व्यावसायिक परीक्षण रिपोर्ट | संख्या/ **No.: COMB-292/2937/2022**

COMMERCIAL TEST REPORT | माह/**Month: November, 2022**

THIS TEST REPORT VALID UP TO : 30th November, 2029

NEW GURDEEP 927, 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
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18. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS

18.1	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**
I.	**Prime mover performance**						
	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	69 **(D)**	±5% of declared value	70.3	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^{-1}/ Hartridge units 75 **(D)**	Nil	2.18 m^{-1}	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	419 **(D)**	±8% of declared value	430.1	Conforms
	g)	Back up torque, % (Natural ambient)	Evaluative	7 % min. **(R)**	Nil	4.27	Conforms
	h)	Max. operating temperature, °C i) Engine oil ii) Coolant	Evaluative	 i) 120 **(D)** ii) 105 **(D)**	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) **(R)** (Max. 2.45 g)	Nil	0.387	Conforms
II. Brake performance at 24 km/h or maximum speed whichever is less							
	a)	Max. stopping distance at a force equal to or less than 600 N on brake pedal (m)- (cold brake and hot brake) **CMVR does not prescribe hot brake test.**	Evaluative	As per requirement of CMVR, Max. 10 m **(R)**	--	Cold 2.90	Conforms
	b)	Max. force exerted on brake pedal to achieve deceleration of 2.5 m/sec^2 (N)	Evaluative	≤ 600 N **(R)**	--	Cold 365	Conforms
	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

1		2	3	4	5	6	7
III. Mechanical vibration							
	a)	Operator's platform	Non evaluative	120 µm max. **(R)**	Nil	190	**Does not conform**
	b)	Steering control wheel	Non evaluative	150 µm max. **(R)**	Nil	156	**Does not conform**
	c)	Seat with driver seated	Non evaluative	120 µm max. (R)	Nil	342	**Does not conform**
IV. Air cleaner oil pull over							
	a)	Air cleaner oil pull over in % when tested in accordance with IS 8122 art (II) 2000	Evaluative	0.20 max. **(R)**	Nil	Dry type air is cleaner provided and hence test is not applicable	Not applicable
V. Noise measurement							
	a)	Max. ambient noise emitted by combine at by standers position dB (A)	Evaluative	As per CMV rules 88 dB (A) Maximum **(R)**	Nil	84.4	Conforms
	b)	Max. noise at operator's ear level dB (A)	Evaluative	As per CMV rules 98 dB (A) Maximum **(R)**	Nil	95.2	Conforms
VI. Header lifting Test							
	a)	Satisfactory completion of header lifting test	Evaluative	-	Nil	Satisfactorily completed	Conforms
VII. Discord limit							
	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
VIII. Field performance							
	a)	Suitability for crops	Evaluative	Wheat and paddy (Wheel type) Paddy (Track type)	Nil	Wheat and paddy	Conforms
	b)	Average processing losses (%)	Evaluative Wheat Rice	Max (of Average 3% Average 4% **(R)**	Nil	Wheat (max) 2.42 % Paddy (max) 3.92 %	Conforms Conforms

	c)	Threshing efficiency	Evaluative	≥98 percent for wheat & Paddy **(R)**	Nil	99.1 % for Wheat 98.3 % for Paddy	Conforms
	d)	Cleaning efficiency	Evaluative	≥96 percent for wheat & Paddy **(R)**	Nil	96.7 % for Wheat 96.2 % for Paddy	Conforms
	e)	Grain breakage in main grain tank	Evaluative	≤ 2.5 percent **(R)**	Nil	1.33 % for Wheat 1.06 % for Paddy	Conforms
	f)	Non collectable losses	Evaluative	$i) \leq 2.5$ percent for wheat & Paddy & grain **(R)**	Nil	0.66 % For Wheat 2.00 % For Paddy	Conforms
IX. Safety requirement							
	a)	Guards against all moving parts/ drives and hot parts	Evaluative	Belt and chain drives, pulleys hydraulic pipes (Around operators work place) **(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 is provided in exhaust system	--
	e)	Stone trap before concave bars	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 auger 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
	j)	Working clearance around the controls	Non evaluative	Essential 70 mm, min **(R)**	-	Provided	Conforms
	k)	Labelling of control and gauges	Evaluative	Essential **(R)**	-	Provided	Conforms
X	**Material of construction**:						
	i)	Knife guard should conform to IS: 6024 -1983	Non evaluative	Should have maximum hardness 163 HB **(R)**	-	184 (Average)	**Does not conform**
	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=0.49 Mn= 0.47	**Does not conform** **Does not conform**
	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)**	--	C=0.12	**Does not conform**

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 and breakdowns were 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 Individual brake pedals for LHS & RHS brake is not provided. It may be considered for providing.

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

19.7 The height of first step of ladder is observed as 660 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

Operator manual is provided by the applicant during the test. However, the same needs to be updated as per IS: 8132-1999.

The following literature should be provided for guidance of users.

i) Service manual of combine harvester

ii) Parts catalogue of combine harvester

iii) Service manual of engine

iv) Parts catalogue of engine

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN **DIRECTOR**	07.11.2022

Test report is compiled by Sh. C. Veeranjaneyulu, Senior Technician

20. APPLICANT'S COMMENTS

No specific comments received from the applicant.