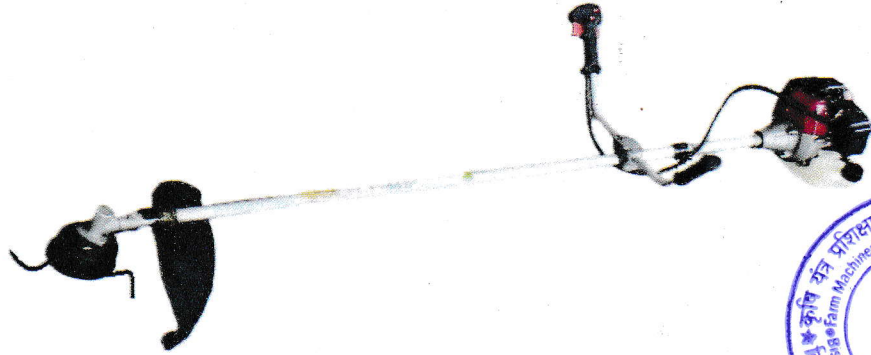
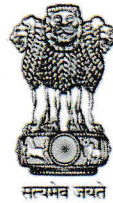




THIS TEST REPORT IS VALID UPTO 31.08.2028



FOGGERS INDIA PVT. LTD. SUDARSHAN ULTRA 43U  
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- शोणितपुर (असम)

BISWANATH CHARIALI: SONITPUR: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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## 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	: <b>Yongkang Valid Technology Corporation Limited</b> , Address: No. 9 Wang Hu Rd., Economic Development Area, Yongkang Zhejaing, CHINA
Name & Address of Applicant	: <b>M/s Foggers India Pvt. Ltd.</b> 313, 3 <sup>rd</sup> floor, Grohitam Premises, Plot No- 14B, Sector-19, Near Mathadi Bhavan, Vashi, Navi Mumbai-400705

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Make : Foggers India Pvt. Ltd.

Model : Sudarshan Ultra 43U

Serial No. : Not mentioned

Type : Engine operated

Type of cutting attachment : Nylon rope and Circular blade

Year of manufacture : 2021

Country of origin : CHINA

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

#### 4.2 Constructional details :

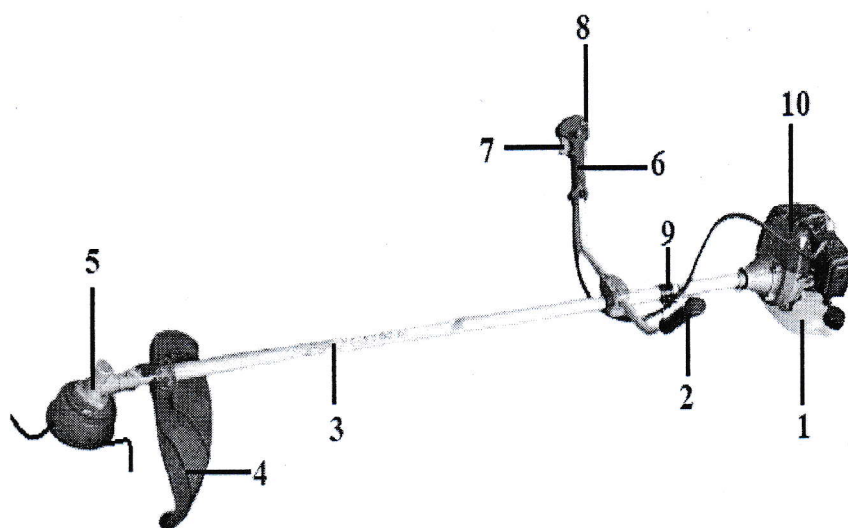


Fig. 1 : BRUSH CUTTER, MODEL: SUDARSHAN ULTRA 43U

#### 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               | 9. Connection for Shoulder strap |
| 5. Gear case               | 10. Engine                       |



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## 10. HARDNESS AND CHEMICAL COMPOSITION

### 10.1 Hardness of Circular blade

Sl. No.	Hardness as per IS: 6025 – 1982 (HRC)	Hardness as measured (HRC)	Remarks
1	48 to 58	27.0	Does not Conform

### 10.2 Chemical composition of Circular Blade:

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

Constituent	As per IS: 6025 – 1982 (%)	Composition As observed (% by weight)	Remarks
Carbon (C)	0.70 to 0.95	0.410	Does not Conform
Manganese (Mn)	0.3 to 0.5	0.866	Does not Conform
Silicon (Si)	---	0.290	---
Sulphur (S)	---	0.008	---
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
Circular blade	21.27	376.5	374.0	2.5	0.66	0.03

## 12. FIELD PERFORMANCE TEST

Field tests were conducted for total of 32.27 hours duration. Grass/weeds cutting with nylon rope and bush cutting using circular blade attachments were carried out for 11.0 hours and 21.27 hours, respectively. A total of seven test trials were conducted at rated speed of  $6600 \pm 100$  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	Grass/weeds cutting	Bush cutting
1	2	3	4
1	Field Condition	Level	
2	Thickness of stem of Grasses/Bush at cutting height (mm)	1.21 to 1.22	21.3 to 28.43
3	Average number of Grass/Bush in $1m^2$	419 to 773	15 to 18

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1	2	3	4
4	Average height of Grasses/Bush (mm)	361 to 518	2020 to 2430
5	Mass of Grass/Bush cut (kg/h)	44.69 to 190.1	1380.9 to 1915.6
6	Mass of Grass/Bush cut (kg/ha)	2128 to 4420	89140 to 98640
7	Rate of work (ha/h)	0.021 to 0.043	0.014 to 0.020
8	Time required for one hectare (h)	23.26 to 47.61	50.0 to 71.43
9	Fuel consumption		
	-l/h	0.680 to 0.975	0.635 to 0.815
	-l/ha	15.82 to 35.32	35.28 to 49.00

### 12.1 Grass/Weeds cutting using nylon rope

#### 12.1.1 Rate of work

The area of cut was recorded as 0.021 to 0.043 ha/h.

Time required for one hectare was recorded as 23.26 to 47.61 hours.

Mass of weeds cut was 44.69 to 190.1 kg/h.

#### 12.1.2 Fuel consumption

Fuel consumption was observed as 0.680 to 0.975 l/h and 15.82 to 35.32 l/ha.

### 12.2 Bush cutting using circular blade

#### 12.2.1 Rate of work

The area of cut was recorded as 0.014 to 0.020 ha/h.

Time required for one hectare was recorded as 50.0 to 71.43 hours.

Mass of bush cut was 1380.9 to 1915.6 kg/h.

#### 12.2.2 Fuel consumption

Fuel consumption was observed as 0.635 to 0.815 l/h and 35.28 to 49.00 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.

## 13. EASE OF OPERATION AND ADJUSTMENTS

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

## 14. DEFECTS, BREAKDOWNS AND REPAIRS

1. It was observed that Tap & Go set (nylon rope cutting attachment) was broken after 0.41 hour of field testing. On the request of applicant Tap & Go set was changed with new one.
2. During field testing it was observed that engine was getting stopped automatically. On the request of applicant fuel pipe line was changed with new one.
3. Fuel tank guard/stand was broken and air cleaner cover got removed from engine during field performance test.
4. Re-coil Starter lock pin was found broken during the test. On the request of applicant re-coil starter set was changed with new one.





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### **16. COMMENTS & RECOMMENDATIONS**

- 16.1** The average rated power in rating test of engine was observed as 0.59 kW against declared value of 1.0 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 851 g/kWh against declared value of 610 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** Machine serial number was not provided on the machine. This should be looked into.
- 16.5** 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.
- 16.6** It was observed that Tap & Go set (nylon rope cutting attachment) was broken during field testing. On the request of applicant Tap & Go set was changed with new one. This shall be looked into for quality improvement.
- 16.7** It was observed that during field testing engine was getting stopped automatically. On the request of applicant fuel pipe line was changed with new one. This shall be looked into for quality improvement.
- 16.8** Re-coil Starter lock pin was broken during the test. On the request of applicant re-coil starter set was changed with new one. This shall be looked into for quality improvement.
- 16.9** Fuel tank guard/stand was broken and air cleaner cover removed from engine during field performance test. This shall be looked into for quality improvement.
- 16.10** 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.
- 16.11** 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.

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**16.12** The Hardness & Chemical composition of Circular blade does not conform to Indian Standard IS 6025:1982. This should be looked into for corrective action.

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

**16.14** The cylinder bore dia. of engine was declared as 40 mm and declared value of discard limit was 39.9 mm by the manufacturer. This should be looked into for corrective action.

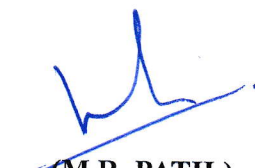
**16.15 Adequacy of Literature**

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

  
(Dr. P.P. RAO)  
DIRECTOR

Draft test report compiled by - **Shri Khagendra Bora**  
Sr.Technical Assistant