LAA TYPE ACCEPTANCE DATA SHEET
TADS 298
SKY ARROW 650T

Issue 1	Initial issue	24/1/18	JP
Revision A	Addition of Safety Spot articles.	27/4/20	MR

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 importer at this time.

The factory contact information at the time of this TADS update is as follows:

Tel: +39 081 597 7111
Email: contact@skyarrow.it
Website: http://www.skyarrow.it/

Address: Magnaghi Aeronautica S.p.A.
Galileo Ferraris
76 – 80142 Naples
Italy

1.2 Description

Originally, the aircraft was designed and produced by the Italian manufacturer, Iniziative Industriali Italiane (3I). In 2012, the rights to the design were purchased by another Italian aerospace company, Magnaghi Aeronautica, who are based in Naples.

The Sky Arrow is a two-seat, high-wing strut-braced monoplane aircraft with tandem seating and a T-tail. The aircraft is normally powered by a Rotax engine mounted in a pusher configuration. The airframe is constructed from Kevlar reinforced carbon fibre composite. Under 3I's manufacture, there was a customer option for the wings and tailplane to be constructed of a riveted aluminium structure with a fabric covering but it is not known if this is still an option. The aircraft is equipped with a fixed tricycle undercarriage featuring a castoring nose wheel with differential brakes to assist with taxying.

Both front and rear cockpits are fitted with engine and flying controls and the aircraft is flown solo from the front seat. The control stick is a side-stick mounted on the right-hand side of the cockpit with the engine throttle mounted on the left-hand side. The one-piece canopy is side hinged allowing access to both seats. Side windows in the rear cockpit area can be removed for flight.

The 3I produced kits had a single fuel tank mounted aft of the cockpit. Later aircraft produced by Magnaghi Aeronautica have been modified to include enlarged wing tanks.

The aircraft operating on an LAA Permit to Fly are powered by a number of different engines including the Rotax 912-UL, 912-ULS and 914-UL, with one example using a UL Power 260i. Various propellers are approved including fixed pitch and variable pitch designs from Airmaster, Arplast, Hercules, Hoffmann, NSI, Tonini and Warp Drive. Note that the only propeller(s) approved for an individual aircraft are those listed on the individual aircraft's Operating Limitations document.

The aircraft is a SEP (Group A) type. It should be noted that it is only the kit based Sky Arrow 650 T aircraft that are eligible to be operated on an LAA administered Permit to Fly. There are a number of factory built Sky Arrow 650 TC and TCNS operating in the UK that hold an EASA Certificate of Airworthiness.

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 as there is no fast build kit option.

2.2 Build Manual

A build manual and other technical information, is supplied with the kit by the manufacturer

2.3 Build Inspections

Build inspection schedule 32.

Inspector approval codes required for the Sky Arrow is A-A or AC1. Inspector signing off final inspection also requires 'first flight' endorsement.

2.4 Flight Manual

Access to the Flight Manual is available by emailing contact@skyarrow.it providing the following information:

1. Serial number
2. Registration marks
3. Flight hours

Note: the manuals provided should be used as reference documents with the proviso that they may not reflect the exact build standard of an LAA Permit to Fly aircraft due to the various engine, propeller and equipment options found across the fleet.

2.5 Mandatory Permit Directives

Applicable specifically to this aircraft type:

MPD 2003-013 Engine mount

MPD 2003-014	Nose gear support bulkhead
MPD 2005-009 R1	Cockpit throttle lever stop replacement

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 following modifications are required mandatory by LAA:

Five-point seat harness	The original three-point harness was not considered to give adequate support
Addition of a starter warning light	A suitable starter warning light is to be connected in parallel with the output side of the starter solenoid, the light being fitted adjacent to the starter switch on the front instrument panel
Electric stall warner	An electric stall warner mounted on the wing centre section is a factory-offered option, considered a mandatory requirement by the LAA

2.7 Additional engine operating limitations to be placarded or shown by instrument markings

Due to the variety of engines installed on LAA administered Sky Arrows, refer to the relevant 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

Ailerons	Up	20° ±2°	Notes
	Down	14° ±2°	
Elevators	Up	22° ±2°	
	Down	14° ±2°	
Elevator tab	Up	10° ±1°	Some later S/N types trim tab 12° Up & 19° Down
	Down	16° ±1°	
Rudder	Left	23° ±2°	
	Right	23° ±2°	
Flap	Up	0°	
	Down	30°	

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: 650 kg
CG Range (composite wing): 2847 mm to 3007 mm aft of datum
CG Range (metal wing): 2819 mm to 2979 mm aft of datum
Datum Point is: Front tip of the nose bowl

2.3 Engine Limitations

Rotax 912 UL & 912/914 ULS

Maximum Engine RPM: 5800
Maximum continuous engine RPM: 5500

UL Power 260i

Maximum engine RPM: 3300

2.4 Airspeed Limitations

Maximum Indicated Airspeed (V_{NE}): 132 knots
Max Indicated Airspeed Flaps Extended: 67 knots

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.

2.10 Maximum permitted empty weight

Not applicable.

Section 3 – Advice to owners, operators and inspectors

3.1 Maintenance Manual

Access to the Maintenance Manual and Illustrated Parts Catalogue is available by emailing contact@skyarrow.it providing the following information:

1. Serial number
2. Registration marks
3. Flight hours

Note: the manuals provided should be used as reference documents with the proviso that they may not reflect the exact build standard of an LAA Permit to Fly aircraft due to the various engine, propeller and equipment options found across the fleet.

3.2 Standard Options

With the original kits, the wings and tailplane were available in two forms: either a fully composite construction or as a riveted aluminium structure covered in fabric.

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.

Reference	Date	Description	Factory Status	Applicability (650T/1450L s/n)
Issued by Iniziative Industriali Italiane (3I)				
SB-01-99	27/01/99	Oil pressure warning light sensor	M	K102 & K123
SB-02-99	24/02/99	Venting line of oil tank	M	K111, K112, K114-K118, K121-K125
SB-03-99	12/07/99	Elevator control travel fore stop replacement	R	All s/n
SB-01-00	10/04/00	Rudder control line bracket	M	K101, K102, K110-K119, K121-K127
SB-02-00	04/07/00	Safety lock wiring of the ground cables fixing screw on engine	R	All s/n
SB-01-01	23/01/01	Fuel pressure sensor installation	R	103
SB-01-02	15/12/02	Engine mount scheduled maintenance	M	All s/n
SB-02-02	15/12/02	Nose bulkhead (STA600) check and reinforcement	M	103, 104, K111-K119, K121-K132
SB-01-04 R1	10/02/05	Modification of sidestick rod sliding bushing	M	All s/n
Issued by Magnaghi Aeronautica S.p.A				
SB-006-2013 Issue 1	13/03/13	Pitch flight control system	M	All 650 T & 1450L

Factory Status: M = Mandatory R = Recommended

3.4 Special Inspection Points

1. One complete metal wing kit was rejected due to poor build standard from the factory
2. Correct maintenance procedures should be followed especially concerning the rigging of the flying controls. One UK based aircraft had the ailerons mis-rigged because of an incorrect setting of the ailerons neutral position.

3.5 Operational Issues

Handling has been found to be straight forward throughout with benign stall characteristics. The aircraft demonstrates strong positive pitch stability even when loaded near to the aft CG limit, strong lateral stability but relatively weak directional stability. The pitch trim is effective under all flight conditions. There is little natural stall warning hence the requirement for a stall warner to be fitted.

The following *Safety Spot* articles are relevant to Sky Arrow 650T aircraft:

Light Aviation December 2008 *Sky Arrow- Electrolytic/Intergranular corrosion*

The article discusses a case of electrolytic corrosion when removing the tail plane.

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