

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: POWERWEEDER-99/2511/2020

माह/Month: September, 2020

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> SEPTEMBER, 2025**



**KISANKRAFT, KK- SRT -910DE  
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

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**12. RUNNING IN**

In the agreement with applicant's representative the Brush cutter was run-in for 0.78 hour before the actual test. All the fastness was checked tightened thereafter.

**13. FIELD TEST**

The field tests under dry land condition were conducted for 26.75 h. (including running in and field adjustment time) The field tests were conducted at the rated 3600 rpm at crank shaft. In all, 5 tests trials were conducted in sandy loam soil at the NRFMT&TI farm, Hisar. The summary of the field test for dry land operation is represented in table-3.

**Crop parameters**

- |     |                    |   |                       |
|-----|--------------------|---|-----------------------|
| i)  | Type of weed       | - | Grass weeds & Bathuwa |
| ii) | Height of weed, cm | - | 1.5 to 41.00          |

**Table 5: SUMMARY OF FIELD PERFORMANCE TEST**

Sl. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Average Soil moisture, %	:	15.3 to 21.00
iii)	Average Bulk density of soil, g/cc	:	1.565 to 1.625
iv)	Average Speed of operation, kmph	:	1.05 to 1.15
v)	Average depth of cut (cm)	:	5.53 to 6.22
vi)	Average Width of cut, m	:	0.68 to 0.78
vii)	Average Area covered, ha/h	:	0.066 to 0.076
viii)	Average Time required for one ha	:	13.09 to 15.27
ix)	Average Fuel consumption		
		l/h :	0.79 to 0.96
		l/ha :	11.29 to 13.37
x)	Average Weeding efficiency (%)	:	93 to 96
xi)	Average Field efficiency (%)	:	80 to 93

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

No noticeable breakdown occurred during test.

**15. COMPONENTS/ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR****15.1 Engine :**

The Engine and other assemblies were dismantled after 37 hrs of engine operation.

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

Top Position		Middle position		Bottom Position		Max. permissible wear limit
Thrust	Non-thrust	Thrust	Non-thrust	Thrust	Non-thrust	
86.03	86.02	86.04	86.02	86.04	86.02	86.10

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<b>15.1.2 Piston:</b>						
<b>Piston diameter (mm)</b>						
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
85.48	85.53	85.93	Not measured due to piston design constraint	0.10	85.88	0.15

**15.1.3 Piston Rings end gap:**

Ring No.	Ring end gap (mm)			Max. permissible wear limit
	At top	At middle	At bottom	
1 <sup>st</sup> compression ring	0.30	0.35	0.35	0.50
2 <sup>nd</sup> compression ring	0.45	0.45	0.45	0.50
Oil ring	0.35	0.40	0.40	0.60

**15.1.4 Big end bearing**

Dia. of crank pin(mm)	Dia. of bearing (mm)	Clearance (mm)		Max. permissible wear limit (mm)	
		Diametrical	Axial	Diametrical	Axial
40.06	39.97	0.09	0.35	0.15	0.45

**15.1.5 Main bearing of crank shaft:**

Sr. No.	Dia. of main journal(mm)	Dia. of main bearing (mm)	Diametrical Clearance of main bearing	End float of crank shaft	Max. permissible wear limit (mm)	
					Diametrical	End float of crank shaft
1	40.01	40.07	0.06	Ball bearing provided	0.12	--

**Ball bearing is provided at flywheel side**

**15.1.6 Piston Rings side clearance:**

Ring No.	Ring side clearance (mm)	Max. permissible wear limit, mm
1 <sup>st</sup> compression ring	0.05	0.15
2 <sup>nd</sup> compression ring	0.04	0.15
Oil ring	0.03	0.15

**15.1.7 Valve guide clearance:**

Valve guide diameter(mm)		Valve stem diameter (mm)		Valve guide clearance (mm)		Max. Permissible wear limit (mm)	
Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust
6.99	6.99	6.97	6.96	0.03	0.02	0.066	

**15.2 Valve guides and valve springs**

Valve spring stiffness, N/mm :

Inlet valve : 17.96	<b>Discard limit</b> 1.35 N/mm.
Exhaust valve : 18.75	



**15.3 Timing gears**

No noticeable defect observed.

**15.4 Clutch**

No noticeable defect observed.

**15.5 Transmission**

No noticeable defect observed.

**15.6 Rotary drive unit**

No noticeable defect observed.

**15.7 Wear of blades:****15.7.1 Mass basis:**

The wear of the rotary weeder blades was measured after 27.53 hours of field operation and the observations are as under:

Sl. No.	Initial mass (g)	Mass after 27.53 hrs.(g)	Loss of mass (g)	Percent wear (%)	Percent wear per hour
1	223.7	219.0	4.7	2.10	0.08
2	209.5	205.7	3.8	1.81	0.07
3	224.5	220.3	4.2	1.87	0.07
4	231.0	226.8	4.2	1.82	0.07
5	239.1	234.4	4.7	1.97	0.07
6	223.1	219.0	4.1	1.84	0.07
7	230.8	226.9	3.9	1.69	0.06
8	225.2	221.7	3.5	1.55	0.06

**16. SUMMARY OF OBSERVATIONS**

S. No.	Characteristics	Declaration	Observation	Whether within tolerance limit (Yes/No)
<b>16.1</b>	<b>Engine performance test</b>			
i)	Average Maximum Power in two hours max. power (kW)	6.0	6.64	Yes
ii)	Specific fuel consumption at average max. power in two hours max. power test, g/kWh	420	370	No
<b>16.2</b>	<b>Wear assessment</b>			
i)	Cylinder bore diameter	86.10	86.04	Yes
ii)	Clearance between piston & cylinder liner	0.15	0.11	Yes
iii)	Ring end gap			
	-Top ring	0.50	0.35	Yes
	-2 <sup>nd</sup> ring	0.50	0.45	Yes
	-oil ring	0.60	0.40	Yes
iv)	Ring groove clearance:			
	-Top ring	0.15	0.05	Yes
	-2 <sup>nd</sup> ring	0.15	0.04	Yes
	-Oil ring	0.15	0.03	Yes

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v)	Clearance of big end bearing :			
	-Diametrical	0.15	0.09	Yes
	-Axial	0.45	0.35	Yes
vi)	Clearance of main bearing			
	-Diametrical	0.12	0.06	Yes
	-Crankshaft end float	Ball bearing Provided at flywheel side		--
<b>16.3 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	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	<b>Not provided</b>	<b>No</b>



Sr. No.	Characteristics	Declaration	Tolerance (as per IS :13539-2008)	As observed	Whether within the tolerance limit (Yes/No)
<b>16.4</b>	<b>Amplitude of mechanical vibration (microns) at :</b>				
i)	Steering handle grips				
	Left	100 max.	--	288	No
	Right	100 max.	--	296	No
ii)	Clutch/brake lever	100 max.	--	376	No
iii)	Accelerator lever	100 max.	--	254	No

### 17. CRITICAL TECHNICAL SPECIFICATIONS

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

### 18. COMMENTS & RECOMMENDATIONS

#### 18.1 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 affects the useful life of the components. In view of above, this deserved to be given top priority for corrective action.

18.2 Provision for emergency stop of engine is not provided. It **MUST** be provided

18.3 The specific fuel consumption at average max. power in 2 hours max power test was observed more than 11.9 % of the declare value. It **MUST** be looked into.

18.4 The power observed during engine performance test is 9.6% more than the value declared by the applicant. It **MUST** be looked into.

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

18.6 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.

18.7 Year of manufacture of prime mover is not specified. It **MUST** be specified.

18.8 Spark arresting device is not provided. It should be provided.



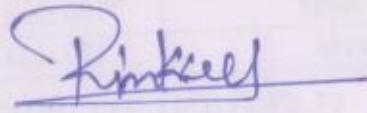
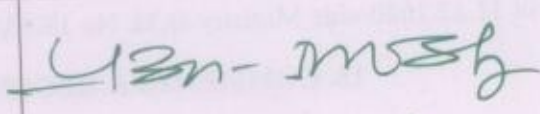
### 19. TECHNICAL LITERATURE

The following literature is provided by applicant.

(a) User manual cum Part's catalogue.

However the same needs to be updated as per IS 8132-1999.

### TESTING AUTHORITY

RINKU PRASAD GUPTA TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

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

### 20. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant comments
20.1	18.1	We will take corrective action on meet the requirement of Indian Standard.
20.2	18.2	We will take corrective action against the same
20.3	18.3	We will be follow-up with the issue with manufacture and we will take corrective action.
20.4	18.4	We will take corrective action against the same
20.5	18.5	We will take corrective action against the same
20.6	18.7	We will take corrective action
20.7	18.8	We will take corrective action against the same

