

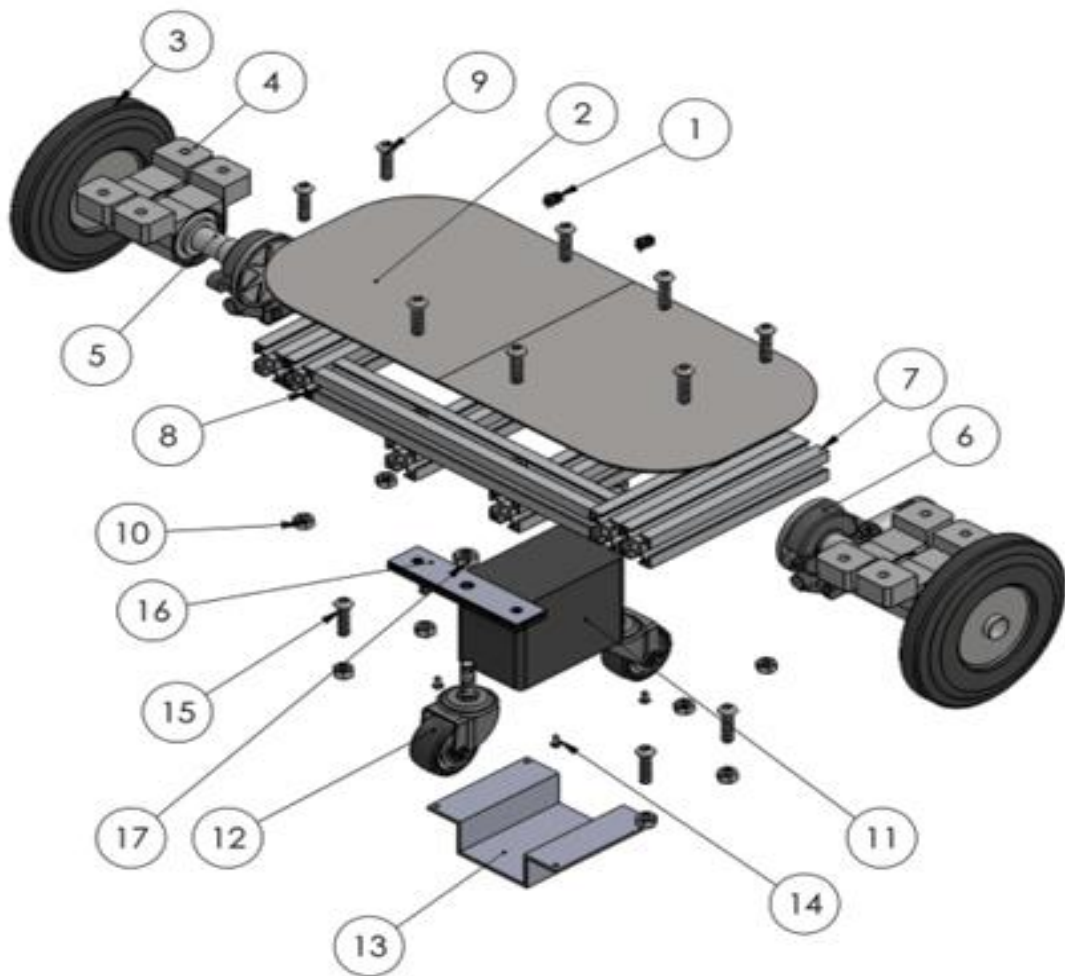
PROTOTYPE DESIGN COLLECTION

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 79

Design and Fabrication of 2-in-1 Gardening Tools

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PROJECT DESCRIPTION

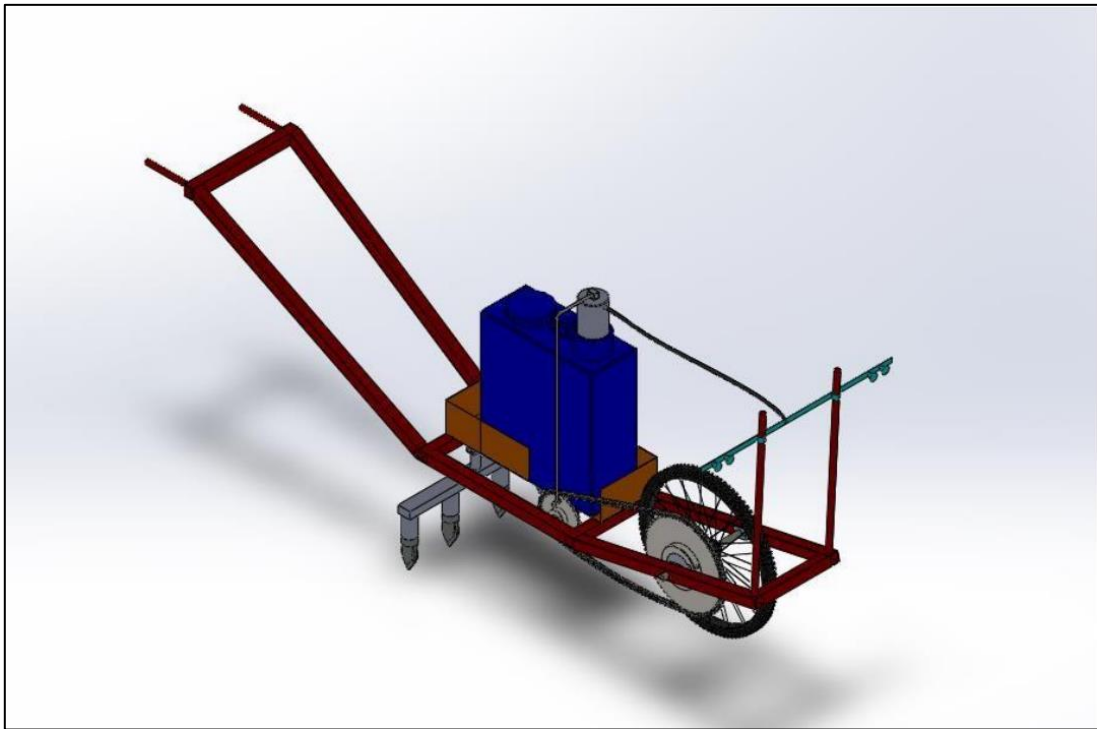
Pesticide sprayer has played an important role in human history as a piece of equipment that is used to apply pesticides on agricultural crops. Farmers frequently spray pesticides with a backpack pesticide sprayer, which they must carry around with them at all times. They have to physically pump the pesticide and continually refill it because the tank capacity is limited and it only has one nozzle, they must travel around a lot to cover the entire farm. Back discomfort and extreme tiredness are common side effects of long-term usage, especially among large-scale plantation producers. As a result, the farmers' health will suffer, reducing their productivity. Therefore, the objective of this project is to design and fabricate a pesticide wheel pump sprayer. Observational data is gathered by watching farmers using their pesticide sprayers. This expected result for this project will help farmers to save time and help to avoid any injuries.

Keywords: *Agricultural, Pesticides sprayer*

PROTOTYPE



DESIGN PARAMETER



PART NO.	PART NAME	DESCRIPTION	QTY.
1	FRAME	Mild Steel Hollow Square, 1" x 1" x 1.5mm, L=1m	6
2	TANK HOLDER	Plastic Tank, 30cmx15cm	1
3	SPROCKET	Driven Sprocket = 15T, Driving Sprocket = 44T	2
4	CHAIN	10 Speed Bicycle Chains	1
5	PESTICIDE TANK	Jerry Can, 20L	1
6	PISTON	PVC Cylinder Pump + Plastic Piston Rod	1
7	CONNECTING ROD	Stainless Steel Rod, 10mmx50cm	1
8	NOZZLE HOLDER	Stainless Steel Rod, 10mm x 2m	1
9	PIPE	PVC Hose, 16mm x 5m	1
10	WHEEL	26" alloy single rim, 26" bicycle tyre (MTB)	1
11	PLOUGH	4T, 40cm x 30cm	1