

# VAN'S AIRCRAFT, INC.

14401 NE Keil Road, Aurora, Oregon, USA 97002 PHONE 503-678-6545 • FAX 503-678-6560 •  
www.vansaircraft.com • info@vansaircraft.com

Service Letter: October, 2005

Subject: Filtered Bypass Kit

Affected Models: All RV's with vertical draft induction using Van's Filtered Airbox.

Supersedes Service Letter dated May, 2003

On engines larger than the O-320 with magnetically latching filter bypass doors installed, the bypass doors may be inadvertently opening during high power settings. This type of bypass incorporates magnetic bypass door latches that may not be strong enough to maintain closure against the induction forces and vibration produced by the engine. This does not affect normal operation of the engine but was not the intent of the design.

A new, pilot operated bypass door is now available for installation or retrofit to all Van's filtered airboxes. This design uses a bowden cable for operation and cannot inadvertently open. The new design is currently being shipped in all filtered airbox kits and Firewall Forward Kits for engines with vertical induction. A similar, pilot operated bypass has been available for horizontal induction engine installations since May, 2003.

## **Retrofit and Installation Information:**

Case 1: Applicable to **Vertical induction** engine installations using a carburetor or fuel injection unit **that currently have a magnetic latch bypass installed.** A retrofit kit is available from Van's. It can be ordered using the following part number:

FAB BYPASS VERT-RETRO

Case 2: Applicable to **Vertical induction** engine installations using a carburetor or fuel injection unit **that do not have a filter bypass installed,** a retrofit kit is available from Van's. It can be ordered using the following part number:

FAB BYPASS VERTICAL

Case 3: Applicable to **Horizontal induction** engine installations using a horizontally mounted fuel injection system **that do not have a filter bypass installed.** A retrofit kit is available from Van's. It can be ordered using the following part number:

FAB-HORIZ BYPASS

Case 4: Applicable to **Horizontal induction** engine installations using a horizontally mounted fuel injection system **that currently have a pilot operated filter bypass installed.**

NO ACTION REQUIRED

Please read and retain the attached notice.

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October 2005: Updated Filter Airbox Advisory of May 2003

ATTN: Van's Aircraft Kit Aircraft Builders & Pilots.

RE: FAB BYPASS

The filtered airbox kits (FAB-320/360/540 or FAB-HORIZ) were designed to filter all engine induction air with a minimum loss of manifold pressure. The 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 engine smoothness.

It is imperative to remember that, unless the individual aircraft operating limitations permit, experimental aircraft are 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 inadvertent flight into heavy snow, freezing rain, or icing conditions, should consider equipping their filtered air box with a FILTER BYPASS. In case of blockage, the filter bypass feature would permit unfiltered air to bypass the filter and directly enter the carburetor/injector air body throat. The enclosed BYPASS KIT kit has been developed and tested by Van's Aircraft Inc. to accomplish the above objective.

FAB-320/360/540: RV's using the vertical induction air box designed for either carburetors or vertical draft fuel injection systems are provided with a provision for pilot-controlled alternate filtered air. The design intent was that when a pilot 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 door. This would block the ram air inlet thus preventing further filter blockage and, at the same time, admit warm air from the engine compartment. The addition of the FILTER BYPASS kit simply provides a method to bypass a totally plugged filter in cases where the alternate filtered air door provided is insufficient.

FAB-HORIZ: RV's using the horizontally mounted Bendix or Airflow Performance System fuel injection units do not have an alternate air door and operators should incorporate the FAB BYPASS. The addition of the FILTER BYPASS kit simply provides a method to bypass a totally plugged filter.

Should filter blockage be encountered, the pilot must open the FILTER BYPASS door so that the engine will continue to draw sufficient induction air. The pilot must land the aircraft as soon as practical after opening the filter bypass door so that the filter blockage can be cleared and to reset the filter bypass door.

The FILTER BYPASS door is not designed to be reset from the cockpit. A visual inspection of the filter bypass door must be done to verify that it has been properly reset.

The FILTER BYPASS door is designed for emergency use only and is not to be opened as part of any routine operations.

Van's Aircraft Inc. has developed and supplied this FILTER BYPASS for the purpose of enhancing safety should inadvertent flight into severe and unusual operating conditions occur. Pilots operating any aircraft equipped with a Van's Aircraft Inc. FAB system with the FILTER BYPASS feature should also be aware of other flight hazards (such as airframe and propeller icing) which may result from operating in conditions severe enough to cause filter blockage. Installation of the Filter Bypass system should not be viewed as license to operate in conditions for which the aircraft is not permitted, and/or not equipped to operate safely.

- Van's Aircraft Inc. recommends that this advisory become a permanent part of the aircraft records.
- Please contact Van's Aircraft for further information and availability of filtered airbox modification components.