

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: IMP-1074/3079/2023
माह/Month: September, 2023

THIS TEST REPORT VALID UP TO : 30th September, 2030



**JAMNA, JAIHDRC-13, (13 TINE RIGID CULTIVATOR)
TRACTOR MOUNTED**



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
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6. RUNNING-IN

The cultivator was run-in for 1.25 hours in the field.

7. FIELD PERFORMANCE TEST

The field test of the cultivator was conducted for 26.57 hours in different soil moisture conditions to assess the performance of the implement.

The no load engine speed of prime mover was maintained as 1700 rpm and the observations are summarized in Table-3.

Summary of field performance test**Table-3**

Sr. No.	Parameters	Range
1.	Prime mover	Swaraj 969 FE
2.	Gear used	M-3
3.	Type of soil	Sandy loam
4.	Soil moisture (%)	11.3 to 11.8
5.	Engine speed (rpm)	
	No load	1700
	On load	1610 to 1650
6.	Bulk density of soil (g/cc)	1.61 to 1.69
7.	Speed of operation (kmph)	5.01 to 5.38
8.	Depth of cut (cm)	12.0 to 14.0
9.	Width of operation (cm)	274 to 275
10.	Wheel slippage (%)	5.00 to 9.72
11.	Area covered (ha/h)	1.092 to 1.224
12.	Time required for one hectare (h)	0.84 to 0.92
13.	Field efficiency (%)	78.64 to 81.41
14.	Fuel consumption	
	l/h	7.12 to 7.50
	l/ha	5.95 to 6.70
15.	Implement draft (kgf)	426 to 944

7.1 Rate of work

- Average rate of work in sandy loam was recorded as 1.092 to 1.224 ha/h at the forward speed of 5.01 to 5.38 kmph.

- Average time required to cover one hectare area was recorded as 0.84 to 0.92 h.

7.2 Quality of work

- Average depth of operation was recorded as 12.00 to 14.00 cm.

- Average field efficiency was recorded as 78.64 to 81.41 %.

7.3 Draft requirement

The average draft requirement was ranged from 426 to 944 kgf.



7.4 Wear analysis of shovel**7.4.1 On mass basis**

Sr. No.	Initial mass (g)	Final mass (g)	Percentage of wear	
			After 26.57 hrs.(%)	Per hour (%)
1.	731.9	712.4	2.66	0.10
2.	710.5	692.3	2.56	0.09
3.	728.9	710.8	2.48	0.09
4.	741.8	723.7	2.44	0.09
5.	731.5	712.4	2.61	0.10
6.	749.9	731.6	2.44	0.09
7.	731.2	713.1	2.47	0.09

8. EASE OF OPERATION AND ADJUSTMENT

No noticable difficulty was observed during the operation and adjustment of cultivator.

9. DEFECTS, BREAKDOWN AND REPAIRS

No noticeable defect occurred in the cultivator during the test.

10. CRITICAL TECHNICAL SPECIFICATION

(Vide Ministry's communication No. 13-9/2019 M & T (I&P) dated 26.04.2019)

Sr. No	Parameters	Specification	Observed	Remarks
1.	Type	Rigid or spring loaded	Rigid type	Conforms
2.	Hitch type	Three point linkage CAT-1/CAT-II	CAT-II	Partially conforms
3.	No. of tine	5, 7, 9,11 or 13 (11 and above preferably folding)	13	Conforms
4.	Working width, m	0.8 (Min.) 1.05 (Min.) 1.35 (Min.) 1.65 (Min.) 1.95 (Min.)	2.74 2.74 2.74 2.75 2.75	Conforms
5.	Row to row spacing between tine, mm	Adjustable, preferably in steps of 250 mm	256 mm	Conforms
6.	Frame	Rigid and strong	Rigid	Conforms
7.	Type of working tool	Reversible shovel, sweep and triangular shovel	Reversible shovel	Conforms
8.	Material of tine	High carbon steel for spring loaded & M.S. for rigid type	M.S	Conforms
	Thickness of tine, mm	22 (Min.) & 25 (Max.)	23.2 mm	Conforms
9.	Material of shovel	High carbon steel	High carbon steel	Conforms
10.	Hardness of shovel and sweep, HRC	Min. 36-45	43 to 44	Conforms
11.	Centre to centre distance tool bar, mm	450 (Min.)	456	Conforms

12.	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacture, Country of Origin, Make, Model, Year of manufacture, Serial Number, Type, Size, required of prime mover (kW)	Provided	Conforms
13.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

11. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 11.1** Average rate of work in sandy loam was recorded as 1.092 to 1.224 ha/h at the forward speed of 5.01 to 5.38 kmph. Average time required to cover one hectare area was recorded as 0.84 to 0.92 h.
- 11.2** Average depth of operation was recorded as 12.00 to 14.00 cm. Average field efficiency was recorded as 78.64 to 81.41 %.
- 11.3** The average draft requirement was ranged from 426 to 944 kgf.

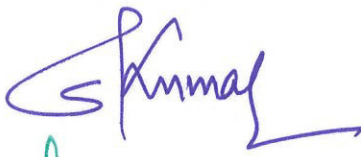
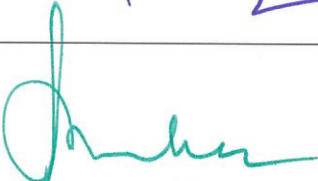
12. TECHNICAL LITERATURES

The following literatures were provided by the applicant during the field test.

1. Operators manual
2. Service manual
3. Parts catalogue

However, the manuals need to be updated as per IS 8132:1999.

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 14.09.2023

13. APPLICANT'S COMMENTS

No specific comments received from the applicant.