Demonstration 2
Expanding Balloon

Inside a deflated balloon, the pressure is about the same as the surrounding atmosphere. To inflate the balloon, the pressure inside is increased by forcing gas into it. The expansion of the balloon is opposed, partly by the rubber of which it is made and partly by the pressure of the atmosphere acting on the outside of the balloon. If the pressure of the atmosphere on the outside of the balloon is removed, the only requirement would be to stretch the rubber.

To demonstrate, the neck of the balloon is secured, leaving a little air at atmospheric pressure trapped inside. The balloon is placed inside the vacuum enclosure and the air is removed by the pump. As soon as the air removal begins, the balloon begins to expand, since the pressure inside now exceeds that of the surrounding air. When the pump has removed all the air it can, the size of the balloon will depend on the volume of the air in it and the resilience of the rubber.