10 Steps to Selecting an Air Compressor

1. **What are you using the compressed air for?** The type of work you do is probably the most important factor in determining compressor size. Do you intend to use air six hours per day, five days a week, or only occasionally? Are your demands for compressed air relatively constant during the day, or do they vary widely? Purchase a compressor designed for a duty cycle which equals or exceeds specified requirement.

2. **Where will the compressor be located?** Outdoor applications require special protection against water and freezing. Indoors, sufficient ventilation is crucial for successful operation since most reciprocating compressors are air cooled. Don’t put the compressor in a closet, for example. Place the compressor at least three feet from the wall to ensure proper air flow and be sure the installation site is sufficiently ventilated to handle the heat generated by the compressor during operation.

3. **How much pressure (psi) do you require?** The psi, or pounds per square inch, capability of a compressor must match or exceed the psi requirement of your hungriest air tools and pneumatic equipment. Check the manufacturer’s specifications and pressure requirement for all your equipment. The pressure also determines whether the unit should be a single-stage (max 135 psi) or a two-stage (max 175 psi) compressor.

4. **How much air flow (cfm) do you require?** Cubic feet per minute or cfm is a measure of air flow the compressor can create. CFM is stated in two different forms, piston displacement (PD) or actual cubic feet per minute (acfm). Always consider the acfm as it reflects the amount of usable air available for work. Read the fine print and make sure you understand whether the cfm rating is “piston displacement” or “actual delivered air” at a specified psi.

5. **What motor horsepower do you require?** Horsepower is directly proportional to cfm rating of a compressor; typically, the higher the horsepower the more air (cfm) the compressor can produce. Don’t rely solely on horsepower or attempt to buy the highest horsepower compressor you can afford. Let your cfm and psi requirements determine horsepower for you. Be very careful with the compressors that claim high horsepower rating with low air flow performance, this often indicates an “occasional-use” air compressor. These products are designed with the motor operating at maximum speed, which typically results in a motor that will run hot with severely shortened lifespan.
10 Steps to Selecting an Air Compressor (continued)

6 What size and type of air tank do you require? Air tanks help eliminate pulsation in the air line and provide storage when demand for air exceeds the capacity of the compressor. The larger the tank, the more pressurized air is available for output. The smaller the tank, the more the compressor has to work to keep up with the demand. Decide if your application requires a vertical or horizontal tank; this is determined by the physical location of the compressor and one’s personal preference. Vertical compressors have a smaller footprint than a horizontal design; vertical tanks are only available on models rated up to 10 horsepower.

7 What compressor features should you consider? Look for the following features to suit more demanding applications:

- 100% cast-iron construction designed for reliability and durability.
- Minimal moving parts reduces maintenance cost and service intervals.
- Splash lubrication provides simple, reliable design reducing initial purchase price
- Stainless steel finger valves eliminate corrosion while ensuring long service life.
- One-piece connecting rods eliminate internal adjustment.
- Oil monitoring device to prevent low-oil damage.
- Separate cast cylinders in two-stage compressors for better cooling and extended life.

8 What are the electrical requirements of the installation? Incoming electrical service is very important to identify and understand before purchasing a compressor. Voltage will determine the horsepower capacity available without expensive modifications. The standard voltage for homes is 110 volts. This voltage will only operate compressors up to three horsepower. In the United States, Canada, Mexico the following voltages and phases are available:

- Single-Phase 1. 110-1-60 2. 208-1-60 3. 230-1-60
- Three-Phase 1. 308-3-60 2. 208-e-60 3. 460-3-60 4. 575-3-60

NOTE: Always have a qualified electrician review electrical requirements prior to procuring an air compressor.
What control system do you require? All reciprocating air compressors require one of the three control systems in order to regulate operation in accordance with air demand:

- Start/Stop Control is used for applications where air is not required continually, allowing the compressor sufficient cooling time. When system pressure falls below the set start-up pressure, the compressor will automatically start. When the cut-off pressure is reached, the compressor will automatically shut-off and will not start again until the system pressure falls below the minimum start pressure.
- Constant Speed Control keeps the compressor from excessively starting and stopping. As with start/stop control, it has a minimum start pressure and a maximum cut-off pressure. This feature prevents premature motor failure and minimizes operating costs associated with high amp-draw. Here’s a rule of thumb: if the compressor starts more than six to eight times per hour, you should operate constant speed control. If the compressor starts less than six times per hour, start/stop control is recommended.
- Dual Control allows the compressor to operate in either start/stop mode or constant speed control mode by adjusting the compressor auxiliary valve. This control method allows the user to easily adjust the control mode dependent upon compressed air usage. Know your requirements and purchase accordingly!

Additional buying tips

- All compressors rated five horsepower and above should have a magnetic motor starter for thermal overload protection. Motor starters are sized according to horsepower as well as by incoming line voltage. The starter can be mounted to the compressor or be positioned remotely. Be sure to check local electrical codes and requirements and have all wiring done by a licensed electrician.
- Use of proper oil is critical to the long-term operation of your compressor. Since compressors are shipped without oil in the crankcase, be sure to check with your supplier regarding any start-up/lube kit requirements. Also, many manufacturers now offer extended warranties on the compressor if you purchase a specific lubricant.
- Moisture is the number one enemy of compressed air systems. A wide variety of moisture removal products are available, ranging from in line filters and moisture drains to after coolers and air dryer. Consult with your local compressed air specialist regarding your specific needs.