

**ADMINISTRATIVE EXTENSION REPORT**

प्रशानिक विस्तार रिपोर्ट

**COMB- 238/2756/2021**

**October, 2021**

**COMMERCIAL TEST REPORT**

ब्यावसायिक परीक्षण रिपोर्ट

**COMB-142/1726/2015**

**April, 2015**

**TEST REPORT IS VALID UPTO : 30<sup>th</sup> APRIL, 2022**



**BALKAR B-525  
TRACTOR POWERED 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**

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#### 4. ESSENTIAL TEST/ INSPECTION

As per the provisions laid down in the IS:15806-2018, Table 2, (i), for change in prime mover make and model within  $\pm 10\%$  variation in power and engine speed (for tractor operated combine only), No test is required, only physical inspection is recommended. Hence, the observations of the comparative specification of the prime mover are given in Chapter 3 and performance parameters are given herewith.

	Parameter	Previous Sample (Ref. Commercial test report No.- T-785/1293/2011 on John Deere 5055E V3 Tractor released by CFMT&TI, BUDNI)	Present sample (Ref. Commercial test report No.- T-1082/1607/2017 on John Deere 5310 V3 Tractor released by CFMT&TI, BUDNI)	Remarks
4.1	Make	John Deere	John Deere	No change
4.2	Model	5055E V3	5310 V3	Change
4.3	Max. Power (absolute) Average max. power observed during 2 hrs. max. power test in natural ambient condition, kW	36.4	36.4	No change
4.4	Rated Power, kW	36.4	36.4	No change
4.4	Rated Speed, rpm	2400	2400	No change

#### 5. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS AS PER IS: 15806-2008 (Complete evaluation including originally tested sample and sample inspected/tested for administrative extension)

John Deere 5310 V3 is fitted as prime mover which is tested by CFMTTI, Budni vide test report No. T-1082/1607/2017, April 2017. The PTO performance is reproduced from the report. It is advised to refer the prime mover test report for detailed information.

S. No	Characteristics	Category (Evaluative/ Non evaluative)	Requirement (R)/ Declaration (D)	Tolerance	Observed	Remark
1	2	3	4	5	6	7
I.	<b>Prime mover performance</b>					
a)	Max. Power (absolute) Average max. power observed during 2 hrs. max. power test in natural ambient condition, kW	Evaluative	36.4	$\pm 5\%$ of declared value	36.5	Conforms



b)	Max. power during field test after adjusting the no load engine speed as per recommendation of the manufacturer for field work, kW	Evaluative	Not applicable	±5% of declared value	Not applicable	-
c)	Power at rated engine speed, kW (under natural ambient condition)	Evaluative	36.4	±5% of declared value	35.3	Conforms
d)	Specific fuel consumption corresponding to average maximum power under 2h maximum power test, g/kWh	Evaluative	325	±5% of declared value	308	Conforms
e)	Max. smoke density at 80% load between the speed at max. power & 55% of speed at max. or 1000 rpm whichever is higher	Evaluative	As per CMVR rule requirement which are as below - For tractor :- 5.2 bosch no. or 75 hartridge For engine :- Free declaration or natural aspirated or turbo charged -65 hartridge	Nil	3.25m <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	Not applicable	±8% of declared value	Not applicable	-
g)	Back-up torque, %	Evaluative	7% min.	Nil	34.3	Conforms
h)	Max. Operating temperature, °C i) Engine oil ii) Coolant	Evaluative	135 118	Should not exceed the declared value	117 100	Conforms




	i)	Lubrication oil consumption, g/kWh	Evaluative	Not exceeding 1 % of SFC at maximum power (high ambient)	3.14	0.61	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)	Evaluative	As per requirement of CMVR	-	5.93	Conforms
	b)	Max. force exerted on brake pedal to achieve a deceleration of 2.5 m/sec <sup>2</sup>	Evaluative	≤600		148	Conforms
	c)	Whether parking brake is effective at a force of 600 N at foot pedal or 400 N at Hand and lever	Evaluative	As per requirement of CMVR		Yes	Conforms
<b>III Mechanical vibration</b>							
	a)	Operator's platform	Non Evaluative	120 μm max.	Nil	190	Does not conform
	b)	Steering wheel	Non Evaluative	150 μm max.	Nil	300	Does not conform
	c)	Seat with driver seated	Non Evaluative	120 μm max.	Nil	330	Does not conform
<b>IV Air cleaner oil pull over</b>							
	a)	Air cleaner oil pull over in % age when tested in accordance with IS: 8122 pt. (II)-2000	Evaluative	0.20 max.	-	Not applicable	-
<b>V Noise measurement</b>							
	a)	Max. ambient noise emitted by combine at bystanders position dB (A)	Evaluative	As per CMVR rules		88	Conforms
	b)	Max. noise at operator's ear level dB (A)	Evaluative	As per CMVR		95	Conforms
<b>VI Header lifting test</b>							
	a)	Satisfactory completion of header lifting test	Evaluative	-	Nil	Satisfactorily completed	Conforms



VII		Discard limit					
	a)	Cylinder bore diameter, mm	Evaluative	106.77	-	106.50	Conforms
	b)	Piston diameter, mm	Evaluative	Not applicable	-	Not applicable	-
	c)	Piston to cylinder liner clearance at skirt	Evaluative	0.32	-	0.11	Conforms
	d)	Ring end gap, mm 1. Top compression ring 2. 2 <sup>nd</sup> compression ring 3. Oil ring	Evaluative	0.75 2.00 0.75	-	0.45 0.74 0.41	Conforms
	e)	Ring groove clearance 1. Top compression ring 2. 2 <sup>nd</sup> compression ring 3. Oil ring	Evaluative	Tapered 0.25 0.92	-	- 0.046 0.057	Conforms
	f)	Diametrical and axial clearance of big end bearing, mm Diametrical Axial	Evaluative	0.65 0.85	-	0.121 0.20	Conforms
	g)	Diametrical end axial clearance of main bearings, mm Diametrical Axial/crank shaft end float	Evaluative	0.65 0.85	-	0.179 0.35	Conforms
	h)	Thickness of brake lining, mm	Evaluative	Wear up to oil groove depth	-	1.52	Conforms
	i)	Thickness of clutch plate, mm	Evaluative	Wear up to rivet head	-	1.40	Conforms
VIII		Field performance					
	a)	Suitability for crops	Evaluative	Wheat & paddy (Wheel type) Paddy (Track type)		Wheat, paddy	Conforms
	b)	Processing losses (%)	Evaluative	Wheat Rice	Max (of average) 3% Max (of average) 4%	Wheat- 0.981 to 1.686% Avg. 1.368% Paddy- 0.974 to 1.723% Avg. 1.234%	Conforms



c)	Threshing efficiency	Evaluative	$\geq 98$ Percent for wheat & Paddy		<b>Wheat-</b> 99.3 to 99.7% Avg. 99.4% <b>Paddy-</b> 99.3 to 99.9% Avg. 99.7%	Conforms
d)	Cleaning efficiency	Evaluative	$\geq 96$ Percent for wheat & paddy		<b>Wheat-</b> 96.3 to 97.9% Avg. 97.0% <b>Paddy-</b> 95.6 to 97.2% Avg. 96.7%	Conforms
e)	Grain breakage in main grain tank	Evaluative	$\leq 2.5$ percent		<b>Wheat-</b> 0.981 to 1.686% Avg. 1.368% <b>Paddy-</b> 0.974 to 1.723% Avg. 1.234%	Conforms
f)	Non collectable losses	Evaluative	1) $\leq 2.5$ percent for wheat & paddy & grain 2) $\leq 4.0$ percent for soybean		<b>Wheat-</b> 0.844 to 1.701% Avg. 1.413% <b>Paddy-</b> 1.608 to 3.007% Avg. 2.171%	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		Provided	Conforms
	b)	Lighting arrangement	Evaluative	Essential 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		Not provided, however tractor engine is equipped with turbo charger which eliminates the requirement of spark arrester	-
	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 –					Conforms
		i. Cutting platform	Evaluative	Essential		Provided	
		ii. Undershot conveyor drive	Non Evaluative	Essential		Provided	
		iii. Grain & tailing elevator	Non Evaluative	Essential		Provided	
	i)	Anti slip surfaces at operator's platform & ladder & proper gripping for the control levers	Evaluative	Essential		Provided	conforms
	j)	Working clearance	Evaluative	-		Provided	conforms



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		around the controls					
	<b>k)</b>	Labelling of control gauges and all operating controls	Evaluative	Essential		Provided	conforms
<b>X</b>	<b>Material of construction</b>						
	<b>a)</b>	Knife guard should conform to IS:6024-1983	Non evaluative	Should have maximum hardness 163 HB		C=0.3077% Si=0.8228% Mn=0.4635% P=0.0133% S=Nil	Unascertainable as the relevant code does not specify the content limit.
	<b>b)</b>	Knife blade should meet the requirement of IS: 10378-1982	Non evaluative	It should have chemical composition as C=0.70 to 0.95% Mn=0.30 to 0.50%		C=0.9660% Mn=0.9415%	<b>Does not conform</b>
	<b>c)</b>	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=0.1598%	<b>Does not conform</b>



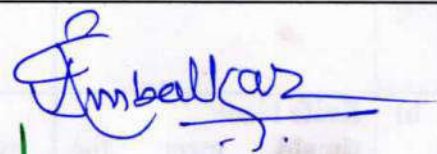
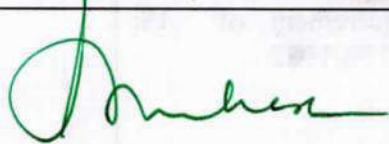
<b>XI Break down (critical major &amp; minor)</b>					
Sr. No	Category of breakdowns	Category (evaluative/ Non evaluative)	Requirements as per IS: 15806-2018	As observed	Whether meets the requirements (Yes/No.)
1.	Critical	Evaluative	No critical breakdown	None	Yes
2.	Major	Evaluative	Not more than three 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 three	None	Yes



## 6. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 6.1** There is no change in the declared maximum power and the rated power and rpm of the prime mover **John Deere 5055E V3** and **John Deere 5310 V3**, hence eligible for Administrative Extension as per provisions laid down in IS:15806-2018.
- 6.2** The effect of the modifications on performance has been examined and considered that, the modifications are not going to affect the results of the original test. The Original test report, therefore, applies to the modified combine harvester also.

### TESTING AUTHORITY

Er. G.R. AMBALKAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 22.10.2021

## 7. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
7.1	5[III(a)(b)(c)]	However the mechanical vibration at operator's platform is very less and near to the required value but we will make arrangement to minimise.
7.2	5[IX(b)(c)]	We will provide the knife blade and knife back as per required specifications in regular production.

