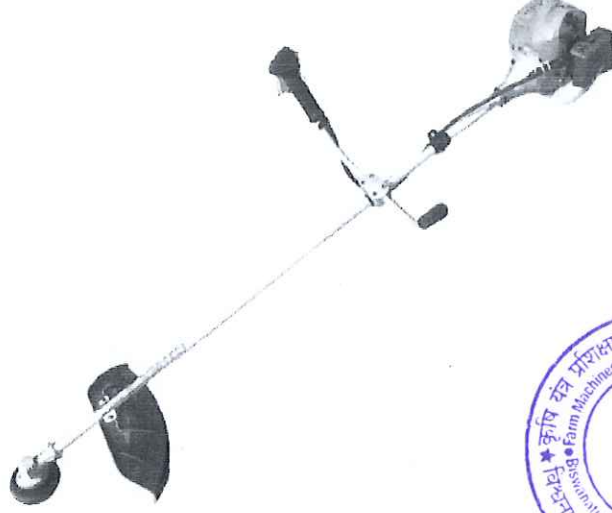




THIS TEST REPORT IS VALID UPTO 31.03.2032



VELMOC AGRO, VGCH-1431, BRUSH CUTTER



भारत सरकार

GOVERNMENT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE AND 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

बिश्वनाथ चारिआलि, जिला - बिश्वनाथ(असम)

BISWANATH CHARIALI, DIST- BISWANATH, ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

Machine 156/530	VELMOC AGRO, VGCH-1431 BRUSH CUTTER	COMMERCIAL (INITIAL)
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Name and Address of Applicant : M/s MACAN AGROMART PVT. LTD, Banur Ambala Highway, Gian Jyoti College Road, Adjoining Woodland warehouse Shambu Kalan, Tepla, Distt. Patiala, Punjab 140 417

Make : VELMOC AGRO

Model : VGCH-1431

Serial No. : 00003

Type : Engine operated

Type of cutting attachment : Nylon rope and circular blade

Year of manufacture : 2024

Country of origin : CHINA

Type of crops/bush recommended : All kinds of weeds/bushes

4.2 Constructional details:

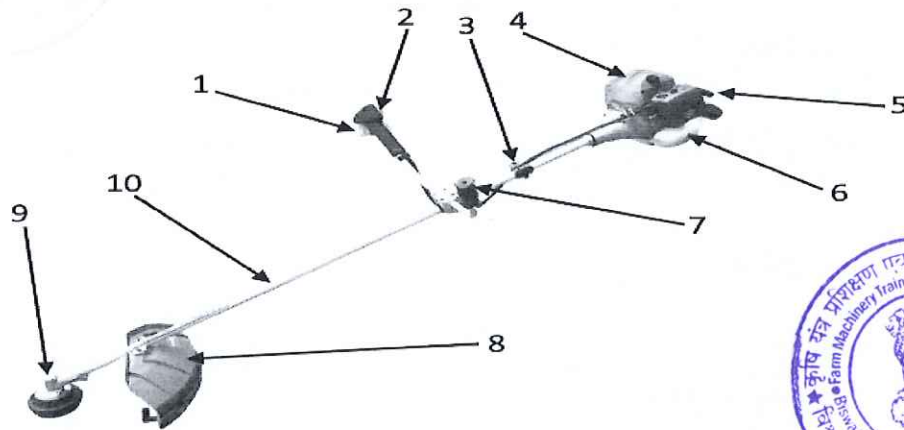


Fig. 1: BRUSH CUTTER, MODEL:VGCH-1431

Keywords:

- | | |
|----------------------------------|-----------------------------|
| 1. Throttle cum clutch trigger | 6. Fuel tank |
| 2. Engine stopping switch | 7. LHS handle |
| 3. Connection for shoulder strap | 8. Deflector |
| 4. Engine | 9. Gear case |
| 5. Recoil starter handle | 10. Transmission cover pipe |

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SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Grass/weeds cutting with nylon rope	Bush cutting with circular blade
1	Field Condition	Level	
2	Thickness of stem of Grasses/Bush at cutting height (mm)	2.7 to 4.4	16.1 to 18.3
3	Number of Grass/Bush per m ²	114 to 248	45 to 50
4	Height of Grasses/Bush (mm)	149 to 350	1270 to 1313
5	Mass of Grass/Bush cut (kg/h)	59.5 to 139.8	545.2 to 793.6
6	Mass of Grass/Bush cut (kg/ha)	1240 to 2300	17500 to 24800
7	Rate of work (ha/h)	0.042 to 0.061	0.031 to 0.032
8	Time required for one hectare (h)	16.45 to 24.04	31.25 to 32.05
9	Fuel consumption:		
	-l/h	0.74 to 0.75	0.71 to 0.74
	-l/ha	12.34 to 17.79	22.76 to 23.13

12.1 Grass/Weeds cutting using nylon rope:

12.1.1 Rate of work:

The area of cut was recorded as 0.042 to 0.061 ha/h.

Time required for one hectare was recorded as 16.45 to 24.04 hours.

Mass of weeds cut was 59.5 to 139.8 kg/h.

12.1.2 Fuel consumption:

Fuel consumption was observed as 0.74 to 0.75 l/h and 12.34 to 17.79 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 0.032 ha/h.

Time required for one hectare was recorded as 31.25 to 32.05 hours.

Mass of weeds cut was 545.2 to 793.6 kg/h.

12.2.2 Fuel consumption:

Fuel consumption was observed as 0.71 to 0.74 l/h and 22.76 to 23.13 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 of the brush cutter.



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- 12.4 **Adequacy of power of prime mover:**
The power of prime mover was found adequate.

13. EASE OF OPERATION AND ADJUSTMENTS

No 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.

15. COMPONENTS/ASSEMBLY INSPECTION

The Engine was dismantled after 34.74 hours of operation.

15.1 **Engine:**

Cylinder bore:

Cylinder bore dia., mm						Max. permissible wear limit, mm
Top position		Middle position		Bottom position		
Thrust side	Non-thrust side	Thrust side	Non-thrust side	Thrust side	Non-thrust side	
40.0	39.99	40.00	39.99	39.99	*	40.25

*Not recorded due to cylinder design constraints

Piston:

Piston dia., mm				Clearance between piston & cylinder liner at the skirt of the piston, mm	Maximum permissible clearance limit, mm
Top (above top compression ring)		At skirt			
Thrust side	Non-thrust side	Thrust side	Non-thrust side		
39.80	39.83	39.91	*	0.08	0.40

*Not recorded due to piston design constraints

Ring end gap:

Rings	Ring end gap, mm			Max. permissible end gap limit, mm
	Top	Middle	Bottom	
1 st comp. ring	0.25	0.25	0.20	0.60
2 nd comp. ring	0.25	0.25	0.20	
Oil ring	NA	NA	NA	

Ring side clearance:

Rings	Ring side clearance, mm	Max. permissible clearance limit, mm
1 st comp. ring	0.09	0.40
2 nd comp. ring	0.09	
Oil ring	NA	NA

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Main bearings: 6201-2Nos.

Bearing No.	Type of bearing	Diametrical clearance, mm	Crankshaft end float, mm	Max. permissible clearance limit, mm	
				Diametrical clearance	Crankshaft end float
1	Ball bearing	NA	0.07	NA	0.10
2	Ball bearing	NA			

Big end bearing:

Bearing No.	Clearance, mm		Max. permissible clearance limit, mm	
	Diametrical	Axial	Diametrical	Axial
1	Needle bearing	NR	0.15	1.10

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

15.2 Transmission system:

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



16. CRITICAL TECHNICAL SPECIFICATIONS (Vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019)

Sr. No.	Parameters	Specifications	Observation	Remarks
1	2	3	4	5
1	Type	Self-propelled, portable	Self-propelled, portable	Conforms
2	Type of cutting attachment	Circular disc / Straight blade / nylon rope	Circular disc / nylon rope	Conforms
Circular blade				
3	Material of circular/straight blade	Alloy steel	Alloy steel	Conforms
4	No. of teeth on circular disc blade	50 - 100	80	Conforms
5	Root diameter / Overall diameter (mm)	200 - 270	253	Conforms
6	Thickness of disc (mm)	1.5 Min.	1.2	Does not conform
7	Teeth thickness (mm)	2.0 Min.	2.3	Conforms
8	Hardness of blade, HRC	68 - 70	30	Does not conform

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1	2	3	4	5
Straight blade				
9	Diameter of straight blade (mm)	250 - 350	NA	--
10	Width at ends /at center (mm)	50 / 70, Min.	NA	--
11	Thickness of straight blade (mm)	1.5 Min.	NA	--
Nylon rope				
12	Length of nylon rope (mm)	2000 - 4000	3000	Conforms
13	Diameter of nylon rope (mm)	2.5 to 4.0	2.5	Conforms
14	Type of engine	Compression ignition / Spark ignition	Spark ignition	Conforms
15	Starting method	Manual / recoil / self -starting	Recoil starting	Conforms
16	Type of clutch	Cone / centrifugal	Centrifugal	Conforms
17	Type of gear drive	Bevel pinion	Bevel pinion	Conforms
18	Capacity of fuel tank (l)	1.0 (Min.)	1.0	Conforms
19	On /Off provision in fuel Supply system	Must be provided	Not provided	Does not conform
20	Provision for easy start of engine	Must be provided	Provided	Conforms
21	Provision for emergency stop of engine	Must be provided	Provided	Conforms
22	Provision for shield / cover to prevent flying of mud & stone from rotor	Must be provided	NA	--
23	Provision for Grass deflector at the rear of the cutting mechanism	Must be provided	Provided	Conforms
24	Provision for Pad with shoulder belt to dampen the vibration	Must be provided	Provided	Conforms
25	Provision for cover on exhaust	Must be provided	Provided	Conforms
26	Direction of exhaust emission away from operator	Must be provided	Provided	Conforms
27	Provision for safety kit (helmet, earplug, mask, hand gloves, safety protective cloth, safety shoes)	Must be provided	Only hand gloves and safety glass were provided.	Does not conform



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1	2	3	4	5
28	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.	Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacturer, Serial number, Engine number, rated rpm & SFC were not provided. Instead of labeling plate, a sticker was pasted on the machine.	Does not conform
29	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms



17. COMMENTS AND RECOMMENDATIONS

- 17.1** The average rated power in rating test of engine was observed as 0.43 kW against declared value of 1.5 kW by the applicant/manufacturer. This should be looked into for corrective action.
- 17.2** The specific fuel consumption (SFC) corresponding to rated power in rating test of engine was observed as 1201.1 g/kWh against declared value of 400 g/kWh by the applicant/manufacturer which exceeded by more than 5 percent of that declared by the applicant/manufacturer and hence does not fulfill the requirement of IS 7347-1974 (Amended 2021). This should be looked into for corrective action.
- 17.3** 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 2021). This should be looked into.
- 17.4** The labeling plate should be riveted on the body of machine having name and address of the manufacturer, Country of origin, Make, Model, Year of manufacture, Serial number, Engine number, Engine HP, rated rpm and SFC. This should be looked into.
- 17.5** 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 operator.

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- 17.6 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 components.
- 17.7 The hardness and chemical composition of circular blade does not conform to Indian Standard IS 6025:2024. This should be looked into for corrective action.
- 17.8 As a safety wear, only hand gloves and safety glass were provided with the machine. The applicant is strictly advised to provide the entire safety kit including helmet, mask, ear plug, protective cloth etc. along with each machine for the safety of operator.
- 17.9 **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: 8132-2023.

TESTING AUTHORITY



(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER




(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - Sh. Vithato Keyho, Sr. Technical Assistant

18. APPLICANT'S COMMENTS

Applicant's Comments
We will take necessary action as per comments and recommendations in the test report for improvement in the future production.

FARM MACHINERY TRAINING & TESTING INSTITUTE (NER), B. CHARIALI, ASSAM (THIS TEST REPORT IS VALID UP TO 31.03.2032)	Page 19 of 21
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ANNEXURE-I

FIELD PERFORMANCE TEST

Cutting attachment : Nylon rope
Place of test : NERFMTTI field, Biswanath Chariali, Assam
Usage : Weeds/grass cutting

Sr. No.	Parameters	Test trial				
		I	II	III	IV	
1	Date of test	20.02.2025	21.02.2025	24.02.2025		
2	Net test duration (h)	2.05	3.59	3.38	6.07	
3	Avg. height of weeds (mm)	NR	300	350	149	
4	Avg. thickness of stem of weeds at cutting height (mm)	NR	3.0	2.7	4.4	
5	Avg. No. of weeds per m ²	NR	248	224	114	
6	Avg. mass of weeds cut per m ² (g)	NR	230	220	124	
7	Actual area cut (ha/h)	NR	0.061	0.042	0.048	
8	Time required for one ha (h/ha)	NR	16.45	24.04	20.83	
9	Mass of weeds cut					
		kg/h	NR	139.8	91.5	59.5
		kg/ha	NR	2300	2200	1240
10	Fuel consumption					
		l/h	NR	0.75	0.74	0.75
		l/ha	NR	12.34	17.79	15.62



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ANNEXURE-II

FIELD PERFORMANCE TEST

Cutting attachment : Circular Blade
 Place of test : NERFMTTI field, Biswanath Chariali, Assam
 Usage : Bush cutting

Sr. No.	Parameters	Test trial	
		I	II
1	Date of test	19.02.2025	20.02.2025
2	Net test duration (h)	5.55	4.60
3	Avg. height of bush (mm)	1270	1313
4	Avg. thickness of stem of bush at cutting height (mm)	16.1	18.3
5	Avg. No. of bush per m ²	50	45
6	Avg. mass of bush cut per m ² (g)	1750	2480
7	Actual area cut (ha/h)	0.031	0.032
8	Time required for one ha (h/ha)	32.05	31.25
9	Mass of bush cut		
	kg/h	545.2	793.6
	kg/ha	17500	24800
10	Fuel consumption		
	l/h	0.71	0.74
	l/ha	22.76	23.13



ANNEXURE-III

DETAILS OF OPERATORS

Operator	:	I	II
Age, years	:	38	42
Height, cm	:	155	155
Weight, kg	:	68	52