

# NEBRASKA OECD TRACTOR TEST 222–SUMMARY 1169

## JOHN DEERE 8R 340 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.h/l)	Gal/hr (l/h)	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1052 rpm)</b>						
303.33 (226.20)	2100	15.79 (59.78)	0.364 (0.221)	19.21 (3.78)	0.71 (2.68)	Fuel used during active exhaust regeneration-1.17 gal (4.44 l) (see note 1, p.2)
<b>Standard Power Take-off Speed(1000 rpm)</b>						
334.34 (249.32)	1996	16.93 (64.09)	0.354 (0.215)	19.75 (3.89)	0.68 (2.58)	
<b>Maximum Power (1 hour)</b>						
346.20 (258.16)	1701	17.14 (64.86)	0.346 (0.210)	20.20 (3.98)	0.62 (2.36)	

#### VARYING POWER AND FUEL CONSUMPTION

303.33 (226.20)	2100	15.79 (59.78)	0.364 (0.221)	19.21 (3.78)	0.71 (2.68)	Air temperature
264.86 (197.50)	2157	14.10 (53.38)	0.372 (0.226)	18.78 (3.70)	0.60 (2.29)	73°F (23°C)
199.62 (148.86)	2168	11.21 (42.42)	0.392 (0.238)	17.82 (3.51)	0.51 (1.93)	Relative humidity
133.63 (99.65)	2180	8.53 (32.29)	0.446 (0.271)	15.67 (3.09)	0.31 (1.18)	45%
67.37 (50.24)	2189	6.17 (23.35)	0.639 (0.389)	10.92 (2.15)	0.16 (0.60)	Barometer
1.47 (1.10)	2201	4.49 (17.00)	21.344 (12.983)	0.33 (0.06)	0.17 (0.63)	28.97" Hg (98.10 kPa)

Maximum Torque - 1143 lb.-ft. (1550 Nm) at 1549 rpm

Maximum Torque Rise - 50.7%

Torque rise at 1680 engine rpm - 43%

Power increase at 1701 engine rpm - 14.1%

#### 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)	D.E.F. Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing dry med bulb	Barom. inch Hg (kPa)
<b>Power at Rated Engine Speed—10th Gear-Manual mode</b>								
267.86 (199.74)	18776 (83.52)	5.35 (8.61)	2100	4.0	0.410 (0.249)	17.04 (3.36)	0.021 (0.013)	213 (100)
<b>75% of Pull at Rated Engine Speed—10th Gear-Manual mode</b>								
208.04 (155.13)	14032 (62.42)	5.56 (8.95)	2160	3.0	0.428 (0.260)	16.31 (3.21)	0.020 (0.012)	211 (99)
<b>50% of Pull at Rated Engine Speed—10th Gear-Manual mode</b>								
141.27 (105.35)	9382 (41.73)	5.65 (9.09)	2172	2.1	0.476 (0.290)	14.67 (2.89)	0.022 (0.013)	209 (98)
<b>75% of Pull at Reduced Engine Speed—5.8 mph (9.4 km/h) Auto mode</b>								
208.04 (155.14)	13946 (62.03)	5.59 (9.00)	1393	3.1	0.388 (0.236)	17.99 (3.54)	0.017 (0.010)	210 (99)
<b>50% of Pull at Reduced Engine Speed—5.8 mph (9.4 km/h) Auto mode</b>								
141.08 (105.20)	9364 (41.65)	5.65 (9.09)	1393	2.1	0.407 (0.248)	17.16 (3.38)	0.013 (0.008)	208 (98)

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

**Dates of tests:** September 17 to October 1, 2020

**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)** 0.8386 **Fuel weight** 6.982 lbs/gal (0.837 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** CK-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 18.0 hours

**ENGINE: Make** John Deere **Diesel Type** six cylinder vertical with turbocharger, air to air aftercooler and D.E.F (diesel exhaust fluid) exhaust treatment **Serial No.** \*RG6090U087418\* **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:** 106.0 - 114.6 lb/h (48.1 - 52.0 kg/h) **High idle:** 2190 - 2210 rpm **Turbo boost:** nominal 21.0 - 23.9 psi (145 - 165 kPa) as measured 22.6 psi (156 kPa)

**CHASSIS: Type** front wheel assist with duals **Serial No.** \*1RW8340DVLB170298\* **Tread width** rear 60.0" (1524 mm) to 127.9" (3248 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 120.1" (3050 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 1.49 (2.40) second 1.73 (2.78) third 2.00 (3.22) fourth 2.32 (3.74) fifth 2.69 (4.33) sixth 3.12 (5.03) seventh 3.59 (5.77) eighth 4.16 (6.70) ninth 4.82 (7.75) tenth 5.58 (8.98) eleventh 6.47 (10.42) twelfth 7.49 (12.06) thirteenth 8.70 (14.00) fourteenth 9.99 (16.08) fifteenth 11.60 (18.67) sixteenth 13.22 (21.27)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED**  
**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)
					7th Gear					
228.51 (170.40)	26822 (119.31)	3.20 (5.14)	2152	13.0	0.454 (0.276)	15.38 (3.03)	0.021 (0.013)	212 (100)	65 (18)	28.53 (96.61)
					8th Gear					
255.46 (190.49)	25163 (111.93)	3.81 (6.13)	2100	8.5	0.429 (0.261)	16.26 (3.20)	0.022 (0.013)	213 (101)	64 (18)	28.53 (96.61)
					9th Gear					
264.45 (197.20)	21785 (96.90)	4.55 (7.32)	2100	5.3	0.416 (0.253)	16.79 (3.31)	0.020 (0.012)	213 (100)	65 (18)	28.62 (96.92)
					10th Gear					
267.86 (199.74)	18776 (83.52)	5.35 (8.61)	2100	4.0	0.410 (0.249)	17.04 (3.36)	0.021 (0.013)	213 (100)	63 (17)	28.61 (96.88)
					11th Gear					
270.17 (201.46)	16193 (72.03)	6.26 (10.07)	2100	3.3	0.407 (0.248)	17.15 (3.38)	0.020 (0.012)	212 (100)	63 (17)	28.61 (96.88)
					12th Gear					
269.00 (200.59)	13878 (61.73)	7.27 (11.70)	2100	2.9	0.411 (0.250)	17.00 (3.35)	0.020 (0.012)	212 (100)	62 (17)	28.61 (96.88)
					13th Gear					
266.26 (198.55)	11781 (52.40)	8.48 (13.64)	2099	2.4	0.413 (0.252)	16.89 (3.33)	0.021 (0.013)	212 (100)	62 (17)	28.62 (96.92)

seventeenth 15.35 (24.70) eighteenth 17.78 (28.61) nineteenth 20.64 (33.22) twentieth 23.89 (38.44) twenty-first 26.10 (42.00) twenty-second 26.10 (42.00) twenty-third 26.10 (42.00) electronically limited reverse 1.79 (2.88), 2.41 (3.88), 3.24 (5.21), 4.32 (6.95), 4.99 (8.03), 6.71 (10.80), 9.02 (14.51), 12.02 (19.35), 15.91 (25.60), 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** hydrostatic **Power take-off** 1000 rpm at 1995 engine rpm **Unladen tractor mass** 28530 lb (12941 kg)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**NOTE 1:** The manufacturer declares that the average time between active regenerations is 40 hours. A 1% power decrease 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. 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. **2222**, Nebraska Summary 1169, March 3, 2021.

Roger M. Hoy  
 Director

M.F. Kocher  
 P.J. Jasa  
 J.D. Luck  
 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	67.4	67.4
Transport speed - no load - 20th gear		68.7
Bystander in 20th gear		85.4

Horizontal distance of drawbar hitch point behind rear wheel axis - 48.7" (1237 mm)

**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 480/80R50;\*\*\*;11(75)  
 Two 420/85R34;\*\*\*;26(180)  
 21.0 in (535 mm)  
 16850 lb (7643 kg)  
 11855 lb (5377 kg)  
 28705 lb (13020 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED - 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)
4.2 mph (6.8 km/h)										
255.16 (190.27)	25013 (111.26)	3.83 (6.16)	1570	8.5	0.395 (0.240)	17.19 (3.48)	0.020 (0.012)	212 (100)	64 (18)	28.53 (96.61)
4.8 mph (7.8 km/h)										
264.26 (197.05)	21940 (97.59)	4.52 (7.27)	1552	5.6	0.393 (0.239)	17.78 (3.50)	0.020 (0.012)	213 (100)	66 (19)	28.62 (96.92)
5.6 mph (9.0 km/hr)										
266.93 (199.05)	18927 (84.19)	5.29 (8.51)	1547	4.2	0.391 (0.238)	17.87 (3.52)	0.019 (0.012)	212 (100)	62 (17)	28.61 (96.88)
6.6 mph (10.6 km/h)										
270.35 (201.60)	16125 (71.73)	6.29 (10.12)	1571	3.4	0.390 (0.237)	17.91 (3.53)	0.019 (0.012)	212 (100)	63 (17)	28.61 (96.88)
7.6 mph (12.2 km/h)										
268.44 (200.17)	13869 (61.69)	7.26 (11.68)	1573	2.9	0.389 (0.237)	17.94 (3.53)	0.019 (0.011)	212 (100)	63 (17)	28.62 (96.92)
8.8 mph (14.2 km/h)										
266.17 (198.48)	11757 (52.30)	8.49 (13.66)	1577	2.4	0.385 (0.234)	18.12 (3.57)	0.016 (0.010)	212 (100)	65 (18)	28.61 (96.88)

**DRAWBAR PERFORMANCE  
UNBALLASTED - FRONT DRIVE ENGAGED  
MANUAL MODE - 1700 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)
					7th Gear					
228.18 (170.15)	26815 (119.28)	3.20 (5.14)	2152	13.1	0.452 (0.275)	15.46 (3.05)	0.021 (0.013)	212 (100)	65 (18)	28.53 (96.61)
					8th Gear					
256.47 (191.25)	25506 (113.45)	3.78 (6.08)	2094	9.1	0.431 (0.262)	16.19 (3.19)	0.021 (0.013)	213 (100)	64 (18)	28.53 (96.61)
					9th Gear					
280.09 (208.86)	24970 (111.07)	4.21 (6.78)	2003	8.3	0.421 (0.256)	16.58 (3.27)	0.020 (0.012)	214 (101)	65 (18)	28.53 (96.61)
					10th Gear					
294.32 (219.47)	23324 (103.75)	4.74 (7.62)	1911	6.7	0.408 (0.248)	17.11 (3.37)	0.011 (0.007)	214 (101)	66 (19)	28.53 (96.61)
					11th Gear					
297.31 (221.70)	22696 (100.95)	4.91 (7.90)	1701	6.3	0.401 (0.244)	17.39 (3.43)	0.017 (0.010)	214 (101)	66 (19)	28.54 (96.63)
					12th Gear					
301.07 (224.51)	19448 (86.51)	5.81 (9.34)	1700	4.4	0.394 (0.240)	17.70 (3.49)	0.017 (0.011)	213 (101)	62 (17)	28.61 (96.88)
					13th Gear					
302.80 (225.79)	16733 (74.43)	6.79 (10.92)	1700	3.6	0.394 (0.239)	17.74 (3.49)	0.018 (0.011)	213 (101)	62 (17)	28.62 (96.92)
					14th Gear					
303.61 (226.40)	14535 (64.65)	7.84 (12.61)	1700	3.1	0.393 (0.239)	17.78 (3.50)	0.017 (0.010)	212 (100)	64 (18)	28.62 (96.92)
					15th Gear					
300.24 (223.89)	12313 (54.77)	9.15 (14.72)	1701	2.6	0.396 (0.241)	17.61 (3.47)	0.017 (0.011)	214 (101)	64 (18)	28.62 (96.90)

## HYDRAULIC PERFORMANCE

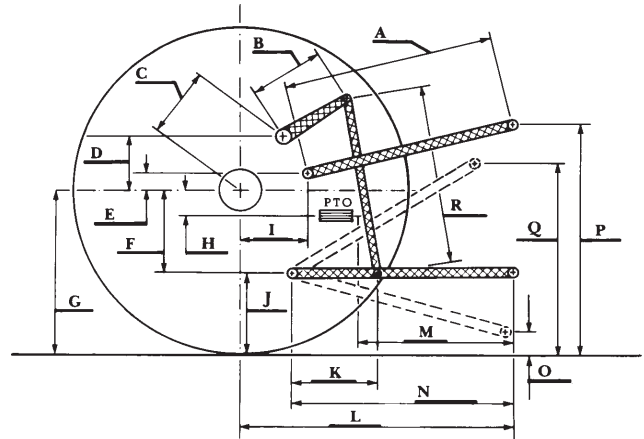
CATEGORY: IVN  
Quick Attach: Yes  
OECD Static test

	<u>Lift cylinders</u>	
Maximum force exerted through whole range:	20254 lbs (90.1 kN) 2x115 mm	15229 lbs (67.7 kN) 2x100 mm
<hr/>		
	<u>85 cc pump</u>	<u>85 cc and 35cc pumps combined</u>
i) Sustained pressure at compensator cutoff:	2925 psi (202 bar)	2941 psi (203 bar)
<b>three outlet sets combined</b>		
ii) Pump delivery rate at minimum pressure and rated engine speed:	60.4 GPM(228.5 l/min)	84.2 GPM(318.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:	60.1 GPM(227.6 l/min)	80.0 GPM(302.9 l/min)
Delivery pressure:	2485 psi (171 bar)	2114 psi (146 bar)
Power:	87.2 HP (65.0 kW)	98.7 HP (73.6 kW)
<hr/>		
	<u>single outlet set</u>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	<u>1/2" couplers</u>	<u>3/4" couplers</u>
iii) Pump delivery rate at maximum hydraulic power:	37.6 GPM(142.2 l/min)	42.9 GPM(162.5 l/min)
Delivery pressure:	2347 psi (162 bar)	2301 psi (159 bar)
Power:	49.1 HP (36.6 kW)	55.8 HP (41.6 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	28.5	725
B	20.5	520
C	20.9	532
D	18.9	480
E	12.0	304
F	14.4	365
G	38.2	970
H	9.1	230
I	23.6	599
J	23.8	605
K	28.7	730
L	52.8	1340
*L'	58.7	1490
M	25.9	657
N	40.1	1019
O	9.1	230
P	50.1	1272
Q	41.5	1055
R	45.7	1160

\*L' to Quick Attach ends



### RECOMMENDED CITATION FORMAT:

NTTL.(2021). Nebraska OECD tractor test 2222 for John Deere 8R 340 e23 Diesel.  
Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>



### JOHN DEERE 8R 340 DIESEL

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