

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: COMB-226/2649/2021  
माह/Month: January, 2021

**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> January, 2028**



**DASMESH-7100 DLX (MAIZE),  
SELF PROPELLED MAIZE 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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## 14. FIELD TEST

14.1 Combine harvester was operated in field for 51.5 hours for maize harvesting. During the test, available variety of crop was 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.

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

## Crop Parameters

Sl. No.	Parameters	Observations
1.	Average plant height, cm	: 180 to 293
2.	Average number of plants/m <sup>2</sup>	: 8 to 10
3.	Average length of cob, cm	: 16 to 22
4.	Average straw/grain ratio	: 0.2:1 to 0.3:1
5.	Average moisture, %	
	- Grain	: 18 to 29
	- Straw	: 22 to 32

The results of field performance test of maize crop 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 grain tank (Max.) (%)	Forward speed (kmph)	Area covered (ha/h)	Fuel consumption		Grain output (kg/h)	Crop throughput (t/h)
									(l/h)	(l/ha)		
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>MAIZE</b>												
DKC 9108	2.6	1.6	3.8	99.8	96.2	2.5	1.73 to 2.30	0.384 to 0.456	6.83 to 7.29	15.43 to 18.97	5209.87 to 7509.65	6.70 to 9.62

## 15. DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS

The brake lining shoe and rivets of RHS brake were found damaged during brake test. Which falls under major breakdown. **Mj-15**



**16.5 Wear of rasp bar**

Sr. No.	Mass of rasp bar before test (g)	Mass of rasp bar after 30.58 h test (g)	Wear (%) by weight
1	4219.0	4206.7	0.29
2	4206.9	4186.9	0.48
3	4337.6	4321.4	0.37
4	4343.0	4328.7	0.33

**17. SUMMARY OF OBSERVATIONS****17.1 ENGINE PERFORMANCE TEST****Table-1 : ENGINE PERFORMANCE TEST (NATURAL 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)
<b>a) Maximum power – 2 hours test</b>					
64.9	2250	19.42	16.39	0.253	3.34
<b>b) Power at rated engine speed: (2200 rpm)</b>					
64.7	2200	19.02	16.05	0.248	3.40

\*High idle at no load was 1650 rpm recommended for field operation.

**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)
<b>a) Maximum power -</b>					
62.2	2250	19.07	16.10	0.259	3.26
<b>b) Power at rated engine speed (2200 rpm)</b>					
61.9	2200	18.41	15.54	0.251	3.36

## 17.2 Field test

## 17.2.1 Summary of field tests

The results of the field test are summarized below:-

Sr. No	Parameters	Observed range
		Maize Harvesting
1.	Range of average speed of operation (kmph)	1.73 to 2.30
2.	Range of average area covered (ha/h)	0.384 to 0.456
3.	Maximum average fuel consumption: - (l/h) - (l/ha)	6.83 to 7.29 15.43 to 18.97
4.	Range of average crop throughput (tonne/h)	6.70 to 9.62
5.	Average of maximum grain breakage in main grain outlet (%)	2.5
6.	Average of maximum header losses (%)	0.38
7.	Average of maximum total non-collectable losses (%)	1.6
8.	Average of maximum total collectable losses (%) (un threshed + broken from main outlet)	2.6
9.	Average of maximum total processing losses (%)	3.8
10.	Average of minimum threshing efficiency (%)	99.8
11.	Average of minimum cleaning efficiency (%)	96.2

## 17.3 Conformity to Indian Standard

- |       |  |                          |
|-------|--|--------------------------|
| (i)   | IS: 6283 (Part I & Part II)-2007(Reaffirmed 2014)- Tractors and machinery for agriculture and forestry- symbol for operator controls and other displays. | Does not conform in toto |
| (ii)  | IS: 8133-1983 (Reaffirmed 2014)-Guidelines for location & operation of operator controls on agricultural tractors and machinery.                         | Does not conform in toto |
| (iii) | IS: 15806-2018 (Combine Harvester recommendation on selected performance and other characteristics)  | Does not conform in toto |



## 19. COMMENTS AND RECOMMENDATIONS

- 19.1 **Prime mover performance :**  
i). The max. Power observed during 2 hrs max. Power test does not meet the requirement of evaluative requirement of IS: 15806-2018. It **MUST** be looked into.  
ii). Max. Crank shaft torque at specified field setting does not meet the requirement of evaluative requirement of IS: 15806-2018. It **MUST** be looked into.
- 19.2 The power at rated engine speed does not meet the requirement of IS: 15806-2018. It should be looked into.
- 19.3 **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.
- 19.4 **Field performance test**  
No noticeable defect observed during field test.
- 19.5 **Ease of operation and safety provision**  
i) No noticeable difficulties observed during operation of combine harvester.  
ii) Slip clutch at undershot conveyor drive and grain is not provided. It **MUST** be provided as per the requirement of IS 15806 : 2018
- 19.6 The labelling of controls gauges and all operating controls does not conform, in toto, to the requirement of the IS: 15806-218. It **MUST** be looked into for take corrective action.
- 19.7 **Hardness and chemical composition**
- 19.8 **Hardness & chemical composition of knife blade, knife guard and knife back is not within the limits specified in their respective IS: 6025-1982. It should be looked into for corrective action at regular production level.**
- 19.9 Individual brake pedals for LHS & RHS brake is not provided. It may be provided.
- 19.10 There is no drive safety for grain unloading auger. It should be provided.
- 19.11 The discard limit of clearance between engine Inlet & Exhaust valve and valve guide is not specified. It **MUST** be specified.
- 19.12 The discard limit for Spring stiffness of inlet and exhaust valve spring is not specified. It **MUST** be specified.
- 19.13 Fuel injector pressure was observed as 220 to 230 kg/cm<sup>2</sup> against the declaration of 254 kg/cm<sup>2</sup>
- 19.14 The model of engine is not specified on a labelling plate of combine harvester. It should be specified.

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- 19.15 The brake lining shoe and rivets of RHS brake where found damage after 93.37 hrs. The brake lining shoe and rivets where placed with new one. This is a major breakdown, (Mj-15) and calls for suitable improvements.
- 19.16 The front reflector provided on combine harvester are of orange colour and does not meet the requirement of CMV Rules for plying on road.
- 19.17 The rear registration plate height does not meet meet the requirement of CMV Rules for plying on road.
- 19.18 Slow moving emblem is not provided on trailer. It **MUST** be provided.
- 19.19 **Literature supplied with the machine**

The following literature was submitted by applicant during testing.

- i) Operator's manual for combine harvester
- ii) Operator manual/part's catalogue for maize cutter.
- iii) Part's catalogue for combine harvester

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

**TESTING AUTHORITY**

R.K NEMA SENIOR AGRICULTURAL ENGINEER	<i>Rema</i>
P. K. PANDEY DIRECTOR	<i>PKP - DMESH</i>

20. **APPLICANT'S COMMENTS**

We will take corrective action to meet the requirements of all Indian Standards.