CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO:BG04 ISSUE: 4

TYPE: **RotorSport UK Calidus**

(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 3
(See AAN 29266 for Special Conditions)

(4) DEFINITION OF BASIC STANDARD: RotorSport UK Ltd Product Definition Document PDD-005 Issue 1

(5) COMPLIANCE WITH THE GYROPLANE DEFINITION

(a) MTOW	500 kg
(b) No. Seats	2
(c) Permitted range of pilot weights	
Front seat	65 – 125 kg.
Rear seat	120 kg max
Permitted total occupant weight:	
Rotax 912 aircraft :	230 kg max (subject to fuel loading)
Rotax 914 aircraft:	220 kg max (subject to fuel loading)
(d) Typical Empty Weight (ZFW)	
Rotax 912 aircraft	270 Kg
Rotax 914 aircraft	280Kg
(e) ZFW + 180 kg crew + 1 hr fuel	
Rotax 912 – 27 litres / 19 kg	469 Kg
Rotax 914 – 23 litres / 17kg	477 Kg

INVESTOR IN PEOPLE

(f) ZFW + 90 kg pilot + full fuel (70ltrs, 55Kg)

Rotax 912 aircraft	415 kg
Rotax 914 aircraft	425 kg

(g) Max ZFW at initial permit issue

Rotax 912 aircraft	301 kg
Rotax 914 aircraft	303 kg

(6) POWER PLANTS

Designation	Calidus	Calidus
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	HTC 3 blade ground adjustable, composite	HTC 3 blade ground adjustable, composite
Propeller Dia x Pitch	HTC:1.72m x 20.5º at 12” inwards from end of blade, with inclinometer against rear tail of aerofoil.	HTC:1.72m x 22 º at 12” inwards from end of blade, with inclinometer against rear tail of aerofoil.
Noise Type Cert No.	None required	None required
AAN approving configuration	AAN29266	AAN29266

(7) ROTOR SYSTEM

Rotor system description:	Calidus Autogyro rotor blade and hub assembly, 8.4m diameter, orange end caps	Calidus Autogyro rotor blade and hub assembly, 8.4m diameter, orange end caps	Rotorsystem II -rotor blades and hub assembly
AAN approving rotor system	AAN29266	AAN29266	AAN 29266 Add 1
Rotor blade life limit	700 hours	700 hours	2500 hours

(8) MANDATORY LIMITATIONS:

(A) Max Take-Off Weight 500 kg

(B) CG Limits

Horizontal c.g. Fwd: 485mm forward of the datum
Aft: 255mm forward of the datum

Vertical c.g. Upper: 895mm above the datum
Lower: 795mm above the datum

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

(D) Cockpit Loadings

Front seat:	Min	65Kg
	Max	125Kg
Rear seat:	Min	0 Kg
	Max	120Kg
Total:	Min	65Kg
	Max	Rotax 912: 230Kg max (subject to fuel loading)
		Rotax 914: 220Kg max (subject to fuel loading)

(E) Never Exceed Speed, V_{NE}	90 mph 120 mph (if mod MC175/SB039 installed)
(F) Minimum Speed	0 mph
(G) Prohibited Manoeuvres:	Aerobatic manoeuvres are prohibited. Intentional spinning is 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 only. This Gyroplane is hereby granted a permission to fly for the purposes of aerial work which consists of the giving of instruction in flying or the conducting of flying tests subject to the installation of any required instructional modifications and the Gyroplane being owned or operated under arrangements entered into by a flying club of which the person giving the instruction or conducting the test and the person receiving the instruction or undergoing the test are both members.
(I) Fuel Contents:	39 litres (single tank) – 38.4 litres usable 75 litres (twin tanks) – 73.8 litres usable

(J) Power Plant

Engine	912ULS	914 UL Turbo
Max RPM	5,800	5,800
Max Continuous RPM	5,500	5,500
MAX CHT	135ºC	135ºC
MAX EGT	N/A	N/A
MAX Manifold Pressure	None	None
Fuel Spec	MOGAS OR AVGAS	MOGAS OR AVGAS
Engine Oil Spec	Motorcycle oil SF or SG	Motorcycle oil SF or SG
Gearbox oil spec	Integral with engine	Integral with engine
Fuel/Oil Mix	N/A	N/A
Coolant Temperature	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

(9) INSTRUMENTS REQUIRED:

ASI: Fitted	Altimeter: Fitted	Rotor RPM: Fitted	Engine RPM: Fitted	Compass: Fitted	VSI: Optional	CHT/EGT: CHT fitted

(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 700mm to right side fin 620mm

(11) PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES:

11.1 Manuals approved for use with this aircraft**.**

(a) Pilots handbook (POH) approved for use with this aircraft is RSUK0060 Issue 2 dated 12 September 2011.
(b) Maintenance manual approved for use with this aircraft is RSUK0061 Issue 3 dated 12 September 2011.
(c) Maintenance schedules approved for use with this aircraft are:
F114 Issue 2 – 25 hour inspection
F115 Issue 3 – annual/100 hour inspection
F156 Issue 1 – Short Term Storage Arrangements
F157 Issue 1 – Long Term Storage Arrangements

11.2 The following placards are to be fitted:-

The following are to be placarded:
a) Engine RPM limits (markings on instrument face)
b) Rotor rpm (markings on instrument face)
c) Loading conditions (placard on nacelle)
d) Fuel quantity & type (placards on fuel tanks)
e) All switches (engraved on instrument panel or placards)
f) Occupant warning (placard on instrument. panel)
g) Limitations as per Permit to Fly (placard in cockpit)
h) Engine CHT limits (markings on instrument face)
i) Compass deviation (placard adjacent to compass)
j) Secondary control functions (placards)
k) Permanent & fireproof attachment of aircraft registration no & aircraft serial no. (plate affixed inside near/on instrument panel)

See Appendix 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: 500fpm at 70mph

Issue History

Issue No.	Date.	Reason and signatory
1	20/01/2011	Initial issue J Barratt
2	03/06/2011	Addition of limitation for gyroplane training under section 8H. Mods listing included under Annex B. J Barratt
3	12/07/2011	Update to section 11.1b) Maintenance Manual and section 11.1c) 100 hour / Annual Inspection schedule approved for use with this aircraft. J Barratt

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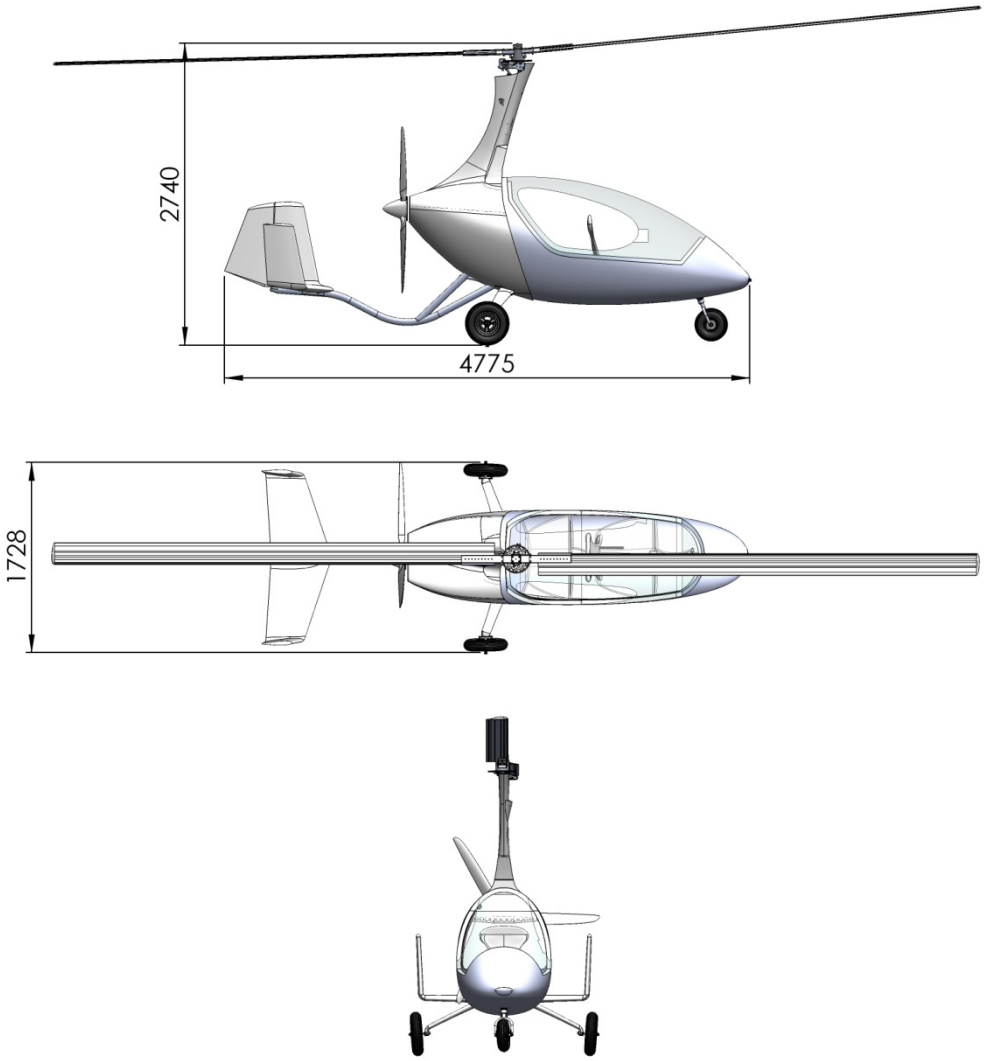
Issue No.	Date.	Reason and signatory
4	15/09/2011	Addition of Rotorsystem II option under section 7, new V_{NE} limit included under section 8E, update to section 11.1 manuals approved for use with this aircraft, update to Appendix B Optional Modifications and update to placards under Appendix D.

J Barratt

Illustration of Aircraft



ANNEX A – MANDATORY MODIFICATIONS

None at this time.

ANNEX B - APPROVED OPTIONAL MODIFICATIONS

Modification Reference	Description
MC-150	Lightened oil-tank mounting
MC-154	Rear seat control panel
MC-164	Canopy seal
MC-166	Pre-rotator drive-shaft improvements
MC-167	Landing-light cable attachment
MC-168	Pre-rotator coupling
MC-175	Rotorsystem II
MC-176	Heater cable retention
MC-177	Throttle/Brake unit modifications
MC-180	Flymap F7 GPS
MC-181	Airbox Foresight GPS
MC-183	Revised Rotax oil filter
MC-186	Canopy deviation
MC-187	GPS antenna cable
MC-188	New LED lamp (4W)
MC-191	Longer brake lever fastener
MC-193	After-muffler clamp improvement

ANNEX C - WEIGHING INFORMATION

N/A. Aircraft to be weighed by manufacturer.

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:

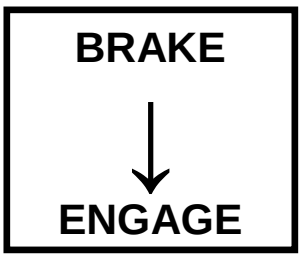
- All emergency controls are coloured red.
- All cockpit controls are clearly marked as to their function and method of operation.
- Fuel and oil filler openings are clearly marked, together with the grade or type required.
- Fuel tank capacity is clearly marked.
- Loading conditions are clearly marked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

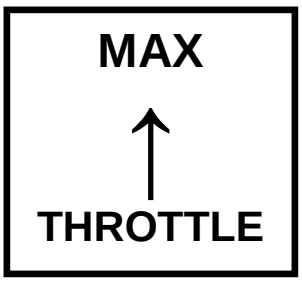
Loading conditions

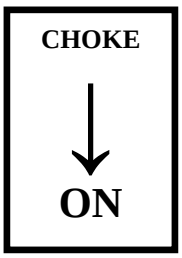
Aircraft Payload Specification
Front seat pilot: 125Kg max, 65Kg min
Pilot must carry ballast to meet 65Kg min.
Rear seat passenger 120Kg max
Empty weight (as measured) Kg
MTOW 500Kg

Aircraft must only be flown solo from the front seat.

Primary control marking







Limitations

OPERATING LIMITATIONS

Aerobatic Limitations
Intentional spinning is prohibited.
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): 90mph

Other Limitations
This aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited

Limitations (if MC175/SB039 installed):

OPERATING LIMITATIONS

Aerobatic Limitations
Intentional spinning is prohibited.
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): 120mph

Other Limitations
This aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited

Occupant warning (in front of front and rear occupants)

OCCUPANT WARNING
This aircraft has not been certificated to an International Requirement

Roll trim indicator (where fitted)

L R
Roll Trim

Coolant header tank

Coolant Header Tank
Filled with 50/50
water/antifreeze

Engine oil tank

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

Fuel tank, below the filler neck (shows 39ltrs if one tank only installed).

Fuel capacity: 75 ltrs
Preferred fuel:
EN228 MOGAS super or super plus
(AVGAS 100LL permissible)

Baggage placard for under seat lockers

Baggage Load:
2Kg MAX

Removable map bag
(where fitted) 1Kg max

Baggage load
1Kg MAX

Auxiliary socket (where fitted,
marked '12v 5A on the panel)

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.

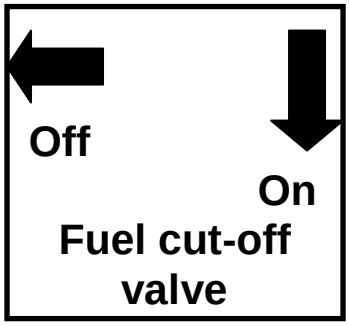
Canopy unlocked when lit

FIRE WARNING When flashing RED

Beside front seat and on back of front seat back

Front seat back straps limit stops must be fitted if rear stick is fitted

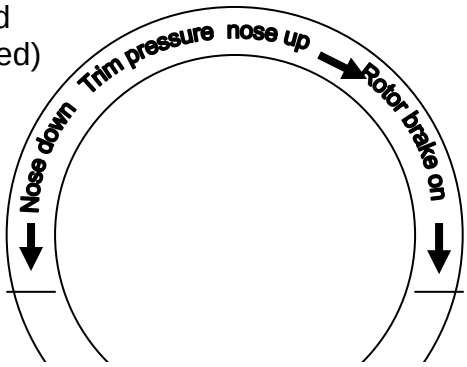
Fuel cut-off valve panel)



Interlock placard (unless engraved on

Pre-rotator & rotor brake interlock release

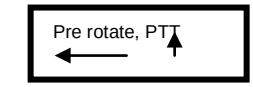
Pressure gauge placard (unless panel annotated)

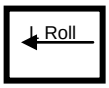


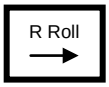
Static ports – ring around saying ‘Static Port – do not obstruct!’

Canopy handle ‘Ensure locked down before flight!’

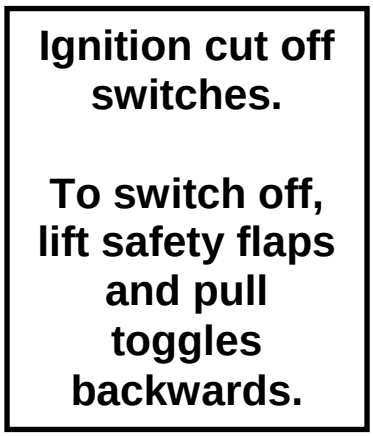
On top of control stick

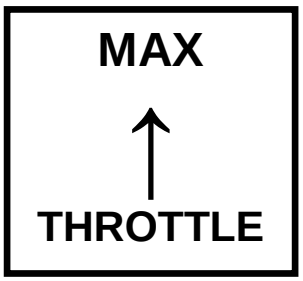


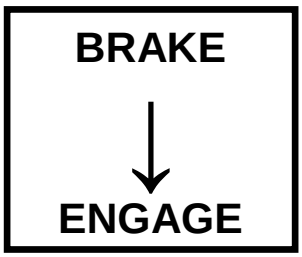




Instructor pack (where fitted). Brake placard only where brake is fitted.

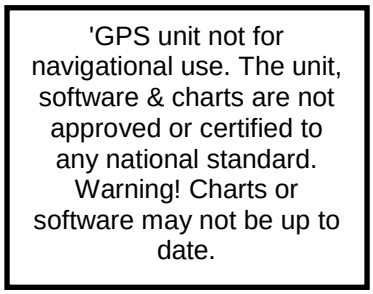






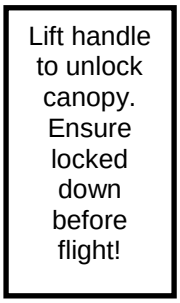
GPS placard (where a GPS is fitted)

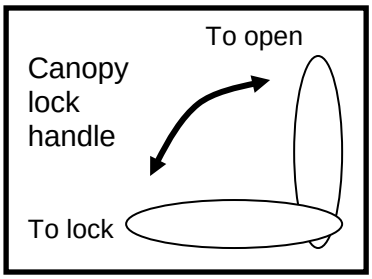
Outside



Canopy placards for the operating lever

Inside





- 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 the keel or on front of the instrument panel.

The registration letters are placed high on the tail fin, and are 60cm 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.