

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: POWER WEEDER-100/2539/2020

माह/Month: October, 2020

THIS TEST REPORT VALID UP TO : 31st OCTOBER, 2025



KISAN, HAIC-186 POWER WEEDER



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

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

Website: <http://nrfmtti.gov.in/>

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

12. FIELD TEST

The field tests under dry land condition were conducted for 27 h. (including running in and field adjustment time) The field tests were conducted at the rated 3500 rpm. In all, 5 tests 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 - Green weeds, grass & bathwa
- ii) Height of weed, cm - 1.2 to 64

Table 5: SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Average Soil moisture, %	:	14 to 18
iii)	Average Bulk density of soil, g/cc	:	1.52 to 1.64
iv)	Average Speed of operation, kmph	:	1.19 to 1.50
v)	Average depth of cut (cm)	:	5.22 to 6.44
vi)	Average Width of cut, m	:	1.06 to 1.12
vii)	Average Area covered, ha/h	:	0.115 to 0.146
viii)	Average Time required for one ha	:	6.85 to 8.70
ix)	Average Fuel consumption		
		l/h :	0.88 to 1.05
		l/ha :	6.03 to 8.43
x)	Average Weeding efficiency (%)	:	81 to 94
xi)	Average Field efficiency (%)	:	86 to 95

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 40 h of engine 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	
86.01	86.00	86.01	86.00	86.01	86.00	86.25

- 14.2 Valve guides and valve springs**
Valve spring stiffness, N/mm :
Inlet valve : 20.90
Exhaust valve : 20.55
- 14.3 Timing gears**
No noticeable defect observed.
- 14.4 Clutch**
No noticeable defect observed.
- 14.5 Transmission**
No noticeable defect observed.
- 14.6 Rotary drive unit**
No noticeable defect observed.

Discard limit

Not specified

14.7 Wear of blades:**14.7.1 Mass basis:**

The wear of the rotary weeder blades was measured after 27 hours of field operation and the observations are as under:

Sl. No.	Initial mass (g)	mass after 27 hrs.(g)	Loss of mass (g)	Percent wear (%)	Percent wear per hour
1	369.39	360.9	8.49	2.30	0.08
2	361.04	354.2	6.84	1.89	0.07
3	358.32	351.8	6.52	1.82	0.07
4	366.65	360.9	5.75	1.57	0.06
5	372.71	364.9	7.81	2.10	0.08
6	360.81	352.7	8.11	2.25	0.08
7	366.64	360.6	6.04	1.65	0.06
8	359.68	353.0	6.68	1.86	0.07

15. SUMMARY OF OBSERVATIONS

S. No.	Characteristics	Declaration	Observation	Whether within tolerance limit (Yes/No)
15.1	Engine performance test			
i)	Average Maximum Power in two hours max. power (kW)	5.8	6.84	Yes
ii)	Specific fuel consumption at average max. power in two hours max. power test, g/kWh	280	465	No
15.2	Wear assessment			
i)	Cylinder bore diameter	86.25	86.01	Yes
ii)	Clearance between piston & cylinder liner	Not specified	0.17	--

Power Weeder-100/2539/2020	KISAN, HAIC-186 POWER WEEDER (COMMERCIAL)
----------------------------	--

Sr. No.	Characteristics	Declaration	Tolerance (as per IS :13539-2008)	As observed	Whether within the tolerance limit (Yes/No)
1	2	3	4	5	6
15.4	Amplitude of mechanical vibration (microns) at :				
i)	Steering handle grips				
	Left	100 max.	--	8600*	No
	Right	100 max.	--	9100*	No
ii)	Clutch/brake lever	100 max.	--	6700*	No
iii)	Accelerator lever	100 max.	--	7900*	No

16. CRITICAL TECHNICAL SPECIFICATIONS

Deferred till 31.12.2020 vide Ministry O.M. No 13-13/2020 M&T, (I&P) dated 24.04.2020

17. COMMENTS & RECOMMENDATIONS

17.1 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 deserved to be given top priority for corrective action.

17.2 Make of fuel injection pump is not mentioned. It **MUST** be specified.

17.3 Make and model of fuel injector is not mentioned. It **MUST** be specified.

17.4 Make & Model of governor is not specified. It **MUST** be specified.

17.5 Maximum permissible wear limit for piston to cylinder clearance is not provided. It **MUST** be mentioned for ensuring the proper repairs.

17.6 The specific fuel consumption at Max. rated power in 2 hours Max. Power test was observed more than 66.1 % of the declare value. It **MUST** be looked into.

17.7 The power observed during engine performance test is 17.9% less than the value declared by the applicant. It **MUST** be looked into.

17.8 Maximum permissible wear limit for valve guide to valve clearance is not specified. It **MUST** be specified for ensuring the proper repairs.

17.9 Discard limit for valve spring stiffness not specified. It **MUST** be specified.

17.10 The chemical composition of blades does not conform, in toto, to the requirements of IS: 6690-1981. This needs to be looked into for corrective action

17.11 The hardness of blades does not conform to the requirements of IS: 6690-1981. This needs to be looked into for corrective action

17.12 The air cleaner oil pull over was observed on higher side. It should be looked in to.

17.13 Pertinent instructions are not mentioned. It **MUST** be mentioned.



- 17.14 Spark arresting device is not provided. It **MUST** be provided
- 17.15 Rotor shaft material is not specified. It **MUST** be specified.
- 17.16 A suitable labeling plate needs to be riveted with interlaid following instruction-
1. Name and address of manufacturers & applicant
 2. Country of origin
 3. Make
 4. Model
 5. Year of manufacture
 6. Serial number
 7. Engine number
 8. Engine HP
 9. Rated rpm
 10. SFC

18. TECHNICAL LITERATURE

One booklet entitled "Operation and Maintenance manual" was provided for reference during test. The same, however, needs to be updated as per IS-8132-1999.

i) Parts catalogue should be provided.

TESTING AUTHORITY

RINKU PRASAD GUPTA TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

Test Report compiled by Manoj Sharma, B. Tech (Ag. Engg)

19. APPLICANT'S COMMENTS

No Specific comments received from the applicant.

