Air Compressor Types

There are a number of ways to compress gas, over the years many different types of compressors have been invented to do so. The three most common air compressors are the reciprocating, rotary screw and centrifugal.

Reciprocating air compressors are positive displacement machines, which means they increase the pressure of the air by reducing its volume. Essentially, the machine takes in successive volumes of air which is confined into a closed space and then elevating the air to a high pressure. A piston within the cylinder helps accomplishes this task. Reciprocating air compressors are either air-cooled or water-cooled in lubricated or non-lubricated configurations and are also provided in a number of different pressures and capacities.

Rotary screw compressors are also positive displacement compressors. The most common rotary air compressor is the single stage helical or spiral lobe oil flooded screw air compressor. This type of air compressor consists of two rotors that are in a casing, where the rotors compress the air internally. These units are oil cooled, where the oil seals the internal clearances providing both cooling and sealing for efficiency. Rotary screw compressors come in two stage designs as well, in both oil flooded and oil free.

Centrifugal air compressors are not of the positive displacement design but instead are dynamic compressors, which is based on a transfer of energy from a rotating impeller to the air. This compressor is designed for higher capacity because flow through the compressor is continuous. Centrifugal air compressors are oil free and the oil lubricated running gear is separated from the air by shaft seals and atmospheric vents.

All air compressor types require preventive maintenance that must be done to keep them working efficiently and to ensure longevity. We at Arizona Pneumatic Systems, Inc. not only design and sell air compressor systems, but also provide comprehensive preventive maintenance programs, custom packaging, rebuilding and repair services.