



Accident to the MAGNI M24 PLUS identified 49ABZ

on 31 August 2020

at Saumur - Saint-Florent (Maine-et-Loire)

⁽¹⁾ Except where otherwise indicated, the times in this report are in local time.

Time	Around 19:00 ⁽¹⁾
Operator	Private
Type of flight	Local
Persons on board	Pilot
Consequences and damage	Pilot fatally injured, microlight destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in November 2021. As accurate as the translation may be, the original text in French is the work of reference.	

Loss of control in initial climb, collision with the ground, fire

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on statements.

The pilot lined up on runway 28 at Saumur - Saint-Florent aerodrome to carry out runway circuits. He pre-rotated the rotor, then took off and performed a horizontal acceleration approximately 10 metres off the ground.

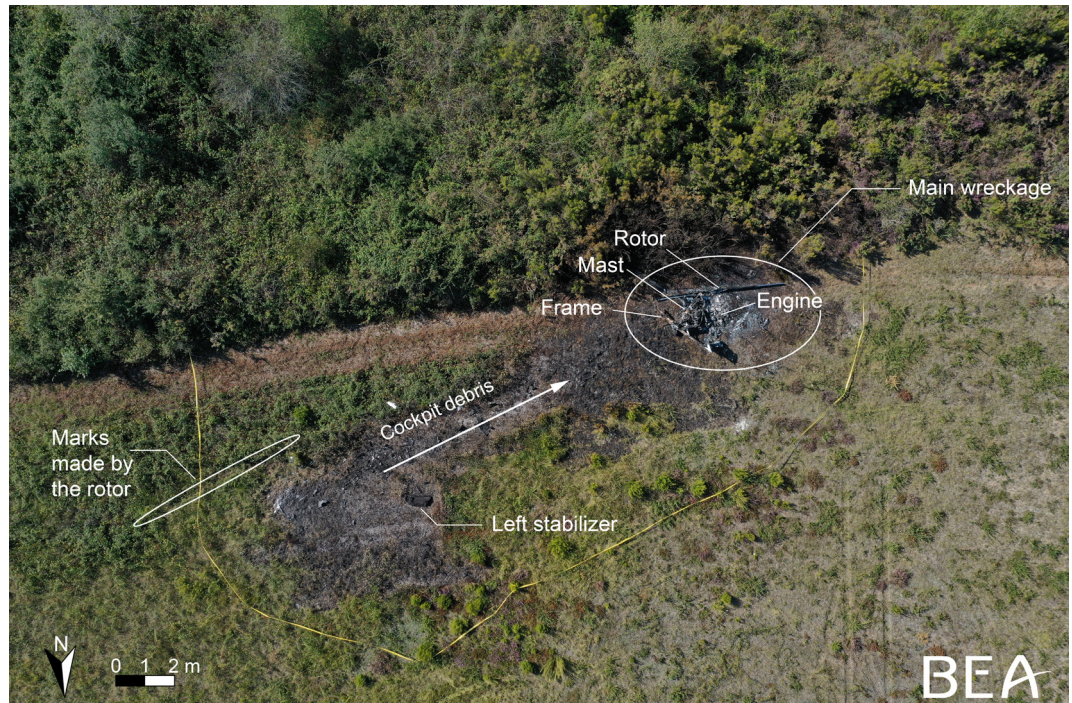
Coming out of the level-off, witnesses saw the microlight adopt a steep nose-up attitude until it was practically vertical. At the peak of its climb, estimated at around 50 metres high by a witness, the microlight carried out two right-hand rolls before pitching nose-down towards the ground to the left.

The microlight collided with the ground in the aerodrome's safety area to the left of the runway, and caught fire upon impact.

2 - ADDITIONAL INFORMATION

2.1 Examination of site and wreckage

Marks left by the main rotor and the airframe in the vegetation at the edge of the aerodrome are consistent with a microlight steeply banked to the left and with a nose-down attitude just before the collision with the ground.



Source: BEA

Figure 1: Aerial view of the accident site

Damage caused by the fire restricted the observations of the wreckage. The position of the elevator trim in particular could not be checked. However, it was possible to determine that:

- the microlight's flight control linkages were continuous;
- the engine was producing power at the time of the collision.

No anomaly that could explain the accident was identified.

2.2 Microlight information

The microlight identified 49ABZ was a Magni M24 Plus gyroplane, equipped with a Rotax 915 IS engine delivering a maximum power of around 140 hp and with a composite four-bladed propeller. The Magni M24 Plus has two seats in side-by-side configuration.



Source: pilot's instructor

Figure 2: Gyroplane identified 49ABZ

The pilot purchased his microlight in March 2020 and took delivery of it at the start of June 2020 at Le Mans aerodrome (Sarthe) to be able to use it during his training to obtain his gyroplane rating.

Before taking delivery of his gyroplane, the pilot had flown in the flying school's Magni M16. The M16 is a gyroplane with two seats in tandem configuration and equipped with a Rotax 914 engine delivering a maximum power of 115 hp.

49ABZ was equipped with a portable GNSS computer and an engine parameters display. None of these computers were recovered at the site.

At the time of the accident, the gyroplane weighed approximately 410 kg for a maximum weight of 500 kg.

2.3 Meteorological information

The meteorological conditions estimated by Météo-France at the time of the accident, based on data from the nearest automatic meteorological station located approximately 20 km south-east of the accident site, were as follows:

- variable dominant northerly wind of an average speed of 3 kt and a maximum speed of 7 kt;
- CAVOK;
- temperature of 21°C.

2.4 Pilot information

The 53-year-old pilot held a microlight pilot licence issued in 1999, along with the following class ratings:

- fixed wing microlight, paramotor and passenger carrying privileges, issued in 1999 when he obtained his licence;
- flex-wing microlight, issued in 2018;
- gyroplane, issued on 17 August 2021, 14 days before the accident.

He also held a Private Pilot Licence - Aeroplanes, issued in 1998, for which his SEP rating expired in 2002.

The pilot started his gyroplane training at a flying school in Le Mans on 28 December 2019. He passed his training after ground and flying exercises completed on 7 August 2020 with the microlight instructor who had trained him. The pilot then made three instruction flights on 16 August pending issuance of his gyroplane rating.

Between 28 December 2019 and 16 August 2020, the pilot had made 30 flights lasting a total of 26 hours and 40 minutes, divided as follows:

- ❑ 15 hours 10 minutes on the flying school's Magni M16;
- ❑ 11 hours 30 minutes on his Magni M24 Plus.

These two gyroplane variants were used alternately during the training. He had made three solo flights in total, in the form of runway circuits, lasting 2 hours and 40 flight minutes, all on his microlight.

The pilot had informed his instructor that he had moved his microlight to Saumur aerodrome (microlight base) on 23 August, and that he had made several runway circuits there on that occasion. The pilot's experience between 23 August and 31 August, the date of the accident, was unknown, but it is still possible to consider that the pilot had logged around 30 flight hours on gyroplanes.

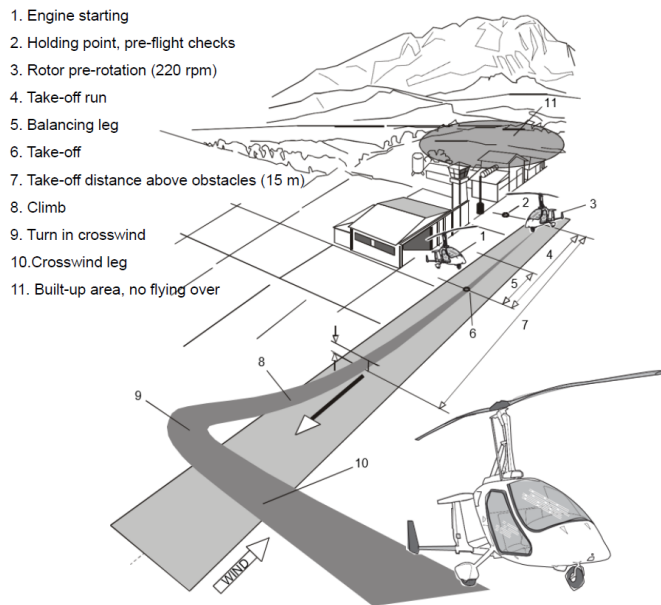
There was nothing of note in the pilot's training progress documents provided by his instructor. The instructor stated that the pilot had wanted to be released for solo flight and that he had had to hold him back from time to time.

In addition, some of his friends, also pilots, described him as clear-headed, daring and active.

The autopsy performed on the pilot's body was unable to determine if he had suffered an incapacitation in flight. The pilot had not be suffering from any known illness that could have caused an in-flight incapacitation and had not been undergoing any specific treatment.

2.5 Take-off procedure of the Magni M24 Plus

The Magni M24 Plus Flight Manual breaks the take-off down into 11 phases (see [Figure 3](#)).



Source: Magni Gyro

Figure 3: Take-off of a Magni M24 Plus

The first steps of the take-off specified in the manufacturer’s Flight Manual are given in Figure 4.

5.11.1 NORMAL TAKE-OFF

1. Throttle leverincrease in a progressive and uniform manner



NOTE:

Increasing the engine power progressively guarantees the same level of progressive attitude of the gyroplane, thus simplifying the management of this procedure.



WARNING DANGER:

In order to guarantee a safe takeoff, the engine’s power must increase progressively until reaching the maximum allowed value.



WARNING:

If a rotor speed of less than 200 rpm is achieved during pre-rotation, acceleration must be gradual. Engine rpm must be increased very carefully.

2. Alignmentuse the rudder pedals to keep the alignment on the runway



WARNING:

During the balancing phase, the attitude must be so that neither the nose wheel (pitch down) nor the rear wheel (pitch up) touch the ground.

3. When the nose wheel has lifted Move the control stick forward and balance the gyroplane on the main wheels
4. Control sticktake-off position



NOTE:

Refer to Chapter 3.18 for more information on take-off.

5. Take-offcorrect the roll induce by the engine torque (stick to the left)
reach and maintain the attitude

Source: Magni Gyro

Figure 4: Normal take-off of a Magni M24 Plus

2.6 Statements

2.6.1 Direct witnesses to accident

The descriptions given by three onlookers of the accident of the history of the flight recounted in [paragraph 1](#) were consistent with each other. Two of these witnesses were friends of the pilot, themselves pilots and owners of gyroplanes⁽²⁾ based at Saumur aerodrome⁽³⁾.

These two witnesses had spoken to the pilot when he arrived at the hangar. The pilot told them that he intended to make runway circuits. He carried out a full pre-flight inspection and checked that he was taking off with 40 litres of fuel in the tank. After start-up, the pilot went through his checklist that he had been given during his instruction, and had seemed calm and collected.

One of the witnesses, who had left during the pre-flight inspection to make runway circuits on his gyroplane, was in his microlight when 49ABZ took off, positioned on a taxiway to observe the take-off. The other witness, who had remained in the hangar with the pilot, positioned himself around 100 metres from the runway to watch the take-off too, interested to watch 49ABZ as he had ordered a model of the same type himself.

This witness estimated that the horizontal acceleration had lasted around 20% longer than the usual level-offs performed⁽⁴⁾. The witnesses did not hear a drop in engine speed. The witness who was in his gyroplane did not hear any specific message from the pilot over the frequency.

2.6.2 Pilot's instructor

The instructor stated that the higher power of the Magni M24 Plus compared to the Magni M16 (140 hp vs 115 hp) compensated for the additional drag due to the side-by-side configuration of the two seats (instead of the tandem configuration on the M16). Therefore, he thinks that both microlights offer the same level of performance.

The instructor specified that he teaches his students to perform a horizontal acceleration up to a speed of around 120 to 130 km/h before increasing the attitude to make the initial climb. In particular, he had told the pilot to display between 85% and 90% of maximum power on his microlight for his first solo flights, to avoid adopting a steeper attitude than when they had both been on board the gyroplane together.

3 - CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are not intended to apportion blame or liability.

Scenario

The gyroplane training of the pilot, already experienced on other microlight classes, was without incident. The instruction took place alternately on one of the flying school's Magni M16 and on the Magni M24 Plus that the pilot had recently purchased. This alternation between the two types of gyroplane did not pose any particular difficulty for the pilot, but his instructor had told him to remain measured when managing the power during take-off for his first solo flights in the M24 Plus, more powerful than the M16. Several days after receiving his gyroplane rating, the pilot, alone on board, had made runway circuits at Saumur, the new base for his gyroplane.

⁽²⁾ Magni M22 Voyager type gyroplanes equipped with a Rotax 914 UL engine delivering 115 hp.

⁽³⁾ The third witness was a model aircraft pilot located on the model aircraft runway adjacent to Saumur aerodrome.

⁽⁴⁾ The take-off distances indicated by the manufacturer are 70 m for a Magni M22 and 100 m for a Magni M24 Plus.

On the day of the accident, the pilot met two acquaintances, pilots and owners of a lower-end range of gyroplanes, interested in finding out more about the Magni M24 Plus. These two pilots, who were positioned near the runway, observed the take-off of 49ABZ.

The pre-rotation and transition between the take-off run and the level-off took place normally.

During the horizontal acceleration, the pilot, who had little gyroplane experience, made an excessive input on the pitch control. As a result, the microlight adopted a steep nose-up attitude, practically vertical.

It should be noted that this flight took place in a context in which the pilot, newly rated and described as "daring" by those who knew him, acted out his wish to be able to fly solo in his microlight after several months of training. It is therefore possible that a desire to demonstrate the performance of his newly acquired gyroplane to the pilots who remained on the ground, who were acquaintances and who he knew were interested in this type of microlight, contributed to this excessive nose-up attitude.

The steep climb at full power led to the decrease in apparent weight of the gyroplane, resulting in a decrease in rotor speed. The pilot, probably surprised by the steep nose-up attitude of his gyroplane and by this dynamic situation, was unable to regain control of the path. He finally lost control of the gyroplane in roll and it collided with the ground near the runway.