International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 05 | May - 2021 ISSN: 2582-3930

# AUTOMOBILE BREAKING SYSTEM

1. RANA PRADIP P. 2. YADAV PAVAN A.

3. PATEL KARAN M. 4. RATHOD YASH C.

5. RATHOD JIGNESH K.

DEPARTMENT OF MECHANICAL ENGINEERING

UNDER THE GUIDENCE OF MR. SHYAMAL PRAJAPATI

**Abstract:-** A new automobile power hydraulic breaking system by vibratory energy is introduced which includes four vibration dampers, four energy accumulators, hydraulic booster , one storage tank, four wheel cylinders, four electromagnetic one-why valves , brake pedal and loading sensing pressure proportioning valve (LSPV). Vibration damper is composed of nitrogen cavity, piston rod, shell, rebound valve and so on. Energy accumulator contains relief valve and oil return tube. The electromagnetic one – way valves are controller is composed of piston, pushrod, inlet valve , oil return valve and so on.

*Keywords: - breaking system, Automobile, Design, wheel , bearing and shaft mechanism,*

**1. Introduction :-** In cars, the hand brake (also known as the emergency brake, e brake, park brake, slide stick or parking brake) is a supplementary system that can be used if the vehicle's primary brake system (usually hydraulic brakes) has a failure. Automobile brakes usually consist of a cable (usually adjustable for length) directly connected to the brake mechanism on one end and to some type of lever that can be actuated by the driver on the other end..The lever is traditionally and more commonly and operated system (hence the hand brake name),the most common configuration being a handle on the floor between the driver and front passenger, and less commonly being ah and lobar located on the lower portion of the dashboard.

However, the most common use for an automobile emergency brake is to keep the vehicle motion less when it is parked, thus the alternative name, parking brake. Car emergency brake shave ratchet locking mechanism that will keep the men gagged until a release button Is pressed. On vehicle as with automatic transmissions, this is usually used in concert with a parking pawl in the transmission. Automotive safety experts recommend the use of both system so immobilize a parked car, and the use of two systems is required by law in some jurisdictions, yet many individuals use only the "Park" position on the automatic transmission and not the parking brake. Also, manual transmission cars are recommended to be left in their lowest gear (usual lye it her first or reverse) when parked, especially when parked on an incline.

## 2. Literature review :-

**An Interactive Qualifying Project Submitted by: Scott J. Cloutier and David H. Linke Advised by: Professor Stephen J. Bitar**

The purpose of this project was to evaluate the educational level of the WPI community on automobile safety devices and develop an interactive medium through which visitors can establish a better understanding of the technology. An interactive video presentation and museum exhibit were constructed together to educate the community on the criteria of history, purpose, and functionality for several major automotive technologies. The presentation component incorporated pictures, videos, and diagrams to portray the educational material about each technology, while the actual exhibit includes physical components from each category to aide in visualization of these devices. This project produced positive feedback from various members of the community as well as several recommendations for future renditions of this project.

**2.2 COLLISION WARNING WITH AUTO BRAKE -A REAL-LIFE SAFETY PERSPECTIVE (Erik Coelingh Lotta Jakobsson Henrik Lind Magdalena Lindman Volvo Car Corporation Sweden Paper Number 07-0450 )**

Automotive safety has gained an increasing amount of interest from the general public, governments, and the car industry. This is more than justified by traffic accident statistics, as each year around 1.2million people die due to road traffic accidents. For these reasons safety remains a core value of Volvo Cars. This paper presents some of the latest active safety developments within Volvo Cars. Rear-end collisions are common accident scenarios and a common cause of these accidents is driver distraction and thus not reacting in time. No vehicle system is a substitute for the most important safety feature in any vehicle: the driver. However, Volvo is harnessing innovative technologies to help alert drivers to avoid potential collisions and reduce the potential impact speed when a collision cannot be avoided. One of those systems is Collision Warning with Auto Brake where the area in front of the vehicle is continuously monitored with the help of a long range radar And a forward-sensingwide-anglecamerafittedinfrontoftheinteriorrear-viewmirror.CAE methods and practical tests. Finally, it is discussed how the benefit of such systems can be judged from real-life safety perspective using traffic accident statistics.

**2.3 Intelligent Car System for Accident Prevention Using ARM-7 1S.P. BhumkarSinhgad 1, V.V. Deotare2, R.V.BabarInstitute Of Technology, Lonavala, Pune, India 3**

This project is about making cars more intelligent and interactive which may notify or resist user under unacceptable conditions, they may provide critical information of real time situations to rescue or police or owner himself. Driver fatigue resulting from sleep deprivation or sleep disorders is an important factor in the increasing number of accidents on today's roads. In this paper, we describe a real-time online safety prototype that controls the vehicle speed under driver fatigue. The purpose of such a model is to advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents. The main components of the system consist of number of real time sensors like gas, eye blink, alcohol, fuel, impact sensors and a software inter face with GPS and Google Maps APIs for location.

**2.4 Design of Advanced Electromagnetic Emergency Braking System Mr. Parag Satish Kulkarni.B.E.A.M.I.E Student. Department of Mechanical Engineering.Maulana Mukhtar Ahmad Nadvi Technical Campus. Savitribai Phule Pune University**

A brake is a device by means of which artificial frictional resistance is applied to a moving member, in order to retard or stop the motion of a machine. In the process of performing this function, the brake absorbs either kinematic energy of moving member or potential energy given up by objects lowered by hoists, elevators etc. An emergency brake is a backup braking system designed to function even when there is total brake failure. It works through purely mechanical means, and is independent of the hydraulic system which controls the brakes normally. In addition to being used in emergency situations, an emergency brake is also used as a parking brake, to prevent the car from rolling away, should it slip into gear. Like all parts of the braking system, the emergency brake should be checked regularly to ensure that it is in good working order.

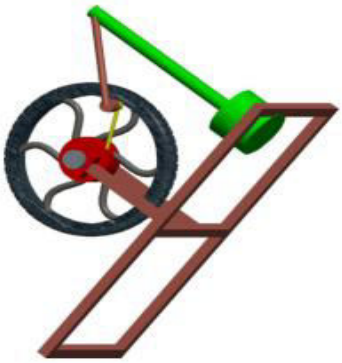
.

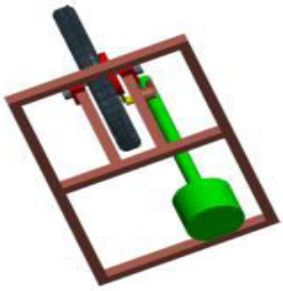
**3. Methodology:-** The braking system is composed of two main components brake, braking and driving mechanism. The brake is equipped with retarder, which is a part of the auxiliary braking system, and its main function is to produce the force of impeding the movement or movement trend of the vehicle.

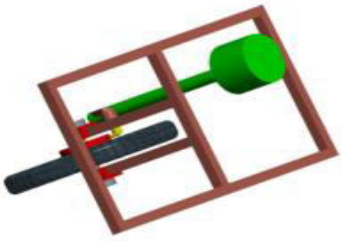
**4. Design :-**

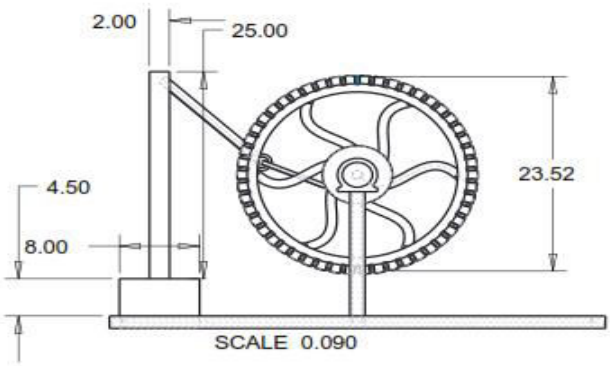
**- full assembly :-**

SCALE 0.060



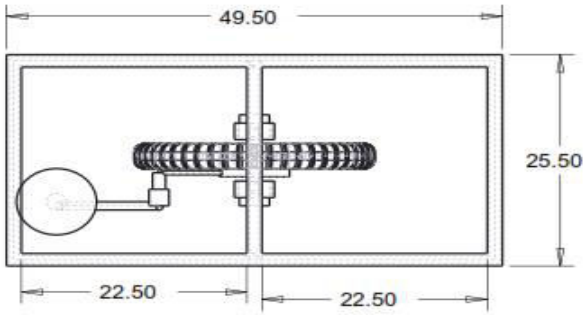


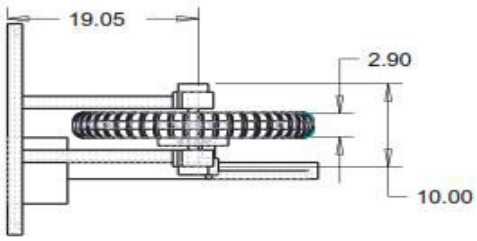




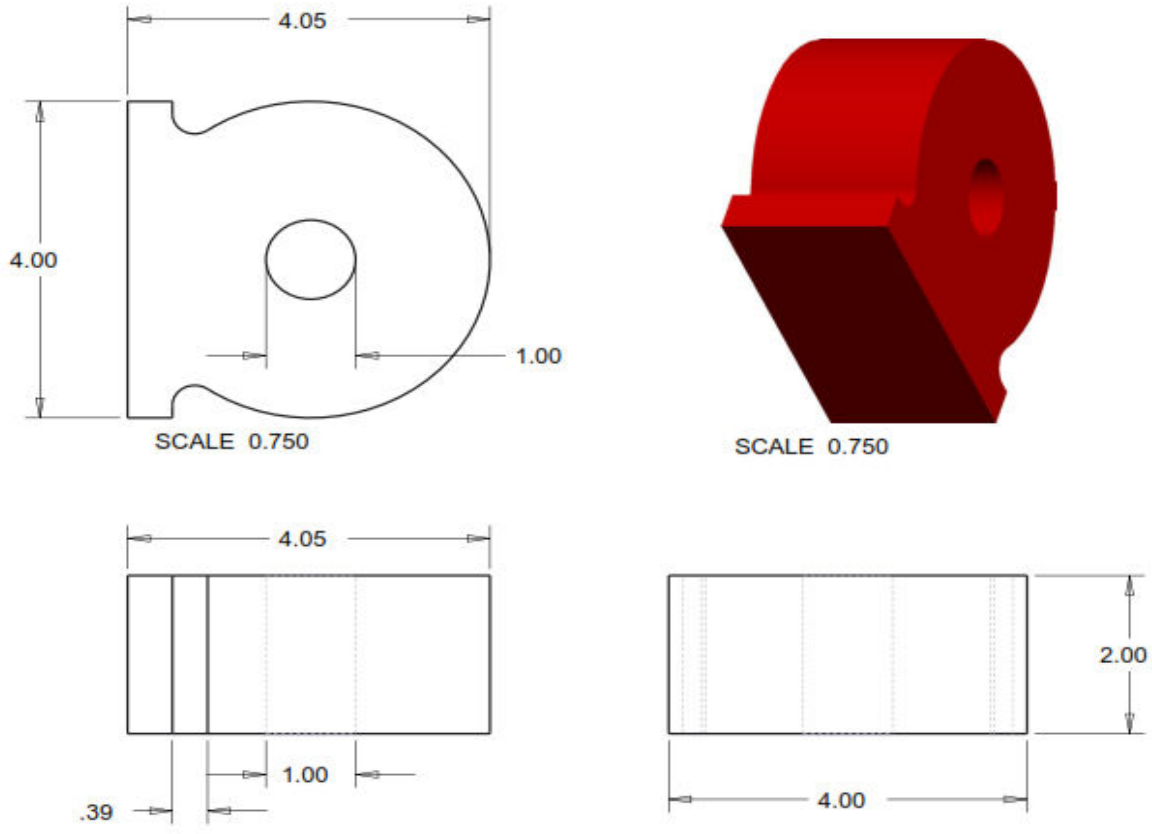

SCALE 0.090

SCALE 0.060

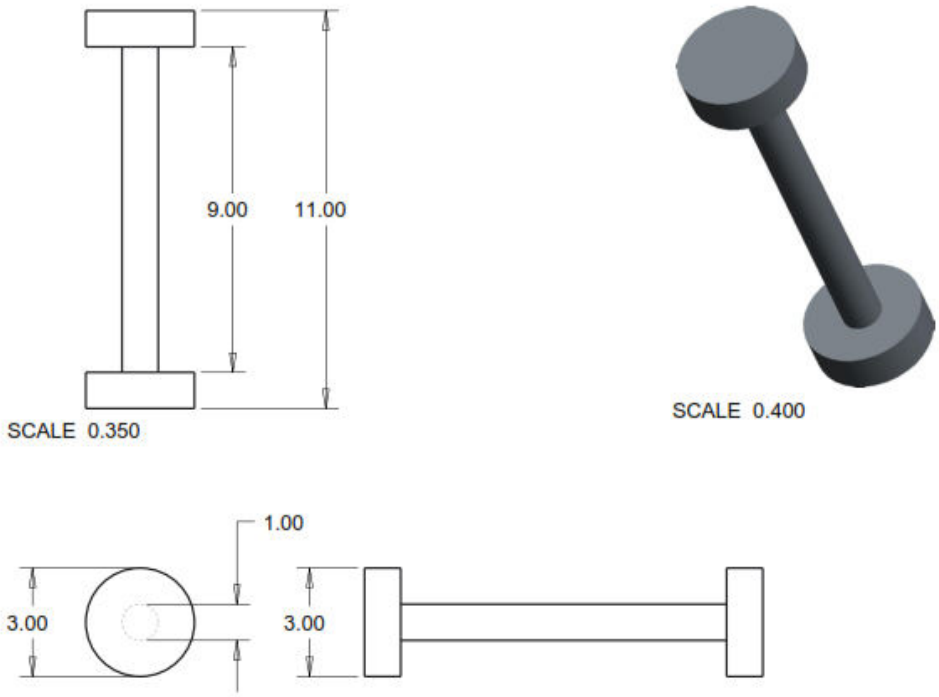


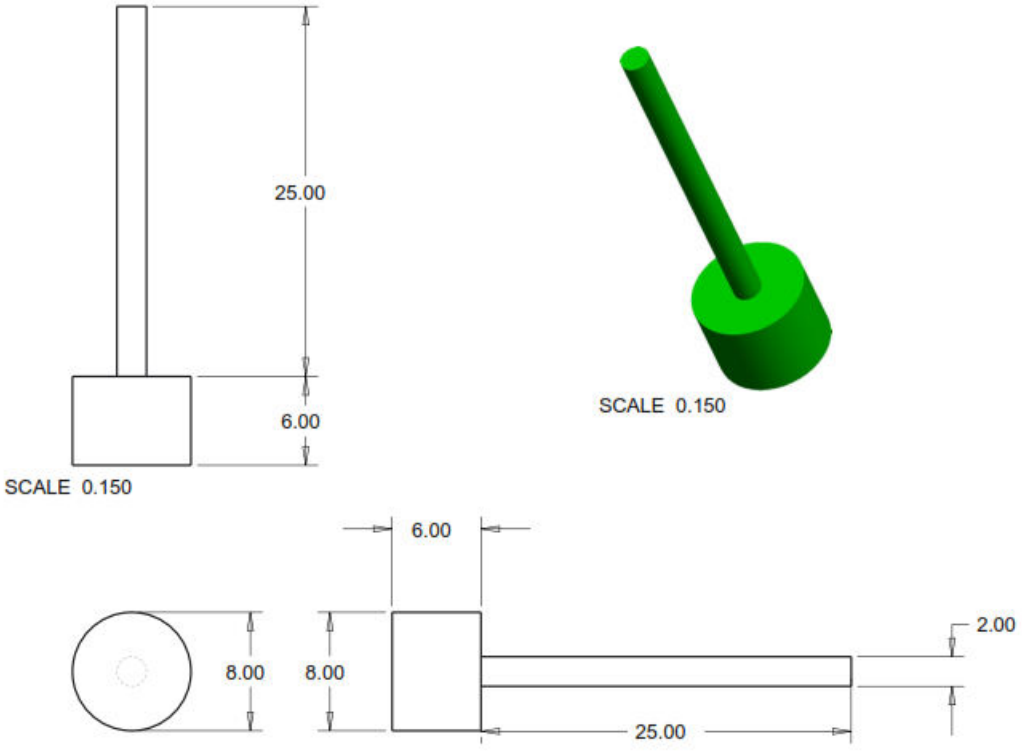
- **Pedestal bearing :-**




- **Supporting shaft :-**



- **Valve with shaft :-**




**5. <u>Result and Discussion</u> :-** During the making of this project "Fabrication of Electromagnetic brake" we got a lot of information and knowledge about the brake its construction working and principle and how the brake action takes place. While doing this project we came across various manufacturing process which we learn in books. But due to project we got actual knowledge about the brake system.

Still this brake system is not actual use in vehicle this is a future concept of the brake by using this techniques of brake it was save the effort of the human being at the maximum level which provide the comfort to the rider of the vehicle. As this brake is require external power source of battery and it require to charge every time, to overcome this problem one can use dynamo for the charging of the power is generated itself by the vehicle.

This study presents a second generation of a collision avoidance and mitigation system, Collision Warning and Auto Brake, aiming at reducing the occurrences of as well as consequences of a rear end collision. The total safety benefit is difficult to predict in absolute numbers. The evaluation methods presented in this study show good prognosis for real-world performance by addressing occupant protection and accident avoidance both in host and pop one

6. References :-

[01] Prof. P.L.Balleny, "Theory of Machines and Mechanism". Page no.574, Twenty second edition 2001, khanna Publication, NewDelhi.

[02] Joseph E. Shingley & Charles R Mischke, "Mechanical Engineering Design ( in SI units)".Page no.986,sixth edition 2003,TaTaMcGraw Hill Publication Company Limited, New Delhi.

[03] G.B.S.Narang, "Automobile Engineering". Page no.275, fifth edition 2004, khanna Publication, New Delhi.

[04] Harbans Singh Reyat, "The Automobile". First edition 1962,S.Chand Publication, New Delhi.

[05] K.M.Gupta. "Automobile Engineering". Volume 2, Page No.80, Umesh Publication, New Delhi.

[06] S.M. Jang, S.H. Lee, and S.S. Jeong, "Characteristic analysis of eddy-current brake system using the linear Hallbach array," IEEE International Journal of Engineering Research and General Science Volume 3, Issue 3, May-June, 2015ISSN 2091-2730 Trans. Magn., vol. 38, no. 5, pp. 2994-2996, 2002.