



THIS TEST REPORT IS VALID UPTO 28.02.2031



VI POWER GOLD BC 139 F BRUSH CUTTER



भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

विश्वनाथ चारिआलि, जिला-विश्वनाथ (असम)

BISWANATH CHARIALI: BISWANATH: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

Machine 110/481	VI POWER GOLD BC 139 F BRUSH CUTTER	COMMERCIAL (INITIAL)
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1. SCOPE OF TEST

1.1 LABORATORY TEST

- a) Checking of specifications
- b) Mechanical vibration measurement
- c) Noise measurement
- d) Wear assessment of critical components
- e) Engine performance test



1.2 FIELD TEST

- a) Rate of work
- b) Quality of work
- c) Labour requirement
- d) Adequacy of prime mover power
- e) Ease of operation, adjustment & safety provisions
- f) Defects, breakdowns and repairs

2. METHOD OF SELECTION

The test sample was selected by the testing authority through random selection. The following test samples were presented by the applicant during the random selection at Applicant's site.

Sl. No	Serial No. of test sample	Remarks
1	2023060575	Out of 5 samples Sr. No. 5 sample was randomly selected.
2	2023060894	
3	2023050226	
4	2023060676	
5	2023071123	

3. TEST CODE AND PROCEDURE

There is no Indian Standard Test Code available for testing of brush cutter as such. However for engine performance test, IS 7347-1974 was referred.

4. SPECIFICATIONS

4.1 General

- Name of the Machine : Brush Cutter
- Name and address of the manufacturer : **Zhejiang Altogarten Industry Trade Co., Ltd.**, Huyan Village Quanxi Town, Wuyi County, Jinhua city, Zhejiang Province, China.

Name & Address of Applicant : **VNM Industries Pvt., Ltd.,**
3rd floor, Shri Hari Mansion, Building
No.19, Navjivan Wadi, Dhobi Talao,
Mumbai-400002, Maharashtra.

Make : VI POWER GOLD

Model : BC 139 F

Serial No. : 2023071123

Type : Back Mounted Engine operated

Type of cutting attachment : Nylon rope & circular blade

Year of manufacture : 2023

Country of origin : **CHINA**

Type of crops/bush recommended : All kinds of weeds/Bushes.



4.2 Constructional details :

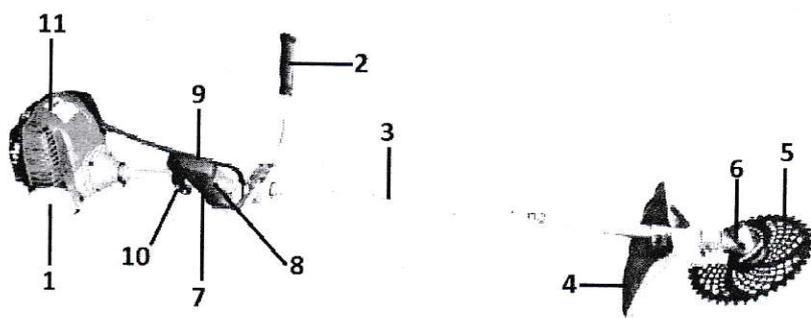


Fig. 1: VI POWER GOLD BRUSH CUTTER, MODEL: BC 139 F

Keywords:

- | | |
|--------------------------------------|-----------------------------------|
| 1. Fuel tank | 7. Handle grip (RHS) |
| 2. Handle grip (LHS) | 8. Throttle cum clutch trigger |
| 3. Transmission cover pipe | 9. Engine stopping switch |
| 4. Grass deflector | 10. Connection for shoulder strap |
| 5. Circular blade cutting attachment | 11. Engine |
| 6. Gear case | |

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10. HARDNESS AND CHEMICAL COMPOSITION

10.1 Hardness of Circular blade:

Sl. No.	Hardness as per IS: 6025 – 1982 (HRC)	Hardness as measured (HRBW)	Remarks
1	48 to 58	89.4	Does not conform

10.2 Chemical composition of Circular blade:

The results of chemical analysis test of Circular blade

Constituents	As per IS: 6025 – 1982 (%)	Composition As observed (% by weight)	Remarks
Carbon (C)	0.70 to 0.95	0.054	Does not conform
Manganese (Mn)	0.3 to 0.5	0.136	Does not conform
Silicon (Si)	-----	0.040	--
Sulphur (S)	-----	0.006	--
Phosphorous (P)	-----	0.014	--

11. WEAR ANALYSIS OF CRITICAL COMPONENTS

Component	Duration of operation (h)	Initial mass (g)	Mass after operation (g)	Loss of mass (g)	Percentage of wear	Percentage of wear on hourly basis
Circular blade	12.36	303.1	300.2	2.9	0.96	0.08

12. FIELD PERFORMANCE TEST

Field tests were conducted for total of 25.19 hours duration. Bush cutting using Circular blade and Grass/weeds cutting with nylon rope attachments were carried out for 12.36 hours and 12.83 hours, respectively. A total of four test trials were conducted at rated speed of 8500 rpm. Detailed results of field tests are shown in ANNEXURE-I & II and summarized in the ensuing table. Details of the operator have been given in ANNEXURE-III.

SUMMARY OF FIELD PERFORMANCE TESTS

Sl. No.	Parameters	Grass/weeds cutting	Bush cutting
1	2	3	4
1	Field Condition	Level	
2	Thickness of stem of Grasses/Bush at cutting height (mm)	0.9 to 1.6	13.8 to 18.8
3	Average number of Grass/Bush in 1m ²	445 to 535	17 to 23



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1	2	3	4
4	Average height of Grasses/Bush (mm)	270 to 520	1530 to 2020
5	Mass of Grass/Bush cut (kg/h)	183.2 to 188.1	1454.8 to 1485.3
6	Mass of Grass/Bush cut (kg/ha)	4182 to 4262	45010 to 46930
7	Rate of work (ha/h)	0.043 to 0.045	0.031 to 0.033
8	Time required for one hectare (h)	22.22 to 23.26	30.30 to 32.26
9	Fuel consumption		
	-l/h	0.56 to 0.60	0.61 to 0.62
	-l/ha	13.03 to 13.24	18.51 to 20.00

12.1 Weeds cutting using nylon rope

12.1.1 Rate of work

- The area of cut was recorded as 0.043 to 0.045 ha/h.
- Time required for one hectare was recorded as 22.22 to 23.26 h.
- Mass of weeds cut was 183.2 to 188.1 kg/h.

12.1.2 Fuel consumption

- Fuel consumption was observed as 0.56 to 0.60 l/h and 13.03 to 13.24 l/ha.

12.2 Bush cutting using Circular blade

12.2.1 Rate of work

- The area of cut was recorded as 0.031 to 0.033 ha/h.
- Time required for one hectare was recorded as 30.30 to 32.26 h.
- Mass of bush cut was 1454.8 to 1485.3 kg/h.

12.2.2 Fuel consumption

- Fuel consumption was observed as 0.61 to 0.62 l/h and 18.51 to 20.00 l/ha.

12.3 Labour/operator requirement :

It was observed that an averagely built person can able to operate the brush cutter for 40 to 45 minutes at a stretch. Hence, two operators are required for continuous operation.

12.4 Adequacy of power of prime mover :

The power of prime mover was found adequate.

13. EASE OF OPERATION AND ADJUSTMENTS

No noticeable difficulties were observed in operation and adjustment during the field test.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable defect or breakdown was observed during test.



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Big end bearing:

Bearing No.	Clearance, mm		Max. permissible clearance limit, mm	
	Diametrical	Axial	Diametrical	Axial
1	Needle bearing	--	0.045	0.09

Measurement of big end bearing clearance was not possible as the piston along with connecting rod was not detachable.

15.2 Valve, guide and timing gear:-

Any marked sign of overheating of valves : None
Pitting of seat/faces of valves : None
Any visual damage of teeth of timing gears : None
Condition of ignition coil & magneto : Normal

15.3 Transmission system:

All the gears of the transmission system were found in normal condition.

16. COMMENTS & RECOMMENDATIONS

16.1 The average rated power in rating test of engine was observed as 0.55 kW against declared value of 1.10 kW by the applicant/manufacturer. This should be looked into for corrective action.

16.2 The specific fuel consumption (SFC) in rating test of engine was observed as 1025.3 g/kWh against declared value of 452 g/kWh by the applicant/manufacturer which exceeded by more than 5 percent of that declared by the manufacturer and hence does not fulfill the requirement of IS 7347-1974 (Amended 2011). This should be looked into for corrective action.

16.3 The engine was not marked with Manufacturer name or trade-mark, Rated power, Rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2011). This may be looked into.

16.4 It was observed that during engine performance test, at full load, engine speed was not stable at rated speed. This shall be looked into for corrective action.

16.5 Noise at operator's ear level was observed on higher side against danger limit of 90 dB(A) as specified by International Labour Organization (ILO) for continuous exposure of 8 hours per day. This calls for reduction in noise level to improve the operational comfort and safety of the operator.

16.6 The Hardness & Chemical composition of circular blade does not conform to Indian Standard IS 6025:1982. This should be looked into for improvement.

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16.7 The amplitude of mechanical vibration at various assemblies viz. steering handle, engine cover and drive shaft cover pipe was on higher side. This calls for dampening down of vibration to improve the operational comfort and service life of the machine components.

16.8 As a safety wear, only hand gloves & goggles (safety glass) were provided with the machine. The applicant is strictly advised to provide the entire safety kit including helmet, Safety shoe, ear plug, mask etc. along with each machine for the safety of operator.

16.9 The applicant is advised to provide metallic labelling plate instead of sticker at suitable place on the machine. It should be looked into.

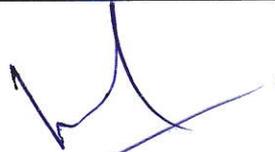
16.10 Adequacy of Literature

The following literature in English language was provided for reference during testing:

- Operator's/ Service manual
- Parts catalogue

It is recommended to bring out the manual in Hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY



(M.R. PATIL)
AGRICULTURAL ENGINEER



(Dr. P.P. RAO)
DIRECTOR



17. APPLICANT'S COMMENTS

Sr. No.	Clause No.	Applicant's Comments
17.1	16.1 to 16.10	We will take necessary action as per comments and recommendation in test report for improvement in future production