

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: COMB-332/3088/2023

माह/ Month: September, 2023

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> September, 2030**



**FARMLINE, FARMLINE 4900  
SELF PROPELLED 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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Page 1 of 64

**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	
		Wheat harvesting	Paddy harvesting
1.	Speed of operation, kmph	1.73 to 1.75	1.66 to 1.76
2.	Area covered, ha/h	0.487 to 0.557	0.452 to 0.530
3.	Fuel consumption:	l/h	7.28 to 8.20
		l/ha	13.74 to 14.95
4.	Crop throughput, tonne/h	4.36 to 6.25	10.08 to 17.80
5.	Grain breakage in main grain outlet, %	1.47 to 1.67	0.17 to 0.63
6.	Header losses, %	0.18 to 0.50	0.50 to 1.40
7.	Total non-collectable losses, %	0.23 to 0.55	0.06 to 0.14
8.	Total collectable losses, % (un threshed + broken from main outlet)	2.00 to 2.27	0.67 to 1.63
9.	Total processing losses, %	2.04 to 2.30	0.71 to 1.72
10.	Threshing efficiency, %	99.20 to 99.70	98.90 to 99.50
11.	Cleaning efficiency, %	96.70 to 97.10	97.40 to 98.20

**17.3 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 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.              | Conforms                 |
| (vi)  | IS: 15806-2018-Combine Harvester- Recommendations on Selected Performance and Other Characteristics.  | Conforms                 |



## 18. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS

Acceptance criteria for performance characteristics as per clause 4.1 of IS 15806:2018						
Sr. No	Characteristics	Category (Evaluative/ Non evaluative)	Requirement (R)/ Declaration (D)	Tolerance	Observed	Remarks
1	2	3	4	5	6	7
<b>I. Prime mover performance</b>						
	a) Max. power (absolute) Average max. power observed during 2 hrs. max. power test in natural ambient condition, kW	Evaluative	90 (D)	±5% of declared value	89.8	Conforms
	b) Max. power observed during test after adjusting the no load engine speed as per recommendation of the manufacturer for field work, kW	Evaluative	84 (D)	±5% of declared value	82.2	Conforms
	c) Power at rated engine speed, kW (under natural ambient condition)	Evaluative	90 (D)	±5% of declared value	89.5	Conforms
	d) Specific fuel consumption corresponding to average maximum power under 2h maximum power test, g/kWh.	Evaluative	228 (D)	±5% of declared value	225	Conforms
	e) Max. smoke density at 80 % load between the speed at max. power & 55 % of speed at max. power or 1000 rpm whichever is higher	Evaluative	As pre CMV rules. Maximum smoke density light absorption coefficient 5.2 units (R)	Nil	1.75 m <sup>-1</sup>	Conforms





COMB-332/3088/2023	FARMLINE, FARMLINE 4900 SELF PROPELLED COMBINE HARVESTER (COMMERCIAL)
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1	2	3	4	5	6	7
f)	Max. crank shaft torque, (N-m) observed during the test after no load engine speed is adjusted as per manufacturer's recommendation for field work	Evaluative	450 (D)	±8% of declared value	452.7	Conforms
g)	Back up torque, % (Natural ambient)	Evaluative	7 % min. (R)	Nil	16.42	Conforms
h)	Max. operating temperature, ° C i) Engine oil ii) Coolant	Evaluative	120 (D) 108 (D)	Should not exceed the declared value	103.3 101.3	Conforms Conforms
i)	Lubrication oil consumption, g/kWh	Evaluative	1 % of SFC at maximum power (high ambient) (R)	Nil	0.272	Conforms

### II. Brake performance at 20 km/h or maximum speed whichever is less

i)	Max. stopping distance at a force equal to or less than 600 N on brake pedal (m)- (cold brake and hot brake)	Evaluative	As per requirement of CMVR (R)	Nil	Cold: 3.9 m Hot: 3.6 m	Conforms
b)	Max. force exerted on brake pedal to achieve deceleration of 2.5 m/sec <sup>2</sup> (N)	Evaluative	≤ 600 N (R)	--	Cold: 432 N Hot: 420 N	Conforms
i)	Effectiveness of parking brake at a force of 600 N at foot pedal or 400 N at hand lever	Evaluative	As per requirement of CMVR (R)	Nil	Yes	Conforms

### III. Mechanical vibration

i)	Operator's platform	Non evaluative	120 µm max. (R)	Nil	250	Does not conform
ii)	Steering wheel	Non evaluative	150 µm max (R).	Nil	180	Does not conform
iii)	Seat with driver seated	Non evaluative	120 µm max. (R)	Nil	160	Does not conform

1	2	3	4	5	6	7
<b>IV. Air cleaner oil pull over</b>						
a)	Air cleaner oil pull over in % when tested in accordance with IS: 8122 part (II) 2000	Evaluative	0.20 max. (R)	Nil	Dry type air cleaner provided hence test is not applicable	Not applicable
<b>V. Noise measurement</b>						
i)	Max. Ambient noise emitted by combine at by-stander's position, dB(A)	Evaluative	88 dB(A) as per CMVR (R)	Nil	82.4	Conforms
ii)	Max. Noise at operator's ear level, dB(A)	Evaluative	98 dB(A) as per CMVR (R)	Nil	96.2	Conforms
<b>VI. Header lifting Test</b>						
i)	Satisfactory completion of header lifting test	Evaluative	-	Nil	Satisfactorily completed	Conforms
<b>VII. Discard limit</b>						
i)	Thickness of brake lining	Evaluative	4.5 to 4.7 mm above the rivet head (D)	-do-	4.9 to 6.8 mm above rivet head	Conforms
ii)	Thickness of clutch plate	Evaluative	4.5 to 4.7 mm above the rivet head (D)	-do-	2.9 to 3.4 mm above rivet head	Conforms
<b>VIII. Field performance</b>						
a)	Suitability for crops	Evaluative	Wheat & paddy (Wheel type) Paddy (Track type)	Nil	Wheat and paddy	Conforms
b)	Average processing losses (%)	Evaluative Wheat Rice/ Paddy	Max. (of average) 3% 4% (R)	Nil	Wheat, Max. 2.29 % Paddy Max. 1.72 %	Conforms Conforms
c)	Threshing efficiency (%)	Evaluative	≥98 percent for wheat & Paddy (R)	Nil	Min. 99.2 % for Wheat, Min. 98.9 % for Paddy	Conforms
d)	Cleaning efficiency (%)	Evaluative	≥96 percent for wheat & Paddy (R)	Nil	Min. 96.7 % for Wheat, Min. 97.4 % for Paddy	Conforms
e)	Grain breakage in main grain tank (%)	Evaluative	≤ 2.5 percent (R)	Nil	Max. 1.67 % for wheat, Max. 0.63 % for Paddy	Conforms

COMB-332/3088/2023	FARMLINE, FARMLINE 4900 SELF PROPELLED COMBINE HARVESTER (COMMERCIAL)
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1	2	3	4	5	6	7
f)	Non collectable losses (%)	Evaluative	≤ 2.5 percent for wheat & Paddy & grain ≤ 4.0 percent for Soybean (R)	Nil	Max. 0.55 % for wheat, Max. 0.14 % for Paddy	Conforms
<b>IX. Safety requirement</b>						
a)	Guards against all moving parts	Evaluative	Belt and chain drives, pulleys hydraulic pipes (R)	--	Provided	Conforms
b)	Lighting arrangement	Evaluative	As per CMVR (R)	-	Provided	Conforms
c)	Grain tank cover	Evaluative	Essential (R)	-	Provided	Conforms
d)	Spark arrester in engine's exhaust in case naturally aspirated engine	Evaluative	Essential (R)	-	Turbo charger fitted engine provided	--
e)	Stone trap before concave	Evaluative	Essential (R)	-	Provided	Conforms
f)	Rear view mirror	Evaluative	Essential (R)	-	Provided	Conforms
g)	Fire extinguisher	Evaluative	Essential (R)	-	Provided	Conforms
h)	Slip clutch at following drives – i) Cutting platform ii) Undershot conveyor drive iii) Grain & tailing elevator	Evaluative Non evaluative Non evaluative	Essential (R) Optional Optional	-	Provided Provided Not provided	Conforms Conforms Does not conform
i)	Anti slip surfaces at operator platform & ladder & proper gripping for the control levers.	Evaluative	Essential (R)	-	Provided	Conforms





COMB-332/3088/2023	FARMLINE, FARMLINE 4900 SELF PROPELLED COMBINE HARVESTER (COMMERCIAL)
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1	2	3	4	5	6	7
j)	Working clearance around the controls	Non evaluative	Essential 70mm,min (R)	-	Provided	Conforms
k)	Labelling of control and gauges	Evaluative	Essential (R)	-	Provided	Conforms
<b>X</b>	<b>Material of construction :</b>					
i)	Knife guard should conform to IS: 6024 -1983	Non evaluative	Should have maximum hardness 163 HB (R)	-	226.5	<b>Does not conform</b>
ii)	Knife blade as per IS :6025 -1982	Non evaluative	It must have Chemical composition as C=0.70-0.95 % Mn= 0.30-0.50% (R)	-	C= 0.70 Mn= 0.49	Conforms Conforms
iii)	Knife back should meet the requirement of IS:10378-1982	Non evaluative	The knife back shall be manufactured from Carbon Steel having minimum carbon content of 0.35 % (R)	-	0.29	<b>Does not conform</b>

## 19. COMMENTS AND RECOMMENDATIONS

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

### 19.2 Field performance test

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

i) During the field performance test the fuel consumption was observed 7.28 to 9.89 l/h and 13.74 to 19.22 l/ha.

ii) The area covered was observed 0.452 to 0.557 ha/h.

### 19.3 Ease of operation and safety provision

No noticeable difficulties observed during operation of combine harvester.

### 19.4 Hardness and chemical composition

**19.4.1** 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.



COMB-332/3088/2023	FARMLINE, FARMLINE 4900 SELF PROPELLED COMBINE HARVESTER (COMMERCIAL)
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19.4.2 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.

19.4.3 Hardness of the knife guard does not conform to their relevant IS code. It should be looked into for corrective action.

19.4.4 Slip clutch at grain and tailing elevator should be provided.

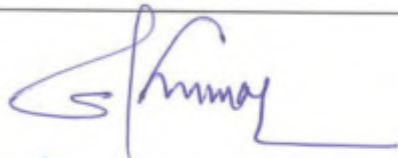
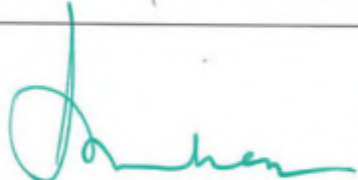
19.5 **TECHNICAL LITERATURE**

The following literatures were supplied by the applicant

1. Operator's manual for combine harvester
2. Operator manual-Engine
3. Parts catalogue for combine harvester

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

**TESTING AUTHORITY**

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 25.09.2023

The test report is compiled by Sh. Vikram, Senior Technician

**20. APPLICANT'S COMMENTS**

We will take care during our regular production.

