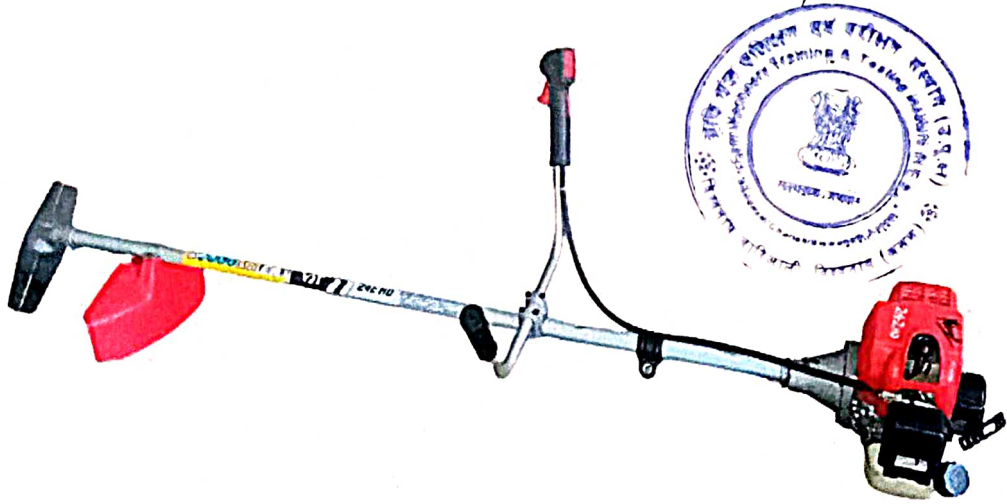




THIS TEST REPORT IS VALID UPTO 31.08.2027



242 HD VST 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]

1. SCOPE OF TEST

1.1 LABORATORY TEST

- Checking of specifications
- Mechanical vibration measurement
- Noise measurement
- Wear assessment of critical components
- Engine performance test

1.2 FIELD TEST

- Rate of work
- Quality of work
- Labour requirement
- Adequacy of prime mover power
- Ease of operation, adjustment & safety provisions
- Defects, breakdowns and repairs



2. METHOD OF SELECTION

As per Govt. of India, OM No. 13-1/2021-M&T (I&P), dated 03.02.2022, the selection of sample for test was exempted. Hence, the machine was directly submitted by the applicant at this Institute for test.

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 (Amended 2011) was referred.

4. SPECIFICATIONS

4.1 General

Name of the Machine	: Brush Cutter
Name and address of the manufacturer	: FARMECH ENTERPRISE CO., LTD No.15, Lane 1265, Chung-Cheng Road, Wu-Fong District, Taichung City 41350, Taiwan
Name & Address of Applicant	: VST TILLERS TRACTORS LTD Plot No 222-224 & 229-232, 3 rd Phase, KIADB Industrial Area, Malur, Kolar District, Karnataka-563 130

Machine 69/440	242 HD VST BRUSH CUTTER	COMMERCIAL (INITIAL)
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Model : 242 HD

Serial No. : 422100330

Type : Engine operated machine

Type of cutting attachment : Nylon rope and straight blade

Year of manufacture : 2022

Country of origin : TAIWAN

Type of crops/bush recommended : All kinds of weeds

4.2 Constructional details :

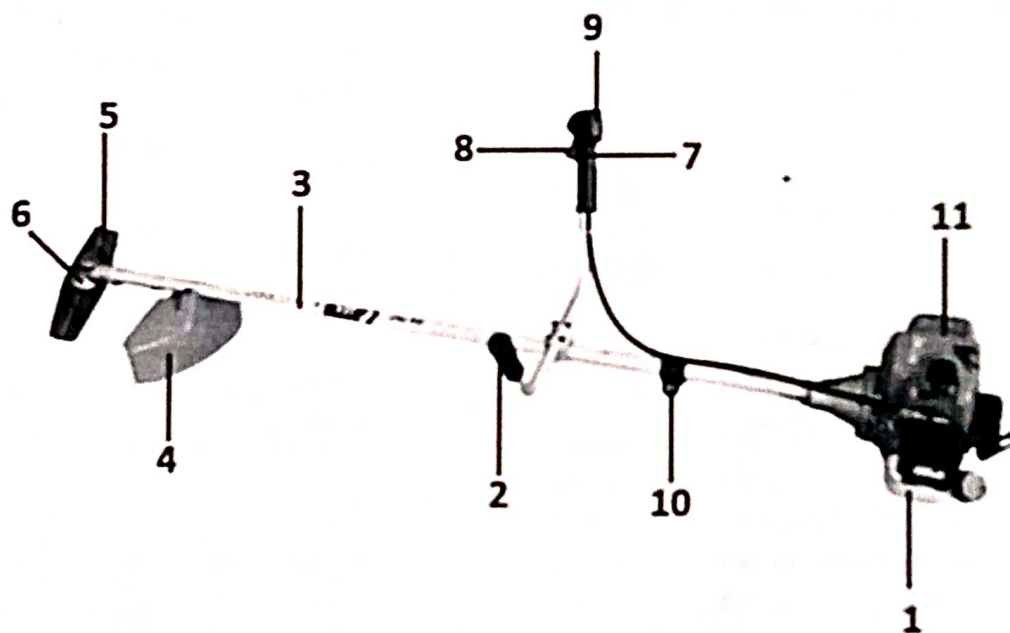


Fig. 1 : VST BRUSH CUTTER, MODEL: 242 HD

Keywords:

- | | |
|----------------------------|--------------------------------|
| 1. Fuel tank | 7. RHS handle |
| 2. LHS handle | 8. Throttle cum clutch trigger |
| 3. Transmission cover pipe | 9. Engine stopping switch |
| 4. Deflector | 10. Shoulder strap |
| 5. Straight blade | 11. Engine |
| 6. Gear case | |

Machine 69/440	242 HD VST BRUSH CUTTER	COMMERCIAL (INITIAL)
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10. HARDNESS AND CHEMICAL COMPOSITION

10.1 Hardness of Straight blade

Sl. No.	Hardness as per IS: 6025 – 1982 (HRC)	Hardness as measured (HRC)	Remarks
1	48 to 58	32.5	Does not Conform

10.2 Chemical composition of Straight Blade:

The results of chemical analysis test of straight blade were as under.

Constituent	As per IS: 6025 – 1982 (%)	Composition As observed (% by weight)	Remarks
Carbon (C)	0.70 to 0.95	0.524	Does not Conform
Manganese (Mn)	0.3 to 0.5	0.506	Does not Conform
Silicon (Si)	---	0.229	---
Sulphur (S)	---	0.005	---
Phosphorous (P)	---	0.018	---

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
Straight blade	13.83	255.0	252.1	2.9	1.14	0.08

12. FIELD PERFORMANCE TEST

Field tests were conducted for total of 27.02 hours duration. Grass/weeds cutting with nylon rope and bush cutting using straight blade attachments were carried out for 13.19 hours and 13.83 hours, respectively. A total of five test trials were conducted at rated speed of 7500±100 rpm. Detailed results of field tests are shown in ANNEXURE-I & III and summarized in the ensuing table. Details of the operator have been given in ANNEXURE-III.

SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameters	Grass/weeds cutting	Bush cutting
1	2	3	4
1	Field Condition	Level	
2	Thickness of Grasses/Bush (mm)	1.35 to 1.53	12.67 to 14.80
3	Average number of Grass/Bush in 1m ²	389 to 401	27 to 29

Machine 69/440	242 HD VST BRUSH CUTTER	COMMERCIAL (INITIAL)
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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. COMMENTS & RECOMMENDATIONS

- 16.1 The average rated power in rating test of engine was observed as 0.5 kW against declared value of 1.67 kW by the manufacturer. This should be looked into for corrective action.
- 16.2 The specific fuel consumption (SFC) in rating test of engine was observed as 2547.1 g/kWh against declared value of 660 g/kWh by the 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 rpm 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 ILO for continuous exposure of 8 hours per day. This calls for reduction in noise level to improve the operational comfort and safety.
- 16.6 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.
- 16.7 The Hardness & Chemical composition of straight blade does not conform to Indian Standard IS 6025:1982. This should be looked into for corrective action.

Machine 69/440	242 HD VST BRUSH CUTTER	COMMERCIAL (INITIAL)
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16.8 The mentioned values of rated power and rated speed (rpm) of engine on the labeling sticker of the machine was not matching with the observed values during engine test. This may be looked into.

16.9 As a safety wear only safety shoes & goggles (safety glass) were provided with the machine. The applicant has strictly advised to provide the safety kit viz. helmet, hand gloves, ear plug, mask etc. along with each machine for the safety of operator.

16.10 Though country of origin is TAIWAN, on the labeling sticker of the machine it was mentioned as INDIA, this shall be looked into for corrective action.

16.11 **Adequacy of Literature**

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

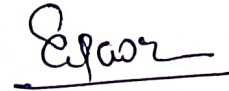
- Operator's/ Service manual
- Parts catalogue

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



(S.G. PAWAR)
AGRICULTURAL ENGINEER



(Dr. P.P. RAO)
DIRECTOR

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