

(यह परीक्षण रिपोर्ट 31/07/2023 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/07/2023)



JOHN DEERE 5105 4WD V2 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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3. ESSENTIAL TEST

3.1. SPECIFICATIONS

	<u>Base Model</u>	<u>Variant Model</u>
3.1.1 Tractor:		
Make	John Deere	John Deere
Model	5036 D	5105 4WD V2
Type	Four wheeled, rear-wheel driven (2WD), General purpose agricultural tractor	Four wheeled, four wheel drive (4WD), unit constrictor, standard agricultural tractor
Month & Year of manufacture	BE-G	02/20
Chassis number	1PY5036DPG0000002	1PY5105DELA015869
Country of Origin	India	
3.1.2 Engine:		
Make	John Deere	
Model	3029DPY78	3029DPY93
Type	Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine	
Serial number	PY3029D397505	PY3029D560104
Engine speed (Manufacturer's recommended production setting), (rpm):		
- Maximum speed at no load	2250 to 2350	
- Low idle speed	800 to 900	
- Speed at maximum torque	1100 to 1400	
Rated speed, (rpm):		
- For PTO use	2100	
- For drawbar use	2100	
3.1.3 Cylinder & Cylinder Head:		
Number	Three	
Disposition	Vertical, inline	
Bore/stroke, (mm)	106.5 / 110	
Capacity as specified by the applicant, (cc)	2940	
Compression ratio	18.5 : 1	18.5: 1 (±0.2)
Type of cylinder head	Monoblock,	
Type of cylinder liners	Wet, replaceable	
Type of combustion chamber	Direct injection	
Arrangement of valves	Inline, Overhead	
Valve clearance (cold):		
- Inlet valve, (mm)	0.35	
- Exhaust valve, (mm)	0.45	
3.1.4 Fuel System:		
Type	Gravity and force feed	
3.1.4.1 Fuel tank:		
Capacity, (l)	58.5	60.0
Location	Behind Operator's seat	
Provision for draining of sediments/ water	Not Provided	
Material of fuel tank	Plastic (PE-LLD)	



7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

- 7.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) and non – evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 table-1 of **Indian Standard 12207: 2019** for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

Sl. No.	Characteristic	Category (Evaluative / Non-Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant (D)/ Requirement (R)		As observed		Whether Variant model meets the requirements (Yes/No)
				Base model	Variant Model	Base model	Variant model	
1	2	3	4	5a	5b	6a	6b	7
7.1.1 PTO Performance:								
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: ± 5 percent for PTO power and engine power > 26 kW. ± 10 percent for PTO power and or engine ≤ 26 kW.	23.0 (D)	25.8 (D)	24.2	25.6	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	23 (D)	25.5	24.2	25.6	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+10 %	258(D)	272	248	274	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	146(D)	144	130.0	145.7	Yes
e)	Back-up torque, percent	Non Evaluative	12 percent, min.	10 percent, min (R)	12 percent, min (R)	18.3	25.2	Yes
7.1.2 Drawbar performance :								
a)	Max. drawbar pull with ballast corresponding to 15 percent wheel slip or 7 percent slip, kN	Non Evaluative	Minimum 70 percent of static mass with ballast	17.44 (D) 17.44 (R)	18.88 (D) 18.78 (R)	17.74	22.21	Yes
b)	Max. drawbar pull without ballast or with standard ballast, as the case may be corresponding to 15 percent wheel slip or 7 percent track slip, kN	Evaluative	Minimum 70 percent of static mass of tractor without ballast or with standard ballast, as the case may be	12.29 (D) 12.29 (R)	13.73 (D) 13.63 (R)	13.94	16.70	Yes



1	2	3	4	5a	5b	6a	6b	7
c)	Maximum drawbar power without 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.	18.4 (D) 19.4 (R)	20.64 (D) 20.5 (R)	20.0	21.0	Yes
d)	Max. transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	110 (D)	110 (D)	75	88	Yes
7.1.3 Noise measurement:								
a)	Maximum ambient noise emitted by the tractor at bystanders position, dB (A)	Evaluative	88 dB (A) for > 1.5 tonne GVW & 85 dB (A) for < 1.5 tonne GVW (as per CMVR)	88 (R)	88 (R)	79	80	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	96 (as per CMVR)	96 (R)	96 (R)	93	93	Yes
7.1.4 Safety features:								
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 (Part2))	Provided		Meets the requirements		Yes
b)	Lighting arrangement	Evaluative	As per CMVR	Provided		Meets 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)	Does not Conform		Does not meet the requirements		No
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Conforms		Meets the requirements		Yes



1	2	3	4	5a	5b	6a	6b	7
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	Conforms		Meets the requirements		Yes
f)	Specifications of linkage	Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time)	Conforms		Meets the requirements		Yes
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirement 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 gear, (kmph)	Evaluative	Should not exceed 20 kmph	Conforms		14.86 kmph	13.44 kmph (Meets the requirements)	Yes
	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. The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer/dealer shall ensure the training on this aspect to operator before the delivery of tractor.	Not applicable		Not applicable		Not applicable

7.1.5 Labelling of tractors (Provision of labelling plate):									
1)	Make	Evaluative	Should conform to the requirements of CMVR along with maximum PTO Power in kW and year of manufacture in numerical form. MM YY Digit 01 - 12 in box No.1 for MM will represent the months and next two digits in box No.2 for YY will represent the year of manufacturing.		JOHN DEERE			Yes	
2)	Model	Evaluative				5105 4WD V2			Yes
3)	Month & Year of manufacture	Evaluative				02/20			Yes
4)	Engine number	Evaluative				PY3029D560104			Yes
5)	Chassis number	Evaluative				1PY5105DELA015869			
6)	Declaration of PTO power, kW	Evaluative				25.8			Yes



1	2	3	4	5a	5b	6a	6b	7
7.1.6	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
7.1.7	Fitment of roll Over protective structures (ROPS): for tractor having more than 1150 mm rear track width		Evaluative	ROPS should meet the requirement of IS 11821 or OECD code or equivalent International standard		ROPS not fitted		Not applicable
7.1.8	Standard Accessories		Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.		Provided		Yes
7.1.9	Accessories (optional)		Non Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR		Provided		Yes

7.2 CATEGORY OF BREAKDOWNS / DEFECTS (as per clause 5.0 of IS:12207-2019) :					
Sl. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	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 three and frequency of each should not be more than two.	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed five, that is, (2 major + 3 minor) or (1 major + 4 minor) or 5 minor breakdowns.	None	Yes

7.3 Salient Observations:

7.3.1 Laboratory tests:

7.3.1.1 PTO Performance:

- i) The maximum PTO power was recorded as **25.6 kW** against the declaration of **25.8 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power was recorded as **274 g/kWh** against the declaration of **272 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as **145.7 Nm** against the declaration of **144.0 Nm**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.



- iv) The backup torque was observed as 25.2 %, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.

7.3.1.2 Drawbar Performance:

- i) The maximum drawbar pull with unballasted & ballast condition corresponding to 15 % wheel slip was recorded as 16.70 kN & 22.21 kN respectively against the declaration of 13.73 kN & 18.88 kN respectively, which is within the tolerance limit as specified in IS:12207-2019.
- ii) The maximum drawbar power without ballast was recorded as 21.0 kW against the declaration of 20.64 kW, which is within the tolerance limit as specified in IS: 12207-2019.
- iii) During 10 hour drawbar performance test, creeping of RHS rear tyre over the rims was recorded as 20 mm respectively. This may be looked into for necessary corrective action.

7.3.1.4 Dimension of Power Take-Off Master Shield:

The dimensions "m" of the power take off shaft master shield does not meet the requirements of IS: 4931-1995 (Reaffirmed in 2014) and calls for necessary corrective action.

7.4 Maintenance / Service problems:

No noticeable maintenance and service problems was observed during the test.

7.5 Recommendation with regard to safety on tractor:

The following requirements, inter alia, may be considered for incorporation on the tractor as per relevant Indian Standards:

- i) Longitudinal distance of from seat index point to the centre of differential lock pedal and steering control wheel should be as per relevant Indian Standard for easy maneuverability of tractor.
- ii) There should be provision for spark arresting device in exhaust system.
- iii) The working clearance between position control lever & mudguard should be provided as per relevant standard.
- iv) Grease lubricant, oil lubricant type and frequency chart should be provided on the tractor.

7.6 Adequacy of Literature:

7.6.1 The following literatures were supplied with the test tractor for reference during the test:-

- i) Operator's Manual for John Deere 5036D, 5038D, 5039D 5042D, 5045D, 5050D, 5050D V8, 5105, 5105 4WD V2, 5205 and 5005 tractor models
- ii) Repair technical manual Part-1, Part-2 & Part-3 for John Deere 5036D, 5038D, 5039D 5042D, 5045D, 5050D, 5050D V8, 5105, 5105 4WD V2, 5205 and 5005 tractor models
- iii) Parts Catalogue Part-1 & Part-2 for John Deere 5105 and 5105 4WD V2 tractor models

7.6.2 The literatures should also be brought out in national as well as other regional languages for the guidance of users and service personnel.

The results of the tests carried out on variant model "John Deere 5105 4WD V2" tractor has been compared with those on base model "John Deere 5036D" and found within the limit, as specified in Indian Standard: 12207-2019.



8. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	4 Months (March, 2020 to June, 2020)	Yes	None

TESTING AUTHORITY:

RAJNEESH PATEL
AGRICULTURAL ENGINEER

C.V. CHIMOTE
TEST ENGINEER

J.J.R. NARWARE
DIRECTOR

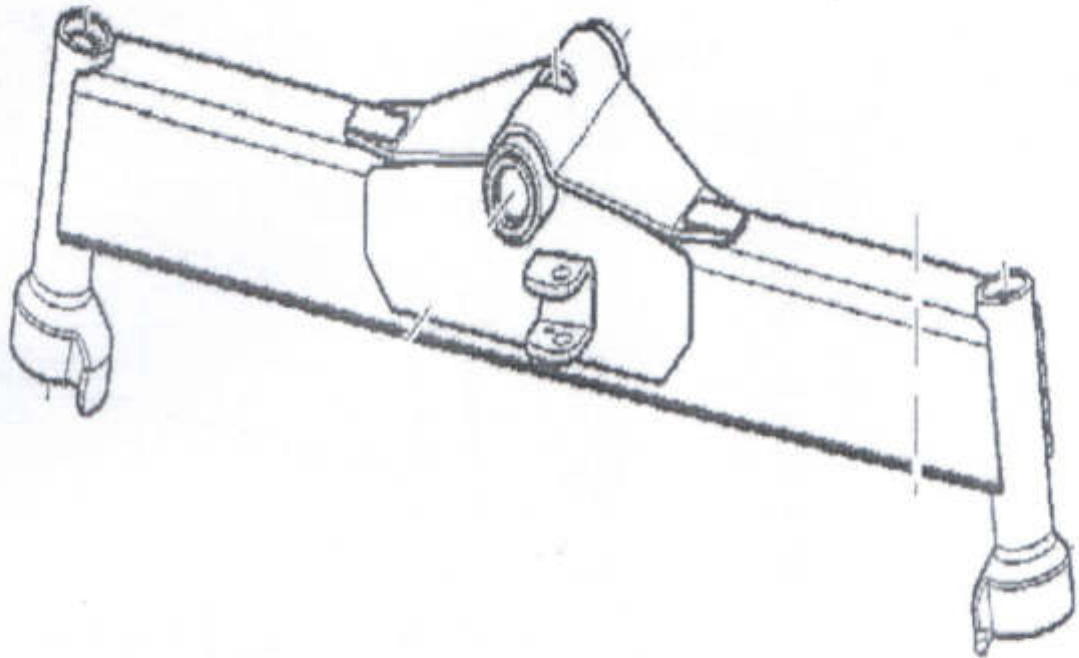
This test report is compiled by **Smt. Poonam Khurasia**, Senior Technical Assistant

9.0 APPLICANT COMMENT'S

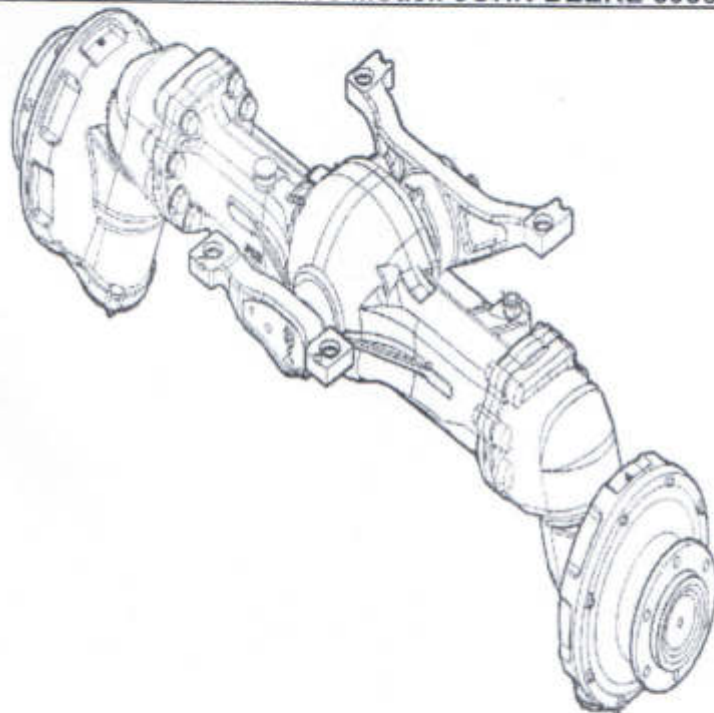
Para No.	Our Reference	Applicant's comments
--Nil--		



ANNEXURE-I



Design of front axle for Base Model: JOHN DEERE 5036D



Design of front axle for Variant Model: JOHN DEERE 5105 4WD V2



T- 1456/1983/2020	JOHN DEERE 5105 4WD V2 TRACTOR- Commercial (Variant)
	THIS TEST REPORT IS VALID UPTO : 31/07/2023

ANNEXURE- II

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	<u>HOURS</u>
1.	Running-in	24.0
2.	PTO performance test under natural ambient condition	4.53
3.	Drawbar performance test	14.20
4.	Noise measurement	1.00
5.	Turning ability test	0.25
6.	Location of centre of gravity	0.25
7.	Nominal speed test	2.00
C.	Miscellaneous test and other run hours including idle run, transportation, preparation for test and trial runs.	2.26
TOTAL		48.49