

AIRWORTHINESS APPROVAL NOTE NO: 29276

APPLICANT: Magni Gyro Ltd.
AIRCRAFT TYPE: Magni M24C
REGISTRATION NO: G-CGPB CONSTRUCTOR'S NO: 24105964
OPERATOR: -
INSTALLER: -
DESIGN ORGANISATION: Magni Gyro Ltd.
CERTIFICATE CATEGORY: Permit to Fly
MODIFICATION NO: -
MODIFICATION TITLE: Type Approval of the Magni Gyro Ltd. M24C Gyroplane and Approval for the Issue of a Permit to Fly

1. Introduction

The Magni Gyro Ltd. M24C gyroplane has been designed and manufactured by Magni Gyro Ltd and Magni Gyro SRL in Italy. Magni Gyro SRL in Italy manufacture gyroplanes and sell them throughout the world. However, the M24C gyroplane variant is unique to the UK.

This AAN has been raised to record Type Approval of the Magni Gyro Ltd. M24C gyroplane and the Approval for a UK Permit to Fly.

2. Aircraft Build Standard

The Magni Gyro Ltd. M24C is a single engine, two seat (side by side configuration) gyroplane with a fixed tricycle undercarriage. The M24C gyroplane is fitted with a 115hp Rotax 914UL four stroke, turbo charged engine and a 3 blade Arplast Ecoprop GL170/3 ground adjustable propeller. The gyroplane has a two blade teetering fixed pitch rotor of 28ft diameter. The M24C has a maximum take off weight of 500 kg.

The Type Approved Build Standard of the M24C gyroplane is defined in report reference 002-00-24C M24C Type Design Build Standard Issue D dated September 2010 or later approved version, see TADS BG05 for details.

APPLICANT AIRCRAFT CERTIFICATION

AD166/2
10082009

3. Approval Procedures

This aircraft approval has been carried out in accordance with BCAR Section A Chapter A3-7.

4. Basis Of Approval

4.1 CAA Approval Basis For The Aircraft

The basis of approval of the Magni Gyro UK Ltd. M24C gyroplane is BCAR Section T Issue 3 dated 12 August 2005 and Special Condition AAN 29276 SC1 Fire Protection.

4.2 CAA Design Requirements For Permit to Fly

Any installed equipment for which the Air Navigation Order requires approval must be approved by the CAA.

4.3 Environmental Requirements

No noise certification standards apply to gyroplanes.

4.4 Design Requirements Associated With Operational Approvals

Not applicable.

5. Compliance With The Basis Of Approval

5.1 Compliance With The Approval Basis For The Aircraft

Magni Gyro UK Ltd. has provided the following compliance checklist and associated test reports and analyses for the M24C gyroplane:

a) Compliance checklist

M24C Compliance Checklist report reference 008-00-24C Issue J dated September 2010 has been reviewed and accepted by CAA. Special Condition AAN 29276 SC1 Fire Protection was accepted and closed at Issue 3 dated 25 August 2010.

b) Design Reports

The following reports have been reviewed and accepted by CAA:

004-00-24C M24C Single masses analysis	Issue C	July 2010
006-00-24C M24C Electrical Load Analysis	Issue C	July 2010
007-00-24C M24C Model definitions	Issue A	Oct 2009
010-00-24C M24C Mainframe analysis	Issue C	Aug 2010
012-00-24C M24C Controls analysis	Issue C	Aug 2010
022-00-24C M24C Tank test procedure	Issue B	July 2010
023-00-24C M24C Fuselage Stress Analysis	Issue A	Aug 2010
024-00-24C M24C Fuel tank pressure test	Issue A	April 2010
027-00-24C M24C Stress analysis summary	Issue A	Aug 2010
029-00-24C M24C Fire Protection Test Report	Issue A	Aug 2010
033-00-24C M24C Landing Gear Static Test Report	Issue B	July 2010

035-00-24C M24C Controls Load Test Report	Issue C	July 2010
036-00-24C M24C Airframe Load Test Report	Issue B	Aug 2010
038-00-24C M24C Weight & Balance Test Procedure	Issue B	Aug 2010
041-00-24C M24C Unusable Fuel Determination	Issue A	Dec 2009
070-00-24C M24C Electro-Magnetic Compatibility Check	Issue A	Sept 2010
071-00-24C M24C Battery Cable Justification	Issue A	Aug 2010

c) Flight Test

The following flight test reports referenced in the Compliance Checklist are acceptable to the CAA:

019-00-24C M24C Flight test procedure	Issue B	Aug 2010
020-00-24C M24C Flight test report	Issue C	Sept 2010

The CAA conducted familiarisation flight tests on G-CGPB on 1 & 2 September 2010, CAA Flight Debrief Note No 2. dated 6 September 2010 and Flight Test Report FTR 13071P refer. The stability, handling and performance characteristics were found to meet the requirements of BCAR Section T.

d) Equivalent Level of Safety Items

The following Equivalent Level of Safety Items to BCAR Section T requirements have been agreed with CAA:

T23 Load Distribution Limits

MGL report 038-00-24C Weight and Balance Test Procedure details CG/Thrust offset as varying between 7.83 inch and 13.46 inches (Thrust line 7.83 inches above to 13.46 inches above CG). AMC T 23 identifies that CAA should be consulted to establish design/equivalent safety standards. Magni Flight Test Report 020-00-24C referenced in paragraph (c) above, CAA Flight Debrief Note No 2. dated 6 September 2010 and CAA Flight Test report 13071P confirm equivalent safety and acceptable handling.

e) Alternative Means of Compliance

The following Alternative Means of Compliance to BCAR Section T requirements has been agreed with CAA:

T143a)i) Controllability and Manoeuvrability

Flight testing to $1.1V_{NE}$ rather than $1.15V_{NE}$ has been accepted in line with a proposed change to BCAR Section T.

5.2 Compliance With Design Requirements For Permit to Fly

The following optional avionic equipment may be fitted:

Manufacturer	Description	Model	Approval
Funkwerk Avionics GmbH	Radio	ATR500	LBA.O.10.911/113JTSO
Garmin	GPS	296	-
Garmin	GPS	496	-
MicroAir	VHF Radio	M760	LA301068
Trig Avionics Limited	Mode S Transponder	TT21	EASA.21O.1056 Rev. A
Lynx	VHF Antenna	E004-2 01-08-97	N/A

5.3 Compliance with Environmental Requirements

Not applicable.

5.4 Compliance with Design Requirements Associated With Operational Approvals

Not applicable.

5.5 Required Manuals And Other Documents Including Mandatory Placards

5.5.1 Flight Manual

M24C Flight Manual reference 025-00-24C Issue D dated September 2010 or later approved revision.

5.5.2 Placards

Placards to be fitted are detailed in the Type Approval Data Sheet, see paragraph 5.5.5 below.

5.5.3 Maintenance Manual

The aircraft must be maintained in accordance with the following:

- a) 026-00-24C M24C Maintenance Manual Issue B dated 27 September 2010 or later approved revision.
- b) 045-00-24C M24C Maintenance Schedule Issue D dated September 2010 or later approved revision.

5.5.4 Weight and Balance Schedule.

Report 038-00-24C Issue B M24C Weight & Balance Test Procedure details the weight and balance for the M24C.

See Flight Manual, referenced under section 5.5.1 above, for permitted cockpit loads and for Weight and Balance Record.

5.5.5 Type Approval Data Sheet

Type Approval Data Sheet, BG05 refers.

6. Conditions Affecting This Approval

6.1 Aerobatic Limitations

Aerobatic manoeuvres are prohibited
Intentional spinning is prohibited
Manoeuvres involving a deliberate reduction in normal 'g' shall be avoided
Maximum bank angle 60 degrees

6.2 Loading Limitations

Maximum Total Weight Authorised: 500 kg

Maximum Empty Weight	301 kg
Maximum Pilot Weight left seat	120 kg
Maximum Occupant Weight right seat	120 kg
Minimum Pilot Weight left seat	60 kg

Left seat occupants under 60 kg weight must carry ballast

CG limits:

Horizontal: 1780 mm aft of the datum to 1939 mm aft of the datum

Vertical: 1097 mm above the datum to 954 mm above the datum

Horizontal cg datum is defined as the gyroplane nose. Vertical CG datum is defined as the ground.

6.3 Engine Limitations

Maximum take-off (max. 5 minutes)	5800 rpm
Max. continuous	5500 rpm
Manifold pressure (take off)	39.9 inches HG
Manifold pressure (max continuous)	35.4 inches HG
Max. CHT	135 °C
Max EGT	950 °C
Min. oil temp.	50 °C
Max. oil temp.	130 °C
Min. oil pressure	1.5 bar
Max. oil pressure	7.0 bar
Normal operating oil pressure	2-5 bar

6.4 Air Speed Limitations

Maximum indicated air speed	100 MPH IAS
Max crosswind	25 kts

6.5 Other Limitations

The aircraft shall be flown by day in visual meteorological conditions only.

Flight in icing conditions is prohibited

The aircraft is approved for operation with a maximum of two occupants

Aircraft to be flown solo from the left hand seat only

7. Continued Airworthiness

The influence of Mandatory Directive, Service Bulletin eligibility and other data must be considered and the publications monitored accordingly.

8. Survey

This aircraft G-CGPB being the first of the type to be registered in the UK has been surveyed by the CAA.

In the particular areas examined during the survey the aircraft was found to conform with the standard recorded by this AAN.

9. Issue of Permit to Fly

The following actions must be completed prior to issue of the Permit to Fly:

- a. All actions and ground test procedures specified by the aircraft manufacturer must be completed satisfactorily.
- b. It must be verified that the documents or amendments to documents, and the placards defined under Section 5.5 above are as specified, including any changes specified under Section 8 above.

10. Approval

Subject to the conditions of Section 6 above, this M24C aircraft registered G-CGPB, and any other of the same type completed to the same build standard, is approved for the issue of a Permit to Fly, provided that it is operated in accordance with the limitations specified/referenced and that it conforms with the contents of this AAN.



JC Barratt
Design
For the Civil Aviation Authority

Date 4TH October 2010