

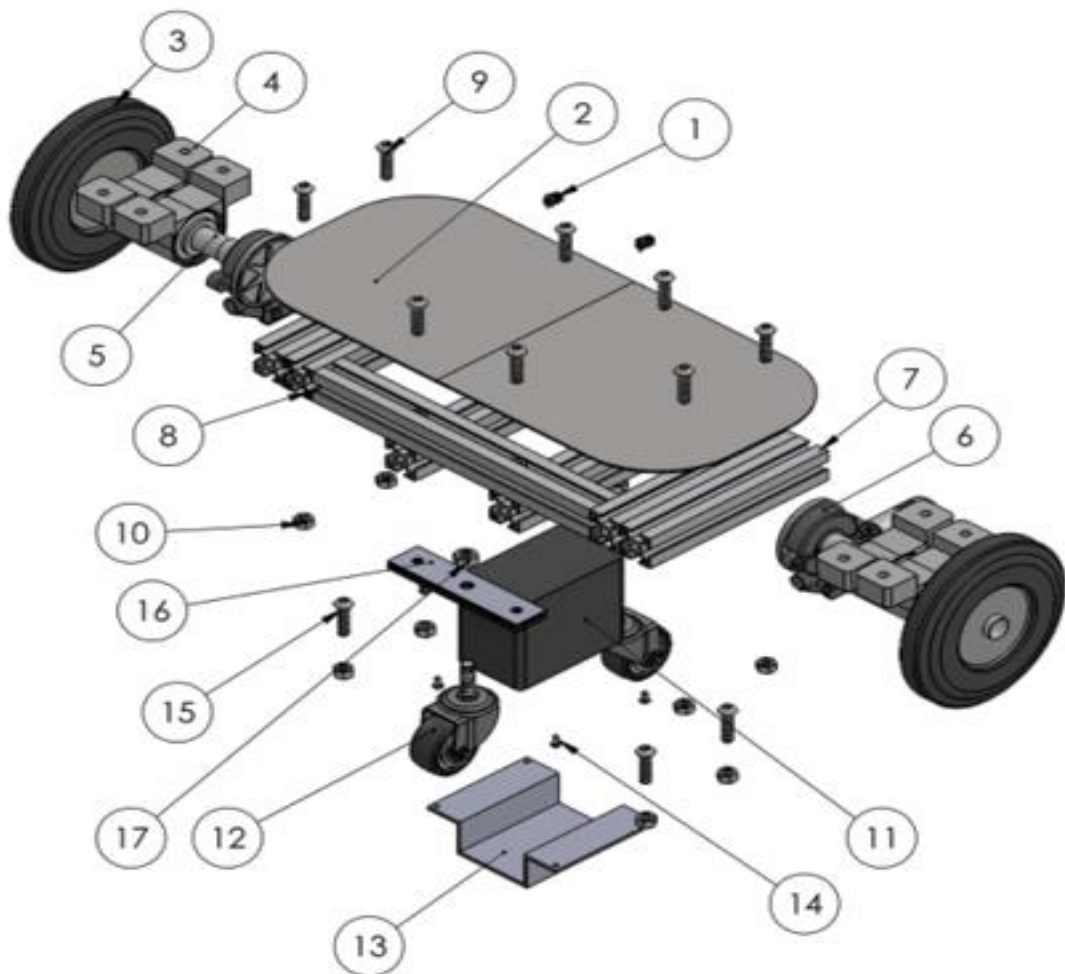
# PROTOTYPE DESIGN COLLECTION

## 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 72

### Design and Fabrication of Agricultural Sprayer

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#### PROJECT DESCRIPTION

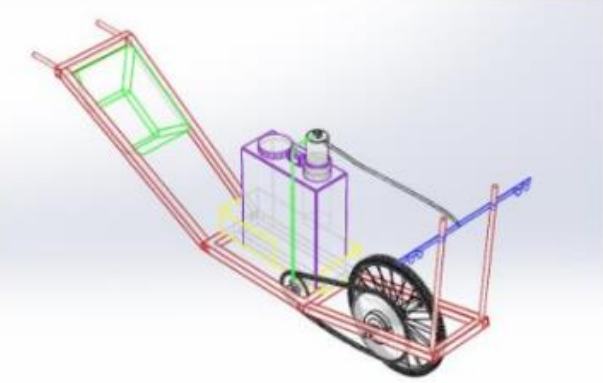
Agriculture is an essential industry, providing food for the world's population. However, the work involved in growing crops can be challenging, and farmers often face a variety of obstacles. One of the challenges farmers faces is using sprayers to protect their crops from pests and disease. Traditional sprayers can be heavy, cumbersome, and difficult to operate, making it challenging for farmers to spray their crops effectively. Body-mounted sprayers are a common type of sprayer used in agriculture. They require the farmer to carry the water container and pump the water by hand. This can be tiring and requires a significant amount of force, especially when covering large areas. Farmers may also need to carry additional supplies, such as pesticides and herbicides, which can add to the weight they must carry. To address these challenges, a new agricultural sprayer has been designed that offers several benefits to farmers. This sprayer is simple and easy to use, requiring only a small amount of force to operate. The water used for spraying is located on top of the project, eliminating the need for farmers to carry heavy water containers. The sprayer also pumps water automatically, eliminating the need for manual pumping. This new sprayer offers several advantages over traditional sprayers. It is lightweight, making it easier for farmers to carry and use. The automatic pumping system means that farmers can cover larger areas more efficiently, without tiring as quickly. This can help farmers save time and energy while ensuring that their crops are adequately protected. In conclusion, agriculture is a vital industry, and farmers face many challenges when growing crops. The new agricultural sprayer offers a simple and effective solution to one of these challenges. By making it easier for farmers to spray their crops, this new sprayer can help improve crop yields and reduce the physical strain on farmers.

**Keywords:** *Sprayer pesticide, Agricultural*

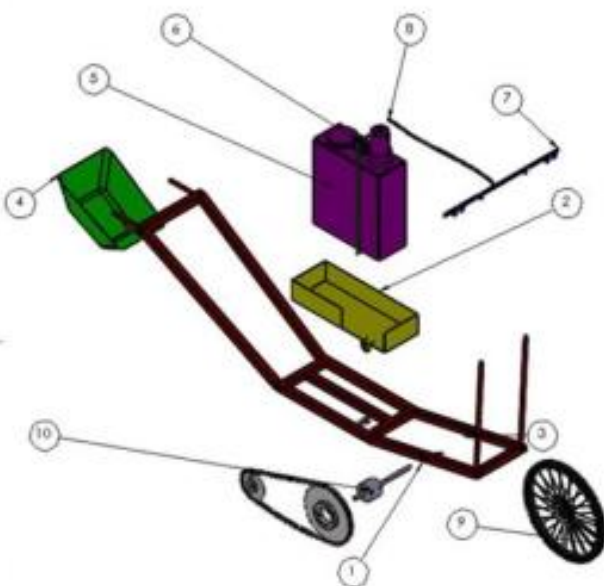
#### PROTOTYPE



**DESIGN PARAMETER**



<b>FAKULTI KEJURUTERAAN MEKANIKAL UNIVERSITI TEKNOLOGI MARA (UITM) JOHOR KAMPUS PASIR GUDANG</b>	
APPROVED:	CHECKED:
NAME: MUHAMMAD AL-HADI BIN RUSLI	
STUDENT ID: 2020464438	
CLASS: J4EM1104J	
DRAWING PART: FRAME	
SCALE: 1:15	SHEET: 1 OF 1



ITEM NO.	PART NAME	DESCRIPTION	QTY.
1	Frame	2530 x 870 x 410 mm	1
2	Tank Holder	450 x 50 x 124 mm	1
3	Rearing Strap	50 x 38.1 x 6 mm	2
4	bucket	308 x 335 x 182 mm	1
5	Tank	18.4 x 7.6 x 20.2 mm	1
6	Connecting Rod	(OD 9mm) (ID 5mm) (L 675mm)	1
7	Handle holder	800 x 2 x 30 mm	1
8	Pipe	(OD 20mm) (ID 40mm)	1
9	wheel	Ø 500 mm	1
10	Coupler	(OD 97mm) (ID 20mm)	1

<b>FAKULTI KEJURUTERAAN MEKANIKAL (FKM) UNIVERSITI TEKNOLOGI MARA (UITM) JOHOR KAMPUS PASIR GUDANG</b>			
APPROVED	CHECKED	DRAWN MUHAMMAD AL-HADI BDF 82051	
GROUP J4EM1104J			
COURSE NAME MEC299 FINAL YEAR PROJECT 1			
DRAWING TITLE ASSEMBLY WITH BILL OF MATERIALS			
PART NAME FINAL ASSEMBLY			
PART NO.			
SCALE 1:15	PROJECTION	WEIGHT 10 KG	SHEET 1/1