

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT (VARIANT)

संख्या/ No.: COMB- 231/2666/2021
माह/Month: February, 2021

THIS TEST REPORT VALID UP TO : 29th February, 2028



**JOHN DEERE, W70 V2
SELF PROPELLED COMBINE HARVESTER**



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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13. FIELD TEST

13.1 Combine harvester was operated in field for 28.9 and 27.0 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 under:-

Crop Parameters

Sl. No.	Parameters		Observations	
			Wheat	Paddy
1.	Average plant height, cm	:	90 to 110	68 to 117
2.	Average number of tillers/m ²	:	220 to 443	244 to 310
3.	Average length of ear head, cm	:	8 to 11	24 to 28
4.	Average straw/grain ratio	:	0.8 to 1.0	1.4 to 1.8
5.	Average moisture, %			
	- Grain	:	8.54 to 9.0	13.5 to 16.0
	- Straw	:	8.9 to 9.3	56.0 to 63.6

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	Collect able losses (%) (Max.)	Non-collect able losses (%) (Max.)	Total processing losses (%) (Max.)	Threshing efficiency (%) (Min.)	Cleaning efficiency (%) (Min.)	Grain breakage in main grain tank (Max.) (%)	Forward speed (kmph)	Area covered (ha/h)	Fuel consumption		Grain out put (kg/h)	Crop through-put (t/h)
									(l/h)	(l/ha)		
1	2	3	4	5	6	7	8	9	10	11	12	13
WHEAT												
PVW-725	2.1	0.9	2.3	98.9	97.2	2.0	1.29 to 2.08	0.411 to 0.594	5.73 to 6.09	10.52 to 14.51	2785.52 to 3406.48	4.93 to 9.19
PADDY												
PB-1509	1.4	0.9	2.0	99.0	97.2	0.65	2.37 to 2.61	0.681 to 0.795	8.4 to 10.2	11.59 to 12.92	4265.21 to 4874.58	11.51 to 12.34

14. DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS

No defect or breakdown observed during the test.



15.6 Wear of the peg teeth

The wear of the peg teeth of the threshing cylinder and concave was measured. The percentage wear on mass basis was computed and the results are given below:

Sl. No.	Original mass before test (g)	Mass after 29 h of test (g)	Percent wear by weight (%)
a)	Peg teeth of threshing cylinder		
1.	218.2	216.4	0.82
2.	224.3	222.1	0.98
3.	211.0	208.9	1.00
4.	216.5	214.5	0.92
5.	223.5	221.8	0.76
6.	220.4	218.7	0.77
7.	220.9	218.7	0.77
8.	214.6	212.9	1.00
9.	218.6	216.4	0.79
10.	213.1	211.6	1.00
11.	218.7	217.1	0.70
12.	218.4	216.6	0.73
b)	Peg teeth of concave		
1	213.7	212.1	0.75
2	212.8	211.7	0.52
3	215.4	214.3	0.51
4	227.8	226.4	0.61
5	219.3	218.2	0.50
6	213.5	212.6	0.42
7	207.5	206.2	0.63
8	207.8	206.5	0.63

16. SUMMARY OF OBSERVATIONS**16.1 ENGINE PERFORMANCE TEST****Table-1 : ENGINE PERFORMANCE TEST (NATURAL AMBIENT)**

Brake Power kW	Engine speed (rpm)	Fuel consumption			Specific energy, kWh/t
		l/h	kg/h	Specific, kg/ kWh	
(1)	(2)	(3)	(4)	(5)	(6)
a) Maximum power – 2 hours test					
66.2	2101	20.07	16.50	0.249	3.30
b) Power at rated engine speed: (2100 rpm)					
66.2	2101	20.07	16.50	0.249	3.30

Table-2: ENGINE TEST (HIGH AMBIENT)

Brake power (kW)	Engine speed (rpm)	Fuel consumption			Specific energy, kWh/l
		l/h	kg/h	Specific, kg/kWh	
(1)	(2)	(3)	(4)	(5)	(6)
a) Maximum power -					
65.5	2100	20.29	16.60	0.253	3.23
b) Power at rated engine speed (2100 rpm)					
65.5	2100	20.29	16.60	0.253	3.23

16.2 Field test**16.2.1 Summary of field tests**

The results of the field test are summarized below:-

S. No	Parameters	Observed range	
		Wheat harvesting	Paddy harvesting
1.	Range of average speed of operation (kmph)	1.29 to 2.08	2.57 to 2.61
2.	Range of average area covered (ha/h)	0.411 to 0.594	0.681 to 0.795
3.	Maximum average fuel consumption: - (l/h) - (l/ha)	5.73 to 6.09 10.52 to 14.51	8.4 to 10.2 11.59 to 12.92
4.	Range of average crop throughput (tonne/h)	4.93 to 9.19	11.51 to 12.34
5.	Average of maximum grain breakage in main grain outlet (%)	2.0	0.65
6.	Average of maximum header losses (%)	0.76	0.33
7.	Average of maximum total non-collectable losses (%)	0.9	0.9
8.	Average of maximum total collectable losses (%) (un threshed + broken from main outlet)	2.1	1.4
9.	Average of maximum total processing losses (%)	2.3	2.0
10.	Average of minimum threshing efficiency (%)	98.9	99.0
11.	Average of minimum cleaning efficiency (%)	97.2	97.2

16.3 Conformity to Indian Standard

- | | | |
|-------|--|--------------------------|
| (i) | IS: 6025-1982 (Reaffirmed 2014)-Specification for knife section for harvesting machine. | Does not conform in toto |
| (ii) | IS: 6024-1983 (Reaffirmed 2014)-Specification for guards for harvesting machines. | Does not conform in toto |
| (iii) | IS: 10378-1982 (Reaffirmed 2016)-Specification of knife back for harvesting machine. | Does not conform in toto |
| (iv) | IS: 6283 (Part I & Part II)-2007(Reaffirmed 2014)-Tractors and machinery for agriculture and forestry-symbol for operator controls and other displays. | Conforms |
| (v) | IS: 8133-1983 (Reaffirmed 2014)-Guidelines for location & operation of operator controls on agricultural tractors and machinery. | Does not conform in toto |
| (vi) | IS: 15806-2018 (Combine Harvester recommendation on selected performance and other characteristics) | Conforms |

6	Type of gear box	do	do	do
7	Type of drive (2W/4W drive)	2W drive	2W drive	No Change
8	Fitment of cabin	Ref: Test Report No. Comb. 92/1511, May 2013 issued by the institute	Same as in the Base Model	No Change
9	Straw walker number and size	do	do	do

20. COMMENTS AND RECOMMENDATIONS

20.1 Mechanical vibration

The amplitude of mechanical vibration of components marked as (*) in chapter 13 of this 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.

20.2 Field performance test

No noticeable defect observed during field test.

20.3 Ease of operation and safety provision

i) The first aid box is not provided on the machine. It **MUST** be provided.

20.4 Hardness and chemical composition

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

20.5 Safety against the accidental start of engine is not provided on combine harvester. It **MUST** be provided.

20.6 The discard limit of clearance between engine valve and valve guide is not specified. It **MUST** be specified.

20.7 Spring stiffness of inlet and exhaust valve discard limit is not specified. It **MUST** be specified.

20.8 Height of rear turn indicator light does not meet the requirement of CMVR. It **MUST** be looked into.

20.9 Height of rear parking cum position light does not meet the requirement of CMVR. **MUST** be looked into.

20.10 Height of rear brake light does not meet the requirement of CMVR. **MUST** be looked into.

20.11 Height of reverse gear indicator light does not meet the requirement of CMVR. **MUST** be looked into.

20.12 Height of no. plate light does not meet the requirement of CMVR. **MUST** be looked into.

20.13 Slow moving vehicle emblem is not provided on the combine harvester. It **MUST** be provided.

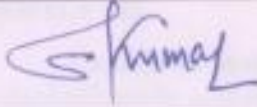
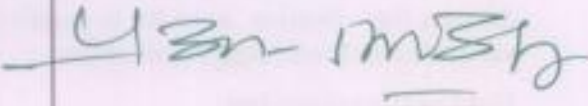
20.14 Literature supplied with the machine

The following literature supplied by the applicant during the test.

- i) Operator's manual
- ii) parts catalogue

However, therefore the same needs to be up dated as per IS: 8132-1999.

TESTING AUTHORITY

SANJAY KUMAR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report compiled by C. Veeranjanyulu, Senior Technician

21. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicants Comments
21.1	20.4	We shall develop the component as per the standard.
21.2	20.6 & 20.7	We will follow the recommendation.
21.3	20.8, 20.9, 20.10, 20.11 & 20.12	We shall ensure that all CMVR requirements are followed completely.

