

REVIEW PAPER ON THREE WAY PNEUMATIC DUMPER MECHANISM

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Abstract - There can be a rapid growth in the development of infrastructure nowadays, but still the Conventional dumpers are used to dump the materials like sand, gravel, grid etc. on construction sites. In conventional dumper, hydraulic system is used to push the dumper and dump the material only in rear side of the vehicle. As per our survey, many people find it inconvenient regarding the unloading of vehicle. In everyday life conventional dumper is not suitable to dump the material in compact spaces. Also vehicle is unable to get sufficient turning radius at small streets. The process of unloading the dumper becomes more critical, obstructing and time consuming. To deal with the problem of turning vehicle and also unloading of a vehicle, a mechanism could be used which will manage to dump the material in three different direction.

Key Words: Pneumatic system , Dumper , Hydraulic system , Conventional , Fabrication

1. INTRODUCTION

A dumper is a vehicle designed for carrying bulk material, often on building site. Dumpers are distinguished from dump trucks by configuration: a dumper is usually an open four wheeled vehicle with the load skip in front of the driver, while a dump truck has its cab in front of the load. The skip can tip to dump the load; this is where the name "dumper" comes from.

The Project consist of Pneumatic system and the mechanism to lock the either side of Dumper. The Dumper is to be lifted by the pneumatic cylinder which is design on the basis of Pressure and the force exerted by the dumper when fully filled.

2. LITERATURE REVIEW

Tipper has bunches of uses in today's world. In mechanical and homegrown contemplations, tippers can pull an assortment of items including rock, potatoes, grain, sand, manure, hefty rocks, and so forth. By thinking about wide extent of the theme, it is important to do study and research on the subject of tipper instrument to make it more affordable and productive. In existing framework, tipper can dump just in one side by utilizing water driven jack or transport system. By this examination it is simple for the driver to empty the trailer and furthermore it diminishes time and fuel utilization. For making tipper system with such above conditions the two instruments specifically pressure driven jack and transport component can be utilized. However, ultimately it accompanies question that how the

two frameworks can orchestrate in single set up? Answer to this inquiry is only this examination work.

Pneumatics turned into being included into truck set up sell off our bodies fantastically early on, in which record indicates one of the first pneumatic unload bodies was the Robertson steam wagon with a pneumatic hoist that obtained electricity from the truck's engine or an impartial steam engine. Alley & McClellan of Glasgow developed some other early pneumatic sell off body in 1907 that was strength-driven.

Modern three methods losing dumper" has been conceived by using observing the issue in unloading the substances. The survey on this regards in several vehicle garages, found out the records that often some hard techniques had been adopted in unloading the materials from the trailer. This paper has especially targeted on above issue. Consequently a prototype of suitable association will be designed. The automobiles can be unloaded from the trailer in three way without application of any effect pressure.

3. METHODOLOGY

Due to the fact that pneumatic circuit plays an essential role on this device, it is very vital to provide an explanation for the operating of this circuit. To begin with beginning with air compresses, its feature is to compress air from a low inlet strain (normally atmospheric) to a higher pressure degree. This is done with the aid of decreasing the quantity of the air. Air compressors are usually advantageous displacement gadgets and are both of the reciprocating piston type or the rotary screw or rotary vane sorts. The air compressor used here's a typically small sized, two-stage compressor unit. It also includes a compressed air tank, electric rotor and pulley drive, pressure controls and units for brief hook up and use.

The spool valve used here is 5 ports, 3 positions. There are exhaust ports, outlet ports and one inlet port. The 2 outlet ports are linked to an actuator (cylinder). The pneumatic turns on is a double performing, single rod cylinder. The cylinder output is coupled to in addition cause. The piston cease has an air honing effect to prevent sudden thrust at extreme ends.

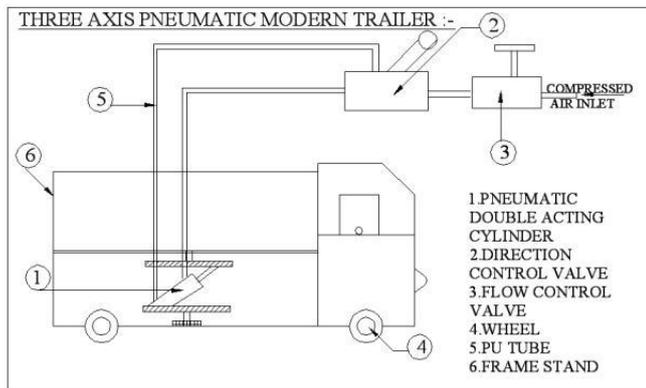


Fig - Schematic diagram

4. Application

- **Material loading:** In this, any bulk and unit load can be loaded, transported and unloaded at required place and required direction.
- **Dispensing:** dispensing is distributed or weighted out in carefully determined portions. In which material is distributed at any three directional places.
- **Palletizing:** In this the material is filled in pallets and these pallets are carried or supported by trailer and transported to required place by using forklift.
- **Material dropdown:** the finished products on machine is dropdown by using pneumatic trailer.
- **Pick & place:** pick up and placement of all types of materials at required place.

5. FUTURE SCOPE

- Precision control over the site of the cylinder may be executed through installation of proper sensor arrangement.
- As opposed to one cylinder we will use two small cylinders of same capability to lift better loads with higher balancing.
- We can automate the whole system using microprocessors and transformer arrangement.

6. CONCLUSION

The evolved prototype well-known shows the anticipated outcomes. Further changes in this developed setup will put this work inside the predominant league of use. This concept saves time & electricity which leads to green and powerful running. This similarly line have to be model the use of equations and an experimental agreement. The constructional work or the infrastructural paintings demands efficient and user friendly equipment that allows you to result in increasingly more use of 3 manner losing dumper.

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