

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: Comb- 280/2916/2022
माह/Month: September, 2022

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



**JAGATJIT-1441,
TRACTOR MOUNTED 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

Northern Region Farm Machinery Training and Testing Institute

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

Website: <http://nrfmtti.gov.in/>

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

Page 1 of 56

COMB-280/2916/2022	JAGATJIT-1441, TRACTOR MOUNTED COMBINE HARVESTER (COMMERCIAL)
--------------------	--

- (v) IS: 8133-1983 (Reaffirmed 2014)-Guidelines for : Conforms
location & operation of operator controls on
agricultural tractors and machinery.
- vi) IS: 15806:2018 Recommendation on selected Conforms
performance and other characteristics

18. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS

John Deere 5310 V6 tractor was fitted as Prime mover. This John Deere 5310 V6 tractor is reported to have been tested by CFMTTI, Budni, vide their test report No. T-1473/2000/2020, March, 2020. PTO performance of John Deere 5310 V3 tractor (prime mover of this combine) to the extent it is reported in the CFMTTI Test report No. T-1473/2000/2020, September, 2020, is reproduced for readers' information. Readers are advised to refer to T-1473/2000/2020, March, 2020 in respect of John Deere 5310 V6 tractor, issued by CFMTTI, Budni, for detailed information.

Sr. No.	Characteristics	Category (Evaluative/ Non evaluative)	Requirement /Declaration	Tolerance	Observed	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Prime mover performance						
	a) Max. Power (absolute) average max. Power observed during 2 h max. power test in natural ambient condition, kW	Evaluative	36.4	±5% of declared value	34.7	Conforms
	b) Power at rated engine speed, kW	Non-evaluative	36.4	±5% of declared value	34.4	Does not conform
	c) Specific fuel consumption corresponding to average maximum power under 2 h maximum power test, g/kWh.	Evaluative	325	+5% of declared value	296	Conforms
	d) Max. Smoke density (Bosch no.) at 80% load between the speed at max. Power and 55% of speed at max. or 1000 rpm whichever is higher	Evaluative	As per Central Motor Vehicles (CMV) Rules.	Nil	0.63	Conforms

COMB-280/2916/2022	JAGATJIT-1441, TRACTOR MOUNTED COMBINE HARVESTER (COMMERCIAL)
---------------------------	--

(1)	(2)	(3)	(4)	(5)	(6)	(7)	
	e)	Back up torque, %	Evaluative	10 % min.	Nil	41.6	Conforms
	f)	Max. Operating temperature, °C i) Engine oil ii) Coolant	Evaluative	135 118	Should not exceed the declared value	120 105	Conforms
	g)	Lubrication oil consumption, g/kWh	Evaluative	Not exceeding 1 % of SFC at maximum power high ambient	Nil	0.39	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	--	Cold 6.9	Conforms
	b)	Max. force exerted on brake pedal to achieve deceleration of 2.5 m/sec ²	Evaluative	≤ 600 N	--	Cold 353	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	--	Effective	Conforms

III. Mechanical vibration

	a)	Operator's platform	Non evaluative	120 µm max.	Nil	236	Does not conform
	b)	Steering control wheel	Non evaluative	150 µm max.	Nil	296	Does not conform
	c)	Seat with driver seated	Non evaluative	120 µm max.	Nil	295	Does not conform

IV. Air cleaner oil pull over

	a)	Air cleaner oil pull over in % when tested in accordance with IS 8122 (part 2)	Evaluative	0.20 percent max.	Nil	Dry type air cleaner provided hence test is not applicable	Not Applicable
--	----	--	------------	-------------------	-----	--	----------------

COMB-280/2916/2022	JAGATJIT-1441, TRACTOR MOUNTED COMBINE HARVESTER (COMMERCIAL)
--------------------	--

(1)	(2)	(3)	(4)	(5)	(6)	(7)
V. Noise measurement						
	a) Max. ambient noise emitted by combine at bystanders position dB (A)	Evaluative	As per CMV Rules	Nil	81.9	Conforms
	b) Max. noise at operator's ear level, dB (A)	Evaluative	As per CMV Rules	Nil	89.2	Conforms
VI. Header lifting Test						
	a) Satisfactory completion of header lifting test	Evaluative	-	Nil	Satisfactory completed	Conforms
VII. Relevant discard limit of John Deere 5310 V6 tractor as reported in the Budni test report No. T- 1473/2000/2020, March, 2020 is reproduced hereunder						
	a) Cylinder bore diameter, mm	Evaluative	106.62	Nil	106.49 to 106.50	Conforms
	b) Piston diameter, mm	Evaluative	106.30	Nil	106.35 to 106.73	Conforms
	c) Piston to cylinder liner clearance at skirt	Evaluative	0.32	Nil	0.13 to 0.14	Conforms
	d) Ring end gap, mm i) Top compression ring ii) 2 nd compression ring iii) Oil ring	Evaluative	0.75 2.00 0.75	Nil	0.50 0.75 0.55	Conforms
	e) Ring groove clearance, mm 1. Top compression ring 2. 2 nd compression ring 3. Oil ring	Evaluative	Tapered 0.25 0.92	Nil	Tapered 0.025 to 0.050 0.047 to 0.055	Conforms
	f) Diametrical and axial clearance of big end bearing, mm Diametrical Axial	Evaluative	0.65 0.85	Nil	0.117 to 0.142 0.30 to 0.35	Conforms
	g) Diametrical and axial clearance of main bearings, mm Diametrical Axial/crank shaft end float	Evaluative	0.65 0.85	Nil	0.087 to 0.125 0.30	Conforms
	h) Thickness of brake lining, mm	Evaluative	Wear up to oil groove depth	Nil	Left: 1.20 to 1.28 Right: 1.20 to 1.26	Conforms
	i) Thickness of clutch plate, mm	Evaluative	Wear up to rivet head	Nil	Transmission: 2.70 to 2.88, PTO: 0.95 to 1.01	Conforms

COMB-280/2916/2022	JAGATJIT-1441, TRACTOR MOUNTED COMBINE HARVESTER (COMMERCIAL)
--------------------	--

(1)	(2)	(3)	(4)	(5)	(6)	(7)	
VIII. Field performance							
	a)	Suitability for crops	Evaluative	Wheat & paddy (Wheel type) Paddy (Track type)	Nil	Wheat and paddy	Conforms
	b)	Average processing losses (%)	Evaluative	Wheat : Max. (of average) 3% Rice : Max. (of average) 4%	Nil	Wheat Max. (of average) 2.47 % Rice Max. (of average) 1.95 %	Conforms Conforms
	c)	Threshing efficiency	Evaluative	≥98 percent for wheat & Paddy	Nil	99.7 % for Wheat 98.3 % for Paddy	Conforms
	d)	Cleaning efficiency	Evaluative	≥96 percent for wheat & Paddy	Nil	96.5 % for Wheat 97.2 % for Paddy	Conforms
	e)	Grain breakage in main grain tank	Evaluative	≤2.5 percent	Nil	2.17 % for Wheat 0.90 % for Paddy	Conforms
	f)	Non collectable losses	Evaluative	≤2.5 percent for wheat & Paddy & grain ≤4.5percent for Soybean	Nil	1.04 % For Wheat 0.74 % For Paddy	Conforms
ix. Safety requirement							
	a)	Guards against all moving parts	Evaluative	Belt and chain drives, pulleys hydraulic pipes around operators work place	-	Provided	Conforms
	b)	Lighting arrangement	Evaluative	As per CMVR	-	Provided	Conforms
	c)	Grain tank cover	Evaluative	Essential	-	Provided	Conforms
	d)	Spark arrester in engine's exhaust in case naturally aspirated engine	Evaluative	Essential		Turbo charger Provided system	Not Applicable

(1)	(2)	(3)	(4)	(5)	(6)	(7)
e)	Stone trap before concave bars	Evaluative	Essential	-	Provided	Conforms
f)	Rear view mirror	Evaluative	Essential	-	Provided	Conforms
g)	Fire extinguisher	Evaluative	Essential	-	Provided	Conforms
h)	Slip clutch at following drives –					
	i) Cutting platform auger	Evaluative	Essential	-	Provided	Conforms
	ii) Undershot conveyor drive	Non-Evaluative	Optional		Provided	Conforms
	iii) Grain & tailing elevator	Non-Evaluative	Optional		Provided	Conforms
i)	Anti slip surfaces at operator platform & ladder & proper gripping for the control levers.	Evaluative	Essential	-	Provided	Conforms
j)	Working clearance around the controls	Non evaluative	Essential 70mm,min	-	Provided	Conforms
k)	Labelling of control and gauges	Evaluative	Essential	-	Provided	Conforms

xi	Material of construction :						
i)	Knife guard should conform to IS: 6024 - 1983	Non evaluative	Should have maximum hardness 163 HB	-	Hardness 204 HB	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%	-	C= 0.57 Mn= 0.78	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 %	--	C=0.17	Does not conform
--	------	---	----------------	--	----	--------	-------------------------

X. Break down (critical, major & minor)

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 observed during field test.

19.3 Ease of operation and safety provision

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

19.4 There is no provision for varying oscillation of sieve. It should be looked into.

19.5 Hardness and chemical composition

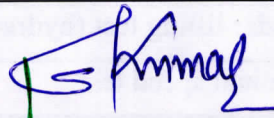
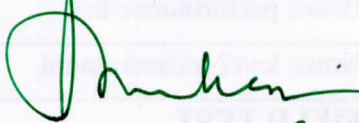
- i) **Hardness & chemical composition of knife blade, knife guard and knife back is not within the limits specified in their respective IS: 6025-1982. It should be looked into for corrective action at regular production level.**

19.6 Literature supplied with the machine

Operator cum service manual cum parts catalogue supplied with the machine.

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

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 22.09.2022

The Test Report compiled by Er. E. Bhasker, Senior Technician

20. APPLICANT'S COMMENTS

No specific comments received from the applicant