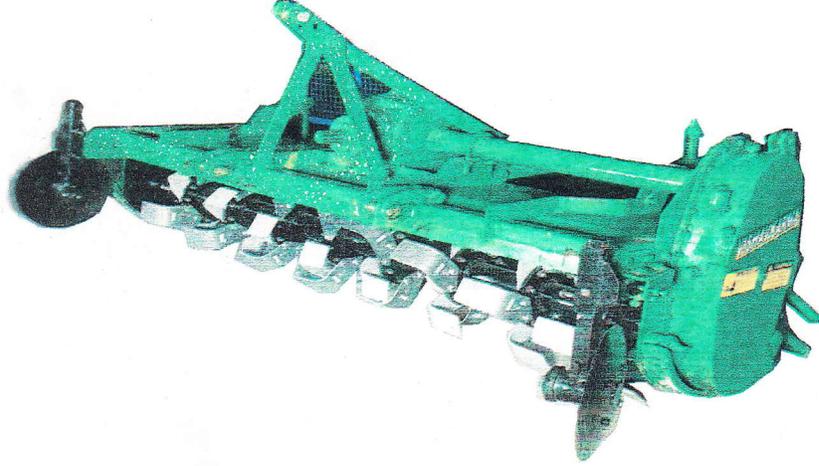


व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : Imp- 422/1227
माह / Month : April, 2010



**ROTAVATOR
'JAI BABA VISHWAKARMA-743'**



भारत सरकार
कृषि मंत्रालय
(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & COOPERATION)

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- 5.1 The hardness of blades was determined at edge and shank portion. The results of hardness test are tabulated in Table-I.

TABLE-1

As per IS:6690-2007 (HRC)		Hardness as observed (HRC)		Remark	
Edge portion	Shank portion	On Edge portion	On shank portion	On Edge portion	On shank portion
53 to 59	37 to 45	55	49	Conforms	Does not conform

5.2 Chemical composition

The chemical composition of blades is tabulated in Table-2

TABLE-2

Sl. No.	Material	Requirement as per IS:6690-2002 (% by weight)	As observed (% by weight)	Remark
1.	Carbon I	0.50 to 0.60	0.59	Conforms
2.	Silicon(Si)	1.50 to 2.00	2.07	Does not conform
3.	Manganese (Mn)	0.50 to 1.00	0.78	Conforms
4.	Sulphur (S)	0.05 (max)	0.004	Conforms
5.	Phosphorous (P)	0.05 (max)	0.013	Conforms

:: 1 out of 5 primary elements (20%) content of primary element carbon is not conforming IS: 6690-Jan. 2007.

6. FIELD TEST

The field tests of the implement comprising of dry and wet land operations were conducted for 25.0 & 15.0 hours in different soil moisture conditions to assess the performance of the implement. The details of tractor used for field operations are given in annexure-I.

The tractor PTO speed was maintained at 540 rpm. The performance of implement is reported in Annexure-II and summarized in Table-3.

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TABLE-3

Summary of field performance

Sl.No.	Parameters	Dry land operation	Wet land operation (puddling)
i)	Tractor used	Sonalika-60 DI	
ii)	Type of soil	Clay Loam	
iii)	Av. Soil moisture, %	6.0 to 8.0	-
iv)	Depth of standing water, cm	-	6.8 to 8.7
v)	Field efficiency, %	63.1 to 81.5	-
vi)	Puddling Index, %	-	78.6 to 82.8
vii)	Av. Speed of operation, kmph	3.05 to 3.13	1.90 to 2.07
viii)	Av. Depth of cut, cm	9.0 to 9.5	-
ix)	Av. depth of puddle, cm	-	16.2 to 17.8
x)	Av. Working width, m	2.11 to 2.17	-
xi)	Area covered, ha/h	0.41 to 0.54	-
xii)	Time required for one hectare, h	1.85 to 2.44	-
xiii)	Fuel consumption		
	- l/h	5.6 to 9.0	6.5 to 7.6
	- l/ha	10.96 to 18.72	-

6.1 Rate of Work

6.1.1 Dry land operation

- The rate of work in clay loam soil was recorded as 0.41 to 0.54 ha/h and the forward speed as 3.05 to 3.13 kmph.
- The time required to cover one hectare area was recorded as 1.85 to 2.44 h.

6.1.2 Wet land operation

- Speed of operation varied from 1.90 to 2.07 kmph.

6.2 Quality of work

6.2.1 Dry land operation

- The depth of operation was recorded as 9.0 to 9.5 cm.
- The field efficiency was recorded as 63.1 to 81.5 %.

6.2.2 Wet land operation

- Depth of puddle was recorded as 16.2 to 17.8 cm.
- Puddling index was recorded as 78.6 to 82.8 %.

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8. EASE OF OPERATION, ADJUSTMENTS & SAFETY

- 8.1 The drive shaft (universal coupling shaft) is not provided with safety bolt as an its safety device.
- 8.2 The propeller shaft has telescopic sections with universal joints, to adjust the length of drive shaft, which is adequate.
- 8.3 Depth adjustment can be made by raising or lowering the skids.
- 8.4 Implement does not have provision to vary rotor shaft speed to cater to different soil and moisture conditions.
- 8.5 Operator has to get down from tractor to make adjustments on rotavator .

9. SOUNDNESS OF CONSTRUCTION

No breakdown occurred during 40.00 hrs of operation in the field.

10. COMMENTS & RECOMMENDATIONS

- 10.1 The dimensions of three point linkage of the implement do not conform to IS:4468-March 2007(Part-I). This should be incorporated at production level
- 10.2 The propeller shaft is not provided with shearing bolt for safety of the machine
- 10.3 It is recommended to have provision for change in rotor speed to suit wider range of soil and soil moisture conditions.
- 10.4 Maneuverability of tractor with Rotavator and quality of work were observed to be satisfactory.
- 10.5 Dimensions of power input shaft of rotavator does not conform to IS: 4931-Oct. 2004. This should be incorporated at production level.
- 10.6 The hardness of edge portion of hatchet blades is within the IS requirement, Where as the hardness at shank position does not conform the limits specified in IS 6690-Jan-2007 therefore. Blade hardness should be as per IS:6690-Jan. 2007, should be used in regular production of rotavator.
- 10.7 The percentage wear of hatchet blades on mass basis during field operation of 40.00 hrs, ranged from 3.98 to 5.46% which is normal.
- 10.8 The percentage wear of hatchet blades on dimensional basis after field operation of 40.0 hrs, ranged from 8.24 to 14.93 % and 6.82 to 9.64 % respectively at edge and at 65 mm from edge.

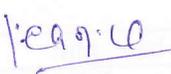
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- 10.9 Content of Carbon, Manganese, Phosphorus & Sulphur is conforming to IS: 6690-2002 where as Silicon content of rotavator blade is more than the limit. It should be within the BIS specified limit.
- 10.10 Rotavator stand should be provided with implements.
- 10.11 The specification of propeller shaft does not conform to IS: 4931-1999. This should be modified according to the above said BIS code.
- 10.12 The PTO power requirement of rotavator was observed from 20.4 to 35.0 kW (27.7 to 47.6 Ps) in dry land operation which is about 58% to 99.7% pto power of engine.
- 10.13. The identification plate must be provided on each Rotavator at regular production level.

11. LITERATURE

Inadequate literature was provided with machine. Adequate servicing, operator manuals, parts catalogue etc. should be brought out as per IS: 8132-1983 requirement for guidance of users and operators.

TESTING AUTHORITY

(R. M. TIWARI) ASSISTANT ENGINEER (W/S)	
(P. K. CHOPRA) SENIOR AGRICULTURAL ENGINEER	
(A. N. MESHARAM) - DIRECTOR -	

:: Test report compiled by Sh. B. N. Dixit (Tech. Assistant).

APPLICANT'S COMMENTS

No comments received.