

# Australian Ultralight Federation Inc

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## MAINTENANCE ALERT: GSC PROP - TOWNSVILLE ACCIDENT

There was an accident a few weeks ago (May 2001) to a Lightwing in the Townsville area caused by a blade breaking off at the hub of a GSC propeller. The two ladies in the aircraft suffered minor injuries or were shaken, but my spy advises that the pilot was quickly in the air again and the other has flown since also. Well done.

These GSC propellers consist of wooden blades with special composite or aluminium ends which are retained by clamping between the hub plates. There is also a through bolt which passes through the blade root

In the case in question, the through bolt was very badly corroded and the material of the blade was badly discoloured suggesting that the moisture which caused the corrosion had also commenced to reduce the integrity of the wooden blade material itself (it was apparently going rotten!).

The wooden blades of these propellers are bonded (glued) into the socket and it is the outside of this socket which is clamped by the hub clamping bolts. (See Photographs below). As a safety measure, a bolt passes through the socket and through the root of the blade and seems to be intended as a retaining pin if the bonding (glue) holding the blade into the socket failed or if the clamping on the socket was faulty.



Photograph No 1



Photograph No 2

The design assumes that the wood of the blade root is sound.

Thanks to Egovision Studios in Canberra and their voluntary photographic services, the two photographs above clearly show what remains of the defective blade and of the corroded bolt.

The first at Figure 1 is a good illustration of how the wooden root has just pulled out of the socket leaving the fibres which had been penetrated by the glue in place still glued to the socket.

The second at Figure 2 clearly shows the rusty bolt and the plug of deteriorated wood it prevented from pulling out and it shows another view of the surface wood of the blade glued to the inside of the socket. The only value of the bolt in the case of a faulty blade root is to prevent the socket from departing with the blade: no use at all if the rest of the blade is faulty. It doesn't matter how good the glue is or how secure the bolt is - if the wood is faulty, the blade will separate.

**Action Recommended.**

Operators of these propellers are advised to assess whether the propellers should be disassembled for inspection. One obvious indicator would be to remove the through bolts to check their surface condition. However, if these bolts have been replaced during the life of a propeller, they may be in good condition yet the material of the blades which would have been subject to the environment for the full life of the blades may not necessarily be the same.

Signs of advanced problems may be evident where the blade exits the plastic socket but it would be necessary to disassemble the propeller to be really sure.



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