

ADVANCEMENT OF PRESSURE SWITCH HYDRAULICS PRESS MACHINE

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ABSTRACT: These days the hydraulics machine is very much prerequisite to proselyte the portrait of any material into required look by pressing manipulation. In generic most of the hydraulics machine is used to germinate a compressive flexion. This scrutiny paper work deals with the advancement of pressure switch hydraulics pressure machine. The pressure switch is a Mechatronics device, which is used to convert the electric power to mechanical work. The objective of this research paper is to increase the pressing power of hydraulics pressure machine with the praxis of pressure switch. Basically in this scrutiny paper us cognize the important prelude of pressure switch in the hydraulic press machine.

Keywords: Compressive Force, Electric Power, Hydraulics Pressure Machine, Mechanical Work, Mechatronics, Pressure Switch.

I. INTRODUCTION

Hydraulics plays a very important portion in almost all fragments of diligences. Hydraulics is a discipline of liquids at convenience and in tempo, especially under pressure, and application of that knowledge in design and control of machines. Hydraulic tract is a handover system in which uses the pressure applied in fluid to power the hydraulic machine [3]. The executions of a hydraulic press succumb, largely, upon the behavior of its structure during manipulation. However, these welded structures are becoming complicated and their accurate analysis under given loading conditions is quite important to the structural designer [4]. Basically, hydraulic press succumb on the Pascal's principle, the pressure in the system is stagnant. At one end of the system is a piston with the small cross sectional area driven by the a lever to increase the force driven in small diameter tubing a fluid such as oil is displaced went piston is pushed inward. The small piston, for a given distance of movement, displaces a smaller amount of volume than the large piston, which is proportional to the ratios of areas of heads of the piston. Therefore the small piston must be moved a large distance to get the large piston move significantly. The distance the large piston will move is the distance that small piston is moved divided by the ratio of the areas of the heads of the piston. This is how the energy is converted in the form of work [11]. The prime remuneration of implementing this system is the movement of the mechanical devices can be operated by means of hydraulic components such as actuators to initiate the movement which could be in the form of lever to apply manually or by means of switches to operate automatically [17]. Now, in this research paper we will increase the power of hydraulic machine by the using of pressure switch without increasing the motor power.

II. RESEARCH METHODOLOGY

1. ODIUM OF HYDRAULIC PRESS

Odiom is defined as the basic structure and function of hydraulic press machine.

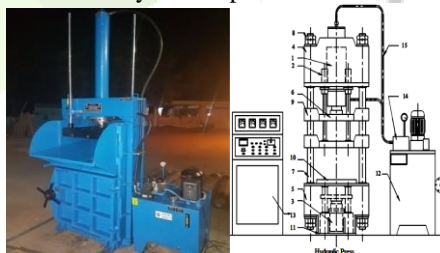


Fig.1: Isometric and sketch view of hydraulic press machine

Table No.1: Parts of hydraulic press machine are [2]

S.NO	PARTS OF HYDRAULIC PRESS MACHINE
1	Main cylinder
2	Blank holding cylinder
3	Ejector cylinder
4	Top platen
5	Bottom platen
6	Moving platen
7	Column pillars
8	Nut and check nuts
9	Side guides
10	Press table
11	Foundation plate
12	Power pack unit

13	Control panel
14	Manifold block
15	Hydraulic piping

2. POWER PACK UNIT

In the hydraulic press machine the power pack unit acts as a brain of the machine. All the important parts of the hydraulic machine are attached to the power pack unit.

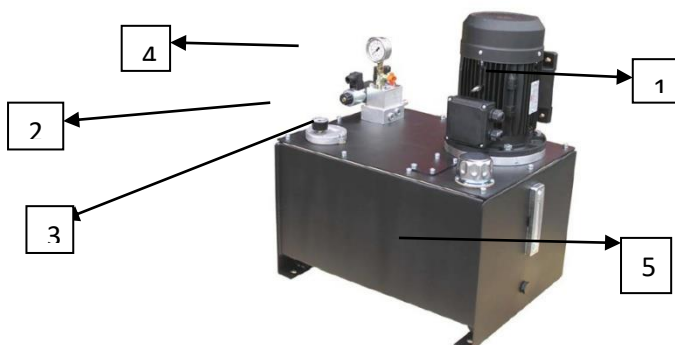


Fig.2: isometric view of power pack unit of hydraulic press machine

Table No.2: parts of power pack unit are

S.NO	PARTS OF POWER PACK UNIT
1	Motor
2	Pressure Switch
3	Minford Block
4	Pressure Gauge
5	Sump

3. PRESSURE SWITCH IN HYDRAULIC PRESS MACHINE

A pressure switch is a form of switch that closes an electrical contact when a certain set fluid pressure has been reached on its input. The switch may be designed to make contact either on pressure rise or on pressure fall. At present most of the hydraulic machine industry are use pressure switch hydraulic machine because it enhance the hydraulic power in short interval of time.



Fig.3: Isometric view of Pressure switch

3.1 Type and Parts of Pressure Switch

There are two fundamental types of pressure switch

- 1. Hydraulic
- 2. Pneumatic

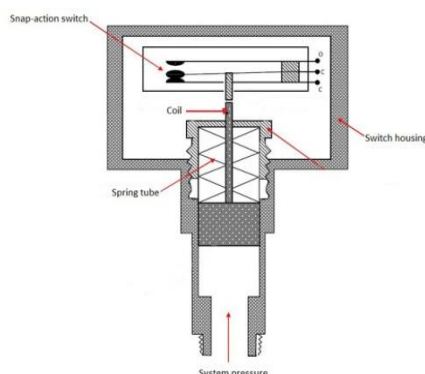


Fig.4: Circuit diagram and parts of pressure switch

3.2 Function of Pressure Switch in Hydraulic Machine

In the hydraulic press machine the basic function of pressure switch is to enhance the power of hydraulic press machine. Pressure switch is converting the electrical energy into mechanical work.

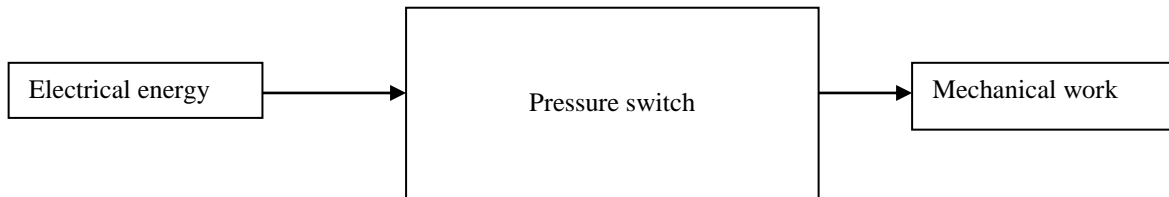


Fig.5: conversion of electrical energy into mechanical work

3.3 Application of Pressure Switch

In the modern hydraulic press machine the pressure switch is necessary to increase the power of press machine without increasing the motor capacity. Pneumatic Pressure switch is used in compressor, pump and hydraulic pressure switch is used in automotive engineering.

3.4 Advantage and Disadvantage of Pressure Switch

A pressure switch is a mechanism that senses when a pressure or vacuum has moved out of a predefined range, and shuts down the associated mechanical system, or sounds a warning alarm. A pressure switch is consequently globally utilized to ensure the proper operation of equipment and the safety of personnel. In residential situations the pressure switch is utilized for everyday functions such as controlling the amount of water pumped into a washing machine, or the correct operation of pool filters and air conditioning systems. In industrial settings in comparison utilizations can range from controlling the pressure in a boiler to ensuring the safe operation of various terrestrial and marine hydraulic systems. Due to the various different roles that pressure switches play in countless residential and industrial systems, many different types of switches currently exist. These switches generally fall into two categories: electromechanical switches and solid-state switches [22].

4. SPECIFICATION OF HYDRAULIC PRESS MACHINE

S.NO	SPECIFICATION	CAPACITY
1	Type	Pressure Switch Hydraulic Press Machine
2	Application	Cartoon and pad bottle
3	Rated Nominal Pressure	200000N
4	Ram Stroke Length	680 mm
5	Weight Of The Press Machine	20000KN
6	Motor Power	5HP
7	Work Table Size	630×960 MM
8	Opening height	830 mm
9	Knock Out Force	300KN
10	Power Sources	Hydraulic

III. RESULT AND CONCLUSION

An attempt has been made to advancement of pressure switch hydraulic press machine. It is more effective than the other general press machine. Now, it makes 200kg packet of pad bottle or plastic or cartoon.



Fig.6: packet of pad bottle and cartoon

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