

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: Comb-320/3033/2023  
माह/Month: May, 2023

**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> May, 2030**



**KS, KS 513 TD  
TRACTOR MOUNTED COMBINE HARVESTER**



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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## 15. FIELD TEST

- 15.1 Combine harvester was operated in field for 25.56 and 29.06 hours (excluding running-in of 2.17 & 2.03 hours) for wheat and paddy harvesting respectively. During the test, available varieties of crop were harvested to assess the field performance of combine with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction etc. The crop and atmospheric conditions during field test are given in Appendix - II & V respectively. The crop parameters recorded during the test for all crops are as under: -

**Crop parameters**

Sr. No.	Parameters		Observations	
			Wheat	Paddy
1.	Plant height, cm	:	91 to 108	97 to 122
2.	Number of tillers/m <sup>2</sup>	:	231 to 305	160 to 254
3.	Length of ear head, cm	:	7 to 11	22 to 29
4.	Straw/grain ratio	:	0.60 to 0.90	1.10 to 1.40
5.	Moisture, %			
		- Grain :	11.7 to 11.8	14.0 to 15.1
		- Straw :	6.8 to 7.1	61.0 to 64.5

The results of field performance test of wheat and paddy crops harvesting are summarised in table-5 and presented in detail in Appendix- II to V.

**Table- 5 : SUMMARY OF LOSSES & EFFICIENCIES OBSERVED DURING FIELD PERFORMANCE TEST.**

Crop variety	Collectable losses (Max.) (%)	Non-collectable losses (Max.) (%)	Total processing losses (Max.) (%)	Threshing efficiency (Min.) (%)	Cleaning efficiency (Min.) (%)	Grain breakage in main tank (Max.) (%)	Forward speed (kmph)	Area covered (ha/h)	Fuel consumption		Grain output (kg/h)	Crop throughput (t/h)
									(l/h)	(l/ha)		
<b>WHEAT</b>												
WH-1140	2.40	0.30	2.40	99.40	97.30	0.13	2.25	0.511	5.68	11.11	3536	6.48
						1.80	2.28	0.610	6.90	11.55	4088	7.42
<b>PADDY</b>												
ND-67	2.30	0.29	2.41	98.80	96.40	1.10	1.12	0.278	7.00	24.31	1847	3.83
						1.40	1.19	0.337	8.18	25.34	2285	4.70
ND-53	2.13	0.22	2.20	98.90	97.00	1.07	1.19	0.324	7.57	23.37	1709	4.00
							1.20	0.336	8.09	24.09	1805	4.15

**Summary of field performance of chopper cum spreader**

Uniformity of straw spread, CV (%)	18.23
Weighted mean size of chopped straw, cm	9.11

15.2 **Unloading of grain**

The time to unload the grain tank ranged from 45 to 76 second in wheat operation & 47 to 70 seconds in paddy operation.

15.3 **Time required for daily maintenance**

The average labour required for daily maintenance was approximately two man hours.



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23.	Fitting of SMS on combine harvester	Rigidly fixed to the combine chassis	Rigidly fixed	Conforms
24.	Fitting of power transmission system on combine harvester	Rigidly fixed to the combine chassis	Rigidly fixed	Conforms
25.	Marking/labelling of machine	Labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make and Model, Year of manufacture, Serial number, Type, Size required, size of prime mover (kW), Weight of the machine (kg)	Provided	Conforms
26.	Literature	Operator manual, Service manual and Parts catalogue should be provided	Provided	Conforms

## 21. COMMENTS AND RECOMMENDATIONS

- 21.1** The amplitude of mechanical vibration of components marked as (\*) in chapter 9 of this test report are observed on higher side. This calls for providing suitable remedial measures to dampen the vibration in order to improve the operational comfort and service life of various components & sub-assemblies.
- 21.2 Field performance test**
- 21.2.1** No noticeable defect was observed during field test.
- 21.3 Ease of operation and safety provision**  
No noticeable difficulties were observed during operation of combine harvester.
- 21.4 Hardness and chemical composition**
- 21.4.1** Chemical composition of knife blade is not within the limits specified in IS: 6025-1982. It should be looked into for corrective action at regular production level.
- 21.4.2** Hardness of the knife guard does not conform to their relevant IS code. It should be looked into for corrective action.
- 21.4.3** Chemical composition of knife back is not within the limits specified in IS: 10378-1982. It should be looked into for corrective action at regular production level.
- 21.4.4** The material of blade and bush is not specified. It should be specified.
- 21.4.5** Hardness of the flail and fixed serrated blade does not conform to their relevant IS code. It should be looked into for corrective action.



21.5 The safety drive of grain and tailing elevator is not provided. It should be looked into corrective action.



**21.6 Literature supplied with the machine.**

The following literatures are provided by the applicant during the test.

- i) Operator and service manual of combine harvester
- ii) Service manual of engine
- ii) Parts catalogue of combine harvester
- ii) Operator and service manual of SMS
- iv) Parts catalogue of SMS

However, the manual needs to be updated as per IS: 8132-1999.

**TESTING AUTHORITY**

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 29.05.2023

The test report is compiled by Sh. Deny Hasnu, Senior Technician

**22. APPLICANT'S COMMENTS**

Para No.	Our reference	Applicant comments
22.1	21.1	During regular production level we will improve the design to reduce the amplitude of mechanical vibration to conforms the IS.
22.2	21.4.1, 21.4.2 & 21.4.3	We will change the dimensions, hardness and chemical composition of those parts not conform to IS, so that hardness and chemical composition of all parts conforms to IS.
22.3	21.4.4	We will specify the material of blades.
22.4	21.5	We will provide the safety drive to grain and tailing elevator.
22.5	21.6	We will update the manual as per the IS: 8132-1999.