Bangladesh Rice Research Institute

Engineering Blueprint for the BRRI Weeder

AKM Saiful Islam

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Preface

This book, "Engineering Blueprint for the BRRI Weeder" stands as a testament to the relentless pursuit of innovation and excellence by the Bangladesh Rice Research Institute (BRRI). Designed specifically for mechanically transplanted rice fields with 30 and 20 cm row spacing, the BRRI Manual Weeder represents a significant advancement in weed control technology. The meticulous engineering behind the BRRI Weeder is aimed at providing farmers with a versatile and efficient tool for weed management in line sowing fields. Its design allows for operation in muddy conditions, ensuring uninterrupted weed control operations throughout the growing season. Female can easily operate BRRI weeder. BRRI Weeder ensures the faster weed control than traditional hand weeding methods. Farmers can significantly reduce the time and labor in weed control, thereby increasing overall productivity and profitability. Within the pages of this book, readers will find comprehensive engineering blueprints, detailed schematics, and technical specifications that provide a thorough understanding of the BRRI Weeder's design and functionality. It is our hope that this book will serve as a valuable resource for researchers, engineers, policymakers, and farmers alike, driving forward progress and innovation in the field of agricultural technology.

Director General
Bangladesh Rice Research Institute

Foreword

Weed control is a critical aspect of agricultural management, directly impacting crop yield, and overall productivity. The BRRI Weeder has been meticulously designed to address the specific needs of farmers operating in mechanically transplanted rice fields with 30 and 25 cm row spacing. It is with great pleasure and anticipation that I introduce "Engineering Blueprint for the BRRI Weeder" compiled by Dr AKM Saiful Islam. The weeder provides a faster alternative to manual weeding, reducing labor and enhancing productivity. By empowering farmers with a precision implement that significantly reduces the time and labor required for weed control, the BRRI Weeder not only enhances farm productivity but also contributes to the economic viability of agricultural operations. The engineering blueprints presented in this book offer an invaluable insight into the design and functionality of the BRRI Weeder. I extend my heartfelt congratulations to the team at BRRI for their dedication and ingenuity to develop the BRRI Weeder. May this book serve as a guiding light for researchers, engineers, policymakers, and farmers.

(Dr. Md. Shahjahan Kabir)

Chief Scientific Officer
Farm Machinery and Postharvest Technology Division
BRRI, Gazipur

About Project Director

Dr. AKM Saiful Islam graduated from the Department of Farm Power and Machinery, Bangladesh Agricultural University, Mymensingh and received chancellor award for achieving first position in graduate course. Dr Islam obtained MS degree from the same university in 1996. He completed a postgraduate diploma course from Silsoe College, UK in 1997. DR Islam obtained PhD in Agricultural Engineering from the Department of Farm Power and Machinery, Bangladesh Agricultural University, Mymensingh in 2012. He started his career as a Scientific Officer in Farm Machinery and Postharvest Technology Division of Bangladesh Rice Research Institute in 1998. Dr. Islam developed training manual for seedling raising techniques, BRRI weeder, rice-wheat reaper, BRRI open drum thresher, BRRI rice-wheat thresher, BRRI panicle thresher, BRRI whole feed combine harvester. He is involved in the invention and development of mechanized seedling raising techniques, BRRI seed sower, BRRI auto seed sower, BRRI rice transplanter, BRRI semi automatic rice transplanter, BRRI solar light trap, BRRI urea super granular fertilizer, BRRI power weeder, BRRI rice-wheat reaper, BRRI rice-wheat thresher, BRRI panicle thresher, BRRI whole feed combine harvester, BRRI head feed combine harvester, BRRI straw rope maker, BRRI air blow rice mill, BRRI compact rice mill, BRRI mini rice huller and BRRI short and long rice processing technology. At present, he is working as a Chief Scientific Officer and project director of the project "Strengthening Farm Machinery Research Activity for Mechanized Rice Cultivation (SFMRA)".

About project

The project "Strengthening Machinery Research Activity for Mechanized Rice Cultivation" was approved for implementation from July 2019 to June 2025 at an estimated cost of Tk 4400 Lakhs. The project is being implemented by the Farm Machinery and Postharvest Technology Division of Bangladesh Rice Research Institute under the Ministry of Agriculture in 12 upazilas of 12 districts of seven divisions of the country. One of the main objectives of the project is to strengthen farm machinery research activities for sustainable rice cultivation. The specific objectives of the project are (a) Developing nine agricultural machinery and technologies suitable to the socio-economic condition of the farmers: i.e. rice transplanter, mini combine harvester, power weeder, reaper binder, compact rice mills, rice transplanter-cum-fertilizer, straw rope maker, seed sower machines, post-harvest management and renewable energy (solar and briquette machines); (b) Further development of the machinery by collecting feedback from the stake shoulder through 324 adaptive trials; (c) Providing hands-on training to 6480 machine operators, farmers, mechanics and service providers and 200 local agricultural machinery manufacturers and extension officers/workers to increase their skills on modern agricultural machinery; (d) Capacity building of 20 scientists and 20 workshop workers for the research on modern agricultural machinery through higher education and training; and (e) Modernization of exisiting farm machinery research lab-cum-workshop. The project activities are a) Developing nine agricultural machinery and post-harvest technologies suitable for sustainable rice production i.e. rice transplanter, combine harvester, power weeder, reaper binder, compact rice mill, rice transplanter-cum-fertilizer, straw rope maker, seed sower machine, post-harvest management and renewable energy (solar and briquette machines); b) To procure prototypes from abroad and preparing indigenously adapted machines through reverse engineering and applied research; c) To develop machine according to the feedback obtained through practical field tests; d) To Conduct 324 two-day residential hands-on training on seedling raising techniques, operation, repair and maintenance of rice transplanters for mechanized rice transplanting; e) To sensitize 6480 farmers, machine operators, mechanics, farmer groups/farmers associations, service providers about utility of agricultural machinery, operating techniques, repair and maintenance through 324 practical field tests of BRRI developed modern machinery; f) To publish the training schedule and names of the trainees in the form of a database on the BRRI web site to maintain transparency and accountability in the training program and to avoid duplicity in the selection of trainees; g) Developing 10 skilled scientific manpower through three months of overseas training; h) To organize short term (7-10 days) training of 10 scientists in agricultural machinery manufacturing countries; j) Conducting 10 trainings of three days duration on transfer of machinery technology to the farm machinery manufacturers/extension officers/workers; j) To enhance quality research skills by establishing machine testing lab (375 square meters) with modern equipment for machinery quality control; k) Develop a commercial approach to agriculture through limited long-term use of farm machinery and rental machinery service providers in the project area; l) Building co-operation between researchers, extension workers, manufacturers and farmers; d) Development of 2,500 cubic meter research field/plot for head office research; d) Vertical extension (450 square meters) of farm machinery lab cum office building at head office; n) Construction of machinery display cum ware house (150 sq m to 750 sq m in 5 Regional stations) for display room at BRRI Regional stations; (v) Skilling of 20 workshop workers through training in machine prototyping, repair and maintenance; d) To provide necessary technical assistance to the entrepreneurs and machinery manufacturing institutions/factories serving through the Department of Agriculture Extension for ensuring the use of sustainable agricultural machinery at the field level. Recruiting 11 persons (one office assistant cum computer programmer, two bench mechanics, two lathe-operators, two tin smiths, two hammer men and two drivers) through outsourcing to support the project director in project execution. Scientists of FMPHT division, research assistants, Accountant of Accounts division and staff of Planning and Evaluation Division are working on the project as additional responsibilities.

Purpose of BRRI weeder

The development of the BRRI (Bangladesh Rice Research Institute) weeder serves several purposes aimed at addressing challenges specific to rice cultivation in Bangladesh. It provides a precision agricultural implement tailored for mechanically transplanted rice fields in 30 and 25 cm row spacing. Here are some key purposes behind its development:

Weed Control: One of the primary purposes of developing the BRRI weeder is to provide farmers with an effective tool for weed control in rice fields. Weeds compete with rice plants for nutrients, water, and sunlight, leading to reduced yields if left unmanaged. The weeder helps farmers remove weeds efficiently, thereby improving crop productivity.

Labor Efficiency: Manual weeding is a labor-intensive task, particularly in flooded rice fields where traditional methods like hand-pulling or using handheld tools can be slow and physically demanding. The BRRI weeder is designed to streamline the weeding process, making it more efficient and less labor-intensive, thus saving farmers time and effort.

Cost-Effectiveness: Chemical herbicides are commonly used for weed control in rice cultivation, but their overreliance can lead to environmental pollution, health hazards, and the development of herbicide-resistant weeds. By providing an alternative to herbicides, the BRRI weeder promotes cost-effective and environmentally friendly weed management practices, reducing farmers' dependence on chemical inputs.

Smallholder Accessibility: Smallholder farmers make up a significant portion of the agricultural workforce in countries like Bangladesh. The BRRI weeder is developed with the needs and constraints of smallholder farmers in mind, aiming to provide them with affordable and accessible technology to improve their agricultural practices and livelihoods.

The development of the BRRI weeder serves the broader goal of improving the efficiency, productivity, and sustainability of rice farming practices in Bangladesh.

Characteristics of BRRI weeder

TThe BRRI (Bangladesh Rice Research Institute) weeder is a type of agricultural equipment specifically designed for weeding in rice fields. Here are some common characteristics of BRRI weeders:

Design: BRRI weeder is designed to operate mechanically transplanted rice fields with 30 and 25 cm row spacing. It would be lightweight and easy to maneuver in wet lands. They often have a simple yet sturdy construction to withstand the rigors of fieldwork.

Manual Operation: BRRI weeders are manually operated, meaning they don't require a power source such as electricity or fuel. Farmers can operate them by hand, making them suitable for areas where access to mechanized equipment may be limited.

Blade Configuration: The weeder usually consists of blades or teeth that are arranged in a specific pattern to effectively cut through weeds while minimizing damage to the rice plants.

Floating Design: BRRI weeders have a floating design, allowing them to glide over the waterlogged rice fields with minimal resistance. This design feature helps reduce fatigue for the operator and ensures efficient weed removal.

Ergonomic Handles: Ergonomics is an important consideration in the design of BRRI weeders. They often feature ergonomic handles or grips to provide comfort during prolonged use and reduce strain on the operator's hands and arms.

Affordability: BRRI weeders are designed to be affordable and accessible to smallholder farmers, particularly in developing countries where rice cultivation is prevalent. This affordability factor helps promote adoption and widespread use among farmers.

Effectiveness: Despite their simplicity, BRRI weeders are designed to be effective at removing weeds from rice fields without causing significant damage to the rice plants. Proper use and maintenance are essential for achieving optimal results.

BRRI weeders play a crucial role in integrated weed management strategies for rice cultivation, helping farmers reduce reliance on herbicides and improve crop yields sustainably.

Technical Specifications

Technical Specification of BRRI Weeder (For 30 cm row spacing)

Model: BRRI W2024

Taking, l=length, w=width, h=height, t=thickness, ⌀=diameter, r=radius.

1. Handle: Pipe [$\varnothing_{outer} = 20mm$, $\varnothing_{inner} = 15mm$], l=1430mm. Flat bar (20×3) mm used. Length of flat bar, l=516mm.
2. Base ground support: Flat bar (20×3) mm used. Length of flat bar, l=1120mm.
3. Rotor: [$\varnothing_{outer} = 115mm$, $\varnothing_{inner} = 107mm$], l=150mm.
4. Distance controller: Flat bar (20×3) mm, here, l=240mm.
5. Bolts & nuts: Matrix (M6×1.0) mm.

Technical Specification of BRRI Weeder (For 25 cm row spacing)

Taking, l=length, w=width, h=height, t=thickness, ⌀=diameter, r=radius.

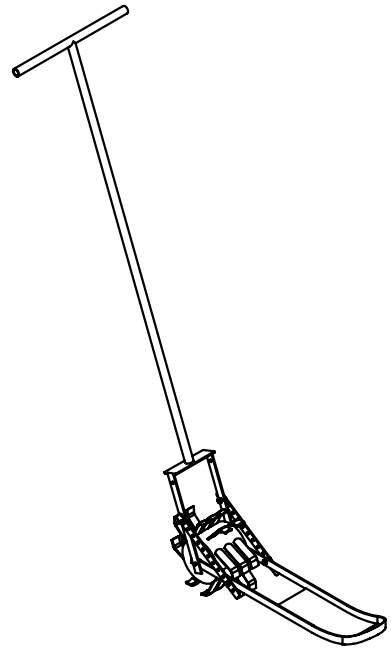
1. Handle: Pipe [$\varnothing_{outer} = 20mm$, $\varnothing_{inner} = 15mm$], l=1430mm. Flat bar (20×3) mm used. Length of flat bar, l=516mm.
2. Base ground support: Flat bar (20×3) mm used. Length of flat bar, l=1120mm.
3. Rotor: [$\varnothing_{outer} = 115mm$, $\varnothing_{inner} = 107mm$], l=100mm.
4. Distance controller: Flat bar (20×3) mm, here, l=240mm.
5. Bolts & nuts: Matrix (M6×1.0) mm.

Index

Chapter 1

ISOMETRIC VIEW

ITEM NO.	Description	PartNo	Material	QTY.
1	BASE GROUND SUPPORT	SMFRA-002	Plain Carbon Steel	1
2	HANDLE	SMFRA-001	Plain Carbon Steel	1
3	DISTANCE CONTROLLER	SMFRA-004	Plain Carbon Steel	2
4	WHEEL	SMFRA-003	Plain Carbon Steel	1
5	BOLT M6	SFMRA-005	Stainless Steel (ferritic)	4
6	M6 NUT	SFMRA-006	Stainless Steel (ferritic)	4



NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

UNLESS OTHERWISE SPECIFIED:
STD. TOLARANCE
DIMENSIONS ARE IN MILLIMETER
MILLIMETER: ± 0.1, ANGULAR: ± 0.05°
* DOES NOT APPLY TO HOLE SIZE

BANGLADESH RICE RESEARCH INSTITUTE
SFMRA PROJECT, FMPHT DIVISION

DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: WIDDER ASSEMBLY - BILL OF MATERIALS (BOM)

DWG NO: SFMRA-A

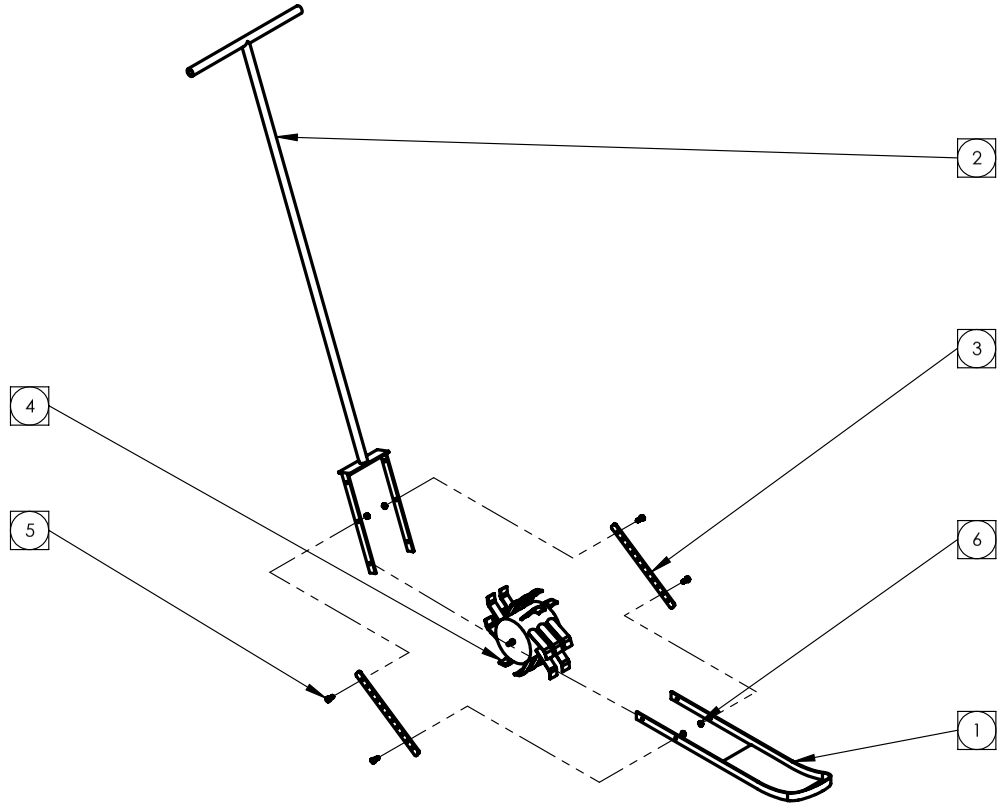
MANUFACTURING METHOD: MACHINING, BENDING & WELDING

WEIGHT: 5480.66 g | A4

SCALE: 1:15 | SHEET 1 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:



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DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: WIDDER ASSEMBLY - EXPLODED VIEW

DWG NO: SFMRA-B

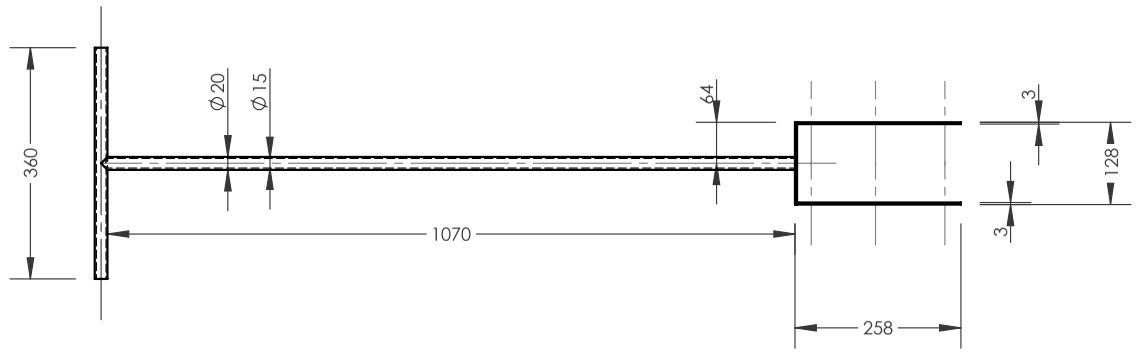
MANUFACTURING METHOD: MACHINING, BENDING & WELDING

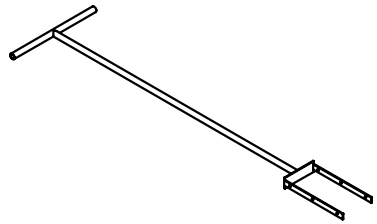
WEIGHT: 5480.66 g | A4

SCALE: 1:25 | SHEET 2 | REVISION: A

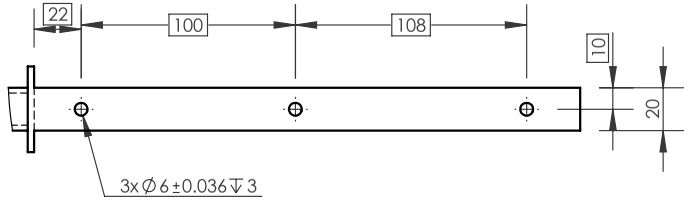
DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

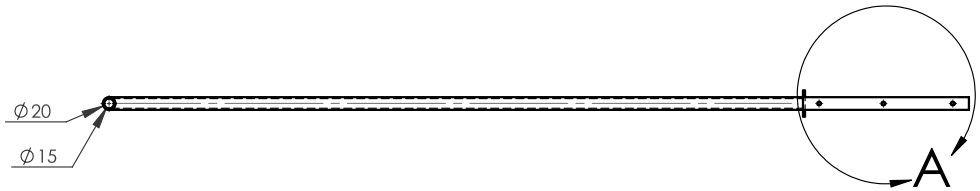




*MODEL IS SYMMETRY.
*ONE SIDE DIMENSIONS HAS SHOWN HERE.



DETAIL A
SCALE 1 : 3



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MILLIMETER: ± 0.1, ANGULAR: ± 0.05°
* DOES NOT APPLY TO HOLE SIZE

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DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: HANDLE

DWG NO: SMFRA-001

MANUFACTURING METHOD: MACHINING, BENDING & WELDING

MATERIAL: PLAIN CARBON STEEL | WEIGHT: 1890.04 g | A4

SCALE: 1:20 | SHEET 3 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
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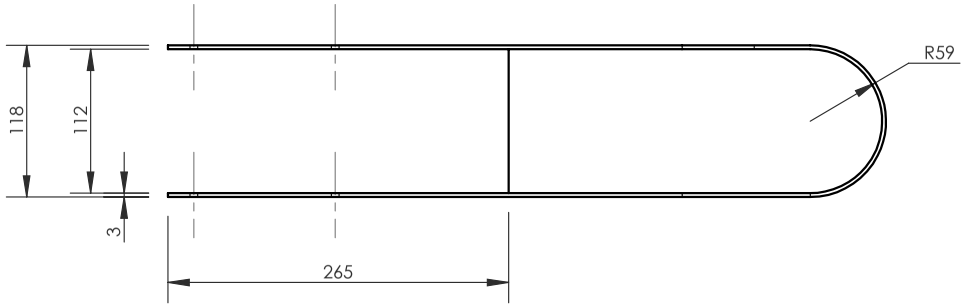
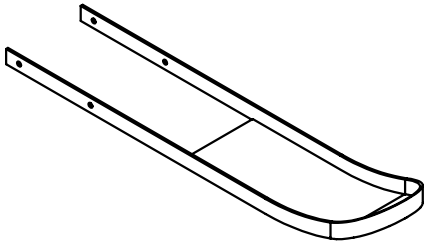
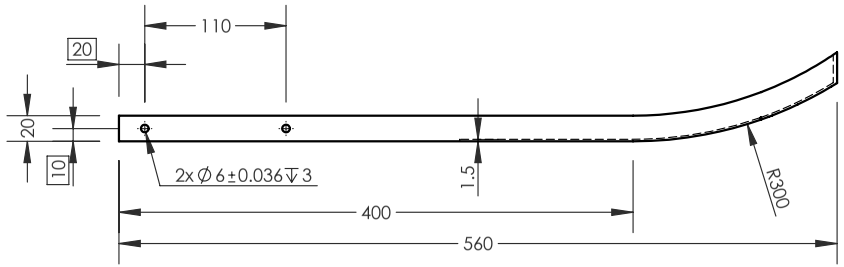
THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED







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FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: BASE GROUND SUPPORT

DWG NO: SMFRA-002

MANUFACTURING METHOD: MACHINING, BENDING & WELDING

MATERIAL: Plain Carbon Steel | WEIGHT: 934.17 g | A4

SCALE: 1:5 | SHEET 4 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
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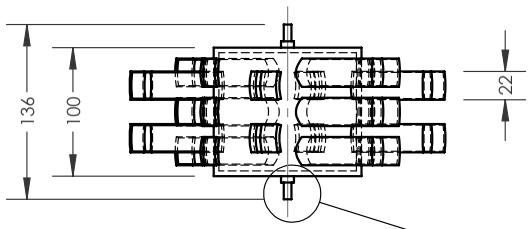
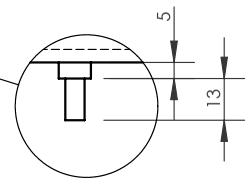
APP'V'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

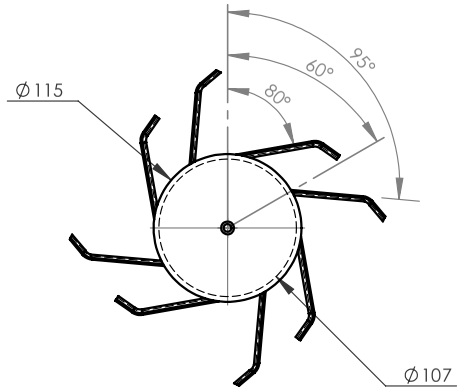
THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

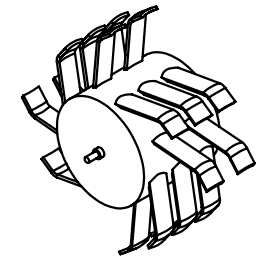


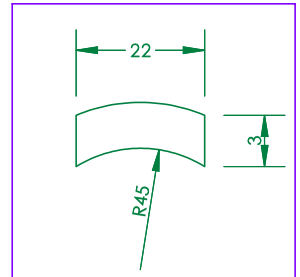


DETAIL A
SCALE 1 : 2



N.B: TOTAL **8** ROWS FOR THE SPIKES ON THE CYLINDRICAL SURFACE. (FOLLOWING **EQUAL SPACING** FROM ONE ROW TO ANOTHER ROW).
N.B: AT **90°** POSITION THERE ARE TOTAL **3** SPIKES AVAILABLE FOLLOWING **80°** ANGLE. (x4)
N.B: AT **60°** POSITION THERE ARE TOTAL 2 SPIKES AVAILABLE FOLLOWING **95°** ANGLE. (x4)
*ONLY FRONT AND TOP VIEW HAS SHOWN HERE.





N.B: PROFILE FOR THE SPIKES.

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

UNLESS OTHERWISE SPECIFIED: STD. TOLARANCE DIMENSIONS ARE IN MILLIMETER MILLIMETER: ± 0.1, ANGULAR: ± 0.05° * DOES NOT APPLY TO HOLE SIZE	BANGLADESH RICE RESEARCH INSTITUTE SFMRA PROJECT, FMPHT DIVISION	DO NOT SCALE DRAWING FINISH: NONE FIRST ISSUED: 04-APR-2024
TITLE: BRRI WEEDER		
DRG. NAME: WHEEL		
DWG NO: SMFRA-003		
MANUFACTURING METHOD: MACHINING, BENDING & WELDING		
MATERIAL: Plain Carbon Steel	WEIGHT: 2418.80 g	A4
SCALE: 1:5	SHEET 5	REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
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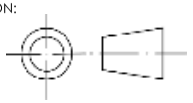
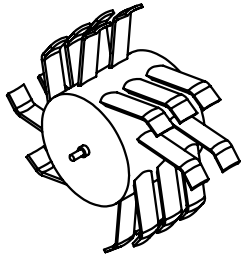
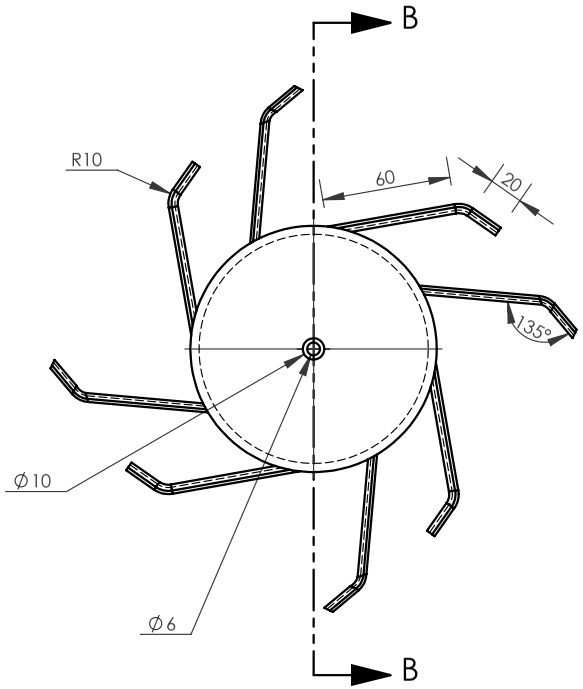
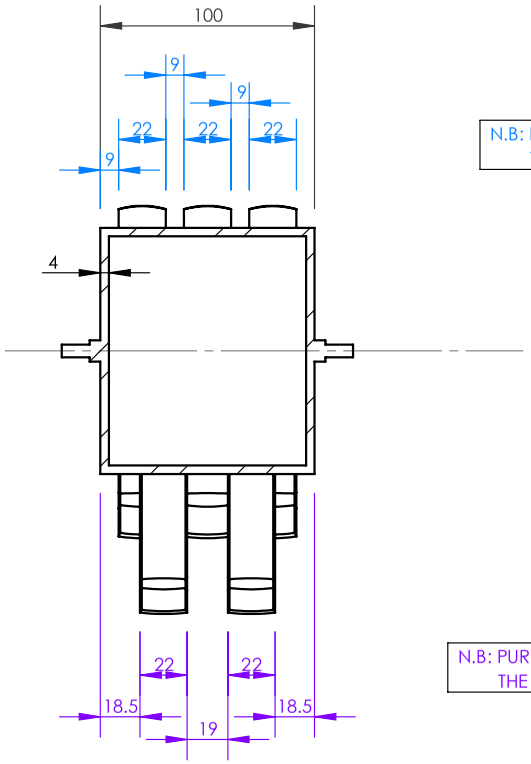
THIRD ANGLE PROJECTION:



*ONLY FRONT AND SECTION B-B FROM FRONT VIEW HAS SHOWN HERE.





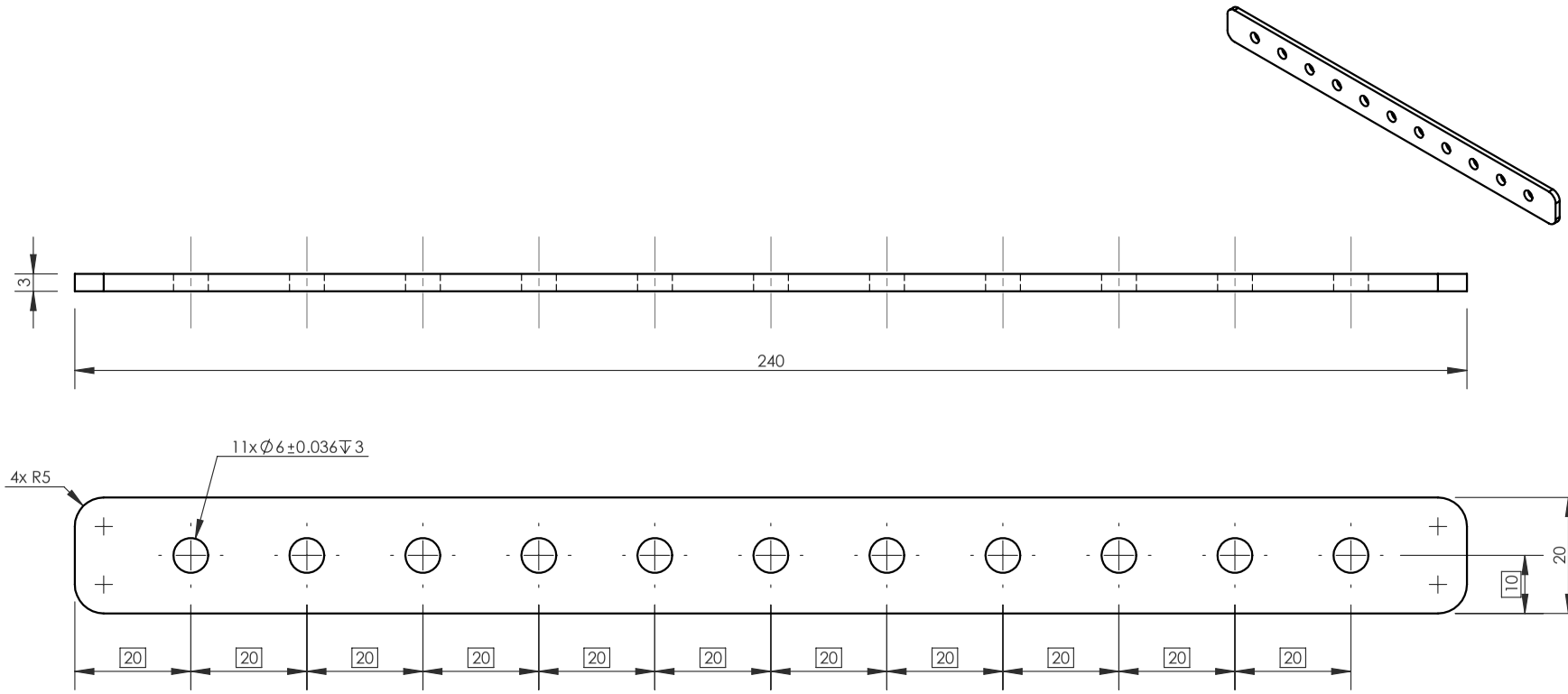


SECTION B-B
SCALE 1 : 3

N.B: BLUE COLOR DIMENSIONS FOR THE ROW WITH **3** SPIKES.

N.B: PURPLE COLOR DIMENSIONS FOR THE ROW WITH **2** SPIKES.

DWG NO: SMFRA-003
SHEET: 06



UNLESS OTHERWISE SPECIFIED:
STD. TOLARANCE
DIMENSIONS ARE IN MILLIMETER
MILLIMETER: ± 0.1, ANGULAR: ± 0.05°
* DOES NOT APPLY TO HOLE SIZE

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DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: DISTANCE CONTROLLER

DWG NO: SMFRA-004

MANUFACTURING METHOD: MACHINING

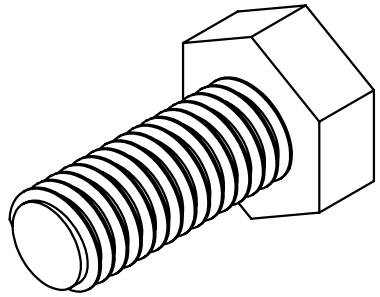
MATERIAL: Plain Carbon Steel | WEIGHT: 104.54 g | A4

SCALE: 1:2 | SHEET 7 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APP'V'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED



N.B: M6 BOLT

UNLESS OTHERWISE SPECIFIED:
STD. TOLARANCE
DIMENSIONS ARE IN MILLIMETER
MILLIMETER: ± 0.1, ANGULAR: ± 0.05°
* DOES NOT APPLY TO HOLE SIZE

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SFMRA PROJECT, FMPHT DIVISION

DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: BOLT M6

DWG NO: SFMRA-005

OUTSOURCING: VENDOR

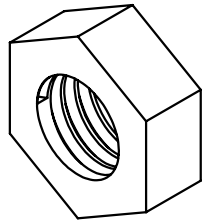
MATERIAL: STAINLESS STEEL (FERRITIC) | WEIGHT: 5.46 g | A4

SCALE: 2:1 | SHEET 8 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED



N.B: M6 NUT
(QUANTITY: 06)

UNLESS OTHERWISE SPECIFIED:
STD. TOLARANCE
DIMENSIONS ARE IN MILLIMETER
MILLIMETER: ± 0.1, ANGULAR: ± 0.05°
* DOES NOT APPLY TO HOLE SIZE

BANGLADESH RICE RESEARCH INSTITUTE
SFMRA PROJECT, FMPHT DIVISION

DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER

DRG. NAME: M6 NUT

DWG NO: SFMRA-006

OUTSOURCING: VENDOR

MATERIAL: Stainless Steel (ferritic)	WEIGHT: 1.68 g	A4
SCALE: 5:1	SHEET 9	REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

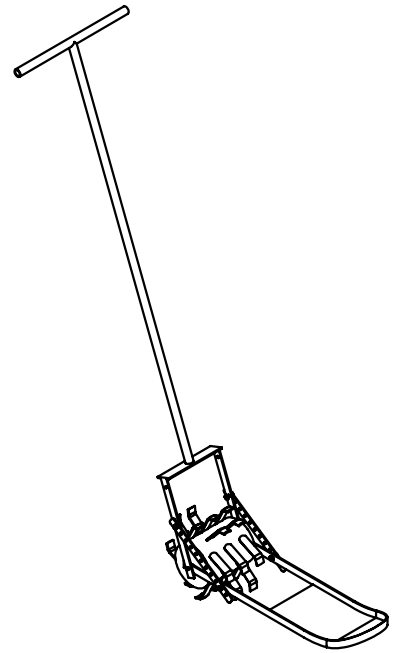
THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

Chapter 2

ISOMETRIC VIEW

ITEM NO.	Description	PartNo	Material	QTY.
1	BASE GROUND SUPPORT	SMFRA-002	Plain Carbon Steel	1
2	HANDLE	SMFRA-001	Plain Carbon Steel	1
3	DISTANCE CONTROLLER	SMFRA-004	Plain Carbon Steel	2
4	WHEEL	SMFRA-003	Plain Carbon Steel	1
5	BOLT M6	SFMRA-005	Stainless Steel (ferritic)	4
6	M6 NUT	SFMRA-006	Stainless Steel (ferritic)	4



NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

UNLESS OTHERWISE SPECIFIED:
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* DOES NOT APPLY TO HOLE SIZE

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DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER (BRRI W2024)

DRG. NAME: WIDDER ASSEMBLY - BILL OF MATERIALS (BOM)

DWG NO: SFMRA-WIN2024-A

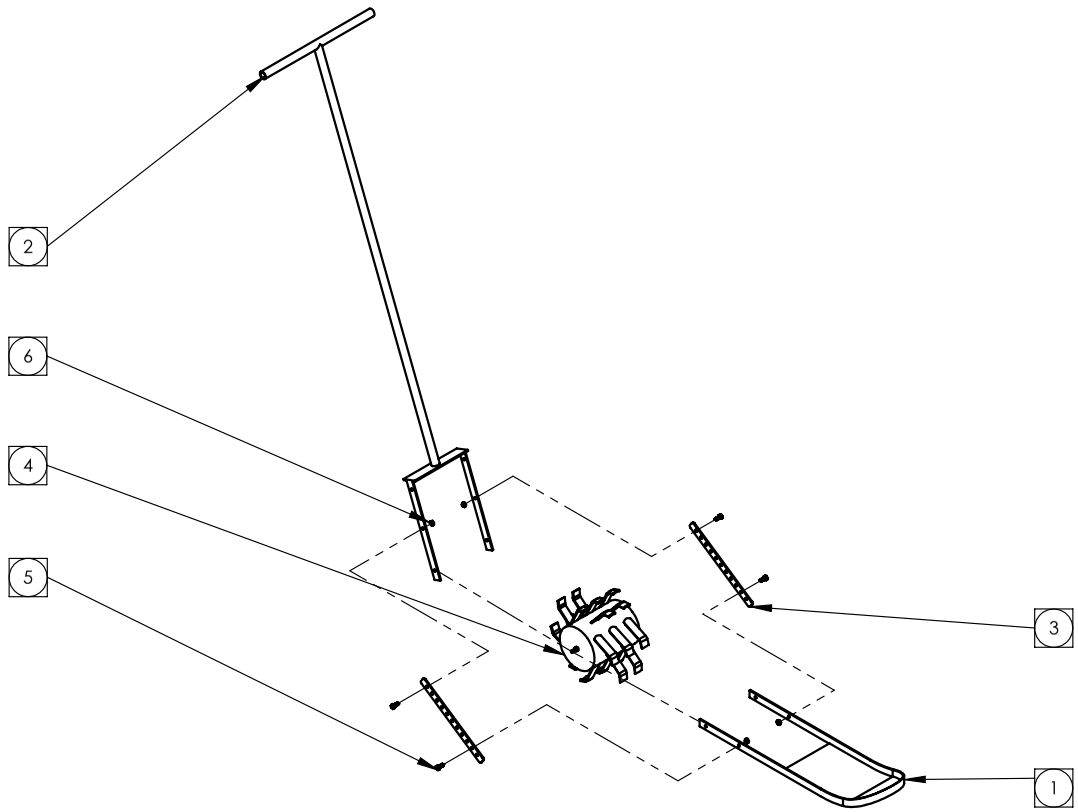
MANUFACTURING METHOD: MACHINING, BENDING & WELDING

WEIGHT: 6237.07 g | A4

SCALE: 1:15 | SHEET 1 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:



NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

UNLESS OTHERWISE SPECIFIED:
STD. TOLARANCE
DIMENSIONS ARE IN MILLIMETER
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DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER (BRRI W2024)

DRG. NAME: WIDDER ASSEMBLY - EXPLODED VIEW

DWG NO: SFMRA-WIN2024-B

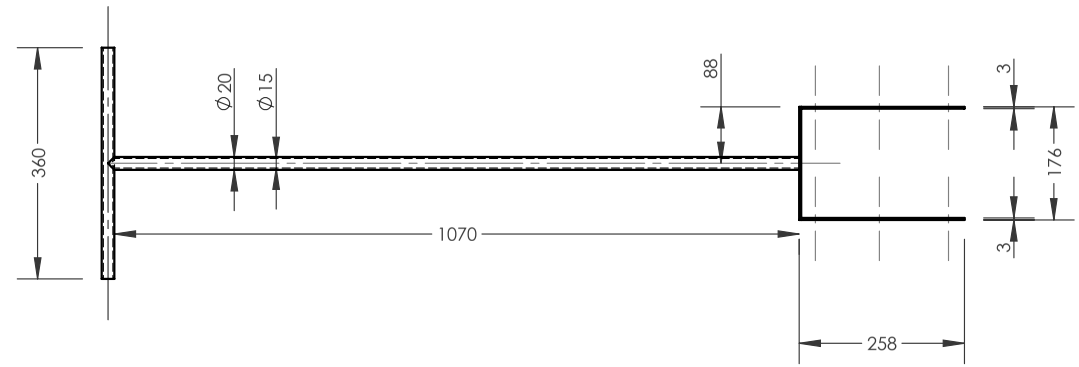
MANUFACTURING METHOD: MACHINING, BENDING & WELDING

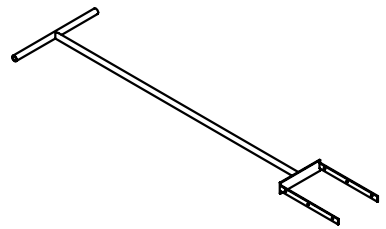
WEIGHT: 6237.07 g | A4

SCALE: 1:15 | SHEET 2 | REVISION: A

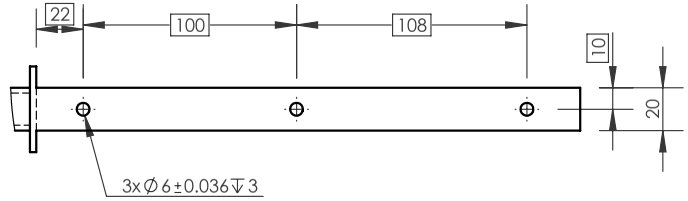
DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

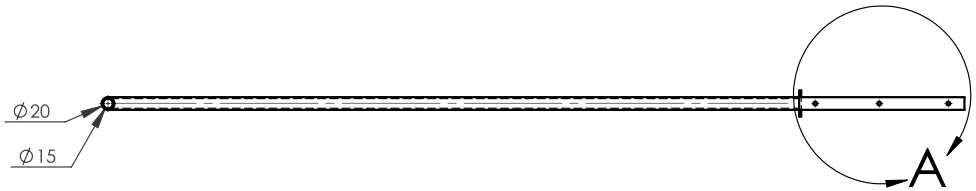




*MODEL IS SYMMETRY.
*ONE SIDE DIMENSIONS HAS SHOWN HERE.



DETAIL A
SCALE 1 : 3



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DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER (BRRI W2024)

DRG. NAME: HANDLE

DWG NO: SMFRA-001

MANUFACTURING METHOD: MACHINING, BENDING & WELDING

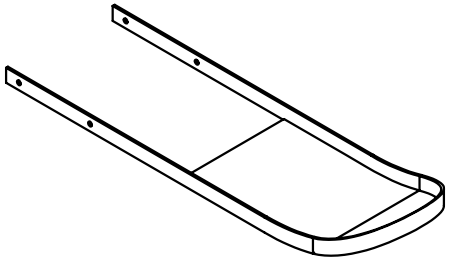
MATERIAL: PLAIN CARBON STEEL | WEIGHT: 1934.97 g | A4

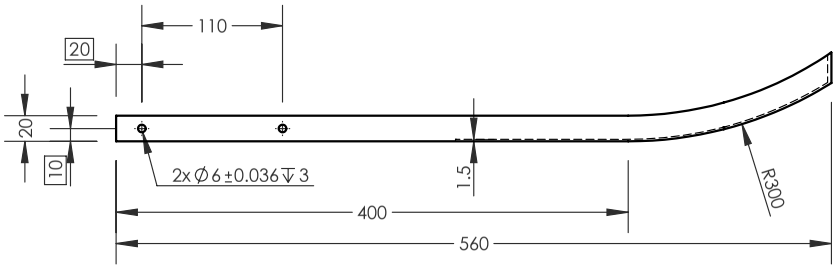
SCALE: 1:20 | SHEET 3 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED





UNLESS OTHERWISE SPECIFIED:
STD. TOLARANCE
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* DOES NOT APPLY TO HOLE SIZE

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SFMRA PROJECT, FMPHT DIVISION

DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER (BRRI W2024)

DRG. NAME: BASE GROUND SUPPORT

DWG NO: SMFRA-002

MANUFACTURING METHOD: MACHINING, BENDING & WELDING

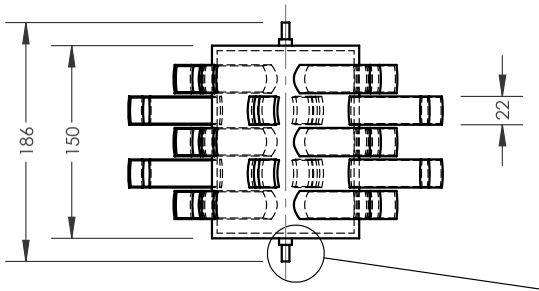
MATERIAL: Plain Carbon Steel | WEIGHT: 1101.66 g | A4

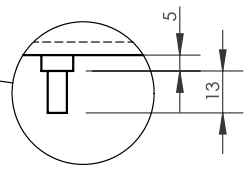
SCALE: 1:5 | SHEET 4 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

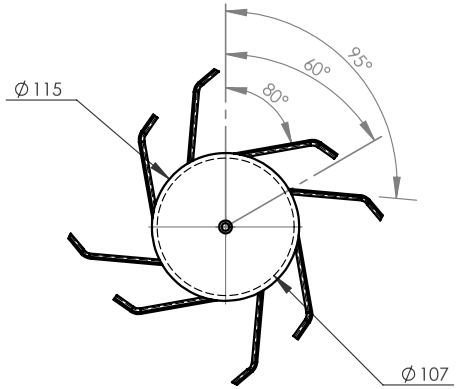
THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

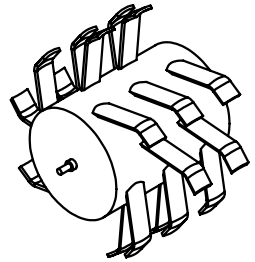


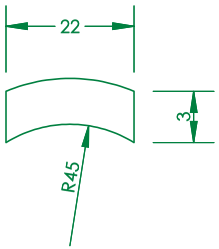


DETAIL A
SCALE 1 : 2



N.B: TOTAL **8** ROWS FOR THE SPIKES ON THE CYLINDRICAL SURFACE. (FOLLOWING **EQUAL SPACING** FROM ONE ROW TO ANOTHER ROW).
N.B: AT **90°** POSITION THERE ARE TOTAL **3** SPIKES AVAILABLE FOLLOWING **80°** ANGLE. (x4)
N.B: AT **60°** POSITION THERE ARE TOTAL 2 SPIKES AVAILABLE FOLLOWING **95°** ANGLE. (x4)
*ONLY FRONT AND TOP VIEW HAS SHOWN HERE.





N.B: PROFILE FOR THE SPIKES.

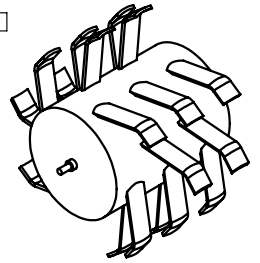
NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

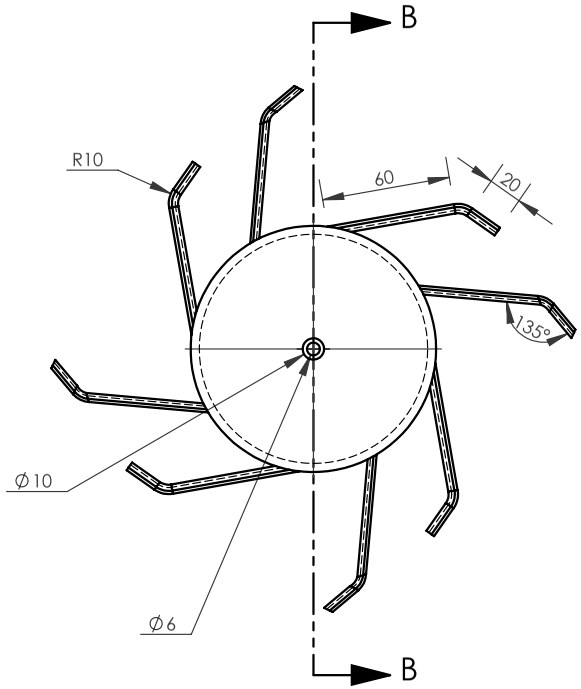
UNLESS OTHERWISE SPECIFIED: STD. TOLARANCE DIMENSIONS ARE IN MILLIMETER MILLIMETER: ±0.1, ANGULAR: ± 0.05° * DOES NOT APPLY TO HOLE SIZE	BANGLADESH RICE RESEARCH INSTITUTE SFMRA PROJECT, FMPHT DIVISION		DO NOT SCALE DRAWING FINISH: NONE FIRST ISSUED: 04-APR-2024
TITLE: BRRI WEEDER (BRRI W2024)			
DRG. NAME: WHEEL			
DWG NO: SMFRA-003			
MANUFACTURING METHOD: MACHINING, BENDING & WELDING			
MATERIAL: Plain Carbon Steel	WEIGHT: 2962.80 g	A4	
SCALE: 1:5	SHEET 5	REVISION: A	

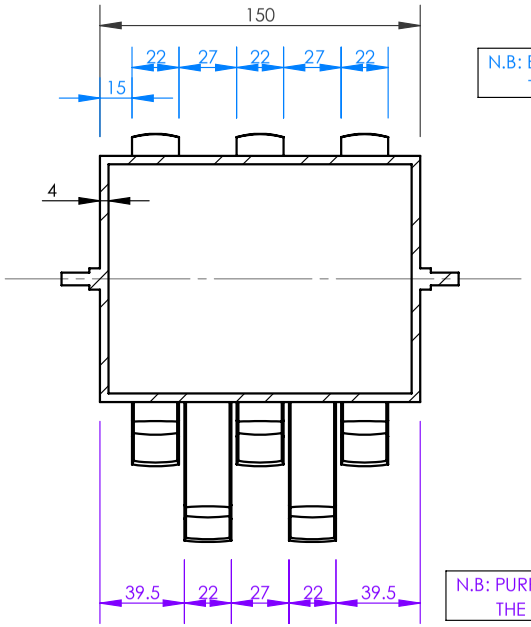
DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

*ONLY FRONT AND SECTION B-B FROM FRONT VIEW HAS SHOWN HERE.





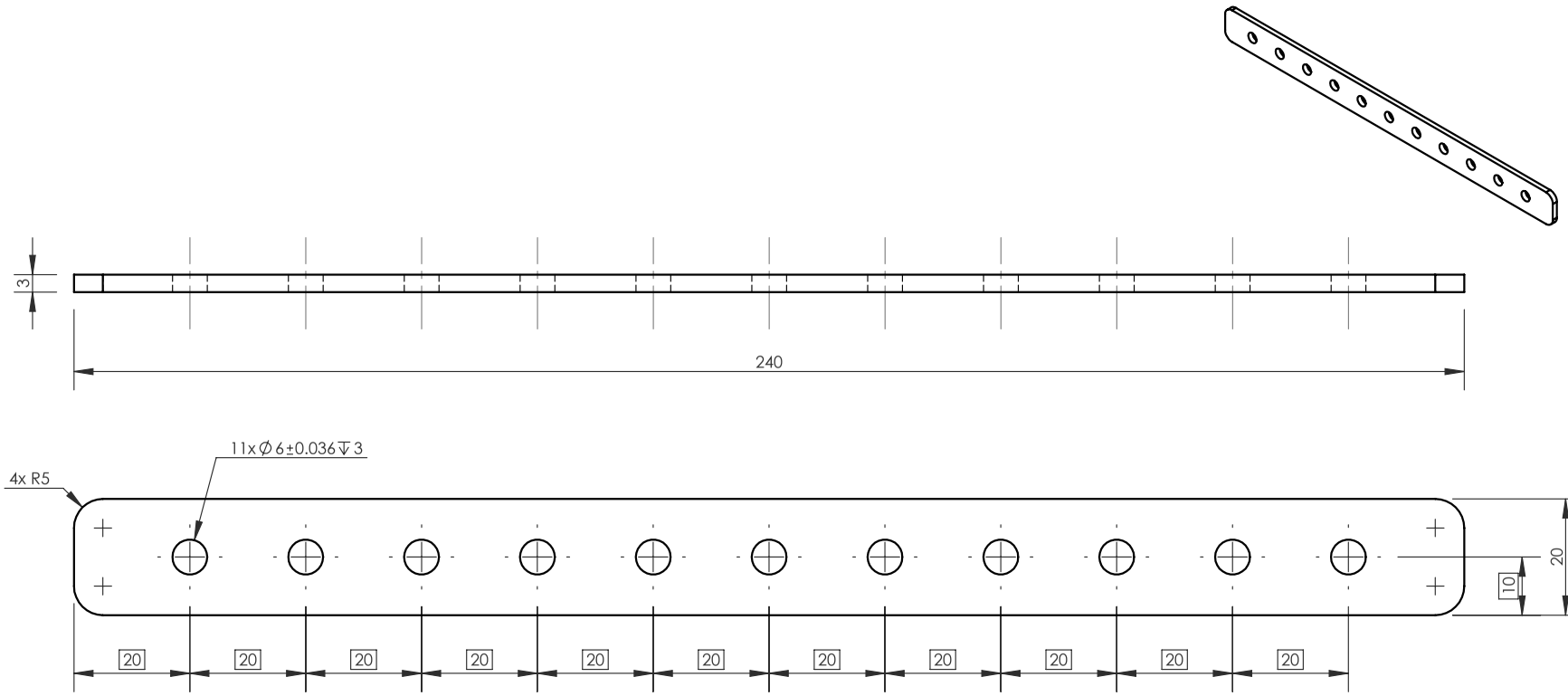


N.B: BLUE COLOR DIMENSIONS FOR THE ROW WITH **3** SPIKES.

N.B: PURPLE COLOR DIMENSIONS FOR THE ROW WITH **2** SPIKES.

SECTION B-B
SCALE 1 : 3

DWG NO: SMFRA-003
SHEET: 06



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STD. TOLARANCE
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MILLIMETER: ± 0.1, ANGULAR: ± 0.05°
* DOES NOT APPLY TO HOLE SIZE

BANGLADESH RICE RESEARCH INSTITUTE
SFMRA PROJECT, FMPHT DIVISION

DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER (BRRI W2024)

DRG. NAME: DISTANCE CONTROLLER

DWG NO: SMFRA-004

MANUFACTURING METHOD: MACHINING

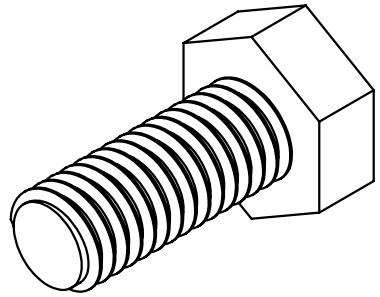
MATERIAL: Plain Carbon Steel | WEIGHT: 104.54 g | A4

SCALE: 1:2 | SHEET 7 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED

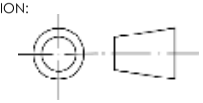


N.B: M6 BOLT

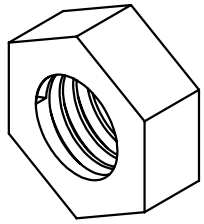
UNLESS OTHERWISE SPECIFIED: STD. TOLARANCE DIMENSIONS ARE IN MILLIMETER MILLIMETER: ±0.1, ANGULAR: ± 0.05° * DOES NOT APPLY TO HOLE SIZE	BANGLADESH RICE RESEARCH INSTITUTE SFMRA PROJECT, FMPHT DIVISION		DO NOT SCALE DRAWING FINISH: NONE FIRST ISSUED: 04-APR-2024
TITLE: BRRI WEEDER (BRRI W2024)			
DRG. NAME: BOLT M6			
DWG NO: SFMRA-005			
OUTSOURCING: VENDOR			
MATERIAL: STAINLESS STEEL (FERRITIC)	WEIGHT: 5.46 g	A4	
SCALE: 2:1	SHEET 8	REVISION: A	

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:



NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED



N.B: M6 NUT
(QUANTITY: 06)

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BANGLADESH RICE RESEARCH INSTITUTE
SFMRA PROJECT, FMPHT DIVISION

DO NOT SCALE DRAWING
FINISH: NONE
FIRST ISSUED: 04-APR-2024

TITLE: BRRI WEEDER (BRRI W2024)

DRG. NAME: M6 NUT

DWG NO: SFMRA-006

OUTSOURCING: VENDOR

MATERIAL: Stainless Steel (ferritic) | WEIGHT: 1.68 g | A4

SCALE: 5:1 | SHEET 9 | REVISION: A

DETAILS	NAME	SIGNATURE	DATE
DRAWN	ENGR. SHAFIER JAHAN KHAN	S J K	15-APR-2024
CHK'D	DR. MD. MOSHARRAF HOSSAIN	M M H	01-MAY-2024
APPV'D	DR. AKM SAIFUL ISLAM	A S I	15-MAY-2024

THIRD ANGLE PROJECTION:

NOTE: DEBURR AND BREAK SHARP EDGES ALL BENDS MIN. RADIUS UNLESS SPECIFIED