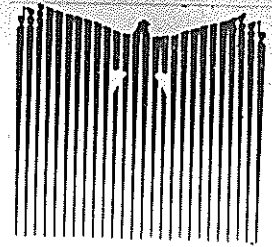


Date: 10th May 1989



INFORMATION BULLETIN No. 32

Structural Failure

This last month has been the blackest and most terrible period in the history of Mainair Sports. Three people have lost their lives flying our aircraft and we are stunned and saddened beyond belief. The accidents are being investigated by the AAIB and BMAA, but the facts as far as we can ascertain are as follows:

24th April - Balne, Selby, Yorks

Paul Bradshaw, an instructor, and Alan his brother were testing an Alpha which had recently been repaired. Paul ran the All-Seasons Flying School and usually taught on a Pegasus XL aircraft.

The aircraft suffered structural failure in the air owing to violent contact between the trike unit and wing. Five distinct propeller marks were imprinted on the wing fin and the wing leading edges had failed negatively. The kingpost had failed in compression; the front strut had been smashed through by the control bar, which was also broken.

We have not been able to interview all the witnesses to the event, but one person who saw the aircraft shortly before the event described it as flying a "very steep turn one way and then the other", and given a model he illustrated a bank of approximately 75° and a wing-over manoeuvre.

I do not know if anyone saw the actual manoeuvre which caused the accident, as the AAIB are not able to release names or statements until after the Coroner's inquest.

Sunday, 7th May - Crossland Moor

Simon Kenyon, a company pilot and one of my close friends was flying a 532 engined Alpha and took off from Crossland Moor to check out a batten adjustment he had made to remove a slight turn. He had about 8 litres of fuel. He carried out an excessively steep climb out from the airfield, a manoeuvre he had conducted previously and one I had personally warned him about. The 532 is a very powerful engine and intended for use overseas only in hot/high conditions which require the additional power. Simon has carried out most of the development testing of the aircraft and had helped me in writing the manual amendments in which we specifically warn about excessively steep climb-outs and the need to operate the throttle carefully especially when flying solo.

10 - 15 minutes later he was witnessed by a flex-wing pilot standing on the airfield to enter a very steep wings level climb at an angle of 70°-80° which was sustained for at least 5 or 6 seconds at which the witness looked away. He looked back to see the aircraft tumble twice, come out and then tumble again before dropping straight to the ground.

It is not known exactly what Simon was doing at the time of the failure but tests prove that an angle of 68° with 7 litres of fuel in the rear tank will uncover the fuel dip pipe and allow the pump to draw air. The aircraft is limited to a maximum nose-up/down of 30°. The damage to the aircraft shows that it broke up violently in the air, failing at the monopole rearwards, wings negatively and propeller against the fin. The damage to the propeller in the air was restricted to one blade only and suggests very low unpowered rotation.

We state categorically that if you operate your Mainair (or any other) aircraft in a sensible and considered manner, respect the limits, and operate it as it was designed to be operated, it will give you hours of pleasurable, safe flying. Neither the CAA, AIB or ourselves have found any evidence at all of aerodynamic or structural fault in the design or manufacture. We do make high performance flex-wings and, like powerful cars, they have to be treated with respect or their capabilities may result in flight outside your own piloting skills.

The microlights we manufacture all have a very high power to weight ratio which is made even more so when being flown by a light-weight pilot in a lightly loaded condition. It is quite evident that in these circumstances the aircraft will be much lighter to fly, much more responsive, and the potential for flying to speeds and attitudes higher than allowed is much greater. BE ESPECIALLY CAREFUL TO REMAIN WITHIN THE FLIGHT LIMITATIONS WHEN FLYING SOLO.

Enclosed with this bulletin is a page which should be read, considered and added to your aircraft manual. A warning placard for fixing to the wing control frame is also being produced and when available will be freely supplied. We ask all pilots to reconsider their approach to microlight flying and realise that the limitations are put there because the design demands it. Please treat and make sure others treat microlight flex-wings as capable, fun aircraft intended for A-to-B pleasure flying. If you know of owners who have a reputation of putting in the odd very steep wing over, or diving steeply or any of the other manoeuvres which are patently outside the flight envelope, then ask them to stop because it is dangerous and can so easily go wrong.

BULLETIN 25

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26th. November, 1987.

NOTICE

THIS FLEX-WING AIRCRAFT IS CERTIFIED FOR NON-AEROBATIC FLIGHT ONLY.
MAXIMUM BANK ANGLE 60°. MAXIMUM PITCH ANGLE 30° UP OR DOWN. NO SPINS,
WHIP STALLS, TAIL SLIDES OR WING OVERS.

WARNING.

LOSS OF FLIGHT CONTROL MAY RESULT FROM NEGATIVE LOADING WHICH CAN OCCUR FROM STEEP PITCH AND/OR ROLL MANOEUVRES IN EXCESS OF THE ABOVE VALUES. IT IS DANGEROUS TO CONDUCT STEEPLY BANKED REVERSE TURNS, (FIGURE OF 8) WING OVERS AND DEEP STALLS AND TO FLY THE AIRCRAFT AT SPEEDS BEYOND VNE. POSITIVE ACTION MUST BE TAKEN TO AVOID YOUR OWN AND OTHER AIRCRAFT'S WAKE TURBULENCE.

BE AWARE OF THE FLIGHT LIMITATIONS AT ALL TIMES AND OPERATE THIS AIRCRAFT IN A SENSIBLE AND CONSIDERED MANNER.

POSITIVE LOADING MUST BE SUSTAINED AT ALL TIMES.

Flex-wing aircraft have suffered structural failure as a direct result of pilot control loss. If a sustained negative load is applied in flight the trike unit is capable of contacting the wing structure with great force and severe structural damage will result. It is very dangerous to fly the aircraft outside the limits stated and it is not designed to offer any aerobatic capability whatsoever.

Pilots should not attempt steep wing overs and roll reversals since the inertia of the trike unit may cause the bank angle to exceed that intended. As a guide, if the control bar upright tubes are level with the horizon you are at a bank angle of 65° and have exceeded the limitations. The flight limitations are maximum values. There is no reason why they should ever be reached in ordinary flying.

Please fly this aircraft sensibly, maturely, and in a responsible manner.

I personally am utterly distraught by these accidents. We build fast powerful microlight aircraft which are demanded for cross-country performance. They have the ability to be flown beyond the limitations we have tested them to and in every accident so far, all witnesses tell of attitudes beyond these limitations. The aircraft are not going there on their own and we have asked ourselves countless times whether or not they can do so by themselves. We have found no evidence that they can. You will not enter a turn of 60° or more unless you initiate a steep turn to start with and you will not get the nose up or down beyond 30° unless you purposely allow it to do so or do not check it in time. If you intend to fly just up to the limit of say 50° bank and it goes beyond that then you as a pilot have flown badly and have underestimated the rate of roll. You have also got to ask yourself why you wanted to do a 50° turn in the first place. Steep turns like this are completely unnecessary and are done solely as an exciting manoeuvre to give a short thrill. There seems to be a feeling that microlights can be safely operated at 60° of bank and 30° of pitch. We have tested to these limits but we have not been stupid enough to try to break our aircraft at these attitudes or to fly in a hazardous way at or beyond these limitations. We have film and photographs of completely inverted rolls and vertical dives but this is by skilled test pilots who will not allow the aircraft to exceed certain attitudes or loadings and who today have no intention of ever repeating those tests. We do not know what happens at 70° of bank if the pilot loses airspeed and pulls in. We think he could well decrease further the angle of attack and this, coupled with the slip at these high attitudes may cause the wing to roll further into the turn and hence to a negative loading situation whilst still vertical in the air.

We plead with everyone to fly these aircraft in a considered way. A wing-over, even a 50° wing-over is an aerobatic manoeuvre and means that the pitch limitation is exceeded both in the entry and exit. This is prohibited and dangerous. Steep turns are unnecessary, dangerous and should not be carried out by anyone.

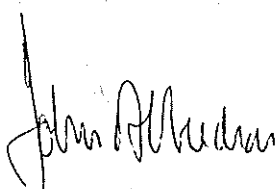
We intend to ask the CAA to lower the allowed bank angles from 60° to 45°, of course still tested by us to 60°. If a pilot inadvertently flies 15° more than he intended then at the most he will be at 60°. With the present limit he is at 75° in dangerous unknown territory.

I have enclosed a copy of Bulletin 25. Read it again. It was sent out in November, 1987.

Our aircraft have flown countless thousands of miles, for thousands of hours and given tremendous pleasure to hundreds of pilots. If you fly sensibly and considerately within the flight envelope at all times you will never break an aircraft in the air. If you ignore these limits even just a little bit, or just now and again, you have the attitude of mind which may one day cause untold suffering not just to yourself but to your family and friends.

Finally, the major question on all our lips is Why Mainair? Well, firstly we tell you via our bulletins about every incident including those overseas ones such as the Scorcher flying loops at an airshow in Norway. Sadly, this is not always the case with every other manufacturer. There have been other failings in the air in Europe with flex-wing aircraft made by both U.K. manufacturers and by foreign manufacturers, failure showing almost identical damage. Not all are documented or well-known about in the U.K.

In the U.K, our 449 Flash wings on the CAA register compare with 143 Q wings and 123 Raven wings (all trike makes) On these numbers alone, it is twice as likely to happen on a Flash as on any other high performance wing and three times more likely than on either a Raven or a Q. There is nothing different about the principle of flight of any high performance flex-wings. None will sustain negative loads. Our aircraft have been marketed as high performance aircraft and they are high performance aircraft. Perhaps this has been a serious error because some people seem unable to respect this performance and some have deliberately mis-used it to all our costs. Please, please, please fly our flex-wings and any other flex-wings as they are designed to be flown.



JOHN HUDSON. (DIRECTOR)
MAINAIR SPORTS LTD.