

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: MACHINE-16/2514/2020
माह/Month: September, 2020

THIS TEST REPORT VALID UP TO : 30th SEPTEMBER, 2025



**CENTURY, CEN-1
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

Northern Region Farm Machinery Training and Testing Institute

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11.2 Chemical composition analysis:**11.2.1 Triangular blade:**

Constituents	As per IS: 6025-1982	Composition as observed (% of weight)	Remarks
Carbon (C)	0.70-0.95	0.5330	Does not conform
Manganese (Mn)	0.30 to 0.50	0.5350	Does not conform
Silicon (Si)	--	0.2914	--
Sulphur (S)	--	0.0312	--
Phosphorous (P)	--	0.0316	--

12. FIELD TEST

Field tests were conducted for 15 hours with nylon rope attachment and 13 hours with triangle blade attachment. 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	Medium	Medium
3	Average number of grass/weed in 1 sq.m	42 to 54	261 to 312
4	Avg. height of grass/weed, cm	20.3 to 27.3	13.5 to 20.5
5	Avg. Diameter of grass/weed, mm	1.4 to 2.4	2.03 to 3.13
6	Avg. Mass of grass cut (kg/h)	12.6 to 17.2	6.56 to 7.12
7	Avg. area covered (Rate of work), ha/h	0.013 to 0.029	0.020 to 0.035
8	Avg. Time required for one hectare, h	34.48 to 76.92	28.57 to 43.00
9	Avg. Fuel consumption	l/h	0.51 to 0.64
		l/ha	22.06 to 38.07
			0.84 to 0.87
			24.86 to 43.00

12.1 Cutting using nylon rope assembly**12.1.1 Rate of work**

- Average area covered (rate of work) was observed as 0.013 to 0.029 ha/h.
- Average time required for one hectare was observed as 34.48 to 76.92 h.
- Average mass of grass cut was observed as 12.6 to 17.2 kg/h.
- Average No. of grass stem in one m² area was 42 to 54

12.1.2 Fuel consumption

Average fuel consumption was observed as 0.51 to 0.64 l/h. and 22.06 to 38.07 l/ha.

12.2 Cutting using triangular blade**12.2.1 Rate of work**

- The average area covered (rate of work) was observed as 0.020 to 0.035ha/h.
- Average time required for one hectare was observed as 28.57 to 43.00 hours.
- Average numbers of perennial weed in one square meter are was 261 to 312.
- Average mass of perennial weed cut was 6.56 to 7.12 kg/h.

Machine- 16/2514/2020	CENTURY, CEN-1 BRUSH CUTTER (COMMERCIAL)
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12.2.2 Fuel consumption

Fuel consumption was observed as 0.84 to 0.87 l/h and 24.86 to 43.00 l/ha.

12.3 Labor requirement

To ensure the cutting work without interruption, two operators are required to work alternates. 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 (mm/g)	Length/ Mass after operation (mm/g)	Loss of length/ mass (mm/g)	Percentage wear	Percentage wear on hour basis
Nylon rope	15	900	450	450	50	3.33
Triangular blade	13	233.4	230.7	2.7	1.16	0.09

13. EASE OF OPERATION & ADJUSTMENTS

Fatigue was observed just after half an hour of operation of the Bush cutter, mainly, due to excessive mechanical vibration and noise. The operator complained about pain in different parts of his body like wrist & shoulder etc during operation.

Work-Rest cycle for this brush cutter is observed on follows

30 minutes work – 10 minutes rest – 20 minutes work - 10 minutes rest – 20 minutes work - 15 minutes rest & so on.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable breakdowns were occurred during 28 hours of operation.

15. CRITICAL TECHNICAL SPECIFICATION

(Differed till 31.12.2020 Vide Ministry O.M No. 13-13/2020 M&T (I&P) dated 24.04.2020)

16. COMMENTS AND RECOMMENDATIONS

- 16.1 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.
- 16.2 The chemical composition of blades does not conform, to the requirements of IS: 6025-1982. This needs to be looked into for corrective action.
- 16.3 The hardness of blades does not conform, to the requirements of IS: 6025-1982. This needs to be looked into for corrective action
- 16.4 Warning labels are not provided. It **MUST** be provided.

16.5 Labeling plate should be riveted on machine with following information.

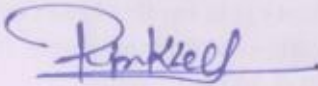
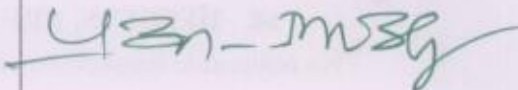
1. Name and address of manufacturer
2. Name and address of applicant
3. Country of origin
4. Make
5. Model
6. Year of manufacturer
7. Serial number
8. Engine number
9. Engine HP
10. Rated rpm
11. SFC

17. TECHNICAL LITERATURE

Four pages, stapled together was supplied as "Service manual". The contains ware not that are require to make it a Service manual.

It is therefore recommend to provide the Technical literature as per IS: 8132-1999 for guidancee for users.

TESTING AUTHORITY

RINKU PRASAD GUPTA TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

Test Report compiled by, Manoj Sharma, B. Tech (Ag. Engg)

18. APPLICANT'S COMMENTS

Para No	Our reference	Applicant comments
18.1	16.1	We will ask manufacturer to use the parts so as to reduce vibrations.
18.2	16.2 &16.3	We will ask manufacturer to use the blade with recommended chemical composition and hardness.
18.3	16.4	We will paste them in future machines.
18.4	16.5	We will rivet plate saying recommended specifications on machine.
18.5	17	We will supply the recommended literature along with future machines.