



LAA TYPE ACCEPTANCE DATA SHEET
TADS 323
VANS RV-7 & 7A

Issue 16	Addition of Van's SL and SB	Dated 25/07/18	JV
Revision A	Addition of standard option to section 3.2	Dated 28/01/19	JV
Revision B	Addition of standard option to section 3.2	Dated 14/05/19	JV
Revision C	Addition of Safety Spot articles	Dated 17/09/19	JH
Revision D	Note added to Van's SB 16-03-28. Additional standard options in section 3.2	Dated 02/09/20	JV
Revision E	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 21/10/20	JP
Revision F	Addition of Whelen lights option to section 3.2	Dated 18/05/21	JV
Revision G	Addition of Beringer wheels & brakes and FlyLED light options to section 3.2. Addition of standard modifications to 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 to Fly 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 RV-7 and RV-7A are developments of the former RV-6 and RV-6A models. The improvements being mainly in ease of build and improved payload and performance



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using up to 200 hp Lycoming engines. Van's Aircraft have now approved the installation of the 210 hp YIO-390 A3B6 and 215 hp IO-30-EXP119 engines. The RV-7 and RV-7A 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. Solid-riveted sheet aluminium construction is used throughout. Many hundreds of these kits have been sold. 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-7 is similar to the RV-7A except that the RV-7 has a tailwheel rather than nosewheel undercarriage.

150-215 hp Lycoming O-320, IO-320, O-360, IO-360 and IO-390 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](#)).

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 Catto, Hartzell, Lodge, MT, Sensenich and Warnke 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 are 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-7/-7A Assembly Manual and RV-7/-7A drawings. Revisions to the RV-7/7A drawings issued since 2008 can be found in the [RV-7/7A 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.



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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 ([TL 2.22](#)).

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

<i>Reference</i>	<i>Description</i>	<i>Applicability</i>
MOD/323/001	P2 control column attachment	All variants
MOD/323/002	Addition of artificial stall warner (supersedes MOD-181-002)	All variants
MOD/323/003	Inspection for cracking in tailplane front spar	All variants
MOD/323/004	Inspection for cracks in elevator forward spar	All variants
Van's SB 02-6-1	Van's larger rudder	All variants

The RV-7/-7A type engine mount must be fitted to RV-7/-7A aircraft rather than the similar but weaker RV-6/6A engine mount even though the two appear interchangeable.

Note also the LAA [advisory letter](#) regarding water leakage past fuel filler caps dated 03.09.02.

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: 25 to 32° Down: 15 to 17°</i>
<i>Elevators</i>	<i>Up: 25 to 30° Down: 20 to 25°</i>
<i>Rudder</i>	<i>Left 30 to 35° Right 30 to 35°</i>
<i>Flaps</i>	<i>Down 40°</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: 1800 lb
CG Range: 78.7" to 86.82" aft of datum
Datum Point is: a point 70.0" forward of the leading edge of the wing
 - 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)
 - 2.4 Airspeed Limitations
Maximum Indicated Airspeed (V_{NE}): 230 mph IAS
Max Indicated Airspeed Flaps Extended: 100 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:

"Recommended climb speed 90 kts (103 mph). Refer to RV-7 Pilot's Note ref [RV7/PN/1](#)"

"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.

Aerobatic Limitations

Alternative limitations for those individual aircraft cleared for limited aerobatics:

Intentional spinning is prohibited.

The following aerobatic manoeuvres only are permitted, not exceeding +6g or -3g

Maximum airspeed for full control deflection, VA = 142 mph IAS

<i>Manoeuvre</i>	<i>Entry air speed</i>
Inside loop	150 mph
Aileron roll	138 mph
Slow roll	138 mph
Stall turn	138 mph
Barrel roll	138-150 mph
Roll off the top	160 mph
Cuban eight	160 mph

Loading Limitations

Maximum aerobatic weight: 727 kg (1600 lb)

CG Range, aerobatic category: 78.7" to 84.5" aft of datum.

Aircraft cockpit to be placarded: "Warning: this is a high-performance aircraft in which care is required particularly during aerobatic manoeuvres to avoid exceeding structural limits and/or maximum permitted airspeeds".

"In the event of an inadvertent erect spin, the aircraft responds to standard recovery actions ie throttle closed, check ailerons centred, apply full opposite rudder followed by progressive forward stick until rotation ceases".

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-7/7A 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](#)).



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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.

Some examples of the RV-7 and -7A may be cleared for limited aerobatics. This is subject to a number of special requirements and a special flight test. A G meter must be fitted for aerobatic clearance. Contact LAA Engineering for the procedure to clear an aircraft for aerobatics.

In general, it is possible to convert an RV-7A to an RV-7 and vice versa. Contact LAA Engineering for advice prior to starting a conversion.

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 No</i>	<i>Mod</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 13274	
Bell	Tailwheel fork	Mod 12276	
Beringer	RF-022(A) main wheels and EA-002N(A) brake assemblies	Mod 15426	
Briggs Airmotive	Nosewheel bearing spacers	Mod 12265	
Delrin	Aileron stop	Mod 12893	
Dynon	Pitot head on a Gretz mount	Mod 12540	
Dynon	Pitot head on a Safeair1 mount	Mod 14034	
Flyboys	Supertracks canopy tracks extension	Mod 15022	
FlyLED	The Works (nav, strobe, landing/taxi lights)	Mod 15598	
Fly LED	Tail light kit	Mod 15598	
Garmin	GAP 26 pitot head on a Gretz mount	Mod 14769	
Garmin	GAP 26 heated pitot head on a Safeair1 mount	Mod 15392	
Gretz	GA-1000 heated pitot head on a Gretz mount	Mod 15255	
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	



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n/a Replacement of removable canopy hinge pins n/a
with appropriate bolts and nuts

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 RV-7/7A continuing airworthiness, service information and plans revisions can be downloaded from the Van's Aircraft website: [RV-7/7A 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
SL 15-11-20	23 Dec 15	RV – Aerobatic gross weight
N 14-12-11	11 Dec 14	VS-801PP vertical stabiliser skins
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 Install	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
SL Nose Gear	09 Nov 07	Nose gear leg and fork upgrade
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
N FAB SB 05	01 Oct 05	Filtered Airbox advisory
N Nosegear Design	10 Mar 05	Nose gear design
N HS710	10 Nov 04	Check horizontal flange of HS-710 Addendum
N Buying a Used RV Kit	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
N Hartzell HC-C2YR-1BF	01 Mar 03	Hartzell HC-C2YK prop
N CT-83F	14 Nov 01	CT82F and CT83F throttle quadrants
N Anti-Rotation Bracket	12 Jun 00	Fuel pickup tube anti-rotation bracket



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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 sender
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 Service Bulletin are acceptable to LAA and no separate repair application is necessary)
SB 14-12-22	22 Dec 14	Nose stop flange installation
SB 14-02-05	05 Feb 14	Cracks in elevator spar (see also LAA MOD/323/004)
SB 14-01-31	31 Jan 14	Horizontal stabiliser cracks (see also LAA MOD/323/003)
SB 12-08-14	14 Aug 12	Inspect for missing wing attach bolts
SB 11-09-13	03 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 02-12-1	01 Dec 02	Pre-manufactured hoses
SB 02-6-1	01 Jun 02	Larger rudder (LAA required mod)
SB 96-10-2	02 Oct 96	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.
7. Note that the trailing edge profile on control surfaces is critical to control characteristics.



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8. 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).
9. With the similar RV-6A model, problems have been experienced with the nosewheel jamming in the spat and 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 may be 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 Van's seek to improve this issue by raising the ground clearance of the nose leg.
10. If manual elevator trim is fitted, refer to [SB 06-9-20](#) regarding problems with rear attachment of trim cable.
11. Longitudinal levelling datum for weight is the cockpit rails.

3.5 Operational Issues

The following Safety Spot articles are relevant to Van's RV-7 aircraft

- 1 *Light Aviation* issue [May 2012](#) *Fuel injector pipe failure*
Fuel injector pipe not constructed with a flare was leaking fuel and making cockpit smell.
- 2 *Light Aviation* issue [February 2013](#) *Carburettor heater insufficient*
Loss of power produced by O-360 caused by suspect carburettor ice. Design of carburettor heater possibly insufficient to melt ice.
- 3 *Light Aviation* issue [March 2014](#) *Checks for empennage cracks*
Relevant to RV-7. 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 the possibility of cracking at the inboard aileron hinge bracket. More likely found on high use aerobatic examples of type.
- 5 *Light Aviation* issue [January 2017](#) *Rudder primary stop failure*
Rudder stop failed allowing over travel of rudder into elevator. Caused punctures of aircraft skin and risked 'locking out'.



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Other Operational Issues and Notes:

1. Adjustments to lateral trim can be made by lightly dressing aileron trailing edges.
2. 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.
3. The stall warning vane may need adjusting to sound the hooter at the correct airspeed.
4. Due to the onset of neutral longitudinal stability in the climb configuration at lower airspeeds, a placarded recommendation to climb at an airspeed of 90 knots (103 mph) has been included by LAA for RV-7/7A types. Further details are provided in LAA note [RV7/PN/1](#) (also available from LAA).
5. Problems have been experienced with the similar RV-6A 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, torqueing 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.
6. With a Lycoming O-320 engine as supplied through Van's in a Van's 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 Van's 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 be '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](#)).



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<i>Standard Mod no.</i>	<i>Issue</i>	<i>Description</i>
11174	1	Firewall penetrations
11202	2	Rudder cable fairings
12265	1	Nosewheel bearing spacer
14083	1	GoPro camera external mounting

----- END -----

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