

# Power Trolley

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**Abstract:** *A trolley nowadays are important for transferring different items from place to place in our daily life or even in working life as per the requirement. We can see trollies in shopping mall, airport and industries for handling the goods. In the airport, passengers use trollies to transfer their luggage till the check in counters. Sometimes they face higher weight issues at the check in, making them pay the excess baggage charge or dispose of few important items thereof only. This creates an uncomfortable and awkward situation at the check in. And if the passenger is an old age or senior citizen it's really a very panic situation. Additionally, a survey based on a prepared questionnaire carried out at Muscat airport revealed the need for substantial improvements in the present trollies in terms of comfort in luggage handling, loading and unloading of the luggage and the need for weight of the luggage at the time of loading itself. Furthermore, many food and kitchen industries use trollies to receive and transfer the goods items to the store after weighing them. Additionally the trolley provides few added benefits such as charging of smart devices by using photovoltaic system technology and sliding platform for easy loading and unloading of the goods. The future work includes use of lighter aluminum alloy material along with use of solar panels for operation of the trolley.*

**Keywords:** DPDT Switch, low cost

## I. INTRODUCTION

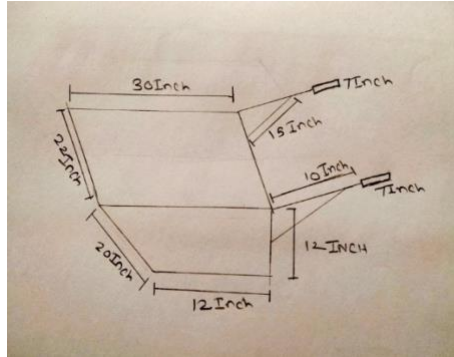
A vehicle which can be lifted bodily off the line by four men shall be deemed to be a trolley. Any similar but heavier vehicle (which includes Dip Lorry) shall be deemed to be a lorry. Any trolley which is self-propelled, by means of a motor, is a motor trolley. A trolley shall not, except in cases of emergency, be used for the carriage of permanent way or other heavy material, and when a trolley is so loaded, it shall be deemed, to be a lorry. Wheelbarrows have been extensively used for carrying cement, refuse, tools and other materials.

It is a simple device that eases the process of transporting materials. However, it requires the user's strength to push it forward which will limit the movement of the device going through obstacles such when going uphill and also a difficulty to the wheelbarrow which will overcome the problem of the conventional wheelbarrow.

The project power trolley is heavy load carrying and transporting application which is very helpful for workers and farmers. This is convenient process of reduce time and finish work before or on time. This project is very safe and comfortable for the worker. This project consist of engine of scooter, accelerator, brakes ,hoverboard , wheelbarrow which makes this project power efficient, cost effective , flexible and robust solution supporting heavy duty works. It is easy use, fast, accurate, high efficiency, and safe without any danger. This project comprised of low power consumption, low cost. Also, this project can be used for various purposes. Finally, the reliability and validity of this project have been ensured via field tests. The field test show that our project can travel very comfortably without any discrepancy.

**Design analysis of trolley**

Measurement of trolley and hover board



SR NO	MATERIAL NAME
1	Bake cable
2	Accelerator cable
3	Universal joint
4	Shock absorber pipe
5	Ball bearings
6	Cdi wiring
7	Nut bolt 8mm,10mm
8	CI engine
9	Tvs tyre- 3.0010
10	Engine boost
11	Axle rod
12	Ignition switch lock
13	Egr 10w 40
14	Wooden board
15	Iron circular rod
16	Mild steel galvanized pipe
17	Rubber
18	Black, grey oil paint
19	Tvs hand grip
20	Metal handle bar
21	Single Wheel Barrow Trolley
22	Ms sheet
23	Electrodes

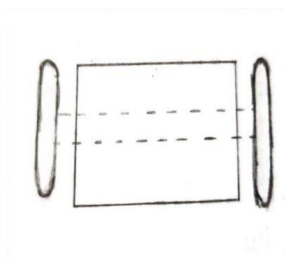


Figure no 3.2.2 hover board

**LIST OF COMPONENTS**

Components details

Accelerator (Throttle) and Accelerator cable

The accelerator cable connects the accelerator pedal to the throttle body, enabling the driver to control the vehicles level of acceleration. The cable consists of inner cable



Brake and brake cable

Brake cable connects a brake handle, pedal, or lever mechanism.

Brake cable is used for stopping trolley. An engine's power can be increased or decreased by the restriction of inlet gases (by the use of a throttle), but usually decreased.



Universal joint coupling

A Universal coupling is a linkage or joint between two shafts, for example, a driving shaft and a driven shaft, which permits rotation of the shafts when their axes do not coincide shock absorber pipe



shock absorber pipe is used as connecting rod between wheel barrow and hoverboard. It is directly welded to the universal joint coupling. 5) ball bearing

A ball bearing is a type of rolling element bearing that uses balls to maintain the separation between the bearing races. The purpose of a ball bearing is to reduce rotational friction and support radial and axial loads. 5) CDI wiring CDI stands for capacitor discharge ignition system. It is a type of automotive ignition system which is widely used in outboard motors, motorcycles, lawn mowers, chainsaws, small engines, turbine-powered aircraft, and some cars



Nuts and bolts

In this project there are various types and size of nut and bolt are used.

SI engine

SCOOTY PEPT engine is used to power our trolley which makes around Displacement 5.36 cy (87.80 cc)  
 Engine type Single-cylinder engine, 4-stroke Power 4.93 hp (3.6 kw) @ 6500 rpm Torque 4.3 Ft. LBS at 4000 RPM (0.6 Kgf-m at 4000 rpm) (5.80 Nm at 4000 rpm)  
 Bore x stroke 2.0 x 1.7 inches (51.0 x 43.0 mm) Intake Intake by carburetor  
 Ignition Electronic ignition by CDI10) Engine boost  
 Engine boost is fixed on axle rod it is good for stability and fix it properly.



**Axle rod**

An axle or axletree is a central shaft for a rotating wheel or gear. On wheeled vehicles, the axle may be fixed to the wheels, rotating with them, or fixed to theAn ignition switch, starter switch or start switch is a switch in the control system of a motor vehicle that activates the main electrical systems for the vehicle, including "accessories" (radio, power windows, etc.). In vehicles powered by internal



co13) EGR 10w40

Motor oil is a lubricant used in internal combustion engines, which power cars, motorcycles, lawnmowers, engine-generators, and many other machines. 14) Hoverboard A Wooden ply is use for hoverboard base for standing It is a platform for diver. It has two wheels which connected with bearing and rod.



Black and grey oil paint

Black and grey oil paint are used for painting and colouring. 16) Wheel barrow

A wheelbarrow is a small hand-propelled vehicle, usually with just one wheel, designed to be pushed and guided by a single person using two handles at the rear

**PROTOTYPE OF POWER TROLLEY**



close position This is close position trolley can carry material. We have tested power trolley it can travel and carry load.



open position This is open position to drop material.

**II. IMPLEMENTATION OF PROJECT**

We have implemented our whole project on wiring, welding and cutting, facing, fitting , etc. We have tested our project with successful outputs and following are the some of our instances.

Process involved in this project

**WELDING**

Welding is a fabrication process that joins materials, usually metals or thermoplastics, by using high heat to melt the parts together and allowing them to cool, causing fusion. Welding is distinct from lower temperature techniques such as brazing and soldering, which do not melt the base metal (parent metal).



Figure welding process

**Cutting process**

Grinding is a type of abrasive machining process which uses a grinding wheel as cutting tool.A wide variety of machines are used for grinding, best classified as portable or stationary:



Figure cutting process

Pipe bending Tube bending is any metal forming processes used to permanently form pipes or tubing. Tube bending may be form-bound or use freeform- bending procedures, and it may use heat supported or cold forming procedures.

### III. APPLICATION AND FUTURE SCOPE

#### APPLICATION

This is an important motor engine based project which has the simple technology has implemented in it. And it has many applications & advantages as mentioned below.

- Power trolley is most demanding in farms and construction sites members. This project really proves helpful when heavy load materials are needed to transport.
- Less workers are on sites they can use this project to complete their tasks in less time. Workers which cant take maximum load they can use this project to supply in minimum time.

#### IV. FUTURE ENHANCEMENT

The future work of the project is very essential in order to make the design system more advanced. In the designed system the enhancement would. connecting some electric gadget. If possible engine will be replaced by electric motor adding some latest technology and some sensors. In order to make economically more useful and helpful to workers noise will be reduced pollution will be in control. Advantage of this project 1) Heavy load up to 70kg to 150kg can be transported using less efforts. 2) speed can be achieved up to 60 km to 80km required less time and covers more distance .3) Good fuel efficiency less fuel consumption in 3-4 liters 100km/hrs. can be achieved. 4) low maintenance is required and low maintenance cost. 5) Easy to drive /simple to operate. 6) Durability is high due to good materials used.

### V. DISCUSSION AND CONCLUSION

#### DISCUSSION

After its fabrication , we inferred few limitations like large noise produced by engine. After starting and while driving as per it is a engine it will basically produce noise. We have discussed to keep it like that in future it will be modified we have just made simple model in future there will change in some technology and engine can make pollution so we will catalytic converter in it. smooth working and better suspension will be added in it to resist shock, vibrations, and jerk etc. hoverboard was made by wooden and based on two small wheels. They are also on a chance of replaced by big wheels which will used to resist shocks and vibration and driver will in safe condition.

#### CONCLUSION

The project power trolley is heavy load carrying and transporting application which is very helpful for workers and farmers. This is convenient process of reduce time and finish work before or on time. This project is very safe and comfortable for the worker. This project consist of engine of scooter ,accelerator ,brakes ,hoverboard , wheelbarrow which makes this project power efficient, cost effective , flexible and robust solution supporting heavy duty works. It is easy use , fast, accurate ,high efficiency, and safe without any danger.

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