CIVIL AVIATION AUTHORITY

GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG06 Issue: 10
17 Dec. 2024

TYPE: RotorSport UK Cavalon

(1) MANUFACTURER: AutoGyro Certification Ltd (formally 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, 915iS and 916iS engines only) See respective AAN addendum
(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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(g) Max ZFW at initial permit issue

Rotax 912ULS aircraft 309 kg

Rotax 914UL aircraft (500kg MTOW) 311 kg

Rotax 914UL, 915iS and 916iS aircraft (560kg MTOW) 371 kg

(6) POWER PLANTS

Designation	Cavalon	Cavalon	Cavalon
Engine Type	912 ULS	914 UL	915iS or 916iS
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 Or Ivoprop DL3-68 in-flight pitch adjustable propeller (Modification MC-294 Service Bulletin SB-088)	HTC 3 blade ground adjustable, composite Or Ivoprop DL3-68 in-flight pitch adjustable propeller (Modification MC-294 Service Bulletin SB-088)	HTC 4 blade ground adjustable, composite (915iS option only) or Woodcomp KW-30 hydraulic in-flight pitch adjustable
Propeller Dia x Pitch	HTC:1.72m x 19.5º at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil. Ivoprop 68inch dia, pitch variance 13deg to 20deg nom	HTC:1.72m x 20.5 º at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil. Ivoprop 68inch dia, pitch variance 14deg to 21deg nom	HTC: 1.73m x 20.5deg at 12" inwards from end of blade, with inclinometer against rear tail of aerofoil

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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	915iS Addendum 07 916iS Addendum 08

(7) ROTOR SYSTEM

Rotor system description:	Autogyro Rotorsystem II RAO, 8.4m diameter, AOI reduced Red end caps Black clamp profiles	Autogyro Rotorsystem II TOPP, 8.4m dia, blue end caps 8.6m 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, 915iS or 916iS 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: 345mm forward of the datum
- Aft: 330mm forward of the datum (915iS & 916iS)

Vertical c.g.
- Upper: 940mm above the datum
- Lower: 745mm above the datum
- Lower: 685mm above the datum (915iS & 916iS)

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:

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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 120mph 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 45mph (40 kts) is prohibited. (not placarded)
(H) Other limitations:	Day VMC, or Day/night VMC where equipped (MC-383, AAN29345 addendum 5)
(I) Fuel Contents:	103 litres. Unusable fuel, 3ltr (100ltr usable)

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(J) Power Plant

Engine	912ULS	914 UL
Max RPM	5,800	5,800
Max Continuous RPM	5,500	5,500
MAX CHT (where CHT gauge fitted)	135ºC	135ºC
Max coolant temp (where CT gauge fitted under MC-321) **or** (CHT-CT placard fitted under MC-314)	120ºC	120ºC
MAX EGT	N/A	N/A
MAX Manifold Pressure (if VP prop fitted) Analogue gauge **or**	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: 130ºC Min: 50ºC	Max: 130ºC Min: 50ºC
Fuel Pressure	N/A	N/A

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Engine	915iS 90kW	915iS & 916iS
Max RPM	5,060	5,800
Max Continuous RPM	5,060	5,500
MAX CHT (where CHT gauge fitted)	N/F	N/F
Max coolant temp (where CT gauge fitted under MC-321) **or** (CHT-CT placard fitted under MC-314)	120ºC	120ºC
MAX EGT	N/A	N/A
MAX Manifold Pressure (if VP prop fitted) Analogue gauge **or**	No limits applicable by Rotax.	No limits applicable by Rotax.
MAX Manifold pressure (if VP prop fitted) Digital gauge	No gauge regardless of propeller fitted	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
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: 130ºC (915iS)	Max: 130ºC (915iS) Max 120ºC (916iS) Min: 50ºC
Fuel Pressure	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 ºC	Manifold pressure gauge (if VP prop fitted) in Hg. Not 915iS

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, 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

(10) CONTROL DEFLECTIONS:

Rotor Head Roll -16º total	Rotor Head Pitch - 24º 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

(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 or RSUK0425 for the 915iS or 916iS variant.
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 or RSUK0426 for the 915iS or 916iS variant.

(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 or later generation documents as defined within the AMM
F178 - short term storage and return to service
F179 - long term storage and return to service

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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:

See Annex A for required modifications.

(13) Optional Equipment Installations.

1) Lithium technology Main Aircraft battery (MC-441)
2) Garmin GFC 500 Autopilot (MC-430)

(14) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

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

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Issue History

Issue No.	Date.	Reason and signatory
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		Vne increased to 120mph (aircraft fitted with rotorhead III under RotorSport mod MC-382 only) RotorSystem TOPP 8.6m added
7		915iS engine and propellers release
8	27.09.2022	Optional modifications introduced: MC-441 Lithium main Batter option MC-430 Garmin GFC 500 Autopilot
9	22 March 2024	916iS engine installation
10	17 Dec 2024	Introduction of 915iS 90kW variant. Ref Autogyro Certification MC-461

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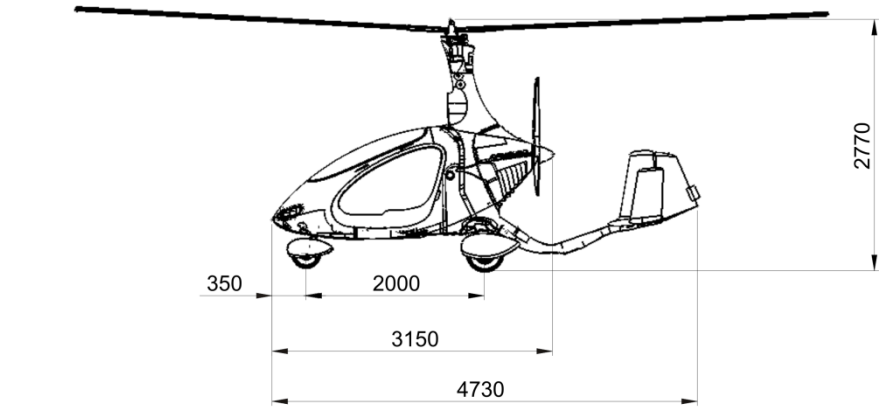
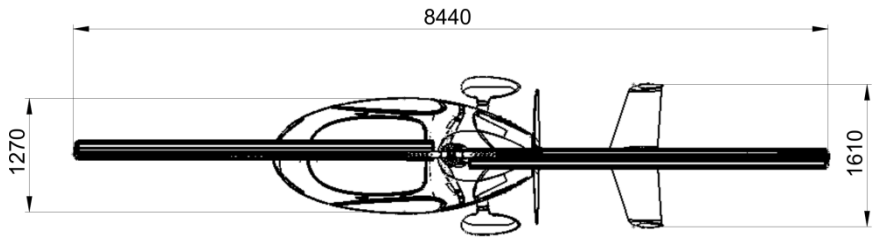
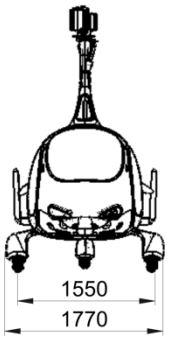
Illustration of Aircraft







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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.

1) Lithium technology Main Aircraft battery (MC-441)
2) Garmin GFC 500 Autopilot (MC-430)

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 (Vne)' is indicated as 120mph.

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

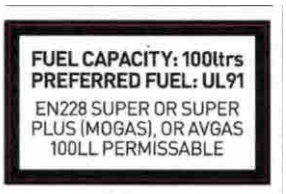
Coolant Header Tank
Inside air intake.
Replenish with 50/50 ethylene glycol antifreeze and distilled water.

Engine oil tank

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

Superceded by:

Fuel tank, below the filler neck



Adjacent to digital 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

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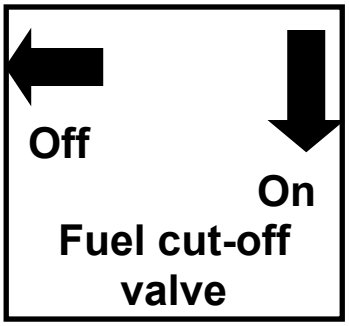
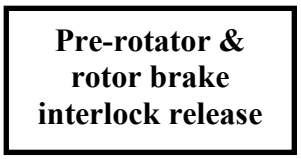
Behind the seats in the baggage area, both sides

Fuel cut-off valve



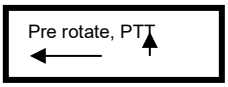
Interlock placard (unless engraved on panel)

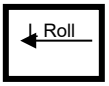


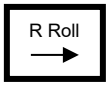
Door handle 'Ensure door locked before flight!'

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

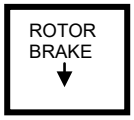
Sponge grip type

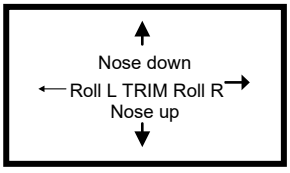






OEM type stick grip





GPS placard (where a GPS is fitted)

'Do not rely on this device. Day VMC only. GPS unit not for navigational use. The unit, software & charts are not approved or certified to any national standard. Warning! Charts or software may not be up to date.

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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 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.