

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW OF THE PROJECT

One of the problems of a vehicle is tire problem. If the vehicle tires have some problem then the user must remove the tires and fix the problem. And for a car user, it's difficult to remove tire's nut especially for women users. The obstacles are time waste and force needed. In Malaysia automotive market there is no tool that is easy to use to remove the nuts. The time to open a car's tire nut is too long and has waste the car user's time with utilization of high force that is hard for women users. To resist the time waste and high force needed a tool have been designed to remove four tire nuts in one time with force used decrement.

The tire nut removal has been designed with 114 pitch circle diameter (PCD) for the last project. This tool can open four nuts in one time and the force utilization has been reduced. This tire nut removal is operating with a gear system usage to reduce the force needed to remove a nut and straight remove all four nuts in one time. This project maybe has solved the four nut removal problem and force usage utilization. This tire nut removal with 114 PCD has some potential in Malaysia automotive market. This project is quite successful but the tool also has some problems.

For final year project, the tire nut removal with 114 PCD is chosen to be improved and repaired the errors. This tire nut removal has been designed to remove four nuts in one time and decreased the force usage. The force usage has been decreased lower than the force needed to remove a nut. And for the torque decrement, it has been decreased 21.125 lower also. This project will improve and repairs the errors also decreased the lack of the tire nut removal 114 PCD in the last project.

1.2 PROBLEM STATEMENT

From the introduction, the tire nut removal has been studied about the problems. This tire nut removal is designed for facilitate the four nut 114 PCD car user. There are two major problems that can avoid the tire nut removal from marketing. The problems are the tire nut removal is too heavy where it's hard for a women user to use the tool. Then the materials for this tire nut removal are quite expensive and are not suitable for marketing.

The objective is to produce a tire nut removal for 114 PCD with these qualities:

1. Make the tire nut removal lighter.
2. Use less expensive materials and production cost.
3. Achieved the power window torque as the input power.

1.3 OBJECTIVE

1. Improve and optimize the tire nut removal with 114 PCD cars.
2. To replace the mild steel material to other material.
3. New gear ratio and smaller square design of product.

1.4 SCOPES OF PROJECT

Scope of project for this project includes literature review from the last project and all the results of the last project, engineering material, designing and manufacturing field. This scopes starts from studying the last thesis, sketching, drawing, material election, analysis, machining and fabrication and testing the product.

1.5 JUSTIFICATION

This improvement of tire nut removal is important because this product has a big chance in marketing. The improvement can help the entire car user especially women user to simply remove the four nuts. The first model has accomplished the force and time used problems and now this project will complete the tire nut removal 114 PCD cars. This new project of improvement tire nut removal 114 PCD can market the project for the society comfort. As we all know, tire is the main component of a car. This tire nut removal can settled one of the quandary problems of a tire.