

VAN'S AIRCRAFT

TOTAL PERFORMANCE

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Service Letters and Bulletins: www.vansaircraft.com/public/service.htm

SERVICE LETTER 16-11-04

TIP-UP CANOPIES

While rare, in-flight canopy and door openings have been reported in all models of RVs. Field reports of aircraft flight characteristics both during and after an in-flight opening vary significantly. The most pronounced changes in flight characteristics reported have been related to canopy openings on RVs with tip-up (forward opening) type canopies, as used on the RV- 6/7/9/12/and 14 models. In most cases these incidents have been minor, but some have had serious consequences.

Field reports indicate that if the canopy does become unlatched in flight, the aircraft will most likely pitch nose down abruptly. The severity of the pitching moment can depend on speed, attitude and weight and balance. While the noise and attitude change may be very distracting, it is paramount that the pilot maintains control of the aircraft at all times. If at a safe altitude, slowing the airplane may allow the canopy to be closed and latched. Otherwise, the aircraft should be landed as soon as possible to determine the cause and ensure the canopy is secured prior to further flight.

Keeping seat belts fastened and snug during all phases of flight is very important. Doing so will reduce the likelihood of the pilot being displaced and less able to control the aircraft during an uncommanded attitude change.

Van's is confident that the canopy mechanism works well if it is constructed, maintained and operated per our plans. Most in-flight openings occur due to the pilot simply forgetting to latch the canopy properly prior to take-off. Latch component wear and maladjustment may also contribute to the likelihood of an in-flight opening. Given the low number of incidents and details submitted from field reports, we believe that most incidents have been operational, rather than related to maintenance and function of the latch mechanism itself.

Builders and operators of RVs with tip-up canopies should pay particular attention to the latching mechanism, and ensure that it operates as designed to secure the canopy. Preflight checks should be made to ensure that the latching mechanism fully engages the canopy frame and that the operating handle is securely retained when closed. A thorough inspection of the entire latching mechanism and its function should be completed during Annual Condition Inspections. Owners who did not build the airplane should consult with an

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experienced RV mechanic if any doubt exists about the security of the latching mechanism.

On the RV-6/7/9 design, a secondary latch is incorporated at the top rear of the canopy frame, and this should always be utilized prior to takeoff, to supplement the main latching mechanism.

On later models, the RV-12 and 14, modern EFIS type avionics are usually incorporated into a warning system that will alert the pilot if the canopy is not securely latched. Such a system is included in the RV-12 kits, and is available for retrofit to early Skyview-equipped RV-12s. Ref: Notification-14-05-22

On the RV-6/7/9/14 models, avionics installations vary widely. An EFIS-type warning device may or may not be available or practical. An audio warning system to alert a pilot to an open canopy will not be effective if it is activated continuously when the canopy is open. It is most useful if interlinked with engine rpm, as incorporated in the current Skyview and G3X equipped RV-12.

For more information on linking an audio warning to rpm and the canopy latched state, download the AFS, SkyView, or Garmin G3X canopy warning readme files from the downloads page of the Van's Aircraft web site.

Van's encourages pilots of RVs with tip-up type canopies to report incidents when the canopy has opened in flight to improve our understanding of the issues involved. If you have flight or engine data downloaded from an EFIS system that may be useful. Photos or videos of any damage, or parts that appear to operate improperly will also help. Reports detailing how the airplane performed during the incident will also be useful. This material may be sent to support@vansaircraft.com.