

## Generators, Light Towers, Compressors, and Heaters

Used Compressors Idaho - Air compressors are popular equipment that stores pressurized air by transferring power into potential energy. These units use electric, diesel or gas motors to force air into a storing tank to increase the pressure. 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 used for many applications. The tank depressurizes as the kinetic energy of the air is used. After the lower limit has been attained, the air compressor roars back to life to begin the process of pressurization. Positive Displacement Air Compressors There are a variety of air compression methods. These methods are divided into positive-displacement or roto-dynamic 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 The dynamic air compressors consist of centrifugal air compressors and axial compressors. 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. 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 Air compressors are used in many different industries. For example, supplying clean air at moderate pressure to a diver that is supplied for surface submersion, supplying clean air of high-pressure to fill gas cylinders and supplying pneumatic HVAC controls with moderately pressurized clean air to power pneumatic tools including jackhammers and filling up high-pressure air tanks to fill vehicle tires. 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-less and oil-injected are the two main kinds of air-compressor pumps. The oil-free system is more expensive compared to oil-lubed systems and they last less time. 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. Often, gas and diesel-powered models are used in remote places that do not have great electricity access. Gas and diesel models are noisy and emit exhaust. Interior locations such as workshops, warehouses, garages and production facilities have power and can rely on quieter, electric-powered models. Rotary-Screw Compressor One of the most sought after compressors is the rotary-screw compressor. This model of gas compressor relies on a positive-displacement mechanism of the rotary type. These units are commonly used in industrial settings to replace piston compressors for jobs that require high-pressure air. 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. In the rotary-screw model, compressors rely on rotors to compress the gas. Dry-running rotary-screw models use timing gears. These items ensure the perfect alignment of the male and female rotors. Lubricating oil fills the space between the rotors in oil flooded rotary-screw models. This serves as a hydraulic seal while simultaneously transferring mechanical energy between the rotors. 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. Effectiveness and success are obtained when certain clearances are achieved with the sealing chamber of the helical rotors, the rotors and the compression cavities. Rotation at high speeds minimizes the ratio of a leaky flow rate versus an effective flow rate. Rotary-screw compressors are used in industrial locations that need constant air, food processing plants and automated manufacturing facilities. Other than fixed models, there are mobile units in tow behind trailers that run on diesel engines. Also known as “construction compressors,” portable compression systems are popular for sandblasting, industrial paint systems, construction crews, pneumatic pumps, riveting tools and more.

**Scroll Compressor** A scroll compressor is used to compress refrigerant. 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. As one of the scrolls is often fixed, the other scroll eccentrically orbits 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. The lack of glands, seals and valves keeps them simple to operate and fairly inexpensive in terms of maintenance. Compared to many other pump models, this tube or hose feature is relatively low cost.