

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN, ANALYSIS AND  
FABRICATION OF WHEEL DOLLY  
JACK**

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## **ABSTRACT**

Jack has played an important role in human history as a device that use mechanical mechanism to amplify force in order to lift heavy objects beyond human capabilities [2]. Wheel dolly jack is an improve version of the earlier jacks that was more mobile and able to carry more weight. Wheel dolly jack are usually use to move vehicles out of inconvenient space. However, its huge size takes too much space and causing it to only be use in a certain condition [3]. Because of this problem, only mechanics and towing services uses this wheel dolly jack. There's also the problem with the Wheel dolly jack is not very known by the public causing it to be rarely used in emergency. This is a huge problem as vehicles breakdown frequently happen due to the nature of a machine and causes user to be stranded on the side of the road or in a dangerous spot until tow services arrive [4]. Even worse, some vehicles breakdown happens in the middle of the road and could lead to an accident. This is very dangerous especially for female driver who was often target for criminal acts such as hijacking, intimidation and sexual assault [5]. That's why it's a necessity to have a wheel dolly jack to move the car to safety and away from a vulnerable spot. The aim of this project is to design, analysis and fabricate the wheel dolly jack then to modify it to become more easier to use. I used SOLIDWORKS software to design my product and use polishing, welding, cutting, milling and bending technique to fabricate the final product. The final product has accomplished my goal to become a functional wheel dolly jack and more user friendly. With this product, driver especially female driver can easily move their vehicles without needing more manpower.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of Study

Jack is a mechanical lifting device that apply great forces to lift heavy objects [1]. Its most common form is car jack, which lift the vehicles so that maintenance can be performed. The first jack to be invented would be the scissor jacks. Scissor jacks use mechanical advantage to allow humans to lift heavy vehicles using manual force alone [2]. Through time, numerous types of jack have been developed such as hydraulic jack which uses hydraulic power to function enables it to lift heavy vehicles with ease. Then, the wheel dolly jack is developed. The wheel dolly jack is an improved version of the earlier jacks which capable of lifting and moving the vehicles unlike the previous jacks. Jacks has played a huge part in human history in using mechanical device to help human lift objects beyond their capabilities.

### 1.2 Problem Statement

Although the wheel dolly jack is supposed to be an improve version of the previous jacks, it still has some flaws in its design. One of the problems is its huge size which is too large to be carrying around causing only mechanics and towing services to had them [3]. This is a huge problem as vehicles breakdown often happen and user have to be stranded in the middle of nowhere until help came or vehicles that breakdown in the middle of the road can cause accident to happen [4]. Stranded on the road is also very dangerous for female driver as they are much vulnerable to criminal acts [5]. Wheel dolly jack also weren't well known by the public causing it to rarely be use in emergency.