

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: Comb-325/3039/2023
माह/Month: June, 2023

THIS TEST REPORT VALID UP TO : 30th June, 2030



**YANMAR, AW70GW
SELF PROPELLED COMBINE HARVESTER (TRACK TYPE)**



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

Northern Region Farm Machinery Training and Testing Institute

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[ISO 9001:2015 CERTIFIED]

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Pressure, kPa	: 99.0
Relative humidity, %	: 36.6
Wind velocity, m/s	: 1.0 to 2.6
Max. noise level, dB(A)	: 94.5

15. FIELD TEST

15.1 Combine harvester was operated in field for 25.47 and 25.99 (excluding run-in) 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 & IV** respectively.

The crop parameters recorded during the test for all crops are as given below: -

Crop Parameters

Sl. No.	Parameters	Observations	
		Wheat	Paddy
1.	Plant height, cm	: 90 to 114	80 to 150
2.	Number of tillers/m ²	: 277 to 394	152 to 263
3.	Length of ear head, cm	: 8 to 12	14 to 26
4.	Straw/grain ratio	: 1.4 to 2.8	2.0 to 3.5
5.	Moisture, %		
	- Grain	: 9.1 to 12.3	13.6 to 14.1
	- Straw	: 7.0 to 9.7	64.7 to 66.2

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)		
WHEAT												
DBW-222	1.37	0.80	1.42	98.8	97.7	0.17	2.63 to 2.86	0.317 to 0.377	4.91 to 5.10	13.03 to 16.09	1874 to 2308	4.91 to 5.46
WH-1270	1.80	0.84	1.89	98.4	97.7	0.17	2.51 to 2.79	0.301 to 0.347	5.04 to 5.56	14.51 to 18.46	1066 to 1179	3.11 to 4.08
PADDY												
MTU-1010	1.65	0.72	1.94	98.6	97.2	0.32	2.04 to 3.24	0.251 to 0.419	6.49 to 7.48	15.50 to 29.75	1973 to 2821	8.27 to 10.43

- 15.2 Unloading of grains**
The time to unload the grain tank ranged from 79 to 110 second in paddy operation & 70 to 90 seconds in wheat operation.
- 15.3 Time required for daily maintenance**
The average labour required for daily maintenance was approximately two-man hours.
- 15.4 Harvesting of any other crop**
Not done, as not recommended

16. DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS

No noticeable defect or breakdown was observed during the test.

17. INSPECTION AND ASSESSMENT OF WEAR

- 17.1 Transmission system**
- 17.1.1 HST unit**
Visual condition of the components of complete assembly. : No noticeable defect observed
- 17.1.2 Gear box**
Visual condition of the components of complete assembly. : No noticeable defect observed
- 17.1.3 Track system**
Visual condition of the components of complete assembly. : No noticeable defect observed
- 17.2 Steering system/ (Hydraulic direction control unit)**
Visual condition of the components of complete steering assembly. : No noticeable defect observed
- 17.3 Starter motor & alternator**
Presence of oil in housing : None
Condition of bearings and other components : No noticeable defect observed
- 17.4 Chains, sprockets and belts**
Visual condition of components of combine. : No noticeable defect observed
- 17.5 Bearings**
Visual condition of components of combine. : No noticeable defect observed



19.2 Acceptance criteria in case of Breakdowns/Defects as per clause 4.2 of IS:15806-2018**XVII. Break down (critical, major & minor)**

Sr. No.	Category of breakdowns	Category (Evaluative/ Non evaluative)	Requirements as per OM	As observed	Whether meets the requirements (Yes/No)
1.	Critical	Evaluative	No critical breakdown	None	Yes
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature	None	Yes
3.	Minor	Evaluative	Not more than five and frequency of each should not be more than two	None	Yes
4.	Total breakdown	Evaluative	In no case total no of (major + minor) breakdowns exceed five	None	Yes

20. COMMENTS AND RECOMMENDATIONS**20.1 Mechanical vibration**

The amplitude of mechanical vibration of components marked as (*) in chapter 13 of this test report are observed to be 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.

20.2 Field performance test

No noticeable defect and breakdown were observed during operation of combine harvester.

20.3 The maximum power in two-hour test was observed as 47.6 kW against the declaration of 50.0 kW for full throttle setting under natural ambient condition.

20.4 The specific fuel consumption corresponding to maximum power at full throttle setting was observed 233 g/kWh.

20.5 The backup torque of engine was observed as 22.53% under natural ambient condition.

20.6 Lubricating oil consumption was observed 0.09 g/kWh during five-hour rating test.

20.7 The noise produced by the machine at by-stander's position and at operator's ear level was measured as 80.8 dB(A) and 94.5 dB(A) respectively.

20.8 Ease of operation and safety provisions

No noticeable difficulties observed during operation of combine harvester.

20.9 Hardness and chemical composition

Hardness & chemical composition of knife blade and knife guard are not within the limit specified in relevant Indian standards. It should be looked into for corrective action at regular production level.



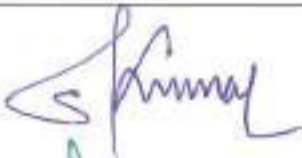
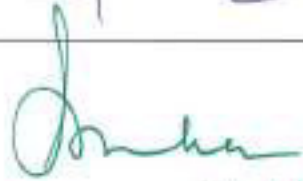
20.10 Literature supplied with the machine.

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

- i) Operators manual
- ii) Spare parts catalogue
- iii) Service manual

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

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 02-06-2023

Draft test report compiled by C. Veranjanceyulu, Senior Technician

21. APPLICANT'S COMMENTS

Will take suitable corrective action.