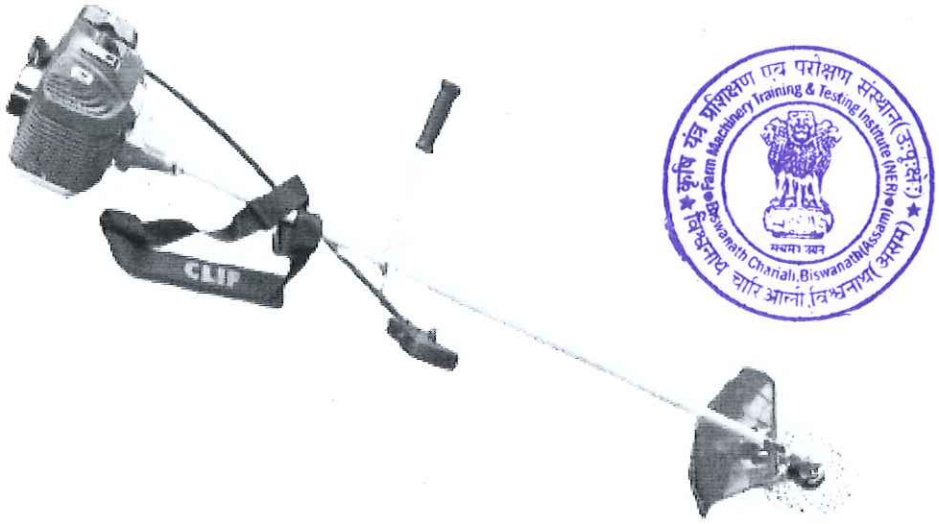
व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)

स्वच्छ भारत
एक कदम स्वच्छता की ओर

संख्या/No.: Machine 152/526
माह / Month: March 2025

THIS TEST REPORT IS VALID UPTO 31.03.2032



कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान (उत्तर पूर्वी क्षेत्र)
Farm Machinery Training & Testing Institute (NERI)
Biswanath Chariali, Biswanath(Assam)
बिश्वनाथ चारि आलि बिश्वनाथ (असम)

CLIF, BC 305G, 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]

Ph. No. 03715-222094 **Website: https://nerfmtti.nic.in** **E-mail: fmti-ner@nic.in**

Name and Address of Applicant	:	CLIF TOOLS PVT. LTD., 72 Narayan Dhuru Street, Mumbai, Maharashtra - 400003
Make	:	CLIF
Model	:	BC 305G
Serial No.	:	2024302003
Type	:	Engine operated
Type of cutting attachment	:	Nylon rope 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:

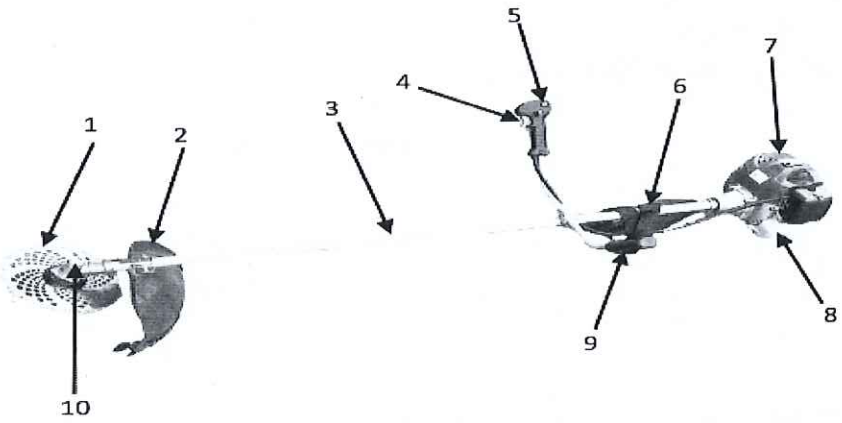

Fig. 1: BRUSH CUTTER, MODEL: BC 305G

Keywords:

1. Circular blade
2. Deflector
3. Transmission cover pipe
4. Throttle cum clutch trigger
5. Handle Engine stopping switch
6. Connection for shoulder strap
7. Engine
8. Fuel tank
9. RHS Grip
10. Gear case

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Grass/weeds cutting with nylon rope	Bush cutting with circular blade
1	Field Condition	Level	
2	Thickness of stem of Grasses/Bush at cutting height (mm)	1.7 to 2.0	13.8 to 14.7
3	Avg. number of Grass/Bush per m²	70 to 102	29 to 39
4	Avg. Height of Grasses/Bush (mm)	124 to 265	2600 to 2850
5	Mass of Grass/Bush cut (kg/h)	98.5 to 151.0	1202.2 to 1569.8
6	Mass of Grass/Bush cut (kg/ha)	2010 to 2860	40200 to 51400
7	Rate of work (ha/h)	0.049 to 0.052	0.029 to 0.032
8	Time required for one hectare (h)	18.94 to 20.41	30.96 to 33.44
9	Fuel consumption:		
	-l/h	1.30 to 1.34	1.34 to 1.40
	-l/ha	25.38 to 26.53	43.34 to 44.81

12.1 Grass/Weeds cutting using nylon rope:

12.1.1 Rate of work:

The area of cut was recorded as 0.049 to 0.052 ha/h.
Time required for one hectare was recorded as 18.94 to 20.41 hours.
Mass of weeds cut was 98.5 to 151.0 kg/h.

12.1.2 Fuel consumption:

Fuel consumption was observed as 1.30 to 1.34 l/h and 25.38 to 26.53 l/ha.

12.2 Bush cutting using circular blade:

12.2.1 Rate of work:

The area of cut was recorded as 0.029 to 0.032 ha/h.
Time required for one hectare was recorded as 30.96 to 33.44 hours.
Mass of weeds cut was 1202.2 to 1569.8 kg/h.

12.2.2 Fuel consumption:

Fuel consumption was observed as 1.34 to 1.40 l/h and 43.34 to 44.81 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

No noticeable defect or breakdown was observed during test.

15. COMPONENTS/ASSEMBLY INSPECTION

The Engine was dismantled after 35.85 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	
44.03	44.02	44.04	44.01	44.03	44.01	44.25

*Not recorded due to cylinder design constraints

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		
43.64	43.70	43.93	*	0.11	1.00

*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	0.55	0.55	0.55	1.00
2nd comp. ring	0.60	0.60	0.60	
Oil ring	NA	NA	NA	

Ring side clearance:

Rings	Ring side clearance, mm	Max. permissible clearance limit, mm
1st comp. ring	0.09	0.30
2nd comp. ring	0.11	
Oil ring	NA	NA

Main bearings: 6202-2Nos. Ball bearing

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	0.10
2	Ball bearing	NA			

Big end bearing:

Bearing No.	Clearance, mm		Max. permissible clearance limit, mm	
	Diametrical	Axial	Diametrical	Axial
1	Needle bearing	NR	0.15	0.70

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)

Sr. No.	Parameters	Specifications	Observation	Remarks
1	2	3	4	5
1	Type	Self-propelled, portable	Self-propelled, portable	Conforms
2	Type of cutting attachment	Circular disc / Straight blade /nylon rope	Circular disc / 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	40	**Does not conform**
5	Root diameter / Overall diameter (mm)	200 - 270	248.8	Conforms
6	Thickness of disc (mm)	1.5 Min.	1.2	**Does not conform**
7	Teeth thickness (mm)	2.0 Min.	2.3	Conforms
8	Hardness of blade, HRC	68 - 70	28	**Does not conform**

1	2	3	4	5
		Straight blade		
9	Diameter of straight blade (mm)	250 - 350	NA	--
10	Width at ends /at center (mm)	50 / 70, Min.	NA	--
11	Thickness of straight blade (mm)	1.5 Min.	NA	--
		Nylon rope		
12	Length of nylon rope (mm)	2000 - 4000	2000	Conforms
13	Diameter of nylon rope (mm)	2.5 to 4.0	2.5	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.)	1.2	Conforms
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, safety protective cloth, safety shoes)	Must be provided	Not provided.	**Does not conform**

1	2	3	4	5
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.	Name and address of manufacturer & Applicant, Country of origin, Year of manufacturer, Serial number, Engine number, SFC were not provided. 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 0.50 kW against declared value of 1.5 kW by the applicant/manufacturer. This should be looked into for corrective action.

17.2 The specific fuel consumption (SFC) corresponding to rated power in rating test of engine was observed as 2495 g/kWh against declared value of 800 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 It was observed that during engine rating test at full load engine speed was fluctuating. This should be looked into for improvement.

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 2021). 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 and chemical composition of circular blade does not conform to Indian Standard IS 6025:2024. This should be looked into for corrective action.

17.9 **Safety wears were not provided with the machine. The applicant is strictly advised to provide the entire safety kit including helmet, safety shoes, ear plug, mask 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: 8132-2023.

TESTING AUTHORITY

(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER

(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - **Sh. Vithato Keyho, Sr. Technical Assistant**

18. APPLICANT'S COMMENTS

Applicant's Comments
We will take necessary action as per comments and recommendations in the test report for improvement in the future production.

ANNEXURE-I

FIELD PERFORMANCE TEST

Cutting attachment : Nylon rope
Place of test : Kanyaka Farm, Jamugurihat, Dist.- Sonitpur, Assam
Usage : Weeds/grass cutting

Sr. No.	Parameters	Test trial	
		I	II
1	Date of test	21.03.2025	22.03.2025
2	Net test duration (h)	3.35	7.17
3	Avg. height of weeds (mm)	265	124
4	Avg. thickness of stem of weeds at cutting height (mm)	1.7	2.0
5	Avg. No. of weeds per m^2	102	70
6	Avg. mass of weeds cut per m^2 (g)	286	201
7	Actual area cut (ha/h)	0.052	0.049
8	Time required for one ha (h/ha)	18.94	20.41
9	Mass of weeds cut		
	kg/h	151.0	98.5
	kg/ha	2860	2010
10	Fuel consumption		
	l/h	1.34	1.30
	l/ha	25.38	26.53

ANNEXURE-II

FIELD PERFORMANCE TEST

Cutting attachment : Circular Blade
Place of test : Kanyaka Farm, Jamugurihat, Dist.- Sonitpur, Assam
Usage : Bush cutting

Sr. No.	Parameters	Test trial		
		I	II	III
1	Date of test	19.03.2025	20.03.2025	21.03.2025
2	Net test duration (h)	6.08	7.75	2.0
3	Avg. height of bush (mm)	2850	2600	2700
4	Avg. thickness of stem of bush at cutting height (mm)	14.7	13.8	14.9
5	Avg. No. of bush per m^2	38	29	39
6	Avg. mass of bush cut per m^2 (g)	4860	4020	5140
7	Actual area cut (ha/h)	0.032	0.029	0.030
8	Time required for one ha (h/ha)	30.96	33.44	32.89
9	Mass of bush cut			
	kg/h	1569.8	1202.2	1562.8
	kg/ha	48600	40200	51400
10	Fuel consumption			
	l/h	1.40	1.34	1.35
	l/ha	43.34	44.81	44.40

ANNEXURE-III

DETAILS OF OPERATORS

Operator	:	I	II
Age, years	:	38	42
Height, cm	:	155	155
Weight, kg	:	68	52