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2010

## Test 1974: John Deere 6100D

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA OECD TRACTOR TEST 1974—SUMMARY 742

## JOHN DEERE 6100D 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1015 rpm)</b>					
87.47 (65.23)	2096	5.11 (19.35)	0.410 (0.250)	17.11 (3.37)	
<b>Standard Power Take-off Speed—(PTO speed—1000 rpm)</b>					
89.33 (66.61)	2065	5.09 (19.27)	0.400 (0.243)	17.55 (3.46)	
<b>Maximum Power (1 hour)</b>					
90.10 (67.19)	1896	5.02 (18.99)	0.391 (0.238)	17.96 (3.54)	

#### VARYING POWER AND FUEL CONSUMPTION

87.47 (65.23)	2096	5.11 (19.35)	0.410 (0.250)	17.11 (3.37)	Air temperature
76.90 (57.34)	2169	4.63 (17.52)	0.423 (0.257)	16.62 (3.27)	71°F (22°C)
58.72 (43.79)	2211	3.81 (14.41)	0.455 (0.277)	15.43 (3.04)	Relative humidity
39.83 (29.70)	2248	2.84 (10.76)	0.501 (0.305)	14.02 (2.76)	55%
20.22 (15.08)	2280	2.09 (7.92)	0.727 (0.442)	9.66 (1.90)	Barometer
2.12 (1.58)	2307	1.47 (5.55)	4.854 (2.953)	1.45 (0.28)	28.69" Hg (97.16 kPa)

Maximum Torque - 268 lb.-ft. (363 Nm) at 1398 rpm

Maximum Torque Rise - 22.1%

Torque rise at 1699 engine rpm - 20%

Power increase at 1896 rpm - 3.0%

#### 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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—5th (B2) Gear</b>									
74.66 (55.67)	5170 (23.00)	5.42 (8.71)	2098	7.1	0.477 (0.290)	14.72 (2.90)	181 (83)	71 (22)	29.00 (98.21)
<b>75% of Pull at Maximum Power—5th (B2) Gear</b>									
59.47 (44.34)	3891 (17.31)	5.73 (9.22)	2175	5.0	0.525 (0.319)	13.38 (2.64)	180 (82)	79 (26)	29.00 (98.21)
<b>50% of Pull at Maximum Power—5th (B2) Gear</b>									
41.16 (30.69)	2590 (11.52)	5.96 (9.58)	2220	3.2	0.566 (0.345)	12.40 (2.44)	177 (80)	80 (27)	29.00 (98.21)
<b>75% of Pull at Reduced Engine Speed—6th (B3) Gear</b>									
59.41 (44.30)	3828 (17.03)	5.82 (9.37)	1715	4.8	0.475 (0.289)	14.79 (2.91)	181 (83)	82 (28)	29.00 (98.21)
<b>50% of Pull at Reduced Engine Speed—6th (B3) Gear</b>									
41.47 (30.92)	2587 (11.51)	6.01 (9.67)	1739	3.0	0.493 (0.300)	14.25 (2.81)	178 (81)	81 (27)	29.00 (98.21)

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

**Dates of tests:** May 20-June 2, 2010

**Manufacturer:** Industrias 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) 0.8433 Fuel weight 7.022 lbs/gal (0.842 kg/l) Oil SAE 15W-40 API service classification CH-4 Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant SAE 85W-140 API GL-5 Total time engine was operated: 19.5 hours

**ENGINE: Make** John Deere Diesel **Type** Four cylinder vertical with turbocharger **Serial No.** \*PE4045T779357\* **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 (4525 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and prestrainer **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan.

**ENGINE OPERATING PARAMETERS: Fuel rate:** 34.8 - 36.8 lb/h (15.8 - 16.7 kg/h) **High idle:** 2250 - 2350 rpm **Turbo boost:** nominal 9.4 - 12.3 psi (65 - 85 kPa) as measured 11.8 psi (81 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** \*1P06100DTAT020038\* **Tread width** rear 59.5" (1512 mm) to 79.4" (2016 mm) front 59.7" (1516 mm) to 79.3" (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 4.05 (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 2.86 (4.61), 6.74 (10.84), 16.17 (26.02) **Clutch** dry disc operated by foot pedal **Brakes** wet disc 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 2065 engine rpm **Unladen tractor mass** 9090 lb (4123 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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd(A3)Gear									
59.31 (44.22)	7723 (34.35)	2.88 (4.63)	2171	14.0	0.564 (0.343)	12.45 (2.45)	180 (82)	68 (20)	29.00 (98.21)
4th(B1)Gear									
73.00 (54.43)	7338 (32.64)	3.73 (6.00)	2099	12.0	0.497 (0.302)	14.13 (2.78)	180 (82)	70 (21)	29.00 (98.21)
5th(B2)Gear									
74.66 (55.67)	5170 (23.00)	5.42 (8.71)	2098	7.1	0.477 (0.290)	14.72 (2.90)	181 (83)	71 (22)	29.00 (98.21)
6th(B3)Gear									
72.82 (54.30)	3834 (17.05)	7.13 (11.47)	2102	5.1	0.493 (0.300)	14.24 (2.80)	180 (82)	74 (23)	29.00 (98.21)

### UNBALLASTED - FRONT DRIVE ENGAGED-1900 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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd (A3)Gear									
59.10 (44.07)	7751 (34.48)	2.86 (4.60)	2162	14.4	0.540 (0.329)	13.05 (2.57)	179 (82)	68 (20)	29.00 (98.21)
4th (B1)Gear									
73.15 (54.55)	7358 (32.73)	3.73 (6.00)	2103	12.3	0.498 (0.303)	14.09 (2.78)	179 (81)	70 (21)	29.00 (98.21)
5th (B2)Gear									
74.85 (55.81)	5777 (25.70)	4.86 (7.81)	1907	8.4	0.475 (0.289)	14.77 (2.91)	181 (83)	72 (22)	29.00 (98.21)
6th (B3)Gear									
75.80 (56.52)	4441 (19.75)	6.40 (10.30)	1903	5.7	0.466 (0.284)	15.07 (2.97)	181 (83)	75 (24)	29.00 (98.21)

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 4th (B1) gear	90.6	90.6
Transport speed-no load- 9th(C3) gear		93.2
Bystander in 9th (C3) Gear		84.5

### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Two 18.4-34;8;12(85)	Two 18.4-34;8;12(85)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	1000 lb (454 kg)	None
<b>Front Tires</b> - No., size, ply & psi(kPa)	Two 13.6-24;8; 16(125)	Two 13.6-24;8;12(85)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	595 lb (270 kg)	None
<b>Height of Drawbar</b>	19.5 in (495 mm)	19.0 in (485 mm)
<b>Static Weight with operator</b> - Rear	6670 lb (3026 kg)	5765 lb (2615 kg)
- Front	4190 lb (1901 kg)	3500 lb (1588 kg)
- Total	10860 lb (4927 kg)	9265 lb (4203 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. This tractor did not meet the manufacturer's claim of 25% torque rise. The manufacturer's claim of 82 dB(A) cab sound level was not verified. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 133°F(56°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. **1974**, Nebraska Summary 742, July 27, 2010.

Roger M. Hoy  
Director

M.F. Kocher  
D.R. Keshwani  
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)
<b>Maximum Power—5th (B2) Gear</b>									
75.09 (55.99)	5411 (24.07)	5.21 (8.38)	2103	9.4	0.474 (0.288)	14.82 (2.92)	181 (83)	69 (21)	28.90 (97.87)
<b>75% of Pull at Maximum Power—5th (B2) Gear</b>									
59.91 (44.67)	4056 (18.04)	5.54 (8.91)	2173	6.7	0.528 (0.321)	13.30 (2.62)	180 (82)	76 (24)	28.90 (97.87)
<b>50% of Pull at Maximum Power—5th (B2) Gear</b>									
41.68 (31.08)	2705 (12.03)	5.78 (9.30)	2218	4.5	0.577 (0.351)	12.17 (2.40)	177 (80)	78 (26)	28.90 (97.87)
<b>75% of Pull at Reduced Engine Speed—6th (B3) Gear</b>									
59.72 (44.53)	4073 (18.12)	5.50 (8.85)	1684	6.7	0.482 (0.293)	14.56 (2.87)	180 (82)	82 (28)	28.90 (97.87)
<b>50% of Pull at Reduced Engine Speed—6th (B3) Gear</b>									
41.20 (30.72)	2691 (11.97)	5.75 (9.25)	1719	4.4	0.476 (0.290)	14.77 (2.91)	178 (81)	80 (27)	28.90 (97.87)

**MAXIMUM POWER IN SELECTED GEARS**

4th (B1) Gear									
66.15 (49.32)	6754 (30.04)	3.67 (5.91)	2149	14.7	0.514 (0.312)	13.68 (2.69)	180 (82)	65 (18)	28.90 (97.87)
5th (B2) Gear									
75.09 (55.99)	5411 (24.07)	5.21 (8.38)	2103	9.4	0.474 (0.288)	14.82 (2.92)	181 (83)	69 (21)	28.90 (97.87)
6th (B3) Gear									
74.17 (55.30)	4049 (18.01)	6.87 (11.05)	2101	6.6	0.492 (0.299)	14.27 (2.81)	181 (83)	72 (22)	28.90 (97.87)

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE ENGAGED (1900 ENGINE RPM)**  
**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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd (A3) Gear									
67.35 (50.22)	8962 (39.86)	2.82 (4.54)	2147	14.8	0.499 (0.303)	14.11 (2.78)	180 (82)	63 (17)	28.90 (97.87)
4th (B1) Gear									
75.79 (56.52)	7724 (34.36)	3.68 (5.92)	2050	11.2	0.472 (0.287)	14.87 (2.93)	180 (82)	67 (19)	28.90 (97.87)
5th (B2) Gear									
76.97 (57.40)	5923 (26.35)	4.87 (7.84)	1901	7.6	0.465 (0.283)	15.10 (2.98)	181 (83)	71 (22)	28.90 (97.87)
6th (B3) Gear									
76.68 (57.18)	4492 (19.98)	6.40 (10.30)	1901	5.2	0.467 (0.284)	15.03 (2.96)	181 (83)	74 (23)	28.90 (97.87)

## HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 6841 lbs (30.4 kN)

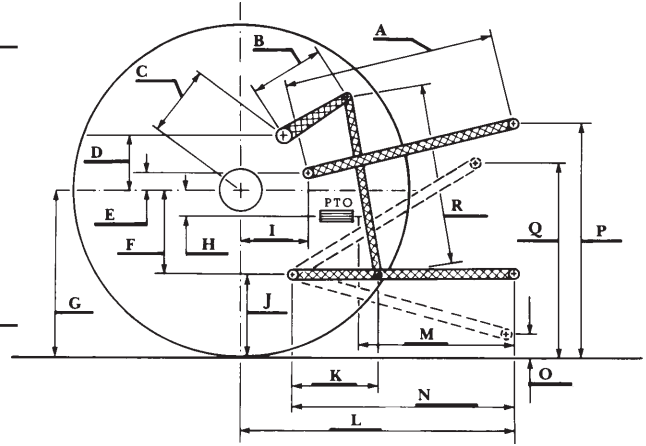
i) Sustained pressure with relief valve open: 3272 psi (226 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 19.5 GPM (73.9 l/min)

iii) Pump delivery rate at maximum hydraulic power: 18.0 GPM (68.0 l/min)

Delivery pressure: 2594 psi (179 bar)

Power: 27.2 HP (20.3 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 6100D DIESEL**