

Automatic Hand Brake System

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Abstract—The manual handbrake release mechanism has replaced the automatic handbrake release mechanism, which is considered more effective than conventional systems. An automatic handbrake system is also necessary for human safety to prevent accidents when drivers forget to engage the handbrake. The report emphasizes that advancements in technology aim to reduce human effort and enhance comfort. It discusses the importance of handbrakes and the need to reduce manual effort in operating them to promote safety and convenience

1) INTRODUCTION

In this hand brake system the hand brake are automatically operated without using the driver hand it's operate . It operate when the driver not seated and the and the car is off condition it operate . In this automatic hand brake system we used the load sensor and that used to detect the load of human body are the car in key are released from the car it's sense and the controller send signal to the motor and motor are rotated. And we de develop v shape shaft to the rotation of hand brake from rotary motion in linear motion it used and the hand brake are automatically operated in the car for standing the car while parking .

Keywords – Automatic Hand Brake

2) METHODOLOGY

We develop a Automatic hand brake system. In this automatic hand brake system we used the load sensor and that used to detect the load of human body are the car in key are released from the car it's sense and the controller send signal to the motor and motor are rotated. And we de develop v shape shaft to the rotation of hand brake from rotary motion in linear motion it used and the hand brake are automatically operated in the car for standing the car while parking

3)PROBLEM DEFINATION

1) In conventional hand brake system the hand brake are operating in hand liver with the help of hands and some time the hand brake are not in mind hand brake are not operated and this causes the many accidents and this major disadvantage of hand brake system this purpose we .Case study's 1 In case the driver are not operated hand brake and leave the car

2) while not used hand brake the accidents are happen

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Problem Image





4) WORKING OF MODIFIED AHBS

When the vehicle is stopped by driver and he/she turn of the vehicle . The drive will get forget to operate hand brake. At that time automatic hand brake system conduct their work. The ignition is get off by driver ignition switch send signal to the circuit. After this when driver is get up from the seat the load sensor which is mounted below the driver seat sense the weight and pass the signal to circuit. Circuit take this both signal and give order to motor to rotate and operate the hand brake automatically by the mechanism. When driver came back and see the operated hand brake he release it manually. In this project two input are fitted because if any one input have any problem second input will operate the hand brake. In this system hand brake is operate automatically or manually also.

- **Steps**

- 1.Now the driver get out from the car he get up from the seat and turn off the car key.
- 2.Due to this the load sensor is activate and pass the signal to the circuit and simultaneously the key slot is also pass the signal to the circuit
- 3.The PLC circuit is read the signal and operate the angular motor.
- 4.Whit the help of the mechanism the motor is rotate the mechanism is lift the hand brake in upward direction
- 5.Due to this the hand brake operation is complete without operator.
- 6.After completion of the work the motor is rotate antilock wise direction and stay its original position
- 7.But the hand brake is released with manually for safety purpose.

5) CONSTRUCTION OF MODIFIED AHBS

a) **DC spur gear motors** with the capability of offering custom solutions in the form of custom DC spur gear motors. Specification: • Length: 80mm • Torque: 1.5 kg.cm • Shaft Diameter: 6mm • Weight: 130.00g 12V DC geared motors for robotics applications. Very easy to use and available in standard size. Nut and threads on shaft to easily connect and internal threaded shaft for easily connecting it to wheel.

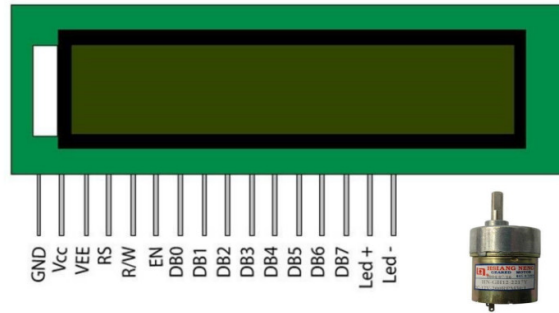
b) The **PIC microcontroller** is a low cost ‘computers on a chip’ manufactured by Microchip. They allow electronic designers and hobbyists impart intelligence and logic to a single chip for special purpose applications and products. The PIC microcontroller programming is done using the popular software ‘Mikro C’. This powerful yet easy to program into a 40-pin package is upwards compatible with the PIC16C5X, PIC12CXXX and PIC16C7X devices.

c) Introduction to PIC 16f877a controller PIC is a family of Harvard architecture microcontrollers made by Microchip technology, derived from the PIC1640, originally developed by the Microelectronics division of General Instrument. The name PIC initially is referred to Peripheral Interface Controller. PICs are popular with developers due to their low cost, wide availability, large user base, extensive collection of application notes, availability of low cost, free development tools and serial programming (and reprogramming with flash memory) capability. The microcontroller is from PIC series.

d) **LOAD CELL** 100kg 200kg 300kg weighing scales load cell Features and Application 1. Single point parallel beam load cell 2. Aluminum weighing load cell 3. Electronic load cell ranges: 100kg, 200kg, 300kg, 4. Chinese weighing sensor manufacturer 5. Parallel beam load cell are widely used for weighing scales, platform scales, price computing scales, health scales, mechanical weighing apparatus and other weighing and control system.

e) **LCD** (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on

f)The **NTN bearing** unit is a combination of a radial ball bearing, seal, and a housing of high-grade cast iron or pressed steel, which comes in various shapes. The outer surface of the bearing and the internal surface of the housing are spherical, so that the unit is self-aligning. The inside construction of the ball bearing for the unit is such that steel balls and retainers of the same type as in series 62 and 63 of the NTN deep groove ball bearing are used. A duplex seal consisting of a combination of an oil proof synthetic rubber seal and a slinger, unique to NTN, is provided on both sides.



Process : This is set Of Our Project . Let's Understand Idea With Images .



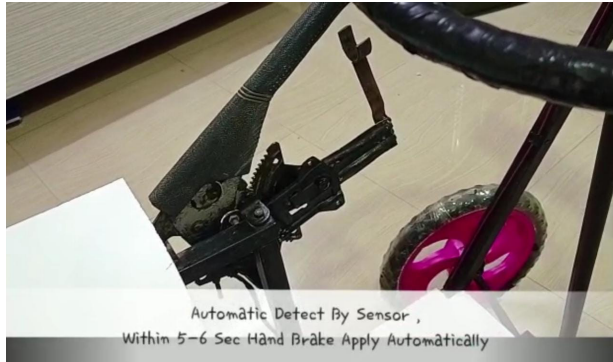
- Setup Of Project
- Load sensor and Release Handbrake Of Automobile



Circuit and Display

When A driver Is Forget To apply To Hand Brake In cars , This System is very Useful .

It Automatically Detect that is , Car key is Off and Driver is Get off The car, Load Sensor Is detect It ,Send information to PIC Circuit , and Its automatically apply Hand Brake In 6-7 sec Only .



6)Advantages

- Low cost of this system of compare to other system
- Improves parking experience in hills and very use full in incline road surface
- Very compact.
- Emergency stop and start is possible.
- The urgent braking condition in sudden brake are apply in manually in rear condition.
- Sensing can be easily done using sensors and two to three second in operate the hand brake.
- Reduces the manual interaction in steady position .
- Highly accurate this system in sudden apply the hand brake.
- This system are automatically and also manually operate this system.

Intuition

In our project, automatic hand brake is actuated with the help of the key the Dc motor and load sensor based on some conditions. Sensors sense and provides signal to the circuit board which directly drives the motor. The Dc motor gets activated and lifts the hand and disengages with the help of push lock and spring tension. In future, this could be developing by adding some of the additional features and also automatic hand brake will be used in all types of automobiles at low cost. caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract”, will require you to apply a style (in this case, italic) in addition to the style provided by the drop down menu to differentiate the head from the text.

7) ACKNOWLEDGMENT

With deep sense of gratitude we would like to thank all the people who have lit our path with their kind guidance. We are very grateful to these intellectuals who did the best to help on our project work It is our privilege to express deep sense of gratitude to Principal **Prof. S. R. Upasani**, of **Guru Gobind Singh Polytechnic, Nashik**, for his comments and kind permission to complete this project We remain indebted to HOD of Mechanical Department **Prof. V.K.DHAGATE**, for their timely suggestions and valuable guidance. We also express deep sense of gratitude to our Project Guide **Prof. C.N. PURKAR**. AND ALSO Thanks to Guardian Prof. Derle sir . And also, we thank to our friends and the people who support directly or indirectly to our project work.

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These references provide information on various aspects of automatic hand brake systems in automobiles, including their design, development, and implementation.