



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUE308 - SPECIAL VEHICLES

IV YEAR /VII SEMESTER

Unit 1- Earth Moving Vehicles

Topic 1 : Dumpers



CONTENT



- Introduction
- Need for Dumpers
- Components
- Construction & Working
- Advantages & Disadvantages
- Applications
- Manufacturing Companies



INTRODUCTION



- A dumper is a vehicle designed for carrying bulk material, often on building sites.
- The skip can tip to dump the load; this is where the name "dumper" comes from.
- They are normally diesel powered.
- A towing eye is fitted for secondary use as a site tractor.
- Available in both tracks and wheels.





NEED FOR DUMPERS



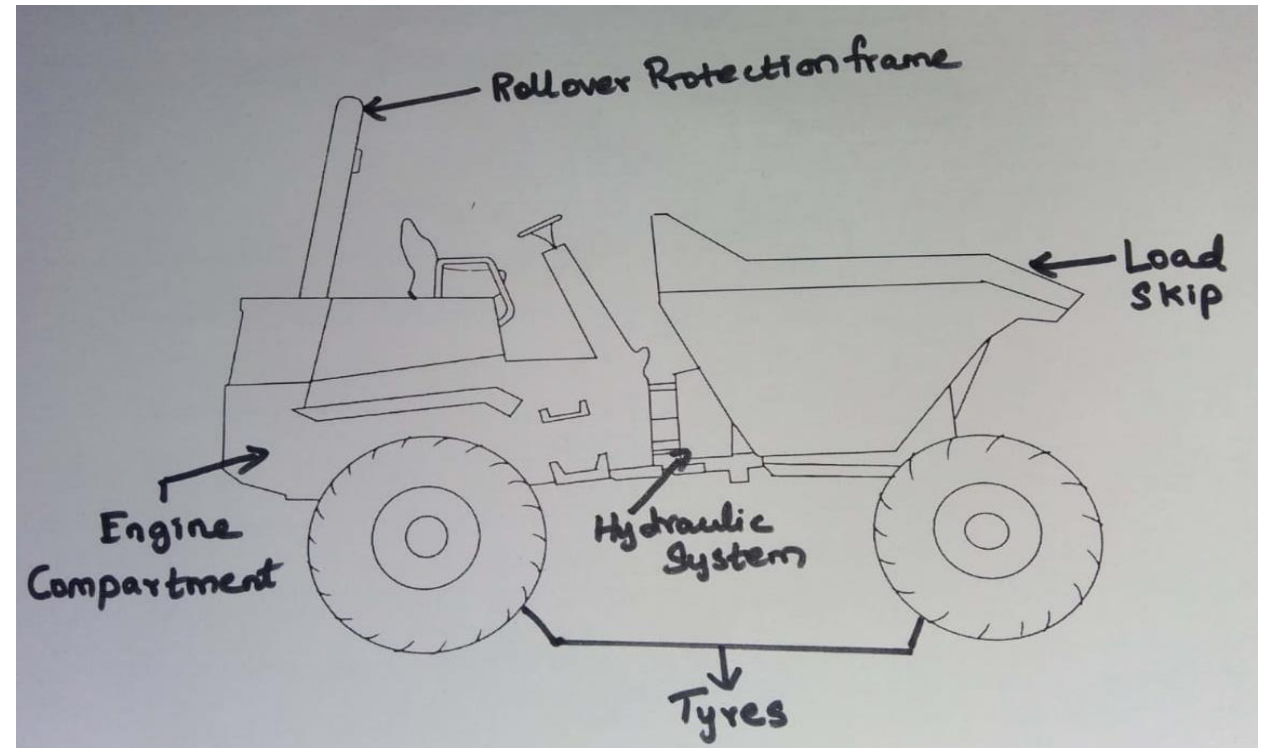
- For every purpose, it is not possible to use the man power for carrying and discharging the earth materials (sand).
- Since it is a time consuming process and requires more man power.
- For overcoming this problem, the dumper is used for carrying loads.
- The use of dumper requires only one operator.
- It reduces the operating time.





COMPONENTS

- Engine and Transmission unit
- Hydraulic pump
- Main control valve
- Hydraulic cylinder
- Front Bucket or skip load
- Driver cabin
- Hydraulic Steering (Orbitrol Steering system)
- Roll over protection frame (ROPS)





CONSTRUCTION



- Dumper comprises of an engine at the rear side of the dumper behind the driver seat.
- The Hydraulic cylinders is attached underneath the skip load for moving it.
- The driver cabin is provided with the Falling Object Protection Structure (FOPS) and Roll over protection frame (ROPS).





CONSTRUCTION

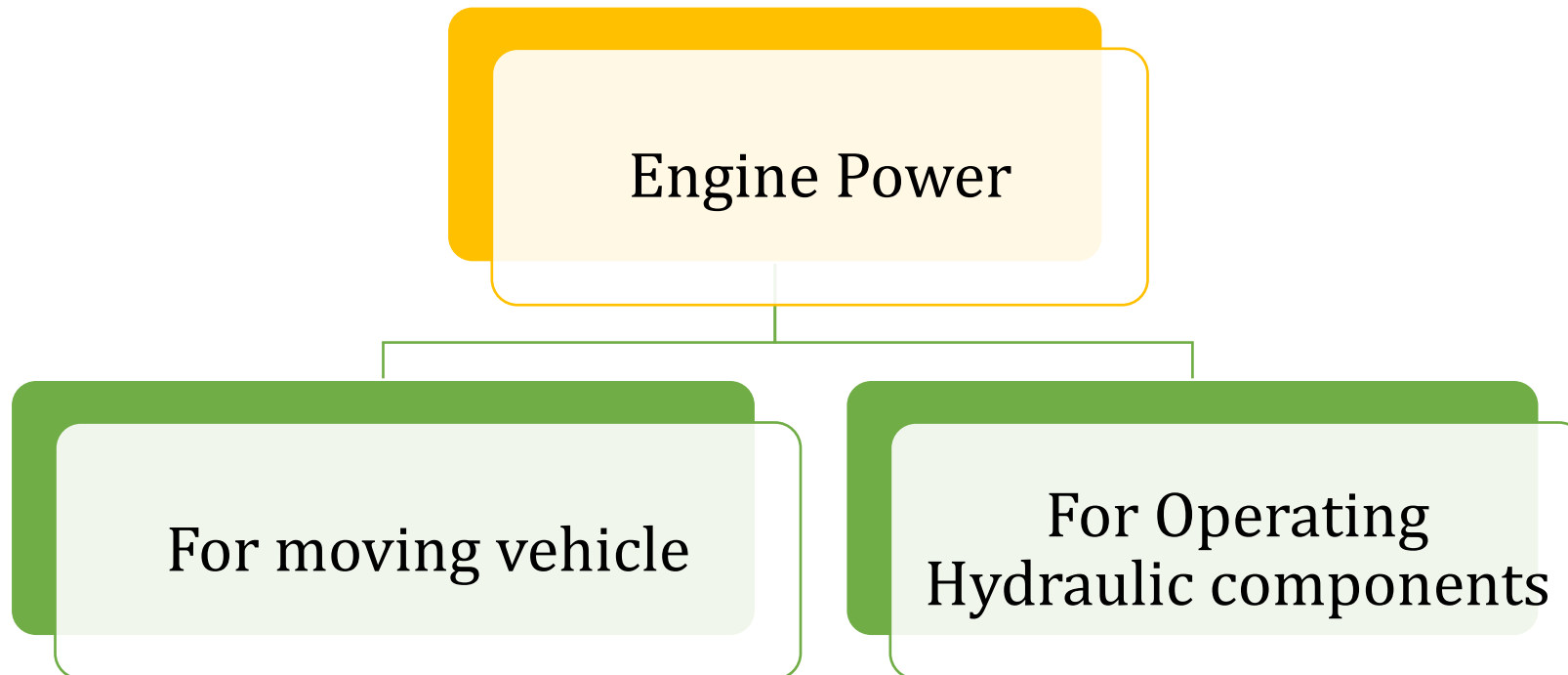


- The Steering system used in the dumpers is the Orbitrol steering system.
- In case of tracks, Cletrac Differential Steering is used.
- The braking system is operated by means of Hydraulic system.





WORKING





WORKING



- The engine power runs the hydraulic pump.
- The hydraulic pump forces the hydraulic fluid to the hydraulic cylinder.
- Through the movement of the hydraulic cylinder, the arm is moved.
- The controlling of the hydraulic system is done by the use of valve control lever.





ADVANTAGES



- Reduces human effort.
- Can perform work in all terrains with the aid of tracks.
- Less operating time.
- More efficient work.





DISADVANTAGES



- Requires proper maintenance.
- Requires Skill driver
- Cleaning process is difficult.





APPLICATION



- Used in Building construction areas to pick up the load from one place to the desired destination
- Used in Mining areas
- Used in Road construction works





MANUFACTURING COMPANIES



- ❖ Volvo
- ❖ JCB
- ❖ Komatsu
- ❖ Bob Cat



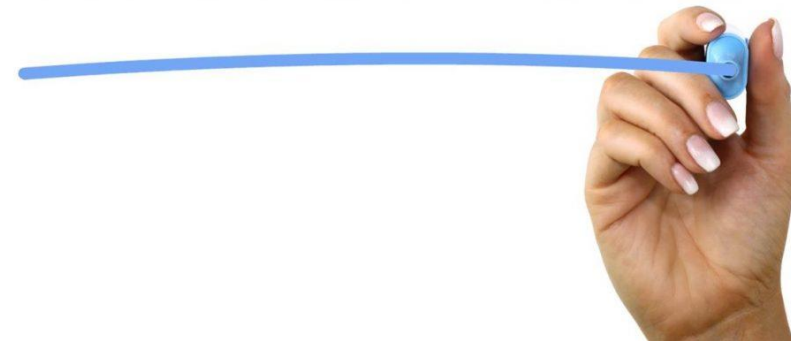
Bobcat®

KOMATSU



1. Mention the location of engine in the Dumper.
2. Mention the use of ROPS.
3. What is the cost of Dumper?

ASSESSMENT





REFERENCE



- ❖ <https://en.wikipedia.org/wiki/Dumper>
- ❖ <https://www.youtube.com/watch?v=RT0PjLGYPRc>



THANK YOU !!!