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2008

## Test 1923: John Deere 7430 IVT Diesel

Nebraska Tractor Test Lab

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

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# NEBRASKA OECD TRACTOR TEST 1923—SUMMARY 593

## JOHN DEERE 7430 DIESEL

### INFINITELY VARIABLE TRANSMISSION

#### 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—1072 rpm)</b>					
141.13 (105.24)	2101	8.48 (32.09)	0.421 (0.256)	16.65 (3.28)	
<b>Standard Power Take-off Speed (1001 rpm)</b>					
157.31 (117.30)	1961	9.09 (34.43)	0.405 (0.247)	17.30 (3.41)	
<b>Maximum Power (1 hour)</b>					
161.22 (120.22)	1701	9.34 (35.36)	0.406 (0.247)	17.26 (3.40)	

#### VARYING POWER AND FUEL CONSUMPTION

141.13 (105.24)	2101	8.48 (32.09)	0.421 (0.256)	16.65 (3.28)	Air temperature
123.61 (92.18)	2167	7.76 (29.38)	0.440 (0.268)	15.93 (3.14)	77°F (25°C)
93.88 (70.01)	2196	6.62 (25.06)	0.494 (0.301)	14.18 (2.79)	Relative humidity
63.92 (47.66)	2224	5.41 (20.47)	0.593 (0.361)	11.82 (2.33)	21%
32.27 (24.06)	2244	4.29 (16.25)	0.933 (0.567)	7.52 (1.48)	Barometer
1.92 (1.43)	2250	2.60 (8.26)	9.475 (5.763)	0.74 (0.15)	28.75" Hg (97.36 kPa)

Maximum Torque - 513 lb.-ft. (694 Nm) at 1602 rpm

Maximum Torque Rise -45.2%

Torque rise at 1701 engine rpm -41%

Power increase at 1701 engine rpm -14.2%

#### 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 dry med bulb	Barom. inch Hg (kPa)
<b>Maximum Power—6.2 mph (10.0 km/h)(Manual mode)</b>								
126.57 (94.38)	8393 (37.33)	5.66 (9.10)	2099	2.60	0.465 (0.283)	15.08 (2.97)	179 (82)	52 (11)
<b>75% of Pull at Maximum Power—6.2 mph (10.0 km/h)(Manual mode)</b>								
100.22 (74.73)	6356 (28.27)	5.91 (9.52)	2175	1.77	0.511 (0.311)	13.71 (2.70)	175 (80)	59 (15)
<b>50% of Pull at Maximum Power—6.2 mph (10.0 km/h)(Manual mode)</b>								
68.08 (50.76)	4211 (18.73)	6.06 (9.76)	2215	1.07	0.602 (0.366)	11.64 (2.29)	173 (78)	59 (15)
<b>75% of Pull at Reduced Engine Speed—6.2 mph (10.0 km/h)(Auto mode)</b>								
100.11 (74.65)	6394 (28.44)	5.87 (9.45)	1717	1.74	0.486 (0.296)	14.41 (2.84)	183 (84)	59 (15)
<b>50% of Pull at Reduced Engine Speed—6.2 mph (10.0 km/h)(Auto mode)</b>								
68.22 (50.87)	4245 (18.88)	6.03 (9.70)	1446	1.11	0.504 (0.307)	13.90 (2.74)	175 (80)	59 (15)

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

**Dates of tests:** March 27-April 24, 2008

**Manufacturer:** John Deere Waterloo Works, P.O. Box 270, Waterloo Ia, USA, 50704

**FUEL, OIL and TIME:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8419 Fuel weight 7.010 lbs/gal (0.840 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: 36.0 hours

**ENGINE:** Make John Deere Diesel Type six cylinder vertical with turbocharger and intercooler Serial No. \*PE6068L025104\* 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 414 cu in (6788 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 one paper element and prestrainer Fuel cooler radiator for returned fuel Muffler underhood Exhaust vertical Cooling medium temperature control 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 55.3 - 61.1 lb/h (25.1 - 27.7 kg/h) High idle: 2200-2300 rpm Turbo boost: nominal 16.0-18.1 psi (110-125 kPa) as measured 17.2 psi (118 kPa)

**CHASSIS:** Type front wheel assist Serial No. \*RW7430P004428\* Tread width rear 63.0" (1601 mm) to 100.3" (2548 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) Wheelbase 105.7" (2685 mm) Hydraulic control system direct engine drive Transmission Infinitely variable with four mechanical ranges and automatic shifting between ranges. Nominal travel speeds mph (km/h) forward - 0-25.0 mph, (0-40 km/h) reverse - 0-25.0 mph (0-40 km/h) Clutch wet multiple disc hydraulically actuated by foot pedal Brakes wet multiple disc hydraulically operated by two foot pedals that can be locked together Steering hydrostatic Power take-off 540 rpm at 1778 engine rpm or 1000 rpm at 1950 engine rpm. Economy PTO 1000 rpm at 1733 engine rpm Unladen tractor mass 15015 lb (6811 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - AUTO MODE**  
**MAXIMUM POWER AT SELECTED SPEEDS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp.°F (°C)		Barom. inch Hg (kPa)
					3.1 mph (5.0 km/h)				
104.86 (78.19)	14683 (65.31)	2.68 (4.31)	1967	10.38	0.520 (0.316)	13.49 (2.66)	179 (82)	48 (9)	28.76 (97.39)
					3.7 mph (6.0 km/h)				
120.34 (89.74)	13414 (59.67)	3.36 (5.41)	1974	6.10	0.492 (0.299)	14.26 (2.81)	183 (84)	50 (10)	28.72 (97.26)
					4.3 mph (7.0 km/h)				
122.04 (91.01)	11440 (50.89)	4.00 (6.44)	1974	4.40	0.476 (0.290)	14.73 (2.90)	180 (82)	51 (11)	29.11 (98.58)
					5.0 mph (8.0 km/h)				
126.70 (94.48)	10291 (45.78)	4.62 (7.43)	1974	3.51	0.460 (0.280)	15.24 (3.00)	178 (81)	49 (9)	29.12 (98.61)
					6.0 mph (9.6 km/h)				
131.12 (97.78)	8988 (39.98)	5.47 (8.80)	1974	2.68	0.447 (0.272)	15.67 (3.09)	181 (83)	43 (6)	29.12 (98.61)
					6.2 mph (10.0 km/h)				
131.96 (98.40)	8500 (37.81)	5.82 (9.37)	1975	2.67	0.452 (0.275)	15.50 (3.05)	182 (84)	53 (12)	29.11 (98.58)
					6.8 mph (11.0 km/h)				
129.86 (96.84)	7582 (33.73)	6.42 (10.34)	1973	2.32	0.463 (0.282)	15.14 (2.98)	180 (82)	56 (13)	29.09 (98.51)
					7.5 mph (12.0 km/h)				
126.25 (94.15)	6788 (29.97)	7.03 (11.31)	1973	1.97	0.474 (0.288)	14.80 (2.91)	180 (82)	58 (14)	29.08 (98.48)
					8.1 mph (13.0 km/h)				
123.43 (92.04)	6070 (27.00)	7.63 (12.27)	1971	1.73	0.490 (0.298)	14.31 (2.82)	185 (85)	60 (16)	29.06 (98.41)
					9.1 mph (14.6 km/h)				
120.12 (89.57)	5228 (23.25)	8.62 (13.87)	1976	1.42	0.504 (0.307)	13.91 (2.74)	181 (83)	60 (16)	29.03 (98.31)

**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 injection pump inlet was maintained at 117°F (47°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. **1923**, Nebraska Summary 593, September 17, 2008.

Roger M. Hoy  
Director

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

<b>TRACTOR SOUND LEVEL WITH PREMIUM CAB</b>	<b>Auto Mode dB(A)</b>
At no load at 4.6 mph (7.5 km/h) (engine 1230 rpm)	65.8
At no load at 4.6 mph (7.5 km/h) (engine 2250 rpm)	70.5
Transport speed-no load	72.9
Bystander	86.0

**TIRES, BALLAST AND WEIGHT**

	<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Four 480/80R42;**,9(60)	Two 480/80R42;**,15(105)
<b>Ballast</b> - Duals (total)	1520 lb (690 kg)	None
- Cast Iron (total)	1305 lb (592 kg)	None
<b>Front Tires</b> - No., size, ply & psi(kPa)	Two 380/85R30;**,18(125)	Two 380/85R30;**,12(85)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	1085 lb (492 kg)	None
<b>Height of Drawbar</b>	19.5 in (495 mm)	19.5 in (495 mm)
<b>Static Weight with operator</b> - Rear	12300 lb (5579 kg)	9850 lb (4468 kg)
- Front	6800 lb (3085 kg)	5340 lb (2422 kg)
- Total	19100 lb (8664 kg)	15190 lb (6890 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - MANUAL MODE**  
**MAXIMUM POWER AT SELECTED SPEEDS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3.1 mph (5.0 km/h)									
104.89 (78.22)	14640 (65.12)	2.69 (4.32)	2162	10.11	0.531 (0.323)	13.21 (2.60)	178 (81)	47 (8)	28.78 (97.46)
3.7 mph (6.0 km/h)									
117.02 (87.26)	13429 (59.74)	3.27 (5.26)	2101	6.21	0.504 (0.307)	13.90 (2.74)	178 (81)	49 (9)	28.74 (97.33)
4.3 mph (7.0 km/h)									
118.52 (88.38)	11448 (50.92)	3.88 (6.25)	2096	4.37	0.497 (0.302)	14.11 (2.78)	177 (81)	51 (11)	29.11 (98.58)
5.0 mph (8.0 km/h)									
123.23 (91.89)	10300 (45.82)	4.49 (7.22)	2101	3.50	0.475 (0.289)	14.76 (2.91)	176 (80)	48 (9)	29.12 (98.61)
6.0 mph (9.6 km/h)									
126.67 (94.46)	8943 (39.78)	5.31 (8.55)	2099	2.63	0.467 (0.284)	15.00 (2.95)	180 (82)	42 (6)	29.12 (98.61)
6.2 mph (10.0 km/h)									
126.57 (94.38)	8393 (37.33)	5.66 (9.10)	2099	2.60	0.465 (0.283)	15.08 (2.97)	179 (82)	52 (11)	29.11 (98.58)
6.8 mph (11.0 km/h)									
124.74 (93.02)	7504 (33.38)	6.23 (10.03)	2098	2.27	0.473 (0.287)	14.83 (2.92)	177 (81)	55 (13)	29.10 (98.54)
7.5 mph (12.0 km/h)									
122.26 (91.17)	6718 (29.89)	6.82 (10.98)	2098	2.05	0.487 (0.296)	14.40 (2.84)	178 (81)	58 (14)	29.09 (98.51)
8.1 mph (13.0 km/h)									
120.14 (89.59)	6082 (27.05)	7.41 (11.92)	2097	1.72	0.492 (0.299)	14.25 (2.81)	182 (83)	60 (16)	29.07 (98.44)
9.1 mph (14.6 km/h)									
114.16 (85.13)	5120 (22.77)	8.36 (13.46)	2100	1.40	0.515 (0.313)	13.61 (2.68)	178 (81)	60 (16)	29.04 (98.34)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - 1700 RPM - MANUAL MODE**  
**MAXIMUM POWER AT SELECTED SPEEDS**

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.lhr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3.1 mph (5.0 km/h)									
104.93 (78.25)	14641 (65.13)	2.69 (4.33)	2162	10.07	0.532 (0.323)	13.18 (2.60)	177 (81)	47 (8)	28.78 (97.46)
3.7 mph (6.0 km/h)									
119.64 (89.22)	14355 (63.85)	3.13 (5.03)	2060	8.54	0.502 (0.306)	13.95 (2.75)	181 (83)	51 (11)	28.70 (97.19)
4.3 mph (7.0 km/h)									
125.16 (93.33)	14077 (62.62)	3.33 (5.37)	1907	9.74	0.504 (0.307)	13.91 (2.74)	181 (83)	51 (11)	29.11 (98.58)
5.0 mph (8.0 km/h)									
134.09 (99.99)	13735 (61.10)	3.66 (5.89)	1785	7.33	0.476 (0.290)	14.73 (2.90)	185 (85)	50 (10)	29.12 (98.62)
6.0 mph (9.6 km/h)									
141.37 (105.42)	12679 (56.40)	4.18 (6.73)	1703	5.49	0.462 (0.281)	15.16 (2.99)	186 (86)	44 (7)	29.12 (98.61)
6.2 mph (10.0 km/h)									
142.15 (106.00)	11927 (53.06)	4.47 (7.19)	1697	4.82	0.460 (0.280)	15.24 (3.00)	186 (85)	54 (12)	29.10 (98.54)
6.8 mph (11.0 km/h)									
142.01 (105.90)	10723 (47.70)	4.97 (7.99)	1700	3.94	0.458 (0.279)	15.30 (3.01)	188 (87)	57 (14)	29.09 (98.51)
7.5 mph (12.0 km/h)									
140.59 (104.84)	9674 (43.03)	5.45 (8.77)	1697	3.31	0.463 (0.282)	15.14 (2.98)	189 (87)	59 (15)	29.08 (98.48)
8.1 mph (13.0 km/h)									
138.95 (103.62)	8760 (38.97)	5.95 (9.57)	1702	2.73	0.468 (0.285)	14.98 (2.95)	190 (88)	60 (16)	29.05 (98.37)
9.1 mph (14.6 km/h)									
133.66 (99.67)	7476 (33.26)	6.70 (10.79)	1697	2.18	0.493 (0.300)	14.22 (2.80)	189 (87)	60 (16)	29.02 (98.27)
9.9 mph (16.0 km/h)									
135.89 (101.33)	6925 (30.80)	7.36 (11.84)	1696	1.97	0.483 (0.294)	14.50 (2.86)	193 (89)	61 (16)	29.01 (98.23)
10.9 mph (17.6 km/h)									
137.63 (102.63)	6377 (28.37)	8.09 (13.02)	1693	1.81	0.478 (0.291)	14.65 (2.89)	193 (89)	61 (16)	29.01 (98.23)

**DRAWBAR PERFORMANCE**  
**BALLASTED - 1700 RPM - MANUAL MODE**  
**MAXIMUM POWER AT SELECTED SPEEDS**

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	Barom. inch Hg (kPa)		
95.49 (71.21)	18332 (81.54)	1.95 (3.14)	2169	2.2mph (3.6 km/h) 9.11 0.561 (0.341)		12.50 (2.46)	180 (82)	65 (18)	28.41 (96.21)
108.67 (81.03)	17635 (78.44)	2.31 (3.72)	2157	2.6mph (4.2 km/h) 7.40 0.531 (0.323)		13.20 (2.60)	180 (82)	66 (19)	28.41 (96.21)
120.46 (89.83)	17091 (76.02)	2.64 (4.25)	2052	3.1mph (5.0 km/h) 6.41 0.516 (0.314)		13.59 (2.68)	181 (83)	67 (19)	28.43 (96.28)
130.34 (97.19)	16563 (73.68)	2.95 (4.75)	1892	3.7mph (6.0 km/h) 5.59 0.490 (0.298)		14.30 (2.82)	186 (86)	68 (20)	28.45 (96.34)
131.06 (97.73)	15685 (69.77)	3.13 (5.04)	1701	4.3mph (7.0 km/h) 4.51 0.500 (0.304)		14.02 (2.76)	193 (89)	69 (21)	28.47 (96.41)
136.39 (101.71)	14206 (63.19)	3.60 (5.79)	1697	5.0mph (8.0 km/h) 3.74 0.480 (0.292)		14.61 (2.88)	194 (90)	69 (21)	28.48 (96.44)
139.42 (103.96)	12852 (57.17)	4.07 (6.55)	1698	5.6mph (9.0 km/h) 3.38 0.472 (0.287)		14.86 (2.93)	193 (89)	69 (21)	28.49 (96.48)
141.69 (105.66)	11642 (51.78)	4.56 (7.35)	1701	6.2mph (10.0 km/h) 2.66 0.463 (0.282)		15.14 (2.98)	194 (90)	69 (21)	28.50 (96.51)
140.79 (104.99)	10487 (46.65)	5.03 (8.10)	1702	6.8mph (11.0 km/h) 2.37 0.465 (0.283)		15.08 (2.97)	192 (89)	70 (21)	28.51 (98.55)
139.99 (104.39)	9538 (42.43)	5.50 (8.86)	1699	7.5mph (12.0 km/h) 2.04 0.469 (0.286)		14.93 (2.94)	194 (90)	70 (21)	28.53 (96.61)
137.30 (102.39)	8619 (38.34)	5.97 (9.61)	1701	8.1mph (13.0 km/h) 1.93 0.478 (0.291)		14.65 (2.89)	197 (91)	71 (22)	28.55 (96.68)
131.36 (97.95)	7325 (32.58)	6.73 (10.82)	1698	9.1mph (14.6 km/h) 1.53 0.498 (0.303)		14.08 (2.77)	197 (92)	71 (22)	28.56 (96.72)
133.27 (99.38)	7052 (31.37)	7.09 (11.40)	1699	9.6mph (15.4 km/h) 1.45 0.495 (0.301)		14.17 (2.79)	195 (91)	72 (22)	28.57 (96.75)
136.14 (101.52)	6277 (27.92)	8.13 (13.09)	1698	10.9mph (17.6 km/h) 1.26 0.483 (0.294)		14.52 (2.86)	197 (91)	72 (22)	28.58 (96.78)

### THREE POINT HITCH PERFORMANCE (OECD Static Test)

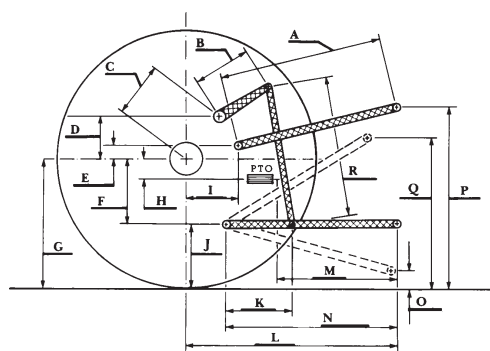
CATEGORY: III

Quick Attach: None

Maximum force exerted through whole range: 11049 lbs (49.1 kN)

	<u>1 outlet set</u>	<u>three outlet sets combined</u>
i) Sustained pressure at compensator cutoff:	2953 psi (204 bar)	2978 psi (205 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	29.4 GPM (111.2 l/min)	29.9 GPM (113.0 l/min)
iii) Pump delivery rate at maximum hydraulic power:	28.5 GPM (107.7 l/min)	29.6 GPM (111.9 l/min)
Delivery pressure:	2227 psi (153 bar)	2503 psi (173 bar)
Power:	37.0 HP (27.6 kW)	43.2 HP (32.2 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	27.2	692
B	16.1	410
C	22.3	566
D	21.1	535
E	8.6	218
F	9.6	245
G	34.2	870
H	3.1	80
I	18.3	465
J	24.6	625
K	23.1	587
L	44.9	1140
M	22.0	560
N	38.6	980
O	9.0	230
P	51.6	1310
Q	38.0	964
R	37.4	950



**JOHN DEERE 7430 DIESEL**