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

संख्या/No.: Machine 135/509
माह / Month: November 2024

THIS TEST REPORT IS VALID UPTO 30.11.2031

SVVAS VIRAT SERIES, V4300, 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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Name and address of the applicant	:	M/s Vindhya Associates #2-T-120/2, Uma Madhav Mansion, Maroli Kaikamba Junction, NH73, Mangaluru, Karnataka– 575 005
Make	:	SVVAS VIRAT SERIES
Model	:	V4300
Machine Serial No.	:	20230916071
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:

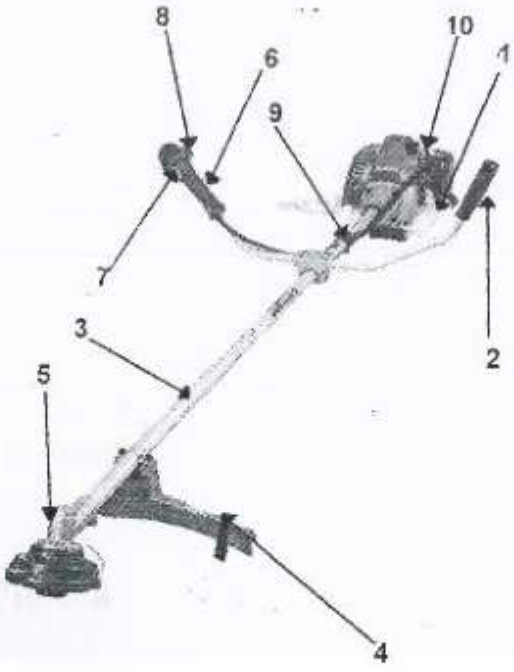

Fig. 1:BRUSH CUTTER, MODEL: V4300

10.4 Chemical composition of straight blade:

Constituent	As per IS: 6025 – 1982 (%)	Composition as observed (% by weight)	Remarks
Carbon (C)	0.70 to 0.95	0.187	Does not conform
Manganese (Mn)	0.3 to 0.5	2.625	Does not conform
Silicon (Si)	--	1.752	--
Sulphur (S)	--	0.010	--
Phosphorous (P)	--	0.010	--

11. WEAR ANALYSIS OF CRITICAL COMPONENTS

Component	Duration of operation (h)	Initial mass (g)	Final mass (g)	Loss of mass (g)	Percentage of wear	Percentage of wear on hourly basis
Straightblade	6.67	274.05	271.73	2.32	0.85	0.13
Circular blade	6.92	397.10	394.40	2.70	0.68	0.10

12. FIELD PERFORMANCE TEST

Field tests were conducted for total of 25.61hours duration. Grass/weeds cutting with nylon rope and bush cutting with straight blade and circular blade attachments were carried out for12.02hours,6.67 hours and 6.92 hours,respectively. A total of seven test trials were conducted at rated engine speed of 6500rpm. Detailed results of field tests are shown in ANNEXURE-I, II& IIIand summarized in the ensuing table. Details of the operator have been given in ANNEXURE-IV.

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)	1.50 to 1.57	10.32 to 12.13	19.34 to 20.10
3	Number of Grass/Bush per m^2	488 to 510	21 to 22	20 to 22
4	Height of Grass/Bush (mm)	279 to 407	1182 to 1915	1978 to 1981
5	Mass of Grass/Bush cut (kg/h)	112.0 to 125.7	678.2 to 708.8	817.1 to 877.2
6	Mass of Grass/Bush cut (kg/ha)	3862 to 4150	22868 to 23386	35528 to 36552
7	Rate of work (ha/h)	0.029 to 0.031	0.029 to 0.031	0.023 to 0.024
8	Time required for one hectare (h)	32.26 to 34.48	32.26 to 34.48	41.67 to 43.48

9	Fuel consumption			
	-l/h	0.69 to 0.72	0.67 to 0.68	0.69 to 0.70
	-l/ha	22.4 to 24.2	21.9 to 23.1	29.2 to 30.0

12.1 Grass/Weeds cutting using nylon rope

12.1.1 Rate of work

The area of cut was recorded as 0.029 to 0.031 ha/h.
Time required for one hectare was recorded as 32.26 to 34.48 hours.
Mass of weeds cut was 112.0 to 125.7 kg/h.

12.1.2 Fuel consumption

Fuel consumption was observed as 0.69 to 0.72 l/h and 22.4 to 24.2l/ha.

12.2 Bush cutting usingstraight blade

12.2.1 Rate of work

The area of cut was recorded as 0.029 to 0.031 ha/h.
Time required for one hectare was recorded as 32.26 to 34.48 hours.
Mass of bush cut was 678.2 to 708.8 kg/h.

12.2.2 Fuel consumption

Fuel consumption was observed as 0.67 to 0.68 l/h and 21.9 to 23.1 l/ha

12.3 Bush cutting using circular blade

12.3.1 Rate of work

The area of cut was recorded as 0.023 to 0.024 ha/h.
Time required for one hectare was recorded as 41.67 to 43.48 hours.
Mass of bush cut was 817.1 to 877.2kg/h.

12.3.2 Fuel consumption

Fuel consumption was observed as 0.69 to 0.70 l/h and 29.2 to 30.0 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

No noticeable defect or breakdown was observed during test.

15. COMPONENTS/ASSEMBLY INSPECTION

The Engine was dismantled after 35.36 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	40.01	40.01	40.00	NR	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		
39.69	39.74	39.94	*	0.08	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	0.25	0.25	0.25	
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: 6202-2Nos.

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	0.10	NA	0.20
2	Ball bearing	NA			

Big end bearing:

Bearing No.	Clearance, mm		Max. permissible clearance limit, mm	
	Diametrical	Axial	Diametrical	Axial
1	Needle bearing	--	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	254.8	Conforms
6	Thickness of disc (mm)	1.5 Min.	1.12	**Does not conform**
7	Teeth thickness (mm)	2.0 Min.	2.0	Conforms
8	Hardness of Blade, HRC	68 - 70	15.3	**Does not conform**
	Straight blade			
9	Diameter of straight blade(mm)	250 - 350	300	Conforms
10	Width at ends /at center (mm)	50 / 70, Min.	60.4/90.2	Conforms
11	Thickness of straight blade(mm)	1.5 Min.	1.8	Conforms
	Nylon rope			
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
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.)	0.90	**Does not conform**
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, protective cloth, safety shoes)	Must be provided	Helmet and mask were not provided	**Does not conform**
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.	Only Make, Modeland Serial Number was mentioned on the labeling sticker. 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 0.37 kW against declared value of 1.25 kW by the applicant/manufacturer. This should be looked into for corrective action.

17.2 The specific fuel consumption (SFC) in rating test of engine was observed as 1330 g/kWh against declared value of 750 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 may 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.

17.6 The amplitude of mechanical vibration at various assemblies viz. steering handle, engine cover and drive shaft cover pipe were 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 straight blade and circular blade does not conform to Indian Standard IS 6025:1982. This should be looked into for corrective action.

17.8 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, mask 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: 8132-1999.

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 17.9	As per observation and recommendation, we will fulfil and compel the points needed.

ANNEXURE-I

FIELD PERFORMANCE TEST

Cutting attachment : Nylon rope (Tap & Go)
Place of test : NERFMTTI farm, 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)	5.52	3.17	3.33
3	Avg. height of weeds (mm)	279	407	374
4	Thickness of stem of weeds at cutting height (mm)	1.50	1.53	1.57
5	Avg. No. of weeds per m^2	488	510	492
6	Avg. mass of weeds cut per m^2 (g)	405.6	415.0	386.0
7	Actual area cut (ha/h)	0.031	0.030	0.029
8	Time required for one ha (h/ha)	32.26	33.33	34.48
9	Mass of weeds cut			
	kg/h	125.7	124.5	112.0
	kg/ha	4056	4150	3862
10	Fuel consumption			
	l/h	0.69	0.72	0.70
	l/ha	22.42	24.17	24.24

ANNEXURE-II

FIELD PERFORMANCE TEST

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

Sr. No.	Parameters	Test trial I	Test trial II
1	Date of test	03.10.2024	03.10.2024
2	Net test duration (h)	3.33	3.34
3	Avg. height of bush (mm)	1915	1182
4	Thickness of stem of bush at cutting height (mm)	12.13	10.32
5	Avg. No. of bush per m^2	22	21
6	Avg. mass of bush cut per m^2 (g)	2287	2339
7	Actual area cut (ha/h)	0.031	0.029
8	Time required for one ha (h/ha)	32.26	34.48
9	Mass of bush cut		
	kg/h	708.8	678.2
	kg/ha	22868	23386
10	Fuel consumption		
	l/h	0.68	0.67
	l/ha	21.97	23.10

ANNEXURE-III

FIELD PERFORMANCE TEST

Cutting attachment : Circular Blade
Place of test : NERFMTTI farm, 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)	3.17	3.75
3	Avg. height of bush (mm)	1981	1978
4	Thickness of stem of bush at cutting height (mm)	20.10	19.34
5	Avg. No. of bush per m^2	22	20
6	Avg. mass of bush cut per m^2 (g)	3655	3553
7	Actual area cut (ha/h)	0.024	0.023
8	Time required for one ha (h/ha)	41.67	43.48
9	Mass of bush cut		
	kg/h	877.2	817.1
	kg/ha	36552	35528
10	Fuel consumption		
	l/h	0.70	0.69
	l/ha	29.25	30.00

ANNEXURE-IV

DETAILS OF OPERATORS

Operator		I	II
Age, years	:	25	36
Height, cm	:	155	153
Weight, kg	:	60	66