FABRICATION OF PNEUMATIC INBUILT JACK FOR FOUR WHEELER

Snehal E. Kaikade¹, Pawan S. Bhagat², Adnan M.A. Shaikh³ and Pankaj Patil⁴
¹²³⁴Diploma Student of Mechanical Engg, V.I.T Uti Nagpur road, Umred, Maharashtra, India

Abstract—In today automotive and industrial world, Pneumatic system play a vital role, it is actually and arrangement of different elements in order to regulate, direct, sense and command itself to achieve the desired result. In Pneumatic system working media is fluid power. The term fluid power related to the employment of fluid media under control conditions to perform some useful work. Fluid power in industries has been important in the development of automatic machinery and equipments for the use in industrial plants. The fluid media for power transmission has many advantages over the media of power transmission.

I. INTRODUCTION

Fluid Power
The term “fluid Power’ relates to the employment of fluid under controlled conditions to perform some useful work. Fluid power in industry has been important in the development of automatic machinery and equipment for use in industrial plants. The fluid media for power transmission has many advantages over other media of power transmission
There are two main branches of fluid power
➢ Pneumatics
➢ Hydraulics

Air and It’s Behaviour
The relation between pressure and volume of a gas, like air is given by Boyle’s Law:
“At constant temperature, the volume of a given mass of gas is inversely proportional to the absolute pressure”.
Boyle’s law states that as gas is reduced in volume, its pressure will increase inversely. This law is expressed as:
P1 x V1 = P2 x V2
This is only constant at a constant temperature. As air is compressed, the energy in this work is dissipated as heat, i.e., the temperature will rise as the air is reduced in volume.

I. I Need pneumatic jack
In Process industries and robotics and other applications, technology have been utilize in several purpose to carry out and need the operation in automation mode. Out of this technology pneumatic technology is important one, in fast life where time is a first important factor; we need to utilize automation technology for future growth. Keeping this factor in mind it has been found that pneumatic technology can be deliberately used to have very effective and good result about his work and cost effectiveness.By imagine lot of examples one example is that today we show various type of conveyer such as gravity, roller, belt etc., all of these examples utilize complicated mechanisms for sorting items operations hence to overcome this, we can use simple technology to do the required work is one pneumatic technology.

II. SPECIFICATION OF COMPONENTS

Air Generation and Distribution
For the continuing performance of control systems and working elements it is necessary to guarantee that the air supply is clean, dry and at the required pressure. If these conditions are not fulfilled, then short to medium term degeneration of the system will be accelerated. The effect is downtime on the machinery in addition to increased costs for repair or replacement of parts. The preparation of the air starts from the point of generation and can be contaminated at many potential points in the system right up to the point of use. There is no use in preparing good quality air and then allowing incorrect component selection to reduce the quality.

Air Compressor
The selection from the various types of compressors available is dependent upon quantity of air, pressure, quality and cleanliness and how dry the air should be.
There are varying levels of these criteria depending on the type of compressor.

Reciprocating Compressor
Reciprocating compressors are very common and provide a wide range of pressures and delivery rates. For higher pressures multistage compressors are used with inter cooling between each stage of compression.

Flow Compressor (Turbo-Compressor)
Flow compressors produce large volumes of air at small increases in stage pressure. The air is accelerated by the blades of the compressor but there is only a small increase in pressure of about 1.2 times the inlet pressure per stage.

Criteria For The Selection of a Compressor Delivery Volume
- This is understood to mean the amount of air, which the compressor delivers. Delivery volumes are specified in two different ways:
- The theoretical delivery volume for reciprocating piston compressors is the product, swept volume x no. of revolutions.
- The effective delivery volume depends on the type of compressor and the pressure. It is affected by the volumetric efficiency.
- Only the effective delivery volume of a compressor is of interest. Only this volume is available for driving and controlling pneumatic equipment. Delivery volume is given in Nm3/min. or in Nm3/h.
- Nevertheless, many compressor manufacturers refer to the theoretical value in their specifications.

Air Receiver

 Receivers provide constant air pressure in a pneumatic system, regardless of varying or fluctuating consumption. This enables briefly occurring consumption peaks to be balanced out, which cannot be made up by the compressor. A further function of receivers is the emergency supply to the system in cases of power failure.

Pneumatic Actuators

An actuator is an output device for the conversion of supply energy into useful work. The output signal is controlled by the system, and the actuator responds to the control signals via the final control element. Other type of output device is used to indicate the status of control system or actuator.

Pneumatic Valves

Pneumatic control systems consist of signal components, control components and a working part. The signal and control components influence the operating sequence of the working element and are termed valves. Valves are devices for controlling or regulating “start”, “stop” and direction, as well as pressure or flow of a pressure medium. Valves are divided into the following group, according to their function:
- Directional valves (way valves)
- Non-return valves
Pressure control
Flow control valves

Flow Control Valves
Flow control valves (Throttle valves) influence the volumetric of compressed air, in both directions. Flow control valves with constant restriction: Here, the length of the throttling section is greater than its diameter. Flow control valves with adjustable restriction Throttle valve adjustable

Housing and Tubing

Beyond the compressed air distribution system, which is composed of rigid main pipelines, feeder lines and associated fittings and accessories, a means must be provided for conducting clean, dry and lubricated compressed air to tooling and equipment. Air hose tubing are used for this purpose.

III. ADVANTAGE
• Air is available everywhere
• Can be stored easily
• Clean and non – pollutant
• Transportable over long distances
• High speed operation
• No return lines
• Relatively low cost to produce
• Largely insensitive to temperature
• Technology can be easily learned

IV. APPLICATION
1. It is used in automobile industries.
2. It is also used to lift machineries.

V. OBJECTIVE
1) Implementation of the pneumatic technology.
2) Modified the existing mechanisms.
3) To make use of pneumatic system were working fluid is readily available.
4) To prepare and efficient and cost effective system.

VI. CONCLUSION
1. Not resistant to fluctuating load
2. Very high speed possible
3. Operating pressure is minimum generally 6 bar
4. Uses only air
5. Air supply is necessary
6. Very low operating cost
7. Stroke control is easy but fluctuation unavoidable
8. Simple maintenance
9. No problem in system
10. Overall cost is low
11. Weight to pressure ratio is large

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Biographies:
Mr. Snehal E. Kaikade pursuing in Diploma(Mechanical Engineering), MSBTE, Mumbai.

Mr. Pawan S. Bhagat pursuing in Diploma(Mechanical Engineering), MSBTE, Mumbai.

Mr. Adnan M.A. Shaikh pursuing in Diploma (Mechanical Engineering), MSBTE, Mumbai.