प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट संख्या/No. CSIR/CMERI/FMTTC/2024/033

INITIAL COMMERCIAL TEST REPORT माह/Month: June, 2024

THIS TEST REPORT VALID UP TO : 31ST MAY, 2031

BALWAAN CORN THRESHER CT-600

सत्यमेव जयते
Goverment Of India

कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र

Farm Machinery Training and Testing Centre

सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान

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4 SPECIFICATIONS

4.1 General

Name of Implement	:	Corn Thresher
Type	:	Motor operated, Hopper fed, cylinder type
Make*	:	BALWAAN
Model*	:	CT-600
Serial No.	:	0005
Year of manufacture	:	2024
Power Source	:	Electric Motor (Normal operating power = 2 hp and Peak power = 2 hp)
Name & address of manufacturer	:	MODISH TRACTOR AURKISAN PVT. LTD. 17-C Sharma Colony Extension -22, Godam Industrial Area, Jaipur, Rajasthan - 302006
Name & address of applicant	:	-do-
Crops to be processed	:	Maize
Overall dimension (L×W×H, mm)	:	950×455×690
Total weight (kg)	:	27

* As per data provided by the applicant

5 CONSTRUCTIONAL DETAILS

Main objective of the Manual Maize Sheller is to remove maize seeds from cubs without damage. It is achieved by pressing maize cubs firmly between rotating drum with spiral coil and rib on the wall of the chamber in the shelling chamber thus putting a shearing impact between cub and sheet. The drum rotates with power from electric motor through pulley and belt.

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5.1 Support Stand

It provides the stability to the machine. It is made up of MS flats and MS angle. The members are bolted with each other which acts as a stand on which the motor is fixed at bottom and Processing Chamber is fixed at top.

Weight (kg.)	:	2.670
Long vertical members	:	2 nos. Length - 510 mm, MS angle 36 × 36 × 2.16 mm
Short vertical members	:	2 nos. Length - 410 mm, MS angle 35 × 35 × 2.14 mm
Long horizontal bottom members	:	2 nos. Length - 580 mm, MS angle 36 × 36 × 2.16 mm
Short horizontal bottom members	:	2 nos. Length - 370 mm, MS angle 36 × 36 × 2.14 mm
Motor base angle	:	2 nos. Length - 280 mm, MS flat 36 × 36 × 2.2 mm
Slot on flat for motor	:	4 nos. 48.81 × 7.95 mm, c/c distance -118.79 mm
Holes on vertical frame for fixing Processing chamber	:	6 nos., one hole each on long vertical members with Φ 11.10 mm; 02 holes each on short vertical members with Φ11,10 mm

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Table – 4 Machine Parameters

Sl. No.	Parameters		
1	Speed of Motor, rpm	No Load	2980
		On Load	2935
2	Speed of shelling drum, rpm	No Load	1541, 1568
		On Load	1358, 1362
3	Noise Level in (dB)	No Load	On Load
	At 1 m distance	77.50	100.25
	At 4 m distance	69.70	90.68
4	Temperature (°C)	No Load	On Load
	Motor	39.80	45.60
	Feed cub	30.30	33.60
	Seed at output	29.80	31.90

Table –5 Data Sheet for TEST at LOAD

Item	1	2	3
Source of Power	Electric Motor		
Power rating (kw)	0.9	0.9	0.9
Type of Drive	Belt and Pulley		
Variety of Maze	Parjenta 7744		
Grain to cub ratio	0.92	0.93	0.88
Moisture content	6.8	7.6	8.1
Concave clearance (mm)	27.11 to 40	27.11 to 40	27.11 to 40
Atmospheric Temp (°C)	35	35	35
Humidity (%)	72	72	72
Atmospheric pressure (mm of Hg)	752.31	752.31	752.31

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Subrata Kr Mandal

9 Summary of Observation

9.1 Feeding is done manually and there is no feed regulator. Hence feed rate is dependent on the operator.

9.2 Moisture content of feed should be below 13.25% for better performance of the machine

9.3 Recommended feed rate is 10 q/h

9.4 Shelling efficiency is 99.98%.

9.5 Percent of unshelled grain is 0.04% at recommended feed rate.

9.6 Percent of cracked and broken grain is 0.05% at recommended feed rate which meets the performance requirement as per IS:7051-1973 (Reaffirmed 2012)

9.7 Total loss observed was 0.05% at recommended feed rate which meets the performance requirement as per IS:7051-1973 (Reaffirmed 2012)

9.8 Corrected output capacity observed is 755.12 kg/h.

9.9 Maximum diameter of cub that can (measured after shelling) be processed for better performance of the machine is 48.70 mm.

9.10 Feeding was needed to be uniform and maximum 3 to 4 cubs at a time for smooth as proper functioning of the machine.

10 COMMENTS & RECOMMENDATIONS

10.1 Operator manual should be provided as per IS: 8132 -1999.

10.2 Direction of rotation **MUST** be provided.

10.3 The machine is not provided with minimum cautionary notices as per IS:7051-1973 (Reaffirmed 2012). This **MUST** be provided.

10.4 Lever adjustment for small cub is difficult and to be looked into for corrective action.

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11 TECHNICAL LITERATURE

The following literatures are not provided by the applicant during the test along with the application form.

a. User's or service manual

b. Parts' catalogue

These manuals need to be provided as per IS: 8132-1999.

TESTING AUTHORITY

Report Prepared by	Sr. Technical Officer, CSIR-CMERI Farm Machinery Testing Centre	27/06/2024
Report Verified & Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	27.06.2024
Report Approved for release by	Head, Business Development Unit, CSIR-CMERI, Durgapur	Sudip Samanta 27/6/24

12 APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
12	10.1 to 10.4	It's ok corrective action will be taken.

CSIR - Central Mechanical Engineering Research Institute * Durgapur-713209 *

FARM MACHINERY TRAINING AND TESTING CENTRE CSIR-CMERI DURGAPUR