2009

Test 1949: John Deere 6115D Diesel

Nebraska Tractor Test Lab
University of Nebraska-Lincoln, tractortestlab@unl.edu

NEBRASKA OECD TRACTOR TEST 1949–SUMMARY 631
JOHN DEERE 6115D DIESEL
9 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1017 rpm)					
99.05 *(73.86)*	2100	6.35 *(24.02)*	0.452 *(0.275)*	15.61 *(3.08)*	
Standard Power Take-off Speed (1000 rpm)					
99.37 *(74.10)*	2066	6.28 *(23.75)*	0.445 *(0.271)*	15.84 *(3.12)*	
Maximum Power (1 hour)					
99.37 *(74.10)*	2066	6.28 *(23.75)*	0.445 *(0.271)*	15.84 *(3.12)*	
VARYING POWER AND FUEL CONSUMPTION					
99.05 *(73.86)*	2100	6.35 *(24.02)*	0.452 *(0.275)*	15.61 *(3.08)*	Air temperature
85.69 *(63.90)*	2135	5.76 *(21.81)*	0.474 *(0.289)*	14.87 *(2.93)*	81°F *(27°C)*
64.62 *(48.18)*	2148	4.89 *(18.51)*	0.534 *(0.325)*	13.22 *(2.60)*	Relative humidity
43.63 *(32.54)*	2172	3.73 *(14.12)*	0.603 *(0.367)*	11.69 *(2.30)*	58%
22.08 *(16.47)*	2193	2.57 *(9.72)*	0.820 *(0.499)*	8.60 *(1.69)*	Barometer
3.41 *(2.55)*	2200	1.61 *(6.09)*	3.322 *(2.021)*	2.12 *(0.42)*	28.74 Hg *(97.33 kPa)*

Maximum torque - 315 lb.-ft. *(427 Nm)* at 1400 rpm
Maximum torque rise - 27.1%
Torque rise at 1700 engine rpm - 19%
Power increase at 2066 engine rpm - 0.3%

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F cool-ing med	*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—5th (B2) Gear									
80.89 *(60.32)*	5807 *(25.83)*	5.23 *(8.41)*	2099	8.7	0.550 *(0.334)*	12.83 *(2.53)*	178 *(81)*	74 *(23)*	28.71 *(97.22)*
75% of Pull at Maximum Power—5th (B2) Gear									
63.55 *(47.39)*	4366 *(19.42)*	5.46 *(8.79)*	2137	6.3	0.612 *(0.372)*	11.52 *(2.27)*	177 *(81)*	84 *(29)*	28.71 *(97.22)*
50% of Pull at Maximum Power—5th (B2) Gear									
44.35 *(33.07)*	2961 *(13.17)*	5.62 *(9.04)*	2156	4.2	0.705 *(0.429)*	10.01 *(1.97)*	175 *(80)*	86 *(30)*	28.72 *(97.26)*
75% of Pull at Reduced Engine Speed—6th (B3) Gear									
63.94 *(47.68)*	4369 *(19.43)*	5.49 *(8.83)*	1673	6.0	0.565 *(0.344)*	12.47 *(2.46)*	182 *(83)*	88 *(31)*	28.72 *(97.26)*
50% of Pull at Reduced Engine Speed—6th (B3) Gear									
44.52 *(33.19)*	2973 *(13.23)*	5.62 *(9.04)*	1681	4.2	0.643 *(0.391)*	10.97 *(2.16)*	179 *(82)*	87 *(31)*	28.72 *(97.26)*

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: June 15-19, 2009

Manufacturer: Industrius John Deere , Boulevard Valdez Sanchez # 470, Saltillo, Coahuila CP25005 Mexico

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8470 **Fuel weight** 7.052 lbs/gal *(0.845 kg/l)* **Oil SAE** 15W-40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 20.0 hours

ENGINE: Make John Deere Diesel **Type** Four cylinder vertical with turbocharger and air to air intercooler **Serial No.***PE4045L071552* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.19 x 5.00" *(106.5 mm x 127.0 mm)* **Compression ratio** 17.0 to 1 **Displacement** 276 cu in *(4517 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 44.3 - 47.8 lb/h *(20.1 -21.7 kg/h)* **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 17.4-20.3 psi *(120-140 kPa)* as measured 19.2 psi *(132 kPa)*

CHASSIS: Type front wheel assist **Serial No.***P06115X001348* **Tread width** rear 59.5" *(1512 mm)* to 79.4" *(2016 mm)* front 59.7" *(1516 mm)* to 79.4" *(2016 mm)* **Wheelbase** 92.5" *(2350 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph *(km/h)*** first 1.72 *(2.77)* second 2.37 *(3.82)* third 3.05 *(4.91)* fourth 4.04 *(6.51)* fifth 5.58 *(8.98)* sixth 7.17 (*11.54*) seventh 9.70 *(15.61)* eighth 13.40 *(21.56)* ninth 17.21 *(27.70)* reverse 1.78 *(2.86)*, 2.45 *(3.95)*, 3.16 *(5.08)*, 4.18 *(6.73)*, 5.77 *(9.29)*, 7.42 *(11.94)*, 10.04 *(16.15)*, 13.86 *(22.31)*, 17.81 *(28.66)* **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc mechanically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2085 engine rpm or 1000 rpm at 2067 engine rpm **Unladen tractor mass** 9160 lb *(4155 kg)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
					4th(B1)Gear				
74.05 *(55.22)*	7623 *(33.91)*	3.65 *(5.87)*	2129	14.6	0.590 *(0.359)*	11.94 *(2.35)*	177 *(81)*	81 *(27)*	28.71 *(97.22)*
					5th(B2)Gear				
80.89 *(60.32)*	5807 *(25.83)*	5.23 *(8.41)*	2099	8.7	0.550 *(0.334)*	12.83 *(2.53)*	178 *(81)*	74 *(23)*	28.71 *(97.22)*
					6th(B3)Gear				
80.33 *(59.90)*	4359 *(19.39)*	6.91 *(11.12)*	2094	5.1	0.550 *(0.334)*	12.83 *(2.53)*	180 *(82)*	79 *(26)*	28.71 *(97.22)*

UNBALLASTED - FRONT DRIVE ENGAGED-2066 ENGINE RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
					4th (B1)Gear				
74.24 *(55.36)*	7642 *(33.99)*	3.64 *(5.86)*	2129	14.8	0.592 *(0.360)*	11.92 *(2.35)*	177 *(81)*	81 *(27)*	28.71 *(97.22)*
					5th (B2)Gear				
81.05 *(60.44)*	5925 *(26.36)*	5.13 *(8.26)*	2066	9.4	0.549 *(0.334)*	12.86 *(2.53)*	179 *(81)*	77 *(25)*	28.71 *(97.22)*
					6th (B3)Gear				
80.60 *(60.10)*	4440 *(19.75)*	6.81 *(10.96)*	2069	5.6	0.549 *(0.334)*	12.85 *(2.53)*	180 *(82)*	80 *(27)*	28.71 *(97.22)*

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive Engaged dB(A)	Front Wheel Drive Disengaged dB(A)
At no load in 4th (B1) gear	89.5	89.4
Transport speed - no load - 9th (C3) gear		91.8
Bystander in 9th (C3) gear		85.3

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Front Wheel Drive Disengaged dB(A)
At no load in 4th (B1) gear	76.3	76.3
Transport speed - no load - 9th (C3) gear		78.5
Bystander		--

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi*(kPa)*	Two 18.4-34;8;12*(85)*	Two 18.4-34;8;12*(85)*
Ballast - Liquid (total)	None	None
- Cast Iron (total)	1025 lb *(465 kg)*	None
Front Tires - No., size, ply & psi*(kPa)*	Two 13.6-24;8;28*(195)*	Two 13.6-24;8;12*(85)*
Ballast - Liquid (total)	None	None
- Cast Iron (total)	1985 lb *(900 kg)*	None
Height of Drawbar	19. 5 in *(495 mm)*	18.5 in *(470 mm)*
Static Weight with operator - Rear	6255 lb *(2837 kg)*	5835 lb *(2647 kg)*
- Front	6090 lb *(2762 kg)*	3500 lb *(1587 kg)*
- Total	12345 lb *(5599 kg)*	9335 lb *(4234 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the fuel pump inlet was maintained at 137°F *(58°C)*. The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1949**, Nebraska Summary 631, July 31, 2009.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE

BALLASTED - FRONT DRIVE DISENGAGED

FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—5th (B2) Gear									
77.14 *(57.52)*	5845 *(26.00)*	4.95 *(7.97)*	2102	13.5	0.578 *(0.352)*	12.19 *(2.40)*	180 *(82)*	81 *(27)*	28.58 *(96.78)*
75% of Pull at Maximum Power—5th (B2) Gear									
61.13 *(45.58)*	4381 *(19.49)*	5.23 *(8.42)*	2137	9.7	0.633 *(0.385)*	11.13 *(2.19)*	179 *(82)*	85 *(29)*	28.56 *(96.72)*
50% of Pull at Maximum Power—5th (B2) Gear									
42.30 *(31.54)*	2925 *(13.01)*	5.42 *(8.72)*	2157	7.3	0.734 *(0.447)*	9.60 *(1.89)*	177 *(81)*	87 *(31)*	28.56 *(96.72)*
75% of Pull at Reduced Engine Speed—6th (B3) Gear									
61.30 *(45.71)*	4356 *(19.38)*	5.28 *(8.50)*	1673	9.0	0.576 *(0.350)*	12.25 *(2.41)*	179 *(82)*	86 *(30)*	28.56 *(96.72)*
50% of Pull at Reduced Engine Speed—6th (B3) Gear									
42.40 *(31.62)*	2919 *(12.99)*	5.45 *(8.76)*	1685	6.8	0.659 *(0.401)*	10.69 *(2.11)*	177 *(81)*	88 *(31)*	28.56 *(96.72)*

MAXIMUM POWER IN SELECTED GEARS

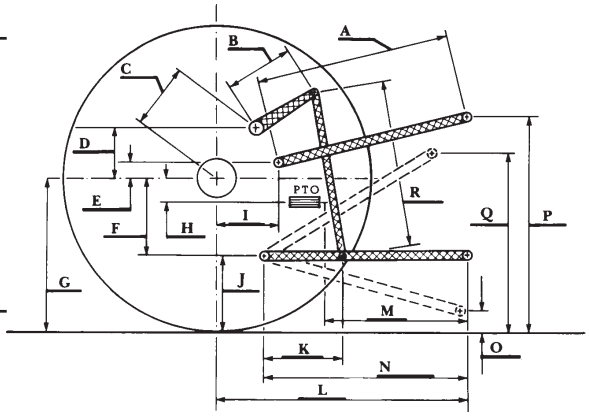
4th(B1) Gear									
60.06 *(44.79)*	6251 *(27.81)*	3.61 *(5.80)*	2138	14.5	0.645 *(0.393)*	10.93 *(2.15)*	179 *(82)*	78 *(26)*	28.58 *(96.78)*
5th(B2) Gear									
77.14 *(57.52)*	5845 *(26.00)*	4.95 *(7.97)*	2102	13.5	0.578 *(0.352)*	12.19 *(2.40)*	180 *(82)*	81 *(27)*	28.58 *(96.78)*
6th(B3) Gear									
77.20 *(57.57)*	4376 *(19.46)*	6.62 *(10.65)*	2101	8.9	0.571 *(0.347)*	12.36 *(2.43)*	180 *(82)*	83 *(28)*	28.58 *(96.78)*

BALLASTED - FRONT DRIVE ENGAGED-2066 ENGINE RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
3rd (A3) Gear									
72.42 *(54.00)*	9856 *(43.84)*	2.76 *(4.43)*	2131	14.6	0.594 *(0.361)*	11.88 *(2.34)*	179 *(82)*	77 *(25)*	28.58 *(96.78)*
4th (B1) Gear									
80.81 *(60.26)*	8346 *(37.13)*	3.64 *(5.85)*	2063	11.8	0.545 *(0.331)*	12.94 *(2.55)*	180 *(82)*	80 *(27)*	28.58 *(96.78)*
5th (B2) Gear									
80.48 *(60.01)*	5757 *(25.61)*	5.24 *(8.43)*	2066	7.8	0.546 *(0.332)*	12.92 *(2.55)*	180 *(82)*	82 *(28)*	28.58 *(96.78)*
6th (B3) Gear									
78.66 *(58.65)*	4298 *(19.12)*	6.87 *(11.05)*	2067	5.0	0.563 *(0.343)*	12.52 *(2.47)*	181 *(83)*	84 *(29)*	28.57 *(96.75)*

HYDRAULIC PERFORMANCE

CATEGORY: II	
Quick Attach: None	
OECD Static test	
Maximum Force exerted through whole range:	6841 lbs *(30.4 kN)*
i) Sustained pressure with relief valve open:	3076 psi *(212 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	18.4 GPM *(69.7 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	13.6 GPM *(51.5 l/min)*
Delivery pressure:	2602 psi *(179 bar)*
Power:	20.6 HP *(15.4 kW)*



THREE POINT HITCH PERFORMANCE(SAE Static test)

Observed maximum pressure psi. *(bar)*	2840 *(195)*
Location:	hydraulic manifold
Hydraulic oil temperature: °F *(°C)*	149 *(65)*
Location:	hydraulic sump
Category:	II
Quick attach:	No

System pressure 2480 psi *(171 Bar)*

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	15.1 *(384)*	22.0 *(559)*	29.1 *(739)*	36.0 *(915)*
Lift force on frame lb	10343	9597	8880	8389	7224
" " " " " " *(kN)*	*(46.0)*	*(42.7)*	*(39.5)*	*(37.3)*	*(32.1)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	*mm*	inch	*mm*
A	26.8	*680*	25.7	*652*
B	12.8	*325*	12.8	*325*
C	20.4	*518*	20.4	*518*
D	18.6	*473*	18.6	*473*
E	6.0	*153*	6.0	*153*
F	6.9	*176*	6.9	*176*
G	32.3	*820*	32.3	*820*
H	2.9	*48*	2.9	*48*
I	19.3	*489*	19.3	*489*
J	25.4	*644*	25.4	*644*
K	19.8	*503*	19.8	*503*
L	44.1	*1121*	44.1	*1121*
M	22.3	*566*	22.3	*566*
N	37.2	*945*	37.2	*945*
O	7.7	*195*	7.7	*195*
P	49.4	*1254*	44.4	*1127*
Q	32.3	*820*	32.3	*820*
R	31.7	*805*	31.7	*805*

JOHN DEERE 6115D DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln