



## «AIR RACE» CONTEST RULES

*Version 3.0 dated July 20, 2017.*

### Contents

<b>1. General provisions</b> .....	2
1.1. Objective of the Contest.....	2
<b>2. Field Specifications</b> .....	2
<b>3. Robot Specifications</b> .....	3
<b>4. Procedure of the Competition</b> .....	3
4.1. Ineligibility Conditions .....	4
<b>5. Procedure to Determine the Winner</b> .....	4
<b>6. Revision History</b> .....	5



## 1. General provisions

### 1.1. Objective of the Contest

The robot must circumscribe round the poles following a given trajectory as many times as possible in the allotted time.

## 2. Field Specifications

The following requirements apply to the field:

length is 10 m;

width is 5 m;

height is 3 m.

The field must be covered with a protective net.

Two poles are so positioned in the field that a 2 m free space is ensured around the poles.

The following requirements apply to the poles:

distance between poles is 5 m;

height is 3 m;

diameter is 0,11 m.

The trajectory is marked on the field by the line circumscribing an eight curve round the poles.

The following requirements apply to the line:

linetype: dotted line;

width is 5 cm;

dash length is 30 cm;

distance between dashes is 10 cm.

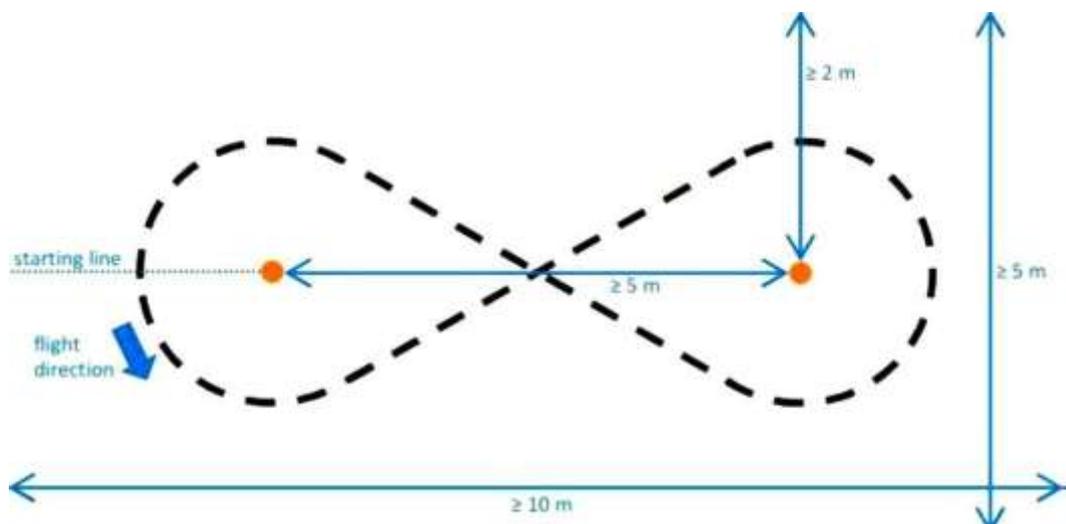


Fig. 1. The field scheme



## 3. Robot Specifications

The robot must be autonomous.

The robot must be a flying vehicle capable of flying at a height of 1-2 m.

The following requirements apply to robots (see Table 1):

Table 1 Robot Specification

№	Dimensions	Type of flying vehicle			
		Plane	Propeller-driven	Zeppelin	Other
1	2	3	4	5	6
1.	Weight	$\leq 500$ g	$\leq 1$ kg	$\leq 2$ kg	$\leq 2$ kg
2.	Length	$\leq 1$ m	$\leq 1$ m	$\leq 2$ m	$\leq 1$ m
3.	Width	$\leq 1$ m	$\leq 1$ m	$\leq 1$ m	$\leq 1$ m
4.	Height	$\leq 1$ m	$\leq 1$ m	$\leq 1$ m	$\leq 1$ m

The robot must display its ability to stay at a height of 1-2 m without interference of a human.

Maximum speed limit is 10 m/s.

Only electric motors are allowed.

## 4. Procedure of the Competition

Duration of attempt is 10 minutes.

During the flight, the robot must be at a height of 1-2 m above the ground.

During the Contest an additional navigation aid is allowed. This may be represented

by the dashed line on the field, active or passive beacons or marks on the floor.

The beacons must be installed during the preparation time.

Active beacons must be powered from batteries; usage of electric mains is prohibited.

The beacons must be fully removed from the field within 2 minutes after the flight.

The operator must prove his/her ability to control the robot in the manual mode before starting the Contest.

The operator must be able to regain control over the robot at any time.

Only the operator is allowed to enter the flight area during the preparation time and the Contest.

Each team is allowed 5 minutes for preparation. Upon preparation completion or upon expiry of 5 minutes, the referee commences taking the 10 minutes long flight time.

Launch must be performed from the start line.

During the flight, there must be no people in the flight area.



The flight is terminated when the robot has touched the ground or the safety net or when the pilot has decided to interrupt the flight.

During the attempt, restarts are allowed. The operator may enter the flight area to relaunch the robot after clearance by the referee.

In case of restart, the referee's stopwatch is not stopped.

The attempt is over upon expiry of 10 minutes of flying time or by the referee's command.

## **4.1. Ineligibility Conditions**

In the following cases the robot will be disqualified:

the robot is non-autonomous (the human is in control of the robot);

during the attempt the participant has touched the flying area or the robot.

## **5. Procedure to Determine the Winner**

The robot scores one point for each correctly circumscribed eight circle.

All points scored during a launch are summed up.

In case there were multiple launches, points for each of them are tallied separately and the start with the maximum score is taken into account.

The time of attempts shall be recorded by an electronic gate system or by the referee

with a stopwatch, depending on availability of equipment.

If two robots have equal points, the best launch number is taken into account. If these robots have also the same best launch number, the time of successful completion of the first full circle during this attempt is counted.



## 6. Revision History

<b>№</b>	<b>Doc. No.</b>	<b>Date</b>	<b>Note</b>	<b>Previous version</b>	<b>Update version</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1.	3.0		Entire text changed	Based on version 2.1	
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