THE GLIDING FEDERATION OF AUSTRALIA

GFA AN 94
(ISSUE 1)

AIRWORTHINESS ADVICE NOTICE

TYPE AFFECTED: Monerai 'S' and Monerai 'P'.

SUBJECT: Miscellaneous airworthiness information.

BACKGROUND: This AN records airworthiness information which is useful to know.

APPROVED MODIFICATIONS:

1. Kit manufacturers optional modifications and equipment.

1.1 Wing Tip Extension Kit.

Optional for model 'S'. Standard for model 'P'. The extended tips provide a span increase from 10.97 m to 12 m. If the wingspan is extended beyond 10.97 m then the glider load limits must be redetermined by following the procedures under Weight and Balance Item 2.

1.2 Aileron bellcrank modification as per drawing A-0115 dated 27.1.84

2. GFA approved optional modifications.

2.1 Drag spar angle fitting - to strengthen drag spar to skin/rib fitting and prevent loosening of the first rivet of the wing fitting to rear spar connection. GFA MOD 96/2.

2.2 Shoulder harness fitting - Modified to relieve neck chafing. GFA MOD 93/1 Item 7.

2.3 Nylon Elevator guide - fitted at station E to minimise lateral movement of control slide tube under load. GFA MOD 93/1 Item 9.

2.4 Under seat lap belt harness attach - modified from original. GFA MOD 93/1 Item 20.

SIGNED: Jonathan Shand CHIEF TECHNICAL OFFICER AIRWORTHINESS	For and on behalf of: THE GLIDING FEDERATION OF AUSTRALIA

2.5 A central joystick may be installed in place of the original side stick in accordance with GFA MOD 96/3. This modification adds a significant amount of weight to a type which already has a payload problem. When deciding to incorporate this modification the trade-off between lower payload and better ergonomics should be carefully considered.

DEFECTS:

1. The handle of the AVIBANK attach pins may come loose on the knurled position, preventing correct locking. Defective pins are to be replaced or modified to provide positive locking.

2. An incident has been experienced where a pilots parachute shackle passed under the arm rest and jammed the control stick slide tube. A shield should be added to prevent this occurrence.

3. Rudder flutter has occurred due to inadequate mass balance of the tail surfaces. Excess paint on control surfaces is to be avoided and each control surface must be balanced to within design limits.

4. A fatal accident occurred in the USA where a Monerai 'P' suffered an in flight structural break up including the loss of a wing.

The accident involved a bending failure of the main spar near the root, caused by severe turbulence and the high weight operation of this particular aircraft.

Following the accident the failed wing material was found to meet the appropriate specifications. A group in the USA then carried out structural testing to destruction with another Monerai 12 m wing.

The test and subsequent analysis showed wing did not meet its original design strength. The maximum limit load factor has therefore been reduced. See GFA AD 425.

The test failure in the ultimate wing bending case was similar to the fatal accident.

Because the Monerai is a small light weight design, it may easily be overloaded and also overstressed in turbulence.

GLUE FAILURE:

A number of cases of glue failure have been reported and the available literature suggests that glue joints assembled using the methods set down by Monnett may have acceptable strength at the time of bonding but may deteriorate rapidly over time.

The primary problem is caused by moisture. Operation in environments of high humidity may be sufficient to cause bond strength reductions which are undetectable except by destructive testing.

Builders and operators of the Monerai should be familiar with the information contained in GFA AN 68. When inspecting the aircraft special care must be paid to all glue joints. The Tap Test should be performed at all annual inspections to discover any areas which have already debonded but this will not discover areas which are weakened but have not yet failed.

All debonded areas must be repaired prior to further flight.

When operating this type special care must be taken to ensure the glider does not get wet. The glider should never be tied down outside if there is a likelihood of rain and the trailer or hangar the gliders is stored in must be 100% rain proof.

If the glider becomes wet it should be dried immediately by wiping down with a good quality chamois.

WEIGHT AND BALANCE: 1. All Monerai's being amateur built are subject to detail variations introduced by each builder. Sailplanes like the Monerai are very light and any variations from the design guide-lines will reduce the payload and affect the CG.

a) A coat or two of paint, particularly enamels, will add a substantial amount of weight. The weight added varies with paint type but 5.5 kg for 15 m^2 is typical.

b) Excessive mass balance weights are needed if tail surfaces are overweight. (see defect 3).

c) Monnett's modifications introduced since the drawings were first released add up to a reasonable weight increase.

d) Items such as: battery, upholstery, floor boards, tow hooks, radio and instruments all add weight.

Remember the phrase 'Simplicate and add lightness'.

2. The design of the Monerai 'S' glider does provide some possibility of an increase in the maximum gross weight, particularly if the wings are heavier than the weights assumed in the initial calculations.

It may be possible to obtain an improvement in payload by determining the weight limits for the individual glider, depending on the weight break down of the glider weight of each wing. These figures change each time the glider wings are repaired or refinished.

To take advantage of this payload improvement, whenever the wings are repaired or refinished the glider must be reweighed and the weight of both wings must be determined.

This data should then be sent to the CTOA using Appendix A along with the entire weighing to allow determination of the new limits for maximum take off weight.

Regardless of the actual weight increase the following conditions will apply to all operations at the increased weights.

a) The maximum allowable manoeuvring load factor will be reduced to 5.3 g.

b) New placards must be installed as follows:

MAXIMUM NORMAL LOAD FACTOR IS = 5.3 g

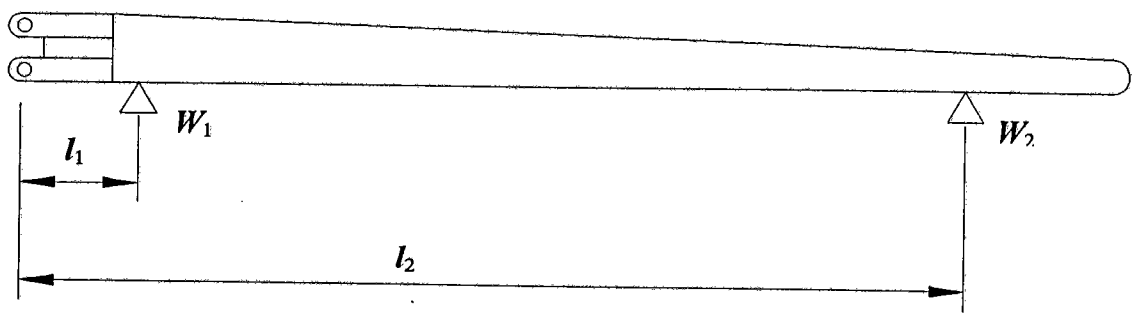
c) If the maximum permissible normal load factor of 5.3 g is inadvertently exceeded then the wing must undergo an inspection for damage by a person rated as a 'Replacement of Components' for Metal.

APPENDIX A
APPLICATION FOR A PAYLOAD INCREASE

I hereby apply for a payload increase for Monerai 'S' VH- _____

The glider has been weighed by a Weight and Balance Authorised Inspector and the weighing sheet is attached.

The wings have been weighed to determine their centre of gravity position. The dimensions l_1 and l_2 should be measured from the centre of the main wing pin holes and should be accurate to within ±0.010 m (±10 mm).



	Left wing	Right Wing
l_1 (m)		
l_2 (m)		
W_1 (kg)		
W_2 (kg)		

Signed ..... Date .....