

THE GLIDING FEDERATION OF AUSTRALIA



GUIDELINES FOR ANNUAL INSPECTIONS OF GLIDERS AND POWERED SAILPLANES

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*NOTE: THERE ARE NEW PROCEDURES FOR COMPLETING ANNUAL
INSPECTIONS.
PLEASE READ THESE GUIDELINES CAREFULLY BEFORE COMMENCING AN
ANNUAL INSPECTION.*

GUIDELINES FOR COMPLETING A FORM 2 INSPECTION

The following is a guide for clubs, private owners and inspectors to make the job of performing Annual Inspections a little easier and the purpose a little clearer. It has been devised from the Manual of Standard Procedures (Part 3), Basic Sailplane Engineering, accumulated experience and commonsense. Most of the content of this guide is already standard practice, this booklet simply summarises the key points.

THE NEW PROCEDURES FOR COMPLETING ANNUAL INSPECTIONS

It has now been eight years since the Annual Inspection paper work was last updated and in that time there have been a number of changes to the airworthiness infrastructure within which we work (set down by the CAA) and so the recent need to reprint new copies of the Maintenance Release was seen as an ideal opportunity to reflect those changes in our system and to generally spruce up our forms.

The new system produces only one real change. As background, inspectors should know that to fly legally a sailplane needs three pieces of paper. A Certificate of Registration, a Certificate of Airworthiness and a valid Maintenance Release. A Permit to Fly may be issued by an authorised officer to replace any or all of the above documents.

Inspectors will no longer be required to issue a Permit to Fly prior to performing an Evaluation Flight. (There has been a change in the ops section to define Test Flying as testing of new sailplane designs - not newly imported sailplanes - and sailplanes which have had major modifications. Evaluation Flying is to evaluate that all is normal with the sailplane following importation or maintenance. See GFA MOSP, Part 2, Operations, Section 20 for further details).

The Maintenance Release will now be issued before the Evaluation Flight, the pilot will record the results of the flight in the Maintenance Release and if any defects are found they will be recorded in the Major/Minor Defects section as appropriate. Once a successful Evaluation Flight has been performed the sailplane may be returned to service.

Other changes which are of a paperwork nature include:

- A reworked Form 2 to group the inspection according to the section of the sailplane being worked on.
- The Independent Control Check is now on the Form 2 just prior to the Inspector's Certification.
- In the wing, fuselage and sailplane groups there is an item for Dual Inspection of control safety locking. This is so that sections of the sailplane can be closed up before final assembly. eg. the seat pan may be installed in the workshop and the inspection for safety locking of the fuselage doesn't need to be repeated at the time of the independent control check provided it is signed out on the Form 2 by someone rated DI or higher at the time the sailplane was closed up.
- The forms have received a general tidy up due to the wonders of modern printers and computers.

If these steps are followed then the new procedures will be complied with.

1. Complete the Annual Inspection according to the GFA Form 2 up to the Independent Control Check.
2. Have an Independent Inspection performed by someone rated for Daily Inspection or higher. Concealed controls which have been signed out in the Form 2 need not be reinspected for safety locking (See items 16, 20 and 45 on the Form 2). The inspector must check that all parts are correctly attached, that all controls have correct safety locking, that the controls move in the correct sense and that there is full and free movement.

A Daily Inspector is the minimum qualification for an Independent inspection.

3. The inspector then fills in and signs the Inspectors Certification and the Maintenance Release. The date of issue of the Maintenance Release is the date the inspector signs the MR before the Evaluation Flight. The MR can be issued for up to 12 months at the Inspector's discretion. All scheduled maintenance that is required by the manufacturer, the GFA or the Inspector, to be done before the next Form 2 inspection, is entered in Part 1 of the Maintenance Release.

4. If necessary the sailplane may now be transported to the airfield in preparation for the evaluation flight and rigged.
5. A Daily Inspection must be performed and signed out in the Daily Inspection Record.
6. The sailplane receives an Evaluation Flight in accordance with the procedures in Basic Sailplane Engineering Section 3.5.

An evaluation flight is carried out by an experienced and authorised person (see GFA MOSP Part 2 Operations) who must wear a currently repacked parachute. The completion of a satisfactory evaluation flight may require several launches.

7. If the flight is satisfactory the Evaluation Flight Report in the Maintenance Release is signed by the pilot and the sailplane returns to service. If defects are found they are recorded under Major or Minor Defects in the Maintenance release as appropriate. As with all Major Defects the sailplane cannot be flown until they are rectified and signed out by a Form 2 Inspector. Minor Defects mean the sailplane can be flown but the defect must be checked at each Daily Inspection.
8. The Inspector returns page 3 of the Form 2, Glider/Powered Sailplane Maintenance Record, to the RTOA.

WHAT INSPECTIONS ARE DUE?

All too often an Inspector is given a sailplane for an Annual Inspection only to find that it is due for a 20 year survey or 3000 hr inspection etc. To determine if the glider you are about to work on is due for a survey you should check with GFA AD 337 for elapsed time based survey requirements and with any specific ADs for Time in Service based survey requirements.

COMPLETING AN ANNUAL INSPECTION

PREREQUISITES

It is essential that the Inspector obtain all relevant documentation prior to starting. This ensures that the Inspector is aware of the recommendations of the manufacturer, all GFA requirements (Airworthiness Directives and Airworthiness Advice Notices) and he has all the documents needed for the inspection.

The inspector must have the following documents:-

The Certificate of Registration. The inspector should ensure that the details on the C of R are correct. The Certificate Holder's address is the address to which all ADs etc. will have been sent. If the Certificate of Registration details are incorrect then it is possible that all ADs have not been received.

The Certificate of Airworthiness. This should be checked for validity and it also provides some of the placarding requirements. If the Certificate is not valid or will expire before the next annual inspection then it should be renewed in accordance with the procedures in GFA AD 337.

The most recent Maintenance Release. This is reviewed for any Minor Defects which need rectification and to ensure that the hours in the log book are up to date.

The Sailplane logbook. The hours must be up-to-date (check with the Maintenance Release). The log book provides a complete record of the sailplane history which may need to be reviewed to check for repetitive defects, degradation of repairs, approved modifications etc.

The Flight and Maintenance Manuals. These manuals provide the primary source of technical information for a particular type. Data such as allowable freeplays, flight limitations etc. will be found in these manuals.

The current AD Schedules (Specific and General) and a copy of the current issue all relevant ADs and ANs. These schedules allow the inspector to ensure that the latest copies of all ADs and ANs are available.

An AAF kit. This will include the new Maintenance Release, the Specific and General AD schedule, the General AN schedule and a copy of the AN specific to the type.

It is good policy to inspect a sailplane together with all ancillary equipment such as radio, oxygen system, tie-down, battery etc. The Inspector will review these for function, security and their influence on weight and balance. It is a good idea to include the appropriate manuals for this equipment.

LOAN EQUIPMENT

GFA and the State Associations have available for loan to inspectors a number of specialised tools. If you know that you will need to borrow some of the equipment it should be booked through your RTOA.

Loan equipment includes:

- Electronic weighing scales
- Tow release testing tool
- Econoscope (Boroscope)
- Cable splicing tools (not all states)

THE INSPECTION

The Form 2 inspection is carried out observing all manufacturer's recommendations, Section 3 of the GFA MOSP, Basic Sailplane Engineering and must include all necessary Airworthiness Directives, repairs and maintenance. It is essential that details of this work are entered in the appropriate parts of the logbook. It is emphasised that the inspector signs a statement that all ADs have been complied with, so previous work should be verified if possible.

The Form 2 is filled in progressively and acts as a check list.

WHERE TO START

Like all jobs, carrying out an annual inspection can be helped along with some thought and pre-planning. The following 7 items are key aspects of an annual inspection and should be the first items checked:

WING FREQUENCY CHECK

If this check shows a significant drop in wing frequency then you probably have a wing structural problem or the fuselage carry through system has developed looseness or other defects.

CONTROL SURFACE FREEPLAY CHECK

Freeplay in excess of the maker's (or Basic Sailplane Engineering) limits will indicate bearing wear or other control system defects which are not readily found once the sailplane is de-rigged.

FLIGHT CONTROL SYSTEM STOPS

Incorrectly adjusted, or damaged control stops could lead to system damage (bent pushrods, damaged bellcranks and control surface hinges etc.).

CONTROL SURFACE DEFLECTION CHECK

Incorrect control surface deflection may indicate control system damage or could explain adverse handling characteristics.

ASI CALIBRATION

If the ASI calibration is out, the instrument will have to be sent away for overhaul and this takes time. Check any colour coding against the cockpit placard, an incorrectly colour coded instrument may have been swapped from another aircraft. The ASI does not have to be colour coded provided the airspeed limits are properly placarded unless the Flight Manual requires ASI colour coding. If there is colour coding on an instrument it must accurately reflect the limits for the particular sailplane.

HARNES INSPECTION

Defects may require the harness to be replaced or re-webbed. A large number of harnesses now in service may have exceeded the life recommended by their manufacturer. Is there an Airworthiness Directive out on the harness? When harnesses are rewebbed the opportunity should be taken to convert them to pull up to tighten.

FATIGUE LIFE

As time goes by sailplanes may be kept flying by cannibalising parts. Many of those parts will have fatigue life limits. Check for components that may have exceeded their life limit (should be listed in the Logbook) or will exceed their limits during the next 12 months.

The whole airframe may also be close to its certified fatigue life limitations.

These seven items can be checked quickly a week or two before the annual is started, allowing some pre-planning to be done. Obviously it is better to know before you start that the ASI needs overhauling, rather than finding out after the rest of the inspection is completed and the sailplane is needed back in service.

CHECKS AFTER RIGGING THE SAILPLANE

The aircraft is then rigged. If the wings have been repaired or painted then the wing-bending frequency should be redetermined for future reference. Control deflections are measured and the extent of control freeplay determined. If extensive refabricating, painting or repairs have been done or extensive changes made to the aircraft equipment or ballast, then the sailplane must be reweighed.

The procedures above (New Procedures for Completing Annual Inspections) are then followed to put the sailplane back into service.

LOGBOOK ENTRIES

A short, concise Logbook entry (ref. Basic Sailplane Engineering Sect 3) finishes the job. Write your entries as if you were the person in the future reading it and trying to understand it.