2008

Test 1921: John Deere 7130 Diesel

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1921–SUMMARY 591
JOHN DEERE 7130 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1038 rpm)					
101.98 *(76.05)*	2301	6.75 *(25.54)*	0.464 *(0.282)*	15.11 *(2.98)*	
Standard Power Take-off Speed (1000 rpm)					
109.04 *(81.31)*	2214	6.95 *(26.32)*	0.447 *(0.272)*	15.69 *(3.09)*	
Maximum Power (1 hour)					
117.50 *(87.62)*	1900	7.13 *(26.98)*	0.425 *(0.259)*	16.48 *(3.25)*	
VARYING POWER AND FUEL CONSUMPTION					
101.98 *(76.05)*	2301	6.75 *(25.54)*	0.464 *(0.282)*	15.11 *(2.98)*	Air temperature
89.61 *(66.82)*	2382	6.45 *(24.41)*	0.504 *(0.307)*	13.90 *(2.74)*	80°F *(27°C)*
68.60 *(51.16)*	2412	5.55 *(21.01)*	0.567 *(0.345)*	12.36 *(2.44)*	Relative humidity
46.15 *(34.41)*	2437	4.68 *(17.71)*	0.711 *(0.432)*	9.86 *(1.94)*	15%
22.98 *(17.14)*	2453	4.17 *(15.77)*	1.270 *(0.773)*	5.52 *(1.09)*	Barometer
1.70 *(1.26)*	2460	3.12 *(9.94)*	12.918 *(7.858)*	0.54 *(0.11)*	28.79 Hg *(97.50 kPa)*

Maximum torque - 343 lb.-ft. *(465 Nm)* at 1449 rpm
Maximum torque rise - 47.1%
Torque rise at 1847 engine rpm - 42%
Power increase at 1900 engine rpm - 15.2%

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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F cool-ing med	*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—8th (C1) Gear									
94.11 *(70.18)*	7212 *(32.08)*	4.89 *(7.88)*	2293	3.19	0.500 *(0.304)*	14.03 *(2.76)*	179 *(82)*	45 *(7)*	28.90 *(97.87)*
75% of Pull at Maximum Power—8th (C1) Gear									
74.20 *(55.33)*	5401 *(24.02)*	5.15 *(8.29)*	2396	2.45	0.558 *(0.339)*	12.57 *(2.48)*	178 *(81)*	52 *(11)*	28.90 *(97.87)*
50% of Pull at Maximum Power—8th (C1) Gear									
50.82 *(37.90)*	3624 *(16.12)*	5.26 *(8.46)*	2427	1.68	0.683 *(0.416)*	10.26 *(2.02)*	175 *(80)*	54 *(12)*	28.89 *(97.83)*
75% of Pull at Reduced Engine Speed—11th (C3) Gear									
74.22 *(55.35)*	5406 *(24.05)*	5.15 *(8.29)*	1661	2.47	0.487 *(0.296)*	14.39 *(2.83)*	175 *(79)*	53 *(12)*	28.89 *(97.83)*
50% of Pull at Reduced Engine Speed—11th (C3) Gear									
50.66 *(37.78)*	3615 *(16.08)*	5.26 *(8.46)*	1681	1.69	0.532 *(0.324)*	13.18 *(2.60)*	172 *(78)*	55 *(13)*	28.88 *(97.80)*

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

Dates of tests: March 26-April 29, 2008

Manufacturer: John Deere Tractor Works, 3500 East Donald Street, P.O. Box 270, Waterloo Ia, 50704-0270

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:** 24.5 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.***PE6068L026109* **Crankshaft** lengthwise **Rated engine speed** 2300 **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 pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 44.1 - 48.5 lb/h *(20.0 -22.0 kg/h)* **High idle:** 2410 - 2510 rpm **Turbo boost:** nominal 11.6-14.5 psi *(80-100 kPa)* as measured 13.2 psi *(91 kPa)*

CHASSIS: Type front wheel assist **Serial No.***RW7130H004327* **Tread width** rear 63.0" *(1601 mm)* to 85.7" *(2178 mm)* front 59.4" *(1510 mm)* to 88.0" *(2235 mm)* **Wheelbase** 104.3" *(2650 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled power shift **Nominal travel speeds mph *(km/h)*** first 1.53 *(2.46)* second 1.84 *(2.96)* third 2.21 *(3.55)* fourth 2.70 *(4.35)* fifth 3.06 *(4.93)* sixth 3.69 *(5.94)* seventh 4.42 *(7.11)* eighth 5.04 *(8.11)* ninth 5.41 *(8.71)* tenth 6.07 *(9.77)* eleventh 7.27 *(11.70)* twelfth 8.90 *(14.33)* thirteenth 10.38 *(16.70)* fourteenth 12.50 *(20.11)* fifteenth 14.96 *(24.09)* sixteenth 18.34 *(29.51)* reverse 1.60 *(2.57)*, 1.92 *(3.09)*, 2.30 *(3.70)*, 2.82 *(4.54)*, 3.20 *(5.15)*, 3.85 *(6.20)*, 4.61 *(7.42)*, 5.26 *(8.47)*, 5.65 *(9.09)*, 6.33 *(10.19)*, 7.59 *(12.21)*, 9.30 *(14.96)*, 10.83 *(17.43)*, 13.04 *(20.99)*, 15.62 *(25.14)*, 19.13 *(30.79)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 2300 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)*
				4th(A4) Gear					
83.37 *(62.17)*	12385 *(55.09)*	2.52 *(4.06)*	2364	9.66	0.560 *(0.340)*	12.52 *(2.47)*	177 *(81)*	41 *(5)*	28.94 *(98.00)*
				5th(B1) Gear					
90.72 *(67.65)*	11929 *(53.06)*	2.85 *(4.59)*	2305	7.70	0.513 *(0.312)*	13.66 *(2.69)*	178 *(81)*	43 *(6)*	28.93 *(97.97)*
				6th(B2) Gear					
91.66 *(68.35)*	9729 *(43.28)*	3.53 *(5.69)*	2298	4.72	0.511 *(0.311)*	13.72 *(2.70)*	178 *(81)*	46 *(8)*	28.93 *(97.97)*
				7th(B3) Gear					
94.79 *(70.69)*	8305 *(36.94)*	4.28 *(6.89)*	2299	3.69	0.491 *(0.299)*	14.26 *(2.81)*	179 *(82)*	46 *(8)*	28.88 *(97.80)*
				8th(C1) Gear					
94.11 *(70.18)*	7212 *(32.08)*	4.89 *(7.88)*	2293	3.19	0.500 *(0.304)*	14.03 *(2.76)*	179 *(82)*	45 *(7)*	28.90 *(97.87)*
				9th (B4) Gear					
90.48 *(67.47)*	6405 *(28.49)*	5.30 *(8.52)*	2302	2.81	0.523 *(0.318)*	13.41 *(2.64)*	178 *(81)*	47 *(8)*	28.88 *(97.80)*
				10th(C2) Gear					
91.06 *(67.90)*	5745 *(25.56)*	5.94 *(9.56)*	2298	2.55	0.518 *(0.315)*	13.53 *(2.67)*	178 *(81)*	46 *(8)*	28.90 *(97.87)*
				11th (C3) Gear					
92.27 *(68.80)*	4849 *(21.57)*	7.14 *(11.48)*	2294	2.13	0.503 *(0.306)*	13.95 *(2.75)*	178 *(81)*	48 *(9)*	28.86 *(97.73)*
				12th(C4) Gear					
87.14 *(64.98)*	3720 *(16.55)*	8.78 *(14.14)*	2293	1.62	0.543 *(0.330)*	12.91 *(2.54)*	180 *(82)*	49 *(9)*	28.83 *(97.63)*

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 2143 engine rpm or 1000 rpm at 2208 engine rpm **Unladen tractor mass** 12340 lb *(5597 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 129°F *(54°C)*. This tractor did not meet the manufacturer's 3 point lift claim of 7450 lb *(3379 kg)*, with 75 mm cylinders. The manufacturer's claim of 35% torque rise with the 2V-CR PowerTech E engine was not verified. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1921**, Nebraska Summary 591, September 17, 2008.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB	Comfortgard Cab 2WD dB(A)	Premium cab Front Wheel Drive Engaged dB(A)	Premium cab Front Wheel Drive Disengaged dB(A)
At no load in 7th (B3) gear	69.1	71.0	70.7
Transport speed - no load - 16th (D4) gear	71.6		71.9
Bystander in 16th (D4) gear			81.8

TIRES, BALLAST AND WEIGHT	Tested without ballast
Rear Tires - No., size, ply & psi *(kPa)*	Two 480/80R38;***;12 *(85)*
Front Tires - No., size, ply & psi *(kPa)*	Two 380/85R28;***;11 *(75)*
Height of Drawbar	20.0 in *(510 mm)*
Static Weight with operator - Rear	7745 lb *(3513 kg)*
- Front	4770 lb *(2164 kg)*
- Total	12515 lb *(5677 kg)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 1900 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)*
					4th(A4)Gear				
83.46	12324	2.54	2367	9.19	0.556	12.61	177	41	28.94
(62.24)	*(54.82)*	*(4.09)*			*(0.338)*	*(2.48)*	*(80)*	*(5)*	*(98.00)*
					5th(B1)Gear				
91.07	11979	2.85	2303	7.62	0.512	13.68	178	43	28.93
(67.91)	*(53.29)*	*(4.59)*			*(0.312)*	*(2.69)*	*(81)*	*(6)*	*(97.97)*
					6th(B2)Gear				
99.36	11762	3.17	2114	7.13	0.490	14.30	179	48	28.92
(74.09)	*(52.32)*	*(5.10)*			*(0.298)*	*(2.82)*	*(81)*	*(9)*	*(97.93)*
					7th(B3)Gear				
105.09	11435	3.45	1902	6.26	0.468	14.98	182	47	28.88
(78.36)	*(50.87)*	*(5.55)*			*(0.285)*	*(2.95)*	*(83)*	*(8)*	*(97.80)*
					8th(C1)Gear				
106.56	10083	3.96	1891	4.92	0.464	15.12	181	45	28.90
(79.46)	*(44.85)*	*(6.38)*			*(0.282)*	*(2.98)*	*(83)*	*(7)*	*(97.87)*
					9th(B4)Gear				
104.79	9099	4.32	1903	4.19	0.473	14.83	181	48	28.87
(78.14)	*(40.48)*	*(6.95)*			*(0.288)*	*(2.92)*	*(83)*	*(9)*	*(97.77)*
					10th(C2)Gear				
105.64	8183	4.84	1893	3.65	0.470	14.92	181	46	28.89
(78.77)	*(36.40)*	*(7.79)*			*(0.286)*	*(2.94)*	*(83)*	*(8)*	*(97.83)*
					11th(C3)Gear				
107.11	6869	5.85	1897	3.00	0.465	15.09	180	49	28.84
(79.87)	*(30.56)*	*(9.41)*			*(0.283)*	*(2.97)*	*(82)*	*(9)*	*(97.66)*
					12th(C4)Gear				
102.24	5278	7.26	1909	2.26	0.496	14.15	182	50	28.82
(76.24)	*(23.48)*	*(11.69)*			*(0.301)*	*(2.79)*	*(83)*	*(10)*	*(97.60)*
					13th(D1)Gear				
102.56	4569	8.42	1893	2.02	0.485	14.44	182	50	28.82
(76.48)	*(20.33)*	*(13.55)*			*(0.295)*	*(2.85)*	*(83)*	*(10)*	*(97.60)*

DRAWBAR PERFORMANCE

UNBALLASTED - 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—8th (C1) Gear									
93.32	7289	4.80	2294	3.97	0.503	13.94	179	45	28.91
(69.59)	*(32.42)*	*(7.73)*			*(0.306)*	*(2.75)*	*(82)*	*(7)*	*(97.90)*
75% of Pull at Maximum Power—8th (C1) Gear									
74.40	5490	5.08	2400	2.83	0.552	12.70	176	52	28.90
(55.48)	*(24.42)*	*(8.18)*			*(0.336)*	*(2.50)*	*(80)*	*(11)*	*(97.87)*
50% of Pull at Maximum Power—8th (C1) Gear									
50.67	3667	5.18	2425	1.97	0.681	10.30	176	54	28.88
(37.78)	*(16.31)*	*(8.34)*			*(0.414)*	*(2.03)*	*(80)*	*(12)*	*(97.80)*
75% of Pull at Reduced Engine Speed—11th (C3) Gear									
74.59	5509	5.08	1664	2.92	0.486	14.43	175	53	28.90
(55.62)	*(24.51)*	*(8.17)*			*(0.296)*	*(2.84)*	*(79)*	*(12)*	*(97.87)*
50% of Pull at Reduced Engine Speed—11th (C3) Gear									
50.76	3671	5.19	1683	1.97	0.524	13.39	171	55	28.88
(37.85)	*(16.33)*	*(8.35)*			*(0.318)*	*(2.64)*	*(77)*	*(13)*	*(97.80)*

MAXIMUM POWER IN SELECTED GEARS

5th(B1) Gear									
71.65	9352	2.87	2396	9.53	0.591	11.86	175	45	28.93
(53.43)	*(41.60)*	*(4.62)*			*(0.359)*	*(2.34)*	*(80)*	*(7)*	*(97.97)*
6th(B2) Gear									
83.38	8789	3.56	2372	6.01	0.548	12.80	176	47	28.92
(62.17)	*(39.09)*	*(5.73)*			*(0.333)*	*(2.52)*	*(80)*	*(8)*	*(97.93)*
7th(B3) Gear									
92.66	8346	4.16	2294	5.02	0.508	13.80	177	47	28.88
(69.10)	*(37.12)*	*(6.70)*			*(0.309)*	*(2.72)*	*(80)*	*(8)*	*(97.80)*
8th(C1) Gear									
93.32	7289	4.80	2294	3.97	0.503	13.94	179	45	28.91
(69.59)	*(32.42)*	*(7.73)*			*(0.306)*	*(2.75)*	*(82)*	*(7)*	*(97.90)*
9th(B4) Gear									
90.67	6546	5.19	2299	3.46	0.521	13.46	179	47	28.87
(67.62)	*(29.12)*	*(8.36)*			*(0.317)*	*(2.65)*	*(81)*	*(8)*	*(97.77)*
10th(C2) Gear									
92.37	5926	5.84	2296	3.00	0.508	13.80	179	46	28.90
(68.88)	*(26.36)*	*(9.41)*			*(0.309)*	*(2.72)*	*(82)*	*(8)*	*(97.87)*
11th(C3) Gear									
93.20	4970	7.03	2294	2.47	0.507	13.83	178	48	28.85
(69.50)	*(22.11)*	*(11.32)*			*(0.308)*	*(2.72)*	*(81)*	*(9)*	*(97.70)*
12th(C4) Gear									
88.73	3825	8.70	2302	1.86	0.529	13.25	180	49	28.83
(66.17)	*(17.02)*	*(14.00)*			*(0.322)*	*(2.61)*	*(82)*	*(9)*	*(97.63)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II, IIIN
Quick Attach: No

Maximum force exerted through whole range:	5110 lbs *(22.7 kN)*(75 mm cylinders)	
	6398 lbs *(28.5 kN)*(80 mm cylinders)	
	8262 lbs *(36.8 kN)*(90 mm cylinders)	
	17.5 GPM pump	29 GPM pump
i) Sustained pressure at compensator cutoff:	2930 psi *(202 bar)*	2895 psi *(200 bar)*
	two outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	18.4 GPM*(69.6 l/min)*	31.0 GPM *(117.4 l/min)*
iii)Pump delivery rate at maximum hydraulic power:	18.3 GPM*(69.1 l/min)*	29.7 GPM *(112.4 l/min)*
Delivery pressure:	2731 psi *(188 bar)*	2508 psi *(173 bar)*
Power:	29.1 HP *(21.7 kW)*	43.4 HP *(32.4 kW)*
	single outlet set	
ii) Pump delivery rate at minimum pressure and rated engine speed:	18.1 GPM*(68.6 l/min)*	26.0 GPM *(98.3 l/min)*
iii)Pump delivery rate at maximum hydraulic power:	18.0 GPM*(68.2 l/min)*	25.2 GPM *(95.5 l/min)*
Delivery pressure:	2518 psi *(174 bar)*	2308 psi *(159 bar)*
Power:	26.5 HP *(19.7 kW)*	34.0 HP *(25.3 kW)*

THREE POINT HITCH PERFORMANCE(SAE Static test)

Observed maximum pressure psi.*(bar)*	2990*(206)*
Location:	lift cylinders
Hydraulic oil temperature: °F *(°C)*	149*(65)*
Location:	hydraulic sump
Category:	II,IIIN
Quick attach:	No

System pressure 2545 psi *(176 Bar)*
with lift cylinders 2 x 75 mm

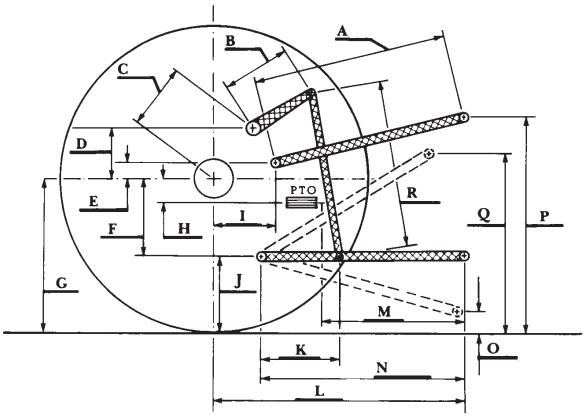
Hitch point distance to ground level in. *(mm)*	7.9*(201)*	14.9*(379)*	21.9*(556)*	28.9*(735)*	36.1*(916)*
Lift force on frame lb	6676	7154	7246	7032	6355
" " " " " " " *(kN)*	*(29.7)*	*(31.8)*	*(32.2)*	*(31.3)*	*(28.3)*

with lift cylinders 2 x 80 mm

Hitch point distance to ground level in. *(mm)*	7.9*(201)*	16.3*(415)*	23.9*(608)*	31.9*(810)*	40.0*(1015)*
Lift force on frame lb	15683	9566	9428	9212	8322
" " " " " " " *(kN)*	*(69.8)*	*(42.6)*	*(41.9)*	*(41.0)*	*(37.0)*

with lift cylinders 2 x 90 mm

Hitch point distance to ground level in. *(mm)*	8.0*(203)*	15.9*(403)*	23.9*(606)*	31.9*(811)*	40.0*(1015)*
Lift force on frame lb	18196	12491	12253	11980	10875
" " " " " " " *(kN)*	*(80.9)*	*(55.6)*	*(54.5)*	*(53.3)*	*(48.4)*



HITCH DIMENSIONS AS TESTED—NO LOAD

	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	12.6	*320*	12.6	*320*
F	8.7	*220*	8.7	*220*
G	32.3	*820*	32.3	*820*
H	4.9	*125*	4.9	*125*
I	16.9	*428*	16.9	*428*
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*

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JOHN DEERE 7130 DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln