

# Free report on orifices experiment

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## **Following the American Psychological Association's Guidelines**

The experiment involving one orifice plate aims to investigate the flow rate and throw resulting from different orifice sizes. The first orifice resulted into 715 m head over jet with a fixed volume of 20 L and a flow rate of 0. 72464 L/s. It took 28: 53 seconds with 1185 mm throw on the first orifice. The second orifice resulted into 650 m head over jet with a fixed volume of 20 L and a flow rate of 0. 70174 L/s. It took 28: 53 seconds with 1125 mm throw on the second orifice. In contrast, the third orifice resulted into 560 m head over jet with a fixed volume of 20 L and a flow rate of 0. 598086 L/s. It took 33: 44 seconds with 1185 mm throw on the third orifice. Lastly, the fourth orifice resulted into 285 m head over jet with a fixed volume of 20 L and a flow rate of 0. 41263 L/s. It took 48: 47 seconds with 730 mm throw on the fourth orifice. This clearly states that with a fixed volume, as the head over jet increases, the time it takes to complete it also increases. It means it is getting slower. The distance also increases. This means that the head over jet, the time and also the distance of the throw are all directly proportional to each other. With respect to the flow rate, it is faster as the head over jet and distance increases. This also means that the flow rate of the liquid is directly proportional to the distance and head over jet. This is to conclude that in this experiment, the orifices with higher head over jet produced higher liquid flow rate and throw distance with a faster time. In contrast, orifices with lower head over jet produced lower liquid flow rate and throw distance with a slower time.

The above results were expected. In Bernoulli's Principle, it states that as the

speed of a moving fluid increases, the pressure within the fluid decreases. This implies that lowering the head over jet may lower pressure in the fluid. This may also impact the increase in fluid release in the orifice.

**Reference:**

Bureau of Reclamation. 2014. Submerged Orifices. [http://www.usbr.gov/hydraulics\\_lab/pubs/wmm/chap09\\_01.html](http://www.usbr.gov/hydraulics_lab/pubs/wmm/chap09_01.html). (Accessed 17 May 2014).