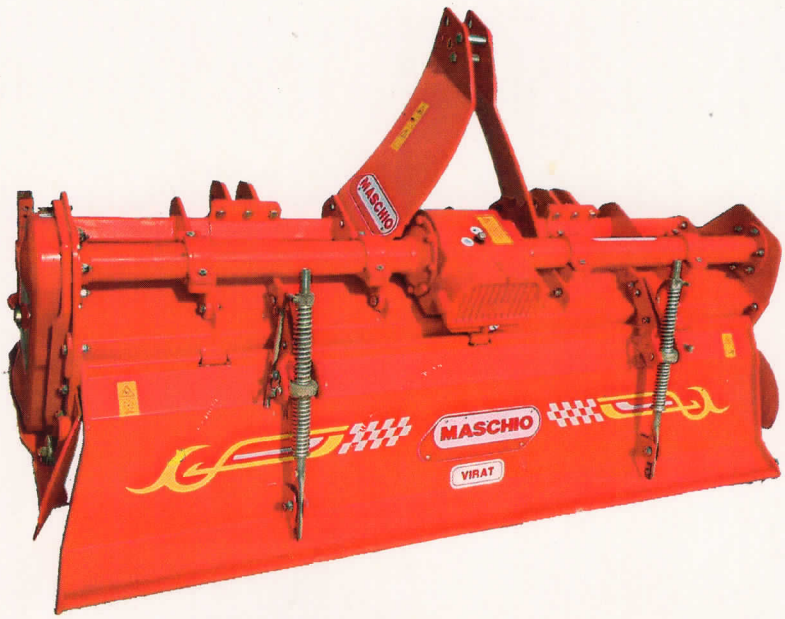
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: IMP-974/2258/2018**
माह/**Month : December, 2018**

THIS TEST REPORT VALID UP TO : 31st December, 2025



MASCHIO GASPARDO VIRAT SP 185, ROTAVATOR (TRACTOR MOUNTED)

सत्यमेव जयते

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
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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	56±3	49.2 to 50.2	**Does not conform**
On shank portion	37 to 45	49.2 to 50.2	**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	0.2650	**Does not conform**
Silicon (Si)	0.10 -0.40	1.50-2.00	0.2807	Conforms
Manganese (Mn)	0.50 -1.0	0.50-1.00	1.0980	**Does not conform**
Sulphur (S)	0.05(max)	0.05(max)	0.0000	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.0180	Conforms

7. FIELD PERFORMANCE TEST

The field tests of the implement comprising of wet land and dry land operation were conducted for 16.0 and 26.09 hours respectively to assess the performance of the implement. The performance of implement is reported in **Annexure-I & II** for wet land and dry land operations respectively.

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

Summary of Field Performance Test

Sl. No.	Parameters/operations	Wet land operation (Puddling)	Dry land operation
I	**II**	**III**	**IV**
1.	Tractor used	Mahindra 555DI	
2.	Gear used	L-1	L-2
3.	Type of soil (Refer IS:7926-1975)	Sandy loam	
4.	Average soil moisture (%)	-	13.5 to 14.6
5.	Average depth of standing water (cm)	10.8 to 11.2	-
6.	Bulk density of soil (g/cc)	-	1.32 to 1.52
7.	Average speed of operation (kmph)	2.57 to 2.62	4.35 to 4.61
8.	Avg. travel reduction /Avg. wheel slip (%)	-0.62 to -1.03	-2.39 to -1.26
9.	Average depth of puddle/ Average depth of cut (cm)	16.8 to 17.3	6.2 to 8.7
10.	Avg. working width (cm)	-	161 to 169
11.	Area covered (ha/h)	-	0.552 to 0.665
12.	Time required for one ha (h)	-	1.50 to 1.81
13.	Field efficiency (%)	-	76.9 to 85.6
14.	Puddling index (%)	72 to 78	-

15.	Fuel consumption		
	l/h	3.03 to 3.17	5.50 to 5.70
	l/ha	-	7.50 to 10.32
16.	Average PTO power utilized (kW)	18.37	

7.1 Wet Land operation

7.1.1 Quality of work

i) The depth of puddle was recorded as 16.8 to 17.3 cm.

ii) The puddling index was recorded as 72 to 78 %.

7.2 Dry land operation

7.2.1 Rate of work

i) The rate of work was recorded as 0.552 to 0.665 ha/h, and the speed of operation varies from 4.35 to 4.61 kmph.

ii) The time required to cover one hectare was recorded as 1.50 to 1.81 h.

7.2.2 Quality of work

i) The depth of operation was recorded as 6.2 to 8.7 cm.

ii) Average working width was observed as 161 to 169 cm.

iii) Field efficiency was observed as 76.9 to 85.6 %.

7.3 Labour requirement

In all, two skilled operators are needed to ensure continuous operation of machine 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 42.09 hr. of operation (g)	Difference of weight (g)	Percentage of wear (%) after 42.09 hr.	Percentage of wear on hour basis (%)
1.	1026.5	1007.5	19.0	1.85	0.04
2.	1022.4	1005.5	16.9	1.65	0.04
3.	1021.0	1005.5	15.5	1.52	0.04
4.	1021.4	1004.5	16.9	1.65	0.04
5.	1019.6	1004.2	15.4	1.51	0.04
6.	1026.2	1010.2	16.0	1.56	0.04
7.	991.5	974.9	16.6	1.67	0.04
8.	997.8	978.1	19.7	1.97	0.05
9.	1039.9	1022.7	17.2	1.65	0.04

8. EFFECTIVENESS OF SEALINGS

After completion of wet land operation for 16.0 hours , the implement 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

9. EASE OF OPERATION & ADJUSTMENTS

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

10. DEFECTS, BREAKDOWN AND REPAIRS

No any noticeable defect, breakdowns were observed the field test 42.09 hr.

11. COMMENTS AND RECOMMENDATIONS

11.1 The labeling plate MUST be provided on machine with following information:-

-Make

-Model

-Year of manufacturer

-Working width

-Recommended tractor power (KW)

-Manufacturer's address

11.2 The specifications of implement hitch, does not conform in toto to the 4468 (Part-1)-1997. Hence, it is recommended that implement should be provided with the hitch conforming to relevant Indian Standards.

11.3 Dimensions of PIC of implement do not conform in toto to IS: 4931-1995 and therefore, it should be looked in to for corrective action.

11.4 Hardness of the blade does not conform to IS: 6690:1981. This needs to be looked into for corrective action at production level.

11.5 The chemical composition blade does not conform to as per IS: 6690-1981. This needs to be looked into for corrective action at production level.

11.6 Technical literature:-

The following literature was supplied with rotavator during test

i) Use & maintenance manual

ii) Spare parts catalogue

The use & maintenance manual should be updated as per IS 8132-1999

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

12. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
12.1	4.4 Dimension 'A'	We will make changes in design and implement in mass production.
12.2	4.5.1 Dimension 'a, c & x'	We will make changes in design and implement in mass production.
12.3	4.5.3	We will consider this in mass production.
12.4	11.2	We will make the required design changes and implement in production.
12.5	11.3	We will make the required design changes and implement in production.
12.6	11.6	We will make required changes in literature.