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A Review Pneumatic Bumper For Four Wheeler Using Two Cylinder

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Abstract - *The technology of pneumatics plays a major role in the field of automation and modern machine shops and space robots. The aim is to design and develop a control system based intelligent electronically controlled automotive bumper activation is called PNEUMATIC BUMPER SYSTEM FOR FOUR WHEELER USING TWO CYLINDER. This project consists of Ultra-sonic sensor module, Control Unit, Pneumatic bumper system. The Ultra-sonic sensor senses the obstacle. If there is any obstacle closer to the vehicle (within 90cm), the control signal is given to the control unit and pneumatic bumper simultaneously. The pneumatic bumper comes forward. Bumper system is provided for protection of vehicle engine and damage of the vehicle.*

Keywords- *Automatic Pneumatic Bumper, IR Sensor, IR Transmitter & Proximity Sensor*

I. INTRODUCTION

We have pleasure in introducing our project "PNEUMATICN BUMPER FOR FOUR WHEELER USING CYLINDER". Which is fully equipped by IR Ultra-sonic sensors, Control Unit and pneumatic cylinder along with bumper. It is the project which has been fully equipped and designed for auto vehicles. The technology of pneumatics plays a major role in the field of automation and modern machine shops and space robots. The aim is to design and develop a control system based on intelligent electronically controlled automotive bumper activation system is called "Pneumatic Bumper for Four Wheeler Using Two Cylinder.

The project consists of Ultra-sonic sensor, Control Unit, Pneumatic bumper system. The Ultra-sonic sensor senses the obstacle. There is any obstacle closer to the vehicle (within 90cm), the control signal is given to the Control Unit and bumper system.
This bumper activation system is activated
When the obstacle is sensed by the Ultra-sonic sensor.

1.1 Introductions to safety system

The aim is to design and develop a control system based on pneumatic cylinder of an intelligent electronically controlled automotive braking system. For comparison of iterative technologies techniques. The final phase of the new modern vehicle shall include:

- Development of improved ABS control systems
- Development and assessment of an electro-hydraulic-BBW (EH-BBW) system
- Individual wheel braking combined with traction control
- Assessing sensor failure and fault tolerant control system design
- Preliminary studies into an electrically actuated system
- Re-engineering using simplified models.

II. COMPONENTS AND DESCRIPTION

2.1. DOUBLE ACTING PNEUMATIC CYLINDER

The cylinder is a Double acting cylinder one, which means that the air pressure operates forward and backward strokes. The air from the compressor is passed through the 3/2 solenoid valve which controls the pressure to required amount by adjusting its knob. A pressure gauge is attached to the air storage tank for showing the pressure.

Fig1:Double Acting Cylinder

2.2. SOLENOID VALVE

The directional valve is one of the important parts of a pneumatic system. A solenoid valve is an 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.

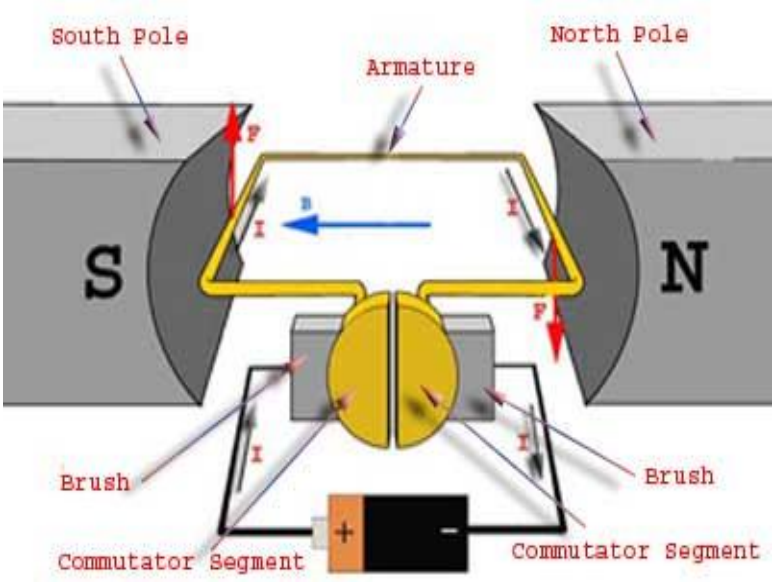
Fig2: Solenoid Valve

Table: 1
Solenoid Valve Specifications

Type	5/2
Voltage	230V
Power	6VA
Working Pressure	1.5-10 Bar
Current	23A AC

2.3. DC MOTOR:

A DC motor in simple words is a device that converts electrical energy (direct current system) into mechanical energy. It is of vital importance for the industry today, and is equally important for engineers to look into the **working principle of DC motor** in details that has been discussed in this article. In order to understand the **operating principle of DC motor** we need to first look into its constructional feature.



The very basic construction of a DC motor contains a current carrying armature which is connected to the supply end through commutator segments and brushes. The armature is placed in between north south poles of a permanent or an electromagnet as shown in the diagram above.

2.4. FRAME STRUCTURE:

III. LITERATURE REVIEW

J. T. Wang General Motors Corporation, United States, Paper No. 05-0144 , An extendable and retractable bumper (E/R bumper) is presented in this paper. The E/R bumper is intended to automatically extend in situations in which there is a high risk of frontal impact to prepare the vehicle for crash and retract when the risk subsides. A functional demonstration vehicle and two experimental vehicles were built with the E/R bumper. Analytical and nonlinear finite element models

were used to aid in the design of these vehicles, and to predict their crash performance in full, offset and oblique impact tests. While the functional demonstration vehicle was used to study its control and operation sequences, the experimental vehicles were crashed in a 56kph rigid barrier impact test and a 64kph 40% Offset Deformable Barrier impact test. These crash tests, together with nonlinear finite element analysis, showed that the additional crush space realized by extending the bumper could reduce the severity of the crash pulse and the amount of structural intrusion to the vehicle compartment.

Mr. Nivesh Thepade, Assistant Professor,Smt. Kashibai Navale College of Engineering, Pune, In almost all of the cases of vehicle accidents, the basic reason cited is failure to apply the brakes at the right time. If the brakes are applied at the right time the accidents can be prevented. Automation can assure higher reliability of braking as compared to fully manual braking. The use of pneumatic system can prove to be useful in automation due to its simplicity and ease of operation. So, the aim is to design and develop a system based on automatic control of vehicle. So, we aim to design "Intelligent Braking system with Pneumatic Bumper".

IV. CONCLUSION

This project work has provided us an excellent opportunity and experience, to use our limited knowledge. We gained a lot of practical knowledge regarding, planning, purchasing, assembling and machining while doing this project work. We feel that the project work is a good solution to bridge the gates between institution and industries.

We are proud that we have completed the work with the limited time successfully. The **PNEUMATIC BUMPER FOR FOUR WHEELER** is working with satisfactory conditions. We are able to understand the difficulties in maintaining the tolerances and also quality. We have done to our ability and skill making maximum use of available facilities.

In conclusion remarks of our project work, let us add a few more lines about our impression project work. Thus we have developed an **"PNEUMATIC BUMPER FOR FOUR WHEELER"** which helps to know how to achieve low cost automation. The application of pneumatics produces smooth operation. By using more techniques, they can be modified and developed according to the applications.

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