



**LAA TYPE ACCEPTANCE DATA SHEET**  
**TADS 329**  
**SILENCE TWISTER**

Issue 3			
Revision A	New format. Amended contact details. Addition of aerobatic clearance, fixed-gear option and UL260i engine.	2/3/11	JV
Revision B	Note added to section 3.4 regarding tailplane pins. Note on cg limits in section 2.9. Editorial changes.	21/2/14	JV
Revision C	Minor editorial change to section 2.7. MTWA increased in section 2.9.	30/11/17	JV
Revision D	Addition of Safety Spot articles	23/8/19	JH

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

Pete Wells, Zuluglasstek Ltd, Baileys Farm, Westfield Farm, Long Crendon, HP18 9EN

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### 1.2 Description

The Silence Twister is a small sporting, single-seat, cantilever, low-wing aircraft normally fitted with a retractable undercarriage which is manufactured in kit form by Silence Aircraft and latterly by DG Sailplanes. The LAA acceptance covers the kit as manufactured by Silence Aircraft only, not kits sold by DG Sailplanes, which may differ. The type can also be cleared for aerobatic manoeuvres not exceeding +6g or -3g.

The Silence Twister is a conventionally configured single-seat, low-wing, cantilever monoplane with a sideways-opening bubble canopy and electrically operated rearwards retracting undercarriage (a fixed-gear version is also approved). The aircraft is fitted with electrically activated plain flaps. The Silence Twister design first flew in the late 1990s and several examples have subsequently been built in Germany and other countries.

The Twister is of all composite construction, using technology developed for German high performance gliders. The wings and tailplane of the aircraft are built in two halves and



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designed for quick de-rigging by the pilot/owner so that the aircraft can be kept in an enclosed trailer, glider-style.

The aircraft is manufactured in the form of a kit for construction by amateurs. The majority of the airframe consists of female moulded glass fibre honeycomb sandwich panels. The wing is of full cantilever type and consists of a fixed centre section, which incorporates the rearwards-retracting main undercarriage, and quickly-removable outboard panels. The wing is of single spar construction, incorporating a full depth moulded I-section spar. The outboard panels incorporate projecting tangs at the root end which plug into matching sockets in the centre section spar, being retained by eccentric aluminium pins. The control surfaces are operated by a conventional system of stranded steel cables, pushrods and bellcranks. An unconventional feature is the use of pushrods manufactured from carbon fibre tubes of large diameter, having aluminium end fittings moulded into each end. The large plain flaps are electrically operated and their position can be set at any of four positions using a pre-selector type switch. The root ends of the wings contain moulded wing fuel tanks, fuel being selected using an Andair off/left/right/both selector.

A conventional steerable tailwheel type undercarriage is fitted, the two main undercarriage units being retractable using an electric motor and screw jack arrangement. Emergency lowering can be achieved using a combination of gravity and spring assistance, the connection to the screw jack being released by opening the two-piece sheave using an emergency pull-cable arrangement. Main undercarriage suspension is provided by the composite cantilever spring main gear legs, the steerable tailwheel suspension by a steel spring and rubber buffer arrangement.

The cockpit is provided with a moulded kevlar/glass internal shell intended to provide additional crash protection to the pilot. The pilot is provided with a four point harness. A one-piece jettisonable sideways-hinged canopy is fitted.

The engine is a direct-drive 'flat four' Jabiru 2200A, of 80 BHP, turning a fixed pitch one-piece wood GT-2 propeller. The ULPower UL260i engine (a flat four giving 97 BHP) has also been approved for this airframe, also turning a GT-2 propeller.

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.

The type is only eligible as an SEP Aeroplane ('Group A') in the UK, not as a microlight.

## **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 standard Twister kit provided by Silence Aircraft has been accepted as compliant with the 51% rule by the FAA, FAA revised listing dated June 24 2005 refers, and has been accepted as compliant with the 51% rule by the LAA on that basis.



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2.2 Build Manual

Silence provides a basic Build Manual. For further advice refer to Zuluglastek.

2.3 Build Inspections

Build inspection schedule 53 (Twister aircraft).  
Inspector approval codes A-A or AC-1 or K. Inspector signing off final inspection also requires 'first flight' endorsement.

2.4 Flight Manual

The Silence Twister Flight Manual includes all essential operating information. A UK Supplement covers the differences in operating limitations applicable to the LAA-accepted model. This is included as Appendix A to this TADS.

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)

- MOD/329/001 Deletion of emergency over-ride switch on electric flaps, which could cause flaps to be driven past normal end stop.
- MOD/329/002 Andair left/right/both selector valve substituted. Facet fuel pump and aluminium fuel lines incorporated in fuel system.
- MOD/329/003 Improved elevator push rod sheave to rear of cockpit.
- MOD/329/004 Inclusion of alternate selectable 'hot air' carb heat system.
- MOD/329/005 Addition of four Silence-supplied reinforcing mouldings at firewall attachment to fuselage, to reinforce attachment of the engine mount and firewall to airframe. Now included in standard kit.
- MOD/329/006 Now re-defined as optional – see options below
- MOD/329/007 Undercarriage warning system added to sound horn when flaps are lowered in combination with reduced throttle and raised undercarriage

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 Jabiru 2200A: Max CHT: 210°C (Silence advise normal 150°C, Short term 175°C)  
Oil temp: 50-110°C  
Oil pressure: 125-525 kPa @3100 RPM



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2.8 Control surface deflections

<i>Ailerons</i>	<i>Up: 105 mm ± 10 mm</i> <i>Down: 90 mm ± 10 mm</i>
<i>Elevators</i>	<i>Up: 80 mm ± 5 mm</i> <i>Down: 60 mm ± 5 mm</i>
<i>Rudder</i>	<i>Left 210 mm ± 15 mm</i> <i>Right 210 mm ± 15 mm</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: One
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**  
Intentional spinning is permitted.  
Aerobatic manoeuvres are permitted not exceeding +6g or -3g.  
Maximum duration of inverted flight: 3 seconds.
  - 2.2 **Loading Limitations**  
Maximum Total Weight Authorised: 420 kg<sup>1</sup>  
CG Range: 365 mm to 450 mm aft of datum  
Datum Point is: leading edge of wing at root  
Note: for retractable gear versions, the above cg limits apply in both the wheels up and wheels down configuration, and are with reference to the aircraft being weighed in the gear-down configuration, assuming the centre of gravity moves aft by 20mm when wheels are retracted.
  - 2.3 **Engine Limitations**  
Maximum Engine RPM: 3300
  - 2.4 **Airspeed Limitations**  
Maximum Indicated Airspeed (V<sub>NE</sub>): 160 knots IAS  
Max Indicated Airspeed Flaps Extended: 65 knots IAS  
Maximum Manoeuvring Speed (V<sub>a</sub>): 98 knots IAS  
Maximum Rough Air Penetration Speed: 119 knots IAS  
Maximum Airspeed Undercarriage Extended: 100 knots IAS
  - 2.5 **Other Limitations**  
The aircraft shall be flown by day and under Visual Flight Rules only.  
Smoking in the aircraft is prohibited.

<sup>1</sup> Aircraft were originally approved to 410 kg and certain aircraft may still show this on their Operating Limitations document.



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**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.

**Section 3 – Advice to owners, operators and inspectors**

**3.1 Maintenance Manual**

A Maintenance Schedule is included in the Operators manual. For engine maintenance, refer to engine manufacturer’s recommended schedule.

**3.2 Standard Options**

- A variable pitch propeller option for the Jabiru 2200A engine is under evaluation.
- Zuluglastek kevlar seat for improved crashworthiness is accepted by LAA.
- ST Aviation electric back-up carb heat system is accepted by LAA on Jabiru engine.
- Zuluglastek improved bearing at base of control column stick (MOD/329/006).
- A fixed undercarriage option is available.

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

None known.

**3.4 Special Inspection Points**

- During early flight testing of the UK prototype an engine failure occurred, leading to a forced landing which caused substantial damage. It was found that the fuel system had been contaminated by surplus resin from the inside of the tanks, which had been scraped from the tank walls during the assembly of the wings. The tanks were checked for freedom from contamination during the repair of the aeroplane and the manufacturer’s wing assembly process changed to eliminate the problem in future. It is recommended however that particular attention be paid to avoiding fuel system contamination and frequent checking of fuel filter(s) especially during early test flights would be prudent.
- An in-flight failure of the tailplane occurred due to the locking pin not being correctly inserted. Care needs to be taken to check before flight that the pin is properly engaged. When de-rigging, there is no need to extract the pin more than a couple of inches for it to disengage. The [February 2014 Safety Spot](#) article refers.

**3.5 Operational Issues**

The following Safety Spot articles are relevant to Silence Twister aircraft

*Light Aviation* issue [May 2009](#)

*Gear indication failure*

Gear down lock indication system reliant on motor down limit microswitch. Gear indicated down but was not, emergency gear release was difficult to operate.

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*Light Aviation* issue [February 2014](#)

*Tailplane attachment failure*

Tailplane attachment pin not fully engaged, tail plane rotated 90deg in flight. Care needs to be taken to check before flight that the pin is properly engaged.

*Light Aviation* issue [April 2018](#)

*Canopy release after forced landing*

Loss of oil of unknown cause resulting in engine failure and forced landing. First responders did not know how to open canopy from outside. Placards recommended.

*Light Aviation* issue [March 2010](#)

*Stick grip failure*

Control stick broke off in pilot's hand. Stick grip design was not attached sufficiently to the control column. Other cases of stick grip failure have resulted in loss of control and damage to aircraft.

- The Twister is a very straightforward flying aircraft with benign characteristics, with positive stability about all axes and pleasant controls, and a gentle stall.
- Due to fuel contamination problems experienced previously with the type, due to the release of surplus resin from the inside of the tanks, it is recommended that particular attention be paid to avoiding fuel system contamination and frequent checking of fuel filter(s) especially during early test flights would be prudent.
- Pilots should familiarise themselves with the emergency undercarriage lowering procedure before flight.
- The elevator trim system is a glider-type bungee bias arrangement, the operation of which may be unfamiliar to power pilots.
- It is imperative that the cylinder head bolts and tappets are checked at 5, 10, 15 and 20 hours. Omitting this check can lead to head leaks and damage at around 25-50 hours. Have a good look around the rocker boxes and make sure oil is present and that there are no signs of overheating in the form of burnt lacquered oil. New engines with hydraulic tappets need only to have the head bolts checked.
- Encourage test pilot to work the engine quite hard to avoid glazed piston bores, vary rpm settings and do not fly at low power settings for too long.



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**APPENDIX A**

**FLIGHT MANUAL SUPPLEMENT**

**SILENCE TWISTER G-TWST**

This aircraft is not a microlight, it is a 'group A' aeroplane.

The maximum gross weight is 420 kg.

The aircraft is not cleared for aerobatic operation. The manoeuvring limits are +4g, -2g.

Vne	140 kts
Flap limiting speed	65 kts
U/C limiting speed	100 kts
Manoeuvring speed	98 kts
Rough Air limit	119 kts

Signed: FR Donaldson

For the Popular Flying Association  
CA Approval ref DAI/1172/48

Dated 25 November 2005

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Please report any errors or omissions to LAA Engineering: [engineering@laa.uk.com](mailto:engineering@laa.uk.com)