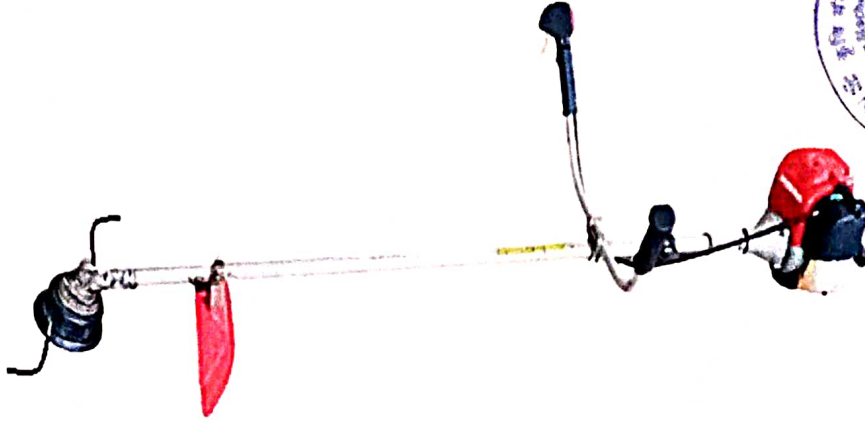




THIS TEST REPORT IS VALID UPTO 31.10.2027



UMK435T U2NT HONDA 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)

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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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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

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	:	Thai Honda Co., Ltd, 410 Ladkrabang Industrial Estate, Chalongkrung Road, Lamlatue, Ladkrabang, Bangkok, Thailand-10520
Name & Address of Applicant	:	Honda India Power Products Limited, Plot No-5, Sector-41 (kasna), Greater Noida Industrial Development Area, Dist- Gautam Buddha Nagar, Greater Noida, Uttar Pradesh- 201310, INDIA

Model	: UMK435T U2NT
Make	: HONDA
Serial No.	: HAAT-2372565
Type	: Engine operated
Type of cutting attachment	: Nylon rope and straight blade
Year of manufacture	: Not Specified
Country of origin	: THAILAND
Type of crops/bush recommended (apa)	: Applicable for bushes, grass & weeds cutting.

4.2 Constructional details :

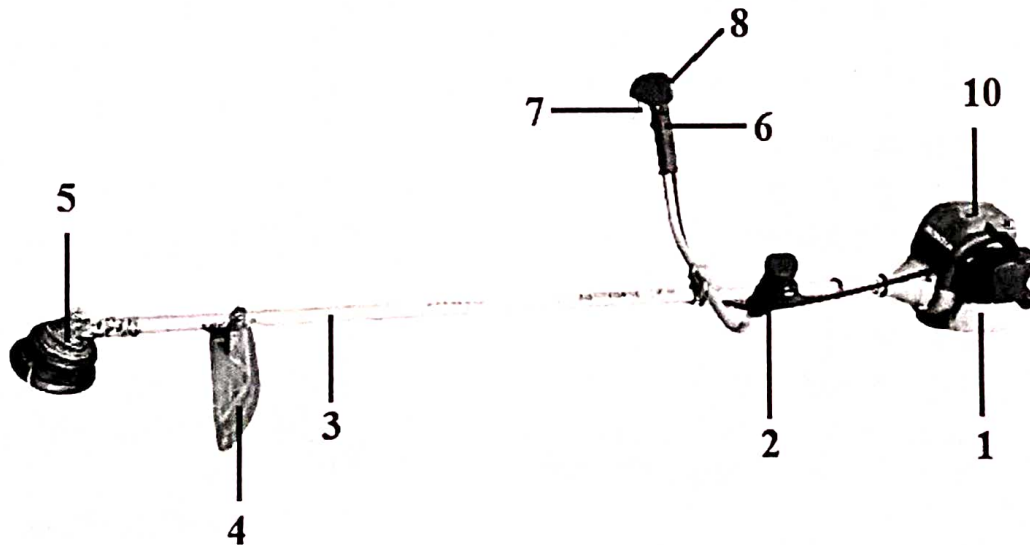


Fig. 1 : HONDA BRUSH CUTTER, MODEL: UMK435T U2NT

Keywords:

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

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	47.9	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	0.772	Conforms
Manganese (Mn)	0.3 to 0.5	0.371	Conforms
Silicon (Si)	---	0.191	---
Sulphur (S)	---	0.003	---
Phosphorous (P)	---	0.007	---

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	15.46	264.7	257.9	6.8	2.57	0.17

12. FIELD PERFORMANCE TEST

Field tests were conducted for total of 26.36 hours duration. Grass/weeds cutting with nylon rope and bush cutting using straight blade attachments were carried out for 10.90 hours and 15.46 hours, respectively. A total of five test trials were conducted at rated speed of 7000 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 TEST

Sl. No.	Parameters	Bush cutting	Grass/weeds cutting
1	2	3	4
1	Field Condition	Level	
2	Thickness of Grasses/Bush (mm)	6.16 to 12.34	2.90 to 3.33
3	Average number of Grass/Bush in 1m ²	24 to 30	239 to 540

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1	2	3	4
4	Average height of Grasses/Bush (mm)	956.0 to 1950.2	189.0 to 424.8
5	Mass of Grass/Bush cut (kg/h)	497.43 to 782.79	466.12 to 704.53
6	Mass of Grass/Bush cut (kg/ha)	14850 to 25660	9136 to 12900
7	Rate of work (ha/h)	0.031 to 0.034	0.051 to 0.055
8	Time required for one hectare (h)	29.15 to 32.78	18.31 to 19.60
9	Fuel consumption		
		-l/h	0.711 to 0.783
		-l/ha	21.94 to 23.30
			0.561 to 0.579
			10.60 to 11.0

12.1 Bush cutting using straight blade

12.1.1 Rate of work

- The area of cut was recorded as 0.031 to 0.034ha/h.
- Time required for one hectare was recorded as 29.15 to 32.78 hours.
- Mass of bush cut was 497.43 to 782.79 kg/h.

12.1.2 Fuel consumption

- Fuel consumption was observed as 0.711 to 0.783 l/h and 21.94 to 23.30 l/ha.

12.2 Grass/Weeds cutting using nylon rope

12.2.1 Rate of work

- The area of cut was recorded as 0.051 to 0.055 ha/h.
- Time required for one hectare was recorded as 18.31 to 19.60 hours.
- Mass of weeds cut was 466.12 to 704.53 kg/h.

12.2.2 Fuel consumption

- Fuel consumption was observed as 0.561 to 0.579 l/h and 10.60 to 11.0 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.

12.4 Adequacy of power of prime mover :

The power of prime mover was found adequate.

12. EASE OF OPERATION AND ADJUSTMENTS

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

13. DEFECTS, BREAKDOWNS AND REPAIRS

It was observed that nylon rope attachment (Tap & Go) opened several times while field performance test. On request of the applicant, Tap & Go complete set was changed during field performance test after 3.33 hours. of operation.

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 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

Transmission system:

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

16. COMMENTS & RECOMMENDATIONS

- 16.1** It was observed that nylon rope cutting attachment (Tap & Go) opened several times while field performance test. Tap & Go complete set was changed with new one during field performance test. This shall be looked into for improvement.
- 16.2** The average rated power in rating test of engine was observed as 0.67 kW against declared value of 1.0 kW by the manufacturer. This should be looked into for corrective action.
- 16.3** The specific fuel consumption (SFC) in rating test of engine was observed as 588.1 g/kWh against declared value of 360 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.
- 16.4** 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.
- 16.5** Cushion material with shoulder belt to damper the Vibration at shoulder of operator was not provided. This shall be looked into for operators confort & ease of operation.
- 16.6** 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.



16.7 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.

16.8 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.

16.9 The Hardness of straight blade does not conform to Indian Standard IS 6025:1982. This should be looked into for corrective action.

16.10 Labeling plate along with machine details should be provided on the machine at suitable place as per Indian Standard.

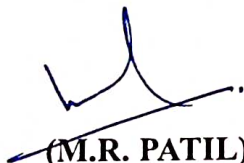
16.11 Adequacy of Literature

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

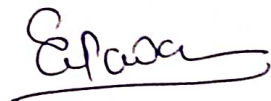
- Operator's/ Service manual
- Parts catalogue

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

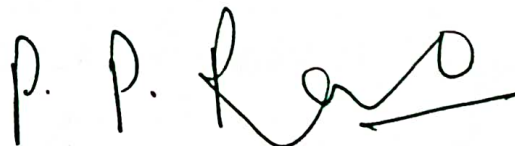
TESTING AUTHORITY



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