

2002, 2003, 2004 RULES of MICROCLIPPER

The Microclipper Contest is a contest in which robots compete by discovering empty cylindrical cans in an unfamiliar maze by themselves and turning as many of them as possible upside down within a certain time period. Robots entered in this contest are called "microclippers."

1. Rules for the Microclipper

- 1-1. A microclipper shall be selfcontained. A microclipper shall not use an energy source employing a combustion process.
- 1-2. A microclipper shall not have any hardware or software added, deleted, replaced or modified by the operator during the contest. It is however permissible to make minor repairs or adjustments and to replace the batteries with those with exactly the same specifications.
- 1-3. No part of the microclipper should be left in the maze.
- 1-4. A microclipper must run on the floor surface in the maze. It must not jump over or climb up the cylinders or the walls of the maze.
- 1-5. A microclipper must not deform or destroy the maze and the cylinders.

2. Rules for the Maze.

- 2-1. The sides of the maze walls shall be white, and the top of the walls shall be red. The floor shall be black. The track of the maze shall be made of wood finished with non-gloss black paint.
- 2-2. The maze shall be composed of multiples of an 18 cm x 18 cm unit square. The maze shall comprise 16 x 16 unit squares. The walls constituting the maze shall be 5 cm high and 1.2 cm thick. (See Fig.1)
- 2-3. Small square zones, each 1.2 cm x 1.2 cm, at the four corners of each unit square are called lattice points. The maze is so constituted that there is at least one wall at a lattice point. (See Fig.1)

3. Rules for the Cylinders

- 3-1. Cylinders shall be placed almost at the center of each of the several unit squares in the maze.
- 3-2. Empty steel cans for commercially available juice and other products shall be used as the cylinders.
- 3-3. A cylinder is 104 mm in length, 53mm in diameter, and 38g in weight (errors in

height and diameter are within plus or minus 0.5mm or less, and those in weight are within plus or minus 3g or less).

3-4. The top surface of a cylinder shall be painted white, the sides yellow, and the base blue.

4. Rules for the contest

4-1. Each contesting microclipper shall be subject to a time limit of 10 minutes. Within this time limit, the microclipper may try up to 5 runs.

4-2. Each microclipper shall compete by turning the cylinders placed in the maze upside down. The number of cylinders turned upside down (cylinders with the blue surface facing upwards) by the time 10 minutes have elapsed from the start of the contest, or by the time five runs have been completed, is recorded as the result of contest.

4-3. If there is more than one microclipper that has turned all cylinders upside down within the given period of time, ranking shall be determined on the basis of the time that has elapsed until the microclipper returns to the starting point from its last run and stops.

4-4. The configuration of the maze and the position of the cylinders shall not be made public until the start of the contest.

4-5. After the layout of the maze is disclosed, the operator must not feed any information on the maze and the position of the cylinders into the microclipper.

4-6. Measurement of the time given to a microclipper shall start with the start call of the tournament committee chairperson.

4-7. The start of the maze shall be located at one of the four corners. The microclipper shall begin negotiating the course in a clockwise direction. Each run is to end when a contesting microclipper stops for more than 2 seconds, or is approved to discontinue its run.

4-8. The operator must not touch the microclipper after it starts running unless directed to do so by the tournament committee chairperson or approved to discontinue its run. If an apparent malfunction is found in the microclipper's run, the tournament committee chairperson shall accept an operator's request to discontinue the run. For cases where a request to discontinue the run is made for other reasons, it shall be accepted on condition that all memory of the maze so far collected is completely erased and cylinders are returned to their initial status.

4-9. The cylinder shall be placed at designated locations in the maze before the start of the contest. The operator must not touch the cylinders while the microclipper is

running.

4-10. If the contestant restarts the microclipper, he must, with the approval of the tournament committee chairperson, place all cylinders again in the position where they originally stood before the contest began, or is allowed to eliminate fallen cylinders from the maze.

4-11. The illumination, temperature and humidity of the room in which the maze is located shall be those of an ambient environment. Requests to adjust the illumination shall no be accepted.

4-12. The tournament committee chairperson reserves the right to ask, as he deems it appropriate, the operator for an explanation of his microclipper. The tournament committee chairperson also reserves the right to stop a run, declare disqualification, or give instructions as he deems appropriate.

[Appendices]

(1) The contestant is not permitted to load programs or to replace ROM during the contest. It is also prohibited to give instructions regarding execution of a program by connecting a microclipper to a development unit or console box, independent of the main unit, during a competition.

(2) Dimensions of Microclipper

There shall be no limitations placed on the dimensions of a microclipper. Its lower structure, however, is limited by the size of the maze.

(3) Structure of Maze

The precision with which the maze is made is that commonly used for similar structures, and there may be an element of error in the dimensions. As the maze is designed to be flexible, the design may produce gaps or difference in level of approximately 1 mm between sections of the walls or the floor. There are also nonuniform color, discoloring and smear.

(4) If a cylinder leans against the wall or column of the maze, it shall be considered to have fallen down.

(5) Separate regulations concerning the presentation of awards shall be established for each contest.