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COMMERCIAL TEST REPORT (Variant)

Lk[;k **/ No.** : **T- 1273/1800/2019**
ekg **/ Month** : **October, 2019**

(;g ijh{k.k fjikVZ **31/10/2022** rd oS/k gS**I@ THIS TEST REPORT IS VALID UPTO :31/10/2022)**

JOHN DEERE 3036EN TRACTOR

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GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
DEPARTMENT OF AGRICULTURAL, COOPERATION & FARMER'S WELFARE,
MECHANIZATION & TECHNOLOGY DIVISION
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CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE
(An ISO 9001: 2015 Certified Institute)
TRACTOR NAGAR, BUDNI (M.P.) 466445

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Manufacturer	:	**M/s. John Deere India Pvt. Ltd.** Gat No.166 - 167 & 271 - 291, Off Pune-Nagar Road, Sanaswadi, Pune - 412 208 (M.S.)
Location of other manufacturing plant	:	**M/s. John Deere India Pvt. Ltd.** Survey No.501, Village-Khatamba Jamgod, Dewas Bhopal Highway, Dewas (Madhya Pradesh) 455115

Month: October	Test Report No. T- 1273/1800/2019	Year: 2019

GOVERNMENT OF INDIA
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Type of Test	:	**COMMERCIAL (Variant)**
Test code/Procedure	:	IS: 5994 -1998 (Reaffirmed in 2014) and IS: 12207-2019
Period of Test	:	**October, 2019**
Test Report No	:	**T- 1273/1800/2019**
Month/Year	:	**October, 2019**

i) The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.

ii) The data given in this report pertain to the particular machine was selected randomly from production line by the testing authority for test.

iii) The results presented in this report do not in any way attribute to the durability of the machine.

iv) This report should not be reproduced in part or full without prior permission of the Director, Central Farm Machinery Training and Testing Institute, Budni (M.P.)

v) This is a Variant test report and, should be read in conjunction with the Test Report of base model i.e. **"John Deere 3028EN Tractor"** bearing report **No. T- 1254/1781/2019** released in **July, 2019.**

Sl. No	Units	Conversion Factor
1.	**Force:**	
	1 kgf	9.80665 N
		2.20462 lbf
2.	**Power:**	
	1 Mechanical power	1.01387metric horse power
		745.7 W
	1 Metric horse power	735.5 W
	1 kW	1.35962 Metric horse power
3.	**Pressure:**	
	1 psi	6.895 kPa
	1 kgf/cm^2	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm^2
	1 mm of Hg	1.3332 m-bar

A B B R E V I A T I O N S	
Apa	As per applicant
TDC	Top Dead Centre
IS	Indian Standard
LHS/RHS	Left Hand Side/ Right Hand Side
Hg	Mercury
Temp.	Temperature
N.R.	Not recorded
Rpm	Revolutions per minute
O.D/I.D	Outer diameter/ Inner diameter
N.A.	Not available/ Not applicable
PTO	Power take-off
R.H.	Relative Humidity

C O N T E N T S

Manufacturer	:	**M/s. John Deere India Pvt. Ltd.** Gat No . 166 - 167 & 271 - 291, Off Pune-Nagar Road, Sanaswadi, Pune - 412 208 (M.S.)
Location of other manufacturing plant	:	**M/s. John Deere India Pvt. Ltd.** 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 and test carried out	:	At manufacturer's works
Duration of said running-in (h):		
- Engine	:	12
- Transmission	:	08
Method of Selection	:	The test sample was selected randomly out of five tractors from the production line by the representative of testing authority.

1. SCOPE OF TEST

The **"John Deere 3028EN**" tractor had undergone "Commercial Testing" at this Institute and a test report bearing **No. T-1254/1781/2019 was released in July, 2019.** Now the applicant has submitted an application vide letter No. Nil dated 24.07.2018 for testing of "**John Deere 3036EN**" tractor as a Variant of **"John Deere 3028EN**" tractor.

The applicant having enclosed a list of following differences in the technical specifications between **"John Deere 3028EN**" and "**John Deere 3036EN**" tractor and requested to test the "**John Deere 3036EN**" tractor as a variant of **"John Deere 3028EN**" tractor.

The major features of Base model and Variant model are listed below:

S.No.	Parameters	Base Model T-1254/1781/2019,(July,2019)	Variant Model
1	2	3	4
1.	**Tractor:**		
	Make	John Deere	John Deere
	Model	3028EN	3036EN
2.	**Engine:**		
	Make	Yanmar Co. Ltd Japan	Yanmar Co. Ltd Japan
	Model	3TNV82A-KJPT	3TNV88-KJPT
	Engine speed (Manufacturer's recommended production setting), (rpm):		
	- Maximum speed at no load,	2910 to 3010	2975 to 3025
	- Low idle speed	900 to 1000	925 to 975
	- Speed at maximum torque	1150 to 1250	1200
3.	**Cylinder & Cylinder Head:**		
	Bore/stroke, (mm)	82/84	88/90
	Capacity as specified by the applicant, (cc)	1331	1642
	Compression ratio	19.2±0.5	19.1±0.5

1	2	3	4
4.	**Fuel system:**		
	Injectors:		
	- Make	Yanmar Co. Ltd Japan	Yanmar Co. Ltd Japan
	- Holder Number	VBAM	VBAM
	- Nozzle number	162P165VAE1, YDLLA6D29	162P185VAE1, YDLLA
	- Injection timing	16.3 ± 1^0 before TDC	17 ± 1^0 before TDC
5.	**Masses, (kg) :**		
	Unballast mass of tractor, (Front/Rear/Total), (Kg)	480/695/1175	486/665/1151
6.	**Overall dimensions , (mm)**		
	-Length	2840	2965
	-Width	1090	1105
	-Height	495	505
	-Minimum ground clearance, (mm)	290 (Below transmission oil drain plug)	287 (Below drain plug of transmission housing)
7.	**PTO Performance :**		
	Declared maximum PTO power, (kw)	17.2	20.5
	Specific fuel consumption corresponding to maximum power, (g/kWh)	294	280
	Maximum equivalent crankshaft torque, (Nm)	86.9	108.4
	Equivalent crankshaft torque at maximum power, (Nm)	69.9	88.3

Subsequent to the examination of the case in light of table-2 & 3 of Indian Standard IS 12207-2019, the following tests were considered to be carried out :

- Specification checking
- Nominal speed test
- Two hour maximum PTO power performance test, under natural ambient condition

2. FUEL AND LUBRICANTS

2.1 Fuel : The high-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of **0.836 gm/cc** at 15^oC was used.

2.2 Lubricants:

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine oil	SAE 15W-40	As recommended
2.	Transmission, Hydraulic, Steering and brake systems oil	John Deere Hy Guard	Oil originally filled in the tractor was not changed
3.	Grease	John Deere high temperature/ Extreme pressure / Non-clay grease	Servo grease MP

3. ESSENTIAL TEST

3.1. SPECIFICATIONS

			Base Model	Variant Model
3.1.1	**Tractor:**			
	Make	:	John Deere	John Deere
	Model	:	3028E N	3036EN
	Variants, if any	:	None	None
	Type	:	Four wheeled, four wheel drive (4WD), Standard Agricultural Tractor.	
	Month & Year of manufacture	:	BL-H (November,2017)	09 & 19 (September, 2019)
	Chassis number	:	1PY3028EEHA000001	1PY3036ECKA004728
	Country of Origin	:	India	India
3.1.2	**Engine:**			
	Make	:	Yanmar Co. Ltd Japan	Yanmar Co. Ltd Japan
	Model	:	3TNV82A-KJPT	3TNV88-KJPT
	Type	:	Four stroke, liquid cooled, direct injection, natural aspirated, diesel engine.	
	Serial number	:	CH3W13DE5446	CH3W17D218375
	Engine speed (Manufacturer's recommended production setting), (rpm):			
	- Maximum speed at no load,	:	2910 to 3010	2975 to 3025
	- Low idle speed	:	900 to 1000	925 to 975
	- Speed at maximum torque	:	1150 to 1250	1200
	Rated speed, (rpm):			
	- For PTO use	:	2800	2800
	- For drawbar use	:	2800	2800
3.1.3	**Cylinder & Cylinder Head:**			
	Number	:	Three	Three
	Disposition	:	Vertical, inline	Vertical, inline
	Bore/stroke, (mm)	:	82/84	88/90
	Capacity as specified by the applicant, (cc)	:	1331	1642
	Compression ratio	:	19.2±0.5	19.1±0.5
	Type of cylinder head	:	Monoblock	Monoblock
	Type of cylinder liners	:	Wet, Non- replaceable	
	Type of combustion chamber	:	Cavity on piston crown	
	Arrangement of valves	:	Inline, Overhead	Inline, Overhead
	Valve clearance (cold):			
	- Inlet valve, (mm)	:	0.15 to 0.25	0.15 to 0.25
	- Exhaust valve, (mm)	:	0.15 to 0.25	0.15 to 0.25
3. 1.4	**Fuel System:**			
	Type of fuel feed system	:	Gravity and force feed	Gravity and force feed
3. 1.4.1	**Fuel tank:**			
	Capacity, (l)	:	32.0	29.9
	Location	:	Above the bell housing under the bonnet.	

			Base Model	Variant Model
	Provision for draining of sediments/water	:	Provided	
	Material of fuel tank	:	Plastic-PELLD (apa)	
3. 1.4.2	**Water separator:**			
	Make	:	Taiyo Giken	
	Type	:	Inverted funnel gravity separation.	
	Location	:	In between fuel tank and fuel feed pump on RHS of engine.	
	Capacity, (l)	:	0.25	0.27
3. 1.4.3	**Fuel feed pump:**			
	Make	:	U-Shin	
	Type	:	Diaphragm	
	Model/Group combination No.	:	YMR No. 119225-52102	
	Provision of sediment bowl	:	**Not provide**	
	Method of drive	:	Electrically operated	
3. 1.4.4	**Fuel filters:**			
	Make	:	Nippon Rokaki (apa)	
	Model/Group combination No	:	119802-55801	
	Number(s)	:	One	
	Types of elements	:	Full flow, spin – on though away paper element.	
	Capacity of final stage filter, (l)	:	0.35	
3.1.4.5	**Fuel Injection pump:**			
	Make	:	Yanmar Co. Ltd Japan	Yanmar Co. Ltd Japan
	Model/Group Combination No.	:	W1985251410 C001	729235-51320 C001
	Type	:	Mono, plunger	Mono, plunger
	Serial number	:	20160705	20190325
	Method of drive	:	Through timing gears	Through timing gears
3.1.4.6	**Fuel injector(s):**			
	Make	:	Yanmar Co. Ltd Japan	Yanmar Co. Ltd Japan
	Nozzle holder no.	:	VBAM	VBAM
	Nozzle no.		162P165VAE1, YDLLA6D29	162P185VAE1, YDLLA
	Type	:	Multihole (Four holes)	Multihole (Five holes)
	Manufacturer's production pressure setting, (MPa)	:	21.575±0.981	21.575±0.981
	Injection timing	:	16.3 ± 1 degrees BTDC	17 ± 1 degrees BTDC
	Firing order	:	1-3-2	1-3-2
3.1.4.7	**Governor:**			
	Make	:	Yanmar Co. Ltd Japan	Yanmar Co. Ltd Japan
	Model/Group Combination No.	:	Inbuilt with fuel injection pump	
	Type	:	Mechanical, centrifugal, variable speed	
	Rated engine speed, (rpm)	:	2800	2800
	Governed range of engine speed, (rpm)	:	900 to 3010	925 to 3075

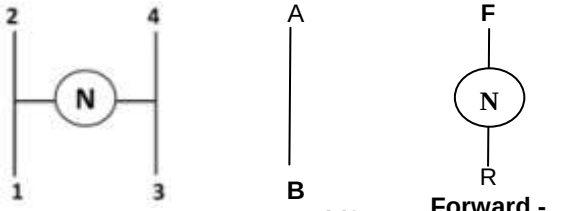
			Base Model	Variant Model
3.1.5	**Air Intake System:**			
3.1.5.1	**Pre-cleaner**	:	**Not provided**	
3.1.5.2	**Air cleaner:**			
	Make	:	Donaldson	
	Type	:	Dry	
	Location	:	In front of radiator, under the bonnet.	
	Range of suction pressure at maximum power, (kPa)	:	3.4 to 3.7	1.7
	Details of element:		**Primary**	**Secondary**
	- Size (OD/ID), mm	:	105.3/63.5	59.0/45.0
	- Length, (mm)	:	265	260
	- Type	:	Cellulose fiber paper	Cellulose fiber paper
	Provision of dust unloading valve	:	Provided	
	Vacuum indicator & its range (mm of water/mm of hg)	:	Provided	
	Maintenance schedule	:	Replace primary and secondary element after every 1000 hrs. of operation.	
3.1.6	**Exhaust System:**			
	Type of silencer	:	Downdraft (Cylindrical)	
	Position of silencer outlet with respect to SIP, (mm):			
	- Downward	:	665	595
	- Longitudinal	:	1800	1800
	- Lateral	:	245 (on LHS)	245 (on (LHS)
	Range of exhaust gas pressure at maximum power, (kPa)	:	6.4 to 6.7	NR
	Provision of spark arresting device	:	**None**	**None**
	Provision against entry of rain water	:	Horizontal, downdraft opening.	
3.1.7	**Lubricating system:**			
	Type	:	Forced feed-cum-splash	
	Oil sump capacity, (l)	:	4.0	3.9
	Total lub oil capacity, (l)	:	4.2	4.1
	Oil change period	:	First change after 100 hours and subsequently after every 250 hours of operation.	
	Cooling device, (if any)	:	**None**	
	Filters:			
	Make	:	John Deere	
	Type	:	Full flow, spin-on through away paper element.	
	Number	:	One	
	Pump:			
	Type	:	Trochoid pump	
	Method of drive	:	Through timing gears	
	Pressure release setting,(kPa)	:	290 (apa)	
3.1.8	**Cooling system:**			
	Type	:	Force circulation of coolant and water	
	Coolant as recommended	:	Ethylene glycol	
	Coolant and water ratio	:	20:80	

			Base Model	Variant Model
	Details of Pump	:	Centrifugal, open impeller of 60.0 mm diameter having six numbers of vanes and driven through crankshaft pulley by a cogged 'V'-belt common to alternator.	
	Details of fan	:	Suction type having seven polypropylene blades of 380.0 mm diameter and mounted on water pump shaft.	
	Means of temperature control	:	Thermostat	Thermostat
	Bare radiator capacity, (l)	:	2.0	2.0
	Expansion flask capacity, (l)	:	0.8	0.8
	Total coolant capacity, (l)	:	4.8	4.9
	Radiator cap pressure, (kPa)	:	88	88
3.1.9	**Starting System:**			
	Type	:	12V, DC, Electrical	
	Aid for cold starting	:	None	
	Any other device provided for easy starting	:	None	
3.1.10	**Electrical System:**			
3.1.10.1	**Battery:**			
	Make and model	:	Exide & FEF1-55D23L (MF)	Exide & FEF3-55D23L (MF)
	Type	:	Lead acid	
	Capacity and rating	:	12V, 45 Ah at 20 hours discharge rate	
	Location	:	In-front of radiator, under the bonnet.	
3.1.10.2	**Starter:**			
	Make	:	Denso	
	Model	:	YM129129-77010	
	Type	:	Pre-engaging, solenoid operated	
	Power rating, (kW)	:	12V, 1.2 kW	
3.1.10.3	**Generator:**		**Base Model**	**Variant Model**
	Make	:	Bosch, India	SEG
	Model	:	F002 G90514	SJ33958
	Type	:	Alternator	
	Output rating	:	12V, 40 A	12V, 50 A
	Method of drive	:	Driven through crank shaft pulley by a cogged 'V'-belt common to water pump.	
3.1.10.4	**Voltage regulator**	:	In-built in alternator	

3.1.10.5 Details of lights :

Description	No. & capacity of bulbs	Height of the centre of beam above ground level, (mm)		Size of beam, (mm)		Distance between centre of the beam and outside edge of tractor at standard rear track setting, (mm)	
		Base model	**Variant model**	**Base model**	**Variant model**	**Base model**	**Variant model**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Front Lights:							
- Head lights	2,12V,60/55W	915	915	145 x 80	145 x 80	415	415
- Parking lights	2, 12V, 5W	1160	1160	110 x 35	110 x 35	85	85
- Turn Indicators-cum-Hazard lights	2, 12V, 21W	1195	1195	110 x 35	110 x 35	85	85
Rear lights:							
-Tail light-cum-brake light	2, 12V, 21/5W	1160	1160	110 x 35	110 x 35	85	85
- Turn Indicators-cum-Hazard lights	2,12V, 21W	1195	1195	110 x 35	110 x 35	85	85
- Plough light (on RHS mudguard)	1, 12 V, 55 W	1230	1230	130 x 70	130 x 70	310	310
- Reflectors (Red)	2	1105	1105	100 x 40	100 x 40	90	90
-Registration plate Light (RHS)	1, 12V, 5W	1050	1050	30 ϕ	30 ϕ	150	150

3.1.11 Instrument panel details:		**Base Model**	**Variant model**
i)	Engine speed-cum-digital cumulative digital run-hour-meter (0-35 x100 rpm)	Provided	Provided
ii)	Coolant temperature gauge (with colour zones)	Provided	Provided
iii)	Fuel level gauge (with colour zones)	Provided	Provided
iv)	Lubricating oil pressure indicator lamp	Provided	Provided
v)	Light switch (Rotary type)	Provided	Provided
vi)	Main switch (key-turn type)	Provided	Provided
vii)	Horn push button	Provided	Provided
viii)	Air cleaner clogging indicator	Provided	Provided
ix)	Battery charging warning indicator lamp	Provided	Provided
x)	Turn signal indicator & hazard Light indicator	Provided	Provided
xi)	Turning indicator switch	Provided	Provided
xii)	Head light (long beam) indicator lamp	Provided	Provided
xiii)	Hazard warning switch	Provided	Provided
xiv)	Hand accelerator lever.	Provided	Provided
xv)	Forward – reverse gear shifting lever	Provided	Provided
xvi)	Steering control wheel.	Provided	Provided
xvii)	Rear view mirror	Provided	Provided

			Base Model	Variant Model
3.1.12	**Transmission System:**			
3.1.12.1	**Clutch:**			
	Make	:	LUK, India	
	Type	:	Single, dry friction plates	
	No. of friction plate(s)	:	One	
	Size, (OD/ID),(mm)	:	240/160 ϕ	
	Material of clutch lining	:	Organic 8402 (apa)	
	Method of operation		By depressing the clutch pedal fully, provided on LHS of operator's seat.	
3.1.12.2	**Gear box :**			
	Make	:	John Deere	
	Type	:	Mechanical, constant mesh gears	
	Gear shifting pattern in case of base and variant models	:	 **Gear shift lever** **Range shift lever** **Forward - Reverse gear lever**	
	Location of gear shifting levers	:	a) Main gear shifting lever is provided on RHS of the operator's seat. b) Range shift lever is provided on LHS of the operator's seat. c) Forward - Reverse gear lever is provided on LHS of dashboard.	
	No. of speeds:			
	- Forward	:	08	08
	- Reverse	:	08	08
	Oil capacity, (l)	:	36.0	35.1
			Common with differential, rear axle, final drive, hydraulic, brake & steering systems.	
	Oil changing period	:	First change after 1100 hours thereafter every 1250 hours of operation	
3.1.12.3	**Range of nominal Speed, (Kmph) :**			
	- Forward	:	1.57 to 19.31	1.57 to 19.30
	- Reverse	:	1.64 to 20.09	1.65 to 20.14
3.1.12.4	**Differential:**			
	Type	:	Crown wheel and bevel pinion with differential unit accommodated inside the differential housing.	
	Reduction through crown wheel and pinion	:	4.556**:** 1 (41/9T)	
	Differential lock :			
	Type	:	Pin type	
	Location	:	On RHS of operator's seat	
	Method of operation	:	By pressing a pedal provided on RHS of operator's seat.	

			Base Model	Variant Model
3.1.12.5	**Rear axle and Final Drive :**			
	Type	:	Bull gear pinion	
	Reduction through final drive	:	6.273 : 1 (69/11T)	
	Oil capacity of final drive, (l)	:	36.0	35.1
			Common with gearbox, differential, hydraulic, brake & steering systems.	
	Oil changing period	:	First change after 1100 hrs subsequently after every 1250 hours of operation.	
3.1.12.6	**Front differential:**			
	Type	:	Crown wheel and bevel pinion with differential unit accommodated inside the center of front axle housing.	
	Reduction through crown wheel and pinion	:	3.36 :1 (37/11T)	
	Oil capacity of final drive, (l)	:	4.0	3.9
			Common with front axle and front final drive.	
	Oil changing period	:	First change after 100 hrs subsequently after every 600 hours of operation.	
	Differential lock	:	**Not provided**	
3.1.12.7	**Front axle and front final drive :**			
	Make		Dana	
	Type		Crown wheel and bevel pinion accommodated inside the front axle housing (near front wheel hub), Portal bevel gear.	
	Reduction through final drive		3.42:1 (41/12T)	
	Oil capacity of final drive, (l)	:	4.0	3.9
			Common with front differential.	
	Oil changing period	:	First change after 100 hrs subsequently after every 600 hours of operation.	
3.1.13	**Power lift (Hydraulic System):**			
	Make	:	Mita	
	Identification mark	:	222623	375535M
	Type	:	Open centre, live, ADDC	
	No. and type of cylinder	:	One, single acting	
	Type of linkage lock for transport	:	Mechanical	
	Hydraulic pump:			
	-Make	:	Dynamatics	
	-Type	:	External gear type	
	-Location & drive	:	On LHS of engine & through timing gears.	
	No. & type of filter(s)	:	Two, One suction strainer & one full flow spin-on throw away type filter.	
	Hydraulic oil capacity, (l)	:	36.0	35.1
			Common with gearbox, differential, hydraulic, brake & steering systems.	

Base Model | **Variant Model**

Oil change period : First change after 1100 hrs subsequently after every 1250 hours of operation.

Provision for external tapping : Provided

Details of control levers:

Sl. No.	Control level	Functions
i)	Position control lever	To control depth of the implement.
ii)	Draft control lever	To control the draft of the implement.
iii)	Auxiliary knob on distributor	
iv)	Rate of drop knob	

Method of draft sensing : Through top link

3.1.13.1 Three-point linkage:

Sl. No.	Observations		As per IS: 4468-(Part-1) -1997, **(Cat.I / Cat.I N**), (mm)	As measured, (mm)		Remarks in case of **variant model**
				Base Model	**Variant Model**	
1	**2**		**3**	**4 (a)**	**4 (b)**	**5**
I.	**Upper hitch points:**					
	a)	Dia of hitch pin hole	19.30 to 19.50 / 19.30 to 19.51	19.43	19.40	Conforms to cat. 1N
	b)	Width of ball	44.0 (max.) / 44.0 (max.)	43.9	43.89	-do-
II.	**Lower hitch points:**					
	a)	Dia of hitch pin hole	22.40 to 22.65 / 22.40 to 22.73	22.46	22.61	-do-
	b)	Width of ball	34.8 to 35.0 / 34.8 to 35.0	34.9	34.43	-do-
III.	Lateral distance from lower hitch point to centre line of tractor		359 / 218	218	218	Conforms to cat. 1N
IV.	Lateral movement of lower hitch points		100 (min) / 50 (min)	130	150	-do-
V.	Distance from end of power take-off to centre of lower hitch point (lower links in horizontal position)		450 to 575 / 300 to 375	527	525	**Dose not Conforms to Cat. 1N**
VI.	Transport height (without force)		820 (min)/ 600 (min)	801	805	Conforms to Cat. 1N
VII.	Power range		560(min)/ 420 (min)	595	625	-do-
VIII.	Leveling adjustment		100 (min)/ 75 (min)	215	220	-do-
IX.	Lower hitch point tyre clearance		100 (min)/ 100 (min)	210	180	-do-
X.	Lower hitch point height		200(max)/ 200 (max)	155	180	-do-

3.1.13.2 Drawbar:

3.1.13.2.1 Linkage Drawbar {Refer Fig.1}:

Notation	As per IS: 12953-1990, (Cat.I) / (Cat.IN), (mm)	As measured, (mm)		Remarks in case of variant model
		Base Model	Variant Model	
1	2	3a	3b	4
A	683 ± 1.5 / 400 ± 1.5	400.5	400.5	Conforms to Cat. 1N
B	75 (min) / 75 (min)	76.4	76.4	Conforms to Cat. I & Cat. 1N
C	30 (min) / 30 (min)	31.9	32.0	--do--
D∅	21.79 to 22.0 / 21.79 to 22.0	21.9	22.0	--do--
E	39.0 (min) / 39.0 (min)	39.0	43.0	--do--
F∅	12.0 (min) / 12.0 (min)	12.0	12.0	--do--
G	15.0 (min) /15.0 (min)	15.3	15.1	--do--
H∅	25 ± 1 / 25 ± 1	25.4	25.0	--do--
J	80 ± 1.5 / 80 ± 1.5	80.1	80.0	--do--
No. of holes	05	05	05	Conforms to Cat. 1N

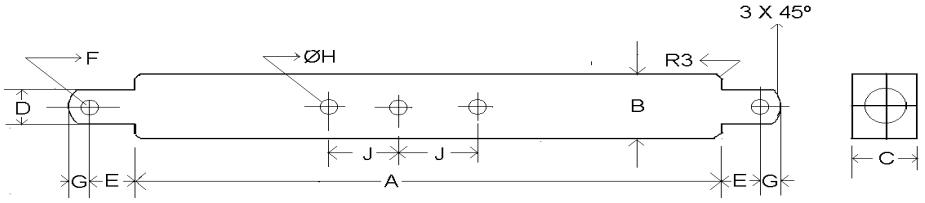


Fig. 1: DIMENSIONAL NOTATIONS FOR LINKAGE TYPE DRAWBAR

			Base Model	Variant Model
3.1.13.2.2	**Swinging drawbar**	:	**Not provided**	**Not provided**

3.1.14 Power take-off shaft:

Type	:	Type-I, Not Independent	
Method of engaging	:	By a hand lever provided on LHS of operator's seat.	
No. of shaft(s)	:	One	One
PTO speed corresponding to rated engine speed, (rpm)	:	607	607
Distance behind rear axle, (mm)	:	250	245
Engine to PTO speed ratio	:	4.615:1	4.615:1
Whether the PTO shaft is capable of transmitting the full power of engine	:	Yes	Yes

3.1.14.1 Specification of power take-off shaft:

Specification	As per IS: 4931-1995 (Type-I)	As observed		Remarks in case of **variant model**
		Base Model	**Variant Model**	
1	**2**	**3a**	**3b**	**4**
Nominal speed, (rpm)	540 ± 10	540 rpm of PTO shaft corresponds to 2492 rpm of engine.		Conforms
No. of splines	6	6	6	--do—
Direction of rotation	Clockwise	Clockwise	Clockwise	--do--
Location	The position of the centre of the end of PTO shaft shall be within 50 mm to right or left of the centre line of the tractor	Centrally located	Centrally located	Conforms
Dimensions, (mm) [See Fig. 2(a)]:				
D∅	34.79 ± 0.06	34.82	34.74	Conforms
d∅	28.91± 0.05	28.87	28.96	--do—
B∅	29.4 ± 0.1	29.46	29.45	--do—
A∅ (Optional)	8.3	NA	NA	--
W	8.69 - 0.09 - 0.16	8.66	8.69	--do—
a	7	7	7	--do—
b (optional)	25 ± 0.5	NA	NA	--
c	38	38	38	Conform
X	30°	30°	30°	--do—
B	76 (min)	88.0	87.0	--do—
h	450 to 675	505	506	--do—

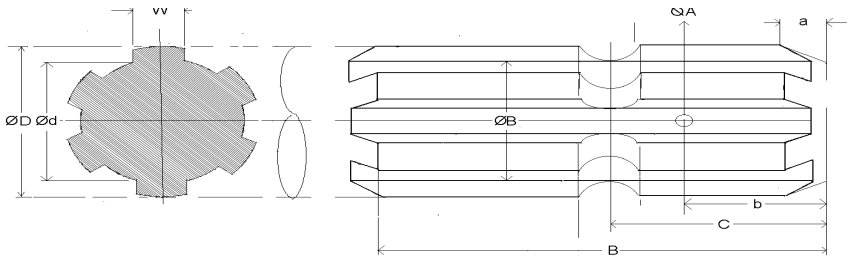


Fig. 2 (a): DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT

3.1.14.2 PTO Master Shield : **Base Model** | **Variant Model** **Provided**

Dimensions of PTO master shield for type I & II PTO (mm) [See Fig. 2 (b)]

Specification	As per IS 4931-1995	As observed		Remarks
		Base Model	Variant Model	
k	70 (min)	70	70	Conforms
m	125±5	120	125	Conforms
n	85±5	61	60	**Does not Conform**
p	285±5	230	235	**Does not Conform**
r	76(max.)	51	50	Conforms

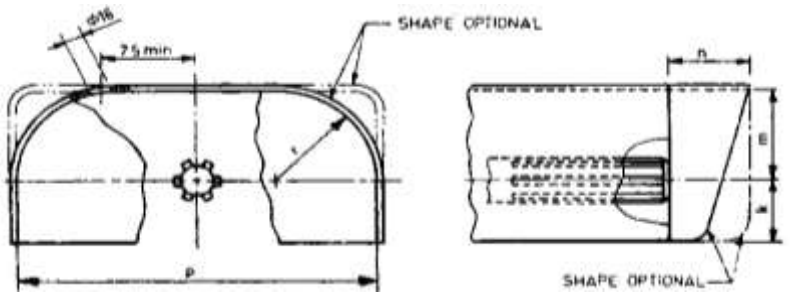


Fig.2 (b): DIMENSIONAL NOTATIONS POWER TAKE-OFF SHAFT MASTER SHIELD

			Base Model	Variant Model
3.1.15	**Towing hitch:**			
3.1.15.1	**Front**	:		
	Type	:		Clevis
	Location	:	**Not provided**	In front of the front axle frame.
	Height above ground level, (mm)	:		490
	Number of positions	:		01
	Type of adjustment	:		None
	Dia of pin hole, (mm)	:		60.3
	Width of clevis, (mm)	:		32.6
3.1.15.2	**Rear:**			
	Type	:	Clevis	Clevis
	Location	:	At rear of transmission housing.	
	Height above ground level, (mm)	:	332	344
	Number of positions	:	01	01
	Type of adjustment	:	None	None
	Distance of hitch point, (mm):			
	- From rear axle centre	:	355	340
	- From power take-off shaft end	:	250	100
	Dia of pin hole, (mm)	:	32.9	32.9
	Width of clevis, (mm)	:	65.0	64.2
3.1.16	**Steering:**			
	Make / Make of distributor	:	Danfoss	
	Type	:	Hydrostatic	
	Location	:	Inside console	
	Method of operation	:	Manual, by steering control wheel	
	Diameter of steering control wheel, (mm)		360	
	Make & type of pump	:	Dynamatic & Gear	
	Location	:	On LHS of engine	
	Method of drive	:	Through engine timing gears	
	Make ,type & number of hydraulic ram cylinder	:	NA, Double acting & One	
	Capacity, (l)	:	36.0	35.1
			Common with gear box, differential, rear axle & final drive, brake & hydraulic systems.	
	Oil change period		First change after 1100 hrs subsequently after every 1250 hours of operation.	

			Base Model	Variant Model
3.1.17	**Brakes:**			
3.1.17.1	**Service Brake:**			
	Make	:	John Deere (apa)	
	Type	:	Mechanical, Oil immersed disc brakes.	
	Location	:	On bull pinion shaft inside rear axle housing.	
	No. of friction disc(s)	:	Three (on each wheel side)	
	Area of liners, (cm^2)	:	583.5 (on each wheel side)	
	Material of liners	:	Paper lining (apa)	
	Method of operation	:	Independent or combined pedal operation by right foot.	
	Oil capacity, (l)	:	36.0	35.1
			Common with gear box, differential, rear axle & final drive, hydraulic & steering systems	
	Oil change period	:	First change after 1100 hours subsequently after every 1250 hours of operation.	
3.1.17.2	**Parking Brake:**			
	Type	:	Pawl & ratchet arrangement	
	Location & method of operation	:	By locking the service brake in position by hand lever provided below RHS of dashboard.	
3.1.18	**Wheel Equipment:**			
3.1.18.1	**Steered Wheel(s):**			
	Make	:	MRF shakti life	
	Number(s)	:	Two	
	Type of tyre(s)	:	Pneumatic, traction	
	Size	:	180/85 D12	
	Ply rating	:	4	
	Maximum permissible loading capacity of each tyre at 110 kPa pressure, (kgf)	:	220	
	Recommended inflation pressure, (kPa):			
	- for field work	:	110	
	- for transport	:	110	
	Standard track width, (mm)	:	900 **(std.)** & 925	900 **(std.)** & 925
	Method of changing track width	:	By reversing the wheel discs.	
	Make & size of wheel rim	:	WILP & 5JA x 12	WILPG & 4.50 E x 16
3.1.18.2	**Drive wheel(s):**			
	Make	:	MRF shakti life	
	Number(s)	:	Two	
	Type of tyre(s)	:	Pneumatic, traction	
	Size	:	8.3-24	
	Ply rating	:	8	
	Maximum permissible loading capacity of each tyre at 80 kPa inflation pressure, (kgf)	:	430	
	Recommended inflation pressure, (kPa):			
	- For field work	:	80	
	- For transport	:	80	
	Track width, (mm)	:	845 (std.), 865, 915 & 925	845 (std.), 865, 925 & 935

			Base Model	Variant Model
	Method of changing track width	:	By reversing wheel disc and changing the position of disc on offset rim lugs.	
	Make & size of wheel rim	:	WILP & W7 x 24	
3.1.18.3	**Wheel base, (mm)**	:	1570	
	Method of changing wheel base, if any, and range.	:	None	
3.1.19	**Operator's seat:**			
	Make	:	Harita seating system ltd.	
	Type	:	Cushioned	
	Type of suspension	:	Two helical coil springs	
	Type of dampening	:	None	
	Range of adjustment, (mm):			
	- Vertical	:	Nil	
	- Lateral	:	Nil	
	- Longitudinal	:	± 25	

3.1.20 Provision for safety and comfort of operator:

3.1.20.1 Conformity with IS: 12343 – 1998 (Reaffirmed in 2014) :

3.1.20.2 Conformity with IS: 6283 (Part 1 & 2)-1998 (Re-affirmed in March 2014):

All the controls are identifiable with symbols as per IS: 6283 (Part-1 & 2)-1998**(Re-affirmed in March 2014)**, **except the following:**

Base model	Variant model
The colour zone for engine revolution gauge has not been provided.	The colour zone for engine revolution gauge has not been provided.

3.1.20.3 Conformity with IS: 8133-1983 (Reaffirmed in 2014):

Location and movement of various controls meets the requirement of IS: 8133-1983.

3.1.20.4 Conformity with IS: 12239 (Part -1)- 1996 (Reaffirmed in October,2017):

Meets the requirements of IS: 12239 (Part-1)-1996 (Reaffirmed in **October,2017**), **except the following:**

i) Provision of spark arresting device in the exhaust system.	**i)** Spark arrester in the exhaust system is not provided.
---	**ii)** Subsequent steps should be provided.

3.1.20.5 Conformity with IS:12239 (Part-2)-1999 (Re-affirmed in October,2017) :

Meets the requirements of IS:12239 (Part-2)-1999, **except the following:**

Base model	Variant model
i) Minimum Cautionary notice as per clause 11.2 of above referred standard has not been provided.	**i)** Minimum Cautionary notice as per clause 11.2 of above referred standard has not been provided.
ii) The working clearance between position control and draft control lever has not been provided as per IS: 12239(Part-II) 1999.	--

3.1.20.6 Conformity with IS: 14683-1999 (Reaffirmed in March 2014):

Lighting meets the requirement of IS: 14683-1999 (Reaffirmed in March 2014):

3.1.20.7 Rear view mirror:

Rear view mirror has been provided

3.1.20.7 Slow moving emblem:

Slow moving emblem has been provided.

3.1.21 Mass of tractor, (Kg):		Base model	Variant model
- Front	:	480	486
- Rear	:	695	665
- Total	:	1175	1151

3.1.22 Over all dimensions, (mm):			
- Length	:	2840	2965
- Width	:	1090	1105
- Height (with exhaust pipe)	:	495	505
Minimum ground clearance	:	290 (Below transmission oil drain plug)	287 (Below drain plug of transmission housing)

3.1.23 Labelling of tractor as per IS: 10273-1987 (Reaffirmed in 2014):

Location of labelling plate:- The labelling plate is riveted on LHS at front axle support and provides the following information:

Name of Manufacturer	**John Deere India Pvt. Ltd. , Pune, (India)**
Make	John Deere
Model	3036 EN
Month & Year of manufacture	09,19 (September, 2019)
Engine Serial Number	CH3W17D218375
Chassis Serial Number	1PY3036ECKA004728
Maximum P.T.O Power, kW (hp)	20.5 (27.87)
Specific fuel consumption, g/kWh (g/hph)	280 (207)

3.1.24 Number of external lubricating points:		Base model	Variant model
- Oiling	:	Nil	Nil
- Grease cups	:	Nil	02
- Grease nipples	:	09	06

3.1.25 Colour of tractor:

Chassis & engine	:	Green
Bonnet & Mudguards	:	Green
Wheel discs & rims		Yellow

3.2 NOMINAL SPEED TEST

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when fitted with **8.30 - 24** size tires of **470 mm** radius index, (kmph)	Nominal speed at rated engine speed when fitted with **8.30 - 24** size tires of **470 mm** radius index, (kmph)	Variation in nominal speed (%) in case of **variant model**
		Base model	**Variant model**	**Base model**	**Variant model**	
1	**2**	**3a**	**3b**	**4**	**5**	**7**
Forward	A1	315.66	316.10	1.57	1.57	+0.00
	A2	238.79	238.50	2.08	2.08	+0.00
	A3	123.25	123.00	4.02	4.04	+0.50
	A4	93.53	93.30	5.30	5.32	+0.38
	B1	86.88	86.80	5.72	5.72	+0.00
	B2	65.69	65.70	7.56	7.56	+0.00
	B3	33.88	33.90	14.61	14.65	+0.27
	B4	25.71	25.70	19.31	19.30	-0.05
Reverse	RA1	302.45	300.30	1.64	1.65	+0.61
	RA2	228.71	229.00	2.17	2.17	+0.00
	RA3	118.15	117.20	4.19	4.23	+0.95
	RA4	89.64	89.60	5.54	5.54	+0.00
	RB1	83.26	83.20	5.96	5.96	+0.00
	RB2	62.96	63.00	7.88	7.88	+0.00
	RB3	32.52	32.40	15.27	15.31	+0.26
	RB4	24.70	24.60	20.09	20.14	+0.25

3.3 PTO PERFORMANCE TEST

S. No.	Particulars	**Base Model**	**Variant Model**
1.	Date(s) of test	11.01.2019 & 14.01.2019	04.10.2019
2.	Tractor run prior to start of PTO test, (h)	3.1	21.3
3.	Dynamometer test bench used	Eddy current, SAJ-AG 250	Eddy current, Schenck - Avery W700
Maximum power two hours test under natural ambient condition was conducted. The results of Power take-off performance test under natural ambient of base & variant models are tabulated in **Table-1.**			

Table - 1

	Power, (kW)	Speed, (rpm)		Fuel Consumption			Specific energy, (kWh/ l)
		PTO	Engine	(l/h)	(kg/h)	(kg/kWh)	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
a) Maximum power – 2 hours test (under natural ambient condition):							
Base model	17.9	607	2801	5.94	4.97	0.278	3.01
Variant model	20.7	607	2801	6.95	5.81	0.281	2.98

Sl. No.	Parameters	Base Model		Variant Model
		Natural Ambient	High Ambient	Natural Ambient
i)	-No load maximum engine speed, (rpm)	2995	2991	3009
ii)	-Equivalent crankshaft torque at maximum power, (Nm)	61.0	58.6	70.7
iii)	-Maximum equivalent crankshaft torque, (Nm)	79.0	73.5	89.6
iv)	-Engine speed at maximum equivalent crankshaft torque, (rpm)	1098	1301	1246
v)	- Back up torque, (%)	29.5	--	26.7
vii)	**- Range of atmospheric conditions:**			
	Temperature, (^{o}C)	27 to 30	40 to 44	27 to 28
	Pressure, (kPa)	99.4 to 99.7	100 to 101.0	NR
	Relative humidity, (%)	34 to 40	22 to 26	48
viii)	**- Maximum temperatures, (^{o}C):**			
	Engine oil	89	98	116
	Coolant	83	97	99
	Fuel	55	67	56
	Air intake	30	45	38
	Exhaust gas	630	645	624
ix)	**- Pressure at maximum power:**			
	Intake air, (kPa)	3.4 to 3.7	4.0 to 4.5	1.7
	Exhaust gas, (kPa)	6.4 to 6.7	6.9 to 7.1	NR
x)	**- Consumptions:**			
	Lub oil, (g/kwh)	--	0.62	--
	Coolant (% of total coolant capacity)	--	Nil	--

4. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustments/Defects/Breakdowns and Repairs	Tractor run hours
--- None ---		

5. COMPARISON BETWEEN BASE MODEL AND VARIANT MODEL (Based on Table 3 & 4 of Indian Standard 12207: 2019)

Sl. No.	Clause No	Features	Observation on base model **T-1254/1781/2019 (July, 2019)**	Observation on variant model	Remarks
1	**2**	**3**	**4**	**5**	**6**
1.	**i)**	Clutch	Single, dry friction plate	Single, dry friction plate	No change
2.	**ii)**	Air cleaner	Same configuration in base & variant models except (refer para 3.1.5.2)		No change
3.	**iii)**	Exhaust system	Downdraft, (Cylindrical)		No change
	a)	Position of silencer outlet w.r.t SIP, mm			
		-Downward	665	595	**Changed**
		-Longitudinal	1800	1800	No change
		-Lateral	245 (on LHS)	245 (on (LHS)	No change
	b)	Range of exhaust gas pressure at maximum power (kPa)	6.4 to 6.7	NR	**--**
4.	**iv)**	Gear Box**:**			
		- Type	Mechanical, constant mesh gears		No change

Reduction ratio of transmission:

Movement	**Gear**	**Base model**	**Variant model**	**Variation (%)**	Remarks
Forward	A1	315.66	316.10	+0.14	Similar
	A2	238.79	238.50	-0.12	-do-
	A3	123.25	123.00	-0.20	-do-
	A4	93.53	93.30	-0.25	-do-
	B1	86.88	86.80	-0.09	-do-
	B2	65.69	65.70	+0.02	-do-
	B3	33.88	33.90	+0.06	-do-
	B4	25.71	25.70	-0.04	-do-
Reverse	RA1	302.45	300.30	-0.71	-do-
	RA2	228.71	229.00	+0.13	-do-
	RA3	118.15	117.20	-0.80	-do-
	RA4	89.64	89.60	-0.04	-do-
	RB1	83.26	83.20	-0.07	-do-
	RB2	62.96	63.00	+0.06	-do-
	RB3	32.52	32.40	-0.37	-do-
	RB4	24.70	24.60	-0.40	-do-

5.	**Range of speeds, (kmph):**				
	v)	- Forward	1.57 to 19.31	1.57 to 19.30	Similar
		- Reverse	1.64 to 20.09	1.65 to 20.14	Similar
		Additional no. of speed	None	None	No change

1	2	3	4	5	6
6.	**vi)**	**Fitment of accessories:**			
		- Expansion tank	Provided	Provided	No change
		- Additional hydraulic pump	None	None	--do--
		- Air compressor	None	None	--do--
		- Radiator	Provided	Provided	--do--
		- Bare radiator capacity, (l)	2.0	2.0	--do--
		- Total coolant capacity,(l)	4.8	4.9	Similar
7.	**vii)**	**Brake system:**	Same configuration in base & variant models (refer para 3.1.17)		No change
8.	**viii)**	**Type of three-point linkage:**			
		Type	Cat.I/Cat.II	Cat.I/Cat.II	No change
		Rear/front mounted	Rear mounted	Rear mounted	No change
9.	**ix)**	**PTO shafts:**			
		Location	Centrally located	Centrally located	No change
		Type	Type-I, Not Independent		No change
		Speed corresponding to rated engine speed (rpm)	607 Clockwise rotation		No change
		Anticlockwise rotation speed (rpm)	Not provided	Not provided	No change
10.	**x)**	**Type of drive:**	4 WD	4WD	No change
11.	**xi)**	**Hydraulic System:**			
		Location & type of Hydraulic pump drive	Same configuration in base & variant models (refer para 3.1.13).		No change
12.	**xii)**	**Positioning of Hydraulic Sensing Mechanism:**			
		Lower link, top link, etc.	Through top link	Through top link	No change
13.	**xiii)**	**Rear Final Reduction:**	6.273 : 1 (69/11T)		No change
14.	**xiv)**	**Differential lock**	Pin type	Pin type	No change
15.	**xv)**	**Change related to statutory/ regulatory requirements (As per Table 3):**			
	a)	Engine operating principle (spark/ compression ignition, two/four stroke)	Compression Ignition, 4 strokes	Compression Ignition, 4 strokes	No change
	b)	Number & arrangement of cylinders	Three vertical inline	Three vertical inline	No change
	c)	PTO power, (kW)	17.2	20.5	**Changed**
	d)	Engine displacement, (cc)	1331	1642	No change
	e)	Rated engine speed,(rpm)	2800	2800	No change
	f)	Naturally aspirated/turbo charged	Naturally aspirated	Naturally aspirated	No change

1	2	3	4	5	6
16.	**Change related to ergonomics, safety comfort, and statutory / regulatory requirements:**				
	a)	IS: 10273	Conformed	Conforms	No change
	b)	IS: 4931	**Did not conform**	**Does not conform**	No change
	c)	IS: 4468	**Did not conform**	**Does not conform**	No change
	d)	IS: 12953	Conformed	Conforms	No change
	e)	IS:12343	Not applicable as the rear track width is less than 1150 mm.		No change
	f)	IS:12239 (Pt-I)	**Did not conform**	**Does not conform**	No change
	g)	IS:12239 (Pt-II)	**Did not conform**	**Does not conform**	No change
	h)	IS:8133	Conformed	Conforms	No change
	i)	IS: 6283	**Did not conform**	**Does not conform**	No change
	j)	IS:14683	Conformed	Conforms	No change
17.	**xviii)**	**Other changes:**			
	a)	Engine model	3TNV82A-KJPT	3TNV88-KJPT	**Changed**
	b)	Model/Group Combination No. of FIP	W1985251410 C001	729235-51320 C001	**Changed**
	c)	Nozzle no. of injector	162P165VAE1, YDLLA6D29	162P185VAE1, YDLLA	**Changed**
	d)	Injection timing	16.3 ± 1 degrees BTDC	17 ± 1 degrees BTDC	**Changed**
	e)	**Over all dimensions,(mm):**			
		-Length	2840	2965	**Changed**
		-Width	1090	1105	**Changed**
		-Height	495 (With exhaust type)	505 (With exhaust type)	**Changed**
	f)	**Mass of tractor, (F/R/T), (Kg)**	480/695/1175	486/665/1151	**Changed**
	g)	**Decals, (sticker)**	John Deere 3028EN	John Deere 3036EN	**Changed**

6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 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 tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

Sl. No.	Characteristic	Category (Evaluative / Non-Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant/ requirement		As observed		Whether Variant model meets the require-ments (Yes/No)
				Base model	Variant Model	Base model	Variant model	
1	2	3	4	5a	5b	6a	6b	7
6.1.1	**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>26kW . ±10 percent for PTO power and or engine ≤ 26 kW.	17.2 (D)	20.5 (D)	17.9	20.7	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	17.2 (D)	20.5 (D)	17.9	20.7	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+10 %	294 (D)	280 (D)	278	281	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	86.9 (D)	108.4 (D)	79.0	89.6	**No**
e)	Back-up torque, percent	Evaluative	12 percent, min.	20 (D)	12 (D)	29.5	26.7	Yes

6.1.2	**Safety features :**							
a)	Guards against moving and hot parts		Evaluative	Belt drives, pullies, 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)	-	Not applicable as the rear track width is less than 1150 mm.	NA	NA
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
e)	Dimensions of three point linkage		Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	-	**Does not conform**	**Does not meet the requirements**	**No**
f)	Specifications of linkage drawbar		Evaluative	Should meet the requirements of IS:12953 and IS: 12362 (Part 3) (As amended from time to time)	-	Conforms	Meets the requirements	Yes
	Swinging drawbar				-	--	Not Provided	--
h)	1)	Maximum travelling speed at rated engine speed in reverse gear, (kmph)	Evaluative	Should not exceed 20 kmph	-	Conforms	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	--

6.1.3	**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.	--	JOHN DEERE	Yes
	2)	Model	Evaluative		--	3036EN	Yes
	3)	Engine number	Evaluative		--	CH3W17D218375	Yes
	4)	Chassis number	Evaluative		--	1PY3036ECKA004728	Yes
	5)	Declaration of PTO power, (kW)	Evaluative		--	20.5	Yes
	6)	Month & Year of manufacturing	Evaluative	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.	--	09 | 19	Yes
6.1.4	**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

6.2 Salient Observations:

6.2.1 Laboratory tests:

6.2.1.1 PTO Performance:

i) The maximum PTO power was observed as **20.7 kW** against the declaration of **20.5 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 **281 g/kWh** against the declaration of **280 g/kWh**, which is within the tolerance limit of IS: 12207-2019.

iii) The maximum equivalent crankshaft torque was recorded as **89.6 N-m** against the declaration of **108.4 N-m**, which does not meet the requirement of IS: 12207:2019 with regard to tolerance. This should be looked into for necessary corrective action.

iv) The backup torque is 26.7%.

6.2.1.2 Three Point Linkage:

i) The distance from end of power take - off to centre of lower hitch point of tractor does not meet the requirement of IS: 4468 (Part-1)-1993 (Reaffirmed 2014). This should be looked into for necessary corrective action.

6.2.1.3 PTO Master Shield :

The dimension "n" & "p" of PTO master shield does not meet the requirements of IS: 4931-1995 (Reaffirmed 2014). This should be looked into for necessary corrective action.

6.2.1.4 Operator's work place:

Operator's work place meets the requirements of IS: 12239 (Part-1) 1996(Reaffirmed Oct., 2017), **except the following**:

i) Provision of spark arresting device in the exhaust system.

6.2.1.5 Symbols of operator's controls and other displays:

All controls are identifiable with the symbols as per IS: 6283 (Part 1&2)-1998, except the caution and the color zones for the engine revolution gauge has not been provided. This needs to be looked into for necessary corrective action.

6.3 Maintenance / Service problems:

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

6.4 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 for spark arresting device in exhaust system.
ii) "Minimum cautionary notice" as per clause 11.2 of IS: 12239 (part-2)-1999.
iii) Provision of color zones for the engine revolution gauge.

6.5 Adequacy of Literature:

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

a) Operator's manual for (3028EN & 3036EN tractor models).
b) Technical/workshop manual for (3028EN & 3036EN tractor models).
c) Parts Catalogue for (3028EN & 3036EN tractor models).

The supplied literature was found adequate. However, these literatures should be brought out in national as well as other regional languages of India for guidance of users.

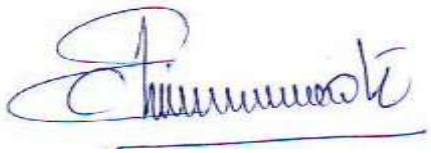
As per clause 8.1.1 of IS: 12207-2019, the optional features inspected/verified on the base model shall be deemed to be fitted on this variant model. The results of the tests carried out on variant model "John Deere 3036EN" has been compared with those on base model "John Deere 3028EN" and found within the limit, as specified in Indian Standard: 12207-2019.

7. 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	01, Months (October, 2019)	Yes	None

TESTING AUTHORITY:

SHWETABH SINGH
AGRICULTURAL ENGINEER



C.V. CHIMOTE
TEST ENGINEER

J.J.R. NARWARE
DIRECTOR

8. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
8.1	6.2.1.1(iii), 6.2.1.2(i), 6.2.1.3, 6.2.1.4 & 6.2.1.5	Your valuable comments and suggestions for improvements are well taken. Under the policy of continuous product improvement these aspects are further being examined and will try to eliminate soon wherever necessary.

ANNEXURE -I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	20.0
2.	PTO performance test	3.93
3.	Nominal speed test	0.75
B	Miscellaneous test and other run hours including idle run, transportation, preparation for test and trial runs.	0.42
	TOTAL:	**25.10**