Gezira State

Ministry of Agriculture, Animal Wealth and Natural Resources

GENERAL ADMINISTRATION OF AGRICULTURE

Rice Promotion Unit

In Collaboration with

Japan International Cooperation Agency (JICA)

&

Post-harvest Technology Expert

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Rice Post-harvest Technology Training Program

Rice Milling Machine Technology

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Rice Post-harvest Technology Training Program

Text Book

Rice Milling Machine Technology

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Management & Processing of RMU

Rough Paddy from Farmers → Paddy Cleaning → Cleaned Paddy → Weighing & Measuring of Moisture Content, Quality Analysis → RMU Processing

RMU Processing

Husk

Head Rice
Large Broken
Medium Broken
Small Broken

Blending by % of Medium & Small broken → Milled Rice Standard Required

Weighing & Bagging

Storage & Distribution
**Account book of Rice Milling Machine Operation**

1. **Name of RMU:**
   
2. **Date:**
   **No.:**

3. **Name of Paddy Owner:**

4. **Address of the Owner:**

5. **Mobile Phone Number:**

6. **Variety:**

7. **Q'ty of Bag (Rough Rice):**

8. **Weight of **Cleaned Paddy:**
   **kg**

9. **Moisture Contents:**
   **%**

10. **Amount of Milled Rice**
    1) **Rice / Large & Medium Broken**  
       **kg, @ SDG __________/ kg**
    2) **Small & Fine Broken**  
       **kg, @ SDG __________/ kg**
    3) **Total**  
       **kg, @ SDG __________/ kg**

11. **Milling Charge**
    1) **Pre-cleaning**  
       **SDG ______ @ SDG __________/ kg**
    2) **Milling**  
       **SDG ______ @ SDG __________/ kg**

12. **Remarks:**

   ____________________________________________

   ____________________________________________

   ____________________________________________
Structure of (RMM)
The components of the machine:

1. Inlet Unit:
   - Hopper
   - Vibrating screen
   - Magnetic unit
   - Hopper slide
   - Flow regulator

2. Husking Unit:
   - Rubber rollers (1200&890 r/min)
   - Husk clearance adjuster
   - Husk blower (1680 r/min)
   - Husk duct
3. Polishing Unit:

- Milling roll (900 r/min)
- Intake screw
- Hexagonal screen
- Resistance board and weight
- Milling Chamber Blower (3400 r/min)
4. Milled Rice Cleaning Devices:

5. Power Transmission Unit:

- Motor’s pulley & 4 V- shape belts
- The main pulley & 4 V-shape belts
- Husking rollers’ pulleys
- Hopper’s pulley
- Blowers’ pulleys
- Tension pulley (A)
- Tension adjustment of the blower (B)
6. **Power Source Unit:**

- Motor (15 kw – 20 HP)
- Starter (Star – Delta)
- Cable
- 3 Phase Source
Foundation of RMM:

**Drawing of Foundation & Anchor-bolts**

**Holes of Anchor-bolts:**

\[ \phi 150 \text{ mm} \times 200 \text{ mm} \]

Depth x 8

**Dimension of Foundation of RMM**
Rice Milling Unit (RMU) Accessories:

- Moving rack (frame)
- Anchor-bolts
- Steps
- Sieves (Appendix)
- Hand tools (Appendix)

Small mesh  Medium mesh  Large mesh
Assembling & Installation of (RMM)

1. Unpack the RMM then check the accessories and the tools
   (Chinese packing style)

2. Put the moving rack (frame) on the concrete foundation

3. don’t tight the nuts of the anchor bolts

4. Use the leveling gauge to level the moving rack
   (small pieces of steel sheet are very important)

5. Tight the nuts of the anchor bolts

6. Put the RMM and the Motor on the moving rack

7. Loosely tight the bolts and use leveling gauge

8. Tight firmly the bolts of the RMM and the Motor
9. Fix the motor pulley and Put the belts (motor & main pulley must be in straight line)

10. Tight the tension pulley (spanner 36)

11. Adjust the tension of the blower’s belt

12. Adjust the tension of the motor’s belts

13. Fix the husk duct, the resistance board & weight and milled rice outlet
14. Electric connections

- Open the starter and connect the cables
- Open the motor electric panel and connect the cables
- Put off the circuit breaker of the building and connect the cable with the main switch
**Operation of (RMM)**

1. Examine foundation or moving rack bolts and each tightening solid part

2. Examine the tension of belts

3. Inspect the distance between the husking rubber rollers (0.5-1.5 mm)

4. Clean the paddy by the sieves

5. Close the slide of the hopper

6. Press the start bottom

7. Examine the machine if there any Strange sound, smell or something unusual like warming ...etc

8. Use the steps to feed the machine

9. Open the hopper slide & turn the handle of the flow regulator slowly towards the left pointing between 2 to 5

10. Control polishing by resistance weight
Safety Measures and Maintenance

- Be careful when dealing with electric connections and take care of manufacturing error (starter and motor panel)

- Use long husk duct to avoid pollution (2 m for 1 unit in accordance with distance between RMM and Husk yard)

- Wear tight clothes

- Cover the moving parts (Install guard fences)

- Keep away from moving parts (Don’t get carelessly close to moving parts)

- Lubricate all position of bearing

- Follow the instructions of the manufacturer’s operation manual

- If the paddy clogged in the husking chamber, increase the clearance between the husking rubber rollers by Husk clearance adjuster
• If the brown rice clogged in polishing chamber, loose the bolts of the screen holder by drive socket to remove it, then remove the screen to clean the polishing chamber. After that use wire brushes to clean the screen from bran.

• If the diameter of the rubber roller after wear and tear show a difference of 3 mm, the quick and the slow roller should be used in turn

• If the intake screw or milling roll or hexagonal screen worn, new one should be replaced
Appendix
<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
<th>Unit Price</th>
<th>Amount</th>
<th>Price</th>
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<td>Moiture content meter</td>
<td>KETT handy type</td>
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<td>2</td>
<td>Hand drill</td>
<td>600 Watt</td>
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<tr>
<td>3</td>
<td>Drill bits</td>
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<td>5</td>
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<td>4</td>
<td>Drill bits</td>
<td>φ 9 mm</td>
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<td>Drill bits</td>
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<td>Monkey spanner</td>
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<td>Stoning Hammer</td>
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<td>Bolts &amp; nuts</td>
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<td>Leveling steel sheets</td>
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<td>Sieve</td>
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<td>Sieve</td>
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<tr>
<td>40</td>
<td>Sieve</td>
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