

# Vacuum Working Demonstrator



Model: 102-VT

A vacuum is often thought of as the total absence of air within a sealed container. In reality, however, a vacuum exists any time the pressure inside a closed volume is less than the local atmospheric pressure. It is almost impossible to remove every air molecule from any container, so a so-called “perfect” vacuum can never really be achieved. There are, however, different ranges of vacuum forces that can be obtained as more air is removed and the pressure differential increases.

The range of vacuum forces varies from rough (coarse) to middle (fine) and finally to high. Most industrial vacuum systems need only rough (coarse) vacuum force for basic lifting and workholding applications, since it's cheaper to increase force by increasing the amount of contact area with a vacuum cup than it is to create a higher vacuum force.

Some applications require higher vacuum forces, though. For example, middle (fine) vacuum force is needed for

various process applications, such as coating, degassing, freeze drying, and molecular distillation; and advanced laboratory instruments, like particle accelerators, mass spectrometers, and electron microscopes, use high vacuums.

Many industrial systems utilize vacuum forces, so it's important to understand how vacuums are created and measured, including how changes in atmospheric pressure can impact vacuum systems. Bayport Technical's Vacuum Working Demonstrator (102-VT) is an acrylic model that clearly demonstrates the effect of atmospheric pressure variations on fluids and gases.

For example, atmospheric pressure variations can greatly impact the boiling temperature of water. At sea level (normal atmospheric pressure), water boils at 100°C. However, ascend to the top of a mountain where atmospheric pressure is greatly reduced, and water will boil at about 75°C. Inside a vacuum chamber where there is very little pressure, water can boil at near room temperature (20°C).

Students using Bayport Technical's Vacuum Working Demonstrator will be able to gain hands-on experience with a vacuum pump and vacuum gauge to measure the pressure inside a clear acrylic domed vacuum chamber, preparing them to work with a variety of industrial systems that utilize vacuum forces.

---

## **SPECIFICATIONS**

- Aluminum base
- Acrylic domed vacuum chamber
- Vacuum pump
- Vacuum gauge

## **UTILITIES**

- Requires 110-20 VAC / 60 Hz / 1-phase power

## **PRODUCT DIMENSIONS**

- Overall Dimensions: 24" L x 12" W x 18" H

### **Address**

Bayport Technical  
905 S. 14th Street  
La Porte, TX 77571

### **Contacts**

email: bayportcontact@amatrol.com  
phone: (281) 471 1229