



LAA TYPE ACCEPTANCE DATA SHEET
TADS 320
VANS RV-9 & 9A

Issue 15	Addition Vans SB and SL	Dated 25/7/18	JV
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This TADS is intended as a summary of available information about the type and should be used during the build, operation and permit revalidation phases to help owners and inspectors. Although it is hoped that this document is as complete as possible, other sources may contain more up to date information, e.g. the manufacturer's website.

Section 1 contains general information about the type.

Section 2 contains information about the type that is **MANDATORY** and must be complied with.

Section 3 contains advisory information that owners and inspectors should review to help them maintain the aircraft in an airworthy condition. If due consideration and circumstances suggest that compliance with the requirements in this section can safely be deferred, is not required or not applicable, then this is a permitted judgement call. This section also provides a useful repository for advisory information gathered through defect reports and experience.

Section 1 - Introduction

1.1 UK contact

There is no UK agent. Contact Vans direct: Van's Aircraft Inc, 14401 NE Keil Road, Aurora, Oregon, 97002, USA

Tel: 001 (503) 6786545

Website: www.vansaircraft.com

UK Vans owners club – 'RV Squadron': www.rvuk.co.uk or email rvsqn-owner@yahoogroups.com

1.2 Description

The Vans RV-9 is a single-engine, two-seat monoplane design of all-metal construction, originating from the USA. The aircraft is a direct development of the VANS RV-6/-6A and -7/-7A two-seat aircraft, which are accepted by the LAA and have been constructed and flown in large numbers in the UK and abroad. The aircraft is constructed from a kit. The Vans RV-9A has a greater wing and tailplane area than the RV-6 and -7 designs and is designed to give better short field performance with lower powered engines.

The aircraft is a low-wing monoplane of conventional layout. The fuselage is of monocoque construction with sheet aluminium skins and solid rivets throughout. The design methodology borrows heavily from the Vans RV-3, -4, -6/-6A, -7/-7A and -8/-8A designs. A forward hinged canopy is fitted allowing straightforward access to the side-by-side seating arrangement. A rearwards sliding canopy option is available. Dual controls are fitted.

The RV-9 and RV-9A can be built from standard or fast-build kit. Pre-built wing spars are also available. All are acceptable subject to the inspector being entirely satisfied with the quality of workmanship of any part-built assemblies. The aircraft is fitted with integral wing fuel tanks and sealed during construction using a proprietary sealant. For UK-built examples recommend suitable corrosion protection of aluminium



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airframe throughout, e.g. epoxy primer on aluminium parts and assembly compound where steel parts are assembled to aluminium parts.

The RV9 is similar to the RV9A except that the RV9 has a tailwheel rather than nosewheel undercarriage. RV9 and 9A both cleared in the UK.

118-160 BHP Lycoming O-235, O-320, or IO-320, engines may be fitted as recommended by Vans. Consult LAA technical leaflet TL 3.15 for acceptable choices of clone engines. In general, a modification application is required for electronic ignition installations on Lycoming/clone engines.

Note that the only propeller(s) approved for an individual aircraft are those listed on the individual aircraft's Operating Limitations document or in the [PTL/1](#) (Propeller Type List) for the type.

Section 2 – Mandatory information for owners, operators and inspectors

At all times, responsibility for the maintenance and airworthiness of an aircraft rests with the owner. Condition No 3 of a Permit to Fly requires that: *"the aircraft shall be maintained in an airworthy condition"*.

2.1 Fast Build Kit 51% Compliance

The contents of the standard fast build kit is accepted as compliant with the 51% 'major portion' requirements on the basis that it is the same kit standard that has been accepted as 51% compliant by the FAA.

2.2 Build Manual

RV-9/-9A Assembly Manual and RV-9/-9A drawings. Vans's newsletter, the RVator, provides useful additional guidance. A useful compilation of the content of past 'RVators' is also available from Vans.

2.3 Build Inspections

Build inspection schedule 44 (Vans RV Aircraft).
Inspector approval codes A-A, A-M, or K. Inspector signing off final inspection also requires 'first flight' endorsement.

2.4 Flight Manual

Nil. Build manual contains section with advice on flight testing.

2.5 Mandatory Permit Directives

None applicable specifically to this aircraft type:

Also check the LAA website for MPDs that are non-type specific ([TL2.22](#)).



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2.6 LAA Required Modifications (including LAA issued AILs, SBs, etc)

<i>Reference</i>	<i>Description</i>	<i>Applicability</i>
MOD-320-001	Addition of aural artificial stall warning device (when using the Reddish stall warner, some owners have had to increase the chordwise width of the vane by ½" to make it trigger at the lower stall speed of the RV-9 compared to its normal application on the short-wing RV models). Note that this cross-refers to MOD-181-002 and is mandatory and not 'recommended' as shown on that document.	All variants
MOD-320-002	P2 control column attachment	All variants

Note also LAA [advisory letter](#) regarding water leakage past fuel filler caps dated 3.9.02

2.7 Additional engine operating limitations to be placarded or shown by instrument markings

Notes:

- Refer to the engine manufacturer's latest documentation for the definitive parameter values and recommended instruments.
- Where an instrument is not fitted, the limit need not be displayed.

2.8 Control surface deflections

<i>Ailerons</i>	<i>Up: 25 to 32°</i> <i>Down: 15 to 17°</i>
<i>Elevators</i>	<i>Up: 25 to 30°</i> <i>Down: 20 to 25°</i>
<i>Rudder</i>	<i>Left 30 to 35°</i> <i>Right 30 to 35°</i>
<i>Flap</i>	<i>Down 32°</i>

2.9 Operating Limitations and Placards

(Note that the wording on an individual aircraft's Operating Limitations document takes precedence, if different.)

1. Maximum number of occupants authorised to be carried: Two
2. The aircraft must be operated in compliance with the following operating limitations, which shall be displayed in the cockpit by means of placards or instrument markings:

- 2.1 Aerobatic Limitations
 Aerobatic manoeuvres are prohibited.
 Intentional spinning is prohibited.



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- 2.2 Loading Limitations
Maximum Total Weight Authorised: 1750 lb
CG Range: 77.95" to 84.84" aft of datum
Datum Point is: a point 70.0" forward of the leading edge of the wing
Maximum baggage weight: 100 lb
- 2.3 Engine Limitations
Maximum Engine RPM: 2700 (2600 rpm when Sensenich 70CM 2-blade metal propeller fitted to O-320 or IO-320 engines; 2800 with certain O-235 engines)
- 2.4 Airspeed Limitations
Maximum Indicated Airspeed (V_{NE}): 210 mph IAS
Max Indicated Airspeed Flaps Extended: 100/90 mph IAS
- 2.5 Other Limitations
The aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited.

Additional Placards:

"Occupant Warning - This Aircraft has not been Certificated to an International Requirement"

A fireproof identification plate must be fitted to fuselage, engraved or stamped with aircraft's registration letters.

When certain types of metal propeller are fitted, RPM 'avoid bands' are necessary as specified by the propeller manufacturer, in which case these must also be placarded.

2.10 Maximum permitted empty weight

N/A

Section 3 – Advice to owners, operators and inspectors

3.1 Maintenance Manual

Nil. In the absence of a manufacturer's schedule, LAMS can be used as a guide to required inspections and this is reflected in the check list in Section 1 of the LAA's Permit renewal application form. Alternatively the LAA Generic Maintenance Schedule may be used.

Vans service information should also be reviewed. Maintenance is typical of riveted aluminium alloy airframe. Engine maintenance as appropriate to the engine manufacturer's advice (e.g. Lycoming).

3.2 Standard Options

Vans offer a great number of options in their catalogue of accessories, the majority of which are accepted by the LAA. Refer to LAA technical leaflet TL3.08 for details.



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The following items are also permitted to be fitted as optional equipment, without further reference to LAA Engineering. Installations must be inspected by an LAA Inspector against the supplied installation instructions and a PMR entered into the logbook.

- Andair TOX series throttle quadrant with or without flap switches.
- Andair lockable fuel caps.
- Andair fuel pump PX375-TC (on fuel injected engines only and only pump serial numbers 30453 and on).
- Affordable Panels Inc modular instrument panel (ref LAA mod 11302).
- Briggs Airmotive nosewheel bearing spacers (ref LAA mod 12265).
- AntiSplatAero nose leg brace and fairing fitted in accordance with the manufacturer's instructions entitled 'The Nose Job' (ref LAA mod 13483)
- Bell tailwheel fork (ref LAA mod 12276)
- Sega tailwheel fork (ref LAA mod 12414)
- Rocket tailwheel steering link (ref LAA mod 11575)
- Replacement of removable canopy hinge pins with appropriate bolts and nuts.
- JD Air Parts Tailwheel Fork Assembly.
- JD Air Parts Lightweight Tailwheel.
- JD Air Parts Tailwheel Steering Link.
- Dynon pitot head on a Gretz mount (ref LAA mod 13559).
- Dynon pitot head on a Safeair1 mount (ref LAA mod 12981).
- Bonding of canopy (ref LAA mod 11217, see [instructions](#)).
- Skybolt CLoc cowl fastener kit (ref LAA mod 13205).

3.3 Manufacturer's Information (including Service Bulletins, Service Letters, etc)

In the absence of any over-riding LAA classification, inspections and modifications published by the manufacturer should be satisfied according to the recommendation of the manufacturer. It is the owner's responsibility to be aware of and supply such information to their Inspector. Copies of service information can be downloaded from Vans' Website.

Service Letters:

<i>Dated</i>	<i>Description</i>
21.3.18	Cracks near the top of the step
16.11.16	Tip-up canopy operation
24.10.14	Heat muff screen installation
3.7.14	SAIB HQ-14-16 all-metal lock nuts
20.12.11	Fuel valve lever II installation
19.4.11	A letter to prospective buyers of flying RVs
26.11.07	Soft rivets
16.11.07	Inspect master switch
9.11.07	Nose gear leg and fork upgrade
6.9.07	Tricycle gear aircraft nose wheel torque
5.4.07	Dynafocal II mounts
18.10.06	#2 Battery cables
13.2.06	60 amp alternator
10.05	Filtered Airbox advisory
10.03.05	Nose gear design
11.8.04	Buying a second hand RV kit
30.6.04	Buying a flying RV



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4.9.03	GAS-3 gascolator recall
3.03	Hartzell HC-C2YR prop
3.03	Hartzell HC-C2YK prop
14.11.01	CT 82F and CT 83F
5.12.00	Check your gear legs
12.6.00	Fuel pickup tube anti-rotation bracket

Service Bulletins:

<i>Reference</i>	<i>Description</i>
SB 18-05-21	Proper installation of gauge plug in fuel spider
SB 16-03-28	Cracking of wing aft spar web at the inboard aileron hinge bracket attach rivets
SB 14-12-22	Nose stop flange installation
SB 12-8-14	Inspect for missing wing attach bolts
SB 11-9-13	Fuel tank slosh inspection
SB 07-11-09	Nose gear leg and fork upgrade
SB 07-4-12	Securing flap motor rod end bearing
SB 07-2-6	Affixing the passenger control stick permanently
SB 06-9-20	Trim cable anchor
SB 06-2-23	Safetying of standard and flop-type fuel pickup tubes (see also related LAA letter)
SB 05-1-1	Tip-up canopy fuselage kits
SB 04-3-1	Electric flap motor recall
SB 02-12-1	Pre-manufactured hoses
SB 96-10-2	Full swivel tail wheel
SB 96-10-1	Filtered airbox

3.4 Special Inspection Points

- Builders not familiar with the form of solid construction used in this type are encouraged to practise on scrap test pieces to learn techniques of riveting before starting on actual construction.
- These are high-performance aircraft and top quality workmanship is essential.
- The engine compartments of these aircraft are fairly cramped and care should be taken to avoid overheating problems, charring of the cowlings near the exhaust, vapour-lock due to pre-heating of fuel in gascolator, etc. Insulating the exhaust pipes has been found to help, but can cause problems with premature and hidden corrosion of the exhaust pipes underneath.
- The flaps are operated by rod-ends on the operating pushrods without any back-up capturing feature and therefore the rod-ends must be checked carefully for wear to ensure that there is no possibility of a rod-end coming adrift from a flap.
- Check that fuselage fairing around rear of tailplane is well secured since if this fairing comes loose it could cause the elevator to jam.
- Take care to minimise operating friction in flying controls by careful attention to hinges, rod-ends, lubrication etc.
- To avoid problems with the nosewheel jamming in the spat it is important to trim the nosewheel spat to ensure generous clearance between the tyre and the wheel aperture in the spat (circa half an inch), and to maintain the correct nosewheel tyre pressure. It is also important to maintain suitable preload on the nosewheel axle bearings, torquing up the axle nut gently as required in the absence of a conventional spacer between the bearings. Note that the wheel spats are used as part of the locking system for the axle nuts, so if the aircraft is operated with spats removed, alternative means of locking the axle nuts is required. Later type



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nosewheel forks provided by Vans seek to improve this issue by raising the ground clearance of the noseleg.

- If manual elevator trim fitted, refer to SB-06-9-20 regarding problems with rear attachment of trim cable.
- Longitudinal levelling datum for weight is the cockpit rails.

3.5 Special Test Flying Issues

- VP Prop flight test schedule required if VP prop is fitted.
- These are high-performance aircraft but nevertheless the designs are well developed and thanks to good handling characteristics they have achieved a good accident-free record.
- The stall warner vane may need adjusting to sound the hooter at the correct airspeed.
- Problems have been experienced with the RV-9A noseleg, especially when operating off grass, with instances of the nosewheel bending back and the strut digging into the ground, causing a rapid stop and further damage. In order to avoid this risk, it is important to maintain the correct nosewheel tyre pressure, and to trim the spat to ensure generous clearance between the tyre and the wheel aperture in the spat (circa half an inch). It is also important to maintain suitable preload on the nosewheel axle bearings, torquing up the axle nut gently as required in the absence of a conventional spacer between the bearings. It is also important to land the aircraft on the mainwheels first and hold the nosewheel off the ground during the initial part of the landing roll, rather than landing on all three wheels together which encourages wheelbarrowing and overloading the nosewheel.
- With a Lycoming O-320 engine as supplied through Vans in a Vans airframe, some owners have found that engines supplied with an IO-5217 carburettor ran too lean, leading to rapid temperature rise and a serious risk of overheating in the climb and unduly high temperatures in the cruise. This may be because the Vans intake ducts are more efficient than normal and allow a greater airflow than in other Lycoming installations. This appears to be a particular serious problem when constant speed propellers are used, allowing the engine to develop full power (and therefore maximum heat) in the climb. In some cases this has meant having to throttle back at about 1000 ft agl after take-off, to avoid exceeding engine temperature limits and risking engine damage. Some owners have resorted to drilling out the carburettor main jet with a #39 drill to cure the problem, but this modification presumably negates the warranty. Marvel-Schebler suggest that their alternative IO-3678-32 carburettor is set up to more rich than the IO-5217, and should be suitable in this application, but some owners report this causing a flat spot between 1300 and 1500 RPM.

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Please report any errors or omissions to LAA Engineering: engineering@laa.uk.com