International Journal of Innovative Research in Engineering
Volume 3, Issue 6 (November-December 2022), PP: 260-262.
www.theijire.com
ISSN No: 2582-8746

A Review on Pneumatic Brakes

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How to cite this paper:
Naresh Didshere[1], Farkade Abhijit[2], Gade Nikesh[3], "A Review on Pneumatic Brakes", IJIRE-V3I06-260-262.

Abstract: *A brake is a medium that applies frictional resistance to a moving machine element in order to decelerate or halt the machine stir. utmost thickets use disunion between two shells that are forced together to convert the kinetic energy of a moving object into heat and decelerate down the vehicle's stir. A curvaceous boscage is one that uses air as its operating fluid. Curvaceous Braking System is the system that's used to apply this miracle. A curvaceous boscage , also known as a compressed air boscage system, is a type of disunion boscage for motorcars that uses compressed air to apply the boscage pad and bring the vehicle to a stop Vehicle accidents are far and wide in recent times. This is because of increase in population of vehicles, due to its high demand. A system must be designed to reduce the accidents. The technology of pneumatics plays a main part in the field of robotization and ultramodern machine shops. IR detector fixed on the frontal end of the vehicle detects the presence of the handicap. If vehicle moves veritably near to the contrary vehicle also it applies boscage automatically. It's used for avoiding accident over by contending in roadways and parking or busy business areas through Curvaceous retardation. Curvaceous retardation system works briskly when compared to other.*

Key Word: *Pneumatic brakes, road accidents*

I.INTRODUCTION

Brake plays important part within the vehicle as machine. An machine requires to run the machine it also needs thickets since we hydraulic thickets but what about heavy vehicles, in heavy vehicles we use Curvaceous air thickets for the effective retardation. Generall , a curvaceous boscage or air boscage is a kind of mechanical System in whichcompressed liquid fluid from hydraulic boscage is replaced from compressed air which applying pressure to the master piston cylinder connected to the boscage pads for the retardation of vehicle. moment India is the most important under developed country in the world. India is the largest country in the use of colour ful types of vehicles.As the available coffers to run these vehicles like quality of roads, and attainability of new technologies in vehicles are causes for accidents. The number of peoples which are dead during the vehicle accidents is also veritably large as compared to the other causes of death. Though there are different causes for these accidents but proper technology of retarding system and technology to reduce the damage during accident are Substantially effects on the accident rates. The curvaceous retardation system is one of the types of Automobile Braking System. It's also known as the Air retarding system. It's constructed by George We singhouse in the 1860s. In this Braking System, Compressed Air is used the apply the Brake. The Brake force yield by the Hydraulic Brake isn't sufficient to stop the heavy vehicles. thus Pneumatic Brake is used in heavy vehicles.

II LITERATURE REVIEW

Subhasis Sarkar, Deep Mistry, Suraj Raval, Harsh Vadhnere4, Nimit Suryawala[1], It can be judged that the response time for actuating the brake differs in every individual vehicle. The use of pneumatic system can prove to be useful in automation due to its simplicity and ease of operation. Also IR sensors to perform these operations.

Thota Venkata Naveen Kumar , N.Ramesh , D.Bala Raju[2] ,Pneumatic systems are suitable for working environments exposed to radiation and high t emperature, which makes pneumatics immune to most elements present in nature. A pneumatic system can also use other types of compressed gases. This is beneficial for applications where natural gas is the power source.

Fanping Bu+, Han-Shue Tan[3], This paper focuses on the precision stopping control problem for heavy-duty vehicles equipped with a pneumatic brake system. It is a control application paper that integrates various control synthesis toolsto solve a real-world control problem.

Durgasi Mahesh, Pothuri Nageswara Rao, Madakala Chandra Obul Reddy, Miriyala Ujwal, Shivam Singh[4],This paper concludes that ABS play major role within the controlling of car ABS can protect vehicles from the slippery road. The simplicity of pneumatic braking systems prove that its operation is straightforward and also IR sensors perform well with this

S. Suresh, J.D. Nallasivam, K Kandasamy and A Thirumoorthy [5] This Paper make an impressing mark in the field of automobile. It is very usefully for drivers to drive the vehicle without tension.

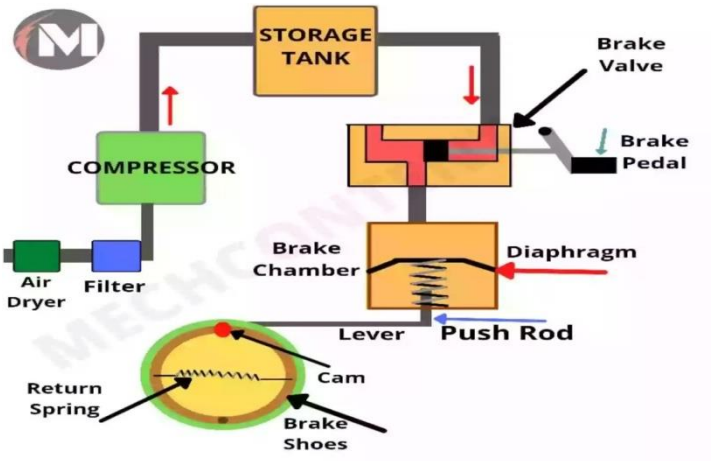
Steven Rodrigues [6] Pneumatic regenerative braking system is better than electric regenerative braking system in terms of compactness. This system can be installed in all the wheels of a vehicles giving better control to the driver.

Mr. Kushal V. Gawande, Mr.Bharat A. Shende, 3Mr. Vipul B. Meshram [7] . They have prepared an "Automatic Pneumatic Braking System" which helps to know the how to achieve low cost product.

Ketan H. Mhatre [8] "Electro-Pneumatic braking system" uses laws of pneumatics to apply the brakes. When any hurdle is sensed in the path by the sensors, it will apply the instant brake in seconds, So that it will reduce the accidentswhich are caused by human unawareness's

III.CONSTRUCTION

1) AIR COMPRESSOR- Compressor workshop on the machine power. The compressor takes Air from the atmosphere and conpresses it and sends to the storehouse tank.



2) AIR FILTER- Air Filter is used Before the Compressor to remove the Dust Particals from the Air, before enteringin to the Compressor.

3) AIR DRYER- Air Dryer is used Before the Compressor to remove the humidity from the Air, before entering into the Compressor. Because humidity damages the Compressor Blades.

4) STOREHOUSE TANK- It Stores the Compressed Air receives from the Compressor.

5) SAFETY stopcock/ PRESSURE controller stopcock- This stopcock is used on the Storage Tank to maintain the pressure in inside the tank & Removes the inordinate air from the tank.

6) Boscage stopcock- It's used to Regulate the Air inflow from the Storage Tank to Brake Chamber.

It's control by the Brake Pedal. When motorist press the boscage pedal, Brake Valve Opens, thus Air flows from the Storage Tank to Brake Chamber.

When motorist release the boscage pedal, Brake Valve Closes, thus Air Stops to overflows from the Storage Tank to Brake Chamber.

7) Boscage CHAMBER- It's consists of the Diaphragm, Return springThe Diaphragm is connected to the drive rod & Push Rod is connected to the Lever & Lever is connected to the cam.

When motorist release the boscage pedal, Return spring is keeps the diaphragm in original position.

8) Boscage tap- It's consists of the Two Brake shoes, Cam, Return spring.

One end of the both shoes depended & other ends are connected to the Cam. Hence when cam rotates, the boscage shoes expands inside the boscage barrel.

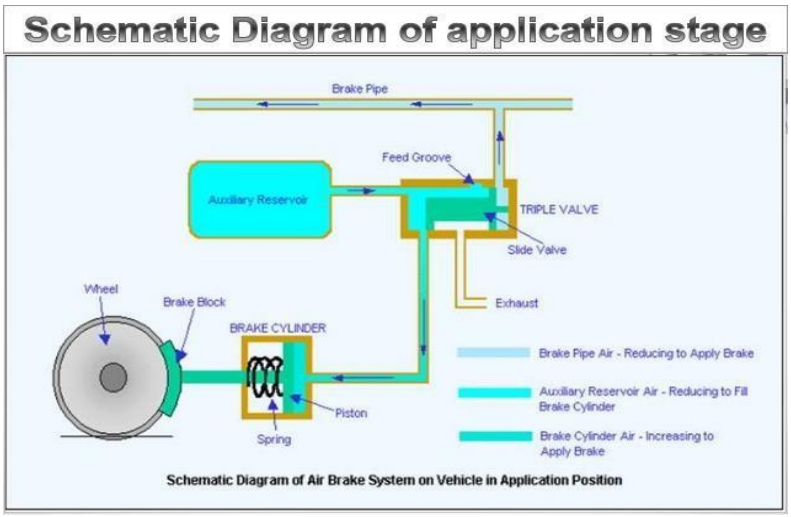
On the external face of the boscage shoes has disunion filling. thus when boscage shoes expands, Due to disunion between shoes & boscage barrel, Wheel stops.

The shoes are connected with the return spring. Thus when motorist release the clutch pedal, Shoes are comes to original position due to spring

IV.WORKING

A starting motor converts the voltage keep within the battery into energy to crank the engine for beginning. A straightforward motor includes a horseshoe-shaped soft-iron yoke with field windings wound around every of the 2 pole-pieces (Fig). The coil winding rotates between the pole-pieces with its ends connected to every half-segment of a split-ring. The present from the positive terminal of the battery flows to the right-hand brush andsection, around the coil loop, and comes

out of the left-hand section and brush. It then circulates through the left-and right-hand yoke field windings and returns to the negative terminal of the battery.



V.APPLICATION

Application

Due to its property of preventing brake failure air brake systems are widely used in various vehicles but in heavy vehicles like trucks and buses due to the government vehicle regulations, air brake system is mandatory.

- It is used in railways
- All the trucks and busses on the road today use air brake systems, few from them are.

1. Volvo 9400PX buses.
2. Bharat Benz 3123R truck.

VI.CONCLUSION

Hence the pneumatic braking system is inexpensive and light weight as compared to a batter and alternator system and hence can be more widely and commonly used in almostany type of vehicles including bicycles.

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