

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: SR.Comb. : 151/2861/2022

माह/Month: June, 2022

THIS TEST REPORT VALID UP TO : 30th June, 2029



**KSA-7562, TRACTOR OPERATED
STRAW REAPER COMBINE**



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

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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8. LABOTATORY TESTS

Material analysis: The hardness and chemical analysis with respect to critical components are given in Table-3 & 4 respectively.

Table-3: Hardness of critical parts:-

Sr. No.	Component	Material	Hardness observed (HRC)	
			Hardened zone	Remainder zone
1	Cutter bar blade	High carbon steel	60	31
2	Knife guard	High carbon steel	223 (HB)	
3	Knife back	Mild carbon steel	225 (HB)	
4	Chopping cylinder blade	High carbon steel	60	20
5	Concave blade	High carbon steel	61	21

Table-4: Chemical analysis of critical components

Sr. No.	Component	Primary element (%) by weight				
		Carbon	Manganese	Silicon	Phosphorous	Sulphur
1	Knife blade	0.61	0.53	0.26	0.01	0.07
2	Knife guard	0.38	0.51	0.54	0.00	0.11
3	Knife back	0.16	0.28	0.89	0.00	0.12
4	Chopping cylinder blade	0.57	0.43	0.59	0.01	0.08
5	Concave blade	0.53	0.34	0.83	0.00	0.07

9. FIELD TEST

The straw reaper combine was operated with Swaraj 855 tractor at engine throttle setting corresponding to 540 PTO rpm was tested in the field for 37.56 (including running-in 1.0) 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

Sr. No.	Parameters	Range of parameters
1.	No. of tillers, m ²	316 to 353
2.	Manually recovered straw, g/m ² (Stubbles only)	303.63 to 364.57
3.	Moisture content of straw, %	6.50 to 9.00
4.	Loose straw, g/m ²	198.37 to 204.67
5.	Height of stubbles before harvesting, mm	234.4 to 322.23
6.	Height of stubbles after harvesting, mm	61.10 to 80.60

Table -6 : Summary of field performance test

Sr. No.	Observations	Range of observations
1.	Speed of operation, kmph	2.19 to 2.23
2.	Width of cut, m	2.12 to 2.14
3.	Overlap, %	3.60 to 4.50

4.	Rate of work, ha/h	0.381 to 0.395
5.	Fuel consumption	
	l/h	5.86 to 6.02
	l/ha	15.00 to 15.77
	l/t	3.20 to 3.83
6.	PTO power consumption, kW	34.98
7.	Average length of straw, mm	7.70 to 8.98
8.	Straw split, %	97.00 to 97.40
9.	Straw recovery, %	81.26 to 83.74
10.	Grain recovery, %	58.84 to 68.25

9.1 Ease of operation

No noticeable problem was observed during operation of straw reaper.

9.2 Quality of wheat straw: Satisfactory for animal feed.

9.3 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.

10. WEAR OF CRITICAL COMPONENTS

The wear of serrated blades of chopping cylinder and concave was measured after completion of 38.43 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

10.1 Concave blade

Sr. No.	Concave		
	Mass before test (g)	Mass after test (g)	Wear (%)
1	66.7	66.4	0.45
2	66.3	66.1	0.30
3	65.8	65.4	0.61
4	66.5	66.2	0.45

10.2 Chopping cylinder

Sr. No.	Chopping cylinder		
	Mass before test (g)	Mass after test (g)	Wear (%)
1	70.4	69.9	0.71
2	69.5	68.9	0.86
3	68.6	68.0	0.87
4	68.7	68.1	0.87
5	68.5	68.1	0.58
6	70.5	70.0	0.71
7	67.9	67.3	0.88
8	68.9	68.5	0.58

15	Arrangement for forward and backward movement of reel	Must be provided	Provided	Conforms
16	Labeling of lubricating points	Must be provided	Provided	Conforms
17	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, make, model, year of manufacture, serial number, size, required size of prime mover (kW/Hp)	Provided	Conforms
18	Literature	Operator manual, service manual & parts catalogue should be provided.	Provided	Conforms

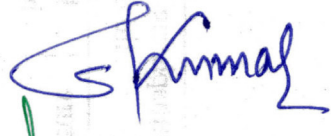
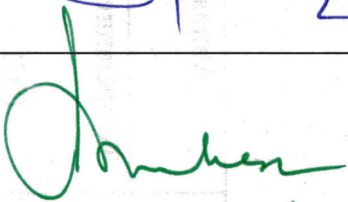
13. COMMENTS & RECOMMENDATIONS

- 13.1** Drive safety clutch for chopping cylinder is not provided. It **MUST** be provided.
- 13.2** The construction of PIC and PIC shaft does not meet the requirement of IS: 4931-1995. It **MUST** be looked into for corrective action.
- 13.3** Provision against overload and safety guard on power take off drive shaft is not provided. It **MUST** be provided.
- 13.4 Visual observations and provision for adjustments**
- i) The provision for following adjustment on straw reaper is not provided. It should be provided.
 - a) Adjustment of speed of chopping cylinder, blower, reel, screen slope, sieve clearance & cutter bar.
 - b) Adjustment of air displacement.

14. TECHNICAL LITERATURE

One booklet entitled "Operator's manual, Service manual and Spare parts catalogue" was provided for reference during test. The same, however, need to be updated as per IS-8132-1999.

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 28.06.2022

Draft test report compiled by Sh. Deny Hasnu, Senior Technician

15. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant comments
15.1	13.1, 13.2, 13.3 & 13.4	During regular production of straw reaper, We will make amendments to provide all as per comments and recommendations in the report. We will make amendments to follow all Indian Standard. We will supply quality products to the customers.