

STOLP STARDUSTER TOO

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1. USA contact

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2. Description

The Starduster Too is a two seat open cockpit biplane of classic appearance, with a welded steel tube fuselage and tail surfaces, and wooden wings, the whole being fabric covered. The Starduster Too is built from a set of drawings available from Stolp Starduster Corp. Although not an out and out aerobatic aircraft, the Starduster Too is cleared for aerobatics by the LAA. The Starduster Too is cleared by the LAA with Lycoming O-320, IO-320, O-360 and IO-360 engines. Use of six cylinder Lycoming engines not accepted by the LAA at this time.

3. Fast Build Kit 51% Compliance

Not applicable – the Starduster Too is a plans built aircraft, although some prefabricated assemblies are available from Stolp Starduster Corp.

4. Build Manual / Drawings

All essential information provided on the drawings.

| | |
|-------------|------------------------------|
| Sheet 1 | GA |
| Sheet 2 | Lower wing |
| Sheet 3 | Upper wing |
| Sheet 4 | Wing spars |
| Sheet 5 | TBD |
| Sheet 6 | Centre section upper wing |
| Sheet 7-9 | TBD |
| Sheet 10 | Tail surfaces |
| Sheet 11 | Fuselage geometry |
| Sheet 12 | Wing struts |
| Sheet 13 | Control system |
| Sheet 14 | TBD |
| Sheet 15 | Assembly of major structures |
| Sheet 16-19 | TBD |
| Sheet 20 | Centre section and tank bay |

5. 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

STOLP STARDUSTER TOO

6. Maintenance Manual

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

7. Flight Manual

Nil known.

8. Mandatory Permit Directives

None applicable specifically to this aircraft type, but note

MPD: 1998-019-R1 Flexible Fuel Tubing Applies to all aircraft

9. LAA Mandatory Modifications

Four modifications were required by the LAA for acceptance of the type in the UK, as follows:

MOD/035/001 10/6/86 Aileron Control Stops

To avoid the possibility of aileron control surfaces moving over centre and becoming locked, aileron control stops must be installed. Drawing available from LAA.

MOD/035/002 20/12/91 Fuel System - Crash-worthiness

The location of fuel system components in the fuselage beneath the main fuselage steel truss resulted in uncontrollable loss of fuel when a Starduster aircraft suffered undercarriage collapse in a landing accident and the system ruptured. To avoid the possibility of reoccurrence, fuel systems should incorporate a fuel cock upstream of this area whenever possible, and systems should be configured in a way that minimises the degree of vulnerability of fuel system components to this type of accident damage, i.e. avoid routing fuel pipes underneath main fuselage truss. Contact LAA for full information when required.

MOD/035/003 Additional Elevator Hinges

Starduster Too aircraft must be modified to include, at a specified location at extreme outboard end of tailplane rear spar tube, a third (each side) elevator hinge attachment point. Drawings available from LAA.

MOD/035/004 Additional Fin/tail Bracing Wires

Starduster Too aircraft must be have two (each side) fin bracing wires and two (each side) tailplane struts, per latest drawings, rather than one. Very early Starduster Too drawings are thought to have shown only a single set of wires and struts each side. Drawings available from LAA.

10. Service Bulletins

Nil known

11. Standard Options

Auxiliary fuel tank in wing centre section

STOLP STARDUSTER TOO12. Special Inspection Points

- 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.
- 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.
- 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.
- The Starduster is known to be easily groundlooped 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.

13. Operating Limitations and Placards

Operating limitations vary from one example to another – the following are typical but not universal. Consult LAA for individual aircraft operating limitations.

Maximum number of occupants authorised to be carried: Two

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:

Aerobatic Limitations

Intentional spinning is permitted

Aerobatic manoeuvres imposing g forces in excess of +5g or -5g are prohibited.

Max aerobatic weight: 774 Kg. (May differ on individual aircraft)

Loading Limitations

Maximum Total Weight Authorised: 901 Kg (depending on engine power)

CG Range: 18" to 27" aft of datum. (Some examples cleared to aft cg limit of 29" AOD)

Datum is: forward face of firewall.

Engine Limitations

Maximum Engine RPM: 2700

Airspeed Limitations

Maximum Indicated Airspeed: 180 mph (some examples cleared to different Vne)

Max airspeed rough air: 110 mph

STOLP STARDUSTER TOO

Other Limitations

The aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited.

Additional Placard

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

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

14. 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.

15. Control surface deflections

| | | |
|--------------|------------------|--------------|
| Ailerons | Up: 30 degrees | (lower wing) |
| | Down: 18 degrees | (lower wing) |
| Elevators | Up: 30 degrees | |
| | Down: 25 degrees | |
| Rudder | Left 25 degrees | |
| | Right 25 degrees | |
| Elevator tab | Up and down | TBD |

Approved :



F.R. Donaldson
Chief Engineer

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