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2015

Test 2132: John Deere 8370RT

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 2132—SUMMARY 1002

JOHN DEERE 8370RT DIESEL

e23 TRANSMISSION

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption		Mean Atmospheric Conditions
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW/hl)	Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1053 rpm)						
320.98 (239.36)	2101	17.55 (66.43)	0.383 (0.233)	18.29 (3.60)	0.32 (1.21)	Fuel used during active exhaust regeneration-1.12 gal (4.24 l) (see note 1, p.2)
Standard Power Take-off Speed(1000 rpm)						
348.97 (260.22)	1995	18.84 (71.33)	0.378 (0.230)	18.52 (3.65)	0.34 (1.30)	
Maximum Power (1 hour)						
359.53 (268.10)	1851	19.20 (72.66)	0.374 (0.227)	18.73 (3.69)	0.40 (1.51)	
VARYING POWER AND FUEL CONSUMPTION						
320.98 (239.36)	2101	17.55 (66.43)	0.383 (0.233)	18.29 (3.60)	0.32 (1.21)	Air temperature
280.05 (208.83)	2155	15.33 (58.04)	0.383 (0.233)	18.26 (3.60)	0.30 (1.13)	73°F (23°C)
210.99 (157.34)	2166	12.11 (45.83)	0.402 (0.244)	17.43 (3.43)	0.23 (0.87)	Relative humidity
141.37 (105.42)	2176	9.15 (34.65)	0.453 (0.276)	15.45 (3.04)	0.21 (0.80)	36%
70.99 (52.94)	2187	6.43 (24.34)	0.634 (0.386)	11.04 (2.18)	0.14 (0.52)	Barometer
1.21 (0.90)	2198	3.76 (14.23)	21.769 (13.242)	0.32 (0.06)	0.12 (0.47)	29.06" Hg (98.41 kPa)

Maximum Torque - 1139 lb.-ft. (1544 Nm) at 1601 rpm
 Maximum Torque Rise - 41.9%
 Torque rise at 1678 engine rpm - 36%
 Power increase at 1851 rpm - 12.0%

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)	D.E.F Consumption Hp.hr/gal (kW/hl)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—9th Gear-Manual mode										
282.59 (210.73)	24869 (110.62)	4.26 (6.86)	2100	4.1	0.435 (0.264)	16.11 (3.17)	0.010 (0.006)	204 (96)	50 (10)	28.95 (98.07)
75% of Pull at Maximum Power—9th Gear-Manual mode										
222.18 (165.68)	18607 (82.77)	4.48 (7.21)	2160	2.0	0.441 (0.268)	15.89 (3.13)	0.011 (0.007)	195 (90)	56 (14)	28.94 (98.00)
50% of Pull at Maximum Power—9th Gear-Manual mode										
150.59 (112.29)	12410 (55.20)	4.55 (7.32)	2172	1.0	0.483 (0.294)	14.49 (2.85)	0.014 (0.008)	188 (86)	57 (14)	28.93 (97.97)
75% of Pull at Reduced Engine Speed—4.6 mph(7.4 km/h)-Auto mode										
221.81 (165.40)	18621 (82.83)	4.47 (7.19)	1384	2.1	0.404 (0.246)	17.34 (3.42)	0.013 (0.008)	206 (97)	56 (14)	28.93 (97.97)
50% of Pull at Reduced Engine Speed—4.6 mph(7.4 km/h)-Auto mode										
150.39 (112.14)	12497 (55.59)	4.51 (7.26)	1384	1.0	0.421 (0.256)	16.62 (3.27)	0.019 (0.012)	189 (87)	57 (14)	28.92 (97.93)

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

Dates of tests: October 1-13, 2015

Manufacturer: John Deere Tractor Works, 3500 East Donald St., P.O. Box 270, Waterloo Ia, 50704-0270

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8412 **Fuel weight** 7.004 lbs/gal (0.839 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 10W-30 API service classification CJ-4 Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 26.5 hours

ENGINE: Make John Deere **Diesel Type** six cylinder vertical with two turbochargers and air to air aftercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *RG6090U014958* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.661" x 5.354" (118.4 mm x 136.0 mm) **Compression ratio** 16.0 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 **Exhaust DOC** (diesel oxidation catalyst), SCR (selective catalyst reduction) and regenerative DPF (diesel particulate filter) integrated within a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 116.8 - 126.5 lb/h (53.0 - 57.4 kg/h) **High idle:** 2190 - 2210 rpm **Turbo boost:** nominal 24.7 - 26.8 psi (170 - 185 kPa) as measured 25.6 psi (177 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *1RW8370REES914004* **Track width** 76.0" (1930 mm) to 120.0" (3048 mm) **Length of track on ground** 99.0" (2515 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 1.39 (2.24) second 1.62 (2.60) third 1.87 (3.01) fourth 2.17 (3.49) fifth 2.51 (4.04) sixth 2.91 (4.69) seventh 3.35 (5.39) eighth 3.89 (6.26) ninth 4.49 (7.23) tenth 5.21 (8.39) eleventh 6.05 (9.73) twelfth 7.00 (11.27) thirteenth 8.12 (13.07) fourteenth 9.33 (15.02) fifteenth 10.83 (17.43) sixteenth 12.34 (19.87) seventeenth 14.33 (23.06) eighteenth 16.61

DRAWBAR PERFORMANCE(Unballasted)
MANUAL MODE - 2100 ENGINE RPM

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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
					6th Gear					
245.12 (182.78)	36816 (163.76)	2.50 (4.02)	2122	14.3	0.494 (0.300)	14.19 (2.80)	0.011 (0.006)	206 (97)	57 (14)	28.91 (97.90)
					7th Gear					
264.42 (197.17)	33131 (147.37)	2.99 (4.81)	2100	9.6	0.464 (0.282)	15.10 (2.97)	0.012 (0.007)	209 (98)	56 (13)	28.94 (98.00)
					8th Gear					
277.50 (206.93)	28877 (128.45)	3.61 (5.80)	2100	5.9	0.443 (0.270)	15.81 (3.11)	0.011 (0.007)	208 (98)	56 (13)	28.94 (98.00)
					9th Gear					
282.59 (210.73)	24869 (110.62)	4.26 (6.86)	2100	4.1	0.435 (0.264)	16.11 (3.17)	0.010 (0.006)	204 (96)	50 (10)	28.95 (98.04)
					10th Gear					
283.27 (211.23)	21238 (94.47)	5.00 (8.05)	2100	2.8	0.433 (0.263)	16.19 (3.19)	0.011 (0.006)	211 (99)	49 (10)	28.95 (98.04)
					11th Gear					
286.53 (213.66)	18351 (81.63)	5.86 (9.42)	2100	2.0	0.429 (0.261)	16.34 (3.22)	0.010 (0.006)	206 (96)	51 (10)	28.95 (98.04)
					12th Gear					
288.62 (215.22)	15886 (70.66)	6.81 (10.96)	2100	1.5	0.423 (0.257)	16.55 (3.26)	0.011 (0.007)	213 (100)	52 (11)	28.95 (98.04)
					13th Gear					
287.36 (214.28)	13572 (60.37)	7.94 (12.78)	2100	1.1	0.424 (0.258)	16.52 (3.25)	0.011 (0.006)	208 (98)	53 (11)	28.96 (98.07)
					14th Gear					
283.32 (211.27)	11625 (51.71)	9.14 (14.71)	2100	0.8	0.433 (0.264)	16.16 (3.18)	0.011 (0.007)	214 (101)	54 (12)	28.95 (98.04)

(26.73) nineteenth 19.28 (31.02) twentieth 22.31 (35.91) twenty-first 25.89 (41.67) twenty-second 26.01 (42.00) twenty-third 26.01 (42.00) electronically limited reverse 1.66 (2.67), 2.23 (3.59), 3.00 (4.82), 3.99 (6.42), 4.62 (7.43), 6.21 (9.99), 8.34 (13.42), 11.12 (17.90), 14.71 (23.68), 19.79 (31.85), 26.10 (42.00), 26.10 (42.00) electronically limited **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated by foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 1995 engine rpm **Unladen tractor mass** 36035 lb (16345 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The manufacturer declares that the average time between active regenerations is 50 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full load, under steady state conditions.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2132**, Nebraska Summary 1002, December 10, 2015.

Roger M. Hoy
Director

M.F. Kocher
J.D. Luck
P.J. Jasa
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in 9th gear	67.8
Transport speed - no load - 21st gear	70.7
Bystander in 21st gear	86.7

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	25.0 in (635 mm)	25.0 in (635 mm)
Ballast - Cast iron(front)	2590 lb (1175 kg)	None
- Cast iron(front frame)	200 lb (91 kg)	None
Height of Drawbar	19.5 in (495 mm)	19.0 in (485 mm)
Static Weight with operator	39000 lb(17690 kg)	36210 lb(16424 kg)

DRAWBAR PERFORMANCE(Unballasted) - AUTO MODE
(Loads based on 2100 engine rpm manual mode performance runs)

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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3.9mph(6.2km/h)										
276.26 (206.00)	28805 (128.13)	3.60 (5.79)	1806	5.9	0.425 (0.258)	16.50 (3.25)	0.016 (0.010)	214 (101)	56 (13)	28.94 (98.00)
4.5 mph (7.2 km/h)										
282.07 (210.34)	24906 (110.79)	4.25 (6.84)	1808	4.2	0.420 (0.256)	16.66 (3.28)	0.014 (0.009)	213 (101)	50 (10)	28.95 (98.04)
5.2 mph (8.3 km/h)										
283.17 (211.16)	21091 (93.82)	5.04 (8.10)	1819	2.8	0.415 (0.252)	16.89 (3.33)	0.014 (0.008)	213 (101)	50 (10)	28.95 (98.04)
6.0 mph (9.6 km/h)										
285.66 (213.02)	18493 (82.26)	5.79 (9.32)	1795	2.0	0.408 (0.248)	17.17 (3.38)	0.014 (0.009)	213 (101)	51 (11)	28.95 (98.04)
7.0 mph (11.2 km/h)										
288.51 (215.14)	15900 (70.72)	6.81 (10.95)	1806	1.4	0.407 (0.248)	17.19 (3.39)	0.013 (0.008)	214 (101)	52 (11)	28.96 (98.07)
8.1 mph (13.0 km/h)										
286.70 (213.79)	13580 (60.41)	7.92 (12.75)	1823	1.1	0.407 (0.248)	17.21 (3.39)	0.014 (0.009)	213 (101)	53 (12)	28.96 (98.07)
9.3 mph (15.0 km/h)										
282.87 (210.94)	11580 (51.51)	9.16 (14.74)	1813	0.8	0.409 (0.249)	17.14 (3.38)	0.014 (0.009)	213 (101)	55 (13)	28.95 (98.04)

**DRAWBAR PERFORMANCE(Unballasted)
MANUAL MODE - 1850 ENGINE RPM**

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 Consumption (kW.h/l)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. ^o F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
6th Gear										
246.27 (183.64)	36755 (163.49)	2.52 (4.05)	2123	13.8	0.489 (0.297)	14.33 (2.82)	0.010 (0.006)	206 (96)	56 (14)	28.91 (97.90)
7th Gear										
271.11 (202.17)	34864 (155.08)	2.92 (4.70)	2063	10.3	0.467 (0.284)	15.00 (2.96)	0.011 (0.006)	212 (100)	58 (14)	28.91 (97.90)
8th Gear										
291.09 (217.06)	33570 (149.33)	3.26 (5.24)	1955	9.1	0.455 (0.277)	15.41 (3.03)	0.011 (0.007)	215 (102)	59 (15)	28.92 (97.93)
9th Gear										
304.20 (226.84)	31540 (140.30)	3.62 (5.82)	1850	7.6	0.442 (0.269)	15.85 (3.12)	0.012 (0.007)	216 (102)	61 (16)	28.92 (97.93)
10th Gear										
310.46 (231.51)	26963 (119.94)	4.32 (6.95)	1849	4.8	0.433 (0.263)	16.19 (3.19)	0.011 (0.007)	216 (102)	63 (17)	28.92 (97.93)
11th Gear										
317.36 (236.65)	23369 (103.95)	5.09 (8.19)	1850	3.3	0.424 (0.258)	16.51 (3.25)	0.011 (0.007)	215 (102)	65 (18)	28.93 (97.97)
12th Gear										
321.14 (239.47)	20234 (90.01)	5.95 (9.58)	1850	2.3	0.419 (0.255)	16.73 (3.30)	0.012 (0.007)	216 (102)	65 (18)	28.93 (97.97)
13th Gear										
321.25 (239.55)	17331 (77.09)	6.95 (11.18)	1850	1.7	0.418 (0.254)	16.76 (3.30)	0.013 (0.008)	216 (102)	67 (19)	28.92 (97.93)
14th Gear										
318.74 (237.68)	14915 (66.34)	8.02 (12.90)	1850	1.3	0.421 (0.256)	16.64 (3.28)	0.013 (0.008)	216 (102)	68 (20)	28.92 (97.93)
15th Gear										
317.31 (236.62)	12748 (56.71)	9.34 (15.02)	1850	1.0	0.422 (0.257)	16.59 (3.27)	0.013 (0.008)	216 (102)	67 (19)	28.92 (97.93)

**DRAWBAR PERFORMANCE(Ballasted)
MANUAL MODE - 1850 ENGINE RPM**

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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear										
224.04 (167.06)	38116 (169.55)	2.21 (3.55)	2154	13.7	0.497 (0.303)	14.09 (2.77)	0.012 (0.007)	201 (94)	63 (17)	28.89 (97.83)
6th Gear										
249.79 (186.26)	36237 (161.19)	2.59 (4.16)	2135	12.0	0.477 (0.290)	14.67 (2.89)	0.010 (0.006)	205 (96)	63 (17)	28.89 (97.83)
7th Gear										
271.20 (202.23)	34807 (154.83)	2.93 (4.71)	2061	10.2	0.466 (0.284)	15.02 (2.96)	0.011 (0.007)	213 (100)	64 (18)	28.90 (97.87)
8th Gear										
291.35 (217.26)	33977 (151.13)	3.22 (5.18)	1938	9.6	0.457 (0.278)	15.33 (3.02)	0.012 (0.007)	216 (102)	66 (19)	28.89 (97.83)
9th Gear										
304.57 (227.12)	31468 (139.98)	3.63 (5.83)	1850	7.5	0.441 (0.268)	15.87 (3.13)	0.012 (0.007)	216 (102)	68 (20)	28.90 (97.87)
10th Gear										
311.72 (232.45)	26996 (120.08)	4.33 (6.97)	1850	4.7	0.431 (0.262)	16.24 (3.20)	0.012 (0.007)	216 (102)	68 (20)	28.90 (97.87)
11th Gear										
316.85 (236.28)	23265 (103.49)	5.11 (8.22)	1850	3.2	0.424 (0.258)	16.52 (3.25)	0.011 (0.007)	216 (102)	69 (21)	28.90 (97.87)
12th Gear										
319.88 (238.53)	20125 (89.52)	5.96 (9.59)	1850	2.3	0.420 (0.256)	16.67 (3.28)	0.011 (0.007)	216 (102)	70 (21)	28.90 (97.87)
13th Gear										
320.47 (238.97)	17272 (76.83)	6.96 (11.20)	1851	1.8	0.419 (0.255)	16.72 (3.29)	0.012 (0.007)	216 (102)	71 (22)	28.90 (97.87)
14th Gear										
316.46 (235.98)	14794 (65.80)	8.02 (12.91)	1851	1.5	0.423 (0.258)	16.54 (3.26)	0.012 (0.007)	217 (103)	72 (22)	28.90 (97.87)
15th Gear										
314.33 (234.39)	12627 (56.17)	9.34 (15.02)	1850	1.2	0.426 (0.259)	16.45 (3.24)	0.012 (0.007)	217 (103)	72 (22)	28.90 (97.87)

HYDRAULIC PERFORMANCE

CATEGORY: IVN

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range: 22144 lbs (98.5 kN) (lift cylinders - 2x115 mm)
16520 lbs (73.5 kN) (lift cylinders - 2x100 mm)

85 cc pump
i) Sustained pressure at compensator cutoff: 2958 psi (204 bar)
three outlet sets combined

ii) Pump delivery rate at minimum pressure and rated engine speed: 61.7 GPM (233.5 l/min)

iii) Pump delivery rate at maximum hydraulic power: 61.8 GPM (233.9 l/min)
Delivery pressure: 2517 psi (174 bar)
Power: 90.7 HP (67.7 kW)

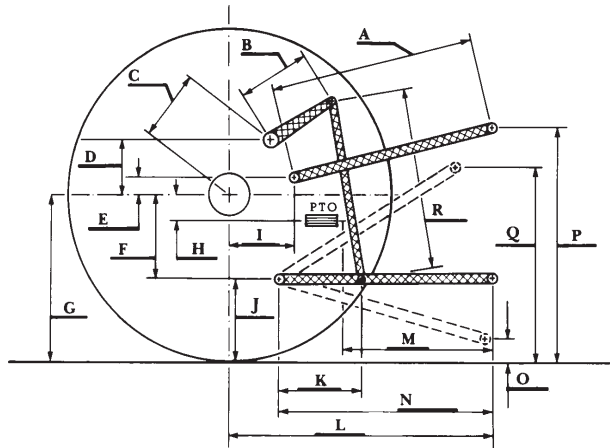
single outlet set
1/2" couplers **3/4" couplers**
ii) Pump delivery rate at minimum pressure and rated engine speed: 36.2 GPM (137.1 l/min) 43.0 GPM (162.9 l/min)

iii) Pump delivery rate at maximum hydraulic power: 32.9 GPM (124.5 l/min) 41.6 GPM (157.6 l/min)
Delivery pressure: 2385 psi (164 bar) 2273 psi (157 bar)
Power: 45.8 HP (34.1 kW) 55.2 HP (41.2 kW)

HITCH DIMENSIONS AS TESTED - NO LOAD

	inch	mm
A	28.3	720
B	20.5	520
C	24.8	631
D	24.2	615
E	15.5	394
F	11.5	292
G	34.5	875
H	3.1	80
I	18.5	470
J	23.0	583
K	39.8	1011
L	53.6	1361
*L'	59.5	1511
M	30.6	777
N	45.7	1161
O	9.0	230
P	50.0	1270
Q	40.6	1030
R	44.3	1124

*L' to Quick Attach ends



JOHN DEERE 8370RT DIESEL