A Smart Gear Lever Locking System

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ABSTRACT

The present condition of insecure environment causes increase in the ratio of vehicle theft, which creates a major responsibility towards manufacturers as well as owners of luxury automobile to inbuilt the anti-theft system which prevent the car from theft. The objective of this work is to design and fabricate an anti-lock gear lever system by locking the gear lever of the car with the help of microcontroller. This project is very useful for anti-theft, because gear lever unit is locked when vehicle is in the parking condition. Gear lever is released when the password is matched with the owner's password. And if the password is mismatched, the gear lever didn't unlock. When the vehicle is parked, anti-lock steering system is activated by the microcontroller.

Key words:Pneumatic Cylinder, Solenoid Valve, Gear Box.

I. INTRODUCTION

Car theft is one of the strangest events of one's life. Thus, theft proofing your car is as important as purchasing one. The additional vehicular security systems to be perfectly installed are very important. When the car is parked and locked by the owner it should be in rest in all condition till the owner unlocks it. With the increasing vehicle theft, the prime concern for vehicle safety and surveillance is arising. Thus, safety of the automobile has become a vulnerable issue which created the urge of developing new security system.

II. LITERATURE SURVEY

Samir Rana et al. (2018) In this paper, we have made an android app, which is used to communicate with the device installed in our vehicles, which in turn will control the functions of the vehicle, as well as ensure the locking of the accelerator, gear and brake pedals, so that the vehicle does not move. Thus, the most expensive and important asset of all of us, will be on our fingertips and fully secure. This will prove to be a great technique to prevent the theft of the vehicles, especially in metropolitan cities, where theft cases are being reported, every day.

K. M. Arunraja et al. (2017) The Anti-theft steering system and vehicle information system through password serves as a best safety and convenience system for the vehicle users to protect themselves from impending danger. This research work widens the area of safety and comfort systems in the field of automobile engineering providing various benefits such as accident prevention and passenger safety installations.

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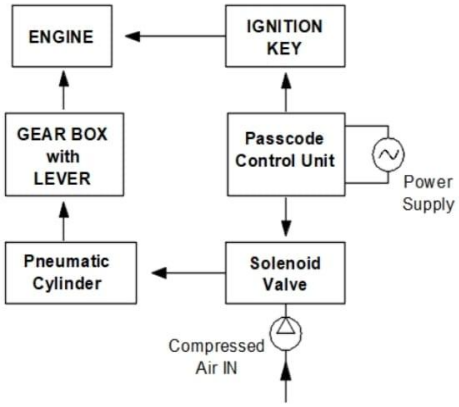
III. BLOCK DIAGRAM



IV. COMPONENTS

a.Pneumatic Cylinder

A pneumatic cylinder can be found in many different types, like single-acting cylinder, double acting cylinder, rotary air cylinder, rod less air cylinder and telescoping cylinder. These cylinders are preferred for many reasons that include noise-free operation and elimination of the need to store liquids, as in the case of hydraulic cylinders. An air-based pneumatic cylinder is also clean and environment-friendly as any leakage from it doesn't pollute the surroundings. Pneumatic actuators are the tools consisting of parts like pneumatic cylinder, piston and valves and are used in the applications like oil refining and chemical industries

b.SolenoidValve

A solenoidvalve isan

electromechanically operated valve. The valve is controlled by an electric current through a solenoid in the case of a two-port valve the flow is switched on or off; in the case of a three-port valve, the outflow is switched between the two outlet ports. Multiple solenoid valves can be placed together on a manifold.

c.Gear Box

The most basic definition of a gearbox is that it is a contained gear train, or a mechanical unit or component consisting of a series of integrated gears within a housing. In fact, the name itself defines what it is a box containing gears. In the most basic sense, a gearbox functions like any system of gears; it alters torque and speed between a driving device like a motor and a load.The gears inside of a gearbox can be any one of a number of types from bevel gears and spiral bevel gears to worm gears and others such as planetary gears

d.Control Unit

a) An Electronic Control Unit (ECU) is any embedded system in automotive electronics that controls one or more of the electrical systems or subsystems in a vehicle.

b) Types of ECU include Electronic Control Unit, Engine Control Module (ECM), Power train Control Module (PCM), Transmission Control Module (TCM), Brake Control Module (BCM or EBCM), Central Control Module (CCM), Central Timing Module (CTM), General Electronic Module (GEM), Body Control Module (BCM), Suspension Control Module (SCM), control unit, or control module. Taken together, these systems are sometimes referred to as the car's computer (Technically there is no single computer but multiple ones.) Sometimes one assembly

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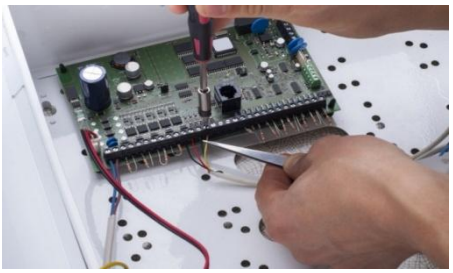
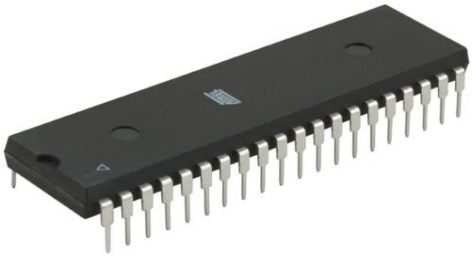
incorporates several of the individual control modules (PCM is often both engine and transmission).

c) Some modern motor vehicles have up to 80 ECUs. Embedded software in ECUs continues to increase in line count, complexity, and sophistication. Managing the increasing complexity and number of ECUs in a vehicle has become a key challenge for original equipment manufacturers.



e.MICROCONTROLLER

A microcontroller (MCU for microcontroller unit, or UC for µ-controller) is a small computer on a single integrated circuit. In modern terminology, it is similar to, but less sophisticated than, a system on a chip (SoC); anSoC may include a microcontroller as one of its components. A microcontroller contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals. Program memory in the form of ferroelectric RAM, NOR flash or OTP ROM is also often included on chip, as well as a small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general-purpose applications consisting of various discrete chips.



f.COMPRESSOR

A compressor is a mechanical device that increases the pressure of a gas by reducing its volume. An air compressor is a specific type of gas compressor. Compressors are similar to pumps: both increase the pressure on a fluid and both can transport the fluid through a pipe. As gases are compressible, the compressor also reduces the volume of a gas. Liquids are relatively incompressible; while some can be compressed, the main action of a pump is to pressurize and transport liquids.

V. WORKING PRINCIPLE

In our project consist of gear lever, pneumatic cylinder, solenoid valve, control unit, wheel, chassis, keypad and etc. Here key pad connected to the control unit and control unit activates the pneumatic cylinder then they lock and unlock the gear lever. Whenever the password enters correctly that time gear lever to be work. Incase password will be wrong the control unit activated pneumatic cylinder then they automatically lock the gear lever. The pneumatic cylinder is operating the forward and backward movement of linear operation. Its help of gear lever lock and unlock purpose. The pneumatic cylinder is automatically operated with help of solenoid valve and control unit.

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VI. RESULT AND DISCUSSION

- We have described a new security system by locking gear lever.
- It is used car, lorry, trucks and heavy vehicles.
- It is more effective security system for vehicles

VII. CONCLUSION

The Anti-theft gear lever system through password serves as a bestsafety and convenience system for the vehicle userstoprotect themselves from impending danger. This researchwork widens the area of safety and comfort systems in thefield of automobile engineering.

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