

## VACUUM PUMP CAPACITY RATINGS

The capacity for vacuum pumps is specified in a couple of different ways, depending on the type of vacuum pump and the manufacturer. It is important to know the ACFM rating of the pump, which expresses the "actual cubic feet per minute" inlet capacity at a specific vacuum level.

Liquid ring vacuum pumps are all rated in ACFM, the actual capacity at the different vacuum levels as shown on the individual pump performance curves.

Capacities expressed in CFM or SCFM (standard cubic feet per minute) can be very misleading because we have to take into consideration the volumetric efficiency of the pump at a specific vacuum level (see example below).

Rotary vane pumps are generally rated in CFM of free air displacement, which is the theoretical displacement at 0" Hg vacuum.

Manufacturers of small rotary vane pumps, such as Gast, rate their pumps in SCFM at different vacuum levels. [To convert these values to ACFM click here to refer to the calculations in "Inlet Volume Calculations"](#).

Piston vacuum pumps are rated by the theoretical displacement in CFM, known as piston displacement (PD).

To be able to compare capacities of different pumps, we need to calculate the actual capacity (ACFM) at different levels of vacuum. To be able to do this, we need to know the volumetric efficiency of the pump at a specific vacuum level (request this from the manufacturer), which can vary anywhere between 90% and 40%, depending on the pump design.

For example, if a specific pump has a displacement of 100 CFM and the volumetric efficiency at 28" Hg gauge is 80%, the actual pump capacity at 28" Hg would be 80 ACFM. These values can also be obtained from the individual performance curves, if available.

