

# LACO TECHNOLOGIES

## HELIUM BOMBING CHAMBER

### USER GUIDE

#### OVERVIEW

A bombing chamber is a tool used to inject helium into small, sealed devices in preparation for helium leak testing. The bombing method is commonly used when it is impractical to inject the helium tracer gas into the part during assembly. Generally, bombing is best suited for hermetically sealed devices with small internal cavities and is normally performed with batched parts.

During the bombing process helium flows into the test part through a leak defect. Following bombing, the part is placed in a separate vacuum chamber for helium leak testing. The helium that leaked into the part during bombing will then leak out of the part during leak testing and the part will be classified as a leak.

Note: Large leaks may not be found because the helium will be pumped out too quickly to detect.

#### PROCEDURE

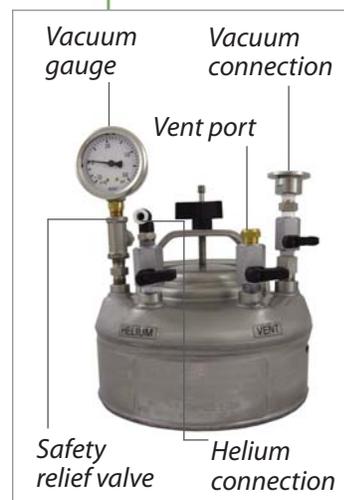
1. Load parts in helium bombing chamber and secure lid.
2. With a vacuum pump connected to the vacuum port, open the vacuum valve to evacuate the chamber to desired pressure then close valve.
3. With the helium supply connected, open the valve to introduce the helium to the bombing pressure. Close valve for the bombing time.
4. When the bombing time is complete open the helium vent valve. The helium should not be vented into the same area where the leak testing is performed.
5. Record time at which chamber was vented. (Start of dwell time). Do not exceed the maximum dwell time.
6. Place the parts in a separate vacuum chamber (either individually or in small batches) connected to a helium mass spectrometer leak detector for leak testing. In practice, it is helpful to fan or spray parts with compressed air to remove any surface helium that may stick to the part prior to leak testing.
7. Testing the same part more than once may risk depleting the part of helium and accepting a leaking the part as a false negative.



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#### TERMINOLOGY

##### BOMBING TIME

Time parts are exposed to 99-100% helium under pressure.

##### BOMBING PRESSURE

Helium bombing pressure used in the chamber to bomb parts. Typically, 30-60 psig.

##### DWELL TIME

Maximum allowable time after bombing before leak testing is required.

##### ACTUAL LEAK RATE

Leak rate specification for part.

##### INDICATED LEAK RATE

Leak rate specification as indicated on the helium mass spectrometer leak detector.

##### BOMBING PARAMETERS

There are two methods to determine bombing parameters:

- The fixed method uses standard pressures and times for small electronic devices.
- The variable method allows the user to calculate bombing parameters based on the reject leak rate, internal part volume and other variables.



Contact  
LACO Technologies  
for assistance.