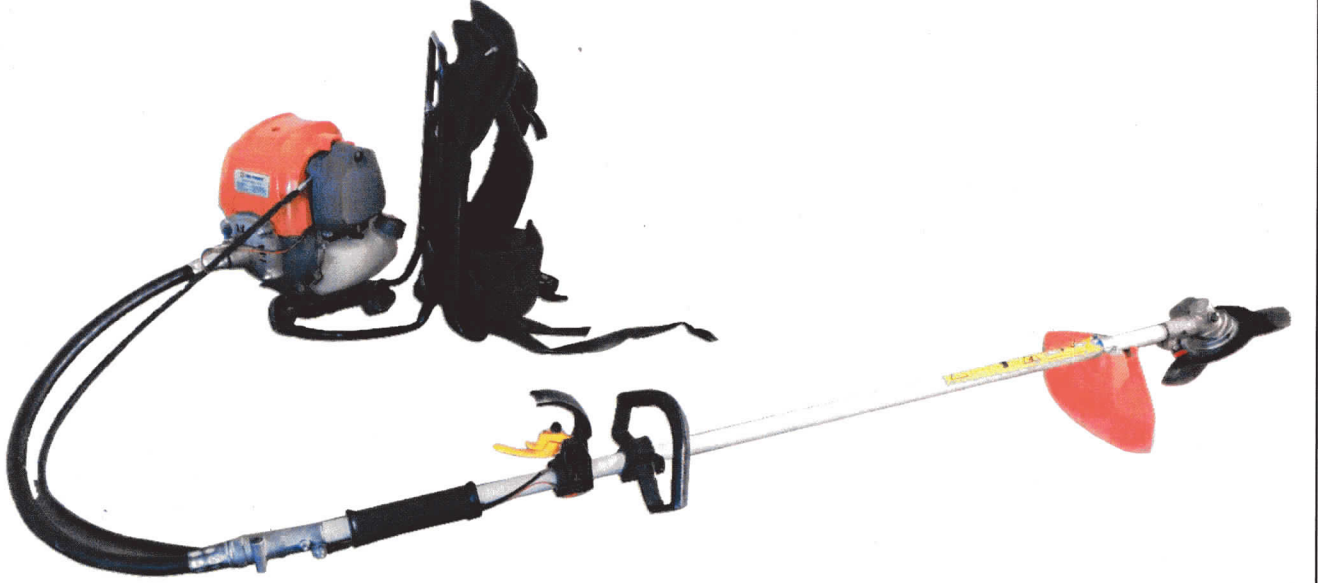


ब्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: MACHINE-23/2589/2020  
माह/Month: November, 2020

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> November, 2025**



**XTRA POWER, XP-BBC-50  
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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**[ISO 9001:2015 CERTIFIED]**

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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	0.4334	<b>Does not conform</b>
Manganese (Mn)	0.30 to 0.50	0.4491	<b>Does not conform</b>
Silicon (Si)	--	0.2324	--
Sulphur (S)	--	0.0296	--
Phosphorous (P)	--	0.0137	--

**12. FIELD TEST**

Field tests were conducted for 16.08 hours with nylon rope attachment and 10.69 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/ Weeds cutting	
		For nylon rope	For triangular blade
1	Field condition	Level	Level
2	Intensity of grass/ Seasonal weeds	Medium	Medium
3	Average number of grass/weed in 1 sq.m	41 to 49	47 to 51
4	Avg. height of grass/weed, cm	34.0 to 58.8	60.3 to 73.7
5	Avg. Diameter of grass/weed, mm	2.0 to 2.7	2.4 to 2.7
6	Avg. Mass of grass cut (kg/h)	28.3 to 35.3	30.6 to 35.2
7	Avg. area covered (Rate of work), ha/h	0.016 to 0.020	0.017 to 0.020
8	Avg. Time required for one hectare, h	51.28 to 64.10	51.28 to 58.48
9	Avg. Fuel consumption	l/h	0.46 to 0.52
		l/ha	25.64 to 31.07
			0.50 to 0.52
			26.67 to 29.24

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

- Average area covered (rate of work) was observed as 0.016 to 0.020 ha/h.
- Average time required for one hectare was observed as 51.28 to 64.10 h.
- Average mass of grass cut was observed as 28.3 to 35.3 kg/h.
- Average No. of grass stem in one m<sup>2</sup> area was 41 to 49

**12.1.2 Fuel consumption**

Average fuel consumption was observed as 0.46 to 0.52 l/h. and 25.64 to 31.07 l/ha.

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

- The average area covered (rate of work) was observed as 0.017 to 0.020 ha/h.
- Average time required for one hectare was observed as 51.28 to 58.48 hours.
- Average numbers of perennial weed in one square meter are was 47 to 51.
- Average mass of perennial weed cut was 30.6 to 35.2 kg/h.

**12.2.2 Fuel consumption**

Fuel consumption was observed as 0.50 to 0.52 l/h and 26.67 to 29.24 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	16.86	9260	3500	5760	62.2	3.69
Triangular blade	10.69	248.7	231.3	17.4	7.0	0.65

**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.


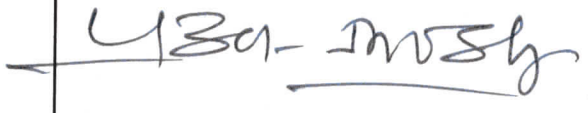
- 16.5 Labeling plate should be riveted on machine with following information.
1. Name and address of manufacturer
  2. Name and address of applicant
  3. Country of origin
  4. Make
  5. Model
  6. Year of manufacturer
  7. Serial number
  8. Engine number
  9. Engine HP
  10. Rated rpm
  11. SFC

### 17. TECHNICAL LITERATURE

Owner's manual is 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

SANJAY KUMAR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report compiled by, Manoj Sharma, B. Tech (Ag. Engg)

### 18. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant comments
18.1	16.1	Necessary steps will be taken at production level to reduce mechanical vibration so that the comfort level of operator is enhanced.
18.2	16.2 & 16.3	The hardness and chemical composition of blades as required in BIS standards will be provided.
18.3	16.5	The labelling plate as suggested by Testing Authority will be riveted with required information.

