



Fabrication Of Pneumatic Forging Machine

Prof. Sunil Parge¹, Malgudri Saraswati², Rasika Pasare³

¹Asst.Professor Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology, Lonavala

²Student Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology, Lonavala

³Student Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology, Lonavala

ABSTRACT

In this we fabricate the pneumatic circuit with time delay circuit forging machine. It time delay valve has three different times like, low, medium, high. It control by a button and it consist many more electric and electronic components. This circuit run on adapter this adapter provide 12 volt DC current. This pneumatic circuit also have components like, compressor, FRL unit. Pressure gauge, 3/2 solenoid operated direction control valve, double acting cylinder, etc.

Keyword: - pneumatic circuit with time delay circuit forging machine, 12 volt DC adapter, and compressor, solenoid valve, Pressure gauge.

1. INTRODUCTION

In this pneumatic system, it is the concept of transmitting or work done using compressed air. It was similar to the hydraulic system. The pneumatic time delay hammering machine consists of cylinders these are DAC mean double- acting cylinder it is used to the force of air to be move-in both sides extend and retract strokes. From the double-acting cylinder. They have two-port to allow the air in one for outstroke and one is the in stroke. Then the stroke length for this design is not limited however the piston rod is more remuneration to buckle and bend.



Fig 1.1: - double acting cylinder.

1.1 FRLUNIT

The FRL unit is working on a like pressure regulator, which is the lubricator function of an FRL unit. The lubrication oil is more effectively working to help with pneumatic components. Which the filter regulator lubricator unit is of is a filtered and remove the unwanted impurities and next passing through the fresh air on a next component. The FRL is the most important part of a pneumatic operating structure or any pneumatic projects.



Fig1.2 FRLunit

2.SOLENOID OPERATED VALVE

In this project we used 3/2 solenoid operated direction control valve and it works or operate on 230 volt

A.C. supply. In this project the solenoid valve is useful for convert the electric signals into movement of actuator. The solenoid it is applying on an electricity to the solenoid quickly directs air through the valve is consist of an on/off bulb. Then the works on the air supply is connected on a solenoid valve is a supply passing through the double acting cylinder. The quickly response time and high flow rate of a time delay circuit makes our pneumatic solenoid valve suitable for numerous application



Fig 1.3: - 3/2 Solenoid D.C. Valve

3.PRESSURE GAUGE

Pressure gauge is a device which is measuring device. Then the measures the pressure in a pneumatic supply on air. The pressure gauge are widely used on all over the world in industrial environment because our used in a small structure, practical and project on a pneumatic circuit measured the pressure in air the air is supply from compressor which is flow the compressed air is passing through the tubes because the pressure gauge. The pressure gauge the works from the pressure measurement.



Fig 1.4: - Pressure gauge

Time Delay circuit

Time delay circuit it used to do delay the time as per selected time or as per required time. And the time delay circuit have three types time high, medium, low. In this we used many electronics and electrical components like 555 timer, relays, bc547, led, in4007 (diode), resistors, capacitors, adapter (12v, 1amp) to convert the 230v AC to 12v DC. This circuit is fitted in one plastic box. For control the time we used two toggleswitch for control minimum and maximum time.

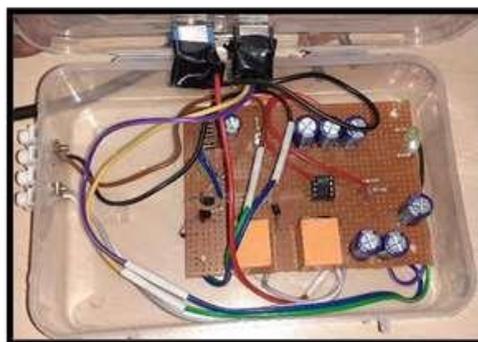


Fig 1.5: - Time Delay Circuit

2. LITERATURE SURVEY

Girish Gharat (1): This project has met its objective to produce a C-Frame gas Press and its operation is proscribed to V-Bending and Punching. We have got an inclination to style a gas press that

costs however that gettable among the market. We tend to area unit very good at what we have done and commemorated doing it. Our gas press is useful to do and do metal forming operations and since it may well be a try of metric weightunit capability press.

Anand Kumar Singh (2): installation is best than mechanism and system in terms of maintenance, cost, accuracy, Productivity. Supported calculation project model work on grievous bodily harm forty 2 bar punching force

K.K.Alaneme (3): The failure of punch die materials used within the assembly of cable trays have been investigated. The analysis shows that the short service life of the autochthonic die part is due to incorrect heat- treatment that did not take away the cold-worked structure in inherent the material throughout production, thus resulting in inferior toughness and/or fatigue resistance. It was equally best-known that occasional arrangement of the mold higher dies teeth and lower die plate thanks to over labor of the machine contributes to the failure of the die material.

Shridhar D. R. (4): throughout this paper vogue and management methodology of sheet punching machine is explained. By mistreatment Programmable Logic Controllers as a result of the controller of the complete system, wise and easy management over the system area unit usually Achieved. Manufacturing measure of the system is reduced by developing an automatic feeding mechanism, worker safety is exaggerated by reducing the human participation among the strategy, and thus the drawback of angular placement of sheets is to boot Reduced.

3. METHODOLOGY

In the analysis the pneumatic system was used. Simulation the forging process using the pneumatic system has key role is improving the quality, delivery and cost reduction. It has been externally efficient in a wide range of research and industrial applications

- To study the various research paper to study work done on forging/hammering.
- Input data problem/Test conditions.
- Market survey related pneumatic system.
- Material selection based on requirements of pneumatic time delay forging machine.
- By using experimentation with test setup. For forging operation.
- Compare analytical and experimental results.
- Documenting results for further improvement / research.

In the design fabrication of any product, the role of each part plays a vital role. The main objectives of our project the manual method of forging and replace it into the pneumatic system. Usually, the forging is done by a manual method like hammering. To minimize labour availability problems and other financial expenditure spent on labour. Minimize the labour cost pneumatic time delay forging machine is helpful.

4. FUTURE SCOPE OF PROJECT

This project gets greater scope in the future many small scales and medium scale forging companies can use it as per their size of machine required. Also used blacksmith use in their small forging workshop also in future we can use it as like punching and bending machine. When changing its working platform or dies

and punch or hammer. The best things about this project are less in cost than the hydraulic machines, easy to handle, easy to dismantle and assemble, and the main thing of this project it has less maintenance cost.

5. STRUCTURE OF PROJECT



CONCLUSION

We observe and know about the time delay circuit and understood the working of the time delay circuit. And design and fabricate the time delay circuit.

REFERENCES

- [1] <https://books.google.co.in/books?id=n3a-Sbvoqj4C&pg=PA109&lpg=PA109&dq=literature+review+for+time+delay+valve&source=bl&ots=4oq0kIeLD&sig=ACfU3U2XZYSHz0jqwDZO0HBApzPJHpHw&hl=en&sa=X&ved=2ahUKEwjZp9WX6MHmAhVs7HMBHUYjAmUQ6AEwE3oECAwQAQ#v=onepage&q&f=false>
- [2] https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/108105088/lec33.pdf
- [3] <https://studylib.net/doc/5276690/time-delay-valve>
- [4] <http://www.mechdiploma.com/explain-time-delay-valve-neat-sketch>
- [5] Design and Development of Pneumatic Punching machine, Anand Kumar Singh, IJTRE, Volume4, Issue 11, July 2017