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## Inbuilt Hydraulic System for LMVS

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### ABSTRACT

An automobile hydraulic Jack can be easily operated by a single push button provided on the dashboard.

The system operates on hydraulic drive which consists of three main parts as a hydraulic pump, driven by an electric motor, hydraulic cylinder to lift the vehicle.

The hydraulic jacks actuated separately for either side of the car as per the breakdown condition.

This Jack will be very useful for all senior citizens and especially for ladies who find it extremely difficult to operate the jack manually in any breakdown conditions.

The motive behind using a hydraulic system instead of a pneumatic system is, more power is produced by the system and the simplicity in design as compared to pneumatic design.

As the hydraulic oil is incompressible so the lifting capacity is more as compared with the pneumatic system which operates on air which is compressible.

### 1. Introduction

It is believed that 'Necessity is the mother of invention'. Here the necessity lies in reducing the human effort applied during manual operation of the jacks and hence the need of the invention.

To provide a safe and simple automatic hydraulic jacking system without manual effort. To provide a new jacking system that can be operated from within the vehicle by means of a dashboard control panel. Hydraulics is the science of transmitting force or motion through the medium of a confined liquid. In a hydraulic device, power is transmitted by pushing on a confined liquid. The transfer of energy takes place because, in a hydraulic device, power is transmitted by pushing on a confined liquid. Inbuilt hydraulic jack system is based on the principle of Pascal's law. Hydraulics is a mechanical function that operates through the force of liquid pressure. In hydraulic based systems mechanical movement is produced by contained, pumped liquid typically through cylinders, moving pistons. Several upstarts relate to hydraulic system and more especially, to an inbuilt hydraulic jack system.

Most of the vehicles are lifted by using screw jack. This needs high manpower and consumes a lot of time. Various types of jacks or lift devices have been installed for lifting the vehicle. Conventionally we have always used a separate jack for each of 4 wheels; instead here, we have the jacks permanently installed on the vehicle. It is an object of innovation to provide ideal jack system that can be operated by driver from inside the car. It is also an object of innovation to provide an ideal hydraulic system which is operated by cam mechanism which actuates hydraulic jack which will lift the vehicle. It is a device which will be used in future to tire changes purposes. When tire gets punctured, we need to change the tire and with the help of this system, vehicle lift by a side automatically, with little chores.

The general idea of the project is to minimize human effort while operating the jack.

This system will be directly and permanently incorporated into the vehicle frame.

A hydraulic jack is a device used to elevate heavy weight without manpower. The device is accomplished by exerting

great force. It exerts the liquid against a piston pressure is reinforced in the jack's container. asked Pascal's Law that the pressure of a liquid in a container is the same at all points.

#### *Need of project*

hydraulic valve properly directs the flow of a liquid medium, usually oil, through your hydraulic system.

The direction of the oil flow is determined by the position of a spool.

The hydraulic system can only function as per requirements by using valves.

Thus, you should always look for the correct type of hydraulic valve to serve your intended purpose.

Hydraulic valves are available in a variety of these.

There required is determined by the maximum flow of the hydraulic system through the valve and the maximum pressure in the hydraulic system.

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## 2. Construction

It consists of following main component which is given below:

- I. Battery
- II. DC Motor
- III. Hydraulic Pump (gear pump)
- IV. Hydraulic Fluid Reservoir
- V. Control valve
- VI. Double Acting Hydraulic cylinder
- VII. Hydraulic Hose Pipe
- VIII. Chassis

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## 3. Working

The ack will be installed on both sides of the chassis according to the weight distribution of the car.

These hydraulic jacks are operated by a volt battery. It is the same time all jacks can work, and vehicles can lift from one side and also from the other side as per requirement. A double acting hydraulic cylinder that uses fluid to push against the piston.

This is based on Pascal s law.

In the recent past there has been a significant increase in the use of hydraulics

in our industrial area. This hydraulic system is a means of power transmission in modern machines. the hydraulic cylinder takes power from the engine and pressure the oil inside This system works by taking power from the engine of the vehicle in which it to stop this pressure is transferred to main food and distributed to all the hydraulic cylinders.

### *Advantages*

This system in automobiles will not only save the effort of a person but will also.

- save one's precious time under critical circumstances.
- This type of system is very useful for ladies and senior cite end since during the
- problem of puncture of tire, they can easily replace the tire.
- This is also very useful for heavy vehicles such as trucks and buses, since there is a
- common problem of breaking leaf spring plates, this system will help in changing.
- of leaf spring plates.

### *Disadvantages*

- Cost will increase slightly.
- Weight of vehicle will increase slightly.
- System requires maintenance also.
- System cannot work without volt current.

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