व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)

संख्या/No.: Machine 136/510
माह / Month: November 2024

THIS TEST REPORT IS VALID UPTO 30.11.2031

SVVAS VIRAT SERIES, V4500, BRUSH CUTTER

सत्यमेव जयते

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)
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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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		XinbeiDistrict,Changzhou, CHINA
Name & Address of Applicant	:	M/s Vindhya Associates #2-T-120/2, Uma Madhav Mansion, Maroli Kaikamba Junction, NH73, Mangaluru, Karnataka– 575005
Make	:	SVVAS VIRAT SERIES
Model	:	V4500
Serial No.	:	2024070303661
Type	:	Engine operated
Type of cutting attachment	:	Nylon rope, straight blade 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:

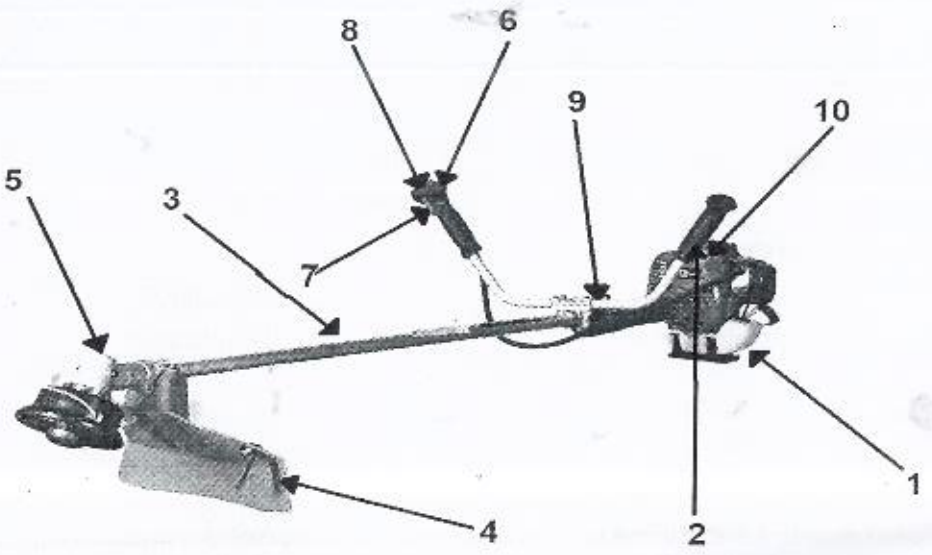

Fig. 1: BRUSH CUTTER, MODEL:V4500

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Grass/weeds cutting with nylon rope	Bush cutting with Straight blade	Bush cutting with circular blade
1	Field Condition	Level		
2	Thickness of stem of Grasses/Bush at cutting height (mm)	1.60 to 2.38	10.87 to 11.15	19.71 to 19.91
3	Number of Grass/Bush in 1m²	454 to 530	22 to 24	22 to 23
4	Height of Grasses/Bush (mm)	319 to 473	1338 to 1501	1997 to 2008
5	Mass of Grass/Bush cut (kg/h)	128 to 176.5	805.3 to 912.5	979.7 to 1049
6	Mass of Grass/Bush cut (kg/ha)	3880 to 5106	24400 to 26836	37468 to 37680
7	Rate of work (ha/h)	0.033to 0.036	0.033 to 0.034	0.026 to 0.028
8	Time required for one hectare (h)	27.78 to 30.30	29.41 to 30.30	35.71 to 38.46
9	Fuel consumption			
	-l/h	0.75 to 0.80	0.73 to 0.75	0.78 to 0.79
	-l/ha	20.92 to 24.30	21.62 to 22.82	28.36 to 30.19

12.1 Grass/Weeds cutting using nylon rope

12.1.1 Rate of work

The area of cut was recorded as 0.033 to 0.036 ha/h.
Time required for one hectare was recorded as 27.78 to 30.30 hours.
Mass of weeds cut was 128 to 176.5 kg/h.

12.1.2 Fuel consumption

Fuel consumption was observed as 0.75 to 0.80 l/h and 20.92 to 24.30 l/ha.

12.2 Bush cutting using straight blade

12.2.1 Rate of work

The area of cut was recorded as 0.033 to 0.034 ha/h.
Time required for one hectare was recorded as 29.41 to 30.30 hours.
Mass of bush cut was 805.3 to 912.5 kg/h.

12.2.2 Fuel consumption

Fuel consumption was observed as 0.73 to 0.75 l/h and 21.62 to 22.82 l/ha.

12.3 Bush cutting using circular blade

12.3.1 Rate of work

The area of cut was recorded as 0.026 to 0.028 ha/h.
Time required for one hectare was recorded as 35.71 to 38.46 hours.
Mass of weeds cut was 979.7 to 1049 kg/h.

12.3.2 Fuel consumption

Fuel consumption was observed as 0.78 to 0.79 l/h and 28.36 to 30.19 l/ha.

13. EASE OF OPERATION AND ADJUSTMENTS

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

14. DEFECTS, BREAKDOWNS AND REPAIRS

A minor crack in the recoil starter mounting base was observed after completion of field performance tests. On request of the applicant, it was replaced with new one.

15. COMPONENTS/ASSEMBLY INSPECTION

The Engine was dismantled after 35.56 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	
40.02	40.01	40.02	40.00	40.02	40.00	40.20

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		
39.86	39.89	39.93	*	0.09	0.30

*not recorded due to piston design constraints

Ring end gap:

Rings	Ring end gap, mm			Max. permissible end gap limit, mm
	Top	Middle	Bottom	
1st comp. ring	0.30	0.30	0.30	1.00
2nd comp. ring	0.35	0.30	0.30	
Oil ring	NA	NA	NA	

Ring side clearance:

Rings	Ring side clearance, mm	Max. permissible clearance limit, mm
1st comp. ring	0.08	0.30
2nd comp. ring	0.08	
Oil ring	NA	

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	0.08	NA	--
2	Ball bearing	NA			

Big end bearing:

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

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)

Sl. No.	Parameters	Specifications	Observation	Remarks
1	Type	Self-propelled, portable	Self-propelled, portable	Conforms
2	Type of cutting attachment	Circular disc / Straight blade /nylon rope	Circular disc / Straight blade /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	60	Conforms
5	Root diameter / Overall diameter (mm)	200 - 270	254.9	Conforms
6	Thickness of disc (mm)	1.5 Min.	1.17	**Does not conform**
7	Teeth thickness (mm)	2.0 Min.	2.0	Conforms
8	Hardness of Blade, HRC	68 - 70	18.8	**Does not conform**
	Straight blade			
9	Diameter of straight blade(mm)	250 - 350	305	Conforms
10	Width at ends /at center (mm)	50 / 70, Min.	62.5/90.1	Conforms

11	Thickness of straight blade(mm)	1.5 Min.	1.91	Conforms	
	Nylon rope				29
12	Length of nylon rope(mm)	2000 - 4000	3000	Conforms	
13	Diameter of nylon rope(mm)	2.5 to 4.0	3.0	Conforms	
14	Type of engine	Compression ignition / Spark ignition	Spark ignition	Conforms	
15	Starting method	Manual / recoil / self -starting	Recoil starting	Conforms	17.
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.)	0.95	**Does not conform**	
19	On /Off provision in fuel Supply system	Must be provided	Not provided	**Does not conform**	17.
20	Provision for easy start of engine	Must be provided	Provided	Conforms	17.3
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 deflectorat the rear of the cutting mechanism	Must be provided	Provided	Conforms	17.4
24	Provision for Pad with shoulder belt to dampen the vibration	Must be provided	Provided	Conforms	17.5
25	Provision for cover on exhaust	Must be provided	Provided	Conforms	
26	Direction of exhaust emission away from operator	Must be provided	Provided	Conforms	17.6
27	Provision for safety kit (helmet, earplug, mask,hand gloves, protective cloth, safety shoes)	Must be provided	Helmet and mask were not provided	**Does not conform**	17.7
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	Only Make, Model and Serial Number was mentioned on the labeling sticker. Instead of labeling plate, a sticker was pasted on the machine.	**Does not conform**	17.8 17.9

		number, Engine HP, rated rpm & SFC.		
29	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

17. COMMENTS AND RECOMMENDATIONS

17.1 A minor crack in the recoil starter mounting base was observed after completion of field performance tests. On request of the applicant, it was replaced with new one. This should be looked into for quality improvement in future production.

17.2 The average rated power in rating test of engine was observed as 0.42 kW against declared value of 1.5 kW by the applicant/manufacturer. This should be looked into for corrective action.

17.3 The specific fuel consumption (SFC) in rating test of engine was observed as 797g/kWh against declared value of 750 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 2021). This should be looked into for corrective action.

17.4 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 should be looked into.

17.5 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.

17.6 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.

17.7 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 components.

17.8 The hardness andchemical composition of straight blade and circular blade does not conform to Indian Standard IS 6025:1982. This should be looked into for corrective action.

17.9 As a safety wear, safety glass, hand gloves, ear plug and safety shoes were provided with the

machine. The applicant is strictly advised to provide the entire safety kit including helmet, mas etc. along with each machine for the safety of operator.

17.10 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)
SENIOR AGRICULTURAL ENGINEER

(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - **Shri J. Bhon Singh**
Sr. Technical Assistant

18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
18.1	17.1 to 17.10	As per observation and recommendation, we will fulfil and compel the points needed.

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
1	Date of test	30.09.2024	01.10.2024	01.10.2024
2	Net test duration (h)	5.58	3.22	3.25
3	Avg. height of weeds (mm)	319	376	473
4	Thickness of stem of weeds at cutting height (mm)	1.60	2.05	2.38
5	Avg. No. of weeds per m^2	454	530	505
6	Avg. mass of weeds cut per m^2 (g)	388	511	490
7	Actual area cut (ha/h)	0.033	0.034	0.036
8	Time required for one ha (h/ha)	30.30	29.41	27.78
9	Mass of weeds cut			
	kg/h	128	173.61	176.5
	kg/ha	3880	5106	4902
10	Fuel consumption			
	l/h	0.80	0.78	0.75
	l/ha	24.30	22.94	20.92

ANNEXURE-II

FIELD PERFORMANCE TEST

Cutting attachment : Straight blade
Place of test : NERFMTTI field, Biswanath Chariali, Assam
Usage : Bush cutting

Sr. No.	Parameters	Test trial	
		I	II
1	Date of test	03.10.2024	03.10.2024
2	Net test duration (h)	3.42	3.25
3	Avg. height of bush (mm)	1501	1338
4	Thickness of stem of bush at cutting height (mm)	11.15	10.87
5	Avg. No. of bush per m^2	22	24
6	Avg. mass of bush cut per m^2 (g)	2440	2683
7	Actual area cut (ha/h)	0.033	0.034
8	Time required for one ha (h/ha)	30.30	29.41
9	Mass of bush cut		
	kg/h	805.2	912.5
	kg/ha	24400	26836
10	Fuel consumption		
	l/h	0.75	0.73
	l/ha	22.82	21.62

ANNEXURE-III

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	07.10.2024	07.10.2024
2	Net test duration (h)	3.25	3.67
3	Avg. height of bush (mm)	2008	1997
4	Thickness of stem of bush at cutting height (mm)	19.91	19.71
5	Avg. No. of bush per m^2	23	22
6	Avg. mass of bush cut per m^2 (g)	3768	3747
7	Actual area cut (ha/h)	0.026	0.028
8	Time required for one ha (h/ha)	38.46	35.71
9	Mass of bush cut		
	kg/h	979.7	1049.2
	kg/ha	37680	37468
10	Fuel consumption		
	l/h	0.78	0.79
	l/ha	30.19	28.36

ANNEXURE-IV

DETAILS OF OPERATORS

Operator		I	II
Age, years	:	25	27
Height, cm	:	162	165
Weight, kg	:	63	54