Briefing on 30 Nov 2010 (Golf Task)

1. Task Description

1.1 You are to design a motorised "Golf Club" (a swinging actuator) and auxiliary attachment to be attached to a robot (Robotino). The specification and requirements are in Appendix A.

1.2 The ball in play is a green tennis ball measuring 67mm in diameter and weighing between 56gm and 60gm.

1.3 The robot is to strike a ball with a "Golf Club" into a "hole" with as few strokes as possible.

1.4 The robot must be stationary while hitting the ball.

1.5 If the ball comes to a rest in the OB (out-of-bound) area, it will be placed on a Relief line nearest to where it rests. If this location is occupied by the robot, the ball will be placed at about 200mm from the robot, along the Relief line.

1.6 When the ball is in play, competitors are not to touch the ball or robot unless they wish to abort the run

1.7 To complete the game, the robot put the ball into the 'hole'. The score is based on the number of strokes the robot takes to complete the game.

1.8 A valid score must have at least 2 strokes. A hole-in-one is an unsuccessful run.

1.9 A stroke is considered when the ball is hit by the Golf Club. **A hit is considered as long as the ball moves regardless of the distance.**

1.10 One stroke is added to the score each time the ball landed in the OB area.

1.11 Two strokes are added to the score if any part of the robot other than the Golf Club hit the ball.

2. Arena

2.1 The arena layout is shown in Fig.1.

2.2 There are two obstacles bars comprising 40x20 aluminum profile. The length and location of the obstacles will be made known in the competitor's instruction.

2.3 The OB area is 200mm from the arena wall and edge of obstacles.

2.4 The Relief line is 400mm from the wall and obstacles.

2.5 The “hole” is at one corner in the arena.

2.6 The two sides forming the corner behind the “hole” will each have a red rectangular marking of size H400mm x W200mm.

3. Rules and Regulations

3.1 Your team has to use “*Robotino* View” to develop the program for this task.

3.2 No remote control is allowed.

3.3 Your team may have up to a maximum of 3 attempts during the 20 minutes for performance evaluation.

3.4 Your team may modify the hardware and program before each run during the 20 minutes performance evaluation period.

Appendix A

Specifications of Golf Club & Auxiliary Attachment

Golf Club

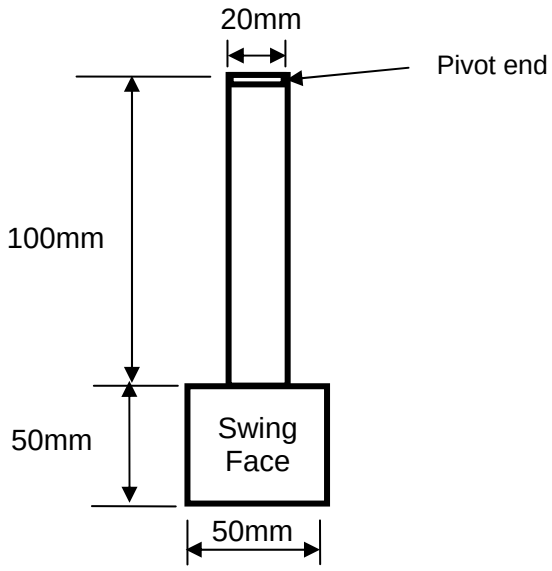

Fig 2 - Swing End Effecter
(Front View)

Tolerance : ± 5mm

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1. The dimension of the Golf Club is as shown in Fig 2.

2. The Golf Club shall be installed vertically at the front of the robot and pivoted at its top-most end.

3. Only the Swing Face shall come into contact with the ball and during the striking action.

4. The Golf Club must not have any active fixtures to retain or guide the ball.

5. All other dimension, form, material, actuation and method of attachment will be at the discretion of the participants.

6. The power source must be obtained from the *Robotino*'s batteries. No external batteries are allowed.

7. The wirings from the Golf Club mechanism to *Robotino* must go through the "Interface E/S" socket. You are only allowed to connect to the output port (DO0 to DO7) and power output (24V, GND) on the socket.

8. The Golf Club must be operated through the output icons in the "Robotino View" software and no remote control is allowed.

Auxiliary Attachments

9. You are allowed to use only the two optical sensors, one inductive sensor and one vision system provided by the *Robotino* set.

10. You may use your discretion in the use of material, method of mounting, operation and deployment of the above sensors and camera system.

11. Any electrical supply required for operation of the above devices and related items must be obtained from the Robotino's batteries.

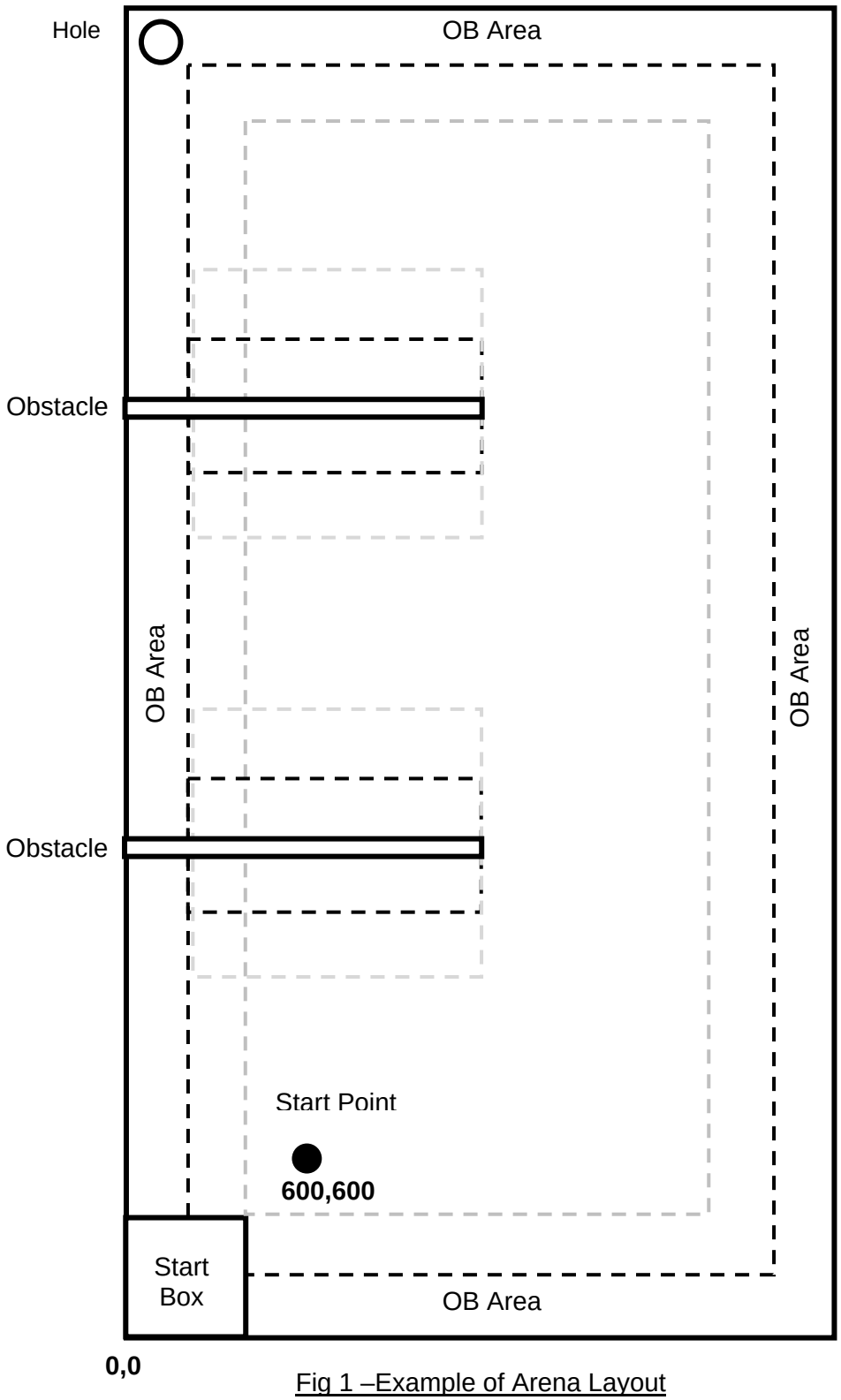

Fig 1 –Example of Arena Layout