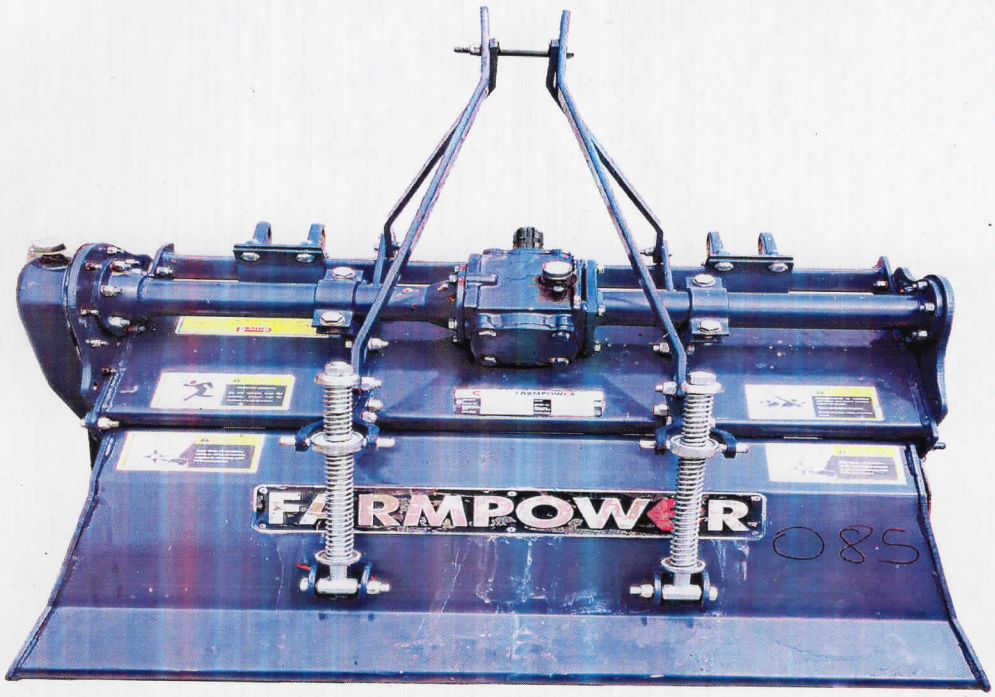
O/C.

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: IMP-1007/2343/2019**
माह/**Month: August, 2019**

THIS TEST REPORT VALID UP TO : 31st August, 2026



ESCORTS FPCSSG-085, FARMPOWER, 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
Northern Region Farm Machinery Training and Testing Institute
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4.11 Lubricants:

Sl. No.	Particulars	As recommended by the manufacturer	As used during test
1	Primary Gear box	SAE140	Oil originally filled in the machine was not changed
2	Secondary Gear box	SAE140	
3	Rotor Hub	Servo AP3 grease	Servo AP3 grease
4	Propeller Shaft	Servo AP3 grease	Servo AP3 grease

5. RUNNING – IN

Not recommended by the manufacturer.

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	47.9 to 48.9	**Does not conform**
On shank portion	37 to 45	47.9 to 48.9	**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	0.2975	**Does not conform**
Silicon (Si)	0.10 -0.40	1.50-2.00	0.3920	Conforms
Manganese (Mn)	0.50 -1.0	0.50-1.00	1.3303	**Does not conform**
Sulphur (S)	0.05(max)	0.05(max)	0.0256	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.0516	Conforms

7. FIELD PERFORMANCE TEST

The field tests of the implement for dry land operation was conducted for 37.21 hours respectively to assess the performance of the implement. The performance of implement is reported in **Annexure-I**

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

Summary of Field Performance Test

Sl. No.	Parameters/operations	Dry land operation
I	II	III
1.	Tractor used	Mahindra 215 DI
2.	Gear used	L-2
3.	Type of soil (Refer IS:7926-1975)	Sandy loam
4.	Average soil moisture (%)	6.80 to 15.8
5.	Bulk density of soil (g/cc)	1.67 to 1.89
6.	Average speed of operation (kmph) Avg. wheel slip (%)	2.58 to 3.39
7.	Average depth of cut (cm)	8.5 to 10.1
8.	Avg. working width (cm)	91 to 124
9.	Area covered (ha/h)	0.220 to 0.297
10.	Time required for one ha (h)	3.37 to 4.55
11.	Field efficiency (%)	76.9 to 88.2
12.	Fuel consumption76.85-88.18	
	l/h	1.24 to 2.48
	l/ha	4.66 to 11.27
13.	Average PTO power utilized (kW)	NR

7. Dry land operation

7.1.1 Rate of work

i) The rate of work was recorded as 0.220 to 0.297 ha/h, and the speed of operation varies from 2.58 to 3.39 kmph.

ii) The time required to cover one hectare was recorded as 3.37 to 4.55 h.

7.1.2 Quality of work

i) The depth of operation was recorded as 8.5 to 10.1 cm.

ii) Average working width was observed as 91 to 124 cm.

iii) Field efficiency was observed as 76.9 to 88.2 %.

7.2 Labour requirement

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

7.3 Wear analysis (on mass basis)

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

13.	Safety clutch/device (shear bolt) in PTO drive shaft	Must be provided	Provided	Conforms
14.	Rotavator stand	Must be provided	Provided	Conforms
15.	Guard over propeller shaft	Must be provided	**Not Provided**	**Does not conform**
16.	Sheet metal	AS36/IS 2062	--	--
17.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, County of origin, Make, Model, Year of manufacture, Serial number, Type, Size, required size of prime mover (kW)	Provided	Conforms
18.	Literature	Operator manual, service manual and parts catalogue should be provided	Provided	Conforms

11. COMMENTS AND RECOMMENDATIONS

11.1 The specification of implement hitch, does not conform in toto to the 4468 (Part-I)-1997. Hence, it is recommended that implement should be provided with the hitch conforming to relevant Indian Standard.

11.2 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.

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

11.4 Safety guard on P.T.O. drive shaft is not provided. It **MUST** be looked into.

11.5 The working width of rotavator does not conform to the requirement of Critical Technical Specifications. It **MUST** be looked into.

11.6 The number of blade does not meet the requirement of Critical Technical Specifications. It **MUST** be looked into.

11.7 The outer diameter of rotor shaft does not meet the requirement of Critical Technical Specifications. It **MUST** be looked into.

11.8 The rotor diameter with blade does not meet the requirement of Critical Technical Specifications. It **MUST** be looked into.

11.9 The max. PTO power in the labeling plate is specified as 17.5 kW, whereas the recommended prime mover is specified as 12 Hp. It **MUST** be looked in to for corrective action.

11.10 Technical literature:-

Operator cum service manual with parts catalogue was supplied with rotavator during testing.

The operator 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	11.1	We will take care.
12.2	11.2	We will take care to achieve standard dimensions.
12.3	11.4	Will take care in future supplies.
12.4	11.10	We will take care.
12.5	P-2- Sl.No.-6/ P-19,Sl.No.-10(15)	We will take care in future supplies.