UNIVERSITI TEKNOLOGI MARA

PRESSURE JACK

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ABSTRACT

Car jack is a mechanical device that help mechanic or people easier to lifting car for changing tyre and other operation involves car underpart. Mostly, the jacks that car workshop has is not easy to carry and it cost a lot to service it. The main goal of this project is to solve the problem with using pressure concept to replace the hydraulic concept, so it does not require any oil orfluid to work the jack. This project work using a jack with simple pressure principle using pneumatic piston and air compressor to push the piston up and lifting load and the outcome of this project is expected to be the product that can archive success and can do the innovation in jack.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

Jack is a mechanical device that use to lift load from certain height. Jack also can lift massive load such as an industrial jack that can lift load more than 2 or 3 tons. The most popular variety is a car jack, floor jack, or garage jack, which raises vehicles so that maintenance may be done on them. I would personally invent a small prototype jack that using pneumatic piston and only using pedal press air pump.

1.2 Problem Statement

The problem that related to jacks are common problem associated with hydraulic jack is the screw requires high lubricant & easily getting stuck. A hydraulic jack works by forcing an incompressible liquid into a cylinder via a pump plunger. Because oil is self-lubricating and stable, it is used. Using hydraulic oil can have cost us a lot. Other than that, Screw mechanism also cost us a lot of time and energy consume. So, from my point of view, this problem can be settled by using pressure principle. The concept is still the same to lifting load but by using pneumatic piston and air compressor. Furthermore, the jack does not require hydraulic oil to operate instead, compressed air is used to lift the object. This enables a simple lifting and lowering mechanism for things weighing up to 150 kg.

1.3 Objectives

The main objectives of this project are:

a) To Design a jack using pneumatic system
b) To fabricate a jack using pressure concept to make it more convenient for users.