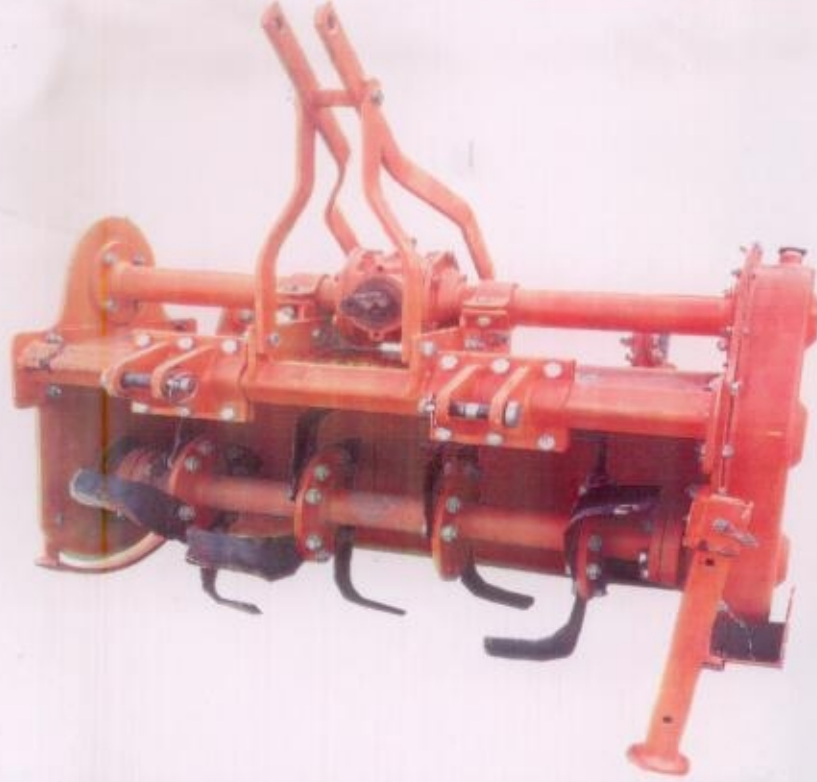


ब्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: ROTAVATOR-286/2525/2020

माह/Month : September, 2020

THIS TEST REPORT VALID UP TO : 30th SEPTEMBER, 2027



**SONALIKA, SLSSMR-3.0 ROTAVATOR
(TRACTOR MOUNTED)**



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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ROTAVATOR-286/2525/2020	SONALIKA, SLSSMR-3.0 ROTAVATOR (TRACTOR MOUNTED) (COMMERCIAL)
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4.11 Lubricants:

Sl. No.	Particulars	As recommended by the manufacturer	As used during test
1	Primary Gear box	EP-140	Oil originally filled in the rotavator was not changed
2	Secondary Gear box	EP-140	
3	Rotor Hub	EP-140	
4	Propeller Shaft	Not specified	M.P. Grease

5. RUNNING – IN

Rotavator was run in for 0.93 hour before field performance test.

6. LABORATORY TEST

6.1 Hardness: - The surface hardness of blade was recorded as under: -

Description	As per IS: 6690:1981 (HRC)	Hardness as observed (HRC)	Remarks
Edge portion	53 to 59	48.9	Does not conform
On shank portion	37 to 45	52	Does not conform

6.2 Chemical composition

The chemical composition of blades is tabulated as under:-

Constituents	As per IS: 6690-1981		Composition as observed (% of weight)	Remarks
	Carbon Steel	Silicon Manganese steel		
Carbon (C)	0.70 -0.85	0.50-0.60	0.2408	Does not conform
Silicon (Si)	0.10 -0.40	1.50-2.00	0.2725	Conforms to carbon steel
Manganese (Mn)	0.50 -1.0	0.50-1.00	1.1065	Does not conform
Sulphur (S)	0.05(max)	0.05(max)	0.0291	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.0166	Conforms

7. FIELD PERFORMANCE TEST

The field test of the rotavator was conducted for 39 hrs. As recommended by the applicant, **for dry land only**, to assess the performance. The details of performance test is reported in **Annexure-I**.

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



Summary of Field Performance Test

Sl. No.	Parameters/operations	Dry land operation
I	II	III
1.	Tractor used	International tractor ltd. Garden Trac DI-20
2.	Gear used	L-1
3.	Type of soil (Refer IS:7926-1975)	Sandy loam
4.	Average soil moisture (%)	4.77 to 19.05
5.	Bulk density of soil (g/cc)	1.58 to 1.69
6.	Average speed of operation (kmph)	0.69 to 0.74
7.	Avg. travel reduction /Avg. wheel slip (%)	-4.43 to -1.67
8.	Average depth of cut (cm)	6.72 to 9.82
9.	Avg. working width (cm)	74 to 77
10.	Area covered (ha/h)	0.041 to 0.047
11.	Time required for one ha (h)	21.28 to 24.39
12.	Field efficiency (%)	76 to 87
13.	Fuel consumption	
14.		l/h 1.33 to 2.78
		l/ha 31.01 to 66.19
	Average PTO power utilized (kW)	NR

7.0 Dry land operation**7.1 Rate of work**

- i) The rate of work was recorded as 0.041 to 0.047 ha/h, and the speed of operation varies from 0.69 to 0.74 kmph.
- ii) The time required to cover one hectare was recorded as 21.28 to 24.39 h

7.2 Quality of work

- i) The depth of operation was recorded as 6.72 to 9.82 cm.
- ii) Average working width was observed as 74 to 77 cm.
- iii) Field efficiency was observed as 76 to 87 %.

7.3 Labour requirement

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

7.4 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 39.56 hr. of operation (g)	Difference of weight (g)	Percentage of wear (%) after 39.56 hr.	Percentage of wear on hour basis (%)
1.	836.4	768.4	68.0	8.13	0.21
2.	828.3	754.0	74.3	8.97	0.23
3.	816.2	758.7	57.5	7.04	0.18
4.	822.5	775.7	46.8	5.69	0.14

8. EFFECTIVENESS OF SEALINGS

Wet land test was not recommended by the applicant, hence not done.

9. EASE OF OPERATION & ADJUSTMENTS

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

10. DEFECTS, BREAKDOWN AND REPAIRS

No noticeable defect or breakdown was observed during the test.

11. CRITICAL TECHNICAL SPECIFICATION

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

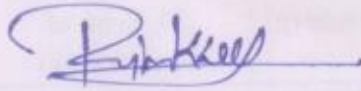
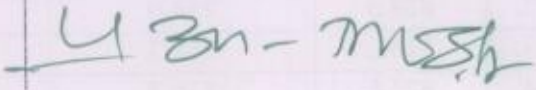
12. COMMENTS AND RECOMMENDATIONS

- 12.1 The Dimension of three point linkage of implement does not conform, in toto, to the requirements of IS: 4468(Part-2)-1993 and therefore, it may be looked into for corrective action.
- 12.2 The Dimensions 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.
- 12.3 Safety guard on P.T.O. drive shaft is not provided. It **MUST** be looked into.
- 12.4 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.
- 12.5 The hardness of blades does not conform, to the requirements of IS: 6690-1981. This needs to be looked into for corrective action
- 12.6 The tractor provided by applicant during field test was of '10.5 kW' in the Budni test report no. T-826/1335/2012 where as on labeling plate of implement, the tractor required is mentioned of '20HP(14.71Kw)'. **This is misleading to the users** and calls for necessary action.

12.7 Technical literature:-

One booklet entitled " Service, Operating & Maintenance Manual cum Spare parts Catalogue with Warranty Card" was provided for reference during test. The same, however, needs to be updated as per IS-8132-1999.

TESTING AUTHORITY

RINKU PRASAD GUPTA TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

13. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
13.1	12.1	The dimension of three point linkage of implement will be improve at production end, as per requirement of IS:4468(Part-2)-1993
13.2	12.2	The dimension of PIC of implement will be improve at vendor/production end.
13.3	12.3	Safety guard of P.T.O drive shaft will be provided with supply of rotavator.
13.4	12.4	The chemical composition of blades will be improve at vendor/production end.
13.5	12.5	The hardness of blades will be improve at vendor/production end.

