

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 Bulletin

SB 96-3-1

Date issued: March 25, 1996

Models affected: All RV-3 and RV-3A kits and flying aircraft

Synopsis: After a number of in flight wing failures in RV-3 and RV-3A aircraft, studies were initiated to identify any possible design deficiencies. These studies resulted in a recommendation by Van's Aircraft and the FAA to limit aerobatic flight of affected aircraft until main wing spar modifications have been accomplished.

Required action: All RV-3 and RV-3A builders and pilots with pre-RV-3B wing designs who wish to continue to fly these aircraft in the aerobatic category must, before further aerobatic flight, either complete the applicable Change Notice listed below or incorporate the RV-3B wing design.

Until the applicable Change Notice is completed or the RV-3B wing design is incorporated, RV-3 and RV-3A pilots should perform no aerobatic maneuvers and limit flight G loads to a maximum 4.4 G's (Utility Category).

This limitation should be reflected in the Operating Limitations for the aircraft as well as the airframe logbook until such a time that appropriate modifications have been completed.

Unmodified aircraft must display an "Aerobatic Limitations" placard referencing the Operating Limitations of the aircraft. This placard is available at no charge from Van's Aircraft. Part No. PLA AEROBATIC LIMITS

Contact Van's Aircraft for more information on the RV-3B wing design or the following Change Notices:

*CN-301 TYPE I (1/8" thick spar bar stock with 1/8" rivets)

*CN-301 TYPE II (3/16" thick spar bar stock with 3/16" rivets)

Additional information can be found at:

<http://www.faa.gov/aircraft/safety/alerts/saib/media/ACE-99-10.htm>

ACE-99-10

November 24, 1998

Introduction

The purpose of this Special Airworthiness Information Bulletin (SAIB) is to inform registered owners of certain amateur built Van's Aircraft, Inc. (Van's), RV-3/-3A model airplanes of design, equipment and operating limitations that Van's considers critical for safe aerobatic flight. Adherence to Van's specifications is highly recommended.

Background

Eight accidents with seven fatalities have occurred in the United States, since 1980. (One additional fatal accident occurred in Canada.) Five of the nine accidents (including the Canadian accident) involved unmodified RV-3s. Four airplanes were modified to Van's RV-3A configuration (optional designation after incorporating Van's first wing structural modification (CN-1) for Type I wing spars).

RV-3/-3A U.S. Accident Brief Summary (Source: NTSB Accident Briefs; may not include all causal factors leading to the accident):

No.	Date	NTSB File No.	'N' Number	Model	Fatal Y/N?	Location	Accident Description
1.	8/5/80	3-2810	N66CJ	RV-3	Y	Streator, IL	Cruise flt.; left wing separated. (Acft. rebuilt from prev. landing accident.) (Pre-mod. accident.)
2.	3/11/81	3-0469	N55F	RV-3	Y	Kennett, MO	Low level/high speed flyby; left wing separated from acft. (Undersized wing spar attach bolts.)
3.	11/27/86	2051	N135RV	RV-3	Y	Carmel Valley, CA	Acro; wings separated at top of climb.
4.	3/14/88	578	N87JP	RV-3A	N	Antioch, CA	Acro; spin recovery, left wing bent upward, impacted nearly level attitude.
5.	8/6/92	2667	N50WP	RV-3	Y	Jackson, MI	Acro; abrupt pitch up/top of loop, wings folded. (CN-1 spar mod.)
6.	10/8/95	1760	N27RV	RV-3A	Y	Forest Grove, OR	Acro; rapid climbing; r. wing separated; +9.2 g's indicated.
7.	3/8/98	FTW98FA145	N99HV	RV-3A	Y	Elbert, CO	Acro; wing folded top of loop.
8.	9/26/98	LAX98LA305	N244WW	RV-3	Y	Arbuckle, CA	VFR only pilot, in 400' overcast instrument meteorological conditions (IMC); pulled up from dive; +7/-4.5 g's indicated.

The FAA previously issued two General Aviation Notices (GENOTs) addressing RV-3 inflight wing failures:

a. GENOT #8600.14, RWA 1/40 SVC B, dated 3/24/81, provided for the suspension of RV-3 airworthiness certificates until new certificates could be issued prohibiting aerobatic flight, and

b. GENOT #8600.25, RWA 2/100 SVC B, dated 5/22/82, lifted the aerobatic restrictions based on a modification of the wing structure and the individual airplane's demonstrated aerobatic flight up to design limit loads.

Van's Design, Equipment and Operating Recommendations

Van's recommends that aerobatic flight operations be prohibited for RV-3/-3A airplanes that have not had Van's wing spar modifications incorporated, or those modified RV-3/-3A airplanes that are over 1,050 pounds gross weight (including pilot and wing fuel weight).

a. Design and Weight Limitations: RV-3/-3A airplanes properly modified to Van's Change Notice #1 (CN-1) and Change Notice #2, Type I (CN-2-I) Spar Modification Instructions for Type I wings (**1/8 inch thick** spar bar stock with 1/8 inch rivets) or CN-2-II Spar Modification Instructions for Type II wings (**3/16 inch thick** spar bar stock with 3/16 inch rivets) should not be prohibited by design from aerobatics, unless the airplane's aerobatic gross weight (including pilot and wing fuel weight) exceeds **1,050 pounds**. (Van's CN-1 (re-enforcement of the root rib and rear spar) if not previously incorporated, is designed to be incorporated in conjunction with CN-2-I.)

b. Required Aerobatic Equipment and Operating Limitation Placards: In addition to Van's wing spar modifications, Van's RV-3/-3A design includes the following minimum flight equipment and placard installation for aerobatic flight operations:

Placards:

1. + 6 G maximum positive load limit at maximum aerobatic gross weight of 1,050 lbs. (including pilot and wing fuel weight).
2. -3 G maximum negative load at 1,050 lbs. gross weight (including pilot and wing fuel weight).
3. 210 mph never exceed speed (V_{NE}).
4. 132 mph design maneuvering speed (V_A).

Equipment:

1. Recording accelerometer (G meter) required.

Recommendation

Design, Equipment and Operation: The FAA highly recommends registered owners of amateur built RV-3/-3A model airplanes incorporate Van's required design changes, placards and equipment prior to normal or aerobatic flight and observe Van's aerobatic flight operational limitations. In no case should the airplane be operated above 1050 pounds max. gross weight, above +6/-3 g's, or beyond V_{NE} or V_A .

Overload: In the event of inadvertently encountering inflight "g" loads above +6/-3 g's, it is highly recommended that registered owners immediately contact Van's for a detailed inspection criteria. A detailed wing structural inspection in accordance with Van's design criteria should be completed prior to the next flight. Any structural damage should be corrected prior to the next flight using specifications obtained from Van's.

Condition Inspection: If you are not the original builder, you should not assume your RV-3 meets all of Van's design specifications, unless a thorough internal inspection has been conducted to your satisfaction. When documenting the wing's internal condition, the inspection should include, but not be limited to, the following:

1. Evidence of aircraft quality workmanship standards;
2. Over/under driven rivets;
3. Corrosion;

4. Insufficient edge distance for rivets and center section bolts, or oversized/elongated holes;
5. Extra holes in spar flange strips;
6. Corroded, damaged or defective control push rod linkages;
7. Cracks around aileron bellcrank mount in the wing rib web;
8. Evidence of previous damage to the internal wing structure, i.e., bent ribs, etc.

FOR FURTHER INFORMATION CONTACT:

FAA, Chicago Aircraft Certification Office, Attention: Mr. Nick Miller, 2300 East Devon Avenue, Des Plaines, IL 60018, telephone (847) 294-7837, facsimile (847) 294-7834. Van's Aircraft, Inc., may be contacted at P.O. Box 160, North Plains, OR 97133, telephone (503) 647-5117, facsimile (503) 647-2206.