व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

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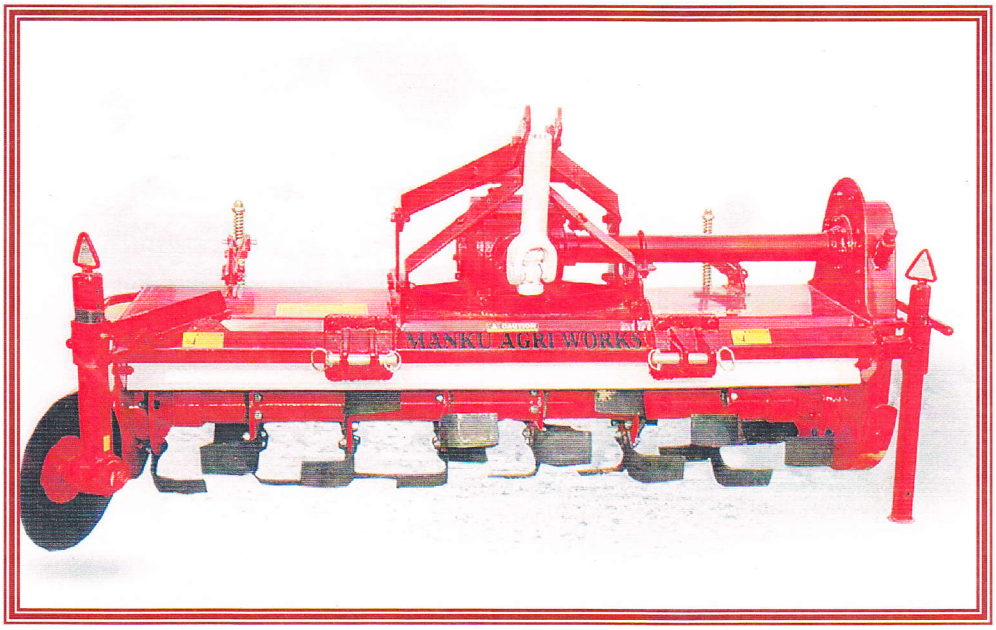

ROTAVATOR
'MAW-608'

सत्यमेव जयते

भारत सरकार

कृषि मंत्रालय

(कृषि एवं सहकारिता विभाग)

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

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
ट्रैक्टर नगर, सिरसा रोड, हिसार –125001 (हरियाणा)

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE
TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)

Telephone : 01662- 276824, 276172
Website : http://dacnet.nic.in/nrfmtti

Telefax No. : 01662-276984
E-Mail : fmti-nr@ nic.in

4.11 Overall Dimensions, mm (Ref. Fig.2)

Length	:	1220
Width	:	2020
Height	:	1060
Mass, kg	:	500

4.12 Mass, kg

5. LABORATORY TEST

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

S. No.	Portion of blade	Hardness (HRC)		Remark
		As observed	As per :6690-Jan. 2007	
1	On Edge portion	41	53 to 59	**Does not conform**
2	On shank portion	38	37 to 45	Conforms

5.2 Chemical composition

The chemical composition of blades is tabulated in Table-2

TABLE-2

Sl. No.	Material	Requirement as per IS:6690-Jan. 2007 (% by weight)	As observed (% by weight)	Remark
1.	Carbon I	0.50 to 0.60	0.23	**Does not conform**
2.	Silicon(Si)	1.50 to 2.00	0.76	Conforms
3.	Manganese (Mn)	0.50 to 1.00	1.44	**Does not conform**
4.	Sulphur (S)	0.05 (max)	0.007	Conforms
5.	Phosphorous (P)	0.05 (max)	0.010	Conforms

:: 2 out of 5 primary elements, (40) % of primary are 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 20.67 to 15.00 hours at 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 P.T.O. speed was observed at 540 rpm of tractor. The performance of implement is reported in Annexure-II, III and summarized in Table-3.

TABLE-3

Summary of field performance

Sl.No.	Parameters	Dry land operation	Wet land operation (puddling)
i)	Tractor used	Sonalika-55 DI	
ii)	Type of soil	Sandy loam	
iii)	Av. Soil moisture, %	12.0 to 13.5	-
iv)	Depth of standing water, cm	-	10.6 to 11.8
v)	Field efficiency, %	81.1 to 92.9	-
vi)	Puddling Index, %	-	77.8 to 80.4
vii)	Av. Speed of operation, kmph	2.97 to 3.16	2.64 to 2.68
viii)	Av. Depth of cut, cm	8.5 to 10.8	-
ix)	Av. depth of puddle, cm	-	13.0 to 14.7
x)	Av. Working width, cm	1.71 to 1.89	-
xi)	Area covered, ha/h	0.43 to 0.52	-
xii)	Time required for one hectare, h	1.92 to 2.33	-
xiii)	Fuel consumption		
	- l/h	6.00 to 6.50	3.00 to 4.93
	- l/ha	12.24 to 14.24	-

6.1 Rate of Work

6.1.1 Dry land operation

-The rate of work in sandy loam soil was recorded as 0.43 to 0.52 ha/h and the speed of operation as 2.97 to 3.16 kmph.

-The time required to cover one hectare area was recorded as 1.92 to 2.33 h.

6.1.2 Wet land operation

- Speed of operation varied from 2.64 to 2.68 kmph.

6.2 Quality of work

6.2.1 Dry land operation

-The depth of operation was recorded as 8.5 to 10.8 cm.

-The field efficiency was recorded as 81.1 to 92.9%.

6.2.2 Wet land operation

-Depth of puddle was recorded as 13.0 to 14.7 cm.

-Puddling index was recorded as 77.8 to 80.4%.

8. EASE OF OPERATION, ADJUSTMENTS & SAFETY

8.1 The propeller shaft should be provided with safety device.

8.2 Depth adjustment can be made by raising or lowering the skids.

8.3 Implement does not have provision to vary rotor shaft speed to cater to different soil and moisture conditions.

8.4 Operator has to get down from tractor for adjustment of rotavator.

9. SOUNDNESS OF CONSTRUCTION

No breakdown occurred during 35.67 hrs operation in the field.

10. COMMENTS & RECOMMENDATIONS

10.1 Dimensions of three point linkage system are not conforming to the requirements of IS: 4468 Part-I-March 2007. Therefore, standard 3 point linkage system should be incorporated with the rotavator at regular production level.

10.2 Dimensions of power input shaft and corresponding hub propeller shaft are not conforming to the requirements of IS: 4931-Oct. 2004. Therefore, the standard shaft with hub should be used at regular production level.

10.3 Maneuverability of tractor with Rotavator and quality of work were observed to be satisfactory.

10.4 It is recommended to have provision for change in rotor speed to suit wider range of soil and soil moisture conditions.

10.5 The hardness at edge of the blade is 41 HRC as against the required hardness of 56 ± 3 as per IS: 6690-Jan. 2007. This should be looked into and standard blade should be used at regular production level.

10.6 The percentage wear of hatchet blades on mass basis during field operation of 35.67 hr, ranged from 0.044 to 0.051% which is normal.

10.7 The percentage wear of hatchet blades on dimensional basis at tip & 65 mm from edge of blade after during field operation of 35.67 hr, ranged from 4.19 to 6.81 % and 2.53 to 4.33 % respectively.

10.8 The pto power requirement of tractor was from 24.0 to 25.0 kW as against the tractor pto power of 36.6 kW. Hence, power utilization varies from 65.6 to 68.3%

10.9 Safety clutch or belt should be provided with propeller shaft.

10.10 An identification plate should be provided on each Rotavator at regular production level.

10.11 The chemical composition of primary element of rotavator blade are not as per unit specified in IS:6609-2007.