

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: POWER WEEDER - 172/3019/2023

माह/ Month: May, 2023

THIS TEST REPORT VALID UP TO : 31st May, 2028



**ROYAL KISSAN, RK170F
POWER WEEDER**



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

ट्रेक्टर 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

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Background noise level dB(A)	: 52.1
Atmospheric conditions	
Temperature, °C	: 37.1
Pressure, kPa	: 99.58
Relative humidity, %	: 11.9
Wind velocity, m/sec	: 0.4 to 1.1
Observed noise level dB(A)	: 86.2

9. AIR CLEANER OIL PULL OVER TEST

Not applicable as the machine is having dry type Air cleaner

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 2 & 3.

10.1 Table 2: Hardness of blades

	Requirement as per IS: 6690-1981 (HRC)	Hardness (HRC) as observed	Remarks
At edge portion	56 ± 3	38.2 (Average)	Does not conform
At shank portion	37 to 45	41.8 (Average)	Conforms

10.2 Table 3: Chemical analysis of rotary blade

Elements	Requirements as per IS: 6690-1981 (%)	As observed (%)	Remarks
Carbon	0.50 to 0.60	0.47	Does not conform
Manganese	0.50 to 1.00	0.84	Conforms
Silicon	1.50 to 2.00	2.24	Does not conform
Phosphorous	0.05 (Max.)	0.04	Conforms
Sulfur	0.05 (Max.)	0.04	Conforms

11. RUNNING IN

The power weeder was run-in for 1.00 hours before field performance test as recommended by the applicant. All the fasteners were checked and tightened thereafter.

12. FIELD TEST

The field tests under dry land condition were conducted for 25.33 hours. The field performance tests were conducted at 3200 no load engine rpm. In all, 5 tests trials were conducted in sandy loam soil at the NRFMTTI farm, Hisar. The result of the field test for dry land operation is summarized in table-6.

Crop parameters

- | | | |
|------------------------|---|----------------|
| i) Type of weed | - | Seasonal weeds |
| ii) Height of weed, cm | - | 10 to 22 |



Table 6: SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Soil moisture, %	:	10.6 to 12.1
iii)	Bulk density of soil, g/cc	:	1.69 to 1.80
iv)	Speed of operation, kmph	:	2.29 to 2.58
v)	Depth of cut, cm	:	7.67 to 8.33
vi)	Width of cut, m	:	1.02 to 1.08
vii)	Area covered, ha/h	:	0.198 to 0.248
viii)	Time required for one ha	:	4.35 to 5.34
ix)	Fuel consumption		
		l/h :	0.93 to 1.08
		l/ha :	4.17 to 5.24
x)	Weeding efficiency, %	:	91.30 to 94.87
xi)	Field efficiency, %	:	79.92 to 85.08

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 35.08 hours 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	
70.02	70.02	70.02	70.02	70.02	70.02	70.30
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
69.96	69.97	69.94	Not measured due to piston design constraint	0.08	72.65	0.40



14	Thickness of rotor blade, mm	5 (min.)	5.5	Cenforms
15	Material of blade	Boron (28MnCrB5) / High carbon steel EN 42j	High carbon steel	Cenforms
16	Hardness of blade, HRC	38 (min.)	48.7 (Average)	Cenforms
17	Shape of rotor blade	C / J shape	J shape	Cenforms
18	Provision for handle height adjustment	Must be provided	Provided	Cenforms
19	Provision for handle rotation	Must be provided	Provided	Cenforms
20	Provision for emergency stop of engine	Must be provided	Provided	Cenforms
21	Provision for easy start of engine	Must be provided	Provided	Cenforms
22	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided	Provided	Cenforms
23	Depth control mechanism	Must be provided	Provided	Cenforms
24	Provision for transport wheels	Must be provided	Provided	Cenforms
25	Provision for cover on exhaust	Must be provided	Provided	Cenforms
26	Direction of exhaust emission away from operator	Must be provided	Provided	Cenforms
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 manufacturer, Serial number, Engine number, Engine HP, rated rpm & SFC.	Provided	Cenforms
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 deserved to be given top priority for corrective action.



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



17. TECHNICAL LITERATURE

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

- i) Operator's manual
- ii) Parts catalogue
- iii) Service manual

However, the manual needs to be updated as per IS: 8132-1999.

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 09.05.2023

Test report is compiled by Sh. Vikram, Senior Technician.

18. APPLICANT'S COMMENTS

No specific comments received from the applicant.

