

Generators, Light Towers, Compressors, and Heaters

Used Compressors Bellevue - Air compressors are valuable equipment that transfers power into potential energy which is stored in pressurized air. Air compressors use diesel, gasoline or electric motors, forcing air into a storage tank to pressurize it. Eventually, the tank reaches its limit and the air compressor turns off, holding the air in the tank until it can be used. There are many applications that require compressed air. The tank depressurizes as the kinetic energy of the air is used. 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 multiple methods for air compression. They are divided into roto-dynamic or positive-displacement categories. In the positive-displacement method, air compressors force the air into a space with decreased volume and this compresses the air. A port or valve opens one maximum air pressure is achieved. Next, the air is discharged from the compression chamber into the outlet system. 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. Pressure energy is transformed via discharged kinetic energy with a rotating component. There is a spinning impeller to generate centrifugal force. This mechanism accelerates and decelerates the contained air to produce pressurization. Air compressors create heat and need a method to dispose of the heat, typically with some kind of water or air cooling mechanism. Compressor cooling also relies on atmospheric changes. Certain equipment factors need to be considered including the available compressor power, inlet temperature, ambient temperature and the location of the application. Air Compressor Applications Numerous industries rely on air compressors. Supplying clean air with moderate pressure to a submerged diver is one use. Providing clean air with high-pressurization to fill gas cylinders to supply pneumatic HVAC controls and powering items such as jackhammers or filling vehicle tires are other popular uses. There are many industrial applications that rely on moderate air pressure. Types of Air Compressors Most air compressors are the reciprocating piston style, the rotary vane model or the rotary screw kind. 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. Overall, the oil-less system is considered to deliver higher quality. Power Sources There are numerous power sources that are compatible with air compressors. 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 gas compressor requires a rotary type positive-displacement mechanism. These models are often used to replace piston compressors in vast industrial applications where large volumes of high-pressure air are required. High-power air tools and impact wrenches are popular. Gas compression of a rotary-screw model features a sweeping, continuous motion, allowing minimal pulsation which is common in piston model compressors and may cause a less desirable flow surge. Rotors are used by the rotary-screw compressors to make gas compression possible. Timing gears come into play with dry-running rotary-screw compressor models. 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. Entering at the suction portion, gas travels through the threads while the

screws rotate; forcing the gas to pass through the compressor and exit through the screws ends. Success and overall effectiveness rely on specific clearances being achieved between the sealing chamber of the compression cavities, the rotors and the helical rotors. Rotation at high speeds minimizes the ratio of a leaky flow rate versus an effective flow rate. Food processing plants, industrial applications requiring constant air and automated manufacturing facilities use rotary-screw compressors. 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

A scroll compressor is used to compress refrigerant. It is popular with supercharging vehicles, in vacuum pumps and commonly used in air-conditioning. 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. This apparatus features dual interleaving scrolls that are responsible for pumping, compressing and pressurizing fluids including gases and liquids. Usually, one of the scrolls is fixed, while the second scroll is capable of orbiting with zero rotation. This action traps and pumps or compresses fluid between the two scrolls. The compression movement happens when the scrolls synchronously rotate with their rotation centers misaligned to create an orbiting motion. The Archimedean spiral is found in flexible tubing variations. It functions similarly to a tube of toothpaste and resembles a peristaltic pump. There is a lubricant on the casings to stop exterior pump abrasion. 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 many other pump models, this tube or hose feature is relatively low cost.