



LAA TYPE ACCEPTANCE DATA SHEET
TADS 372
GROPPO TRAIL & GROPPO TRAIL MK2

Issue 5	Mk2 variant added. Amendments to control deflections in section 2.8. Minor editorial changes.	Dated 04/12/17	JV
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These TADS are 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

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1.2 Description

The Groppo Trail is a high wing strut braced monoplane of all metal construction, seating two in an enclosed cockpit with tandem seating, which is designed to be sold either as a completed aircraft or in kit form for assembly by amateurs, designed by Nando Groppo and marketed by Sprite Aviation of Dover. The only engine models currently approved in the UK are the Rotax 912-ULS, with fixed pitch two bladed wood Woodcomp SR30S propeller, and Sauer S 2200 UL or S 2400 UL, with Hercules propeller.

Note that the only propeller(s) approved for an individual aircraft are those listed on the individual aircraft's Operating Limitations document.

The fuselage is of welded steel tube truss construction, mostly using square section tubing. It is skinned with aluminium alloy panels riveted in place. The wings are of two spar construction, fully aluminium skinned, and braced by a single strut either side. The wings are designed to fold for storage, without the use of tools, being fitted with swivels so that withdrawal of the root pins allows the wings to be rotated 90 degrees to the leading edge down position and then rotated 90 degrees back to lie alongside the fuselage. The conventional cantilever tail surfaces are of all aluminium alloy construction. The undercarriage is a tailwheel type, the main gear being an aluminium alloy one-piece leaf type bolted to the bottom of the fuselage. A steerable tailwheel is fitted.



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From s/n 66/25 onwards the fuselage contains main gear mounts for both tailwheel and nosewheel versions although the nosewheel variant is not yet LAA approved.

Fuel is contained in moulded fuel tanks located in each wing root, selectable individually at will. The engine is mounted on a conventional welded steel tube mount and contained within a moulded glass fibre cowling which also encloses the coolant radiator.

The flying controls are operated via a conventional system of stranded cables, pushrods and bellcranks. The flaps are electrically operated using a pre-selector switch system. Full dual controls are fitted.

With a maximum gross weight of 520 kg, the Groppo Trail is only eligible as SEP Aeroplanes under LAA administration.

The Mk2 variant introduces a thicker wing leading edge skin, larger fuel tanks, larger cockpit door and revised seat and control arrangements. MTWA is increased to 544 kg.

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

Only aircraft built from the basic kit are currently accepted as 51% compliant. The basic kit involves the builder in assembling the wings, tail surfaces and control surfaces from component parts, as well as fitting out the pre-welded fuselage frame with skins and all systems. The alternative advanced kit which is supplied with flying surfaces pre-assembled has not been assessed for compliance with the 51% rule.

2.2 Build Manual

The manufacturer's build manual is supplied on CD with each kit. The build is divided into 43 steps so that updates only require revisions for affected build stages. Sprite Aviation also supply additional notes to assist builders.

2.3 Build Inspections

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

2.4 Flight Manual

Groppo Trail POH and maintenance manual available from Sprite Aviation [website](#).



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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)

The modifications (to the standard aircraft as produced by Nando Groppo) are required by the LAA for acceptance of the type in the UK, as follows:

Mod no.	Summary	Applicability
MOD-372-001	The wing lift strut fittings have been upgraded (drawing submitted 8.11) due to concerns about fatigue life of the original configuration. The upgraded fittings are supplied with all UK kits.	Mk1 only
MOD-372-002	The fuselage frame has been reinforced in the area of the rear wing spar attachment due to concerns about the fatigue life of the original arrangement, drawing 000964 refers. Groppo have adopted this improvement on all aircraft post s/n 65/24.	Mk1 only
MOD-372-003	6mm diameter bolts at lift strut attachment have been replaced with AN4 bolts with associated nuts and washers. This hardware is not included in the kit.	All variants
MOD-372-004	The wing lift struts have been uprated because the original design was found under strength under negative g loading, as a result of the change in strut end fitting design. New type lift struts and aerofoil sleeves are included in all UK kits. (See 'Lift strut assembly' from downloads section of the Sprite Aviation website .)	Mk1 only
MOD-372-005	The fuel tank outlet fittings have been modified to include a finger strainer feature. (See 'Finger Strainer' from downloads section of the Sprite Aviation website .) Finger strainer mesh is supplied by Sprite Aviation with all UK kits. Kits from s/n 081 onwards have a revised tank fitting which must be modified in accordance with Sprite Service Letter TR-SL-001.	All variants
MOD-372-006	Baggage restraint net has been added to baggage bay behind rear seat. An approved restraint net is available from Sprite Aviation.	All variants
MOD-372-007	The cables which operate the wing fold disconnect system have been routed via guides in the wing to prevent possible snag with aileron control system adjacent. (See 'wing fold cable guides' in downloads section of the Sprite Aviation website .)	All variants
MOD-372-008	A rubber gaiter has been added to the aileron pushrod	All variants



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	where it emerges through the baggage bay floor, to prevent the possibility of loose articles causing jamming of the control system. An approved gaiter is available from 'Car Builder Solutions' p/n #GRGT1.	
MOD-372-009	The door open/shut placard has been revised for improved clarity of meaning. (See appendix 1.)	All variants
MOD-372-010	End stops have been added to both the in-line fuel taps to prevent over-rotation and partial mis-selection. Note: fuel taps currently recommended have end stops built into mechanism.	All variants
MOD-372-011	Revised seat hinges fitted of more robust design. (See appendix 1 for identification.)	Mk1 only
MOD-372-012	Modification to fuselage upper truss at wing carry-through, to avoid welds in tension under negative g loading. This improvement has been adopted by Groppo for all aircraft and does not require any action by the builder. (See appendix 1 for identification.)	Mk1 only
MOD-372-013	Microswitches added to each wing root pin location to activate warning buzzer if wing pins not inserted and master switch on. A kit of parts to complete the installation is supplied by Sprite Aviation with each aircraft kit. Full installation instructions are on the Sprite Aviation website in the downloads section.	All variants
MOD-372-014	Addition of positive throttle stop. (See 'Throttle stop' from downloads section of the Sprite Aviation website .)	All variants
MOD-372-015	Modification to vapour return line to allow use of more robust 6mm fuel pipe. Groppo have adopted this change for all aircraft. (See appendix 1 for identification details.)	All variants
MOD-372-016	Fin area increased and fin leading edge profile blunted to provide improved directional stability. All UK kits are supplied with upgraded dorsal fin, extended fin leading edge and extended fin tip. Groppo have adopted this improvement for all aircraft.	Mk1 only
MOD-372-017	Laser marks on flap operating arms blended out to avoid stress raisers in stressed area. Builders to check for marks and blend out if necessary. (See appendix 1 for details).	All variants
MOD-372-018	Nyloc nuts on attachment bolts for hydraulic brake master cylinders replaced by castle nuts and split pins. These parts are not supplied with the kit. See the Sprite Aviation website for part numbers.	All variants
MOD-372-019	Rudder horn clevis pins replaced by AN3 bolts with	All variants



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	castle nuts and split pins. These parts are not supplied with the kit. See the Sprite Aviation website for part numbers.	
MOD-372-020	Upper and lower lift strut fixings have nyloc nuts replaced by castle nuts and split pins. These items are not supplied with the kit. See the Sprite Aviation website for part numbers.	All variants
MOD-372-021	Mainwheels and axles replaced by improved type (Marc manufacture) alternatives. ICP manufactured wheels as fitted to early continental models are not approved in the UK.	Mk1 only
MOD-372-022	Tailwheel steering system modified to reduce sensitivity of ground steering. The later approved tailwheel has conventional spring and chain steering. The early continental rod driven system is not approved in the UK.	All variants
MOD-372-023	Aileron disconnect pins should be secured by 6mm wing nuts rather than the plain nuts supplied with the kit. (See appendix 1 for details.)	All variants
MOD-372-024	A single 4mm drain hole needs to be added to each wingtip to prevent water collecting in the composite tip when the wings are folded. The location of the hole should be the lowest point of the wing tip when the wings are folded. (See appendix 1 for details.)	All variants
MOD-372-025	Two reinforcing strips to be added to the fin spar base (Gropo p/n 966). All UK kits have this part supplied and drawings rev 6 onwards show the modification.	Mk1 only
MOD-372-026	In order to comply with the fireproofing requirements of CS-VLA 1191, the aluminium firewall must be replaced with stainless steel with a minimum thickness of 0.38 mm. The upper part of the firewall (Gropo p/n 274) remains cabin side of the steel replacement.	All variants
MOD-372-027	The 8 off 6 mm bots which secure the tailplane to the fuselage are to be replaced by AN4-15A bolts, MS21044-N4 nuts and AN960-416 washers. The holes must be 'line reamed' with a tapered hand reamer.	All variants
MOD-372-028	Modifications to raise and stiffen seats to prevent possibility of fouling with flying control system.	Mk2 only

When the Sauer engine is fitted, including an oil heated inlet manifold, and using the standard Sauer installation into the Trail it is acceptable either:

- a. to use the optional electrical carburettor heater fitted to the carburettor body, in which case an ammeter must be wired in series with the heater element and displayed prominently near the carb heat switch, so that proper operation can be checked, or



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- b. to have no carb heat provision but to fit the optional LM335 carb body temperature probe wired into the EFIS with alarms set to activate in flight if carburettor temperature should approach a low enough value for carburettor icing to become possible.

It is not possible to fit both the electrical carburettor heater and the carburettor temperature sensor because they both utilise the same port in the carburettor body.

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

With Sauer engines:

- Maximum CHT: 200°C measured at 4mm tapping or 230°C measured at spark plug hole
- Maximum oil temperature: 120°C
- Maximum oil pressure: 4.5 bar
- Minimum oil pressure above 2000 rpm: 2.0 bar
- Minimum oil pressure (idle): 1.0 bar

2.8 Control surface deflections

Ailerons	Up: 20° ±1.5° Down: 14° ±1.5°
Elevators	Up: 26.5° ±0° Down: geometrically set by up position (approximately 14° on Mk1, slightly more on Mk2)
Elevator tab	Up: 15° ±1.5° Down: 18° ±1.5°
Rudder	Left: 30° ±1.5° Right: 30° ±1.5°
Flap	Down: 0° - 35° ±1.5°



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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: 520 kg (Mk2 544 kg)
Maximum combined weight of crew and baggage: 187 kg (Mk2 only)
CG Range: 240 mm to 426 mm aft of datum.
Datum Point is: Leading edge of the wing at the root.
 - 2.3 Engine Limitations
Maximum Engine RPM (Rotax 912-ULS): 5800
Maximum continuous engine RPM (Rotax 912-ULS): 5500
Maximum Engine RPM (Sauer engines): 3200
Maximum continuous engine RPM (Sauer engines): 2700*

*Maximum continuous engine speed for Sauer S 2400 UL engine is 3000 rpm only when fitted with the optional oil cooler.
 - 2.4 Airspeed Limitations
Maximum Indicated Airspeed (V_{NE}): 118 knots
Max Indicated Airspeed Flaps Extended: 65 knots
 - 2.5 Other Limitations
The aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited.
Solo flight from front seat only.

Additional Placards:

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

"THIS AIRCRAFT HAS FOLDING WINGS.
BEFORE EACH FLIGHT:
CHECK WING PINS ARE INSTALLED AND LOCKED
CHECK BOTH AILERON PUSHRODS ARE CONNECTED
FULL AND FREE ON ALL CONTROLS
FUEL IS TURNED ON
FUEL CONTENTS VISUAL CHECK

SEE PILOTS OPERATING HANDBOOK FOR FULL LIST OF VITAL ACTIONS."



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

2.10 Lified items

Upper lift strut to wing attachment bolts (12mm socket head bolts and 12 mm plain nuts) are required to be replaced annually. These items are graded and must be factory supplied.

Section 3 – Advice to owners, operators and inspectors

3.1 Maintenance Manual

Maintenance Manual includes manufacturer's maintenance schedule for the airframe. For airframe rigging information consult build manual. For engine maintenance consult engine manufacturer's schedule.

3.2 Standard Options

The manufacturers build manual represents and incorporates the accepted standard specification of the UK approved aircraft.

The listing below shows the factory options that have been accepted by the LAA.

MOD-406 Substitute rear wing spar attachment. This is a steel (replacing 6061 aluminium) offset rear spar attachment to compensate for a dimensional problem associated with kits 66/25, 72/31, 74/33, 75/34, 79/38, 81/40, 82/41, 83/42 and 84/43.

Oil cooler for Sauer engine (allows greater max. continuous engine speed).

Electrical carburettor heater for Sauer engine (see section 2.6).

LM335 carburettor body temperature probe (see section 2.6).

Tail ballast box (ref Groppo drawings dated 13/1/2011)

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.

3.4 Special Inspection Points

Builders should be aware that the wing fold catches should be adjusted in accordance with Sprite Aviation advice (available on the website).



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3.5 Special Test Flying Issues

None at current issue.

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

Appendix 1



MOD-372-006
An elasticated luggage net manufactured for motor cycle use prevents items falling into the passenger cabin.



MOD-372-008
An aftermarket gear change gaiter has been used to prevent loose items jamming the aileron control.



MOD-372-009
The door open/closed placard has been changed to improve clarity. The placard should be placed on both sides of the door.

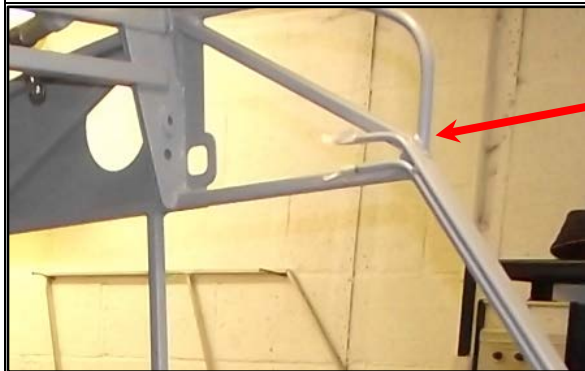


MOD-372-011
New type seat hinges. The old ones were made of stainless steel.

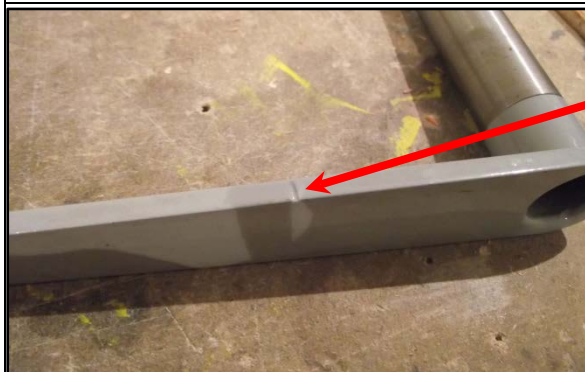
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TADS (type number)
TYPE (as on database)



MOD-372-012
This shows the new upper wing truss. The old type is butt welded.



MOD-372-015
Dual fixed steel pipes on the port side of the fuselage. Early models did not have the extended vapour return (top pipe).



MOD-372-017
Laser marks need to be blended out.



MOD-372-023
Wing nuts replace plain nuts.



MOD-372-024
Position of drain hole in wing tip.