UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF BRAKE SYSTEM FOR FORMULA STUDENT RACE CAR

MOHAMAD AMILLY HAQIME BIN ROHAZIF
2021463206

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ABSTRACT

The Formula Student Racing Car have parameters that always come first before the car is actually tackling the corners, which is the braking system. The braking system will reduce the speed of the car until safe speed limit, depends on the car itself. Brake system in any race car will have several problem like cannot stand for heat and other else. It will slowing down the braking system performance until break that function during races. Therefore,the objective of the project is to design and analyze the rotor disc for a small race car's braking system. This project want to propose manufacturing processes involved for a limited production of the rotor disc too. The methodology of designing a braking system for a Formula Society of Automotive Engineers (SAE) car typically involves the following steps which is determind the design requirements and brake bias to select the appropriate components. After that,it will perform and testing in computer simulations by using solidworks,optimize and finalize the design. The expected result of a braking system for a Formula SAE car is to provide maximum stopping power while maintaining stability and control of the vehicle during braking. The braking system should be able to slow down the car quickly and consistently, allowing the driver to brake late and carry more speed into corners. In conclusion, the braking system of a Formula SAE car plays a critical role in ensuring the safety and performance of the vehicle on the race track.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

Many car owners ignore the complexity of their brake system and the significance of regular maintenance. The most important safety car features is its braking system because being able to stop or slow down quickly is essential for avoiding collisions. In this manual, we'll examine brake upkeep and repairs and explain why they're crucial [1].

The Society of Automotive Engineers (FSAE) is an interdisciplinary competition that the Society of Automotive Engineers sponsors. It enables graduate and undergraduate university students worldwide with their own car design, construction, and competition. This car must possess high performance, durability, and reliability. The automobile is evaluated based on its design, usability, marketability, cost, and performance in challenging racing circumstances. The design seeks to guarantee a reliable and effective braking system. A brake is a tool used to apply artificial frictional resistance to a moving machine portion to halt the movement of the machine as a whole. The brake serves this purpose by absorbing the potential energy generated by lowering items, such as lifts and elevator shafts, or the kinetic energy of moving parts. The energy that the brake absorbs is released as heat. The car will stop because of this heat dissipating into the atmosphere. Consequently, the braking system needs to meet the following criteria. In an emergency, the brakes must be powerful enough to stop the car at least a short distance away. When braking, the driver must have proper vehicle control to prevent skidding. The brake must have high anti-fading performance, meaning that its efficiency shouldn't be diminished when used continuously over an extended period of time. The brake should perform well against wear. Without a braking device, passengers would be in a dangerous situation. Therefore, adequate braking is required for all vehicles.