



Glossary

A	Air tank	A storage tank, or reservoir, for compressed air.
B	Balanced force	An object under the influence of balanced forces is at rest or moves at a uniform velocity.
	Bar	A common metric unit used for pressure measurement. 1 bar equals 100,000 Pascals.
C	Circumference	The distance around a circle.
	Compressibility	The characteristic of substances, such as gases, that can be compressed so that they occupy less space to fit into smaller containers.
	Compressor	A mechanism used to compress air. A compressor could be motorized or operated manually.
	Cylinder	A rigid barrel with closed ends containing a piston and a piston rod. When compressed air enters the cylinder, it expands against the piston, producing force and creating movement.
	Cylinder Piston	See Piston.
E	Efficiency	A measure of how much of the force that goes into a machine comes out as useful work. Friction often wastes a lot of energy reducing the efficiency of a machine.
	Energy	The capacity to do work.
F	Fair Testing	Measuring the performance of a machine by comparing its performance under different conditions.
	Force	A push or a pull in a particular direction that can be applied to an object. The force created by a pneumatic cylinder is the product of the air pressure times the area of the piston.
	Friction	The resistance met when one surface is sliding over another, e.g. when an axle is turning in a hole or when you rub your hands together.
G	Grip	The grip between two surfaces depends on the amount of friction between them. Tyres grip dry road surfaces better than wet road surfaces.
K	Kinetic energy	The energy of an object that is related to its speed or movement. The faster it is travelling, the more kinetic energy it has.

L	Lever	A bar that pivots about a fixed point when an effort is applied to it.
	Lever, first class	The pivot is between the effort and the load. A long effort arm and short load arm amplifies the force at the load arm. For instance prying the lid off a paint can. The Scissor Lift uses a first class lever.
	Lever, second class	The load is between the effort and the pivot. This lever amplifies the force from the effort to make lifting the load easier; for instance a wheelbarrow.
	Lever, third class	The effort is between the load and the pivot. This lever amplifies the speed and distance the load moves compared to the effort. The thumb of the Hand is a third class lever.
	Linkages	A mechanical linkage carries movement and forces through a series of rods or beams connected by moving pivot points. The Scissor Lift contains many linkages.
M	Machine	A device that makes work either easier or faster to do. It usually contains mechanisms.
	Manometer	A manometer is a pressure measuring instrument. The LEGO® manometer gives you a pressure reading in both bar and psi.
	Mass	Mass is the quantity of matter in an object. Mass is often confused with weight.
	Mechanism	A simple arrangement of components that transforms the size or direction of a force, and the speed of its output, such as a lever or two gears meshing.
P	Piston	A solid disk that moves inside a cylinder in response to changing pressure.
	Piston rod	A rod connected to a piston and extending outside a cylinder. When the piston moves inside the cylinder, the piston rod also moves.
	Pivot	The point around which something turns or rotates, such as the pivot of a lever. The pivot of a pair of scissors is the screw or rivet holding it together.
	Pneumatic	Related to the use of compressed air.
	Pneumatic circuit	The path of compressed air through a system of pneumatic components.
	Potential energy	Stored energy. Compressed air has potential energy that can be used to do work when it expands against a piston in a cylinder.
	Power	The rate at which a machine does work (work divided by time).
	Pressure	The amount of force exerted on a unit area. Atmospheric pressure at sea level is approximately 15 pounds per square inch (psi) and we are so used to this that we don't notice it. The scientific unit for pressure is the pascal (Pa) and 1 Pa is 1 newton per square metre. A newton is quite a small force and a square metre is a large area so the force per unit area of 1 Pa is tiny. In fact it takes almost 7000 Pa to exert 1 psi and 100 000 Pa to exert atmospheric pressure.

Psi Pounds force per square inch. Psi is common a unit used for pressure measurement. 1 psi equals 6894,76 Pascals

Pump A device that applies a force to a fluid, such as air or water, to create pressure or movement.

S Sequencing Setting up actions to happen in the right order and at the right time intervals.

T Tube Flexible, hollow cylindrical material used to transport a fluid, such as compressed air.

V Valve A device to accept compressed air and direct its flow through tubing to other compressed air components. A valve is controlled by a handle with several positions.

W Work The result of a force moving against a resistance through a distance. The act of compressing air is an example of doing work.