

Instrument Validation

Z3RO



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We are testing the one-way valve that we have made and simulating one thousand feet by taking pressure out of the jar. We tested to see if the valve would let the higher pressure out of the jar and let the low pressure stay inside the jar.

Purpose

The purpose of this lab was to test our one-way valve and see if it held the low pressure inside the one quart glass jar. We had to test this in order to find the inconsistency of the valve and check the precision of the valve. This was important to find out because if the pressure does not stay, then the exact pressure that it is when up at about 1,000 feet then we cannot make exact measurements of pressure.

Method

Our method was to take a quart glass jar and construct a one-way valve on the top of the lid. This valve lets pressure out and holds pressure once it comes back down from one thousand feet. We simulated a one thousand foot launch by taking air out of the jar with a syringe. A barometer was connected to the jar and a Lab pro. The Lab Pro was connected to a computer so we were able to analyze the data that was taken. We sucked out about one full syringes of air (about 30 mL of air). We took data every second to see if the valve leaked and how fast it leaked.

Data and Analysis:

Time (s)	Pressure (KPa)
1	99.36
2	99.38
3	99.37
4	97.75
5	98.37
6	98.8
7	99.14
8	99.25
9	99.27
10	99.26

At 4 seconds into the testing, we drew out 30mm of air from the jar in order to reduce the inside pressure by using the syringe. As can be seen by the results of the test, the pressure change was not retained for very long, for approximately 4 seconds. Our one way valve has a leak and regains what air we take out. We will replace the saran one way valve with a rubber flap held down by a rubber band.