

प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट

INITIAL COMMERCIAL TEST REPORT

संख्या/No. CSIR/CMERI/FMTTC/2024/035

माह/Month: June, 2024

THIS TEST REPORT VALID UP TO

:

31st MAY, 2031



**BALWAAN POWER WEEDER
(MODEL: BP-650)**



कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र
Farm Machinery Training and Testing Centre
सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान
CSIR - Central Mechanical Engineering Research Institute

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CSIR/CMERI/FMTTC/2024/035	BALWAAN POWER WEEDER (MODEL: BP-650) (INITIAL COMMERCIAL TEST)
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4 SPECIFICATIONS

4.1 General

Type of machine	: Self-Propelled, Walk Behind Type
Make	: BALWAAN
Model	: BP 650
Serial No.	: 0004
Name and address of manufacturer	: Modish Tractor Aurkisan Pvt. Ltd. 17-C Sharma Colony, Extension. 22, Godam Industrial Area, Jaipur – 302006, Rajasthan
Year of manufacture	: 2023
Country of origin	: India

4.2 Details of prime mover

Name and address of manufacturer	: Modish Tractor Aurkisan Pvt. Ltd. 17-C Sharma Colony, Extension. 22, Godam Industrial Area, Jaipur – 302006, Rajasthan
Type	: Single Cylinder, Air Cooled, 4 Stroke, OHV, Spark Ignition Engine.
Make	: BALWAAN KRISHI
Model	: 170F
Sr. No.	: 23111300269
Country of origin	: India
Year of manufacture	: 2024
Engine speed (Manufacturer's recommended setting), (rpm)	
High idle speed*	: 2800
Low idle speed*	: 4000
Rated speed, (rpm)*	: 3600
No load engine speed for field operation, (rpm)	: 3940
Speed at maximum torque, rpm	: 3541
Max Torque Observed (Nm)	: 3.45 @ 3541 rpm
Rated Power Observed (kW)	: 4.0 (5.36 HP)
Max Power Observed (kW)	: 4.2 (5.63 HP)

CSIR/CMERI/FMTTC/2024/035	BALWAAN POWER WEEDER (MODEL: BP-650) (INITIAL COMMERCIAL TEST)
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Table 3: Chemical analysis of rotary blade

Elements	Requirement as per IS: 6690-1981 (%)	As observed (%)	Remarks
Carbon	0.50 to 0.60	0.157	Does not Confirm
Manganese	0.50 to 1.00	1.43	Does not Confirm
Silicon	1.50 to 2.00	0.373	Does not Confirm
Phosphorous	0.05 (Max.)	0.032	Conforms
Sulphur	0.05 (Max.)	0.015	Conforms

11 RUNNING IN

The Power weeder was run-in for one hour before field performance test as recommended by the applicant. All the fasteners were checked & tightened thereafter.

12 FIELD TEST

The field test under dry land condition was conducted for 21.08 hrs. The field performance tests were conducted at the rated 3600 rpm. Multiple test trials were conducted in sandy loam soil at the FMTTC, CSIR-CMERI farm, Durgapur. The results of the field test for dry land operation are summarized in Table-4. **Crop parameters:**

- i) Type of weed : Seasonal Grass
- ii) Height of weed, cm : 0.2 to 5

Table 4: Summary of field performance test

Sl. No.	Parameter	Range
i	Type of soil	: Sandy Loam
ii	Average Soil moisture (%)	: 12 to 15.3
iii	Average Bulk density of soil (g/cc)	: 1.6 to 1.9
iv	Average Speed of operation (kmph)	: 1.49 to 2.1
v	Average depth of cut (cm)	: 6.4 to 7.5
vi	Average Width of cut (m)	: 1.15 to 1.18
vii	Average Area covered (ha/h)	: 0.13 to 0.17
viii	Average Time required for one ha (Hr.)	: 5.9 to 8.0
ix	Average Fuel consumption	
	L/hr.	: 0.5 to 0.8
	L/ha	: 3.6 to 5.9
x	Average Weeding efficiency (%)	: 91.5 to 95.7
xi	Average Field efficiency (%)	: 67.1 to 82.9

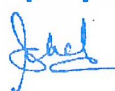
The detailed field performance testing data is given in Annexure I.

13 ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIRS

No noticeable breakdown occurred during test.

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CSIR/CMERI/FMTTC/2024/035	BALWAAN POWER WEEDER (MODEL: BP-650) (INITIAL COMMERCIAL TEST)
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23.	Depth control mechanism	Must be provided	Provided	Conforms
24.	Provision for transport Wheels	Must be provided	Provided	Conforms
25.	Provision for cover on Exhaust	Must be provided	Provided	Conforms
26.	Direction of exhaust emission away from Operator	Must be provided	Provided	Conforms
27.	Marking/labeling machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacturer, Serial number, Engine number, Engine HP, rated rpm & SFC.	Provided	Conforms
28.	Literature	Operator manual, service manual and Parts catalogue should be provided.	Provided	Conforms

16 COMMENTS & RECOMMENDATION

- 16.1** The amplitude of mechanical vibration marked as (*) under section 7, are on higher side. It is not just directly concerned with operator's health, safety and comfort, but also adversely affects the useful life of the components. It needs to be corrected.
- 16.2** Material of the blade does not confirm as per IS Standard. It needs to be looked into.
- 16.3** Material of the rotor shaft does not confirm as per IS Standard. It needs to be looked into.
- 16.4** Chemical analysis of the rotor blade does not confirm with the requirement as per IS: 6690-1981. It should be looked into.
- 16.5** Provision for handle Rotation is not provided in the machine. It needs to be provided.
- 16.6** The user's manual, parts catalogue and service manual are provided. But it needs to be updated as per IS:8132-1999.

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17 TECHNICAL LITERATURE

The following literatures are provided by the applicant during the test along with the application form.

- a) User's manual book
- b) Parts' catalogue
- c) Service manual

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

TESTING AUTHORITY

Report Prepared by	Sr. Technical Officer, CSIR-CMERI Farm Machinery Testing Centre	<i>Jalal</i> 28/06/2024
Report Verified & Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	<i>Subrata kr Mandal</i> 28.06.2024
Report Approved for release by	Head, Business Development Unit, CSIR-CMERI, Durgapur	<i>Judip Samanta</i> 28/6/24

18 APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
18	16.1 to 16.6	It's ok corrective action will be taken.



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Report prepared by

Jalal

Report verified by

Subrata kr Mandal