

ब्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: MACHINE-17/2542/2020

माह/Month: October, 2020

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



**RICOITALY, RI 431 A
BRUSH CUTTER**



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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[ISO 9001:2015 CERTIFIED]

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2	Engine cover	3600*	5200*
3	Frame pipe	2200*	3700*
4.	Grass deflector	2700*	3100*

* The amplitude of mechanical vibration is on higher side.

10. NOISE MEASUREMENT

Noise at operator's ear level

Date of test	:	13.10.2020
Type of sound level meter	:	CESVA-SC-20E
Temperature, °C	:	43.1
Pressure, kPa	:	96.89
Relative humidity, %	:	35.2
Background noise level, dB(A)	:	52.7
Observed noise level, dB(A)	:	92

11. HARDNESS AND CHEMICAL COMPOSITION OF ROTOR BLADES

11.1 Hardness:

11.1.1 Hardness of triangular blade:

Sr. No.	As per IS: 6025:1982 HRC	As observed (HRC)	Remarks
	48 to 58	43.0	Does not conform

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	0.4648	Does not conform
Manganese (Mn)	0.30 to 0.50	1.0983	Does not conform
Silicon (Si)	--	0.3004	--
Sulphur (S)	--	0.0313	--
Phosphorous (P)	--	0.0264	--

12. FIELD TEST

Field tests were conducted for 16 hours with nylon rope attachment and 12 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	45 to 51	57 to 80
4	Avg. height of grass/weed, cm	9.67 to 27.33	30.33 to 34.66

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5	Avg. Diameter of grass/weed, mm	2.83 to 3.34	2.53 to 2.96
6	Avg. Mass of grass cut (kg/h)	9.5 to 12.5	11.5 to 17.4
7	Avg. area covered (Rate of work), ha/h	0.016 to 0.025	0.017 to 0.023
8	Avg. Time required for one hectare, h	38.61 to 62.5	38.82 to 55.6
9	Avg. Fuel consumption	l/h	0.40 to 0.50
		l/ha	19.31 to 25.00
			0.40 to 0.50
			17.4 to 29.41

12.1 Cutting using nylon rope assembly

12.1.1 Rate of work

- i) Average area covered (rate of work) was observed as 0.016 to 0.025 ha/h.
- ii) Average time required for one hectare was observed as 38.61 to 62.5 h.
- iii) Average mass of grass cut was observed as 9.5 to 12.5 kg/h.
- iv) Average No. of grass stem in one m² area was 45 to 51

12.1.2 Fuel consumption

Average fuel consumption was observed as 0.40 to 0.50 l/h. and 19.31 to 25.00 l/ha.

12.2 Cutting using triangular blade

12.2.1 Rate of work

- i) The average area covered (rate of work) was observed as 0.017 to 0.023 ha/h.
- ii) Average time required for one hectare was observed as 38.82 to 55.6 hours.
- iii) Average numbers of perennial weed in one square meter are was 30.33 to 34.66.
- iv) Average mass of perennial weed cut was 11.5 to 17.4 kg/h.

12.2.2 Fuel consumption

Fuel consumption was observed as 0.4 to 0.5 l/h and 17.4 to 29.41 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	17.23	4750	1940	2810	59.16	3.43
Triangular blade	11.70	248.35	240.40	7.95	3.20	0.27

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 29 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

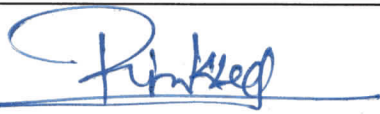
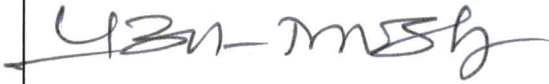
17. TECHNICAL LITERATURE

No literature was provided by the applicant during the test.

The following literature, therefore, **MUST** be provided as per IS: 8132-1999 for guidance of users.

- i) Operator's manual
- ii) Service manual
- iii) Part's catalog

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

We are satisfied with the report

