

प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट

**INITIAL COMMERCIAL TEST REPORT**

THIS TEST REPORT VALID UP TO

:

संख्या/No. CSIR/CMERI/FMTTC/2024/038

माह/Month: August, 2024

31<sup>st</sup> JULY, 2031



**BIRSA AGRO MACHINERY  
POWER WEEDER (MODEL: BPW-212P)**



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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**4 SPECIFICATIONS****4.1 General**

Type of machine	: Self-Propelled, Walk Behind Type
Make	: BIRSA AGRO MACHINERY
Model	: BPW-212P
Serial No.	: 2219166
Name and address of manufacturer	: BIRSA AGRO MACHINERY Dumka Road, Maheshpur, Pakur, Jharkhand, Pin- 816106
Year of manufacture	: 2024
Country of origin	: China

**4.2 Details of prime mover**

Name and address of manufacturer	: BIRSA AGRO MACHINERY Dumka Road, Maheshpur, Pakur, Jharkhand, Pin- 816106
Type	: Single Cylinder, Air Cooled, 4 Stroke, OHV, 25° Inclined Horizontal Shaft.
Make	: HWASDAN
Model	: 170F
Sr. No.	: *2403101134*
Country of origin	: China
Year of manufacture	: 2023
Engine speed (Manufacturer's recommended setting), (rpm)	
High idle speed	: 3800
Low idle speed	: 1400
Rated speed, (rpm)	: 3600
No load engine speed for field operation, (rpm)	: 3600
Speed at maximum torque, rpm	: 3603
Max Torque Observed (N-m)	: 10.1 @ 3603 rpm
Rated Power Observed (kW)	: 3.81
Max Power Observed (kW)	: 4.10

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**Table 4: Chemical analysis of rotary blade**

Elements	Requirement as per IS: 6690-1981 (%)	As observed (%)	Remarks
Carbon	0.50 to 0.60	0.50	Conforms
Manganese	0.50 to 1.00	0.93	Conforms
Silicon	1.50 to 2.00	0.198	<b>Does not Confirm</b>
Phosphorous	0.05 (Max.)	0.021	Conforms
Sulphur	0.05 (Max.)	0.0071	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 24.50 h. 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 : 0.8 to 9

**Table 5: Summary of field performance test**

Sl. No.	Parameter		Range
I	Type of soil	:	Sandy Loam
ii	Average Soil moisture (%)	:	14.1 to 17.2
iii	Average Bulk density of soil (g/cc)	:	1.53 to 1.72
iv	Average Speed of operation (kmph)	:	1.49 to 2.10
v	Average depth of cut (cm)	:	8.4 to 9.7
vi	Average Width of cut (m)	:	1.09 to 1.14
vii	Average Area covered (ha/h)	:	0.13 to 0.15
viii	Average Time required for one ha (Hr.)	:	6.9 to 7.6
ix	Average Fuel consumption		
		L/hr. :	0.9 to 1.0
		L/ha :	6.1 to 7.7
x	Average Weeding efficiency (%)	:	90.8 to 95.1
xi	Average Field efficiency (%)	:	65.1 to 90.9

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

### 13 ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIRS

No noticeable breakdown occurred during test.

<b>Farm Machinery Training and Testing Centre, CSIR-Central Mechanical Engineering Research Institute, Durgapur THIS REPORT IS VALID UPTO: 31<sup>ST</sup> JULY, 2031</b>	19 of 25
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**Report prepared by**

*[Signature]*

**Report verified by**

*[Signature]*



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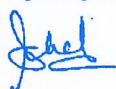
23.	Depth control mechanism	Must be provided	Provided	Conforms
24.	Provision for transport Wheels	Must be provided	Provided	Conforms
25.	Provision for cover on Exhaust	Must be provided	Provided	Conforms
26.	Direction of exhaust emission away from Operator	Must be provided	Provided	Conforms
27.	Marking/labeling 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** Chemical analysis of the rotor blade does not comply with the requirement as per IS: 6690-1981. It should be looked into.
- 16.4** Material of rotor shaft does not confirm as per the requirement of BIS standards. It needs to be looked into.
- 16.5** The user manual and service manual are provided. But it needs to be updated as per IS standards.

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**Report verified by**



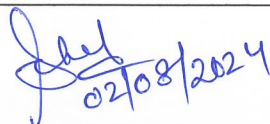
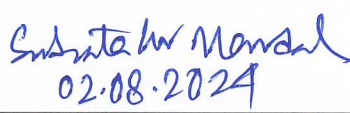
**17 TECHNICAL LITERATURE**

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	 02/08/2024
Report Verified & Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	 02.08.2024
Report Approved for release by	Head, Business Development Unit, CSIR-CMERI, Durgapur	 02/8/24

**18 APPLICANT'S COMMENTS**

Para No.	Our Reference	Applicant's Comments
18	16.1 to 16.5	Noted, corrective actions will be taken against the given Comments & Recommendations from 16.1 to 16.5

