

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: POWER WEEDER - 165/2984/2023  
माह/Month: April, 2023

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> April, 2028**



**SIMPSON, ISAM 800  
POWER WEEDER (COMMERCIAL)**



भारत सरकार

**Government of India**

कृषि एवं किसान कल्याण मंत्रालय

**Ministry of Agriculture and Farmers Welfare**

कृषि एवं किसान कल्याण विभाग

**Department of Agriculture and Farmers Welfare**

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

**Northern Region Farm Machinery Training and Testing Institute**

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**9. AIR CLEANER OIL PULL OVER TEST**

Not applicable as dry type air cleaner is provided on the machine.

**10. HARDNESS & CHEMICAL COMPOSITION OF BLADES:** Hardness & chemical analysis of primary element of the blade were carried out as per IS: 6690 -1981. The details of same are given in Table 3 & 4.

**10.1 Table 3 : Hardness of blades**

	Requirement as per IS: 6690-1981 (HRC)	Hardness (HRC) as observed	Remarks
At edge portion	56±3	55	Conforms
At shank portion	37 to 45	40	Conforms

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

Elements	Requirements as per IS: 6690-1981 (%)	Requirements as per IS: 6690-1981 (Boron 28Mncr B5) (%)	As observed (%)	Remarks
Carbon	0.50 to 0.60	0.24 to 0.30	0.760	Does not conform
Manganese	0.50 to 1.00	1.10 to 1.40	0.720	Conforms
Silicon	1.50 to 2.00	<0.40	0.211	Does not conform
Phosphorous	0.05 (Max.)	<0.025	0.012	Conforms
Sulphur	0.05 (Max.)	<0.035	0.002	Conforms

**11. RUNNING-IN**

The Power weeder was run-in for 1.08 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 22.66 h. The field performance tests were conducted at the 2500 rpm. In all, 4 tests trials were conducted in Red soil at the Thoraipakkam, Chennai. The results of the field test for dry land operation is summarized in Table-5

**Crop parameters**

- |                        |   |               |
|------------------------|---|---------------|
| i) Type of weed        | - | Seasonal weed |
| ii) Weight of weed, cm | - | 4.5 to 16.2   |

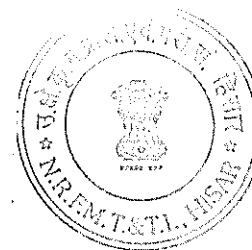


Table 5: SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameter		Range
i)	Type of soil	:	Red soil
ii)	Soil moisture, %	:	14.2 to 16.8
iii)	Bulk density of soil, g/cc	:	1.54 to 1.65
iv)	Speed of operation, kmph	:	1.49 to 1.69
v)	Depth of cut, cm	:	6.37 to 6.90
vi)	Width of cut, m	:	0.60 to 0.63
vii)	Area covered, ha/h	:	0.073 to 0.098
viii)	Time required for one ha	:	11.49 to 13.70
ix)	Fuel consumption		
		l/h :	0.87 to 1.04
		l/ha :	10.24 to 13.16
x)	Weeding efficiency, %	:	90 to 94
xi)	Field efficiency, %	:	74 to 85

**13. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR**

No noticeable breakdown occurred during test.

**14. COMPONENTS/ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR****14.1 Engine :**

The Engine and other assemblies were dismantled after 27.26 hours of operation.

**14.1.1 Cylinder :****Cylinder bore dia. (mm)**

Top Position		Middle position		Bottom Position		Max. permissible wear limit
Thrust	Non-thrust	Thrust	Non-thrust	Thrust	Non-thrust	
77.01	77.00	77.01	77.00	77.00	77.00	77.17

**14.1.2 Piston:****Piston diameter (mm)**

Top position		At Skirt			Max. permissible wear limit (mm)	
Thrust side	Non-thrust side	Thrust side	Non-thrust side	Piston to cylinder clearance (mm)	Piston dia. at skirt	Piston to cylinder clearance
76.56	76.55	76.95	Not measured due to piston design constraint	0.06	76.85	0.12

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19.	Provision for handle rotation	Must be provided	Provided	Conforms
20.	Provision for emergency stop of engine	Must be provided	Provided	Conforms
21.	Provision for easy start of engine	Must be provided	Provided	Conforms
22.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided	Provided	Conforms
23.	Depth control mechanism	Must be provided	Provided	Conforms
24.	Provision for transport wheels	Optional	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 manufacture, Serial number, Engine number, Engine HP, Rated rpm & SFC.	Country of origin is not provided.	<b>Partially conforms</b>
28.	Literature	Operator manual, service manual and parts catalogue should be provided.	Provided	Conforms

## 16. COMMENTS & RECOMMENDATIONS

### 16.1 Mechanical vibration

The amplitude of mechanical vibration marked as (\*) on the relevant chapter, are on drastically higher side. It is not just directly concerned with operator's health, safety and comfort, but also adversely affect the useful life of the components. In view of above, this deserve to be given top priority for corrective action.

**16.2** The grade of grease is not specified. It should be specified.

**16.3** The chemical composition of blades does not conform, to the requirements of IS:6690-1981. This needs to be looked into for corrective action. However the manufacturer has provided the superior quality of material i.es Boron (28MnCrB5).





**17. TECHNICAL LITERATURE**

The following literatures are provided by the applicant during the test.

- Operator manual
- Parts catalogue
- Service manual

However, the manuals need to be updated as per IS: 8132-1999.

**TESTING AUTHORITY**

SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 17.04.2023

**18. APPLICANT'S COMMENTS**

Sr. No.	Our Reference	Applicant Comments
18.1	16.1, 16.2 & 16.3	We have taken necessary corrective action.

