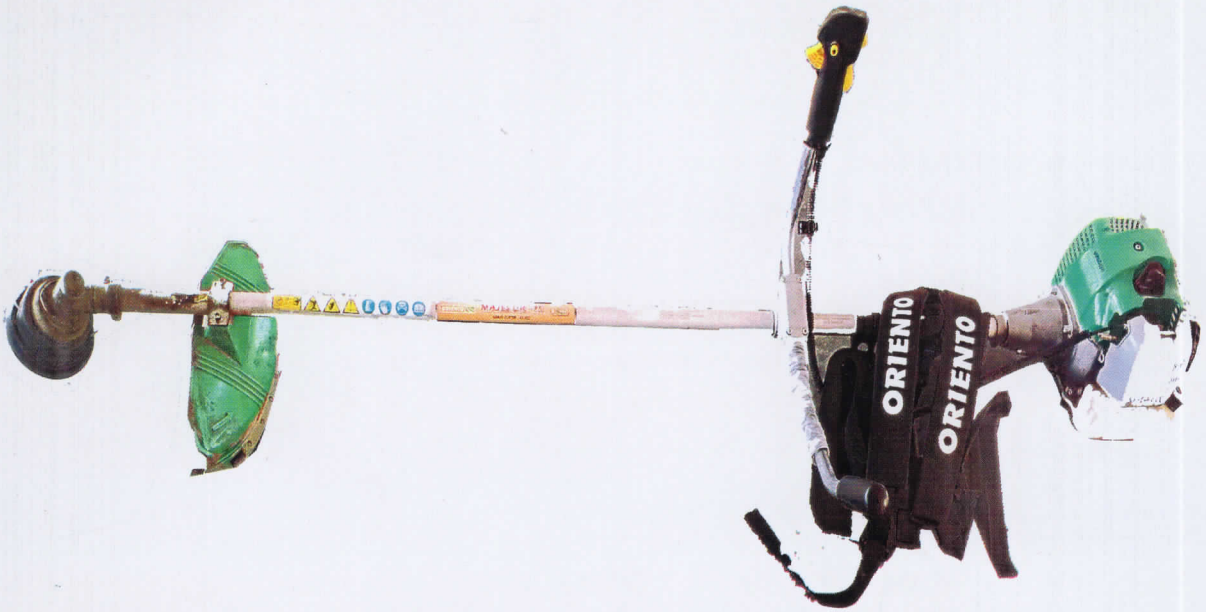
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL **TEST REPORT**

संख्या/ **No.: MACHINE-07/2459/2020**
माह/**Month** : February, 2020

THIS TEST REPORT VALID UP TO : 28th FEBRUARY, 2025



ORIENTO, OGC/43/2S BRUSH CUTTER

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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12. FIELD TEST

Field tests for 25.31 hrs. duration comprising of seasonal grass cutting with nylon rope and using triangular blade attachments were carried out for 12.29 hrs. and 13.02 hrs. respectively. Detailed results of field tests are shown in Annexure-I & II and summarized in the ensuing table. Details about the operator are show in Annexure-III.

Sr. No.	Parameters	Seasonal Grass cutting	
		For Nylon rope	For triangular blade
1	Field condition	Level	Level
2	Intensity of grass	High	High & Medium
3	Average number of grass/weed in 1 sq.m	488 to 597	327 to 456
4	Avg. height of grass/weed, cm	34.48 to 54.40	14.03 to 48.0
5	Avg. Diameter of grass/weed, mm	2.43 to 3.01	2.07 to 4.10
6	Avg. Mass of grass cut (kg/h)	20.40 to 27.20	10.4 to 31.6
7	Avg. area covered (Rate of work), ha/h	0.031 to 0.064	0.02 to 0.035
8	Avg. Time required for one hectare, h	15.63 to 32.26	28.57 to 50.0
9	Avg. Fuel consumption		
	l/h	0.77 to 0.88	0.88 to 0.95
	l/ha	12.04 to 26.13	25.14 to 45.0

12.1 Seasonal Grass cutting using nylon rope assembly

12.1.1 Rate of work

i) Average area covered (rate of work)was observed 0.031 to 0.064 ha/h.

ii) Average time required for one hectare was observed as 15.63 to 32.26 h.

iii) Average mass of grass cut was observed as 20.40 to 27.20 kg/h.

iv) Average No. of grass stem in one m^2 area was 488 to 597.

12.1.2 Fuel consumption

Average fuel consumption was observed as 0.77 to 0.88 l/h. and 12.04 to 26.13 ha/h.

12.2 Seasonal Grass cutting using triangular blade

12.2.1 Rate of work

i) The average area covered (rate of work) was observed as 0.020 to 0.035 ha/h.

ii) Average time required for one hectare was observed as 28.57 to 50.0 hours.

iii) Average number of perennial weed in one square meter are was 327 to 456.

iv) Average mass of perennial weed cut was 10.4 to 31.6 kg/h.

12.2.2 Fuel consumption

Fuel consumption was observed as 0.88 to 0.95 l/h and 25.14 to 45.0 l/ha.

12.3 Labour requirement

Two skilled operators were needed to operate the grass cutter continuously. Additionally, one more labor is needed gather the collected bush/weeds.

12.4 Adequacy of power of prime mover

The power of prime mover was found adequate.

12.5 Wear analysis of critical components

Component	Duration of operation (h)	Initial length/ mass (gm/mm)	Length/ Mass after operation	Loss of length/ mass	Percentage wear	Percentage wear on hour basis
Nylon rope	12.29	2044	585	1459	71.38	5.81
Triangular blade	13.02	296	230	66	22.30	1.71

13. EASE OF OPERATION, ADJUSTMENTS AND SAFETY

No problem was observed during the test except, the fatigue was observed during the operation of the machine due to excessive mechanical vibration and noise.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable were breakdown occurred during 25.31 hours of operation.

15. CRITICAL TECHNICAL SPECIFICATION

(Vide Ministry's communication No 13-9/2019 M &T (I&P) dated 26.04.2019)

Si. No	Parameters	Specification	Observed	Remarks
1.	Type	Self propelled, portable	Self propelled	Conforms
2.	Type of cutting attachment	Circular disc/Straight blade/nylon rope	Straight blade & nylon rope used	Conforms
		Circular blade		
3.	Material of Circular/straight blade	Alloy Steel	**Not specified by the applicant**	--
4.	No. of teeth on circular disc blade	50-100	Circular blade is not recommended by applicant	--
5.	Root diameter/Overall diameter (mm)	200-270		
6.	Thickness of disc (mm)	1.5 Min		
7.	Teeth thickness (mm)	2.0 Min		
8.	Material of Blade	M42		
9.	Hardness of Blade, HRC	68-70		
		Straight blade		
10.	Diameter of straight blade (mm)	250-350	250	Conforms
11.	Width of ends/at center (mm)	50/70, Min.	50/70	Conforms
12.	Thickness of straight blade (mm)	1.5 Min	1.5	Conforms
		Nylon rope		
13.	Length of nylon rope (mm)	2000-4000	Length 2044 mm	Conforms
14.	Diameter of nylon rope (mm)	2.5 to 4.0	Diameter- 2.5 mm	Conforms
15.	Type of engine	Compression ignition/Spark ignition	Spark Ignition	Conforms
16.	Starting method	Manual/recoil/self-starting	Manual/Recoil Start	Conforms
17.	Type of clutch	Cone/centrifugal	Centrifugal	Conforms
18.	Type of gear drive	Bevel pinion	Bevel pinion	Conforms

19.	Capacity of fuel tank (l)	1.0 (min)	1.0 lit.	Conforms
20	On off provision in fuel supply system	Must be provided	**Not Provided**	**Does not conform**
21.	Provision for easy start of engine	Must be provided	**Not Provided**	**Does not conform**
22.	Provision for emergency stop of engine	Must be provided	Provided	Conform
23.	Provision for shield/cover to prevent flying of mud and stone from rotor	Must be provided	Provided	Conform
24.	Provision for Grass deflector at the rear of the cutting mechanism			
25.	Provision for Pad with shoulder bet to dampen the vibration	Must be provided	Provided	Conform
26.	Provision for cover on exhaust.	Must be provided	Provided	Conform
27.	Direction of exhaust emission away from operator	Must be provided	Provided	Conform
28.	Provision for safety kit (helmet, ear plug, mask, hand gloves, safety glass, Protective cloth, safety shoes)	Must be provided	Provided	Conforms
29.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, country of origin Make, Model, year of manufacturer, Serial Number, Engine number, Engine HP, rated rpm & SFC.	The labeling plate should be riveted and Applicant address is not specified	**Does not conform in toto**
30.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided.	Conforms

16. COMMENTS AND RECOMMENDATIONS

16.1 Noise at operator's ear level position was observed on higher side against warning and danger limit of 85 dB (A) as specified by ILO For continuous exposure of 8 hour per day. **This calls for reduction in noise level to improve the operator's comforts & safety.**

16.2 The amplitude of mechanical vibration marked as (*) on the relevant chapter, are on drastically higher side. It is not just directly concerned with operator's health, safety and comfort, but also adversely affects the useful life of the components. In view of above, this deserved to be given top priority for corrective action.

16.3 The hardness and chemical composition of the cutting blade does not meet the requirement as per IS: 6025-1982. It should be looked into.

16.4 Bore/stroke of the cylinder of engine is not specified by the applicant. It **MUST** be specified for user guidance.

16.5 Provision for Easy Start of Engine is not provided. **This is critical parameter and therefore it MUST be provided.**

16.6 On off provision in fuel supply system is not Provided. **This is critical parameter and therefore it MUST be provided.**

16.7 The material of blades is not specified. **This is critical parameter and therefore it MUST be specified.**

16.8 The prime mover manufacturing year is not specified. It should be looked into.

16.9 Marking/labeling of machine **does not meet the requirement of critical technical specification. It must be looked in toto.**

17. TECHNICAL LITERATURE

User's manual was provided by the manufacturer for reference during testing. However, it should be updated as per IS: 8132-1999.

TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P. K. PANDEY **DIRECTOR**	

18. APPLICANT'S COMMENTS

Para No	Our reference	Applicants comment's
18.1	16.1 &16.2	We will improve & will provide in regular production
18.2	16.3	We will improve & will provide in regular production as per IS:6025:1982
18.3	16.4	We will specify in regular production
18.4	16.5 & 16.6	We will improve & will provide in regular production
18.5	16.7	We will specify in regular production.(material of blade-Alloy steel)
18.6	16.8	We will specify in regular production
18.7	16.9	We will improve & will provide in regular production