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Test 1806: John Deere 9520T 18 Speed

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NEBRASKA OECD TRACTOR TEST 1806-SUMMARY 372

JOHN DEERE 9520T DIESEL

18 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/ltr (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)					
333.00 (248.32)	2100	19.63 (74.29)	0.415 (0.252)	16.97 (3.34)	
Standard Power Take-off Speed (PTO speed 1000 rpm)					
357.43 (266.53)	1895	19.41 (73.48)	0.382 (0.233)	18.41 (3.63)	
Maximum Power (2 hours)					
371.54 (277.05)	1700	20.44 (77.36)	0.387 (0.236)	18.18 (3.58)	

VARYING POWER AND FUEL CONSUMPTION

333.00 (248.32)	2100	19.63 (74.29)	0.415 (0.252)	16.97 (3.34)	Air temperature
290.58 (216.68)	2155	18.15 (68.70)	0.440 (0.268)	16.01 (3.15)	75°F(24°C)
220.03 (164.07)	2173	15.38 (58.22)	0.492 (0.299)	14.31 (2.82)	Relative humidity
147.85 (110.25)	2196	12.10 (45.80)	0.576 (0.351)	12.22 (2.41)	15%
74.69 (55.70)	2218	8.86 (33.54)	0.835 (0.508)	8.43 (1.66)	Barometer
1.12 (0.84)	2233	5.54 (20.96)	34.776 (21.154)	0.20 (0.04)	29.10" Hg(98.54 kPa)

Maximum Torque - 1221 lb.-ft. (1656 Nm) at 1100 rpm
 Maximum Torque Rise - 46.9%
 Torque rise at 1701 engine rpm - 37%

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									
354.72 (264.52)	31415 (139.74)	4.23 (6.81)	2103	4.56	0.447 (0.272)	15.76 (3.10)	201 (94)	65 (18)	28.98 (98.14)
75% of Pull at Maximum Power 7th Gear									
282.15 (210.40)	23624 (105.08)	4.48 (7.21)	2167	2.08	0.484 (0.294)	14.45 (2.85)	204 (95)	82 (28)	28.47 (96.41)
50% of Pull at Maximum Power 7th Gear									
191.91 (143.11)	15761 (70.11)	4.57 (7.35)	2187	1.06	0.575 (0.350)	12.15 (2.39)	186 (85)	84 (29)	28.47 (96.41)
75% of Pull at Reduced Engine Speed 9th Gear									
281.98 (210.27)	23631 (105.12)	4.47 (7.20)	1761	2.15	0.454 (0.276)	15.39 (3.03)	190 (88)	84 (29)	28.47 (96.41)
50% of Pull at Reduced Engine Speed 9th Gear									
191.09 (142.50)	15758 (70.09)	4.55 (7.32)	1770	0.98	0.505 (0.307)	13.84 (2.73)	184 (84)	86 (30)	28.48 (96.44)

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

Dates of Test: April 2 - May 31, 2002

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) 0.8461 Fuel weight 7.045 lbs/gal (0.844 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: 42.0 hours

ENGINE: Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No.*RG6125H031904* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 5.00" x 6.50"(127.0 mm x 165.0 mm) Compression ratio 17.0 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 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) High idle: 2205 - 2255 rpm Turbo boost: nominal 21.7 - 24.7 psi (150 - 170 kPa) as measured 23.2 psi (160 kPa)

CHASSIS: Type tracklayer-rubber tracked Serial No.*RW9520T901027* 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 (3.42) second 2.62 (4.21) third 2.90 (4.66) fourth 3.24 (5.21) fifth 3.57 (5.74) sixth 3.98 (6.41) seventh 4.41 (7.10) eighth 4.93 (7.93) ninth 5.43 (8.74) tenth 6.06 (9.76) eleventh 6.71 (10.80) twelfth 7.42 (11.94) thirteenth 8.26 (13.29) fourteenth 9.13 (14.69) fifteenth 11.29 (18.17) sixteenth 13.89 (22.35) seventeenth 17.17 (27.63) eighteenth 21.13 (34.01) reverse 2.13 (3.42), 2.90 (4.66), 3.24 (5.21), 4.41, (7.10), 4.93 (7.93), 6.71 (10.80)

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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st Gear									
218.79 (163.16)	42772 (190.26)	1.92 (3.09)	2164	12.87	0.555 (0.337)	12.60 (2.48)	182 (83)	45 (7)	29.05 (98.37)
2nd Gear									
261.17 (194.75)	41451 (184.38)	2.36 (3.80)	2135	11.56	0.521 (0.317)	13.41 (2.64)	184 (84)	46 (8)	29.05 (98.37)
3rd Gear									
281.42 (209.85)	40192 (178.78)	2.63 (4.23)	2101	9.90	0.487 (0.296)	14.34 (2.83)	185 (85)	47 (8)	29.05 (98.37)
4th Gear									
303.30 (226.17)	38028 (169.15)	2.99 (4.81)	2102	8.10	0.477 (0.290)	14.65 (2.89)	199 (93)	72 (22)	28.49 (96.48)
5th Gear									
318.99 (237.87)	36002 (160.14)	3.32 (5.35)	2097	7.13	0.472 (0.287)	14.81 (2.92)	194 (90)	74 (23)	28.49 (96.48)
6th Gear									
338.92 (252.74)	33836 (150.51)	3.76 (6.05)	2097	6.08	0.470 (0.286)	14.85 (2.93)	199 (93)	76 (24)	28.49 (96.48)
7th Gear									
354.72 (264.52)	31415 (139.74)	4.23 (6.81)	2103	4.56	0.447 (0.272)	15.76 (3.10)	201 (94)	65 (18)	28.98 (98.14)
8th Gear									
358.23 (267.13)	28038 (124.72)	4.79 (7.71)	2099	3.07	0.445 (0.271)	15.83 (3.12)	204 (96)	62 (17)	28.98 (98.14)
9th Gear									
357.38 (266.50)	25116 (111.72)	5.34 (8.59)	2101	2.23	0.447 (0.272)	15.75 (3.10)	196 (91)	60 (16)	28.99 (98.17)
10th Gear									
356.23 (265.64)	22300 (99.19)	5.99 (9.64)	2100	1.69	0.448 (0.273)	15.70 (3.09)	200 (93)	58 (14)	28.98 (98.14)
11th Gear									
355.71 (265.25)	20045 (89.16)	6.65 (10.71)	2100	1.38	0.447 (0.272)	15.74 (3.10)	201 (94)	55 (13)	28.97 (98.10)
12th Gear									
350.95 (261.71)	17889 (79.57)	7.36 (11.84)	2100	1.14	0.450 (0.274)	15.63 (3.08)	199 (93)	66 (19)	28.97 (98.10)
13th Gear									
344.44 (256.85)	15708 (69.87)	8.22 (13.23)	2101	0.98	0.463 (0.281)	15.22 (3.00)	201 (94)	70 (21)	29.04 (98.34)

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** 43410 lb (19690 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The 9520T engine has an electronic control system which provides a vehicle protection system to avoid overloading the drive train. This system provides four different engine power levels. At 2100 rpm the engine produces up to 375 hp when the transmission is in forward gears 1 through 3 or when the tractor is being used for stationary PTO operations. At 2100 rpm the engine produces 400 hp when the transmission is in gear 4. At 2100 rpm the engine produces 425 hp when the transmission is in gear 5. At 2100 rpm the engine produces 450 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 102°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. **1806**, Nebraska Summary 372, July 23, 2002.

Brent T. Sampson
Test Engineer

L.L. Bashford
G.J. Hoffman
V.I. Adamchuk
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

dB(A)

At no load in 7th gear	75.2
Transport speed-no load- 18th gear	76.9
Bystander in 18th gear	93.7

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Track width	36.0 in (915 mm)	36.0 in (915 mm)
Ballast - Cast iron(front)	3200 lb (1451 kg)	None
- Cast iron (side)	3215 lb (1458 kg)	None
Height of Drawbar	19.0 in (485 mm)	19.0 in (485 mm)
Static Weight with operator	50000 lb(22679 kg)	43585 lb(19770 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)
1st Gear									
222.61 (166.00)	43053 (191.51)	1.94 (3.12)	2163	12.00	0.546 (0.332)	12.79 (2.52)	183 (84)	45 (7)	29.05 (98.37)
2nd Gear									
263.23 (196.29)	41154 (183.06)	2.40 (3.86)	2138	10.42	0.516 (0.314)	13.54 (2.67)	184 (84)	46 (8)	29.05 (98.37)
3rd Gear									
281.97 (210.27)	40165 (178.66)	2.63 (4.24)	2102	9.64	0.487 (0.296)	14.36 (2.83)	185 (85)	47 (8)	29.05 (98.37)
4th Gear									
305.15 (227.55)	38775 (172.48)	2.95 (4.75)	2091	8.84	0.470 (0.286)	14.86 (2.93)	187 (86)	48 (9)	29.06 (98.41)
5th Gear									
319.09 (237.94)	37901 (168.59)	3.16 (5.08)	2043	9.44	0.477 (0.290)	14.65 (2.89)	195 (90)	75 (24)	28.49 (96.48)
6th Gear									
343.41 (256.08)	37184 (165.40)	3.46 (5.57)	2014	9.70	0.479 (0.291)	14.60 (2.88)	198 (92)	77 (25)	28.49 (96.48)
7th Gear									
361.82 (269.81)	38155 (169.72)	3.56 (5.72)	1873	10.03	0.468 (0.284)	15.06 (2.97)	199 (93)	65 (18)	28.98 (98.14)
8th Gear									
384.40 (286.65)	36898 (164.13)	3.91 (6.29)	1804	8.16	0.458 (0.279)	15.37 (3.03)	198 (92)	64 (18)	28.98 (98.14)
9th Gear									
392.61 (292.77)	33175 (147.57)	4.44 (7.14)	1802	5.22	0.448 (0.272)	15.73 (3.10)	192 (89)	61 (16)	28.99 (98.17)
10th Gear									
399.15 (297.64)	29648 (131.88)	5.05 (8.12)	1802	3.45	0.439 (0.267)	16.03 (3.16)	192 (89)	59 (15)	28.99 (98.17)
11th Gear									
403.84 (301.14)	26856 (119.46)	5.64 (9.08)	1802	2.46	0.434 (0.264)	16.22 (3.19)	203 (95)	57 (14)	28.98 (98.14)
12th Gear									
400.49 (298.65)	24096 (107.18)	6.23 (10.03)	1799	2.23	0.440 (0.268)	15.99 (3.15)	199 (93)	68 (20)	28.95 (98.04)
13th Gear									
395.69 (295.07)	21178 (94.20)	7.01 (11.28)	1802	1.69	0.445 (0.271)	15.82 (3.12)	204 (95)	71 (22)	29.05 (98.37)
14th Gear									
398.34 (297.04)	19247 (85.61)	7.76 (12.49)	1802	1.30	0.443 (0.270)	15.88 (3.13)	201 (94)	70 (21)	29.01 (98.24)
15th Gear									
388.72 (289.87)	15155 (67.41)	9.62 (15.48)	1799	0.90	0.457 (0.278)	15.40 (3.03)	205 (96)	70 (21)	29.02 (98.27)

DRAWBAR PERFORMANCE

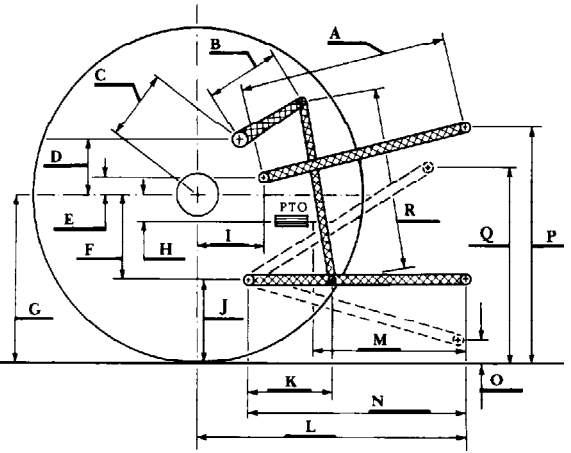
(Ballasted at 1800 RPM)

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)	Temp.°F(°C) cool- ing med	Temp.°F(°C) Air dry bulb	Barom. inch Hg (kPa)	
1st Gear									
256.39 (191.19)	50817 (226.05)	1.89 (3.04)	2144	13.33	0.534 (0.325)	13.19 (2.60)	183 (84)	53 (12)	28.78 (97.46)
2nd Gear									
290.77 (216.83)	47581 (211.65)	2.29 (3.69)	2030	10.00	0.476 (0.290)	14.80 (2.92)	187 (86)	54 (12)	28.76 (97.39)
3rd Gear									
297.42 (221.79)	42490 (189.00)	2.63 (4.22)	2075	8.81	0.470 (0.286)	15.00 (2.95)	196 (91)	68 (20)	28.75 (97.36)
4th Gear									
305.94 (228.14)	39838 (177.21)	2.88 (4.63)	2040	8.81	0.473 (0.288)	14.89 (2.93)	188 (87)	77 (25)	28.73 (97.29)
5th Gear									
330.14 (246.18)	39123 (174.03)	3.16 (5.09)	2015	8.00	0.462 (0.281)	15.26 (3.01)	197 (91)	78 (26)	28.76 (97.39)
6th Gear									
366.13 (273.02)	38880 (172.94)	3.53 (5.68)	1984	6.82	0.455 (0.277)	15.49 (3.05)	191 (88)	73 (23)	28.72 (97.26)
7th Gear									
383.26 (285.80)	39343 (175.01)	3.65 (5.88)	1853	6.54	0.448 (0.273)	15.71 (3.09)	198 (92)	71 (22)	28.72 (97.26)
8th Gear									
397.74 (296.59)	37163 (165.31)	4.01 (6.46)	1799	5.33	0.443 (0.269)	15.91 (3.13)	200 (93)	69 (21)	28.73 (97.29)
9th Gear									
402.85 (300.40)	33405 (148.59)	4.52 (7.28)	1804	3.56	0.436 (0.265)	16.15 (3.18)	198 (92)	67 (19)	28.74 (97.33)
10th Gear									
407.84 (304.12)	29986 (133.38)	5.10 (8.21)	1797	2.27	0.433 (0.263)	16.26 (3.20)	195 (91)	57 (14)	28.74 (97.33)
11th Gear									
405.64 (302.48)	26818 (119.29)	5.67 (9.13)	1796	1.80	0.439 (0.267)	16.06 (3.16)	205 (96)	58 (14)	28.73 (97.29)
12th Gear									
404.79 (301.85)	24147 (107.41)	6.29 (10.12)	1797	1.41	0.436 (0.265)	16.15 (3.18)	201 (94)	59 (15)	28.75 (97.36)
13th Gear									
397.30 (296.27)	21118 (93.94)	7.06 (11.35)	1805	1.18	0.445 (0.271)	15.82 (3.12)	203 (95)	60 (16)	28.75 (97.36)
14th Gear									
398.38 (297.07)	19183 (85.33)	7.79 (12.53)	1802	1.02	0.448 (0.272)	15.73 (3.10)	202 (94)	61 (16)	28.75 (97.36)
15th Gear									
387.77 (289.16)	15074 (67.05)	9.65 (15.52)	1802	0.86	0.457 (0.278)	15.41 (3.04)	201 (94)	63 (17)	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:	2970 psi (205 bar)		
	Single outlet set	Two outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	36.2 GPM (137.0 l/min)	50.8 GPM (192.3 l/min)	
iii) Pump delivery rate at maximum			
hydraulic power:	33.5 GPM (126.8 l/min)	50.6 GPM (191.5 l/min)	
Delivery pressure:	2105 psi (145 bar)	2250 psi (155 bar)	
Power:	41.1 Hp (30.7 kW)	66.4 HP (49.5 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)						
Hitch point 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)						
Hitch point 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)						
Hitch point 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)						
Hitch point 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 9520T DIESEL

Agricultural Research Division
 Institute of Agriculture and Natural Resources
 University of Nebraska Lincoln
 Darrell Nelson, Dean and Director