



**SUBJ: Navigation; STC Modification Airworthiness Interrelationship**  
**Effects – Airspeed Limitations and Markings**

**SAIB: CE-12-37**  
**Date: June 26, 2012**

*This is information only. Recommendations aren't mandatory.*

## **Introduction**

This Special Airworthiness Information Bulletin (SAIB) informs aircraft owners, mechanics, operators, manufacturers, distributors, dealers, and installers who incorporate supplemental type certificate (STC) modifications that affect the aircraft's performance or handling qualities of the need to verify airspeed indicators are marked correctly and airspeed limitations are properly documented in airplane flight manuals (AFM) or AFM supplements.

At this time, this airworthiness concern is not considered an unsafe condition that would warrant an airworthiness directive (AD) action under title 14 of the code of Federal Regulations (14 CFR part 39).

## **Background**

STC compatibility concerns were identified for STC installations on a twin-engine airplane. This aircraft included one STC that lowered the minimum control speed ( $V_{MC}$ ) from the originally-certificated  $V_{MC}$ . This same airplane later incorporated a different STC for higher horsepower engines and associated propellers, which required  $V_{MC}$  to be raised from the originally-certificated airplane  $V_{MC}$ . Data indicated the aircraft's  $V_{MC}$  speed markings did not follow requirements of the second incorporated STC modification and the FAA issued an airworthiness directive (AD) to address this issue. While we do not have data indicating that any specific additional unsafe conditions exist, this SAIB is intended to raise awareness for these types of STC compatibility issues, for future STC installations, and for STC's already installed.

As noted in the limitations section of each STC, the installer must determine whether the design change is compatible with previously approved modifications. Particular attention should be applied to aircraft with more than one modification affecting the airspeed limitations, performance, or handling characteristics. This includes STCs affecting minimum airspeed limitations (such as stall speeds [ $V_{SO}$ ,  $V_{S1}$ ] or minimum control speeds [ $V_{MC}$ ]), maximum airspeed limitations (such as flap extension speeds [ $V_{FE}$ ], structural cruising speeds [ $V_{NO}$ ], never exceed speeds [ $V_{NE}$ ], or maximum operating limits [ $V_{MO}/M_{MO}$ ]), low-speed handling characteristics (such as vortex generators), installation of higher horsepower engines with associated propellers, and other performance enhancing devices on the same airplane.

## **Recommendations**

The FAA recommends the following:

- For new installations of STCs, the installer of one or more incorporated modifications that may impact the airplane's performance and/or handling characteristics conduct a thorough evaluation of the safety impact of the changes being made by the new STCs with the changes made by all previously installed STCs on the airplane. This should include specific consideration of changes affecting the airplane's airspeed or performance limitations. Proper

evaluation of STC compatibility may require further engineering analysis and/or flight evaluation/testing for certain installation combinations.

- For existing multiple STC installations (already installed on aircraft), owners/pilots/mechanics review existing STC installations to determine if there are any potential compatibility issues. In some cases, one may identify a concern that warrants further evaluation, such as different STC's requiring different airspeed limitations.
- Owners/pilots/mechanics may have questions regarding STC compatibility for existing STC installations or for new installations. There are several potential sources of information regarding STC compatibility:
- For existing multiple STC installations, persons who previously installed STCs may be able to provide information regarding STC compatibility determinations for their installations.
- For new and existing STC installations:
  - STC holders may be able to provide helpful information regarding their STC. Even though they may only have information for their own STC, their information may help in assessing compatibility with other STCs.
  - Type clubs may also have knowledge or experience that can be beneficial.
  - In some cases it may be beneficial for an experienced flight test pilot or engineer to conduct an "evaluation" to determine the interrelationship of STC modifications.
- It may be beneficial for owners/mechanics to ensure that any completed reviews or evaluations performed are documented in the airplane's permanent records.

We request owners/pilots/mechanics/others who identify any potential adverse effects of STC interrelationships to report their concern to the FAA, using the address listed below. This would include airplanes with multiple STCs affecting airspeed limitations that may not be properly documented in the AFM or AFM supplement, or airspeed indicators that may not be marked correctly. Under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), the Office of Management and Budget (OMB) has approved the information collection contained in this SAIB, and assigned OMB Control Number 2120-0731.

### **For Further Information Contact**

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