

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)



NO: BG03 ISSUE: 7

- TYPE: Magni M16C
- (1) MANUFACTURER: Magni Gyro UK Ltd
Healings Farm
Waddington
Clitheroe
Lancs
BB7 3JE
- (2) UK IMPORTER: N/A
- (3) CERTIFICATION : BCAR Section T Issue 3 (CAP 643)
- (4) DEFINITION OF BASIC STANDARD: M16C Type Design Build Standard 002-00-16C Issue E
- (5) COMPLIANCE WITH GYROPLANE DEFINITION:
- | | | |
|----|--|----------------------------------|
| a) | MTOW | 500kg |
| b) | No. Seats | 2 |
| c) | Permitted range of pilot weights | |
| | Front Seat | 60-120 kg |
| | Rear Seat | 120 kg max |
| | Permitted total Occupant Weight: | 215 kg (subject to fuel loading) |
| d) | Typical Empty Weight (ZFW) | 285 kg |
| e) | ZFW +180 kg crew + 1 hr fuel
(27 litres, 19 kg) | 484 kg |
| f) | ZFW + 90 kg crew + full fuel
(72ltrs, 52 kg) | 427 kg |
| g) | Max ZFW at initial permit issue | 301 kg |

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

(6) POWER PLANTS

Designation	M16C
Engine Type	Rotax 914 UL
Reduction Gear	2.37:1
Exhaust System	Rotax stainless steel with after muffler
Intake System	Single intake filter and balance box
Propeller Type	Arplast Ecoprop GL170/3 ground adjustable composite propeller
Propeller Dia x Pitch	1.70m x 12° at 45" inwards from end of blade, with inclinometer against rear tail of aerofoil
Noise Type Cert No.	None Required
AAN Approving Configuration	AAN 28705

(7) ROTOR SYSTEM

Rotor system description	Single two blade fixed pitch teetering rotor of 28ft diameter.
AAN approving rotor system	AAN 28705

(8) MANDATORY LIMITATIONS:

(A) MTOW	500kg
(B) CG Limits	
Horizontal CG	Fwd: 1679 mm aft of datum Aft: 1835 mm aft of datum
Vertical CG	Upper: 1026 mm above datum Lower: 959 mm above datum
(C) CG Datum:	
Horizontal cg:	Fwd edge of main keel box section
Vertical cg:	Ground
(D) Cockpit Loadings	
Front Seat	Min 60 kg Max 120 kg
Rear Seat	Min 0 kg Max 120 kg
Total	Max 215 kg

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

- (E) Never Exceed Speed, V_{NE} 100 mph
- (F) Minimum Speed 40 mph
- (G) Prohibited Manoeuvres: Aerobatic manoeuvres are prohibited.
Intentional spinning is prohibited.
Manoeuvres involving a deliberate reduction in normal 'g' shall be avoided. Flight into known icing conditions is prohibited (not placarded). Maximum crosswind 25 kts.
- (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: 72 litres (69 litres useable)
- (J) Power Plant

Engine	Rotax 914UL
Max RPM	5800
Max Continuous RPM	5500
Max CHT	135°C
Max EGT	950°C
Fuel Spec	MOGAS or AVGAS
Engine Oil Spec	Motorcycle oil SF or SG or Shell VSX
Gearbox Oil Spec	Integral with Engine
Fuel/Oil Mixture	N/A
Coolant Temperature	N/A
Oil Pressure	Max: 7 bar Min: 1.5 bar Normal operating 2 – 5 bar
Oil Temperature	Max: 130°C Min: 50°C
Fuel Pressure	N/A

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

(9) INSTRUMENTS REQUIRED:

ASI: Fitted	Altimeter: Fitted	Rotor RPM: Fitted	Engine RPM: Fitted	Compass: Fitted	VSI: Optional	CHT: Fitted
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(10) CONTROL DEFLECTIONS:

Rotor Head – Roll: 16° Total	Rotor Head – Pitch: 19° Total	Rudder Deflection: Left: 40° ±5° Total Right: 45° ±5° Total
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(11) PILOTS NOTES, MAINTENANCE MANUALS REFERENCES:

11.1 Manuals approved for use with this aircraft:

(a) Flight Manual 025-00-16C Issue E. See Appendix B for Flight Manual Supplements applicable to Optional Modifications.

(b) Maintenance Manual 026-00-16C Issue B.

(c) Maintenance Schedule 045-00-16C Issue H.

11.2 The following placards are to be fitted:

(a) Engine RPM limits

(b) Rotor RPM

(c) Loading conditions (placard on instrument panel)

(d) Fuel quantity & type (placard next to fuel filler)

(e) All switches (engraved on switch or placard next to switch)

(f) Occupant warning (placard on instrument panel)

(g) Limitations as per Permit to Fly (placard on instrument panel)

(h) Engine CHT limits (markings on instrument panel)

(i) Compass deviation (placard next to compass)

(j) Secondary control functions (placards)

(k) Permanent & fireproof attachment of aircraft registration no. & aircraft serial no. (plate affixed on starboard side of the keel tube below the front control stick.)

See Appendix D for placards fitted as standard.

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

See Appendix A for required modifications.

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

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

Minimum performance at max take-off weight: 625 fpm at 60 mph

Issue History

<u>Issue No.</u>	<u>Date</u>	<u>Reason and Signatory</u>
1	21/05/2009	Initial Issue J Barratt
2	13/11/2009	Mandatory and optional modifications added under Appendices A & B. J Barratt
3	29/06/2010	Updated Type Design Build Standard included under section 4, rear seat minimum weight corrected under section 8D, mandatory and optional modifications listings updated under Appendices A & B and occupant warning placard (front seat) and rotor limits placard added. J Barratt
4	16/07/2010	Section 6 Propeller designation corrected. Section 9 Required Instruments corrected to show the VSI as optional. J Barratt
5	13/01/2011	Reference to approved maintenance schedule added under section 11.1c). Approved issue status of manuals included under section 11.1. Modification Listing under Appendix B updated. J Barratt

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

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<u>Issue No.</u>	<u>Date</u>	<u>Reason and Signatory</u>
6	19/05/2011	Addition of limitation for gyroplane training under section 8H. Updated modifications listing under Appendix B. J Barratt
7	01/08/2011	Maintenance Manual and Maintenance Schedule updated under sections 11.1b) and 11.1c).  J Barratt

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

Illustration of Aircraft – Photographs



APPENDIX A – MANDATORY MODIFICATIONS

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

Modification Reference	Description
MOD 016	Replacement Bolts (included in Type Design Build Standard 002-00-16C issue E)
MOD 019	Fuel Line Replacement (included in Type Design Build Standard 002-00-16C issue E)

APPENDIX B – APPROVED OPTIONAL MODIFICATIONS

Modification Reference	Description	Flight Manual Supplement
MOD 002	Lynx VHF Antenna	
MOD 003	Funkwerk ATR500 Radio	025-00-16C/003
MOD 004	Garmin 296 & RAM Mount	
MOD 005	SAF Oil Drain	
MOD 006	MicroAir M760 Radio	025-00-16C/003
MOD 007	Trig TT21 Transponder	025-00-16C/003
MOD 008	AirGizmo Mount	
MOD 009	Baggage Pod	025-00-16C/001
MOD 010	Map Pocket	
MOD 011	Strobe & Positioning Lights	025-00-16C/002
MOD 012	Intercom	025-00-16C/003
MOD 014	12V Power Socket	025-00-16C/003
MOD 017	Instructors Pack	
MOD 022	Switch Guards	
MOD 027	Cable Guide	
MOD 028	Fwd starboard baggage pod	
MOD 029	Forward port baggage pod	
MOD 030	Carbon fuselage	
MOD 031	Spinner	
MOD 032	Semperit fuel lines	
MOD 034	TCU repositioning	
MOD 035	Instructors Pack	
MOD 037	Funkwerk ATR833 radio	

APPENDIX C – WEIGHING INFORMATION

N/A Aircraft to be weighed by manufacturer.

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

APPENDIX D – STANDARD PLACARDS

(Copied from Flight Manual)

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

- a. All cockpit controls are clearly marked as to their function and method of operation.
- b. Fuel and oil filler openings are clearly marked, together with the grade or type required. Fuel tank capacity is also clearly marked:



M-16 C TandemTrainer
Max Usable Fuel: 69lt
Minimum Grade of Fuel to be Used :
MON 85 RON 95 UNLEADED FUEL
for 100L AVGAS use check Rotax Manual



M-16 C Tandem Trainer
Oil used in this aircraft:
Shell ADVANCE VSX
4T 15W – 50 Synthetic based
API SG JASO MA

- c. Loading conditions are clearly marked.

	
M-16 C TANDEM TRAINER	
Max Indicated Airspeed (Vne)	100mph
Min speed for power-on flight.....	40mph
Empty Weight.....	285 Kg
Mauw.....	500 Kg
Max cockpit loading (including fuel).....	215 Kg
Min solo pilot weight.....	60 Kg
CG Limits.....	(refer to flight manual)
AEROBATIC MANOEUVERS ARE PROHIBITED. MANOEUVERS INVOLVING DELIBERATE REDUCTION IN NORMAL "G" SHALL BE AVOIDED. THE AIRCRAFT SHALL BE FLOWN BY DAY VMC ONLY.	

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

d. Engine limitations are clearly marked:



M-16 C Tandem Trainer

Engine Parameters

	Min	Norm	Max
Temperature (°C)			
OIL	50	90-110	130
CHT	50	90-110	135
EGT		750-850	950
Oil Press (0,1 x bar)			
	15	20-50	70
Max Engine RPM.....	5800		
Max Continuous RPM...	5500		

e. Other placards fitted:

Occupant warning (front seat):



**AEROBATIC MANOEUVRES
ARE PROHIBITED.
MANOEUVRES INVOLVING
DELIBERATE REDUCTION IN
NORMAL "G" SHALL BE
AVOIDED.
OCCUPANT WARNING:
THIS GYROPLANE HAS NOT
BEEN CERTIFIED TO AN
INTERNATIONAL
REQUIREMENT.
THE AIRCRAFT SHALL BE
FLOWN BY DAY VMC ONLY.
SMOKING ON BOARD THIS
AIRCRAFT IS PROHIBITED.**

Occupant warning (rear seat):



M-16 C Tandem Trainer

**OCCUPANT WARNING
This Gyroplane has
not been certified to
an international
requirement.
Smoking is prohibited
on board this aircraft.**

Additional placards on the front instrument panel:

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP
GYROPLANE TYPE APPROVAL DATA SHEET (TADS)

NO: BG03 ISSUE: 7

ROTOR LIMITS

Min RPM for Take Off.....150

Max RPM.....550

START-UP

- 1 – CHECK STICK RETAINER IS APPLIED
- 2 – HELMET/SEAT-BELTS: FASTENED
- 3 – CONTROL STICK: FORWARD
- 4 – BREAKERS: ON
- 5 – THROTTLE: IDLE POSITION
- 6 – CHOKE: ON (if the engine is cold!)
- 7 – MASTER: ON
- 8 – KEY: BOTH
- 9 – TEST AUX PUMP: ON/OFF
- 10 – MAIN PUMP: ON
- 11 – SHOUT: "CLEAR PROP"
- 12 – HOLD BRAKES ON
- 13 – STARTER
- 14 – CHOKE: OFF
- 15 – START TAXIING: TEST BRAKES

BEFORE TAKE-OFF

- 1 – CHOKE: OFF
- 2 – BREAKERS: ON
- 3 – MASTER: ON
- 4 – HOLD BRAKES ON
- 5 – TEST MAGNETOS
- 6 – KEY: BOTH
- 7 – PUMPS: ON
- 8 – LIGHT: ON
- 9 – TEST FUEL WARNING LIGHT
- 10 – MINIMUM TEMPERATURES: OK
- 11 – TRIM: OFF (green light)
- 12 – HELMET/SEAT-BELTS: FASTENED
- 13 – SET ALTIMETER
- 14 – ROTOR BRAKE: OFF
- 15 – PARKING BRAKE: ON
- 16 – REMOVE STICK RETAINER AND HOLD
STICK FULLY FORWARDS
- 17 – RELEASE PARKING BRAKE