

## FABRICATION OF PNEUMATIC JACK FOR CAR

### ABSTRACT

The main target of project is to improve version of a mini pneumatic jack. This will be more efficient for the user. This machine is pneumatic powered which has low co-efficient of friction. A pneumatic cylinder erected provides power to lift up the Jacky. This is a pneumatic powered machine and requires no other means of power to operate. The required components are Compressor, Pneumatic cylinder, Solenoid, Control circuit and Jack.

There are many types of work holding devices like machine vices swivel vices, universal vice, pipe vice, T-Bolt's 'U' clamps, Goose neck clamp, angle plate, Jigs and fixtures etc. These are all mechanical type work holding devices. In this project we are dealing about the pneumatic plain vice used in drilling machine. Here the loading and unloading is quick. The job can be held more rigidly.

### INTRODUCTION

Automation can be achieved through computers, hydraulics, pneumatics, robotics, etc., of these sources, pneumatics form an attractive medium for low cost automation. The main advantages of all pneumatic systems are economy and simplicity. Automation plays an important role in mass production. Nowadays almost all the manufacturing processes are being made automatic in order to deliver the products at a faster rate. The following reasons affirms the benefits of automation,

- To achieve mass production
- To reduce man power
- To increase the efficiency of the plant
- To reduce the work load
- To reduce the production cost
- To reduce the production time
- To reduce the material handling
- To reduce the fatigue of workers
- To achieve good product quality
- Less maintenance

- There are three major types of work holding devices which are:
  - 1. Mechanical type
  - 2. Hydraulic type
  - 3. 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.

## **PNEUMATICS:**

The word „pneuma“ comes from Greek and means wind. The word pneumatics is the study of air movement and its phenomena is derived from the word pneuma. Today pneumatics is mainly understood to mean the application of air as a working medium in industry especially the driving and controlling of machines and equipment. Pneumatics has for some considerable time been used for carrying out the simplest mechanical tasks in more recent times has played a more important role in the development of pneumatic technology for automation. Pneumatic systems operate on a supply of compressed air which must be made available in sufficient quantity and at a pressure to suit the capacity of the system. When the pneumatic system is being adopted for the first time, however it will indeed be necessary to deal with the question of compressed air supply. The key part of any facility for supply of compressed air is by means using reciprocating compressor. A compressor is a machine that takes in air, gas at a certain pressure and delivers the air at a high

pressure. Compressor capacity is the actual quantity of air compressed and delivered and the volume expressed is that of that of the air

## ADVANTAGES:

- Air used in pneumatic systems can be directly exhausted back
- In to the surrounding environment and hence the need of special reservoirs and no-leak system designs are eliminated.
- Pneumatic systems are simple and economical
- Control of pneumatic systems is easier
- Idle time of the machine is reduced.
- When compared with the mechanical vices, it consumes less time for clamping and unclamping the job.
- It reduces the manual labour
- Hence, production rate is higher
- In this mechanism there is no backlash.