

CIVIL AVIATION AUTHORITY

GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG06 Issue: 4

TYPE: RotorSport UK Cavalon

- (1) MANUFACTURER: RotorSport UK Ltd
Poplar Farm
Prolley Moor
Wentnor
Bishops Castle
SY9 5EJ
- (2) UK IMPORTER: N/A
- (3) CERTIFICATION: BCAR CAP 643 Section T Issue 5
- (4) DEFINITION OF BASIC STANDARD: RotorSport UK Ltd Product Definition Document PDD-006.

(5) COMPLIANCE WITH THE GYROPLANE DEFINITION

- (a) MTOW 500 kg (912ULS engine or 914UL engine)
560 kg (914UL engine only)
(Addendum 1, MC-281)
- (b) No. Seats 2
- (c) Permitted range of pilot weights
Right seat 65 – 110 kg.
Left seat 110 kg max
Permitted total occupant weight: 200 kg max (subject to fuel loading)
- (d) Typical Empty Weight (ZFW)
Rotax 912 aircraft 270 kg
Rotax 914 aircraft 280 kg
- (e) ZFW + 172 kg crew + 1 hr fuel
Rotax 912 – 27 litres / 19 kg 461 kg
Rotax 914 – 23 litres / 17kg 469 kg
- (f) ZFW + 86 kg pilot + full fuel (100ltrs, 72Kg)
Rotax 912 aircraft 424 kg
Rotax 914 aircraft 434 kg
- (g) Max ZFW at initial permit issue

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Rotax 912 aircraft	309 kg
Rotax 914 aircraft (500kg MTOW)	311 kg
Rotax 914 aircraft (560kg MTOW)	371 kg

(6) POWER PLANTS

Designation	Cavalon	Cavalon
Engine Type	912 ULS	914 UL
Reduction Gear	2.43:1	2.43:1
Exhaust System	Stainless steel with after muffler	Rotax stainless steel with after muffler
Intake System	Dual intake filter	Single intake filter, balance box
Propeller Type	<p>HTC 3 blade ground adjustable, composite</p> <p align="center"><u>Or</u></p> <p>Ivoprop DL3-68 in-flight pitch adjustable propeller (Modification MC-294 Service Bulletin SB-088)</p>	<p>HTC 3 blade ground adjustable, composite</p> <p align="center"><u>Or</u></p> <p>Ivoprop DL3-68 in-flight pitch adjustable propeller (Modification MC-294 Service Bulletin SB-088)</p>
Propeller Dia x Pitch	<p>HTC:1.72m x 19.5° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil.</p> <p>Ivoprop 68inch dia, pitch variance 13deg to 20deg nom</p>	<p>HTC:1.72m x 20.5 ° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil.</p> <p>Ivoprop 68inch dia, pitch variance 14deg to 21deg nom</p>
Noise Type Cert No.	None required	None required
AAN approving configuration	AAN29345	AAN29345
Addendum	Addendum 02 - IVO prop	Addendum 02 - IVO prop

(7) ROTOR SYSTEM

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Rotor system description:	Autogyro Rotorsystem II RAO, 8.4m diameter, AOI reduced Red end caps Black clamp profiles	Autogyro Rotorsystem II TOPP, 8.4m diameter, Blue end caps Silver clamp profiles (Modification MC-328)
AAN approving rotor system	AAN29345	AAN29345 Addendum 03

(8) MANDATORY LIMITATIONS:

(A) Max Take-Off Weight 500 kg or 560 kg (914UL engine only)

(B) CG Limits: Limits are the same for HTC and
IVO DL3-68 propeller variants and all rotor
variants.

CG Limits

Horizontal c.g. Fwd: 540mm forward of the datum
Aft: 325mm forward of the datum

Vertical c.g. Upper: 940mm above the datum
Lower: 745mm above the datum

Lateral c.g. Left: 24mm from aircraft centreline
Right: 70mm from aircraft centreline
Lateral CG limits are defined by the seat
loading limits only

(C) CG datum:
horizontal and vertical cg: Mainwheel axis

(D) Cockpit Loadings
Right seat: Min 65 kg
Max 110 kg

Left seat: Min 0 kg
Max 110 kg

Total: Min 65 kg
Max 200 kg (subject to fuel loading)

(E) Never Exceed Speed, V_{NE} 100 mph

(F) Minimum Speed 0 mph

(G) Prohibited Manoeuvres: Aerobatic manoeuvres are prohibited.
Manoeuvres involving a deliberate

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reduction in normal 'g' shall be avoided.
Flight in icing conditions is prohibited (not placarded).

Flight in strong gusty winds or wind velocities of more than 45mph (40 kts) is prohibited. (not placarded)

(H) Other limitations:

Day VMC only.

(I) Fuel Contents:

103 litres. Unusable fuel, 3ltr
(100ltr usable)

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(J) Power Plant

Engine	912ULS	914 UL Turbo
Max RPM	5,800	5,800
Max Continuous RPM	5,500	5,500
MAX CHT (where CHT gauge fitted)	135°C	135°C
Max coolant temp (where CT gauge fitted under MC-321) <u>or</u> (CHT-CT placard fitted under MC-314)	120°C	120°C
MAX EGT	N/A	N/A
MAX Manifold Pressure (if VP prop fitted) Analogue gauge <u>or</u>	No limits applicable	Max manifold air pressure (take off) 39.9in Hg Max continuous manifold air pressure 35.4inHg
MAX Manifold pressure (if VP prop fitted) Digital gauge	Not marked on gauge See placards	Not marked on gauge See placards Limits as analogue
Fuel Spec	As specified by BRP Rotax service instructions or Pilots Operating Handbook	As specified by BRP Rotax service instructions or Pilots Operating Handbook
Engine Oil Spec	As specified by BRP Rotax service instructions	As specified by BRP Rotax service instructions
Gearbox oil spec	Integral with engine	Integral with engine
Fuel/Oil Mix	N/A	N/A
Oil Pressure	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Normal range: 2-5 bar	Max: 7 bar Min: 0.8 bar (0-3500 rpm) 1.5 bar (above 3500 rpm) Normal range: 2-5 bar
Oil Temperature	Max: 130°C Min: 50°C	Max: 130°C Min: 50°C
Fuel Pressure	N/A	N/A

(9) INSTRUMENTS REQUIRED:

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ASI: Fitted mph	Altimeter: Fitted Feet mb subscale	Rotor RPM: Fitted	Engine RPM: Fitted	Compass: Fitted	VSI: Optional Ft/min	CHT/EGT: CHT or CT fitted °C	Manifold pressure gauge (if VP prop fitted) in Hg
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(10) CONTROL DEFLECTIONS:

Rotor Head Roll -16° total	Rotor Head Pitch - 24° total	Rudder deflection: Defined by maximum horizontal distance between rudder lower tip and side fin: to left side fin 630mm to right side fin 530mm
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(11) PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES:

11.1 Manuals approved for use with this aircraft. (see www.rotorsport.org)

- (a) Pilots handbook (POH) approved for use with this aircraft is RSUK0287.
- (b) Maintenance manual approved for use with this aircraft is RSUK0288.
- (c) IVO prop manual approved for use with this aircraft is RSUK0325.
- (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

11.2 The following placards are to be fitted:-

The following are to be placarded:

- a) Engine RPM limits (markings on instrument face)
- b) Engine MAP limits (914UL engine fitted with Ivoprop DL3-68 only)
- c) Rotor rpm (markings on instrument face)
- d) Loading conditions (placard between seats)
- e) Fuel quantity & type (placards adjacent fuel tank filler)
- f) All switches (engraved on instrument panel or placards)
- g) Occupant warning (placard on instrument. panel)
- h) Limitations as per Permit to Fly (placard in cockpit)
- i) Engine CHT or CT limits (markings on instrument face)
- j) Compass deviation (placard adjacent to compass)
- k) Secondary control functions (placards/engaving)
- l) Permanent & fireproof attachment of aircraft registration no & aircraft serial no. (plate affixed to instrument panel)

See Annex D for placards fitted as standard.

(12) MANDATORY MODIFICATIONS / SERVICE BULLETINS / AIRWORTHINESS DIRECTIVES ETC:

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See Annex A for required modifications.

(13) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Minimum performance at max take-off weight: 500fpm at 70mph

Issue History

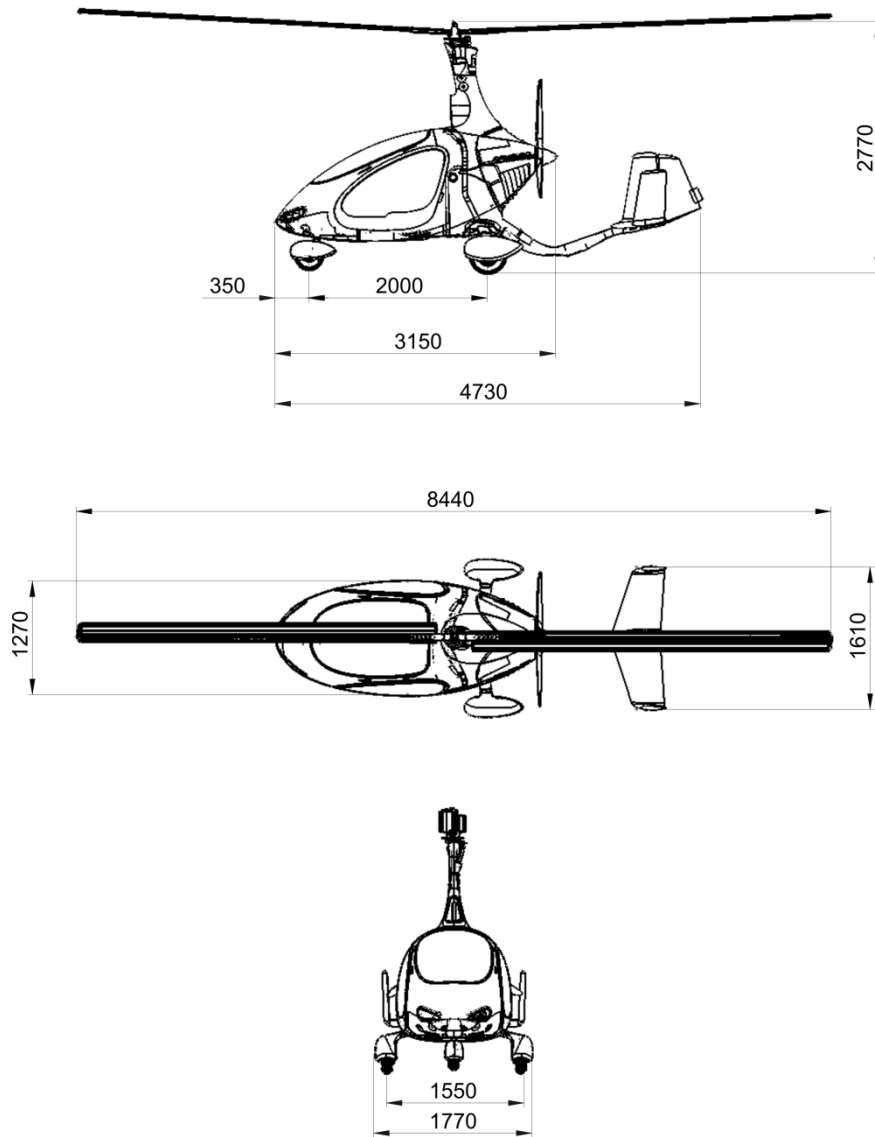
<u>Issue No.</u>	<u>Date.</u>	<u>Reason and signatory</u>
1	26.04.2013	Initial issue
4		Change of certification basis from Section T issue 4 to Section T issue 5.

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Illustration of Aircraft



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ANNEX A – MANDATORY MODIFICATIONS

None at this time.

ANNEX B - APPROVED OPTIONAL MODIFICATIONS

A list of approved minor modifications is available from the RotorSport website, www.rotorsport.org under support/aircraft compliance.

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

ANNEX C - WEIGHING INFORMATION

N/A. Aircraft to be weighed by manufacturer.

Refer to the specific aircraft weight and balance certificate, AWC-CVLN/xxx.

ANNEX D – STANDARD PLACARDS

(copied from Pilots Handbook)

GENERAL PLACARDS AND MARKINGS:

In conformity with BCAR Section T the following placards and markings are installed:

- All emergency controls are coloured red (fuel tap cover).
- All cockpit controls are clearly marked as to their function and method of operation.
- Fuel and oil filler openings are clearly marked, together with the grade or type required.
- Fuel tank capacity is clearly marked.
- Loading conditions are clearly marked as follows:

Loading conditions



Standard placards

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Brake, throttle and choke control marking is engraved on the adjacent panel.

Limitations (printed as part of loading condition placard)

OPERATING LIMITATIONS

Aerobatic Limitations

Aerobatic manoeuvres are prohibited.

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

CG Range Limits (Gyroplane) – refer to Pilots Handbook data.

Airspeed Limitations

Maximum Indicated Airspeed (Vne): 100mph

Other Limitations

This aircraft shall be flown by day and under Visual Flight Rules only.

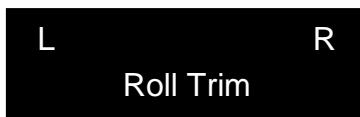
Smoking in the aircraft is prohibited

Occupant warning (in view of both seat occupants)

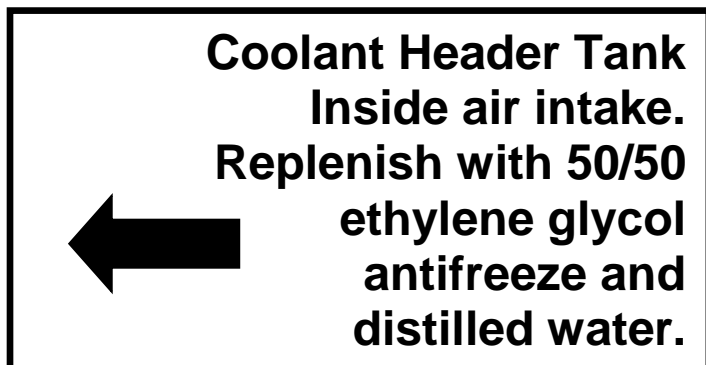
OCCUPANT WARNING

**This aircraft has not been certificated to an
International Requirement**

Roll trim indicator (where fitted)



Coolant header tank



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Engine oil tank

Superseded by:

**Oil tank
Capacity 3 ltrs.
Use Shell VSX or
equivalent Motorcycle
oil SF or SG**

**OIL TANK CAPACITY
3 LTRS.**
USE AEROSHELL OIL SPORT
PLUS 4 OR EQUIVALENT IN
ACCORDANCE WITH BRP ROTAX
SERVICE INSTRUCTIONS

Fuel tank, below the filler neck

**FUEL CAPACITY: 100ltrs
PREFERRED FUEL: UL91
EN228 SUPER OR SUPER
PLUS (MOGAS), OR AVGAS
100LL PERMISSABLE**

Adjacent to manifold pressure gauge, where fitted;

Max manifold pressure	39.9 in Hg
Max. cont. manifold pressure	35.4 in Hg

Warning lamp placards

Continuously lit Low Volt lamp indicates electrical demand exceeds supply, and the battery is being drained. If lit in flight, reduce demand until unlit. If not possible, expedite landing.

**FIRE WARNING
When flashing
RED**

Behind the seats in the baggage area, both sides

**BAGGAGE LOAD:
10kg MAX BAGGAGE
PERMITTED BEHIND
THIS SEAT**

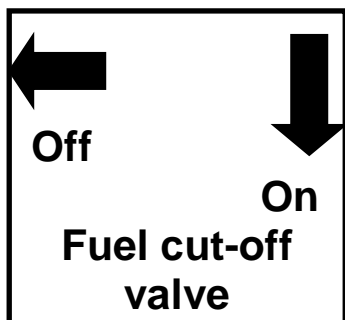
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Fuel cut-off valve

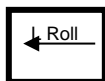
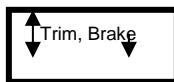
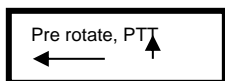
Interlock placard (unless engraved on panel)



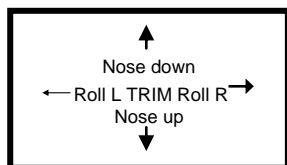
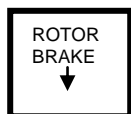
Door handle 'Ensure door locked before flight!'

On top of control stick (Format depends on stick type)

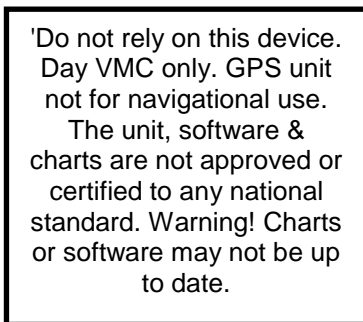
Sponge grip type



OEM type stick grip



GPS placard (where a GPS is fitted)



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Outside door placards for the operating lever



Fitted to doors outside



At both static ports



Seat angle adjustment.

Ensure locking pin engaged properly after adjustment

Circuit breakers (or engraved)

CIRCUIT BREAKERS
Only attempt to reset (once) if essential
for continued safe flight

Other

If the compass deviation is more than 5° on all headings, then a deviation placard

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must be present.

COMPASS DEVIATION			
For	N	30	60
Set			
For	E	120	150
Set			
For	S	210	240
Set			
For	W	300	330
Set			
Calibration by: date:			

Instrument placards as section 2.5

The aircraft is fitted with a permanently attached fireproof plate with the aircraft registration number and serial no. marked on it, on front of the instrument panel.

The registration letters are placed high on the tail fin, and are 60cm min long, 30cm high. This has been accepted to CAP523, the CAA standard for aircraft registration. Alternative markings and position of markings is acceptable provided they comply with this standard.

Note that all placards must have the same units of measure as the instruments.