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Test 1623: John Deere 8560 Powersync Diesel 12 and 24-Speed

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1623—SUMMARY 061

JOHN DEERE 8560 POWRSYNC DIESEL

24 SPEED ALSO 12 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)					
202.65 (151.12)	2100	11.76 (44.53)	0.401 (0.244)	17.23 (3.39)	
Maximum Power (2 Hours)					
210.25 (156.79)	1900	11.69 (44.27)	0.384 (0.234)	17.98 (3.54)	
Standard Power Take-off Speed (1003 rpm)					
210.12 (156.69)	1900	11.69 (44.25)	0.385 (0.234)	17.97 (3.54)	

VARYING POWER AND FUEL CONSUMPTION

202.65 (151.12)	2100	11.76 (44.53)	0.401 (0.244)	17.23 (3.39)	Air temperature
178.77 (133.31)	2180	10.85 (41.07)	0.420 (0.255)	16.48 (3.25)	
136.10 (101.49)	2211	9.42 (35.65)	0.478 (0.291)	14.45 (2.85)	Relative humidity
92.31 (68.83)	2243	7.07 (26.78)	0.530 (0.322)	13.05 (2.57)	
46.55 (34.71)	2272	4.90 (18.57)	0.728 (0.443)	9.49 (1.87)	Barometer
0.87 (0.65)	2295	3.13 (11.83)	24.961 (15.183)	0.28 (0.05)	

Maximum Torque 697 lb.-ft (945 Nm) at 1350 rpm

Maximum Torque Rise 37.5%

Torque Rise at 1000 engine rpm 30%

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—12th (C3) Gear									
180.74 (134.78)	11162 (49.65)	6.07 (9.77)	2104	1.59	0.452 (0.275)	15.28 (3.01)	182 (83)	69 (21)	29.09 (98.51)
75% of Pull at Maximum Power—12th (C3) Gear									
142.24 (106.07)	8371 (37.24)	6.37 (10.25)	2197	1.14	0.490 (0.298)	14.12 (2.78)	182 (83)	75 (24)	29.08 (98.48)
50% of Pull at Maximum Power—12th (C3) Gear									
96.63 (72.06)	5580 (24.82)	6.49 (10.45)	2231	0.79	0.564 (0.343)	12.25 (2.41)	181 (83)	75 (24)	29.07 (98.44)
75% of Pull at Reduced Engine Speed—15th (B5) Gear									
142.57 (106.32)	8375 (37.25)	6.38 (10.27)	1774	1.14	0.449 (0.273)	15.39 (3.03)	182 (83)	75 (24)	29.08 (98.48)
50% of Pull at Reduced Engine Speed—15th (B5) Gear									
96.61 (72.04)	5581 (24.82)	6.49 (10.45)	1798	0.70	0.500 (0.304)	13.82 (2.72)	181 (83)	75 (24)	29.06 (98.41)

LUGGING ABILITY IN 12th (C3) GEAR

Crankshaft Speed rpm	2104	1893	1685	1474	1263	1054
Pull—lbs (kN)	11162 (49.65)	13090 (58.23)	14625 (65.06)	15388 (68.45)	15502 (68.96)	14989 (66.67)
Increase in Pull %	0	17	31	38	39	34
Power—Hp (kW)	180.74 (134.78)	190.05 (141.72)	188.41 (140.49)	172.94 (128.96)	149.30 (111.34)	120.47 (89.84)
Speed—Mph (km/h)	6.07 (9.77)	5.44 (8.76)	4.83 (7.77)	4.21 (6.78)	3.61 (5.81)	3.01 (4.85)
Slip %	1.59	2.02	2.20	2.28	2.28	2.28

Location of Test: Center for Agricultural Equipment, Lincoln Nebraska 68583-0832, U.S.A.

Dates of Test: May, 1989

Manufacturer: John Deere Waterloo Works, P.O. Box 3500, Waterloo, Iowa 50704

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane No. 51.1 **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8301 **Fuel weight** 6.912 lbs/gal (0.828 kg/l) **Oil SAE 15W40 API service classification** CD/SD **To motor** 5.719 gal (21.649 l) **Drained from motor** 5.414 gal (20.494 l) **Transmission, hydraulic and final drive lubricant** John Deere HyGard fluid **Total time engine was operated** 27.5 hours.

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *RG6076H102244* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** (as specified) 4.56" × 4.75" (115.8 mm × 120.7 mm) **Compression ratio** 16.0 to 1 **Displacement** 466 cu in (7634 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 cartridge **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan.

ENGINE OPERATING PARAMETERS: **Fuel rate** 80.0-87.3 lb/hr (36.3-39.6 kg/hr) **High idle** 2225-2325 rpm **Turbo boost** nominal 15-18 psi (103-124 kPa) as measured 16.0 psi (110 kPa).

CHASSIS: **Type** four wheel drive with duals **Serial No.** *RW8560H001036* **Tread width** rear 73.7" (1871 mm) to 132.0" (3352 mm) front 73.7" (1871 mm) to 132.0" (3352 mm) **Wheel base** 133.9" (3400 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 2.06 (3.31) second 2.47 (3.98) third 2.65 (4.27) fourth 3.18 (5.12) fifth 3.63 (5.84) sixth 4.35 (7.00) seventh 4.39 (7.06) eighth 4.84 (7.79) ninth 5.26 (8.47) tenth 5.65 (9.10) eleventh 5.80 (9.34) twelfth 6.23 (10.03) thirteenth 6.78 (10.91) fourteenth 7.47 (12.02) fifteenth 7.73 (12.45) sixteenth 8.53 (13.72) seventeenth 9.27 (14.93) eighteenth 10.22 (16.45) nineteenth 10.31 (16.60) twentieth 12.36 (19.90) twenty-first 13.28 (21.37) twenty-second 15.92 (25.63) twenty-third 18.18 (29.25) twenty-fourth 21.78 (35.06) reverse 2.47 (3.98), 2.96 (4.77), 5.26 (8.47), 5.80 (9.34), 6.31 (10.16), 6.96 (11.20) **Clutch** multiple wet disc hydraulically power actuated by foot pedal **Brakes** multiple wet disc hydraulically power actuated by foot pedal **Steering** hydrostatic

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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st (A1) Gear									
164.02 (122.31)	31879 (141.80)	1.93 (3.11)	2157	7.84	0.486 (0.295)	14.23 (2.80)	182 (83)	59 (15)	29.09 (98.51)
2nd (A2) Gear									
176.54 (131.65)	30280 (134.69)	2.19 (3.52)	2022	6.99	0.465 (0.283)	14.87 (2.93)	182 (83)	64 (18)	29.10 (98.54)
3rd (A3) Gear									
181.35 (135.23)	28833 (128.26)	2.36 (3.80)	2007	5.96	0.449 (0.273)	15.39 (3.03)	182 (83)	68 (20)	29.11 (98.58)
4th (A4) Gear									
183.15 (136.58)	25154 (111.89)	2.73 (4.39)	1902	3.90	0.440 (0.268)	15.71 (3.09)	181 (83)	61 (16)	29.12 (98.61)
5th (A5) Gear									
183.92 (137.15)	22005 (97.88)	3.13 (5.04)	1900	3.31	0.439 (0.267)	15.74 (3.10)	182 (83)	64 (18)	29.12 (98.61)
6th (A6) Gear									
182.25 (135.90)	18015 (80.13)	3.79 (6.11)	1904	2.63	0.444 (0.270)	15.57 (3.07)	183 (84)	66 (19)	29.12 (98.61)
7th (B1) Gear									
185.16 (138.07)	18196 (80.94)	3.82 (6.14)	1901	2.72	0.437 (0.266)	15.80 (3.11)	183 (84)	71 (22)	29.08 (98.48)
8th (C1) Gear									
186.64 (139.18)	16561 (73.67)	4.23 (6.80)	1905	2.46	0.434 (0.264)	15.93 (3.14)	183 (84)	70 (21)	29.08 (98.48)
9th (B2) Gear									
187.40 (139.75)	15245 (67.81)	4.61 (7.42)	1903	2.28	0.431 (0.262)	16.03 (3.16)	184 (84)	74 (23)	29.10 (98.54)
10th (B3) Gear									
188.70 (140.72)	14286 (63.55)	4.95 (7.97)	1904	1.94	0.428 (0.261)	16.14 (3.18)	183 (84)	65 (18)	29.10 (98.54)
11th (C2) Gear									
186.19 (138.84)	13720 (61.03)	5.09 (8.19)	1905	1.85	0.434 (0.264)	15.91 (3.13)	183 (84)	69 (21)	29.10 (98.54)
12th (C3) Gear									
189.88 (141.60)	13006 (57.85)	5.48 (8.81)	1904	1.76	0.426 (0.259)	16.21 (3.19)	183 (84)	69 (21)	29.10 (98.54)
13th (B4) Gear									
183.80 (137.06)	11527 (51.27)	5.98 (9.62)	1907	1.67	0.438 (0.266)	15.78 (3.11)	183 (84)	70 (21)	29.09 (98.51)
14th (C4) Gear									
187.01 (139.45)	10636 (47.31)	6.59 (10.61)	1904	1.67	0.432 (0.263)	16.00 (3.15)	183 (84)	68 (20)	29.13 (98.65)
15th (B5) Gear									
187.44 (139.77)	10299 (45.81)	6.83 (10.98)	1901	1.50	0.431 (0.262)	16.05 (3.16)	184 (84)	68 (20)	29.13 (98.65)
16th (C5) Gear									
185.17 (138.08)	9203 (40.93)	7.55 (12.14)	1903	1.32	0.437 (0.266)	15.83 (3.12)	184 (84)	69 (21)	29.13 (98.65)
17th (B6) Gear									
180.51 (134.61)	8238 (36.64)	8.22 (13.22)	1903	1.14	0.447 (0.272)	15.46 (3.05)	184 (84)	72 (22)	29.13 (98.65)

and articulated **Power take-off** 1000 rpm at 1895 engine rpm **Unladen tractor mass** 32075 lb (14549 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 injection pump return was maintained at 149° F (65° C). This tractor is equipped with a variable speed cooling fan. Since engine power is influenced by fan speed, all power tests were conducted at approximately the same ambient air temperatures. The pull in 1st (A1) gear was limited to avoid tractor bouncing. The performance figures on this summary were taken from a test conducted under the OECD restricted standard test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1623**, Summary 061, December 22, 1989.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
R. D. GRISSE
G. J. HOFFMAN
Board of Tractor Test Engineers

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/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st (A1) Gear									
162.65 (121.29)	32166 (143.08)	1.90 (3.05)	2152	9.06	0.492 (0.300)	14.04 (2.77)	182 (83)	62 (17)	29.09 (98.51)
2nd (A2) Gear									
174.41 (130.06)	28308 (125.92)	2.31 (3.72)	2098	5.31	0.467 (0.284)	14.79 (2.91)	182 (83)	64 (18)	29.10 (98.54)
3rd (A3) Gear									
178.04 (132.76)	26747 (118.97)	2.50 (4.02)	2101	4.74	0.457 (0.278)	15.11 (2.98)	182 (83)	66 (19)	29.11 (98.58)
4th (A4) Gear									
177.50 (132.36)	21858 (97.23)	3.05 (4.90)	2101	3.14	0.458 (0.279)	15.08 (2.97)	181 (83)	55 (13)	29.12 (98.61)
5th (A5) Gear									
177.65 (132.48)	19072 (84.83)	3.49 (5.62)	2104	2.72	0.458 (0.278)	15.10 (2.97)	182 (83)	63 (17)	29.12 (98.61)
6th (A6) Gear									
175.26 (130.69)	15625 (69.50)	4.21 (6.77)	2102	2.11	0.464 (0.282)	14.90 (2.94)	183 (84)	66 (19)	29.12 (98.61)
7th (B1) Gear									
179.74 (134.03)	15938 (70.90)	4.23 (6.81)	2099	2.37	0.452 (0.275)	15.29 (3.01)	182 (83)	70 (21)	29.08 (98.48)
8th (C1) Gear									
178.74 (133.28)	14314 (63.67)	4.68 (7.54)	2101	2.02	0.456 (0.278)	15.14 (2.98)	183 (84)	70 (21)	29.08 (98.48)
9th (B2) Gear									
178.72 (133.27)	13115 (58.34)	5.11 (8.22)	2103	1.94	0.457 (0.278)	15.11 (2.98)	183 (84)	70 (21)	29.09 (98.51)
10th (B3) Gear									
180.64 (134.70)	12349 (54.93)	5.49 (8.83)	2100	1.67	0.451 (0.274)	15.34 (3.02)	182 (83)	67 (19)	29.10 (98.54)
11th (C2) Gear									
178.42 (133.04)	11852 (52.72)	5.65 (9.09)	2104	1.67	0.456 (0.277)	15.15 (2.99)	183 (84)	69 (21)	29.10 (98.54)
12th (C3) Gear									
180.74 (134.78)	11162 (49.65)	6.07 (9.77)	2104	1.59	0.452 (0.275)	15.28 (3.01)	182 (83)	69 (21)	29.09 (98.51)
13th (B4) Gear									
176.29 (131.46)	10004 (44.50)	6.61 (10.64)	2101	1.50	0.463 (0.282)	14.92 (2.94)	182 (83)	70 (21)	29.09 (98.51)
14th (C4) Gear									
177.20 (132.14)	9117 (40.55)	7.29 (11.73)	2100	1.32	0.458 (0.279)	15.08 (2.97)	183 (84)	68 (20)	29.12 (98.61)
15th (B5) Gear									
177.59 (132.43)	8817 (39.22)	7.55 (12.16)	2101	1.23	0.458 (0.279)	15.09 (2.97)	183 (84)	68 (20)	29.13 (98.65)
16th (C5) Gear									
176.53 (131.64)	7934 (35.29)	8.34 (13.43)	2100	1.05	0.462 (0.281)	14.97 (2.95)	183 (84)	68 (20)	29.13 (98.65)

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
Gear closest to 4.7 mph (7.5 km/h)—8th (C1) Gear	76.5
Maximum sound level	76.5
Transport speed—no load—24th (D6) Gear	76.5
Bystander in 24th (D6) Gear	87.0

THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi. (bar)	2500 (172)				
Location	remote outlet				
Hydraulic oil temperature °F(°C)	145 (63)				
Location	hydraulic sump				
Category	III				
Quick attach	Yes				
Hitch point distance to ground level in. (mm)	8.9 (226)	16.2 (411)	26.4 (671)	34.4 (874)	40.2 (1021)
Lift force on frame lb. " " " " " " (kN)	16075 (71.5)	16358 (72.8)	16417 (73.0)	15822 (70.4)	14983 (66.6)

TIRES AND WEIGHT

Rear Tires	—No., size, ply & psi (kPa)
Front Tires	—No., size, ply & psi (kPa)
Height of Drawbar	
Static Weight	—Rear
	—Front
	—Total

Tested Without Ballast

Four 18.4R42; **, 14 (95)
Four 18.4R42; **, 14 (95)
18 in (455 mm)
14415 lb (6539 kg)
17660 lb (8010 kg)
32075 lb (14549 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: Yes

Maximum Force Exerted Through Whole Range:

11306 lbs (50.3 kN)

i) Opening pressure of relief valve:

NA

Sustained pressure with pump stalled:

2500 psi (172 Bar)

ii) Pump delivery rate at minimum pressure:

43.6 GPM (165.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

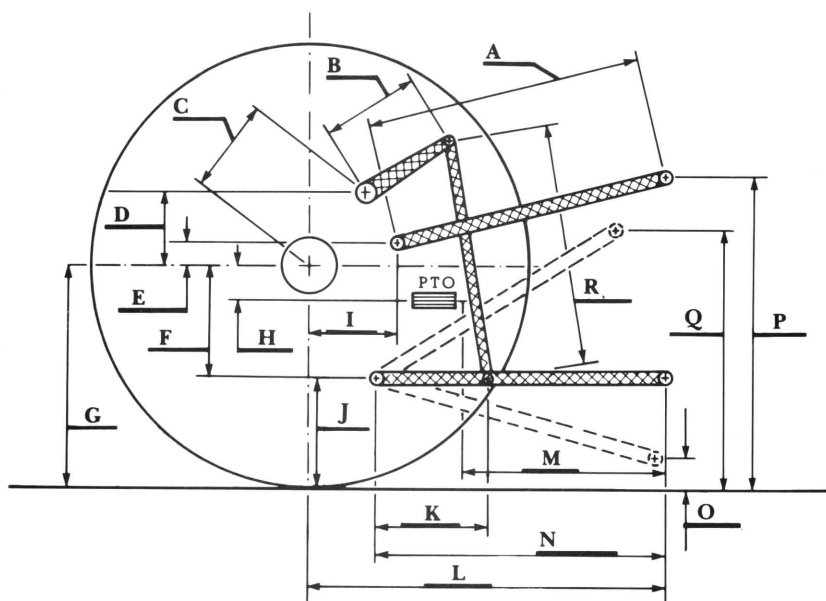
41.0 GPM (155.2 l/min)

Delivery pressure:

1850 psi (128 Bar)

Power:

44.3 Hp (33.0 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	31.5	800
B	18.6	472
C	26.2	666
D	24.4	620
E	11.3	288
F	13.8	350
G	35.1	892
H	4.8	122
I	22.7	577
J	21.3	542
K	28.8	731
L	55.3	1405
L'	61.8	1570
M	25.4	645
N	44.0	1117
O	7.9	201
P	48.3	1228
Q	40.3	1024
R	44.8	1137

L' to end of Quick attach



John Deere 8560 Powrsync Diesel

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