AUTOMATIC PNEUMATIC BUMPER FOR FOUR WHEELER

SYNOPSIS

The technology of pneumatics has gained tremendous importance in the field of workplace rationalization and automation from old-fashioned timber works and coal mines to modern machine shops and space robots. It is therefore important that technicians and engineers should have a good knowledge of pneumatic system, air operated valves and accessories.

The aim is to design and develop a control system based an intelligent electronically controlled automotive bumper activation system is called “AUTOMATIC PNEUMATIC BUMPER”. This system is consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic bumper system. The IR sensor is used to detect the obstacle. There is any obstacle closer to the vehicle (with in 4 feet), the control signal is given to the bumper activation system.

The pneumatic bumper system is used to product the man and vehicle. This bumper activation system is only activated the vehicle speed above 40-50 km per hour. This vehicle speed is sensed by the proximity sensor and this signal is given to the control unit and pneumatic bumper activation system.

INTRODUCTION

We have pleasure in introducing our new project “AUTOMATIC PNEUMATIC BUMPER”, which is fully equipped by IR sensors circuit and Pneumatic bumper activation circuit. It is a genuine project which is fully equipped and designed for Automobile vehicles. This forms an integral part of best quality. This product underwent strenuous test in our Automobile vehicles and it is good.
WORKING OPERATION

The vehicle speed is sensed by the proximity sensor. The vehicle speed is above the 40-50 Km per hour, the control unit will activate the IR sensor Unit. The **IR TRANSMITTER** circuit is to transmite the Infra-Red rays. If any obstacle is there in a path, the Infra-Red rays reflected. This reflected Infra-Red rays are received by the receiver circuit is called “**IR RECEIVER**”. The IR receiver circuit receives the reflected IR rays and giving the control signal to the control circuit. The control circuit is used to activate the solenoid valve. If the solenoid valve is activated, the compressed air passes to...
the Pneumatic Cylinder. The compressed air activates the pneumatic cylinder and moves the piston rod.

If the piston moves forward, then the bumper arrangement activated. The piston speed is varied by adjusting the valve is called “FLOW CONTROL VALVE”. In our project, we have to apply this arrangement in one wheel as a model. The compressed air is drawn from the compressor in our project. The compressed air is flow through the Polyurethene tube to the flow control valve. The flow control valve is connected to the solenoid valve as mentioned in the block diagram.

**APPLICATIONS**

- For automobile application
- Industrial application

**ADVANTAGES**

- Free from wear adjustment.
- Less power consumption
- It gives simplified very operation.
- Installation is simplified very much.

**DISADVANTAGES**

- Additional cost is required to install this arrangement in the vehicle.
AUTOMATIC PNEUMATIC BUMPER FOR TWO WHEELER :-

1. IR SENSOR UNIT
2. WHEEL
3. PNEUMATIC CYLINDER
4. PISTON
5. PROXIMITY SENSOR
6. SOLENOID VALVE
7. FLOW CONTROL VALVE
8. POLYURETHANE TUBE
9. FRAME STAND
10. MOTOR
11. BELT DRIVE
12. CONTROL UNIT