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Tractor Test 1845: John Deere 9620T Diesel

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 1845—SUMMARY 449

JOHN DEERE 9620T DIESEL

18 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—1108 rpm)					
324.10 (241.68)	2100	19.14 (72.46)	0.413 (0.251)	16.93 (3.34)	
Standard Power Take-off Speed—(PTO speed—1000 rpm)					
363.53 (271.08)	1894	20.22 (76.55)	0.390 (0.237)	17.98 (3.54)	
Maximum Power (2 hours)					
374.40 (279.19)	1700	19.97 (75.58)	0.374 (0.227)	18.75 (3.69)	

VARYING POWER AND FUEL CONSUMPTION

324.10 (241.68)	2100	19.14 (72.46)	0.413 (0.251)	16.93 (3.34)	Air temperature
283.30 (211.26)	2156	18.19 (68.84)	0.450 (0.274)	15.58 (3.07)	75°F(24°C)
214.20 (159.73)	2179	14.59 (55.23)	0.478 (0.291)	14.68 (2.89)	Relative humidity
144.24 (107.56)	2199	11.81 (44.71)	0.574 (0.349)	12.21 (2.41)	51%
73.08 (54.50)	2221	8.39 (31.75)	0.805 (0.489)	8.71 (1.72)	Barometer
1.69 (1.26)	2236	5.52 (20.90)	13.970 (22.967)	0.31 (0.06)	29.16" Hg(98.75 kPa)

Maximum Torque - 1233 lb.-ft. (1672 Nm) at 1051 rpm
 Maximum Torque Rise - 51.9%
 Torque rise at 1700 engine rpm - 42%

DRAWBAR PERFORMANCE (Unballasted)

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—7th Gear									
381.79 (284.70)	34440 (153.20)	4.16 (6.69)	2105	6.19	0.471 (0.287)	14.87 (2.93)	186 (86)	46 (8)	28.77 (97.43)
75% of Pull at Maximum Power—7th Gear									
307.61 (229.38)	25886 (115.15)	4.46 (7.17)	2168	2.36	0.493 (0.300)	14.21 (2.80)	180 (82)	48 (9)	28.76 (97.39)
50% of Pull at Maximum Power—7th Gear									
210.59 (157.03)	17228 (76.63)	4.58 (7.38)	2193	0.74	0.546 (0.332)	12.83 (2.53)	173 (78)	48 (9)	28.76 (97.39)
75% of Pull at Reduced Engine Speed—9th Gear									
307.07 (228.98)	25902 (115.22)	4.45 (7.15)	1755	2.22	0.441 (0.268)	15.89 (3.13)	184 (84)	48 (9)	28.75 (97.36)
50% of Pull at Reduced Engine Speed—9th Gear									
211.58 (157.77)	17242 (76.70)	4.60 (7.41)	1789	0.72	0.471 (0.287)	14.88 (2.93)	180 (82)	48 (9)	28.75 (97.36)

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

Dates of Test: November 22 - December 11, 2004

Manufacturer: John Deere Tractor Works, 3500 East Donald St., 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) 0.8420 Fuel weight 7.011 lbs/gal (0.840 kg/l) Oil SAE 15W-40 API service classification CH-4 Transmission and hydraulic lubricant John Deere Hy-Gard fluid Total time engine was operated: 35.0 hours

ENGINE: Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No. *RG6125H041866* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 5.00" x 6.50" (127.0 mm x 165.0 mm) Compression ratio 14.7 to 1 Displacement 765 cu in (12536 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, separate radiators for hydraulic and transmission oil, radiator for rear axle oil Fuel filter one paper element, one paper cartridge and water separator Muffler vertical Cooling medium temperature control 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: (375 engine hp) 128.5 - 141.7 lb/h (58.3 - 64.3 kg/h), (400 engine hp) 134.4 - 148.2 lb/h (61.0 - 67.2 kg/h), (425 engine hp) 139.6 - 153.9 lb/h (63.3 - 69.8 kg/h), (450 engine hp) 149.1 - 164.4 lb/h (67.6 - 74.6 kg/h), (475 engine hp) 158.4 - 173.4 lb/h (71.8 - 78.7 kg/h), (500 engine hp) 167.6 - 182.3 lb/h (76.0 - 82.7 kg/h) High idle: 2205 - 2255 rpm Turbo boost: (375 engine hp) nominal 21.8 - 25.4 psi (150 - 175 kPa) as measured 24.8 psi (171 kPa)

CHASSIS: Type tracklayer-rubber tracked Serial No. *RW9620T903228* Track width 107.4" (2728 mm) Length of track on ground 111.0" (2819 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio with full range operator controlled power shift Nominal travel speeds mph (km/h) first 2.13 (3.43) second 2.62 (4.22) third 2.90 (4.67) fourth 3.24 (5.21) fifth 3.57 (5.75) sixth 3.99 (6.42) seventh 4.41 (7.10) eighth 4.93 (7.93) ninth 5.43 (8.74) tenth 6.06 (9.76) eleventh 6.72 (10.81) twelfth 7.42 (11.94) thirteenth 8.26 (13.30) fourteenth 9.13 (14.70) fifteenth 11.29 (18.17) sixteenth 13.89 (22.36) seventeenth 17.18 (27.64) eighteenth 21.14 (34.02) reverse 2.13 (3.43), 2.90 (4.67), 3.24 (5.21), 4.41, (7.10), 4.93 (7.93), 6.72 (10.81)

DRAWBAR PERFORMANCE

(Unballasted at 2100 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. ^o F (°C) cool- ing med	Temp. ^o F (°C) Air dry bulb	Barom. inch Hg (kPa)	
3rd Gear									
271.92 (202.77)	40016 (178.00)	2.55 (4.10)	2144	14.12	0.521 (0.317)	13.47 (2.65)	183 (84)	46 (8)	28.67 (97.09)
4th Gear									
296.88 (221.38)	39801 (177.04)	2.80 (4.50)	2108	14.05	0.515 (0.314)	13.60 (2.68)	184 (85)	46 (8)	28.68 (97.12)
5th Gear									
331.48 (247.19)	38223 (170.03)	3.25 (5.23)	2104	9.19	0.487 (0.296)	14.40 (2.84)	183 (84)	43 (6)	28.77 (97.43)
6th Gear									
357.17 (266.34)	36310 (161.52)	3.69 (5.94)	2102	7.67	0.479 (0.292)	14.63 (2.88)	183 (84)	44 (7)	28.77 (97.43)
7th Gear									
381.79 (284.70)	34440 (153.20)	4.16 (6.69)	2105	6.19	0.471 (0.287)	14.87 (2.93)	186 (86)	46 (8)	28.77 (97.43)
8th Gear									
391.39 (291.86)	30925 (137.56)	4.75 (7.64)	2100	4.05	0.457 (0.278)	15.33 (3.02)	184 (85)	48 (9)	28.74 (97.33)
9th Gear									
393.05 (293.10)	27938 (124.28)	5.28 (8.49)	2096	2.99	0.456 (0.277)	15.39 (3.03)	184 (84)	48 (9)	28.74 (97.33)
10th Gear									
391.39 (291.86)	24659 (109.69)	5.95 (9.58)	2099	2.00	0.455 (0.277)	15.39 (3.03)	183 (84)	48 (9)	28.73 (97.29)
11th Gear									
389.54 (290.48)	22028 (97.98)	6.63 (10.67)	2098	1.36	0.458 (0.279)	15.31 (3.02)	183 (84)	50 (10)	28.76 (97.39)
12th Gear									
387.91 (289.26)	19779 (87.98)	7.35 (11.84)	2099	1.01	0.456 (0.278)	15.36 (3.03)	183 (84)	49 (9)	28.75 (97.36)
13th Gear									
376.69 (280.89)	17167 (76.36)	8.23 (13.24)	2102	0.69	0.470 (0.286)	14.91 (2.94)	184 (84)	48 (9)	28.75 (97.36)

Clutch wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 1895 engine rpm **Unladen tractor mass** 43380 lb (19676 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The 9620T engine has an electronic control system which provides a vehicle protection system to avoid overloading the drive train. This system provides six different engine power levels. At 2100 rpm the engine produces 375 hp when the tractor is being used for stationary PTO operations. At 2100 rpm the engine produces 400 hp when the transmission is in forward gears 1 through 3. At 2100 rpm the engine produces 425 hp when the transmission is in gear 4. At 2100 rpm the engine produces 450 hp when the transmission is in gear 5. At 2100 rpm the engine produces 475 hp when the transmission is in gear 6. At 2100 rpm the engine produces 500 hp in all other applications.

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 103°F (39°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. **1845**, Nebraska Summary 449, February 4, 2005.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
W.P. Campbell
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 7th gear	73.7
Transport speed-no load-18th gear	79.0
Bystander in 18th gear	----

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Track width	36.0 in (915 mm)	36.0 in (915 mm)
Ballast - Cast iron (front)	3055 lb (1386 kg)	None
- Cast iron (side)	3390 lb (1537 kg)	None
Height of Drawbar	18.5 in (470 mm)	18.5 in (470 mm)
Static Weight with operator	50000 lb (22679 kg)	43555 lb (19756 kg)

DRAWBAR PERFORMANCE
(Unballasted at 1800 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
275.67 (205.57)	40581 (180.51)	2.55 (4.10)	2134	13.74	0.516 (0.314)	13.58 (2.68)	184 (84)	46 (8)	28.67 (97.09)
4th Gear									
302.51 (225.58)	40221 (178.91)	2.82 (4.54)	2106	13.31	0.507 (0.308)	13.82 (2.72)	185 (85)	46 (8)	28.68 (97.12)
5th Gear									
330.66 (246.57)	38367 (170.66)	3.23 (5.20)	2101	9.61	0.488 (0.297)	14.36 (2.83)	183 (84)	43 (6)	28.77 (97.43)
6th Gear									
357.09 (266.28)	37669 (167.56)	3.55 (5.72)	2068	9.59	0.489 (0.297)	14.35 (2.83)	186 (86)	45 (7)	28.77 (97.43)
7th Gear									
389.80 (290.67)	37199 (165.47)	3.93 (6.32)	2051	8.99	0.485 (0.295)	14.47 (2.85)	188 (87)	47 (8)	28.76 (97.39)
8th Gear									
416.92 (310.90)	36081 (160.50)	4.33 (6.97)	2000	7.86	0.482 (0.293)	14.55 (2.87)	189 (87)	47 (8)	28.76 (97.39)
9th Gear									
430.65 (321.14)	34223 (152.23)	4.72 (7.59)	1927	5.63	0.470 (0.286)	14.92 (2.94)	188 (87)	44 (7)	28.68 (97.12)
10th Gear									
440.93 (328.80)	32112 (142.84)	5.15 (8.29)	1864	4.60	0.460 (0.280)	15.23 (3.00)	190 (88)	45 (7)	28.68 (97.12)
11th Gear									
447.92 (334.01)	30253 (134.57)	5.55 (8.94)	1801	3.79	0.452 (0.275)	15.51 (3.06)	190 (88)	50 (10)	28.67 (97.09)
12th Gear									
454.48 (338.91)	27442 (122.07)	6.21 (9.99)	1805	2.79	0.431 (0.262)	16.27 (3.20)	189 (87)	41 (5)	28.80 (97.53)
13th Gear									
445.87 (332.49)	24053 (106.99)	6.95 (11.19)	1798	1.93	0.452 (0.275)	15.50 (3.05)	192 (89)	52 (11)	28.67 (97.09)
14th Gear									
450.97 (336.29)	21857 (97.22)	7.74 (12.45)	1801	1.36	0.446 (0.271)	15.71 (3.09)	194 (90)	52 (11)	28.67 (97.09)
15th Gear									
443.15 (330.45)	17280 (76.87)	9.62 (15.48)	1798	0.69	0.457 (0.278)	15.35 (3.02)	199 (93)	53 (12)	28.67 (97.09)

Lugging ability in 12th gear

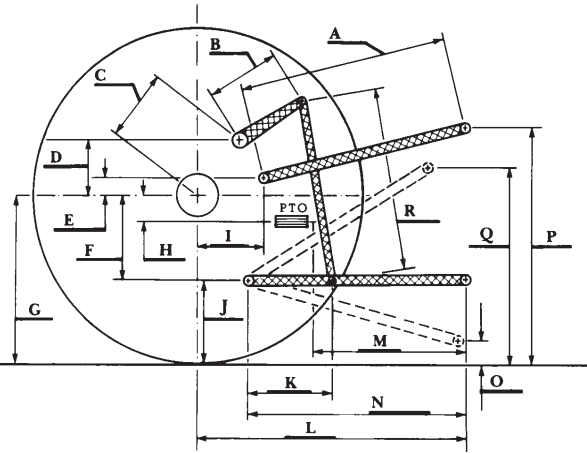
Crankshaft speed rpm	2099	2008	1902	1805	1709	1607	1511	1102
Pull-lbs (kN)	19779 (87.98)	23256 (103.45)	25268 (112.40)	27442 (122.07)	28930 (128.69)	30062 (133.72)	30398 (135.22)	30244 (134.53)
Increase in pull %	0	18	28	39	46	52	54	53
Power-Hp (kW)	387.91 (289.26)	433.03 (322.91)	443.88 (331.00)	454.48 (338.91)	451.41 (336.62)	439.26 (327.55)	416.92 (310.89)	302.68 (225.71)
Speed-mph (km/h)	7.35 (11.84)	6.98 (11.24)	6.59 (10.60)	6.21 (9.99)	5.85 (9.42)	5.48 (8.82)	5.14 (8.28)	3.75 (6.04)
Slip %	1.01	1.65	2.12	2.79	3.20	3.65	3.87	3.68

DRAWBAR PERFORMANCE
(Ballasted at 1800 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)
1st Gear									
248.47 (185.28)	48991 (217.92)	1.90 (3.06)	2160	13.40	0.533 (0.324)	13.15 (2.59)	184 (84)	40 (4)	28.82 (97.60)
2nd Gear									
289.57 (215.93)	45850 (203.95)	2.37 (3.81)	2106	10.11	0.495 (0.301)	14.16 (2.79)	184 (84)	41 (5)	28.82 (97.60)
3rd Gear									
309.08 (230.48)	44361 (197.33)	2.61 (4.21)	2058	8.33	0.476 (0.290)	14.72 (2.90)	185 (85)	52 (11)	28.46 (96.38)
4th Gear									
330.41 (246.39)	41457 (184.41)	2.99 (4.81)	2069	6.63	0.470 (0.286)	14.92 (2.94)	185 (85)	52 (11)	28.46 (96.38)
5th Gear									
355.18 (264.85)	40539 (180.32)	3.29 (5.29)	2056	6.29	0.468 (0.285)	14.98 (2.95)	186 (85)	53 (12)	28.47 (96.41)
6th Gear									
382.46 (285.20)	40071 (178.25)	3.58 (5.76)	2004	6.21	0.472 (0.287)	14.85 (2.92)	187 (86)	53 (12)	28.47 (96.41)
7th Gear									
421.78 (314.52)	39798 (177.03)	3.97 (6.40)	2006	6.03	0.469 (0.286)	14.94 (2.94)	189 (87)	53 (12)	28.48 (96.44)
8th Gear									
437.46 (326.22)	39652 (176.38)	4.14 (6.66)	1868	5.96	0.456 (0.278)	15.36 (3.03)	192 (89)	53 (12)	28.49 (96.48)
9th Gear									
445.23 (332.01)	37564 (167.09)	4.44 (7.15)	1801	5.01	0.455 (0.277)	15.41 (3.04)	192 (89)	53 (12)	28.50 (96.51)
10th Gear									
451.51 (336.69)	33608 (149.50)	5.04 (8.11)	1800	3.04	0.448 (0.272)	15.66 (3.09)	190 (88)	42 (6)	28.80 (97.53)
11th Gear									
452.54 (337.46)	30138 (134.06)	5.63 (9.06)	1801	2.57	0.445 (0.271)	15.74 (3.10)	190 (88)	43 (6)	28.79 (97.49)
12th Gear									
454.87 (339.20)	27292 (121.40)	6.25 (10.06)	1799	1.92	0.444 (0.270)	15.81 (3.11)	189 (87)	44 (7)	28.78 (97.46)
13th Gear									
447.28 (333.54)	23878 (106.21)	7.02 (11.30)	1803	1.40	0.451 (0.274)	15.54 (3.06)	191 (88)	45 (7)	28.77 (97.43)
14th Gear									
450.50 (335.94)	21728 (96.65)	7.78 (12.51)	1802	1.09	0.446 (0.271)	15.73 (3.10)	191 (88)	46 (8)	28.76 (97.39)
15th Gear									
439.56 (327.78)	17120 (76.15)	9.63 (15.49)	1798	0.70	0.464 (0.282)	15.13 (2.98)	194 (90)	47 (8)	28.75 (97.36)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III, IV			
Quick Attach: yes	Category III	Category IV	
Maximum force exerted through whole range:	13605 lbs (60.5 kN)	14921 lbs (66.4 kN)	
i) Opening pressure of relief valve:	NA		
Sustained pressure at compensator cutoff:	2950 psi (203 bar)		
	Single outlet set	Two outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	39.2 GPM (148.4 l/min)	50.0 GPM (189.3 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	29.6 GPM (112.0 l/min)	49.0 GPM (191.5 l/min)	
Delivery pressure:	2222 psi (153 bar)	2256 psi (155 bar)	
Power:	38.4 HP (28.6 kW)	64.5 HP (48.1 kW)	



THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. (bar):	2980 (205)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C):	145 (63)
Location:	hydraulic valve
Category:	III, IV
Quick attach:	yes

HITCH DIMENSIONS AS TESTED—NO LOAD

Category III (lift cylinders - 2x90 mm)						
SAE Static Test—System pressure 2680 psi (185 Bar)						
Hitchpoint distance to ground level in. (mm)	7.9 (201)	16.0 (407)	24.1 (613)	31.8 (807)	40.0 (1016)	
Lift force on frame lb	14426	14737	14682	14307	13430	
" " " " " " (kN)	(64.2)	(65.6)	(65.3)	(63.6)	(59.7)	
ASAE Static Test—System pressure 2860 psi (197 Bar)						
Hitchpoint distance to ground level in. (mm)	7.9 (201)	16.0 (407)	24.1 (613)	31.8 (807)	40.0 (1016)	
Lift force on frame lb	15373	15703	15643	15248	14312	
" " " " " " (kN)	(68.4)	(69.9)	(69.6)	(67.8)	(63.7)	
Category IV (lift cylinders - 1x90 mm & 1x100 mm)						
SAE Static Test - System pressure 2680 psi (185 Bar)						
Hitchpoint distance to ground level in. (mm)	9.0 (228)	15.2 (387)	22.3 (566)	29.6 (751)	36.8 (935)	44.0 (1118)
Lift force on frame lb	15954	16238	16328	16020	15372	13856
" " " " " " (kN)	(71.0)	(72.2)	(72.6)	(71.3)	(68.4)	(61.6)
ASAE Static Test—System pressure 2860 psi (197 Bar)						
Hitchpoint distance to ground level in. (mm)	9.0 (228)	15.2 (387)	22.3 (566)	29.6 (751)	36.8 (935)	44.0 (1118)
Lift force on frame lb	17014	17317	17417	17094	16403	14772
" " " " " " (kN)	(75.7)	(77.0)	(77.5)	(76.0)	(73.0)	(65.7)

	Category III		Category IV	
	inch	mm	inch	mm
A	30.8	783	30.0	762
B	18.5	471	18.5	471
C	31.9	810	31.9	810
D	30.4	772	30.4	772
E	11.3	288	11.3	288
F	13.8	350	13.8	350
G	32.9	836	32.9	836
H	0.7	19	0.7	19
I	22.7	577	22.7	577
J	19.1	486	19.1	486
K	29.4	746	29.4	746
L	54.4	1383	54.4	1383
*L'	61.0	1550	61.4	1560
M	24.5	623	24.5	623
N	43.1	1095	43.1	1095
O	8.0	203	9.0	229
P	49.6	1260	49.6	1260
Q	39.5	1003	40.5	1029
R	48.7	1238	47.9	1216

*L' to Quick Attach ends



JOHN DEERE 9620T DIESEL