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

संख्या/No.: MISC/NERFMTTI, B. Chariali/ 04/04/552
माह / Month: October 2025

THIS TEST REPORT IS VALID UPTO 31.10.2032

CLIF, GX 35A, 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
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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 and safety provisions
f) Defects, breakdowns and repairs

2. METHOD OF SELECTION

The test sample was selected by the testing authority through random selection. The following test samples were presented by the applicant during the random selection.

Sr. No.	Serial No. of test sample	Remarks
1	**202507-0264**	Out of five samples, Sr. No. 1 sample was randomly selected.
2	202507-0265	
3	202507-0266	
4	202507-0267	
5	202507-0268	

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 (Reaffirmed 2021) was referred.

4. SPECIFICATIONS

4.1 General:

Name of the Machine	:	Brush Cutter
Name and address of the manufacturer	:	JINHUA VINTAGE TRADING CO. LTD., 5B, Building 1, Southwest Corner at the Intersection of South Shuanglong Street and Binhong Road, Xiguan Subdistrict, Wucheng District, Jinhua city, Zhejiang Province, **CHINA**

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Name and Address of Applicant	:	CLIF TOOLS PVT. LTD., 1212/1213, 12th floor, The Epicenter, Waman Tukaram Patil Marg, Chembur, Mumbai, Maharashtra-400088
Make	:	CLIF
Model	:	GX 35A
Serial No.	:	202507-0264
Type	:	Engine operated
Type of cutting attachment	:	Nylon rope and Circular blade
Year of manufacture	:	2025
Country of origin	:	**CHINA**
Type of crops/bush recommended	:	All kinds of weeds/bushes

4.2 Constructional details:

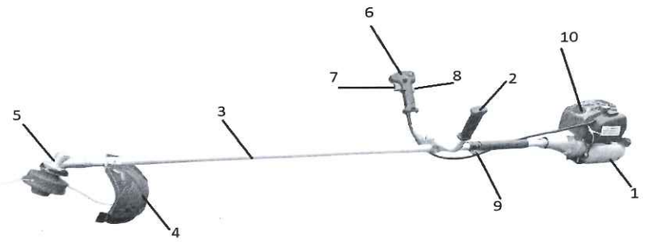

Fig. 1: BRUSH CUTTER, MAKE: CLIF, MODEL: GX 35A

Key words:

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

10. HARDNESS AND CHEMICAL COMPOSITION

10.1 Hardness of Circular blade:

Sr. No.	Hardness as per IS: 6025 – 2024 (HRC)	Hardness as measured (HRC)	Remarks
1	45 to 62	30	**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 – 2024 (%)	Composition as observed (% by weight)	Remarks
Carbon (C)	0.50 to 0.95	0.459	**Does not conform**
Manganese (Mn)	0.2 to 0.8	0.802	Conforms
Silicon (Si)	--	0.274	--
Sulphur (S)	--	0.006	--
Phosphorous (P)	--	0.020	--

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	10.25	389.30	384.84	4.46	1.15	0.11

12. FIELD PERFORMANCE TEST

Field tests were conducted for total of 25.41 hours duration. Grass/weeds cutting with nylon rope and sh cutting with circular blade attachment were carried out for 15.16 hours and 10.25 hours, respectively. A tal of four test trials were conducted at rated engine speed of 7500 rpm. Detailed results of field tests are own in ANNEXURE-I & II and summarized in the ensuing Table. Details of operators have been given in NNEXURE-III.

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)	3.02 to 3.46	7.93 to 8.13
3	Avg. number of Grass/Bush per m²	120 to 127	47 to 53
4	Avg. height of Grasses/Bush (mm)	170 to 173	833 to 863
5	Mass of Grass/Bush cut (kg/h)	42.16 to 54.79	753.78 to 931.53
6	Mass of Grass/Bush cut (kg/ha)	1360 to 1660	20940 to 22720
7	Rate of work (ha/h)	0.031 to 0.033	0.036 to 0.041
8	Time required for one hectare (h)	30.30 to 32.26	24.39 to 27.78
9	Fuel consumption:		
	-l/h	0.68 to 0.69	0.76 to 0.77
	-l/ha	20.91 to 21.94	18.78 to 21.11

12.1 Grass/Weeds cutting using nylon rope:

12.1.1 Rate of work:

The area of cut was recorded as 0.031 to 0.033 ha/h.
Time required for one hectare was recorded as 30.30 to 32.26 hours.
Mass of weeds cut was 42.16 to 54.79 kg/h.

12.1.2 Fuel consumption:

Fuel consumption was observed as 0.68 to 0.69 l/h and 20.91 to 21.94 l/ha.

12.2 Bush cutting using circular blade:

12.2.1 Rate of work:

The area of cut was recorded as 0.036 to 0.041 ha/h.
Time required for one hectare was recorded as 24.39 to 27.78 hours.
Mass of weeds cut was 753.78 to 931.53 kg/h.

12.2.2 Fuel consumption:

Fuel consumption was observed as 0.76 to 0.77 l/h and 18.78 to 21.11 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.

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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 35.41 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	
39.02	39.01	39.02	39.01	39.02	39.01	39.40

*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		
38.68	38.75	38.86	*	0.16	0.40

*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	0.20	0.20	0.15	1.00
2nd comp. ring	0.15	0.15	0.15	
Oil ring	NA	NA	NA	

Ring side clearance:

Rings	Ring side clearance, mm	Max. permissible clearance limit, mm
1st comp. ring	0.04	0.30
2nd comp. ring	0.04	
Oil ring	NA	NA

Main bearings: Two nos. of Ball bearings, 6202-1 No. and 6201-1 No.

Bearing No.	Type of bearing	Diametrical clearance, mm	Crankshaft end float, mm	Max. permissible clearance limit, mm	
				Diametrical clearance	Crankshaft end float (apa)
1	Ball bearing	NA	0.08	NA	0.30
2	Ball bearing	NA			

Big end bearing:

Bearing No.	Clearance, mm		Max. permissible clearance limit, mm	
	Diametrical	Axial	Diametrical	Axial
1	Needle bearing	NR	0.30	0.60

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	Carbon steel	**Does not conform**
4	No. of teeth on circular disc blade	50 - 100	60	Conforms
5	Root diameter / Overall diameter (mm)	200 - 270	252.3	Conforms
6	Thickness of disc (mm)	1.5 Min.	2.02	Conforms
7	Teeth thickness (mm)	2.0 Min.	2.3	Conforms
8	Hardness of blade, HRC	68 - 70	30	**Does not conform**

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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	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.)	0.7	**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, 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, 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 0.66 kW against declared value of 0.80 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 824 g/kWh against declared value of 700 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 should 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 Material and hardness of circular blade, capacity of fuel tank and on/off provision in fuel supply system do not conform to critical technical specifications vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019. This should be looked into for corrective action.

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.

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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. D. Deori, Technical Assistant

18. APPLICANT'S COMMENTS

We will take care as per comments and recommendations in our future products.

ANNEXURE-I

FIELD PERFORMANCE TEST

Cutting attachment : Nylon rope
Place of test : NERFMTTI, Biswanath Chariali, Biswanath, Assam
Usage : Weeds/grass cutting

Sr. No.	Parameters	Test trial	
		I	II
1	Date of test	06.10.2025	07.10.2025
2	Net test duration (h)	7.58	7.58
3	Avg. height of weeds (mm)	173	170
4	Avg. thickness of stem of weeds at cutting height (mm)	3.46	3.02
5	Avg. No. of weeds per m^2	127	120
6	Avg. mass of weeds cut per m^2 (g)	166	136
7	Actual area cut (ha/h)	0.033	0.031
8	Time required for one ha (h/ha)	30.30	32.26
9	Mass of weeds cut		
	kg/h	54.79	42.16
	kg/ha	1660	1360
10	Fuel consumption		
	l/h	0.69	0.68
	l/ha	20.91	21.94

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ANNEXURE-II

FIELD PERFORMANCE TEST

Cutting attachment : Circular Blade
Place of test : NERFMTTI, Biswanath Chariali, Biswanath, Assam
Usage : Bush cutting

Sr. No.	Parameters	Test trial	
		I	II
1	Date of test	08.10.2025	09.10.2025
2	Net test duration (h)	5.08	5.17
3	Avg. height of bush (mm)	863	833
4	Avg. thickness of stem of bush at cutting height (mm)	7.93	8.13
5	Avg. No. of bush per m^2	53	47
6	Avg. mass of bush cut per m^2 (g)	2272	2094
7	Actual area cut (ha/h)	0.041	0.036
8	Time required for one ha (h/ha)	24.39	27.78
9	Mass of bush cut		
	kg/h	931.53	753.78
	kg/ha	22720	20940
10	Fuel consumption		
	l/h	0.77	0.76
	l/ha	18.78	21.11

ANNEXURE-III

DETAILS OF OPERATORS

Operator	:	I	II
Age, years	:	25	30
Height, cm	:	170	163
Weight, kg	:	54	65