

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: ROTAVATOR- 372/2878/2022
माह/Month: August, 2022

THIS TEST REPORT VALID UP TO : 31st August, 2029



**JAMNA, JAIM4SR-5.5
ROTARY TILLER (ROTAVATOR)
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. FIELD PERFORMANCE TEST

The field tests of the rotavator comprising of dry land and wet land operations were conducted for 26.95 and 10.50 hours respectively to assess the performance test which is reported in **Annexure-I & II** for dry land and wet land operation, respectively.

Observations of field performance test is summarized in the ensuing table:-

Summary of Field Performance Test

Sl. No.	Parameters/operations	Dry land operation	Wet land operation (Puddling)
I	II	III	IV
1.	Tractor used	Swaraj 744 XT	
2.	Gear used	L-1	L-1
3.	Type of soil	Sandy loam	
4.	Average soil moisture (%)	14.50 to 16.80	--
5.	Average depth of standing water (cm)	--	14.67 to 14.77
6.	Bulk density of soil (g/cc)	1.52 to 1.67	--
7.	Average speed of operation (kmph)	2.23 to 2.28	2.11 to 2.13
8.	Avg. travel reduction (%)	--	0.58 to 0.92
9.	Avg. wheel slip (%)	-0.34 to -1.71	--
10.	Average depth of puddle (cm)	--	14.37 to 15.80
11.	Average depth of cut (cm)	10.46 to 11.34	--
12.	Avg. effective width (cm)	165 to 168	--
13.	Area covered (ha/h)	0.292 to 0.331	--
14.	Time required for one ha (h)	3.02 to 3.42	--
15.	Field efficiency (%)	77.45 to 87.80	--
16.	Puddling index (%)	--	78.06 to 79.70
17.	Fuel consumption		
		l/h	4.23 to 4.91
		l/ha	13.51 to 16.11
18.	Avg. PTO power consumption, kW	15.05	

6.1 Dry land operation**6.1.1 Rate of work**

- i) The rate of work was recorded 0.292 to 0.331 ha/h, and the speed of operation varied from 2.23 to 2.28 kmph.
- ii) The time required to cover one hectare was recorded as 3.02 to 3.42 h.

6.1.2 Quality of work

- i) The depth of operation was recorded as 10.46 to 11.34 cm.
- ii) Average effective width was observed as 165 to 168 cm.
- iii) Field efficiency was observed as 77.45 to 87.80 %.

6.2 Wet Land operation**6.2.1 Quality of work**

- i) The depth of puddle was recorded as 14.37 to 15.80 cm.
- ii) The puddling index was recorded as 78.06 to 79.70 %.

6.3 Labour requirement

In all, two skilled operators are needed to ensure continuous operation of rotavator for day long period.

6.4 Wear analysis (on mass basis)

Wear of hatchet blades (on mass basis) was measured and recorded in ensuing table:

Percentage wear of rotavator blades on mass basis

Sl. No.	Initial mass of blade (g)	Mass of blade after 38.87 hr. of operation (g)	Difference of weight (g)	Percentage of wear (%) after 38.87 hr.	Percentage of wear on hour basis (%)
1.	959.3	929.1	30.2	3.14	0.08
2.	966.6	944.8	21.8	2.26	0.06
3.	964.0	931.5	32.5	3.37	0.09
4.	970.4	944.8	25.6	2.64	0.07
5.	976.9	943.7	33.2	3.40	0.09
6.	978.4	952.0	26.4	2.70	0.07
7.	980.4	952.3	28.1	2.87	0.07

7. EFFECTIVENESS OF SEALINGS

After completion of wet land operation for 10.50 hours, the rotavator was dismantled for checking the effectiveness of sealing provided against ingress of dust, and water/mud in various sub-assemblies/components. The observations are given in ensuing table:-

Sl. No.	Location	Whether ingress of mud and/or water was observed (Yes/No)
1.	Primary reduction gear box	No
2.	Secondary reduction gear box	No
3.	Rotor assembly (hub)	No

8. EASE OF OPERATION & ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of rotavator

9. DEFECTS, BREAKDOWN AND REPAIRS

No defect observed during the test.

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

Note: The implementation of critical technical specifications has been deferred till 30.09.2022 vide Ministry's O.M No. 13-1/2021- M&T (I&P) dated 03.02.2022.



12. COMMENTS AND RECOMMENDATIONS

12.1 The Dimension of PIC of Implement does not conform, in toto, to the requirements of IS: 4931-1995 and therefore, it may be looked into for corrective action.

12.2 Technical Literature:

One booklet entitled "Operator manual, service manual cum parts catalogue" was provided for reference during test. The same, however, needs to be updated as per IS:8132-1999.

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 18.08.2022

The test report is compiled by Er. Dharmendra Kumar, Technical Assistant

13. APPLICANT'S COMMENTS

Para no.	Our reference	Applicants comments
13.1	12.1	The dimension of PIC will be taking care in our regular production.