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2014

Test 2084: John Deere 7270R

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2084—SUMMARY 933

JOHN DEERE 7270R DIESEL

e23 TRANSMISSION

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1077 rpm)						
227.46 (169.62)	2100	13.25 (50.17)	0.408 (0.248)	17.16 (3.38)	0.40 (1.52)	Fuel used during active exhaust regeneration-1.68 gal (6.36 l) (see note 1, p.2)
Standard Power Take-off Speed (1000 rpm)						
247.52 (184.58)	1950	14.22 (53.84)	0.402 (0.245)	17.40 (3.43)	0.35 (1.33)	
Maximum Power (1 hour)						
256.06 (190.94)	1800	14.42 (54.60)	0.394 (0.240)	17.75 (3.50)	0.32 (1.22)	

VARYING POWER AND FUEL CONSUMPTION

227.46 (169.62)	2100	13.25 (50.17)	0.408 (0.248)	17.16 (3.38)	0.40 (1.52)	Air temperature
198.12 (147.74)	2153	11.82 (44.76)	0.418 (0.254)	16.75 (3.30)	0.46 (1.73)	74°F (23°C)
149.22 (111.27)	2164	9.24 (34.97)	0.434 (0.264)	16.15 (3.18)	0.36 (1.36)	Relative humidity
99.93 (74.52)	2174	6.90 (26.12)	0.484 (0.294)	14.48 (2.85)	0.25 (0.96)	28%
50.25 (37.47)	2185	4.85 (18.34)	0.675 (0.411)	10.37 (2.04)	0.10 (0.37)	Barometer
0.57 (0.43)	2194	2.63 (9.95)	32.108 (19.531)	0.22 (0.04)	0.15 (0.57)	28.92" Hg (97.93 kPa)

Maximum torque - 822 lb.-ft. (1114 Nm) at 1500 rpm

Maximum torque rise - 44.3%

Torque rise at 1680 engine rpm - 39%

Power increase at 1800 engine rpm - 12.5%

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—9th Gear- Manual mode									
203.00 (151.38)	17921 (79.72)	4.25 (6.84)	2101	4.2	0.455 (0.277)	15.39 (3.03)	219 (104)	59 (15)	28.89 (97.83)
75% of Pull at Maximum Power—9th Gear- Manual mode									
158.57 (118.25)	13409 (59.65)	4.43 (7.13)	2158	2.7	0.461 (0.281)	15.18 (2.99)	217 (103)	61 (16)	28.89 (97.83)
50% of Pull at Maximum Power—9th Gear- Manual mode									
107.64 (80.26)	8969 (39.89)	4.50 (7.24)	2169	1.7	0.501 (0.305)	13.97 (2.75)	216 (102)	63 (17)	28.88 (97.80)
75% of Pull at Reduced Engine Speed—4.6 mph (7.4 km/h)-Auto mode									
159.21 (118.72)	13402 (59.61)	4.46 (7.17)	1413	2.7	0.439 (0.267)	15.93 (3.14)	216 (102)	62 (17)	28.89 (97.83)
50% of Pull at Reduced Engine Speed—4.6 mph (7.4 km/h)-Auto mode									
107.33 (80.03)	8955 (39.83)	4.49 (7.23)	1222	1.8	0.443 (0.269)	15.80 (3.11)	215 (101)	64 (18)	28.86 (97.73)

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

Dates of tests: April 18 -23, 2014

Manufacturer: John Deere Tractor Works, 3500 East Donald Street, 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)** 0.8410 **Fuel weight** 7.002 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 15W-40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 23.0 hours

ENGINE: Make John Deere **Diesel Type** six cylinder vertical with two turbochargers, air to air aftercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *PE6068U000359* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.19 x 5.00" (106.5 mm x 127.0 mm) **Compression ratio** 16.0 to 1 **Displacement** 414 cu in (6788 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 prestrainer **Fuel cooler** radiator for pump return fuel **Exhaust** regenerative particulate filter integrated within a vertical muffler **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 87.6 - 95.0 lb/h (39.7 - 43.1 kg/h) **High idle:** 2150 - 2250 rpm **Turbo boost:** nominal 32.6 - 35.5 psi (225 - 245 kPa) as measured 34.4 psi (237 kPa)

CHASSIS: Type front wheel assist with duals **Serial No.** *1RW7270RLES081008* **Tread width** rear 60.0" (1524 mm) to 128.9" (3272 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 115.2" (2925 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 1.43 (2.30) second 1.65 (2.66) third 1.91 (3.07) fourth 2.20 (3.54) fifth 2.54 (4.08) sixth 2.93 (4.71) seventh 3.35 (5.39) eighth 3.87 (6.22) ninth 4.42 (7.12) tenth 5.11 (8.22) eleventh 5.90 (9.49) twelfth 6.79 (10.92) thirteenth 7.84 (12.61) fourteenth 8.97 (14.44) fifteenth 10.36 (16.68) sixteenth 12.04 (19.37) seventeenth 13.90 (22.37) eighteenth 16.05 (25.83) nineteenth 18.54 (29.84) twentieth 21.33 (34.33) twenty-first 24.64 (39.65) twenty-second 26.10 (42.00) twenty-third 26.10 (42.00) electronically limited

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
MANUAL MODE - 2100 ENGINE RPM
DRAWBAR 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	Air dry bulb	Barom. inch Hg (kPa)
7th Gear								
180.31 (134.46)	23264 (103.48)	2.91 (4.68)	2121	14.4	0.500 (0.304)	14.00 (2.76)	218 (103)	28.89 (97.83)
8th Gear								
200.10 (149.21)	20582 (91.55)	3.65 (5.87)	2099	6.0	0.460 (0.280)	15.23 (3.00)	218 (103)	28.89 (97.83)
9th Gear								
203.00 (151.38)	17921 (79.72)	4.25 (6.84)	2101	4.2	0.455 (0.277)	15.39 (3.03)	219 (104)	28.89 (97.83)
10th Gear								
203.75 (151.94)	15393 (68.47)	4.96 (7.98)	2100	3.0	0.453 (0.275)	15.47 (3.05)	219 (104)	28.78 (97.46)
11th Gear								
204.54 (152.52)	13310 (59.20)	5.76 (9.27)	2100	2.5	0.450 (0.274)	15.56 (3.06)	219 (104)	28.76 (97.39)
12th Gear								
203.67 (151.87)	11468 (51.01)	6.66 (10.72)	2100	2.1	0.453 (0.275)	15.46 (3.05)	219 (104)	28.77 (97.43)
13th Gear								
201.13 (149.98)	9771 (43.46)	7.72 (12.42)	2100	1.7	0.458 (0.279)	15.28 (3.01)	219 (104)	28.77 (97.43)
14th Gear								
200.10 (149.21)	8469 (37.67)	8.86 (14.26)	2100	1.4	0.461 (0.281)	15.18 (2.99)	220 (104)	28.78 (97.46)

reverse 1.34 (2.15), 1.78 (2.87), 2.37 (3.81), 3.13 (5.04), 3.58 (5.76), 4.77 (7.68), 6.34 (10.21), 8.39 (13.50), 11.25 (18.11), 15.01 (24.15), 18.64 (30.00), 18.64 (30.00) electronically limited **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically operated by two foot pedals that can be locked together **Steering** Electro-Hydraulic **Power take-off** 540 rpm at 1958 or 1723 engine rpm or 1000 rpm at 1950 engine rpm **Unladen tractor mass** 24090 lb (10927 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. A 5% power increase was observed during the active regeneration.

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 130°F (54°C). This tractor did not meet the manufacturer's remote hydraulic flow claim of 59 GPM (223.3 l/min) with 85 cc pump. 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. **2084**, Nebraska Summary 933, May 15, 2014.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 9th gear	66.8	66.6
Transport speed-no load - 21st gear		69.0
Bystander in 21st gear		84.4

TIRES 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 480/80R46;***;12(85)
Two 420/90R30;***;15(105)
18.5 in (470 mm)
16215 lb (7355 kg)
8050 lb (3651 kg)
24265 lb (11006 kg)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - AUTO MODE
(Loads based on 2100 engine rpm manual mode performance runs)
DRAWBAR POWER AT SELECTED TRAVEL SPEEDS

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)	
171.67 (128.01)	22081 (98.22)	2.92 (4.70)	1297	7.8	3.4 mph (5.4 km/h) 0.464 (0.282)	15.10 (2.98)	217 (103)	53 (11)	28.90 (97.87)
200.08 (149.20)	20810 (92.57)	3.61 (5.80)	1574	6.1	3.9 mph (6.2 km/h) 0.438 (0.266)	16.00 (3.15)	218 (103)	57 (14)	28.89 (97.83)
200.90 (149.81)	17600 (78.29)	4.28 (6.89)	1582	3.9	4.5 mph (7.2 km/h) 0.434 (0.264)	16.12 (3.17)	219 (104)	71 (22)	28.78 (97.46)
203.29 (151.59)	15495 (68.93)	4.92 (7.92)	1566	3.0	5.1 mph (8.2 km/h) 0.432 (0.263)	16.22 (3.20)	219 (104)	69 (21)	28.78 (97.46)
204.66 (152.61)	13261 (58.99)	5.79 (9.32)	1586	2.5	6.0 mph (9.6 km/h) 0.432 (0.263)	16.19 (3.19)	219 (104)	72 (22)	28.78 (97.46)
203.46 (151.72)	11451 (50.94)	6.66 (10.72)	1589	2.1	6.8 mph (11.0 km/h) 0.435 (0.264)	16.11 (3.17)	219 (104)	69 (21)	28.77 (97.43)
201.19 (150.02)	9691 (43.11)	7.79 (12.53)	1601	1.7	8.0 mph (12.8 km/h) 0.438 (0.266)	16.00 (3.15)	219 (104)	72 (22)	28.78 (97.46)
200.09 (149.21)	8397 (37.35)	8.94 (14.39)	1578	1.4	9.1 mph (14.6 km/h) 0.443 (0.269)	15.81 (3.12)	219 (104)	73 (23)	28.78 (97.46)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - 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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
7th Gear									
180.53 (134.62)	23296 (103.63)	2.91 (4.68)	2118	14.3	0.501 (0.305)	13.98 (2.75)	219 (104)	48 (9)	28.89 (97.83)
8th Gear									
204.93 (152.81)	22038 (98.03)	3.49 (5.62)	2050	7.9	0.467 (0.284)	14.99 (2.95)	219 (104)	58 (14)	28.89 (97.83)
9th Gear									
217.43 (162.13)	20812 (92.57)	3.92 (6.31)	1978	6.2	0.454 (0.276)	15.43 (3.04)	219 (104)	58 (14)	28.89 (97.83)
10th Gear									
224.15 (167.14)	19005 (84.54)	4.43 (7.12)	1902	4.6	0.448 (0.273)	15.62 (3.08)	220 (104)	69 (21)	28.79 (97.49)
11th Gear									
229.48 (171.12)	17657 (78.54)	4.87 (7.84)	1800	3.8	0.439 (0.267)	15.94 (3.14)	220 (104)	69 (20)	28.77 (97.43)
12th Gear									
230.65 (171.99)	15288 (68.00)	5.66 (9.11)	1800	3.0	0.438 (0.267)	15.98 (3.15)	220 (104)	70 (21)	28.78 (97.46)
13th Gear									
230.05 (171.55)	13130 (58.40)	6.57 (10.57)	1800	2.5	0.438 (0.266)	15.99 (3.15)	221 (105)	73 (23)	28.78 (97.46)
14th Gear									
229.24 (170.94)	11389 (50.66)	7.55 (12.15)	1799	2.0	0.438 (0.266)	16.00 (3.15)	221 (105)	73 (23)	28.78 (97.46)
15th Gear									
227.44 (169.60)	9749 (43.36)	8.75 (14.08)	1800	1.7	0.443 (0.269)	15.82 (3.12)	220 (104)	73 (23)	28.78 (97.46)

Shiftable PTO Performance

540 rpm shaft limited to 80 hp(60 kW)

Economy mode

539 PTO rpm @ 1720 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)
79.93 (59.60)	1720	5.16 (19.52)	0.452 (0.275)	15.50 (3.05)	0.17 (0.64)
60.11 (44.83)	1720	4.25 (16.09)	0.495 (0.301)	14.14 (2.79)	0.11 (0.42)
40.01 (29.83)	1720	3.34 (12.66)	0.585 (0.356)	11.97 (2.36)	0.09 (0.34)
19.96 (14.89)	1720	2.42 (9.16)	0.848 (0.516)	8.25 (1.63)	0.11 (0.42)
0.12 (0.09)	1720	1.67 (6.32)	95.599 (58.193)	0.07 (0.01)	0.11 (0.42)

Normal mode

538 PTO rpm @ 1950 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)
79.75 (59.47)	1950	5.53 (20.94)	0.486 (0.296)	14.42 (2.84)	0.17 (0.64)
59.85 (44.63)	1950	4.62 (17.51)	0.541 (0.329)	12.94 (2.55)	0.10 (0.38)
39.96 (29.80)	1950	3.77 (14.28)	0.661 (0.402)	10.59 (2.09)	0.09 (0.34)
19.95 (14.88)	1950	2.79 (10.57)	0.980 (0.596)	7.15 (1.41)	0.08 (0.30)
0.13 (0.10)	1950	2.01 (7.60)	107.320 (65.328)	0.07 (0.01)	0.15 (0.57)

CATEGORY: III

Quick Attach: Yes

OECD Static test

Maximum force exerted through whole range:

lift cylinders
15862 lbs (70.6 kN) (2x100 mm)
18302 lbs (81.4 kN) (1x100 mm & 1x115 mm)

i) Sustained pressure at compensator cutoff:

63 cc pump 85 cc pump
2955 psi (204 bar) 2887 psi (199 bar)
three outlet sets combined

ii) Pump delivery rate at minimum pressure and rated engine speed:

44.4 GPM (168.1 l/min) 58.5 GPM (221.4 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

43.3 GPM (164.0 l/min) 58.3 GPM (220.7 l/min)

Delivery pressure:

2761 psi (190 bar) 2773 psi (191 bar)

Power:

69.8 HP (52.0 kW) 94.3 HP (70.3 kW)

single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:

36.1 GPM (136.5 l/min) 36.5 GPM (138.1 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

35.5 GPM (134.5 l/min) 34.2 GPM (129.5 l/min)

Delivery pressure:

2298 psi (158 bar) 2291 psi (158 bar)

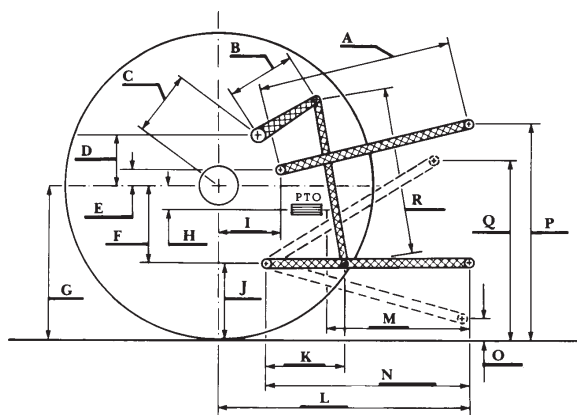
Power:

47.6 HP (35.5 kW) 45.7 HP (34.1 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	28.0	710
B	20.5	520
C	22.9	581
D	18.9	480
E	7.3	185
F	14.4	365
G	38.8	985
H	3.5	90
I	22.4	570
J	24.4	620
K	29.3	745
L	52.0	1321
*L'	56.0	1423
M	28.0	712
N	43.4	1102
O	9.0	230
P	51.9	1319
Q	39.4	1001
R	44.9	1140

*L' to Quick Attach ends



JOHN DEERE 7270R DIESEL

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