

## HYDRAULIC OR PNEUMATIC WEIGHT LIFTER.....

*... Make your own Lifting Mechanism*

### Problem Statement:

Make a manually controlled machine which has minimum weight, which can lift maximum weight up to maximum height using hydraulic or pneumatic mechanism.

### Machine Specification:

1. **Base of machine** should fit into a box of dimension **50 cm \* 50 cm** at the time of start. There is no restriction on the height of the machine. The extensions used to control the machine are excluded while measuring the machine dimensions.
2. **A lifting pan** must be there in the machine on which weights have to be placed.  
**Minimum dimension of lifting pan: Surface area (50 cm\* 50 cm)**
3. Machine can expand or compress during the run.
4. Use of batteries, spring, and electrical motor, electrical compressor or any other source of stored energy is prohibited.
5. Use of readymade assembly, digital devices is not allowed.
6. **For pneumatic devices maximum allowable pressure: 6 bar**  
**Carry your own Pressure measuring devices.**

### Materials allowed

Syringes (or any other cylinder-piston arrangement), tubes, wood, metallic frames, metallic pins, rubber bands, plastic, water, oil (approve type of oil before 15<sup>th</sup> Feb 2016 from the event organisers), ready-made tyres, non return valve.

### Competition Rules:

1. Competition will constitute 2 rounds.
2. Machine should lift the weight **minimum by 5 cm** from original position of Lifting Pan.
3. Information regarding the Weights:  
Weights will be in the form of bricks (weight= 2 kg).
4. Maximum allowable weight that participating team can lift by machine is 25 kg.
5. Weights will be in the multiples of 200,500, 1000 grams.
6. Each participating team will get 3 trials. In each trial team will have to decide the weight to be placed on the lifting pan.
7. The machine must lift weight within 30 seconds.
8. The system should remain stable in its lifted state for at least another 30 seconds after the lifting ends.
9. **For controlling of machine only hand operation is allowed.**

### General rules:

1. The teams must adhere to the spirit of healthy competition.
2. Any team that is not ready at the time specified will be disqualified from the competition automatically.
3. The organizers reserve all rights to change any of the above rules as they deem fit. Change in rules, if any will be highlighted on the website.

4. In case of any discrepancy decision of the judges shall be treated as final and binding on all.
5. Change in rules, if any will be highlighted on the website.

**Winning Criteria:**

**Winning criteria will be based on following parameter:**

- Weight lifted by machine
- Height up to which weight is lifted
- Weight of machine
- Compactness of mechanism
- Innovative mechanism

**Winning criteria formulae:**

=Weight lifted (kg)\* 0.5 + Height lifted (cm)\*10 +5000/machine weight (kg) + Innovations (100) + compactness (50)

- For innovations mark will depend upon Mechanical advantage, Innovative mechanism, compact machine.

**Certificate Policy**

- All the teams will get Certificate of Participation.
- Certificate for winner and runner up.
- Certificate for best innovation.

**Team Details:**

- A team can have a maximum of 3 members.
- Students from different educational institutes are allowed to make a team.

**ENTRY FEES:**

**Rs. 200 per team**

For further information/ Queries,

**CONTACT US:**

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