



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

Issue 15	Addition Vans SB and SL	Dated 25/07/18	JV
Revision A	Addition of standard option to section 3.2	Dated 12/06/19	JV
Revision B	Addition of Safety Spot articles	Dated 17/09/19	JH
Revision C	Note added to Vans SB 16-03-28.	Dated 02/09/20	JV
Revision D	Amend UK RV Sqn contact, added more engine options and hyperlinks, further standard option added, update maintenance section 3.1, reformat sections 3.2 and 3.3, added note on engine mount repairs to section 3.4	Dated 05/11/20	JP
Revision E	Addition of Whelen lights option to section 3.2. Addition of standard modifications at section 3.6.	Dated 04/10/21	JV

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 Van's direct:

Van's Aircraft, Inc
14401 NE Keil Road
Aurora
OR 97002
USA

Tel: 001 (503) 678 6545
Website: www.vansaircraft.com

UK Van's Aircraft owners club – further details at www.rvuk.co.uk or email the 'RV Squadron' RVSqn+subscribe@groups.io

1.2 Description

The Vans RV-9/9A is a single-engine, two-seat monoplane design of all-metal construction, originating from the USA. The aircraft is a direct development of the Van's Aircraft 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



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aircraft is constructed from a kit. The Van's 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 RV-9/9A is not designed or approved for aerobatics.

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 other Van's Aircraft 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 'Quick 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 airframe throughout, e.g. epoxy primer on aluminium parts and assembly compound where steel parts are assembled to aluminium parts.

The RV-9 is similar to the RV-9A except that the RV-9 has a tailwheel rather than nosewheel undercarriage. The RV-9 and -9A are both approved types in the UK.

118-160 BHP Lycoming O-235, O-320, or IO-320 engines may be fitted as recommended by Van's. Also accepted with equivalent 'XP' type engines manufactured by Superior Air Parts. Consult LAA regarding acceptable models of Superior Air Parts engines. In general, a modification application is required for electronic ignition installations on Lycoming/clone engines (see also LAA Technical Leaflet [TL 3.15: Non-Certified and Cloned Lycoming Engines](#)). Examples cleared by the LAA have also been built with the Wilksch WAM-120 compression ignition engine.

Various manufacturers' propellers have been approved by LAA Engineering for installation on the RV-7/7A. These include fixed pitch and variable pitch propellers from Aymar-Demuth, Catto, Hartzell, Lodge, MT, Sensenich, Sterba and Walker with an associated mixture of engine types. There may be restrictions on certain propellers fitted to some engines, particularly those that have electronic ignition installed.

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.



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2.2 Build Manual

RV-9/-9A Assembly Manual and RV-9/-9A drawings. Revisions to some of the RV-9/9A drawings issued since 2008 can be found in the [RV-9/9A Service Information and Revisions](#) section of the Van's Aircraft website.

Van's Aircraft newsletter, the [RVator](#), provides useful additional guidance. Although no longer produced (Van's publish more information on their website and on 'social media', the past RVators still provide useful information.

2.3 Build Inspections

Build inspection schedule 44 (Van's 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](#)).

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 1/2" 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.



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2.8 Control surface deflections

<i>Ailerons</i>	<i>Up:</i>	<i>25 to 32°</i>
	<i>Down:</i>	<i>15 to 17°</i>
<i>Elevators</i>	<i>Up:</i>	<i>25 to 30°</i>
	<i>Down:</i>	<i>20 to 25°</i>
<i>Rudder</i>	<i>Left</i>	<i>30 to 35°</i>
	<i>Right</i>	<i>30 to 35°</i>
<i>Flap</i>	<i>Down</i>	<i>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.
 - 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: 0-16°: 100 mph IAS
16-32°: 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.



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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 FWR-1 Permit to Fly revalidation application form.

Alternatively, the LAA Generic Maintenance Schedule may be used. Further details can be found in the [Aircraft Maintenance](#) section of the LAA website.

Van's [RV-9/9A Service Information and Revisions](#) should also be reviewed regularly. Maintenance is typical of riveted aluminium alloy airframe.

Engine maintenance as appropriate to the engine manufacturer's advice, e.g. Lycoming (further reference information can be found in [LAA TADS E04: Lycoming](#)).

3.2 Manufacturer's/Standard Options

Van's 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 [TL 3.08](#) for details.

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.

Note: Contact LAA Engineering for further details of a specific referenced mod.

<i>Manufacturer/Supplier</i>	<i>Description</i>	<i>LAA Mod No</i>
Affordable Panels Inc	Modular instrument panel	Mod 11302
Andair	Fuel pump PX375-TC (on fuel injected engines only and only pump serial numbers 30453 and on).	n/a
Andair	Lockable fuel caps	n/a
Andair	TQX series throttle quadrant with or without flap switches	n/a
AntiSplatAero	Nose leg brace and fairing fitted in accordance with the manufacturer's instructions entitled 'The Nose Job'	Mod 13483
Bell	Tailwheel fork	Mod 12276
Briggs Airmotive	Nosewheel bearing spacers	Mod 12265
Dynon	Heated pitot/AoA head on a Gretz mount	Mod 13559
Dynon	Heated pitot/AoA head on a Safeair1 mount	Mod 12981



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Garmin	GAP 26 heated pitot head on a Gretz mount	Mod 14844
JD Air Parts	Tailwheel fork assembly	n/a
JD Air Parts	Lightweight tailwheel	n/a
JD Air Parts	Tailwheel steering link	n/a
Rocket	Tailwheel steering link	Mod 11575
Sega	Tailwheel fork	Mod 12414
Skybolt	CLoc cowl fastener kit	Mod 13205
Whelen	Microburst series nav and strobe lights	n/a
n/a	Bonding of canopy (also see instructions)	Mod 11217
n/a	Replacement of removable canopy hinge pins with appropriate bolts and nuts	n/a

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.

Copies of RV-9/9A continuing airworthiness, service information and plans revisions can be downloaded from the Van's Aircraft website: [RV-9/9A Service Information and Revisions](#)

Notifications and Service Letters:

<i>Reference ID</i>	<i>Dated</i>	<i>Description</i>
SL-00014	26 Aug 20	Optional added stiffener in tail cone
SL 19-04-30	20 Jun 19	New elastomer nose gear leg/mount – retrofit info
N 18-03-21	21 Mar 18	Cracks near the top of the step
SL 16-11-04	16 Nov 16	Tip-up canopy operation
N 14-10-24	24 Oct 14	Heat muff screen installation
N 14-07-03	03 Jul 14	SAIB HQ-14-16 all-metal lock nuts
N Fuel Lever II Installation	20 Dec 11	Fuel valve lever II installation
N Buying a Flying RV	19 Apr 11	A letter to prospective buyers of flying RVs
SL Soft Rivets	26 Nov 07	Soft rivets
N Master Switch	16 Nov 07	Inspect master switch
N Nosewheel Torque	06 Sep 07	Tricycle gear aircraft nose wheel torque
N Dynafocal II	05 Apr 07	Dynafocal II mounts
N Battery Cables	18 Oct 06	#2 Battery cables
N 60 Amp Alternator Wiring	13 Feb 06	60 Amp alternator wiring change
N FAB SB 05	01 Oct 05	Filtered Airbox advisory
N Nosegear Design	10 Mar 05	Nose gear design
N Buying a Used RV	11 Aug 04	Buying a second-hand RV kit
N Buying a Flying RV	30 Jun 04	Buying a flying RV (see also 19 Apr 11 above)
N Gascolator	04 Sep 03	GAS-3 gascolator recall
N Hartzell HC-C2YK-1BF	01 Mar 03	Hartzell HC-C2YR prop



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N Hartzell HC-C2YR-1BF	01 Mar 03	Hartzell HC-C2YK prop
N CT-83F	14 Nov 01	CT 82F and CT 83F
N RV9A Gear Leg	05 Dec 00	Check your gear legs
N Anti-Rotation Bracket	12 Jun 00	Fuel pickup tube anti-rotation bracket

Service Bulletins:

<i>Reference ID</i>	<i>Dated</i>	<i>Description</i>
SB 00006	06 May 20	Potential leaking of Kavlico pressure sensors
SB 18-05-21	21 May 18	Proper installation of gauge plug in fuel spider
SB 16-03-28	28 Mar 16	Cracking of wing aft spar web at the inboard aileron hinge bracket attach rivets (note that the rectification actions given in this bulletin are acceptable to LAA and no separate repair application is necessary)
SB 14-12-22	22 Dec 14	Nose stop flange installation
SB 12-8-14	14 Aug 12	Inspect for missing wing attach bolts
SB 11-9-13	13 Sep 11	Fuel tank slosh inspection
SB 07-11-09	09 Nov 07	Nose gear leg and fork upgrade
SB 07-4-12	12 Apr 07	Securing flap motor rod end bearing
SB 07-2-6	06 Feb 07	Affixing the passenger control stick permanently
SB 06-9-20	20 Sep 06	Trim cable anchor
SB 06-2-23	23 Feb 06	Safetying of standard and flop-type fuel pickup tubes (see also related LAA letter)
SB 05-1-1	01 Jan 05	Tip-up canopy fuselage kits
SB 04-3-1	01 Mar 04	Electric flap motor recall
SB 04-2-1	01 Feb 04	Inspect fuel tanks
SB 02-12-1	01 Dec 02	Pre-manufactured hoses
SB 96-10-2	02 Oct 02	Full swivel tail wheel
SB 96-10-1	01 Oct 96	Filtered airbox

3.4 Special Inspection Points

1. 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.
2. These are high-performance aircraft and top-quality workmanship is essential.
3. 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.
4. 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.
5. Check that fuselage fairing around rear of tailplane is well secured since if this fairing comes loose it could cause the elevator to jam.
6. Take care to minimise operating friction in flying controls by careful attention to hinges, rod-ends, lubrication etc.



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7. 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 nosewheel forks provided by Vans seek to improve this issue by raising the ground clearance of the nose leg.
8. If manual elevator trim fitted, refer to [SB 06-9-20](#) regarding problems with rear attachment of trim cable.
9. Longitudinal levelling datum for weight is the cockpit rails.
10. Engine mount cracks have been reported in the vicinity of the undercarriage leg sockets on similar tailwheel RV-6 model, especially when operated from grass fields. Cracks may also occur at other points on the engine mount of tailwheel versions and engine mounts must be carefully and regularly inspected. For repairs to engine mounts, consult with LAA Engineering and prior to carrying out any repairs, submit a [LAA/MOD 8: Repair Proposal](#) form unless otherwise directed by LAA Engineering. Note: Nigel Reddish has approval to carry out repairs to RV engine mounts without further reference to LAA Engineering under Mod Number 11076 (Email: sreddishandson@btconnect.com; Telephone: 01623 810300).

3.5 Operational Issues

The following Safety Spot articles are relevant to Van's RV-8 aircraft:

- 1 *Light Aviation* issue [September 2010](#) *Leaking fuel sender*
Fuel sender gasket damaged by reaction with fuel. Recommended to fit fuel senders with a fluid sealant.
- 2 *Light Aviation* issue [May 2012](#) *Fuel injector pipe failure*
Fuel injector pipe not constructed with a flare was leaking fuel and making cockpit smell.
- 3 *Light Aviation* issue [March 2014](#) *Checks for empennage cracks*
Relevant to RV-9. Four RV-6s found with cracks in the tail plane, all cracks slightly different and if found contact LAA engineering with repair program so it could be looked at by structures specialists. Cross refer also to [LAA/AWA/14/02](#) and [LAA/AWA/14/03](#).
- 4 *Light Aviation* issue [June 2016](#) *Rear spar web cracks*
Van's [SB 16-03-28](#) released detailing possibility of cracking at the inboard aileron hinge bracket. More likely found on high use examples of type.

Other Operational Issues and Notes

1. 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.
2. The stall warner vane may need adjusting to sound the hooter at the correct airspeed.

3. Problems have been experienced with the RV-9A nose leg, 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.
4. With a Lycoming O-320 engine as supplied through Vans in a Vans airframe, some owners have found that engines supplied with an 10-5217 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 10-3678-32 carburettor is set up to 'more rich' than the 10-5217, and should be suitable in this application, but some owners report this causing a flat spot between 1300 and 1500 RPM.

3.6 Standard Modifications

The following Standard Modifications have been approved on the type. The Standard Modification leaflet associated with each modification (published on the website) must be followed and an [LAA/MOD1](#) form completed and return to LAA Engineering in each case (see also [TL 3.06](#)).

<i>Standard Mod no.</i>	<i>Issue</i>	<i>Description</i>
11156	1	Baggage tie-downs
11170	1	Cockpit sidewall lights
11174	1	Firewall penetrations
11175	1	Increased fixings for wingtip lenses
11201	1	Engine cowl front fixing
11202	2	Rudder cable fairings
11207	1	Strengthen tunnel cover
12265	1	Nosewheel bearing spacer
14083	1	GoPro camera external mounting

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