DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A52CE
Revision 3
Magnaghi Aeronautica S.p.A
Sky Arrow 650TCS
Sky Arrow 650TCNS
September 7, 2017

TYPE CERTIFICATE DATA SHEET No. A52CE

This Data Sheet, which is part of Type Certificate No. A52CE, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder	Magnaghi Aeronautica S.p.A. Via Galileo Ferraris, 76/80 80142 Napoli NA Italy
Type Certificate Holder Record	Iniziative Industriali Italiane S.p.A. transferred TC A41CE to Magnaghi Aeronautica S.p.A. on August 2, 2012

I - Model Sky Arrow 650TCS Approved March 3, 2003

Engine	Rotax 912S2		
Fuel	MOGAS 95/98 octane (see note 8)		
Lubricant	See Flight Manual		
Engine Limitation	Maximum takeoff power - 5 min	73.5 kW (98 HP) at 5,800 RPM	
	Maximum continuous power	69.0 kW (92HP) at 5,500 RPM	
Propeller and Propeller Limitation	Wooden/composite propeller, two bladed, fixed pitch Hoffmann p/n HO17GHM-174 177CLD		
	Diameter	Max 68.70 in	Min. 68.31 in
	Blade Angle at 75%	23°	
Airspeed Limits (CAS)	V_{NE} (Never exceed speed)	132 kts	
	V_{NO} (Structural cruising speed)	104 kts	
	V_A (Maneuvering speed)	90 kts	
	V_{FE} (Flap extended speed)	67 kts	
Maximum Weight	At takeoff	1,433 lb (650 Kg)	
	At landing	1,433 lb (650 Kg)	
Center of Gravity Limits	From 111.8 in (26% MAC) to 115.3 in (32% MAC) at 1,433 lb or less Maximum forward at 111.02 in (24.5% MAC) at 1,323 lb or less. Maximum backward at 118.6 in (38% MAC) between 1,212 lb or less Maximum backward at 117.3 in (36% MAC) at 1,292 lb or less (see note 9). Linear variation for intermediate weights.		

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Reference Lines	Vertical tangent to the nose.
Leveling References	Spirit level, placed on the floor between the two seats.
Minimum Crew	1 pilot (front seat)
Maximum Crew	2 (front at 67.3 in behind the reference line) (rear at 102.4 in behind the reference line)
Maximum Baggage weight	66 lb at 102.4 in behind the reference line 33 at 119.0 in behind the reference line 40 lb at 102.4 in behind the reference line (see note 10)
Fuel Capacity	Total 18 gal at 121.6 in behind the reference line, usable 17.8 gal
Oil Capacity	Maximum 3.17 qts Minimum 2.11 qts (at 137.8 in before the reference line)
Cooling Liquid Capacity	Maximum 2.43 qts Minimum 2.32 qts
Control Surface Range	Ailerons down 14° ±2°/ up 20° ±2° Elevator down 14° ±2°/ up 22° ±2° Flaps down 30° ±1° Rudder lh 23° ±2°/ rh 23° ±2° Trim down 19° ±l° / up 12° ±1°
Applicable Serial Numbers	CS001 and up
Import Requirements Category	A U.S. Standard Airworthiness Certificate may be issued in the Normal on the basis of a Certificate of Airworthiness for Export endorsed by a representative of Ente Nazionale per l'Aviazione Civile (ENAC) containing the following statement "The aircraft covered by this certificate has been examined, tested and found to conform to the type design approved under Type Certificate No. A52CE and is in a condition for safe operation".
Certification Basis	<u>Airframe Certification</u> Type certification under 14 CFR Part 21, §21.29 including the following requirements: - 14 CFR Part 23, effective February 1, 1965, including Amendments 23-1 through 23-42 effective February 4, 1991. Limited to DAY –VFR only. Equivalent Safety Items: Equivalent levels of safety finding made per the provisions of 14 CFR Part 21, §21.21(b)(1) for: ELOS ACE-02-07: 14 CFR Part 23, §23.572, Fatigue evaluation of wing, empennage and associated structure; Refer to FAA memorandum dated May 21, 2002. Exemption with mitigating features: Federal Aviation Administration Exemption No. 7957 issued January 27, 2003 to 14 CFR Part 23, §23. 562. See published Grant of Exemption , Regulatory Docket

No. FAA-2002-13656-1, for conditions and limitations of this Exemption.

Noise Certification
- 14 CFR Part 36, Appendix G, effective December 1, 1969, as amended through 36-24 effective August 7, 2002.

Engine Certification
- 14 CFR Part 33

Propeller Certification
- 14 CFR Part 35

Equipment	The standard equipment indicated in the pertinent airworthiness rules (see the certification basis) must be installed on the aircraft. In addition, the following equipment is required: Sky Arrow 650TCS/TCNS Flight Manual J.V. 14.3F issued October 18, 2000
Master Drawing List	Model Sky Arrow 650TCS: JV-14.31 rev. 4 and following revisions.

II - Model Sky Arrow 650TCNS Approved March 3, 2003

Engine	Rotax 912S2		
Fuel	MOGAS 95/98 octane (see note 8)		
Lubricant	see Flight Manual		
Engine Limitation	Maximum takeoff power - 5 min	73.5 kW (98 HP) at 5800 RPM	
	Maximum continuous power	69.0 kW (92 HP) at 5500 RPM	
Propeller and Propeller limitations	Wooden/composite propeller, two bladed, fixed pitch Hoffmann p/n HO17GHM-174 177CLD		
	Diameter:	Max 68.70 in	Min 68.31 in
	Blade angle at 75%	23°	
Airspeed Limits	V_{NE} (Never exceed speed)	132 kts	
	V_{NO} (Structural cruising speed)	104 kts	
	V_A (Maneuvering speed)	90 kts	
	V_{FE} (Flap extended speed)	67 kts	
Maximum Weight	At takeoff	1,433 lb (650 Kg)	
	At landing	1,433 lb (650 Kg)	
Center of Gravity Limits	From 111.8 in (26% MAC) to 115.3 in (32% MAC) at 1,433 lb or less. Maximum forward at 111.02 in (24.5% MAC) at 1,323 lb or less. Maximum backward at 118.6 in (38% MAC) between 1,212 lb or less. Maximum backward at 117.3 in (36% MAC) at 1,292 lb or less (see note 9). Linear variation for intermediate weights.		
Reference Lines	Vertical tangent to the nose.		
Leveling References	Spirit level, placed on the floor between the two seats.		
Minimum Crew	1 pilot (front seat)		
Maximum Crew	2 (front at 67.3 in behind the reference line) (rear at 102.4 in behind the reference line)		

Maximum baggage weight	66 lb at 102.4 in behind the reference line 33 lb at 119.0 in behind the reference line 40 lb at 102.4 in behind the reference line (see note 10)	
Fuel Capacity	Total 18 gal at 121.6 in behind the reference line, usable 17.8 gal	
Oil Capacity	Maximum Minimum (at 137.8 in before the reference line)	3.17 qts 2.11 qts
Cooling Liquid Capacity	Maximum Minimum	2.43 qts 2.32 qts
Control Surface Range	Ailerons Elevator Flaps Rudder Trim	down 14° ±2°/ up 20° ±2° down 14° ±2°/ up 22° ±2° down 30° ±1° 1h 23° ±2°/ rh 23° ±2° down 19° ±1° / up 12° ±1°
Applicable Serial Numbers	CNS001 and up	

Import Requirements

A U.S. Standard Airworthiness Certificate may be issued in the Normal Category on the basis of a Certificate of Airworthiness for Export endorsed by a representative of Ente Nazionale per l'Aviazione Civile (ENAC) containing the following statement "The aircraft covered by this certificate has been examined, tested and found to conform to the type design approved under Type Certificate No. A52CE and is in a condition for safe operation".

Certification Basis

Airframe Certification

Type certification under 14 CFR Part 21, § 21.29 including the following requirements:

- 14 CFR Part 23, effective February 1, 1965, including Amendments 23-1 through 23-42 effective February 4, 1991. Limited to DAY/NIGHT –VFR only.

Equivalent Safety Items:
Equivalent levels of safety finding made per the provisions of 14 CFR Part 21, §21.21(b)(1) for:

ELOS ACE-02-07: 14 CFR Part 23, §23.572, Fatigue evaluation of wing, empennage and associated structure; Refer to FAA memorandum dated May 21, 2002.

Exemption with mitigating features:
Federal Aviation Administration Exemption No. 7957 issued January 27, 2003 to 14 CFR Part 23, § 23.562. See published Grant of Exemption, Regulatory Docket No. FAA-2002-13656-1, for conditions and limitations of this Exemption.

Noise Certification

- 14 CFR Part 36, Appendix G, effective December 1, 1969, as amended through 36-24 effective August 7, 2002.

Engine Certification- 14 CFR Part 33

Propeller Certification14 CFR Part 35

The Ente Nazionale per l'Aviazone Civile (ENAC) originally type ertificated this aircraft under its Type Certificate Number A343. Effective September 28, 2003, the European Aviation Safety Agency (EASA) began oversight of this product under their Type certificate Number A343 on behalf of Italy.

Equipment

The standard equipment indicated in the pertinent airworthiness rules (see the certification basis) must be installed on the aircraft.
In addition, the following equipment is required:
Sky Arrow 650TCS/TCNS Flight Manual J.V. 14.3F issued October 18, 2000.

Master Drawing List

Model Sky Arrow 650TCNS: JV-14.02 rev.6 and following revisions.

Import requirements

The FAA can issue a U.S. airworthiness certificate based on an NAA Export Certificate of Airworthiness (Export C of A) signed by a representative of the Austro Control Group (ACG) on behalf of the European Community. The Export C of A should contain the following statement " The aircraft covered by this certificate has been examined, tested, and found to comply with ACGs TC No xxx approved under U.S. Type Certificate No. A 47CE and to be in a condition for safe operation".

Service Information

Each of the documents listed below must state that it is approved by the European Aviation Safety Agency (EASA) or – for approvals made before September 28, 2003- by Austro Control Group. Any such documents are accepted by the FAA and are considered FAA approved.

- Service bulletins
- Structural Repair Manuals
- Vendor Manuals
- Aircraft Flight Manuals, and
- Overhaul and Maintenance Manuals

Note 1

JAR-VLA effective April 26, 1990, through Amendment VLA/92/1 effective January 1, 1992, used as compliance to the comparable 14 CFR Part 23, amendment 42 rules, as provided by AC 23-11, dated December 2, 1992, for both Sky Arrow Models 650TCS and 650TCNS.

Note 2

When first receiving the airworthiness certificate, each aircraft must be issued an updated Weight and Balance report where all the equipment that is part of the empty weight is listed.

Note 3

All placards specified in the appropriate Flight Manual must be displayed in the aircraft in the appropriate location.

Note 4

As 14 CFR Part 23, the aircraft will receive a Standard Certificate of Airworthiness, 14 CFR Part 91, § 91.205 (b) of the regulations applies to Model 650TCS (DAY/VFR Only), and 14 CFR Part 91, § 91.205 (c) of the regulations applies to Model 650TCNS (Night/VFR capable, not IFR)

Note 5

The instructions for continued airworthiness and life limits are described as follows:

Airframe: 650TCS and TCNS - Sky Arrow 650TCS and TCNS – maintenance Manual J.V. 14.4.

Engine: 650TCS and TCNS – Maintenance Manual for Rotax Engine 912 Series.

Propeller: 650TCS and TCNS – Hoffmann Propellers Owner's Manual No 0110.74.

Note 6	All external surfaces exposed to sunlight must be white, with the exception of the tail numbers and the factory striping.
Note 7	650 TCNS ERA (Environmental Aerial Research) and RAWAS (Remotely Assisted Working Aerial System) configuration can be obtained applying the following modification Kits: Standard Configuration: - no 15/98 Fuselage shell modification and relevant interface supports - no 38/98 Additional installation of GPS antennas on wing and stabilizer and of radiometers - no 39/98 Modification of main electrical system Additional Configuration: - no 33/98 Above rear seat luggage storage container installation - no 34/98 Installation of the nose extension - no 35/98 Installation of the aircraft lifting points near wing attachments - no 37/98 Installation of the engine radiator protection grid - no 40/98 Modification of the wing box area on the top of the fuselage The ERA/RAWAS Equipment Lists are listed in Flight Manual JV-14.3F (refer to Addedum 1 and Addedum 3)
Note 8	AVGAS 100LL can be used as alternate fuel in accordance to section 2.12 of the applicable Flight Manual
Note 9	The modification Kit No 30/00 “Enlargement of the canopy lateral window” can be applied to all models.
Note 10	The modification Kits No 15/98 “Fuselage shell modification”, No 31/00 “fore rectangular hole on the bottom of the fuselage” and No 32/00 “Installation of the closing port of the fore rectangular hole on the bottom of the fuselage” can be applied to all models. Modification Kit No 39/98 “ Modification of main electrical system” can be applied to Sky Arrow 650TCNS aircraft only.

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