



JOHN DEERE, 5039C PC V3 TRACTOR



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय
(कृषि, सहकारिता एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)

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-1060/1585/2017

JOHN DEERE 5039C PC V3 TRACTOR Commercial (Initial)

Manufacturer : M/s. John Deere India Private Limited
Gate No. 166-167 & 271-291
Off. Pune – Nagar Road, Sanaswadi
Pune – 412 208

Test requested by (applicant) : The manufacturer

Selected for test by : Applicant

Place of running-in : At manufacturer's works

Duration of said running-in (h):

- Engine : 12

- Transmission : 12

Method of Selection : The tractor was submitted directly by the applicant for test. Hence method of selection is not known.

1. SPECIFICATIONS

- 1.1 Tractor:**
- Make : JOHN DEERE
- Model : 5039C PC V3
- Variants, if any : None
- Brand name : Not specified
- Type : Four wheeled, two wheels driven, General Purpose Agricultural Tractor.
- Year of manufacture : 2015 (BH-F)
- Chassis number : 1VY5039CJFA000445
- Country of Origin : INDIA
- 1.2 Engine:**
- Make : John Deere
- Model : 3029DPY73
- Type : Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine.
- Serial number : PY3029D383411
- Engine speed (Manufacturer's recommended production setting), (rpm):**
- Maximum speed at no load,(rpm) : 2250 to 2350
- Low idle speed, (rpm) : 800 to 900
- Speed at max. torque, (rpm) : 1100 to 1400
- Rated speed, (rpm):**
- For PTO use : 2100
- For drawbar use : 2100
- 1.3 Cylinder & Cylinder Head:**
- Numbers : Three
- Disposition : Vertical, inline
- Bore/stroke, (mm) : 106.5/110
- Capacity as specified by the applicant, (cc) : 2940



Condition of seals for front axle assemblies : Normal
 Any visual damage, pitting & chipping of front axle transmission gear teeth : none
 Clearance between centre pin and bush, mm : 0.11 to 0.12 | Against discard limit of 0.8 mm

- 14.6 Steering system:**
 Visual condition of the components of complete steering assembly : Normal
- 14.7 Starter motor & Alternator:**
 Presence of soil/oil in housing : None
 Condition of bearings and other Components : Normal

15. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustments/Defects/Breakdowns and repairs	Category of breakdown	Tractor run hours
1	2	3	4
–	None	--	--

16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 Evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2014 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: 12207-2014	Values declared by the applicant(D)/ Requirement (R)	As observed	Whether meets the requirements (Yes/No.)
1	2	3	4	5	6	7
16.1.1	PTO Performance :					
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26kW. -7.5/+10% for PTO power ≤ 26kW	24.9 (D)	25.0	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	24.9 (D)	24.8	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	270 (D)	275	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	140.5 (D)	137.3	Yes
e)	Back-up torque, percent	Non Evaluative	10 percent, min.	10 percent, min (R)	26.5	Yes



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1	2	3	4	5	6	7
Maximum operating temperature (°C):						
1)	Engine oil	Non 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)	126	Yes
2)	Coolant (water)	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.	110 (D)	106	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under high ambient conditions	Max. 2.75 (R) 1% of SFC, max. (D)	0.82	Yes
h)	Smoke level	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 per meter	0.27 per meter	Yes
16.1.2 Drawbar performance :						
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN).	Non Evaluative	Minimum 65% of static mass of tractor with ballast	16.07 (D) 15.30(R) Minimum	19.87	Yes
b)	Maximum drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN).	Evaluative	Minimum 65% of static mass of tractor with standard ballast	11.70 (D) 11.79 (R) Minimum	15.13	Yes
c)	Maximum drawbar power with standard ballast (kW).	Evaluative	Minimum 80% of PTO power as referred in Sl. No. i) a) of PTO performance in case of tractors having total static mass >1500 kg. Minimum 75% of PTO power as referred in Sl. No. i) a) of PTO performance in case of light weight tractors. Minimum 75% of the engine power as referred in Sl. No. i) a) of PTO performance in case of tractors which do not have a PTO shaft.	19.9 (D) 20.0 (R) Minimum	23.3	Yes
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company.	95 (D)	84	Yes
16.1.3 Power lift and hydraulic pump performance :						
a) Maximum lifting capacity throughout the range of lift, (kN):						
1)	At hitch points	Non Evaluative	[Tolerance of minus 10%]	11.00 (D)	10.15	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	8.50 (D) 5.88 (R) Minimum	8.27	Yes



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1	2	3	4	5	6	7
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) 50 (R) Maximum	27	Yes
16.1.4 Brake performance at 25 kmph:						
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):					
1)	Cold brake	Evaluative	10	10 (R)	7.26	Yes
2)	Hot brake	Evaluative	10	10 (R)	7.54	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² , (N)	Evaluative	600	600 (R)	274 to 280	Yes
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever	Evaluative	Yes/No	Yes (R)	Yes	Yes
16.1.5 Noise measurement :						
a)	Maximum ambient noise emitted by the tractor, dB(A)	Evaluative	As per CMVR	88 (R)	80	Yes
b)	Maximum noise at operator's ear level, dB(A)	Evaluative	As per CMVR	96 (R)	91	Yes
16.1.6 Amplitude of mechanical vibrations at :						
1)	Left foot rest	Non Evaluative	100 microns (max)	100 (R)	140	NO
2)	Right foot rest			100 (R)	190	NO
3)	Seat (with driver seated)			100 (R)	60	Yes
4)	Steering wheel			100 (R)	120	NO
16.1.7 Air cleaner:						
	Air cleaner oil pull over, (%)	Non Evaluative	0.25 % (maximum)	Dry type air cleaner is provided	NA	NA
16.1.8 Haulage requirements :						
a)	Gross mass of the trailers, (tones):					
1)	Two wheel	Non Evaluative	-	5.0 (D)	5.0	Yes
2)	Four wheel	Evaluative	-	6.5 (D)	6.5	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):					
1)	Two wheel	Non Evaluative	-	5.7 to 6.2 (D)	5.91 to 5.99	Yes
2)	Four wheel		-	5.6 to 6.2 (D)	5.63 to 5.91	Yes
c)	Fuel consumption, (ml/km/tonne):					
1)	Two wheel	Non Evaluative	-	33.0 (D)	33.4 to 33.8	No



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1	2	3	4	5	6	7
	2) Four wheel		-	26.0 to 27.0 (D)	26.0 to 27.3	No
16.1.9	Wetland cultivation (Puddling Operation):					
	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 ingress of water and/or mud	No ingress of water and/or mud was observed.	Yes
	1) Clutch assembly	-do-				
	2) Brake housings	-do-				
	3) Front axle hubs	-do-				
	4) Engine oil	-do-				
	5) Transmission oil	-do-				
16.1.10	Safety features :					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 Part 2)	-	Meets the requirements	Yes
b)	Lighting arrangement	Evaluative	As per CMVR	-	Meets the requirements	Yes
c)	Seating requirements (Tractors having more than 1150 mm track width)	Non Evaluative	Should meet the requirements of IS 12343 (as amended from time to time)	-	Does not meet the requirements	No
d)	Technical requirements for PTO shaft	Non Evaluative	Should meet the requirements of IS 4931 (as amended from time to time)	-	Does not meet the requirements	No
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS 4468 (Part 1) (as amended from time to time)	-	Meets the requirements	Yes
f)	Specifications of linkage drawbar	Non Evaluative	Should meet the requirements of IS 12953 (as amended from time to time)	-	Meets the requirements	Yes
	Specifications of swinging drawbar	Non Evaluative	Should meet the requirements of IS 12362 (Part 3) (as amended from time to time)	-	Not provided	NA
16.1.11	Labeling of tractors (Provision of labeling plate):					
	1) Make	Evaluative	Should conform to the requirements of CMVR	--	JOHN DEERE	Yes
	2) Model	Evaluative		--	5039C PC V3	Yes
	3) Year of manufacture	Evaluative		--	BH-F (AUGUST 2015)	Yes
	4) Engine serial number	Evaluative		--	PY3029D383411	Yes
	5) Chassis number	Evaluative		--	1VY5039CJFA0 00445	Yes
	6) Declaration of PTO power, (kW)	Evaluative		--	24.9	Yes

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7	1	2	3	4	5	6	7	
No	16.1.12	Discard limit for:						
	(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer and supported by printed literature.	106.77	106.49 to 106.51	Yes	
Yes	(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.32	0.133 to 0.134	Yes	
	(c)	Ring end gap (mm):						
	-	Top comp. ring.	Evaluative	-do-	0.75	0.40 to 0.45	Yes	
	-	2 nd comp. ring.		-do-	2.00	0.65	Yes	
	-	Oil ring.		-do-	0.75	0.40 to 0.45	Yes	
	(d)	Ring groove clearance (mm):						
Yes	-	Top comp. ring.	Evaluative	-do-	--	Taper rings	--	
Yes	-	2 nd comp. ring.		-do-	0.25	0.054 to 0.063	Yes	
	-	Oil ring.		-do-	0.92	0.055 to 0.058	Yes	
No	(e)	Clearance of main bearings (mm):						
	-	Diametrical clearance	Evaluative	-do-	0.65	0.084 to 0.159	Yes	
	-	Crankshaft end float	Evaluative	-do-	0.85	0.20	Yes	
No	(f)	Clearance of big end bearings, (mm):						
	-	Diametrical	Evaluative	-do-	0.65	0.098 to 0.146	Yes	
Yes	-	Axial	Evaluative	-do-	0.85	0.40	Yes	
Yes	(g)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.80	0.12 to 0.15	Yes	
Yes	(h)	Clearance between center pin and bush, (mm)	Non Evaluative	-- do--	0.80	0.11 to 0.12	Yes	
NA	16.1.13	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	
Yes	(c)	Workshop/ Service manual	Evaluative	Provided/ Not provided	Provided	Provided	Yes	
Yes								
Yes								
Yes								
Yes								
Yes								

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16.1.14 CATEGORY OF BREAKDOWNS / DEFECTS :					
S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	As observed	Whether meets the requirements (Yes/No.)
1	2	3	4	5	6
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 breakdowns	Evaluative	In no case, the total number of breakdowns should exceed five, that is, (2 major + 3 minor) or 5 minor breakdowns.	None	Yes

16.2 Optional requirements as per Clause-4 (Table-2) of IS:12207-2014:				
S. No.	Characteristic	Requirements as per IS: 12207-2014	As observed	Whether meets the requirements (Yes/No.)
1	2	3	4	5
1.	Fitment of ROPS	With a provision for fitment of ROPS.	Not provided	No
		If ROPS fitted it should meet the requirement of IS: 11821-1992.	ROPS not fitted	Not applicable
2.	Accessories	Trailer hitch, front tow hook may be provided.	Trailer hitch provided Front tow hook not provided	No

16.3 Conformity with following IS:

- i) Guide lines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS 10273:1987 (Reaffirmed in March, 2009)] : **Conforms**
- ii) Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS: 4931-1995 (Reaffirmed in March, 2009)] : **Does not conform**
- iii) Agricultural wheeled tractors - Three-point linkage: Part 1 Categories 1, 2, 3 & 4 (Fourth Revision) [IS 4468 (Part-1):1997/ ISO 730-1:1994 (Reaffirmed in March, 2009)] : **Conforms**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in March, 2007)] : **Conforms**
- v) Agricultural tractors - Operator's seat technical requirement [IS 12343 -1998 (First revision) (Reaffirmed in March, 2009)] : **Does not conform**



Whether the requirements (No.)
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 es
 es
 Whether the requirements (No.)
 5
 No
 Not applicable
 No

- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (PT-1) 1996 (Reaffirmed in February, 2012)/ISO 4254-1:1989] : **Does not conform**
- vii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1) – 2006 (Reaffirmed in March, 2009) and IS: 6283 (Part-2)-2007 (Reaffirmed in March, 2009)]/ISO 3767-2:1991] : **Conforms**
- viii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) [(IS 12239 (PT-2) 1999) (Re-affirmed in March, 2009)] : **Does not conform**
- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Re-affirmed in March, 2009) : **Conforms**
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999) (Re-affirmed in March, 2009) : **Conforms**

16.4 **Salient Observations:**

16.4.1 **Laboratory tests:**

16.4.1.1 **PTO Performance:**

- i) The maximum PTO power was observed as **25.0 kW** against the declaration of **24.9 kW** which meets the requirement of IS: 12207-2014 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power was recorded as **275 g/kWh** against the declaration of **270 g/kWh**, which is within the tolerance limit of IS: 12207-2014.
- iii) The backup torque is **26.5 %**.

16.4.1.2 **Drawbar performance:**

The creeping of LHS & RHS rear tyres over rim was recorded as 50 & 55 mm, respectively during ten hours drawbar performance test. This should be looked into for necessary corrective action.

16.4.1.3 **Mechanical Vibration:**

The amplitude of mechanical vibration on various assemblies marked as (*) in Chapter-8 of this test report is on very higher side, especially at the steering control wheel & foot rests. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

16.4.1.4 **Haulage requirements:**

The specific fuel consumption with two and four wheel trailer does not meet the values declared by the applicant. This should be looked into.

**16.4.1.5 Operator's Seat:**

The vertical distance from seat index point to the centre of clutch pedal and brake pedal does not meet the requirement of IS: 12343-1998. This should be looked into for necessary corrective action.

16.4.2 Field performance test:**16.4.2.1 Wet land cultivation (Puddling operation):**

No ingress of water and or mud in various assemblies/components was noticed during wetland cultivation of tractor. Hence, it meets the requirements of IS: 11082-1984 (Technical Requirements of Agricultural Tractors for Wetland Operation). The tractor is found suitable for wetland operation (Puddling).

16.5 Maintenance / Service Problems:

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

16.6 Recommendation with regard to safety on tractor:

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

- i) Provision for spark arresting device in exhaust system.
- ii) Vertical distance from seat index point to centre of clutch pedal and brake pedal should be within the limit for easy handling of tractor.
- iii) There should be provision attach trailer brake valve
- iv) The working clearance between main gear lever and mudguard should be as per the minimum requirements of relevant Indian Standard for easy operating the lever.

16.7 Adequacy of Literature supplied with machine:**16.7.1** The following literature was supplied with the tractor for reference during the test:

- i) Operator's manual
- ii) Spare Parts Catalogue
- iii) Service manual (Technical Manual)

16.7.2 The printed literature supplied with the test sample is in English. The literature may be brought out as per IS: 8132-1999 (Reaffirmed in March, 2009) for the guidance of user and service personnel in national as well as other regional languages.

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17. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of test	Whether the report is released within the time frame given in the Citizen Charter	Remark
10 Months	10 Months (March,2016 to December, 2016)	Yes	None

TESTING AUTHORITY:

C. K. TIJARE
AGRICULTURAL ENGINEER

C. V. CHIMOTE
TEST ENGINEER

Y. K. RAO
SENIOR AGRICULTURAL
ENGINEER

J.J.R. NARWARE
DIRECTOR

18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
18.1	16.4.1.2 & 16.4.1.4	We will take necessary action.
18.2	16.4.1.5	Shall be taken up with operator station changes.



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ANNEXURE - I**BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST**

Sl. No.	Item	Disc Plough	Rotavator	Puddler
1.	Make	Not available	Sonalika	NA
2.	Type	Mounted	Mounted	Mounted
3.	No. of bottom / blades/discs	02	30	12, six in each gang
4.	Type of bottom / blades/discs	Concave	Hatchet	Notched concave
5.	Size of bottom / blade/disc, (mm)	615	200x55x7.15	460
6.	Spacing of bottom/blade/disc, (mm)	560	225	165
7.	Lower hitch point span, (mm)	850	560	680
8.	Mast height, (mm)	600	350	460
9.	Overall dimensions, (mm):			
	- Length	1910	1470	1190
	- Width	935	1070	2425
	- Height	1260	790	1335
10.	Gross mass, (kg)	280	360	245

ANNEXURE -II**BRIEF SPECIFICATION OF HALF CAGE WHEELS**

Sl No.	Items	Specification
1.	Type	Half cage wheel
2.	Outer dia, (mm)	1085
3.	Width, (mm)	340
4.	No. and types of lugs	12, straight lugs made up of M.S. angle section welded to angle iron frame.
5.	Size of angle section, (mm)	50 x 50 x 6
6.	Length of lug, (mm)	340
7.	Spacing of lug, (mm)	275
8.	Weight of each cage wheels, (kg)	60

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ANNEXURE-III

TRACTOR RUN HOURS DURING TEST

RE - I

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	11.80
3.	Power lift and hydraulic pump performance test	3.07
4.	Drawbar performance test	16.91
5.	Turning ability	0.20
6.	Location of centre of gravity	0.20
7.	Operator's field of vision	--
8.	Brake test	1.66
9.	Noise measurement	1.50
10.	Mechanical vibration test	0.75
11.	Theoretical speed test	0.42
B.	FIELD TEST:	
1.	Disc ploughing	10.15
2.	Rotavation	10.98
3.	Wetland cultivation (including water proof)	15.16
C.	HAULAGE TEST:	6.23
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	7.87
	TOTAL:	86.90

RE -II

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