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A Review Advanced Vehicle with Automatic Pneumatic Bumper System using Two Cylinder

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Abstract — Pneumatic technology performs a critical function with inside the vicinity of automation and modern mechanical workshop and area robots. The goal is to layout and increase an smart manipulate tool primarily based totally definitely virtually at the activation of electronically managed vehicle bumper in case of flame pneumatic damper two cylinder system This challenge consists of manipulate unit, pneumatic bumper tool. If there can be an impediment with inside the course of the vehicle (internal ninety cm), the manipulate sign is dispatched to the manipulate unit and concurrently to the pneumatic bumper. The pneumatic bumper movements forward. The bumper tool is present. For vehicle engine safety and vehicle damage.

Keywords - Pneumatic, small Sensor, Hydraulics, Automation.

1. INTRODUCTION

A pneumatic car is powered through a pneumatic motor that makes use of compressed air saved in a tank. Instead of blending gasoline with air and combusting it with inside the engine to power pistons with warm growth gases, compressed air vehicles (CAVs) use growth. Compressed air to strength its pistons. A producer claims to have evolved an engine this is ninety percentages efficient. Air propulsion also can be included into hybrid structures including battery electric powered propulsion and gasoline tanks to rate the batteries.

The machine is referred to as Hybrid Pneumatic Electric Drive. In addition, regenerative braking also can be used alongside this machine. We are thrilled to present our mission "AUTOMATIC ACTIVATION OF BUMPER AND PNEUMATIC BRAKES BEFORE THE COLLISION". Is it completely geared up with IR sensor circuit and pneumatic brake and bumper activation circuit. It is the completely geared up and designed mission for motor vehicles.

Pneumatic engineering performs an vital position with inside the subject of automation and cutting-edge device stores and area robots. The goal is to layout and broaden a manage machine primarily based totally on an wise and electronically managed automobile bumper activation machine called "Auto Pneumatic Bumper and Pre-Collision Break".

The mission includes an infrared transmitter and receiver circuit, a manage unit and a pneumatic bumper. machine. When an impediment is toward the automobile (inside 1 foot), the manage sign is dispatched to the bumper and brake activation machine. This bumper activation machine is activated when automobile pace exceeds 4,050 km/h. The proximity sensor detects the velocity and this sign is dispatched to the manage unit c and the pneumatic bumper activation machine. [1-5]

2. PNEUMATIC BUMPER CAR

The word "pneuma" comes from the greek and approach breathable air, for automation. pneumatic structures function with a reserve of compressed air which ought to be to be had in enough amount and at a stress similar to the float price of the gadget. however, whilst the usage of the pneumatic gadget for the primary time, it'll in reality be vital to deal with the problem of the compressed air supply.

Automation may be performed through computer, hydraulics, pneumatics, robotics, etc. Among those sources, pneumatics is an appealing method of low-value automation. The primary blessings of all pneumatic structures are economic system and simplicity. Automation performs an essential position in mass manufacturing. For mass manufacturing of the product, the machining operations decide the machining order.

The machines used to fabricate a selected product are referred to as switch machines. Components ought to robotically pass from boxes to a couple of machines one after some other and the final thing may be positioned one by one for packaging.

Materials also can be again and again transferred from transferring conveyor belts to and from the development site. Today, nearly the complete production system is atomized to supply merchandise faster. Shown by the Fig. 2.1 and 2.2

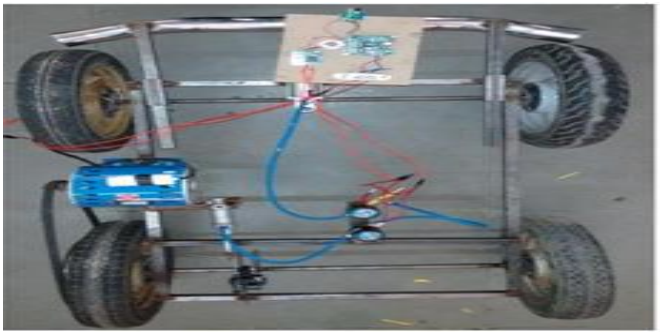

Fig. - 2.1 Frame structure

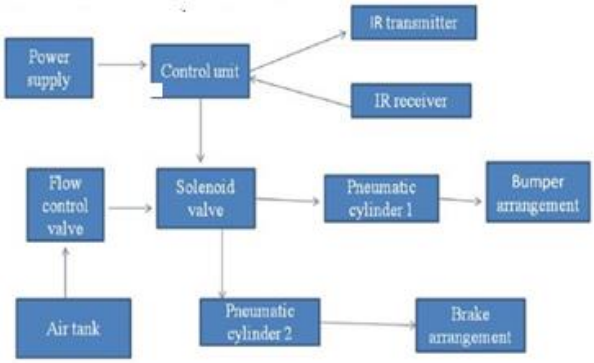

Fig. - 2.2 Model flow chart

Achieve mass manufacturing

- Reduce manpower
- Increase manufacturing facility performance
- Reduce hard work load
- Reduce manufacturing fee
- Reduce manufacturing time
- Reduce cloth dealing with
- Reduce employee fatigue
- Achieve correct great of product

3. WORKING PRINCIPLE

Vehicle velocity is detected through the proximity sensor. The car velocity exceeds 40-50 km / h, the manage unit begins of evolved the IR sensor unit. The IR TRANSMITTER circuit is used to transmit infrared rays. Either way, there are contemplated infrared rays. These contemplated infrared rays are obtained through the receiver circuit labeled "IR RECEIVER". The IR collector circuit gets the contemplated IR rays and components the manage flag to the manage circuit. It is used to begin the solenoid valve. If the solenoid valve is activated, the compressed air reaches the pneumatic cylinder.

The compressed air begins of evolved the pneumatic cylinder and movements the cylinder rod. When the cylinder pushes forward, the Guardian sport board is launched. The cylinder velocity is modified through adjusting the valve called "CURRENT CONTROL VALVE". In our company, we should practice this technique to a bicycle model. [2-5] Compressed air is sucked from the compressor. Air flows thru the polyurethane tubing to the valve go with the drift regulator. The go with the drift regulator is related to the solenoid valve as indicated through the rectangular profile.

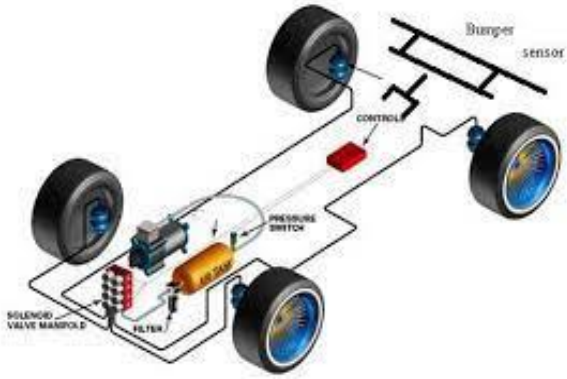

Fig.-3.1 Block Figure

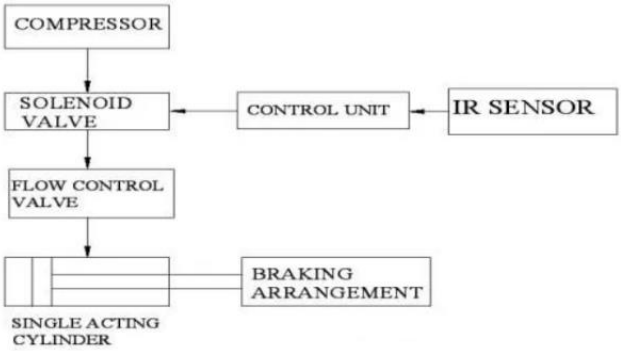

Fig.3.2 Circuit Diagram

4. APPLICATIONS

Applications for Pneumatic Controls Pneumatic structures are used in lots of locations in our everyday world, which include educate doors, automatic manufacturing lines, mechanical grippers, and more. A pneumatic gadget makes use of compressed air to transmit and manipulate power. If you are the use of a hand pump to inflate a bicycle tire, it is a completely easy air compressor. Exercise machines like ellipticals and resistance machines are powered through tires. In those devices, a pneumatic cylinder creates a resistance that can be adjusted with air pressure [8-13].

- This tool can be applicable in all varieties of light cars like cars, Rickshaws, Tempos.
- This tool moreover effectively established in the heavy cars like buses, trucks, trailers, etc

- Bicycle pumps. These pumps are used to inflate bicycle tires,
- Basket balls, soccer balls, etc.
- Dental drills,
- Manufacturing sites
- Workshops

5. ADVANTAGES

Profits are nicely marketed as producers need their automobiles to be appealing to investors. Compressed air automobiles are much like electric powered automobiles in lots of ways, however as opposed to **batteries**; they use compressed air to shop for electricity. Its capacity benefits different automobiles. These include [5-9]:

- Like electric powered automobiles, air-powered automobiles can subsequently burst off the grid. Gasoline might also additionally not be wished because of energy intake from the energy grid. This gives great fee advantages. The pollutants created throughout the transportation of fuel may be eliminated.
- The technology of compressed air reduces the manufacturing fee of the auto via way of means of about 20%, for the reason that creation of cooling structures, gas tanks, ignition structures or silos is not necessary.
- Air itself is incombustible
- High torque for minimum volume.
- The mechanical shape of the motor is easy and robust.
- Low manufacturing and preservation prices and trouble-loose preservation.
- Compressed air tanks may be disposed of or recycled. With a ways fewer pollution than batteries.
- Pneumatic automobiles aren't restrained via way of means of degradation. issues with cutting-edge battery structures Loads on liquid fuels
- Lighter automobiles can display much less abuse at the roads, ensuing in longer lasting roads.

6. DISADVANTAGES

Like the current automobile and maximum family appliances, the primary downside is oblique electricity consumption. The electricity is used to compress the air, which in flip affords the electricity to run the engine. Any conversion of electricity among bureaucracy creates losses. With the conventional automated inner combustion engine, electricity is wasted converting oil into usable fuel, inclusive of drilling, refining, labor, garage and in the long run transportation to the cease user.

- In compressed air cars, electricity is misplaced while electric electricity is transformed into compressed air. When the air expands, as with inside the engine, it cools rapidly (Charles' law) and has to be delivered lower back to ambient temperature with the aid of a warmness exchanger much like the intercooler utilized in inner combustion engines.
- Heating is important to gain a full-size fraction of the theoretical electricity delivered. The warmness exchanger may be problematic. Although it plays a comparable assignment to the intercooler, the temperature distinction among the incoming air and the operating fuel online is lower.
- When the saved air heats up, the unit turns into very bloodless and may freeze in bloodless and humid climates.
- Filling the tank with compressed air with an cheaper homemade or traditional air compressor can soak up to four hours, even though specialized device at fuel line stations can fill the tanks in as low as three minutes. Very warm while crammed quickly. Immersed in water to chill them. While filling.
- This could now no longer be viable with the tanks in a automobile and as a end result the tanks could take a long term to top off or could ought to maintain much less than a complete fee as the warmth will increase the pressure.

CONCLUSION

Our predominant intention is to improve coincidence prevention era and additionally lessen the chance of injuries consisting of car damage, private injury, etc. We locate that our paintings is capable of reap all of the vital objectives. The preliminary fee of motors with airbags is continually high, and airbags are generally established in high-give up motors. By enforcing this layout, we are able to lessen the fee of high-give up motors with the aid of using offering a comparable sort of security. Airbags are used for the inner protection of

humans sitting with inside the car, at the same time as in our layout we shield the auto from inner and outside damage. We will consequently lessen the fee of buying motors and additionally make certain more security.

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