

AUSTRALIAN SPORT ROTORCRAFT ASSOCIATION INC

AIRWORTHINESS ALERT



ABN 53 412 417 012

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Date: 21 January 2010

Subject: Propellers and Exhausts

Background: A member reported that during engine warmup, he noticed an unusual vibration through the airframe. Inspection revealed that one propeller blade had rotated to a position about eight degrees different to the pitch setting that it had been originally set at. Closer inspection revealed that the aluminium sleeves attached to the root of two propeller blades had loosened to the extent that they could be freely rotated by hand. Blistering of the resins forming the composite structure of the blades was also evident.

The engine setup on this gyro is such that the hot gasses emanating from the exhaust are directed directly onto the propeller blades at a point close to the root of the blades. Discussions with the propeller manufacturer and other composite experts indicated temperatures such as could be expected at the mouth of the exhaust exit would raise the temperature of the resins and solid material well above the 85 degrees C that resins of most types can withstand without ill effect. At the temperatures that may be expected, the resins tend to soften thus compromising the structure of the whole component.

Recommendation: It is strongly recommended that gyroplanes with exhaust systems that direct hot exhaust gasses onto the propeller disc at any point, cease operations immediately and be subjected to a visual inspection to determine that the integrity of the structure of the propeller blades is intact. Where doubt as to the integrity is in doubt, the propeller manufacturer should be contacted for advice.

It is further strongly recommended that any such exhaust systems on any gyroplane be modified such that hot gasses emanating from the exhaust do not pass through the propeller disc at any point.

On systems where this is not practical, the system should be modified such that the mouth of the exhaust is located at least 300 mm from the propeller disc and the exhaust gasses directed away from the disc as far as possible.

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