GFA AN 81
(ISSUE 4)

AIRWORTHINESS ADVICE NOTICE

TYPE AFFECTED: PIK-20 Series including PIK-20 E/EII.

SUBJECT: Miscellaneous airworthiness information.

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

MODIFICATIONS:

1. Eiriavion Service Bulletin M 10 approved the optional installation of PIK-20 E water ballast bags (140 l) and an increase in the maximum takeoff weight to 450 kg in PIK-20 sailplanes with serial numbers 20004 - 20067, 20076, 20076, 20077 and 20080. Copies of this Service Bulletin may be obtained from the GFA Secretariat.

Note: This modification was previously approved in GFA AD 150 which has been cancelled.

Owners should note that the maximum flying weight on the back of the Certificate of Airworthiness must be amended to 450 kg by the CTOA before the higher weights can be used.

2. GFA MOD 94-3 provides locations for where to cut three inspection holes in each wing and how to fabricate and install the permanent inspection holes.

DEFECTS:

1. A PIK-20E and a PIK-20D have been found with substantial corrosion of the metal components inside both wings:

a. Most pushrods corroded through the external plating.

b. There was some corrosion inside the push rods.

c. Some of the bolts holding brackets to spar faces were badly corroded.

d. Some rod end bearings were bent.

e. Some of the fittings riveted into the ends of the pushrods were corroded.

If rust can be seen on the outside of tubes or bolt heads then all of the fittings should be stripped from the wings, corrosion treated and re-fitted.

SIGNED:

CHIEF TECHNICAL OFFICER AIRWORTHINESS

For and on behalf of:

THE GLIDING FEDERATION OF AUSTRALIA

The external tube corrosion begins as a white powder as the plating is oxidised turning to red rust as the tube is corroded.

The tubes should be checked internally, any rust treated with a rust converter and something equivalent to hot linseed oil used to coat the inside prior to refitting the end fittings. Use blind rivets if possible to stop future moisture penetration.

Removing all metal components requires 6 access holes per wing to be cut and repaired on completion. It is recommended that 3 holes per wing be repaired as permanent access panels for future inspection and lubrication. GFA MOD 94-3 shows where to cut the holes and how to make the permanent inspection holes.

Early inspection for this problem is recommended. Parts should be cut out if red rust can be seen on tubes or fittings

2. After adjusting the Tost release mechanism from a PIK-20D an inspector found that when the Pik lever arm was refitted to the release, it touched the back of the release body and prevented the mechanism from going overcentre.

The problem was rectified by careful removal of metal from the lever arm so that a small clearance was obtained between the arm and the release body.

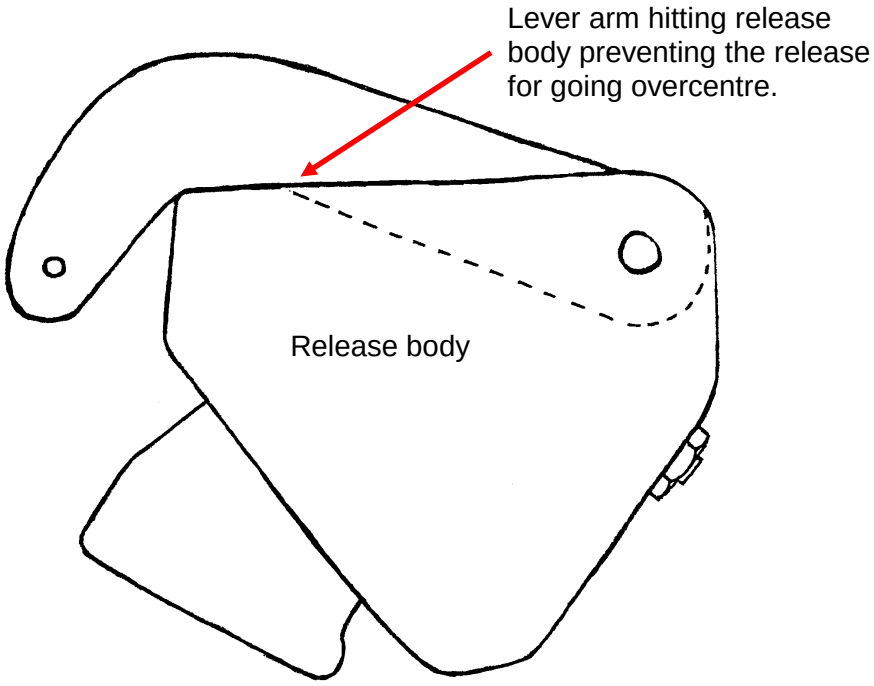

Figure 1: Lever Arm Preventing Overcenter

3. During the annual inspection of a PIK-20D, the lower part of the control column was found to be fouling the thread of a rod-end when full right aileron was applied.

To remedy the situation the cut-out in the control column was enlarged.

NOTE: If a rod end is found bent, it must not be straightened but replaced with a new one.

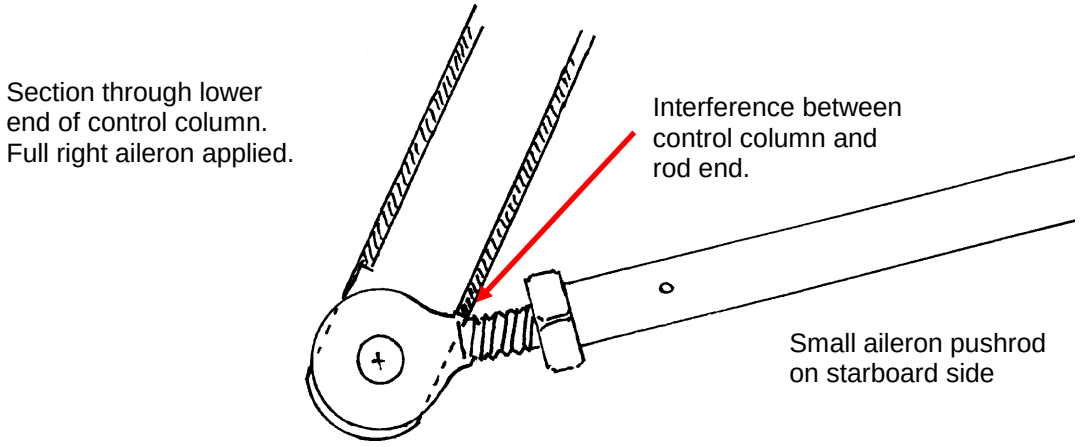

Figure 2: Lower Control Column Demonstrating Interference at Cut Out

4. The GFA has received reports over time of PIK-20 E sailplanes suffering flaperon intermediate pushrod breakage in the wing. Corrosion on the latest fracture suggests the crack initiated at a corrosion site on the threaded portion of the rod end bearing at or near the jam nut. The push rod had failed for a considerable time. It was suspected on an earlier failure that a loose jam contributed but in the most recent failure, the jam nut was confirmed tight. The PIK-20 D and PIK-20 E/EII have the same flaperon control system.

There are three flaperon actuating pushrods. The inner and intermediate drive the flap portion and the outer the aileron. If the intermediate push rod fails, the flaperon is still driven by the inner and outer aileron drive.

Detection of a failure can be by visual means gaining access through the wing root rib and rear wing control cut outs. The flap can be fully deflected upwards or removed. Failure of a control push rod cannot be ascertained by simply inspecting the flap externally and testing controls at the stick or flap. A visual inspection aided by a long screwdriver is recommended to confirm all jam nuts and control rods are functioning and the control system is serviceable. A boroscope can aid in the inspection process. The inspection should be carried out annually or when suspecting any failure.

The failure in one report was identified when a clunking sound was heard by the pilot when flying through turbulence. Experience however suggests that rotating the wing and listening for a loose push rod may not be successful.

Any push rod removed should be inspected in accordance with Item 1 of this notice. Rod ends showing any signs of corrosion

should be non-destructive tested using die-penetrant method or replaced.

An Engineering Order is available to permit replacement of the 6 mm rod ends to 8 mm rod ends. GFA Airworthiness Alert AWA 2012-1 additionally advises of this potential failure point

5. A Service Difficulty Report was received detailing circumferential cracking of two chrome plated flaperon pivot pin spigots on the right wing of a PIK-20E. The PIK-20 flaperon has three actuating pushrods with a corresponding spigot that forms part of the hinge. Two of these spigots on the right hand wing adjacent to the flaperon push rods had circumferential cracking (see red arrows on wing below). The cracks were only in the chrome and had not extended into the chrome molybdenum tubing. Despite this, all cracks are cause of concern and must be repaired or replaced as it is exceedingly difficult to determine the crack depth.

Figure 3: Inverted Stbd Wing Showing Location of Cracked Spigots

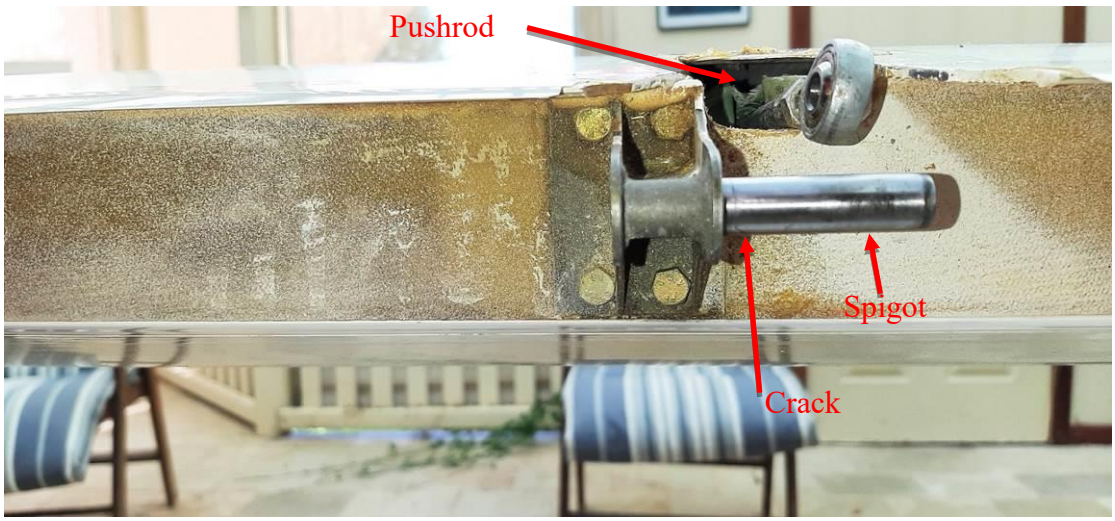

Figure 4: Detail of Cracked Spigot

It appears there are three types of spigots fitted to PIK-20 variants. Some have bare chrome molybdenum spigots, others have chrome plated spigots and later PIK-20 E II variants have completely different design of chrome plated spigots. The design drawings make no mention of chrome plating. The GFA is aware of one PIK in England with similar cracking. .

Figure 5: Circumferential Cracking Of The Chrome Plating Near Base Of Spigot

Figure 6: Spigot Without Chrome Plating

If a survey or deeper inspection has not been recently carried out, it is recommended a detailed inspection be performed at the next annual inspection.

6. A PIK-20EII suffered a failure of the engine thrust stay cable resulting in the pylon and propeller moving forward and contacting the fuselage. The upper turnbuckle assembly failed due to fatigue, possibly after being bent and then straightened.

Figure 7: Damage to Upper Fuselage After Prop Strike From Broken Thrust Cable

The cable when under full thrust load is taught, but when idling can be seen to oscillate. The cable tension figure is stated to be less than 200N (45 lbs) when retracted but no figure is given for rigging when the engine is fully extended. It is very possible that the tension will vary greatly between PIK-20E variants and therefore some cable assemblies may be subject to an increase in fatigue. Turnbuckles that have been bent must be replaced rather than straightened and reused.

Some operators place a safety cable around the turnbuckle to mitigate any damage experienced with such a failure.

Figure 8: Broken Turnbuckle Near Head of Engine Pylon

The cable assembly should be visually inspected at daily inspections and a deeper inspection using magnifying glass or other NDT methods at the annual. It is further recommended that the turnbuckle assembly is replaced any time the stay cable is replaced and the complete stay cable assembly be replaced at each life extension survey inspection.