

# EVOLUTION OF BRAKING

Aadarsh Kumar<sup>1</sup>, Abhishek<sup>2</sup>, Mr. Vinay Kumar<sup>3</sup>  
<sup>3</sup>HOD

<sup>1,2,3</sup>Department of Mechanical Engineering, Mahavir Swami Institute of Technology, Sonapat, India

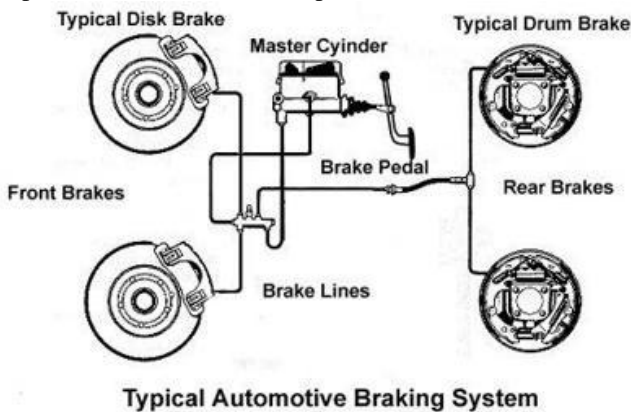
**Abstract:** The aim of this project is to study the braking system. The IC engine technologies have multiplied manifold with advancements and then Jet Propulsion Engine the highest speed that vehicles can reach. However evolution to safely stop these vehicles the speeds of vehicles go up the technology. For humans it have been fascinating by the idea of going faster than before. This paper studies history of braking systems and make a recent study.

## I. INTRODUCTION

This paper carries a history of the braking systems. It also discusses about the recent trends and future aspects or prospects in today's world of brakes.

The first type of brakes were external type brakes used on horse carriages, brought a rubber pads in contact to axle, which were actuated by means of lever which. They got followed by internal brakes such as drums or disks being attached to each wheel.

Along with the development over the years the technology required to stop these vehicles has also experienced a massive evolution



## II. WORKING PRINCIPLE

### PASCAL'S LAW

→ The pressure exerted anywhere in a mass of confined liquid, undiminished in all directions throughout the liquid completely.

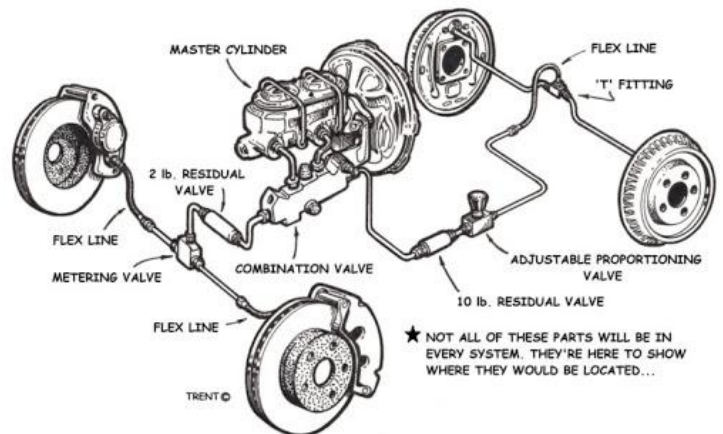
→ Applicable in hydraulic lifts, hydraulic brakes etc.

### WORKING OF BRAKES

A common misconception about brakes is that against a drum or disc they get squeezed, and vehicle is slowed down by the pressure of the squeezing action.

- This became a reason to slow down the vehicle.
- Friction of brake shoes and drums are used to convert kinetic energy developed by the vehicle into heat energy.
- When we apply brakes, the pads or shoes that are pressed against the brake drums or rotor convert the applied kinetic energy into thermal energy due to friction when the breaks are applied.

Brakes are essentially a kind of mechanism to change energy types.



## III. TYPES OF BRAKES

### Mechanical brakes

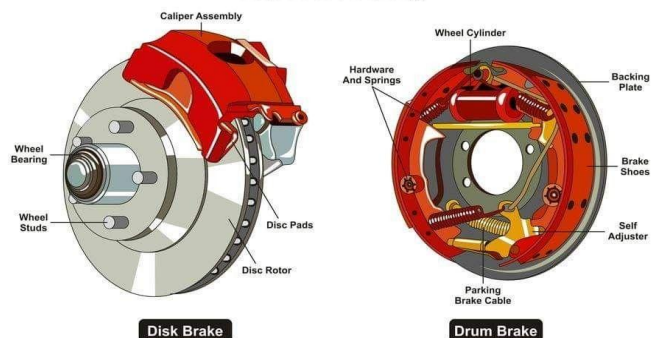
- Drum brakes
- Disc brakes

### Hydraulic brakes

### Power brakes

- Air brakes
- Air hydraulic brakes
- Vacuum brakes
- Electric brakes

### Automotive Braking

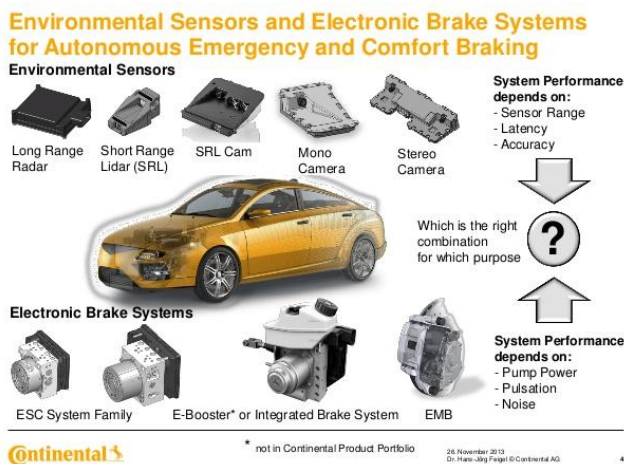


#### IV. FUTURE SCOPE

It's not difficult to imagine that a day will come when the cars will brake on their own as they will be told to do by auto-pilot. To integrate with the regenerative braking and driver-assistance systems based on brake-by-wire system is also designed.

- Greater safety, comfort and customization for drivers.
- Advantages in vehicle manufacturers
- Eco-friendly system

Just think of electric vehicles but also of the driverless ones, a world that is perusing more a revolution than evolution, this is our main objective for this study.



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