

HYDRAC'S 20

SPECIFICATION AND CONSTRAINTS:

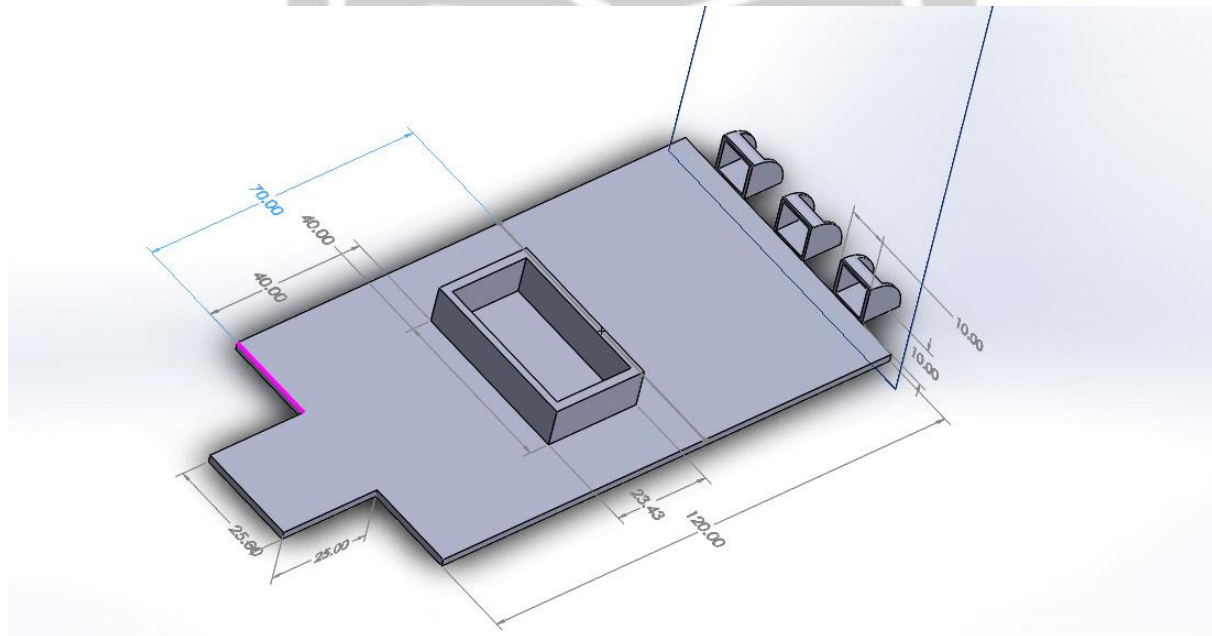
- I.** Force responsible for the entire task done by the bot should be produced only using hydraulic pressure.
- II.** Bot's body may be made by using wood, hardboard, aluminium, pipes, and syringes, or any other relevant material.
- III.** There are no weight restrictions for the bot however extent of length and height of arm should be less than 100 cm and 70 cm respectively.
- IV.** Any means of energy other than the hydraulic energy is strictly prohibited.
- V.** Use of motors, battery, spring, string or rubber will lead to disqualification of the bot.
- VI.** Team size is restricted to a maximum of four members and minimum of one member.
- VII.** The teams will be given a maximum of two minutes for setting up their bots before starting the round.
- VIII.** All dimensions shown in the arenas are in cm.
- IX.** In any dispute, the decision of the coordinators of the event will be the final decision.

INTRODUCTION TO THE PROBLEM STATEMENT:

- i.** There will be four different rounds of increasing difficulty.
- ii.** The first round is qualifiers round. Top 32 teams will be selected on point's basis for the next round.
- iii.** The second round is the round is of 32. Top 16 teams will be selected on a points basis for the next round.
- iv.** The Third round is the round of 16. Top 8 teams will be selected for finals by a number of points earned by the teams.
- vi.** The final round will be a point-based round. Winners will be decided by a maximum number of points earned in the round.

Qualifiers

1. Point distribution will start at a distance of 70cm from base line.
2. Container containing balls will be placed at 40cm from baseline.
3. Balls will be grabbed using hydraulic arm and will be thrown towards goal post(G2,G1,G3)
4. Goal posts are of 10×10 and placed as shown in figure.
5. Lines will be there at every 10cm after $y=0$
6. x point will be awarded of ball landed in 1st line i.e. $y=0$ to 10 cm line.
7. 2x,3x,4x,5x point will be awarded according to line in which ball land i.e 20, 30, 40 ,50cm line respectively.
8. Extra 5x point will be awarded if ball goes into G1 and 3x if in G2 or G3.
9. No extra point if ball not goes in Goal post then only 1st landing points will be awarded.

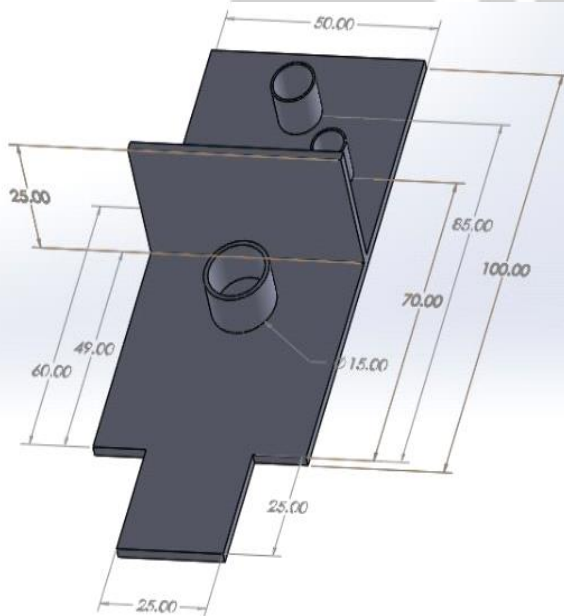
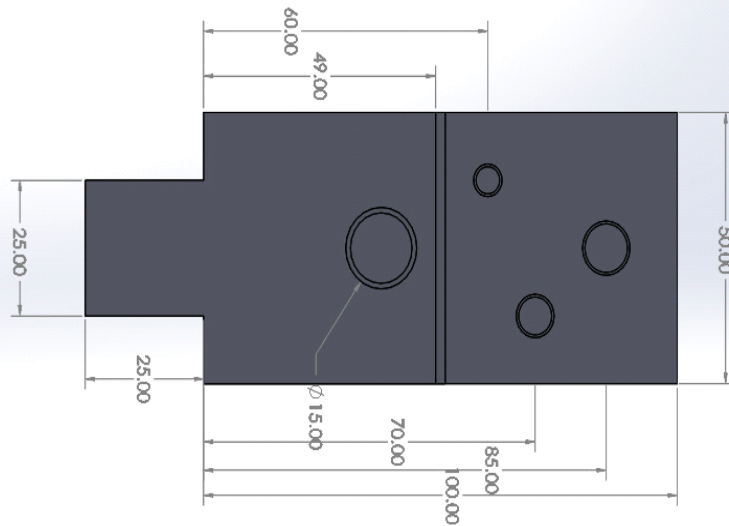


ROUND OF 32

1. A pipe attached with a syringe of volume 10 ml will be placed at the location as specified in the diagram. Grabber will be attached to the pipe to hold it tightly.
2. A beaker of diameter 10 cm filled with water will be placed in the middle of the front side of the arena.
3. Three other beakers of dimensions as specified in the figure will be placed on another side of the arena on the positions as shown in the diagram.
4. A team is expected to grab the pipe with the hydraulic arm, suck water of front beaker and pour it in beakers on another side of the wall.
5. There will be a time constraint of 3 minutes.

JUDGING CRITERIA

1. The teams will be awarded 50 points for filling per 10 ml of water in the nearest beaker.
2. The teams will be awarded 30 points for filling per 10 ml of water in the middle beaker.
3. The teams will be awarded 20 points for filling per 10 ml of water in the farthest beaker.
4. Penalty of 20 points will be imposed if the bot or pipe touches the wall.
5. Penalty of 30 points will be imposed if the bot loses the pipe.
6. Any team will be allowed to touch the bot twice after the timer starts.
7. For the first time, a team touches the bot a penalty of 20 points will be imposed and on repeating it a penalty of 50 points.



Round of 16

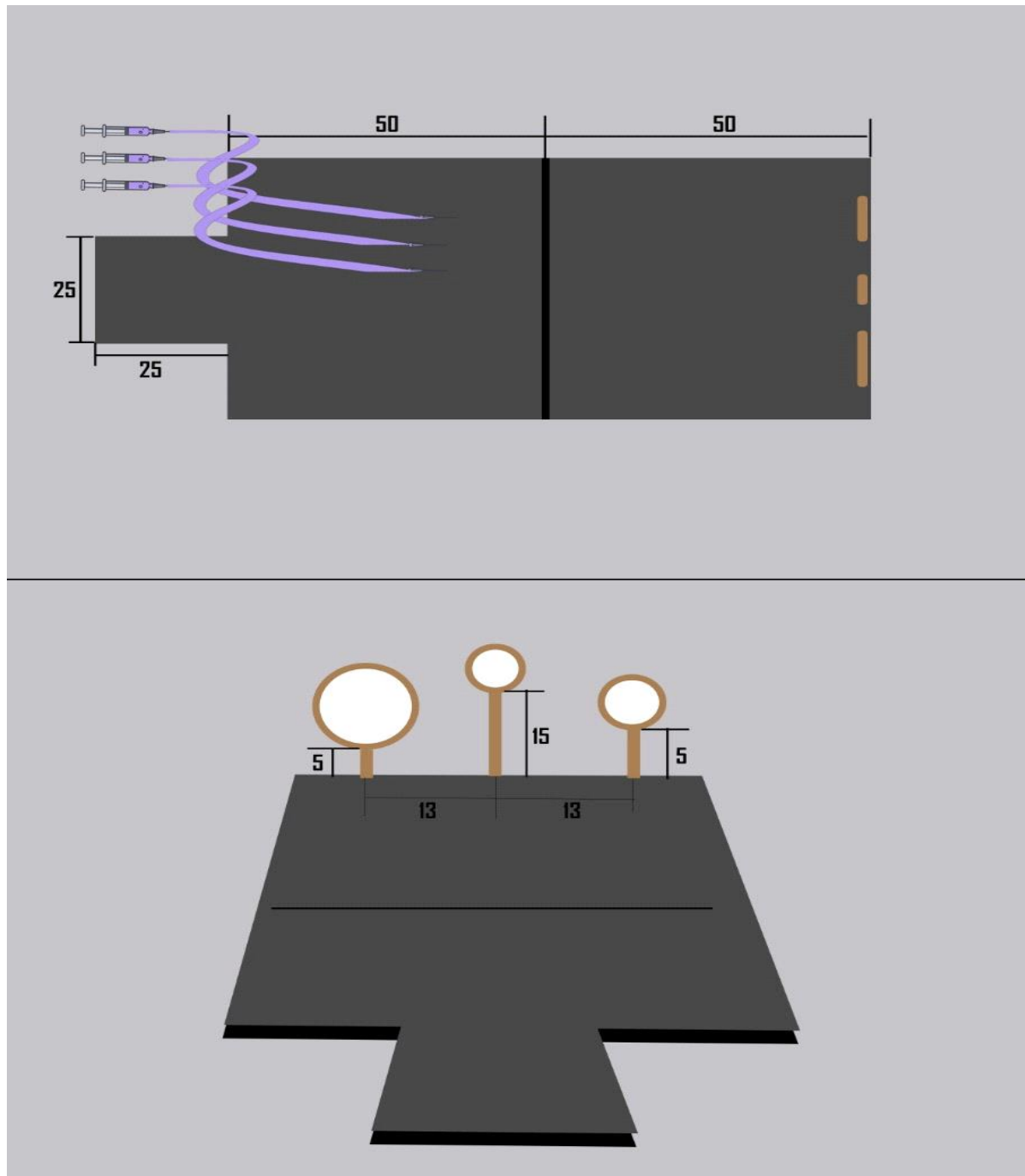
- There will be a baseline which is 50cm from the bot.
- Three Needles will be provided each of which will be connected to a syringe (filled with water). Needles will be attached with a grip to hold it using the bot.
- Needles will be placed in arena as shown in the diagram.
- As shown in the diagram there will be three paper disc of diameter x, 2x and 3x at the height of 20cm, 15cm and 10cm respectively.
- A team is expected to grab the needles with the hydraulic arm and aim it to shoot water on the paper disc across the baseline.

There will be a time constraint of 3 minutes.

Judging criteria

- You will be awarded 10, 5 and 3 points for tearing the paper disc of diameter x, 2x and 3x respectively.
- If your bot crosses the base line first time then 5 points will be deducted and on the second time 10 points will be deducted.
- If your bot crosses 3rd time then your team will be disqualified.
- Any team will be allowed to touch the bot twice after the timer starts.
- For the first time, a team touches the bot a penalty of 20 points will be imposed and on repeating it a penalty of 50 points.

In case of equal points timing will be considered as judging criteria.



Final Round

1. There will be two simple cubes, six other cubes with numbers, two cylinders and one ball.
2. There will be five different slots of different height: two lower slots, two middle slots and one highest slot. The lowest slot will be of 5cm height, middle slots will be of 10 cm height and highest slot of 15cm high.
3. Cubes dimensions will be 4*4 cm, radius and height of cylinder will be 4 cm and 8 cm respectively.
4. You have to place the simple cubes at the sides of the lowest slots.
5. You will get a aptitude question having two digit answer.
6. You have to solve the puzzle and pick the respective digits marked cubes and place them on the two lower slots staring from left.
7. You have to place the cylinders on middle slots.
8. You have to solve logical question and then place the ball on the highest slot.
9. There will be time constrains of 3 minutes.

JUDGING CRITERIA

1. x points will be awarded for putting the first two cubes.
2. 2x points will be awarded for placing cubes on the lower slots.
3. x additional points will be awarded for solving the puzzle and placing correct number cubes.
4. -x points for not solving first puzzle.
5. 3x points for placing cylinders on the middle slots.
6. Only 1 additional chances given if cylinder falls.
7. x points will be awarded for solving second puzzle.
8. 5x points awarded for placing the ball on highest slot.
9. A penalty of 2x points will be imposed if any of the team members touch the bot after the beginning of time for whatsoever the reason maybe.

