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January 1997

Test 1732: John Deere 9300 Powrsync Diesel 12 and 24-Speed

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1732—SUMMARY 232

JOHN DEERE 9300 POWRSYNC DIESEL

24 SPEED ALSO 12 SPEED

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

Dates of Test: April 29 to May 27, 1997

Manufacturer: John Deere Tractor Works, P.O.
Box 270, Waterloo, Iowa 50704

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—1109 rpm)					
320.55 (239.03)	2100	17.58 (66.53)	0.385 (0.234)	18.24 (3.59)	
Standard Power Take-off Speed (1003 rpm)					
358.32 (267.20)	1900	18.91 (71.58)	0.371 (0.225)	18.95 (3.73)	
Maximum Power (2 Hours)					
358.32 (267.20)	1900	18.91 (71.58)	0.371 (0.225)	18.95 (3.73)	

VARYING POWER AND FUEL CONSUMPTION

320.55 (239.03)	2100	17.58 (66.53)	0.385 (0.234)	18.24 (3.59)	Air temperature
277.79 (207.15)	2143	15.68 (59.36)	0.396 (0.241)	17.72 (3.49)	76°F (24°C)
209.86 (156.49)	2162	12.60 (47.71)	0.422 (0.257)	16.65 (3.28)	Relative humidity
140.56 (104.81)	2177	9.65 (36.54)	0.482 (0.293)	14.56 (2.87)	40%
71.60 (53.39)	2193	6.88 (26.04)	0.675 (0.411)	10.41 (2.05)	Barometer
1.11 (0.83)	2208	4.10 (15.42)	25.945 (15.618)	0.27 (0.05)	29.00" Hg (98.21 kPa)

Maximum Torque 1173 lb.-ft. (1590 Nm) at 1300 rpm
Maximum Torque Rise 46.3%
Torque rise at 1699 engine rpm 34%

DRAWBAR PERFORMANCE

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 (B1Lo) Gear									
285.11 (212.61)	24750 (110.09)	4.32 (6.95)	2105	3.71	0.433 (0.263)	16.23 (3.20)	191 (88)	61 (16)	28.82 (97.60)
75% of Pull at Maximum Power—7th (B1Lo) Gear									
220.78 (164.63)	18602 (82.75)	4.45 (7.16)	2152	2.92	0.462 (0.281)	15.20 (2.99)	191 (88)	73 (23)	28.50 (96.51)
50% of Pull at Maximum Power—7th (B1Lo) Gear									
150.06 (111.90)	12407 (55.19)	4.54 (7.30)	2174	2.03	0.512 (0.312)	13.71 (2.70)	185 (85)	75 (24)	28.50 (96.51)
75% of Pull at Reduced Engine Speed—12th (C2Lo) Gear									
220.88 (164.71)	18610 (82.78)	4.45 (7.16)	1516	2.75	0.420 (0.256)	16.71 (3.29)	193 (89)	74 (23)	28.50 (96.51)
50% of Pull at Reduced Engine Speed—12th (C2Lo) Gear									
150.11 (111.94)	12383 (55.08)	4.55 (7.32)	1535	2.12	0.454 (0.276)	15.46 (3.05)	183 (84)	75 (24)	28.50 (96.51)

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane No. 50.6 Specific gravity converted to 60°/60° F (15°/15°C) 0.8435 Fuel weight 7.023 lbs/gal (0.842 kg/l) Oil SAE 15W-40 API service classification CD, CE, CF-4 To motor 9.660 gal (36.567 l) Drained from motor 8.887 gal (33.642 l) Transmission and hydraulic and final drive lubricant John Deere Hy-Gard fluid Total time engine was operated 37.0 hours.

ENGINE: Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air intercooler Serial No. *RG6125H001919* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke (as specified) 5.00" × 6.50" (127.0 mm × 165.0 mm) Compression ratio 16.0 to 1 Displacement 765 cu in (12535 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, separate radiators for front and rear axle oil Fuel filter two paper cartridges Muffler vertical Cooling medium temperature control two thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 120.6-129.4 lb/h (54.7-58.7 kg/h) High idle: 2175-2275 rpm Turbo boost nominal 14.5-18.9 psi (100-130 kPa) as measured 17.7 psi (122 kPa)

CHASSIS: Type four wheel drive with duals Serial No. *RW9300H001169* Tread width rear 68.4" (1738 mm) to 143.9" (3655 mm) front 68.4" (1738 mm) to 143.9" (3655 mm) Wheel base 138.9" (3500 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (2) range operator controlled powershift Nominal travel speeds mph (km/h) first 2.09 (3.36) second 2.50 (4.03) third 2.69 (4.33) fourth 3.22 (5.19) fifth 3.68 (5.92) sixth 4.41 (7.10) seventh 4.45 (7.16) eighth 4.91 (7.90) ninth 5.34 (8.59) tenth 5.73 (9.22) eleventh 5.88 (9.47) twelfth 6.32 (10.17) thirteenth 6.87 (11.06) fourteenth 7.58 (12.19) fifteenth 7.85 (12.63) sixteenth 8.65 (13.92) seventeenth 9.40 (15.13) eighteenth 10.37 (16.69) nineteenth 10.46 (16.83) twentieth 12.54 (20.18) twenty-first 13.47 (21.67) twenty-second 16.14 (25.98) twenty-third 18.43 (29.66) twenty-fourth 22.10 (35.56) reverse 2.51 (4.03), 3.00 (4.83), 5.34 (8.59), 5.89 (9.47), 6.40 (10.30), 7.06 (11.36) Clutch multiple wet disc hydraulically actuated by foot pedal Brakes wet multiple disc hydraulically actuated by foot pedal Steering hydrostatic and articulated Power take-off 1000 rpm at 1895 engine rpm Unladen tractor mass 37135 lb (16844 kg)

DRAWBAR PERFORMANCE 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/kWh)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd (A2Lo) Gear									
246.78 (184.03)	37163 (165.31)	2.49 (4.01)	2135	9.34	0.468 (0.285)	15.00 (2.95)	178 (81)	48 (9)	28.72 (97.26)
4th (A2Hi) Gear									
268.84 (200.47)	34252 (152.36)	2.94 (4.74)	2098	9.03	0.463 (0.282)	15.17 (2.99)	185 (85)	56 (13)	28.66 (97.05)
5th (A3Lo) Gear									
278.77 (207.88)	29964 (133.28)	3.49 (5.61)	2098	5.48	0.445 (0.271)	15.77 (3.11)	190 (88)	57 (14)	28.66 (97.05)
6th (A3Hi) Gear									
280.44 (209.13)	24686 (109.81)	4.26 (6.86)	2101	4.05	0.441 (0.268)	15.92 (3.14)	190 (88)	59 (15)	28.64 (96.99)
7th (B1Lo) Gear									
285.11 (212.61)	24750 (110.09)	4.32 (6.95)	2105	3.71	0.433 (0.263)	16.23 (3.20)	191 (88)	61 (16)	28.82 (97.60)
8th (C1Lo) Gear									
284.87 (212.42)	22405 (99.66)	4.77 (7.67)	2099	3.36	0.432 (0.263)	16.25 (3.20)	192 (89)	61 (16)	28.85 (97.70)
9th (B1Hi) Gear									
283.92 (211.72)	20532 (91.33)	5.19 (8.35)	2097	3.19	0.434 (0.264)	16.18 (3.19)	195 (90)	62 (17)	28.62 (96.92)
10th (B2Lo) Gear									
285.89 (213.19)	19188 (85.35)	5.59 (8.99)	2096	2.83	0.430 (0.262)	16.32 (3.22)	193 (89)	62 (17)	28.83 (97.63)
11th (C1Hi) Gear									
282.50 (210.66)	18474 (82.18)	5.73 (9.23)	2097	2.83	0.436 (0.265)	16.10 (3.17)	192 (89)	63 (17)	28.61 (96.88)
12th (C2Lo) Gear									
285.56 (212.94)	17332 (77.10)	6.18 (9.94)	2097	2.48	0.432 (0.263)	16.26 (3.20)	194 (90)	63 (17)	28.82 (97.60)
13th (B2Hi) Gear									
281.77 (210.11)	15733 (69.98)	6.72 (10.81)	2094	2.30	0.434 (0.264)	16.17 (3.19)	197 (92)	66 (19)	28.59 (96.82)
14th (C2Hi) Gear									
277.94 (207.26)	14021 (62.37)	7.43 (11.96)	2097	2.12	0.446 (0.271)	15.74 (3.10)	194 (90)	66 (19)	28.58 (96.78)
15th (B3Lo) Gear									
278.13 (207.40)	13546 (60.25)	7.70 (12.39)	2096	2.03	0.444 (0.270)	15.80 (3.11)	195 (91)	67 (19)	28.57 (96.75)
16th (C3Lo) Gear									
276.57 (206.24)	12216 (54.34)	8.49 (13.66)	2093	1.94	0.449 (0.273)	15.64 (3.08)	195 (91)	68 (20)	28.55 (96.68)

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At 75% load in 9th (B1Hi) Gear	75.9
Bystander in 24th (D3Hi) Gear	89.0

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 temperature of the returned fuel was maintained at 200° F (93°C). The pull in 3rd (A2Lo) gear was limited to avoid tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Restricted Standard Test Code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1732**, Summary 232, July 9, 1997.

LOUIS I. LEVITICUS

Engineer-in-Charge

L.L. BASHFORD

R.D. GRISIO

M.F. KOCHER

Board of Tractor Test Engineers

DRAWBAR PERFORMANCE AT 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd (A2Lo) Gear									
245.93 (183.39)	37047 (164.79)	2.49 (4.01)	2136	9.34	0.466 (0.283)	15.07 (2.97)	179 (81)	48 (9)	28.72 (97.26)
4th (A2Hi) Gear									
270.58 (201.77)	34206 (152.15)	2.97 (4.77)	2107	8.96	0.460 (0.280)	15.26 (3.01)	185 (85)	56 (13)	28.66 (97.05)
5th (A3Lo) Gear									
283.44 (211.36)	31741 (141.19)	3.35 (5.39)	2039	6.97	0.447 (0.272)	15.72 (3.10)	190 (88)	58 (14)	28.65 (97.02)
6th (A3Hi) Gear									
304.57 (227.12)	30275 (134.67)	3.77 (6.07)	1900	6.16	0.434 (0.264)	16.17 (3.19)	192 (89)	60 (16)	28.63 (96.95)
7th (B1Lo) Gear									
311.13 (232.01)	30415 (135.29)	3.84 (6.17)	1899	5.16	0.424 (0.258)	16.55 (3.26)	191 (88)	60 (16)	28.82 (97.60)
8th (C1Lo) Gear									
310.64 (231.64)	27350 (121.66)	4.26 (6.85)	1895	4.31	0.425 (0.258)	16.53 (3.26)	192 (89)	61 (16)	28.84 (97.66)
9th (B1Hi) Gear									
310.25 (231.35)	24923 (110.86)	4.67 (7.51)	1906	4.14	0.421 (0.256)	16.68 (3.29)	192 (89)	62 (17)	28.61 (96.88)
10th (B2Lo) Gear									
314.84 (234.77)	23397 (104.07)	5.05 (8.12)	1906	3.27	0.418 (0.254)	16.80 (3.31)	192 (89)	62 (17)	28.82 (97.60)
11th (C1Hi) Gear									
309.61 (230.87)	22425 (99.75)	5.18 (8.33)	1906	3.53	0.426 (0.259)	16.50 (3.25)	193 (89)	72 (22)	28.51 (96.55)
12th (C2Lo) Gear									
317.48 (236.74)	21329 (94.87)	5.58 (8.98)	1905	3.01	0.414 (0.252)	16.96 (3.34)	195 (90)	62 (17)	28.82 (97.60)
13th (B2Hi) Gear									
309.44 (230.75)	19104 (84.98)	6.07 (9.78)	1904	2.92	0.428 (0.260)	16.41 (3.23)	196 (91)	66 (19)	28.59 (96.82)
14th (C2Hi) Gear									
309.01 (230.43)	17271 (76.83)	6.71 (10.80)	1902	2.75	0.428 (0.260)	16.42 (3.24)	196 (91)	66 (19)	28.58 (96.78)
15th (B3Lo) Gear									
309.42 (230.73)	16614 (73.90)	6.98 (11.24)	1910	2.48	0.427 (0.260)	16.46 (3.24)	197 (91)	67 (19)	28.56 (96.72)
16th (C3Lo) Gear									
309.11 (230.50)	15064 (67.01)	7.69 (12.38)	1904	2.30	0.425 (0.258)	16.54 (3.26)	195 (91)	67 (19)	28.54 (96.65)
17th (B3Hi) Gear									
308.32 (229.91)	13792 (61.35)	8.38 (13.49)	1904	2.03	0.426 (0.259)	16.47 (3.24)	201 (94)	70 (21)	28.53 (96.61)

TIRES, BALLAST 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

Four 620/70R42; **, 7 (50)

Four 620/70R42; **, 10 (70)

18.5 in (470 mm)

16844 lb (7640 kg)

20456 lb (9279 kg)

37300 lb (16919 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: yes

Maximum Force Exerted Through Whole Range:	13104 lbs	(58.3 kN) (Cat. III hitch)
	14382 lbs	(64.0 kN) (Cat. IV hitch)
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	2920 psi	(201 bar)
ii) Pump delivery rate at minimum pressure:	44.5 GPM	(168.5 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	39.6 GPM	(149.9 l/min)
Delivery pressure:	2450 psi	(169 bar)
Power:	56.6 HP	(42.2 kW)

THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi. (bar)	2950 (203)
Location	remote outlet
Hydraulic oil temperature °F (°C)	147 (64)
Location	hydraulic sump
Category	III (with 90 mm lift cylinders)
Quick attach	yes

Hitch point distance to ground level in. (mm)	8.0 (203)	16.0 (409)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb	14589	14463	14418	13995	12978
Lift force on frame (kN)	(64.9)	(64.3)	(64.1)	(62.3)	(57.7)

As per current ASAE test procedures

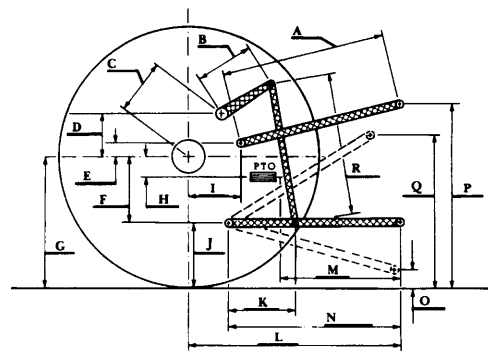
Hitch point distance to ground level in. (mm)	8.0 (203)	16.0 (409)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb.	15715	15580	15531	15076	13980
Lift force on frame (kN)	(69.9)	(69.3)	(69.1)	(67.1)	(62.2)

Category IV and Quick coupler (lift cylinders 1 × 90 mm & 1 × 100 mm) SAE static test

Hitch point distance to ground level in. (mm)	8.0 (203)	15.2 (386)	22.4 (569)	29.6 (752)	36.8 (935)	43.0 (1092)
Lift force on frame lb	16074	15908	16029	15696	14994	13518
Lift force on frame (kN)	(71.5)	(70.8)	(71.3)	(69.8)	(66.7)	(60.1)

As per current ASAE test procedures

Hitch point distance to ground level in. (mm)	8.0 (203)	15.2 (386)	22.4 (569)	29.6 (752)	36.8 (935)	43.0 (1092)
Lift force on frame lb	17199	17020	17208	16851	16152	14562
Lift force on frame (kN)	(76.5)	(75.7)	(76.6)	(75.0)	(71.8)	(64.8)



HITCH DIMENSIONS AS TESTED—NO LOAD

	Category III inch	mm	Category IV inch	mm
A	30.8	780	30.3	770
B	18.6	472	18.6	472
C	26.2	666	26.2	666
D	24.4	620	24.4	620
E	11.3	288	11.3	288
F	13.8	350	13.8	350
G	35.6	905	35.6	905
H	4.8	122	4.8	122
I	22.7	577	22.7	577
J	21.8	555	21.8	555
K	28.8	731	28.3	718
L	55.3	1405	54.5	1384
L'	61.8	1570	60.5	1537
M	25.4	645	24.6	625
N	44.0	1117	43.2	1097
O	8.0	203	8.0	203
P	48.6	1234	48.6	1234
Q	39.1	993	39.0	991
R	44.8	1137	45.0	1143

L' to end of Quick Attach



JOHN DEERE 9300 POWRSYNC DIESEL

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University of Nebraska–Lincoln
Darrell Nelson, Dean and Director