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“MAGNETIC SUSPENSION SYSTEM”

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ABSTRACT

Magnetic suspension works where two or more magnetic of the same polarity absorb bumps. The main problem is making the magnet strong enough when running off a cars electrical system.

The design and analysis of scale-model suspension test facility for FRONT WHEEL BICYCLE MAGNETIC SUSPENSION is discussed. This work describes techniques for the design, construction and testing of a prototype magnetic suspension system. The viability of future high-temperature super conducting magnet designs for FRONT WHEEL BICYCLE MAGNETIC SUSPENSION has been investigated with regard to their application to active secondary suspensions. In order to test the viability of a new “flux-cancelling suspension, a 1/5-scale suspension magnet and guide cylinder for front shock absorber of Bicycle was constructed. The suspension was testing by using high speed rotating test cycle wheel with liner speed of upto 8.4 m/s (30 kmph). A set of approximate design tools and scaling laws have been develop in order to evaluate forces and critical velocities in suspensions.

1.INTRODUCTION

Have set of shocks with magnets inside them that are use as fork set. There is one magnet at top of inner portion of cylindrical shocks sleeve with the north polarity facing down toward the ground. The second magnets sits on top of the inner shock that pivot up and down. This magnet has north polarity upward so its parallel with the other magnets. The two magnets fight against each other giving the forks travel. There is also an adjustment at top of shock, which allows the magnets to become closer, together for stiffer travel or further apart for softer travel.

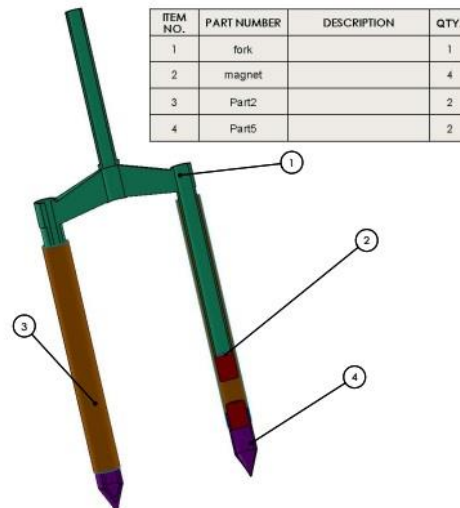
2.TECHNOLOGY

Magnets are attracted to, or repelled by, other materials. A materials that is strongly attracted to a magnets is set to have a high permeability. Iron and are example of materials with very high permeability, and they are strongly attracted to magnets. Liquid oxygen is an example of something with a low permeability, it is only weakly attracted to a magnetic field. Water has a such a low permeability that is actually slightly repelled by magnetic field. Everything has a measurable permeability: people, gases, and even the vacuum of outer space.

The SI unit of magnetic field strength is the tesla, and the SI unit of total magnetic flux is the weber. 1 weber = 1 tesla flowing through 1 square meter, and is a very amount of magnetic flux.

3. Construction

We are going to install the magnetic suspension system on the front shock absorber of the bicycle to have better performance with ease of handling and comfort ride. These are two cylinders installed on the two separate arms of the front shock absorbing rods. The cylinder contains the pair of cylindrical magnets having same pole facings each other to create the required repulsive force to have required levitation effect.



4. Working

The two disc magnets in a tube or two ring magnets on a shaft, as seen in above figure comprise our required magnet for bicycle front suspension system with unlike poles facing, the magnets repel each other and generate an air gap between them. The repulsive force restores displacement towards each other and displacement away is restored by gravity. We have a set of shocks with magnet at the top of inner portion of the shock with the north polarity facing down towards the ground. The second magnet sits on the top of the inner shock that pivots up and down.

This magnet has the north polarity upwards so its parallel with the other magnet. The two magnets fight against each other giving the forks travel. These is also an adjustment at the top of the shock, which allows the magnets to become closer together for a stiffer travel or further apart for softer travel.

5. Advantages

- 1) The damping properties of the system are unparalleled in terms of smooth operation.
- 2) Tire wear is more even. Of course if the geometry of the levers and other elements of the suspension and chassis is properly tuned.
- 3) The aerodynamics of the car is improved .since its body is always parallel to the roadway.

6.Limitation

- 1) Not a single automaker is yet ready to put such models into a series, hoping that the rich will immediately buy up the new product, and there is no point in investing a fortune in a car that will stand in warehouse.
- 2) The only option is to manufacture such cars an individual order, but in this case there are few companies that are ready to provide such a service.

7.Application

- 1) High speed trains in Europe and japan are perhaps the best example of magnetic levitation technology.
- 2) Two additional scientific applications for magnetic levitation includes flywheel and levitation melting.

8.Future Scope

- 1) If the coils are fitted at the outer side of magnets then it is possible to generate electricity which could use for charging purposes.
- 2) Better control of the damping could be provided by using an independent control unit for magnetic suspension.
- 3) Efficiency improvement can be carried out by making use of lightweight materials for the production of the suspension.

9.Conclusion

Magnetic suspension system mainly summarised on the use of permanent magnets in order to overcome the disadvantages of conventional suspension system like- less life, frequent maintenance and less durability. More important magnetic suspension system can be used as an option to conventional suspension system with no doubt.

10.References

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