

**Civil Aviation Authority
United Kingdom**



TYPE APPROVAL DATA SHEET

BG 06

for

Rotorsport UK Cavalon

AutoGyro Certification Ltd

(formally RotorSport UK Ltd)

Poplar Farm

Prolley Moor

Wentnor

Bishops Castle

SY9 5EJ

Applicant's Design Organisation Approval Number DAI/9917/06

Model(s): Rotorsport UK Cavalon

Revision: 11

Date of issue: 10 February 2026

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1. General

The Rotorsport UK Cavalon (referred throughout as Cavalon) is a two seat (side-by-side configuration) gyroplane.

1.1. Manufacturer

Autogyro Certification Ltd (formally RotorSport UK Ltd)
 Poplar Farm
 Prolley Moor
 Wentnor
 Bishops Castle
 SY9 5EJ

1.2. UK Importer

N/A

1.3. Approved Configurations

The basic standard for this aircraft is defined in RotorSport UK Ltd Product Definition Document PDD-006 as approved by AAN 29345, plus approved modifications as described below:

- Addendum 1 [Add1]: (MC-281) 560kg MTOW
- Addendum 2 [Add2]: (MC-294) Ivoprop DL3-68 in-flight adjustable variable pitch propeller
- Addendum 3 [Add3]: (MC-328) Rotorsystem II TOPP 8.4m rotor
- Addendum 4 [Add4]: (MC-381) Revised certification basis to BCAR Section T issue 5
- Addendum 5 [Add5]: (MC-384) Approval for night VMC operation (Night Flying Equipment Package)
- Addendum 6 [Add6]: (MC-374) V_{NE} increase to 120mph, 12,000ft ceiling, 8.6m rotors
- Addendum 7 [Add7]: (MC-406) Rotax 915iS engine
- Addendum 8 [Add8]: (MC-430) Installation of Garmin GFC-500 Autopilot.
- Addendum 9 [Add9]: (MC-448) Introduction of the 916iS Engine

A list of approved minor modifications is available from the RotorSport website, <https://www.auto-gyro.com/downloads-and-documents/> under support/aircraft compliance. Minor Modifications of relevance to this TADS are summarised below and denoted by comment where applicable:

- MC-441 – Lithium technology Main Aircraft battery
- MC-461 – Introduction of 915iS 90kW variant

Minor modifications applicable at release-to-service are listed on the aircraft Statement of Aircraft Conformity, SAC-CVLN/xxx.

Manufacturer Serial Numbers are in the format RSUK/CVLN/XXX (001 - 044) and RSUK-V00XXX.

1.3.1. Powerplants

The following Powerplants are approved:

Designation	Cavalon	Cavalon	Cavalon	Cavalon
Engine Type	912 ULS	914 UL	915iS	916iS
Reduction Gear	2.43:1	2.43:1	2.54:1	2.54:1
Exhaust System	Stainless steel with after muffler	Rotax stainless steel with after muffler	Rotax stainless steel	Rotax stainless steel
Intake System	Dual intake filter	Single intake filter, balance box	Single intake filter, fuel injected	Single intake filter, fuel injected
Propeller Type	Autogyro HTC 3 blade Or Ivoprop DL3-68	Autogyro HTC 3 blade Or Ivoprop DL3-68	Autogyro HTC 4 blade or Woodcomp KW-30	Woodcomp KW-30
Propeller Dia x Pitch	Autogyro HTC: 1.72m x 19.5° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil. Ivoprop DL3-68 (Add2): 68inch dia, pitch variance 13deg to 20deg nom	Autogyro HTC: 1.72m x 20.5 ° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil. Ivoprop DL3-68 (Add2): 68inch dia, pitch variance 14deg to 21deg nom	Autogyro HTC: 1.73m x 20.5deg at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil	Autogyro HTC: 1.73m x 20.5deg at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil
Noise Type Cert No.	N/A	N/A	N/A	N/A
AAN approving configuration	AAN29345	AAN29345	AAN29345	AAN29345
Addendum	Add2 (Optional)	Add2 (Optional)	Add7	Add9

1.3.2. Rotor System

The following Rotor Systems are approved:

Rotor system description:	Autogyro Rotorsystem II RAO, AOI reduced 8.4m dia, Red end caps Black spacers	Autogyro Rotorsystem II TOPP, 8.4m dia, blue end caps Silver spacers	Autogyro Rotorsystem III TOPP, 8.4m dia, blue end caps 8.6m dia, grey end caps Silver spacers
AAN approving rotor system:	AAN29345	AAN29345	AAN29345
Addendum:	(N/A)	Add3 (8.4m)	Add3 (8.4m) Add6 (8.6m)

1.4. Required Instruments

The following instruments are required to be installed with the applicable units stated.

- Airspeed Indicator (ASI): mph
- Altimeter: feet (mb subscale)
- Rotor RPM: RPM
- Engine RPM: RPM
- Compass: N/A
- Vertical Speed Indicator (VSI) (optional): Ft/min
- CHT/EGT: °C
- Manifold Pressure Guage (when Addendum 2 applied): inches Hg

1.4.1. Required Instruments for Night VMC

For flying under night VFR, Modification MC-384 [Add5] is applied, requiring the aircraft to be equipped with:

- Additional under-nose mounted landing light
- Cabin light
- Instrument panel illumination
- Heated pitot tube
- Alternative static port
- Navigation and strobe (white anti-collision) lights
- Aspen EFD1000 PFD (or VFR), providing a slip indicator, ASI, altimeter, attitude indicator and gyro compass, or alternate approved devices
- Additional auxiliary generator, unless in the case of a 915 or 916iS engine.
- 13A/hr battery minimum capacity
- Optional additional red Anti-collision beacons

1.5. Optional Equipment Installations

- 1) Lithium technology Main Aircraft battery (MC-441 – Minor Modification)
- 2) Garmin GFC 500 Autopilot (MC-430) [Add8]

2. Certification Basis

The original Certification Basis for this aircraft was BCAR CAP 643 Section T Issue 4 with additional clause T783 from BCAR CAP 643 Section T Draft Issue 5, as described in AAN29345.

The Certification Basis for the Cavalon 914UL variant with increased MTOW to 560kg is revised to BCAR CAP 643 Section T Issue 5 plus partial compliance with CRI E-01 by AAN29345 Addendum 1.

The Certification Basis for all Cavalon variants is revised to BCAR CAP 643 Section T Issue 5 by AAN29345 Addendum 4.

BCAR CAP 643 Section T Issue 5 restricts flight operations to Day VMC only. Permission to operate under day and night is by way of compliance to the equipment requirements of the ANO for night VMC operation, as detailed in AAN29345 Addendum 5. Requirements for instrument and position lights for night operation are taken from CS27 in the absence of equivalent provisions within BCAR Section T. Compliance with the following additional requirements is demonstrated: CS 23 at Amendment 3

- 23.1401

For aircraft with the Garmin GFC 500 autopilot system installed under AAN29345 Addendum 8, compliance with the following additional requirements is demonstrated: CS 23 at Amendment 4

- 23.779
- 23.1329
- 23.1335

2.1. Equivalent Level of Safety Items

The following Equivalent Level of Safety (ELOS) Items have been reviewed and accepted by the CAA:

- BCAR Section T issue 4:
 - T23 – Load Distribution Limits
CG/Thrust offset varies between 6.9 and 8 Inches. Equivalent Level of Safety and acceptable handling demonstrated by Flight test.
 - T659 – Mass Balance
Alternative method used for mass balance of RotorSystem II blades.
- BCAR Section T Issue 5:
 - T2 – Applicability
For flight under night VMC, compliance is demonstrated against relevant requirements from CS27 and CS23 [Add5]
 - T23 – Load Distribution Limits
Maximum Occupant Weight remains at 86 kg [Add4]
 - T25 – Weight Limits
Maximum Occupant Weight remains at 86 kg [Add4]
 - T967 – Fuel Tank Installation
Required Tank/firewall minimum separation of 0.5" (12.7 mm) not met, separation is 10mm (915iS) [Add7], (916iS) [Add9]
 - T1322 – Warning, Caution and Advisory Lights
Indication for normal operation of propeller at pitch limits is steady amber [Add2]
 - T1935 – Blade Retention
AMC T1935 test loads not met, but significant margin demonstrated over normal flight loads [Add2].

2.2. Special Conditions

The following Special Conditions (SC) and/or Certification Review Items (CRI) apply:

- CRI E-01 Light Gyroplane – Additional Requirements for Type Certification [Add1]

3. Technical Characteristics and Operating Limitations

3.1. Technical Characteristics

3.1.1. General

- Gyroplane with nose gear wheel chassis
- Aircraft structure is a GRP/CRP monocoque
- Two-seat side-by-side configuration (monocoque design)
- Main landing gear with GRP (glass fibre reinforced plastic) spring spar and Hydraulic disc brakes
- Extruded aluminium rotor
- Rotor head controlled with push-pull control cables
- Rudder controlled with cables
- Rudder and stabilizer surfaces made of CRP (carbon fibre)

3.1.2. Fuel Capacity

Total:	103 litres.
Unusable:	2.1 litres 3.1 litres (S/N 001 only)
Useable:	100 litres

Fuel specification as specified by BRP Rotax service instructions or Pilots Operating Handbook.

3.1.3. Permitted Fuels and Lubricants

Engine Oil Spec:	As specified by BRP Rotax service instructions
Gearbox oil spec:	N/A - Integral with engine
Fuel/Oil Mix:	N/A

3.1.4. Dimensions

Span:	1.61m (Not including Rotor)
Length:	4.73m (nose to tail, not including Rotor)
Height:	2.77m
Wing Area:	N/A

3.1.5. Typical Weight

Empty Weight (nominal):	
Rotax 912ULS:	290kg 296kg [Add5]
Rotax 914UL:	290kg 296kg [Add5]
Rotax 914UL (Add1):	290kg 296kg [Add5]
Rotax 915iS (Add7):	300 kg 310kg [Add5]
Rotax 916iS (Add9):	300 kg 310kg [Add5]

3.2. Operating Limitations

The Aircraft must be operated in compliance with the following operating limitations.

3.2.1. Maximum Number of Occupants

Maximum number of occupants authorised to be carried (including crew):	Two
The minimum flight crew is:	One pilot

3.2.2. Aerobatic Limitations

Aerobatic manoeuvres are prohibited.

Manoeuvres involving a deliberate reduction in normal 'g' shall be avoided.

Maximum bank angle 60 degrees.

3.2.3. Engine Limitations

Engine	912 ULS	914 UL	915iS 90kW*	915iS	916iS
Max RPM (5 Minutes)	5,800	5,800	5,060	5,800	5,800
Max RPM (Continuous)	5,500	5,500	5,060	5,800	5,500
Max CHT	135°C <i>Applicable for engine S/N without Suffix -01 ONLY</i>	135°C <i>Applicable for engine S/N without Suffix -01 ONLY</i>	Gauge Not Fitted	Gauge Not Fitted	Gauge Not Fitted
Max CT	120°C	120°C	120°C	120°C	120°C
Max EGT	N/A	N/A	N/A	N/A	N/A
Max Manifold Pressure (VP prop)	N/A	T/O: 39.9in Hg Cont: 35.4inHg <i>Note: Placarded for digital gauge</i>	N/A	N/A	N/A
Oil Pressure	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Nominal: 2-5bar	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Nominal: 2-5bar	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Nominal: 2-5bar	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Nominal: 2-5bar	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Nominal: 2-5bar
Oil Temperature	Max: 130°C Min: 50°C	Max: 130°C Min: 50°C	Max: 130°C Min: 50°C	Max: 130°C Min: 50°C	Max: 120°C Min: 50°C
Fuel Pressure	N/A	N/A	N/A	N/A	N/A

* 915iS 90kW Variant introduced by Autogyro Certification Ltd under Minor Modification MC-461. This minor change affects the maximum RPM only and is achieved by amending the engine RPM Gauge as indicated.

3.2.4. Air Speed Limitations

Maximum airspeed (V_{NE}): 100 mph IAS
120 mph IAS (Rotorkopf III) [Add6]

Maximum airspeed in severe turbulence (V_B): 80 mph IAS

3.2.5. Loading Limitations

Maximum Total Weight Authorised: 500 kg (912ULS, 914UL)
560 kg (914UL) [Add1]
560 kg (915iS) [Add7]
560 kg (916iS) [Add9]

Maximum Empty Weight: 309 kg (912ULS)
311 kg (914UL)
371 kg (914UL) [Add1]
371 kg (915iS) [Add7]
371 kg (916iS) [Add9]

Maximum Pilot Weight right seat:	110 kg
Minimum Pilot Weight right seat:	65 kg
Maximum Occupant Weight left seat:	110 kg
Minimum Occupant Weight left seat:	0 kg
Maximum total weight (both seats):	200 kg

Right seat occupants under 65kg weight must carry suitable ballast.

The following CG limits apply:

Horizontal CG:

FWD:	540mm forward of the datum
AFT:	345mm forward of the datum
AFT:	330mm forward of the datum (915iS, 916iS)

Vertical CG:

Upper:	940mm above the datum
Lower:	745mm above the datum
Lower:	685mm above the datum (915iS, 916iS)

Lateral CG:

Left:	24mm from aircraft centreline
Right:	70mm from aircraft centreline

Lateral cg limits are defined by the seat loading limits only.

Note: The CG datum is defined as the mainwheel axle.

3.2.6. Other Limitations

Smoking in the aircraft is prohibited.

Altitude Limit:	10,000ft
	12,000ft [Add6]
	12,000ft (915iS) [Add7]
	12,000ft (916iS) [Add9]

Flight in icing conditions is prohibited.

Flight in strong gusty winds or wind velocities of more than 45 mph (40kts) is prohibited.

The Aircraft shall be flown by day in Visual Meteorological Conditions only.

OR

The Aircraft shall be flown by day or night in Visual Meteorological Conditions only [Add5].

4. Pilots Notes, Maintenance Manuals References

4.1. Approved Manuals

The following Manuals are approved for use with this aircraft (see www.rotorsport.org):

- (a) Pilots handbook (POH) approved for use with this aircraft is RSUK0287 (912ULS and 914UL only) or RSUK0425 (915iS and 916iS only).
For aircraft fitted with optional Garmin GFC 500 autopilot POH Supplement 9.11 document ref RSUK0444.
- (b) Maintenance manual approved for use with this aircraft is RSUK0288 (912ULS and 914UL only) or RSUK0426 (915iS and 916iS only).
- (c) IVOprop manual approved for use with this aircraft is RSUK0325 [Add2]
- (d) Maintenance schedules approved for use with this aircraft are:
 - F175 - 25hr inspection
 - F176 - annual/100hr inspection
 - F178 - short term storage and return to service
 - F179 - long term storage and return to service
 - F189 – IVO prop 25/100hr service worksheet

4.2. Placards

Placards to be installed in accordance with the applicable POH:

- RSUK0287 (912ULS and 914UL only)
- RSUK0425 (915iS and 916iS only)

The following placards are mandatory:

- a) Smoking in the aircraft is prohibited.
- b) Occupant Warning: This aircraft has not been certificated to an International Requirement
- c) Limitations as per Permit to Fly
- d) Permanent & fireproof attachment of aircraft registration no & aircraft serial no. (plate affixed to instrument panel)

5. Notes

None

6. Document Administration

6.1. Document History

Issue No.	Date.	Changes
1	26.04.2013	Initial issue
4		Change of certification basis from Section T issue 4 to Section T issue 5.
5		Night VMC added
6		V _{NE} increased to 120mph (aircraft fitted with rotorhead III under RotorSport mod MC-382 only) Rotor System TOPP 8.6m added
7		915iS engine and propellers release
8	27.09.2022	Optional modifications introduced: MC-441 Lithium main Battery option. MC-430 Garmin GFC 500 Autopilot option.
9	22 March 2024	916iS engine installation
10	17 Dec 2024	Introduction of 915iS 90kW variant. Ref Autogyro Certification MC-461
11	10 Feb 2026	Document format update Standardisation of terminology across TADS and AANs Alignment of Typical empty weights with current figures in model POH.

6.2. Abbreviations & Definitions

Term	Definition
[]	Addendums noted in square brackets are modifications which may be listed or removed on Permit to Fly limitations as per aircraft configuration.
AAN	Airworthiness Approval Note – Original approving document for type
Add(x)	Addendum to AAN
ASI	Air Speed Indicator
CHT	Cylinder Head Temperature
CRI	Certification Review Item
CT	Coolant Temperature
EFD	Electronic Flight Display
EGT	Exhaust Gas Temperature
ELOS	Equivalent Level of Safety
IAS	Indicated Air Speed
MTOW	Maximum Take Off Weight
MTWA	Maximum Total Weight Authorised
N/A	Not Applicable
PFD	Primary Flight Display
RPM	Revolutions per Minute
SC	Special Condition
Severe Turbulence	Large, abrupt changes in altitude or attitude. Aircraft may be temporarily out of control.
V_B	Design speed for maximum gust intensity
V_{MIN}	Minimum Airspeed
V_{NE}	Never Exceed Speed
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions