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

स्वच्छ भारत
एक कदम स्वच्छता की ओर

संख्या/No.: MISC/NERFMTTI, B. Chariali/ 07/07/556
माह / Month: December 2025

THIS TEST REPORT IS VALID UPTO 31.12.2032

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

CLIF AGRO, 9ZT-0.4J, CHAFF 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)
BISWANATH CHARIALI, DIST- BISWANATH, ASSAM, PIN - 784 176
[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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

Type of test	:	Commercial (Initial)
Period of test	:	November 2025 to December 2025
Test Report No.	:	MISC/NERFMTTI, B. Chariali/07/07/556
This Test Report is Valid Up to	:	31.12.2032
Month / Year of report release	:	December 2025

1 The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.

2 The data given in the Test Report pertain to the particular machine randomly selected for test by the testing authority.

3 The results presented in this report do not in any way attribute to the durability of the machine.

4 The results should not be reproduced in part or full without the prior permission of the Director, North Eastern Region Farm Machinery Training and Testing Institute, Biswanath Chariali, Dist. - Biswanath (Assam) – 784 176.

5 This test report is valid up to 31.12.2032 as per Ministry's O.M. No. 13-22/2020-M&T (I&P) dated 12.12.2023.

SELECTED CONVERSIONS			ABBREVIATIONS	
Sr. No.	**Units**	**Conversion Factor**	**Full form**	**Symbols**
1	**Force**		As per applicant	apa
	1 kgf	9.80665 N	Average	Av.
		2.20462 lbf	Hectare	ha
2	**Power**		Brinell Hardness	HB
	1 hp	1.01387 metric hp (Ps)	Rockwell Hardness	HRC
		745.7 W	Outer Diameter	O.D.
			Inner Diameter	I.D.
	1 Ps	735.5 W	Indian Standard	IS
	1 kW	1.35962 Ps	Mercury	Hg
3	**Pressure**		Mild Steel	MS
	1 psi	6.895 kPa	Not Applicable/ Not available	NA
	1 kgf/cm^2	98.067 kPa = 735.56 mm of Hg	Not Recorded	NR
			Relative Humidity	RH
	1 bar	100 kPa = 10 N/cm^2	Revolutions per minute	rpm
	1 mm of Hg	1.3332 m-bar	Power take-off	PTO

Type of test	:	Commercial (Initial)
Name of Machine	:	Chaff Cutter
Make	:	CLIF AGRO
Model	:	9ZT-0.4J
Type	:	Power operated (electric motor), Cylinder type, Chute-fed, Throw away type
Country of origin	:	**CHINA**
Name and address of the manufacturer	:	LINKWORLD ELECTRONIC CO. LIMITED, ROOM 301, KAM ON BUILDING, 176A QUEEN'S ROAD CENTRAL, HONG KONG, **CHINA**
Website	:	--
E-mail	:	--
Name and address of the applicant	:	CLIF TOOLS PRIVATE LIMITED,1212/1213, 12th floor, The Epicentre, Waman Tukaram Patil Marg, Chembur, Mumbai- 400 088
Website	:	https://cliftools.com/
E-mail	:	gitools@yahoo.com
Test conducted by	:	**GOVERNMENT OF INDIA** North Eastern Region Farm Machinery Training and Testing Institute, PO: Biswanath Chariali, Dist: Biswanath-784 176 (Assam) **(An ISO 9001-2015 Certified Institute)**

CONTENTS

1. SCOPE OF TEST

The scope of test was limited to check and assess the following:

1.1 Specifications and other data furnished by the applicant.

1.2 Conformity to requirements against the relevant Indian Standards.

1.3 Performance test to find out:
- Quantity of work
- Quality of work
- Power consumption
- Labour requirement

1.4 Wear analysis of critical components

1.5 Ease of operation and adjustments

1.6 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	CL-CC504	Out of five samples, Sr. No. 2 sample was randomly selected.
2	**CL-CC500**	
3	CL-CC502	
4	CL-CC501	
5	CL-CC503	

3. TEST CODE/PROCEDURE

IS 11459:2024 : Power-Operated Chaff Cutter-Specification and Test Code

4. SPECIFICATIONS

4.1 General:

Make	:	CLIF AGRO
Model	:	9ZT-0.4J
Name and address of manufacturer	:	LINKWORLD ELECTRONIC CO. LIMITED, ROOM 301, KAM ON BUILDING, 176A QUEEN'S ROAD CENTRAL, HONG KONG, **CHINA**

	Name and address of applicant	:	CLIF TOOLS PRIVATE LIMITED, 1212/1213, 12th floor, The Epicentre, Waman Tukaram Patil Marg, Chembur, Mumbai-400 088
	Name of machine	:	Chaff Cutter
	Type of machine	:	Power operated (electric motor), Cylinder type, Chute-fed, Throw away type
	Year of manufacture	:	2025
	Serial no. of machine	:	CL-CC500
	Country of origin	:	**CHINA**
	Suitability of machine (apa)	:	Chopping of green & dry fodder

4.2 Constructional details:

4.2.1 Main frame/Stand:

Constructional details	:	It was fabricated from MS angle iron having 4 legs of size 520 x 35/35 x 2.90 mm. The legs were further supported with MS angle iron 285 x 35/35 x 2.7 mm (2 Nos.).
For motor mounting	:	MS angle iron 390 x 35/35 x 2.90 mm (2 Nos.).
Slot size (mm)	:	91 x 9.15 - 4 Nos.
Size of platform (mm)	:	245 x 340
Height of platform from ground level (mm)	:	520

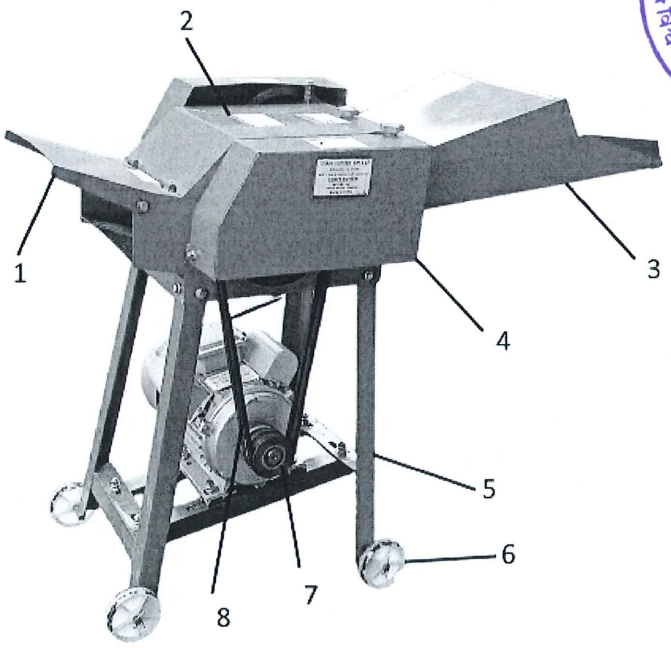

Fig.1. CLIF AGRO, 9ZT-0.4J, CHAFF CUTTER

Keywords:

1. Outlet trough
2. Cutter head safety cover
3. Feeding chute
4. Pulley Safety Cover
5. Main Frame/ Stand
6. Transport wheels
7. Electric motor
8. Pulley belt

4.2.2 Power unit:

Make (apa)	:	CLIF AGRO
Model	:	YLI00L2-2
Type & rating	:	Single phase, Two-Value Capacitor Asynchronous Motor, AC Induction, 3.0HP, 220 V, 13.6 A, 50 Hz, 2500 rpm
Motor serial No.	:	CL-CC500
Mass (kg)	:	22.7
Method of mounting	:	Mounted on cross beams having 4 Nos. of slots of size 91 x 9.15, 4 Nos. at lower position of main frame with the help of 4 bolts and nuts.
Size of mounting base (LxWxT) (mm)	:	390 x 35/35 x 2.90 - 02 Nos.

4.2.3 Main drive:

Type	:	Pulley & belt drive
Size of motor (drive) pulley (mm)	:	69Ø
Size of driven pulley (mm)	:	200Ø
No., type & size of belt (mm)	:	02, 'V' Belt, A-1160
Reduction ratio	:	2.90:1
Arrangement for belt tensioning	:	Through slots provided on the motor mounting

4.2.4 Cutter head:

Type	:	Cylinder type
No. of blades	:	04
No. of bolts on each blade	:	03
Size of cylinder (mm)	:	220 Ø x 210
Dia. of holes for mounting blades (mm)	:	10.4Ø
No. of bolts for adjusting blade clearance	:	03
Method of mounting	:	Cutter head main shaft was mounted on two seal bearings on both sides.

4.2.4.1 Fly-wheel: : NA

4.2.4.2 Blades:

Type	:	Straight, Rectangular type
Number of blades	:	04
Material of blades	:	High carbon steel
Method of mounting	:	Bolted on blade frame with 3 Nos. of bolts
Blade size, L x W x T (mm)	:	220.50 x 69.53 x 6.04 mm
Beveled edge (mm)	:	12.80

Bevel angle	:	26.5
Slot size (mm)	:	23.69 x 10.71

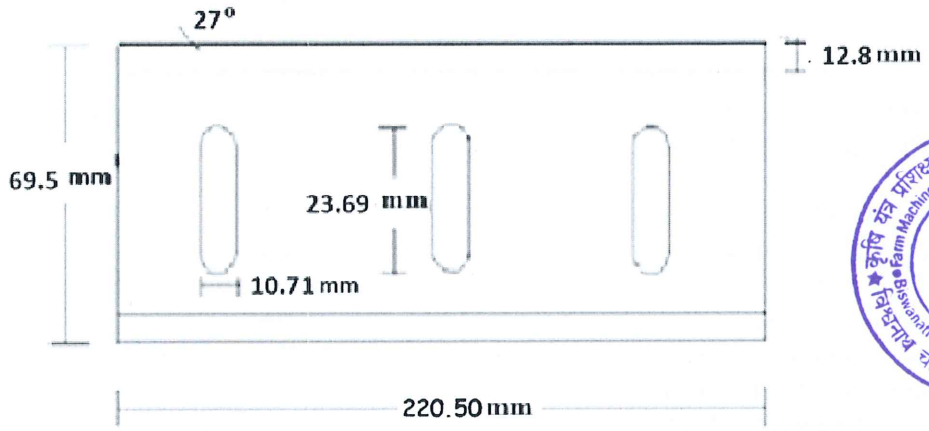

Fig. 2 Dimensions of blade

4.2.4.3 Shear plate (Fixed edge):

Number	:	One
Material	:	MS
Size (mm)	:	230 x 31.1 x 5
Method of mounting	:	Bolted to feeding frame with the help of two bolts and nuts.
Recommended clearance between fixed and rotating blades (mm) (apa)	:	0.03 to 0.25
Method of clearance adjustments	:	Through the slots provided on the blades

4.2.4.4 Main Shaft/Blade frame:

Material	:	MS
Dimensions (mm)	:	380 x 24.80 Ø
Number and type of bearings	:	02 Nos. & seal bearing
Method of mounting	:	Mounted on seal bearings

4.2.5 Feeding mechanism:

4.2.5.1 Feeding system:

Type of feeding	:	Manual, Chute-fed
Material	:	MS sheet
Length of feeding trough (mm)	:	540
Size of feeding trough (mm)		
Front (width x depth x thickness)	:	230 x 80 x 0.91
Rear (width x depth x thickness)	:	360 x 80 x 0.91
Height at the rear end of the trough from ground level (mm)	:	655
Length of covered portion of feeding trough (mm)	:	340
Size of covered portion of feeding trough (mm):		

	Front	:	230 x 80
	Rear	:	330 x 140
Angle of inclination (°)		:	10.7
Method of mounting		:	Bolted to feeding frame
Recommended feeding capacity(kg/h)		:	Not recommended

4.2.5.2 Feed rollers:

Number of rollers	:	Two
Type of rollers	:	Fluted type
Material (apa)	:	Carbon steel
Size of upper roller (mm)	:	230 x 48.75 Ø
Size of lower roller (mm)	:	230 x 48.75 Ø
Effective width of feed roller (mm)	:	230 (upper/lower)
Number of teeth on upper roller	:	06
Number of teeth on lower roller	:	06
Pitch of teeth (mm)	:	22
Size of upper roller shaft (mm)	:	375 x 19.72 Ø
Size of lower roller shaft (mm)	:	320 x 21.95 Ø
Clearance between upper & lower rollers (fixed type) (mm)	:	27.0
Method of space adjustment	:	Fixed type
Method of lubrication	:	Greasing
Recommended lubricant	:	M.P. grease

4.2.6 Blowing unit : **NA**

4.2.7 Transmission system : Power was transmitted from motor to cutter head through 'V' belt and pulley which rotates cutter head assembly (please refer Para 4.2.3).

4.2.7.1 Transmission for feed rollers

Type : Belt & pulley

Pulley arrangement :

	1st	2nd
Dia of drive pulley, mm	65.3	92.1
Dia of driven pulley, mm	195.2	165.4
Reduction ratio	1:0.33	1:0.55

4.2.8 Transport arrangement:

Transport wheel	:	Nylon wheels were provided.
Numbers	:	04
Diameter of wheel (mm)	:	88
Width of wheel (mm)	:	20

4.2.9 Overall dimensions (mm):

Length	:	1050
Width	:	430
Height	:	820

4.2.10 Mass of machine (kg):

With prime-mover : 59.0
Without prime-mover : 22.7

4.2.11 Color of machine:

Frame	:	Red
Body	:	Red
Safety cover	:	Red
Cylinder cover	:	Red
Belt cover	:	Red
Electric motor	:	Grey

4.2.12 Safety arrangements:

Shield cover was provided on cutter head and feed roller assembly. However, cover was not provided on the belt and drive pulley mounted on motor shaft.

4.2.13 Labeling plate:

A labeling plate was provided on safety cover with the following information:

CHAFF CUTTER-9ZT-0.4J
SERIAL NO : CL-CC500
MONTH/YEAR OF MANUFACTURE : AUGUST 2025
CHAFF CUTTER
MOTOR : 3 HP
RATED SPEED : 2500RPM
MADE IN CHINA

5. CONFORMITY TO IS 11459: 2024

Cl. No.	Requirements as per IS 11459: 2024	Observations	Remarks
1	2	3	4
4	**Type of chaff cutter:**		
4.1	On the basis of cutting mechanism, the chaff cutter shall be fly-wheel type or cylinder type	Cylinder type	Conforms
4.2	On the basis of cut chaff dropping position, the chaff cutter shall be of let fall type, throw away type &blow up type	Throw away type	Conforms
4.3	On the basis of feeding system, the chaff cutter should be chute fed or conveyor fed	Chute fed	Conforms
5	**Material:**		
5.2	The chemical composition of material to be used for manufacturing of carbon steel blades shall be as follows:		

	Sr. No	Element	Carbon steel	Composition as observed (% by weight)	Remarks
	1	Carbon	0.60-0.90%	0.641	Conforms
	2	Silicon	0.10-0.40%	0.203	Conforms
	3	Manganese	0.50-1.00%	1.017	**Does not conform**
	4	Sulphur	0.05% max.	0.004	Conforms
	5	Phosphorus	0.05% max.	0.012	Conforms

5.1	**The material for other components of chaff cutter shall be as under:**				
	Sr. No.	**Component**	**Material**	**Observations**	**Remarks**
	(i)	Fly wheel	Cast Iron/ Mild steel	NA	--
	(ii)	Fly wheel cover	Mild steel	Mild steel	Conforms
	(iii)	Cylinder	Mild steel	Mild Steel	Conforms
	(iv)	Frame	Cast iron/ Mild steel	Mild Steel	Conforms
	(v)	Cover plate	Cast iron/ Mild steel	Mild Steel	Conforms
	(vi)	Shear plate	Cast iron/ Mild steel/ Alloy steel	Mild Steel	Conforms
	(vii)	Feed rolls	Cast iron/ Mild steel	Mild Steel	Conforms
	(viii)	Feed roll shafts	Cast Iron/Mild steel	Mild Steel	Conforms
	(ix)	Springs	Spring steel	NA	--
	(x)	Tie rod	Cast Iron/Mild steel	NA	--
	(xi)	Worm and worm gear	Cast Iron	NA	--
	(xii)	Legs	Mild Steel	Mild Steel	Conforms
	(xiii)	Leg support	Mild Steel	Mild Steel	Conforms
	(xiv)	Shaft and axles	Mild steel	Mild Steel	Conforms
	(xv)	Pedestal bearing	Alloy steel	NA	--
	(xvi)	Feeding chute	Mild steel/CRCA sheet	Mild Steel	Conforms
	(xvii)	Fingers, if separated	Cast Iron	NA	--
	(xviii)	Blade cover	Mild steel / Plastic	Mild Steel	Conforms
	(xix)	Pulley	Cast Iron	Cast Iron	Conforms
	(xx)	Blower	Mild steel	NA	--
	(xxi)	Discharge box	Mild steel/CRCA sheet	NA	--
	(xxii)	Belts	Textile belts	Textile belts	Conforms

6	**Hardness:**		
	The fully hardened blade shall be properly and uniformly heat treated to have hardness of 40 to 45 HRC or 370 to 422 HB and partially hardened blade shall be properly heat treated to have hardness of 40 to 45 HRC up to two thirds portion from the tip of the beveled edge.	14.6 HRC	**Does not conform**
12.1.5	**During the no-load run, the visual observations shall not indicate the following:**		
	(a) Presence of any marked oscillation during operation	No	Conforms
	(b) Presence of knocking or rattling sound	No	Conforms

	(c) Frequent slippage of belts	No	Conforms
	(d) Smooth running of shafts in respective bearings	Satisfactory	Conforms
	(e) Any unusual wear or slackness in any components	No	Conforms
	(f) Any marked rise in bearing temperature	No	Conforms
	(g) Other observations	None	--
12.2	**During the load run, the visual observations shall not indicate the following:**		
	(a) Smooth flow of the material through different components	Satisfactory	Conforms
	(b)Frequent clogging of throat and feed rolls	No	Conforms
	(c) Presence of any marked oscillation during operation	No	Conforms
	(d) Presence of knocking or rattling sound	No	Conforms
	(e) Frequent slippage of belts	No	Conforms
	(f) Smooth running of shafts in respective bearings	Satisfactory	Conforms
	(g) Any unusual wear or slackness in any components	No	Conforms
	(h) Any marked rise in bearing temperature	No	Conforms
	(i) Other observations	None	--
7	**CONSTRUCTIONAL REQUIREMENT:**		
7.1	**Cutter Head:** -It shall consist of fly-wheel and blade in case of fly-wheel type and cylinder in case of cylinder type	Cylinder	Conforms
	In case of cylinder type, the cutting reel may be spring mounted. Provision for adjusting height of reel in contact with throat shall be provided. Provision shall also be made for lubricating bearings at each end of the reel shaft.	Not Provided	**Does not conform**
7.2	**Blower:** Blower if provided shall be centrifugal type with the suitable arrangement for controlling air blast.	NA	--
7.3	**Transmission system:**		
	The gears shall be properly meshed and shall be suitably covered.	NA	--
	A suitable arrangement shall be provided for clutching or declutching of drive.	Not provided	**Does not conform**
7.4	**Mounting of power source:**		
	The power source shall be mounted on a frame made of MS angle (minimum 35 x 35 x 5 mm)	35 x 35 x 2.9	**Does not conform**
	Power transmission is through single/double groove V belt and cast iron pulley	Double groove V belt and cast iron pulley	Conforms
	Pulley diameter of power source shall be of 100 mm	69	**Does not conform**
	Diameter of cylinder pulley shall be minimum 265 mm	200	**Does not conform**
7.5	**Cylinder:**		
	The cylinder wheel is fabricated by MS flat seating along the diameter for mounting of chaff blade.	Provided	Conforms
	One central hole with bush is provided for mounting the main power transmission shaft.	Welded	**Does not conform**

	Cylinder must be covered fully with MS sheet of minimum 2 mm thickness.	2.1 mm	Conforms
7.8	**Feeding System:**		
	The feeding system in chaff cutter shall be of chute or conveyor.	Chute	Conforms
	The minimum length of chute & conveyor shall be 900 mm and 1200 mm, respectively.	540	**Does not conform**
	The chute or conveyor shall be covered up to a minimum of 450 mm near feed roll side.	340	**Does not conform**
	In case of chaff cutter conveyor feeding, a feed reversing device may be provided.	NA	--
14	**OTHER REQUIREMENTS:**		
	The worm gear should be as far as possible be enclosed and should preferably be run on an oil trough	NA	--
	The bearing should be completely enclosed and shall have provision for lubrication.	Seal bearing	Conforms
	Provision shall be provided to change the inclination of the plane of the cutting knives to the plane of rotation of flywheel to avoid feed interference.	NA	--
	Provision to change the direction of rotation of feed rolls should be provided.	Not provided	**Does not conform**
	Hooks at suitable places may be provided for lifting the chaff cutter for easy movement.	Not provided	**Does not conform**
	Operator's manual giving operational, maintenance, assembly instruction and adjustments shall be supplied by the manufacturer with each chaff cutter.	Not provided	**Does not conform**
	Instruction for safe operation of chaff cutter shall also be provided	Provided	Conforms
	Provision for adjustment of the following shall be made:		
	(a) Feed rate	Not Provided	**Does not conform**
	(b) Length of cut	Provided	Conforms
	(c) Feed roll clearance	Not Provided	**Does not conform**
	(d) Space between fixed and rotating blades	Provided	Conforms
	(e) Air displacement (if applicable)	NA	--
	(f) Direction of rotation of feed rolls	Not provided	**Does not conform**
	If the cutter head is open, arrangement shall be made for locking it with the stand and the cutting edge of the blade shall be covered.	Not Provided	**Does not conform**
	Various controls shall be easily accessible and capable of being locked in a chosen position.	Provided	Conforms
	Suitable guards shall be provided on the transmission system of the chaff cutter.	Not provided	**Does not conform**

15	**SAFETY REQUIREMENTS:**			
15.1	Each power operated chaff cutter shall be provided with safety provisions as given below:			
	A warning roller which is a source of idler roller with spring may be fitted just before the feeding rollers to warn the operator while feeding the fodder crop into the chaff cutter.		Not provided	**Does not conform**
	The minimum diameter of roller shall be 40 mm.		NA	--
	Gear cover: Worm and pinion assembly shall be covered from all sides by a metal sheet.		NA	--
	A guard on sharpening file should be provided to prevent injuries on knuckles for fingers while sharpening the blade.		Not provided	**Does not conform**
	The trough on the shear plate side shall be covered upto a length of 450 mm min.		340	**Does not conform**
	The thickness of the chute cover shall not be less than 1.6 mm.		1.0	**Does not conform**
	The height of feeding chute of chaff cutter should be between 750 to 1100 mm.		655	**Does not conform**
15.1.7	**A minimum cautionary notice worded as follows shall be written in vernacular language legibly and permanently on the main body of the chaff cutter:**			
	(a)	Do not wear loose dress, bangles, watch etc., while working	Not Provided	**Does not conform**
	(b)	Do not smoke and light fire near dry fodder being cut	Not Provided	**Does not conform**
	(c)	Do not work under the influence of intoxicants like liquor, opium etc.	Not Provided	**Does not conform**
	(d)	Children and aged persons should be discouraged for working on chaff cutter	Not Provided	**Does not conform**
	(e)	Lock the flywheel with the locking pin after work	Not Provided	**Does not conform**
	(f)	Instruct children not to play with the machine	Not Provided	**Does not conform**
	(g)	Do not push small fodder by hand, use pushing device	Not Provided	**Does not conform**
	(h)	Do not touch the belt while pulley is running	Not Provided	**Does not conform**
	(i)	Never bring hand near feed rolls and open blade	Not Provided	**Does not conform**
16	**CAUTIONARY NOTICE:**			
	A plate having a 'Danger signal' shall be rigidly fixed near the blade of the chaff cutter.		Provided	Conforms
	Each chaff cutter shall be provided with Operator's manual (Hindi, English or vernacular language) in which all safety aspects are also to be highlighted along with the precautions to be taken for safe operation of chaff cutter.		Not Provided	**Does not conform**

17	**WORKMANSHIP AND FINISH:**			
	All the components of the chaff cutter shall be free from cracks and such other defects that may be detrimental for their use		Satisfactory	Conforms
	The cast iron components shall not be porous. Welding, if done shall also not be porous.		Satisfactory	Conforms
	All exposed metallic surfaces shall be from rust and may be painted if required.		Satisfactory	Conforms
	Welding used for joining different components shall not be porous, it shall be smooth.		Satisfactory	Conforms
	All sharp corners and protruding fasteners shall be avoided.		Satisfactory	Conforms
	The chaff cutter shall be suitably painted.		Painted	Conforms
18	**MARKING AND PACKING:**			
	Each chaff cutter shall be marked with the following particulars:			
	(a)	Manufacturers name or registered trade mark	Not Provided	**Does not conform**
	(b)	Code & batch number	Not Provided	**Does not conform**
	(c)	Model number	Provided	Conforms
	(d)	Type	Not Provided	**Does not conform**
	(e)	Power rating (kW)	Provided	Conforms
	(f)	Rated input capacity	Not Provided	**Does not conform**
	(g)	Recommended rpm of the fly wheel or cylinder	Provided	Conforms

6. RUNNING-IN

After checking all the nut and bolts of the machine and pre-checking of the chaff cutter, running-in was conducted at rated motor speed in actual field condition for half an hour.

7. FIELD PEFORMANCE TEST

7.1 Test at No-Load:
The chaff cutter was operated at no-load for 1 hour.

7.1.1 Power Consumption:
The no load power consumption of chaff cutter was recorded as 0.4 kW.

7.1.2 Visual Observations:
During the No-load test, the observations against the following points were made:

Sr. No.	Parameters	Observations
(a)	Presence of any marked oscillation during operation	No
(b)	Presence of knocking or rattling sound	No
(c)	Frequent slippage of belts	No
(d)	Smooth running of shaft/shafts in their respective bearings	Yes

(e)	Any marked unusual wear or slackness in any component	No
(f)	Any marked rise in bearing temperature	No
(g)	Motor Speed (rpm)	3001
(h)	Fly wheel/ cylinder speed (rpm)	1045
(i)	Feed roller speed (rpm)	333.5

7.2 Tests at Load:

7.2.1 Short run test:

Four tests of short run were carried out for cutting Napier grass. The detailed parameters of fodder crop are given in Annexure-I and summarized in Table-1. The detailed observations made during the test are given in Annexure-II and summarized in Table-2.

SUMMARY OF FODDER CROP PARAMETER

Table - 1

Sr. No.	Parameters	Observations
1	Name of fodder crop	Napier grass
2	Length of stalk (m)	2.96 to 3.39
3	Dia. of stalk (mm)	15.56 to 18.21
4	Moisture content (%)	65 to 69

SUMMARY OF PERFORMANCE RESULTS

Table - 2

Sr. No.	Parameters	Observations
1	Feed rate (kg/h)	391.4 to 400.2
2	Quantity of cut (kg/h)	390.0 to 392.9
3	Quality of cut	-9.13 to -4.91
4	Cut length of fodder pieces (mm)	23.74 to 25.24
5	Power consumed by chaff cutter for cutting of fodder (kW)	0.3 to 0.4
6	Total power consumed at load (kW)	1.2
7	Quantity of cut chaff per unit energy consumed (kg/kWh)	975.0 to 1304.9
8	Corrected quantity of cut (kg/h)	95.8 to 111.1
9	Corrected quality of cut (kg/kWh)	260.6 to 319.5
10	Performance Index	-11914.0 to -4787.3

7.2.1.1 Quantity of cut:

a) The feed rate was observed as 391.4 to 400.2 kg/h.

b) The quantity of cut fodder received was measured as 390.0 to 392.9 kg/h.

c) The corrected quantity of cut was recorded as 95.8 to 111.1 kg/h.

d) The quantity of cut per unit energy consumed was recorded as 975.0 to 1304.9 kg/kWh.

e) The corrected quality of cut per unit energy consumed was recorded as 260.63 to 319.5 kg/kWh.

7.2.1.2 Quality of cut:

The quality of cut was determined from the standard deviation of measured length of cut of plastic pieces. The quality of cut was ranged from -9.13 to -4.91.

7.2.1.3 Power requirement:

The power consumed by the chaff cutter was calculated after deducting the no-load power consumption of chaff cutter from the power consumption on load and it was measured as 0.3 to 0.4 kW.

7.2.1.4 Performance index:

The overall performance of the chaff cutter was determined by its performance Index and it was calculated as -11914.0 to -4787.3.

7.2.2 Long run test:

The chaff cutter was operated for a total duration of 25 hours for cutting Napier grass. No breakdown in the cutter head, feeding mechanism, transmission systems and body of the chaff cutter was noticed.

No repair was occurred during the entire course of test.

Percent variation in length of cut was observed as 16.0 to 21.0

7.2.3 Labour requirement:

Three labours are required for continuous operation of the chaff cutter. Two labours are required for feeding and supplying the fodder crop and one for handling the chaff.

7.2.4 Ease of operation, adjustments and safety provisions:

a) The machine is easy for installation and operation.
b) The adjustment of clearance between shear plate and rotating blade is easy to perform.
c) The cutter head was guarded by providing safety cover but main power transmission was not guarded by providing safety cover.
d) The chaff cutter was provided with side plates and top cover plates to protect the feed rollers.

7.2.5 Wear analysis of blades:

Sr. No.	Initial mass (g)	Final mass (g)	Loss of mass (g)	Percentage of wear	Percentage of wear per hour after 25 h of operation
1	564.93	559.10	5.83	1.03	0.04
2	572.24	568.50	3.74	0.65	0.03
3	575.13	569.20	5.93	1.03	0.04
4	570.20	565.56	4.64	0.81	0.03

8. EASE OF OPERATION AND ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of the machine.

9. DEFECTS, BREAKDOWNS AND REPAIRS

No defects and breakdowns were observed during the entire test.

10. CRITICAL TECHNICAL SPECIFICATIONS

(Vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019)

Sr. No.	Type	Specifications	Observed	Remarks
1	Type	Power operated	Power operated	Conforms
2	Basis of cutting mechanism type	Fly wheel or cylinder	Cylinder	Conforms
3	Basis of cut chaff dropping position type	Let fall, throw away or blow	Throw away type	Conforms
4	Material of blade	Mn42	High carbon steel	**Does not conform**
5	Hardness of blade	48-52 HRC	14.6 HRC	**Does not conform**
6	Length of conveyor, mm	1200 (Min.)	NA	--
7	Length of chute, mm	900 (Min.)	540	**Does not conform**
8	Thickness of chute sheet, mm	>1.6	0.91	**Does not conform**
9	Covering of chute or conveyor, mm	450 (Min)	340	**Does not conform**
10	Height of feeding unit, mm	750 to 1100	655	**Does not conform**
11	Cautionary notice	Must be provided	Provided	Conforms
12	Marking/labeling of machine	The labeling plate should be riveted on the body of the machine having name and address of manufacturer, country of origin, make, model, year of manufacture, serial number, Type, Require size of prime mover (kW)	Name and address of manufacturer, Make and Type were not provided.	**Does not conform**
13	Literature	Operator manual, service manual and parts catalogue should be provided.	Not Provided	**Does not conform**

11. COMMENTS AND RECOMMENDATIONS

Following modifications/improvements are required as per IS 11459: 2024.

11.1 A warning roller with spring was not fitted before the feeding rollers to warn the operator while feeding the fodder crop into the chaff cutter. This should be looked into for corrective action.

11.2 A suitable arrangement was not provided for clutching or declutching of drive in transmission system. This should be looked into for corrective action.

11.3 Provision for adjustment of feed rate, feed roll clearance and direction of rotation of feed rollers should be provided.

11.4 Suitable guards/cover shall be provided on the belt and drive pulley mounted on motor shaft of the chaff cutter.

11.5 The power source shall be mounted on a frame made of MS angle with minimum thickness of 5 mm. This should be looked into for corrective action.

11.6 Pulley diameter of power source shall be of 100 mm. This should be looked into for corrective action.

11.7 Diameter of cylinder pulley shall be minimum 265 mm. This should be looked into for corrective action.

11.8 The minimum length of feeding chute shall be 900 mm. This should be looked into for corrective action.

11.9 The height of feeding chute of chaff cutter should be between 750 to 1100 mm.

11.10 The chute shall be covered up to a minimum of 450 mm near feed roll side. This should be looked into for corrective action.

11.11 Provision to change the direction of rotation of feed rolls should be provided.

11.12 Hooks at suitable places may be provided for lifting the chaff cutter for easy movement.

11.13 The thickness of the chute cover shall not be less than 1.6 mm.

11.14 The hardness and chemical composition of blade was not met with the requirement of IS 11459 : 2024. This should be looked into for corrective action.

11.15 The labeling plate was not provided with information such as name and address of the manufacturer, code and batch number, rated input capacity and type of chaff cutter. This should be looked into for corrective action.

11.16 The chaff cutter shall be marked with manufacturers name or registered trade mark, Code & batch number, Type and Rated input capacity.

11.17 A minimum cautionary notice worded as stated in IS11459: 2024 shall be written in vernacular language legibly and permanently on the main body of the chaff cutter for safety of operator.

11.18 Operator's manual giving operational, maintenance, assembly instruction and adjustments along with the precautions to be taken for safe operation of chaff cutter shall be supplied with each chaff cutter. 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

12. APPLICANT'S COMMENTS

We have gone through the comments and recommendations as stated in the draft test report and we will take care as per comments and recommendations in our future products.

ANNEXURE – I

FODDER CROP PARAMETERS

Place of test: Kanyaka Farm, Jamuguri, Dist. – Sonitpur, Assam

Sr. No.	Parameters	No. of tests			
		I	II	III	IV
1	Date of test	04.11.2025	06.11.2025	07.11.2025	08.11.2025
2	Name of the fodder crop	Napier grass			
3	Moisture content of fodder crop (%)	67	69	67	65
4	Av. length of stalk (m)	2.96	3.39	3.04	3.37
5	Av. dia. of stalk (mm)	15.56	18.21	16.26	17.36

ANNEXURE – II

PERFORMANCE TEST RESULTS

Place of test: Kanyaka Farm, Jamuguri, Dist. – Sonitpur, Assam

Sr. No.	Parameters	No. of tests			
		I	II	III	IV
1	Name of the crop	Napier grass			
2	Date of test	04.11.2025	06.11.2025	07.11.2025	08.11.2025
3	Duration of test (h)	1.02	1.01	1.02	1.02
4	Feed rate (kg/h)	391.40	400.24	395.21	397.70
5	Quantity of cut (kg/h)	390	391.48	392.90	391.94
6	Quality of cut	-4.91	-9.13	-6.53	-8.24
7	Av. cut length of fodder pieces (mm)	24.80	25.24	23.74	24.70
8	Power consumed by chaff cutter (kW)	0.4	0.3	0.4	0.4
9	Quantity of cut per unit energy consumed (kg/kWh)	975.00	1304.93	982.25	979.85
10	Corrected quantity of cut (kg/h)	104.25	95.87	108.91	111.11
11	Corrected quality of cut (kg/kWh)	260.63	319.57	272.28	277.78
12	Performance Index	-4787.3	-11914.03	-6414.1	-8073.98