

# PROTOTYPE DESIGN COLLECTION

## SERIES 2



# Prototype Design Collection

## Series 2



**AHMAD NAJMIE RUSLI**

**UNIVERSITI TEKNOLOGI MARA CAWANGAN JOHOR  
KAMPUS PASIR GUDANG**

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# FOREWORD

This digital book on Prototype Design Collection Series 2 (PDC Series 2) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

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## CHAPTER 105

### Agricultural Sprayer Machine

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#### PROJECT DESCRIPTION

This project focuses on the design and development of an efficient agricultural sprayer machine to improve crop protection through precise and targeted spraying. Traditional manual spraying methods often result in uneven distribution of chemicals, excessive consumption, and labor-intensive processes. The introduction of automation mechanisms can optimize spraying efficiency, reduce chemical waste, and improve overall agricultural productivity. The agricultural sprayer uses its own motion to activate the spray mechanisms as it moves forward. The multiple spray nozzles on the front of the machine allow multiple rows of crops to be sprayed, significantly reducing labor time. To evaluate the performance and effectiveness of the agricultural sprayer, thorough field trials and validations were conducted. Comparison trials were conducted with different crops and spray formulations to evaluate spray coverage, chemical savings, and overall efficiency. The successful implementation of this machine will have a significant impact on the agricultural industry. The efficient agricultural sprayer will enable precise and targeted spraying, reducing chemical consumption, minimizing environmental impact, and improving resource efficiency. By streamlining crop protection practices, this project is expected to contribute to sustainable and productive agriculture, ensuring optimal yields and quality while reducing costs and environmental risks.

**Keywords:** *Agriculture, Spray, Manual*

#### PROTOTYPE



**DESIGN PARAMETER**

