

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF A PROTOTYPE MINI WOOD
DRILL PRESS MACHINE**

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ABSTRACT

The mini wood drill press machine is a compact and versatile tool designed specifically for woodworking enthusiasts and hobbyists. With its small size and efficient functionality, it aims to provide precision drilling capabilities for various woodworking projects. This project focuses on the development and optimization of the mini wood drill press machine to meet the needs of users who require a portable and reliable drilling solution. Traditional drill presses are often large and cumbersome, making them unsuitable for small-scale woodworking projects or limited workspace environments. The problem statement of this project is to design and develop a mini wood drill press machine that addresses these limitations, providing users with a compact, powerful, and precise drilling tool specifically tailored for woodworking applications. The main objective of this project is to design, develop, and optimize a mini wood drill press machine that fulfils the following concept in Solid Works and the average costing is below RM300. The expected result of this project is a mini wood drill press machine that fulfils the outlined objectives. The machine will be compact, robust, and capable of delivering precise and reliable drilling performance for woodworking projects. It will provide adjustable speed options, stable operation, and user-friendly features, making it a valuable tool for woodworking enthusiasts with limited workspace or on-the-go drilling requirements. The project aims to deliver a high-quality, functional, and market-ready product that satisfies the needs of woodworking hobbyists and professionals alike.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

A Drilling Machine is a type of machine in which the holes are being made on the workpiece by making use of a rotating tool called drill bit or the twist drill. Drilling is basically a technology of creating holes. Drilling operation can also be performed on Lathe machines. In the lathe machine, the workpiece rotates, and the drilling tool is held stationary in the tailstock [1].

The main reason I choose to invent this Mini Wood Drill Press (MWDP) machine because to make sure the users easier to use this machine at their home especially for women that the machine is not heavy to bring anywhere. Besides, the use of this machine is only for drilling wood to makes holes so that the drill bit will not be damaged because nowadays most drilling machine is multiuse. In addition, this machine will be the mini drilling machine and its lighter than other drilling machine in market. It is also a low-cost prototype project and targeting home users.

To avoid such disadvantages, we already know that most of the wood drills on the market are large and they are quite heavy for users who do not produce large products especially for women [2]. Therefore, people prefer to use machines that are portable and easy to use anytime and anywhere. This machine is targeted for a woman because you don't have to bother to drill manually, and it will keep you safe from accidents when using a drilling machine. In the market, the development drill press machine simplifies tiring work that is available in high prices [2]. As a result of the expensive cost of the drill press machine, including maintenance, people are less likely to want to acquire one for their home, and the machine is not affordable for everyone.

Hence, there is a need to design and develop a mini wood drill press for user convenience, named MWDP. The aim of this project is to design a mini wood drill press machine for the purpose of pleasing users with a smaller drill size than those on the market. That can be easily used and cost-effective. The design process will be conducted by referring to a standard engineering design process and the chosen concept will be