"brake failure detection system"

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ABSTRACT

A brake is a mechanical device that inhibits motion by slowing down a body or by slowing it. Brakes retard the motion of a body creating friction between two working surfaces and convert the kinetic energy of the moving body into heat. Sometimes brake failure may occur when the brake lining is cut-off. Most brakes commonly use friction between two surfaces pressed together to convert the kinetic energy of the moving object into heat, though other methods of energy conversion may be employed. For example, regenerative braking converts much of the energy to electrical energy, which may be stored for later use. Other methods convert kinetic energy into potential energy in such stored forms as pressurized air or pressurized oil. Eddy current brakes use magnetic fields to convert kinetic energy into electric current in the brake disc, fin, or rail, which is converted into heat. Still other braking methods even transform kinetic energy into different forms, for example by transferring the energy to a rotating flywheel. Brakes are generally applied to rotating axles or wheels, but also take other forms such as the surface of a moving fluid (flaps deployed into water or air). Some vehicles use a combination of braking mechanisms, such as drag racing cars with both wheel brakes and a parachute, or airplanes with both wheel brakes and drag flaps raised into the air during landing. The aim of this work is to design a braking system with indicator. Brake failure occurs only because of worn out of brake shoe and cut in liner. This system provides audio and visual alert when the brake fails

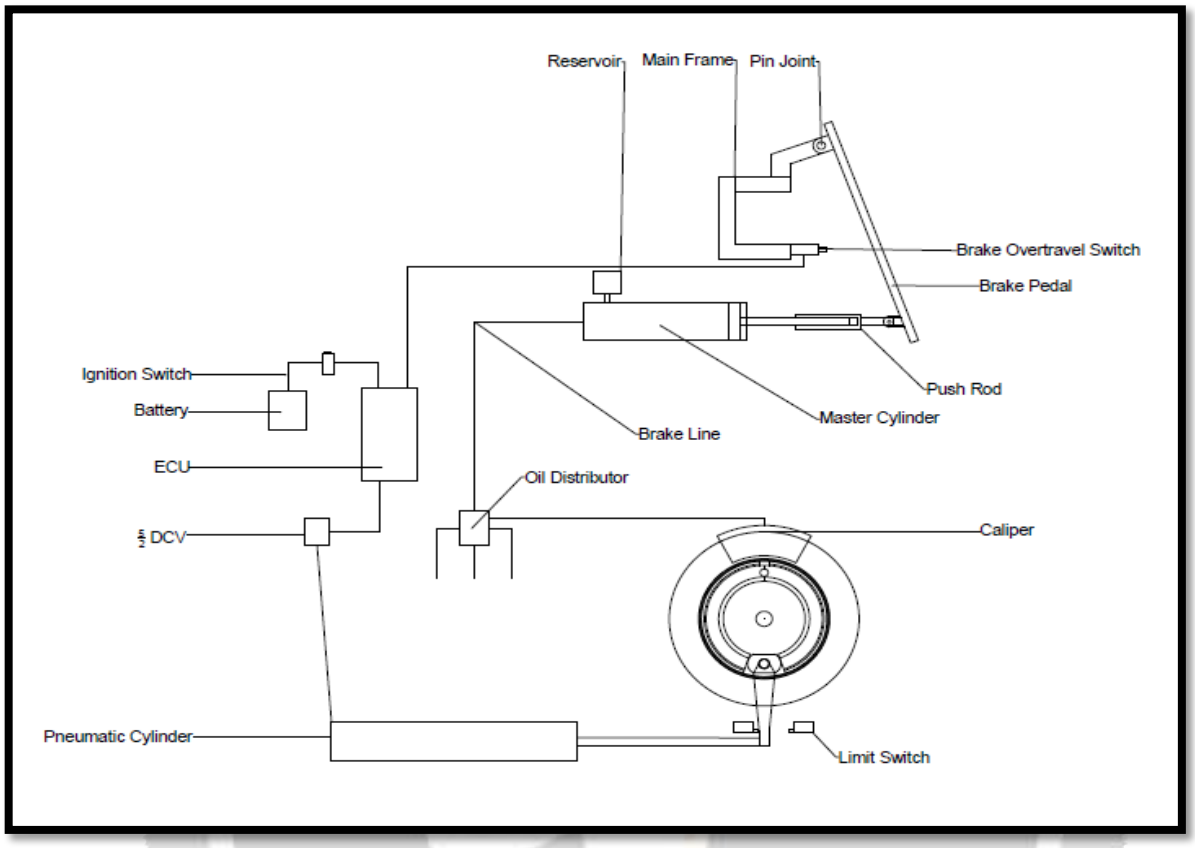
Keywords:- - *Brake, Failure, Buzzer, Renewable Energy, LED.*

INTRODUCTION

In automotive vehicles, the brake are playing an important role and it acts as control system which is used to keep the vehicle stationary as well as to retard the speed of vehicle. FABRICATION ON THE PROJECT In recent developments in automobile sector. Many safety features are developed to improve the braking efficiency. Such as Ant-locking braking system, electronic brake distribution, brake detection system using sensors and many more. These systems are mounted on the pressure lines of braking system. If the system losses the pressure then this all systems are remains idle, and driver loss the control over vehicle.

Though the world is getting modernized, we have to face so many problems. One of such problems is accidents. One of the things that everyone tried to avoid is while traveling is accidents, and sometimes it is inevitable. Now-a-days we can see accidents in every nook and corner of the world. It results in the death of thousands of lives. With the population ever climbing there are more vehicles than ever on road, which means there is a higher livelihood of the brakes giving out. In foreign countries they take remedial measures for the prevention of accidents but our country like India takes less action against the prevention of accidents. One common cause for accidents is brake failure. Accidents may occur due to brake failure. In such a situation my project brake failure indicator plays an important role in controlling accidents. Brake failure indicator circuit is a circuit that constantly monitors the condition of brake. The sensor which is attached to the circuit get the chance of a brake failure by monitoring the brake switch and reminds you of the condition of brake every time when the brake is applied . This invention is related to design and development of braking system. In which two different types of braking mechanisms are used first is hydraulic braking system which is used for normal braking purpose and wire operated mechanical drum braking system for emergency braking purpose. The normal braking system works. The single master cylinder and single brake pedal is used to operate the hydraulic braking system.. The single master cylinder and single brake pedal is used to operate the hydraulic braking system. The brake pedal over travel switch is used to identify the pedal movement because, when the braking system works normally then due to the pressure the pedal movement is defined to a specific distance . When the system losses the pressure then the brake pedals travels more distance than normal braking. This travel movement is used to push brake

over travel switch and push type direction control valve which turn on the buzzer. As well as supply the pressure to the pneumatic cylinder connected to the secondary braking system and brake is applied.



Fig;Circuit diagram for Brake failure detection system

PROBLEM STATEMENT

Today accidents occur due to lot of reasons; one of the main reasons is the brake failure. In order to safe guard the valuable human life from accidents; the monitoring of brake is an essential thing in automobile. Automobile is equipped by Mechanical Systems and control units Which tends to fail if any malfunction is happened so to avoid the loss of Human life as well as Vehicle the said project is proposed.

OBJECTIVES

The objective of this project includes:

- The main objective is to make brake failure identification system.
- To stop the vehicle by applying gradual brakes when primary brake fail.
- To provide best solution for brake failure.
- To install the system in any vehicle for avoiding accidents due to brake failure.

METHODOLOGY

- At first we collected information about how the brake failure occurs in the vehicles
- Then we studied about the types of failure occurring in different types of vehicles
- Then we designed an cad drawing for our project to Visualize it and know its design
- Then we studied about different types of stress occurring on it
- Then we selected proper material According to the stress on it
- We started fabrication work with the approval of our guide and started making the main project model
- After Finishing the Project we tested it for various considerations
- Afterwards we showed it to our teacher and guide and took approval from them .

PRACTICAL IMPLICATIONS / APPLICATIONS

- For automobile application
- For industrial application
- Used in vehicles& moving element
- For mechanicsal application

RESULTS AND DISCUSSION

- Triggering or actuation mechanism for secondary braking can be changed to various means viz. using cam and follower arrangement, Magnetic arrangement, etc
- Means of actuating the secondary system can be changed from pneumatic to any energy transmitting fluid or forms of energy
- Sensor monitoring can be used instead of using mechanical systems. But this may cause failure if there is no electric supply left in vehicle. Or if there is no ground connection

CONCLUSION

This project setup reduces the chances of accidents and prevents loss of life. It improves the efficiency of vehicle and in turn decreases the chances of failure of mechanical systems. Brake failure indication gives additional capability to the driver and to ensure prevention of damage to life and property. Brake failure indicating system is an early warning system. This system can prove to be advancement in mechanical and automotive industry. system endlessly monitors the condition of the brake wire and alerts the rider before it gets cut. The indication to the rider is given within the type of audio-visual sign. All the elements area unit placed rigorously, therefore contributory to the most effective working of the unit. therefore, the project has been with success designed and tested. the indication system will be a new era of vehicle protection system if implemented in any motor vehicles to protect them from accidents. there have been many devices to stop the vehicle at abnormal conditions. but the proposed model deals with indication of brake failures with mechanicals means before any accident could happen and also ensures the safety of human as well as vehicle

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