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## Nebraska Summary: S628 John Deere 6230

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# SUMMARY OF OECD TEST 2416—NEBRASKA SUMMARY 628

## JOHN DEERE 6230 POWRQUAD PLUS DIESEL

### 16 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-1042 rpm)</b>					
76.6 (57.1)	2300	4.94 (18.69)	0.451 (0.274)	15.50 (3.05)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
83.5 (62.3)	2208	5.10 (19.29)	0.427 (0.259)	16.39 (3.23)	
<b>Maximum Power (1 hour)</b>					
90.9 (67.8)	1900	5.40 (20.45)	0.415 (0.253)	16.84 (3.32)	

#### VARYING POWER AND FUEL CONSUMPTION

76.6 (57.1)	2300	4.94 (18.69)	0.451 (0.274)	15.50 (3.05)	Air temperature
66.6 (49.7)	2358	4.54 (17.20)	0.477 (0.290)	14.66 (2.89)	64°F (18°C)
51.0 (38.0)	2398	3.96 (14.98)	0.542 (0.330)	12.89 (2.54)	Relative humidity
34.3 (25.6)	2431	3.35 (12.69)	0.682 (0.415)	10.25 (2.02)	38%
17.4 (13.0)	2458	2.77 (10.47)	1.109 (0.675)	6.30 (1.24)	Barometer
--	2461	1.99 (7.55)	--	--	29.4" Hg (99.6 kPa)

Maximum Torque - 252 lb.-ft. (367 Nm) at 1500 rpm  
 Maximum Torque rise - 54.8%  
 Torque rise at 1800 engine rpm - 48%

#### 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—7th (B3) Gear</b>									
67.0 (50.0)	5525 (24.56)	4.55 (7.32)	2301	4.3	0.501 (0.305)	13.96 (2.75)	176 (80)	61 (16)	29.9 (101.1)
<b>75% of Pull at Maximum Power—7th (B3) Gear</b>									
52.1 (38.8)	4120 (18.33)	4.74 (7.63)	2377	3.4	0.572 (0.348)	12.23 (2.41)	174 (79)	61 (16)	29.9 (101.2)
<b>50% of Pull at Maximum Power—7th (B3) Gear</b>									
35.0 (26.1)	2710 (12.04)	4.84 (7.79)	2408	2.4	0.699 (0.425)	10.00 (1.97)	171 (77)	61 (16)	29.9 (101.1)
<b>75% of Pull at Reduced Engine Speed—8th (C1) Gear</b>									
52.2 (38.9)	4125 (18.34)	4.74 (7.63)	2083	3.5	0.534 (0.325)	13.10 (2.58)	174 (79)	63 (17)	29.9 (101.1)
<b>50% of Pull at Reduced Engine Speed—8th (C1) Gear</b>									
35.1 (26.2)	2730 (12.14)	4.82 (7.76)	2102	2.5	0.642 (0.391)	10.89 (2.15)	171 (77)	61 (16)	29.9 (101.1)

**Location of tests:** DLG Test Centre, Technology and Farm inputs, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

**Dates of tests:** March - June, 2007

**Manufacturer:** Deere & Company, Moline, Illinois, USA

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.840 **Fuel weight** 6.99 lbs/gal (0.838 kg/l) **Oil SAE 10W-40 API service classification CF-4 Transmission and hydraulic lubricant** John Deere Hy-Gard II fluid **Front axle lubricant** SAE 80W90.

**ENGINE: Make** John Deere Diesel **Type** four cylinder vertical with turbocharger and intercooler **Serial No.** L006080 **Crankshaft** lengthwise **Rated engine speed** 2300 **Bore and stroke** 4.19" x 5.00" (106.5 mm x 127.0 mm) **Compression ratio** 16.7 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 **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS: Type** front wheel assist **Serial No.** 518990 **Tread width** rear 56.9" (1446 mm) to 75.4" (1916 mm) front 59.9" (1522 mm) to 79.3" (2014 mm) **Wheel base** 94.5" (2400 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.60 (2.57) second 1.92 (3.09) third 2.30 (3.70) fourth 2.81 (4.53) fifth 3.20 (5.15) sixth 3.85 (6.20) seventh 4.61 (7.42) eighth 5.26 (8.46) ninth 5.65 (9.09) tenth 6.33 (10.19) eleventh 7.58 (12.20) twelfth 9.29 (14.95) thirteenth 10.83 (17.43) fourteenth 13.04 (20.98) fifteenth 15.62 (25.13) sixteenth 19.13 (30.78) reverse 1.67(2.68), 2.01(3.23), 2.40 (3.86), 2.94 (4.73), 3.34 (5.37), 4.02 (6.47), 4.82 (7.75), 5.49 (8.84), 5.90 (9.49), 6.61 (10.64), 7.92 (12.74), 9.69 (15.60), 11.31 (18.20), 13.61 (21.90), 16.30 (26.23), 19.97 (32.13) **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2143 engine rpm or 1000 rpm at 2208 engine rpm. **Unladen tractor mass** 10515 lb (4770 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted-Front Drive Engaged)**  
**MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crankshaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cooling med	Air dry bulb	Barom. inch Hg (kPa)
70.5 (52.6)	10790 (47.99)	2.45 (3.95)	2012	15.0	0.524 (0.319)	13.35 (2.63)	174 (79)	61 (16)	30.0 (101.6)
5th (B1) Gear									
76.8 (57.3)	9705 (43.16)	2.97 (4.78)	1901	9.6	0.494 (0.300)	14.16 (2.79)	181 (83)	61 (16)	30.0 (101.6)
6th (B2) Gear									
79.3 (59.1)	8120 (36.13)	3.66 (5.89)	1900	7.0	0.475 (0.289)	14.72 (2.90)	183 (84)	61 (16)	30.0 (101.6)
7th (B3) Gear									
78.9 (58.8)	6995 (31.11)	4.23 (6.81)	1900	5.9	0.479 (0.291)	14.59 (2.87)	180 (82)	61 (16)	29.9 (101.4)
8th (C1) Gear									
78.6 (58.6)	6455 (28.71)	4.57 (7.35)	1900	5.2	0.480 (0.292)	14.57 (2.87)	181 (83)	61 (16)	29.9 (101.4)
9th (B4) Gear									
80.2 (59.8)	5840 (25.97)	5.15 (8.29)	1902	4.3	0.471 (0.286)	14.85 (2.92)	180 (82)	48 (9)	30.0 (101.5)
10th (C2) Gear									
80.9 (60.3)	4880 (21.71)	6.21 (9.99)	1900	3.8	0.467 (0.284)	14.97 (2.95)	180 (82)	53 (12)	29.9 (101.3)
11th (C3) Gear									
78.3 (58.4)	3835 (17.06)	7.66 (12.33)	1901	3.1	0.482 (0.293)	14.52 (2.86)	180 (82)	53 (12)	29.9 (101.2)
12th (C4) Gear									

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claim of 71.0 dB(A) cab sound level. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2416**, Nebraska Summary 628, February 15, 2009.

Roger M. Hoy  
Director

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

TRACTOR SOUND LEVEL WITH CAB (IVT transmission)	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load at 4.6 mph (7.5 km/h) (engine 1200 rpm)	67.9	67.7
At no load at 4.6 mph (7.5 km/h) (engine 2460 rpm)	72.0	71.7
Transport	--	75.7
Bystander	--	84.4

TRACTOR SOUND LEVEL WITH CAB (PowrQuad transmission)	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th (B3) Gear	71.0	71.4
Maximum Sound level	73.6	71.6
Bystander	--	--

**TIRES AND WEIGHT**

**Rear Tires**—No., size, ply & psi (kPa)  
**Front Tires**—No., size, ply & psi (kPa)  
**Height of Drawbar**  
**Static Weight with operator**—Rear  
— Front  
— Total

**Tested Without Ballast**

Two 460/85R38; \*\*,12 (80)  
Two 340/85R28; \*\*,12 (80)  
20.5 in (520 mm)  
6580 lb (2985 kg)  
4100 lb (1860 kg)  
10680 lb (4845 kg)

This vehicle is equipped with an electronically controlled engine Power management system that monitors and boosts engine power output in certain circumstances. This is achieved by electronically changing the characteristics of the engine power-speed curve. The engine Power management function ("boosted" power level) becomes active in the higher transmission gears for road transport applications. The system is also activated when power transfer through the PTO exceeds a preset level (and forward speed exceeds 0.5 km/h), for mobile PTO driven implement applications. An override system is provided to enable PTO operations at the "boosted" power level while the vehicle is stationary for test purposes. The results of of this PTO output test are presented below.

### 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—1042 rpm)</b>					
89.7 (66.9)	2300	5.53 (20.93)	0.431 (0.262)	16.23 (3.20)	
<b>Standard Power Take-off Speed - (1000 rpm)</b>					
93.5 (69.7)	2208	5.55 (21.01)	0.415 (0.253)	16.84 (3.32)	
<b>Maximum Power (1 hour)</b>					
95.9 (71.5)	2100	5.61 (21.24)	0.409 (0.249)	17.10 (3.37)	

### VARYING POWER AND FUEL CONSUMPTION

89.7 (66.9)	2300	5.53 (20.93)	0.431 (0.262)	16.23 (3.20)	Air temperature
78.6 (58.6)	2371	5.10 (19.29)	0.453 (0.276)	15.42 (3.04)	64°F (18°C)
59.6 (44.4)	2398	4.35 (16.47)	0.511 (0.311)	13.69 (2.70)	Relative humidity
40.4 (30.1)	2433	3.72 (14.10)	0.644 (0.392)	10.86 (2.14)	38%
20.5 (15.3)	2458	2.73 (10.33)	0.929 (0.565)	7.53 (1.48)	Barometer
--	2460	2.04 (7.72)	--	--	29.4"Hg (99.6 kPa)
--			--	--	

Maximum Torque 269 lb.-ft. (365 Nm) at 1500 rpm  
Maximum Torque Rise - 31.3%  
Torque rise at 1800 rpm - 25%

## HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: none

OECD Static test

Maximum force exerted through whole range:  
 pump size 4450 lbs (19.8 kN)  
 17.5 GPM (66.3 l/min) 29.0 GPM (110.0 l/min)

i) Sustained pressure of the open relief valve: 3005 psi (207 bar) 3105 psi (214 bar)

ii) Pump delivery rate at minimum pressure: 18.9 GPM (71.7 l/min) 33.0 GPM (124.8 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 18.3 GPM (69.2 l/min) 30.4 GPM (115.2 l/min)

Delivery pressure: 2560 psi (176 bar) 2555 psi (176 bar)

Power: 27.3 HP (20.4 kW) 45.2 HP (33.7 kW)

### THREE POINT HITCH PERFORMANCE (SAE static test)

Observed Maximum Pressure psi. (bar) 2990 (206)  
 Location: lift cylinder  
 Hydraulic oil temperature: °F (°C) 149 (65)  
 Location: hydraulic valve  
 Category: II  
 Quick attach: none

System pressure - 2480 psi (171 Bar)

Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (915)
Lift force on frame lb	5622	6020	6106	5970	5356
" " " " " " (kN)	(25.0)	(26.8)	(27.2)	(26.6)	(23.8)

OECD test                      SAE test

	OECD test		SAE test	
	inch	mm	inch	mm
A	25.8	655	24.4	620
B	12.6	320	12.6	320
C	20.0	507	20.0	507
D	23.9	475	23.9	475
E	9.7	245	9.7	245
F	8.7	220	8.7	220
G	32.3	820	32.3	820
H	4.9	125	4.9	125
I	17.6	448	17.6	448
J	23.6	600	23.6	600
K	19.8	502	19.8	502
L	42.3	1076	42.3	1076
M	21.5	546	21.5	546
N	37.2	945	37.2	945
O	7.9	200	7.9	200
P	47.6	1210	42.6	1083
Q	34.6	880	34.6	880
R	31.3	795	31.3	795

