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SERVICE BULLETIN

No. SB-AG-52

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WING MODIFICATIONS

**THIS BULLETIN APPLIES TO THOSE AIRPLANES
THAT ARE SUBJECT TO AD 2009-26-11**

REASON FOR PUBLICATION:

This Service Bulletin is being issued in order to warn Thrush owners of potentially unsafe conditions if their wings are modified by means not approved by Thrush Aircraft, Inc.

With the issuance of AD 2009-26-11 most Thrush owners are facing replacing their wing lower spar caps in the next couple of years. The AD gives them two different AMOCs with which to comply with the AD, one of which is Thrush Aircraft, Inc. kit CK-AG-41.

The other AMOC is an STC (SA03654AT) with a stainless steel replacement lower spar cap. Thrush Aircraft, Inc. was not consulted about nor involved in the design of this STC. Thrush Aircraft, Inc. therefore has little knowledge of how the design and substantiation were accomplished. For this reason, and a conflict-of-interest situation under which this STC was approved, Thrush Aircraft, Inc. feels responsible for making Thrush owners aware of possible deficiencies of the STC.

QUESTIONABLE FEATURES:

Since the wings these larger stainless steel spar caps are being installed in were not designed to accommodate it, some ribs will need to be modified. The ribs and leading edge skins of most early thrushes are thinner than are the ribs and skins used on current production Thrushes having lower spar caps that the STC caps were copied from. The combination of the modifications and thinner material will obviously weaken the leading edge structure. Thrush Aircraft Inc. cannot vouch for the adequacy of the modified structure, and will not be responsible for any accidents related to it.

It is a similar situation for the mid-ribs. When Thrush Aircraft, Inc. redesigned the wings to use the larger lower spar caps, the inboard mid-ribs and nose ribs were redesigned accordingly. The structural effects of combining a larger lower spar cap with the mid-ribs of earlier manufactured Thrushes are unknown to Thrush Aircraft, Inc. While it is assumed that the STC approval process assured this compatibility, Thrush Aircraft, Inc. is skeptical because the STC holder reviewed and approved its' own design, a clear conflict of interest.

Finally, Thrush Aircraft, Inc. questions the adequacy of the STC's instructions for making the installation, as they have received numerous phone calls with questions about installing it. In 2004 the Thrush factory modified two sets of old wings by installing our larger lower spar cap and helped a local repair shop do the same. It was found that it was a difficult modification to do without completely removing the whole wing spar from the wing. Removing the spar, however, leaves the remaining wing "box" very flexible. If the wing box is not held in place exactly as it was when the spar was removed until it is reinstalled, there is danger of altering the wing twist. At the least this would make the airplane fly one-wing-low, and it could result in unpredictable and/or violent stall characteristics.

Thrush's CK-AG-41 instructions, on the other hand, give thorough and precise instructions on how to maintain the wing twist.

RECOMMENDED ACTION:

Thrush Aircraft, Inc. has requested that the FAA undertake a thorough and independent review of the substantiation and approval process that was done for this STC, in order to protect Thrush owners and pilots. Until such a review is completed and the above questions satisfactorily answered, Thrush Aircraft, Inc. recommends that owners hold off making a decision about which AMOC to use, and that those airplanes with this STC already installed be flown very cautiously.

If it is absolutely necessary for an operator to install STC SA03654AT, Thrush Aircraft, Inc. recommends avoiding removing the entire wing spar during the installation process. If the wing spar is removed, extreme care should be taken to maintain the shape of the wing “box” until the spar is reinstalled, in order to retain proper wing twist.