

CIRCULAR ATTACHED TO AD 364 (issue 1)

The attached Airworthiness Directive arises from our need in recent years to repair and refurbish pilot harnesses as they either exceed their recommended webbing life or simply deteriorate to an unacceptable condition.

There is nothing wrong with the concept of repair and refurbish, provided that all such work is done to an acceptable standard and where non standard repairs and modifications are required, proper design approval for that work is obtained. In principle there is no legal difference between an airframe or harness modification, without Design Approval, both can negate the Certificate of Airworthiness of the aircraft involved. More importantly, during an emergency when you need your harness to work to its maximum capacity, poor repair standards could very easily cause injury or worse. The AD arose from a pilot's difficulty in releasing the harness in an emergency, pointing clearly for this and all of our equipment to be fully serviceable at all times.

KIT AVAILABILITY

At the date of AD364 issue 1, it is estimated that up to 200 Gadringer FB19 harness systems, or the parts thereof will be required to be inspected and modified. The logistics and cost of removing, freighting and repairing that number of harnesses has been carefully considered and a more acceptable way around the problem devised. (freight alone could cost our sport over \$3,000 to get harnesses to and from recognized repair workshops)

G.F.A. has developed a kit of components which will allow the FB19 buckle tongue half to be modified to AD 364, on site, with only one lap strap needing to be removed from the sailplane (per harness). The kit materials have been carefully chosen to ensure that the purpose of the modification is achieved, plus no short term deterioration due to high cockpit temperatures or ultra violet light.

Every attempt has been made to ensure that the kit of parts and the modification will work in all instances, if however you find that with your particular harness there is an unforeseen problem please contact the undersigned to get the matter resolved. We dont want to fix one problem and create another.

Regards

Mike Burns C.T.O/A

AD 364 MODIFICATION KIT PURCHASE

Please send to

 Post Code

No of kits required :

Price per kit including postage: \$5.00 (each)

Total purchase price: \$

Enclosed is cheque/money order to the value of \$

SIGNED DATE



AIRWORTHINESS DIRECTIVE

TYPES AFFECTED: All gliders, Powered Sailplanes and Power Assisted Sailplanes fitted with pilot harness systems incorporating GADRINGER FB19 BUCKLE ASSEMBLIES.

(NO OTHER PILOT HARNESSSES ARE AFFECTED)

SUBJECT: Modification of Gadringer FB19 Harness Buckle, Tongue Half, to prevent failure to release under emergency conditions.

BACKGROUND: Early in 1989 an Australian pilot experienced difficulty while trying to bail out immediately after a mid-air collision. His delayed exit was caused by the two lap strap buckle halves jamming and locking together.

Investigation of this incident has established a large amount of background information :

- * Over recent years, many pilot harness assemblies have been subject to renewal of harness straps, replacement of abdominal pads and other repairs and miscellaneous modifications, dictated by age, condition and the high cost of new harness assemblies.
- * Repair and refurbish work has been completed by a wide range of organizations and individuals not all of whom have followed G.F.A. harness repair guidelines, or requested G.F.A. design approval for non standard repairs and modifications.
- * The original Gadringer harness system, fitted with the FB 19 Buckle was fitted with two, large, abdominal support pads which are shown in Figure 1.

These two pads not only provided good abdominal support THEY ALSO PREVENTED THE TWO BUCKLE HALVES ENGAGING TOO FAR, THEREBY PREVENTING THE TWO HALVES JAMMING TOGETHER.

- * The fit of the buckle halves with the correct, original pads is shown in figures 2 and 3. The pad overlap and their stiffness ensuring correct buckle alignment
- * Some refurbished harnesses have no abdominal pads at all. Some have small pads as shown in Figure 4 which do not support or align the buckle halves correctly.
- * Some original Gadringer harness assemblies may be in service with no abdominal pads, the original pads being removed because of deteriorated condition .

Issued by: *R. J. Burns* Chief Technical Officer,
Airworthiness

For and on behalf of: GLIDING FEDERATION OF AUSTRALIA

4/8/1989

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- * Some ORIGINAL Gadringer harnesses still in service may have ORIGINAL abdominal pads which are in such poor condition they may no longer prevent jamming of the two buckle halves.
- * The harness involved in the above incident displayed a considerable change in the bendup angle of the buckle tongue. This may have been damage incurred during the accident or may have been man made at sometime in the past.

ANY CHANGE IN THIS ANGLE WILL AFFECT THE EASE OF DISENGAGEMENT OF THE TWO BUCKLE HALVES.

This is illustrated in Figure 5.

MODIFICATION:

The modification to Gadringer Buckle Tongue Half (ident. FB19), fully detailed in APPENDIX A will prevent jamming of the two buckle halves irrespective of the condition or existence of abdominal support pads, provided the following actions are taken.

ACTION REQUIRED:

BEFORE NEXT FLIGHT

- (1) Inspect all pilot harness assemblies for the presence of Gadringer buckle tongue half FB19. ALL buckle halves found to then be subject to the following inspection and modification.
- (2) Inspect the FB19 buckle tongue half for condition and the correctness of the bendup angle (reference Figure 5)
- (3) If either the condition of the buckle tongue half is unacceptable or the bendup angle is outside the tolerance stated, the component is to be removed and destroyed.

BEFORE OCTOBER 31st 1989

- (4) If the buckle tongue half inspects O.K. then the modification involving the installation of a fixed plate as detailed in Appendix A is to be carried out before the above date.

DOCUMENTATION:

Appendix A Modification Instructions
Reference : G.F.A. Inspectors handbook Section 1-8

MATERIALS:

Modification Kit AD 364 is available from the G.F.A. Secretariat.

IMPLEMENTATION:

Inspection of the FB19 buckle and its modification may be carried out by the holder of a C.A.A. 1109 Inspectors Certificate endorsed C of A any type. Compliance with this Airworthiness Directive is to be recorded by Log Book entry.

COMPLIANCE:

The requirements of this Airworthiness Directive are mandatory. This Directive is issued pursuant to the Civil Aviation Regulations under the delegated authority of the Civil Aviation Authority (CE05/88)

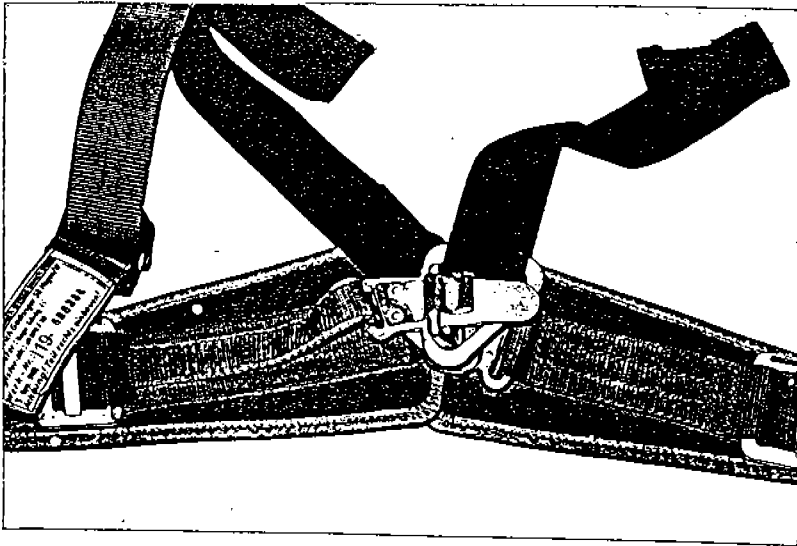


Figure 1

Original Gadringer FB19 harness system with large abdominal pads which overlap in the centre. The pad overlap keeps the buckle halves properly aligned ensuring immediate disengagement when the peg is withdrawn.

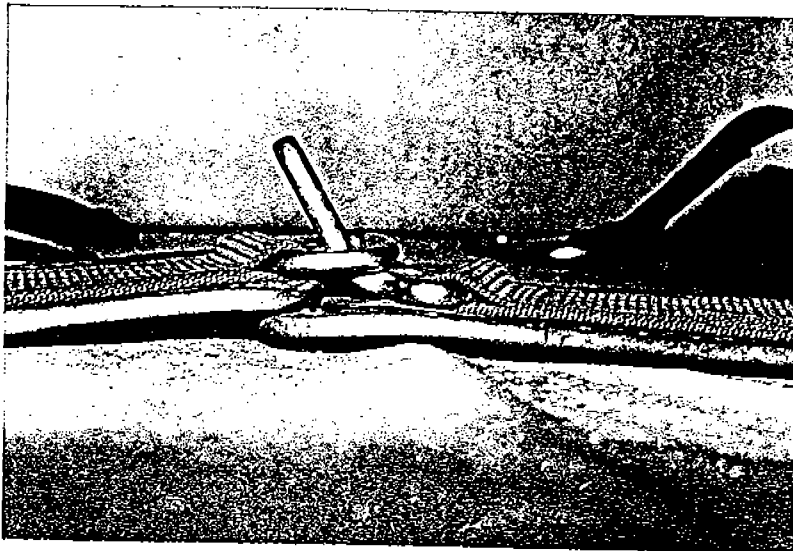


Figure 2

Shows the pad overlap and the correct fit of the two buckle halves. The "bend up" angle of the tongue is obviously important

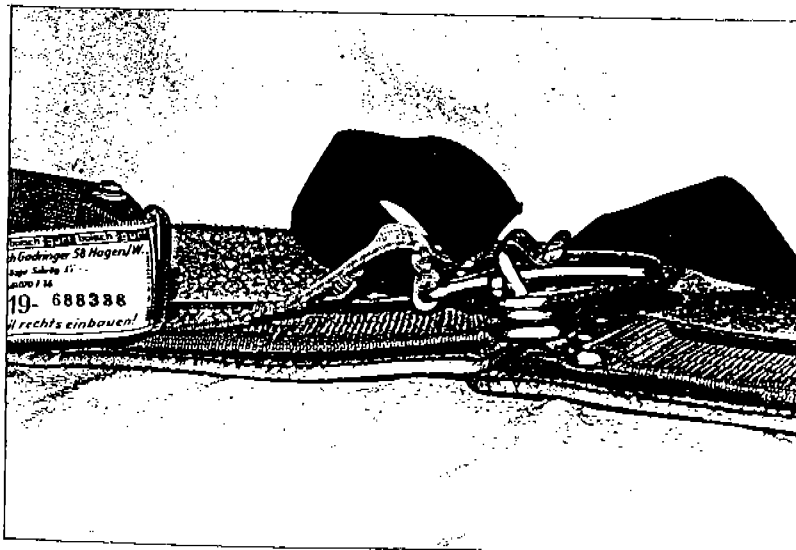


Figure 3

Shows pad overlap and all four straps correctly assembled with proper alignment controlled by the pads.



Figure 4

These 2 illustrations show that without correct pad support the two lap strap buckle halves can engage too far and hook by jamming together at an angle that prevents self disengagement

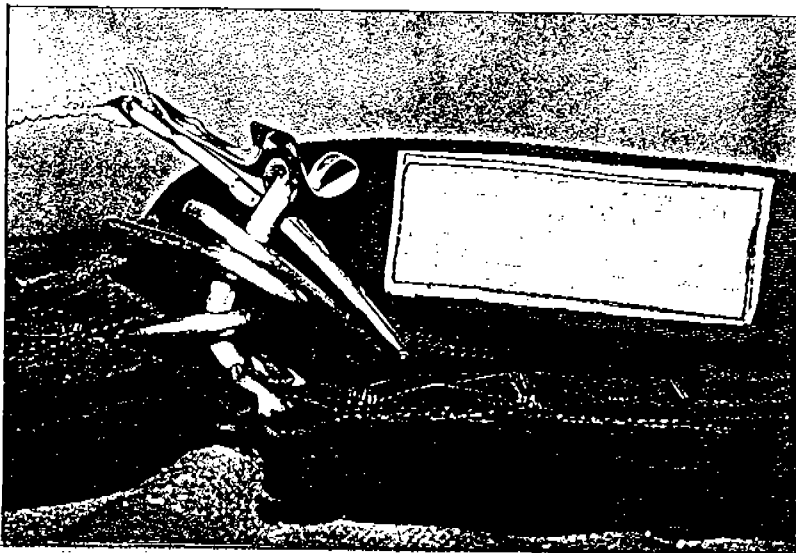
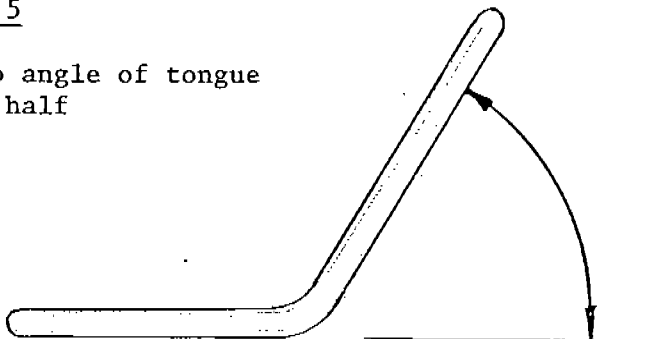


Figure 5

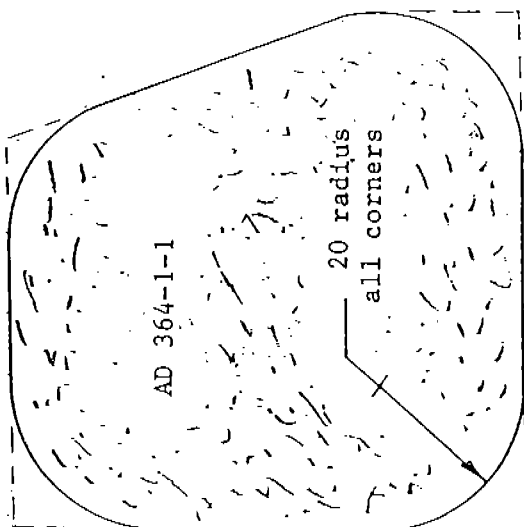
Bend up angle of tongue buckle half



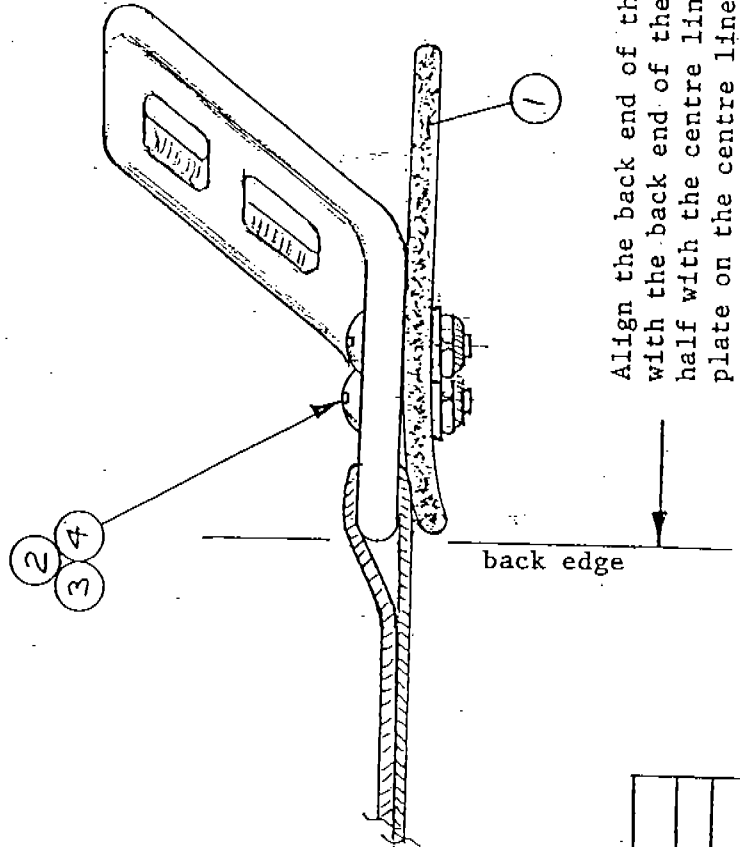
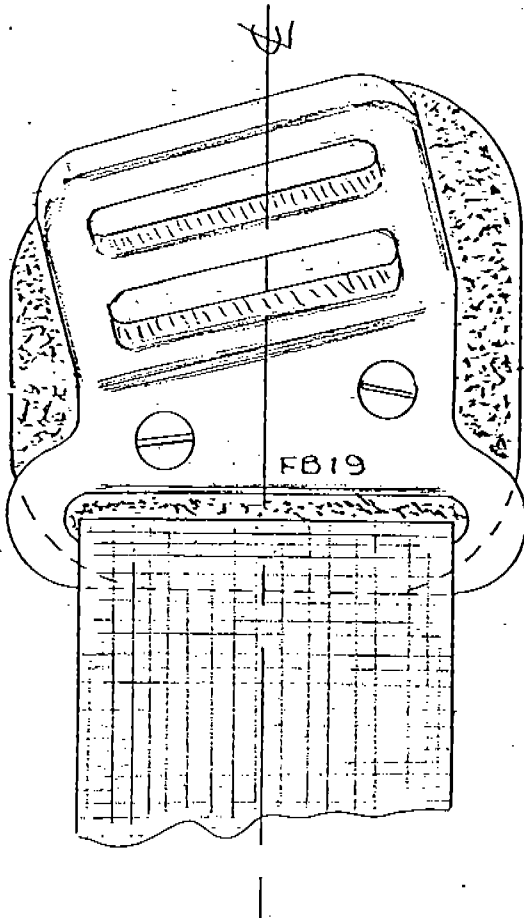
Bend up angle $57^\circ \pm 2^\circ$ measured at 90° to the tongue fold line.

APPENDIX A BUCKLE MODIFICATION

MODIFICATION DETAILS



- 1 PLATE supplied with square corners, to be finished to the instructions on Page 6



Align the back end of the Plate with the back end of the buckle half with the centre line of the plate on the centre line of the webbing.

AD 364 KIT COMPONENTS

ITEM	DESCRIPTION	No. OFF	MATERIAL
4	WASHERS	2	AN 960-6
3	NYLOC NUTS	2	F22 N7M-62
2	SCREWS	2	AN 526-10
1	PLATE	1	AD 364-1-1

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APPENDIX A BUCKLE MODIFICATION

INSTRUCTIONS

- * Remove the original rivets, carefully without damage to the buckle half.
- * Locate the plate (before rounding the square corners) with its back edge aligned with the buckle half back edge, the center of the plate aligned with the center line of the webbing and drill through the existing rivet holes using a 1/8 inch dia drill.
- * Open up one hole through the buckle half and plate using a 9/64 inch dia drill.
- * Fit one screw/nut/washer through that hole, tighten and check the fit and alignment of the plate. If that is satisfactory back drill the other hole and fit the second screw.
- * Disassemble the plate, round off the corners with a 20 mm radius and remove all other sharp edges (appearance, plus we must avoid abrading the webbing)
- * Finally fit the plate with the screws/nuts/washers supplied ensuring that the textured side of the plate is AWAY FROM THE BODY.
- * The ends of the screws may be filed flush with the end of the nuts to avoid any abrasion on clothing etc.

NOTE

If the harness has original Gadringer abdominal straps in good condition they should be left in place, their attaching rivets removed and the above modification completed. The pad can then be contact glued to the underside of the new plate after opening out the rivet holes through the padding to accept the nuts securing the plate.