



LAA TYPE ACCEPTANCE DATA SHEET
TADS 363
VANS RV-12

Issue 8	Addition of Vans SBs and Notifications, information update, minor editorial changes	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-12 is a small, low-wing monoplane of all-aluminium construction, produced in kit form by Vans Aircraft in the USA for assembly by amateurs in the US Experimental category. It is designed to fall within the US Light Sport category and has been designed to comply with the applicable ASTM requirements, allowing the aircraft to be marketed as an E-LSA kit.

The RV-12 draws on the Vans company's experience in manufacturing kits for a range of amateur-built aircraft, ranging from the single-seat RV-3 to the four-seat RV-10; Vans being the World leader in kitplane manufacture.

The RV-12 seats two side by side in an enclosed cockpit with a forward-hinged canopy. A baggage compartment occupies the rear of the cockpit. The RV-12 is fitted with a castoring nosewheel undercarriage, of cantilever leaf type. The two-piece wings are of single spar construction with a twin cell torque box and rear spar mounting slotted flapperons. The wings are designed for easy rig and de-rigging with quick-disconnect controls. A warning system triggered by magnets in the wing pins warns if the wing pins are missing or not fitted properly, and prevents the starter functioning if a fault condition is detected. The all-moving tailplane/stabilator is mounted to the rear of the swept fin and is fitted with a combined trim tab and anti-balance tab. The engine is a carburetted Rotax 912-ULS turning a ground adjustable pitch composite



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Sensenich propeller. The fuel tank occupies a single fuselage tank mounted to the rear of the cockpit. Full dual controls are fitted, the flaps being mechanically operated by a central lever between the seats.

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.

Please note that unlike with many homebuilts, the design of the RV-12 is defined in great detail by the manufacturer and any variations from the specified design constitute a modification.

Please note also that unless you buy the engine through Vans, you will have to go to a great deal of trouble to purchase the correct specification of engine to match the Vans pipework, which has all been prepared to match the engine as sold through Vans.

Vans have now updated the RV-12 design in a number of areas, not least including the installation of the Rotax 912iS as an option to the standard 912ULS powerplant (the aircraft now being designated the RV-12iS). The RV-12iS updates will be accepted by LAA Engineering in due course, currently the type is approved for build whereas the original RV-12 (Rotax 912ULS powered) is a fully accepted LAA design. Further information can be found in the [Vans Aircraft General Information](#) and specifically on the [RV-12iS - What's New](#) page.

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 'flat pack' 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

Vans produce the RV-12 Build Manual (known by Vans as the 'Kit Assembly Instructions'), which includes comprehensive assembly drawings. Previously, Vans produced a newsletter, the RVator, which provided useful additional general aircraft building and operating guidance. A useful compilation of the content of past 'RVators' is also available from Vans.

Revisions to the plans are available at [Vans RV-12 Service Information](#)

2.3 Build Inspections

Build inspection schedule Vans RV-12 Aircraft.



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Inspector approval codes A-A, A-M, or K. Inspector signing off final inspection also requires 'first flight' endorsement.

2.4 Flight Manual

Vans produce a comprehensive Pilot's Operating Handbook for the RV-12. The RV-12 Production Acceptance Procedures contains detailed information on flight testing. There is also a Flight training Supplement which may assist pilots converting to Light Sport Aircraft in general and the RV-12 in particular. Current revisions of all of the RV-12 manuals are available for download at [Vans RV-12 Service Information](#)

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](#)), e.g. engine and equipment.

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

The only modification required by LAA has been the inclusion of mechanical back-up compass, ASI and altimeter in addition to the existing EFIS installation, in accordance with normal LAA requirements.

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.

With Rotax 912-ULS engine:

Maximum CHT*: 135°C
Max Coolant Temp: 120°C (with 50/50 Glycol/water coolant)
Oil Temp Limits: 50°C to 130°C (Normal 90-110°C)
Oil Pressure: 2-5 Bar
Minimum Fuel Pressure: 0.15 bar

The EFIS systems used in the RV-12 and sourced through Vans are supplied set-up with the Rotax 912ULS parameters already installed. Reference should always be made to the engine manufacturer's latest documentation for the definitive parameter values.

*Note: Originally, the Rotax 912 used Cylinder Head Temperature to monitor coolant temperature. More recently, following a change in cylinder head design, the parameter is now termed Coolant Temperature. This applies to engines with a -01 suffix. Further information can be found in Rotax Service Bulletin SB-912-066.



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2.8 Control surface deflections

The RV-12 control surface deflections are detailed in the Production Acceptance Procedures. During the aircraft build, Vans work on the principle that if the aircraft is assembled correctly, then the control surface range of movements will be correct.

Obviously, once in service, it is imperative to check that there are no control surface restrictions. The stabilator and rudder stops are visible during a pre-flight check and the flaperon stops are under the cockpit floor panels and can be visually checked at the Annual Inspection.

Flaperons	
Control Position	Ailerons Neutral/Flaps Up
Reference	Left flaperon trailing edge in line with wing tip trailing edge
Measurement	Right flaperon trailing edge should be 1/4" to 1/2" (6.3 mm to 12.6 mm) below trail position. Verify that when a 10 lb (4.5 kg) upward load is applied to the trailing edge of the right flaperon, the trailing edge does not flex above trail position more than 1/2" (12.6 mm)
Control Position	Ailerons full deflection, flaps up, stick fully back
Reference	Inboard flaperon skin and fuselage skin
Measurement	Minimum of 1/8" (3.17 mm) clearance
Stabilator	
Movement	Check for full and free movement of the control stick and that the stick and stabilator contact their appropriate stops
Anti-Servo Tab	
Control Position	Trim 'nose up' + stabilator trailing edge up
Reference	Distance from centre of AST trailing edge to centre of stabilator trailing edge
Measurement	9/16" (14.29 mm)
Control Position	Trim 'nose up' + stabilator trailing edge up
Reference	Clearance between bottom of rudder and AST push rod
Measurement	1/4" (6.3 mm)
Control Position	Trim 'nose down' + stabilator trailing edge down
Reference	Distance from centre of AST trailing edge to centre of stabilator trailing edge
Measurement	3/8" (9.5 mm)
Control Position	Trim 'nose down' + stabilator trailing edge up



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Reference	Clearance between bottom of rudder and AST push rod
Measurement	1/4" (6.3 mm)
Rudder	
Control Position	Left/Right
Reference	Distance from bottom of rudder trailing edge to centre of AST pushrod with stabilator trailing edge up (and trim 'nose down')
Measurement	Horizontally: 7 1/8" (18.1 mm) Point to point: 7 5/16" (18.57 mm)

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: 600 kg
CG Range: 80.49 inches to 85.39 inches 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: 5800
Maximum continuous engine RPM: 5500
 - 2.4 **Airspeed Limitations**
Maximum Indicated Airspeed (V_{NE}): 136 KIAS
Max Indicated Airspeed Flaps Extended: 80 KIAS
Maximum Indicated Airspeed, Rough Air (V_{NO}): 108 KIAS
Maximum Manoeuvring Speed (V_a): 90 KIAS
 - 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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2.10 Maximum permitted empty weight

N/A.

Section 3 – Advice to owners, operators and inspectors

3.1 Maintenance Manual

The documentation provided with the kit includes a build manual, an operators' manual, and a comprehensive final inspection/commissioning checklist all of which have been assessed as satisfactory.

Alternatively a customised version of 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 (i.e. Rotax).

3.2 Standard Options

The RV-12 differs slightly from the other Vans aircraft in that it is supplied as a complete kit, including engine, propeller and systems.

There are a number of specific options available for the RV-12 which have been accepted by the LAA. These options include:

Airframe

- a. Lighting kit (includes strobes, position and cabin lights)
- b. Wheel fairing kit
- c. Prefabricated fuel tank
- d. RV-12 glareshield
- e. Canopy trim kit
- f. Interior trim kit

Avionics

There are two avionics system options available:

- a. Dynon SkyView
- b. Garmin G3X

Both systems are supplied complete, specifically for installation in the RV-12. They have been designed to be 'plug and play' with the system installation detailed in the build manual.

To date, no Garmin G3X equipped RV-12s have been completed in the UK and this installation has therefore yet to be formally approved by LAA Engineering.

Autopilot

Autopilots are offered for the RV-12 by Vans for both the Dynon and Garmin avionics systems.



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The Dynon autopilot consisting of SV32 pitch and roll servos connected to a Skyview unit is an accepted option when fitted in accordance with the Vans manual. Owners wishing to fit this system should submit autopilot [roll](#) and [pitch](#) inspection checklists to LAA Engineering, as a specific flight test will be needed to check correct installation.

To date, no Garmin G3X equipped RV-12s have been completed in the UK and this installation has therefore yet to be formally approved by LAA Engineering.

McFarlane Vernier Throttle Control

From 2014, the McFarlane vernier throttle control was standard equipment for the RV-12. As this is a direct replacement, this throttle can be installed in place of the original (non-vernier). The throttle control is installed in conjunction with weaker throttle springs, reducing the chances of uncommanded throttle creep.

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 Bulletins:

<i>Reference</i>	<i>Description</i>
SB 18-07-05	Sensenich propeller inspection
SB 18-02-02	Potential cracking in the horizontal stabilator front spar
SB 18-03-06	Replace the throttle return springs (912-ULS powered aircraft)
SB 18-02-03	Anti-servo tab cracks
SB 17-10-14	Inspection and/or replacement of the valve push-rod/rocker arm (certain s/n 912-ULS engines)
SB 16-08-01	Stabilator bearing inspection
SB 16-08-24	Loose engine mount bracket rivets
SB 16-05-26	Data plate modification
SB 16-05-23	RV-12 nose fork inspection
SB 16-04-10	RV-12 switch module harness updated (single or dual EFIS)
SB 15-3-5	Rotax carb float exchange
SB 14-11-3	Wing skin-to-spar rivet wear
SB 14-12-6	F-1206F bearing bracket cracks
SB 14-12-16	Throttle return springs
SB 14-10-14	Rotax carb float SB-912-065UL
SB 14-1-17	Rudder cables chafing misrouted brake lines (s/n 12006-12010)
SB 13-12-19	Fuel tank attach modification (see also LAA/AWA/14/01)
SB 13-12-12	Sealing avionics bay to prevent water intrusion
SB 13-08-29	Throttle cable retaining nuts
SB 13-4-5	Oil tank mount brackets
SB 13-3-21	Ethanol in fuel (note that it is not currently permitted to use fuel containing ethanol in the UK in this class of aircraft)
SB 13-2-6	Chafing Coolant Hoses
SB 12-11-09	Center Section Modification (plus addendum dated 8/1/13)
SB 12-09-26	Loose U-1202 Attach bolts



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SB 12-08-09	Cracks in Nose Wheel Fairing Brackets
SB 12-1-30	Install new PLA-00017 placard below filler cap
SB 11-12-14	Fuel Tank Upgrade
SB 11-9-13	Fuel Tank Slosh Inspection
SB 10-12-14	Possible cracks on WD-1230
SB 10-4-28	Possible cracks on stiffener beads
SB 10-3-17	Radiator Interference
SB 04-2-1	Inspect Fuel Tanks

Service Notifications:

<i>Dated</i>	<i>Description</i>
12.7.18	Change to higher pressure aux fuel pump
6.4.18	Alternative voltage regulator, mounting and cooling
8.12.17	Canopy latch upgrade
10.10.16 (updated 15.3.18)	Wing tip light and landing light option
9.3.18	Glareshield installation
23.2.18 (updated 12.3.18)	Passenger warning light
24.1.18	F-1204M roller modification
7.11.17	ULS winterisation kit
12.9.17	Stabilator fibreglass tip installation
19.5.17	Soft engine isolators
16.3.17	Dynon SkyView ADS-B In
14.12.16	Angle-of-attack installation
16.11.16	Tip-up canopy operation
4.11.16	C-1216-1 canopy strut installation
3.11.16	Voltage regulator relocation
17.10.16	Preheater installation
14.10.16	Revised step installation
3.10.16	Canopy catch install
21.9.16	WD-1230 nose fork upgrade
10.8.16	Soft engine isolators
29.7.16	Garmin G3X ADS-B In
27.7.16	G3X touch dual display
14.7.16	Passenger warning placard
16.1.16	ADS-B Out installation
17.11.15	Spot trace and power cable installation
1.10.15	Flap handle button actuation force
21.9.15	SkyView autopilot/knob modules
15.9.15	Mechanical push button spar pin switch upgrade
15.10.14	Skyview dual screen install
25.9.14	Vernier throttle upgrade
24.9.14	Throttle return spring replacement
10.9.14	Check Skyview GPS data to ELT
7.8.14	Optional wheel pant and nose gear leg fairing installation
3.7.14	SAIB HQ-14-26 all-metal lock nuts
30.6.14	VA-215 oil return hose re-route
22.5.14	Canopy latch safety switch
14.5.14	Minor cracks in HS-1204 fwd inbd rib
11.02.13	Wiring NAV/Strobe
31.08.12	Wiring change for Skyview



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16.08.12	Shipped from Rotax with incorrect fittings
17.05.11	Cracking in Stabilator Nose Ribs
19.11.10	FF-1207 Cooling Shroud Modification
11.09.09	Revised Firewall Forward Wiring Harness
25.03.09	DWG 11-08
10.12.08	Fuselage Frame Inspection

Safety Alerts:

<i>Reference</i>	<i>Description</i>
SA 03-17-11	WD-1215-L-PC and WD-1215-R-PC

3.4 Special Inspection Points

- Builders not familiar with the form of riveted construction used in this type are encouraged to practise on scrap test pieces to learn techniques of riveting before starting on actual construction.
- Take care to minimise operating friction in flying controls by careful attention to hinges, rod-ends, lubrication etc.
- The documentation provided with the kit includes a build manual, an operators' manual, and a comprehensive final inspection/commissioning checklist all of which have been assessed as satisfactory.

3.5 Special Test Flying Issues

- The stall warner vane may need adjusting to operate the warning at the correct airspeed.

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