

CIVIL AVIATION AUTHORITY

GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG06 Issue: 7

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 and 915iS engine only)
(Addendum 1, MC-281 and Addendum 7, MC-406) |
| (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 |

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(6) POWER PLANTS

Designation	Cavalon	Cavalon	Cavalon
Engine Type	912 ULS	914 UL	915iS
Reduction Gear	2.43:1	2.43:1	2.54:1
Exhaust System	Stainless steel with after muffler	Rotax stainless steel with after muffler	Rotax stainless steel
Intake System	Dual intake filter	Single intake filter, balance box	Single intake filter, fuel injected
Propeller Type	HTC 3 blade ground adjustable, composite	HTC 3 blade ground adjustable, composite	HTC 4-blade ground adjustable, composite
	<u>Or</u>	<u>Or</u>	<u>Or</u>
	Ivoprop DL3-68 in-flight pitch adjustable propeller (Modification MC-294 Service Bulletin SB-088)	Ivoprop DL3-68 in-flight pitch adjustable propeller (Modification MC-294 Service Bulletin SB-088)	Woodcomp KW-30 hydraulic in-flight pitch adjustable
Propeller Dia x Pitch	HTC:1.72m x 19.5° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil.	HTC:1.72m x 20.5° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil.	HTC: 1.73m x 20.5° at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil
	Ivoprop 68 in dia, pitch variance 13 deg to 20 deg nom	Ivoprop 68 in dia, pitch variance 14 deg to 21 deg nom	Woodcomp: 1.73 m in flight adjustable
Noise Type Cert No.	None required	None required	None required
AAN approving configuration	AAN29345	AAN29345	AAN29345
Addendum	Addendum 02 IVO prop	Addendum 02 IVO prop	Addendum 07 915iS

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(7) ROTOR SYSTEM

Rotor system description:	Autogyro Rotorsystem II RAO, 8.4 m diameter, AOI reduced Red end caps Black clamp profiles	Autogyro Rotorsystem II TOPP, 8.4 m dia, blue end caps 8.6 m dia, grey end caps Silver clamp profiles (Modification MC-328)
AAN approving rotor system	AAN29345	AAN29345 Addendum 3 (8.4m) Addendum 6 (8.6m)

(8) MANDATORY LIMITATIONS:

(A) Max Take-Off Weight	500 kg or 560 kg (914UL or 915iS engine only)
(B) CG Limits:	Limits are the same for HTC and IVO DL3-68 propeller variants and all rotor variants. Aft Limits are different for the 915iS configuration.
CG Limits	
Horizontal CG.	Fwd: 540 mm forward of the datum Aft: 345 mm forward of the datum Aft: 330 mm forward of the datum (915iS) (Addendum 7, MC-406)
Vertical CG.	Upper: 940 mm above the datum Lower: 745 mm above the datum Lower: 685 mm above the datum (915iS) (Addendum 7, MC-406)
Lateral CG	Left: 24 mm from aircraft centreline Right: 70 mm 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)

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- (E) Never Exceed Speed, V_{NE} 100 mph
120 mph where Rotorhead III is fitted.
- (F) Minimum Speed 0 mph
- (G) Prohibited Manoeuvres: Aerobatic manoeuvres are prohibited.
Manoeuvres involving a deliberate 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 45 mph (40 kn) is prohibited. (not placarded)
- (H) Other limitations: Day VFR, or
Day/night VFR where equipped (MC-383, AAN29345 Addendum 5)
- (I) Fuel Contents: 103 litres. Unusable fuel, 3 litres
(100 litres usable)

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(J) Power Plant

Engine	912ULS	914 UL	915iS
Max RPM	5,800	5,800	5,800
Max Continuous RPM	5,500	5,500	5,500
MAX CHT (where CHT gauge fitted)	135 °C	135 °C	135 °C
Max coolant temp (where CT gauge fitted under MC-321) or (CHT-CT placard fitted under MC-314)	120 °C	120 °C	120 °C
MAX EGT	N/A	N/A	N/A
MAX Manifold Pressure (if VP prop fitted) Analogue gauge or	No limits applicable by BRP Rotax	Max manifold air pressure (take off) 39.9 inHg Max continuous manifold air pressure 35.4 inHg	No limits applicable by BRP Rotax
MAX Manifold pressure (if VP prop fitted) Digital gauge	Not marked on gauge See placards	Not marked on gauge See placards Limits as analogue	No gauge regardless of propeller fitted
Fuel Spec	As specified by BRP Rotax service instructions or Pilots Operating Handbook	As specified by BRP Rotax service instructions or Pilots Operating Handbook	As specified by BRP Rotax service instructions or Pilot's Operating Handbook
Engine Oil Spec	As specified by BRP Rotax service instructions	As specified by BRP Rotax service instructions	As specified by BRP Rotax service instructions
Gearbox oil spec	Integral with engine	Integral with engine	Integral with engine
Fuel/Oil Mix	N/A	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	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	Max: 130 °C Min: 50 °C
Fuel Pressure	N/A	N/A	N/A

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(9) INSTRUMENTS REQUIRED:

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) inHg. Not installed with the 915iS engine.
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For night VFR flight the aircraft is additionally 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.
- Additional auxiliary generator
- 13 A/hr battery
- Optional additional red Anti-collision beacons

(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 630 mm to right side fin 530 mm
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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) Pilot's Operating Handbook (POH) approved for use with this aircraft is RSUK0287 or RSUK0425 for the 915iS variant.
- (b) Maintenance manual approved for use with this aircraft is RSUK0288 or RSUK0426 for the 915iS variant.
- (c) IVO prop manual approved for use with this aircraft is RSUK0325.
- (d) Maintenance schedules approved for use with this aircraft are:

F175 – 25 h inspection
F176 – annual/100 h inspection
F178 – short term storage and return to service
F179 – long term storage and return to service
F189 – IVO prop 25/100 h service worksheet

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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/engraving)
- 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:**

See Annex A for required modifications.

(13) **MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT**

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

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Issue History

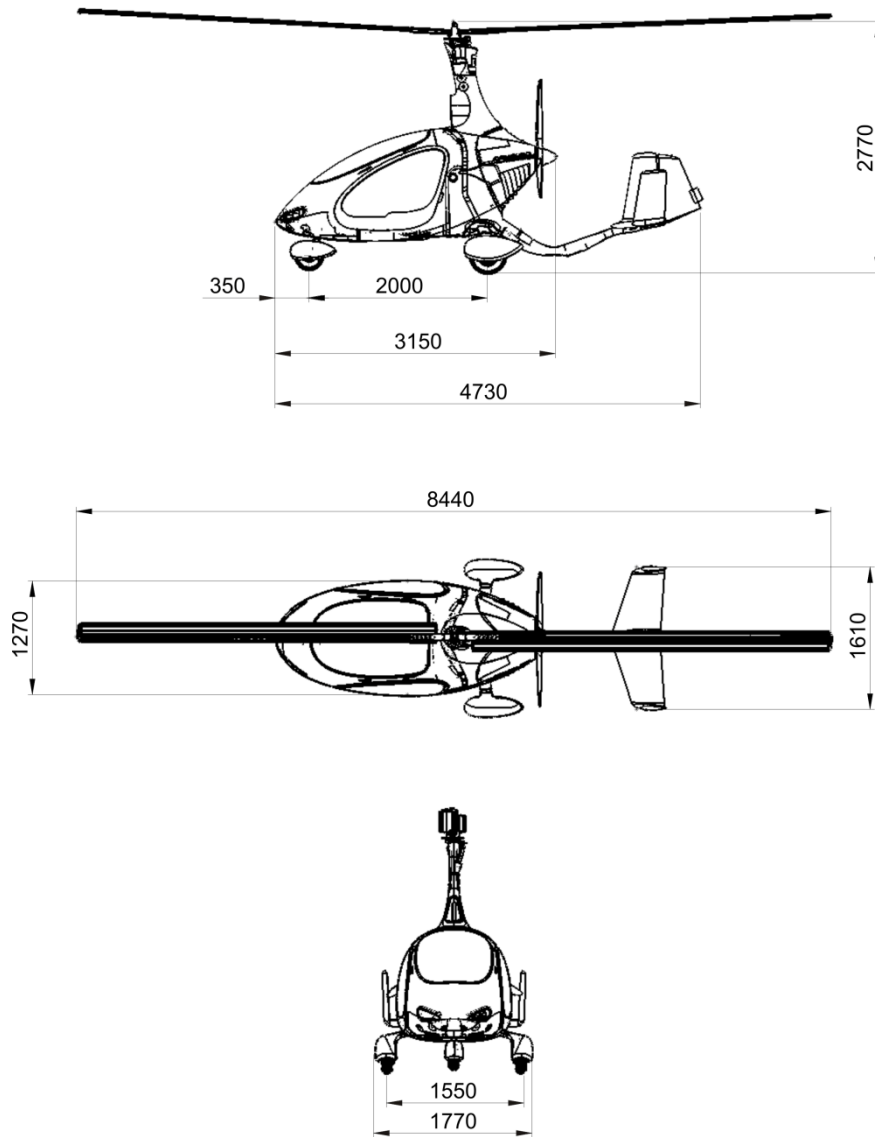
<u>Issue No.</u>	<u>Date.</u>	<u>Reason and signatory</u>
1	26.04.2013	Initial issue
4		Change of certification basis from Section T issue 4 to Section T issue 5.
5		Night VMC added
6		V _{NE} increased to 120 mph (aircraft fitted with Rotorhead III under RotorSport mod MC-382 only) RotorSystem TOPP 8.6 m added
7	12.07.2019	915iS engine and propellers release

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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



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Standard placards

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**

Where the aircraft is equipped for night VMS operation, this placard wording is changed to;

'This aircraft shall be flown under Visual Flight Rules only.'

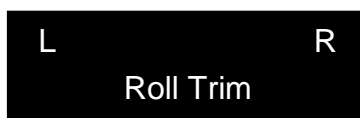
Where the aircraft is equipped with Rotorhead III, the 'Maximum Indicated Airspeed (V_{NE})' is indicated as 120 mph.

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)




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Coolant header tank

Coolant Header Tank
Inside air intake.
Replenish with 50/50
ethylene glycol
antifreeze and
distilled water.



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 digital manifold pressure gauge, where fitted;

Max manifold pressure	39.9 inHg
Max. cont. manifold pressure	35.4 inHg

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

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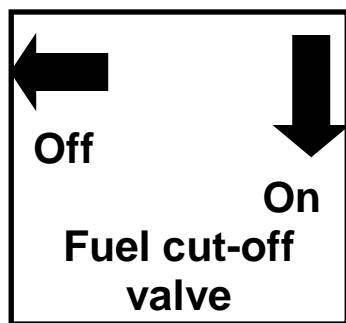
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Behind the seats in the baggage area, both sides

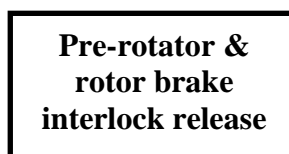


Fuel cut-off valve



Interlock placard (unless

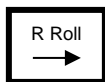
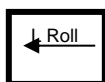
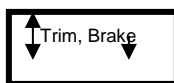
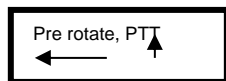
engraved on panel)



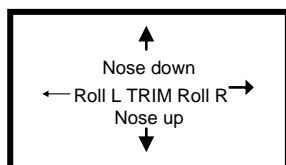
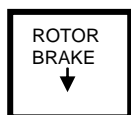
Door handle 'Ensure door locked before flight!'

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

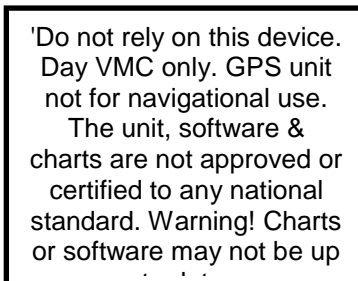
Sponge grip type



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

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Other

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