

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> November, 2029**



**GILLPREET 962G9,  
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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## 14. FIELD TEST

**14.1** Combine harvester was operated in field for 25.12 and 25.79 (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	:	84 to 103	85 to 165
2.	Number of tillers/m <sup>2</sup>	:	281 to 388	156 to 298
3.	Length of ear head, cm	:	9 to 14	18 to 25
4.	Straw/grain ratio	:	1.2 to 1.5	2.2 to 3.0
5.	Moisture, %			
	- Grain	:	8.9 to 9.4	13.5 to 17.0
	- Straw	:	9.8 to 10.2	68.5 to 70.2

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)		
<b>WHEAT</b>												
DBW-303	1.90	0.48	2.01	99.0	96.8	1.10	1.41 to 1.50	0.439 to 0.543	6.59 to 7.07	12.47 to 15.38	2305 to 2713	5.52 to 6.42
<b>PADDY</b>												
MTU-1010	2.34	0.66	2.59	98.8	96.7	1.21	1.44 to 1.46	0.416 to 0.496	7.11 to 8.05	14.95 to 18.23	2020 to 2514	7.69 to 9.42
Shree ram 432	0.50	0.34	0.67	99.7	98.2	0.23	1.45	0.407	7.37	18.13	2380	8.64

**14.2 Unloading of grains**

The time to unload the grain tank ranged from 71 to 90 second in paddy operation & 53 to 66 seconds in wheat operation.

**14.3 Time required for daily maintenance**

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

**14.4 Harvesting of any other crop**

Not done, as not recommended

## 18. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS

18.1 Acceptance criteria for performance characteristics as per clause. 4.1 of IS:15806-2018						
S. 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	71.7 (D)	±5% of declared value	73.8	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	68 (D)	±5% of declared value	68.3	Conforms
	c) Power at rated engine speed, kW (under natural ambient condition)	Non-evaluative	72 (D)	±5% of declared value	73.1	Conforms
	d) Specific fuel consumption corresponding to average maximum power under 2 h maximum power test, g/kWh.	Evaluative	240 (D)	+5% of declared value	245	Conforms

1	2	3	4	5	6	7
e)	Max. smoke density (Bosch no.) at 80% load between the speed at max. Power & 55% of speed at max. power or 1000 rpm whichever is higher	Evaluative	As per CMV rules, Light absorption coefficient 3.25 m <sup>-1</sup> / Hartridge units 75 <b>(D)</b>	Nil	2.18 m <sup>-1</sup>	Conforms
f)	Max. crank shaft torque, (Nm) observed during the test after no load engine speed is adjusted as per manufacturer's recommendation for field work	Evaluative	410 <b>(D)</b>	±8% of declared value	429.2	Conforms
g)	Back up torque, % (Natural ambient)	Evaluative	7 % min. <b>(R)</b>	Nil	42.12	Conforms
h)	Max. operating temperature, °C i) Engine oil ii) Coolant	Evaluative	i) 120 <b>(D)</b> ii) 105 <b>(D)</b>	Should not exceed the declared value	i) 115 ii) 98	Conforms
i)	Lubrication oil consumption, g/kWh	Evaluative	Not exceeding 1 % of SFC at maximum power (high ambient) <b>(R)</b> ( Max. 2.45 g)	Nil	0.387	Conforms
<b>II. Brake performance at 24 km/h or maximum speed whichever is less</b>						
a)	Max. Stopping distance at a force equal to or less than 600 N on brake pedal (m)- (cold brake and hot brake) <b>CMVR does not prescribe hot brake test.</b>	Evaluative	As per requirement of CMVR, Max. 10 m <b>(R)</b>	--	Cold 3.1 m	Conforms
b)	Max. Force exerted on brake pedal to achieve deceleration of 2.5 m/sec <sup>2</sup> (N)	Evaluative	≤ 600 N <b>(R)</b>	--	Cold 435	Conforms

1	2	3	4	5	6	7
c)	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, should be effective (R)	--	Effective	Conforms
<b>III. Mechanical vibration</b>						
a)	Operator's platform	Non-evaluative	120 µm max. (R)	Nil	189	Does not conform
b)	Steering control wheel	Non-evaluative	150 µm max. (R)	Nil	221	Does not conform
c)	Seat with driver seated	Non-evaluative	120 µm max. (R)	Nil	182	Does not conform
<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 is cleaner provided and hence test is not applicable	Not applicable
<b>V. Noise measurement</b>						
a)	Max. ambient noise emitted by combine at by standers position dB (A)	Evaluative	As per CMV rules 88 dB (A) Maximum (R)	Nil	87.6	Conforms
b)	Max. noise at operator's ear level dB (A)	Evaluative	As per CMV rules 98 dB (A) Maximum (R)	Nil	93.1	Conforms
<b>VI. Header lifting Test</b>						
a)	Satisfactory completion of header lifting test	Evaluative	-	Nil	Satisfactorily completed	Conforms
<b>VII. Discord limit</b>						
a)	Thickness of brake lining, mm	Evaluative	Up to Rivet head	-do-	3.7 to 5.2 mm above rivet head	Conforms
b)	Thickness of clutch plate, mm	Evaluative	Up to Rivet head	-do-	2.3 to 2.5 mm above the rivet head	Conforms
<b>VIII. Field performance</b>						
a)	Suitability for crops	Evaluative	Wheat and paddy (Wheel type) Paddy (Track type)	Nil	Wheat and paddy	Conforms

	<b>b)</b>	Average processing losses (%)	Evaluative		Nil		
			Wheat	Max (of Average 3%		Wheat (max) 2.01 %	Conforms
			Rice	Average 4% <b>(R)</b>		Paddy (max) 2.59 %	Conforms
	<b>c)</b>	Threshing efficiency	Evaluative	≥98 percent for wheat & Paddy <b>(R)</b>	Nil	99.0 % for Wheat 98.8 % for Paddy	Conforms
	<b>d)</b>	Cleaning efficiency	Evaluative	≥96 percent for wheat & Paddy <b>(R)</b>	Nil	96.8 % for Wheat 96.7 % for Paddy	Conforms
	<b>e)</b>	Grain breakage in main grain tank	Evaluative	≤ 2.5 percent <b>(R)</b>	Nil	1.10 % for Wheat 1.21 % for Paddy	Conforms
	<b>f)</b>	Non collectable losses	Evaluative	<i>i</i> ) ≤ 2.5 percent for wheat & Paddy & grain <b>(R)</b>	Nil	0.48 % For Wheat 0.66 % For Paddy	Conforms

**IX. Safety requirement**

	<b>a)</b>	Guards against all moving parts/ drives and hot parts	Evaluative	Belt and chain drives, pulleys hydraulic pipes (Around operators work place) <b>(R)</b>	--	Provided	Conforms
	<b>b)</b>	Lighting arrangement	Evaluative	As per CMVR <b>(R)</b>	-	Provided	Conforms
	<b>c)</b>	Grain tank cover	Evaluative	Essential <b>(R)</b>	-	Provided	Conforms
	<b>d)</b>	Spark arrester in engine's exhaust in case naturally aspirated engine	Evaluative	Essential <b>(R)</b>	-	Turbo charger provided at exhaust system	Not applicable
	<b>e)</b>	Stone trap before concave bars	Evaluative	Essential <b>(R)</b>	-	Provided	Conforms
	<b>f)</b>	Rear view mirror	Evaluative	Essential <b>(R)</b>	-	Provided	Conforms
	<b>g)</b>	Fire extinguisher	Evaluative	Essential <b>(R)</b>	-	Provided	Conforms

	<p><b>h)</b> Slip clutch at following drives – i) Cutting platform auger ii) Undershot conveyor drive iii) Grain &amp; tailing elevator</p>	<p>Evaluative  Non evaluative  Non evaluative</p>	<p>Essential (R)  Optional  Optional</p>	<p>-</p>	<p>Provided  Provided  <b>Not provided</b></p>	<p>Conforms  Conforms  <b>Does not conform</b></p>
	<p><b>i)</b> Anti-slip surfaces at operator platform &amp; ladder &amp; proper gripping for the control levers.</p>	<p>Evaluative</p>	<p>Essential (R)</p>	<p>-</p>	<p>Provided</p>	<p>Conforms</p>
	<p><b>j)</b> Working clearance around the controls</p>	<p>Non evaluative</p>	<p>Essential 70 mm, min (R)</p>	<p>-</p>	<p>Provided</p>	<p>Conforms</p>
	<p><b>k)</b> Labelling of control and gauges</p>	<p>Evaluative</p>	<p>Essential (R)</p>	<p>-</p>	<p>Provided</p>	<p>Conforms</p>
<b>X</b>	<b>Material of construction :</b>					
	<p><b>i)</b> Knife guard should conform to IS: 6024 -1983</p>	<p>Non evaluative</p>	<p>Should have maximum hardness 163 HB (R)</p>	<p>-</p>	<p>244 (Average)</p>	<p><b>Does not conform</b></p>
	<p><b>ii)</b> Knife blade As per IS :6025 - 1982</p>	<p>Non evaluative</p>	<p>It must have Chemical composition as C=0.70-0.95 % Mn= 0.30-0.50% (R)</p>	<p>-</p>	<p>C=0.48 Mn= 0.78</p>	<p><b>Does not conform</b>  <b>Does not conform</b></p>
	<p><b>iii)</b> Knife back should meet the requirement of IS:10378-1982</p>	<p>Non evaluative</p>	<p>The knife back shall be manufactured from Carbon Steel having minimum carbon content of 0.35 % (R)</p>	<p>--</p>	<p>C=0.17</p>	<p><b>Does not conform</b></p>

**18.2 Acceptance Criteria in case of Breakdown/Defects as per clause 4.2 of IS:15806-2018**

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

**19. COMMENTS AND RECOMMENDATIONS****19.1 Mechanical vibration**

The amplitude of mechanical vibration of components marked as (\*) in chapter 12 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.

**19.2 Field performance test**

No noticeable defect was observed during the test.

**19.3 Ease of operation and safety provision**

i) Safety against the accidental start of engine is not provided on combine harvester.

It **MUST** be provided.

ii) No noticeable difficulties observed during operation of combine harvester.

iii) Slip clutch at grain and tailing elevator drive are not provided.

It should be provided as per the requirement of IS:15806-2018

**19.4 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.**

**19.5** There is no drive safety for grain unloading auger. It should be provided.

**19.6** The height of first step of ladder is observed as 690 mm against the requirement of 550 mm. It should be looked into for corrective action for operator's comfort.



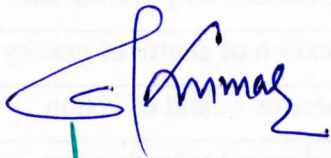

**19.8 Literature supplied with the machine**

The following literature was submitted by applicant during testing.

- i) Operator's and manual for combine harvester
- ii) Parts catalogue for combine harvester
- iii) HAEETI, Service manual, Ashok leyland

However, the same needs to be updated as per IS:8132-1999 by including the information related to SMS

**TESTING AUTHORITY**

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 14.11.2022

Draft test report compiled by C.Veeranjannlulu, Senior Technician

**20. APPLICANT'S COMMENTS**

No specific comments received from the applicant.

