Instructions

1. Pneumatic air tools require a volume of compressed air (CFM) at a specific pressure (PSIG) to operate efficiently - they do not require a specific horsepower. Ignore the horsepower rating when sizing and selecting a compressor.

   Gather all of your pneumatic tools together. Write down the required CFM to operate the tool (supplied by the manufacturer).

2. Add together the CFM requirements of all of the pneumatic tools you plan to run at the same time. Now, add another 25% for additional tools, future growth and eventual air system leaks.

3. Determine the maximum pressure (PSIG) needed to run the air tools. You do not need to add the PSIG values together like you did the CFM requirements, simply use the value of the tool that requires the greatest amount of pressure.

4. Be sure the motor characteristics of the compressor are compatible.
   Is your electrical supply single-phase or three-phase? What is the voltage? Residential and commercial buildings usually have single-phase, 230 Volts, 50 cycle power, while industrial buildings often have a three-phase power supply.

5. Small compressors should be used with an air receiver (storage tank). The receiver stores compressed air and minimizes the loaded run time of the compressor. The air receiver should be at least 5 gallons per CFM for optimal results.

6. Take your CFM, maximum pressure, motor characteristics and receiver size requirements to your local compressor dealer or home improvement center and compare features among brands. Keep the quality factor in mind. You will certainly get what you pay for with air compressors.

There is no universal standard for rating air compressors, air equipment and tools. Common terms are:

- CFM , ICFM , ACFM , FAD , ANR, SCFM , nl/min .

CFM

- CFM (Cubic Feet per Minute) is the imperial method of describing the volume flow rate of compressed air. It must be defined further to take account of pressure, temperature and relative humidity - see below.

ICFM

- ICFM (Inlet CFM) rating is used to measure air flow in CFM (ft^3/min) as it enters the air compressor intake.

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ACFM

- ACFM (Actual CFM) rating is used to measure air flow in CFM at some reference point at local conditions. This is the actual volume flow rate in the pipework after the compressor.

FAD

- FAD (Free Air Delivery) (f.a.d) is the actual quantity of compressed air at the discharge of the compressor. The units for FAD are CFM in the imperial system and l/min in the SI system. The units are measured according the ambient inlet standard conditions ISO 1217 - 1 bar abs and 20^{o}C.
- 1 m^{3}/min (f.a.d) = 1000 liter/min (f.a.d) = 1000 dm^{3}/min (f.a.d) = 16.7 l/s (f.a.d) = 16.7 dm^{3}/s (f.a.d) = 35.26 ft^{3}/min (f.a.d)

ANR

- ANR (Atmosphere Normale de Reference) is quantity of air at conditions 1.01325 bar absolute, 20^{o}C and 65% RH (Relative Humidity).

SCFM

- SCFM (Standard CFM) is the flow in CFM measured at some reference point but converted back to standard or normal air conditions (Standard Reference Atmosphere) 14.4 psia, 80^{o}F and 60% RH (Relative Humidity).

nl/min

- nl/min is the flow in l/min measured at some reference point but converted to standard or normal air conditions 1.01325 bar absolute, 0^{o}C and 0% RH (Relative Humidity).

ISO 1217

- standard reference ambient conditions - temperature 20^{o}C, pressure 1 bar abs, relative humidity 0%, cooling air/water 20^{o}C, and working pressure at outlet 7 bar absolute.

Example - Rating a Compressor

FAD (CFM)	Description
11.1 cfm @ 7.5 Bar	The Free Air Delivery from the compressor is 11.1 CFM at 7.5 Bar
8.2 cfm @ 10 Bar	The Free Air Delivery from the compressor is 8.2 CFM at 10 Bar

A typical rating of a compressor may look like this.

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