

Piston Controlled Emergency Brake assistance System

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ABSTRACT: The piston controlled emergency brake system is the technology ahead of the Anti-lock Braking System (ABS), as we are aware that there are lots of cars available in the market. Now more no of cars means more traffic on the road, and as the traffic on the road increases the chances of accidents due to the collision increases to the greater extent. Thus in his research paper we have come up with the fresh technology of the brake system or, we can simply call it as the next generation braking system which has endless possibilities. Now during the time of emergency the panic situation is created and due to this the driver is not able to apply the sufficient braking pressure which ultimately leads to collision of the vehicles, now what the piston controlled emergency brake system does is that it amplifies the brake force applied by the driver, with the help of piston cylinder arrangement. And thus the main advantage of this piston controlled emergency brake assistance system as compared to the conventional braking system is that no additional component is needed to be integrated in this system.

Keywords: Anti-lock Braking System, Conventional Braking System, cylinder, integrated, piston controlled emergency brake assist.

I. Introduction

As we know that large no of vehicles are being manufactured in the market, as a result of this the traffic has increased significantly on the road, which is directly proportional to the increase in the no of accidents taking place on the road. Even with Anti-lock Braking System (ABS) system it is not possible to achieve the correct brake force, that's why in this research paper we came up with the fresh technology of piston controlled brake system, which will revolutionize the brake system used in the vehicles. Now as the name itself suggest "Piston controlled emergency brake system" thus in this brake system we have used the piston power to amplify the braking force applied by the driver in the situation of the emergency. As we know that pressure is inversely proportional to the surface area of the piston thus, thus in this project we have decreased the area of piston and cylinder arrangement which will in turn amplify the braking force, and will make the whole system more reliable and efficient. As we know that the relation between the speed and the injury are closely related to each other and it has been shown empirically, theoretically as well as mechanically. Due to the Anti-lock Braking System (ABS) crash protection of the cars has increased rapidly over the past eleven years. But according to this research paper PEBA the crash protection will reach to new heights, and will result in much smooth and efficient braking system. Thus the main aim of this new technology is to replace the previously used braking system available in the market with the, piston controlled emergency brake assisting system.

II. Working

During the time of emergency the driver sometimes is not able to apply the sufficient braking force, at this time PEBA comes into the action. So what this PEBA does is that it increases the brake pressure the ABS, regulation intervenes to prevent the wheels from the locking, and thus in this way the PEBA, system will achieve the maximum breaking effect, and due to this the breaking path will be reduced significantly.

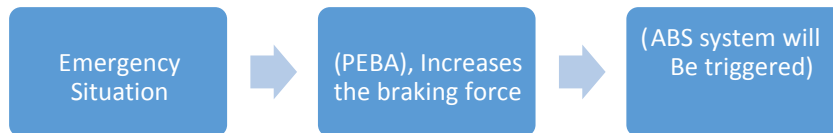
The main functioning of the PEBA is classified into two categories

- 1. Phase one: starting of the PEBA assistance system intervention.**
- 2. Phase two: conclusion of the brake assistance system intervention system.**

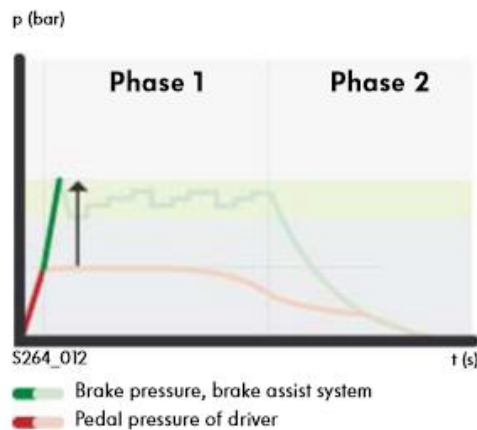
Phase one: In this phase if the trigger conditions are fulfilled then this piston controlled emergency braking system will increase the breaking force, and thus the ABS regulation range is quickly attained through this process.

Phase two: Now somehow if the driver is not able to fulfill the sufficient breaking force needed to trigger the PEBA mechanism the mechanism will conclude that the emergency situation has been rived and will move to the phase two now what happens is the pressure in the piston cylinder arrangement of PEBA will adapt to the drivers pressure on the brake. And the whole system will move on to the transition state one, and as predicted the ABS will come into the action thus restoring the normal braking force.

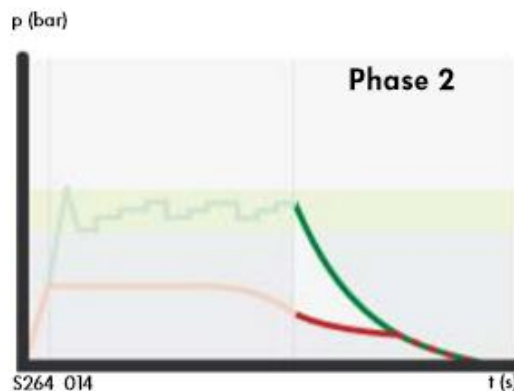
III. Figures And Tables



Graph: Of phase one



Graph: Of phase two



IV. Conclusion

Through our system, we can conclude that by using PEBA, highest braking efficiency can be achieved which will reduce the accidents.

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