MAGNI M24

USER MANUAL

TABLE OF CONTENTS

OVERVIEW

The M24 Orion is a two-seat, enclosed-cockpit autogyro developed and manufactured by Magni Gyro of Italy. It took its maiden flight in 2008 and production began in 2009. More than 300 of the M24 Orion have been delivered throughout the world.

Magni Gyro set out to create a next-generation autogyro for a full spectrum of flying from training to cross-country. The design of the M24 optimizes pilot efficacy, safety, performance, and overall flight experience. The frame of the M24 is constructed of American-produced 4130 chromoly steel that is TIG welded at Magni Gyro's facility in Italy. It features a carbon fiber body with side-by-side seating and dual center control sticks. Its instrument panel has flat panel screens for optimum aircraft situational awareness. It has a high-visibility, fully-enclosed canopy that provides spectacular views. It has removable gull-wing doors.

The M24 uses a composite-construction, high-inertia main rotor system that uses aluminum tubing linkages between its actuators and the aircraft's cockpit for positive, reliable control. It has an advanced mechanical pre-rotator for consistent, safe take-offs. The M24 has a revolutionary empennage designed and positioned relative to the cockpit to mitigate pilot induced oscillations and maintain stability. The tail features a single horizontal stabilizer and three vertical stabilizers. The middle vertical stabilizer has a large rudder for maximum yaw authority for slow-speed take-offs and landings. It has a fixed tricycle landing gear with aerodynamic wheel pants for the main landing gear wheels.

The M24 is powered by a 4-cylinder, turbocharged Rotax 915iS piston engine that delivers up to 141 horsepower for take-off and up to 135 horsepower for continuous flight. The engine drives a Duc Propellers FLASH-2 composite 4-blade pusher propeller for thrust. The autogyro measures 14 feet, 1 inch in length, stands 9 feet, 2 inches tall, and has a rotor system diameter of 28 feet.

The M24 can take-off in distances as short as 30 feet using the pre-rotator in a headwind. In no-wind situations, it can launch in distances as short as 300 feet. It has a service ceiling of 13,000 feet above sea level and a climb rate of 980 feet per minute. It has a cruising speed of 75 mph, a maximum cruising speed of 95 mph, and a top speed of 121 mph.

AIRCRAFT CHARACTERISITCS

ROLE: Ultralight/Light-sport aircraft
MANUFACTURER: Magni Gyro Srl
MODEL: M24 Orion Plus
ORIGIN: Italy
FIRST FLIGHT: August 2008
COMMERCIALISATION: 2009
STATUS: in production
NUMBER BUILT: 300 +

COCKPIT SEATING: 2 side by side
LENGTH: 14ft 2in/4.33m
ROTOR DIAMETER: 27ft 0in/8.23m
HEIGHT: 9ft 2in/2.8m
ROTOR AREA: 572.6sq ft/53.20m2
EMPTY WEIGHT: 628lb/285kg
GROSS WEIGHT: 992lb/450kg
FUEL CAPACITY: 21US gallons/82L

CRUISE SPEED: 55-75kts
STALL SPEED: No Stall Speed
VNE: 105
RANGE: 372mi/600km
SERVICE CEILING: 13,000ft
RATE OF CLIMB: 980 fpm

COCKPIT OVERVIEW

1. Throttle AND BRAKE LEVER
2. LEFT DOOR LEVER
3. CONTROL STICK
4. TRIM BUTTON
5. PRE-ROTATOR LEVER
6. ROTOR BRAKE
7. THROTTLE
8. PARKING BRAKE
9. TABLET
10. VS INDICATOR
11. ALTIMETER
12. ANEMOMETER
13. WARNING LIGHTS
14. ROTOR RPM INDICATOR
15. FUEL LEVEL INDICATOR
16. GLOVE BOX
17. EIS
18. TRANSPONDER
19. RADIO
20. ELECTRICAL PANEL
21. RIGHT DOOR LEVER
22. COMPASS
23. YAW STRING

ENGINE

The **ROTAX 915 iS** is a high-performance aircraft engine developed by BRP-Rotax, building on the success of the ROTAX 912 series. It is designed for light aircraft, ultralights, and light sport aircraft (LSA), offering enhanced power, turbocharging, and advanced fuel-injection technology.

This engine is favored for its excellent power-to-weight ratio, high-altitude performance, and modern electronic systems.

Engine type: Four-cylinder, four-stroke, horizontally opposed (boxer) engine, liquid- and air-cooled.

Displacement: 1.352cm3

Power output: 141hp at 5,800RPM

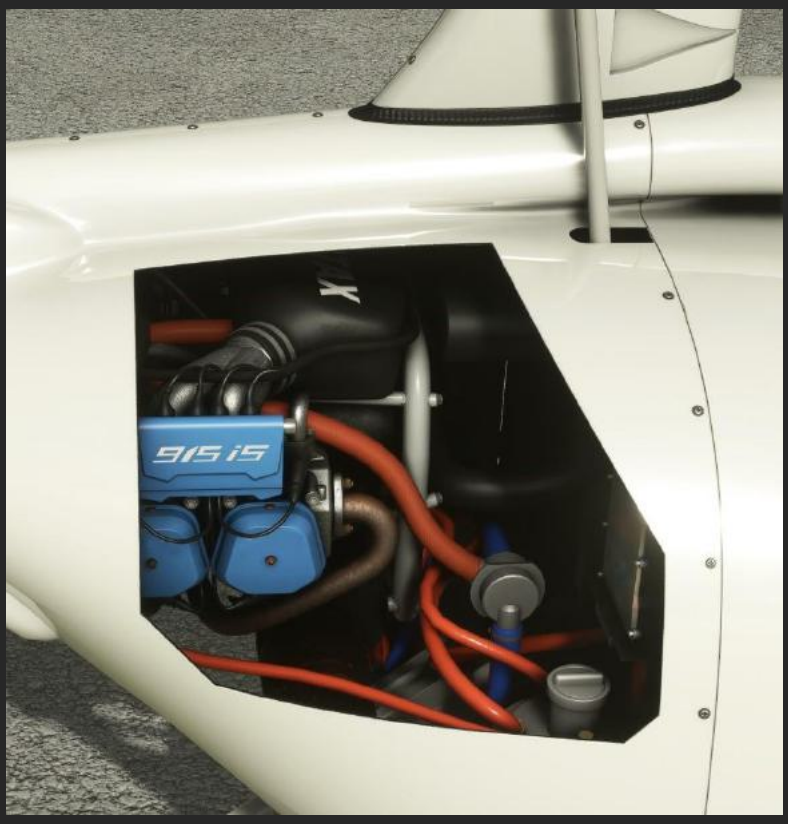
Turbocharging: Equipped with a turbocharger, allowing to maintain full powerup up to 15,000ft

Fuel Injection: Electronic fuel injection (EFI) ensures optimal fuel distribution and performance, improving efficiency, especially at varying altitudes.

Ignition System: Dual redundant electronic ignition system for enhanced reliability and safety.

Multiple Fuel Options: The engine runs on either standard automotive gasoline (mogas) or aviation fuel (avgas), offering flexibility in fuel sourcing.

TBO (Time Between Overhaul): Up to 2,000 hours, comparable to other ROTAX engines, offering long-term reliability and durability.



START UP		
1	Seat Belts	**ON**
2	Parking Brake	**ON**
3	Master	**ON**
4	Start Power	**ON**
5	Line A and B	**ON**
6	Fuel Pumps	**ON**
7	Strobe Lights	**ON**
8	Throttle	**40% 2100 RPM**
9	Headphones	**ON**
10	“CLEAR PROP”	**START ENGINE**
11	Start Power	**OFF**
12	Engines Gauges	**CHECK**
13	Get ATIS	**CHECK**
14	Contact Ground	**CHECK**
TAKE OFF CHECKLIST		
1	Parking Brake	**ON**
2	Engine Oil Temp	**MIN 50°C**
3	Secore Doors	**CHECK**
4	Throttle	**40% 2100-2400rpm**
5	Rotor Brake	**OFF**
6	Stick (Release Cyclic Cable)	**FULL FORWARD**
7	Pre-Rotation	**ENGAGE**
8	Stick	**FULL FORWARD**
9	Rotor RPM	**130**
10	Stick	**FULL AFT**
11	Parking Brake	**OFF**
12	Rotor RPM	**220**
13	Pre-Rotation	**RELEASE**
14	Throttle	**TAKE OFF**
AFTER LANDING		
1	Trim	**FULL FORWARD**
2	Cyclic cable	**ATTACHED**
3	Rotor Brake	**ON < 100RPM**
SHUT DOWN		
1	Parking Brake	**ON**
2	All Switches	**OFF**
3	Headset Batteries	**OFF**