

## Generators, Light Towers, Compressors, and Heaters

**Used Compressors** Orange - Power is transferred into potential energy and stored as pressurized air inside of an air compressor. Air compressors use diesel, gasoline or electric motors, forcing air into a storage tank to pressurize it. Once the tank reaches its' upper limit, the air compressor turns off, as the compressed air is held into the tank until needed. Compressed air is utilized in a variety of industries. Once the kinetic energy in the air tank is used up, the tank undergoes depressurization. The pressurization restarts after the air compressor turns on again, which is triggered after the lower limit is reached.

**Positive Displacement Air Compressors** There are a variety of air compression methods. They are divided into roto-dynamic or positive-displacement categories. The air is forced into a chamber with decreased volume in the positive-displacement model and this is how the air becomes compressed. After maximum pressure is attained, a valve or port opens and the air is discharged into the outlet system from the compression chamber. Popular types of positive-displacement compressors include Piston-Type, Rotary Screw Compressors and Vane Compressors. Dynamic Displacement Air Compressors Centrifugal air compressors, along with axial compressors fall under the dynamic displacement air compressor category. These units rely on a rotating component to discharge the kinetic energy and transform it into pressure energy. Pressurization is attained from a spinning impeller that creates centrifugal force to accelerate and decelerate contained air. Heat is generated by air compressors and these machines need a heat disposal method, generally with some form of air or water cooling component. Atmospheric changes are also taken into consideration during compressor cooling. Inlet temperature, the area of application, the power available from the compressor and the ambient temperature are all factors the equipment must take into consideration.

**Air Compressor Applications** Numerous industries rely on air compressors. Air compressors are used to provide pneumatic power to equipment such as air tools and jackhammers, to fill tires with air, to supply clean air with moderate pressure to divers and much more. Copious amounts of moderate pressure air are generated for numerous industrial applications. Types of Air Compressors The majority of air compressors are either the rotary screw type, the rotary vane model or the reciprocating piston type. These types of air compressors are favored for portable and smaller applications.

**Air Compressor Pumps** Oil-injected and oil-less are two specific types of air-compressor pumps. The oil-free system relies on more technical components; however, it lasts for less time in comparison to oil-lubed pumps and is more expensive. The system that functions without oil has been recognized with delivering better quality.

**Power Sources** Air compressors can be utilized with many different power sources. The most popular models are diesel-powered, gas and electric air compressors. Additional models are available on the market that have been built to use hydraulic ports or engines that are commonly utilized by mobile units and rely on power-take-off. Diesel and gas-powered models are often chosen for remote locations that offer limited access to electricity. They need adequate ventilation for their gas exhaust and are quite noisy. Indoor applications including warehouses, production facilities, garages and workshops that offer easy access to electricity typically rely on electric-powered air compressors.

**Rotary-Screw Compressor** The rotary-screw compressor is one of the most popular kinds on the market. This model of gas compressor relies on a positive-displacement mechanism of the rotary type. These compressors are often used in industrial applications in place of piston compressors. They are popular for jobs that depend on high-pressure air. Impact wrenches and high-power air tools are common. The rotary-screw gas compression unit has a continuous rhythm; featuring minimum pulsation which is a hallmark of piston model units. Pulsation can contribute to a less desirable flow surge. Rotors are used by the rotary-screw compressors to make gas compression possible. There are timing gears affixed on the dry-running rotary-screw compressors. These components are important to ensure the female and male rotors operate perfectly aligned. In oil-flooded rotary-screw compressors, the space between the rotors is lubricated. This design creates a hydraulic seal and transfers mechanical energy in between the rotors simultaneously. Starting at the

suction area, gas moves through the threads as the screws rotate. This makes the gas pass through the compressor and leaves through the ends of the screws. Overall success is effective when particular clearances are achieved regarding the sealing chamber of the compression cavities, the rotors and the helical rotors. Fast speed and rotation are behind minimizing the ratio of a leaky flow rate or an effective flow rate. Rotary-screw compressors are used in industrial locations that need constant air, food processing plants and automated manufacturing facilities. Besides fixed units, there are mobile versions in tow-behind trailers that are powered with small diesel engines. Often referred to as “construction compressors,” portable compression systems are necessary for riveting tools, road construction crews, sandblasting applications, pneumatic pumps and numerous other industrial paint systems. Scroll Compressor This type of popular air compressor specializes in compressing refrigerant or air. It is common in vacuum pumps, to supercharge vehicles and in air conditioning equipment. Scroll compressors are used in many automotive air-conditioning units, residential heat pumps and air-conditioning systems to replace wobble-plate traditional and reciprocating rotary compressors. Fluids including gases and liquids are pumped, compressed and pressurized with the dual interleaving scrolls on this compressor. Usually, one of the scrolls is fixed, while the second scroll is capable of orbiting with zero rotation. This dynamic action traps and compresses or pumps fluid between both scrolls. The compression movement happens when the scrolls synchronously rotate with their rotation centers misaligned to create an orbiting motion. Flexible tubing variations contain the Archimedean spiral that operates similar to a tube of toothpaste and acts like a peristaltic pump. Casings contain a lubricant to prevent exterior abrasion of the pump. The lubricant also dispels heat. The peristaltic pump is a great solution since there are no moving items contacting the fluid. Having no seals, glands or valves keeps this equipment easy to operate and quite inexpensive in maintenance. Compared to additional pump items, this tube or hose piece is fairly low cost.