

Reciprocating engine

[Design](#)



Pneumatic type In mechanical type, the screw rod is actuating the movable jaw. One end is connected to the movable Jaw and it passes through a fixed type nut. When we rotate one end of the screw rod it will rotate in the nut and in turn moves the movable Jaw. Here the rotary motion is converted into reciprocating motion. In Hydraulic type's one end of the piston rod is connected to the movable Jaw and the piston slides in the cylinder. Here the hydraulic fluid actuates the movement of the piston; this in turn actuates the movable Jaw.

Here the principle movement is only a reciprocating movement. Pneumatic type is same as the hydraulic type. Here instead of hydraulic fluid, air is used. LINE DIAGRAM Working Operation: Initially starting with air compresses, its function is to compress air from a low inlet pressure (usually atmospheric) too higher pressure level. This is an accomplished by reducing the volume of the air. Air compressors are generally positive displacement units and are either of the reciprocating piston type or the rotary screw or rotary vane types.

The air impresser used here is a typically small sized, two-stage compressor unit. It also consists of a compressed air tank, electric rotor and pulley drive, pressure controls and instruments for quick hook up and use. The pressure exceeds the designed pressure of the receiver a release valve provided releases the excesses air and thus stays a head of any hazards to take place. The compressed air goes to the solenoid valve through flow control valve. The flow control valve is used to control the amount air flow to the cylinder. This flow is adjusted by manually by the nap is fixed above the flow control valve.

Then this air goes to the 5/2 solenoid valve. The 5/2 solenoid valve is having one input port, two output port and two exhaust port. The 5/2 solenoid valve is controlled by the electronic timing control unit. The speed of the on/off the solenoid valve is controlled by this timing control unit. The 2 outlet ports are connected to an actuator (Cylinder). The pneumatic activates is a double acting, single rod cylinder. The cylinder output is coupled to further purpose. The piston end has an air hording effect to prevent Eden thrust at extreme ends.

Principles Of Working The compressed air from the compressor reaches the solenoid valve. The solenoid valve changes the direction of flow according to the signals from the timing device. The compressed air pass through the 5/2 solenoid valve-1 and it is admitted into the front end of the cylinder block. The air pushes the piston for the work piece clamping. At the end of the stroke air from the solenoid valve reaches the rear end of the cylinder block. The pressure remains the same but the area is less due to the presence of piston rod.

This exerts greater pressure on the piston, pushing it at a faster rate thus enabling faster return stroke. The compressed air pass through the 5/2 solenoid valve-2 and it is admitted into the front end of the cylinder block. The air pushes the piston, so that the work piece is lifted. At the end of the living stroke air from the solenoid valve reaches the rear end of the cylinder block. The pressure remains the same but the area is less due to the presence of piston rod. This exerts greater pressure on the piston, pushing it at a faster rate thus enabling faster return stroke.