European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

EASA.A.079

SKY ARROW

Type Certificate Holder:
Magnaghi Aeronautica S.p.A.

Via Galileo Ferraris, 76
80142 Napoli
ITALIA

Manufacturer:
Magnaghi Aeronautica S.p.A.

Via Galileo Ferraris, 76
80142 Napoli
ITALIA

For variants:

Sky Arrow 650 TC
Sky Arrow 650 TCN
Sky Arrow 650 TCS
Sky Arrow 650 TCNS
Sky Arrow 710 RG

Issue 4: 10 November 2015

CONTENT

SECTION A: SKY ARROW

A.I. General

Data Sheet No : EASA A 079	Issue 04, dated 10 November 2015
I a) Type: b) Variant:	Sky Arrow 650 TC / 650 TCS / 650 TCN / 650 TCNS/ 710 RG
2 Airworthiness Category:	JAR-VLA Normal Category for 650 TC / 650 TCN / 650 T'CS / 650 TCNS variants CS-VLA Normal Category for 710 RG variant
3 Type Certificate Holder:	Magnaghi Aeronautica S.p.A. Via Galileo Ferraris, 76 80142 Napoli ITALIA
4 Manufacturer:	Magnaghi Aeronautica S.p.A. Via Galileo Ferraris, 76 80142 Napoli ITALIA

5 Certification Application Date:

To ENAC for 650 TC variant:	24-May-1994
To ENAC for 650 TCN variant:	3-Jul-1998
To ENAC for 650 TCS / 650 TCNS variants:	10-May-1999
To ENAC for 710 RG variant:	13-May-2002

6 EASA Type Certification Date: Sky Arrow 710 RG: 17 March 2006

7 JAA validation Date (IAA recommendation): N A

8 The EASA Type Certificate replaces ENAC-Italy Type Certificate N° A 343

A.II. Certification Basis

1. Reference Date for determining the applicable requirements:

24-May-1994 for 650 TC variant
3-Jul-1998 for 650 TCN variant
10-May-1999 for 650 TCS and 650 TCNS variants
13-May-2002 for 710 RG variant

2. (Reserved)

3. (Reserved)

4. Certification Basis:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS/ 650 TCNS variants	JAR-VLA trough Amendment VLA/92/1 dated January, 1992
b. Sky Arrow 710 RG variant	As defined in CRI A-01, latest Issue

5. Airworthiness Requirements:

a. Sky Arrow 650 TC 1650 TCN / 650 TCS / 650 TCNS variants	JAR-VLA trough Amendment VLA/92/1 dated January, 1992
b. Sky Arrow 710 RG variant	EASA CS-VLA dated 14/11/2003 (Equivalent to JAR-VLA ed. 26/04/1990 including amendments VLA/91/1 dated October 22nd,1991 and VLA/92/1 dated January 1st,1992)

6. Requirements elected to comply: none

7. EASA Special Conditions:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants		CRI F-01, Issue 1 "Static electricity"
b. Sky Arrow 710 RG variant	CRI F-01,	Issue 1 "Static electricity"
	CRI D-01,	Issue 1 "Landing Gear retraction pneumatic system"

8. EASA Exceptions None

9. EASA Equivalent Safety Findings: None

10. EASA Environmental Standards: Noise: ICAO Annex16,chapt.10
FAR 36 Appendix G (for 650 TC and 650 TCN variants only)

A.III. Technical Characteristics and Operational Limitations

1. Type Design Definition:

a. Sky Arrow 650 TC variant: See Doc n° JV-14.01 rev. 0 dated 25/03/1996 and following revisions

b. Sky Arrow 650 TCN variant: See Doc n° JV-14.21 rev. 0 dated 15/09/1998 and following revisions

c. Sky Arrow 650 TCS variant: See Doc no JV-14.31 rev. 2 dated 22/11/2000 and following revisions

d. Sky Arrow 650 TCNS variant: See Doc n° JV-14.02 rev. 3 dated 20/11/2000 and following revisions

e. Sky Arrow 710 RG variant: See Doc n° JV-14.35 rev. 2 dated 28/11/2005 and following revisions

2. Description: The Sky Arrow is a tandem seat aircraft, almost entirely made of carbon fiber in epoxy resin. It is characterized by: single engine, fixed pitch pushing propeller, high wing with strut and T-tail

The Sky Arrow 650 TC / TCN / TCS / TCNS variants have a fixed tricycle landing gear

The Sky Arrow 710 RG variant has a retractable tricycle landing gear

3. Equipment: The prescribed basic equipment required by applicable airworthiness regulations must be installed on the aircraft for Certification

Equipment List: Aircraft Flight Manual, Section 6

4. Dimensions:

Span	9.68 m	(31.76 ft)
Length	7.60 m	(24.93 ft)
Height	2.56 m	(8.40 ft)
Wing Area	13.55 m^2	(145.85 sqft)

5. Engine:

a. Sky Arrow 650 TC / 650 TCN variants: No, 1 Rotax 912 F2 (for both 650 TC and 650 TCN variants)
Certification basis: FAR 33 Amdt. 15
Type Certificate: TCDS EASA.E.121

No. 1 Rotax 912 A2 (only for 650 TC variant)
Certification basis: JAR 22, Chapter H
Type Certificate: TCDS EASA.E.121

Engine Limits: Max take-oft power — 5 min.:
59.6 KW (81 HP) at 5800 RPM
Max continuous power:
58.0 KW (79 HP) at 5500 RPM
(see note 12)

b. Sky Arrow 650 TCS / 650 TCNS / 710 RG variants:

No. 1 Rotax 912 S2
Certification basis: FAR 33 Amdt. 15
Type Certificate: TCDS EASA.E.121
Engine Limits: Max take-off power – 5 min.:
73.5 KW (98 HP) at 5800 RPM
Max continuous power:
69.0 KW (92 HP) at 5500 RPM

6. (Reserved)

7. Propeller/s:

Wood propeller, twin bladed, fixed pitch:

a. Sky Arrow 650 TC / 650 TCN variants

No. 1 HOFFMANN p/n HO17FHM-167 148 LT) (for both 650 TC / 650 TCN variants)
Certification basis: FAR 35
Type Certificate N° L-32 110/1 issued by LBA

Diameter:
Max 167.2 cm (65.83 in)
Min 167.0 cm (65.75 in) Blade Angle @ 75% R 21°

No. 1 TONINI p/n GI-2/166/145FW/101-SL PC (only for 650 TC variant)
Certification basis: JAA 22, Chapter J
Type Certificate N° E26 issued by RAI

Diameter:
Max 166.5 cm (65.55 in) Min 166.0 cm (65.35 in)
Blade Angle @ 75%R 20°

(See note 5)

b. Sky Arrow 650 TCS / 650 TCNS / 710 RG variants

No. I HOFFMANN p/n HO17GHM-174 177CLD
Certification basis: FAR 35
Type Certificate N° L-32 110/1 issued by LBA

Diameter:
Max 174.5 cm (68.70 in)
Min 173.5 cm (68.31 in)
Blade Angle @ 75% R 23°

8. Fluids:

8.1 Fuel:

a. Sky Arrow 650 TC / 650 TCN variants MOGAS min RON 90 (see note 4)

b. Sky Arrow 650 TCS / 650 TCNS /710 RG variants MOGAS min RON 95 (see note 4)

Refer to Addendum 9 of Flight Manual for selection of eligible fuel for Sky Arrow operating in China.

8.2 Oil: see applicable Aircraft Flight Manual

8.3 Coolant: Conventional coolant based on Ethylene glycol with 50 % water content

9. Fluid capacities:

9.1	Fuel:	Total:	68.0 liters
		Usable:	67.5 liters
9.2	Oil:	Total:	3.0 liters
		Minimum:	2.0 liters
9.3	Coolant:	Total:	2.3 liters
		Minimum:	2.2 liters

10. Air Speeds:

Never exceed speed V_{NE}:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants 132 KIAS
b. Sky Arrow 710 RG variant 135 KIAS

Maximum structural cruising speed V_{NO}
(=Maximum structural design speed V_C):

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants 104 KIAS
b. Sky Arrow 710 RG variant 106 K1AS

Design Manoeuvring Speed V_A:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants — 93 KIAS
b. Sky Arrow 710 RG variant — 98 KIAS

Flap Extended Speed V_{FE}:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants — 67 KIAS
b. Sky Arrow 710 RG variant — 72 KIAS

Maximum Landing Gear Speed V_{LE}:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants — N/A
b. Sky Arrow 710 RG variant — 80 KIAS

Maximum Landing Gear Operation Speed V_{LO}:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants — N/A
b. Sky Arrow 710 RG variant — 80 KIAS

11. Maximum Operating Altitude:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 T'CNS variants — 13500 ft
b. Sky Arrow 710 RG variant — 11000 ft

12. All weather Capability: Day-VFR only
Flight into expected or actual icing conditions is prohibited

13. Maximum Masses:

a. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants — Take-off: 650 kg (1433 lb); Landing: 650 kg (1433 lb)

b. Sky Arrow 710 RG variant — Take-off: 710 kg (1565 lb); Landing: 710 kg (1565 lb)

14. Centre of Gravity Range:

a. Sky Arrow 650 TC 1650 TCN / 650 TCS /650TCNS variants

Forward limit: 24.5% MAC 2.82 m @600kg
26.0% MAC 2.84 m @650kg

Rear limit: 32.0% MAC 2.93 m @650kg
38.0% MAC 3.01 m @550kg

Rear limit: 30.0% MAC 2.90 m @650kg
(see note 6) 36.0% MAC 2.98 m @435kg

Rear limit: 32.0% MAC 2.93 m @650kg
(see note 7) 36.0% MAC 2.98 m @586kg

Linear variation for intermediate Weights

b. Sky Arrow 710 RG variant

Forward limit: 25.5% MAC 2.84 m @710kg

Rear limit: 32.0% MAC 2.93 m @710kg
36.0% MAC 2.98 m @600kg

Linear variation for intermediate Weights

15. Datum: 2.48 m (97.6 in) before MAC Leading Edge

16. (Reserved)

17. Levelling Means: Floor Levelled (See Bubble Level in rear pilot floor)

18. Minimum Flight Crew: 1 (Pilot)

19. Maximum Passenger Seating Capacity: 1

20. (Reserved)

21. Baggage / Cargo Compartments 3
1) Under Rear Seat
30 kg (66 lb) max@2.60 m(102.2 in)behind Datum

2) Behind Rear Seat
15 kg (33 lb) max @ 3.04 m (119.6 in) behind Datum
(see note 8)

3) Above Rear Seat
18 kg (40 lb) max @ 2.60 m (102.2 in) behind Datum
(see note 9)

22. Wheels and Tyres

Nose Wheel Tyre Size	3.40x3.00x5	4 Ply
Main Wheel Tyres Size	5.00-5	6 Ply

A.IV. Operating and Service Instructions

Airplane Flight Manual (AFM)

Sky Arrow variant	Document n°	Affected s/n
650 TC	JV-14.5	C001 to C004, C006, C007 If SB-C n° 01/06 dated February 22, 2006, is applied, see note 12
	JV-14.23	C005, C008 and subsequent CO01 to C004, C006, C007 if Modification Kit n° 01/99 (see note 6) is applied If SB-C n° 01/06 dated February 22, 2006, is applied, see note 12
650 TCN	JV-14.23	CN001 and subsequent If SB-C n° 01/06 dated February 22, 2006, is applied, see note 12
650 TCS	JV-14.3	CS010 and subsequent
650 TCNS	JV-14.3	CNS009 and subsequent
710 RG	JV-14.37	RG001 and subsequent

Airplane Maintenance Manual (AMM)
(incl. Airworthiness Limitations)

Sky Arrow variant	Document n°	Affected s/n
650 TC	JV-14 22	C001 and subsequent If SB-C n° 01/06 dated February 22, 2006, is applied, see note 12.
650 TCN	JV-14 22	CN001 and subsequent If SB-C n° 01/06 dated February 22, 2006, is applied, see note 12.
650 TCS	JV-14.4	CS010 and subsequent
650 TCNS	JV-14.4	CNS009 and subsequent
710 RG	JV-14.36	RG001 and subsequent

Engine Manuals:

Maintenance Manual	Maintenance Manual for Rotax Engine 912 series
Operators Manual	Operators Manual for Rotax 912 series

Propeller Manual:

Owners Manual	Applicable Propeller Owners Manual

Service Information and Service Bulletins None

A.V. Notes

1. When first receiving the airworthness 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

2. All placards specified in the applicable Aircraft Flight Manual must be displayed in the aircraft at the appropriate location

3. All external surfaces exposed to sunlight must be white, with the exception of the tail numbers and the factory striping

4. AVGAS 100LL can be used as alternate fuel in accordance to Chapter 2 of the applicable Aircraft Flight Manual

5. Sky Arrow 650 TC variant:

The Propeller TONINI p/n GT-2/166/145/FW/101-SLPC may be installed, until propeller replacement is necessary, on the following aircraft:

Sky Arrow 650 TC sin: C001 to 0004, C006, C007, C008

The Propeller for replacement is HOFFMANN p/n HO17FHM-167 148 LD

6. Sky Arrow 650 TC / 650 TCN variants:

The Rear limits are 30% MAC @650kg and 36% MAC @586kg, for the following aircrafts if the Modification kit n° 01/99 "Expansion of weigh and balance Envelope" is not applied:

Sky Arrow 650 TC s/n: 0001 to 0004, C006, C007
Sky Arrow 650 TCN s/n: CNO01

7. Sky Arrow 650 TC / 650 TCN / 650 TCS / 650 TCNS variants:

The max Rear limit changes from 38% MAC @550kg to 36% MAC @586kg, when the Modification Kit N° 34/98 "Installation of the nose probe" is applied

8. For Application to:
Sky Arrow 650 TC s/n: C001 to C004, C006, 0007
Sky Arrow 650 TCN s/n: CN001
Modification Kit n° 14/98 "Installation of baggage container behind rear seat" is required.

9. Modification Kit n° 33/98 "Above rear seat luggage storage container installation" is required

10. ERA (Enviromental Aerial Research) and RAWAS (Remotely Assisted Working Aerial System) configurations can be obtained applying the following modification Kits, as described in the Document JV-6.31 rev. 2 and following revisions:

- Kit n° 15/98 Fuselage floor modification and relevant interface supports
- Kit n° 38/98 Additional installation of GPS antennas, on wing and stabilizer, and of radiometers
- Kit n° 39/98 Modification of main electrical system (*)
- Kit n° 33/98 Above rear seat luggage storage container installation.
- Kit n° 34/98 Installation of the nose probe (**)
- Kit n° 35/98 Installation of the aircraft lifting points near wing attachments
- Kit n° 37/98 Installation of the engine radiator protection
- Kit n° 40/98 Modification of the wing box area on the top of the fuselage
- Kit n° 44/00 Storage container modification for ERA/RAWAS

(*): For Application to Sky Arrow 650 TC and 650 TCS variants the Auxiliary Generator (Rotax optional extra) is required
(**): Not Applicable to Sky Arrow 710 RG variant.

11. The following Modifications are applicable to all Sky Arrow variants 650 TC / 650 TCN / 650 TCS / 650 TCNS / 710 RG:

- Kit n° 30/00 Enlargement of lateral window
- Kit n° 31/00 Rectangular opening in the fuselage floor
- Kit n° 32/00 Installation of door for rectangular opening in the fuselage floor

12. Sky Arrow 650 TC and 650 TCN variants — engine and propeller replacement as per SB-C n° 01/06 dated February 22, 2006:

- Engine Rotax 912A2/F2 equipped with Propeller HOFFMANN p/n I-1017FHM-167 148 LD or Propeller TONINI p/n GT-2/166/145FW/101-SLPC may be replaced with Engine Rotax 912 S2 equipped with Propeller HOFFMANN p/n HO17GHM-174 177CLD

After replacement:

-The Aircraft must be re — identified as TCS / TCNS
-The applicable Aircraft Flight Manual is JV-14.3, and the applicable Aircraft Maintenance Manual is JV-14.4
-A new Certificate of Airworthiness must be issued by the National Authority

For replacement as per SB-C n° 01/06 dated February 22, 2006 as per SB-C n° 01/06 dated February 22, 2006 in the following s/n:

Sky Arrow 650 TC s/n: C001 to C004, C006, C007
Sky Arrow 650 TCN s/n: CN001

Modification Kit n° 01/99 "Expansion of weight and balance Envelope" is required

ADMINISTRATIVE SECTION

I Acronyms N/A

II Type Certificate Holder Record

Magnaghi Aeronautica S.p.A.
Via Galileo Ferraris, 76
80142 Napoli
ITALIA

III Change Record

Issue 1 Initial issue 17 March 2006

Issue 2 19 October 2007: Specified Type certificate number and Type Certificate holder on front page
Updated applicable AFMs and AMMs in section A.IV Operating and service instructions, i a w. modifications n° 04/07 and 08/07 Corrected format and typing errors

Issue 3 TC transferred from 3i to Magnaghi Aeronautica SpA, TCDS Unchanged, used new form.

Issue 4

- amended minor typing errors
- Page 5: typing error, amended Drawing List for 710 RG version (point e)
- Pages 5, 6: certification basis for Rotax engine is FAR 33 Amdt. 15
- Pages 5, 6: Rotax engine has TCDS EASA.E.121
- Page 7 Para. 8.1: link to suitable fuel for Sky Arrow operating in China
- Page 7 Para. 8.3: updated coolant specification, as per EASA approval 10053092
- Page 9, tyres size: size listed according to manufacturer standard format.