

# Air compressor

An **air compressor** is a device that converts power (usually from an electric or diesel or gasoline engine) into kinetic energy by pressurizing and compressing air, which is then released in quick bursts. There are numerous methods of air compression, divided into either positive-displacement or negative-displacement types.<sup>[1] [2]</sup>

Positive-displacement air compressors work by forcing air into a chamber whose volume is reduced to effect the compression. Piston-type air compressors use this principle by pumping air into an air chamber through the use of the constant motion of pistons. They use unidirectional valves to guide air into a chamber, where the air is compressed.<sup>[1]</sup> Rotary screw compressors also use positive-displacement compression by matching two helical screws that, when turned, guide air into a chamber, the volume of which is reduced as the screws turn. Vane compressors use a slotted rotor with varied blade placement to guide air into a chamber and compress the volume.

Negative-displacement air compressors include centrifugal compressors. These devices use centrifugal force generated by a spinning impeller to accelerate and then decelerate captured air, which pressurizes it.<sup>[1]</sup>

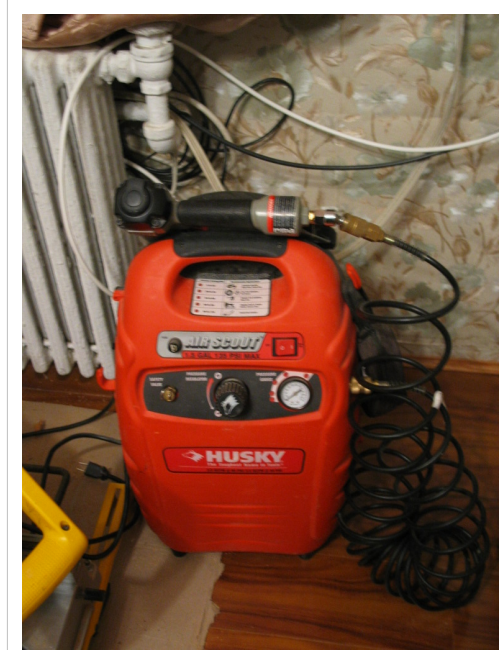
The air compressors seen by the public are used in 5 main applications:

- To supply a high-pressure clean air to fill gas cylinders
- To supply a moderate-pressure clean air to supply air to a submerged surface supplied diver
- To supply a large amount of moderate-pressure air to power pneumatic tools
- For filling tires
- To produce large volumes of moderate-pressure air for macroscopic industrial processes (such as oxidation for petroleum coking or cement plant bag house purge systems).

Most air compressors are either reciprocating piston type or rotary vane or rotary screw. Centrifugal compressors are common in very large applications. There are two main types of air compressor's pumps: Oil lubed and oil-less. The oil-less system has more technical development, but they are more expensive, louder and last for less time than the oiled lube pumps. However, the air delivered has better quality.

## External links to Air Compressor Manufacturers

- Bauer Compressors Inc. website<sup>[3]</sup>
- Ingersoll Rand website<sup>[4]</sup>
- Gardner Denver website<sup>[5]</sup>
- Sullair website<sup>[6]</sup>
- Atlas Copco website<sup>[7]</sup>
- Northern Tool & Equipment<sup>[8]</sup>
- Air Compressors<sup>[9]</sup>



Air compressor supplies air into a nail gun

## References

- [1] Klenck, Thomas. "How it Works: Air Compressor" (<http://www.popularmechanics.com/home/improvement/energy-efficient/1275131>). Popular Mechanics. . Retrieved 30 July 2010.
  - [2] Compressor types: rotary screw, reciprocating, and vane compressors (<http://oee.nrcan.gc.ca/industrial/equipment/compressed-air-ref/page-05.cfm?attr=24>)
  - [3] <http://www.bauercomp.com/>
  - [4] <http://www.ingersollrandproducts.com/>
  - [5] <http://www.gardnerdenverproducts.com/>
  - [6] <http://www.sullair.com/>
  - [7] <http://www.atlascopco.com/>
  - [8] <http://www.northerntool.com/>
  - [9] <http://www.excelcompressors.co.uk/>
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