

# DESIGN AND FABRICATION OF PORTABLE UNDER WASH CLEANER FOR LMV

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**Abstract** - Our project is "DESIGN AND FABRICATION OF PORTABLE UNDER WASH CLEANER FOR LMV". Traditionally the bottom part or chassis of the vehicle is cleaned with the help of ramp or hydraulic lift. To easier the work, a simple portable device needs to be designed and fabricated. It is a cleaning device, which can be able to clean the under chassis of car (LMV- Light motor vehicle) without the need of ramp or hydraulic lift. The main aim of the project is to clean the bottom side of the car in simplest method, especially in bottom side engine areas and differential areas. For this purpose, we built the prototype model for this concept by using some electromechanical arrangements. This is the new type of cleaning machine which can be used in car washing centers and also in the own garage,

**Key Words:** scrubber, battery, DC motor, PUMP.

## 1. INTRODUCTION

CAR WASH is basically done on top of the vehicle usually they did not clean the bottom or chassis of the vehicle in order to clean the bottom side it is difficult to clean the chassis. So, we decided to do a prototype model of the under wash cleaner for the vehicle that can be easily used to clean the chassis with less efforts.

## 2. DESIGN :

### 2.1 MS STEEL

Mild steel is one of steel which are produced internationally. In fact, the World Steel Association claims there are more than 3500 grades of steel when you take into account all of the unique physical, chemical and environmental properties.

These different properties are brought about by varying the different alloying elements mixed with iron in the production of steel. Alloying elements – even carbon – act as hardening agents, preventing dislocations from occurring inside the iron crystals which allow the lattice layers to slide past each other. This is the reason why steel is harder than iron, and why mild steel – which contains a lower amount of carbon than other steels – is a more ductile variety of the material.



FIG.1

### 2.2 SCRUBBER

It is a brush mounted on the movable frame by a 10-millimetre round shaft. shaft is placed in the centre axis of scrubber it is driven by pneumatic gun or DC motor.

### 2.3 ROLLING WHEELS

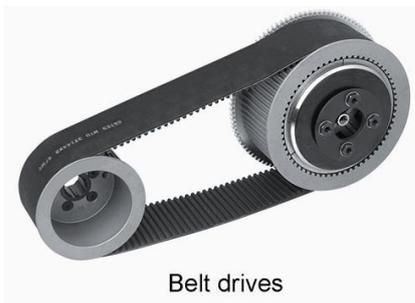
It is used to move the machine. It is fixed below the fixed frame. there are four wheels in our project. This is placed in the four corners of the fixed frame .it is made up of nylon.

### 2.4 DC MOTOR

A DC motor is any of a class of rotary electrical motors that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor. DC motors are the most common type of motors used in robotics. DC motors appear in a large variety of shapes and sizes: permanent magnet iron core, permanent magnet ironless rotor, permanent magnet brushless, wound field series connected, wound field shunt connected, wound field compound connected, variable reluctance stepper, permanent magnet stepper, and hybrid stepper motors.

### 2.5 BELT DRIVE

A belt is a loop of flexible material used to link two or more rotating shafts mechanically, most often parallel. Belts may be used as a source of motion, to transmit power efficiently or to track relative movement. Belts are looped over pulleys and may have a twist between the pulleys, and the shafts need not be parallel.



## 2.6 PUMP

A pump is a device that moves fluids (liquids or gases), or sometimes slurries, by mechanical action, typically converted from electrical energy into Hydraulic energy. Pumps can be classified into three major groups according to the method they use to move the fluid: direct lift, displacement, and gravity pumps.

## 2.7 BATTERY

The battery is used to run the embedded modules without any need AC voltages. This is the 12v battery of rechargeable method. we can use continuously to use of any load and save energy from the solar panel.

## 3. BLOCK DIAGRAM :

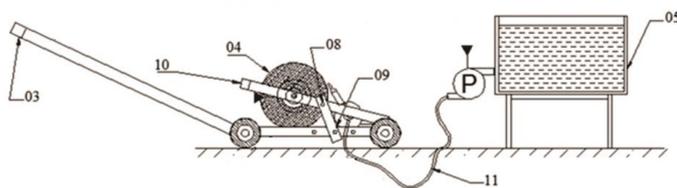


FIG.2

## 4. WORKING PRINCIPLE

The dc motor is connected to the battery. At the same time the scrubber attached in the dc motor also tends to rotate with a speed. In the other side the water stored in the tank is supplied in to the pvc pipe fixed in axis of the scrubber.

The pvc pipe consists small holes for the spraying of water through the nozzle with hiked pressure. As a result, the scrubber rotation and spraying of high velocity water takes place simultaneously. Wheels provided in the setup is allowed to move in various direction. The adjustable clip provided in the setup will used to adjust the hight of the scrubber for various ground clearance of vehicle. the handle is given to move front and back motion to wash the bottom part of the vehicle.

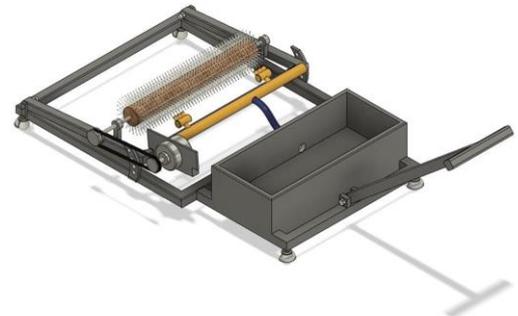
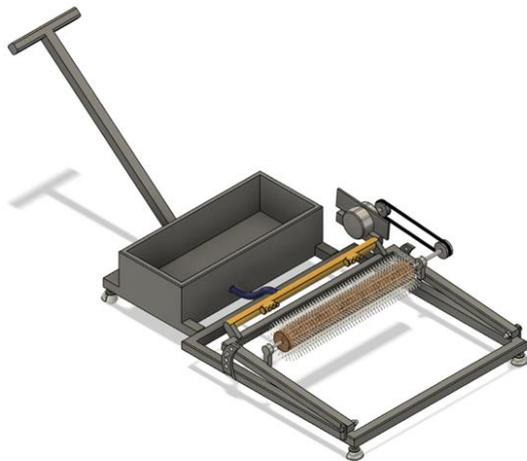
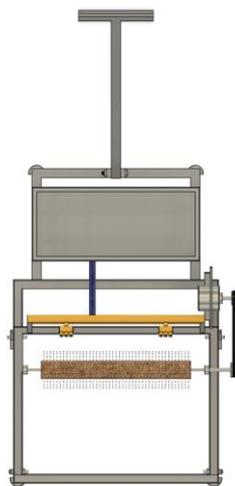


FIG.3



FIG.4

**FIG.5****FIG.6**

## 5. CONCLUSION

It is inferred and concluded that under wash cleaner for LMV is effective. We have acquired a vast experience right from planning and designing of this project till the end of this assembly. To bring the aesthetic look and perfect functionally, we have followed the standard manufacturing methods. Thus, we have obtained a great experience in doing the project. Thus, this paper will be a product in future.

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