

(यह परीक्षण रिपोर्ट 31/07/2025 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/07/2025)



JOHN DEERE 5310 V5 TRACTOR



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय
कृषि, सहकारिता एवं किसान कल्याण विभाग
मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Department of Agriculture, Cooperation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

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T- 1459/1986/2020

JOHN DEERE 5310 V5 TRACTOR - Commercial (1st Batch)**THIS TEST REPORT IS VALID UPTO: 31/07/2025**

The "JOHN DEERE 5310 V5" tractor model had undergone "Initial Commercial Test" at this Institute vide test report No. T- 1054/1579/2016 released in December, 2016. Now the applicant has submitted an application vide letter No. Nil dated: 30.12.2019 for batch testing of "JOHN DEERE 5310 V5" tractor.

All necessary tests as per Table-1 of clause 6.0 of IS: 5994 - 1998 (Reaffirmed in 2014) were carried out and test report released as under.

Manufacturer	: M/s. John Deere India Private Limited Gat No. 166 - 167 & 271 - 291, Off Pune - Nagar Road, Sanaswadi, Pune- 412 208
Location of manufacturing plant	: i) M/s. John Deere India Private Limited Gat No. 166 - 167 & 271 - 291, Off Pune - Nagar Road, Sanaswadi, Pune- 412 208 ii) M/s. John Deere India Private Limited Survey No. 501, Village - Khatamba Jamgod, Dewas Bhopal Highway, Dewas (Madhya Pradesh) 455115
Test requested by (applicant)	: The manufacturer
Selected for test by	: The testing authority
Place of running-in	: At manufacturer's work place
Duration of said running-in, (h):	
- Engine	: 20
- Transmission	: 12
Method of Selection	: The test sample was selected randomly out of Five tractors from the production line by the representative of testing authority.

Details of tractors made available for random selection :

Sr. No.	Chassis Number
i)	1PY5310ELLA046634
ii)	1PY5310ECLA046637
iii)	1PY5310EELA046636
iv)	1PY5310EHLA046635
v)	1PY5310EALA046633

1. SPECIFICATIONS

1.1 Tractor:	
Make	: John Deere
Model	: 5310 V5
Brand Name	: None
Variants, if any	: Yes

S. No.	Variant model (*)	Variant features
1.	5310 V4	Change in nominal speeds.
Remark (*) :- The variant model has been tested at this Institute vide test report No. T-1142/1668/2018, released in March, 2018.		

Type	: Four wheeled, Rear wheel driven, Unit Construction, General purpose, Agricultural tractor.
Month & Year of manufacture	: 02 / 20
Chassis number	: 1PY5310ELLA046634
Country of origin	: India

14. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

14.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluation (not-mandatory) parameter applicable for qualifying Minimum Performance Criteria as per Clause-4 (Table-1) of IS: 12207-2019 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:-

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant (D) / Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
14.1.1	PTO Performance :					
a)	Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power or engine power >26 kW, $\pm 10\%$ for PTO power or Engine power ≤ 26 kW.	36.4 (D)	35.4	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	36.4 (D)	34.5	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	325 (D)	292	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	229 (D)	202.0	No
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 % (D) 12 % (R)	47.1	Yes
f)	Maximum operating temperature(^o C)					
	1) Engine oil	Evaluative	The declared value should not exceed the max. value specified by the oil company and the observed value under high ambient condition should not exceed the declaration.	135 (D)	121	Yes
	2) Coolant (liquid)	Evaluative	The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration.	120 (D)	106	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.96 (Maximum) (R)	0.41	Yes
h)	Smoke level, (m ⁻¹)	Evaluative	Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 (Maximum) (R)	0.51	Yes



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1	2	3	4	5	6	7	
14.1.2 Drawbar performance:							
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	21.92 (D)	24.05	Yes	
				20.53 Minimum (R)			
b)	Maximum drawbar pull with unballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without / standard ballast	15.44 (D)	18.30	Yes	
				14.49 (Minimum) (R)			
c)	Maximum drawbar power without ballast, or with standard ballast as the case may be, kW	Evaluative	Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft.	29.1 (D)	28.8	Yes	
				28.5 Minimum (R)			
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	110 (D)	84	Yes	
14.1.3 Power lift and hydraulic pump performance :							
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Evaluative	±10 percent	18.90 (D)	18.52	Yes
2)	With the standard frame	Evaluative	The lift capacity should at least be 24 kg/PTO kW, and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft	12.90 (D)	15.39	Yes	
				8.38 Minimum (R)			
b)	Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 minute, (mm)	Non Evaluative	The observed value should not exceed 50 mm	50 (D)	05	Yes	
				50 Maximum (R)			
14.1.4 Brake performance at 25 kmph:							
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with unballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	7.69	Yes
	2)	Hot brake	Evaluative	10	10 (R)	8.21	Yes

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1	2	3	4	5	6	7
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	302 to 333	Yes
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever, N	Evaluative	Yes / No	Yes (R)	312	Yes
14.1.5 Noise measurement :						
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	82	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	93	Yes
14.1.6 Amplitude of mechanical vibrations at :						
1)	Left foot rest	Non Evaluative	100 microns (max)	100(R)	208	No
2)	Right foot rest		-do-		183	No
3)	Seat (with driver seated)		-do-		53	Yes
4)	Steering wheel		do-		88	Yes
14.1.7 Air cleaner oil pull over:						
	Maximum air cleaner oil pull over	Evaluative	0.25 % (max.)	Dry type air cleaner is provided	Not applicable	
14.1.8 Haulage requirements:						
a) Gross mass of the trailers, (tones):						
1)	Two wheel	Non	--	5.0 (D)	5.0	Yes
2)	Four wheel	Evaluative	--	7.0(D)	7.0	Yes
b) Distance travelled / litre of fuel consumption, (km/l):						
1)	Two wheel	Non Evaluative	--	4.0 to 6.0 (D)	3.60 to 3.76	No
2)	Four wheel		--	4.0 to 6.0 (D)	3.18 to 3.31	No
c) Fuel consumption (ml/km/tonne):						
1)	Two wheel	Non Evaluative	--	30 to 40 (D)	53.1 to 55.6	No
2)	Four wheel		--	30 to 40 (D)	43.2 to 44.9	No
14.1.9 Wetland cultivation :						
	Sealing for the following assemblies:	Evaluative	The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2. If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only.	There should be no ingresses of water and / or mud (R)	The major breakdowns were not observed in the field test during ICT of this tractor model having test report No. T-1054/1579/2016 released in December, 2016. So, as per the provision as laid down in clause 7.2 of IS: 12207-2019, the field test during the batch testing of this tractor model was not conducted.	Yes
1)	Clutch assembly	-do-				
2)	Brake housings	-do-				
3)	Front axle hubs	-do-				
4)	Engine Oil	-do-				
5)	Transmission Oil	-do-				



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1	2	3	4	5	6	7
14.1.10	Safety features :					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulics pipes(as per IS-12239 Part 2)	Meet the requirements	Yes	
b)	Lighting arrangement	Evaluative	As per CMVR	Meet the requirements	Yes	
c)	Seating requirements (Tractors having more than 1150 mm rear track width)	Non Evaluative	Should meet the requirements of IS: 12343 (As amended from time to time)	Meet the requirements	Yes	
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meet the requirements	Yes	
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	Meet the requirements	Yes	
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953 (As amended from time to time)	Meet the requirements	Yes	
g)	Specifications of Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)	Not provided	Not applicable	
h)	1) Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 kmph	24.15 kmph	Audible warning is provided	
	2) Audible warning signal on tractor.	Evaluative	As soon as the travelling speed in reverse gear reaches to 20 kmph, an audible warning signal on tractor shall be activated.	Audible warning signal is activated, when C-R gear selection combination is engaged	Yes	
14.1.11	Labelling of tractors (Provision of labelling plate):					
	1) Make	Evaluative	Should conform to the requirements of CMVR along with maximum declared value of PTO power in kW and for month & year of manufacture in numerical MM YY Digit 01-12 in box No.1 for MM will represent the month and next two digit in the box No.2 for YY will represent the year of manufacturing	John Deere	Yes	
	2) Model	Evaluative		5310 V5	Yes	
	3) Month & Year of manufacture	Evaluative		02 / 20	Yes	
	4) Engine number	Evaluative		PY3029H136 066	Yes	
	5) Chassis number	Evaluative		1PY5310ELL A046634	Yes	
	6) Declaration of PTO power, kW	Evaluative		36.4	Yes	

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1	2	3	4	5	6	7
14.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	106.77(D)	106.48 to 106.49	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.32 (D)	0.08 to 0.09	Yes
(c)	Piston diameter at skirt, mm	Non Evaluative		106.30 (D)	106.403 to 106.414	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	0.75 (D)	0.40 to 0.45	Yes
	- 2 nd comp. ring.		-do-	2.00 (D)	0.75 to 0.80	Yes
	- Oil ring.		-do-	0.75 (D)	0.50 to 55	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	--	--Tapered--	Not applicable
	- 2 nd comp. ring.		-do-	0.25 (D)	0.03 to 0.05	Yes
	- Oil ring.		-do-	0.92 (D)	0.03 to 0.04	Yes
(f)	Diametrical clearance of main bearings (mm):	Evaluative	-do-	0.65 (D)	0.28 to 0.30	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.65 (D)	0.12 to 0.14	Yes
	- Axial	Evaluative	-do-	0.85 (D)	0.20 to 0.25	Yes
(h)	Crankshaft end float, mm	Evaluative	-do-	0.85 (D)	0.10	Yes
(j)	Clearance between king pin and bush,(mm)	Non Evaluative	-do-	8.00 (D)	0.24 to 0.34	Yes
(k)	Clearance between center pin and bush,(mm)	Non Evaluative	-do-	8.00 (D)	0.22 to 0.27	Yes
14.1.13	Literature (Submission to test agency)					
(a)	Operator manual	Evaluative	Provided / Not Provided	Provided	Provided	Yes
(b)	Parts Catalogue	Evaluative	Provided / Not Provided	Provided	Provided	Yes
(c)	Workshop/ Service manual	Evaluative	Provided / Not Provided	Provided	Provided	Yes
14.1.14	Fitment of Roll Over Protective Structure (ROPS): for tractors having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard	Provided	Not Fitted	Not Applicable
14.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
14.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes



14.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2019):					
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the requirement (Yes/No.)
1.	Critical breakdown	Evaluative	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major breakdowns	Evaluative	There are not more than 1 major breakdowns and neither of them is of repetitive nature	None	Yes
3.	Minor breakdowns	Evaluative	There are not more than 3 minor defects during the test and the frequency of each is not be more than two	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four that is, (1 major + 3 minor) or 4 minor breakdowns	None	Yes

14.3 Salient Observations:

14.3.1 Laboratory tests:

14.3.1.1 PTO Performance Test:

- i) The maximum PTO power was recorded as **35.4 kW** against the declaration of **36.4 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The maximum PTO power was located at **2100 rpm** of engine speed, which is **12.5%** lower than the declared rated engine speed of **2400 rpm**. This indicates that, the setting of fuel injection pump is not proper and should be looked into at production level.
- iii) The specific fuel consumption corresponding to maximum power was recorded as **292 g/kWh** against the declaration of **325 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iv) The maximum equivalent crankshaft torque was recorded as **202.0 N-m** against the declaration of **229 N-m**, which is not within the permissible limit as specified in IS: 12207-2019. Therefore, this should be looked into for necessary corrective action.
- v) The backup torque is **47.1 %** and meets the evaluative requirement of IS: 12207-2019.
- vi) The drop in maximum PTO Power of **6.8 %** was recorded between natural and high ambient condition, which is considered to be on higher side. Therefore, this should be looked into for necessary corrective action.

14.3.1.2 Drawbar performance test:

During ten hours drawbar performance test, creeping of LHS & RHS rear tyre over the rims was recorded as **25 mm & 15 mm** respectively. This should be looked into for necessary corrective action.



14.3.1.3 Hydraulic performance test:

- i) The lifting capacity at hitch point and with coupled frame was recorded as **18.52 kN** and **15.39 kN** and the moment about rear axle was computed as **18.33 kN-m** and **24.62 kN-m** respectively. Whereas moment about front axle is computed as **14.58 kN**. The moment about rear axle at hitch point and with coupled frame is on higher side as compared to moment about front axle. It is therefore recommended that the lifting capacity of hydraulic system may be reduced suitably or standard ballast recommendation may be reviewed to avoid front lifting of tractor.
- ii) The maximum lifting capacity throughout the range of lift at hitch points was recorded as 89.5% of static mass of tractor. Therefore, it should be reviewed and reduced suitably for safe operation of tractor.

14.3.1.4 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies / components marked as (*) in Chapter – 8 of this test report is on higher side. This calls for dampening down of vibrations especially on left & right foot rest to improve the operational comfort and service life of components.

14.3.1.5 Three point linkage:

Some of the parameters of three point linkage conform to Cat. I and some of them conform to Cat.II. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

14.3.1.6 Haulage test:

- i) Distance travelled / litre of fuel consumption with two wheel and four wheel trailer has been recorded as **3.60 to 3.76** and **3.18 to 3.31 km/l** against the declaration of **4.0 to 6.0** and **4.0 to 6.0 km/l** respectively and does not meet the requirement of IS: 12207-2019 as regards to tolerance limit. This should be looked into for necessary corrective action at production level.
- ii) Specific fuel consumption with two wheel and four wheel trailer has been recorded as **53.1 to 55.6** and **43.2 to 44.9 ml/km/tonne** against the declaration of **30 to 40** and **30 to 40 ml/km/tonne** respectively and does not meet the requirement of IS: 12207-2019 as regards to tolerance limit. This should be looked into for necessary corrective action at production level.

14.4 Maintenance / Service Problems:

No noticeable maintenance / service problem was observed during the test.

14.5 Recommendation with regard to safety on tractor:

The following requirements, inter alia, may be considered for incorporation on the tractor:

- i) Vertical retainer should be provided on both side of clutch pedal.
- ii) Working clearance between the range selection lever and operator's seat should be provided as per relevant standard.



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- 14.6 Adequacy of Literature supplied with machine:**
Following literatures of tractor models was supplied with the test sample for reference during the test.
- Operator's Manual of John Deere 5310 V1, 5310 V3, 5310 V4, 5310 V5, 5310 V6, 5050E, 5120, 5055E, 5060E, 5065E, 5075E and 5405 tractor models
 - Parts Catalogue Part-1 & Part-2 of John Deere 5310 V1, 5310 V3, 5310 V4, 5310 V5 and 5310 V6 tractor models
 - Workshop Service / Technical Manual Part-1, Part-2 & Part-3 of John Deere 5310 V1, 5310 V3, 5310 V4, 5310 V5, 5310 V6, 5050E, 5120, 5055E, 5060E, 5065E, 5075E and 5405 tractor models
- 14.7** However, these literatures should be brought out in other vernacular languages of India for guidance of users

15. CITIZEN CHARTER

Time frame for testing & evaluation as per citizen charter	Duration of Test	Whether the report released within time frame given in the citizen charter	Remark
10 Months	03 Months (April, 2020 to June, 2020)	Yes	---

TESTING AUTHORITY:

RAJNEESH PATEL
AGRICULTURAL ENGINEER

C.V. CHIMOTE
TEST ENGINEER

J.J.R. NARWARE
DIRECTOR

16. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
16.1	14.3.1.3, 14.3.1.4 & 14.3.1.6	Your valuable comments & suggestions for improvements are well taken under our policy of continuous product improvement. These aspects are further being looked into & will try to eliminate these deviations soon wherever necessary.

**ANNEXURE - I****TRACTOR RUN HOURS DURING TEST**

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	32.00
2.	PTO Performance test	12.75
3.	Power lift and hydraulic pump performance test	1.00
4.	Drawbar performance test	16.08
5.	Brake test	1.50
6.	Noise measurement	1.33
7.	Mechanical vibration test	1.00
8.	Nominal speed test	0.83
B.	HAULAGE TEST	4.18
C.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	6.78
TOTAL:		77.45