by a Gliding Australia Inspector. It should be pointed out that Gliding Australia Inspector is not taking responsibility for the repair only the correct reinstallation of the repaired component. The responsibility for the quality of the repair rests with the approved organisation.

## 10.20 Authorisation Suspension and Cancellation

- 10.20.1 A member may have their Maintenance Authority or a rating suspended or cancelled due to one or more of the following reasons:
- The Inspector has failed to exercise a sufficient degree of responsibility
  - The Inspector has shown poor judgment
  - The Inspector has been found to exhibit poor airworthiness knowledge or standards
- 10.20.2 When an Inspector is found to be in contradiction of the rules and procedures outlined in this document or has satisfied any of the above breaches, the RMA may suspend the inspectors airworthiness ratings. The suspension will be reviewed by the EMA. The EMA may then

suspend for a period of time, place conditions on the inspectors airworthiness ratings, or cancel the inspectors airworthiness ratings – particularly for repeat offenders that have been warned and counselled previously in accordance with Gliding Australia Admin 0015 Complaints and Discipline and Appeals Policy and Procedures Manual.

- 10.20.3 The EMA will exercise objective decisions when determining the length of suspension and the nature of the suspension (partial suspension of ratings or complete suspension). The severity and nature of the breach will determine the suspension duration. In all instances of suspension, further training and mentoring is expected to occur prior to the expiry of the suspension period.
- 10.20.4 When serious breaches are discovered, the EMA has the option to cancel the Inspector's Airworthiness ratings. Whenever a certificate or authorisation is cancelled the following procedure must be followed:
- a. The Certificate or authorisation is initially suspended for 28 days. The inspector will receive written notification of the nature of the breach and will have the opportunity to respond.
  - b. The inspector is encouraged to show cause as to why the suspension should not be extended to cancellation. Should the Inspector not contest the cancellation the Certificate or authority is cancelled automatically at the end of the 28 day suspension period.
  - c. The Inspector may contest the cancellation in accordance with Admin 0015 Complaints, Discipline and Appeals Policy and Procedures. Until the matter is resolved all airworthiness certificates or authorisations remain suspended.
- 10.20.5 If there are safety concerns regarding the airworthiness of any sailplane, or if any sailplane is implicated by the suspension or cancellation of the Maintenance Authority of a member, the EMA may:
- a. Issue a mandatory Maintenance Direction in accordance with Section 16,
  - b. Suspend or cancel the Maintenance Release,
  - c. Suspend or cancel the CofA.

The suspension will remain extant until such time as further inspections or repairs of the sailplane are conducted to render the sailplane airworthy again.

## **10.21 Sailplane Inspector Syllabus and Theory Exam**

- 10.21.1 The sailplane inspector training syllabi are given in AIRW-M07 Sailplane Inspector Training Syllabus. All inspector candidates are to be trained to these syllabi whether it is in a course or by mentoring and self-study.
- 10.21.2 Gliding Australia Airworthiness Panel will set the national Gliding Australia Basic Sailplane Engineering Inspector Theory exam according to the syllabus and will review it annually.

## **10.22 Revalidation of Maintenance Authorities**

- 10.22.1 Maintenance Authorities (MA) must be revalidated every six (6) years with the exception of Weight and Balance which must be revalidated every three (3) years. If not revalidated they are automatically suspended until revalidated and the authority may not be used. The cycle is from receipt of the most recent authority or revalidation.
- 10.22.2 The intention is to revalidate all of a person's ratings at once: if they fail to qualify for one or more of their ratings then a limitation suspending some of the ratings may be applied, allowing the remaining valid ratings to be used.



- 10.22.3 All revalidations are reviewed by the RMA responsible for the members club or Approved Maintenance Organisation and approved by the EMA. They will request a return from the AAO on the club's inspector's currency, competency, and standards prior to an audit and may ask to audit inspectors work at an audit. If there are concerns, they will not revalidate a rating and will advise the member how to correct the issue. Any inactive inspectors with ratings that have lapsed will remain in the system and can be revalidated at any time.
- 10.22.4 The objective is to ensure inspectors perform some update training and remain current i.e., they need to be active. Gliding Australia will be running refresher courses periodically. All Inspectors are responsible to be aware of their currency and seek guidance if they are uncertain in any activity.
- 10.22.5 The RMA may extend the revalidation by one year, once, unless they consider there is a safety case.
- 10.22.6 If a member holding a sailplane Inspectors Certificate allows their Gliding Australia financial membership to lapse for any continuous period exceeding six (6) months and then renews that membership any previous Maintenance Authorities must be revalidated.
- 10.22.7 The RMA may set terms under which the Maintenance Authority is revalidated. This may include attendance at a formal Gliding Australia sanctioned airworthiness course. It is the responsibility of any member who allows their membership to lapse for less than six (6) months to ensure that they are aware of any procedures or requirements which may have changed while they were not a financial member.



## 11. AIRWORTHINESS INSPECTIONS

### 11.1 Daily Inspection

- 11.1.1 All sailplanes must receive a daily inspection in accordance with the procedures in AIRW-M03 Daily Inspector's Handbook which is available from Gliding Australia website.
- 11.1.2 A sailplane daily inspection can only be performed by persons who are authorised as a Daily Inspector for that particular construction type or, in the case of powered sailplanes, for that particular class.
- 11.1.3 When the daily inspection is completed, the Inspector certifies so in the daily inspection Record (Gliding Australia Form 1) which is in the same booklet as the Maintenance Release (MR). The date and time the certification is made must be present.
- 11.1.4 The Daily Inspector Handbook is the prime source of reference material used for the training of sailplane Daily Inspectors. A copy can be downloaded from Gliding Australia website.

### 11.2 Independent Inspections

- 11.2.1 An independent inspection is required each time:
  - a. A control (flight or engine) circuit is disconnected and reconnected
  - b. Powered sailplane fuel system is reconnected.

**Note:** These are serious safety risks that are significantly reduced by having a second person inspect and confirm. The Daily Inspectors Handbook provides guidance as to the specific requirements.
- 11.2.2 The minimum qualification for performing Independent Inspections is a Daily Inspector authorisation.
- 11.2.3 An independent inspection is required each time the sailplane is rigged. Two certifications must be made in the MR prior to flight, including after an annual inspection.
- 11.2.4 Pilots of sailplanes with fully automatic connections on rigging may elect to do without an independent inspection.
- 11.2.5 Independent Inspection certifications shall be entered in the sailplane's logbook or current maintenance release.

### 11.3 Annual Inspections

- 11.3.1 A sailplane or powered sailplane must not be flown unless an annual inspection has been certified within the last 12 months by a Gliding Australia Inspector rated as an Annual Inspector for the appropriate construction type or, in the case of powered sailplanes for the particular type of engine or propeller. Refer to Section 9.5 for Gliding Australia Policy on annual maintenance.
- 11.3.2 The Gliding Australia Form 2 Annual Inspection is the primary mechanism by which sailplane airworthiness is maintained. "AIRW-M16 Guidelines for Annual Inspections of Gliders" available from Gliding Australia website provides comprehensive guidance for the conduct of Annual Inspections inclusive of the legal requirements pertaining to documentation. However, there may be differences, according to whether the sailplane's logbook statement specifies the manufacturer's maintenance manual or Gliding Australia ongoing airworthiness survey requirements as the second part of the maintenance system.
- 11.3.3 If there is a Logbook Statement which specifies the Manufacturer's maintenance system in lieu of or as well as Gliding Australia default system, and a conflict between the Form 2

requirement and the manufacturer's requirement exists, the manufacturer's requirement takes precedence over the Form 2 requirement.

- 11.3.4 An 'Annual Maintenance Return', Gliding Australia Form 2c is required in all cases, for Gliding Australia's records and audit purposes.
- 11.3.5 A fee is levied by Gliding Australia for the Annual Inspection package to assist funding of Gliding Australia ongoing maintenance system.
- 11.3.6 Part of the annual inspection process is the issuing of a new MR for the sailplane. The MR is provided as part of the Annual Inspection package produced by Gliding Australia. A MR is only valid for 12 months or 250 hours time in service from its date of issue.
- 11.3.7 As each Annual Inspection kit is sold, the number on the MR are allocated to a particular sailplane. Therefore, MRs are not transferable from one sailplane to another.
- 11.3.8 When issuing a MR the following clauses must be noted:
  - a. The date of issue of the MR is the date the inspector signs the MR before the evaluation flight.
  - b. The date of expiry is a maximum of 1 day less than 12 months from the date of issue of the MR. An inspector may issue the MR for a lesser period. See MR document information in Section 19.3 for more clarity.
  - c. The inspector must ensure that all scheduled maintenance required prior to the next annual inspection is entered in Part 1 of the new MR. The first entry should state the time-in-service at which the next Form 2 inspection is due (i.e., 250 hours after the issue of the MR).
- 11.3.9 Only Schedule of Permissible Unserviceabilities listed in Handbook AIRW-M15 may be left uncleared after an Annual Inspection. If the defect is not found on the List of Permissible Unserviceabilities, the defect must be rectified prior to the issuing of the maintenance release. In all instances, any operational safety requirements have primacy over the Permissible Unserviceabilities Schedule. The permissible defects are to be listed in the minor defects section of the MR.
- 11.3.10 The Total Time in Service, number of landings, engine and propeller hours must be carried forward to the new maintenance release.
- 11.3.11 In extenuating circumstances, the EMA may extend the specified period for an annual inspection by up to four weeks. However, before doing so, a risk based assessment of the maintenance history of the sailplane will be considered. A sailplane with a history of significant defects or failures will not be eligible for an extension.
- 11.3.12 Should a MR be extended, a letter of authorisation will be issued for attachment to the MR. The following additional requirements may be placed on an extension by the EMA. Such as:
  - a. No Charter flying
  - b. No Instructional Flying
  - c. No aerobatics
- 11.3.13 Repeated Annual extensions cannot be given.
- 11.3.14 The following persons/organisation issue MRs in accordance with the procedures listed:
  - a. Gliding Clubs - Each gliding club is the Issuing Authority for MRs issued for sailplanes owned or operated by the club. Gliding Australia Inspector, completing the annual inspection does that work as a servant of the club. The inspector certifies the MR and the club issues the MR.
  - b. Private Owners - Where a Registered Operator contracts with a Gliding Australia Annual Inspector, (working privately and not associated with an Approved

Maintenance Organisation) to complete an annual inspection, the Inspector certifies the MR and the Registered Operator issues the MR.

- c. Approved Organisations - Where a Gliding Australia Approved Organisation contracts to complete an Annual Inspection, the Organisation is the Issuing Authority for the MR. Gliding Australia Inspector completing the work certifies the MR as an employee of the Organisation.

## 11.4 Periodic Inspections

- 11.4.1 Some sailplanes, especially powered sailplanes, are subject to periodic inspections as well as the daily and annual inspections listed above. The most common inspections are 25, 50, 100 hour inspections required by the Manufacturer or by an AD. These inspections must be certified by Logbook and Maintenance Release entry.
- 11.4.2 The inspector certifying these periodic inspections must be authorised to perform the inspection as per Chapter 10 of this document.
- 11.4.3 These schedules may be changed to other sensible schedules by Logbook Statement as per Clause 9.7.

## 11.5 Airworthiness Surveys

- 11.5.1 All sailplanes are subject to Airworthiness Surveys and Life Extension Inspections in accordance with the procedures in Chapter 14.

## 11.6 Weight and Balance

- 11.6.1 The effects of any changes to the weight and balance of the sailplane and its control surfaces must be considered. Refer to Chapter 20.
- 11.6.2 If required, re-weighing must be carried out by persons rated "Weight and Balance".

## 11.7 Special Inspections

- 11.7.1 The following special inspections are to be carried out as required:
  - a. Hard Landing: If a sailplane is involved in a hard landing or ground loop, the sailplane must be inspected for hidden damage by an Annual Inspector.
  - b. All Airworthiness Directives, whether issued by CASA, State-of-Design or Gliding Australia, are mandatory and remain in force for the life of the sailplane or until such time as the AD is withdrawn or cancelled by the NAA issuing authority.
- 11.7.2 Inspections resulting from AWAs, SBs or TNs are not mandatory but highly recommended if Gliding Australia system of maintenance is used. If a logbook statement for use of the manufacturers system of maintenance, SBs and TNs are mandatory.
- 11.7.3 Special inspections of individual sailplanes can be ordered by the EMA in accordance with Section 16 when the airworthiness of the sailplane is questioned. The Special Inspection may require:
  - a. The removal of surface finish to inspect previous repairs or laminate substrate
  - b. Access holes to be made to inspect internal components
  - c. A weight and balance Inspection
  - d. Any other action as deemed necessary by the requesting Inspector.
  - e. Any costs incurred to facilitate the special inspection are born by the RO.

## 12. SERVICE DIFFICULTY REPORTING SYSTEM (SDR)

### 12.1 SDR Reporting

- 12.1.1 Defect reporting is a vital part of Gliding Australia airworthiness system. All major defects which are found on a sailplane, which are not caused by accidental damage or by fair wear and tear, must be reported as below. Gliding Australia will report those considered Major Defects to CASA and the TC holder and this will satisfy the reporting requirements of CAR Part 4B.
- 12.1.2 We call the whole system Service Difficulty Reporting (SDR) (The reason for the name change is that we want you to report malfunctions, failures or defects. This should include failures of the system even if this does not result in a failure or defect.)
- 12.1.3 Minor SDRs may be reported by the inspector involved if it may be useful data or prompts to others.
- 12.1.4 SDRs are an important feedback mechanism between the owner or operator of a sailplane and the manufacturer. These reports allow in-service problems or issues to be fed back to the manufacturer for investigation and possible rectification. SDRs are also an important input to the manufacturer for the development of their maintenance systems and for life extension programs.

### 12.2 Gliding Australia SDR System

- 12.2.1 Gliding Australia encourages all sailplane SDRs are reported to Gliding Australia where they can be collated and trends identified. If sufficient or significant problems are noted with a specific sailplane, Gliding Australia will contact the manufacturer and provide them with the details. Major Defects will be reported to CASA on behalf of the member.
- 12.2.2 The preferred method of reporting service difficulties to Gliding Australia is via the online system called SOAR (Safety, Operations and Airworthiness Reporting) which is accessed via Gliding Australia website. As an alternative, the Maintenance Release paper form may be mailed to Gliding Australia office or an email sent to [returns@glidingaustralia.org](mailto:returns@glidingaustralia.org). Additional data may be requested by the investigating officer and must be provided.
- 12.2.3 The SOAR system has been made simple and quick to enter reports. Fill in what you can and consider relevant. If it is not sufficient Gliding Australia will ask for more details and these must be provided. In this way minor SDRs can be reported simply and quickly, but provide all details of relevance for significant events. You may update your report in stages.
- 12.2.4 The system or form will prompt you to enter required information. Enter only what is relevant and leave the rest blank.
- 12.2.5 Marking Criticality 'High' will send the report to the EMA the next business day. If the matter is more critical, phone the EMA as well as submitting the SDR.
- 12.2.6 Australian factory representatives play an important role in defect reporting follow up. All factory agents and representatives must keep their contact details up-to-date with the Gliding Australia Office.

### 12.3 Gliding Australia to Report to CASA and TC Holder

- 12.3.1 Gliding Australia must report serious defects to CASA and the TC Holder. Major service difficulties will be reported as required by CASA.
- 12.3.2 Less critical issues will not be reported to CASA or the TC holder initially. However, if sufficient or significant problems are noted with a specific sailplane, Gliding Australia will contact the manufacturer and CASA to provide them with the details.

- 12.3.3 The EMA is responsible to respond to SDRs marked 'High Criticality' the following business day and to assign reports for action by a manager. The EMA is to check the reports are completed and take appropriate action on behalf of Gliding Australia.
- 12.3.4 The EMA will audit the reports monthly to ensure the correct action is being taken and reports are being completed. They will organise that resources are assigned to manage and analyse reports.

## 13. SPECIFIC MAINTENANCE REQUIREMENTS

### 13.1 Requirements Currently in General ADs

- 13.1.1 Currently these ADs are active. In future versions of BSE and MOSP they will be incorporated into these documents and then cancelled.
- 13.1.2 Gliding Australia AD 34 Hemp Cored Cables.
- 13.1.3 Gliding Australia AD 165 Pressure Test of Ballast Tanks.
- 13.1.4 Gliding Australia AD 278, Structural Inspection following Finish Removal.
- 13.1.5 Gliding Australia AD 364, Modification of Gadringer FB19 Harness Buckle.
- 13.1.6 Gliding Australia AD 396, Operational Safety Aspects of the Top Engine.
- 13.1.7 Gliding Australia AD 448, Mass Balancing of Controls.

### 13.2 Safety Harnesses

- 13.2.1 Safety harnesses may be rewedded only by a CASA approved workshop using approved materials and methods. Webbing must be replaced with new certified webbing of the same rating or higher. Approved fittings must be used.
- 13.2.2 The width of standard CASA approved webbing and the long stitch patterns don't always work with sailplane harnesses. Some rewedders have their own Engineering Orders to authorize acceptable repair methods. Approvals are required.
- 13.2.3 The webbing used in sailplane harnesses often has a life of 10 or 12 years from installation or as specified by the manufacturer of the sailplane or harness – this life is mandatory. Active use of sailplanes is a harsh environment for harnesses and they may wear earlier and require more frequent replacement or rewedding. Ensure lifed limits are met, worn webbing is replaced and a 10 year limit is strongly recommended.
- 13.2.4 Beyond 10 years the inspector is to certify annually in the logbook that the harnesses and buckles have been checked IAW BSE and are being extended on-condition for 12 months. Refer to BSE for guidance on acceptable webbing condition and operation before you approve further use.
- 13.2.5 The buckle must be inspected and replaced if worn such that it may be unsafe. Return to an authorized repairer if in doubt. Particularly rotary buckles do wear and can release or jam.

### 13.3 Releases

- 13.3.1 Previously the maintenance requirements for Tost releases were specified in AD 277. The maintenance requirements for non-Tost releases were specified in AD 293. These ADs have been cancelled and is superceded by this section. All sailplanes, power assisted sailplanes, and powered sailplanes fitted with tow releases must maintain the connections in accordance with the following schedule:

Aircraft	Maintenance Intervals	Tests Required
Sailplanes	All releases: Annual Inspection when >200 launches since previous testing.	Tests 2 and 3 Test 4 if back-release type
	Non-tost releases: At every 2,000 launches following last main spring replacement. - Remove release from sailplane, overhaul and test. - Replace main spring if faulty or fails tests.	Tests 1 and 2 to determine if main spring ok If main spring replaced, repeat Tests 1 and 2 Test 3 Test 4 (if back-release)
	Tost releases: At every 2,000 launches following last main spring replacement. - Remove release from sailplane, overhaul and test. - Replace the main spring irrespective of condition.	Tests 1, 2, 3 and 4 (if back-release)
Tow Planes	Daily inspection	Test 2
	Reoccurring maintenance at whichever of the following happens first: (a) every 1,000 hours time-in-service; (b) every 12 months. - Remove release from tow plane, perform annual service and tests.	Tests 1, 2 and 3
	Tost release only: Replacement of release main spring at interval as determined by the Registered Operator in accordance with release usage. - Remove release from tow plane, perform overhaul, replace spring and test.	Tests 1, 2 and 3

**Table 13-1: Schedule of Inspections and Maintenance Requirements for Tow Releases**

## 13.4 L'Hotellier Connectors

- 13.4.1 Previously the maintenance requirements for L'Hotellier connectors were specified in AD 177. This AD has been cancelled and is superseded by this section. All sailplanes, power assisted sailplanes, and powered sailplanes fitted with L'Hotellier connectors must maintain the connections in accordance with the following schedule:

Check / Action	Daily Inspection	Every 50hrs of flight or 6-mths <sup>1</sup> and during every rigging	Annual inspection or 500hrs flight time <sup>1</sup>	Flight time of L'Hotellier in service 1000/3000hrs <sup>2</sup>
Carried out by:	DI	DI	AI	AI
A. Check for periodic maintenance/ replacement due	✓		✓	
B. Ball and socket installation integrity	✓	✓	✓	✓
C. Ball correctly located in the socket	✓	✓	✓	✓
D. Safety locking present, engaged and functional	✓	✓	✓	✓
E. Positive control connection check	✓	✓	✓	✓
2x qualified persons signoff for checks whenever disconnected/ reconnected		✓	✓	✓
Lubrication		✓	✓	✓
Ball wear check			✓	
Coupling clearance and wear			✓	✓
Latch spring tension check			✓	✓
Ball replacement				✓

Notes:

DI = Daily Inspector, AI = Annual Inspector.

1. Whichever occurs first.
2. L'Hotellier balls with threaded shanks of 6 mm diameter or less, fitted in airbrake or flap control systems must be replaced at intervals not exceeding 1000 hours flight time in service. Note that some sailplane types require more frequent replacement and the Maintenance Manual or a specific AD for the sailplane type should be checked. All other L'Hotellier balls must be replaced at intervals not exceeding 3000 flight hours in service

**Table 13-2: Schedule of Inspections and Maintenance Requirements for L'Hotellier Coonectors**

### 13.5 Compass Swinging

- 13.5.1 Sailplanes (non-powered) have limited use of a compass for navigation. However powered sailplanes, particularly Touring Motorgliders, need a compass as much as any general aviation aircraft. As such sailplanes may have a simple compass but any sailplane that may



use it for navigation or navigation backup must have a standard aviation swingable compass and maintained similar to CASA AWB 34-008 but according to the following rules.

- 13.5.2 Each installed compass in a Touring Motorglider must have a calibration check when the following events occur:
- Prior to the issue of a Certificate of Airworthiness (CoA).
  - At least every 24 months unless the approved maintenance programme prescribes a lesser period.
  - Additional events requiring a compass swing occur as listed in AWB 34-008. Simply whenever the accuracy of the compass is questionable.
- 13.5.3 Check the compass is serviceable; liquid is full and not leaking, there are no excessive bubbles, sediment or discolouration, pivot friction does not result in more than 2° of error.
- 13.5.4 The following is required when performing a compass swing in a sailplane:
- Ensure normal equipment is present. Check that nearby equipment such as the control stick does not influence the compass visibly. Check the running engine, and avionics on/ off does not influence the compass. Swing the compass with the engine running and avionics in cruise mode and if they influence the compass, then fix the problem. Magnetic interferences that occur occasionally and for short periods may be ignored.
  - During compass calibration the sailplane should be positioned by aligning the fore and aft axis of the sailplane with the cardinal points and 30° magnetic headings (also known as a 12 point compass swing) and should be no more than 5° from the required headings. The magnetic heading of the sailplane should be established by means of a landing compass or similar instrument, or by alignment with a marked compass site or known headings.
  - Compasses should be compensated when the result of the compass calibration exceeds 5°.
  - The results of each compass swing should be entered in the Aircraft Logbook and certified by the Annual Inspector.
  - A compass correction card must be attached in legible form showing:
    - The magnetic heading and compass reading necessary to achieve the magnetic heading at the cardinal and intermediate 30° headings or
    - If the deviation under any condition of operation is less than one degree, the card may be endorsed 'Error<1°' in lieu of the corrected headings.
    - The date on which it was swung.

## 13.6 Non Destructive Inspection

- 13.6.1 Non Destructive Inspection (NDI) is required from time to time according to AD action or general component investigation. Each AD requiring NDI will specify the type of inspection required and the frequency of inspection.
- 13.6.2 Red Dye Penetrant testing MUST NOT be used. Annual Inspectors are permitted to perform NDI by Fluorescent Dye Penetrant providing they have been trained and authorized as per Section 10.10.
- 13.6.3 The importance of experience and competency in this testing is emphasised and inspection at authorised expert facilities is recommended.

- 13.6.4 All other forms of NDI must be done by a CASA authorised NDI organisation. The inspection report must be referenced in the logbook and filed.

### 13.7 Welding of Aircraft Structures

- 13.7.1 The quality of welding can be controlled in two ways:
- By controlling the weld; or
  - By controlling the welder.
- 13.7.2 In the Australian regulations, the latter method is required for all repair or modification to sailplane structure and structural components that is performed under approved data, because there are usually insufficient data to justify any other approach. In the case of non-structural components (e.g., fuel tanks) each component is required to pass a pressure test, and this can be used to satisfy the weld quality, rather than an aviation welding authority.
- 13.7.3 In the case of experimental sailplanes, the former method may be used; in cases where there is sufficient knowledge of the structural margins, the welding may be justified by limit load proof test, provided that can be done without exceeding 80% of the yield strength of the weld or the parent metal.
- 13.7.4 All welding of certificated structures must be performed by persons authorised for that type of welding by CASA. For LSA sailplanes, by a person authorised by the manufacturer. A release note must be obtained and glued in the Logbook. Experimental aircraft intended to return to certified will require authorized and logged welding.

### 13.8 Instrumentation Testing

- 13.8.1 Instrument testing and calibration is to be performed according to BSE. The BSE covers the required testing and calibration of Altimeters, Air Speed Indicators, and fuel gauges and takes into account the requirements of CAO 100.5 but simplified to suit the operating characteristics of sailplanes. This testing and calibration must be certified by Annual Inspectors trained and competent in the test. Test equipment will be available for loan from regional RTO-A/ equipment officers. This additional testing and calibration must be done or a PU issued from the next Annual Inspection.
- 13.8.2 The pitot-static system must be tested and corrected for leaks in accordance with BSE at each Annual Inspection and whenever the pitot-static system is disturbed.
- 13.8.3 All equipment on the Minimum Equipment List as listed in Chapter 8.1 and 8.2 are to be tested and calibrated in accordance with BSE every two years. This may be staggered so each is tested biennially for the annual inspection. They must have current calibration or can be operated under a permissible unserviceability if the PU exists.
- 13.8.4 All other instruments are optional equipment and need not be functional or calibrated. If not functional Gliding Australia recommends they are placarded to avoid confusion if pilots other than the registered operator may fly them.
- 13.8.5 Transponders are to be calibrated every two years in accordance with CASA CAO 100.5, Appendix 1, Clause 14. If this is not possible the instrument must be marked and operated under a Permissible Unserviceability and controlled terminal airspace must not be entered except with permission. (Gliding Australia elected to use CAO 100.5 for transponders to avoid confusion and sailplanes cannot be different.) Transponders are not to be turned on if they are not in calibration IAW CAO 100.5. (By order of CASA, 2017.)
- 13.8.6 Check integration of instruments at annual inspection that all Altimeters and transponder indicate height to within 125ft of the primary altimeter reading at 1013mbar sub-scale setting. If this is not possible the instrument must be marked and operated under a Permissible Unserviceability.

### 13.9 Oxygen Systems

- 13.9.1 Compressed Gas Cylinders are to conform to and be tested IAW CASA CAO 100.5, Appendix 1, Section 15. This requires inspection and testing of high pressure cylinders at intervals not exceeding every 3 or 5 years after manufacture dependent on cylinder type. (Gliding Australia elected to use CAO 100.5 for cylinders to avoid confusion.)
- 13.9.2 All high pressure components and plumbing must be leak checked at every annual inspection.

### 13.10 Propellers

- 13.10.1 Requirement: Overhaul:
- 13.10.2 Propellers, and components as listed in the propeller manufacturer's parts catalogue, shall be overhauled by an approved organisation using the manufacturer's overhaul procedures, or other approved data.
- 13.10.3 Compliance: Overhaul:
- 13.10.4 The propeller shall be overhauled in accordance with:
  - a. The propeller manufacturer's published TBO; or
  - b. The CASA TBO period as listed in Appendix 1 of CASA AD/PROP/1 AMDT 2.
- 13.10.5 DI, Annual Inspection, and repair may only be performed by DI inspectors, Annual Inspectors and maintenance persons who are Gliding Australia endorsed/ rated to perform the inspection/ work on the prop type and CASA propeller AMOs.
- 13.10.6 At daily inspection the propeller hubs and blades, including their surface finish, must be checked for movement, breaks, scores, nicks, cracks, delamination, corrosion, and the security of the leading edge sheath, to assure they are safe. Also, the retraction and feathering systems are to be checked.
- 13.10.7 Note: Where approved maintenance data for a specific propeller system is not available, the inspection, maintenance and field repair methods contained in FAA AC 20-37E, or subsequent revisions, should be used.
- 13.10.8 At least annually, after the first flight after propeller fitment, and after significant average ambient humidity for wooden propellers, and after extended idle periods:
  - a. all propeller attachment bolts and hub retaining nuts must be checked to ensure they have the appropriate torque. Use correct techniques as per MMM and BSE Engines as they vary for types.
  - b. the propeller track must be checked to ensure that the blades are rotating in the same plane of rotation.

### 13.11 Emergency Exits

- 13.11.1 In sailplanes the canopy is almost universally the emergency exit. The canopy or the emergency exit must be maintained to the manufacturer's requirements or as elected in the Logbook Statement with a minimum of the following.
- 13.11.2 At daily inspection check the canopy mechanisms are visually correct for hinges, release mechanisms, and that they appear they can be ejected if required.
- 13.11.3 At least annually and after repairs the eject mechanism is to be tested. Take care to protect the canopy from damage. Check and correct any attachments to canopies do not restrict the canopy jettison mechanism and must breakaway when the canopy is jettisoned in flight. Even a thin wire in the wrong place can delay, or prevent, canopy separation. Hand

breakable safety systems as per guidance in BSE are allowed if they will not prevent the ejection system working.

### **13.12 Ballistic Recovery Systems**

- 13.12.1 Ballistic Recovery Systems (BRS) are to be maintained according to the manufacturer's data.

### **13.13 Calibration of Gliding Australia Test Equipment**

- 13.13.1 Gliding Australia equipment for the testing or calibration of sailplanes are to be calibrated at suitable periods as specified in their procedures. For instance, release testers, altimeter testers and scales. If an error in compliance is found all testing carried out using the equipment up to the prior calibration is suspect and is to be rechecked. The Region equipment control officer is responsible to ensure they are calibrated and records are kept of the sailplanes on which they were used. A simple list is sufficient, completed on the use of the equipment. He must also notify all affected sailplane inspectors on finding equipment was non-complaint.

## 14. SAILPLANE STRUCTURAL LIFE – AIRWORTHINESS SURVEYS AND LIFE EXTENSION INSPECTIONS

### 14.1 Background

- 14.1.1 No sailplane has an unlimited life. Structural fatigue, corrosion, design faults, defects when built, and normal wear and tear take a toll on the sailplane, particularly on its structure and mechanical systems. This is why manufacturers provide a maintenance program for their sailplane. However, the maintenance program for a new design is usually based on experience and engineering judgement and it is unlikely that a maintenance program designed for a new type designed in Europe is still appropriate 30 years (or more) later in tropical/ dusty/ hot Australia. Apart from climate effects, usage, loading and even launch methods can adversely affect the airworthiness of a design.
- 14.1.2 It is for this reason that sailplanes need to be periodically inspected in much greater depth than the usual maintenance program and Annual Inspection. For modern types, the information gleaned from these inspections is used:
- a. To extend the life of the type (this is where the data used to justify life extensions comes from)
  - b. To amend and develop the routine maintenance program contained in the type's maintenance manual
  - c. To amend and develop the design standards against which sailplanes are designed.
- 14.1.3 All Australian sailplanes whether there is an active Type Certificate holder or not, are subject to Airworthiness Surveys or Life Extension Inspections.
- 14.1.4 Some sailplanes may have a published service life, defined by the manufacturer and/or airworthiness authority as a total number of hours or occasionally a year limit, to be flown before being retired from service. These sailplanes may be of aluminium-alloy or FRP construction. Regardless of any surveys or inspections carried out, this life cannot be exceeded other than by the mechanism of a supplemental type certificate (STC). STCs may be arranged outside Gliding Australia. Also, the general airframe survey and inspection requirements in no way exempt the operator from carrying out inspection and servicing of individual components which have a defined service life, hours between inspection and/or servicing requirement.
- 14.1.5 For FRP sailplanes, each type is different and no assumptions can be made with respect to whether a sailplane has a published service life or not. The reference document is the type certificate data sheet and the type's maintenance manual, which indicates whether the sailplane has a service life and, if so, what inspection intervals are required. If no manufacturer's inspection schedule has been published, the sailplane will need a survey when it becomes 30 years old. If in doubt about into which category a sailplane falls, contact the RMA or EMA.
- 14.1.6 Some sailplanes may have been rebuilt using components from two or more airframes. In these cases, the component with the longest period in service or greater number of hours in service shall determine the life and survey requirements of the entire sailplane.
- 14.1.7 For a sailplane approaching the survey date, the following procedure should be adhered to for all categories:
- a. The Registered Operator should contact the RMA well in advance. The RMA will need to see the sailplane's logbook and all other airworthiness documentation, and then make a preliminary inspection of the sailplane. Unless the Registered Operator holds "Survey" qualifications, the RMA will assist in locating an appropriately qualified person to supervise the survey. However, this is a good time to get an independent

inspection of the sailplane.

- b. The surveying inspector supervises the survey and carries out any special inspections required by the RMA or the published life extension program. They must hold a Survey rating of the expertise required. Others may assist.
- c. The surveying inspector prepares a survey report including all repairs and any defects that may have relevance to other sailplanes. A logbook entry shall be made, noting the date and flying time at which the inspection was carried out. This entry shall be certified by the surveying inspector.
- d. The survey report, a current weight and balance report and copy of the current completed Form 2c return are forwarded to Gliding Australia Secretariat for inclusion in the sailplane's file.
- e. A new Maintenance Release is issued.

## 14.2 Inspection and Survey Timing

- 14.2.1 For the purposes of survey and life extension programs, Australian sailplanes are divided into five separate categories, each with their own requirements for survey or inspection. These are:

**Category 1.** Sailplanes constructed primarily of wood, metal alloy, or a mixture of the two (such as sailplanes with a steel tube fuselage structure and wood and fabric wings and tail surfaces). These sailplanes must be surveyed 20 years from their date of manufacture, and thereafter at intervals of 10 years from the completion date of the previous survey. (e.g., ES60, ASK-13 and Blanik). Recommendation to contact VINTAGE GLIDERS AUSTRALIA via Gliding Australia.

**Category 2.** Sailplanes constructed of fibre reinforced plastic (FRP) for which there is no manufacturer's life extension program (FRP includes glass, carbon or Kevlar fibres or any combination). These sailplanes must be surveyed 30 years from their date of manufacture, and thereafter at intervals of 10 years from the completion date of the previous survey. (e.g., PIK-20)

**Category 3.** Sailplanes constructed of fibre reinforced plastic (FRP) for which the manufacturer has published a life extension program (FRP includes glass, carbon or Kevlar fibres or any combination). These sailplanes must be inspected in accordance with the manufacturer's published life extension program, including repeat inspections at the Total Time in Service or the years since construction. (Most FRP sailplanes)

**Category 4.** Sailplanes which have been found by the manufacturer/TC Holder or Gliding Australia to present special airworthiness problems. These sailplanes must be inspected and re-inspected in accordance with the manufacturer/TC or STC Holder's or Gliding Australia's instructions (e.g., Foka 5, IS-28B2)

**Category 5.** Sailplanes with no logbook history, or imported without an Export CoA, or specifically identified by the EMA. Inspections for these sailplanes will be determined by the EMA and a Maintenance Direction issued to the Registered Operator (See Section 16).

- 14.2.2 On the life extension falling due the current Maintenance Release (MR) expires. At the previous Annual Inspection it must not be signed out beyond this time or date. The RO should plan the inspection early and sensibly do it at the time of the previous annual. If not then the RO may obtain a new MR from Gliding Australia if the sailplane has a current MR and it will be issued for the balance of the previous Annual Inspection.

### 14.3 Extension of Time

- 14.3.1 In extenuating circumstances, the EMA may extend the specified period for an Airworthiness Survey or Life Extension inspection by up to three months and 50 hours from when the inspection falls due. However, before doing so:
- a risk-based assessment of the maintenance history of the sailplane will be considered. A sailplane with a history of significant defects or failures or with outstanding ADs will not be eligible for an extension.
  - If the Life Limit is specified in a CMR under the TCDS or an ALS (refer 9.6) or in an AD then an extension must not be given. Otherwise (usually the case) an extension may be given.
- 14.3.2 Where an extension to a life extension period is approved, the subsequent period will be reduced by the same amount in order to bring the subsequent inspection back to its original cycle time.
- 14.3.3 The extension of life must be issued in writing (or email). It must be recorded in the Maintenance Release to sign of the Major Defect entered and in the Logbook (certification pages and life extension).

### 14.4 Sailplanes Subject to Surveys

- 14.4.1 The purpose of an airworthiness survey is to verify that those parts of the structure and systems which are not normally examined during a Form 2 inspection are still airworthy, and to ensure that no unapproved repairs, modifications, materials or parts are present in the sailplane. By ensuring that the sailplane is in good condition at each Form 2 inspection, a survey should add only a small amount of time to the inspection, provided there are no hidden defects found.

### 14.5 Sailplanes with a Manufacturer's Life Extension Program

- 14.5.1 For sailplanes for which there is a Manufacturer's Life Extension Inspection Program, the Registered Operator must ensure that the current version of the inspection schedule laid down in the manufacturer's program is complied with. It is important to use the latest version of the program, as manufacturers amend programs in the light of feedback from the field. As the time for the life-extension inspection approaches, contact the manufacturer/TC holder for the latest version of the program. Also, if required the report must be returned to the TC or STC holder, see Clause 14.7.5.

### 14.6 Powered Sailplanes – Additional Requirements

- 14.6.1 In addition to the airframe inspection, the following systems must be inspected in accordance with the manufacturer's inspection procedures:
- Engine and engine controls
  - Exhaust
  - Propeller and propeller controls
  - Retract and reduction systems
  - Fuel system
  - Engine-related electrical system
  - Engine-related instrumentation.

- 14.6.2 Particular attention must be paid to the effects of fuel, oil, heat and vibration on the airframe. The effects of fuel contamination on tanks, fuel lines, seals and carburettors must also be carefully checked and any manufacturer's service bulletins on this subject adhered to.
- 14.6.3 Additional information on Ageing Aircraft can be obtained from the CASA website, as this is a common aircraft issue.
- 14.6.4 An inspector with a Routine Inspection engine rating must assist with this part of the survey but the Survey Inspector is overall responsible.

## 14.7 Implementation

- 14.7.1 Any costs associated with this inspection incurred by the inspecting RMA or their appointee is to be repaid by the sailplane owner or operator. The RMA and the person requesting the inspection are to discuss and agree on tentative costs prior to the inspection.
- 14.7.2 The RMA will appoint a suitably rated survey inspector and will agree a survey schedule in accordance with the above guidance.
- 14.7.3 Surveys and Life Extension Inspections must be carried out by persons rated "Survey" on the applicable type, or by persons authorised by their RMA. Any work carried out as a result of the inspection (e.g., repairs) must be carried out by appropriately authorized persons and certified in the logbook in accordance with normal Gliding Australia procedures. Approved data must be used for all repairs.
- 14.7.4 The RMA is to supervise the inspection and review the report and approve it.
- 14.7.5 Copies of the inspection report are to be provided to the Registered Operator, the RMA and EMA for inclusion in the sailplane's file. Gliding Australia will forward these to the manufacturer for his records and action.
- 14.7.6 Compliance with Survey and Life Extension Inspection requirements is mandatory. This applies to manufacturer's Service Bulletins as well as ADs.
- 14.7.7 Survey or life extension programs require a current weight and balance. Provided there have been no significant changes (refer Clause 20.2) to the weight and balance characteristics since the last re-weigh, a weight and balance report no older than 4 years is considered current. This concession does not apply to a situation where significant structural reinforcement or major refinishing has occurred since the last re-weigh.



## 15. AIRWORTHINESS DIRECTIVES

### 15.1 CASA and State-Of-Design Airworthiness Directives

- 15.1.1 Airworthiness Directives (ADs) are issued by either the National Airworthiness Authority (NAA) of the State of Design, CASA, Gliding Australia (in order of precedence) to address unsafe conditions on aircraft and aeronautical equipment. On 01 October 2009 Australian law changed to make any AD issued by the State of Design of an aircraft or certified component an Australian AD, without CASA having to re-issue the document as a CASA AD or Gliding Australia re-issuing as a Gliding Australia AD. Hence, CASA ADs, Gliding Australia ADs and those issued after 01 October 2009 by the State of Design are legal instruments, and compliance is mandatory under Australian law. (See CASR Part 39 – Airworthiness Directives).
- 15.1.2 Together with the safety standards imposed through type certification and other airworthiness certification requirements, ADs provide an additional and indispensable level of regulation to ensure that aircraft and aeronautical products remain airworthy at all times.
- 15.1.3 Unanticipated problems arising during service, such as design deficiencies, material wear, fatigue, corrosion, and deterioration, which may pose substantial hazards to the continued airworthiness of aircraft and aeronautical products, can be prevented through the prompt issue of ADs. Refer to Section 12 for the reporting of defects.

### 15.2 Gliding Australia Issued Airworthiness Directives

- 15.2.1 While Gliding Australia will rely on CASA and State of Design ADs to ensure the safety of Australian sailplanes, from time to time an airworthiness concern may arise for which CASA or the State-of-Design have not yet initiated AD action. In that event, if it believes it appropriate, Gliding Australia may issue a Gliding Australia AD requiring action to address the safety concern. Action in accordance with all Gliding Australia issued ADs, including those issued prior to 1<sup>st</sup> October 2009, is mandatory.
- 15.2.2 Gliding Australia issued ADs are known as Gliding Australia ADs to distinguish them from CASA and State of Design ADs.
- 15.2.3 Gliding Australia may Cancel or Suspend Gliding Australia ADs in which case they will be marked as such on the latest version and in the Registers. At this stage some sailplanes may have complied and some may not. There will then usually be an alternative directive possibly in MOSP 3 or as a foreign mandatory AD. Gliding Australia will refer to these and these then become mandatory and replace the AD. If an AD is cancelled or suspended then it is no longer mandatory but remains as approved data for the sailplane to which it was applied.

### 15.3 Exclusions and Alternate Means of Compliance

- 15.3.1 Compliance with all relevant CASA and State-of-Design ADs issued after 01 October 2009 is mandatory, unless an Alternate Means of Compliance (AMOC) is approved by CASA, or CASA grants an Exclusion from the operation of the AD (Gliding Australia does not have a delegation to approve AMOCs or Exclusions against CASA and State-of-Design ADs).
- 15.3.2 CASR 39.004 and Advisory Circular AC39-1(4) provide information on AMOCs and Exclusions.
- 15.3.3 Compliance with Gliding Australia ADs is mandatory unless an AMOC or Exclusion has been issued by the EMA. Only CASA is allowed to issue an AMOC or Exclusion for CASA ADs. Only the State-of-Design NAA is allowed to issue an AMOC or Exclusion for State-of-Design ADs.

## 15.4 Responsibility of the Registered Operator

- 15.4.1 The Registered Operator is responsible to monitor all Australian, State of Design and Gliding Australia ADs applicable to their sailplane and aeronautical products, and to comply with them. The RO is responsible to ensure that Gliding Australia (General and Specific), CASA ADs and State of Design ADs that are applicable to a particular sailplane and equipment are complied with and recorded in the sailplane logbook. They must ensure they get the updates when released. Hereafter these are generically referred to as 'relevant ADs'.

## 15.5 Airworthiness Directive Schedule

- 15.5.1 Gliding Australia AD Schedules and Gliding Australia ADs can be found on Gliding Australia website. (Each Form 2 kit contains the General AD Schedule as well as the Specific AD Schedule for the particular type.) It is the Registered Operators responsibility to ensure the latest AD schedule on the website is used to ensure that their sailplane is maintained using up-to-date copies of all relevant ADs.
- 15.5.2 Gliding Australia will maintain links to State of Design or manufacturer websites to assist inspectors in obtaining ADs and Service Bulletins. These will be on Gliding Australia AD schedule webpage. If an inspector finds a new source Gliding Australia is to be advised and it will be added to the links.
- 15.5.3 Where the Registered Operator has an Exclusion or AMOC against an AD, a copy of the approval is to be included in the sailplane's logbook. All conditions and limitations on the approval are to be complied with, and if necessary entries made in the logbook and/or maintenance release.
- 15.5.4 ADs are distributed to the Registered Operator of affected sailplanes when Gliding Australia becomes aware of them. But Registered Operators are responsible to find all applicable ADs for their sailplane. There are simply too many sources and variations of sailplanes and equipment for Gliding Australia to find them all.

## 15.6 Applicability of ADs to Experimental Sailplanes

- 15.6.1 "General" ADs are applicable to experimental sailplanes, unless an exclusion is granted.
- 15.6.2 State of Design, CASA, and Gliding Australia ADs or manufacturer Safety Directions (LSA only) are mandatory to experimental sailplanes that are derived from certificated or LSA manufactured types, unless an exclusion is granted.
- 15.6.3 ADs may be issued by CASA or by Gliding Australia for experimental sailplanes and are applicable unless an exclusion is granted.
- 15.6.4 An exclusion to an AD will normally be granted only if it can be demonstrated that an "Alternative Means Of Compliance" exists – i.e., that whatever issue the AD is intended to address, has been covered in a way that provides an equivalent level of safety.

## 16. MAINTENANCE DIRECTIONS

- 16.1.1 From time to time it may be necessary for the EMA to issue a Show Cause Notice to a Registered Operator as to why a particular airworthiness activity has not been carried out. Subsequent to the outcome of the Show Cause Notice, the EMA may issue a Maintenance Direction to the Registered Operator of the sailplane concerned, requiring that the necessary airworthiness activity to be performed before the sailplane can be flown.
- 16.1.2 A Maintenance Direction must:
- Be in writing.
  - Specify the sailplane affected by Registration Mark.
  - Specify the airworthiness issue which has resulted in the Maintenance Direction.
  - Specify what is required before the sailplane can again be flown.
  - Be signed by the EMA.
  - Be served on the Registered Operator.
- 16.1.3 A Maintenance Direction may:
- Require specific maintenance to be performed
  - Require that specific inspections be performed
  - Require the Registered Operator to report when the Maintenance Direction has been complied with, and the results of any inspections (if applicable)
  - Direct that the sailplane is to remain grounded pending further direction, in which case a date by which that further direction will be provided must be specified.
- 16.1.4 Once the Maintenance Direction has been served on the Registered Operator, the sailplane is grounded until the Maintenance Direction has been complied with unless the direction specifies otherwise. If the sailplane is transferred to a new Registered Operator while a Maintenance Direction is applicable, the new Registered Operator must be made aware and a copy of the Maintenance Direction provided to the new Registered Operator.
- 16.1.5 Compliance with Maintenance Directions is mandatory.

## 17. AIRWORTHINESS ADVISORY MATERIAL

### 17.1 Airworthiness Notifications

- 17.1.1 An Airworthiness Notification (AN) is used to distribute information which does not warrant mandatory action, but has relevance to maintaining a high standard of airworthiness. ANs also provide owners and operators with information about approved modifications, repairs, defects found etc.
- 17.1.2 Individual ANs may be made mandatory by being specifically specified in sections of this manual.

### 17.2 Airworthiness Alerts

- 17.2.1 Gliding Australia may issue Airworthiness Alerts (AWAs) when a problem which could have significant airworthiness implications comes to their attention, usually as a result of a defect report, and where insufficient information exists to allow a full analysis of the problem. An AWA may also be used to collect statistical information about airworthiness problems, or to provide early advice to Registered Operators of problems that are under investigation and for which further action may be pending.
- 17.2.2 The AWA does not have the legal status of an AD, and compliance is not mandatory (but highly advisable).

### 17.3 Basic Sailplane Engineering

- 17.3.1 Basic Sailplane Engineering (BSE) is a series of manuals that are related to MOSP Part 3 published by Gliding Australia which provides guidance and approved practices for inspecting and servicing sailplanes. These manuals include airframe inspection, engine inspection and servicing and information regarding standard repairs.
- 17.3.2 The procedures listed in these manuals reflect standard aeronautical practice and the accumulated airworthiness experience gained by Gliding Australia over the years. All inspectors engaged in airworthiness work must ensure that they have the latest version of this manual available. It provides the approved procedures and data for inspecting sailplanes where the sailplanes manuals are lacking on the subject.

## 18. MODIFICATIONS AND REPAIRS

### 18.1 Approval of Modifications and Repairs

- 18.1.1 When a sailplane type is certificated, its “type design” is defined. This is the design which the regulatory authority (NAA of the State of Design) has certificated as complying with the appropriate design standard. Both the design standard and the type design are documented on the sailplane's Type Certificate. A valid Type Certificate is a prerequisite for the issue of a standard CoA. For sailplanes, the vast majority have JAR 22 or CS 22 as their design standard, although there are many older sailplanes which were certificated against other, older, standards.
- 18.1.2 A sailplane having a TC or a TAC requires the design of all modifications - and a non-standard repair usually constitutes a modification – must be approved by an appropriate authority. To this end, all modifications and repairs to Australian Sailplanes (other than experimental sailplanes as addressed by Clause 18.1.5) must be made in accordance with Approved Data. Approved Data means engineering orders, drawings, specifications, calculations, test reports and other information necessary to show that the repaired or modified sailplane continues to comply with its certification basis. For LSA sailplanes this means the manufacturer's directions.
- 18.1.3 If a proposed modification to a sailplane is such that the modified sailplane will vary significantly from its original type design (i.e., a “major modification”), and if it is desired that the sailplane's CoA continues to be in force, the configuration change may require a Supplemental Type Certificate (STC), and in Australia can only be issued by CASA. Foreign STCs from recognised countries are automatically accepted in Australia. Examples of when an STC may be required include, but are not limited to:
- a. Installation of a power plant on a sailplane not certificated with an engine
  - b. Change of engine or propeller type
  - c. Significant change to the airframe such as a change in wing span.
- 18.1.4 Approved maintenance data which includes authority for and how to perform modifications or repair is defined in Section 9.9.
- 18.1.5 Various regulations exist for approval of data and work on Experimental Aircraft. They are not all the same and you must work to the sailplane's Experimental Certificate restrictions. As far as possible previously certified sailplanes are to be maintained to Approved Maintenance Data.

### 18.2 Sailplane Repairs

- 18.2.1 Most sailplane repairs are performed by “reverse engineering” and restoring a structure to its original state by applying standard repair practices. This applies to FRP, metal tube, and wooden structures. This is acceptable practice if the original design is reinstated exactly and includes the materials used originally. It is necessary to look at the manufacturer's repair data, to ensure that the area concerned is not one in which repairs are prohibited or “repair by replacement” only (for example, items that are critical for fatigue life). This is increasingly the case where a life-extension program has been justified by crack-propagation analysis; such areas are not amenable to reverse-engineering, unless the reverse-engineering is used to completely replace the critical structure or where a highly stressed component such as a spar cannot be repaired to the same strength.
- 18.2.2 The following documents contain standard repair practices and are approved data for the purposes of sailplane repair:
- a. Ursula Hänle's Petit Plastic Plane Patch Primer.

- b. BGA Standard Repairs to Gliders (wood only)
  - c. SZD Sailplane Overhaul Manual (wooden construction)
  - d. AC 43.13 - 1B Acceptable methods, techniques and practices - Aircraft Inspection and Repair. Approved by Gliding Australia except for Wood and metal tube repairs.
  - e. "How to cover an aircraft using the Polyfiber System", Procedure Manual No. 1 STC SA 1008 WE
  - f. Ceconite Procedure Manual 101 June 2008 revision
  - g. "The Hard Stuff" An introduction to the Inspection and Repair of Composite Gliders, Severn Valley Sailplanes
  - h. All manufacturer's repair manuals are approved data for repairs on that type.
- 18.2.3 Any changes in weight and balance as the result of a repair are to be carefully recorded. If the accumulative change in mass or balance since the last reweigh is significant (refer Section 20.2.1), then a weight and balance rated inspector is to analyse the details, change the placards and certify the change in the logbook.
- 18.2.4 Any changes from the original materials (including resins and or cloth) are to be supported by approved data. This may be a standard change approval that is referenced. Standard materials listed in BSE as approved materials are approved.
- 18.2.5 All repairs, regardless of complexity or nature are to be carried out by approved inspectors and certified in the aircraft logbook or Maintenance Release for Daily Inspector permitted repairs. Details of all materials and the methods used are to be entered in the logbook or permanently attached printout, and the approved data used is to be referenced. Each Inspector rating allows an increasing level of repair as defined in Chapter 10.
- 18.2.6 In all instances, repairs to certificated or LSA certified sailplanes, and to those portions of previously-certificated sailplanes that are not affected by an experimental modification are to be carried out to Approved Data or to Approved Repair Schedules. In some instances where approved data is not available, it may be necessary to contact the Manufacturer to get a repair schedule or;
- 18.2.7 Approved data may be obtained for certificated sailplane from a Gliding Australia CASR 21.009/CASR 21M/ authorised person or a CASR 21J Organisation. For LSA sailplanes only the manufacturer may provide data.

### 18.3 Major and Minor Repairs

- 18.3.1 Minor repairs are limited to repairs to non-structural parts of a sailplane. Repairs to any flight control or its support structure are regarded as major.
- 18.3.2 In general, modifications are not minor repairs. However, occasionally a Gliding Australia AD may allow a modification to be certified by an inspector holding a Minor Repair Authorisation. In addition, a CASR 21.009/21.M authorised person may define a modification as minor, thus allowing it to be certified by the holder of a minor repair authorisation.
- 18.3.3 Any modification producing a significant effect on weight and balance is a Major Repair. (Refer Section 20.2.1)
- 18.3.4 To decide whether a modification or repair is "minor" or "major", the following criteria apply:
- a. Is there a significant effect on weight and balance (see Clause **Error! Reference source not found.**)?
  - b. Is there any appreciable effect on structural strength?

- c. Is there any appreciable effect on reliability (including fatigue life)?
  - d. Is there any appreciable effect on operational characteristics?
  - e. Is there any effect on the operating limitations approved by the Certifying Authority?
  - f. Does the modification introduce or affect functions where the failure condition is hazardous or catastrophic?
- 18.3.5 If the answer to all of the questions under Clause 18.3.4 is "No", the modification or repair is minor. All other modifications or repairs are major. More specific guidelines for repairs are given in sections 10.14 to 10.16.

## 18.4 Refinishing Requirements – FRP Sailplanes

- 18.4.1 This section supplements Gliding Australia AD 278. If you have complied with Gliding Australia AD 278 at the time of refinish you would have complied with this section.
- 18.4.2 Removal of the finish to expose the substrate in an FRP sailplane is a high risk activity that has caused major damage and weakening in the past. Therefore, whenever the substrate is exposed extra care and second inspections are required. A minor repair rated inspector may perform a localized minor repair without second inspection. A major repair rated inspector may perform a localized major repair without second inspection. All other exposures are to be second inspected and certified in the sailplane's logbook.
- 18.4.3 There are several requirements that must be complied with when refinishing or partly refinishing a sailplane. These are summarized below:
- a. Any non-authorised people helping with the refinish process must be supervised adequately by the authorised inspector.
  - b. Only manufacturers or Gliding Australia approved products must be used in the refinish process. The paint system as specified must be applied, that is primers, surface finishers, and top coat work as one and are all required to provide adhesion, sunlight and moisture protection to the substrate.
  - c. Prior to the start of any refinish activities; the RMA must be notified of the intent to refinish, the scope of the work to be conducted and by whom.
- 18.4.4 In every instance, sailplanes must have the substrate inspected by the RMA or their appointee at the completion of the old surface finish removal, before any repairs or finish is applied. Very experienced refinishers may obtain EMA authority to self inspect. The inspector is to inspect the repairs prior to finish application. They will inspect for:
- a. Adequate material removal
  - b. Substrate integrity, porosity and cracking
  - c. UV and moisture damage
  - d. Any damage caused by old surface finish removal process
  - e. For FRP sailplanes these requirements are outlined in Gliding Australia AD 278 and BSE.
- 18.4.5 Any application of surface finish must be done in accordance with Approved Data and be certified by an inspector authorised for Refinishing FRP. Changing the finish of a sailplane from the design type of say Gelcoat to another type, i.e., say 2K paint, is considered a minor modification and must be carried out to approved data. You must certify to approved data specifying the change of materials and procedure. This can be the manufacturer's approval, or a standard Gliding Australia approved paint scheme.



- 18.4.6 If FRP sailplanes are found to have propagating cracks in the surface finish that require inspection for potential substrate damage, this is to be carried out by an inspector authorised for Refinishing FRP.
- 18.4.7 The application of gelcoat or paint by Inspectors holding the rating of Minor Repairs FRP is allowable when:
- as a result of stone chips and minor cosmetic imperfections in small localized areas that do not extend into the FRP laminate
  - a result of repairs conducted under the scope of a Minor Repair FRP.

## 18.5 Refinishing Requirements – Other Sailplanes

- 18.5.1 Paint stripping and treatment of corrosion of stressed-skin metal and wooden structures is also a high risk activity, and must be done in accordance with approved procedures.
- 18.5.2 Refinishing of other than composite airframe components, whilst not constituting a modification, is in general a process for which approved data are required.
- 18.5.3 A thorough structural inspection of the wooden structure or the metal skin is required as it is the only chance you will get for the next few decades. To be certified by an Annual Inspector in the logbook.

## 18.6 Modifications

- 18.6.1 Modifications are defined as changes to the approved design of a type certificated sailplane, engine or propeller that:
- Alters the design baseline of the sailplane or systems on-board
  - Changes any structural or load bearing component of the sailplane
  - Affects the aerodynamic characteristics of the sailplane. For example, installation or removal of “winglets”, changed dimensions of control surfaces, wings or fuselage or installation of turbulator tape in positions not approved by the manufacturer
  - Alteration or modification of the wing profile
  - Affects the structural integrity of the sailplane. For example, cutting into load bearing members (e.g., wing spars, D-noses or monocoque fuselages)
  - Significantly affects the Weight and Balance of the sailplane, refer Clause **Error! Reference source not found.** For example, addition of fin water ballast tanks or the fitting of a brass tail wheel.
  - Significantly affects the Moment of Inertia of the sailplane about any of its principal axes of inertia (this is mainly an issue for spin recovery).
- 18.6.2 Further details on modifications are contained in Gliding Australia Design Approval Procedures Manual (DAPM). A copy of this document can be obtained from Gliding Australia website. The Registered Operators are required to familiarize themselves with the DAPM before considering any modifications to a sailplane.
- 18.6.3 All modifications to a sailplane, other than an experimental sailplane (see 18.6.5), but including all certified and LSA sailplanes, must be to approved data (Which can be from an AD, the sailplane manufacturer, or for non-LSA a CASR Part 21.009, or sub Part 21.M Authorised Person), (Unless exempted under Section 18.7 below). Where test flying forms part of the modification approval, the sailplane's CoA is deemed to be suspended, requiring an Experimental Certificate to be issued by the EMA or other appointed person, accompanied by a flight test schedule where necessary.



- 18.6.4 All previous modifications approved by CAR 35 and CAR 36 authorised persons remain in effect.
- 18.6.5 For a sailplane with an in-force EC the RO must inform the issuer of the EC when an experimental aircraft is modified so that the associated risk can be assessed, and, if necessary, the EC re-issued with amended conditions. (Refer to CASA EX43/17 or the latest in-force version for the details of what may or may not be done under an EC. What may be done varies with the purpose of the EC and the limitations of the EC.)
- 18.6.6 The person who approves the modification (refer 18.6.3) may determine the level of authority required to perform and certify the modification.

## 18.7 Oxygen Systems

### WARNING

#### OXYGEN IS DANGEROUS!

An oxygen fire in the cockpit is unlikely to be survivable; nearly everything will burn in an oxygen rich environment, including steel and pilots!

**NO OXYGEN LEAKS ARE ALLOWED AT ANY TIME.**

- 18.7.1 **Portable Oxygen Systems:** Installation of portable Oxygen systems do not require formal engineering approval, but must be signed off in the sailplane's logbook by an Annual Inspector under the following conditions:
- The system **MUST** comprise of parts designed for the purpose and rated for oxygen use.
  - All high-pressure components, including plumbing, **MUST** be professional manufactured for high pressure oxygen use. All high-pressure plumbing **MUST** be leak checked by an Annual Inspector after installation and at every annual inspection.

### NOTE

The oxygen regulator should be mounted directly to the oxygen cylinder.  
The less high pressure connections in the system, the less risk of high pressure oxygen leaks.

- The installation and restraint of the portable oxygen bottle **MUST** be either part of the sailplane's original configuration or approved by an Annual Inspector (using the guidance in Basic Sailplane Engineering for Optional Equipment).
  - A bottle pressure gauge **MUST** be visible to the pilot in command. This can be pneumatic or electric / digital.
  - The system **MUST** have an "on/off" valve located as close to the cylinder/s as possible. The "on/off" valve should be accessible to the pilot in flight.
- 18.7.2 **Permanent Oxygen Systems:** All permanently installed (fixed) systems require formal engineering approval.

## 18.8 Installation of Visual Awareness Lights

- 18.8.1 Typical visual awareness light installations are streamlined shapes that are mounted on the upper/lower side of the fuselage, the aircraft nose or wing tips, and devices that are installed on the inside of the canopy facing forward with provisions to not blind the pilot with the emitted light.

18.8.2 Visual awareness lights may be installed in accordance with the instructions from the system manufacturer by a member with a Replacement of Components authority. Visual awareness lights may be installed on one or more of the following:

- a. The upper / lower side of the centre fuselage
- b. On the doors of a retractable engine
- c. On the doors or retractable landing gear
- d. On the outer side of the wingtips
- e. On the empennage.
- f. On top of the instrument panel.
- g. On the inside of the forward part of the canopy.

### CAUTION

This approval to fit does not include any installation that requires structural alteration of the fuselage or empennage eg conformal lights in the nose or in the leading edge of the fin. Any change that requires structural alteration must have either sailplane manufacturer or Part 21 engineering approval.

18.8.3 Visual awareness lights mounted on the instrument panel or the canopy must:

- a. Be constructed so to not blind the pilot with the emitted light.
- b. Not interfere with the closing and locking of the canopy and must allow the canopy to be jettisoned in an emergency.

18.8.4 The visual awareness lights installation must take into account crashworthiness (refer to Section 24.5 of Basic Sailplane Engineering), the arrangement and visibility of the installation, and any interference with other equipment.

18.8.5 The visual awareness light system must:

- a. Be suitable for the voltage and amp hours of the sailplane battery. An electrical loads analysis may be need for sailplanes with higher current draw on their battery.
- b. Have an individual circuit breaker or fuse.
- c. Have a clearly labelled ON/OFF switch which is easily accessed by the pilot in command. A clearly labelled switch rated circuit breaker may also be used instead.

### NOTE

The use of circuit breakers as switches is not acceptable as it can degrade their protection function, except for a switch-rated circuit breaker, provided that it is shown to be appropriately rated for the number of switch cycles that are expected during the service life of the system or of the circuit breaker.

- d. Have wiring of the correct rating and type. Basic Sailplane Engineering provides guidance and is to be followed at all times. FAA AC 43.13 Section 11 is also approved data for this purpose.

18.8.6 Any holes that are required to mount the visual awareness light and feedthroughs for the related cables into the fuselage shell must not be larger than 6 mm in diameter. Approval of proposed mounting hole location is required by a member with an Annual Inspector

authority. If several holes are required for these feedthroughs, then these shall not be closer than 30 mm from each other, and the number of holes must be minimised.

### CAUTION

Special care is required to avoid damaging any bulkheads, stringers or other critical structure or systems on the inside of the fuselage structure when drilling these holes.

### CAUTION

Special attention is required to prevent any chafing or short circuits with wiring feedthroughs.

- 18.8.7 Changes to the sailplane's weight and CG position must be accounted for by a member with a Weight and Balance authorisation. Any installed system must have an installed mass below 1 kg.
- 18.8.8 Before the first operation in flight, a functional test of the system must be conducted on the ground including the following:
- All instructions and tests defined by the equipment manufacturer.
  - Special attention to ensure there is no possibility of blinding of the pilot.
  - Special attention to ensure there is no overheating of the system.
  - There is no interference over the radio.
  - The canopy is able to be safely jettisoned.
- 18.8.9 The operators must ensure they are familiar with the visual awareness light system safety requirements and limitations. Any limitation defined by the visual awareness light system manufacturer must be adhered to. A placard must be fitted to the cockpit with any safety requirements or limitations.
- 18.8.10 The sailplane Maintenance Release must have an entry for any maintenance requirements defined by the visual awareness light system manufacturer. The sailplane logbook must have an entry of the installation of the system.

## 18.9 Minor Changes Not Requiring Approval

- 18.9.1 Some modifications and repairs are very minor, and do not pose any threat to the ongoing airworthiness of the sailplane. Where approved data is not available the following modifications do not require approval, but must be signed off in the sailplane's logbook by an Annual Inspector:
- Installation of new or updated instruments and radios. Any weight change to the instrument panel must still fall within the manufacturer's limits.
  - Wiring changes (including fuses and switches) to support a new or changed instrument or radio. All instruments require a separate switch and fuse. Wiring must be of the correct rating and type. Basic Sailplane Engineering provides guidance and is to be followed at all times. FAA AC 43.13 Section 11 is also approved data for this purpose.
  - Installation of blanking plates to fill holes left by removal or replacement of instruments.
  - Small repairs or replacement of the instrument panel front face for cosmetic purposes

- or to restore structure weakened by material removal resulting from the successive installation of various instruments.
- e. Small cameras inside the cockpit of similar weight and size of a “GoPro.” When installing the camera consideration needs to be taken to ensure no head strike, vision impairment or interference with flight controls exist. Guidance on Mounting Cameras on Sailplanes and Powered Sailplanes is contained in Gliding Australia document AIRW-D024 at the latest version.
  - f. Replacement or refurbishment of cabin upholstery, NOT including changes to the seat pan. Ensure changes do not impede control function, entry and egress. Only fire resistant materials to be used. Energy absorbing foam to be used for cushions.
  - g. Changes to switches on joysticks as long as they impose no restriction or structural change to the stick.
  - h. Installation of undercarriage warning systems as long as they impose no restriction or risk to jamming of controls, and are protected by a fuse or circuit breaker of no more than 1 Amp.
  - i. Installation of small cameras according to Gliding Australia AIRW-D024, Guidance on Mounting Cameras on Sailplanes and Powered Sailplanes, v1.2 or latest version.
- 18.9.2 All other minor modifications where approved data is not available require approval in accordance with Gliding Australia DAPM and will require a CASR 21.009/21.M engineering order.
- 18.9.3 When mounting equipment such as GPSs, cameras, or video cameras on existing mounts, or installing “temporary” mounts such as suction cup mounts and “RAM” mounts in the cockpit, crashworthiness and loose object hazards must be seriously considered and secondary damage to the sailplane avoided. Head strike is a critical factor in crashworthiness and needs to be addressed carefully. No solid object may be mounted in a position where the occupant’s head is likely to strike it during turbulence or an impact. Any such installation must not restrict the pilot’s vision.
- 18.9.4 Anything mounted behind the pilot must be restrained against the crash loads specified in the type’s certification basis. Note that a 2kg portable battery could be like a 30kg weight falling on your head during an accident – don’t put weights behind your head – it is not crashworthy!
- 18.9.5 Any attachments to canopies must not restrict the canopy jettison mechanism and must breakaway when the canopy is jettisoned in flight. Even a thin wire in the wrong place can delay, or prevent, canopy separation.
- 18.9.6 When any modification is made to a sailplane, all changes to the sailplane’s weight and balance are to be documented and recorded in the logbook, even if insignificant (refer Clause **Error! Reference source not found.**).
- 18.9.7 If the cumulative changes due to one or more modifications is more than given in Clause **Error! Reference source not found.**, then a weight and balance rated inspector is to analyse the details, change the placards and certify the change in the logbook.
- 18.9.8 In all cases, the effect of the change on the magnetic compass must be checked. If necessary, a compass swing will be required.
- 18.9.9 All changes must be certified by an annual inspector and listed on the next Annual Maintenance Return, Gliding Australia Form 2c, to Gliding Australia.

## 18.10 Substitution of Materials and Parts

- 18.10.1 Substitution of material and parts of sailplane are considered modifications (or repairs) and must be treated accordingly.

- 18.10.2 No critical components may be changed or sourced except from certified sources or with an engineering order or with approved data and instructions given in BSE.
- 18.10.3 Sailplane manufacturers use many automotive industry sourced components. If exactly the same component from the same manufacturer can be obtained these components may be used where structural strength or reliability is not critical.
- 18.10.4 **Fasteners:** Fasteners in sailplane structure or control systems must NOT be substituted other than in accordance with approved data. Unfortunately, there is no single reference that provides the necessary information to simplify this; it is generally necessary to identify the original fastener specification and then refer to that specification in order to determine an acceptable replacement. Substitution in accordance with an engineering order or with approved data and instructions given in BSE.
- 18.10.5 Commercial grade hardware obtainable in Australia are very variable in quality in terms of dimensions, strength and durability, and in the case of bearings the lubrication. Hence, commercial grade hardware may only be used if the exact substitution in accordance with BSE is obtained.
- 18.10.6 Stainless steel hardware is not to be used for structural applications unless approved. It is of lower strength and more fatigue susceptible than mild steel.
- 18.10.7 The components must be obtained from a specialist supplier who will supply a letter of conformance listing the component specifications, i.e., confirms the source and specification of the part. This must be filed and referenced in the repair certification in the logbook.

## 18.11 Replacement of Batteries

- 18.11.1 **Sealed Lead Acid Batteries:** Sealed Lead Acid Batteries (SLA) Batteries may be replaced with a good quality SLA battery without approval. For starter motor batteries the battery must be the same capacity and cold crank amp rating as required and listed in the AFM / AMM.

### WARNING

Lithium Ferrous Phosphate (LFP) batteries CANNOT be used in lieu of SLA batteries as starter motor batteries, unless there is sailplane manufacturer approval or an Engineering Order. The battery recharging system must be designed to handle the higher resistance of the LFP battery. **Using an LFP battery as a starter motor battery with an SLA battery recharging system may result in a battery fire in flight.**

Lithium Ferrous Phosphate (LFP) batteries can only be used in lieu of SLA batteries to power onboard avionics.



Figure 18-1: LFP Battery Used As A Starter Motor Battery That Was Overcharged Inflight

18.11.2 **Lithium Ferrous Phosphate Batteries:** Batteries used to only power onboard avionics can be replaced by any brand of Lithium Ferrous Phosphate (LiFePO<sub>4</sub> or LFP) battery provided the Registered Operator obtains a certificate of conformance, or similar document, from the battery manufacturer stating that the battery conforms to one of the following standards:

- a. IEC 62133-2 Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications, Part 2: Lithium systems.
- b. RTCA DO-347, Certification Test Guidance for Small and Medium Sized Rechargeable Lithium Batteries and Battery Systems.
- c. RTCA DO-311A, Minimum Operational Performance Standards for Rechargeable Lithium Batteries and Battery Systems.
- d. UL 1642, Standard for Lithium Batteries.
- e. UL 2054, Standard for Household and Commercial Batteries.
- f. UL 62133 Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes – Safety Requirements for Portable Sealed Secondary Cells, and for Batteries Made From Them, for Use in Portable Applications.
- g. UL 1973 Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications.

**NOTE**

Fusion brand batteries previously purchased under the approval of MTAR 1-2017 do not require a certificate of conformance. Newly purchased batteries of Fusion or other brand batteries do require a certificate of conformance.

18.11.3 The following also applies to LFP batteries:

- a. The battery must have an integrated battery management system provided by the battery manufacturer.
- b. The sailplane owner (registration holder) must approve the use of the LiFePO<sub>4</sub> battery in the sailplane. The sailplane owner can make a logbook entry approving the fitment OR a letter from the sailplane owner approving the fitment can be stapled into the sailplane logbook.
- c. No in-flight charging is allowed – battery charging is only allowed with the battery outside the aircraft. A battery charger suitable for LiFePO<sub>4</sub> Batteries must be used for charging.
- d. The operators must ensure they are familiar with the battery safety requirements and limitations. Any limitation defined by the battery manufacturer must be adhered to. A placard must be fitted to the cockpit with any safety requirements or limitations.
- e. The battery will be suitably marked for identification purposes with the sailplane registration, battery number and the date entering service.
- f. The battery will be fitted with a suitable fuse / circuit breaker and connector.
- g. The sailplane maintenance release must have an entry for recurring maintenance to inspect the battery at each Daily Inspection. The battery, fuse, wiring and connector must be checked for evidence of damage to the battery and wiring assembly at each Daily Inspection.
- h. If dropped or damaged, the battery must be removed from service and marked unserviceable.

- 18.11.4 A voltmeter is recommended to be fitted to the sailplane instrument panel if an LFP battery is fitted.
- 18.11.5 **All Battery Types:** Where the battery is not a direct replacement for an existing battery installation, the guidance of Chapter 9 of Basic Sailplane Engineering Ver 24 must be followed.
- 18.11.6 The dimensions of the replacement battery must fit the box or rack correctly (for crash resistance). If the weight is increased or the dimensions altered, the battery box and support structure must be upgraded to withstand the increased loads and will require a CASR 21.009/21M engineering order.
- 18.11.7 If the replacement battery is a different weight to the original, the sailplane weight and balance is to be corrected as per Clause 18.9.6 by a Weight and Balance inspector.
- 18.11.8 For starter motor batteries the battery must be the same capacity and cold crank amp rating as required and listed in the AFM/AMM.

## 18.12 Replacement of Tyres

- 18.12.1 When replacing a sailplane tyre, any equivalent tyre may be substituted. Care must be exercised that the tyre fits correctly.

## 18.13 Damage to Foreign Sailplanes

- 18.13.1 Gliding Australia repair authorisations may not be used to conduct repairs to, or modification of, foreign registered sailplanes. These sailplanes must be repaired or modified under the rules of their State-of-Registry. Currently, no other country recognises Gliding Australia issued qualifications and authorisations.
- 18.13.2 Owners and operators of foreign registered sailplanes who approach a Gliding Australia authorised inspector or workshop for these services must be referred to the aviation safety regulator of the State-of-Registry. If the owner or operator is able to produce written authority from their regulator allowing a Gliding Australia authorised entity to certify for maintenance, modification or repair, Gliding Australia is to be contacted for approval BEFORE work is commenced so that issues such as liability and insurance may be considered.



## 19. MAINTENANCE CERTIFICATION

### 19.1 Sailplane Logbook

- 19.1.1 The Registered Operator is responsible for the existence and upkeep of suitable Logbooks for each sailplane in order to record:
- Identify the sailplanes maintenance program and approved variations in the Logbook Statement, see Chapter 2.8 and 9.2.
  - Total time in service and number of landings made by the sailplane and engine and propeller time for powered sailplanes
  - Annual inspections, repairs and routine maintenance
  - The results of life extension surveys
  - Engine changes, propeller changes and component changes specifying the dates, time in service and changes of lifed components
  - Recording compliance with ADs
  - A record of modifications incorporated
  - A summary of any changes to the Weight and Balance
  - A history of components that are life limited.
- 19.1.2 Logbook entries must be certified by persons authorised for each category of work, and signed by them as being responsible for that work. In addition to their signatures, Inspectors must include their Gliding Australia membership number and the date the work was completed. A declaration must be made that all activities were conducted in accordance with Gliding Australia MOSP 3 requirements.
- 19.1.3 If the inspector is certifying an approved modification, or work requiring an EO, the details of the EO or Approved Modification must be recorded in the logbook.
- 19.1.4 The Registered Operator must ensure logbooks are up-to-date at least annually prior to the Annual Inspection or:
- When certifying inspections or periodic maintenance
  - When certifying compliance to ADs
  - When any repairs are certified.
- 19.1.5 Loose leaf entries must be glued into the relevant section of the Logbook. A certification statement must also be made within the logbook in case the inserted sheet becomes detached.
- 19.1.6 The preferred Logbook is the Sailplane and Powered Sailplane Logbook available from Gliding Australia Secretariat.
- 19.1.7 It is recommended that all ROs generate a Logbook supplement to hold extra documentation that is not appropriate for logbook entry. Such items will include component release notes, wiring diagrams of the sailplane; photos of repair work etc. This information assists future inspectors to determine sailplane maintenance and repair history.

### 19.2 Logbook Instructions

- 19.2.1 All entries in the logbook are to be legible and made by pen in blue or black ink only. This allows photo-copying of logbook entries as other colours do not reproduce.



- 19.2.2 No logbook entry is to be obliterated or erased by any means.
- 19.2.3 The use of correction fluid is not permitted.
- 19.2.4 An incorrect entry shall be identified by a single strike through the error and shall be signed and dated by the person making the correction. Their Gliding Australia number must be recorded with their signature.
- 19.2.5 Incorrect entries shall only be corrected by a person who is authorised to certify for the type of maintenance the incorrect entry relates too.
- 19.2.6 Loose leaf attachments are permitted in the sailplane and engine sections of the logbook for entries such as major repairs, modifications and engine or propeller overhaul. Computer generated entries are permitted.
- 19.2.7 Such attachments shall bear the sailplane registration marks or the engine serial number as applicable, and will become a permanent part of that section of the logbook.
- 19.2.8 Each loose leaf entry must be securely attached to a logbook page which also includes a written certified endorsement in the logbook stating:
  - a. an entry is attached
  - b. the type of maintenance carried out
  - c. the name of the organisation performing the maintenance
  - d. the date the work was certified.
- 19.2.9 All airworthiness activities that require logbook entry for validity are called a certification. In all instances certifications must provide the following information:
  - a. the date the work being certified was completed
  - b. time-in-service of the sailplane at the time the work was performed
  - c. details of the work performed including reference to any factory repair schedules, EOs, MOSP 3 etc.,
  - d. the signature of the certifying inspector
  - e. Gliding Australia member number of the certifying Inspector.

### 19.3 Maintenance Release

- 19.3.1 The MR (Form AIRW F001) communicates to the pilot the airworthiness status of the sailplane. Gliding Australia will not accept airworthiness or operational responsibility for sailplanes that do not have a Gliding Australia Maintenance Release (MR).
- 19.3.2 The MR is divided into 3 parts and also includes the Daily Inspection Record. All parts must be updated daily whenever the sailplane is flown.
- 19.3.3 All entries are to be in blue or black ink biro pen. White out correction fluid is not permitted in any section of a MR. Any errors in the MR must be crossed out with a single line with the correction immediately adjacent and the error to be initialled by the person authorised to make the entry.
- 19.3.4 All expired maintenance releases must be retained by the RO and kept for future consultation. These expired maintenance releases provide a documentary auditable trail of sailplane history, defects and clearances.

## 19.4 Maintenance Release - Part 1

- 19.4.1 Part 1 identifies the sailplane and records the MR date of issue, date of expiry and that the evaluation flight has been completed. The prime purpose is to record the scheduled maintenance which must be performed while the MR is in force.
- 19.4.2 MR expiry is a duration of no longer than 12 months or 250 hours time in service from when it was issued, unless extended, see Clause 11.3.11. For example: MR issued on 23 May 2011 then the MR would expire on the 22 May 2012 or after 250 elapsed flying hours.
- 19.4.3 The MR ceases to be in force when maintenance activity has started for re-issuance of MR and maintenance to be performed falls due and has not been certified as completed by an appropriately rated inspector.
- 19.4.4 When an inspector completes an item of recurring maintenance required on the MR, it is that inspector's responsibility to endorse the MR to show when that maintenance is due to be repeated.

## 19.5 Maintenance Release - Part 2

- 19.5.1 Where Part 1 controls the overall maintenance from one annual inspection to the next, Part 2 controls the sailplane from one pilot to the next, with provision to record Major Defects which prevent further flight, and Minor Defects that do not represent an inflight safety hazard but need to be inspected for further deterioration at each Daily Inspection.
- 19.5.2 Major Defects are faults which develop in a sailplane which are hazardous to flight or safety of the pilot or members of the public. Once there is an un-cleared Major Defect entry in the MR the MR ceases to be in force and the sailplane cannot be flown.
- 19.5.3 If the daily inspector is unsure whether a defect is major or minor, the defect should be recorded as a major defect, it is better to ground a safe Sailplane than to allow an unsafe sailplane to fly. The defect can only be cleared by an inspector rated for Annual Inspections; he/she must investigate the defect and determine a course of action. If required the defect must be repaired otherwise the inspector may declare the Sailplane safe and certify the release to operational status.
- 19.5.4 If any member of Gliding Australia finds or suspects a fault with a sailplane which may be critical to flight safety or which they are unsure of, an entry should be made in the Major Defects section of Part 2.
- 19.5.5 A Major Defect can only be cleared by a Gliding Australia Inspector who has the authority to clear the defect entry in the MR.
- 19.5.6 Defects categorized as Minor are faults in a sailplane that are not hazardous to flight, but need to be inspected at each daily inspection for further deterioration. (Permissible Unserviceabilities (Section 2.9) are usually of equipment whereas minor defects are for example minor cracks in gelcoat or canopies and non-structural.)
- 19.5.7 As well as bringing the defect to the attention of each daily inspector, recording minor defects also provides the next Annual Inspector with a record of known problems.
- 19.5.8 An Annual Inspector may elect to transfer an item to Part 1 of the MR to limit the amount of flying the sailplane does with the defect by imposing further inspections as necessary. Minor defect recording is "good housekeeping" and is to be encouraged.
- 19.5.9 When issuing a new MR all minor defects must be cleared whereas Permissible Unserviceabilities can remain.

## **19.6 Maintenance Release - Part 3**

- 19.6.1 The hours flown and number of landings made must be entered daily whenever the sailplane is flown. The total time in service must be readily available at all times to allow the airworthiness status of the sailplane to be known.
- 19.6.2 MRs issued to Powered sailplanes has an additional insert (coloured blue) for recording engine hours and propeller hours. Engine hours must be entered daily.
- 19.6.3 Clubs and Operators with their own flight recording system may apply to Gliding Australia for an approval to utilise their own recording systems. Refer to AN150.

## **19.7 Daily Inspection Record (Gliding Australia AIRW F001)**

- 19.7.1 The daily inspection record is in the same booklet as the MR. Whenever a daily inspection is performed, the inspector should use the Daily Inspection Schedule as a guide plus any specific items in the Flight Manual to perform the daily inspection.
- 19.7.2 The Daily Inspection record must be certified prior to flight each day with the date and time the authorisation is made and Gliding Australia number of the authorised Inspector and their signature.

## **19.8 Requirement to Produce Documentation on Request by a Gliding Australia Officer**

- 19.8.1 On request by a CASA official, CAP, DCAP, EMA, RMA or AAO, the registered operator of a sailplane, including clubs and commercial operators, are required to produce Logbooks, Maintenance Releases, Release Certificates and any other maintenance documentation.
- 19.8.2 All maintenance documentation must be kept for at least one year after the operating life of the sailplane, i.e., deregistration, or removal of the component. This includes all maintenance releases and certifications of maintenance.
- 19.8.3 All records are to go with the sailplane when sold.

## 20. WEIGHT AND BALANCE

### 20.1 Background

- 20.1.1 The weight and balance of a sailplane is a critical factor in the airworthiness of the sailplane, on a par with the sailplane's structural integrity. While weight and balance can have an effect on a sailplane's performance, unauthorised changes can have a major effect on the sailplane's:
- stability,
  - controllability,
  - structural integrity, and
  - ability to recover from an in-flight upset (such as a spin).
- 20.1.2 As weight and balance can be affected by various factors, the accuracy of weight and balance placards, and compliance with those placards, are critical to the airworthiness of a sailplane.

### 20.2 Ensuring Correct Weight and Balance

- 20.2.1 A sailplane must have its weight and balance status confirmed:
- Every time there is a change to the sailplane which significantly changes its weight and balance, refer Clause **Error! Reference source not found.**
  - When performing a survey or life extension, a full re-weigh may be required (see Chapter 14.7.7).
- 20.2.2 Clause 21.2.1 (a) may be done either by reweighing the sailplane or by calculation. Certification of a sailplane's weight and balance status may only be performed by Inspectors rated for Weight and Balance. The sailplane's logbook is to be updated with the new weight and balance data following reweighing or recalculation.
- 20.2.3 A significant change in weight and balance is defined as:
- the empty weight has changed by more than 0.5% of the Maximum Take Off Weight; or
  - the empty weight centre of gravity position has changed by more than 2% of the maximum permissible centre of gravity range;
- 20.2.4 If at any point a Registered Operator or Annual Inspector believes that a weight change may be significant, an appropriate W&B Authority Holder is to be consulted.
- 20.2.5 A sailplane must be physically reweighed:
- prior to the initial issue of a Certificate of Airworthiness,
  - if the sailplane has a logbook statement where the sailplane is being maintained IAW the manufacturers system of maintenance and the sailplane's Maintenance Manual requires it,
  - after refinishing of a major component or components of the airframe,
  - after any substantial major repair has been carried out,
  - at each survey or life extension inspection,
  - if the empty weight has changed by more than 2% of the Empty Weight;

- g. if the Empty Weight centre of gravity position has changed by more than 5% of the maximum permissible centre of gravity range,
- h. whenever an RMA or the holder of a Weight Control Authority has reasonable doubt of the accuracy of the current weight data.
- i. if the EMA (in accordance with MOSP3 Chapter 16) or CASA directs that a sailplane be reweighed.

The above circumstances cannot be met by calculation alone.

- 20.2.6 All weight and balance work must be done in accordance with the procedures detailed in Gliding Australia Airworthiness Document AIRW-D011 Weight and Balance Notes, which is available from Gliding Australia website. Any requirements specified in the sailplane Maintenance Manual must also be complied with.

### 20.3 Scales

- 20.3.1 The weighing equipment used to weigh the sailplane and/or components must have an accuracy of  $\pm 100$  grams in the range 0 to 50kg, and  $\pm 0.2\%$  of the applied load above 50 kg.
- 20.3.2 Scales must be checked and re-calibrated to Australian Standards in accordance with the National Instrument Test Procedure NITP 6.1-6.4 at no more than 24 month intervals (refer to Australian Standard AS NZS 2193 2005). They are to be tested over the full range of all operating ranges and are to have an error no greater than 1 unit of measure or are to be clearly placarded with their error ranges on the readout. If they are found deficient, the equipment officer is to have a list of weighs performed and will arrange all doubtful weighs to be checked and corrected.

### 20.4 Requirement for a 5% Margin at the Aft Centre of Gravity Limit

- 20.4.1 Because of the criticality of the aft CG Limit, the fact that sailplane CG position is managed primarily by pilot weight, and the known variability in pilot's estimate of their own weight, Gliding Australia requires that a margin of 5% of the CG range (distance between the forward and aft CG limits) be applied to the aft CG limit of all sailplanes:
- a. Used for training, Air Experience Flights or passenger carrying; or
  - b. Owned by gliding clubs and available for use by club members.
- 20.4.2 The application of the 5% margin to all other sailplanes is strongly recommended.

### 20.5 Simple and Complex Sailplanes

- 20.5.1 For the purposes of Weight and Balance sailplanes are divided into two classes, Simple and Complex:
- 20.5.2 Simple sailplanes have no more than two seats, baggage, wing only ballast tanks and pre-fitted removable ballast weights.
- 20.5.3 Complex sailplanes include:
- a. All sailplanes fitted with engines
  - b. All sailplanes equipped to carry disposable tail ballast (i.e., other than spin kits for training sailplanes).
  - c. Sailplanes with an unconventional configuration, such as canards and flying wings,
  - d. Any sailplane which does not meet the definition of a simple sailplane, and
  - e. Any other type that Gliding Australia may nominate as complex.

- 20.5.4 The Basic W&B Authority allows the weighing and preparation of weighing records and placards for simple sailplanes. All other sailplanes require an Advanced W&B Authority.

## 20.6 Use of Computer Programs and Spreadsheets

- 20.6.1 Computer programs and spreadsheets may be used for Weight and Balance calculations, but in all cases must be validated before use. Minor, and difficult to detect, errors in a spreadsheet or program can cause serious errors in the results which, in weight and balance calculations, are a serious threat to safety.
- 20.6.2 To validate a spreadsheet or program, the calculations included in the spreadsheet or program must be verified as correct by using a second method of calculation. The second method includes hand calculations, a second independent computer based methodology, or using the results of previous sailplane weigh that was calculated independently to ensure that the spreadsheet or program produces the same results.
- 20.6.3 In validating calculations, all elements of the spreadsheet or program that affect the result must be checked. Records of the validation calculations must be retained with the Form W1, and may be used by the Weight and Balance authority holder conducting the independent check.
- 20.6.4 A computer program or spreadsheet that has been approved by Gliding Australia has already been validated and does not require independent checking of the calculations. A register of approved Gliding Australia computer programs and spreadsheets will be maintained by the EMA. The register will include the following:
- The name of the program or spreadsheet file and version number,
  - The name of the person who created the program / file and the creation date,
  - The name of the person who validated the program / file and the validation date,
  - Any limitations or caveats, and
  - The approval date.
- 20.6.5 A computer program or spreadsheet can be submitted to Gliding Australia for approval by sending the file(s) with a request to the EMA. On receipt of the request for approval the EMA will:
- Register the file(s) in the Approved Weight and Balance Program register,
  - Request a member, independent of the creator, with Advanced Weight and Balance authorization to validate the program or spreadsheet IAW paragraph 20.6.2, list any limitations or caveats and recommend approval if suitable,
  - Enter the validation details and any limitations or caveats in the Approved Weight and Balance Program register,
  - Approve the program / spreadsheet if it is considered suitable and record the approval date in the register. The EMA can seek further opinion from other members with Advanced Weight and Balance authorization if there is doubt or uncertainty with the suitability of the program / spreadsheet, and
  - Publish the approved program or spreadsheet file on Gliding Australia website along with any caveats or limitations.

## 20.7 Independent Checks

- 20.7.1 All calculations and placards produced as part of a weight and balance evaluation are to be independently checked by another W&B Authority holder with the necessary level of authorisation unless a Gliding Australia approved program or spreadsheet is used (refer to paragraphs 20.6.4 and 20.6.5).

- 20.7.2 Checking of calculations must take place before the logbook entries are made and placard or flight manual page changes are made.

## **20.8 Weight and Balance Records**

- 20.8.1 All results from weight and Balance evaluations are to be entered into the appropriate section of the sailplane's logbook. This may be accompanied by a copy of Gliding Australia Form W1. Complete records of each evaluation are to be provided to the sailplane's RO for inclusion in the sailplane's data package. The holder of the weight control authority will also retain a copy, including copies of any spreadsheets used in the calculations and the results of independent checks.

## 21. APPROVED MAINTENANCE ORGANISATIONS

### 21.1 Background

- 21.1.1 In order to ensure compliance with CASRs and good engineering practices, Gliding Australia authorises commercial entities for the maintenance and repair of sailplanes and powered sailplanes. These approved commercial entities are called Approved Maintenance Organisations (AMOs).
- 21.1.2 An AMO may only maintain sailplanes, sailplane components or sailplane materials for which it is approved when all necessary facilities, tools, equipment, sailplane materials, approved technical data and certifying employees are available.
- 21.1.3 This section outlines the requirements for the application; accreditation and revalidation of Gliding Australia AMOs.

### 21.2 Application

- 21.2.1 The application for AMO status may be processed and authorised by the EMA. They are hereunder referred to as the issuing authority.
- 21.2.2 For a commercial entity to apply for and gain accreditation as an AMO the following steps must be completed:
  - a. Take appropriate steps to comply with the requirements outlined in this document
  - b. Apply to Gliding Australia for AMO status and pay Gliding Australia administration fee
  - c. Coordinate with the issuing authority a suitable inspection time for a surveillance audit of the workshop premises and infrastructure, this inspection may be assigned to an RMA or another nominated person
  - d. The issuing authority may promulgate a Request for Corrective Action (RCA) should discrepancies against Gliding Australia requirements be discovered
  - e. Upon a successful surveillance audit inspection, the Certificate of AMO may be authorised.
- 21.2.3 Each AMO is authorised via the Certificate to conduct prescribed work. Should the nature of this prescribed work change the issuing authority (or the position incumbent) must be made aware of the changes in writing within 14 days.

### 21.3 AMO Revalidation

- 21.3.1 The AMO accreditation is valid for a period of 12 months.
- 21.3.2 At the completion of the 12 month period, the AMO must supply Gliding Australia airworthiness Panel a renewal application to revalidate the AMO status.
- 21.3.3 The issuing authority (or their appointee) has the option to conduct a surveillance audit at the time the renewal application is made. Usually, the audit will be biennially in accordance with Chapter 22. The EMA may extend this to 3 years when the AMO management is considered stable. For efficiency the auditor may take into account CASA and other audits but should check for Gliding Australia specifics, e.g., Gliding Australia procedures, Gliding Australia ADs, Gliding Australia Logbooks.

### 21.4 AMO Requirements

- 21.4.1 Premises and Facilities Requirements:



- a. A workshop of sufficient size and design to accommodate the nature of work being conducted.
- b. Lighting needs to be of such a standard that the quality of work is not impaired.
- c. Ventilation, as necessary, should be provided to ensure that the health and ability of the employees to carry out maintenance is not impaired and that contamination of the sailplane, components and sailplane materials do not occur.
- d. To prevent contamination, the premises need to be kept in a clean and tidy condition. This should include the provision of suitable floors and may require dust locks, air-conditioning or extractor fans commensurate with the level of cleanliness required for that particular activity.
- e. Dedicated refrigeration facilities to prevent degradation of epoxies and other chemical compounds that are heat sensitive if composite repairs are conducted.
- f. Either a climate controlled room or accurate temperature and humidity instruments if composite work is conducted.
- g. All remote workshop locations are to be detailed and included in the scope of the application and subject to surveillance inspections.
- h. Dedicated parts storage areas for sailplane components, replacement parts and consumables are required to prevent contamination. Parts must be labelled to ensure serviceability is clearly tracked.

#### 21.4.2 Documentation Requirements:

- a. Each AMO must document the following processes in a Maintenance and Repair Procedures manual:
  - i. Work sheet documentation requirements for each job
  - ii. Work sheet retention and archiving process
  - iii. Quality control and final inspection procedures
  - iv. Process for procuring replacement parts and ensuring all parts and components are fit for purpose
  - v. Staff training requirements for un-qualified staff conducting work.
- b. A separate work sheet is required for each job that is conducted within the workshop. This work sheet is a record of all work being conducted on the sailplane including:
  - i. Sailplane details and time in service the work was conducted
  - ii. Person conducting the work
  - iii. The nature and scope of the job
  - iv. Verification that the latest Manufacturers Maintenance Manual, TCDS, Approved Data has been checked for accuracy and currency
  - v. Replacement parts installed and consumables used
  - vi. What systems have been repaired or disconnected
  - vii. Defects or issues of note
  - viii. Have applicable ADs been adhered to.

## 21.5 Staff Qualifications

- 21.5.1 AMOs must ensure that only suitably qualified and authorised Inspectors are performing the work being conducted and certified.
- 21.5.2 AMOs must retain records of training activities to ensure staff are adequately prepared for the work being conducted. This is required for any employee that is not qualified in his or her own right to conduct and certify the work.
- 21.5.3 AMO staff and particularly the Chief Engineer must stay up to date and must attend refresher training and be current on Gliding Australia procedures. See 10.22.

## 21.6 AMO Accreditation

- 21.6.1 An AMOs accreditation is automatically suspended when:
  - a. The business entity changes workshop location or address
  - b. The nominated Chief Engineer is no longer employed by the organisation
  - c. When the Chief Engineer or the AMO holder is subject to any action outlined in Section 10.20 of this document
  - d. The AMO permanently ceases to engage in any or all of the activities for which the AMO was granted
  - e. The AMO holder is unable, for any reason, to carry out the activities for which the AMO was granted. For example, the AMO holder no longer has the necessary facilities etc.

## 22. AIRWORTHINESS AUDITS

### 22.1 Surveillance Audits

- 22.1.1 Refer to MOSP Part 1 for the overall Gliding Australia Audit or Oversight procedures. This section covers Airworthiness only.
- 22.1.2 All gliding clubs, commercial gliding operations and private owners are subject to regular Airworthiness Surveillance Audits. These audits are a requirement of Part 149 . The EMA manages the Audit process to ensure the audits are done, reported and RCAs followed up. These audits will normally be conducted on a club basis; i.e., a selection of club and private sailplane owned by club members will be audited as part of one process.
- 22.1.3 These audits are intended to provide feedback to the club or commercial operation as to the airworthiness standards being implemented within the operation. They should be viewed as an opportunity for feedback and are not considered as an assessment where a pass or fail mark is determined.
- 22.1.4 During a surveillance audit the following items are inspected:
- a. Availability of sailplane Flight and Maintenance Manuals to club members
  - b. Accuracy and completeness of Maintenance manuals
  - c. Logbook and MR
  - d. General sailplane condition
  - e. Sailplane placards
  - f. Modifications
  - g. Workshop facilities.
  - h. Inspector availability
  - i. Daily Inspector sign offs, standards and understanding
- 22.1.5 In most situations the audit will be performed by the state RMA or a person appointed by the EMA. Club Audits are to be conducted at a frequency of no less than every 24 months. The EMA may grant an extension of up to 3 months based on a risk-based assessment of the Club's operations. AMO Audits will be performed in accordance with Chapter 21.
- 22.1.6 An audit may be conducted in the interest of aviation safety by the EMA outside of the normal schedule.
- 22.1.7 Prior notice of 28 days minimum will be given to the club or operation that a scheduled Surveillance Audit is planned. This notice will be given by the person conducting the audit and will be promulgated through the club secretary or club president and the Manager of the AMO. An unscheduled audit may be conducted as a result of a risk-based assessment of the club and sanctioned by the EMA.
- 22.1.8 The club or organisation shall make all reasonable efforts to comply with the audit request and is to provide access to all sailplane and related documentation owned and operated by the club or operation.
- 22.1.9 In the case of privately owned sailplanes, a random selection of sailplanes may be requested by the auditor prior to the audit being conducted. The club is to liaise with sailplane owners and make all reasonable efforts to have representatives of each sailplane available during the audit. Knowledge of the standard of private sailplane maintenance, as well as club aircraft, provides Gliding Australia with a broader awareness of airworthiness standards across the organisation.

- 22.1.10 At the completion of the audit, a report will be raised by the auditor and forwarded to the EMA for review. The auditor may present the club or organisation with a Request for Corrective Action (RCA) that they must comply with. The RMA may conduct a follow up visit or audit at some time in the future to check on compliance.

## **22.2 Audits of Airworthiness Inspectors**

- 22.2.1 The RMA has the authority to audit Inspectors work and methods of operation. The Inspector is to comply with reasonable requests.
- 22.2.2 Normally this will happen as part of the Surveillance Audits described above.

## **23. AIRWORTHINESS REQUIREMENTS ASSOCIATED WITH LAUNCHING**

### **23.1 Releases**

- 23.1.1 Only the approved release type for the sailplane is to be used.
- 23.1.2 Releases are to be maintained as specified by the sailplane manufacturer and Gliding Australia as specified in Section 13.3. Guidance is provided in Section 16 of Basic Sailplane Engineering.
- 23.1.3 Only approved parts are to be used in release repairs.
- 23.1.4 Only approved equipment is to be used for testing. The equipment is to be calibrated every two years by the Regional Association.

### **23.2 Weak Links**

- 23.2.1 All sailplanes, as part of their certification have weak link strengths specified by their designers and are written into their certified type data, normally in the Type Certificate Data Sheet (TCDS), making weak links a legal requirement for operations.
- 23.2.2 Because the majority of sailplanes imported into Australia come from Europe and are placarded to European weak link requirements, which are also contained in their TCDS and manuals, the European standard for weak links has been adopted as the Australian Standard.
- 23.2.3 Launch cable Weak Links (see Gliding Australia MOSP Part 2 Operations) must be used in all forms of sailplane launch methods (except self-launching) to ensure that the sailplane structure is not overloaded during launch.
- 23.2.4 The reliability of the launch cable release mechanisms depends on the use of the correct rings on the tow cable. The only acceptable tow rings for Gliding Australia operations are specified in Gliding Australia AN 75 and BSE.
- 23.2.5 Gliding Australia AN 75 and BSE, which can be downloaded from Gliding Australia website, detail all aspects of Weak Link application and placarding.

### **23.3 Towplane Releases**

- 23.3.1 Towplane releases are to be operated and maintained according to CAO 100.5. Towplane releases must be maintained as per Section 13.3 and by Annual Inspectors. The Club Airworthiness Administration Officer is responsible to make sure the towplane releases are maintained.
- 23.3.2 Tow pilots are authorized as detailed in CAAP 42ZC, Schedule 8 to remove and replace sailplane tow hooks.

## 24. GLOSSARY OF TERMS USED IN THIS MANUAL

### 24.1 Definitions

AD	Airworthiness Directive. All i.e., CASA, Gliding Australia, Foreign. The Gliding Australia will add the issuing authority as a prefix to AD, i.e., Gliding Australia AD, CASA AD, EASA AD etc for specific ADs.
AAF	Airworthiness Administration Fee
AAO	Airworthiness Administration Officer
AC	Advisory Circular
ADPM	Airworthiness Delegations Procedures Manual
AI	Annual Inspector
ALS	Airworthiness Limitation Section
AMM	Aircraft Maintenance Manuals
AMO	Approved Maintenance Organisation
AMOC	Alternate Means of Compliance
AN	Airworthiness Notification
AP	CASA Authorised Person
ASI	Air Speed Indicator
AWA	Airworthiness Alerts
BSE	Basic Sailplane Engineering
CoA	Certificate of Airworthiness
CoR	Certificates of Registration
CAA UK	Civil Aviation Authority of the United Kingdom
CAP	Chairman Gliding Australia Airworthiness Panel
CAIPs	UK CAA Civil Aircraft Inspection Procedures
CAR	Civil Aviation Regulations
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
CG	Centre of Gravity
CMR	Certification Maintenance Requirements
DA	Design Approval
DAPM	Design Approval Procedure Manual
DCAP	Deputy Chairman Airworthiness Panel

DGAC	Direction Generale de l'Aviation Civile
EASA	European Aviation Safety Agency
EC	Experimental Certificate
EMA	Executive Manager Airworthiness
FAA	Federal Aviation Administration
FOT	First of Type
Form 2	A commonly used colloquialism in Gliding Australia for an Annual Inspection. It is actually just the form or checklist used to record the work done.
FRP	Fibre Reinforced Plastic
Gliding Australia	Gliding Federation of Australia
ICAO	International Civil Aviation Organisation
IoA	Instrument of Appointment
LAME	Licensed Aircraft Maintenance Engineer
LBA	Luftfahrt-Bundesamt
LSA	Light Sport Aircraft
MA	Maintenance Authority
MOSP	Manual of Standard Procedures
MMM	Manufacturers Maintenance Manual for the aircraft and or the component
MR	Maintenance Release
MTOW	Maximum Take-Off Weight
NAA	National Aviation Authority
NDI	Non Destructive Inspections
PU	Permissible Unserviceability
RCA	Request for Corrective Action
RLD	Rijks Luchtvaart Dienst
RO	Registered Operator
RMA	Regional Manager Airworthiness
SDRS	Service Difficulty Reporting System
SDR	Service Difficulty Reporting
SFP	Special Flight Permit
SLA	Sealed Lead Acid

SOAR	Safety, Operations and Airworthiness Reporting
SOE	Schedule of Experience
STC	Supplemental Type Certificates
TAC	Type Acceptance Certificates
TC	Type Certificate
TCDS	Type Certificate Data Sheet
USA	United States of America
V <sub>A</sub>	Maximum manoeuvring speed
V <sub>NE</sub>	Never exceed speed
VP	Variable Pitch Propeller
V <sub>RA</sub>	Maximum rough air speed
W&B	Weight and Balance