REPORTING OF DEFECTS.

As information for all Inspectors, on the reporting of Defects to the Chief Inspector, the basic headings of the form are listed below:

DEFECT WARNING No: (Ch.Insp provides).
AIRCRAFT TYPE:
REGISTRATION LETTERS OF AIRCRAFT:
DESCRIPTION OF DEFECT:
AIRWORTHINESS IMPLICATIONS:
HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THE DEFECT:
PROBABLE CAUSE OF FAILURE/DEFECT:
RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION):
REPORTED TO THE MANUFACTURER OR AGENT:
NAME AND ADDRESS OF PERSON REPORTING DEFECT:
OTHER RELEVANT COMMENTS:
DATE: (Of issue by Ch.Insp.)

Note: Inspectors should NOT feel obliged to fill in every section.

For example, to complete the section on recommended rectification may sometimes take the inspector into dangerous legal ground, if the manufacturer is still trading.

Inspectors should fill in the form to the best of their ability, then send it to me. I may not issue a Defect Directive in every instance, if it is inappropriate.

Peter Lovegrove
Chief Inspector to the BMAA.
25 June 1985
DEFECT WARNING No. 001.

AIRCRAFT TYPE: HMA TIGER CUB 440 & ANY MACHINES USING NICKLOW/ROBIN 440 WITH REDUCTION

inspectors, please note: - it is mandatory that some action be taken by owners immediately. either close and detailed inspection for cracks in the propeller-shaft, (which would give serious risk of fatigue failure), or total replacement of the shaft, is required, before these aircraft are flown again.

registration letters of two aircraft faulted: - G-MIZE & G-MICE

description of defect: - there have been several failures of the propeller shaft on the Nicklow/Robin 440 engine-reduction drive.

the shaft material (according to the metallurgist's report on the second shaft failure of two which occurred on G-MIZE), was normalised mild steel, 0.21% carbon, and of hardness 220 VPN. it is not known if this material is common to all such Nicklow engine/reduction combinations.

aerworthiness implications: - severe vibration, followed by possible total loss of propeller and large pulley, necessitating an immediate forced landing. (All of these have occurred.)

hours flown, flights made, relevant to this failure: - on G-MIZE, for example, the first failure occurred after 12 hours (approximately 30 flights). The replacement shaft, reportedly supplied by Nicklow, failed after a further 10 hours (approximately 25 flights).

probable cause of failure/defect: - fatigue failure of shaft. According to the metallurgist's report, crack initiation sites were almost diametrically opposed. There may have been a notch present, possibly due to a 'dug in' by the machine tool at the junction of the tapered and parallel parts of the shaft. The consensus is that the steel examined was too weak for the levels of fatigue stress applied in use.

recommended rectification (repair, replacement, modification): - according to the metallurgist's report, the use of a better steel, for example, EN19T, could be beneficial. But, because this is a fatigue-failure problem, that may not prove to be the complete answer. So, even if owners do replace these shafts with stronger ones, they must continue to operate any aircraft with this reduction gear and/or propeller as though a failure were possible at any time, until a considerable number of uneventful flying hours have been accrued.

If the propeller shaft on a unit of this type shows no evidence of cracks, yet there is serious vibration in flight, the owner/pilot should be alert for the start of fatigue cracks.

reported to manufacturer or agent: - reported by owners of G-MIZE and G-MICE

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DEFECT REPORT No. 001. ENGINE TYPE: LIGHTWEIGHT ROBIN 440

First amendment.

John Bridge has recently crack-tested the crankshaft on one of these engines and found it to be sound.

He noted that the key-way groove had been cut in such a manner that its inner end was hidden within its conical housing in the flywheel magneto, as shown in the sketch below.

On the engine which failed on the aircraft G-MJWJ, the groove clearly extended beyond the housing, (see second sketch).

There is every possibility that this exposed groove might contribute to the onset of fatigue failure. In inspecting these Lightweight Robbins in detail - as they must do, on a mandatory basis - inspectors are asked to determine whether the key-way has been cut beyond the housing. If it has, the likelihood of a crack being present or developing in due course, is probably greatly increased.

As John Bridge points out, the reason why some engines fail and others do not, may be due to nothing more dramatic than a wrong setting on the machine on which the shafts originally had their key-ways milled!

Will inspectors who note any such information relevant to this issue, please tell me about it, so that I can keep everyone fully informed?

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[Diagram showing dimensions and keyway form in broken shaft]
DEFECT WARNING No. 002

HIWAY TRIKES

INSPECTORS SHOULD NOTE THE FALLIBILITY OF THE COMPONENTS DISCUSSED IN THIS REPORT AND ENSURE THAT THE SUGGESTED ACTION IS TAKEN BY OWNERS, IF SEEN TO BE NECESSARY.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known.

DESCRIPTION OF DEFECT: On the trikes of some of the Hiway flax-wings, with the Demon wing, for example, the tops of the seat supports are secured to the upright frame tubes with pip-pins. On two such machines, it was noted by the inspector that, due to wear, the holes through which these pip-pins pass had enlarged to the point where the pins were in danger of falling out.

AIRWORKSHIP IMPLICATIONS: If the pip-pins should fall out, the whole frame of the tricycle is no longer properly braced into its designed format. Loss of flight-control could result and, even if the pilot managed to land, he/she might still be at risk as the wing assembly and frame uprights folded down about his/her as lift was lost.

Inspectors should note that similar - though not identical - wearable may be found on other pip-pin applications.

OURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Engine vibration and many cycles of rigging and dismantling had probably undue wear of the holes in which the pip-pins fit.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): The pip-pins should be replaced by positively locked devices, for example, bolts with washers and Byloc nuts. (Such nuts must, however, be replaced regularly to maintain satisfactory friction-locking.) Alternatively, bolts with washers and castellated nuts, secured with safety-pins or spring-bands, are acceptable.

REPORTED TO MANUFACTURER OR AGENT: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: M. Hurst, 7 Meadow Ridge, Tafford St 176 RH

DEFECT WARNING No. 003

AIRCRAFT TYPE: Several types, Hornet Invader/Striker is typical example

INSPECTORS PLEASE NOTE: THE EXAMINATIONS CALLED FOR IN THIS DIRECTIVE ARE MANDATORY; THE SELF-GROUNDING OF THESE MACHINES BY THE OWNERS IS ONLY ABLE TO BE RECOMMENDED.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: One example, G-MUJ

DESCRIPTION OF DEFECT: There have been seven known total failures of the engine crankshaft on the Lightweight 440c Robin twin, distributed by the former Nicklow Engineering Co. as far as is known.

The failures are reportedly all fairly conventional fatigue breaks. It is not known for certain whether the failures are the direct result of incorrect material, poor design or poor manufacturing techniques, or maybe a combination of two or all of these.

AIRWORKSHIP IMPLICATIONS: Total failure of the engine crankshaft on a microlight aircraft may result in various degrees of risk from break-up of the surrounding components, if the engine is operating at significant rpm at the time of the failure. If the latter occurs whilst the aircraft is in flight, there are additional significant dangers associated with selecting a landing site and executing a safe emergency landing. The very skilled pilot involved in the crash of G-MUJ was quite seriously injured in attempting to reach the nearest landing site and failing to do so, by a relatively small, but crucial, margin.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THESE FAILURES: In the case of G-MUJ, the engine had operated for about 150 hours. The hours accrued on the other failed engines are not known for certain, but G-MUJ is believed to be one of the more well-used machines.

PROBABLE CAUSE OF FAILURE/DEFECT: Poorly designed shaft, poorly machines or incorrect choice of material. Possible combination of these faults.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): No possible repair can be offered. It has been suggested that replacement crankshafts, or a different design, may be made available although this has not yet been confirmed.

INSPECTION ACTION: If asked to survey a microlight which has a 440 Lightweight Robin twin, inspectors will insist upon the engine being removed, dismantled and the crankshaft carefully examined by one of the recognised methods of crack detection, i.e. dye-penetrant, Magnafux, etc. If absolutely no trace of any crack can be found, the engine may be reassembled, reinstalled and inspected. If all is satisfactory, the machine must be signed off as acceptably airworthy. HOWEVER, THE INSPECTOR SHOULD - IN EVERY INSTANCE - RECOMMEND TO THE OWNER THAT HE GROUND HIS AIRCRAFT UNTIL AN IMPROVED CRANKSHAFT CAN BE OBTAINED AND FITTED.

REPORTED TO MANUFACTURER/AGENT/SUPPLIER: Reported to former executive of Nicklow Engineering Co. requesting that all buyers of this type of engine be alerted to the serious risks associated with its continued use, in its original form.

NAME AND ADDRESS OF PERSONS MAKING DEFECT REPORT: J. Bridge, J. Wilkins, B. Stepson.

NAME AND ADDRESS OF PERSONS MAKING DEFECT REPORT: 6 Jun 1985
DEFECT WARNING No. 004  AIRCRAFT TYPE: Early Solo Striker Wings

INSTRUCTORS PLEASE NOTE THAT THE RECOMMENDATIONS MADE IN THIS DIRECTIVE ARE SIMPLY THAT: THEY CANNOT BE INSISTED-UPON AT PRESENT

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known - crash occurred in France.

DESCRIPTION OF DEFECT: Failure in compression of the inboard portion of the leading-edge, that is, the part of the leading-edge between the nose-plate and the attachment point of wires from the forward part of the bowssprit. The failure on the machine in question occurred about 1 mile outboard of the nose-plate.

AIRWORTHINESS IMPLICATIONS: Catastrophic failure of the wing structure, probably unserviceable in the absence of a parachute and good luck.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS FAILURE: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Bowsprit designs produce large compression forces on the leading edges between the nose-plate and the attachment points for the cables from the forward end of the bowsprit. The effects of sail tension drag at the wingtips, etc., are contributory factors to bowing which occurs. The longer the distance from the nose-plate to the forward attachment point of the cables on the bowsprit, the lower the tension in those cables and the smaller the compression in the inner part of the leading edges. The longer bowsprit fitted by the manufacturer to Later 'Maris' of this wing (a 50' bowsprit) increases the angle between the cable and the leading edge from 12.5 to 17 degrees. This reduces the tension in the outer bowsprit cable by 40% and simultaneously reduces the compression forces in the leading-edge itself. At small angles between the cables and the leading-edges, the high tension-forces in the cables can cause them to stretch. If the leading-edges simultaneously bow, under the large compressive forces which increase dramatically as the cable and leading-edge converge, the system can go 'Over top dead centre' - as it is termed - in the most extreme cases.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): Tests are being conducted to determine whether the internal sleeving of the inboard sections of the leading-edges, introduced by the manufacturer about November 1983, is the most effective measure to take.

For the present, owners are recommended to maintain a very careful watch on the development of a permanent bowing in the leading-edges of early Solo Strikers. The wing must be flown conservatively since it is now recognized that the margins of safety with this wing may be less than were previously supposed. Incorporation of the manufacturer's modification to a longer bowsprit is plain a further step in a safer direction.

REPORTED TO MANUFACTURER OR AGENT: Manufacturer is aware of the problem.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Simpson, 13 Portman Square, Bedford Road, Hitchin, Hertfordshire. Tel: 0462 32103.

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AIRCRAFT TYPE: Duet.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-WJTO

DESCRIPTION OF DEFECT: Clevis pins, fitted to turnbarrels, had holes drilled so dangerously near their ends that they were actually breaking out. (See sketch below).

AIRWORTHINESS IMPLICATIONS: End of pin may break out, with wear and vibration, and clevis be released.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Poor manufacture.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): Pins should definitely be replaced by properly drilled ones.

Also, if pins are of this poor standard, whole turnbarrel may be of equally unsatisfactory standard. Check and decide whether total replacement is needed.

REPORTED TO MANUFACTURER OR AGENT: Reported to Mainair Sports Ltd by Timothy Dew.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Timothy Dew, 55 High St, Dilton Marsh, Westbury, Wilts., BA13 3DX.

ADDITIONAL COMMENTS: Some nominal guidance as to the size and location of drilled holes in such pins, is given in the sketches below. It is suggested that the size of the hole is best limited to about 1/3 of the pin diameter. A 1/8" diameter pin, therefore, ought to have a hole no greater than 0.085" diameter drilled through it. The distance between the tangent to the hole and the end face of the pin ought to be at least 3/4 of the hole diameter. In the case of the example, then, this distance would be 3/4 of 0.085", say, 0.060". One could sum up this example by saying that a 1/8" diameter clevis pin should have a clearance hole for a 1/16" diameter split-pin, drilled about 3/32" from the end face of the pin.


Peter Lovegrove,
Chief Inspector to the BMAA.
DEFECT WARNING No.006

AIRCRAFT TYPE: Solo Striker Wings

INSPRATORS PLEASE NOTE THAT THE MODIFICATION CALLED FOR IN THIS DIRECTIVE IS MANDATORY. THE AIRCRAFT IN QUESTION MUST NOT BE FLown UNTIL THIS MODIFICATION HAS BEEN MADE.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not applicable. All Solo Striker wings affected.

DESCRIPTION OF DEFECT: During tests on the BMAA rig at Long Marston, a medium Striker wing was subjected to progressively increasing load. At 500 kg (1102 lb) load, there was no evidence of appreciable bending of the leading edges.

At 550 kg (1235 lb) load, the down tubes of the control frame buckled under compression.

AIRWORTHINESS IMPLICATIONS: Catastrophic failure of the wing structure, probably always unsalvivable in the absence of a parachute.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS FAILURE: Not applicable.

PROBABLE CAUSE OF FAILURE/DEFECT: Relatively high loading on wing transferred to down-tubes of control frame, via the flying wires out to the leading edges, and the cross-bar of the control frame. As the loads in these wires increase, the compressive forces in the down tubes increase in step until, ultimately, they simply fail by buckling. They are encouraged to do so by the small, but important, "Twanging" effect of the aerodynamic-drag forces acting upon them in flight.

MANDATORY MODIFICATION: Internal sleeves of 1" outside-diameter by 16 s.w.g. MT-30-1Y tubing or external sleeves of 1 1/4" outside-diameter by 17 s.w.g. tubing MUST be fitted to the down tubes of the control frame. They must be the same full length as the down tubes.

NOTE: This modification is required quite independently of any modifications made, or later required to be made, to the leading edges of Solo Striker wings, to inhibit bending of them, under the various flight and sail-tension loads.

REPORTED TO MANUFACTURER: Manufacturer of this (Orphan) aircraft if aware of the problem.


Clayton

12 June 1985

SERVICE BULLETIN

DATE: 11 September 1985

WING TYPES: "Solo Striker" and "Sealander"

TITLE: Unsealed Solo Striker and Sealander Wings used on Microlight aeroplanes.

CLASSIFICATION: MANDATORY

This Service Bulletin is classified "MANDATORY" by the Civil Aviation Authority.

COMPLIANCE DATE: To be complied with immediately on receipt.

APPLICABILITY: This Service Bulletin applies to all microlight aeroplanes fitted with Solo Striker wings or Sealander wings with leading edges and/or control frame down-tubes which have not been re-inforced by sleeving as specified by Flexiform. This Service Bulletin applies to all unsealed Solo-Striker wings and Sealander wings with either short or extended boomsprits.

ACTION: All microlight aeroplanes to which this Service Bulletin applies must not be flown until the wings have been modified to a standard acceptable to the CAA.

DESCRIPTION: A microlight pilot was recently killed in France when the unsealed leading edge member of his Solo Striker wing collapsed in flight. As a result of this fatal accident a Solo Striker wing with unsealed leading edges and control frame down-tubes, but with an extended boomsprit, was loaded tested. During the test it was found that the control frame down-tube failed first and not the leading edge member as expected. The load at which the down-tube failed was unacceptably low and, as a result of these events, the CAA has decided that all microlight aeroplanes fitted with Solo Striker wings which have unsealed leading edge members or control frame down-tubes must not be flown until satisfactorily modified.

As the Sealand wing is very similar to the Solo Striker in its design and construction the CAA considers that this Service Bulletin should also apply to unsealed Sealander wings.

Further load tests are being carried out by the BMAA to establish the strength of Solo Striker wings. When these load tests have been completed the CAA's satisfaction a further Service Bulletin will be issued advising all owners of the minimum build standard for Solo Striker and Sealander wings which will be acceptable to the CAA as the basis for issuing and renewing individual exemptions for microlight aeroplanes fitted with these wings. Suitable modifications may then be made available which will enable unsealed wings to be brought up to the required by the CAA.
FILE THIS DOCUMENT IN YOUR INSPECTOR'S HANDBOOK

DEFECT WARNING No: 006 Solo Striker Wings.

First Amendment: Relating to SEALANDER wings.

Flexiform Sky Sails Ltd advise that all Sealandier wings be fitted with:

(i) Full-length 1 1/4 inch outside-diameter oversleeves on the uprights of the control frame.

(ii) The extended bowsprit and all associated rigging wires,

in exactly the same way as has been recommended for the Solo Striker.

** ** ** ** ** ** ** ** **

Flexiform say, with regard to the leading-edge internal sleeving:

"Please refer to Dave Simpson's report of 4 June 1985, Part 3.2,

"This modification" would, of course, strengthen the structure, but at the expense of added weight, heavier handling and slightly awkward static balance".

If the two modifications given above are carried out, there should be no need to sleeve the leading edges, nor should the hang-plates be moved.

** ** ** ** ** ** ** ** **

Inspectors should look for these modifications to have been carried out, before signing off any Sealandier.

DATE: 28 August 1985

Peter Lovegrove
Chief Inspector to the BMAA.

FILE THIS DOCUMENT IN YOUR INSPECTOR'S HANDBOOK

DEFECT WARNING No 006 AIRCRAFT TYPE: FLEXIFORM SOLO STRIKER AND SEALANDER.

SECOND AMENDMENT.

Inspectors should note that the Civil Aviation Authority have now issued a SERVICE BULLETIN for the FLEXIFORM "SOLO STRIKER" and the "SEALANDER".

THIS BULLETIN CARRIES THE CLASSIFICATION OF "MANDATORY", WHICH MEANS THAT THE OWNER HAS ABSOLUTELY NO OPTION IN THE MATTER TO WHICH IT RELATES. HE MUST MAKE THE REQUIRED CHANGES BEFORE EVER FLYING HIS AIRCRAFT AGAIN (unless they have already been made).

IF HE DOES NOT MAKE THE CHANGES, HIS AIRCRAFT REMAINS PERMANENTLY GROUNDED.

Peter Lovegrove
Chief Inspector to the BMAA.

11 September 1985
FILE THIS DOCUMENT IN YOUR INSPECTOR'S HANDBOOK

Inspectors must note that the modifications called for in this directive have been classified by the CAA as mandatory. The wings in question must not be flown until the modifications have been carried out.

Defect Warning No 006. Aircraft Types: Flexiform—Solo

Third Amendment.

Striker and Sealanders WINGS.

Registration Letters of Aircraft Affected: Not applicable; all Solo Striker and Sealanders wings are affected.

Description of Defect: Structural failure of a Solo Striker wing occurred in France; this led to a series of tests to prove strengthening modifications. These tests, carried out on the BHGA test-rig at Long Marston, revealed weaknesses in the control-frame down-tubes (covered in Defect Report No 006).

Airworthiness Implications: Failure of a leading edge or a down-tube would lead to catastrophic failure of the wing.

Hours flown, flights made, relevant to this defect: Not applicable.

Probable Cause of Failure/Defect:

1. Control-Frame Down-Tubes. The load supported by the wing is almost completely applied as compressive forces to the down-tubes. These tubes simply fail by buckling at high loads.

2. Leading Edges. All bowsprit wings produce large compressive loads in the leading edges and these loads are greatest in the sections between the noseplate and the inboard bowsprit-wire terminations. In addition, a bending moment is applied to each leading edge by sail tension and, to a lesser extent, by drag at the tips. This bending moment acts about the bowsprit-wire terminations and results in a forward bend along the leading edge. This combination of compressive and buckling load on the tube is suspected to be the cause of the French accident.

Mandatory Modifications:

The following modifications are the minima necessary to make the wing conform to the build standard of the wing tested.

They are complete and supersede all previously recommended modifications relating to these failures.

1. The bowsprit must be extended to 50 inches. Details are given in Figure 1. Construction is from a single, unsleeved length of 1 7/8 inches diameter, 17 s.w.g., HT-30-TF, seamless drawn tube.

Local reinforcement is permitted but not obligatory.

2. The rear (inner) bowsprit-to-leading-edge rigging is 3 mm diameter cable (to B.S.W. 12 or W 13) and remains the same length and in the same position as the original.

3. New front, (outer) bowsprit-to-leading-edge wires are needed. These must be 3 mm diameter (B.S. W 12 or W 13). Turnbuckles (rigging screws) are permitted in these wires, provided that they have a rating of 450 kg minimum.

The pulley, if fitted in the old bowsprit, must be replaced by a 5/16 inch diameter bolt, (to B.S. 1769, 1083 or 24 251) on to which both front bowsprit wires are individually terminated.

4. The top front-to-rear rigging must be extended to the tip of the new bowsprit. Cable of 2.5 mm diameter minimum (B.S. W 12 or W 13) must be used.

5. The control-frame-to-bowsprit rigging must be extended to the tip of the new bowsprit (again, using cable to B.S. W 12 or W 13).

6. New rigging (B.S. W 12 or W 13) must be added to run from the control frame to the noseplate. Separate cables to each noseplate leading-edge bolt will provide a gap for the top of the control frame when rigging, but any position on the noseplate is satisfactory.

7. The control-frame uprights must be a minimum of 1 1/8 inch diameter, 17 s.w.g., HT-30-TF seamless drawn tubing, fitted with full-length inner sleeves of 1 inch diameter, 17 s.w.g. (or 1 inch diameter, 16 s.w.g. HT-30-TF seamless drawn tubing). A satisfactory alternative is 1 1/4 inch diameter, 17 s.w.g. tubes over 1 7/8 inch diameter, 17 s.w.g. ones. Again, all tubing used must be HT-30-TF seamless drawn material.

8. Note that leading-edge sleeves, as demanded by an earlier directive, are not now mandatory, though they are permitted.

Other Points for Inspectors and Owners to Note:

1. Whilst the modifications referred to in this bulletin will increase the strength of any of the specified wings to a tolerable level, they will still not come up to the strength requirements of B.C.A.R., Section S.

2. Embodiment of these modifications must be properly recorded in the aircraft's engine and Airframe log-book. Supporting evidence of material specifications, etc., must be be retained and be acceptable to the B.M.A.A. inspector before the wing may be signed off for use. (All Solo Strikers and Sealanders, modified in accordance with these CAA mandatory requirements, must, of course, undergo an inspection after completion of the work, quite irrespective of when the last formal Exemption-inspection may
**STRIKER / SEMLANDER EXTENDED RONSPRIT DETAILS**

- **Holes 'A':** 2 off to clear $\frac{5}{16}$" through both walls.
- **Holes 'B':** 2 off through both walls.

**Material:** $\frac{3}{8}$" dia x 17 s.w.g. H.T.-30-TF Seamless Drawn Tube.

All Dimensions $\pm 0.1"$ unless stated otherwise.

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Figure 1.

D. Simpson 2-10-85
FLEXFORM SOLO STRIKER AND SEALANDERS

OWNERS OF THESE WINGS should note that the Civil Aviation Authority have now issued a SERVICE BULLETIN for the FLEXFORM "SOLO STRIKER" and the "SEALANDER". This document is appended.

THE BULLETIN CARRIES THE CLASSIFICATION OF "MANDATORY", WHICH MEANS THAT THE OWNER HAS ABSOLUTELY NO OPTION IN THE MATTER TO WHICH IT RELATES. HE MUST MAKE THE REQUIRED CHANGES BEFORE EVER FLYING HIS AIRCRAFT AGAIN (unless they have already been made).

IF HE DOES NOT MAKE THE CHANGES, HIS AIRCRAFT REMAINS PERMANENTLY GROUNDED.

All BMAA Inspectors have been advised of the CAA's mandatory instruction and will therefore have absolutely no choice but to ground unmodified wings of these two types.

Owners are reminded that, if their machine carries an Exemption, the changes required also represent modification of their now-formalised aircraft. That is to say, for the issue of the Exemption, the details of the aircraft have had to be formally recorded in the log-book. Nothing can then be changed without the machine being re-inspected so, after your wing has been modified as required by the CAA Service Bulletin, it has to be signed off by a BMAA Inspector on both counts.

For your guidance, copies of the notes originally issued to the BMAA inspectors on these two wings, are also appended.

Peter Lovegrove
Chief Inspector to the BMAA.

11 September 1985
DEFECT WARNING No. 007

AIRCRAFT TYPE: Hussey/250 Robin

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known.

DESCRIPTION OF DEFECT: Failure of the stainless-steel tangs, which secure the forward ends of the engine-bracing cables to the restraining bolts in the trailing edges of the wings.

AIRWORTHINESS IMPLICATIONS: If the restraining cables are released, the engine mass is more free to sway or oscillate. In an extreme circumstance, if the pilot were slow to cut power, it might possibly break loose. It would certainly be prone to sway towards the direction in which the remaining stay was secured, especially in a turn. It is not known what the effects of this would be on the overall controllability of the aircraft.

HOUR FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Pronounced vibration from the engine, which is single-cylinder. The vibration is readily detectable in the fuselage boom.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): The obvious solution would seem to be to fit thicker stainless-steel tangs. This would only transfer the troublesome forces to the restraining bolts; if they should fail, because of the vibration, the loss of support of the trailing edge would be far more hazardous that the loss of an engine stay-wire.

The consensus is that the safest step to take is to fit a simple cable across from the throttle at the forward end of each engine-bracing cable to a second thin tang on each restraining bolt. If the engine cable does break away from the tang, this secondary cable will stop the engine from swaying too wildly and, perhaps even more important, will stop the freed cable from flinging itself into the spinning propeller. And, best of all, the restraining bolts do not change their role at all.

REPORTED TO MANUFACTURER OR AGENT: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Campbell, 14 Derby Rd, Borrowash, Derby DE5 3HA. Tel: 0332-677210.

DATE: 21 JULY 1985

Peter Lovegrove
Chief Inspector to the BMAA.

DEFECT WARNING No. 008

AIRCRAFT TYPE: Not Applicable

ENGINE TYPE: Rotax Ultralight engines with Bosch ignition.

DESCRIPTION OF DEFECT: Some owners have reported to Rotax, and they themselves have observed in testing, that there is intermittent firing on some Rotax engines at high r.p.m. The Company have measured the ignition voltage to be only 13 kv at 6000 r.p.m. on some engines, which they consider too low.

AIRWORTHINESS IMPLICATIONS: If the engines misfired at full power, it might prove awkward if the pilot had put himself in a situation where only full engine power could extricate him and his machine. Since reducing the throttle setting a little would probably give steady but slightly lower power the problem is not necessarily a dire one.

HOUR FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: A design and/or manufacturing problem with the ignition system.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): Since most owners do not use the lighting circuits provided on these engines, Rotax are stating that the ignition voltage will be increased by 4 to 5 kv if:

- the cables (GREEN and GREEN/BLACK coming from the second lighting coil - situated above the generator coil - are shorted, or
- the whole lighting circuit is used via a regulator-rectifier, Part Number 866-080.

All future engines will be supplied with a plug connector, Part Number 866-910, through which the lighting coils will be shorted.

If limited lighting current is used, the YELLOW lighting cables should be separated from the GREEN lighting cables. The GREEN cables should then be shorted and the YELLOW cables used for the limited current demand.

REPORTED TO MANUFACTURER OR AGENT: Not applicable, since the agent and the manufacturer have provided the above information.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Nigel Beale, Cyclone Hovercraft Ltd., 8 Walton Road, Caldecotte, Milton Keynes MK7 8AE. Telephone: Milton Keynes (0932) 647333.

C. Lovegrove 30 June 1985
DEFECT WARNING No 009

DESCRIPTION OF DEFECT: Whilst taxiing out to take-off, over smooth level ground, the right-hand wheel-axle sheared off close to where it enters the ball-race. The freewheel smashed the propeller, which then pierced the sail. (Such a failure has also been reported in Flight Line, some time ago).

AIRWORTHINESS IMPLICATIONS: If the axle had snapped on landing, or during the high-speed part of a take-off run, instead of during a gentle taxiing run, the results might have been very much more severe, putting the pilot at risk, rather than just the aircraft.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The aircraft is described as having done about 350 flights, involving no landings which the owner/pilot would call 'heavy'.

PROBABLE CAUSE OF FAILURE/DEFECT: The axles were made from only 5/8 inch diameter aluminium alloy. This is not an adequate size of stock, especially if alloy is used. Sooner or later, it would be bound to fail in fatigue, and, given the occasional heavy landing, one would not expect that to take too long.

Assuming a landing on one wheel, an all-up weight of 350 lb, acting (on the wheel-disc centre-line) only 2 inches from the edge of the bearing, a stress of 30000 lb/in2 is very easily reached. With the normal large increase in stress due to shock loading, it is a miracle that these axles ever survive for more than a few flights!

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): This particular owner has replaced the bearings with Acetal resin (Delrin) sleeves and fitted axles with a diameter of 1/8 inch, and made from HD50 alloy, kept very well greased. For the case calculated above, this would reduce the unfactored stress to about 13000 lb/in2. Applying the one-wheel-landing shock-loading factor, which will double this figure, this appears to be an adequate arrangement, but still with no huge margins. And, at the relevant stress levels, fatigue failure is never going to be far away. A suitable steel would certainly be a better choice.

REPORTED TO THE MANUFACTURER/AGENT: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: George Cooke, "Southville", Upper Chapel, Launceston, Cornwall, PL15 7DN.
Telephone: 0366-3947.

DATE: 28 JULY 1985

Peter Lovegrove
Chief Inspector to the BMAA.

DEFECT WARNING No 010

AIRCRAFT TYPE: Puma Sprint
with Mainair/Robin 440 Reduction

DESCRIPTION OF DEFECT: Failure of two of the four studs which hold the reduction gear to the engine. (After a flight involving prolonged use of full power to counter a strong headwind, the belt was slack and the propeller/shaft/bearings assembly loose. These had specifically been checked before take-off, because of a problem with the tensioning nuts loosening some months earlier, after which Loctite was used to secure the nuts).

The lower part of the studs in question failed in typical multi-start fatigue. The stud hardness was measured at 285 Vickers, or 270 Brinell, corresponding to T and U grade (89).

AIRWORTHINESS IMPLICATIONS: If ALL of the studs were to fail, the whole propeller assembly would be lost. Clearly, this could be catastrophic.

The manufacturer claims (see attached notes) that the presence of a broken stud is made obvious by the change in engine noise and vibration levels. In real engineering terms, there is no simple way of detecting cracks in the studs on other similar machines, except by dismantling the whole assembly and then x-raying or Magnaflux testing the studs. But, of course, the problem could then begin after a satisfactory examination and reassembly.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 150.

Note that this figure is above the 100 hours now recommended by the manufacturer as the time at which the studs MUST be replaced.

PROBABLE CAUSE OF FAILURE/DEFECT: Probably the application of the loading directly on to the threads of studs, combined with the use of studs which did not have rolled threads and on which the cut thread was a few "thou" oversize. Possibly, in the instance which has been reported, also a partial or total consequence of the nut-loosening problem previously experienced.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): The manufacturer recommends the TOTAL REPLACEMENT of the studs after 100 hours of operation.

Comments by Mainair Sports are given on the attached sheets.

REPORTED TO MANUFACTURER/AGENT: Reported by the BMAA Chief Inspector to Mainair Sports Ltd, Shawclough Rd, Rochdale, Lancs.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Peter Robinson, 29 Moreton Crescent, Belle Vue, Shrewsbury, SY3 7YX.
Telephone: 0743-4598.

DATE: 7 JULY 1985

Peter Lovegrove
Chief Inspector to the BMAA.
DEFECT WARNING No 010.

AIRCRAFT TYPE: Puma Sprint with Mainair/Robin 440 Reduction.

DESCRIPTION OF DEFECT: Failure of two of the four studs which hold the reduction gear to the engine. After a flight involving full power to counter a strong headwind, the prolonged use of full power to counter a strong headwind, the belt was slack and the propeller/haft/bearings assembly loose. These had specifically been checked before take-off, because of a problem with the tensioning nuts loosening some months earlier, after which Loctite was used to secure the nuts. The lower part of the studs in question failed in typical multi-start fatigue. The stud hardness was measured at 265 Vickers, or 270 Brinell, corresponding to T and U grade (8S).

AIRWORTHINESS IMPLICATIONS: If all of the studs were to fail, the whole propeller assembly would be lost. Clearly, this could be catastrophic.

The manufacturer claims (see attached notes) that the presence of a broken stud is made obvious by the change in engine noise and vibration levels. In real engineering terms, there is no simple way of detecting cracks in the studs on other similar machines, except by dismantling the whole assembly and then X-raying or Magnaflux testing the studs. But, of course, the problem could then begin after a satisfactory examination and reassembly.

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RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): The manufacturer recommends the TOTAL REPLACEMENT of the studs after 100 hours of operation.

Comments by Mainair Sports are given on the attached sheets.

REPORTED TO MANUFACTURER/AGENT: Reported by the BMIA Chief Inspector to Mainair Sports Ltd, Shawlough Rd, Rochdale, Lancs.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Peter Robinson, 29 Moreton Crescent, Belle Vue, Shrewsbury, Shropshire, SY3 7BY.

Telephone: 0743-4598

DATE: 7 JULY 1985

Peter Lovegrove

REFERENCE: DEFECT DIRECTIVE No 010

Dated 7 July 1985.

Mainair Sports Ltd, Shawlough Road, Rochdale, Lancashire OL2 6LN

Telephone Rochdale (0706) 551511/2 Fax 80006 M244

Date: 3rd July, 1985

Mr. P. Lovegrove, 1 Beaufort Close, Fleet Street, Didcot, Oxford, OX11 8TS.

Dear Peter,

Thank you for the Alert No.10 regarding the jacking studs on 440 engines.

Firstly, we have not supplied anyone with an engine using this reduction drive for almost 2 years. We accept that the studs are made to commercial standards only and could indeed be better. However there are hundreds in use and the failure rate, although higher than we would be happy with today, is still very low. Bear in mind that it is only now, many hours of use later that fatigue has started to rear its head, and in the microlight industry, 2 years is a lifetime.

The failure of a stud should not be catastrophic in any way and should be easily detectable. A broken stud is immediately obvious by the change in engine noise and vibration. Vibration caused by a rough engine, a worn or loose belt and vibration or an out of balance propeller seems to be a major factor in vibration breakage. Our manual states replacement at 200 hours or two years but with service experience we now think that this should be reduced to 100 hours.

Manufacturers Recommendation

The jacking studs should be "lifed" at 100 hours and if there is doubt as to how long they have been on, or the machine has been used with an out of balance propeller they should be changed.

Yours faithfully,

John A. Hudson (Director).
REFERENCE: DEFECT DIRECTIVE No 010
Dated 7 July 1982.

RECOMMENDED MAINTENANCE SCHEDULE - continued

EVERY 100 HOURS OR 12 MONTHS

- **Rigging**
  - Renew all wire rigging

- **Fuel Line**
  - Renew all fuel line - see note below

- **Engine Control Cables**
  - Fully strip, clean and replace, as required.
  - Strip and clean carburettor bowls checking needle wear and operation. Carry out static thrust check and rev check. Engine may need strip and de-coke.

- **Ignition Switch**
  - Replace

- **Wing Connection Bolts**
  - Replace

- **Coat Frame**
  - Remove pivot clamps and inspect for clamp damage and tube wear.

- **Air Frame**
  - Inspect for corrosion

EVERY 200 HOURS OR 2 YEARS

- **Main Propeller Shaft**
  - Replace

- **Main Propeller Shaft Bearings**
  - Replace

- **Main Reduction Bearing Jacking Studs**
  - Replace

- **Wing Connection Bracket**
  - Replace

- **Upright Engine Reduction Drive**
  - Carry out full strip down and inspect - replace bearing unit if it shows signs of wear.

- **Air Frame**
  - Carry out full strip down to inspect all tubes for wear and corrosion damage.

**Fuel line note:** The fuel line is a special fire resistant type and must be obtained directly from Sales Ltd. No replacement fuel line must be used unless it is factory approved.

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DEFECT WARNING No 011.

**AIRCRAFT TYPE:** Skyhook Sabre wing.

**REGISTRATION LETTERS OF AIRCRAFT FAULTED:** G-MJCB and others.

**DESCRIPTION OF DEFECT:** Where the cross-tubes on the wing attach to the leading edge, they pivot on a bracket when the wing is opened and the tension cable cleared. They are therefore radiussed to allow clearance for the leading edge. However, the tension cable has an adjuster and, by adjusting the cross-tubes, can foul the leading edge.

**AIRWORTHINESS IMPLICATIONS:** If an old wing is adjusted too far, the leading edge could be dented, with possible failure of the latter and risk of collapse of the wing.

**HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT:** Approximately 175 hours flown. Date of manufacture of sail: 9 April 1982.

**PROBABLE CAUSE OF FAILURE/DEFECT:** The manufacturer may not have realised at the outset that these wings would ever be adjusted so excessively.

**RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION):**

On this particular wing, there is adequate room to file a larger radius without weakening the structure; this will provide the requisite clearance when fully adjusted.

**REPORTED TO THE MANUFACTURER/AGENT:** Reported to the manufacturer, Skyhook Sailwings Ltd.

**NAME AND ADDRESS OF PERSON REPORTING DEFECT:** Richard Wolfenden, Hornet Microlights Ltd, Bankfoot Mills, Wibsey Bank, Bankfoot, Bradford, BD6 3JU.

**ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE:** When inspecting a Skyhook Sabre wing, it is easy to check the components under consideration here, as the manufacturer fits a zipped inspection hatch in the sail at this point. Even if there is clearance, some action should be taken to allow for subsequent adjustment.

**DATE:** 22 August 1985

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA.
DEFFECT WARNING No. 013.  AIRCRAFT TYPE: Puma Sprint

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MMJ and one other known aircraft.

DESCRIPTION OF DEFFECT: During flight at about 1500 feet, the trike monopole snapped just where the uppermost bolt on the top engine-mountings passed through it. The seat was felt to drop slightly, with no other significant effect. The inner safety cable held the trike together and a reasonable landing was executed. The wing dropped to one side as airspeed was lost on the ground.

AIRWORTHINESS IMPLICATIONS: Because the safety cable carried out its function exactly as designed, the frame of the trike remained in one piece, allowing a safe landing to be executed in the mild weather conditions (5 kt wind) which prevailed at the time.

Had the cable not done its job for any conceivable reason, or had there been particularly turbulent conditions to fly through, the outcome might not have been so uneventful.

HOURS FLO wn, FLIGHTS MADE, RELEVANT TO THIS DEFFECT: 160 hours.

Date of original issue of Permit to Fly: 27 July 1985.

PROBABLE CAUSE OF FAILURE/DEFFECT: The failure occurred in May 1985. In January 1985, a heavy landing had been experienced in this aircraft, which bent the front strut and the keel. No crack was found in the monopole, though it is possible that one was there but was so small that it was overlooked, particularly easy since there was no known previous evidence of the likely site of a crack after such an incident.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): Clearly, in this instance, the only rectification was to replace the monopole and any other parts bent in this mid-May incident (with factory-approved parts, since this is a Section-S approved machine). Following re-inspection, flying could be resumed on the Permit to Fly thereby revalidated.

However, since the monopole is now known to have failed on at least one other machine, also following a previous heavy landing, after which no crack in the tube was detected, certain assumptions have to be made, in the interests of safety.

If a Puma Sprint has been landed heavily, and even if no replacement of the front strut or keel appears to be required, it must be assumed that a crack has occurred in the monopole at the location of this top engine-mounting bolt, even if it cannot readily be seen. Only when a detailed inspection under a bright light, with an 8x or 10x magnifying glass has revealed nothing, can it be assumed that probably no crack has occurred.
Nevertheless, regular checks of this nature should be carried out before each day's flying, following such a bad landing.

BMIA Inspectors called upon to examine Puma Sprints are instructed to give detailed attention to this region of the monopole, irrespective of whether the owners/pilots admit to having done "heavy landings"; everybody does them, sometime! So assume that they have.

Dye-penetrant checking would be helpful. Magnaflux testing would be better but is not so easily carried out in the field.

Inspectors are asked to make owners/pilots aware of this risk of delayed secondary damage after a bad landing.

Any other type of flex-wing which might show a similar site - or sites - for bending stresses to concentrate in the mast(s) in the event of a heavy landing, should be regarded as needing the same degree of close scrutiny by BMIA inspectors. There is nothing particularly unique or unusual in the form of braced monopole used on the Puma Sprint. Any similar design is probably much more at risk in the event of mal-treatment, since it lacks the Puma's safety cable.

Inspectors are advised to suggest to any owner of another type of monopole design that he/she fits a similar safety cable down inside the pole. Its benefit has been admirably demonstrated here. If the machine is a Section-5 approved one, such a change must first be cleared with the manufacturer, though one would hope that they too will learn from these events and start to fit such cables as standard.

REPORTED TO THE MANUFACTURER/AGENT: Reported to the manufacturer, as well as to the BMIA's Safety Officer, the Technical Editor of Flight-Line and the David Simpson.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Not known.

DATE: 22 August 1985

Peter Lovegrove
Chief Inspector to the BMIA.
DEFECT WARNING No 013.  AIRCRAFT TYPE: FUMA SPRINT

FIRST AMENDMENT.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: Inspectors should check the nacelles of monopole trikes very carefully all round at the region of the top of the seat frame. In a symmetrical (straight-ahead) but heavy landing, the mass of the wing may bend the pylon forward to the point of overstressing. Equally, a heavy landing on one wheel can produce exactly the same problem at the left or right of the pylon in this region.

It may be necessary to dismantle the pylon from the trike in order to examine satisfactorily for evidence of cracking. With anodised tubes any “scintillation” – a self-explanatory term – of the anodising is an excellent pointer to over-stressing having taken place.

NAMES OF PERSONS REPORTING THIS INFORMATION: David Simpson and Ian Stokes.

DATE: 11 September 1985

Peter Lovegrove
Chief Inspector to the BMAA.

DEFECT WING No 014.  AIRCRAFT TYPE: Gemini Sprint

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MMKU

DESCRIPTION OF DEFECT: Part of the black engine-casing (thin metal, not a casting), on the Robin 440 engine, fractured and became detached. The casing in question is on the carburettor side, near the flywheel casing.

The detached fragment hit the propeller whilst at full power at 1000 feet altitude. The trailing edge of the propeller detached. Severe vibration ensued and the exhaust shattered. An emergency landing was safely executed.

AIRWORTHINESS IMPLICATIONS: The nature of the damage reported is itself a clear indication of a typical outcome of separation of fragments of metal from an engine or airframe, in this way.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 160 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Probably fatigue failure due to prolonged vibration.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): Careful pre-flight inspection, particularly of the engine and associated components.

REPORTED TO THE MANUFACTURER/AGENT: Reported to Mainair Sports by Roy Sears, 30 Darnoustie, St Ediths Green, Alington, Tamworth, Staffs, B77 4NN (Tel: Home, Tamworth 54724, Work, 021-744-6599).

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Roy Sears, address as above.

ADDITIONAL RELEVANT INFORMATION: Mr Sears examined four other Robin-powered Sprints at Long Marston, simply from interest, and observed similar cracks on two of the four engines, in the region indicated in the sketch below.

DATE: 20 August 1985

Peter Lovegrove
Chief Inspector to the BMAA.
DEFECT WARNING No 015.  ENGINE TYPE: Fuji Robin

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known.

DESCRIPTION OF DEFECT: The small clip which retains the HT wiring in place, immediately adjacent to the ignition coil, was over-crimped. As a result, it bit right through the enshrouding plastic sleeve and into the sheathing of the wires.

AIRWORTHINESS IMPLICATIONS: Clearly, there is a serious risk of short-circuiting or complete severance of the HT leads. This could mean either a total engine-stoppage or an inability to kill the engine when required.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

The problem is certain to be made worse by vibration, which has dire effects on wiring anyway, particularly where leads are anchored down. So even modest hours of use may result in a failure.

PROBABLE CAUSE OF FAILURE/DEFECT: Undoubtedly, the over-zealous crimping of the fixing clip.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): The clip must be opened, the leads carefully examined for damage and - if any is found - suitable replacement made. On re-fixing the clip, which may have to be renewed, great care should be exercised to prevent a repetition of the fault. A rubber sleeve could be introduced to give extra grip without the extreme crushing force.

REPORTED TO THE MANUFACTURER/AGENT: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: J. Bridge, 24, Ulverston Close, Blackburn, Lancashire, BB2 3TX.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: Inspectors should be alert for this kind of simple but critical fault on other engines. Such forms of cable retention are by no means uncommon.

DATE: 5 September 1985

Peter Lovegrove
Chief Inspector to the BMAA.

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DEFECT WARNING No 016.  AIRCRAFT TYPE: Tiger Cub 440

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MJ2V.

DESCRIPTION OF DEFECT: The propeller developed a split which ran from near the hub to within 75 mm (3 inches) of the tip. The split also passed fully through the propeller from the front to the rear face, over the whole length of the crack. Only one blade was affected.

AIRWORTHINESS IMPLICATIONS: Were this sort of crack to be about to start and be undetected by good ground-inspection before a flight, the high stresses associated with normal use could possibly cause it to emerge and propagate rapidly. Were anything of this nature to happen, it is quite likely that events would be too fast for the pilot to stop the engine before the propeller had been lost, or damage done by the resultant excessive vibration. The stresses locked into glued-up unseasoned wood, as it dries out, are extremely high.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The propeller had been run on the engine for 10 1/2 hours of ground-running in and 2 hours of flying.

PROBABLE CAUSE OF FAILURE/DEFECT: There can be little doubt that this type of failure of a wooden propeller is due to the timber having been insufficiently seasoned before lamination.

(The Chief Inspector experienced exactly such a failure of a mahogany propeller which he built, from timber sold as 'fully seasoned' but not so. The noise of the "crack" was so loud that, coming in the night from the loft where the propeller lay, it was thought that the house-roof structure had collapsed, such was the energy and suddenness of failure!)

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): There is only one possible rectification for this sort of failure and that is to build all propellers from well-seasoned wood.

REPORTED TO THE MANUFACTURER/AGENT: Reported to Midland Ultralights, who were the suppliers of the propeller as part of an engine/propeller pack for this Cub. They are not believed to be the manufacturers of the propeller.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: K. Bannister, 21 Allan Drive, Forres, Morayshire, Scotland, IV36 0JX.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: The propeller was of 56 inches diameter and 36 inches pitch. The Serial Number was 0030, but the actual manufacturer has not yet been identified.

DATE: 29 August 1985

Peter Lovegrove
Chief Inspector to the BMAA.
DEFECT WARNING No 017. AIRCRAFT TYPE: Hiway Demon/Skytrike with Hiro engine.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MBCM

DESCRIPTION OF DEFECT: The horizontal tubular braces between the two vertical frame tubes had failed, the top one having broken completely and the lower one having cracked. These 1" O.D. tubes are each sleeved with a 1 1/4" O.D. tube which serves as a spacer and so the faults were somewhat obscured.

On closer examination, the upper left-hand bolt, securing the Hiro engine to its mounting, was missing altogether. This bolt would normally pass through a cushioned bush with an aluminium distance piece and is not wire-locked, (on this particular aircraft).

The loss of this bolt allowed the engine thrust and consequent vibration to be carried through to the bracing tubes. At certain speeds, the amplitude of this vibration would be quite extreme.

AIRWORTHINESS IMPLICATIONS: Clearly, this sort of engine-mounting problem could lead to a dangerous situation, were it to go undetected. There is no flex-wing yet built which can tolerate its engine-mounting bolts beginning to fall out, allowing the engine mass to vibrate forcibly and, possibly, as here, to start causing breakages of the trike-frame structural members.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The machine has flown for a total of 24 hours in the hands of the present owner and 80 hours total.

PROBABLE CAUSE OF FAILURE/DEFECT: Probably, general engine-vibration has caused the loss of the bolt, which has then allowed the engine to vibrate too freely, with the resulting fracturing of the cross-braces.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): First of all the engine-mounting bolt has to be replaced and, with all of its counterparts, wire-locked. The broken and cracked cross-braces have to totally replaced. The sleeves may be satisfactory, but discretion should be used.

REPORTED TO THE MANUFACTURER/AGENT: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: A. Trapp, 14, Brecknell Rise, Broadwaters, Kidderminster, Worcestershire, DY10 20F.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: It would be reasonable to assume that this engine-mounting bolt did not loosen and fall out in a very few moments. There is every likelihood that it became loose over an extended period but went undetected during preflight inspections. Inspectors should try to get owners to understand the vital importance of doing a thorough preflight inspection, not just a quick 'look-see'. If this particular owner was unable to detect the extra magnitude and the different nature - for it must have been - of the vibration in flight, which had begun to occur here, he might have gone on failing to notice it up to the real danger point.

DATE: 15 September 1965

Peter Lovegrove
Chief Inspector to the BMAA.

[Diagram showing broken brace, sleeve spacers, and bolt missing at this location]
DEFEAT WARNING No 018. AIRCRAFT TYPE: Not directly relevant.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not relevant.

DESCRIPTION OF DEFECT: A fuel-filter, of the type fitted to cars and having a paper element, was installed in the fuel line to a Fuji Robin 250 engine. After only about 10 to 12 hours, the paper began to disintegrate, allowing tiny fragments and fibres to flow down the fuel line, and partially block the main jet.

This, of course, gave an immediate leaning-out of the fuel mixture, which produced over-heating and p-e ignition. Any attempt to maintain more than half throttle for prolonged periods - such as for take-off - would have resulted in a holed piston or a piston seizure.

AIRWORTHINESS IMPLICATIONS: Clearly, this sort of fuel-feed problem could lead to a dangerous situation, were it not recognised immediately and dealt with accordingly.

Any in-flight engine failure can be assumed to be a potentially lethal event, because even the most expert pilot may just happen to be over terrain where there is simply nowhere to make a safe forced landing.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 10 to 12 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Presumably, the fuel had to be attacking the paper filter element (because of the oil content in the petrol?). It is also just possible that this was a faulty element.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION):

The owner fitted a metal, transparent fuel-filter, of the type with a fine, double-layer gauze element made from stainless steel. This has proved totally satisfactory. (With care, it may also be suitable for cleaning by back-washing with petrol).

REPORTED TO THE MANUFACTURER/AGENT: Not applicable.


ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: Inspectors and owners may wish to know that the latter type of stainless-steel filter can be obtained from "Motospares", 41 Pittencriffe St, Dumferline, Fife, Scotland.

DATE: 23 September 1985

Peter Lovegrove
Chief Inspector to the BMAA.

DEFEAT WARNING No 019. AIRCRAFT TYPE: Pterodactyl.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known.

DESCRIPTION OF DEFECT: The reduction drive-belt can on the Guyuna 450, single-carburettor engine system worked loose during a flight. The sub-assemble slid forward, shedding three of the four bolts and allowing the front of the propeller to rub against the bolts and allowing the front of the propeller to rub against the outer face of the driver pulley: this removed a considerable amount of wood from the front face of the propeller (see sketch).

The pilot limped back to base on the only remaining (very slack) belt.

The engine was at full power at the time of the slippage.

AIRWORTHINESS IMPLICATIONS: Clearly, this problem could have led to a totally disabled reduction system, or a shattered propeller. Either might have had disastrous results, in common with all engine failures, whatever the reason.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: In basic engineering terms, the system used to clamp the boss which slipped, is extremely poor.

The boss has a radial slit which - with four belts in good condition - may be close to being in the horizontal position, assuming that the dimensions of the cam has been properly chosen, to allow rotation of the cam to tension the belts as they slacksen with use. Yet the main support-block is slist in the vertical direction, clearly a very unsate choice of location, if proper clamping is to be achieved. It is difficult to ensure that a horizontal split - so giving the desired clamping - by applying a horizontal force.

The can-cum-boss also lacks any kind of retention in the support block. If, therefore, the clamping force becomes inadequate, the can will automatically move forward under the propeller thrust.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION):

It would have been very simple to leave an extended flange to bear against the rear of the support block, so transmitting the propeller thrust directly to the support block, leaving the clamping action to do only with holding the belts in tension.

Alternatively, had the can been made slightly larger in diameter, a groove could have been cut into its periphery and the clamping bolt arranged to locate in this.

The sketches give an indication of these schemes.

For any unmodified arrangement, it is vital that the clamping
Defect Warning No 020. Aircraft Type: Not reported.

Registration Letters of Aircraft Faulted: Not known.

Description of Defect: The steel flange broke free from the crankshaft pulley on a 320 or 440 Nicklow reduction (size of twin engine not identified). The "Pop" rivets had failed.

The steel flange damaged the propeller badly.

Airworthiness Implications: As always, anything which can damage a propeller on the ground must put both the pilot and bystanders at risk; in the air, the pilot is at even greater hazard.

Hours Flown, Flights Made, Relevant to this Defect: Not known for certain but believed to be only a relatively few hours.

Probable Cause of Failure/Defect: This problem of rivets working loose and failing, finally allowing drive-belt flanges to break free, is well known. Inspectors must be vigilant for any developing looseness of pulley-flanges.

Recommended Rectification (Repair, Replacement, Modification): It is likely that the pulley will be worn and the rivet-holes damaged, making safe repairs impossible. A replacement pulley must normally be fitted.

Reported to the Manufacturer/Agent: Not applicable.

Name and Address of Person Reporting Defect: Anonymous.

Additional Information for Inspectors to Note: Inspectors should remember that this is a very common problem, not limited to any one make of propeller drive-reduction.

Date: 23 September 1985

Peter Lovegrove
Chief Inspector to the BMAA.
DEFECT WARNING No 021. AIRCRAFT TYPE: Gemini Flash. ENGINE TYPE: Robin 440 (Standard "Heavy" type)

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not reported.

DESCRIPTION OF DEFECT:

DEFECT No 1.

During a full-power climb-out, with two people on board, at about 1000 ft, the crankshaft broke. A safe emergency landing was executed in a stubble field.

The break occurred at the magneto end of the shaft, where the parallel section meets the larger-diameter part which carries the big end. (See sketch).

The crack appears to have propagated over about 50% of the shaft cross-section before the latter finally broke.

AIRWORTHINESS IMPLICATIONS: A fault as serious as a crankshaft failure really needs no elaboration. A forced landing is always inevitable and that brings its own grave risks, especially over unsuitable terrain.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: In excess of 200 hours during 1985.

PROBABLE CAUSE OF FAILURE/DEFECT: First signs are that the problem may have begun were the big-end pin-hole was machined through the large-diameter part. This machining may have removed the small radius which had existed in the corner and could possibly have encroached into the shaft enough to start the classic fatigue failure.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION):

The only rectification is the obvious one of replacing the shaft.

More important is the question, "How can one tell if a shaft like this is about to fail?" The simple answer is "You can't".

That reinforces the oft-repeated warning always to fly, as far as possible, as though the engine is about to stop. Microlight pilots should be advised constantly to look around for their next emergency landing site before they lose sight of the last one.

REPORTED TO THE MANUFACTURER/AGENT: Reported by the owner to Mainair Sports.

NAME AND ADDRESS OF PERSON REPORTING DEFECTS: Kelvin Woodard, 127 West Acre Drive, Old Catton, Norwich, Norfolk, NR6 7HX. Telephone 0603-49934.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: When the crankcase was split, in order to get at the broken crankshaft, a wire paper-staple was found inside the halves! Somewhere along the line, somebody was very careless in allowing this to get in, presumably through the part.

DEFECT No 2. Approximately ten hours after the first problem - described above - the next occurred. In a roughly similar situation during flight, the propeller-boss sheared away from the reduction-drive pulley. (See sketch).

Again, a safe emergency landing was carried out, this time on a disused airfield.

AIRWORTHINESS IMPLICATIONS: Exactly the same as for the crankshaft failure.


PROBABLE CAUSE OF FAILURE/DEFECT: Because of the pitch circle diameter of the propeller bolts, there is apparently very little room to leave a significant radius at the back of the boss.

Kelvin Woodard has already written to Mainair Sports, suggesting that the small corner radius may be a contributory factor in this failure.

RECOMMENDED RECTIFICATION: Total replacement of the failed unit is the only possible step.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: Inspectors are again reminded that neither they, nor the owners, can make any change to a Permit aircraft except on the expressly written instructions of the manufacturers, who will have obtained the authority of the CAA to make those changes to the approved design. Any replacement part must be a fact—supplied component or the aircraft will thenceforward be flying illegally and the pilot will be uninsured.

Peter Lovegrove Chief Inspector to the BMAA.

DATE: 30 September 1985
DEFECT WARNING No 022. AIRCRAFT TYPES: Goldwing.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MRRM.

DESCRIPTION OF DEFECT: During an inspection of the aircraft for Exemption renewal, areas of severe corrosion were found along the cables which actuate the ailerons and spoilers, in the region of the spoiler box, as indicated in Figure 1.

AIRWORTHINESS IMPLICATIONS: Failure of a such a cable would cause a loss of roll control, which could prove catastrophic.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Presumably, the long-term ingress of rain-water.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
The cables in question should be lubricated carefully, to exclude moisture from the strands. Very frequent inspection of the cables should be carried out, to monitor for any possible build-up of corrosion. In view of the location and exposure of the cables, no other solution seems feasible.

REPORTED TO MANUFACTURER: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECTS:

DATE: 14 October 1985

Peter Lovegrove
Chief Inspector to the BMAA.
DEFECT WARNING No 023. AIRCRAFT TYPES: Goldwing.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MJDP.

DESCRIPTION OF DEFECT: The port stub axle snapped during the take-off run, at a speed of around 15 kt. The aircraft slowed to port and the other stub axle snapped. Having turned through about 200 degrees, the aircraft came to rest. Both blades of the propeller were broken when it struck one of the wheels.

Apart from some very slight bruising on the tip of the starboard wing, no other damage occurred.

AIRWORTHINESS IMPLICATIONS: Such failures of stub axles obviously only present their most serious hazard during take-off or landing but, if parts of a propeller - rotating at full power as here - are going to be shed, the risks are clearly grave, especially if spectators happened to be directly in the line of fire.

The machine was moving at only 15 kt; it might have been a much worse matter had the failures occurred during the normal landings at 40 kt.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: A previous owner had widened the track of the main wheels, apparently by inserting a 1 inch outside-diameter, aluminium-alloy tube inside existing nylon bushes. From the information available, (see Figure 1) it appears that the bushes were located inside a 1 1/2 inch outside-diameter tube which was - in turn - inserted inside the main axle-box.

Plastic wheel-hubs rotated directly on the 1 inch diameter stubs, rubbing them away. The stubs finally failed where the tube-wall had been most thinned, at the bottom (see Figure 2 below).

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): If one is going to use plastic hubs, (with no ball-, roller- or sacrificial-sleeve bearings), rotating on aluminium stubs, the soft plastic will collect grit and cut away the harder alloy.

The provision of grease, however copiously applied, can actually make matters worse, since it helps to grab and retain particles of grit and any other abrasive material which abound. (The grease in valve-grinding compound keeps the abrasive in place in exactly this manner).

So plastic hubs should not be used with plain axles, if the latter are of fairly soft material, like some of the unspecified aluminium alloys which have been used. Failure will soon occur and, if the stubs are tubes, rather than round bars, they will fail even earlier!

Therefore, with plastic hubs, if plain stubs are to be used, they should at best be solid alloy or steel, if the owner cannot calculate the loading actually involved. Even with alloy round-bar stubs, it might be possible to fit steel tubes on the stubs as sacrificial sleeves, to be thrown away and replaced when necessary.

REPORTED TO MANUFACTURER: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECTS: Peter Merritt, Nutkins Farm, Kingsclere, Newbury, Berkshire, RG15 8SS.

OTHER POINTS FOR INSPECTORS TO NOTE: Mr Merritt mentioned that he was aware that the stub axles were, at best, a very poor arrangement. He intended to remedy the problem in the winter! This is a classic example of why preventive maintenance should not be put off 'until later'. If an owner knows that something is wrong, he/she must be encouraged always to think in terms of immediate rectification.

DATE: 20 October 1985

Peter Lovellgrove
Chief Inspector to the BMAA.

Figure 1

Figure 2

Weight of Aircraft Causes Most Wear Here. Whole Break Started.
DEFECT WARNING No 024. AIRCRAFT TYPES: Flexiform, Dual Striker and Dual Sealer.

NOTE
WILL INSPECTORS THAT THE MODIFICATIONS CALLED FOR IN THIS NOTE ARE OBLIGATORY. THE AIRCRAFT IN QUESTION MUST NOT BE FLOWN UNTIL THE SPECIFIED MODIFICATIONS HAVE BEEN CARRIED OUT.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not applicable. All Dual Strikers and Sealers are affected.

DESCRIPTION OF DEFECT: Structural failure of a Solo Striker wing during aerobatics in France led to a series of tests to prove strengthening modifications on the Solo wing. Some build standards of the Dual Striker and Sealer, being of similar construction to the Solo, can suffer the same weaknesses, which lie in the leading edges and the control-frame down-tubes.

BACKGROUND: On the basis of information gained during the Solo tests and some individual component tests, modifications have been designed which give some confidence that the wing can support in excess of 1368 kg (222 lb. payload at 4g), with no safety factor.

Three parts of the airframe structure are affected, viz:

(a) The bowsprit is extended to 50 inches, to reduce compressive loads in the leading edges.

(b) The control-frame down-tubes are fitted with 1 1/2 inch x 18 s.w.g. over-sleeves; an alternative construction is given below.

(c) The outer bowsprit and inner flying wires are upgraded to 4 mm stainless steel.

(In designing the modifications, the need for Type Acceptance has been borne in mind. Discussions with the CAA have taken place to reduce the risk of having to carry out further modifications on these wings for Type Acceptance in February 1986.)

AIRWORTHINESS IMPLICATIONS: Failure of a leading edge, down-tube or rigging wire would lead to catastrophic failure of the wing.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not applicable.

OBLIGATORY MODIFICATIONS: The following standard is the minimum necessary. The modifications must be introduced in addition to any other strengthening features found on various models, manufactured over the production lives of the wings. Some of the features listed will already exist on some models but are included to constitute a definition of the required standard.

1. The bowsprit must be extended to 50 inches. Details are given in Figure 1. Construction is from a single, unsleeved length of 1 7/8 inch diameter x 17 s.w.g. HT-30-TP, seamless drawn tubing.

Local reinforcement is permitted but not obligatory.

2. The inner rigging from the bowsprit to the leading-edge is to be 3 mm diameter cable (to B.S. 412 or 15) and remains the same length and in the same location as the original.

3. New outer wires, from the bowsprit to the leading edges, are needed. These must be 4 mm diameter stainless steel 7 x 19 or 7 x 7 construction. Terminations must be made with copper swages only.

The pulley, if fitted in the old bowsprit, must be replaced by a 5/16 inch diameter bolt, (to B.S. 1768 or similar) on to which both front bowsprit wires are to be individually terminated.

4. The top front-to-rear rigging must be extended to the tip of the new bowsprit. This may remain as 2.5 mm diameter wire minimum.

5. The rigging from the control frame to the bowsprit must be extended to the tip of the new bowsprit. Wire of 2.5 mm diameter is the minimum necessary.

6. New rigging, 3 mm diameter minimum, must be added to run from the control frame to the noseplate. (Separate cables to each noseplate/leading-edge bolt will provide a gap for the top of the control frame when rigging, but any position on the noseplate is satisfactory).

7. The inner flying wires must be 4 mm diameter minimum. The wires are to be of stainless steel, 7 x 19 or 7 x 7 construction. Terminations must be made with copper swages only.

8. The outer flying wires must be 3 mm diameter minimum.

9. The rigging wires running from the control frame to the rear of the keel must be 3 mm diameter minimum.

10. The control-frame uprights must be constructed as shown in Figure 2. Additional inserts are permitted if already fitted. 1 1/8 inch diameter x 16 s.w.g. tubing may be used in place of 1 1/8 inch x 17 s.w.g. HT-30-TP seamless drawn tube must be used.

A satisfactory alternative is 1 1/4 inch diameter x 17 s.w.g. full-length sleeves, over 1 1/8 inch x 17 s.w.g. with 1 inch x 17 s.w.g. internal sleeves. These 1 inch sleeves must be a minimum length of 20 inches and centrally located.
11. The leading edges must be 1 7/8 inch diameter x 17 s.w.g., extending from the noseplate to the wing-tip, with a 2 inch x 17 s.w.g. over-sleeve running from the noseplate to a point just outboard of the outer bowsprit-wire termination. Additional reinforcement is permitted but not obligatory.

A join in this over-sleeve is permitted, provided it occurs within 9 inches inboard of the inner bowsprit-wire termination.

Inspectors must note that leading edges and control-frame uprights must be examined carefully to determine their construction, before signing off the aircraft. These wings vary considerably in their build standard.

Other points for inspectors and owners to note:

1. Whilst the modifications referred to in this bulletin should increase the strength of the wings to 4g, they will still not meet the strength requirements of BAA Section 5. Normal speeds, attitudes in flight and manoeuvres must be observed.

2. Embodiment of these modifications must be properly recorded in the aircraft's Airframe and Engine log-book. All wings modified in accordance with this bulletin must undergo an inspection after completion of the work, irrespective of when the last inspection was carried out. The inspector must be satisfied that material specifications are correct and that rigging work has been properly carried out, before signing off the aircraft.

Reported to Manufacturer: The manufacturer of these wings is aware of the problem and has received this bulletin.

Name and address of person reporting these defects: David Simpson 12 Portman Close, Bedford Rd, Hitchin, Hertfordshire, SG4 2UD.

(Materials and kits enabling these modifications to be carried out, are available from Flexiflor Skysails or from the above address)

Date: 19 November 1985

Peter Lovegrove
Chief Inspector to the BMAA.
CA A APPROVED COMPANY

SERVICE BULLETIN

MODELS AFFECTED:

Puma Sprint

SUBJECT:

Tip attachment of sail to airframe

AIRCRAFT AFFECTED:

All Sprint wings employing "D" ring sail fixing at tip attachment points

COMPLIANCE:

BCAR Section S

DESCRIPTION:

If the bolt that passes through the "D" ring and leading edge is not fully tightened there may be a tendency for the large diameter washer at the bolt head to cut into the webbing of the sail attachment point.

MANPOWER:

Owner/Operator - Inspection only Southdown International Ltd - Repair

C.A.A. Approval:

N/A
DEFECT REPORT No 025

AIRCRAFT TYPE: Quicksilver MX & MX 2.

THIS NOTE ACTUALLY COMPRISSES A WHOLE SERIES OF DEFECT REPORTS ON QUICKSILVER MX-1 AND MX-2.

SENT IN BY: PHILIP J. BROGMAN, 73 Conway Drive, Shepshed, Leicestershire.

EACH DEFECT, AND THE REMEDIAL ACTION TAKEN OR RECOMMENDED, IS LISTED IN SEQUENCE, IN VIEW OF THEIR NUMBER.

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DEFECT No 025/1. (MX)

The battens near the wing root, which are a push fit, came out of position, causing slight damage to the propeller in flight.

REMEDY FOR DEFECT No 025/1:

Owner has converted the relevant battens to have a forked rear end, to clip in front of the trailing edge and, thus, prevent their sliding backwards.

(This problem is actually covered by a factory Service and Maintenance Bulletin, No ALL-83-01-A, dated 1 January 1983. P.C.L.)

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DEFECT No 025/2. (MX)

The wheel of the aircraft ran into a cow-pat on touching down! It splashed into the pilot's face, causing him instinctively to pull back on the stick. The aircraft stalled and minor damage occurred to the undercarriage on the subsequent heavy touch-down.

REMEDY FOR DEFECT No 025/2:

Fitting mudguard to the wheels may be an appropriate solution!

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DEFECT No 025/3. (MX)

On a Cuyuna engine, with an Epper belt-drive, the latter shed all of its teeth in flight.

REMEDY FOR DEFECT No 025/3:

Pilot has fitted a new belt but has no firm idea as to how long it may last.

(He should refer to the factory Service and Maintenance Bulletin No D-MX-81-10A which covers the installation of a replacement V-Belt Drive Assembly. An Epper factory upgrade kit is reported to have been available since 1982. Bulletin No D-MX-MX2-82-12A also refers. P.C.L.)

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DEFECT No 025/4. (MX)

A parachute was installed on top of the wing, near the king-post.

This so altered the flight-handling characteristics of the machine that it tended to nose down. The result was a bent undercarriage on landing.

REMEDY FOR DEFECT No 025/4:

Owner has moved the parachute to a new location behind the pilot's seat. This has solved the problem.

*****************************************************************************

DEFECT No 025/5. (MX)

A Cuyuna engine was being run on POI synthetic oil. On stripping the engine down, score-marks were found on the pistons and in the barrels, necessitating reboring and the fitting of new pistons.

After reboring, the rear barrel was still running too hot and causing misfiring.

REMEDY FOR DEFECT No 025/5:

Owner carefully sealed up all of the gaps around the engine casings to improve the cooling-air flow over the rear cylinder.

(Aerolite Ltd suggest that the above cure deals with the effect but not the cause. They say that a hard landing can knock the ignition timing out. Factory timing-specifications have also changed.

Carburettion is critical. Nevertheless, the chosen 'fix' has been used on early engine packs and has proved effective. P.C.L)

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DEFECT No 025/6. (MX)

A Cuyuna engine was very prone to burning out its plugs, causing excessive misfiring.

REMEDY FOR DEFECT No 025/6:

The owner found that the timing was incorrect. Checking the engine number against manufacturer's data indicated that the timing had been altered on some engines, of which his was one.

(Owners are advised to refer to the factory Service and Maintenance Bulletin No D-MX-MX2-82-16A for very specific information on Cuyuna engines. P.C.L.)

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DEFECT No 025/7. (FX 2)

A machine with a Rotax 503 engine suffered severe erosion of the leading edges of the propeller-blades, when flying in rain.

REMEDY FOR DEFECT No 025/7:

The owner found that the propeller (a Martin Reed unit) was made from a combination of soft and hard laminations, the soft ones allowing accelerated wear.

Because of the high rotational speeds of our microlights' propellers (compared with those commonly used on General Aviation
September 1985

FUJI ROBIN 2 PM LIGHTWEIGHT ENGINE INSTALLED IN PUMA SPRINT AIRCRAFT

There have been several reports of crankshaft failure in the lightweight version of the Fuji Robin EC44 engine.

Two of these early failures involved installations in Puma Sprint aircraft, one being the prototype installation in a Southdown operated aircraft. The cause of the failures was traced to a torsional vibration at the flywheel end of the crankshaft caused by the design R.P.M. limit being exceeded due to over-tuning of the unit.

The recommended maximum R.P.M. for this engine is 6,900 R.P.M. Engines that have been operated observing this R.P.M. limit have shown no signs of fatigue and given several hundred hours of trouble-free service to date.

It is recommended that a calibrated R.P.M. counter be used with this installation and that the maximum R.P.M. limit of 6,900 R.P.M. be adhered to at all times.

It is considered unnecessary for an engine strip down and crankshaft inspection if the unit has a minimum of 20 hours service without incident and the maximum R.P.M. limit has been observed.

From the documented successful operation of a number of these units there is no reason to suspect their integrity provided the design operational limits are maintained.

Whilst any damage resulting from the mishandling of this engine would be contained within the crankcase it should be remembered that aircraft must be operated in a way that engine failure or loss of power should not prove catastrophic (see Southdown International Report R.8 - Puma Sprint Operators Instruction Manual Issue 4).

With this in mind it is recommended that aircraft fitted with this type of engine should have an additional placard attached to the base tube of the trike unit.

The following flight limitations should be displayed:

1. The maximum R.P.M. limit - 6,900 R.P.M.
2. "This aircraft should not be operated in such a way that an engine failure would cause injury to its occupants or persons on the ground."
3. "At all stages of flight it should be possible to execute a successful 'dead-stick' landing in the event of an engine failure."
Recently, an occasion arose where a Puma Sprint came up for renewal of its Permit. The aircraft had a Lightweight Robin twin.

As required by the BMAA, the inspector wanted the engine stripped and the crankshaft checked; the owner refused to do this. I was asked to settle the problem.

The inspector was totally correct in refusing to sign off a machine without carrying out the inspection in the prescribed manner. I fully support him in that.

The owner was able to refuse to strip down the engine on a PERMIT aircraft when the manufacturers had confirmed to him, by phone, that no strip-down was considered necessary by them.

There was only one course of action: I asked the manufacturer to confirm IN WRITING that no strip-down of this engine was needed. Such a written statement has been received and is appended to this note, along with the conditions attached by the manufacturer. It protects our inspectors against any possible outcome from a subsequent engine-crackshaft failure on one of these aircraft.

Inspectors cannot sign off Southdown International Puma Sprits with Lightweight Robin Twins for Permit renewal without stripping the engine. When BMAA inspectors examine such a machine, they must write in the Airframe and Engine logbook "Engine not stripped down for crankshaft inspection, as authorised by Southdown International in their letter of September 1985", or some words close to that effect. That relieves the inspector of all personal responsibility for the engine crankshaft's condition.

In all other respects concerning external examination of the engine, etc., the survey must be done in its entirety.

Inspectors should note that this directive applies only to PUMA SPRINTS MADE BY SOUTHDOWN INTERNATIONAL LTD and operating on a PERMIT.

ALL OTHER BMAA AIRCRAFT FITTED WITH THIS ENGINE ARE STILL SUBJECT TO THE EXISTING REQUIREMENT FOR AN ENGINE STRIP-DOWN AND CRANKSHAFT INSPECTION.

Peter Lavoige
Chief Inspector to the BMAA.

3 October 1985
**SPECIAL TOOLS:** Factory repair only

**WEIGHT AND BALANCE:** N/A

**PUBLICATIONS AFFECTED:** None

**ACCOMPLISHMENT INSTRUCTIONS:**

An inspection of the webbing should be incorporated in all pre-flight checks. The retaining bolt should be correctly tightened. If any severe fraying of the webbing is found, the operator should contact the service department to arrange a factory inspection.

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**NOTES:** An appropriate entry should be made in the Aircraft Log Book upon accomplishment if ownership of aircraft has changed please forward to new owner.

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**Do Not Confuse WITH DEFECT REPORT**

**017.**

**1.**

**Check**

Please pass a photocopy of the attached note "Bulletin 17A" to any owner of the type of machine in question, if he/she does not already have one. Also advise him/her to make contact with Mainair Sports so that future Bulletins will reach, directly, all owners of both new and second-hand machines of the type.

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**AERONAUTICS BULLETIN No 17**

21st September, 1985

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**THIS BULLETIN HAS BEEN MADE MANDATORY BY THE CIVIL AVIATION AUTHORITY. ACTION MUST FOLLOW**

**Important.** If you no longer own your Mainair aircraft, please pass this bulletin to the new owner, or return it to us with details.

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**ALL TRIKE UNITS - BUT SPECIFICALLY DUAL SEATERS**

A failure has occurred of a main vertical strut (pylon) on a Gemini trike unit. The pylon fractured during touch-and-go flight training. The pilots reported the aircraft feeling "funny" after an awkward landing (touch-and-go) and inspection revealed a fatigue failure around the tube emanating from the 1/4" dia hole to which the side struts are attached. The strut has an internal safety wire and additional rear engine support rigging.

1) Hours. The aircraft has been operated for 400 hours of flight training.

2) "Life". The strut is "lifed" in the manual at 500 hours. The investigation into the fracture has not yet been completed but it is almost certain to be fatigue. It is considered that 400 hours of flight training is probably equivalent to 500 hours of normal flight operation.

**IMMEDIATE ACTION PRIOR TO FURTHER FLIGHTS OF ANY AIRCRAFT WHICH EITHER:**

a) has logged more than 200 hours
b) has logged more than 150 hours and been used for pilot training
c) you are uncertain as to the aircraft's previous history and logged time

**ACTION**

The main seat frame channel and nylon bush must be unbolted and all clear and the area around the fore and aft and side-to-side bolt holes carefully examined using good light and a magnifying glass to search for cracks or deformation. Any signs of failure or small cracks point to fatigue or impact damage failure and the strut must be replaced.

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**RECORDING**

The attached form must be completed and returned to us immediately in the case of aircraft requiring action now, and as soon as the mandatory inspection has been carried out in all other cases. Further action: THIS INSPECTION MUST BE REPEATED EVERY 50 HOURS.

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**FUEL TANKS**

It has been noticed that some owners of Gemini trike units are not tightly fastening the plastic fuel tank in place, relying on the supporting structure to retain. The webbing strap must be fastened around the vertical strut, over the front of the tank, around the keel ON THE REAR SIDE OF THE TELESCOPIC SEAT STRUT/KEEL JOINT, buckled and pulled very tightly at the front of the tank. This action pulls the tank firmly onto the keel, tightly into the supporting bracket on the vertical strut, and prevents chafing on the structure and damage to the electrical wiring.

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**440 FUEL RODIN THROTTLE CABLES**

Fretting has been noticed where the throttle cable passes between the spark plug coil. Cure is achieved by clipping the cable around the rubber boot with a plastic cable tie to prevent it vibrating. Any severe wear of the rubber boot can be repaired with a silicone rubber compound or a shrink sleeve.
DEFEAT WARNING No 024. AIRCRAFT TYPES: Flexiform 
Dual Striker and 
Dual Sealandar.

NOTE
WILL INSPECTORS THAT THE MODIFICATIONS CALLED FOR IN THIS NOTE ARE OBLIGATORY. THE AIRCRAFT IN QUESTION MUST NOT BE FLOWN UNTIL THE SPECIFIED MODIFICATIONS HAVE BEEN CARRIED OUT.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not applicable. All Dual Strikers and Sealanders are affected.

DESCRIPTION OF DEFECT: Structural failure of a Solo Striker wing during aerobatics in France led to a series of tests to prove strengthening modifications on the Solo wing. Some build standards of the Dual Striker and Sealandar, being of similar construction to the Solo, can suffer the same weaknesses, which lie in the leading edges and the control-frame down-tubes.

BACKGROUND: On the basis of information gained during the Solo tests and some individual component tests, modifications have been designed which give some confidence that the wing can support an excess of 1368 kg (322 kg payload at 4g), with no safety factor.

Three parts of the airframe structure are affected, viz:

(a) The bowsprit is extended to 50 inches, to reduce compressive loads in the leading edges.

(b) The control-frame down-tubes are fitted with 1 1/2 inch x 18 s.w.g. over-sleeves; an alternative construction is given below.

(c) The outer bowsprit and inner flying wires are upgraded to 4 mm stainless steel.

(In designing the modifications, the need for Type Acceptance has been borne in mind. Discussions with the CAA have taken place to reduce the risk of having to carry out further modifications on the wings for Type Acceptance in February 1986.)

AIRWORTHINESS IMPLICATIONS: Failure of a leading edge, down-tube or rigging wire would lead to catastrophic failure of the wing.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not applicable.

OBLIGATORY MODIFICATIONS: The following standard is the minimum necessary. The modifications must be introduced in addition to any other strengthening features found on various models, manufactured over the production lives of the wings. Some of the features listed will already exist on some models but are included to constitute a definition of the required standard.

1. The bowsprit must be extended to 50 inches. Details are given in Figure 1. Construction is from a single, unsleevd length of 1 7/8 inch diameter x 17 s.w.g. HT-30-TF, seamless drawn tubing.

Local reinforcement is permitted but not obligatory.

2. The inner rigging from the bowsprit to the leading-edge is to be 3 mm diameter cable (to B.S. WI2 or 13) and remains the same length and in the same location as the original.

3. New outer wires, from the bowsprit to the leading-edge, are needed. These must be 4 mm diameter stainless steel 7 x 19 or 7 x 7 construction. Terminations must be made with copper swages only.

The pulley, if fitted in the old bowsprit, must be replaced by a 5/16 inch diameter bolt, (to B.S. 1768 or similar) on to which both front bowsprit wires are to be individually terminated.

4. The top front-to-rear rigging must be extended to the tip of the new bowsprit. This may remain as 2.5 mm diameter wire minimum.

5. The rigging from the control frame to the bowsprit must be extended to the tip of the new bowsprit. Wire of 2.5 mm diameter is the minimum necessary.

6. New rigging, 3 mm diameter minimum, must be added to run from the control frame to the noseplate. (Separate cables to each noseplate/leading-edge bolt will provide a gap for the top of the control frame when rigging, but any position on the noseplate is satisfactory).

7. The inner flying wires must be 4 mm diameter minimum. The wires are to be of stainless steel, 7 x 19 or 7 x 7 construction. Terminations must be made with copper swages only.

8. The outer flying wires must be 3 mm diameter minimum.

9. The rigging wires running from the control frame to the rear of the keel must be 3 mm diameter minimum.

10. The control-frame uprights must be constructed as shown in Figure 2. Additional inserts are permitted if already fitted. 1 1/8 inch diameter x 16 s.w.g. tubing may be used in place of 1 1/8 inch x 17 s.w.g. HT-30-TF seamless drawn tube must be used.

A satisfactory alternative is 1 1/4 inch diameter x 17 s.w.g. full-length sleeves, over 1 1/8 inch x 17 s.w.g. with 1 inch x 17 s.w.g. internal sleeves. These 1 inch sleeves must be a minimum length of 20 inches and centrally located.
The leading edge must be 17.8 kg/m, extending from the nose cone to the rear of the nose within the line of the leading edge. Additional reinforcement is permitted but not obligatory.

A join in the nose cone is permitted, provided it occurs completely inside the fuselage. The join must be between 17.8 kg/m and 10.5 kg/m. A join in the nose cone is also permitted, provided it occurs between 17.8 kg/m and 4.6 kg/m.

The tubes shown in the concave panel are to be 17.8 kg/m extending from the nose cone to the rear of the nose within the line of the leading edge. Additional reinforcement is permitted but not obligatory.

A join in the nose cone is permitted, provided it occurs within the line of the leading edge. A join in the nose cone is also permitted, provided it occurs within the line of the leading edge. Additional reinforcement is permitted but not obligatory.

Steel reinforcement is not permitted in the nose cone of the nose cone. Additional reinforcement is permitted but not obligatory.

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NOTES

1. Fix oversleeve with pop rivets: one through both tubes and spacer at positions 1, 2, and 3. One through spacer (countersunk) and 1/8" only at position 2.

2. Locate 1 1/2" oversleeve centrally on 1 1/2".

3. All tube lengths ±0.25". Spacer tolerances as shown.

FIGURE 2

C. Simpson
16-11-85

MATERIAL: ANODIC PVC, NYLON, OR ALUMINIUM

35.1
35.5

35.0
25.0
10mm
light aircraft) there is a marked propensity for them to erode excessively in rain. The presence of softwood laminations would certainly allow the erosion to be accelerated but it is not the root cause of it; the rain is!

A propeller with all laminations of hardwood was fitted.

(A leading-edge protection formed with a thin layer of glass fibre, or rotor-blade tape (as used on helicopters) may also be of help. But do not forget to check the propeller balancing carefully and remember that any crude application of glass fibre may ruin the propeller-blade profile and lower the thrust produced. P.C.L.)

*******************************
DEFECT No 025/8. (MX)
The owner had fitted a bottle to the end of the pipe which ran from the carburettor overflow, in an attempt to prevent petrol from being sprayed everywhere.

The captured fuel/oil mixture rose to the level of the end of the pipe and caused misfiring, due the back-pressure created.

REMEDY FOR DEFECT No 025/8:
The existing pipe should be extended and better located, rather than terminated in a catch-pot. The tube may need to be slightly larger in diameter, in order not to create back-pressure.

(However, Aerolite Ltd suggest that the carburettor may not be in correct working order and may need close scrutiny to determine the reason for the excessive overflow. P.C.L.)

*******************************
DEFECT No 025/9. (All MX 1 and 2s)
The level of engine noise is such as to be capable of causing permanent ear damage.

REMEDY FOR DEFECT No 025/9:
Obviously, ear defenders of some type are a vital item of equipment for the pilot of any Quicksilver. Equally, it is no exaggeration to say that the risk is common to most older microlights and is not too remote from some recent types! It is simply not possible to have a 20-40 H.P. engine at full chat some 18 inches from the back of one's head and not be put at risk.

Without ear-defenders or some sensible protection, prolonged exposure to such levels of noise will certainly impair a pilot's hearing in the longer term. That is beyond debate.

*******************************
DATE: 15 DECEMBER 1985

Peter Lovegrove
Chief Inspector to the BMAA

DEFECT WARNING No 026. AIRCRAFT TYPES: Robin 330 trikes.
 Amendment number 1. PLEASE SCRAP PREVIOUS VERSION.

THIS NOTE ACTUALLY COMPRISES THREE DEFECT REPORTS ON VARIOUS TRIKES, SENT IN BY PHILIP J.BROOKMAN, 75 Conway Drive, Shepshed, Leicestershire.

DEFECT No 1:
Whilst the aircraft was being flown on a humid day, a hole blew in the piston. The cause was a weak mixture and the use of an incorrect type of spark-plug. A B8ES was fitted instead of the correct B9ES.

REMEDY:
After the damaged components were replaced, a B9ES plug was fitted and the needle was raised in the slide to richen the mixture.

*******************************
DEFECT No 2:
The engine misfired.

REMEDY:
The fault was found to be failure of the wiring of the ignition, due to work-hardening. Replacement was required.

*******************************
DEFECT No 3:
On inspecting the monopole of a Puma, hair-line cracks were found around the bolt-hole where the seat fastens and the engine-support bracket fits on the main pylon.

REMEDY:
A new pylon has been fitted and owner has installed a back-up wire outside the pylon.

(Inspectors are again reminded to be exceptionally alert for such signs of incipient failure when examining any form of monopole trike.)

*******************************
DATE: 12 DECEMBER 1985

Peter Lovegrove
Chief Inspector to the BMAA.
RE: DEFECT REPORT No 026, Item 3.

In this report, it was stated that the owner had installed a back-up cable EXTERNAL to the monopole on his Fuma, after hair-line cracks had been observed near the top engine-bolt location.

JACK BISHOP makes the very sound point that some owners might fail to grasp the necessity to consider very carefully how exactly an external cable should be fitted.

With the usual safety-cable installation inside the monopole, if the latter should snap, the two parts are held together with the cable providing the requisite tensile support. At the actual break point, the cable serves rather like an elbow joint, tying and hinges the upper and lower parts together.

If a cable is installed on the outside of the mast, and simply anchored to its top and base, the likely outcome in the event of a mast failure is quite different. The lower truss assembly (frame, engine, tank and occupants) would become unstable and simply invert. A front cable would offer no resistance and even a front strut would readily twist and snap.

Even with a front cable - which did not snap - it is hard to guess what the ensuing Centre of Gravity would do to the flight pattern of the disabled craft, but the heads of the occupant(s) would almost certainly be the first items to hit the ground.

Clearly, then, an externally installed back-up cable needs to be well tied into the monopole along the length up to the top of the engine-mount at least, if it is to be a real safeguard. Obviously it would be even better to tie it in over the whole length.

If this is achieved totally or partially by threading it through the various brackets attached to the monopole, then care must be taken to ensure that neither the cable nor the fittings can be damaged by vibration (from the engine or from airflow effects) causing one to rub against the other.

Summarising, whilst it may look simpler to fit a back-up cable or cables outside the monopole, there are additional requirements to be met which may make it a more sensible and possibly easier job, overall, to fit the cable inside the mast.

Peter Lovegrove
Chief Inspector to the BMAA
22 January 1986
DEFECT WARNING No 027. AIRCRAFT TYPES: Hummer 250, Robin.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known.

DESCRIPTION OF DEFECT: Whilst the aircraft was in flight, a retention-spring came off the exhaust and struck the propellor. The exhaust came out of its stub and also clattered against the propellor.

The ensuing extreme imbalance in the propellor caused severe vibration throughout the airframe.

On landing, it was found that the propellor, the reduction-drive shaft and one bearing - complete with Vee-belts - had been ripped off the engine, shearing two 1/2 inch diameter bolts in the process.

The pilot feels that the type of propellor fitted was a contributory factor, as it was made from very soft wood. The track of this propellor was true with the engine being turned by hand yet, when running at half throttle or above, the track was seen to vary wildly.

Only two laminations were used in the construction of this propellor, which was thought to have been supplied by Hummer Sales.

AIRWORTHINESS IMPLICATIONS: Any impact between any free component and the propellor can obviously lead to a variety of disasters.

HOURS FLOWN, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Possibly the fatigue failure of the retention spring, accelerated by propellor flexure.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): At least one safety cable should always be attached across any retention-spring. In the event of a failure of the spring, there will normally be adequate warning for the pilot to shut down the engine and thus avoid more serious problems.

REPORTED TO MANUFACTURER: Not Applicable.

NAME AND ADDRESS OF PERSON REPORTING THESE DEFECTS: Peter J. Broome, 72 Conway Drive, Shepshed, Leicestershire.

DATE: 2 December 1985

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA.

DEFECT REPORT No 028 AIRCRAFT TYPE: GEMINI (with Striker wing).

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MRWM

DESCRIPTION OF DEFECT: The engine of this machine had originally been upright and had recently been inverted.

It was observed, on inspection, that the base of the 10 litre tank - strapped onto the engine-mounting bracket - had worn quite badly against the fan housing directly beneath it. Because there was no obvious reason to remove the tank frequently, the problem may have remained unnoticed until complete rupture had occurred.

AIRWORTHINESS IMPLICATIONS: The effect of petrol leaking out over a hot engine and the consequent fire risk, need no elaboration.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The aircraft had been flown for 21 hours since the engine was inverted.

PROBABLE CAUSE OF FAILURE/DEFECT: The absence of some special spacers, needed when this engine is inverted on a Gemini of the type involved, allows the tank to sit too low over the engine. There is inadequate clearance and rubbing contact can take place between the tank and engine.

RECOMMENDED RECTIFICATION (REPAIR, REPLACEMENT, MODIFICATION): If the engine is to be inverted on this type of machine by the manufacturer, ensure that the tank is sent to them with the trike, so that they know what measures to take for that particular machine.

If the modification is being conducted by a body other than Mainair Sports, make certain that the latter are consulted for the correct guidance as to how the operation should be conducted and what additional measures are needed, to avoid the type of problem raised here.

REPORTED TO THE MANUFACTURER/AGENT: Mainair Sports have been notified by the BMAA Chief Inspector and their advice sought.


DATE: 26 December 1985

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA.
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS
FILE THIS INFORMATION

RE: DEFECT REPORT No 026, Item 3.

In this report, it was stated that the owner had installed a back-up cable EXTERNAL to the monopole on his Puma, after hairline cracks had been observed near the top engine-bolt location.

JACK BISHOP makes the very sound point that some owners might fail to grasp the necessity to consider very carefully how exactly an external cable should be fitted.

With the usual safety-cable installation inside the monopole, if the latter should snap, the two parts are held together with the cable providing the requisite tensile support. At the actual break point, the cable serves rather like an elbow joint, tying and holding the upper and lower parts together.

If a cable is installed on the outside of the mast, and simply anchored to its top and base, the likely outcome in the event of a mast failure is quite different. The lower trike assembly (frame, engine, tank and occupants) would become unstable and simply invert. A front cable would offer no resistance and even a front strut would readily twist and snap.

Even with a front cable - which did not snap - it is hard to guess what the ensuing Centre of Gravity would do to the flight pattern of the disabled craft, but the heads of the occupant(s) would almost certainly be the first items to hit the ground.

Clearly, then, an externally installed back-up cable needs to be well tied into the monopole along the length up to the top of the engine-mount at least, if it is to be a real safeguard. Obviously it would be even better to tie it in over the whole length.

If this is achieved totally or partially by threading it through the various brackets attached to the monopole, then care must be taken to ensure that neither the cable nor the fittings can be damaged by vibration (from the engine or from airflow effects) causing one to rub against the other.

Summarising, whilst it may look simpler to fit a back-up cable or cables outside the monopole, there are additional requirements to be met which may make it a more sensible and possibly easier job, overall, to fit the cable inside the mast.

Peter Lovegrove
Chief Inspector to the BMAA
23 January 1986
DEFECT REPORT No 029  AIRCRAFT TYPE: Quicksilver with Cuyuna 430 engine.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not known.

DESCRIPTION OF DEFECT: A fatigue failure of the propellor-drive shaft occurred, at the position where the cross-bolt passes through it at the engine-coupling end.

The shaft completely parted at that point but was retained - luckily - by the clamping action of the split coupling. The breakage was only noted when the shaft began to work itself out of the coupling.

The appearance of the fatigue-fractured face indicated that it may possibly have been broken for some time.

AIRWORTHINESS IMPLICATIONS: The loss of a propellor-shaft obviously means the risk of a forced landing at best and airborne damage to the structure round the propellor region at worst, with all that that implies!

HOURS FLO wn, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The aircraft had been flown for 480 hours up to the time of the failure.

PROBABLE CAUSE OF FAILURE/DEFECT: Since the cross-bolt is used as the drive-transmission member, the part of the shaft through which it passes is subjected to a high torque, plus considerable oscillatory loads. Clearly, fatigue failure is a marked risk, which would be made even worse were the cross-hole to be at all jaggedly drilled, or the reduced diameter of the shaft - where it enters the coupling - left with any turning marks.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): A new shaft from the distributors can be fitted once the broken parts are removed. (See note below).

REPORTED TO THE MANUFACTURER/AGENT: Reported to Aerolite Ltd by BMAA Chief Inspector (prior copy of this Defect Report).

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Beer, 2 Whitestone Cottage, Lincombe, Lee, Near Ilfracombe, Devon.

ADDITIONAL INFORMATION FOR INSPECTORS TO NOTE: Figure 1 indicates where the shaft has broken. In Figure 2, Mr Beer has shown how the broken stub of shaft may be removed by tapping it and extracting it with a draw-bolt. Note that extra washers will probably be needed under the head of the draw-bolt as the stub is pulled outwards. This method completely avoids any damage to the female part of the coupling.
DEFECT REPORT No 079  
AIRCRAFT TYPE: De Havilland DH-82 with Lycoming engine.

Mr. Gordon raised several questions about this defect report, as a result of which Mr. Bear has given further information and also attempted to finalize the component in question on a standard basis below.

1. It transpires that the shaft which should accurately be referred to as the "drive shaft" was thought to be original, but Mr. Gordon states unequivocally that it could not be. The factory parts are all 1 inch constant outside diameter.

2. Therefore, must be assumed that the shaft was replaced by a former owner, but not with a factory-standard part.

3. Although both ends of the standard shaft are drilled with 5/16 inch diameter holes, one is 3/4 inch from the end of the shaft whilst the other is 3/8 inch.

The amount of metal left beside the holes is the same, so the strength is the same. However, it is important that the factory part still be installed correctly.

The end with 3/8 inch beyond the hole MUST go near the propeller. If it does not, the extra protrusion can touch the propeller (and has done so!)

3. Barry Gordon points out that the shaft must be "Replaced or overhauled" at 400 hours, according to the MX Owner's Manual, as must also the propeller shaft.

It will be noted that Mr. Bear's shaft had done about 430 hours.

Peter Lovegrove  
Chief Inspector to the BMAA.

28 March 1986
DATE: 2 February 1986

Peter Lovegrove
Chief Inspector to the BMAA

**Figure 1**

CRANK SHAFT

FRACURE ON THIS

DRIVE SHAFT

**Figure 2**

DRILL & TAP M8 OR M10

M8 OR M10

EXTRACTION BOLT

BROKEN SHAFT-STUB

THICK WASHER
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 030

AIRCRAFT TYPE: Not applicable.
ENGINE TYPE: Rotax 503

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not applicable

DESCRIPTION OF DEFECT: The connector for the fuel-pump pulse pipe snapped off in the hand of the engineer installing the engine. See Figure 1.

AIRWORTHINESS IMPLICATIONS: The breakage of this connector would lead to fuel-pump failure, and thus engine stoppage, with all that implies.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Presumably zero.

PROBABLE CAUSE OF FAILURE/DEFECT: A circumferential groove is cut into the connector to allow it to be peened into the casting for retention. This groove had been cut too deep and the residual wall thickness was inadequately strong.

The Rotax manufacturer has identified the failed connector as one of a badly machined batch.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): New connectors have been obtained from Rotax and if any owner encounters the problem, he/she should be encouraged to contact the supplier of the engine for a replacement connector, which is to be fixed in place with Loctite 648.

REPORTED TO THE MANUFACTURER: Actually brought to the Chief Inspector's notice by Nigel Beale of Cyclone Hovercraft.

DATE: 25 March 1986

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

[Diagram]

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Figure 1.
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS. FILE THIS INFORMATION

DEFECT REPORT No 031 AIRCRAFT TYPE: Not applicable. ENGINE TYPE: Rotax

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not applicable

DESCRIPTION OF DEFECT: An owner serviced the gearbox of his engine, after which it was excessively noisy and the engine was difficult to start.

AIRWORTHINESS IMPLICATIONS: Not known.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: The cause is actually known for certain. The owner had assembled the gear and dog system incorrectly. See Figure 1.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Obviously, 'if one lacks the skill to carry out this sort of job, call upon an expert! That has always to be the first guideline.

However, Cyclone Hovercraft have also taken up the matter with Rotax who are already redesigning the unit so that it cannot be put together wrongly.

REPORTED TO THE MANUFACTURER: Actually brought to the Chief Inspector's notice by Nigel Beale of Cyclone Hovercraft.

DATE: 25 March 1986

Peter Lovegrove
Chief Inspector to the BMAA

\[\text{\textbf{Correct!}}\]

\[\text{\textbf{Wrong! But possible! 90° out of position}}\]

\[\text{\textbf{Figure 1}}\]
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 032  AIRCRAFT TYPE: Pegasus Flash

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MNJO

DESCRIPTION OF DEFECT: At the front of the trike-keel, a steel tube is inserted, which carries the front fork and swivel. The steel tube is cut and welded at an angle to give rake to the front wheel. The weld is designed to be round the whole periphery of the tube.

A section of the weld, about 25 mm long, had completely missed the junction between the tube sections; the weld metal had simply been laid over the tube itself, adjacent to the join.

In the latter stages of a landing, the tube snapped at the joint, with the break apparently starting at the unwelded part.

The extent to which the unwelded section of tube was left separated during assembly was evidenced by the penetration of plating into the tube end-faces in that area.

AIRWORTHINESS IMPLICATIONS: On the aircraft in question, the pilot was finishing a normal and satisfactory landing roll when the weld snapped completely. (There was no obvious evidence of progressive fatigue failure). The wheel-fork assembly jammed into the aperture in the pod. The throttle was opened with no input from the pilot (the cable stretched between the keel and the forks) but he was able to switch off the ignition quickly. The possible implications of a crash being caused by this form of failure of the front keel-tube, with the engine then being immediately opened up to high throttle, are all too clear to need elaboration. This form of construction of the front keel-tube section is common to several types of trike in production today.

On examination of the broken tube, the missed weld was immediately obvious. However, it would have been extremely difficult to examine with the pod in place.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The total hours on this machine were 28. Only one incident has occurred which could have any possible relevance to the failure: On a take-off roll, the front wheel hit a rut which lay at 90 degrees to the direction of travel. This happened at 9 hours.

PROBABLE CAUSE OF THE FAILURE/DEFECT: Almost certainly, the ultimate failure was due to the incomplete weld.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Owners are strongly advised to make a thorough inspection of the welded joint in this front keel-tube. Such an examination will almost certainly require the use of a strong torch and a small mirror, possibly an angled one such as used by dentists.

The mirror is needed because of the relative inaccessibility of the underside of the tube in question. There may actually be no alternative to removing the pod to allow a complete check to be carried out.

On G-MNJO, the weld did not follow a direct line round the periphery of the tube; it wandered completely off to the side, so any repetition of such a weld should be detectable.
REPORTED TO THE MANUFACTURER: By the owner.


DATE ON WHICH DEFECT REPORT DRAFTED: 18 May 1986.

Peter Lovegrove
Chief Inspector to the BMAA.

FOOTNOTE:
SINCE THE PEGASUS FLASH IS A PERMIT AIRCRAFT, ANY SUCH DEFECT AS THIS SHOULD BE - AT THE MANUFACTURER'S DISCRETION - THE SUBJECT OF A "SERVICE BULLETIN" ISSUED BY THEM. AFTER SOME DELAY, PRESUMABLY DUE TO THE POST OFFICE LOSING THEIR REPLY TO ME, I HAVE RECEIVED THE FOLLOWING STATEMENT: (I quote it in full to avoid any possible complaints of unfairness on either side).

Sir,
Thank your for your letter dated 18th May '86, reference Defect Report No 032.

The component was produced under Job/No 1059/85 on which there were five items produced. I am assured that the relevant locations of these parts have been ascertained and do not constitute a safety hazard.

Although the weld was not complete on the affected part, we do not think that in itself would have caused the accident by virtue that the missing weld was, in fact, on the compressive-load side of the steering head. Certainly being a stress raiser, it may have been an extra contributory factor to the ultimate failure. Members of our staff have spoken to the operator and it would appear that the previous "Rut" incident mentioned in Defect Report 032 could have been sufficient seriously to damage the steering head and, had a thorough inspection been carried out as recommended in the Operator's Manual (Ref: Para. 9.2), the ultimate failure might have been avoided.

As the components are produced effectively as "One-offs", we consider this defect to be limited to this one occurrence. Accordingly, Solar Wings do not think it is necessary for this particular defect to be the subject of a Service Bulletin.

S.M.G.Rose.
Chief Executive, Solar Wings Ltd.
20 May 1986.

Chief Inspector's final comment: Because these are Permit aircraft, if any inspector or owner finds something amiss in this area of his machine, he must discuss it with the manufacturers and take their advice.
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 033

AIRCRAFT TYPE: Pegasus Trike

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Not stated.

DESCRIPTION OF DEFECT: The rear plug-cap of the Rotax engine on a
Pegasus dual trike came loose in flight and subsequently during
ground runs, in spite of being firmly replaced each time. The
fault has appeared on at least three other occasions on other
Pegasus dual trikes.

AIRWORTHINESS IMPLICATIONS: Risk of engine misfiring though, in
this case, the rubber seal appears to prevent complete loss of
the cap.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Approximately
50 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Either a tight (tensioned)
plug-lead, or engine vibration exciting a resonance - or both -
makes the plug-cap creep off the plug-nipple.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
If the plug-lead is too short and it stretches across the engine
support, replace it with one which fits properly. In addition, fit
plug-cap restraining bungees or cords to both plug-caps. (Do not
forget, though, that wet bungees or cords can effectively earth
down the spark voltage); a bolt and hole in the cowling are
already conveniently located adjacent to each plug.

REPORTED TO THE MANUFACTURER: Reported to Pegasus by the owner.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Simpson, 13
Portman Close, Bedford Rd, Hitchin, Herts SG5 2UX.

DATE: 9 June 1986

Peter Lovgrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 034

AIRCRAFT TYPE: All microlights fitted with Rotax engines.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: Several, including G-MJER, G-MINDO and G-MMMS.

DESCRIPTION OF DEFECT: The cap-head screws securing the exhaust manifold to the engine block on all Rotax engines have a tendency to loosen in service. In several cases, a screw has been lost completely.

AIRWORTHINESS IMPLICATIONS: Even a single lost bolt falling into the propellor can have serious consequences.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: In many cases, bolts have been known to loosen over a period of less than 20 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Vibration, temperature-cycling and loss of effectiveness of the spring washers beneath the screws after temperature-cycling. When new, initial compression of the gasket can loosen the screws.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Drill a hole not exceeding 2 mm diameter across the cap-head of each of the screws and wire-lock them into position. Check the tightness of the screws after 5 hours.

REPORTED TO THE MANUFACTURER: Reported to Cyclone Hovercraft, the importers of the Rotax engines. Rotax have been requested by them to supply drilled screws as standard on all future engines delivered to Britain.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Simpson, 13 Portman Close, Bedford Rd, Hitchin, Herts SG5 2UX.

DATE: 9 June 1986

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 035

AIRCRAFT TYPE: Phantom UL 107
ENGINE TYPE: Fuji Robin 34-PL
333 cc. Serial No: X-E2-025.
Water-cooled. Nicklow 3:1
single tooth-belt reduction.

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MMKX

DESCRIPTION OF DEFEAT: After a flight, the pilot became aware of
a clicking noise from the engine which had not previously been
apparent. The plugs were removed and, when the engine was turned
by hand, a "Ping" could be heard and felt, once per revolution.

The reduction drive was dismantled at the Aerotech Factory and
the propeller shaft was found to be broken just behind the front
bearing.

AIRWORTHINESS IMPLICATIONS: Broken propeller-shafts, even with
rods down their centres supposedly to act as safety 'backstops',
clearly offer some horrendous opportunities for disaster, both on
the ground and in the air, so need no elaboration here.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The total
hours on this power system were 74.

PROBABLE CAUSE OF THE FAILURE/DEFECT: The Nicklow reduction
shaft of this type has a reputation for failing in this manner,
due largely to its poor standard of manufacture, so the breakage
reported here serves to remind inspectors and Safety Officers to
remain vigilant for potential problems of a similar nature.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Only complete replacement of the failed shaft and other damaged
or suspect reduction-gear components is a satisfactory 'fix'.
In this instance, the owner installed a new front bearing and a
new belt.

REPORTED TO THE MANUFACTURER: Manufacturer now defunct.

NAME AND ADDRESS OF THE PERSON REPORTING THE DEFECT: Major
D.B.White, 228 Goldington Rd, Bedford, MK40 3EB

DATE: 30 June 1986.

Peter Lovegrove
Chief Inspector to the DMAA.
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 036  AIRCRAFT TYPE: Eurowing Goldwing
                              fitted with Huntair 330 & reduction

REGISTRATION LETTERS OF AIRCRAFT FAULTED: G-MMTZ

DESCRIPTION OF DEFECT: All of the 'spokes' of the 8 inch diameter
pulley-wheel sheared, although the two parts remained in the
correct juxtaposition, with the cracks very difficult to see.

AIRWORTHINESS IMPLICATIONS: Even if no fragments had fallen off,
the propeller drive would eventually have been lost in a partly
unpredictable manner, with a possible forced landing and the
attendant risk.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 25 hours had
been flown prior to experiencing belt slip. The belts were
renewed and the cracks found after a further 1 1/2 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Possibly some form of
intergranular corrosion (see notes below).

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Total replacement of failed parts. In this instance, it was found
that the propeller-shaft had worn 0.020 inches inside one of the
bearings, where there was originally considerable 'play'. The
shaft was therefore also replaced.

REPORTED TO THE MANUFACTURER: Manufacturer no longer in
existence.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: R.K.Newbolt-Young,
Shilstone Rocks Stud, Widecombe-in-the-moor, Newton Abbot, Devon,
TQ13 7TF (Tel Widecombe 281).

ADDITIONAL NOTES FOR INSPECTORS: This aircraft was built during
February and April 1983. When it was purchased — as new — a
slight amount of white corrosion was noted on the exposed
aluminium-alloy components of the airframe. This was easily
removed with WD40. Problems had been experienced with the
reduction system, as the shaft was being pushed in towards the
aircraft, despite the presence of a spacer washer between the
pulley and one of the bearings.

On one occasion, whilst rectifying this fault, a hydraulic press
had to be used on the large pulley wheel to push it off the shaft
but no visible damage was done to it.

When the new belts were fitted — referred to above — 'crazing'
type cracks were noticed on the spokes of the 8 inch diameter
pulley-wheel. This observation was made in bright evening
sunlight and it was difficult to see the cracks in ordinary
daylight.
Whilst de-rigging the aircraft after a successful flight, it was noticed that a creaking sound was coming from the pulley area when the propeller was turned by hand or during tick-over. This sounded like the creak of wood and the propeller was suspected.

However, on very careful examination, in the region of the 'creak', it was noted that shear cracks crossed each of the spokes of the 8 inch pulley. The outer rim of the pulley was quite loose, although still in place.

CHIEF INSPECTOR’S NOTE: These cracks might have resulted from any one of several causes, including the use of a poor batch of alloy for the original casting. However, the 'white powder' referred to by Mr Newbolt-Young is one of the signs of possible intergranular corrosion, which – as its name implies – means that the grains of metal separate along their boundaries. This process can travel completely through a piece of metal.

So please respect the fact that some of the fairly high-strength alloys which appear on our machines do need anodising, or some other protection, to have adequate resistance to attack by water.

DATE: 18 July 1986

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 037  AIRCRAFT TYPE: Various
ENGINE TYPE: Rotax 462 and 532

DESCRIPTION OF DEFECT: A fault has been found with some rubber inlet-manifolds on the above engines. It is possible for the manifold to start to split after a short period in service.

AIRWORTHINESS IMPLICATIONS: Presumably, in an extreme case, the carburettor might break loose from the engine, but air leakage should probably have stopped the latter before then. The results of a dead engine in flight need no elaboration.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: See above.

PROBABLE CAUSE OF FAILURE/DEFECT: The distributor believes that the problem is due to faulty bonding between the rubber and the steel flange, during manufacture.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Total replacement of the manifold. The distributor will be replace them, free of charge, for all customers who have purchased these particular engines, as soon as supplies are available (in September). In the meantime, Rotax have recommended that owners make a thorough check of the existing manifold for splits, before every flight.

A few of the new manifolds have already been issued so, to avoid confusion, they can be identified as shown in the sketches overleaf.

REPORTED TO THE MANUFACTURER: Actually notified by the distributor, Nigel Beale of Cyclone Hovercraft, "Burnside", Deppers Bridge, Leamington Spa, CV33 OSU, telephone 0926 612188.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: See above.

ADDITIONAL NOTES FOR INSPECTORS: Be alert when checking machines during inspections, in case one of these manifolds should slip the net because the owner has not used the aircraft much.

DATE: 6 September 1986

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 038  AIRCRAFT TYPE: Solar Wings Typhoon

DESCRIPTION OF DEFECT: During a pre-flight inspection, the nose catch on the wing was found snapped, as shown in the sketch.

AIRWORTHINESS IMPLICATIONS: Had this failure occurred in flight, the result might have been the total release of the front cables. It is almost inevitable that the wing would have folded.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: Not stated; possibly the result of wear against the pin?

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Total replacement of the nose-catch unit.

REPORTED TO THE MANUFACTURER: Reported by Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Bridge, 24 Ulverston Close, Blackburn, Lancashire, BB2 3TX.

ADDITIONAL NOTES FOR INSPECTORS: Any other wing which uses a similar device in this location has to be just as vulnerable. All inspectors are urged to be vigilant when examining them and are asked to advise owners to be especially careful to check nose-catches during pre-flight inspections.

DATE: 11 November 1986

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 039        AIRCRAFT TYPE: Hiway trikes

REGISTRATION LETTERS OF AIRCRAFT FAULTED: General comment.

DESCRIPTION OF DEFECT: The filler cap of the aluminium fuel-tank is located in a recess with no raised flange. Water and/or dirt can accumulate in this recess and flow or be washed down into the tank.

AIRWORTHINESS IMPLICATIONS:
Dirt or water in fuel can cause obvious engine problems.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not applicable.

PROBABLE CAUSE OF THE FAILURE/DEFECT: A design feature.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The only possible rectification is total replacement or, perhaps, considerable reshaping of the tank.

Owners and inspectors are advised to be vigilant to ensure that the recess in question is kept clean and dry at all times.

REPORTED TO THE MANUFACTURER: Manufacturer defunct.

NAME AND ADDRESS OF THE PERSON REPORTING THE DEFECT: Peter Robinson, Cambridgeshire Microlight Club, 114 High St, Sutton, Ely, Cambridgeshire, CB6 2NW.


[Signature]
Peter Lovegrove
Chief Inspector to the BMAA.
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 040 AIRCRAFT TYPE: Midland Ultralights Firefly

DESCRIPTION OF DEFECTS:
(i) The lower engine-support is made from thin, curved metal stressed at the radius, with no support fillet; may be prone to fatigue failure.

(ii) The plastic fuel-tank is supported in a glass-fibre (?) tray, the sharp, upper edges of which are ideally formed to cut into the plastic tank in the presence of vibration. There is no top support to the tank.

(iii) The Griflex fuel-tube is secured with standard crimps, which showed signs of severe loosening after one hour of use.

(iv) The exhaust-retention bracket had Nylok nuts securing it.

AIRWORTHINESS IMPLICATIONS: Failure of a fuel-tank or fuel-line can lead to engine problems or, in an extreme, a fire hazard. The breakage of an engine-support bracket is also an obviously risky matter. A loose engine could lead to a broken propeller, for example.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: One hour.

PROBABLE CAUSE OF FAILURE/DEFECT: Inadequate margins in the design. (It should be noted that this machine was originally constructed under the "Sub-70 kg" aegis, so freedom of choice for the designer was small. Such a consideration is now hardly important, within limits).

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): This particular machine was rectified as follows:
(i) The bracket was modified to include a support fillet.
(ii) The edges of the tray were smoothed and a top support fitted.
(iii) The Griflex hose was replaced with BS fuel-resistant hose, secured with suitable Jubilee clips.
(iv) All-metal Simmonds-type nuts were fitted in place of the Nylok nuts.

REPORTED TO THE MANUFACTURER: Reported by the Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Peter Robinson, 114 High St, Sutton, Ely, Cambridgeshire, CB6 2NW.

DATE: 27 September 1986

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 041
AIRCRAFT TYPE: Mainair 250 Trike

DESCRIPTION OF DEFECT: During flight, an engine failure occurred after about 35 minutes, necessitating a forced landing. The 'Push - pull' fuel tap was found to be nearly closed. It was fully opened, the engine restarted and run on the ground for several minutes in preparation for the short flight back to base. There, it was intended to carry out a more detailed investigation of the problem.

1 1/2 minutes into the flight, the engine failed again. Another forced landing ensued and the tap was found completely closed.

AIRWORTHINESS IMPLICATIONS: Engine failures in flight need no elaboration as to the possible outcome.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The tap had been in use for a total period of about 150 hours with no previous problems.

PROBABLE CAUSE OF FAILURE/DEFECT: Probably due to vibrational harmonics which manifested themselves in the air but not when the airframe was damped by being on the ground. The plunger of the tap was really quite stiff to operate and, at no stage, would have been expected to close by itself.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The tap was totally replaced with a different type which seems to have removed the problem.

REPORTED TO THE MANUFACTURER: Reported by Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Beer, 2 Whitestone Cottage, Lee, Near Ilfracombe, Devon.

DATE: 17 November 1986

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS

Re: DEFECT REPORT No 41. FUEL-TAP CLOSURE.

John Hudson, Director of Mainair, has pointed out that the taps in question have not been fitted by his Company since mid-1983.

During the time in which they did feature them, these taps were always specifically installed with the plunger positioned directly downwards, so that vibration would tend to open them, should it affect them at all.

Mainair have, he says, now standardised on a three-way valve of very much better quality, albeit at a necessarily higher price.

Will inspectors please be vigilant for the use of the older taps discussed in Defect Report Number 41 and, if they see any which are installed other than 'plunger downwards when open', require the owner to correct the installation before signing off the aircraft as airworthy?

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

10 December 1986
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 042          AIRCRAFT TYPE: Puma Sprint

DESCRIPTION OF DEFECT: The pylon fractured at the uppermost bolt hole securing the stainless-steel engine mounting for the Fuji Robin engine.

The crack measured 6 mm round the tube, in a horizontal direction from the bolt hole; it was concealed by the plastic saddle washer. Removal of the bolt and washer was necessary to reveal the fracture.

AIRWORTHINESS IMPLICATIONS: Any crack in the monopole of a trike can, and usually will, propagate round the tube. If unnoticed, because of concealing attachments or sloppy pre-flight inspections, this could ultimately place total dependence on the back-up cable - if fitted - and calm or lucky reactions of the pilot, if he/she is to survive.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 170 hours flown.

PROBABLE CAUSE OF FAILURE/DEFECT: The aircraft had been fairly heavily bumped during a landing roll on rough ground on an unfamiliar airfield.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Frequent and careful inspection, especially after any degree of heavy landing, bumping or any other measure which could transmit abuse to the monopole.

Removal of the washers in question is important, for a complete inspection to be able to be carried out.

It should be noted that doubly-sleeved pylons are now available from the manufacturer.

REPORTED TO THE MANUFACTURER: Reported to Southdown International by Mr Daniels.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Tom Daniels, 16 Long Copse Lane, Emsworth, PO10 7UL

DATE: 24 November 1986

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 043 EQUIPMENT TYPE: Skymaster parachute

DESCRIPTION OF DEFECT: During flight, an unwanted deployment of the drogue chute occurred. The latter did not deploy the main parachute and no handling problems ensued with the aircraft.

After landing, the parachute was inspected and both firing pins were firmly in place. The drogue-chute packing-plate had been hit and shattered by the propeller, chipping the latter's blade-tip slightly (after deployment).

AIRWORTHINESS IMPLICATIONS: The parachute was installed under the keel of a Solo Striker wing, 600 mm behind the hang bracket.

Had the main parachute deployed with the aircraft under full power, the result could have been very serious.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The solo type "Skymaster" parachute had been purchased with an aircraft in May 1984. After purchase, the Skymaster was sent to the manufacturer for service and modification to the latest (and believed current) specification.

Since modification, the parachute has been repacked twice as per the manufacturer's instructions and has been flown with, but not deployed, for 198 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: On inspection, the elastic retaining-strap securing the drogue-chute plate, and the elastic safety strap fired by the second firing pin, were found to be degraded.

Although visually it did not appear that the straps were degraded or stretched, it was found fairly easy to dislodge the drogue-chute retaining-plate and the slipstream would easily have done the rest.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
The manufacturer is believed to have ceased trading. However, a repair was effected by replacing the elastic straps with identical off-the-shelf elastic 1 1/2 inch (40mm) wide. Sewing with nylon thread is involved, as is cementing to the case, prior to the addition of a securing 'pop-rivet' exactly as fitted in the original set-up.

The careful selection of a suitable cement will be required; it must be of a type which will not attack the synthetic materials of which the elastic consists.

Replacement of the securing elastic straps will henceforward be carried out every 18 months, and a cover used to keep the daylight from the elastic.
REPORTED TO THE MANUFACTURER: Believed to have ceased trading.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Bill Sherlock, The Old School House, 23 Castle St, Wallingford, Oxon, OX10 80W.

CHIEF INSPECTOR'S NOTE: The overall implications of this incident are extremely serious. For a device which is an add-on unit, put there specifically to enhance the safety of the microlight to which it is attached, to become the very thing which might cause a dangerous mal-function, is intolerable. Inspectors and Club Safety Officers should instigate immediate checks on all aircraft with these or similar parachutes. Mr Sherlock's advice about regular replacement of straps is extremely sound advice. Take it! But do note the requirement for a suitable cement; that is important.

DATE: 8 December 1986

Peter Lovegrove
Chief Inspector to the DMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 044

EQUIPMENT TYPE: FLYING AND LANDING WIRES IN GENERAL.

DESCRIPTION OF DEFECT: It has been noted during routine inspections that some manufacturers have fitted stainless-steel cables with aluminium ferrules. Aluminium and stainless steel form an 'electrolytic pair' which means that, in the presence of moisture, corrosion can and will proceed at an accelerated rate.

When referring to the ferrules on flying or landing wires, it has to be remembered that the action of crushing the ferrule on to the stranded cable produces a perfect site for the capillary entrapment of moisture, often simply by condensation. That means, in turn, that the corrosion takes place where it cannot be observed easily at an early stage.

AIRWORTHINESS IMPLICATIONS: The corrosion and subsequent in-flight failure of flying wires should need no elaboration!

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not relevant.

PROBABLE CAUSE OF FAILURE/DEFECT: Clearly, incorrect choice of materials!

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
There is no alternative but for inspectors to refuse to accept stainless-steel cables fitted with aluminium ferrules. Since it is not possible to remove and replace ferrules, new stainless-steel cables with copper ferrules are needed, or alternatively, carbon-steel cables of equivalent strength and fitted with aluminium ferrules.

REPORTED TO THE MANUFACTURER: Not relevant.


DATE: 27 January 1987

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL INSPECTORS AND CLUB SAFETY OFFICERS.

Delayed Defect Reports.

I must apologise to all Inspectors, Club Safety Officers and to Mr P. Robinson in particular, for the fact that, due to a chain of very unacceptable circumstances, the attached Defect Reports were not issued long ago, when they were first prepared.

Rotax Engine Cylinder-Head Gaskets.

Will all Inspectors please note also the contents of the attached letter from Mr Nigel Beale, of Cyclone Hovercraft who, as usual, is to be highly commended on the manner in which he seeks to keep everyone informed on anything which affects Rotax engines, be it good or detrimental.

Peter Lovegrove
Chief Inspector to the BMAA

4 February 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 045 WING TYPE: Aerial Arts CX130

DESCRIPTION OF DEFECT: The carabiner which was installed in the
cable which ran from the nose, through the king-post to the rear
of the keel, was of a non-lockable type.

AIRWORTHINESS IMPLICATIONS: Were this carabiner to become loose,
the whole top bracing of the keel and wing would be at risk.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not relevant.

PROBABLE CAUSE OF FAILURE/DEFECT: Poor choice of component.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Replacement of the carabiner with a lockable type.

REPORTED TO THE MANUFACTURER: Not known.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Peter Robinson,
114 High st, Sutton, Ely, Cambridgeshire, CB6 2NW.

DATE: 27 September 1986

Peter Lovegrove
Chief Inspector to the BMAA
ROTAX 447 CYLINDER HEAD GASKETS

A 447 engine which suffered persistent power loss after approx. 1 minute at full throttle was found to have a cylinder head gasket which was compressed excessively. The aluminium gasket had been squeezed some way into the cylinder producing a hot spot which was causing pre-ignition. Subsequent hardness testing of the gasket showed that it was just below the minimum hardness specified for a new gasket.

It seems likely that the gasket was softened by continual overheating of the engine (it was also found that the carburettor was mounted considerably out of square, causing the offending cylinder to run lean). Rotax have checked their stock of gaskets, and found no faulty ones. Only one other similar case has ever been reported. However, the possibility that the gasket was originally too soft cannot be entirely ruled out.

On the engine in question, the first sign of any trouble was after 60 hours of operation. It is therefore considered that provided the following service schedule, as recommended in the operators manual, is carried out, any fault should be detected before problems arise.

1) Re-torque the cylinder head on a new engine at about 2 hours. Use a good quality torque wrench, do not guess! Do not overtighten. The correct torque setting is 18-24 Nm.

2) Decarbonise engine at about 50 hours. Renew cylinder head gaskets as a matter of course. Torque heads to correct figure.

3) Examine the old cylinder head gaskets; if the inside diameter is reduced to less than the bore diameter, please return the gasket(s) to Cyclone Hovercraft for examination, together with a note of the engine number and the hours run so that any problems can be monitored.

Nigel Beale

copies:

CAA
Peter Lovegrove
Paul Owen
Dave Simpson, Watchdog

Director: N.R. Beale, BSc, MSc., Company Secretary: P.J. Beale, Registered in England
No. 1517221 VAT Registration No. 336 2061 29
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.  
FILE THIS INFORMATION

DEFECT REPORT No 046  
TRIKE TYPE: Hiway trikes

DESCRIPTION OF DEFECT: The well in the top of the aluminium fuel-tank fitted to the Hiway trike has smooth walls and no raised lip around the actual threaded hole. The well tends to trap dirt and water which, in the absence of a ridge and with the rather indifferent quality of the thread itself, tends to get carried into the fuel.

AIRWORTHINESS IMPLICATIONS: Dirt and moisture in the fuel is an obvious source of engine problems, with all that they imply.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not relevant.

PROBABLE CAUSE OF FAILURE/DEFECT: Poor design and manufacture of component.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): None really possible. Either the tank has to be totally replaced or every care taken to keep the cap area scrupulously clean.

REPORTED TO THE MANUFACTURER: No longer in production.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Peter Robinson,  
114 High st, Sutton, Ely, Cambridgeshire, CB6 2NW.

DATE: 27 September 1986

Peter Lovegrove  
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 047 TRIKE TYPE: Not relevant

DESCRIPTION OF DEFECT: A fuel-tap was positioned so that its rotary lever was pointing downwards when the tap was open. In flight, during a period of as little as two minutes, the lever rotated upwards - against gravity! - closing off the fuel flow.

This occurred under conditions of quite light engine-vibration.

AIRWORTHINESS IMPLICATIONS: Loss of fuel flow means an inevitable engine failure, with all that follows.....

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated, but a very short period involved, being part of a Section S development programme.

PROBABLE CAUSE OF FAILURE/DEFECT: One of the very strange effects of vibration on the offset mass of the tap's operating lever.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): In this instance, the first method of rectification attempted was to tighten the lever and install a friction washer. This proved totally ineffective.

The successful method was to use a much shortened, stubby lever of considerably lower mass. The effect of the accelerations inherent in the transmitted engine-vibrations, upon this lever, was thus now only capable of producing a torque small enough to be resisted by the natural friction of the ordinary tap system.

REPORTED TO THE MANUFACTURER: Reported by a manufacturer.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Richard Wolfenden, Hornet Microlights, Bankfoot Mills, Wibsey Bank, Bankfoot, Bradford, BD6 3JU

DATE: 16 February 1987

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 048

AIRCRAFT TYPE: Non Section-5 trikes of Southdown Sailings/International manufacture.

DESCRIPTION OF DEFECT: The Explosafe aluminium foil in the fuel tanks begins to corrode and/or break up in a relatively short time.

The resulting product blocks filters and jets.

AIRWORTHINESS IMPLICATIONS: Loss of fuel flow means an inevitable engine failure, with all that follows......

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated, but a short period is normally involved, depending on the exact conditions of use.

PROBABLE CAUSE OF FAILURE/DEFECT: Corrosion by water attack and by contaminants in the fuel. The mechanical break-up of the foil and the chemical attack upon it, are both accelerated by the vibration normally present.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Total removal of the foil Explosafe is imperative.

REPORTED TO THE MANUFACTURER: Reported by David Simpson.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Simpson, 13 Portman Close, Bedford Rd, Hitchin, Herts, SG5 2UX.


NOTE TO BMAA INSPECTORS AND OWNERS: It is imperative that this foil be removed from the tanks of all non-Section 5 machines which have it. The tanks must be properly flushed before further use. Inspectors must refuse to sign off any non-Section 5 aircraft which is presented with Explosafe in the tanks, pending its removal.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 048     Re: Explosate in fuel tanks.

FIRST AMENDMENT:
***************
Since issuing the above Defect Report on 11 March 1987, I have continued to seek information as to the overall validity of the criticisms against Explosate.

At first, it appeared that the original suggestions about the hazards it causes were correct, with reports of grey crud and/or metallic aluminium found in filters.

In the light of what seemed valid data. I allowed the Defect Report to stand, until after the time when copy had to be frozen for Watchdog.

In continuing to search out better information on the topic, I have learned that Explosate has a bad reputation in the amateur motor- and boat-racing fields. However, in seeking basic facts about the exact way in which it is hazardous, it has become apparent that a great deal of hearsay and repetition of unsubstantiated criticism is bandied about in those fields.

Since no-one in the BMAA or elsewhere has so far given me information which has stood the test of close scrutiny, I really must reassess my judgement of Explosate.

Of course, the easy approach is to say that, with all of the adverse talk about Explosate, it is an instance of there being no smoke without fire (unfortunate pun!)

Nevertheless, I have decided to WITHDRAW the obligatory requirement on BMAA Inspectors to insist that Explosate be removed from the tanks of Type-Accepted or Orphan machines before Renewals are authorised.

It is quite acceptable for an owner to remove the Explosate from the tank of a Type-Accepted or Orphan machine, if he/she chooses, since it does not appear as a part of the specification as spelled out in any TADS yet, but it is now NOT obligatory.

I must again emphasize that Explosate must NOT be removed from the tanks of Section S (Permit) aircraft. Only the manufacturer and the CAA can authorize such a change.

WHAT I WOULD ASK IS THAT INSPECTORS AND SAFETY OFFICERS SEEK ALL THE INFORMATION THEY CAN FROM OWNERS ABOUT ANY ENGINE FAILURES, AND ABOUT THE NATURE OF THE CRUD FOUND IN FUEL FILTERS, ETC., AND IF EXPLOSAFE IS, OR WAS, PRESENT IN THE TANK: SEND SUCH DATA TO ME, PLEASE; IT WILL BE EXTREMELY VALUABLE.

Peter Lovegrove
Chief Inspector to the BMAA
8 May 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 049

AIRCRAFT TYPE: Pegasus Flash

AIRCRAFT REGISTRATION: G-MMJK

DESCRIPTION OF DEFECT: The tip-strut on the port side had not been entered fully into its socket; only about 1/2 inch had been inserted.

This machine is left fully rigged and pre-flight inspections had failed to reveal the problem.

During flight and ground handling, loads applied to the strut had to be supported by this short inserted section of tube. As a consequence, the tube deformed so badly that it needed reshaping before it would properly and fully enter its socket.

AIRWORTHINESS IMPLICATIONS: Total failure of the tip-strut during flight could have some most disturbing effects on the handling of the aircraft.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 120 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Accidental mis-assembly.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Take the leading edge in one hand, lift the sail with one’s head and fit the tip-strut with the other hand. Listen particularly for the firm ‘click’ which says that the strut has home in properly.

REPORTED TO THE MANUFACTURER: Reported by Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: V.E.J. Smith, 2 King Edward Rd, Chatteris, Cambridgeshire, PE16 6NG. Tel: 03543-5542

DATE: 2 April 1987.

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 050  AIRCRAFT TYPE: Pegasus Flash

AIRCRAFT REGISTRATION: G-HHMA

DESCRIPTION OF DEFECT: The wing had been returned to the factory for repair, after damage during operation. It was returned in a rigged state, and flown, (in ignorance) with both floating, cross-tube, tension wires rigged to one side of the fin strut.

AIRWORTHINESS IMPLICATIONS: There was a small restriction to the "Floating" property of the cross-tube in one direction. A small increase in wing tension was observed, along with a side loading to the fin tube.

There was also constant friction on both tension wires at the point of contact with the fin strut.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Total hours 19; since repair, 3 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Wing was returned from the factory rigged in this way.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The offending cable was rerouted.

REPORTED TO THE MANUFACTURER: Reported by Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: V.E.J. Smith, 2 King Edward Rd, Chatteris, Cambridgeshire, PE16 6NG. Tel: 03543-5342

CHIEF INSPECTOR'S COMMENT: Whilst it seems obvious to say, in this instance, that the factory staff were to blame, that is only a part of the story. The pilot is ultimately responsible for the aircraft which he flies; the onus is on him to preflight-check his machine properly before flying, to ensure its airworthiness.

It is not enough to argue that one should be able to assume that the factory technicians have acted faultlessly. They are human and as fallible as the rest of us, although WA procedures help. That fallibility is as true of Cessna or Piper service agents as it is of microlight service organisations. So please do preflight inspections thoroughly and assume nothing!

DATE: 2 April 1987.

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 051     AIRCRAFT TYPE: Not relevant.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: The owner had purchased a combined on-off fuel tap/fuel filter from Aerotech.

After one tank of fuel had been consumed, he removed the bowl to check conditions and found that the top 'O' Ring had distended to the point where it would not refit into its groove. He removed part of its length and cemented it with Superglue to allow its replacement.

After a further 8 hours of running, he again removed the bowl and found black paint which, as well as bubbling on the exterior of the bowl, had been over-sprayed to a distance about half-way down the interior, and it was equally failing. It looked sound but a gentle rub with a finger removed it easily in lumps!

AIRWORTHINESS IMPLICATIONS: Yet again, this is a potential cause for a disastrous fuel failure and a forced landing, with the attendant high risk.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Total hours about 9.

PROBABLE CAUSE OF FAILURE/DEFECT: The 'O' Ring was of the wrong type of material for use with petroleum products.

Paint should not have been allowed to get inside the filter bowl and that used on the outside should have been fuel-resistant, lest some particles of it be transferred to the inside during proper routine checking (which this owner did excellently).

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): It is not an acceptable 'fix' to recement a shortened 'O' Ring with Superglue for use in flight. As a short-term solution for ground-running, it might be considered OK. Superglue cannot be expected not to fail under constant attack by petroleum products.

Replace the 'O' Ring with a Viton, Kalrez or similar fuel-resistant version. If you buy such a filter/tap from Aerotech or any other supplier, ask that the device be checked for the condition of the bowl and the suitability of the 'O' Ring.

REPORTED TO THE MANUFACTURER: Reported by Chief Inspector to Aerotech.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John McAlpine,
Whittleburn House, Brisbane Glen, Largs, Scotland, KA30 8SN

DATE: 30 MAY 1987

[Signature]

Pater Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 051
SUBJECT: Fuel filter/tap.
FIRST AMENDMENT
***************

The unit described in the above Defect Report was identified by Aerotech as supplied by Raven Aircraft International (Glendale Avenue, Sandycroft, Deeside, Clwyd, CH5 2BP), who have provided the following comprehensive information, after consultation with Coopers, who manufacture the device:

1. Any paint which has been directed to the inside of the filter bowl should be removed but **not by scraping**. The inside of the bowl has been given an anti-corrosion finish, so paint stripper must be used to remove the over-spray.

2. Slight swelling of the seal is considered acceptable and to be expected with some hydrocarbons. However, the extreme variability of the wide range of two-stroke mixtures may introduce chemical combinations with which Coopers may not have experimented.

3. With large-scale production involved, there may well have been changes in the specification from that of the original version.

4. The **flat** gasket seals should **not** be replaced with ‘O’ ring seals. For example, an ‘O’ ring between the upper filter bowl and the housing could cause the bowl to slip sideways and squeeze the seal out completely, with disastrous results.

5. Although the bowl-to-housing seal may dilate slightly, there is no immediate problem so long as it stays in its groove. (It normally has to be removed with a pin). If removed or if it falls out, it must be replaced with a new Viton seal **washer**.

6. Reiterating that ‘O’ rings must not be used, Raven give the dimensions of the requisite Viton seal-washers, versus their parts numbers, as:

<table>
<thead>
<tr>
<th>Part number:</th>
<th>Outside diameter:</th>
<th>Inside diameter:</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300/1</td>
<td>2.50&quot;</td>
<td>2.30&quot;</td>
<td>0.062/0.060&quot;</td>
</tr>
<tr>
<td>2300/2</td>
<td>1.00&quot;</td>
<td>0.79&quot;</td>
<td>0.100&quot;</td>
</tr>
<tr>
<td>2300/3</td>
<td>0.50&quot;</td>
<td>0.23&quot;</td>
<td>0.125&quot;</td>
</tr>
<tr>
<td>2300/4</td>
<td>0.45&quot;</td>
<td>0.23&quot;</td>
<td>0.062/0.060&quot;</td>
</tr>
<tr>
<td>2300/5</td>
<td>0.034&quot;</td>
<td>0.20&quot;</td>
<td>0.062/0.060&quot;</td>
</tr>
</tbody>
</table>

Peter Lovegrove
Chief Inspector to the BMAA

30 June 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 052  AIRCRAFT TYPE: Hornet Dual Trainer Raven.
ENGINE TYPE: Rotax 462 Water-cooled.

AIRCRAFT REGISTRATION: G-MNRL

DESCRIPTION OF DEFECT: On completion of a dual demonstration flight, flown locally for 15 minutes, it was found that the pressure-balancing pipe between the header-tanks of the twin radiators had ruptured. The hole was roughly oval and about 10 mm long. It was estimated that about half of the total coolant inventory had been lost.

The (dual) cockpit load during the flight was about 27 stone (171 kg) and the machine had been flown for 20 minutes immediately prior to the 15 minute flight during which the failure occurred.

The weather was warm, with hazy visibility and slight turbulence.

Although the aircraft was fitted with a CHT gauge and tachometer, the pilot does not recall noticing any abnormal indications.

AIRWORTHINESS IMPLICATIONS: Had this flight extended to the point where the radiators had boiled dry, it is almost certain that the engine would have failed for any of several reasons. Had a forced landing then become necessary, the attendant serious risks would have been present.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Total hours 12.

PROBABLE CAUSE OF FAILURE/DEFECT: The failed tube was described as "Clear plastic tube which, when heated, becomes very pliable" which is a perfect description of what is popularly known as "Beer hose". If it is thin-walled PVC tube, it is certainly unsuitable for use as the cross-tube between radiator headers, where heated water/glycol can readily be expected to flow. If, for example, slightly different duty is demanded from the pair of radiators, stemming from different pressure-drops in flow-channels or from external air-flow patterns, hot liquid is almost certain to flow through the tube.

The radiator-cap release pressure is 1.2 bar (17.4 psig). This could lead to a maximum coolant-temperature, in the radiator-header, of over 100 degrees C in the worst instance, with the accompanying pressure.

PVC can soften and yield at temperatures as low as 45 degrees C, which gives little margin for such an event. However, it is more common for such a tube to enlarge and simply slide off the hot stub, than to rupture into a hole as described. That suggests that this particular piece of tube had a thin section in its wall at the location of the failure, which is again typical of the
risks with this material.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Because this failure occurred on a Type-Approved aircraft, no "Fix" can be recommended by anyone other than the manufacturer, with the full approval of the CAA. Cyclone Hovercraft Ltd have been consulted and have the matter in hand as a matter of urgency.

REPORTED TO THE MANUFACTURER: Reported by Hornet Microlights to Cyclone Hovercraft Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Roger Pattrick, Chief Inspector, Hornet Microlights, Bankfoot Mills, Wibsey Bank, Bankfoot, Bradford BD6 3JU.

CHIEF INSPECTOR’S COMMENT: Although no recommendations can yet be made as to how to remove this vulnerable item, this Defect Report is being issued to ensure that all owners of machines with this engine carry out rigorous checks on the tube in question, pre- and post-flight. Where machines have no CHT gauges or tachometers to indicate the onset of trouble, pilots are strongly advised to be doubly vigilant.

DATE: 9 June 1987

[Signature]
Peter Lovegrove
Chief Inspector to the EMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS
FILE THIS INFORMATION.

DEFECT REPORT No: 052  Failure of water-radiator cross-hose.

FIRST AMENDMENT

Nigel Beale of Cyclone Hovercraft, Rotax engine distributors, has reported that two replacement specimen-hoses have been obtained from Rotax.

One is in the possession of Hornet Microlights, from whom Mr Beale is awaiting their assessment.

The other has been subjected to pressures up to 40 PSIG (2.6 bar) and hot-water temperatures, by Cyclone Hovercraft. It was found to be fully satisfactory and this has been reported to Rotax.

As soon as the new-type hose is fully available to Cyclone Hovercraft, it will be supplied free to all purchasers of the Rotax 462 water-cooled engine.

Peter Lovegrove
Chief Inspector to the BMAA

21 June 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION.

DEFECT REPORT No 052

SECOND AMENDMENT.

************************************************************************

Cyclone Hovercraft Ltd have issued this Safety Bulletin:-

26th June 1987

SAFETY BULLETIN

ROTAX 462 & 532 ENGINES FITTED WITH ROTAX INTEGRATED RADIATORS

A failure has occurred of the transparent plastic balance pipe connecting the twin radiators on a 462 engine with the consequent loss of a large percentage of the coolant.

Rotax have agreed to supply a replacement pipe of improved material for all existing radiators, free of charge. All owners of aircraft fitted with Rotax twin integrated radiators are asked to remove the existing balance pipe and return it to Cyclone Hovercraft, together with the two small clips, and a replacement will be sent, together with new clips.

Care should be taken when removing the original pipe not to damage the radiators, which are made entirely from aluminium and are very fragile. Removal may be facilitated by carefully splitting the pipe ends with a sharp knife after removing the clips.

Owners are reminded that the cooling water temperature should never exceed 95°C under the most severe operational conditions (the average coolant temperature should be 60-80°C). A water temperature gauge is highly recommended if problems are to be detected before severe damage is done to the engine. Owners of Section S machines should consult the aircraft manufacturer regarding the fitting of a temperature gauge, if one is not fitted.

Chief Inspector's comments:- Please note that Cyclone Hovercraft say "by carefully splitting the pipe ends with a sharp knife". Do not press a knife - blunt or sharp - hard against the plastic pipe and stub; aluminium stubs can easily be deeply scored and ridges raised, which will prevent sealing afterwards. It is perhaps best to use a sharp razor knife with its back to the stub, cutting outwards through the plastic tubing.

And do take adequate care when pressing the new reinforced hose on to the relatively fragile aluminium stubs. If you loosen one from the radiator header, it could be somewhat expensive!

Peter Lovegrove
Chief Inspector to the BMAA
12 July 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 053  AIRCRAFT TYPE: QUICKSILVER MX 2

AIRCRAFT REGISTRATION: G-MBXT

DESCRIPTION OF DEFECT: Whilst taxying the machine out ready to fly, the ANS-17a bolt, which passes through the propeller-hub, sheared. The propeller stayed on the hub as the bolt fell away and no damage was sustained. There was no play in the bolt-hole or any other obvious cause.

During the previous preflight inspection, a slight 'squeak' was detected when checking for drive-shaft and propeller-shaft bearing wear. The cause was not identified. The propeller-retaining (AN4-24a) bolts were checked for adequate torque and the propeller tracking was also scrutinised.

AIRWORTHINESS IMPLICATIONS: Had the propeller fallen away in flight, it might have contacted a cable or some part of the structure, so the implication of a single and vital propeller-retaining bolt failing is fairly obvious.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

PROBABLE CAUSE OF FAILURE/DEFECT: The cause of the bolt failure is unknown.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The only general action possible was exactly that which the pilot had carried out. He attempted to find the cause of the 'squeak' which might, or might not, have a bearing on the problem. He took all reasonable care to try to ensure that the propeller and drive system were safe.

It would be advisable for all owners of these machines to remove this propeller-retaining bolt and examine it carefully for any evidence of impending failure. That is, does it appear bent or show signs of cracking, etc. If there is the slightest doubt as to its condition, replace it with a new bolt. Similarly, the bolt-holes should be round and unenlarged.

REPORTED TO THE MANUFACTURER: Reported by the distributor.


DATE: 11 June 1987

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 054  AIRCRAFT TYPE: GEMINI SPRINT

AIRCRAFT REGISTRATION: G-MNHE

DESCRIPTION OF DEFECTS: During an inspection, it was found that the bolt securing the top of the A-frame uprights was loose. No threads were projecting from the Myloc nut.

There was also severe wear in the hub region of one of the main wheels.

AIRWORTHINESS IMPLICATIONS: Loose bolts, inadequately secured, in a critical part of the airframe are clearly dangerous.

Any problem with wheels which could affect the safe execution of take-off or landing in the event of a failure must also be avoided if possible.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

PROBABLE CAUSE OF FAILURE/DEFECT: The history of the bolt is not known. It may or may not have been the original but was clearly in need of checking and/or replacement with a specified component from the manufacturer (Mainair).

The problem with the wheel unit - described by the aircraft's manufacturer as "Not the wheel cutting into the axle, but the dust cover turning in the plastic hub centre", is, they confirm, the result of a lack of grease, dusty or beach operation or a higher than usual proportion of cross-wind operation.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Both of these problems are readily avoidable by proper routine maintenance. This bolt problem is one which is common to all light aircraft and can be cured -- as it was here -- by simply replacing the nut and bolt with recommended parts.

The maintenance schedule for this Section-5 machine calls for close inspection of the wheels - with the weight off them - every ten hours. Removal, cleaning and re-greasing should be carried out every 100 hours.

The manufacturers have found hard runways to be more wearing on these wheels than are grass strips.

REPORTED TO THE MANUFACTURER: Reported by the Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Martin Horan, 5 Abney Close, Mickleover, Derbyshire DE3 5DZ

DATE: 15 June 1987

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 054        AIRCRAFT TYPE: GEMINI SPRINT

FIRST AMENDMENT

It might have been inferred from this report that Mainair made both the wing and the trike in question.

Whilst the trike was certainly theirs, the wing was, of course, a Southdown International product.

Both John Hudson and I failed to spot the obvious mistake or -- at least -- omission, in the original draft of this Defect Report, although he picked it up later.

However, the intent of the Report is unaltered.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

Date: 27 June 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 055      AIRCRAFT TYPE: MAINAIR FLASH

AIRCRAFT REGISTRATION: G-MNFF

DESCRIPTION OF DEFECTS: During a long (1 hour 55 minutes) cross-
country flight, the engine failed. In-flight restarting could not
be achieved and a forced landing had to be made in an inclined
field. Mild damage was incurred in collision with a hedge.

AIRWORTHINESS IMPLICATIONS: Forced landings always present the
obvious serious risks.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: about 90.

PROBABLE CAUSE OF FAILURE/DEFECT: The engine failure was
identified as being the direct result of intermittent ignition
failure. The screw-caps on top of the spark-plugs were loose in
the connectors and one of them had been eroded away by arcing.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
The owner sensibly replaced the plugs, the leads and the
connectors (and repaired the airframe damage). The bungee plug-
cap retainers had stretched and lost most of their elasticity,
thus also failing to do their job. They, too, were replaced.

REPORTED TO THE MANUFACTURER: Reported by the owner, who had the
repairs executed by the manufacturer.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Damian C. Walker, 39
Elm Court, Birkenshaw, West Yorkshire, BD11 2PF.

CHIEF INSPECTOR’S COMMENT: In his report, Mr Walker explained
that – in the minutes immediately preceding this flight, he
actually had spare plugs in his hand! However, he was competing
in Round 1 of the National Championships at Shobdon and, at the
moment in question, had less than five minutes to take off for
the task, after completing fuel monitoring, briefing, planning
and photography. The plugs were therefore not fitted!

It is possible that a more detailed preflight inspection would
have revealed the onset of the problem (though it may have built
up during the long flight). It would certainly have shown that
the bungees were not forcing the caps into firm contact with the
plug-tops. In fact, that part of the inspection could just as
effectively have been executed at home, prior to and in the
absence of, pressures from the competition environment. The moral
is therefore to check what you can at home, taking your time.

DATE: 21 July 1987

Peter Lovegrove
Chief Inspector to the BMAA
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS

The information contained in this batch of Defect Reports has been gleaned from one of Mainair's regular Service Bulletins.

They are to be congratulated on the way in which they do not seek to hide faults which arise on their machines nor to pretend that none ever arise. Their open and forthright approach is exemplary.

What is even more important is that almost every fault and problem which is quoted in the Bulletin is common to all types of flex-wing and to many 3-axis Dacron-and-tube machines as well.

I trust that all BMAA Inspectors will pay heed to the very useful information given in the Reports.

Peter Lovegrove
Chief Inspector to the BMAA

31 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 056      AIRCRAFT TYPE: Southdown Inter’l Sprint

AIRCRAFT REGISTRATION: G-MNYG

DESCRIPTION OF DEFECT: After 16 hours of use, the owner noticed that the flexible fuel-tubing had split inside the braid, where it connected to the tank outlet-stub. Assuming that a sharp edge on the stub was the cause, he rounded it off and fitted the re-cut end of the tube back on to it. (There was adequate slack to allow this course of action).

The machine was flown for two hours in a period of two weeks. A check was carried out on a Monday and, on Wednesday, the entire contents of the tank were observed deposited on the floor. The pipe had ruptured in the same place.

AIRWORTHINESS IMPLICATIONS: A total failure of the fuel tubing, like this, can bring risks of forced landings, fire, etc.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: As above, 16 plus 2 hours. The machine was first registered in August 1986.

PROBABLE CAUSE OF FAILURE/DEFECT: The tube lining the braid changed quite noticeably from its dry state, when wetted with petrol. It increased markedly in diameter, becoming "Cheesy" and ready to split easily, under local pressure from, say, a tank stub, as happened here. It appears that the tube material had degraded with time.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Total replacement of the tube, is the only safe rectification.

REPORTED TO THE MANUFACTURER: Reported by the Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Derek Brunt, Plaistows Farm, Chiswell Green Lane, St Albans, Hertfordshire.

MANUFACTURER’S COMMENT: The manual for this aircraft covers the maintenance and upkeep of the fuel system in considerable detail. All owners are urged to carry out the recommended maintenance on a regular basis.

Replacement fuel-tubes for this aircraft are available from Raven Aircraft International Ltd, Glendale Avenue, Sandycroft, Chester, CH5 20P, Telephone 0244-520632

Peter Lovegrove
Chief Inspector to the BMAA
9 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 057                                       WING TYPE: Flash 2.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: Deciding to wash the soiled wing of his aircraft after it had been kept outside, the owner chose to add industrial bleach to the washing water. The fabric came up like new.

When the wing was checked a few weeks later, the degradation was so severe that the fabric could easily be torn by hand. The sail was total scrap.

AIRWORTHINESS IMPLICATIONS: Fabric as weakened as this could clearly not be expected to survive flight loads for long, without a catastrophic failure. A small rip could easily have propagated into a situation where the whole sail was lost in tatters.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Less than 40 hours had been logged.

PROBABLE CAUSE OF FAILURE/DEFECT: With such a short life, there can be little doubt that the bleach attacked the Dacron fibre.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Total replacement of the sail was the only remedy.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR'S COMMENTS: This situation was not at all linked to the type of aircraft; it could occur with absolutely any machine which uses Dacron and is so treated.

The lesson is simple: Do not wash Dacron with other than soap and water. If you must use detergent, make sure that it is very dilute and that you use plenty of water for rinsing, to the point where there is no trace of foaming at all, in the residue.

DO NOT USE BLEACH, OR ANY KIND OF HYDROCARBON OR SOLVENT, TO WASH DACRON FABRIC. YOUR WING MAY GET PETROL SPLASHES OCCASIONALLY, BUT THAT DOES NOT MEAN IT DOES NO DAMAGE, ALBET FORTUNATELY VERY LOCALISED.

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 058

AIRCRAFT TYPE: GEMINI

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: A Gemini, stored for most of its life, had suffered failure of the Primer Bulb, which had 'perished' and split.

AIRWORTHINESS IMPLICATIONS: Failure of any part of the fuel system on any microlight aircraft - as with any other type of aircraft - could easily lead to a forced landing or worse, with all the obvious implications of extreme hazard.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: The machine was 9 months old.

PROBABLE CAUSE OF FAILURE/DEFECT: Devices such as Primer Bulbs tend to be the product of relatively small firms, or made as a trivial sideline by slightly larger ones. The attention to Quality Control, on units which bring that manufacturer relatively little unit profit, is mediocre. This is, in general, not unreasonable; it matters little whether a mower, outboard boat or sand buggy comes to rest! For us, it is a different story.

The commonest reasons for rubber items to perish 'inexplicably' are the use of just a little too much filler - which stretches the production run - or a ill-controlled temperature during moulding. Neither can be detected when the microlight manufacturer buys in the product, or you buy the item.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Total replacement of the item is obviously the only remedy.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HG

CHIEF INSPECTOR'S COMMENTS: All fuel-line components need frequent and very careful inspections, not just a close scan at Renewal date!

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

DEFECT REPORT No 059

AIRCRAFT TYPE: GEMINI 462 trikes.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: There have been reports of failures of the top rubber mounts of the radiators, particularly the left-hand mounts.

AIRWORTHINESS IMPLICATIONS: Loss of cooling due to failure of the radiator, could clearly lead to substantial engine damage if unnoticed.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: There seems to be a variation in either the consistency (Shore hardness) of the rubber mounts, or in the levels of vibration experienced with different aircraft.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):

(a) Fit a plastic 'tie-wrap' as a back-up in case of total failure of a mount.

(b) Do not replace the mounts with the stiffer (exhaust) type. This may result in failure of the metal bracket which is soldered to the radiator.

(c) Maintain your cooling system carefully.

(d) Regularly inspect for cracking of solder-joints, particularly where the pipes are connected.

(e) Look for coolant staining, hose cracking and coolant-fin damage.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR'S COMMENTS: Since these engines are in popular demand, the fault is potentially common to all aircraft which use them and certainly not unique to the Gemini. Owners must be vigilant about the points discussed above.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 060  AIRCRAFT TYPE: GEMINI 462 trikes.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: Cracking has been found in the box mounts where they fit to the seat channel.

AIRWORTHINESS IMPLICATIONS: Failure of any part of an airframe structure is undesirable at best and potentially lethal at worst.

Failure of an engine mount is especially bad because it is in an area of concentrated stress. Loads must - of necessity - be suddenly transferred to other members when any one fails, thereby taking others to the point where they must fail.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: The manufacturer finds that there seems to be no consistent trend between models although the mounts and tensions are identical in the 462 and 503 models. It is presumed that the greater torque from the 462 engine may be over-stressing the component.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):

The manufacturer recommends very careful monitoring and, in the event of cracking being found, the installation of a new component is necessary.

The manufacturer also reminds owners that propeller balance is a vital factor in the determination of the total 'life' of many airframe components (on all microlights. PCL.) The cracks found on these box mounts are considered to be high-frequency fatigue cracks, and therefore greatly affected by engine/propeller vibration.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 OHO

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 061

AIRCRAFT TYPE: Any using Rotax engines with integral gearbox.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: As the hours of use mount up, wear develops in the final drive-unit of the integral gearbox and it causes the propeller to develop vibrations.

AIRWORTHINESS IMPLICATIONS: It is true to say that the majority of faults which develop with initially sound microlights is the direct result of vibration from the engine/propeller unit.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not specific.

PROBABLE CAUSE OF FAILURE/DEFECT: The final gear-drive on these integral-gearbox Rotax engines locates in an open sinusoidal 'dog' grip and is held there by a considerable spring force, which is provided by a set of disc springs.

Like all steel springs, these discs weaken gradually with hours of use. As a result, the sinusoidal grip allows the propeller to oscillate and it begins to develop increasing amounts of vibration.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Any potential source of vibration should be dealt with quickly, as soon as it is recognised that it is at fault. Alternatively, as soon as the number of hours logged on a given item of equipment reaches that at which the manufacturer recommends servicing, that should be carried out.

Cyclone Hovercraft have the special tools needed to carry out the adjustments and replacements to bring these Rotax drive units up to new standard; they should be consulted.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR’S COMMENTS: Nigel Beale of Cyclone Hovercraft has repeatedly informed owners of the need to maintain the drive units on Rotax engines in proper adjustment. John Hudson’s experiences merely serve to reinforce Mr Beal’s advice.

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 062 AIRCRAFT TYPE: Any using Robin engines.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: Engine misfiring occurred, along with the discharge of oil from the exhaust manifold and flooding of the engine.

AIRWORTHINESS IMPLICATIONS: Any malfunction of the power-plant of any single-engined aircraft presents the obvious risks of forced landings, as occurred here with consequent substantial damage.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 75 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Although not suspected at first, the fault emerged as a split diaphragm in the fuel pump.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the diaphragm is the only rectification. However, the general tuning of the engine should also be checked when the replacement is done; minor adjustments are often made progressively, to take up the effects of such a split gradually developing, yet unrecongnised.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 OHO

CHIEF INSPECTOR’S COMMENTS: This sort of failure is not unique to Robin engines; any engine which uses a fuel pump which involves a pulsing diaphragm is prone to the same problem.

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 063

ENGINE TYPE: Robin 447

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: Engine power loss and RPM drop occurred.

AIRWORTHINESS IMPLICATIONS: Any malfunction of the power-plant of any single-engined aircraft presents the obvious risks of forced landings.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: The ignition capacitor was found to be loose in its spring holder.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): With such a problem, the clip needs to be tightened or replaced.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR'S COMMENTS: The risk of this sort of failure is common to almost all engines found on microlights.

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 063

Please note that this Defect Report should have stated

ENGINE TYPE: "ROTAX 447" not "Robin 447"

Peter Lovegrove
Chief Inspector to the BMIAA

9 September 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 064  AIRCRAFT TYPE: All Mainair wings.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: A Mainair dealer reported that the leech lines on a older Flash wing had extended.

AIRWORTHINESS IMPLICATIONS: Any maladjustment of wing lines and cables presents an obvious risk to safety or, at least, affects the handling of the wing.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

PROBABLE CAUSE OF FAILURE/DEFECT: With repeated expansions and contractions with age, the lines had ultimately become extended overall.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The lines on all wings should be checked and, if necessary, adjusted.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR'S COMMENTS: This kind of problem is capable of arising on any flex-wing. The necessary checks must be carried out during the inspections and certainly by the check-pilot, for his own safety.

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 865

AIRCRAFT TYPE: All Mainair wings.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: The bungee rubber used to retract the cross-tube tension cord may 'perish' with age and break free.

AIRWORTHINESS IMPLICATIONS: If the rubber should break in flight, it may fall rearwards and foul the propeller.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not specific.

PROBABLE CAUSE OF FAILURE/DEFECT: Rubber 'perishes' at a rate dependent upon its tension, its environment and its age.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The rubber should be checked and replaced as soon as there is any reason to suspect its total integrity.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HG

CHIEF INSPECTOR'S COMMENTS: This kind of problem is capable of arising on any flex-wing which uses bungee cord, particularly if it is kept in a constant state of tension.

Peter Lovegrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 066

AIRCRAFT TYPE: All Mainair wings.

AIRCRAFT REGISTRATION: Not relevant.

DESCRIPTION OF DEFECT: The side wires on a Mainair wing were found to have broken strands.

AIRWORTHINESS IMPLICATIONS: Failed cables on any wing are obviously a most dangerous event. Catastrophic collapse of the wing or airframe is the worst outcome possible.

HOURS FLOwn, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 320 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: These cables are quite clearly noted as 'lifed' at 250 hours. Using them for a period longer than this is known to be bad practice.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): As the cables approach or exceed 250 hours of use, replace them.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR'S COMMENTS: Manufacturers are always reluctant to include 'lifed' components in their products. If they do find it necessary to do so, respect their judgement and adhere strictly to the limiting periods of use which they specify.

Peter Lovelgrove
Chief Inspector to the BMAA
27 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 067

AIRCRAFT TYPE: Scorcher and Gemini

AIRCRAFT REGISTRATION: Not known

DESCRIPTION OF DEFECT: An axle tie-wire was found to have broken strands.

AIRWORTHINESS IMPLICATIONS: Total failure of this cable during take-off or landing could have dangerous or, at the very least, expensive, results.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

PROBABLE CAUSE OF FAILURE/DEFECT: The bolts securing this cable were over-tightened, preventing the thimble/ferrules from rotating freely. As a direct result, the cable ends were subjected to avoidable bending stresses, leading to strand failure.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): With such strand failure, the cable has to be replaced. But the additional step which must always be taken and preferably should be a constant feature of all inspections, is to ensure that there is adequate freedom for the thimbles to rotate. The securing bolts must not be over-tightened or, better, there should be spacers inside the thimbles, against which the bolts can be fully tightened, leaving the thimbles free to rotate.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 0HQ

CHIEF INSPECTOR’S COMMENTS: This seemingly trivial feature is something whose absence ruins many expensive cables, as well as placing pilots at risk. Inspectors must always be on the alert for ‘locked’ cable-ends on all kinds of microlights.

Peter Lovegrove
Chief Inspector to the BMAA
31 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 068

AIRCRAFT TYPE: Not stated

AIRCRAFT REGISTRATION: Not known

DESCRIPTION OF DEFECT: The plastic rim became detached from a
locking fuel-cap.

AIRWORTHINESS IMPLICATIONS: Unless the rim found its way into the
propeller, the risks are possibly small.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

PROBABLE CAUSE OF FAILURE/DEFECT: The failure was probably caused
either by rotating the cap by holding the outside rim, rather
than by the locking key, or by lifting the tank by holding the
cap. Both should be avoided.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
The cap has to be replaced.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair
Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs,
OL12 0HU

Peter Lovegrove
Chief Inspector to the BMAA
31 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No 069  AIRCRAFT TYPE: Gemini

AIRCRAFT REGISTRATION: Not known

DESCRIPTION OF DEFECT: The coil winding on the Rotax 462 engine was found to have worked loose.

AIRWORTHINESS IMPLICATIONS: This fault could have led to ignition failure, with all that that entails.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 30 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Possibly some initial looseness in the mounting, or looseness developed as a result of engine/propeller vibration.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The coil winding was shim-locked in place.

REPORTED TO THE MANUFACTURER: Reported by Mainair Sports Ltd

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Hudson, Mainair Sports Ltd, Alma Industrial Estate, Regent St, Rochdale, Lancs, OL12 OHR

CHIEF INSPECTOR'S COMMENTS: This is again typical of the kind of fault which can develop with time and which is easily rectified in the course of simple routine maintenance. If inspectors are vigilant for this type of problem and can urge owners to make such thorough checks on a very regular basis, instead of merely giving lip-service to pre-flight inspection on the field, many serious risks may be avoided and owners saved a great deal of cash!

Peter Lovegrove
Chief Inspector to the BMAA
31 August 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 0/0 ENGINE TYPE: Rotax.

AIRCRAFT REGISTRATION: Not relevant

DESCRIPTION OF DEFECT: Engine misfires have been attributed to faulty Bosch spark-plug caps (the metal shielded type).

AIRWORTHINESS IMPLICATIONS: Ignition malfunctions can lead to obvious engine problems and hazards in flight and at take-off.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not specifically relevant.

PROBABLE CAUSE OF FAILURE/DEFECT: Cyclone Hovercraft have recently discovered that the probable cause is a combination of the Bosch plug-cap being used with replacement NGK spark-plugs, which are fitted with a 'screw-on' aluminium top.

Vibration causes the spring clip inside the plug-cap to wear the aluminium plug-top, resulting in a fine aluminium powder being deposited inside the cap. This eventually leads to the spark tracking down inside the plug-cap, earthing on the metal shield, causing the engine to misfire.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
In order to minimise the possibility of such an occurrence, the following procedure is recommended if replacement plugs with aluminium caps have been fitted:

1. Thoroughly clean inside the plug cap, to remove all traces of aluminium dust and dirt.

2. Preferably replace aluminium-top spark-plugs with plugs with fixed steel tops (these are the only type supplied by Rotax as original equipment, Part No 897050).

3. If plugs with aluminium tops are retained, check the 'screw-on' top for tightness. If loose, it can cause seizing and burned holes in pistons! Thoroughly clean inside the plug-cap at least every ten hours.

4. Plastic spark-plug caps, which we believe should be compatible with either the fixed-top or 'screw-on' top spark-plugs, are available as original equipment for Rotax, on request.

5. NOTE! Plug caps which fit directly on to the 4mm thread on the plug top (with the 'screw-on' top removed) SHOULD NOT BE USED.

REPORTED TO THE MANUFACTURER: Reported by CYCLONE HOVERCRAFT, the Rotax distributors.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Nigel Beale, "Burnside", Deppers Bridge, Leamington Spa, Warks, CV33 0SU.

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA
5 October 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 071 AIRCRAFT TYPE: Pegasus XL SE Rolax 447

AIRCRAFT REGISTRATION: Not known

DESCRIPTION OF DEFECT: At 1000 feet altitude, after climb-out, the pilot throttled back. The engine revs fell suddenly and would not respond to levels above tick-over. A successful forced landing was made.

AIRWORTHINESS IMPLICATIONS: Engine failures and forced landing carry very predictable hazards!

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

PROBABLE CAUSE OF FAILURE/DEFECT: The cause of the failure was found to be the partial blockage of the in-line filter by breakdown products from the paper element inside it.

The filter was returned to the aircraft manufacturer. It was of the MOPROD CLEAR TYPE, WITH A 90 DEGREE BEND.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the filter, preferably with an alternative recommended by the manufacturer, is the only satisfactory solution to this problem.

REPORTED TO THE MANUFACTURER: Reported by owner/pilot to Solar Wings Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: M. Baldwin, 29, Noble Gardens, Garlinge, Margate, Kent CT9 SLD

CHIEF INSPECTOR'S COMMENT: All inspectors are urged to advise owners of machines with this type of filter fitted, to inspect them most carefully at the very least. Ideally, a flow-capacity check should be carried out and replacement made if there is the slightest possibility that blockage is taking place or imminent.

Peter Lovegrove
Chief Inspector to the BMAA

20 December 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 072        AIRCRAFT TYPE: Pegasus XL SE
                                     Rotax 462 Liquid
AIRCRAFT REGISTRATION: G-MTIE

DESCRIPTION OF DEFECTS:
(a) Lower port radiator hose (fore/aft) ruptured and all coolant
    was lost. (The fault was noticed the previous day but wrongly
    thought to be due to a loose Jubilee clip).

(b) The rear silencer bracket snapped.

Both incidents occurred in flight but a safe landing was
achieved, without power. The CHT/EGT was the only indicator of
the failures.

AIRWORTHINESS IMPLICATIONS: Engine failures and forced landing
carry very predictable hazards!

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not
stated.

PROBABLE CAUSE OF FAILURE/DEFECT: Both problems are known to
Pegasus and solutions devised.

(a) The hose needs to be held clear of the engine.

(b) The bracket is insufficiently stiff.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
(a) The hose should be held clear of the engine housing by
    installing a spacer or six washers behind the retaining bolt.

(b) The bracket should be reinforced by adding a welded fillet
    inside the curved part, as shown in the sketch.

REPORTED TO THE MANUFACTURER: Reported by owner/pilot to Solar
Wings Ltd.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: A. Sayers, 8
Abercromby Place, Tullibody, Clackmannanshire

CHIEF INSPECTOR'S COMMENT: All inspectors are urged to advise
owners of any of these machines which are unmodified, to contact
the manufacturers at once.

Peter Lovegrove
Chief Inspector to the BMAA

20 December 1987
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 073  AIRCRAFT TYPE: PUMA SPRINT
AIRCRAFT REGISTRATION: G-MNBH  Rotax 447

DESCRIPTION OF DEFECT: Power loss at full throttle was experienced and fuel starvation was suspected.

AIRWORTHINESS IMPLICATIONS: Engine failures and forced landing carry very predictable hazards!

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 140 hours.

PROBABLE CAUSE OF FAILURE/DEFECT: Diagnosis of fuel starvation was correct. Problem was found to be 'perishing' of rubber inside armoured fuel tubing.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The only solution to this problem is total replacement of the failed fuel tubing.

REPORTED TO THE MANUFACTURER: Reported by Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: J.H.Button, Tempsford Airfield, Everton, Sandy, Beds.

CHIEF INSPECTOR'S COMMENT: This defect bears obvious comparison with that described in Defect Report number 056.
I ask all inspectors to be particularly careful about checking the fuel lines on Puma Sprints, especially if they have been in place for a significant period. It is clear that they need replacement at least at the intervals recommended in the machine's handbook. Such replacements are available from Raven Aircraft International.

Peter Lovegrove
Chief Inspector to the BMAA
8 January 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 074   AIRCRAFT TYPE: Mainair Flash 2A
                      Rotax 503

AIRCRAFT REGISTRATION: G-MILL

DESCRIPTION OF DEFECT: Preflight inspection showed that a number
of Nylon mounting clamps, which hold the propeller-blades in the
correct pitch position, had cracked.

After one 3 1/2 hour flight, one blade was found to have moved by
2 degrees in spite of being torqued to the correct handbook-
figure.

AIRWORTHINESS IMPLICATIONS: The loss of any part or all of a
propeller in flight - or during taxying, in certain circumstances
- will clearly be very hazardous.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: From the comments made by the pilot
reporting the defect, it appeared that the blades might be prone
to move and that their clamps might equally be prone to cracking.

However, the pilot has since pointed out other features which are
pertinent to the problem. Firstly, he has said that the blades
are not easy to set critically to the desired value and, secondly,
that some traces of grease were applied to the blade-
roots to try to make it easier to adjust them.

It is certainly possible, therefore, that the presence of grease
could account for the blade moving so markedly. Nevertheless,
that would not account for the cracking observed in the clamps,
symptomatic of excess torquing on the bolts.

An easier way of setting the exact pitch on the blades would, the
pilot suggests, make matters much simpler.

Mainair have responded to my request for information; I paraphrase
their reply as follows:

"With the correct torque applied to the bolts, we dispute that
the blades will slip, with or without cracks in the clamps.

14 ft.lb is a satisfactory torque for the side bolts but the
internal bolts are tightening over the end of the hub and this
over-tightening can lead to distortion of the side-plates and
cracking of the Nylon retainer.

Although the cracking is non-structural, it is clearly
undesirable. We have reduced the torque value to 12 ft.lb to
protect against this."
RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Take due note of the manufacturer's revised torque figure and seek their advice in cases where the problem appears acute.

REPORTED TO THE DESIGNER: Reported by the Chief Inspector

NAME AND ADDRESS OF PERSON REPORTING DEFECT: M.J.Bird, "Brownlow", Huckley Cross, Near Bridgnorth, Shropshire, WV16 4RP

CHIEF INSPECTOR'S COMMENTS: In spite of the fact that manufacturers take the trouble to settle upon, and specify, exact torque figures for crucial components on microlight aircraft, I know from experience that it is all too common practice for amateurs simply to guess at bolt torques, which one cannot do successfully! (I have no reason to doubt Mr Bird's claim that the torque figures were correct on his machine, since they were set by the supplier of the aircraft, a leading microlight agent and now manufacturer).

Almost equally bad is the practice of using a torque wrench which is unsuited to the range which you actually need. Unless specifically calibrated, most torque spanners are inaccurate to various extents, so when you begin guessing what "Halfway between this setting and zero" means, you might almost be as well off guessing.

So, if you are going to do your own maintenance, buy, borrow or hire a set of reliable torque spanners - perhaps on a Club basis - and do the jobs properly.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

7 February 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

DEFECT REPORT No: 075

AIRCRAFT TYPE: Reimsa 1100

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: Fuel starvation occurred on this machine which used a COOPER FULL FILTER.

AIRWORTHINESS IMPLICATIONS: Fuel starvation can cause engine failure and all the resulting hazards of a forced landing.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: The filter element had been installed upside down. This would either allow dirty fuel to pass directly into the pump and carburettor or - if the filter were pushed hard up against the sealing ring - shut off the fuel flow almost completely.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Clearly, the utmost care must be taken to install the filter element correctly.

REPORTED TO THE MANUFACTURER: Reported by the manufacturer.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: W. Brooks of Scania-Wings Ltd.

CHIEF INSPECTOR'S COMMENT: It is believed that this type of filter is in use on other types of machine, such as the Seagull, for example.

May I ask Inspectors and Safety Officers to bring this note to the attention of all owners, so that they can take due note of its importance, if it is relevant to their aircraft?

Peter Lovegrove
Chief Inspector to the FAA

16 January 1968

CORRECT

WRONG!
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 076    AIRCRAFT TYPE: D.S WINGS

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: Damage to two D.S Wings has been found, caused by propeller impact on them.

AIRWORTHINESS IMPLICATIONS: Fears in wing-fabric, or any item striking - or being struck by - a propeller, can lead to failure of the wing or break-up of the propeller, with the obvious possibility of further catastrophe.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: It appears to be the outcome of taxing downwind with one wing held low. Being a slack wing, the inboard sail blows down into the path of the propeller.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): A possible cure is to install two additional leach lines to the unsupported battens, but without articulation (that is not free to move from side to side). See sketch.

REPORTED TO THE DESIGNER: Reported by the Chief Inspector

NAME AND ADDRESS OF PERSON REPORTING DEFECT: J. Bridge, 24 Ulverston Close, Blackburn BB2 3TX.

Peter Lovegrove
Chief Inspector to the BMRA

16 January 1988
DEFECT REPORT No: 077     AIRCRAFT TYPE: CFM Shadow

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: The internal strengthening sleeve on a replacement nose-leg was found to be inadequately rivetted. The same problem was found on another machine.

AIRWORTHINESS IMPLICATIONS: The collapse of a nose-leg during take-off or landing could obviously cause an aircraft to 'dig in' at the front end and cartwheel, with all the risks implied by that.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: The original nose-leg on this machine was snapped in a bad landing. A factory replacement was obtained, and was considered to be of an improved design, in that the flange was rivetted instead of welded. However, the sleeve installed inside the vertical leg was rivetted in such a way as not to share the load properly between the inner and outer tubes, reducing the value of having the internal sleeve present; see sketch.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): An additional rivet is all that is required.

REPORTED TO THE DESIGNER: Reported by the Chief Inspector

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Christie, DR Despatch Services, 84 Hill Crest Rd, Norwich, Norfolk, NR7 0JU. (Telephone: Norwich 391860)

CHIEF INSPECTOR'S COMMENTS: Owing to variation on exact dimensions of a particular batch of 1 3/4" and 1 5/8" OD tubing, CFM say that they had to split what would generally be a whole section of tube inserted as an inner doubler. They agree that the intention was to insert three rivets to secure the few split doublers which were installed but say that there have so far been no reports of any problems with any which, like Mr Christie's with two rivets, may have slipped past the inspector.

Peter Lovegrove
Chief Inspector to the BMAA

7 February 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 078      AIRCRAFT TYPE: RAVEN X

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: The bolts at the corners of the control frame were carrying the cable thimbles on their threaded portions.

AIRWORTHINESS IMPLICATIONS: Anything which might lead to the failure of what are really flying wires must be considered as a serious danger to flight safety.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: Use of a bolt which has too short a grip length for the dimensions of the components which it is used to secure.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The use of a bolt of the correct grip length is all that would be needed in most instances.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mr. P. Fathers, 97 Pioneer Avenue, Kettering, Northants, NN14 2PA

CHIEF INSPECTOR'S COMMENTS: It is said that the Approval specimen of this aircraft was constructed with this detail exactly as reported by Mr. Fathers and as shown in the Manual photo. I do not doubt this. However, it is still unsatisfactory to use critical bolts in this manner.

I would recommend that inspectors ask for any such bolt to be removed during the inspection and that they then examine both the bolt and the inside of the thimbles to see if damage is beginning to happen on either.

They must then use their discretion as to whether they require that the bolts be replaced with ones of the correct grip length and/or corrections made to the cables.


Peter Lovegrove
Chief Inspector to the BMAA

7 February 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

DEFECT REPORT No: 079  AIRCRAFT TYPE: GEMINI FLASH I

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: The base of the long-range (top) tank on this inverted-Rutax 447 machine had worn badly after chafing against the rivet-heads in the tank tray, despite having plastic strips and 1/8" rubber squares fitted between the two to prevent such abrasion. The fault was found during a routine ground-inspection, comprehensively conducted.

AIRWORTHINESS IMPLICATIONS: Continued abrasion such as this is clearly going to lead to rupture of the tank and loss of fuel. That could, in turn, lead to fire risk or a forced landing, both serious matters.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: Vibration is almost certainly the culprit here, yet again! Neither rubber nor plastic will stand up to it indefinitely and abrasion is almost inevitable.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
In this instance, the owner cleaned the gouges out and filled them with Araldite. He then fitted new and standard plastic strips and thicker rubber squares to the tank.

Although, in principle, any epoxy repair medium such as Isopon or any of the mastic-like non-setting materials might have sufficed equally well, there is always a question-mark over any attempt to bond to the metal adequately enough to contain fuel; if an actual perforation has occurred.

It is likely that Araldite is neither better nor worse than any other material like it (provided that the Araldite is properly cured; simply allowed to cure at room temperature, the bond can sometimes be indifferent if subjected to continuous attack by fuel). So continued vigilance is a very necessary follow-up.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mr Mark Hayward, 1 Rackfield, Wellington, Somerset.

CHIEF INSPECTOR'S COMMENTS: This particular problem is not, and never has been, unique to any specific microlight aircraft design.

What the topic does highlight is the tremendous value of doing careful and thorough ground-inspections on your aircraft. What is a tedious, delaying exercise when discovered before flight, could be a most dangerous event in flight. So I again urge Inspectors to remove all such tanks from all types of aircraft and examine their seatings, when doing a Renewal, and to push owners and
pilots to do comprehensive pre-flight inspections. At least once during each flying session, these should extend to searches such as conducted by Mr Hayward.

John Hudson of Mainair Sports Ltd makes the following useful points also:

"If one tank has shown this problem, then it may well appear on others. With the Mainair installation, simply unfastening a solitary quick-release webbing buckle allows the tank to be lifted clear for examination within 20 seconds.

Now that pilots' attention has been called to the possibility of a problem, there is no excuse for the rapid check not to be carried out.

The abrasion may actually be the result of downward 'bowing' on the base of the tank. Being commercial pressed-steel and welded tanks, they do vary slightly.

Peter Lovegrove
Chief Inspector to the BMAA

10 February 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 080       AIRCRAFT TYPE: PEGASUS FLASH 2

AIRCRAFT REGISTRATION: G-MTHM

DESCRIPTION OF DEFECT: The tape came off the leading edge of one of the propeller blades during flight, with the engine RPM at about 5000. The noise and vibration whilst the tape was stripping almost caused a forced landing in the Kalahari desert bush.

However, the pilot was able to 'limp' back to his base airfield, where the cause of the problem was positively identified.

Only three spots remained cemented on the other blade's tape.

AIRWORTHINESS IMPLICATIONS: Forced landings under any circumstances can obviously bring hazards. In a remote location, even a safe landing may not mark the end of the risks.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 30 hours.

CAUSE OF FAILURE/DEFECT: It appears that the high local ambient temperatures (35-40 degrees C) caused the cement on the tape to soften and fail.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
This is one of those instances where a 'curing', two-part cement - if such can be found - would be preferable to the type of contact adhesive which one habitually finds on such tapes. Obviously, the manufacturers do not expect to encounter this problem in Britain, with our summers! But if aircraft are going to be sold abroad, and this is happening on an increasing scale, this type of problem must be considered. One might almost argue that the absence of the protection afforded by such tape is a lesser disadvantage than such tape parting in mid-flight.

With more groups endeavouring to set up microlight clubs and organisations abroad (as is Mr Scales), it is plainly very important to minimise incidents which could make officialdom unhappy over the airworthiness of our type of machines.

Equally obvious is the fact that this sort of problem cannot be unique to Pegasus machines. Any aircraft which has contact-cemented propeller-tape must be vulnerable to the same loosening.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mr Julian Scales, Box 1190, Gaborone, Botswana.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

20 March 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 081
AIRCRAFT TYPE: PEGASUS FLASH 1

AIRCRAFT REGISTRATION: G-MNJJ

DESCRIPTION OF DEFECT: Broken strands were observed - during a careful pre-flight by the owner - in the rigging cables

(1) at the nose side of the lower left A-frame
(2) at the upper side, top end.

See sketch.

AIRWORTHINESS IMPLICATIONS: Failed cables, for whatever reason, can obviously present the most serious of hazards, in-flight structural failure being the direst of these.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 90 hours total.

CAUSE OF FAILURE/DEFECT: Not specifically stated or identified. Possibly the outcome of bending stresses applied during stowage of the wing for transport? There was no evidence of mechanical damage.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The problem was easily rectified by installation of factory-supplied, replacement cables.

REPORTED TO MANUFACTURER: By Mr Weighell.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mr Geoff Weighell, The Microlight Centre, Enstone Airfield, Church Enstone, Oxon.

CHIEF INSPECTOR'S COMMENT: Once again, this incident points to the immense value of careful pre-flight inspections. Something which, had the owner been slapdash, could ultimately have led to a risk to life, was reduced to a simple maintenance and refurbishment problem, standard and acceptable for all aircraft.

ALWAYS DO YOUR PRE-FLIGHT INSPECTIONS SLOWLY AND CAREFULLY.

Peter Lovegrove
Chief Inspector to the BMAA

20 March 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 082  AIRCRAFT TYPE: PEGASUS XL-SE

AIRCRAFT REGISTRATION: G-MTIO

DESCRIPTION OF DEFECT: The spindle of the choke lever camme adrift. See sketch.

AIRWORTHINESS IMPLICATIONS: Given the right circumstances, the parts of the unit might have gone through the propeller disc and caused a serious problem.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: It is not known if the lever had been knocked when stowing the bar, but the thin flange obviously requires little force to damage it or to dislodge the shaft completely.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): If inspection reveals the likelihood of an imminent problem, replacement of the unit is the simple rectification required.

REPORTED TO MANUFACTURER: By DMAA office.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mr R. Riley, Squirrels Wood, Hamstreet, Kent, TN26 2EA

Peter Lovegrove
Chief Inspector to the DMAA

20 March 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 083  AIRCRAFT TYPE: MAINAIR FLASH

AIRCRAFT REGISTRATION: G-MNIO

DESCRIPTION OF DEFECT: Broken strands were found in the cables adjacent to the point where they enter the long, steel, swaged cable-ends. (See also Defect Report No 081).

AIRWORTHINESS IMPLICATIONS: Cable failures in flight may obviously have dire consequences but, even on the ground, if a broken cable swung back into a revving propeller, the flying fragments of the latter could put bystanders at risk.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: The manufacturers of this wing believe that the problem stems primarily from over-tightening of the bolt which passes through the eye of the termination. Please read and carefully digest detailed comments given below.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): If inspection reveals broken strands on a cable end, however few, it must be assumed that others are imminent to fail and the component replaced with a factory-made component - or exact equivalent - before flying is resumed.

REPORTED TO MANUFACTURER: By owner and Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Michael Batchelor, 25 Maple Avenue, Thornbury, Bristol, BS12 1AW.

MANUFACTURER'S COMMENTS: "The side-wires are 4 mm x 7 x 7 stainless-in-stainless terminations and are lifted at 250 hours. We have already circulated all owners on two occasions, 7 July 1986 and 13 August 1987. The notice has also appeared in Flightline under Watchdog. The terminals are used because one cannot bend 4 mm wire around a thimble and then fit this to a 1/4" or 5/16" bolt without getting a very high point-loading and, in addition, bending the wire to a radius far less than the minimum recommended for its diameter. Without special machined thimble centre-supports, the only way is to use rolled swages.

Roll swages are perfectly satisfactory if they are used correctly. There is an internal 'lead-in' and the stiffness is just the same, from a fatigue point of view, as a standard ferrule termination where two adjacent ferrules are used, which is common practice on other aircraft. The major problem is that over-tightening the bolt clamps the terminal against the tube and restricts movement. These bolts should not be tight but should allow movement of the terminal.

The same terminations are used on the front and rear wires and, in five years of production, we have never received a report of a failure of these wires.

We call for "Replacement when required" in our manual and, if a failure was reported at 90 hours, (Defect Report 081), it is very specific and, I suggest, caused by an over-tightened termination, which will cause a problem during rigging. As the wing is dropped flat and the control-frame folds down, the wire is pointing forward and down and can easily kink."
Corrosion is, of course, a problem and particularly so in certain climatic conditions. Early aircraft did use galvanised wire but stainless-steel rigging is used throughout, nowadays.

CONCLUSIONS.

(1) All Inspectors should be warned to look carefully for evidence of serious corrosion and cable-strand damage BUT NOT JUST ON ROLL TERMINATIONS. All cable ends are subject to fatigue and corrosion, regardless of the swaging method.

(2) All cable attachments MUST be free to move easily. Bolts should not be tight and must not clamp the thimble eye.

(3) Cables which show any sign of failure MUST be replaced.

(4) The requirements on owners to follow the manufacturer’s recommendations for ‘lifed’ items MUST be followed and the requirements to inspect at frequent intervals, as stated in the Operator’s Manual, cannot be over-emphasized.

Owners of all Flash and Scorcher wings must ensure that the front cables are free to move at the control-frame ends and that the cables are lined up prior to laying the wing down.

We are currently examining ways of designing the end termination/bolt fixing so as to prevent owners from being able to overtighten the assembly.

John Hudson, Mainair Sports Ltd".

CHIEF INSPECTOR’S COMMENTS: It is a matter of great concern that owners are still failing to realise the vital importance of setting up cable-terminations on their bolted anchorages so that they can freely rotate. UNDER VERY FEW CIRCUMSTANCES, WILL A TERMINATION, ROLLED OR THIMBLED, BE SATISFACTORY OR SAFE IF IT IS SOLIDLY GRIPPED BY THE BOLT. Misalignments, vibrations, rigging and de-rigging changes in alignment of cables and so on, all have to be taken up by the termination rotation slightly or markedly about its bolt anchorage.

The dangers of locked-up cables has been emphasized over and over again, yet still it is happening. I must ask Inspectors and Safety Officers to keep on checking and trying to hammer home the importance of this measure. It is easy and cheap to deal with, whereas new cables are expensive and lives are priceless.

Peter Lovegrove
Chief Inspector to the BMAA

26 March 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION.

DEFECT REPORT No: 084  AIRCRAFT TYPE: MAINAIR

AIRCRAFT REGISTRATION: Not specified.

DESCRIPTION OF DEFECT: An aluminium fuel-filter was found to be leaking around the rubber seal. Later, four more filters of this type were found to be leaking.

AIRWORTHINESS IMPLICATIONS: If on the suction side of the pump, as they were on Mainair machines before August 1986, filters which leak can allow the ingress of air to the fuel line. This could lead to loss of power, for example.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: The rubber seal is pressing on the sinter and not on the filter rim. If one of the filter pipes is closed with a finger and you suck on the other end, any such leak will soon be revealed. (A slightly more complicated test, but rather more sanitary if you find the inhalation of petrol fumes objectionable, is to put a piece of rubber or plastic tube on one of the stubs, close the other with a finger and blow on the tube whilst holding the filter underneath the surface of a bowl of water. Remove all water from the unit afterwards).

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): John Hudson of Mainair has commented on the topic as follows: "The problem seems to be that the sintered bronze element is standing proud of the male body by a few thousandths of an inch. Rubbing the assembly on flat emery paper (laid on a piece of glass, PCL) will remove high spots and allow the rim of the male body to seat down on the rubber. Problems can also occur if the rubber seal is perished and changing it is the obvious answer if that happens.

The filter is positioned on the pressure side of the pump on all aircraft since August 1986. We rely on the dip-pipe filter to clear debris before the pump.

Integrity of the fuel system is very important and, over a period of time, things change. A filter which does not leak when supplied can start to do so as the rubber softens with age and shrinks away from the rim seal. The rubber hose can also age, hardening and showing small cracks.

Careful attention should be paid to all aspects of the fuel system and replacement of all fuel tubing annually is recommended.

John Hudson"
Clifford Sims has suggested that an alternative repair—wh ich will achieve the same result as that proffered by John Hudson—is to deepen the shoulder on which the sinter sits, using a lathe. 0.3 to 0.4 mm above the sinter will give a good seal. Any depth greater than this will leave the sinter loose-fitting!

Clearly, which solution one chooses may depend on the resources one has available and the effectiveness of either measure is easily able to be checked as described above.

REPORTED TO MANUFACTURER: By Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Clifford Sims, 33 Pinckneys Way, Durrington, Wiltshire, SP3 8BT

CHIEF INSPECTOR'S COMMENTS: It must be remembered that, with prolonged exposure to petrol, most of the substances which are usable as seals and hoses for housing it, are attacked by it in different ways. Materials which have plasticisers in them, giving them their flexibility, have this leached out over a period of time. This has the effect mentioned above, of making the material more brittle and therefore prone to cracking. It also has a second effect in the case of seals; it makes them more rigidly assume their crushed shape, with little resilience remaining to maintain the seal. Hence, the obvious need to replace seals at very regular intervals, no matter how good the alignment of the mating faces against which they rest.

Peter Lovegrove
Chief Inspector to the BMAR

5 April 1983
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 085             AIRCRAFT TYPE: FUMA SPRINT
                                      ROTAX 447

AIRCRAFT REGISTRATION: G-HNYD

DESCRIPTION OF DEFECT: After an uneventful flight, the machine
was tied down and later subjected to high winds. On return to the
aircraft, the wing-tip was found to have dug in and a trike wheel
was about an inch off the ground.

An inspection revealed no apparent damage.

When again flown, the aircraft was taken to about 500 feet and a
swing to the left was observed. This was put down to turbulence.

A small control-input was made to bank left and this resulted in
a vicious steep left-hand bank, which could only be controlled by
grabbing the A-frame upright and physically hauling the aircraft
level by brute force.

The machine continued to fly but wanted the left-wing low; it
needed heavy inputs and a firm grasp on the A-frame upright, in
order to keep it level.

A precautionary landing was made successfully.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: It was found that the wing-tensioning
wire had jammed alongside the hang-block, instead of on top.

The aircraft was definitely NOT rigged like this, so the change
must have occurred as a direct result of the high winds.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Only a very detailed pre-flight inspection of the whole of the
machine and not just the parts which attract attention, like the
embedded wing-tip, could have revealed this dangerous problem.

REPORTED TO MANUFACTURER: By Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: F. Brownson, Bottom
Farm, Green End Rd, Radnage, Bucks.

CHIEF INSPECTOR'S COMMENTS: Mr Brownson has made the important
comment that - had a pilot of lighter build or less physical
strength been flying the machine in this state - a serious crash
would have occurred. The control inputs required were VERY heavy.

May I again exhort all owners/pilots to be most diligent in their
pre-flight inspections. If aircraft are tied down in the open,
that is an even greater reason to look for untoward changes which
would not be found on a hangared machine. That such a simple
movement of the location of a wire can prove so disastrous to the control of the aircraft is evidence of the need for extreme care in pre-flight inspection. This cannot be over-emphasized.

Peter Lovegrove
Chief Inspector to the RNZN

5 April 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

DEFECT REPORT No: 086  AIRCRAFT TYPE: Not Stated.

AIRCRAFT REGISTRATION: Not Stated.

DESCRIPTION OF DEFECT: A set of cables had been made up for a flex-wing by a boat-yard.

The ferrules had been so crushed that damage had occurred to the cable strands. They had also extruded so as to flow along the cables slightly.

Nor was it at all certain that the ferrules were exactly correct for the cables in question.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: Manufacture of cable assemblies with swaged ferrules by boat-yards is perfectly satisfactory for boats! But aircraft owners must be aware of the grave risks if a cable fails on their machine – as compared with a boat – and not be tempted to save cash by using the wrong sort of supplier for these crucial parts. And no real criticism can be levelled at the boat-yard; they supply cables to their market which cannot be faulted. They simply do not cater for our environment. Do not ask them to do so.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):

Buy aircraft cables from a recognised aviation supplier, who knows the risks inherent in failure in airbourne wires, and who will apply proper inspection procedures appropriate to the product and the risk.

REPORTED TO MANUFACTURER: Not relevant.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: H. Lang, Lyndene, West Park Drive, West Park, Darrington, Near Pontefract, Yorks, WF8 3HY

CHIEF INSPECTOR'S COMMENTS: Apropos my earlier note about the vital importance of sound flying-wires, etc., I am pleased to note that inspectors are being vigilant about this serious matter.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

17 April 1986
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 088    AIRCRAFT TYPE: Raven X, Rotax 914

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: When the engine was turned over slowly by hand, a clicking noise could be heard.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: About 190 hours, using Castrol Super T1 at 50:1 ratio.

CAUSE OF FAILURE/DEFECT: When the crankcase was split open, it was found that the plastic cage of the bearing on the crankshaft, nearest to the gearbox, had melted out and resolidified in a cavity in the crankcase.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): A new bearing was obtained from Cyclone Hovercraft Ltd. The engine was carefully cleaned of all debris and reassembled.

REPORTED TO MANUFACTURER: By Mark Phillips.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mark Phillips, The Mews, Shirley Hall, Langton Green, Kent, TN3 0QW

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

1 May 1986
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 089 - AIRCRAFT TYPE: Unspecified
ENGINE: Rotax 503

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: One cylinder of the engine went 'dead' during flight. The pilot was just able to maintain height on the power from the remaining cylinder and got back to his base circuit.

He made a long approach to the runway with the throttle just a little below full setting, calculated to bring him nicely onto the ground.

Well over the runway, he rounded out and was just about to close the throttle when the 'dead' cylinder sprang into life and - at very nearly full throttle - pushed the aircraft into a highly nose-up attitude from which it stalled.

He was soon surrounded by a great deal of broken aircraft tubing. Luckily, his own injuries were surprisingly trivial.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: A wire to the second cylinder had come adrift and then, at the worst possible moment, again made temporary contact.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The fault in question might have been revealed by careful pre-flight inspection. If not, then the only other precautionary measure possible is to try to be as sure as possible that no electrical wiring is vibrating too freely in flight. Get your passenger, if possible, to watch the wires and observe if any of them go into a blur at any engine speed. Then try to arrange a suitable form of dampening, with tie-wraps, for example.

REPORTED TO MANUFACTURER: Not known.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Not known.

Peter Lovegrove
Chief Inspector to the BMAA

1 May 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 090  AIRCRAFT TYPE: Mainair Gemini Flash
                      ENGINE: Rotax 503

AIRCRAFT REGISTRATION: G-MNL1

DESCRIPTION OF DEFECT: The upper pulley-wheel which drives the
                        air-cooling fan, was found - during ground inspection - to be
                        cracked completely round its circumference.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 120 hours.

CAUSE OF FAILURE/DEFECT: Not known. The manufacturers' comments
                          are awaited.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Total replacement with a factory-supplied component is, of
course, the only possible remedy.

REPORTED TO MANUFACTURER: By Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Jim Greenshields.
4 Gravelands Lane, Henlade, Taunton, Somerset, TA3 5DL

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

9 May 1998
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 091  AIRCRAFT TYPE: Thruster TST Mk 1

AIRCRAFT REGISTRATION: G-MTSI

DESCRIPTION OF DEFECT: In flight, at about 700 feet, the engine cut suddenly. A forced landing was safely executed.

Investigation showed that glass fibres had blocked the intake orifice of the filter. They had passed along the fuel-line and entered the tube entrance to the filter; they could not be observed through the glass.

The pilot cleaned the unit to the best of his ability and, after successfully re-starting the engine, flew back to his base. Whilst he was taxying to the hangar, the engine failed again, for the same reason.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 20 hours.

CAUSE OF FAILURE/DEFECT: It is apparent that fibres of glass have been left inside the tank, or are separating from its inner wall, and are being swept out of it.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): In this instance, the Inspector recommended a very thorough flushing of the tank before any further use of it was attempted.

He has also recommended that the fuel-line be checked carefully at this point before any day's flying is begun, at least until no further aggregation of debris is noted.

REPORTED TO MANUFACTURER: By Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Terry Travis, 19 Wade Lane, Hill Ridware, Near Rugeley, Staffs.

CHIEF INSPECTOR'S COMMENTS: Since the problems on this Thruster were reported to him, Mr Travis has learned of the same difficulty arising on Thruster G-MTXD (after 18 hours use) and G- MTVP (after 20 hours use). The Thruster referred to in this Report, G-MTSI, has also had a recurrence of the problem.

The comments of Mr Ian Stokes, of Thruster Aircraft (UK) Ltd, have been sought and are as follows:

"When moulded, the halves of the tank are gel-coated internally. However, when they are joined, it seems we may occasionally find small areas of loose glass-fibres exposed inside the tank. These progressively detach themselves from the wall.

We are now taking extra precautions to ensure that this can no longer occur."
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 092   AIRCRAFT TYPE: MW-5
ENGINE TYPE: ROBIN 440

AIRCRAFT REGISTRATION: G-MTOK

DESCRIPTION OF DEFECT: In flight, at about 500 feet and 50 knots IAS, there was a sharp 'crack' and a slight upwards pitch. The loss of propeller and drive gear was the cause.

The aircraft became more precipitate in pitch control so the engine, which had not risen noticeably in RPM, was switched off and the inevitable forced landing anticipated.

Due to having to clear a hedge, airspeed was lost and it was not possible to hold off as desired. The nose-wheel dug into the soft soil and the aircraft slowly inverted. Moderate damage resulted.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 5 hours.

CAUSE OF FAILURE/DEFECT: The bolt which holds the propeller and drive-wheel to the shaft appears to have sheared, in a manner similar to at which occurred on Jerry Cullen's machine G-MTBT last Summer.

The bolt is the only source of retention of the propeller assembly. Once it is lost, the assembly spins away from the aircraft.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
If, as in this instance, there is any airframe damage, that must be repaired by - or to the instructions of - the factory and signed off by a suitable inspector before a flight test.

The manufacturer's comments on the problem of the failed drawbar were sought and are as follows:

"Effective since the date of this incident, Aerotech International issued a temporary grounding order to all Sorcerer owners and have instituted a mandatory modification for all Sorcerers and tractor applications of this reduction system.

The modification involves replacing the aluminium-alloy drawbar with a high-tensile steel, 12 mm diameter assembly".

The manufacturers go on to recommend that this modification be made to all Nicklow reduction units, as a retrofit task, including pusher units.

REPORTED TO MANUFACTURER: By the owner/pilot.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Alan Edwards,
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 093 AIRCRAFT TYPE: Gemini Flash 2

AIRCRAFT REGISTRATION: G-MTWI

DESCRIPTION OF DEFECT: During pre-flight inspection, the pilot gave the luff lines a good tug. The retaining ring of one of them broke.

The machine is always hangared and left rigged.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Aircraft is about 18 months old.

CAUSE OF FAILURE/DEFECT: IT is fairly certain that the failure was due to corrosion of the ring.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement with a manufacturer's recommended spare is, of course, the only solution here.

REPORTED TO MANUFACTURER: By BMAA central office.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Paul Truelove, (Club Safety Officer) 51 Collingworth Av, Haworth Park, Hull, HU6 7DD

Peter Lovegrove
Chief Inspector to the BMAA

9 July 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

DEFECT REPORT No: 094 AIRCRAFT TYPE: Gemini Sprint

AIRCRAFT REGISTRATION: Not known.

DESCRIPTION OF DEFECT: During pre-flight inspection, it was found that the slack back-up wire (inside the fin) had failed at the top swage. It was said that it just fell off!

The wire shows signs of fatigue and, being slack by design so that it carries load only in emergency, had been flexing abnormally at the swage.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: Probably due to fatigue from flexing.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement with a manufacturer's recommended spare is, of course, the only solution here.

If it is possible to install such a device, a light spring-tensioner like a thin bungee, could be stretched from the middle of the cable to an anchor point. This would damp out unwanted thrashing of the cable but allow it to fulfil its role when needed.

REPORTED TO MANUFACTURER: By BMAA central office.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Bridge.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

9 July 1988

[Diagram of the fin and wire with labels: Fatigue Wire Failure Here, Eyelet for Leach Lines, Slack Back-up Wire Inside Fin, Failed at Top End.]
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 095  AIRCRAFT TYPE: Thruster TST

AIRCRAFT REGISTRATION: G-MTGE

DESCRIPTION OF DEFECT: During pre-flight inspection, it was found that the diagonal fin-bracing strut had broken its forward rivetted bush and was floating free. This had happened three times from new and was not unexpected. Replacements have been ordered from the manufacturer.

More important was that a crack was found in the main fuselage tube; it emanated from the rear horizontal-stabiliser through-hole on the starboard side. The crack was about 25 mm long and curving downwards.

Removal of the stabiliser assembly showed another crack, once the plastic plug had been removed.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 200+ hours.

CAUSE OF FAILURE/DEFECT: The weld which joins the fore-and-aft member running inside the stabiliser frame-tube, to the horizontal or outward-running rear-frame tube, had come into contact with the forward part of the Nylon fuselage-tube bush. The reporting inspector thought that this may have contributed to the failure of the fuselage member. This has yet to be confirmed or refuted by the manufacturer.

The stabiliser support-wires restrict movement outwards but, as the rear tubes are not joined, movement is allowed inwards.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Thruster Aircraft (UK) Ltd have been informed of the problems and have issued a Service Letter (No 5). It reads as follows:

"The owner of a 200+ hour Thruster TST has reported cracks at the rear end of the fuselage tube. These have appeared around the hole through which the rear tube of the horizontal stabiliser is inserted, i.e. the hole forward of the elevator-bearing hole.

All owners must ensure that this area is closely and thoroughly inspected for similar cracks before further flight. If cracks have appeared in this area of your aircraft, let us know immediately and do not fly the aircraft until you have heard from us further.

Follow-up by Thruster Aircraft (UK) Ltd: It is very probable that a retro-fit modification will be supplied to you for this area of the fuselage/stabiliser fitting, to prevent future possibility of this occurring.

For our records and information collation, would you please
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 096 AIRCRAFT TYPE: Thruster TST:

AIRCRAFT REGISTRATION: G-MTNG

DESCRIPTION OF DEFECT: On this machine, the propellor is held on by bolts threaded into the propellor-boss and then locked with Nylok nuts. During pre-flight inspection, it was found that the wood of the propellor had shrunk, allowing it to loosen on the boss. (Although the looseness cannot be detected during a normal pre-flight inspection, it results in the bolts having to take all driving, shock and oscillatory loads, elongating the holes in the propellor in the process. Burning of the bolt-holes can also result).

The reporting Inspector has had two bolts shear off, one on each of two machines. This necessitated replacing all twelve bolts because the remainder had to be presumed to have been weakened.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: Presumably wood shrinkage.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Check the tightness of your propellor-bolts regularly. Undo the lock-nuts and determine if the bolts can be tightened readily. The reporting Inspector found that he could add three-quarters of a turn to regain a satisfactory situation.

Do not forget to retighten the lock-nuts!

REPORTED TO MANUFACTURER: By Mac Smith.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Mac Smith, 3 Woodlinken Close, Verwood, Dorset, BH21 6BP.

[Signature]

Peter Lovagrove
Chief Inspector to the BMAA

24 July 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 097    AIRCRAFT TYPE: Pegasus & LC 462

AIRCRAFT REGISTRATIONS: G-MTYE and G-MTYI

DESCRIPTION OF DEFECT: It was found that the rubber sleeve, between the engine and the carburettor (Jubilee clip) had split on both installations.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: G-MTYE had flown only 9 hours plus and G-MTYI only 3 hours.

CAUSE OF FAILURE/DEFECT: Probably attributable to vibration, a poor batch of mouldings, or a combination of both.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): There is no alternative to a factory replacement-part in such cases as this.

REPORTED TO MANUFACTURER: By Geoff Weighell.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Geoff Weighell, The Microlight Centre, Enstone Aerodrome, Church Enstone, Oxon.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

24 July 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

FIRST AMENDMENT

PLEASE NOTE THAT THE NUMBER ON THE ORIGINAL OF THIS DEFECT
REPORT WAS IN ERROR; FILE THIS COPY AND DESTROY THE ORIGINAL.

DEFECT REPORT No: 078    AIRCRAFT TYPE: Swallow B

AIRCRAFT REGISTRATION: G-MJNS

DESCRIPTION OF DEFECT: After a steep climb-out from take-off, a gentle turn was started at about 350 feet. The engine speed reduced and then picked up again.

At about 450 feet, the turn was steepened to commence a return to the airfield. After only a few more seconds, the engine stopped completely.

In the ensuing forced landing, the nose-wheel fork broke off.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 85 hours.

CAUSE OF FAILURE/DEFECT: The cause of the problem appeared to be a faulty valve in the rubber squeeze-bulb, which shut off the fuel to the engine. The high climb-angle may have contributed but could not have caused the engine to stop, since that occurred in level or descending flight.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the bulb, along with a careful check on the whole fuel-line system for breakaway particles which might block it.

REPORTED TO MANUFACTURER: None available.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: D. Hey, c/o 2 Marsham Grove, Marsh, Huddersfield, Yorkshire, HD3 3DT

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

27 June 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 099    AIRCRAFT TYPE: Thruster 1ST

AIRCRAFT REGISTRATIONS: G-MTKA

DESCRIPTION OF DEFECT: During a routine inspection of the aircraft, fatigue fractures were found at the forward bolt-holes at the inner ends of both trailing edges. The cracks extended to the ends of the tubes and were very clearly visible.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: Probably attributable to rough handling, and the usual vibrations, plus the need for a more robust end-attachment for the tubes.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): There is currently no alternative to factory replacement-tubes, if failures such as these occur.

REPORTED TO MANUFACTURER: By Chief Inspector and Fiona Luckhurst.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Fiona Luckhurst, c/o Aerolite Aviation, Long Marston Airfield, Stratford-on-Avon, Warwickshire, CV37 8RT

[Signature]
Peter Lovegrove
Chief Inspector to the BMAA

12 July 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 100       AIRCRAFT TYPE: Thruster TST

AIRCRAFT REGISTRATION: Not known

DESCRIPTION OF DEFECT: During pre-flight inspection of the aircraft, it was found that the Jubilee clip at the top of the fuel pump had broken below the clamping screw.

The break was not visible but the clip looked loose.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 20 hours

CAUSE OF FAILURE/DEFECT: In view of the extraordinary numbers of Jubilee clips used in the engineering world, it seems likely that this is a 'one-off' failure. These clips can sometimes work loose under extreme vibration, or the screw-track can become worn and unreliable after repeated use. Neither of these would provide the explanation here.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the clip is an obvious first step. The reporting pilot also intends to shake each fuel-line clip in future inspections and not simply rely on visual inspection.

REPORTED TO MANUFACTURER: By Chief Inspector


Peter Lovegrove
Chief Inspector to the BMAA

3 August 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 101 AIRCRAFT TYPE: Hornet Raven 462

AIRCRAFT REGISTRATION: G-MTMR

DESCRIPTION OF DEFECT: About 20 to 25 feet into the take-off run, there was a bang. The pilot switched off the ignition and aborted.

It was found that the port rear flying-wire was severed at the A-frame, the propeller was broken and split, and parts of the propeller had passed through the wing panel at the rear keel pocket and port side.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 20 hours

CAUSE OF FAILURE/DEFECT: By tracing the point on the runway where the event had occurred, it was found that there was a shallow hole, but with a pronounced edge on the end, in the direction of the take-off run.

It was thus deduced that the port wheel had gone into the depression and caused the engine to lift. This, in turn, allowed the propeller to meet the flying wire.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): This is a defect which, if the probable cause is confirmed, needs a modification prepared and recommended by the manufacturer, with the approval of the CAA. His views are being sought.

In the meantime, owners of Raven Hornets are asked to do what this owner subsequently did, that is, proceed as follows:

Place the propeller vertically and push forward on the top blade whilst pulling rearwards on the lower blade. If there is not at least 2 inches (50 mm) clearance from the flying wires, do not fly the aircraft again until you have sought the advice of the manufacturer.

REPORTED TO MANUFACTURER: By John Teague.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Teague, 3 Standenhall Drive, Burnley, Lancs,

Peter Lovegrove
Chief Inspector to the BMAA

3 August 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 102 AIRCRAFT TYPE: Southdown Lightning

AIRCRAFT REGISTRATION: G-MMRL.

DESCRIPTION OF DEFECT: Whilst scanning this aircraft, the Club Safety-Officer (also an Inspector) noted that the eyebolts, which carry the full lateral flying-wires loads in tension, had an inadequate length of thread engaged in the Nyloc nuts.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: In accordance with an earlier directive from the BMAA Technical Office, the uprights of the A-frame of this machine had been sleeved.

The additional external tube wall-thickness had taken up length from the eyebolts, to the point where an inadequate length remained through the securing nuts. The nuts in question were not thought to be tension nuts, merely some type of soft-grade general-purpose devices.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): The replacement of the eyebolts is not a trivial matter as the cables are directly secured to them and they are themselves of a type specially made for this wing.

Since the bracing sleeves need only to act on the centre 60 to 70% of the A-frame uprights, it is considered acceptable, by the Technical Officer and myself, that a couple of inches may be removed from the lower end of the sleeve, thus effectively reinstating the eyebolt shank-length necessary to make the nuts secure. Proper tension-nuts should also be used on the eyebolts.

REPORTED TO MANUFACTURER: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Jim Romain, 111 Burnham Green Rd, Burnham Green, Welwyn, Herts, AL6 ONH

Peter Lovewgrove
Chief Inspector to the BMAA

25 August 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 103     AIRCRAFT TYPE: Pegasus Flash
                          Rotax 447
AIRCRAFT REGISTRATION: G-MNJP

DESCRIPTION OF DEFECT: During an inspection, it was found that
the straps which hold the pump/filter unit to the engine-mounting
assembly were broken in several places.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: Over-tightening is suspected.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Replacement is the only possible rectification at present.

REPORTED TO MANUFACTURER: By John Bridge, who also sent them a
sample of the failed item.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Bridge, 24
Ulverston Close, Blackburn, Lancs.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

2 October 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 104    AIRCRAFT TYPE: CFM Shadow
                        Rotax 447

AIRCRAFT REGISTRATION: G-MTMY

DESCRIPTION OF DEFECT: During initial engine-priming, the
emergency fuel-shut-off tap was observed to be leaking.

This was the third such tap fitted and found to leak. All were
factory-supplied units.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Total engine
time to date: 12 hours. (The previous taps had leaked after short
operational times).

CAUSE OF FAILURE/DEFECT: A faulty batch of fuel-cocks.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Replacement is the only possible rectification. The CFM factory
only fitted these particular taps to a limited number of machines
and, unfortunately, the units supplied on the bulk order did not
perform like the original sample. A better alternative has now
been found.

Owners who observe this tap to be leaking should contact the CFM
factory.

REPORTED TO MANUFACTURER: By Philip James.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Philip James, 6
Parkway, Poundhill, Crawley, Sussex.

Peter Lovegrove
Chief Inspector to the BMAA

15 October 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 105  AIRCRAFT TYPE: Tripeace, Fuji Robin 330

AIRCRAFT REGISTRATION: Not known.

DESCRIPTION OF DEFECT: The engine abruptly developed an intermittent misfire at cruise RPM. (It never actually ceased to run).

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 135 engine hours.

CAUSE OF FAILURE/DEFECT: Failure of the Mikuni fuel-pump diaphragms.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
After reading of this problem and the suggested cause and rectification, in "Tech Topics", the pilot was able to go straight to the source of the trouble. He had - after reading of the problem - obtained new diaphragms, 'just in case', but had not actually fitted them. So it was an easy step to do the repair job. There have been no problems since.

He confirms that the diaphragms did show evidence of the fatigue described by David Simpson.

REPORTED TO MANUFACTURER: Not applicable.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David ?, 6 Rendham Rd, Saxmundham, Suffolk, IP17 1DT.

Peter Lovegrove
Chief Inspector to the BMAA

15 October 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 106 FIRST AMENDMENT

Several people, including Eddy Clapham and Nigel Beale of Cyclone Hovercraft Ltd, have pointed out to me that I must have been misinformed and that the propeller flange on the Rotax 447 does not have M5 and M8 treads tapped into it, but 1/4" and 5/16" UNF. (A Continental manufacturer using American, rather than European standard threads; astonishing!)

With very soft woods used on some propellers today, for lightness and, thus, low inertia, there is an increasing tendency for the propeller to get crushed by careless bolt-torquing during safety checks and maintenance. Clearly, this could easily lead to the bolts being progressively driven towards the engine prop-flange. With the tapped-flange arrangement used on the Rotax engine, this could finally produce thread-binding and damage to bolt and hub.

On the Mike Whittaker designs, (PFA-Approved), Eddy Clapham says they have introduced a pair of 1/4" thick Dural discs of 110 mm diameter on either face of the propeller hub. Card gaskets are introduced between the Rotax flange and the false hub-plate.

The six 1/4" UNF bolts are used to install this system. The extra diameter of the discs spreads the load more evenly into the wood and permits greater torques to be used on the bolts without crushing the propeller. Even on the Rotax 532 (64 HP) this has worked satisfactorily over 150 hours of operation.

I have discussed this idea with Nigel Beale and, whilst he is aware of its use and has informed Rotax of the basic problem, there is, at present, no authorisation to apply it to other Permit aircraft under BMAA control at present. As always, however, he will inform us as soon as he has any details to impart on this topic.

So, in the meantime, can I exhort owners and pilots who engage in maintenance or other work which involves tightening prop-bolts, to be especially careful not to proceed to the point where either the hub is crushed or the bolts foul the threads in the hub-plate?

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

25 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 107   AIRCRAFT TYPE: Pegasus Trike

AIRCRAFT REGISTRATION: Not known

DESCRIPTION OF DEFECT: In two inspections, cracks have been found in the two mounting-plates which support the front end of the underslung petrol-tank.

The crack appears between the plates and the tank, with the welding failing.

In one instance, the tank was leaking.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Over 100 hours for both machines, from grass fields.

CAUSE OF FAILURE/DEFECT: It is suspected that failure to keep the mounting strap totally tight was the probable cause. "Totally tight" means - in this context - no free play at all.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Rewelding of the tanks is clearly needed. However, this MUST be done by a competent expert who will fill the tank with an inert oxygen-free gas. Failure to do this whilst attempting a weld-repair can very easily result in a very large explosion!

REPORTED TO MANUFACTURER: Solar Wings are aware of this fault and have modified the tank on their latest machines.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Jack Bishop, 7 Burns Close, Woodley, Berkshire, RG5 3RP

CHIEF INSPECTOR'S COMMENT: It is important for owners and pilots to remember that, when operating from rough grass fields, their machines can readily be subjected to accelerations up to levels of 15 g or more, depending on how cavalier (competent?) they are in their ground-handling technique. (12 g has been measured as developed when an aircraft has simply been wheeled over a hangar sill!) Even if the tank has only a little fuel in it and weighs a few pounds, just factor that up by the g-force and you can see why manufacturers make detailed recommendations about the use of their machines. Follow them!

Peter Lovegrove
Chief Inspector to the BMAA
30 October 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 108 AIRCRAFT TYPE: Raven X

AIRCRAFT REGISTRATION: G-MTBN

DESCRIPTION OF DEFECT: During an inspection for renewal of Permit-to-Fly, it was noted that the hole for the rigging pin in the lower front-strut section, had lengthened by about 4mm (see sketch). This allowed vertical movement of the removable section.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: It was found that the wear was due to the removable section failing to butt against the sleeve inside the lower section. This gave the two pieces the freedom to slide relative to one another, hammering the rigging-pin hole in the process.

It was noted that the lower sleeve-section was of rather thin wall-thickness.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the worn tube-sections is the only satisfactory rectification. Obviously, in the repair, care should be exercised to ensure that the two important pieces of tube properly touch whilst the rigging-pin hole is being drilled, or marked for drilling.

REPORTED TO MANUFACTURER: Reported by BMAA central office.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: John Bridge, 24 Ulverston Close, Blackburn, BB8 3TX

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

31 October 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

DEFECT REPORT No: 109    AIRCRAFT TYPE: Thruster TST

AIRCRAFT REGISTRATIONS: G-MTPX and G-MTJR

DESCRIPTION OF DEFECT: During ground inspections, cracks were found at the roots of both trailing edges on one machine (after 250 hours of use) and on one trailing edge of the other machine (after only 50 hours). The other trailing edge on this particular aircraft had cracked earlier and had been replaced, hence its apparent survival at this stage.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 250 and 50 hours, as stated above.

CAUSE OF FAILURE/DEFECT: There does seem to be a weak area here in the aircraft, since this defect is occurring with increasing frequency.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the trailing edge is, at present, the only rectification possible and acceptable.

REPORTED TO MANUFACTURER: Reported by Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Ms Fiona Luckhurst, 32 The Meadows, Bidford-on-Avon, Warks, B50 4AP

CHIEF INSPECTOR'S COMMENTS: I am becoming increasingly concerned about the frequency with which this particular form of failure is happening. I am not aware of any total 'fix' promulgated by Thruster (UK) Ltd as a result of the earlier reports of the problem. However, I understand that a remedy is now under discussion and information will be disseminated as soon as possible, if the CAA accept its viability.

Whilst we await their recommendations, may I ask all owners, Safety Officers and Inspectors, to check the trailing edges on Thrusters very carefully during every pre-flight inspection? At any Renewal inspection, I look to Inspectors to be most diligent in examining this area of these machines, lest any crack pass unnoticed and thereby be allowed to propagate dangerously.

It is a matter of concern that the crack observed on the low-hours machine reported above had occurred on an aircraft which had been carefully treated and not used for training.

Peter Lovegrove
Chief Inspector to the BMAA

7 November 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.  
FILE THIS INFORMATION

DEFECT REPORT No: 110    AIRCRAFT TYPE: Ultrasports Trike

AIRCRAFT REGISTRATION: Not known.

DESCRIPTION OF DEFECT: A crack was found in the driving pulley of the reduction gear on the Robin 440 2FM engine on this trike. It appeared to extend through the hub to the back of the recess (see sketch) and almost circled the hub. It would actually open and close as the propellor was lightly tilted.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Thought to be between 60 and 100 hours.

CAUSE OF FAILURE/DEFECT: The distance from the back of the recess to the location of the crack was about 5/16" (8 mm). It is not known if the radius at the outer diameter of the recess was too small but - were it so - that could have helped this cracking to begin. The quality of detail design and machine finish has much to do with the onset of failures such as this.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of the hub is obviously mandatory. The hub could not have lasted many more hours or minutes, with such dire cracking present.

REPORTED TO MANUFACTURER: Not relevant

NAME AND ADDRESS OF PERSON REPORTING DEFECT: P.J. Brookman, 73 Conway Drive, Shepshed, Leicestershire.

Peter Lovegrove  
Chief Inspector to the BMAA  
19 November 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 110     AIRCRAFT TYPE: Ultrasports 440

FIRST AMENDMENT

***************

Mike Morris of 30 Knowlefield Avenue, Stanwix, Carlisle, Cumbria, CA3 9BU has reported a further failure of this top pulley. He gave his drive an extra careful examination following the report made to general owners via Tech Topics. Although not pleased to find a failure, he was relieved that he had found it in ground inspection, thanks to reading and absorbing the contents of Tech Topics.

The peripheral cracking was exactly as described in the original Defect Report.

A specialist aluminium-welding Company was asked to attempt re-welding but failed.

A new pulley was obtained from Betacraft but we understand that Aerotech may also be able to supply them. The cost of replacement was about 100 pounds.

Betacraft hold some pulleys in stock, ready toothed but leave the drilling until required, because some owners need 6 holes and others 4 holes for their particular propellers.

It is recommended that the radius, at the root of the propeller-stub side of the toothed-wheel, be left with a very generous radius.

Peter Lovegrove
Chief Inspector to the BMAA

11 February 1989
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 111       AIRCRAFT TYPE: Hybred Raven

AIRCRAFT REGISTRATION: G-MTNF

DESCRIPTION OF DEFECT: Shortly after take-off, a bang was heard. The aircraft continued to handle normally and a circuit was flown and a safe landing made.

On examination, it was found that the filler cap had come off the top tank and struck the propeller, damaging it slightly. The filler cap is a lock-on type and the pilot believed that, if it was not in the correct position, the key could not be removed, as is normally the case with car filler-caps of similar type. After filling the tank before the flight, the cap was replaced and the key turned and removed. The cap was tested for security by pulling and twisting and it seemed to be properly fitted.

On examination of another Hybred Raven immediately after the incident, it was found that the cap can be replaced and the key removed when the cap is not actually in the locked position. It will also spin freely as if in the locked position but IF SPUN IN THE OPPOSITE DIRECTION, THE CAP WILL COME OFF.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not relevant.

CAUSE OF FAILURE/DEFECT: It would appear to be a type of cap which is not entirely suitable for its purpose.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): To obviate the problem altogether, it is obviously necessary to replace the cap with a type - approved by the factory, since this is a Permit aircraft - which does not allow removal of the key when it is not securely locked. Owners should contact Medway Microlights for advice. In the meantime, be very careful to check the security of the cap as suggested by Mr Heathcote, after locking it.

REPORTED TO MANUFACTURER: By BMAA Headquarters.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: R. Heathcote, 36 Stafford's Acre, Kegworth, Derby.

Peter Lovegrove
Chief Inspector to the BMAA

22 November 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 111   AIRCRAFT TYPE: HYBRED RAVEN

FIRST AMENDMENT

Medway have supplied the Service Bulletin given below. Will Inspectors please try to ensure that all owners of such machines are informed about this?

Peter Lovegrove
Chief Inspector to the BMAA
22 January 1989

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SERVICE BULLETIN 003

Models Affected

Hybred Aircraft

Subject

Locking Fuel Cap

Microlights Affected

Hybred 44 XL/Hybred 44 XL'R

Compliance

Description

It has come to our attention that it is possible to fit the locking fuel cap in an "already locked" state, that is, with the key turned fully clockwise. This results in the cap being free to rotate in either direction but not being secure because the locking lugs are not located in the retaining groove.

It is essential that the cap be fitted in an unlocked state, that is, with the key turned fully anti-clockwise. The key can then be turned fully clockwise and removed. This results in the cap being free again to rotate in either direction, but with the locking lugs this time located in the retaining groove, thereby securing the cap.

CAA Approval

Manpower

Parts Required

None

Special Tools

None

Weight & Balance

Not Affected

Publications Affected

None

Accomplishment Instructions

An appropriate entry should be made in Aircraft Log Book upon accomplishment. If ownership of aircraft has changed please forward to new owner.
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 112    AIRCRAFT TYPE: Pegasus Flash 2
AIRCRAFT REGISTRATION: G-MTAM
Rotax 447

DESCRIPTION OF DEFECT: Whilst the aircraft was in flight, the engine faltered but, after about 15 seconds of spluttering, picked up again.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: About 45 hours total.

CAUSE OF FAILURE/DEFECT: It was suspected that the fuel filter had become blocked. Although it appeared clean and free from debris, it restricted the fuel flow. It was not possible to prime the engine by turning the propeller over.

With the filter removed, the restriction disappeared.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): In this instance, the filter has been replaced.

REPORTED TO MANUFACTURER: By BMAA Headquarters.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Julian Scales, Box 1190, Gaborone, Botswana.

CHIEF INSPECTOR’S COMMENT: In his report, Mr Scales points out that the fuel obtainable in Southern Africa has a high alcohol content. This, he thinks, may attract water into solution which indirectly leads to sealing-off of the filter and a marked impedence to the flow of petrol-oil mixture. He found no evidence of corrosion.

Peter Lovegrove
Chief Inspector to the BMAA

13 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 113    AIRCRAFT TYPE: Pegasus XL-SE
                      Rotax 447

AIRCRAFT REGISTRATION: G-MTDL

DESCRIPTION OF DEFECT: With the aircraft about 75 feet into the climb-out, the engine failed. It was the first flight of the day, following incident-free operation on the previous day.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not known.

CAUSE OF FAILURE/DEFECT: It was found that the small-end roller-bearing had broken up. The piston had seized up in the bore. The engine stopped dead at full power.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): There is absolutely no alternative to a complete strip-down and cleaning of the engine. This will guarantee removal of every shred of filings, swarf, etc., which could cause another failure were the engine to be rebuilt with such material left undetected.

REPORTED TO MANUFACTURER: By BMAA Headquarters.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: R. Wotton, Dagrenel, Stoodleigh, Tiverton, Devon. Tel: 03985-217

CHIEF INSPECTOR’S COMMENTS: In May of last year, Cyclone Hovercraft Ltd put out a Bulletin about this (their Safety Bulletin CH-UL-1/5/87). They pointed out that if the engine is over-heated significantly at any time, the small-end bearing can suffer. (Some types of aircraft, which need prolonged maximum engine power, have been found - not surprisingly - to be far more prone to this type of over-heating than others). The rollers become pitted and wear steadily, finally culminating in a sudden and catastrophic collapse and engine failure.

Cyclone Hovercraft recommend that, when the engine is de-coked at about 50 hour intervals, the small-end bearing is also carefully inspected. If its colour is more blue than the usual straw tint, or if there are tiny worm-like pits or grooves in the rollers, the bearing must be replaced.

In 447 engines sold during most of this year, Rotax have fitted a new type of small-end bearing which is far more resistant to this particular form of failure. On older engines, owners should follow Cyclone Hovercraft’s advice.


Peter Lovegrove
Chief Inspector to the BMAA

13 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 114     AIRCRAFT TYPE: Puma Sprint

AIRCRAFT REGISTRATION: G-MMYZ

DESCRIPTION OF DEFECT: During examination for Renewal of the Permit-to-Fly, the lower stainless-steel engine-mounts were found to be cracked on both sides, where the welded supports are attached.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 120 hours.

CAUSE OF FAILURE/DEFECT: Presumed to be fatigue.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Replacement of cracked components with factory-supplied parts. No alternative route is permissible since this is a Type-Approved aircraft.

REPORTED TO MANUFACTURER: By BMAA Headquarters.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: R. Sears, 30 Carnoustie, Amington, Tamworth, Staffs, B77 4NN.

[Signature]

Peter Lovegrove
Chief Inspector to the BMAA

18 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.

FILE THIS INFORMATION

DEFECT REPORT No: 115 AIRCRAFT TYPE: Vector 600

AIRCRAFT REGISTRATION: G-MJAZ

DESCRIPTION OF DEFECT: Following a very normal circuit and landing, a short take-off was being attempted.

The port spoiler was pulled forward (it is thought, by the vortex formed on the wing, due to its high angle of attack) and locked in the upright position. The aircraft yawned rapidly to port. The yaw was corrected by full starboard rudder and spoiler, but no appreciable climb-rate was achieved. Control was able to be maintained to the point of a safe touch-down in a nearby field.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: The lifting of the spoiler was as often observed, with less dire results, on Vectors and Mirages. What was not usual was its locking-up into the vertical (fully deflected) position. It was found that the crank to the spoiler had moved beyond the limit and locked. The bungee could not then have any restoring effect.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION): Recovery from the field selected for the forced landing was made by using a temporary cord to limit the movement of the spoiler.

This very rudimentary but fully effective repair was later made good by the installation of proper stop-cords, which were of such proportions that the spoiler could not lift to the point where the crank could be forced "over top dead center".

This form of rectification, with the right sort of cord material and terminations, should be satisfactory. However, it might be better to fit some form of cable or peg stop to the crank, if possible. This would make it even more certain that 'locking-up' could not occur. Limiting the movement of the spoiler is perhaps curing the effect and not the real cause of the problem.

REPORTED TO MANUFACTURER: None available.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: Bryn Fussell, 7 Hendre Isef, Llwynhendy, Llanelli, Dyfed, SA14 9LE.

CHIEF INSPECTOR’S COMMENTS: Will all Inspectors examining Vector 600s or Mirages, satisfy themselves that the spoilers cannot move sufficiently far to lock up in this way, whether by positive control inputs or by vacuum effects produced during flight.

Peter Lovegrove
Chief Inspector to the BMAA

22 December 1988
The spontaneous lifting of the spoilers on a Vector (G-MBTN) has been regularly observed by a group of fliers in the North Beds Club, who owned it at various times and carried out over 400 hours of flying with it. The lifting was seen to occur in normal flight and not only at high angles of attack.

About two years ago, the machine was purchased by Mr James Spavins, of 9 Queens Crescent, Clapham, Bedford (Bedford 42530). He made two modifications which totally removed the problem.

The metal plates inside the spoilers were withdrawn and 1 1/2" (about 40 mm) diameter holes cut into them at about 4" (100 mm) centres. The plates were then replaced and matching holes cut in the fabric with a scalpel. Epoxy-based cement was used to bond the fabric and metal together at the periphery of the holes.

This change had the effect of balancing the pressure between the upper and lower faces of the spoiler - when lying closed - by simply allowing air to leak through the holes.

When raised by the operation of the control system, the spoiler still presented plenty of 'flat-plate' area to create drag on the relevant wing.

The second simple modification involved moving one of the 'pull-back' bungees. It was taken up the relevant tube and secured so as to give a more uniform pull on the spoiler unit. Tape and 'tie wraps' were used. The pictures show the general arrangements of these simple and effective modifications. (See Overview)

The aircraft has been flown for 2-300 hours with these changes made and has always been fully controllable.

Since the 'self-raising' spoiler effect has been observed on other older microlights, like the Mirage, the addition of the holes may also be beneficial in those instances.

Peter Lovegrove
Chief Inspector to the BMAA

11 February 1989
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 116 AIRCRAFT TYPE: Puma Sprint
            Fuji Robin 440

AIRCRAFT REGISTRATION: G-MMXO

DESCRIPTION OF DEFECT: On completion of a flight, it was found
impossible to stop the engine with the ignition switch. The fuel
had to be turned off and the ignition shorted to the frame to get
the engine to stop.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: Not stated.

CAUSE OF FAILURE/DEFECT: The cause was traced to a connecting
lead having become dislodged during the flight, presumably due to
that ever-threatening vibration. (Prior to take-off, all had been
well with the ignition).

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Vibration is a constant cause of troubles with microlight aircraft
and - where ignition wiring is concerned - all pilots can do is
to try to ensure that lengths of wire are not left unnecessarily
unsupported. Secure them with neat taping or suitable tie-wraps.

Also make sure that any push-fit connectors are a proper fit and
not made loose by vibration. Even a connector which apparently
remains in place is little use if it has become worn and able to
break the electrical circuit. Even the metal dust which arises
within such components, due to vibration, can provide a dangerous
insulation between seemingly contacting items.

REPORTED TO MANUFACTURER: By BMAA Office.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: David Tasker, 147
Weddington Rd, Nuneaton, Warks, CV10 0EG

\[Signature\]
Peter Lovegrove
Chief Inspector to the BMAA

22 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 117  AIRCRAFT TYPE: Thruster TST

AIRCRAFT REGISTRATION: G-MTLO

DESCRIPTION OF DEFECT: Whilst taxying to hold, prior to the
departure, which had to be aborted, the diagonal bracing-tube of
the starboard jury-strut assembly parted suddenly about 0.5
inches (12 mm) away from the weld at the lower rear end, near the
junction with the horizontal fore-and-aft tube.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: 94 since new.

CAUSE OF FAILURE/DEFECT: Subsequent examination of the break,
using a x100 microscope at the owner's tube-manufacturing works,
showed a classic crystalline fracture of the thick-walled/small-
bore chrom-moly tube. The break was almost perfectly straight at
90 degrees to the tube axis, at a point 0.5 inches from the weld.

There was no apparent sign of a progressive fracture emanating
from any kind of surface damage-point. The aircraft has only ever
experienced one moderately heavy landing, just sufficient to
strain slightly one of the leaf springs. This occurred after 2
hours of use. Since then, no severe strains have been applied.

On many occasions, at cruising revs around 5000 RPM, both port
and starboard diagonal braces have been seen in continuous
resonance. This may have led to fatiguing of the tube around the
point where movement is arrested at the welded fixed point at the
end of this member. As expected, the maximum visible amplitude of
the resonance was at the centre of the tube’s length.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
A new jury-strut was ordered from the factory for installation.

REPORTED TO MANUFACTURER: By the owner/pilot.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: M.Rudd, Cedar Tree
Cottage, Puttenham, Guildford, Surrey, GU3 1AJ Tel: 0483-810478.

CHIEF INSPECTOR'S COMMENTS: I have asked the manufacturers for
their comments on this failure, and will issue an Amendment to
this Defect Report if they have any significant comment to add.
Being 'in the trade', Mr Rudd's comments are - not surprisingly -
well considered and pertinent. I exhort owners to check for this,
or any similar or derived type of problem.

Overall, the defect does not reflect any fundamental weakness in
this particular aircraft, it simply endorses the effect of the
the microlight aircraft's greatest enemy: vibration.

Peter Lovegrove
Chief Inspector to the BMAA 31 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 118  AIRCRAFT TYPE: Raven X (Southdown Int).

AIRCRAFT REGISTRATION: Not stated.

DESCRIPTION OF DEFECT: The securing pin for the cross-tube back-up cable rubs against the cross-tube primary tensioning cables.

Eventually - after about 200 hours - the cable approaches the point of being cut through.

HOURS FLOWN, FLIGHTS MADE, RELEVANT TO THIS DEFECT: About 200 hours.

CAUSE OF FAILURE/DEFECT: The relevant positioning of the cables, pin and Nylon guide-block.

RECOMMENDED RECTIFICATION, (REPAIR, REPLACEMENT, MODIFICATION):
Clearly, the first consideration is that, if the cable is worn, it should be replaced. (Use a factory-made component. Note previous warnings from me about boat-yard or general chandlers' cables; they can be dangerously unsuitable and Inspectors may have to fail them on principle).

The reporter of this Defect cured the fault on his aircraft by carefully lowering the location of the securing pin. Being extremely cautious to avoid damaging the primary cables, he used a small round file to cut the hole downwards as shown in the sketch.

REPORTED TO MANUFACTURER: By the Chief Inspector.

NAME AND ADDRESS OF PERSON REPORTING DEFECT: M.D. Phillips, The Mews, Shirley Hall, Langton Green, Kent, TN3 0RQ.

CHIEF INSPECTOR'S COMMENTS: I have asked the manufacturers for their comments on this problem and its rectification, along with information on its possible relevance to Chester and Medway Raven Xs. I consider the ideal solution to be a new type of bracket with the securing pin in a better location, which may already be in use on recent machines. I will issue an Amendment to this Defect Report if the manufacturers have any comments to add.

Peter Lovegrove
Chief Inspector to the BMAA
31 December 1988
TO ALL AREA AND LOCAL INSPECTORS AND CLUB SAFETY OFFICERS.
FILE THIS INFORMATION

DEFECT REPORT No: 118 AIRCRAFT TYPE: Raven & Raven X Wings

FIRST AMENDMENT

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Medway have supplied the Service Bulletin given below. Will Inspectors please try to ensure that all owners of these wings are informed about the necessary replacement component?

Peter Lovegrove
Chief Inspector to the BMAA
22 January 1989

Burrows Lane, Middle Stakes, Rochester, Kent ME3 9RN

Fix 0634 270648 Telephone: (0634) 270780 Date: 17th January 1989

SERVICE BULLETIN 002

Models Affected
Raven/Raven X Wings

Subject
King Post Channel

Microlights Affected
All with Raven wings

Compliance
Inspection and rectification before next flight

Description
King Post Mounting Channel

On some of the above wings, the securing pin for the 'X' Tube tension back up loop has been found to foul the primary tension cables when it is fitted and removed. This may result in abrasion to the cable at the point of contact with the pin. This must be rectified by the fitting of a replacement channel supplied by Medway Microlights. This item has the nylon guide block secured by clevis pins rather than roll pins and facilitates the replacement of the block without removal of the channel should any wear become apparent at the contact points with the primary cables. If there is any evidence of fretting on the primary cable due to contact with the securing pin, they must also be replaced with the relevant assembly supplied by Medway Microlights.

CAA Approval

Maintenance

Parts Required
King Post Channel - Nylon Block - Clevis Pins

Special Tools
None

Weight & Balance
Not Affected

Publications Affected
None

Accomplishment Instructions
An appropriate entry should be made in the Aircraft Log Book upon accomplishment. If ownership of aircraft has changed please forward to new owner.