

AIRBOX ADVISORY

It has come to our attention that some RV pilots may not be properly operating their RV Filtered Air Box (FAB) carburetor air induction system.

The FAB units supplied for RV kits were designed to filter all engine induction air with a minimum loss of manifold pressure. A properly positioned circular filter facilitates uniform airflow through the carburetor or injection air body to better equalize the mass flow to the individual cylinders. This contributes to maximizing power output and smoothness of engine operation. The air box design includes a provision for pilot-controlled alternate heated filtered air, or "carb" heat.

The design intent was that when a pilot first encountered flight conditions where foreign materials, including snow and freezing rain, might be ingested into the induction air system, he would actuate the alternate air (a.k.a. "carb heat") door. This would block the ram air inlet and, at the same time, admit warm air to melt any frozen blockage and prevent the ingestion and/or accumulation of more. It is important to prevent incoming frozen, or freezing, precipitation from accumulating to the point of severe blockage before applying the heated alternate air, as the heat energy available in the reduced alternate air flow might not be sufficient to clear an accumulated frozen blockage. Proper technique upon encountering frozen precipitation is always to engage "carb heat" to avoid intake filter blockage. Failure to properly employ carb heat when first encountering freezing precipitation or other conditions conducive to carburetor ice may lead to engine failure.

It is imperative to remember that, unless their individual aircraft operating limitations permit, experimental aircraft are not, (repeat: not!) permitted to fly into known icing conditions. Flight into forecast icing conditions is limited by the provisions of FAR 91.527. Flight into icing conditions can be extremely dangerous since the rate of ice accumulation in the induction system and on the airframe are unpredictable and may change in seconds.

Pilots who foresee encounters with heavy snow, or inadvertent flight into freezing rain or icing conditions, should consider equipping their FAB air box with a filter by-pass. The filter bypass feature would permit unfiltered heated air to bypass the filter. Drawings that illustrate and explain the concept for altering the FAB-320 and FAB-360 induction air box units with a filter bypass inlet air gate will soon be available on our website (www.vansaircraft.com), or by mail or FAX at your request.

It is generally accepted that the Bendix and Airflow Performance Systems fuel injection units used on the Lycoming engines of some RVs do not need alternate heated air for venturi icing protection. However, RV builders and operators should consider incorporating the alternate air gate as a means of preventing filter blockage from icing or other ingested materials in the event of emergencies, including inadvertent flight into freezing precipitation.

Similarly, the "snorkel" induction system used in conjunction with the 200 HP Lycoming IO-360-A1D6 engines on some RV-8s and RV-7s did not initially have a provision for alternate air. While not needed for venturi icing, an alternate air

source should be considered for any of these aircraft operated in an environment where filter blockage could occur, including inadvertent flight into freezing precipitation. Drawings that illustrate and explain the concept for altering the VA-132 Air Box will soon be available on our website (www.vansaircraft.com), and hard copies will be available via FAX or Mail upon request.