

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



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

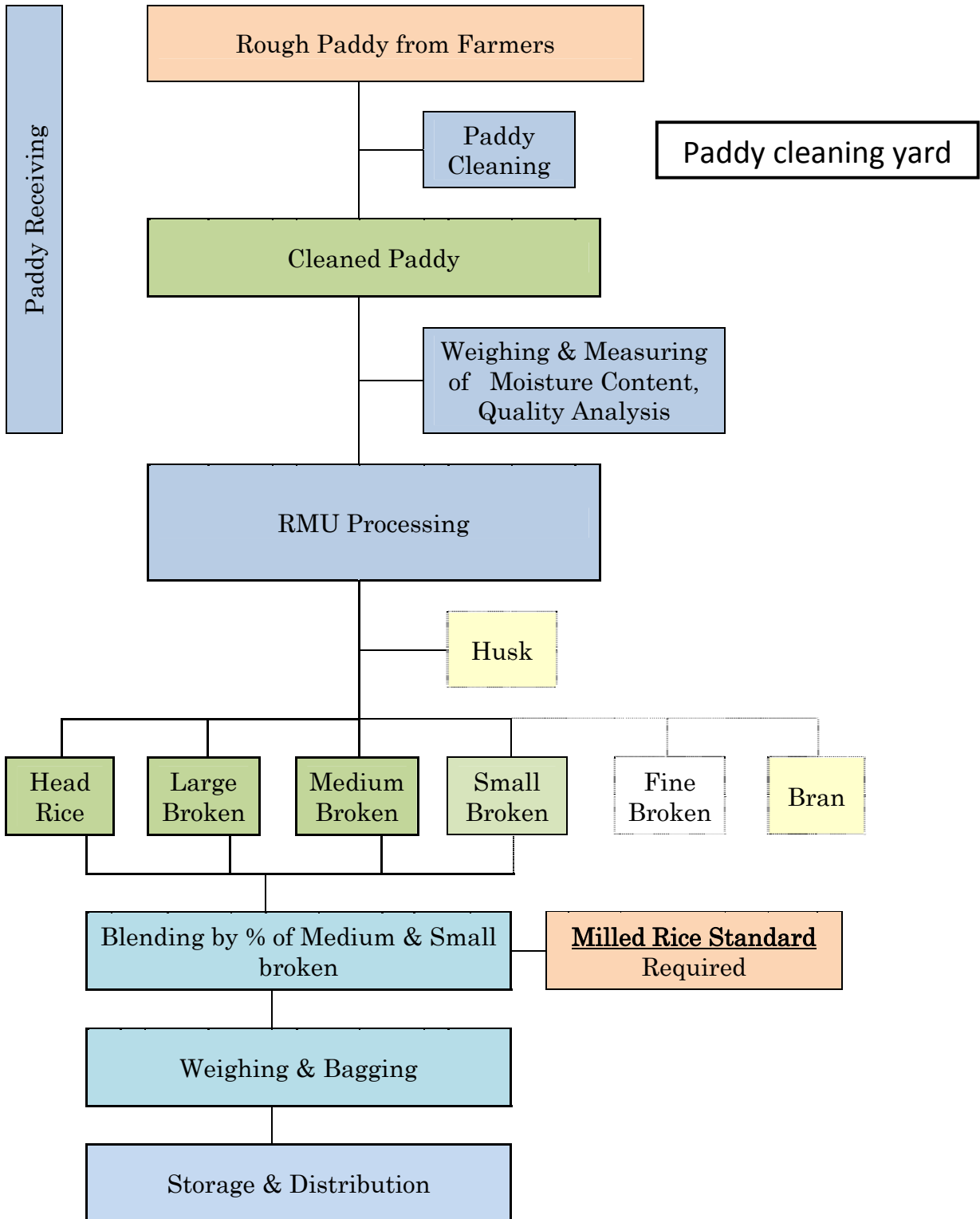
Text Book

Rice Milling Machine Technology

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Management & Processing of RMU



Account book of Rice Milling Machine Operation

1 Name of RMU: _____
Date: _____ No.: _____

2 Name of Paddy Owner: _____

3 Address of the Owner: _____

4 Mobile Phone Number: _____

5 Variety: _____

6 Q'ty of Bag (Rough Rice) _____

7 Weight of **Cleaned Paddy**: _____ kg

8 Moisture Contents: _____ %

9 Amount of Milled Rice

1) Rice / Large & Medium Broken _____ kg, @ SDG _____ / kg

2) Small & Fine Broken _____ kg, @ SDG _____ / kg

3) Total _____ kg, @ SDG _____ / kg

10 Milling Charge

1) Pre-cleaning SDG _____ @ SDG _____ / kg

2) Milling SDG _____ @ SDG _____ / kg

11 **Remarks:**

Structure of (RMM)



The components of the machine:

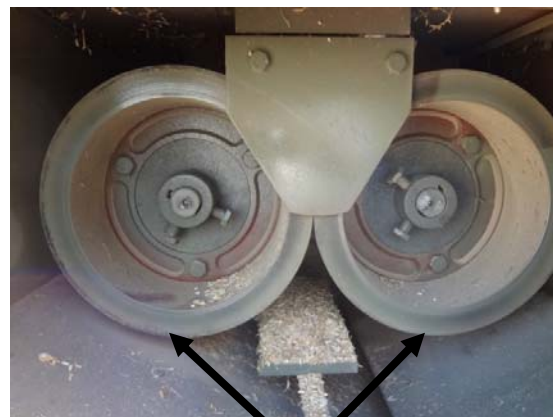
1. Inlet Unit :

- 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



Different r.p.m



Husk clearance adjuster



Husk blower & 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:

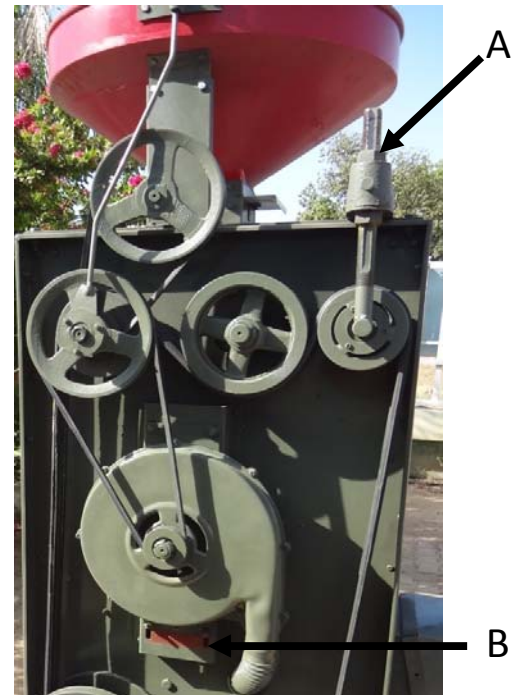
- Motor's pulley & 4 V- shape belts
- The main pulley & 4 V-shape belts
- Husking rollers' pulleys
- Hopper's pulley
- Blowers' pulleys
- Tension pulley (A)
- Tension adjustment of the blower (B)



A



B

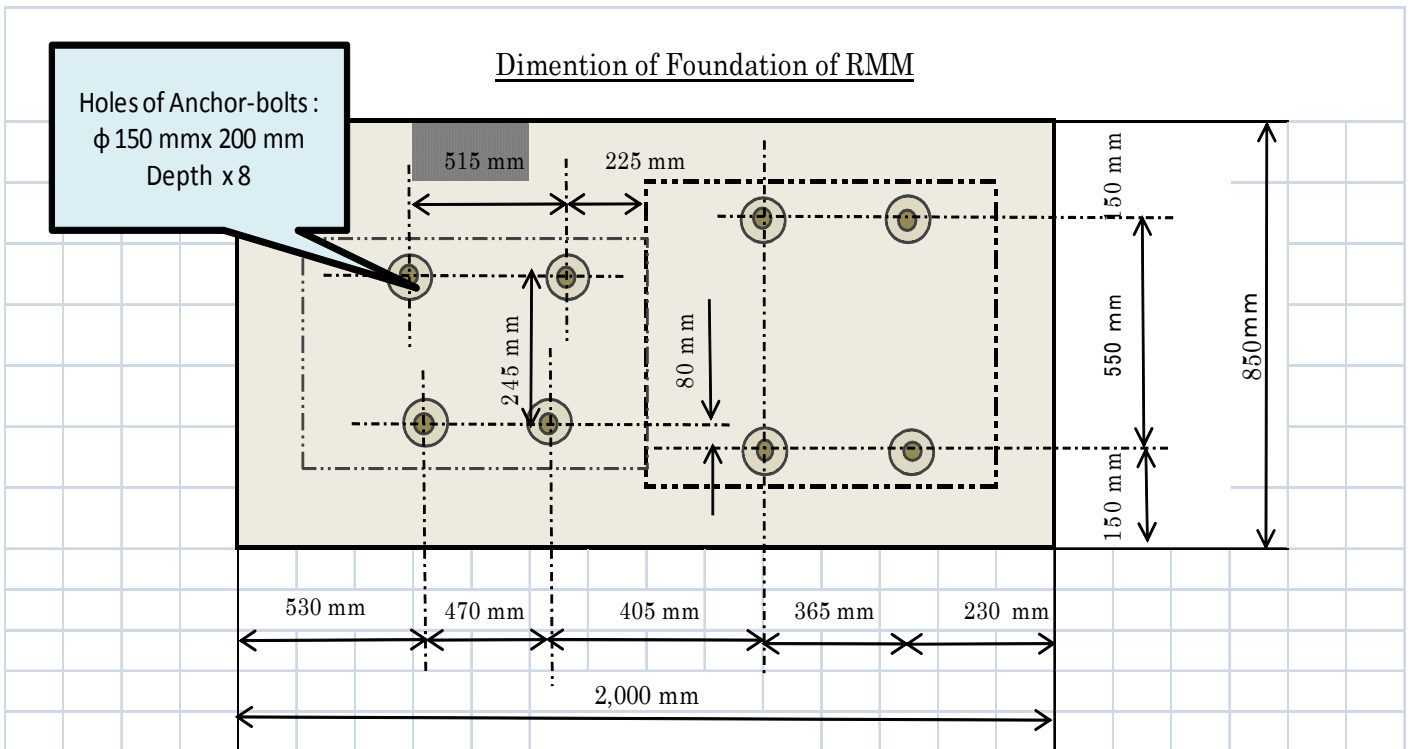
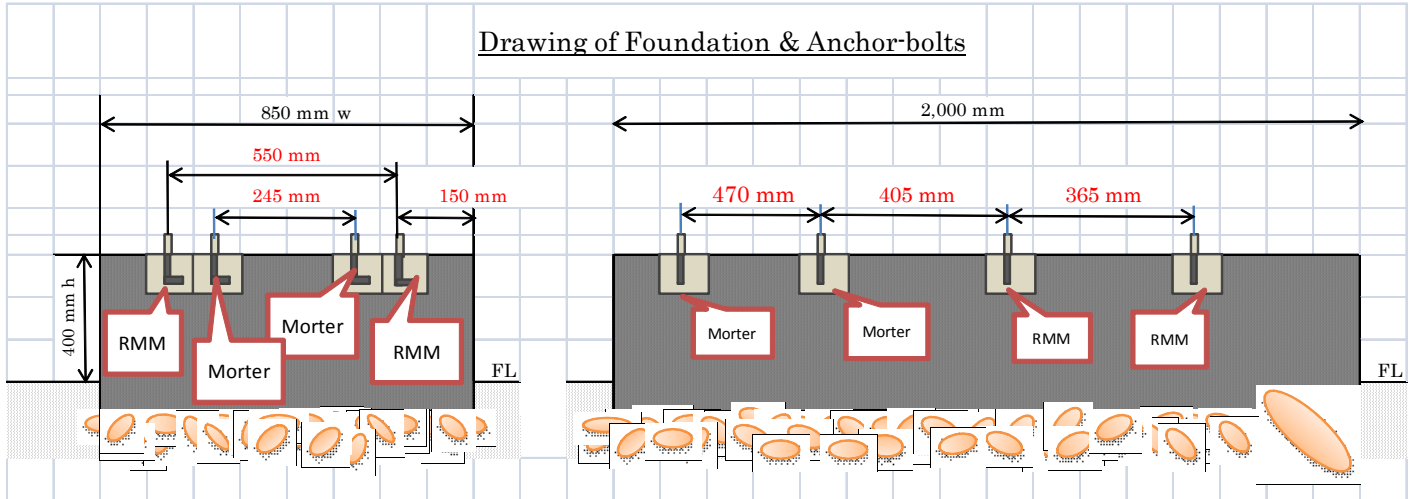


6. Power Source Unit:

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



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.



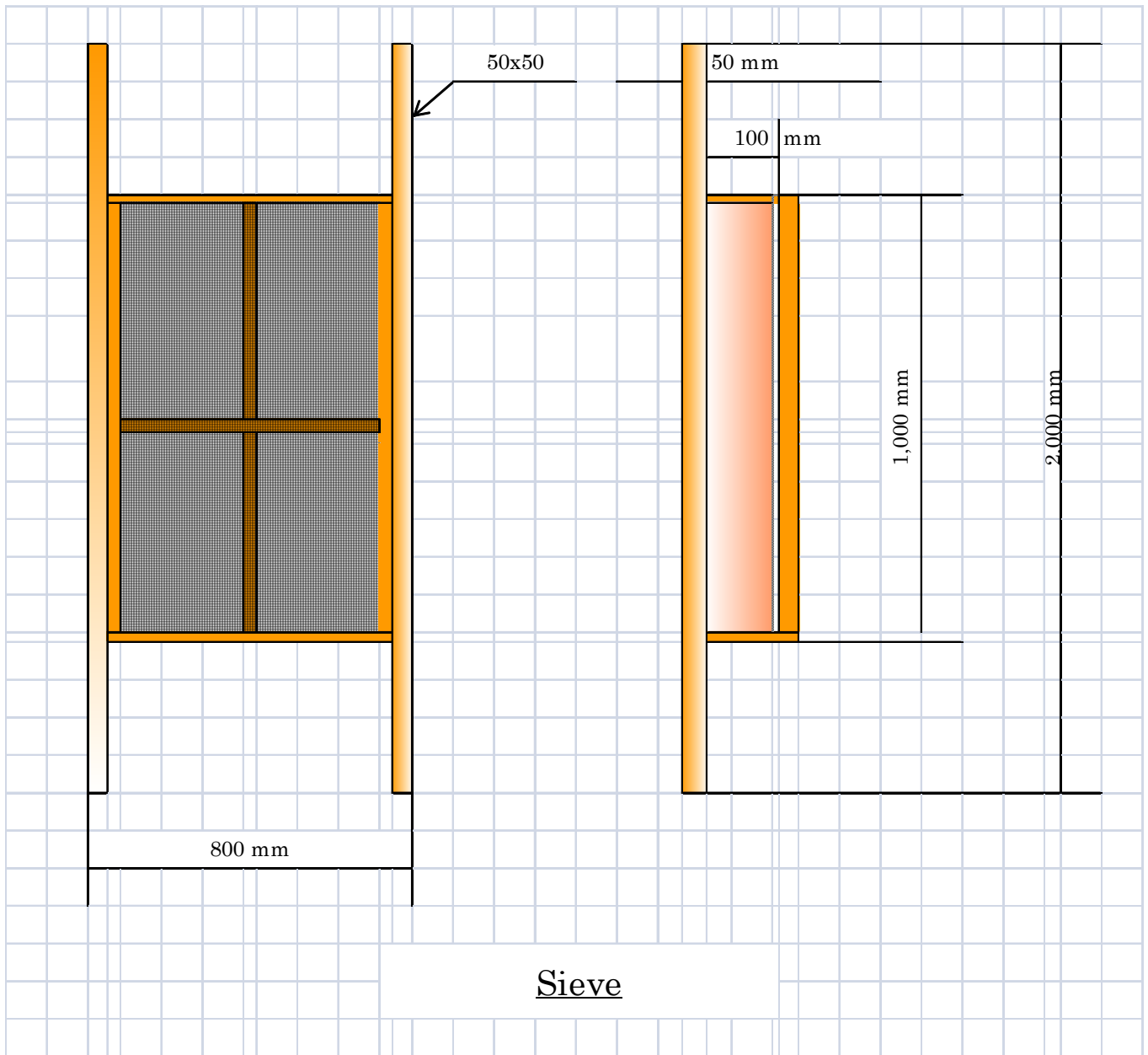
- If the diameter of the rubber roller after wear and tear show a difference of 3 mm, the quick and the slow roller should be used in turn



- If the intake screw or milling roll or hexagonal screen worn, new one should be replaced



Appendix



List of Tools & Equipment

No.	Item	Description	Unit Price	Amount	Price
1	Moisure content meter	KETT handy type		1	
2	Hand drill	600 Watt		1	
3	Drill bits	φ 6 mm		5	
4	Drill bits	φ 9 mm		5	
5	Drill bits	φ11 mm		5	
7	Voltameter	Digital		1	
9	Leveling gauge	30 cm		1	
10	Measuring tape	5 m × 65 mm		1	
11	Spanners set	6 ~ 22 mm		1	
12	Single Spanner	36 mm		1	
13	Monkey spanner	10 inch		1	
14	Offset handle-square drive			1	
15	Drive socket	10 mm		1	
16	Drive socket	12 mm		1	
17	Drive socket	14 mm		1	
18	File			1	
19	Ball Hammer	1 lb		1	
20	Stoning Hammer	3 lb		1	
21	Pliers			1	
22	Vinyl electrical tape	3 colors		3	
23	Screwdriver	75 × 5 mm		1	
24	Spider screwdriver	75 × 5 mm		1	
25	Steel sheet cutter (Scissor)			1	
26	Sand paper	1 m		1	
27	Grease				
28	Bolts & nuts	6 mm		10	
29	washers	6 mm		10	
30	Spring washers	6 mm		10	
31	Spring washers	22 mm		8	
32	Tools bag	61 × 29 × 29 cm		1	
33	Crimping tool	22 - 10 AWG		1	
34	Electric cable	4 × 16 mm ² - 4 core			
35	connectors	16 mm ²		12	
36	Leveling steel sheets	Small pieces			
37	Steps			1	
38	Sieve	Small Mesh		1	
39	Sieve	Medium Mesh		1	
40	Sieve	Large Mesh		1	
41	Husk duct (Pipe)	φ 20 × 2000 mm		3	
42	Plastic cover				