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January 2006

Test 1890: John Deere 8530 IVT

Nebraska Tractor Test Lab

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John Deere

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NEBRASKA OECD TRACTOR TEST 1890—SUMMARY 557

JOHN DEERE 8530 DIESEL

INFINITELY VARIABLE TRANSMISSION

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—1050 rpm)					
277.53 (206.95)	2100	15.38 (58.22)	0.388 (0.236)	18.05 (3.55)	
Standard Power Take-off Speed(1000 rpm)					
302.39 (225.49)	2000	16.23 (61.42)	0.376 (0.229)	18.64 (3.67)	
Maximum Power (1 hour)					
312.73 (233.20)	1800	16.65 (63.05)	0.373 (0.227)	18.78 (3.70)	

VARYING POWER AND FUEL CONSUMPTION

277.53 (206.95)	2100	15.38 (58.22)	0.388 (0.236)	18.05 (3.55)	Air temperature
241.64 (180.19)	2154	14.14 (53.52)	0.410 (0.249)	17.09 (3.37)	76°F(24°C)
182.41 (136.02)	2163	11.81 (44.71)	0.453 (0.276)	15.44 (3.04)	Relative humidity
122.10 (91.05)	2173	9.03 (34.17)	0.518 (0.315)	13.53 (2.66)	41%
61.44 (45.82)	2186	5.94 (22.49)	0.677 (0.412)	10.34 (2.04)	Barometer
1.46 (1.09)	2194	4.16 (15.73)	19.903 (12.107)	0.35 (0.07)	29.06" Hg(98.41 kPa)

Maximum Torque - 1006 lb.-ft. (1364 Nm) at 1597 rpm
 Maximum Torque Rise - 45.0%
 Torque rise at 1701 engine rpm - 37%

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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—6.2 mph (10.0 km/h)									
240.35 (179.23)	15071 (67.04)	5.98 (9.62)	2097	3.02	0.441 (0.269)	15.86 (3.12)	199 (93)	46 (8)	28.82 (97.60)
75% of Pull at Maximum Power—6.2 mph (10.0 km/h)									
187.09 (139.51)	11319 (50.35)	6.20 (9.98)	2157	2.27	0.487 (0.296)	14.39 (2.83)	200 (93)	59 (15)	28.40 (96.17)
50% of Pull at Maximum Power—6.2 mph (10.0 km/h)									
125.61 (93.67)	7502 (33.37)	6.28 (10.11)	2168	1.50	0.565 (0.344)	12.39 (2.44)	195 (91)	58 (14)	28.40 (96.17)
75% of Pull at Reduced Engine Speed—Auto mode									
186.73 (139.24)	11279 (50.17)	6.21 (9.99)	1734	2.24	0.455 (0.277)	15.40 (3.03)	204 (96)	58 (14)	28.40 (96.17)
50% of Pull at Reduced Engine Speed—Auto mode									
126.20 (94.11)	7515 (33.43)	6.30 (10.14)	1350	1.47	0.435 (0.265)	16.10 (3.17)	189 (87)	58 (14)	28.40 (96.17)

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

Dates of tests: October 5 - 25, 2006

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) 0.8409
Fuel weight 7.002 lbs/gal (0.839 kg/l)
Oil SAE 15W-40 API service classification CI-4
Transmission and hydraulic lubricant John Deere Hy-Gard fluid
Front axle lubricant John Deere Hy-Gard fluid
Total time engine was operated: 32.0 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler
Serial No. *RG6090L006210*
Crankshaft lengthwise **Rated engine speed** 2100
Bore and stroke 4.661" x 5.354" (118.4 mm x 136.0 mm)
Compression ratio 16.3 to 1
Displacement 548 cu in (8984 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 water separator
Fuel cooler radiator for pump return fuel
Muffler vertical
Cooling medium temperature control 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 104.9 - 113.8 lb/h (47.6 - 51.6 kg/h)
High idle: 2175 - 2225 rpm
Turbo boost: nominal 29.0 - 33.4 psi (200 - 230 kPa) as measured 31.7 psi (218 kPa)

CHASSIS: Type front wheel assist with duals
Serial No. *RW8530D005577*
Tread width rear 60.0" (1524 mm) to 128.9" (3270 mm) front 64.0" (1625 mm) to 87.6" (2225 mm)
Wheelbase 118.9" (3020 mm)
Hydraulic control system direct engine drive
Transmission Infinitely variable with four mechanical ranges and automatic shifting between ranges.
Nominal travel speeds mph (km/h) forward - 0-25.0 mph, (0-40 km/h) reverse - 0-12.5 mph (0-20 km/h)
Clutch a foot pedal controls the hydrostatic oil flow
Brakes wet multiple disc hydraulically operated by two foot pedals that can be locked together
Steering hydrostatic
Power take-off 1000 rpm at 2000 engine rpm
Unladen tractor mass 26800 lb (12156 kg)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - 2100 RPM
MAXIMUM POWER AT SELECTED SPEED SETTINGS

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	Air dry bulb	Barom. inch Hg (kPa)	
212.46 (158.43)	24641 (109.61)	3.23 (5.20)	2128	11.01	0.500 (0.304)	14.00 (2.76)	202 (95)	61 (16)	28.53 (96.61)
221.43 (165.12)	23003 (102.32)	3.61 (5.81)	2098	8.84	0.483 (0.294)	14.49 (2.86)	201 (94)	61 (16)	28.53 (96.61)
227.30 (169.50)	21066 (93.71)	4.05 (6.51)	2098	6.37	0.470 (0.286)	14.90 (2.93)	200 (94)	61 (16)	28.53 (96.61)
233.71 (174.28)	19624 (87.29)	4.47 (7.19)	2099	4.78	0.450 (0.274)	15.55 (3.06)	203 (95)	59 (15)	28.40 (96.17)
237.86 (177.37)	18859 (83.89)	4.73 (7.61)	2100	4.21	0.442 (0.269)	15.84 (3.12)	201 (94)	59 (15)	28.40 (96.17)
239.51 (178.60)	16798 (74.72)	5.35 (8.60)	2097	3.64	0.439 (0.267)	15.95 (3.14)	201 (94)	59 (15)	28.40 (96.17)
240.35 (179.23)	15071 (67.04)	5.98 (9.62)	2097	3.02	0.441 (0.269)	15.86 (3.12)	199 (93)	46 (8)	28.82 (97.60)
240.25 (179.15)	13657 (60.75)	6.60 (10.62)	2098	2.73	0.440 (0.268)	15.92 (3.14)	200 (94)	49 (9)	28.82 (97.60)
238.21 (177.63)	12355 (54.96)	7.23 (11.64)	2101	2.40	0.444 (0.270)	15.76 (3.10)	199 (93)	51 (11)	28.81 (97.56)
236.42 (176.30)	11321 (50.36)	7.83 (12.60)	2097	2.19	0.448 (0.273)	15.63 (3.08)	198 (92)	52 (11)	28.80 (97.53)
235.85 (175.87)	10448 (46.47)	8.47 (13.62)	2101	2.05	0.449 (0.273)	15.58 (3.07)	201 (94)	53 (12)	28.80 (97.53)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load at 4.6 mph (7.5 km/h)	71.4	71.2
Transport speed - no load		74.5
Bystander		86.5

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
	Rear Tires - No., size, ply & psi (kPa)	Six 480/80R50;***;11(80)
Ballast - Triples (total)	2420 lb (1098 kg)	None
- Cast Iron (total)	4760 lb (2159 kg)	None
Front Tires - No., size, ply & psi (kPa)	Four 420/85R34;***;17(120)	Two 420/85R34;***;23(160)
Ballast - Duals (total)	1620 lb (735 kg)	None
- Cast Iron (total)	1385 lb (628 kg)	None
Height of Drawbar	19.5 in (495 mm)	19.0 in (485 mm)
Static Weight with operator - Rear	22430 lb (10174 kg)	15765 lb (7151 kg)
- Front	14710 lb (6673 kg)	11190 lb (5076 kg)
- Total	37140 lb (16847 kg)	26955 lb (12227 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: Manual mode was selected by placing the AutoPowr(IVT) selector in the OFF position. Auto mode was selected by placing the Autopowr (IVT) selector in position 3.

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 119°F(49°C). This tractor had a power bulge of 12.7% which did not meet the manufacturer's claim of 13% power bulge. 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. **1890**, Nebraska Summary 557, December 8, 2006.

Roger M. Hoy
 Director

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

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - 1800 RPM
MAXIMUM POWER AT SELECTED SPEED SETTINGS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F(°C)	Air dry bulb	Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med		
3.6 mph (5.8 km/h)									
214.27 (159.78)	24839 (110.49)	3.23 (5.21)	2122	10.70	0.496 (0.302)	14.12 (2.78)	198 (92)	61 (16)	28.53 (96.61)
4.0 mph (6.4 km/h)									
218.94 (163.26)	23315 (103.71)	3.52 (5.67)	2081	10.24	0.494 (0.301)	14.17 (2.79)	201 (94)	61 (16)	28.53 (96.61)
4.3 mph (7.0 km/h)									
233.68 (174.26)	22748 (101.19)	3.85 (6.20)	2043	8.44	0.471 (0.287)	14.86 (2.93)	200 (93)	61 (16)	28.54 (96.65)
4.7 mph (7.5 km/h)									
248.56 (185.35)	22443 (99.83)	4.15 (6.68)	2008	7.39	0.450 (0.274)	15.55 (3.06)	201 (94)	61 (16)	28.54 (96.65)
5.0 mph (8.0 km/h)									
253.52 (189.05)	22152 (98.54)	4.29 (6.91)	1965	7.10	0.448 (0.273)	15.63 (3.08)	200 (94)	61 (16)	28.54 (96.65)
5.6 mph (9.0 km/h)									
262.49 (195.74)	21686 (96.46)	4.54 (7.31)	1839	6.70	0.442 (0.269)	15.84 (3.12)	200 (93)	61 (16)	28.54 (96.65)
6.2 mph (10.0 km/h)									
271.03 (202.11)	20111 (89.46)	5.05 (8.13)	1802	4.63	0.430 (0.262)	16.27 (3.21)	200 (93)	47 (8)	28.82 (97.60)
6.8 mph (11.0 km/h)									
274.60 (204.77)	18401 (81.85)	5.60 (9.01)	1803	4.02	0.424 (0.258)	16.50 (3.25)	199 (93)	50 (10)	28.82 (97.60)
7.5 mph (12.0 km/h)									
272.81 (203.43)	16688 (74.23)	6.13 (9.87)	1801	3.49	0.425 (0.258)	16.48 (3.25)	199 (93)	51 (11)	28.81 (97.56)
8.1 mph (13.0 km/h)									
272.09 (202.90)	15276 (67.95)	6.68 (10.75)	1805	3.18	0.425 (0.259)	16.46 (3.24)	199 (93)	52 (11)	28.80 (97.53)
8.7 mph (14.0 km/h)									
272.40 (203.13)	14185 (63.10)	7.20 (11.59)	1802	2.91	0.427 (0.260)	16.38 (3.23)	199 (93)	54 (12)	28.80 (97.53)
9.3 mph (15.0 km/h)									
271.13 (202.18)	13134 (58.42)	7.74 (12.46)	1804	2.62	0.430 (0.262)	16.28 (3.21)	199 (93)	55 (13)	28.79 (97.49)
9.9 mph (16.0 km/h)									
270.27 (201.54)	12250 (54.49)	8.27 (13.32)	1804	2.47	0.431 (0.262)	16.26 (3.20)	199 (93)	55 (13)	28.79 (97.49)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - AUTO MODE
MAXIMUM POWER AT SELECTED SPEED SETTINGS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
3.6 mph (5.8 km/h)									
210.25 (156.78)	24315 (108.16)	3.24 (5.22)	1905	11.54	0.489 (0.297)	14.33 (2.82)	204 (95)	61 (16)	28.53 (96.61)
4.0 mph (6.4 km/h)									
220.64 (164.53)	22895 (101.84)	3.61 (5.82)	1992	8.54	0.472 (0.287)	14.82 (2.92)	203 (95)	61 (16)	28.53 (96.61)
4.3 mph (7.0 km/h)									
228.44 (170.35)	20990 (93.37)	4.08 (6.57)	2007	6.18	0.457 (0.278)	15.33 (3.02)	204 (95)	61 (16)	28.54 (96.65)
4.7 mph (7.5 km/h)									
233.80 (174.35)	19593 (87.15)	4.47 (7.20)	2034	4.83	0.444 (0.270)	15.78 (3.11)	202 (95)	59 (15)	28.40 (96.17)
5.0 mph (8.0 km/h)									
237.63 (177.20)	18900 (84.07)	4.71 (7.59)	2046	4.34	0.439 (0.267)	15.94 (3.14)	201 (94)	59 (15)	28.40 (96.17)
5.6 mph (9.0 km/h)									
240.29 (179.18)	16854 (74.97)	5.35 (8.60)	2040	3.67	0.434 (0.264)	16.14 (3.18)	201 (94)	59 (15)	28.40 (96.17)
6.2 mph (10.0 km/h)									
240.54 (179.37)	15034 (66.87)	6.00 (9.66)	2019	3.09	0.434 (0.264)	16.14 (3.18)	200 (93)	48 (9)	28.82 (97.60)
6.8 mph (11.0 km/h)									
240.19 (179.11)	13585 (60.43)	6.63 (10.67)	2009	2.72	0.434 (0.264)	16.12 (3.17)	199 (93)	51 (11)	28.81 (97.56)
7.5 mph (12.0 km/h)									
238.08 (177.53)	12276 (54.61)	7.27 (11.70)	2018	2.39	0.439 (0.267)	15.95 (3.14)	199 (93)	52 (11)	28.81 (97.56)
8.1 mph (13.0 km/h)									
236.71 (176.52)	11232 (49.96)	7.90 (12.72)	2007	2.19	0.441 (0.268)	15.87 (3.13)	199 (93)	53 (12)	28.80 (97.53)
8.7 mph (14.0 km/h)									
236.26 (176.18)	10403 (46.27)	8.52 (13.71)	2043	2.04	0.446 (0.271)	15.71 (3.09)	199 (93)	54 (12)	28.79 (97.49)

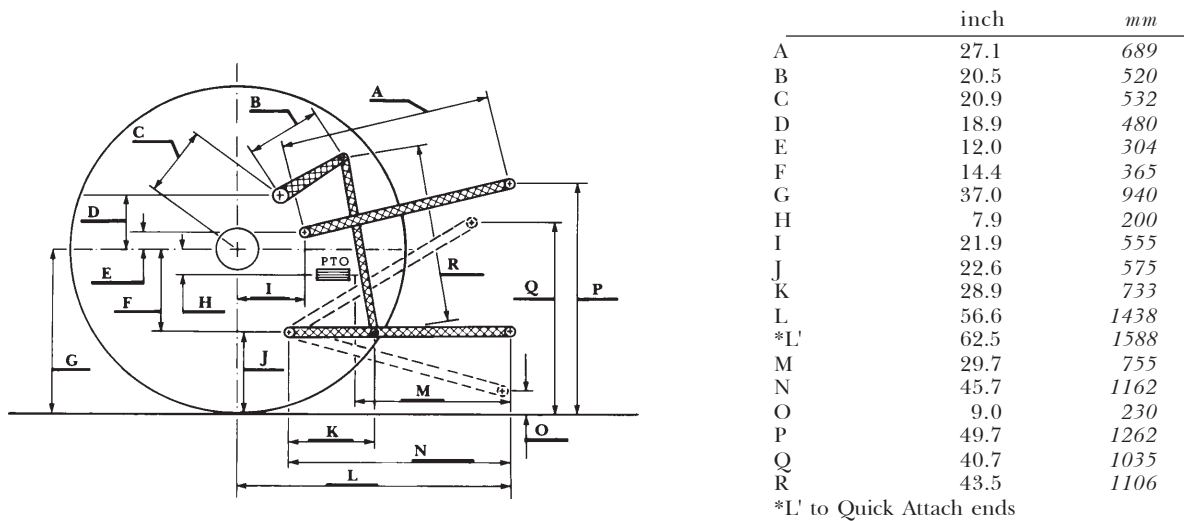
DRAWBAR PERFORMANCE
BALLASTED- FRONT DRIVE ENGAGED - 1800 RPM
MAXIMUM POWER AT SELECTED SPEED SETTINGS

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)
199.70 (148.92)	36832 (163.84)	2.03 (3.27)	2128	13.27	0.526 (0.320)	13.32 (2.62)	192 (89)	44 (7)	28.81 (97.56)
226.22 (168.69)	34835 (154.95)	2.44 (3.92)	2058	9.30	0.478 (0.290)	14.66 (2.89)	199 (93)	46 (8)	28.81 (97.56)
246.73 (183.99)	33834 (150.50)	2.73 (4.40)	1977	8.13	0.455 (0.277)	15.38 (3.03)	202 (94)	50 (10)	28.80 (97.53)
258.79 (192.98)	32720 (145.55)	2.97 (4.77)	1843	7.17	0.446 (0.271)	15.69 (3.09)	204 (96)	50 (10)	28.79 (97.49)
267.00 (199.10)	29028 (129.12)	3.45 (5.55)	1801	5.34	0.436 (0.265)	16.08 (3.17)	200 (93)	51 (11)	28.78 (97.46)
270.49 (201.70)	26879 (119.57)	3.77 (6.07)	1802	4.65	0.430 (0.262)	16.27 (3.20)	199 (93)	52 (11)	28.77 (97.43)
272.48 (203.19)	25651 (114.10)	3.98 (6.41)	1801	4.27	0.425 (0.258)	16.48 (3.25)	202 (95)	53 (12)	28.76 (97.39)
274.40 (204.62)	22773 (101.30)	4.52 (7.27)	1802	3.55	0.425 (0.259)	16.46 (3.24)	200 (93)	54 (12)	28.75 (97.36)
275.84 (205.69)	20519 (91.27)	5.04 (8.11)	1801	3.09	0.421 (0.256)	16.64 (3.28)	199 (93)	54 (12)	28.75 (97.36)
276.30 (206.04)	18617 (82.81)	5.57 (8.96)	1802	2.79	0.420 (0.256)	16.65 (3.28)	205 (96)	55 (13)	28.74 (97.33)
274.46 (204.67)	16932 (75.32)	6.08 (9.78)	1799	2.49	0.423 (0.257)	16.56 (3.26)	199 (93)	55 (13)	28.73 (97.29)
273.13 (203.68)	15538 (69.12)	6.59 (10.61)	1797	2.28	0.425 (0.258)	16.48 (3.25)	200 (94)	56 (13)	28.72 (97.26)
272.30 (203.06)	14321 (63.70)	7.13 (11.48)	1800	2.05	0.425 (0.259)	16.46 (3.24)	200 (93)	56 (13)	28.72 (97.26)
271.06 (202.13)	13274 (59.05)	7.66 (12.32)	1801	1.84	0.430 (0.262)	16.27 (3.20)	199 (93)	57 (14)	28.71 (97.22)
269.81 (201.20)	12390 (55.12)	8.17 (13.14)	1799	1.74	0.430 (0.262)	16.27 (3.21)	199 (93)	58 (14)	28.70 (97.19)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY:	IVN
Quick Attach: Yes	
Lift cylinders:	2x112 mm
Maximum force exerted through whole range:	18326 lbs (81.5 kN)
85 cc pump	
i) Sustained pressure at compensator cutoff:	2990 psi (206 bar)
	three outlet sets combined
ii) Pump delivery rate at minimum pressure and rated engine speed:	61.5 GPM (232.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	61.4 GPM (232.4 l/min)
Delivery pressure:	2469 psi (170 bar)
Power:	88.4 HP (66.0 kW)
	single outlet set
ii) Pump delivery rate at minimum pressure and rated engine speed:	39.0 GPM (147.6 l/min)
iii) Pump delivery rate at maximum hydraulic power:	37.3 GPM (141.2 l/min)
Delivery pressure:	2077 psi (143 bar)
Power:	45.2 HP (33.7 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD



JOHN DEERE 8530 IVT DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln