

# WHY COMPRESSED AIR?



*Compressed air is a utility that has critical roles in most industries. In familiar applications, compressed air drives pneumatic tools, such as screw drivers, impact wrenches and pneumatic cylinders. It serves as a source of energy that produces rotary and linear motion in these devices.*

## ROTARY MOTION



Any device that converts a form of energy into mechanical energy to produce motion may rightly be termed a 'motor'. The word is, however, used most commonly to refer to an electrically powered device. This is because electricity is the most widely used source of energy in rotary motors and electric motors are ubiquitous.

Electric motors are available in small to very large sizes. There is a range of motor speeds also.

Electric motors are vulnerable to damage in situations where the rotor is unable to rotate. Such situations may arise from excessive loads, bearing seizure or other reasons. The stator current rises greatly when an electric motor stalls, causing damage to the windings.

Compressed air is the choice for applications in which the load is light and intermittent. Even when a pneumatic motor (also known as air motor) stalls, there is no risk of failure of the device. Compressed air is most commonly used in industrial settings to drive hand tools in which rotary motion is produced.



Air motors are also used to operate hoists and fans in situations where electricity is not available or where the use of electricity is precluded by the hazardous nature of a location, for example an oil well.



When the torque and power values are high, hydraulic motors are used in place of air motors. Hydraulic motors are also used in rotary couplings in drive trains.

*Rotational or linear motion can be produced using electrical and hydraulic means, apart from compressed air. Each source of energy has its own advantages, making it the most suitable option for a distinct set of applications.*

## LINEAR MOTION



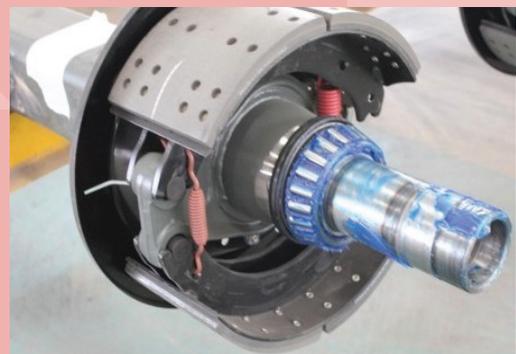
The use of electricity to produce linear motion is restricted to applications in which the forces are small and the travels are short. The solenoids used in electric latches and calling bells provide examples of linear motion produced using electricity. The print heads of dot matrix printers are another example.



When high pressures or long travels are required, such as in the large presses used to make car bodies, hydraulic systems are preferred.



Compressed air may be used to produce linear motion using pneumatic cylinders. Such cylinders are extensively used in applications where there is a high degree of automation, such as bottling plants. Pneumatic cylinders may be used in machines that fit caps on bottle tops and affixing labels on bottles.



Another example of the production of linear motion using compressed air is seen in air brakes, where brake shoes are pressed against brake drums pneumatically.

## MANY OTHER USES



Compressed air has, of course, many other kinds of applications, such as pneumatic conveying of powders, spraying powder in powder coating processes, spraying liquids in painting and inflating tyres. Electrical or hydraulic alternatives are not available for all these applications.

Compressed air must be treated before it is used in any application.

Trident Pneumatics manufactures a wide range of equipment to treat compressed air for every possible use, for pressures up to 16 bar and flow rates up to 2000 cfm.

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