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

संख्या/No.: MISC/NERFMTTI, B. Chariali/
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THIS TEST REPORT IS VALID UPTO 31.03.2033

DHARMATECH INDUSTRIES, DI-CH-350, 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)
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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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Name and address of applicant	:	DHARMATECH INDUSTRIES 23/2, Parishikhar Industrial Estate, NR. Ramol Toll Plaza, S.P. Ring Road, Ramol, Ahmedabad, Gujarat – 382 449
Name of machine	:	Chaff cutter
Type of machine	:	Power operated (electric motor), cylinder type, chute-fed, throw away type
Year of manufacture	:	2024
Serial no. of machine	:	100
Country of origin	:	**INDIA**
Suitability of machine (apa)	:	Chopping of green and 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 37/37 x 3.2 mm. The legs were further supported with MS angle iron 300 x 37/37 x 3.2 mm (2 Nos.).
For motor mounting	:	MS angle iron 480 x 37/37 x 3.0 mm (2 Nos.).
Slot size (mm)	:	90.7 x 8.8 - 4 Nos.
Size of platform (mm)	:	248 x 410
Height of platform from ground level (mm)	:	525

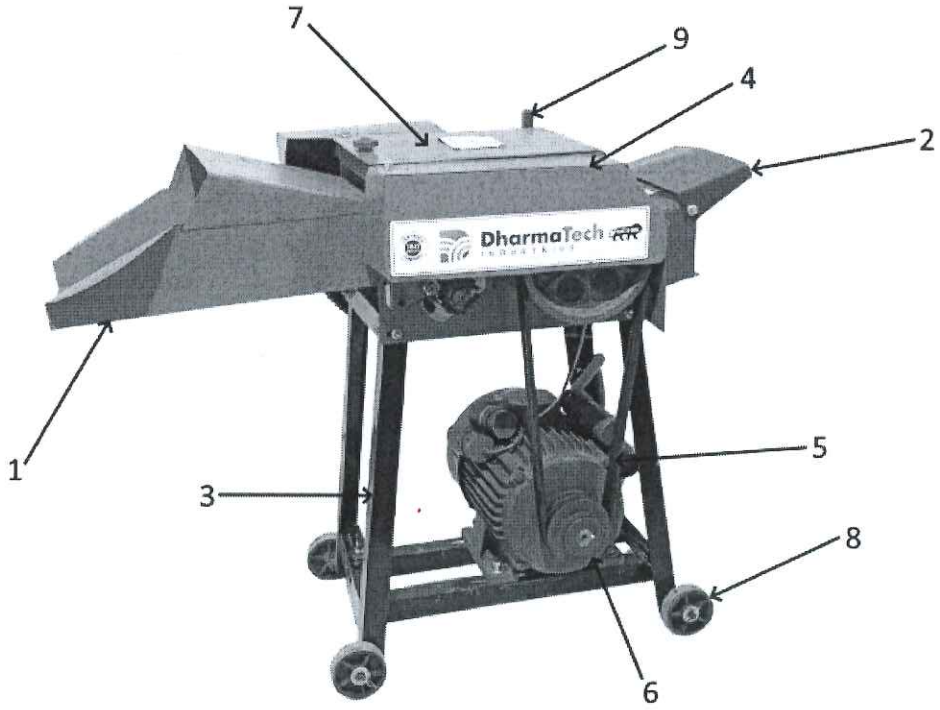

Fig.1. DHARMATECH INDUSTRIES, DI-CH-350, CHAFF CUTTER

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 average no load power consumption of chaff cutter was recorded as 0.66 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	Satisfactory
(e)	Any marked unusual wear or slackness in any component	No
(f)	Any marked rise in bearing temperature	No
(g)	Motor speed (rpm)	1498
(h)	Fly wheel/ cylinder speed (rpm)	749
(i)	Feed roller speed (rpm)	187

7.2 Tests at load:

7.2.1 Short run test:

Five 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	Av. length of stalk (m)	2.08 to 3.55
3	Av. dia. of stalk (mm)	12.39 to 19.59
4	Av. moisture content (%)	64 to 67

SUMMARY OF PERFORMANCE RESULTS

Table - 2

Sr. No.	Parameters	Observations
1	Feed rate (kg/h)	260.03 to 273.20
2	Quantity of cut (kg/h)	241.67 to 257.28
3	Quality of cut	-9.38 to -9.58
4	Av. cut length of fodder pieces (mm)	16.96 to 22.29
5	Power consumed by chaff cutter for cutting of fodder (kW)	0.4 to 0.5
6	Total power consumed at load (kW)	1.1 to 1.2

7	Quantity of cut chaff per unit energy consumed (kg/kWh)	521.32 to 668.85
8	Corrected quantity of cut (kg/h)	87.06 to 106.19
9	Corrected quality of cut (kg/kWh)	174.12 to 260.28
10	Performance index	-6387.52 to -4994.25

7.2.1.1 Quantity of cut:

a) The feed rate was observed as 260.03 to 273.20 kg/h.
b) The quantity of cut fodder received was measured as 241.67 to 257.28 kg/h.
c) The corrected quantity of cut was recorded as 87.06 to 106.19 kg/h.
d) The quantity of cut per unit energy consumed was recorded as 521.32 to 668. kg/kWh.
e) The corrected quality of cut per unit energy consumed was recorded as 174.12 260.28 kg/kWh.

7.2.1.2 Quality of cut:

The quality of cut was determined from the standard deviation of measured length of c of plastic pieces. The quality of cut was ranged from -9.38 to -9.58.

7.2.1.3 Power requirement:

The power consumed by the chaff cutter was calculated after deducting the no-loa power consumption of chaff cutter from the power consumption on load and it wa measured as 0.4 to 0.5 kW.

7.2.1.4 Performance index:

The overall performance of the chaff cutter was determined by its performance inde and it was calculated as - 6387.52 to - 4994.25.

7.2.2 Long run test:

The chaff cutter was operated for a total duration of 25.67 hours for cutting *Napi* grass. No breakdown in the cutter head, feeding mechanism, transmission systems an body of the chaff cutter was noticed during field performance test.
No repair was occurred during the entire course of test.
Percent variation in length of cut was observed as 16.7 to 21.9.

7.2.3 Labour requirement:

Three labours are required for continuous operation of the chaff cutter. Two labours ar 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 was easy for installation and operation.
b) The adjustment of clearance between shear plate and rotating blade was easy t perform.
c) The cutter head and main power transmission were guarded by providing safet covers.
d) The feed rollers were provided with spring loaded arrangement.
e) The chaff cutter was provided with side plates and top cover plates to protect the fee 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 25.67 h of operation
1	566.60	563.17	3.43	0.61	0.02
2	567.80	564.55	3.25	0.57	0.02
3	568.20	565.12	3.08	0.54	0.02
4	574.40	572.41	1.99	0.35	0.01

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 course of 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	29 HRC	**Does not conform**
6	Length of conveyor, mm	1200 (Min.)	NA	--
7	Length of chute, mm	900 (Min.)	510	**Does not conform**
8	Thickness of chute sheet, mm	>1.6	2.2	Conforms
9	Covering of chute or conveyor, mm	450 (Min)	260	**Does not conform**
10	Height of feeding unit, mm	750 to 1100	660	**Does not conform**

1	2	3	4	5
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)	Country of origin, type and required size of prime mover (kW) were 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 Provision for adjustment of feed rate and direction of rotation of feed rollers should be provided.

11.1.4 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.

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

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

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

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

11.1.9 The height of feeding chute of chaff cutter should be between 750 to 1100 mm. This should be looked into for corrective action.

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

11.1.13 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.

11.1.14 A minimum cautionary notice worded as per IS 11459 : 2024 shall be written in vernacular language legibly and permanently on the main body of the chaff cutter.

11.2 Marking /labeling:

The labeling plate was not provided with information such as country of origin, type, required size of prime mover (kW), code and batch number, rated input capacity and recommended rpm of the cylinder. This should be looked into for corrective action.

11.3 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. K Bai.

(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - Sh. D. Deori, Technical Assistant

12. APPLICANT'S COMMENTS

We will take necessary action as per comments and recommendations in the test report for our future products.

ANNEXURE – I

FODDER CROP PARAMETERS

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

Sr. No.	Parameters	No. of tests				
		I	II	III	IV	V
1	Date of test	26.02.2026	27.02.2026	02.03.2026	03.03.2026	05.03.2026
2	Name of the fodder crop	*Napier* grass				
3	Moisture content of fodder crop (%)	64	64	67	67	65
4	Av. length of stalk (m)	2.98	3.55	2.30	2.26	2.08
5	Av. dia. of stalk (mm)	15.79	19.59	13.95	13.36	12.39

ANNEXURE – II

PERFORMANCE TEST RESULTS

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

Sr. No.	Parameters	No. of tests				
		I	II	III	IV	V
1	Name of the crop	*Napier* grass				
2	Date of test	26.02.2026	27.02.2026	02.03.2026	03.03.2026	05.03.2026
3	Duration of test (h)	1.02	1.03	1.02	1.02	1.0
4	Feed rate (kg/h)	266.55	273.20	260.03	266.69	266.58
5	Quantity of cut (kg/h)	249.77	257.28	241.67	251.52	249.05
6	Quality of cut	- 9.57	- 9.52	- 9.58	- 9.55	- 9.38
7	Av. cut length of fodder pieces (mm)	22.29	18.58	18.25	16.96	17.60
8	Power consumed by chaff cutter (kW)	0.5	0.5	0.5	0.4	0.5
9	Quantity of cut per unit energy consumed (kg/kWh)	539.02	545.80	521.32	668.85	534.00
10	Corrected quantity of cut (kg/h)	87.06	105.75	94.27	104.11	106.19
11	Corrected quality of cut (kg/kWh)	174.12	211.50	188.54	260.28	212.38
12	Performance Index	- 5158.4	- 5196.02	- 4994.25	- 6387.52	- 5008.92