

THIS TEST REPORT VALID UP TO : 30th September, 2027



**DASMESH-517, TRACTOR OPERATED
STRAW REAPER COMBINE**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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[ISO 9001:2015 CERTIFIED]

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Table-4: Chemical analysis of critical components

S. No.	Component	Primary element(%) by weight				
		Carbon	Manganese	Silicon	Phosphorous	Sulphur
1	Knife blade	0.9019	0.5689	0.3384	0.0193	0.0258
2	Knife guard	0.3910	0.6869	0.3635	0.0307	0.0630
3	Knife back	0.2709	0.4884	0.2006	0.0547	0.0619
4	Chopping cylinder blade	0.7902	0.6701	0.2274	0.0245	0.0235
5	Concave blade	0.7890	0.6455	0.3127	0.0245	0.0261

7. FIELD TEST

The straw reaper combine was operated with John Deere 5310 tractor at engine throttle setting corresponding to 540 PTO rpm was tested in the field for 52.4 (including running-in 1.27) hours for reaping of left over straw & stubbles after wheat harvesting by grain combine harvester. During tests field performance of straw reaper was assessed with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction etc. The crop parameters, atmospheric conditions and performance parameters as observed during field tests are also given in **Annexure-I & II** and summarized in Table-5 & 6.

Table-5 : Summary of field crop conditions

S. No.	Parameters	Range of parameters
1.	No. of tillers, m ²	235 to 450
2.	Manually recovered straw, g/m ² (Stubbles only)	244.3 to 358.2
3.	Moisture content of straw, %	9 to 14
4.	Loose straw, g/m ²	23.8 to 70.3
5.	Height of stubbles before harvesting, mm	256 to 281
6.	Height of stubbles after harvesting, mm	61 to 108

Table -6 : Summary of field performance test

S. No.	Observations	Range of observations	
1.	Speed of operation, kmph	2.13 to 2.20	
2.	Width of cut, m	1.70 to 1.92	
3.	Overlap,%	8 to 18	
4.	Rate of work, ha/h	0.282 to 0.377	
5.	Fuel consumption	l/h	7.02 to 8.60
		l/ha	21.21 to 26.82
		l/t	6.73 to 13.16
6.	PTO power consumption, kW		
7.	Average length of straw, mm	10.8 to 16.1	
8.	Straw split,%	94 to 96	
9.	Straw recovery,%	71 to 84	
10.	Grain recovery,%	34 to 54	

7.1 Ease of operation

No noticeable problem was observed during operation of straw reaper.

7.2 Quality of wheat straw: Satisfactory for animal feed.

7.3 Labor requirements

One man hour was required for daily maintenance of tractor and straw reaper. One skilled operator is needed to operate tractor with straw reaper.

8. WEAR OF CRITICAL COMPONENTS

The wear of serrated blades of chopping cylinder and concave was measured after completion of 52.4 hours of wheat straw harvesting.

Percentage wear on mass basis were computed and the results are given below in Table - 7

Table-7: Wear assessment of blades on mass basis**8.1 Concave blade**

Sr. No.	Concave		
	Mass before test (g)	Mass after test (g)	Wear (%)
1	93.00	92.23	0.83
2	91.16	90.83	0.36
3	89.10	88.40	0.79
4	93.10	92.67	0.46
5	92.50	92.26	0.26
6	91.10	90.80	0.33
7	91.50	91.15	0.38

8.2 Chopping cylinder

Sr. No.	Chopping cylinder		
	Mass before test (g)	Mass after test (g)	Wear (%)
1	69.25	69.00	0.36
2	68.86	68.55	0.45
3	69.10	68.93	0.25
4	68.86	68.29	0.83
5	62.68	62.28	0.64
6	68.62	68.13	0.71
7	68.79	68.46	0.48
8	70.00	69.40	0.86
9	68.21	67.90	0.45
10	69.00	68.71	0.42
11	68.59	68.21	0.55
12	68.69	68.31	0.55
13	69.79	69.23	0.76
14	69.62	69.05	0.82
15	68.71	68.19	0.76
16	69.29	68.92	0.53

Wear of concave & chopping cylinder blade on mass basis has ranged from 0.26 to 0.83 % and 0.25 to 0.86 % respectively.

9. DEFECTS, ADJUSTMENTS, BREAKDOWN AND REPAIRS

03 No's concave and 05 No's chopping cylinder blades were broken due to entry of stone during the field test at 5.03 hrs.

10. CRITICAL TECHNICAL SPECIFICATION

Deferred till 31.12.2020 vide Ministry O.M. No. 13-13/2020-M&T (I&P) dated 24.04.2020.

11. COMMENTS & RECOMMENDATIONS

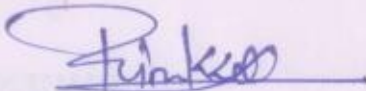
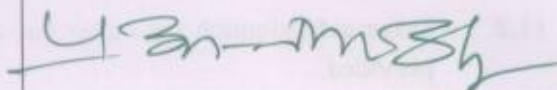
- 11.1** Safety device in feeding platform auger drive is not provided. It **MUST** be provided.
- 11.2** Drive safety clutch for cutter bar and chopping cylinder are not provided. It **MUST** be provided.
- 11.3** The construction of PIC and PIC shaft does not meet the requirement of IS: 4931-1995. It **MUST** be looked into for corrective action.
- 11.4** Provision against overload and safety guard on power take off drive shaft is not provided. It **MUST** be provided.
- 11.5** 03 No's concave and 05 No's chopping cylinder blades were broken due to entry of stone during the field test at 5.03 hrs. It **MUST** be looked into.
- 11.6** The stone trap as it is not capable of trapping the stone found in the field test. It **MUST** be looked in to for improvement.
- 11.7 Visual observations and provision for adjustments**
- i) Marking on inlet and outlet is not provided. It should be provided.
 - ii) Marking of direction of rotation on chopping drum, blower unit, beater unit and reel unit is not provided. It should be provided.
 - iii) Proper registration of cutter bar knife section is not provided. It should be looked into.
 - iv) The provision for following adjustment on straw reaper is not provided. It should be provided.
 - a) Adjustment of speed of chopping cylinder, blower, reel & cutter bar.
 - b) Adjustment of air displacement.



12. TECHNICAL LITERATURE

One booklet entitled "Technical data/Operation/Service/Parts catalogue" was provided for reference during test. The same, however, needs to be updated as per IS-8132-1999.

TESTING AUTHORITY

RINKU PRASAD GUPTA TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

Test Report is compiled by: C. Veeranjanyulu, Senior Technician

13. APPLICANT'S COMMENTS

No comments received from the applicant

