

Vehicle Door Opening Warning Safety System

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Abstract - The safely vehicle door opening system is necessary to prevent accidents happening from backside while opening the car door and to provide safety to passengers. To prevent accident due to passenger's carelessness, Here we will use the magneto resistance light on the car door. So it prevent from the accident and gives the warning while opening the door. A vehicle door opening warning system for a car also includes a sensor for sensing the approaching of another car from behind when a person is opening the car door, and a warning light and a buzzer are activated to give a visual warning signal and an audio warning signal when the car door is being opened.



Keywords: Magneto Resistance Light, sensors, Indication light, Car door.

1. INTRODUCTION:

A vehicle door opening warning system for a car includes a Magneto Resistance light and sensor for sensing the approaching of another car from behind when a person is opening the car door, a car door-opening control unit stops the car door from being opened when the sensor senses the approaching of the other vehicle from behind, and a warning light and a buzzer are activated to give a visual warning signal to the vehicle coming from back and an audio warning signal when the car door is being opened.

1.1 WORKING PRINCIPLE OF MAGNETO RESISTANCE LIGHT:

The light works on the principle of Magneto Resistance. Magneto Resistance has the tendency of a material to change the value of its electrical resistance in an externally-applied magnetic field. So when the light comes in contact with magnet it will stop blinking (while door is closed) and it will start blinking when it will get away from magnet (when door is open). It works with the help of button cell and it is also a self-renewable product and it does not need any electricity to run it. It will blink like this in red color and it gives the indication the vehicle coming from back and it works very efficiently in night mode.

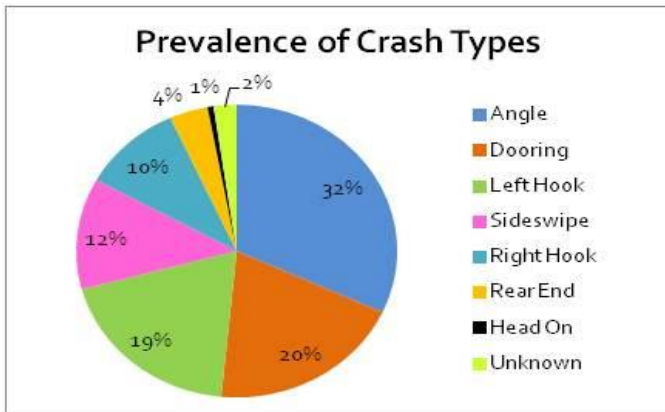
1.2 BUZZER WITH LIGHT INDICATION ON CAR MIRRORS:

When the vehicle approaches from back and when the door will open at the same time then the magneto Resistance light will start blink and the same time the sensor will also sense and will give light indication on the mirror as shown in Fig. and also buzzer will start ringing when the sensor senses the vehicle arriving from back. It will helps to prevent the accident from the vehicle arriving from backside.



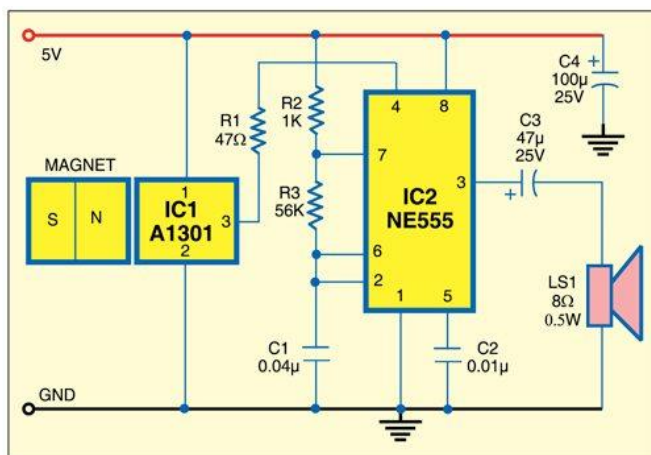
2. PRAVALENCE OF CRASH TYPE:

As per the data shown in the pie chart 20% of crash types is due to dooring systems. So it is too high ratio and with the help of this solution we can decrease this crash rates. As per my view all the company should mandatorily give this magneto resistance light in the door and also there is one benefit that it does not consumes electricity. The warning sensors and buzzers will include in cost.



3. DOOR OPENING WARNING ALARM:

This door open alarm uses an input sensor fixed at the corner of the door frame and a magnet fixed on the door panel close to the sensor. When the door is opened, the magnet moves away from the sensor, generating a controlling signal to sound the alarm. The circuit is built around Hall sensor A1301 (IC1), timer NE555 (IC2), a powerful magnet and a few discrete components. The sensor is a three-terminal device. The voltage generated by it depends on the polarity of the magnet. The presence of south-polarity magnetic field, perpendicular to the branded face of the sensor, increases the output voltage of the sensor. Conversely, the presence of north-polarity magnetic field in the same orientation as the branded face of the sensor device decreases the sensor output.



When the door is closed, the magnet is close to the sensor. Presence of north-polarity magnetic field generates a low voltage at the output of the sensor. As a result, pin 4 of NE555 also goes low and the timer does not oscillate. This de-activates the speaker indicating that the door is closed. When the door is opened, the magnet moves away from the sensor. The output of the sensor goes high and pin 4 of IC2 also goes high. The timer oscillates and the speaker sounds to indicate that the door is open. The speaker sounds until the door is closed. Assemble the circuit on a general-purpose PCB and enclose in a suitable case. Fix the Hall sensor at the

corner of door frame and the magnet on the door, keeping its north pole (N) oriented towards the sensor. Align the sensor and magnet such that when the door is closed the output of the Hall sensor is low.

4. ADVANTAGES AND DISADVANTAGES:

4.1 ADVANTAGES:

1. Magneto Resistance light do not consumes the electricity.
2. Light is very in weight.
3. It helps in giving warning to vehicles coming from back.
4. Cost is low.
5. Assembly and installation is very easy.

4.2 DISADVANTAGES:

1. The cost of buzzers and warning alarm sensors is high.
2. Time to maintenance is needed.
3. It will work on button cell so it should be change at some period of time.

5. CONCLUSION

In conclusion, this will help to decrease the rate of accidents due to opening of the cars doors. This devices doesn't consumes the electricity so it is almost free from electricity and also there is no chances of short circuit and it's a safe device this device should be attached in every cars from the company itself. Finally, this device can helps to prevent many accidents from being crash and injured.

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