



**POWER WEEDER  
ASPEE, RT/DE-135**



भारत सरकार

**Government of India**

कृषि एवं किसान कल्याण मंत्रालय

**Ministry of Agriculture and Farmers Welfare**

कृषि, सहकारिता एवं किसान कल्याण विभाग

**Department of Agriculture, Cooperation and Farmers Welfare**

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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

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**[ISO 9001:2015 CERTIFIED]**

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10.2 Table 4 : Chemical analysis of rotary blade

Elements	Requirements as per IS: 6690-1996 (%)	As observed (%)	Remarks
1.	2.	3.	4.
Carbon	0.50 to 0.60	0.4530	<b>Does not conform</b>
Manganese	0.50 to 1.00	0.9989	Conforms
Silicon	1.50 to 2.00	0.3473	<b>Does not conform</b>
Phosphorous	0.05 (Max.)	0.0301	Conforms
Sulphur	0.05 (Max.)	0.0000	Conforms

## 11. FIELD TEST

The field tests under dry land condition were conducted for 25.71 h. (including running in and field adjustment time) The field tests were conducted at the full accelerator setting. In all, 6 test trials were conducted in sandy loam soil at the NRFMTTI farm, Hisar. The summary of the field test for dry land operation is represented in table-3.

## Crop parameters

- i) Type of weed - Seasonal weeds  
ii) Height of weed, cm - 19.8 to 23.63

Table 5: SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Average Soil moisture, %	:	1.4 to 3.5
iii)	Average Bulk density of soil, g/cc	:	1.31 to 1.44
iv)	Average Speed of operation, kmph	:	2.92 to 3.58
v)	Average depth of cut (cm)	:	6.8 to 6.9
vi)	Average Width of cut, m	:	1.04 to 1.19
vii)	Average Area covered, ha/h	:	0.196 to 0.286
viii)	Average Time required for one ha	:	2.81 to 5.10
ix)	Average Fuel consumption		
		l/h :	0.99 to 1.26
		l/ha :	3.03 to 5.41
x)	Average Weeding efficiency (%)	:	50.69 to 80.62
xi)	Average Field efficiency (%)	:	55.62 to 88.49





## 14. SUMMARY OF OBSERVATIONS, COMMENTS &amp; RECOMMENDATIONS

S. No.	Characteristics	Declaration	Observation	Whether within tolerance limit (Yes/No)
<b>14.1</b>	<b>Engine performance test</b>			
i)	Average rated power in rating test, kW	6.3	7.56	No
ii)	Specific fuel consumption at average rated power in rating test, g/kwh	Not specified	0.226	--
iii)	Governing test			
	Temporary speed change in percentage of rated speed.	Not specified	6.94	--
	Permanent change in speed in percentage of rated speed	Not specified	6.12	--
<b>14.2</b>	<b>Wear assessment</b>			
i)	Cylinder bore diameter	86.5(max.)	86.07	Yes
ii)	Clearance between piston & cylinder liner	0.28	0.14	--
iii)	Ring end gap			
	-Top ring	0.4	0.80	No
	-2 <sup>nd</sup> ring	0.5	2.61	No
	-oil ring	0.39	1.52	No
iv)	Ring groove clearance:			
	-Top ring	0.18	0.22	No
	-2 <sup>nd</sup> ring	0.19	0.22	No
	-Oil ring	0.16	0.35	No
v)	Clearance of big end bearing :			
	-Diametrical	0.2	0.04	Yes
	-Axial	0.65	0.50	Yes
vi)	Clearance of main bearing			
	-Diametrical	0.3	0.05	Yes
	-Crankshaft end float	0.7	0.08	Yes
<b>14.3</b>	<b>Safety requirements</b>			
i)	Provision of guards on moving parts other than rotary	--	Provided	Yes
ii)	Provision of guard for tilling component as per clause 5.2 of IS 15925-2012	--	Provided	Yes
iii)	Location and direction of exhaust emission to be away from the operator	--	Provided	Yes
iv)	Covers on hot parts	--	Provided	Yes
v)	Provision of parking stand with locking	--	Provided	Yes

vi)	Identification of controls	Shall have the direction and/or method of operation clearly identified by durable label or mark	Not provided	--
vii)	Marking/labels with Advice to read operator's manual Advice Wear eye and ear protection Cautionary information Safety signs near tines Distance warning for bystanders	--	Not provided	No
viii)	Pertinent instructions	Shall be provided as presented in Annex A of IS:15925-2012	Not provided	No

**14.4 The observed engine power does not meet the requirement of Indian Standard. It should be looked into.**

**14.5 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 deserved to be given top priority for corrective action.**

**14.6 Noise measurement**

Noise at operator's ear level and at bystander's position were observed near to and more than warning and danger limit of 95.8 dB(A) & 81.5 dB(A) respectively. Which exceed to warning and ILO for continuous exposure of 8 hours. **This calls for reduction in noise level to improve operator's comfort and safety.**

**14.7** Make and Model of governor is not mentioned. It MUST be mentioned.

**14.8** Make and Model of Air cleaner is not mentioned. It MUST be mentioned.

**14.9** Maximum permissible wear limit for valve guide to valve clearance is not provided. It must be mentioned for ensuring the proper repairs.

**14.10** Marking/labels with advice to read operator's manual/wear eye/ear protection/cautionary information/distance warning for bystanders are not provided. It MUST be provided.

**14.11** Pertinent instruction are not mentioned. It MUST be mentioned.

**14.12 The power weeder is not marked with the warning/recommendations to wear eye & ear protection or with the appropriate ISO hazard pictorial let alone prominently.**

**14.13** Ring end gap of all the three rings exceeds the limit than declared discard limit. This **MUST** be looked into.

**14.14** Ring grove clearance of all the three rings exceeds the limit than declared value. This **MUST** be looked into.



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14.14 Ring groove clearance of all the three rings exceeds the limit than declared value. This MUST be looked into.

- 14.15** Engine Sr. No. on engine and Sr. No. mentioned on labeling plates are different. This **MUST** be looked into for corrective action.
- 14.16** The oil pull over during air clearance oil pull over test was observed on higher side. It **MUST** be improved.
- 14.17 Rotor blades**
- i) The hardness of rotary blade does not meet the requirements of IS:6690-1981 (reaffirmed in 2002). This may be looked into at regular production level.**
  - ii) Carbon and silicon content of rotary blade does not meet the requirements as specified in IS:6690-1996.**
- 14.18 Field test**  
The oil from gear box leaked due to damage of gasket and the gasket was replaced with new one.
- 14.19 Ease of operation and handling**  
Considerable amount of difficulties were faced while turning the machine at the end of row. It **MUST** be looked into to improve ease of operation by the operator.
- 14.20 Maintenance/service problems**  
No noticeable maintenance/service problem observed during the test.
- 14.21 Miscellaneous**
- i) Spark arresting device is not provided in exhaust. It may be considered for providing.**

### **15. TECHNICAL LITERATURE**

- 1.** The operator's manual is provided by applicant during test. It should be updated as per IS 8132-1999.  
The following literature **MUST** be provided with power weeder
  1. Service manual
  2. Part's catalogue

### **TESTING AUTHORITY**

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report compiled by: V.S. Shinde, Senior Technical Assistant.