



LAA TYPE ACCEPTANCE DATA SHEET
TADS 064
STEEN SKYBOLT

Issue 2	New format. Additional notes on maximum gross weight	Dated 03/01/18	JV
Revision A	Notes added to section 3.4 regarding Marquart Charger undercarriage.	Dated 08/01/18	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

No UK contact.

Manufacturer is:

Steen Aerolab, 1451 Clearmont Street NE, Palm Bay, FL 32905, USA.

Telephone +1 321 725 4160

www.steenaero.com

1.2 Description

The Steen Skybolt is a two-seat open cockpit biplane of classic appearance. It has a welded steel tube fuselage and tail surfaces and wooden wings; the whole being fabric covered. The upper wing is built in one piece.

The Skybolt is built from a set of drawings available from Steen Aerolab; partial kits are also available. The Skybolt is cleared for aerobatics by the LAA. The Skybolt is cleared by the LAA with Lycoming O-360 and IO-360 engines, driving either a fixed pitch or constant speed propeller. The use of six cylinder Lycoming engines is not accepted by the LAA at this time. The version accepted by the LAA is the Skybolt 'S' version (standard version), not the 'D' (three-piece wing) or 'R' (radial) version. The aircraft may be built with open cockpits or an enclosed canopy.

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.



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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

Not applicable – the Skybolt is a plans built aircraft, although some prefabricated assemblies are available from Steen Aerolab.

2.2 Build Manual

All essential information provided on the drawings.

2.3 Build Inspections

Build inspection schedule 1D (wood/metal biplane).
Inspector approval codes A-A or A-W. Inspector signing off final inspection also requires ‘first flight’ endorsement.

2.4 Flight Manual

Nil known.

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)

There are no mandatory modifications for a basic open cockpit Skybolt with a maximum gross weight of 1650 lbs.

For the canopy-equipped version, as supplied from Steen, it is necessary to add an external canopy release arrangement. Details are available from LAA.

An increased maximum gross weight of 1800 lbs with no structural changes is available upon written request to LAA Engineering. If the aircraft is operated at weights above 1650 lbs it is recommended that the undercarriage attachment bolts are regularly checked for signs of bending (e.g. by rotating the bolts and seeing if they bind in their bushings) particularly after any heavy landing.

In order to raise the aerobatic weight to 1800 lbs it is necessary to make a written request to LAA Engineering. The following modifications are required and a worksheet detailing these changes will be needed in order for the increased weight to be approved:



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- a. All wing internal drag/anti-drag bracing to be 1/4" diameter not 3/16" per some Skybolt plans sets.
- b. Bottom wing attachment bolts to be AN5 specification not AN4 as per some Skybolt plans sets. (G-KEST also has bottom wing attachment fittings strengthened as per mod G-KEST/MOD/2, this modification is not considered mandatory for the increased maximum aerobatic weight however).

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.

2.8 Control surface deflections

TBD

2.9 Operating Limitations and Placards

(Note that the wording on an individual aircraft's Operating Limitations document takes precedence, if different.)

Operating limitations vary from one example to another – the following are typical but not universal.

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
Intentional spinning is permitted
Aerobatic manoeuvres imposing g forces in excess of +6g or -3g are prohibited.
Max aerobatic weight: 1650 lbs (depending on mod state)
 - 2.2 Loading Limitations
Maximum Total Weight Authorised: 1650 lbs (depending on mod state)
CG Range: 3.0 inches forward of datum to 2.5 inches aft of datum.
Datum Point is: leading edge of lower wing.
 - 2.3 Engine Limitations
Maximum Engine RPM: 2700.
 - 2.4 Airspeed Limitations
Maximum Indicated Airspeed (V_{NE}): 173 mph
 - 2.5 Other Limitations
The aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited.



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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.

2.10 Maximum permitted empty weight

Not applicable.

Section 3 – Advice to owners, operators and inspectors

3.1 Maintenance Manual

LAA is not aware of any particular maintenance schedule made available by Steen Aerolab, and owners and inspectors should maintain these aircraft using the CAA LAMS schedule or the LAA generic schedule as a guide.

3.2 Standard Options

Cockpit canopy: see sections 1.1 and 2.6.

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.

None known for the type.

3.4 Special Inspection Points

1. Builder interpretation of areas which are sparsely detailed on the drawings, such as fuel tank, engine controls, exhaust system, cowlings, wheel brakes, cockpit harness etc.
2. One aspect that demands particular attention from an inspection point of view is that these aircraft are aerobatic, and are normally used as such. They are regularly subjected to greater loads and stresses than non-aerobatic types. Deferred defects, which may be perfectly safe on a docile type, may have catastrophic implications on an aircraft capable of violently manoeuvring at up to 6g. A particularly high standard of vigilance should be exercised when inspecting aerobatic types especially on the integrity of the structural components and flying control systems. By way of example, a few years ago a Starduster Too aircraft (non-LAA) crashed fatally when flying wires became detached from the wing due to the loss of the retaining bolt. It had been recently imported from the USA and the nut that should have retained the bolt was thought to have been missing for sometime. It is therefore essential that

access holes be provided in the wings and other areas in order to permit adequate inspection of critical structural assemblies, such as flying wire and strut attachments.

3. Inspectors should also consider the general implications of cockpit safety applicable to an aerobatic aeroplane. A few years ago in the UK a Skybolt aircraft (non-LAA) crashed fatally when, it's thought, the fire extinguisher came loose in the cockpit during aerobatics and knocked out the pilot.
4. The undercarriage attachment bolts have been known to bend in a heavy landing. Rotating the bolts is a quick way of seeing if they have been bent.
5. As with most biplanes, the Skybolt is easily ground-looped in in-experienced hands, particularly on tarmac. Therefore, special attention should be paid to the lower wing integrity, with wrinkles in the fabric and bruised wingtips being investigated fully. Such incidents could cause damage to the wing spars and these should be carefully checked for cracks and other problems.
6. Choice of a wood fixed pitch propeller may lead to an aft cg situation, preventing the carriage of a heavy pilot.
7. For aircraft fitted with Marquart Charger main undercarriage: after any heavy landing in excess of 2.2g at gross weights above 1650 lbs, the following inspections must be carried out:
 - a. Rotate leg pivot bolts to check that they are not bent. If bent, replace.
 - b. Ensure fuselage tubes around undercarriage attachments and at shock supports are straight, with particular attention to the regions near the lower longerons.
 - c. A visual check of overall undercarriage alignment.

3.5 Special Test Flying Issues

Aerobatics and spinning schedule to be completed in addition to standard schedule at initial flight testing if aerobatics and spinning to be cleared.

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