A

SEMINAR REPORT

ON

"BREAK FAILURE INDICATOR"

PRESENTED BY,

1.AMRUTA S JUMDE- (2110121293521)

2.PERMESHWAR S KADAM- (2110121293522)

3.VAIBHAV J DAMDAR- (2110121293523)

4.ANKUSH L TADAKE- (2110121293524)

5.SAHIL A RATHOD-(2110121293525)

GUIDED BY-

PROF: P.S. SWAMI

ELECTRICAL ENGINEERING DEPARTMENT

GOVERNMENT ENGINEERING COLLEGE OF, YAVATMAL

DECLARATION

I declare that the seminar work presented in this report titled **"BREAK FAILURE INDICATOR"** submitted to the Electrical Engineering Department, Government college of Engineering Yavatmal for the B.Tech degree in **Electrical Engineering**, is my original work.

Date:-

Place:- Yavatmal

1.AMRUTA JAMDE

2.PERMESHWAR KADAM

3.VAIBHAV DAMDAR

4.ANKUSH TADAKE

5.SAHIL RATHOD

DEPARTMENT OF ELECTRICAL ENGINEERING CERTIFICATE

This is to certify that the following student of Second year Electrical Engineering have successfully submitted the seminar report entitled

BREAK FAILURE INDICATOR

The work prepared by him is found satisfactory.

DATE:-

ACKNOWLEDGEMENT

I wish to extend my sincere gratitude to my seminar guide, Prof:P.S.SWAMI Lecturer, Department of Electrical Eengineering, for his valuable guidance and encouragement which has been absolutely helpful in successful completion of this seminar.

I am indebted to Prof.A.S.SHIDEKAR, Professor and Head, Department of Electrical Engineering for his valuable support.

I am also grateful to my parents and friends for their timely aid without which I wouldn't have finished my seminar successfully. I extend my thanks to all my well wishers and all those who have contributed directly and indirectly for the completion of this work.

And last but not the least; I thank God Almighty for his blessings without which the completion of this seminar would not have been Possible.

INDEX

4.RESISTOR

5.BATTERY

6.CAPACITOR

7.555 TIMER

- ADVANTAGE

- APPLICATION

- FUTURE SCOPES

- INSTUCTION TO USE

- CONCLISION

- REFERENCES

BRAKE FAILURE INDICATOR

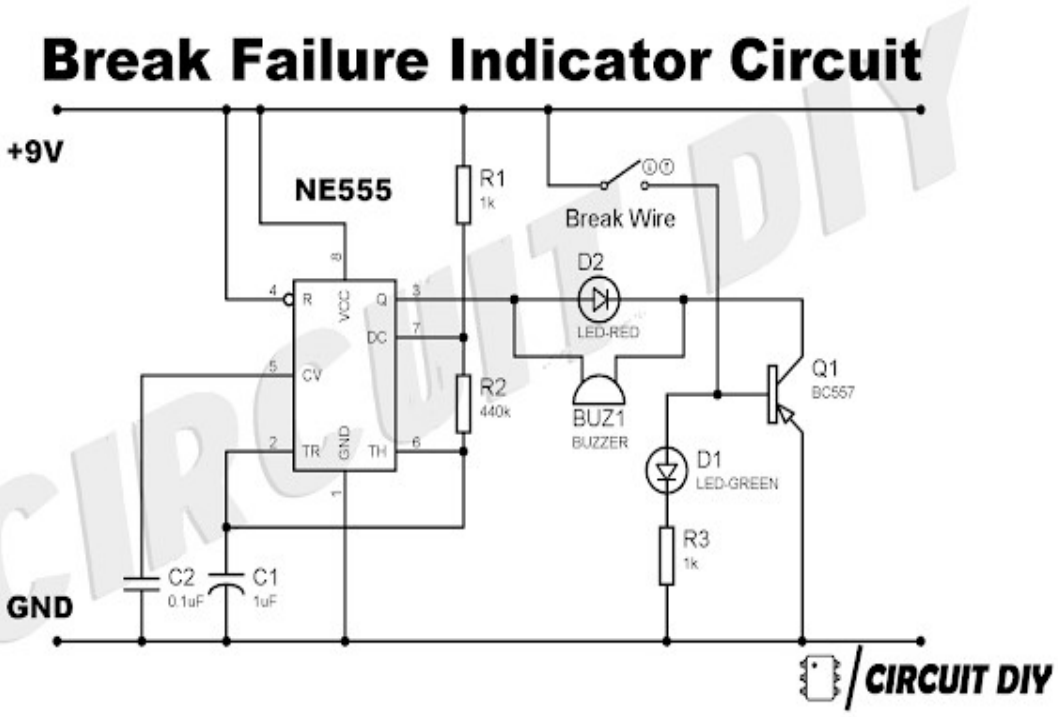
ABSTRACT

Automobiles have been the primary mode of transportation for most of us and we depend on them for our day to day commute. Brake failure indicator circuit is a circuit that constantly monitore the condition of brake.The sensor which is attached to the circuit of a brake failure by monitoring the brake switch and reminds you the condition of brake every time when brake is appiled. This mechanism involves a Brake wire which runs from the brake lever to the braking mechanism set-up of the vehicle. It is this wire that gets pulled when we apply brakes to stop our vehicle. Machines are widely controlled by automated control system. To meet the need of growing population economic, effective and reliable control of machines as well as their control system is necessary. The main objective of this project is to continuously monitor the braking system a each and every time during the operation of the vehicle. Now a days, accidents are occurring due to lot of reasons, the one of the main reason is brake failure, it caused to due to poor maintenance, improper use and product defect, in order to safe guard the valuable human for accident the accident monitoring of brake is very important issue in automobile. The brake failure indicator circuit is a circuit that monitors constantly of the condition of brakes and provides an audio visual indication. When the brake is applied in order to slow down or to stop the vehicle the green LED blinks and the buzzer beeps for about one second if the brake system is accurate and working properly. If brake system fails the red LED glows and the buzzer do not beep when the brakes are applied.

INTRODUCTION

A brake is a mechanical device that hinder, restrain, or prevents motion, slowing or stopping a moving object or preventing its motion.Most of the brakes generally uses friction between two surfaces pressed together to change the form of the kinetic energy of the moving object into heat, despite the fact that other methods of energy conversion may be employed for the same. For example, regenerative braking converts a large amount of the energy to electrical energy along with the heat energy, which may be stored or can be sent back to the source for later use. Some other methods convert the kinetic energy into potential energy in such stored forms as pressurized oil or pressurized air. Magnetic fields is used in Eddy current brakes to convert kinetic energy into electric current in the brake disc, fin, or rail, which is converted into heat energy. Still there are other braking methods to transform kinetic energy into different forms, for example by transferring the energy to a rotating flywheel.

DIAGRAMANDEXPLANATION



WORKING OF THIS BRAKE FAILURE CIRCUIT

Once the connection is made power the circuit, make sure the Brake cable (here I have used a normal yellow wire to represent the brake cable) is connected across the +5V and base of BC557 through a resistor as shown in the circuit. If everything works as expected you should see the Green LED turned on and the Buzzer and Red Light Turned Off. Now, cut/remove the brake cable the Red LED and the Buzzer should start flashing.

COMPONENTS USED IN BRAKE FAILURE INDICATOR:

BUZZER :

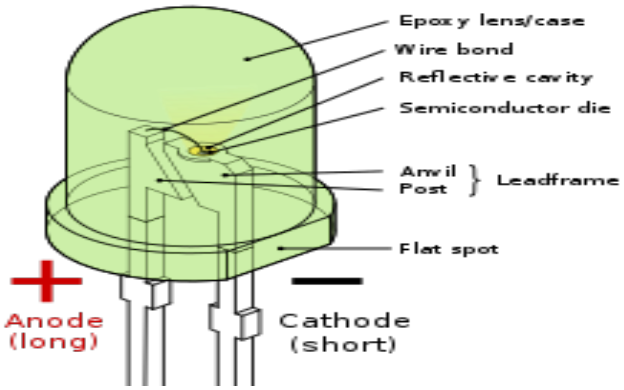
A buzzer is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on, PCB Board which makes this a widely used component in most electronic applications.

There are two types are buzzers that are commonly available. The one shown here is a simple buzzer which when powered will make a Continuous Beeeeeeppp.... sound, the other type is called a readymade buzzer which will look bulkier than this and will produce a Beep. Beep. Beep. Sound due to the internal oscillating circuit present inside it. But, the one shown here is most widely used because it can be customised with help of other circuits to fit easily in our application. This buzzer can be used by simply powering it using a DC power supply ranging from 4V to 9V. A simple 9V battery can also be used, but it is recommended to use a regulated +5V or +6V DC supply. The buzzer is normally associated with a switching circuit to turn ON or turn OFF the buzzer at required time and require interval.

LED :

A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. The colour of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the band gap of the semiconductor. White light is obtained by using multiple semiconductors or a layer of lightemitting phosphor on the semiconductor device.

Appearing as practical electronic components in 1962, the earliest LEDs emitted low-intensity infrared light. Infrared LEDs are used in remote-control circuits, such as those used with a wide variety of consumer electronics. The first visible-light LEDs were of low intensity and limited to red. Modern LEDs are available across the visible, ultraviolet, and infrared wavelengths, with high light output.



PCB /BREAD BOARD

A printed circuit board (PCB) mechanically supports and electrically connects electrical or electronic components using conductive tracks, pads and other features etched from one or more sheet layers of copper laminated onto and/or between sheet layers of a ((non-conductive substrate. Components are generally soldered onto the PCB to both electrically connect and mechanically fasten them to it. Printed circuit boards are used in all but the simplest electronic products. They are also used in some electrical products, such as passive switch boxes.

Alternatives to PCBs include wire wrap and point-to-point construction, both once popular but now rarely used. PCBs require additional design effort to lay out the circuit, but manufacturing and assembly can be automated. Specialized CAD software is available to do much of the work of layout. Mass-producing circuits with PCBs is cheaper and faster than with other wiring methods, as components are mounted and wired in one operation. Large numbers of PCBs can be fabricated at the same time, and the layout only has to be done once. PCBs can also be made manually in small quantities, with reduced benefits.

RESISTOR

A resistor is a passive two-terminal electrical component that implement electrical resistance as a circuit flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. High power resistors that can dissipate many watts of electrical power as heat, may be used as parts of motor controls, in power distribution systems, or as test loads for generators.Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

Resistors are common elements of electrical networks and electronic circuits and are ubiquitous in electronic equipment. Practical resistors as discrete components can be composed of various compounds and forms. Resistors are also implemented within integrated circuits.

BATTERY

Battery is a device consisting of one or more electrochemical cells with external connections for powering electrical devices such as flashlights, mobile phones, and electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anode. The terminal marked negative is the source of electrons that will flow through an external electric circuit to the positive terminal. When a battery is connected to an external electric load, a redox reaction converts high-energy reactants to lower-energy products, and the free-energy difference is delivered to the external circuit as electrical energy. Historically the term "battery" specifically referred to a device composed of multiple cells, however the usage has evolved to include devices composed of a single cell.

CAPACITOR

In October 1745, Ewald Georg von Kleist of Pomerania, Germany, found that charge could be stored by connecting a high-voltage electrostatic generator by a wire to a volume of water in a hand-held glass jar.[4] Von Kleist's hand and the water acted as conductors, and the jar as a dielectric (although details of the mechanism were incorrectly identified at the time). Von Kleist found that touching the wire resulted in a powerful spark, much more painful than that obtained from an electrostatic machine. The following year, the Dutch physicist Pieter van Musschenbroek invented a similar capacitor, which was named the Leyden jar, after the University of Leiden where he worked.[5] He also was impressed by the power of the shock he received, writing, "I would not take a second shock for the kingdom of France."[6] Daniel Gralath was the first to combine several jars in parallel to increase the charge storage capacity.[7] Benjamin Franklin investigated the Leyden jar and came to the conclusion that the charge was stored on the glass, not in the water as others had assumed. He also adopted the term "battery",[8][9] (denoting the increasing of power with a row of similar units as in a battery of cannon), subsequently applied to ((clusters of electrochemical cells.[10] Leyden jars were later made by coating the inside and outside of jars with metal foil, leaving a space at the mouth to prevent arcing between the foils.[*citation needed*] The earliest unit of capacitance was the ((jar, equivalent to about 1.11 nanofarads.[11]
Leyden jars or more powerful devices employing flat glass plates alternating with foil conductors were used exclusively up until about 1900, when the invention of wireless (radio) created a demand for standard capacitors, and the steady move to higher frequencies required capacitors with lower inductance. More compact construction methods began to be used, such as a flexible dielectric sheet (like oiled paper) sandwiched between sheets of metal foil, rolled or folded into a small package.

A capacitor is a device that stores electrical energy in an electric field. It is a ((passive electronic component with two ((terminals.

The effect of a capacitor is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to add capacitance to a circuit. The capacitor was originally

known as a condenser or compensator. This name and its cognates are still widely used in many languages, but rarely in English, one notable exception being condenser microphones, also called capacitor microphones. The physical form and construction of practical capacitors vary widely and many types of capacitor are in common use.

555 TIMER :

The IC was designed in 1971 by Hans R. Camenzind under contract to signetics, later acquired by Philips semiconductors, now NXP
In 1962, Camenzind joined PR Mallory's Laboratory for Physical Science in Burlington, Massachusetts.[5] He designed a pulse-width modulation(PWM) amplifier for audio applications;[8] however, it was not successful in the market because there was no power transistor included. He became interested in tuners such as a gyrator and a phase-locked loop (PLL). He was hired by Signetics to develop a PLL IC in 1968. He designed an oscillator for PLLs such that the frequency did not depend on the power supply voltage or temperature.
Signetics subsequently laid off half of its employees due to a recession; development on the PLL was thus frozen.
Camenzind proposed the development of a universal circuit based on the oscillator for PLLs and asked that he develop it alone, borrowing equipment from Signetics instead of having his pay cut in half. Other engineers argued the product could be built from existing parts; however, the marketing manager approved the idea. Among 5xx numbers that were assigned for analog ICs, the part number "555" was chosen.
Camenzind also taught circuit design at Northeastern University in the morning attending the university himself at night working toward a Master's degree in Business Administration.The first design for the 555 was reviewed in the summer of 1971. Assessed to be without error, it proceeded to layout design. A few days later, Camenzind got the idea of using a direct resistance instead of a constant current source finding later that it worked. The change decreased the required 9 pins to 8 so the IC could be fit in an 8-pin package instead of a 14pin package. This revised design passed a second design review with the prototype completed in October 1971.

ADVANTAGES :

1) No need of external battery. Circuit can be powered from the vehicle's battery itself.

2) Power consumption is comparably less.

3) It is not depend on the petrol level.

4) Operating principle is very easy.

5) Installation is simplified very much.

6) The safety of driver is ensured.

7) Brake failure is notified to the surrounding traffic via buzzer.

8) The cost is low.

APPLICATIONS :

1) Four wheeler application

2) Two wheeler application

3) Mechanical Crane

4) Mechanical machines

FUTURE SCOPES :

1) It can be used with high sensitivity pressure sensor.

2) If in case the brake fails, brake failure indicator can also be used in order to shut down the vehicle's engine.

3) The circuit will work in vehicles only with negative grounding.

4) The brake switch is fluid operated and does not function if fluid pressure drops to leakage.

INSTRUCTION TO USE :

1) Always operate vehicles with proper negative grounding.

2) Keep the volume of audio visual indicator sound high so it can be easily hear by operator.

3) is important and necessary to attach the sensor with brake switch.

4) Always monitor the level of fluid leakage and its condition.

CONCLUSION

1) The main purpose of this project is to provide such a device to vehicles operator so that any harmful damage and accidents cause by failure of brake switch can be easily prevented by the proper indication of working condition of brake switch. There are many aims of this project describe as:-

2) To sense the pressure drop due to the pressure leakage.

3) To indicate the proper working condition of brake switch.

4) To observe the level of hydraulic pressure.

5) To calculate the fluid braking pressure when the brake is applied.

6) To prevent small number of accident occurs in trains and boats by the failure of brake switch.

REFERENCES

1) http://saranyasblog.blogspot.in/2009/02/introduction-brake-failure-indicator.html

2) https://en.wikipedia.org/wiki/Brake

3) http://www.edwardslawok.com/types-of-auto-brakes.html
4) http://westislandgarage.com/en/auto-repairs/55-systeme-de-freinage
5) http://www.smartmotorist.com/driving-guideline/failure-of-vehicles-brakingsystem.html
6) http://www.e-z.net/~ts/hybrakes.htm
7) http://www.electronicsforu.com/electronicsforu/circuitarchives/view_article.asp?sno=232

THANK YOU