

Beginners Guide To Buying Your First Air Compressor



You're in the market for a new air compressor...what now? There are some things you'll need to know so you can find the air compressor that best fits your needs and your budget.

So, let's get started!

- What brand of air compressor do you choose?
- Is oil-free or oil-bath best?
- Will I need a two-stage unit or is a single-stage unit sufficient?
- How much CFM will I require?
- How much PSI will I need?

If you're a contractor or use your air compressor in an industrial or commercial application, solid build quality, longevity and a reputable brand name should be key in your decision making process. Not to say this is unimportant for the homeowner or hobbyist, but there is a compressor for every demand and job out there; the more you know going into it, the easier it'll be when you're at the outlet about to make your purchase!

1) First, what is the application you'll be using your air compressor for?

If you're using the compressor to spray paint or sand blast, for instance, you'll probably want to get an *oil-free* unit, this way you won't have to worry about moisture getting into the line and mixing with your air. If you need high CFM (cubic feet per minute), then you can still go with an oil-bath compressor but you'll need to purchase it with a water trap and an oil/particulate filter to keep the compressed air nice and dry.

Oil-free units are great and very convenient as there is virtually no maintenance to worry about...there is no oil to change and you can operate the unit on an uneven surface, not something that an oil-bath unit can offer. Most oil-free units on the market, however, do not put out high CFM, generally 6 CFM or less. Also, these units are generally louder than oil-bath units, so if noise is a factor, go with either a "silent" oil-free compressor (the "JC10" Rolair unit or any of the California Air Tools units, for instance) or an oil-bath compressor. Oil-*bath* units are always recommended for longevity, and they simply put out a heck of a lot more CFM than any oil-free unit will be able to manage producing. Most contractors and all industrial applications and commercial garages demand a heavy-duty oil-bath air compressor as it will put out the CFM you need and will simply last a lot longer than any oil-free unit will.

However, if you're a small contractor that has one or two workers, an oil-free unit may be sufficient. If you're simply using a trim gun to install trim in a kitchen, this doesn't demand high CFM so you can probably get away with using a smaller oil-free unit.

2) *How much CFM is sufficient?*

CFM (or *Cubic Feet per Minute*) is probably the most important specification you'll need to know when choosing an air compressor. Your application, whether it be a roofing nail gun, sand blaster or die grinder, will have a CFM requirement specification (you can find this in the manual for your tool). You need to choose an air compressor that **at least** meets that minimum CFM output. If an air compressor doesn't have the required CFM for your tool, it was run constantly and you risk burning the motor, pump or both, and your application will suffer for it as well. Be sure the air compressor puts out the required CFM (and ideally a couple more CFM) for your application! The CFM spec is related to *duty cycle* of a unit so we'll discuss that this term means now. Below is a very handy chart and info on what duty cycle means for an air compressor (and to give credit where credit is due, this very helpful information comes from VIAIR at <https://www.viaircorp.com/tech>):

Duty Cycle Reference Chart:

Duty cycle refers to the amount of time a compressor can be operated in a given time period at 100 PSI, and a standard ambient temperature of 72° F. It is commonly expressed in percentage format:

$$\text{Compressor on time} \div (\text{on time} + \text{off time}) = \text{Duty Cycle \%}$$

Please Note: *All compressors, regardless of rated duty cycle, require sufficient rest time in between cycles to allow for partial or complete heat dissipation. Heat dissipation rates may vary depending on ambient temperatures and operating conditions.*

ONE HOUR DUTY CYCLE

(100 PSI @ 72° F)	MINUTES ON/MINUTES OFF
9% Duty Cycle	5 Min. On / 55 Min. Off
10% Duty Cycle	6 Min. On / 54 Min. Off
15% Duty Cycle	9 Min. On / 51 Min. Off
20% Duty Cycle	12 Min. On / 48 Min. Off
25% Duty Cycle	15 Min. On / 45 Min. Off
30% Duty Cycle	18 Min. On / 42 Min. Off
33% Duty Cycle	20 Min. On / 40 Min. Off
50% Duty Cycle	30 Min. On / 30 Min. Off
100% Duty Cycle	1 Hour Run Time

3) How much PSI do I need?

PSI (or *Pounds per Square Inch*) is how much *pressure* of air a compressor exhausts, whereas CFM tells you the *volume* of air produced. PSI isn't as important as CFM because *most* applications don't require high CFM. Any typical air compressor puts out at least 120 PSI, which is sufficient to run any nail gun, grinder or blow gun. There are some newer air compressors that put out high pressures of 225+ PSI, but these are purpose built for tools that take advantage of these higher pressures (and you only really see these in Japan and Europe for the time being). It's always a good idea to confirm, however, what the PSI requirement of your tool/application is prior, just as you would with the CFM rating.

4) Do I need a Single-Stage or a Two-Stage air compressor?

The difference between *single-stage* units and *two-stage* units is pretty simple. It doesn't have anything to do with the number of cylinders or heads the pump has. The main practical difference between the two is that a *single-stage* unit will [typically] operate at a lower PSI (max 155 PSI) whereas a *two-stage* unit will operate at 175 to 200 PSI). Also, a *two-stage* unit will recycle quicker (pump up quicker) and has a higher *CFM* rating than a *single-stage* unit. For applications/tools that require high CFM, such as a sandblaster or die grinder, it's probably best to go with a *two-stage* air compressor as it will recycle very quickly when called for more air, and will easily give you the volume of air you need to do the job efficiently. For most homeowners and hobbyists that are using small nail guns, blow guns or pumping up beach balls, a *single-stage* unit is definitely sufficient. Even most small contractors can get away with using *single-stage* units if they have a small crew.

5) Choose a reputable brand.

Look, I know that we live in an increasingly "throw-away" culture, where cheap Chinese air compressors are on the market, and even well-known brands are having components (if not whole units) built overseas with cheaper materials. And, sometimes buying cheap is worth it if you don't use the air compressor often, so what if the valves crack or piston ring(s) wear out? You can probably buy a replacement for the same amount as a repair would cost...I get it. *However*, in most cases it is certainly worth it to increase your budget and buy a unit manufactured by a reputable brand you trust; I'm thinking *Campbell Hausfeld*, *Rolair*, *Jenny*, *Champion*, *Ingersol Rand* and *Coleman Powermate*. Not only will these units typically be of a higher quality, but it's worth it just for the fact that most (but not *all*) units made by these manufacturers have replacement parts available, and offer great warranties. They also usually have a large network of authorized service centers available nationwide, so when you need to have the unit repaired, it's convenient to do so. It's the old adage, spend more now so you won't have to down the road.

I hope this beginner's guide to purchasing your first air compressor gave you some helpful advice and provided clear insight. The more you know going into the purchase the better, and knowing what you need will save you money now *and* later.

Thanks for reading!