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2009

## Test 1951: John Deere 6140D Diesel

Nebraska Tractor Test Lab

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

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# NEBRASKA OECD TRACTOR TEST 1951–SUMMARY 633

## JOHN DEERE 6140D 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—1016 rpm)					
116.32 (86.74)	2098	7.21 (27.28)	0.437 (0.266)	16.14 (3.18)	
Standard Power Take-off Speed (1000 rpm)					
117.18 (87.38)	2065	7.11 (26.90)	0.428 (0.260)	16.49 (3.25)	
Maximum Power (1 hour)					
117.41 (87.55)	2048	7.11 (26.93)	0.427 (0.260)	16.50 (3.25)	

#### VARYING POWER AND FUEL CONSUMPTION

116.32 (86.74)	2098	7.21 (27.28)	0.437 (0.266)	16.14 (3.18)	Air temperature
100.71 (75.10)	2141	6.50 (24.60)	0.455 (0.277)	15.50 (3.05)	75°F (24°C)
75.99 (56.66)	2153	5.43 (20.54)	0.504 (0.306)	14.00 (2.76)	Relative humidity
51.26 (38.23)	2175	4.20 (15.91)	0.578 (0.352)	12.20 (2.40)	12%
25.89 (19.30)	2197	2.92 (11.04)	0.794 (0.483)	8.88 (1.75)	Barometer
2.96 (2.21)	2200	1.71 (6.47)	4.070 (2.476)	1.73 (0.34)	28.55 Hg (97.68 kPa)

Maximum torque - 344 lb.-ft. (467 Nm) at 1598 rpm

Maximum torque rise - 18.2%

Torque rise at 1699 engine rpm - 15%

Power increase at 2048 engine rpm - 0.9%

#### 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)
Maximum Power—5th (B2) Gear									
96.68 (72.09)	6524 (29.02)	5.56 (8.94)	2099	8.6	0.533 (0.324)	13.23 (2.61)	171 (77)	48 (9)	28.89 (97.83)
75% of Pull at Maximum Power—5th (B2) Gear									
75.73 (56.47)	4872 (21.67)	5.83 (9.38)	2140	6.1	0.572 (0.348)	12.34 (2.43)	170 (77)	53 (12)	28.85 (97.70)
50% of Pull at Maximum Power—5th (B2) Gear									
52.21 (38.93)	3262 (14.51)	6.00 (9.66)	2161	4.0	0.658 (0.400)	10.72 (2.11)	165 (74)	54 (12)	28.83 (97.63)
75% of Pull at Reduced Engine Speed—6th (B3) Gear									
75.24 (56.11)	4877 (21.69)	5.79 (9.31)	1653	6.0	0.527 (0.320)	13.39 (2.64)	171 (77)	56 (13)	28.80 (97.53)
50% of Pull at Reduced Engine Speed—6th (B3) Gear									
52.07 (38.83)	3256 (14.48)	6.00 (9.65)	1679	4.0	0.614 (0.374)	11.48 (2.26)	168 (75)	55 (13)	28.82 (97.60)

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

**Dates of tests:** April 1 -21, 2009

**Manufacturer:** Industrious 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: 21.5 hours

**ENGINE: Make** John Deere **Diesel Type** Four cylinder vertical with turbocharger and air to air intercooler **Serial No.** \*PE4045L71562\* **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** 1 thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 50.5 - 54.5 lb/h (22.9 -24.7 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal 20.3-23.2 psi (140-160 kPa) as measured 22.0 psi (151 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** \*P06140X001136\* **Tread width** rear 59.5" (1512 mm) to 79.4" (2016 mm) front 59.5" (1512 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 1.83 (2.95) second 2.53 (4.07) third 3.25 (5.23) fourth 4.31 (6.93) fifth 5.95 (9.57) sixth 7.64 (12.29) seventh 10.33 (16.63) eighth 14.27 (22.96) ninth 18.33 (29.50) reverse 1.90 (3.05), 2.62 (4.21), 3.36 (5.41), 4.46 (7.17), 6.15 (9.90), 7.90 (12.72), 10.69 (17.20), 14.76 (23.75), 18.96 (30.52) **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** 9920 lb (4500 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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th(B1)Gear									
87.48 (65.24)	8496 (37.79)	3.86 (6.21)	2131	14.4	0.563 (0.342)	12.53 (2.47)	170 (77)	43 (6)	28.91 (97.90)
5th(B2)Gear									
96.68 (72.09)	6524 (29.02)	5.56 (8.94)	2099	8.6	0.533 (0.324)	13.23 (2.61)	171 (77)	48 (9)	28.89 (97.83)
6th(B3)Gear									
97.19 (72.47)	4957 (22.05)	7.35 (11.83)	2099	6.0	0.517 (0.314)	13.64 (2.69)	171 (77)	51 (11)	28.87 (97.77)

**UNBALLASTED - FRONT DRIVE ENGAGED-2050 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)
4th (B1)Gear									
87.36 (65.14)	8486 (37.75)	3.86 (6.21)	2131	14.7	0.566 (0.344)	12.47 (2.46)	172 (78)	43 (6)	28.91 (97.90)
5th(B2)Gear									
97.27 (72.53)	6725 (29.91)	5.42 (8.73)	2054	9.0	0.523 (0.318)	13.50 (2.66)	171 (77)	50 (10)	28.88 (97.80)
6th(B3)Gear									
97.58 (72.77)	5111 (22.74)	7.16 (11.52)	2053	6.4	0.513 (0.312)	13.75 (2.71)	171 (77)	52 (11)	28.86 (97.73)

**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. For the maximum power tests the fuel temperature at the fuel pump inlet was maintained at 141°F (61°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. **1951**, Nebraska Summary 633, July 31 2009.

Roger M. Hoy  
Director

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

<b>TRACTOR SOUND LEVEL WITH CAB</b>	<b>Front Wheel Drive Engaged dB(A)</b>	<b>Disengaged dB(A)</b>
At no load in 4th (B1) gear	75.9	76.0
Transport speed - no load - 9th (C3) gear		78.8
Bystander in 9th (C3) gear		87.8

**TIRES, BALLAST AND WEIGHT**

	<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Two 18.4-38;8;12(85)	Two 18.4-38;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 14.9-24;8;22(150)	Two 14.9-24;8;12(85)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	2000 lb (907 kg)	None
<b>Height of Drawbar</b>	22.0 in (560 mm)	21.0 in (535 mm)
<b>Static Weight with operator</b> - Rear	6835 lb (3100 kg)	6375 lb (2892 kg)
- Front	6260 lb (2840 kg)	3720 lb (1687 kg)
- Total	13095 lb (5940 kg)	10095 lb (4579 kg)

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE ENGAGED (2050 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd(A3)Gear									
85.97 (64.11)	11029 (49.06)	2.92 (4.70)	2133	14.4	0.561 (0.341)	12.56 (2.48)	172 (78)	42 (6)	28.90 (97.87)
4th(B1)Gear									
98.89 (73.74)	9689 (43.10)	3.83 (6.15)	2056	11.4	0.497 (0.302)	14.20 (2.80)	172 (78)	45 (7)	28.91 (97.90)
5th(B2)Gear									
99.37 (74.10)	6766 (30.10)	5.51 (8.86)	2053	6.8	0.502 (0.305)	14.04 (2.77)	172 (78)	47 (8)	28.91 (97.90)
6th(B3)Gear									
98.85 (73.71)	5134 (22.84)	7.22 (11.62)	2051	5.1	0.501 (0.305)	14.09 (2.78)	169 (76)	49 (9)	28.91 (97.90)

## HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

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

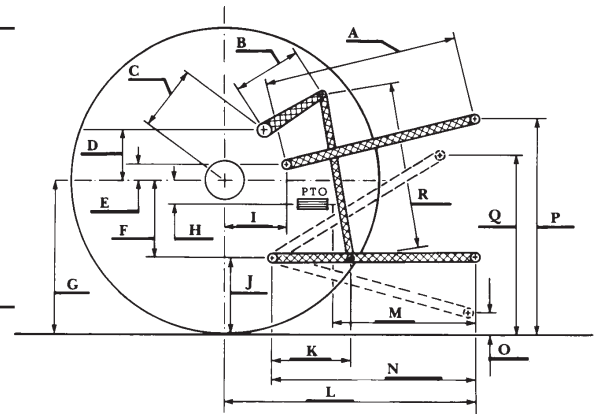
i) Sustained pressure with relief valve open: 3100 psi (214 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 18.5 GPM (70.0 l/min)

iii) Pump delivery rate at maximum hydraulic power: 16.1 GPM (60.9 l/min)

Delivery pressure: 2401 psi (166 bar)

Power: 22.6 HP (16.8 kW)



## HITCH DIMENSIONS AS TESTED—NO LOAD

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)

	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 6140D DIESEL

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln