

# Air Compressor FAQ: What is An Air Compressor & More



## What is a Compressor?

An **air compressor** is a type of power tool that is used to pressurize air for the operation of other air tools. Painting, drilling or sanding are common air tool applications that require a compressor.

The primary components of a compressor are the piston and cylinder. The suction stroke draws air in through the inlet valve from the air tank. In the discharge stroke, trapped air is compressed as the piston moves down and then released through a discharge valve into a tank. A motor drives the piston arm.

As air is forced into the air tank, it becomes pressurized. The pressurized air functions like a battery. Its stored energy is used to run power tools such as sanders, paint sprayers or drills.

The volume of compressed air in the tank is measured in cubic feet (even though the air tank is measured in gallons). The rate at which the compressor moves air is called its capacity or flow, measured in cubic feet per minute (CFM).

The pressure created as the compressor squeezes air into the tank is measured in pounds per square inch (PSI). When you attach an air tool to the compressor, the tool's flow is measured at the recommended operating pressure. The typical rating is CFM @ 90 PSI. (Spray guns are measured at 40 PSI.)

In a single-stage air compressor, the air is compressed in one stroke. In a two-stage air compressor, the air is compressed to an intermediate pressure in the first stage, cooled through an intercooler, and compressed again to higher pressure in a second stage. Two-stage compressors are larger machines suitable for simultaneous use by multiple users because of their higher CFM output and working pressure.



## **How to choose the right compressor**

Choosing the right compressor is largely based on how often you will need to use the air compressor and for what application. Lighter-duty jobs require a lighter-duty compressor pump, and a heavier-duty pump is required for more frequent use or larger tools that require more force to operate.

### **Occasional use air compressors for the non-professional**

For light or occasional use, you can use lighter-duty pump designs in your air compressor. These usually will be direct-drive, oil-free designs. These are perfect for the homeowner and light-duty do-it-yourself (DIY) user who is inflating car tires, bicycle tires and balls and blowing leaves and dirt from garage floors. These compressors are virtually maintenance free. Lighter-duty air compressors are usually constructed using aluminum.

### **Medium use portable air compressors**

If you are a farmer or contractor who needs a hand-carry compressor that can also handle heavy-duty loads, you will want a direct-drive, oil-lubricated compressor. Oil lubrication aids in cooling extends pump life and provides quiet operation.

### **Frequent use, heavy-duty air compressors**

If you are a heavy-duty do-it-yourselfer (DIY), commercial, professional or industrial user, you should consider lubricated, belt-driven pump design air compressors. The V-belt drive arrangements on these compressors allow them to run at conservative speeds for lower noise and longer life. Heavy-Duty air compressors are usually made from cast iron.

### **Questions to ask when selecting an air compressor**

When shopping around for the best air compressor, you should consider what tools you will be using and your power supply.

### **What power tools do you need the compressor for?**

The air output (CFM) of the compressor determines what air tools can be used with a compressor. If a compressor produces 5.7 CFM at 90 PSI, it can operate any tool or tools with a combined air requirement up to 5.7 CFM efficiently.

Remember to think of not only your present needs but what you will want to accomplish down the road. It is more economical to buy the right compressor now, even if it is more expensive than to buy a second one later.

### **Do you have access to electricity?**

For most compressors, you will need access to standard household service (115 volts) or to a 230-volt circuit. The largest compressors require access to three-phase power. If you are planning to use the compressor remotely, you will need a portable, gas-powered unit.

### **Other supplies you may need while using an air compressor**

- Air Tools
- Filters
- Regulators
- Lubricators
- Tubing/Hoses
- Aftercoolers (to cool hot compressed air prior to application)
- Teflon tape
- Blowgun
- Oil (for oil-lube compressors)
- Fittings
- Couplings
- Goggles
- Hardware to bolt compressor to the floor (recommended)

## **Q and A: Answers to the most frequently asked questions about air compressors**

**Question: How do I hook up my compressor?**

115-Volt units use your household electricity “as is” and have a plug installed at the factory. 230-Volt compressors must be hard-wired into your electrical system. Do not use a “pigtail” type plug, which will void your warranty and may cause circuit overload. Many compressors also need a dedicated circuit, where the circuit breaker is providing protection for only one electrical outlet. Call a qualified electrician if you are not sure how to hook up your compressor. Note: Using an extension cord with an air compressor is not recommended. For added reach, use an extra air hose instead.

**Question: When should I change the air filter?**

Check the filter regularly. Change it when it is dirty or clogged.

**Question: Do I have to remove the compressor from the pallet prior to installation?**

Yes. Operating the unit on the pallet may lead to failure in the discharge tube or cause a short in the electric motor.

**Question: How often should I drain the tank?**

Drain air tanks after EVERY use to avoid condensation and rust.

**Question: How do I regulate the pressure on the compressor?**

For pressure reduction on stationary units, use an in-line filter/regulator. Do not attempt to change the pressure setting by adjusting the pressure switch.

**Question: When should I change the oil?**

Generally, you should **change the oil** after the first 50 hours of use (called the break-in period). Thereafter, be sure to consult your compressor’s manual for the manufacturer’s specific recommendations.

**Question: What is the duty cycle?**

Duty cycle is the relationship between the “on” and “off” time of a compressor. For example, a 50% duty cycle, in a 60-minute period, means 30 minutes on and 30 minutes off. Applying a load greater than a compressor’s duty cycle reduces pump life.