



JOHN DEERE, 5060E V2 TRACTOR



भारत सरकार
कृषि मंत्रालय
(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & CO-OPERATION)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE
TRACTOR NAGAR, BUDNI (M.P.) - 466 445

E-mail : fmti-mp@nic.in

Web site : cfmtti.dacnet.nic.in

Telephone : 07564-234729

Fax : 07564-234743



T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

Manufacturer : M/s. John Deere India Pvt. Ltd.
Gat No. 166 - 167 & 271 - 291,
Off Pune-Nagar Road, Sanaswadi,
Pune- 412 208 (M.S.)

Test requested by (applicant) : The manufacturer
Selected for test by : The manufacturer
Place of running-in : At manufacturer's works
Duration of said running-in (h):
- Engine : 12
- Transmission : 18
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 : 5060E V2
Variants, if any : None
Type : Four wheeled, Rear wheel-driven, Standard Agricultural Tractor
Year of manufacture : BA-B (January, 2011)
Chassis number : 1PY5060ECBA000004
Country of Origin : India

1.2 Engine:

Make : John Deere
Model : 3029HPY37
Type : Four stroke, Turbo charged, liquid cooled, direct injection, diesel engine.
Serial number : PY3029H001380
Engine speed (Manufacturer's recommended production setting), (rpm):
- Maximum speed at no load : 2575 to 2650
- Low idle speed : 800 to 875
- Speed at maximum torque : 1700 to 1900
Rated speed, (rpm):
- For PTO use : 2400
- For drawbar use : 2400

1.3 Cylinder & Cylinder Head:

Number : Three
Disposition : Vertical, inline
Bore/stroke, (mm) : 106.5 / 110
Capacity as specified by the applicant, (cc) : 2940



T-834/1343/2012 | **JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)**

Condition of thrust bearings : Normal
 Condition of bearings for stub axles : Normal
 Condition of seals for stub axles and king pins : Normal
 Clearance between centre pin and bush, (mm) : 0.03 to 0.04 | Against discard limit of 0.80 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/Repairs	Tractor run hours
i)	NONE	--

16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 Evaluative (mandatory) / Non-evaluative (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2008 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: 12207-2008	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)	Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of -5 / +10% for PTO power > 35hp -7.5/+10% for PTO power ≤ 35 hp	39.0(D)	39.8	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	39.0(D)	38.6	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	280(D)	276	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	195(D)	212.5	Yes
e)	Back-up torque, percent	Non Evaluative	7 percent, min.	10(D)	18.91	Yes



T-834/1343/2012	JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)
-----------------	---

1	2	3	4	5	6	7	
f)	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)	116	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.	118(D)	86	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions.	3.09 (R)	1.87	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 metre (R)	0.39	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 with ballast	21.10 (R)	22.05	Yes	
				24.19 (D)			
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast	13.51 (R)	15.44	Yes	
				15.50 (D)			
c)	Maximum drawbar power without/ ballast, (kW).	Evaluative	Min. 80% of PTO power as referred in 16.1.1 (a) of PTO performance	31.8 (R)	34.0	Yes	
				31.2 (D)			
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	110 (D)	86	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%]	17.5 (D)	17.37	Yes
	2)	With the standard frame	Evaluative	The lift capacity should at least be 18 kg/PTO hp. and it should be 16 kg/engine hp where the tractor is not provided with a PTO shaft	12.9 (D)	13.83	Yes
9.55 (R)							



T-834/1343/2012	JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)
-----------------	---

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	[Tolerance of plus 5 mm]	50 (D)	02	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)	8.21 to 7.74	Yes
	2) Hot brake	Evaluative	10	10 (R)	8.20	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	241 to 249	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)	82	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	98 (R)	95	Yes
16.1.6 Amplitude of mechanical vibrations at :						
	1) Left foot rest	Non Evaluative	100 microns (max)	100 (R)	100	Yes
	2) Right foot rest		-do-		100	Yes
	3) Seat (with driver seated)		-do-		90	Yes
	4) Steering wheel		-do-		80	Yes
16.1.7 Haulage requirements :						
a)	Gross mass of the trailers, (tones):					
	1) Two wheel	Non Evaluative	--	5.0 (D)	5.0	Yes
	2) Four wheel		--	7.5 (D)	7.5	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):					
	1) Two wheel	Non Evaluative	--	4 to 6 (D)	4.06 to 4.11	Yes
	2) Four wheel		--	4 to 6 (D)	3.76 to 3.78	No
c)	Fuel consumption (ml/km/tonne):					
	1) Two wheel	Non Evaluative	--	30 to 50 (D)	48.7 to 49.26	Yes
	2) Four wheel		--	30 to 50 (D)	35.3 to 35.5	Yes



T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

1	2	3	4	5	6	7
16.1.8	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 ingress of water and/or mud (R)	No ingress of mud and / or water was observed	Yes
	1) Clutch assembly	-do-				
	2) Brake housings	-do-				
3) Front axle hubs	-do-					
16.1.9	Safety features :					
a)	Guards against moving and hot parts	Evaluative	As per CMVR	At present no requirements	—	--
b)	Lighting arrangement	Evaluative	As per CMVR	--	Provided	Yes
16.1.10	Labelling of tractors (Provision of labelling plate):					
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--	John Deere	Yes
2)	Model	Evaluative		--	5060 E V2	Yes
3)	Year of manufacture	Evaluative		--	BA-B (January,2011)	Yes
4)	Engine serial number	Evaluative		--	PY3029H00 1380	Yes
5)	Chassis serial number	Evaluative		--	1PY5060EC BA000004	Yes
6)	Declaration of PTO power, kW (hp)	Evaluative		--	39.0 (53.02)	Yes
16.1.11	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	106.62	106.49 to 106.51	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.32	0.090 to 0.117	Yes
(c)	Ring end gap (mm):					
-	Top comp. ring.	Evaluative	-do-	0.75	0.55	Yes
-	2 nd comp. ring.		-do-	2.00	1.45 to 1.50	Yes
-	Oil ring.		-do-	0.75	0.55 to 0.60	Yes
(d)	Ring groove clearance (mm):					
-	Top comp. ring.		-do-	--	Taper Rings	--
-	2 nd comp. ring.		-do-	0.25	0.071 to 0.074	Yes
-	Oil ring.		-do-	0.92	0.083 to 0.094	Yes



T-834/1343/2012	JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)
-----------------	---

1	2	3	4	5	6	7
(e)	Clearance of main bearings (mm):					
	- Diametrical clearance	Evaluative	-do-	0.32	0.106 to 0.166	Yes
	- Crankshaft end float	Evaluative		0.38	0.13	Yes
(f)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.32	0.087 to 0.115	Yes
	- Axial	Evaluative	-do-	0.38	0.30	Yes
(g)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.80	0.21 to 0.23	Yes
(h)	Clearance between center pin and bush, (mm)	Non Evaluative	-do-	0.80	0.03 to 0.04	Yes

16.1.12 CATEGORY OF BREAKDOWNS / DEFECTS :					
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	As observed	Whether meets the requirement (Yes/No.)
1.	Critical breakdown	Evaluative	No critical breakdown	None	Yes
2.	Major breakdowns	Evaluative	Not more than two and neither of them should be repetitive in nature.	None	Yes
3.	Minor breakdowns	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:12207-2008:				
S. No.	Characteristic	Requirements as per IS: 12207-2008	As observed	Whether meets the requirement (Yes/No.)
1	2	3	4	5
1	Air cleaner oil pull over, max. oil pull over (%)	0.25% (max.)	Dry type air cleaner provided	Not applicable
2.	Seating requirements	Should meet the requirements of IS: 12343-1998.	Does not meet the requirement	No
3.	Fitment of ROPS	With a provision for fitment of ROPS. If ROPS fitted it should meet the requirement of IS: 11821-1992.	Provision given ROPS not fitted	YES Not applicable
4.	Technical requirements for PTO shaft	Should meet the requirements of IS: 4931 -1995.	Does not meet the requirement	No



T-834/1343/2012	JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)
-----------------	---

1	2	3	4	5
5.	Dimensions of three point linkage	Should meet the requirements of IS: 4468 (Part-I)-1997.	Does not meet the requirement	No
6.	Specifications of linkage drawbar	Should meet the requirements of IS: 12953-1990.	Meets the requirement	Yes
7.	Specification of swinging drawbars	Should meet the requirements of IS: 12362 (Part 3) -1994.	Not provided	Not applicable
8.	Accessories	Trailer hitch, front tow hook, linkage drawbar may be provided.	Front towing hitch not provided	No

16.3 Conformity with following IS:

- i) Guide lines for declaration of power and specific fuel consumption and labelling 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 - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468 (Part-I):1997/ISO 730-1:1994 (Reaffirmed in March, 2007)] : **Does not conform**
- 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 (Reaffirmed in March, 2009)] : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : [IS 12239(PT-1) 1996/ISO 4254-1:1989 (Reaffirmed in March, 2007)] : **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)] : **Does not conform**
- viii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) [(IS 12239 (PT-2) 1999) (Reaffirmed in March, 2009)] : **Does not conform**



T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) [(IS: 8133 – 1983) (Reaffirmed in March, 2009)] : **Conforms**
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads [(IS: 14683-1999) (Reaffirmed in March, 2009)] : **Conforms**

16.4 Salient Observations:

16.4.1 Laboratory tests:

16.4.1.1 PTO Performance:

- i) The backup torque is 18.9 %.
- ii) The specific fuel consumption corresponding to maximum Power was measured as 276 g/kWh against the declaration of 280 g/kWh and meets the requirements of IS: 12207-2008 with regard to tolerance.
- iii) The percentage drop in maximum power during natural ambient and high ambient condition was observed as 5.3 %, which was considered on higher side. This should be looked into for necessary corrective action.

16.4.1.3 Three Point Linkage:

- i) Diameter of hole for upper and lower hitch point meets the requirements of Cat-II whereas the width of ball has been provided as per Cat-I. This should be looked into for necessary corrective action.
- ii) Some of the parameters conform to Cat. I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

16.4.1.4 Linkage Drawbar:

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

16.4.1.5 Power take-off shaft:

The dimension "dØ" and "h" of the PTO shaft does not meet the requirements of IS: 4931-1995. This should be looked into for necessary corrective action.

16.4.1.6 Operator's seat:

- i) The length and width of seat does not meet the requirement of IS: 12343-1988. This should be looked into for necessary corrective action.

16.4.1.7 Location and operation of operator's control:

Working clearance around the hydraulic position control lever does not meet the requirement of the IS: 12239 (Part-2)-1996. This should be looked into for necessary corrective action.

16.4.1.8 Symbols of operator's controls and other displays:

Some of the controls / display such as grease lubricant frequency, oil lubricant type & frequency are not identifiable with the symbols as per IS: 6283 (Part 1&2)-1998. This needs to be looked into for necessary corrective action.



T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

16.4.2 Field performance:

- 16.4.2.1**
- i) The average area covered in disc ploughing operation with recommended size of plough was recorded in the range of 0.286 to 0.296 ha/h. Keeping in view the PTO power of the tractor, the area coverage is considered less hence the recommended size of the plough may be reviewed.
 - ii) The average area covered in rotavation operation with recommended size of rotavator was recorded in the range of 0.710 to 0.728 ha/h. Keeping in view the PTO power of the tractor, the area coverage is considered less hence the recommended size of the rotavator may be reviewed.

16.4.2.2 Wetland operation:

- i) No ingress of mud/or water was noticed during puddling operation of the tractor. Hence, It meets the requirements of IS: 11082-1984 (Technical requirements of agricultural tractors for wetland operation). The tractor is suitable for wetland operation (Puddling).

16.4.2.3 Haulage performance:

- (i) The distance travelled / litre of fuel consumption with two and four wheel trailer was observed as 4.06 to 4.11 & 3.76 to 3.78 km/l against the declaration of 4.00 to 6.00 km/l. This does not meet the requirement of IS: 12207-2008 and therefore, should be looked into for necessary corrective action.

16.5 Maintenance / Service problems:

No noticeable maintenance and service problems 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 as per relevant Indian Standards:

- i) Provision of spark arresting device in exhaust system.
- ii) "Minimum cautionary notice" as per clause 11.2 of IS:12239 (part-2)-1999
- iii) Provision of Master shield for PTO shaft
- iv) The working clearance around hydraulic position control lever does not meet the requirement of IS: 12239 (part-2)-1999.
- v) Provision of front tow hook.

16.7 Adequacy of Literature:

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

- a) Operator's manual (For 5060E model tractors)
- b) Part's catalogue 5060E
- c) Technical manual Part I (For 5055E, 5060E V2, 5065E & 5075E model tractors)
- d) Technical Manual Part II for Engine operation, Tests and Adjustments (For 5055E, 5060E, 5065E V2 & 5075E model tractors)




T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

- 16.7.2 The supplied literature was found adequate; however, this literature should be brought out in national as well as other regional languages of India for guidance of users.

TESTING AUTHORITY:


R.K.NEMA
AGRICULTURAL ENGINEER


P..K. VERMA
SENIOR AGRICULTURAL ENGINEER


V.N. KALE
DIRECTOR

17. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
17.1	16.4.1.1(iii)	We will take necessary action to identify the root cause.
17.2	16.4.1.3 & 16.4.1.4	Most of the Indian customers use implements fitted with pins of bigger size. Hence, we have to provide with balls suiting the pins (Cat-II) though the other parameters call for conformity with Cat-I.
17.3	16.4.1.5	We have taken corrective action and will be implemented on production tractors.
17.4	16.4.1.6	Shall be taken up with operator station changes.
17.5	16.4.1.8	We have taken corrective action and will be implemented on production tractors.
17.6	16.4.2.3(i)	We will take necessary action to identify the root cause.



T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

T-8

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

S. No.	Item	Disc Plough	Rotavator
1.	Make	Field King	Green System
2.	Type	Mounted	Mounted
3.	No. of discs / blades	Three	42
4.	Type of discs / blades	Plain Concave	Hatchet
5.	Size of discs / blades, (mm)	525	170 x 140 x 5
6.	Spacing of discs / flanges, (mm)	520	245
7.	Lower hitch point span, (mm)	855	870
8.	Mast height, (mm)	440	470
9.	Overall dimensions, (mm):		
	- Length	2030	1150
	- Width	1750	1950
	- Height	1070	1040
10.	Gross mass, (kg)	365	490

ANNEXURE – II**BRIEF SPECIFICATION OF FULL CAGE WHEEL**

S. No.	Items	Specification
1.	Type	Full cage wheel
2.	Dia, (mm)	1270
3.	Width, (mm)	860
4.	No. and types of lugs	24, Straight lugs made of M.S. angle section welded to angle iron frame
5.	Size of angle section, (mm)	50 x 50 x 5
6.	Length of lugs, (mm)	415
7.	Spacing of lugs, (mm)	320
8.	Weight of each cage wheels (kg)	145



T-834/1343/2012

JOHN DEERE, 5060E V2 TRACTOR – Commercial (Initial)

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

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	–
2.	PTO performance test	12.62
3.	Power lift and hydraulic pump performance test	2.45
4.	Drawbar performance test	13.67
5.	Turning ability	0.1
6.	Location of centre of gravity	0.2
7.	Operator's field of vision	0.1
8.	Brake test	2.0
9.	Noise measurement	1.25
10.	Mechanical vibration test	1.0
11.	Theoretical speed test	0.70
B.	FIELD TEST:	
1.	Disc ploughing	10.2
2.	Rotavation	10.5
3.	Puddling (including 5.0 hours water proof test)	15.2
C.	HAULAGE TEST:	8.91
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	8.59
	TOTAL:	87.5