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

स्वच्छ भारत
एक कदम स्वच्छता की ओर

संख्या/No.: Machine 155/529
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 (NER) Biswanath Chariali, Biswanath (Assam) बिश्वनाथ चारिआलि, बिश्वनाथ (असम)

SAMSON, SAM-9ZT0.5H, 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**

Name and address of the applicant	:	M/s GREEN FIELD MATERIAL HANDLING PVT. LTD., Plot No. N-49/1, MIDC, ADDL. Ambernath Indl. Area, Anand Nagar, Ambernath (E), Dist.-Thane, Maharashtra– 421 506
Name of machine	:	Chaff Cutter
Type of machine	:	Power operated (electric motor), Cylinder type, Conveyor- fed, Throw away type
Year of manufacture	:	2024
Serial no. of machine	:	CC2416
Country of origin	:	**CHINA**
Suitability of machine (apa)	:	Chopping of green and dry fodder

4.2 Constructional details:

4.2.1 Main frame/Stand:

Constructional details	:	It is fabricated from MS angle iron having 4 legs of size 2570 x 49/49 x 3.2 mm (2 Nos.). The legs are further supported with MS angle iron 410 x 38/38 x 2.3 mm widthwise (2 Nos.) and MS sheet of 380 x 140 x 0.8 mm lengthwise (2 Nos.).
For motor mounting	:	450 x 38/38 x 2.9 mm - 02 Nos.
Slot size (mm)	:	80 x 9 - 04 Nos
Size of platform (mm)	:	400 x 245
Height of platform from ground level (mm)	:	550

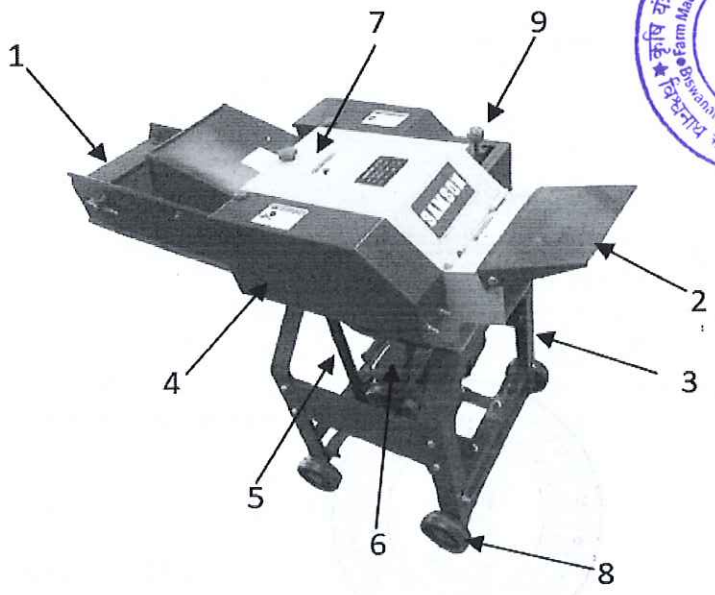

Fig.1. SAMSON, SAM-9ZT0.5H, CHAFF CUTTER

7. FIELD PEFORMANCE TEST

7.1 Test at No Load:

The chaff cutter was operated at no load for 0.5 hour.

7.1.1 Power Consumption:

The no load power consumption of chaff cutter was recorded as 0.80 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	None
(b)	Presence of knocking or rattling sound	None
(c)	Frequent slippage of belts	None
(d)	Smooth running of shaft/shafts in their respective bearings	Satisfactory
(e)	Any marked unusual wear or slackness in any component	Not noticed
(f)	Any marked rise in bearing temperature	Not noticed
(g)	Motor Speed, rpm	2986
(h)	Flywheel/ cylinder speed, rpm	1011 to 1016
(i)	Feed roller speed, rpm	253 to 254

7.2 Tests at Load:

7.2.1 Short run test:

Four tests of short run were carried out for cutting Napier grass. The detail parameters of fodder 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 PARAMETERS

Table - 1

Sr. No.	Parameters	Observations
1	Name of fodder crop	Napier grass
2	Av. length of stalk (m)	2.8 to 3.0
3	Av. dia. of stalk (mm)	13.3 to 15.8
4	Av. moisture content (%)	58 to 67

SUMMARY OF PERFORMANCE RESULTS

Table - 2

Sr. No.	Parameters	Observations
1	Feed rate (kg/h)	296 to 372
2	Quantity of cut (kg/h)	294 to 369
3	Quality of cut	-7.93 to -10.21
4	Av. length of fodder pieces (mm)	14.3 to 23.9
5	Power consumed by chaff cutter for cutting of fodder (kW)	0.2 to 0.4
6	Total power consumed at load (kW)	1.0 to 1.2

7	Quantity of cut chaff per unit energy consumed (kg/kWh)	736 to 1845
8	Corrected quantity of cut (kg/h)	96.7 to 180.6
9	Corrected quality of cut (kg/kWh)	241.5 to 903.0
10	Performance Index	-6501.8 to -14630.9

7.2.1.1 Quantity of cut:

a) The feed rate was observed as 296 to 372 kg/h.

b) The quantity of cut fodder received was measured as 294 to 369 kg/h.

c) The corrected quantity of cut was recorded as 96.7 to 180.6 kg/h.

d) The quantity of cut per unit energy consumed was recorded as 736 to 1845 kg/kWh.

e) The corrected quality of cut per unit energy consumed was recorded as 241.5 to 903.0 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 -7.93 to -10.21.

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 0.2 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 -6501.8 to -14630.9.

7.2.2 Long run test:

The chaff cutter was operated for a total duration of 20.0 hours for cutting Napier grass.
No breakdown in the cutter head, feeding mechanism, transmission system 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 11.9 to 19.2.

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 and main power transmission are guarded by providing safety covers.

d) The feed rollers are provided with spring loaded arrangement.

e) The Chaff Cutter is 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 24.11 h of operation
1	578.13	569.33	8.80	1.52	0.063
2	571.85	566.34	5.51	0.96	0.040
3	592.54	585.34	7.20	1.22	0.050
4	580.0	574.06	5.94	1.02	0.042

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	**2**	**3**	**4**	**5**
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	Carbon steel	**Does not conform**
5	Hardness of blade	48-52 HRC	185 HB	**Does not conform**
6	Length of conveyor, mm	1200 (Min.)	515	**Does not conform**
7	Length of chute, mm	900 (Min.)	550	**Does not conform**
8	Thickness of chute sheet, mm	>1.6	NA	--
9	Covering of chute or conveyor, mm	450 (Min)	300	**Does not conform**

1	2	3	4	5
10	Height of feeding unit, mm	750 to 1100	755	Conforms
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 manufacturer, serial number, Type, Required size of prime mover (kW)	Address of manufacturer, country of origin, Make, serial number, type are not provided.	**Does not conform**
13	Literature	Operator manual, service manual and parts catalogue should be provided	Provided	Conforms

11. COMMENTS AND RECOMMENDATIONS

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

11.1.1 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.

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

11.1.3 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.

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

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

11.1.6 Cylinder must be covered fully with MS sheet of minimum 2 mm thickness.

11.1.7 The minimum length of conveyor shall be 1200 mm.

11.1.8 The chute or conveyor shall be covered up to a minimum of 450 mm near feed roll side.

11.1.9 In case of chaff cutter conveyor feeding, a feed reversing device may be provided.

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

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

11.1.12 The hardness of blade was not meeting the requirement of IS 11459 : 2024. This should be looked into for corrective action.

11.2 During long-run test, the variation in length of cut was observed by more than 10 %. This should be looked into for corrective action.

11.3 Marking /labeling:

The labeling plate was not provided with information such as manufacturer's name or registered trade mark, Code and batch number, Type, recommended rpm of the cylinder. This should be looked into for corrective action.

11.4 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**

12. APPLICANT'S COMMENTS

Applicant's Comments
We have noted the comments and recommendation we will do necessary action in future lot.

ANNEXURE – I

FODDER CROP PARAMETERS

Place of test: Kanyaka Farm, Jamugurihat, Dist.- Sonitpur, Assam

Sr. No.	Parameters	No. of tests			
		I	II	III	IV
1	Date of test	11.03.2025	13.03.2025	15.03.2025	17.03.2025
2	Name of the fodder crop	Napier grass			
3	Moisture content of fodder (%)	62	65	67	58
4	Av. length of stalk (m)	2.8	3.0	3.0	2.9
5	Av. dia. of stalk (mm)	14.3	13.3	15.1	15.8

ANNEXURE – II

PERFORMANCE TEST RESULTS

Place of test: Kanyaka Farm, Jamugurihat, Dist.- Sonitpur, Assam

Sr. No.	Parameters	No. of tests			
		I	II	III	IV
1	Name of the fodder crop	Napier grass			
2	Date of test	11.03.2025	13.03.2025	15.03.2025	17.03.2025
3	Duration of test (h)	1.03	1.00	1.03	1.05
4	Feed rate (kg/h)	311	372	296	317
5	Quantity of cut (kg/h)	311	369	294	317
6	Quality of cut	-8.39	-7.93	-8.84	-10.21
7	Av. length of fodder pieces (mm)	23.9	14.3	20.1	19.8
8	Power consumed by chaff cutter (kW)	0.3	0.2	0.4	0.3
9	Qty. of cut per unit energy consumed (kg/kWh)	1035	1845	736	1056.7
10	Corrected quantity. of cut (kg/h)	98.8	180.6	96.7	134.5
11	Corrected quality of cut (kg/kWh)	329.3	903.0	241.5	448.3
12	Performance Index	-8686.5	-14630.9	-6501.8	-10788.6