

प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट
INITIAL COMMERCIAL TEST REPORT

संख्या/No. CSIR/CMERI/FMTTC/2023/007

माह/Month: July, 2023

THIS TEST REPORT VALID UP TO

31st JULY, 2030



**PB MANKU-06
TRACTOR OPERATED MULTICROP THRESHER**



कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र
Farm Machinery Training and Testing Centre
सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान
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3. TEST PROCEDURE / TEST CODE

There is no Indian standard/test code available for testing of tractor trailer as such. The guidelines, however, have been taken from the following:

IS- 6284:1985	: Test code for power thresher for cereals
IS- 11234:1985 (Reaffirmed 2001)	: Test code for power thresher for groundnut
IS- 9020:2002 (Reaffirmed 2012)	: Power threshers-Safety requirements
IS 4333 (Part 1) 1996	: Method of Analysis for food grains
IS 7897: 1975	: Test code for chaff cutter
IS 4931:1995	: Agricultural tractors - Rear mounted power take off Types 1, 2 and 3

4. SPECIFICATION**4.1 General**

Name of manufacturer	: Birsa Agro Machinery
Name of applicant	: Mainur Islam
Name of Machine	: Multicrop Thresher
Type	: Tractor P.T.O. Operated
Make	: Birsa Agro Machinery
Model	: PB MANKU-06
Serial No.	: BAM0022
Year of manufacture	: 2023
Recommended crop	: Multicrop
Recommended power source	: 39 hp and above



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8.6.1.5	Revolutions per minute of the threshing drum and its direction of rotation	Not Provided	Does not Confirm
8.6.2	Each thresher shall be fitted with a label/plate containing cautionary notions written in vernacular language and their pictorial representation. The size of the pictures and the typography of the letters shall be selected according to the size of the label or poster and the distance at which these have to be seen or read. The minimum size for picture shall be 40 mm.	The sticker is provided with cautionary notice with picture. Pictorial representation is provided.	Conforms
8.6.2.1	Do not put or take-off belt while pulley is in running	Provided	Conforms
8.6.2.2	Do not stand on thresher during operation or transportation	Provided	Conforms
8.6.2.3	Do not smoke and light fire near threshing yard and thresher	Provided	Conforms
8.6.2.4	Do not feed ear-head by hand	Provided	Conforms
8.6.2.5	Children and aged person should be discouraged for feeding the crop	Provided	Conforms
8.6.2.6	Do not cross over the belts	Provided	Conforms
8.6.2.7	Do not wear loose dress, bangle, watch, etc. while working	Provided	Conforms
8.6.2.8	Do not walk under the influence of intoxicants like liquor, opium, etc while working	Provided	Conforms
8.6.2.9	Do not work when tired	Provided	Conforms
8.6.2.10	Do not make adjustment when thresher is working	Provided	Conforms

9. EASE OF OPERATION & ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of paddy thresher.

10. DEFECTS, BREAKDOWNS AND REPAIR

No noticeable defect/breakdown was occurred during entire period of field & lab tests.



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II. CRITICAL TECHNICAL SPECIFICATIONS

Sr. No.	Parameters	Specification	Observation	Remarks
1	Type	Tractor /Power tiller/Engine/Electric motor operated	Tractor PTO shaft operated	Conforms
2	Type of crop feeding	Chute-fed/conveyor-fed/feed roller-fed/hopper-fed	Chute fed	Conforms
3	Type of threshing drum/cylinder	Hammer mill/Rasp bar/Spike tooth/Syndicator	Spike tooth	Conforms
4	Suitability of crop	Paddy, Wheat	Paddy, Wheat	Conforms
5	Total length of feeding chute and covered portion (mm)	900(Min) and 450(Min)	683 mm and 30 mm	Does not Confirm
6	Material and thickness of feeding chute/hopper(mm)	M.S sheet 1.6 (Min)	M.S. Sheet Thickness 1.56 mm	Does not Confirm
7	Number of hammers/beaters/rasp bars/spikes/chopping knives	Depending on the size of drum	Flat beater = 16	Conforms
8	Number of sieves	2 (Min)	02	Conforms
9	Dimension of sieves/size of apertures or holes, mm	Thickness of sieve 1.0 (Min)	Thickness 0.6mm	Does not Confirm
10	Number of blower/aspirator	1 (Min)	Total 4 blower	Conforms
11	Concave clearance (mm)	15(Min) adjustable	25 mm (fixed)	Conforms
12	Recommended threshing cylinder speed (rpm)	To be declared by the manufacturer 680	540 rpm	Does not Confirm
13	Recommended blower speed (rpm)	To be declared by the manufacturer 680	540 rpm	Does not Confirm
14	Provision of adjusting concave clearance	Must be provided	Not provided	Does not Confirm
15	Provision of changing cylinder/drum speed	Must be provided	Not provided	Does not Confirm
16	Provision of changing blower speed	Must be provided	Not Provided	Does not Confirm
17	Provision of changing air-flow rate	Must be provided	Not Provided	Does not Confirm
18	Provision of changing shaker unit speed	Must be provided	Provided	Conforms



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12. COMMENTS & RECOMMENDATIONS

- 12.1 The rated input capacity is not specified by the applicant. It **MUST** be specified.
- 12.2 Provision for adjustment of concave clearance and airflow rate is not provided on the thresher. It **MUST** be provided.
- 12.3 Required tools for operation, maintenance and adjustment of various components of the thresher are not provided. It **MUST** be supplied by the manufacturer.
- 12.4 Propeller shaft guard is not provided. It **MUST** be provided with thresher.
- 12.5 The specification of feeding chute does not conform to IS: 9020-2002 (Reaffirmed 2012). This **MUST** be taken care in future production level for safety concern of operator.
- 12.6 Revolutions per minute of the threshing drum and its direction of rotation is not provided. It must be provided.
- 12.7 The recommended grade of lubricant and lubricating schedule is not provided. It should be provided for the guidance of user for enhancing the life of machine.
- 12.8 The specification of power input connection does not conform to IS: 4931-1995. This **MUST** be taken care in future production level.
- 12.9 Operation manual is not provided. It **MUST** be provided as per IS: 8132-1999.

TESTING AUTHORITY

Report Prepared by	Sr. Technical Officer, CSIR-CMERI Farm Machinery Testing Centre	<i>[Signature]</i> 28/07/2023
Report Verified by	Scientist, CSIR-CMERI Farm Machinery Testing Centre	<i>[Signature]</i> 28/07/2023
Report Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	<i>[Signature]</i> 28.07.23
Report Approved for release by	Head, Business Development Group, CSIR-CMERI, Durgapur	<i>[Signature]</i> 28/7/23

**13. APPLICANT'S COMMENTS**

Para No.	Our Reference	Applicant's Comments
13	12.1 - 12.9	Noted, corrective actions will be taken against the given comments & recommendations from 12.1 to 12.9



Name of crop: Paddy
Place of test: Durgapur

Annexure - III

Variety of crop: IET 4087

FIELD PERFORMANCE RESULTS

Sl. No	Feed rate (kg/h)	Output from main outlet, (kg/h)	Grain-crop ratio	Percentage of losses (%)			Total machine losses (%)	Efficiency (%)	
				Broken	Blown	Un Threshed		Threshing	Cleaning
A									
Short run test									
(i)	3522	1612	0.46:1	0.14	0.86	0.25	0.04	99.75	98.96
(ii)	3812	1668	0.46:1	0.18	0.68	0.13	0.018	99.87	99.12
50% Rated input capacity									
(i)	1825	843.2	0.46:1	0.19	0.21	0.09	0.01	99.91	90.50
B									
Varying speed test:									
At 15% higher speed than recommended cylinder speed									
(i)	4150	1912	0.46:1	0.89	0.6	0.02	0.03	99.98	98.46
At 15% Lower speed than recommended cylinder speed									
(ii)	3105	1437	0.46:1	0.42	0.55	0.23	0.09	99.77	98.94



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