

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: POWER WEEDER-103/2544/2020

माह/Month: October, 2020

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



**SPRAYMAN, SCS-1000GX
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

11. RUNING IN

In the agreement with applicant's representative the Power weeder was run-in for 10 (with rotor in standing position) hour before the actual test. All the fastness was checked tightened thereafter.

12. FIELD TEST

The field tests under dry land condition were conducted for 26 h. (including running in and field adjustment time) The field tests were conducted at the rated 3600 rpm. In all, 6 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 - Seasonal weeds
ii) Height of weed, cm - 07 to 44

Table 5: SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Average Soil moisture, %	:	04 to 16
iii)	Average Bulk density of soil, g/cc	:	1.595 to 1.790
iv)	Average Speed of operation, kmph	:	1.36 to 3.12
v)	Average depth of cut (cm)	:	4.78 to 5.56
vi)	Average Width of cut, m	:	0.65 to 0.82
vii)	Average Area covered, ha/h	:	0.081 to 0.172
viii)	Average Time required for one ha	:	5.81 to 12.29
ix)	Average Fuel consumption		
		l/h :	1.08 to 1.68
		l/ha :	9.53 to 13.91
x)	Average Weeding efficiency (%)	:	70 to 93
xi)	Average Field efficiency (%)	:	67 to 83

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 41h of engine operation.

14.1.1 Cylinder :

Cylinder bore dia. (mm)						Max. permissible wear limit
Top Position		Middle position		Bottom Position		
Thrust	Non-thrust	Thrust	Non-thrust	Thrust	Non-thrust	
68.03	68.03	68.02	68.01	68.00	68.00	68.165

14.2 Valve guides and valve springs**Discard limit**

Valve spring stiffness, N/mm :

Inlet valve : 4.63

Exhaust valve : 5.00

Not specified.**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.

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

The wear of the rotary weeder blades was measured after 26.88 hrs. 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	323.14	316.4	6.74	2.09	0.08
2	316.67	311.2	5.47	1.73	0.06
3	317.68	309.8	7.88	2.48	0.09
4	323.90	316.7	7.20	2.22	0.08
5	327.05	319.9	7.15	2.19	0.08
6	324.13	316.7	7.43	2.29	0.09

15. SUMMARY OF OBSERVATIONS

S. No.	Characteristics	Declaration	Tolerance (as per IS :13539-2008)	As observed	Whether within the tolerance limit (Yes/No)
1	2	3	4	5	6
15.1	Engine performance test				
i)	Average rated power in rating test, kW	3.7	± 5 %	3.69	Yes
ii)	Specific fuel consumption at average rated power in rating test, g/kwh	400	± 5 %	389	Yes
iii)	Governing test		Tolerance (as per IS :7347-1974)		

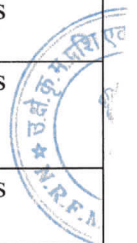
iv)	Momentary speed change in percentage of rated speed.	-	For class-1 governing- 12% (Max) and class-2 governing- 15% (Max)	6.22	Yes
v)	Permanent change in speed in percentage of rated speed		For class-1 governing- 6% (Max) and class-2 governing- 10% (Max)	5.42	Yes

15.2 Wear assessment

S. No.	Characteristics	Declaration	As observed	Whether within the tolerance limit (Yes/No)
i)	Cylinder bore diameter	68.165	68.03	Yes
ii)	Clearance between piston & cylinder liner	0.12	0.08	Yes
iii)	Ring end gap			
	-Top ring	1.00	0.50	Yes
	-2 nd ring	1.00	2.35	No
	-oil ring	--	Not measured due to ring design constraint	--
iv)	Ring groove clearance:			
	-Top ring	0.15	0.09	Yes
	-2 nd ring	0.15	0.07	Yes
	-Oil ring	--	Not measured due to ring design constraint	--
v)	Clearance of big end bearing :			
	-Diametrical	0.12	0.1	Yes
	-Axial	1.1	0.30	Yes
vi)	Clearance of main bearing			
	-Diametrical	Ball bearing Provided both side		--
	-Crankshaft end float			--

15.3 Safety requirements

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	Provided	Yes
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	--	Provided	Yes
viii)	Pertinent instructions	Shall be provided as presented in Annex A of IS:15925-2012	Not provided	No

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.	--	254	No
	Right	100 max.	--	430	No
ii)	Clutch/brake lever	100 max.	--	880	No
iii)	Accelerator lever	100 max.	--	465	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 Discard limit for valve spring stiffness is not specified. It **MUST** be specified.
- 17.3 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.
- 17.4 The hardness of blades does not conform in toto, to the requirements of IS: 6690-1981. This needs to be looked into for corrective action.
- 17.5 Discard limit of air cleaner oil pull over is not specified It must be specified.
- 17.6 Pertinent instructions are not mentioned. It **MUST** be mentioned.
- 17.7 Make & model of governor is not specified. It **MUST** be specified.
- 17.8 The piston ring end gap of 2nd ring has exceeded the discard limit. It should be looked into.
- 17.9 A suitable labeling plate needs to be provide with interlaid following instruction-
1. Name and address of manufacturers & applicant
 2. Country of origin
 3. Make
 4. Model
 5. Year of manufacture
 6. Engine No.
 7. Serial No.
 8. Engine HP
 9. Rated rpm
 10. SFC

18. TECHNICAL LITERATURE

No Technical literature provided by the applicant during the test
The following literature, therefore, **MUST** be provided as per IS: 8132-1999 for guidance of users.

- i) Operator's manual
- ii) Service manual
- iii) Part's catalog

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 comments received from the applicant.

