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2020

Test 2222: John Deere 8R 340

Nebraska Tractor Test Lab

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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) | |
| MAXIMUM POWER AND FUEL CONSUMPTION | | | | | | |
| Rated Engine Speed—(PTO speed—1052 rpm) | | | | | | |
| 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) |
| Standard Power Take-off Speed(1000 rpm) | | | | | | |
| 334.34 (249.32) | 1996 | 16.93 (64.09) | 0.354 (0.215) | 19.75 (3.89) | 0.68 (2.58) | |
| Maximum Power (1 hour) | | | | | | |
| 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) |
|---|--------------------------------|------------------------|---------------------------------|-----------|---|--|--|-------------------------------|
| Power at Rated Engine Speed—10th Gear-Manual mode | | | | | | | | |
| 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) |
| 75% of Pull at Rated Engine Speed—10th Gear-Manual mode | | | | | | | | |
| 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) |
| 50% of Pull at Rated Engine Speed—10th Gear-Manual mode | | | | | | | | |
| 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) |
| 75% of Pull at Reduced Engine Speed—5.8 mph (9.4 km/h) Auto mode | | | | | | | | |
| 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) |
| 50% of Pull at Reduced Engine Speed—5.8 mph (9.4 km/h) Auto mode | | | | | | | | |
| 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 Consumption (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

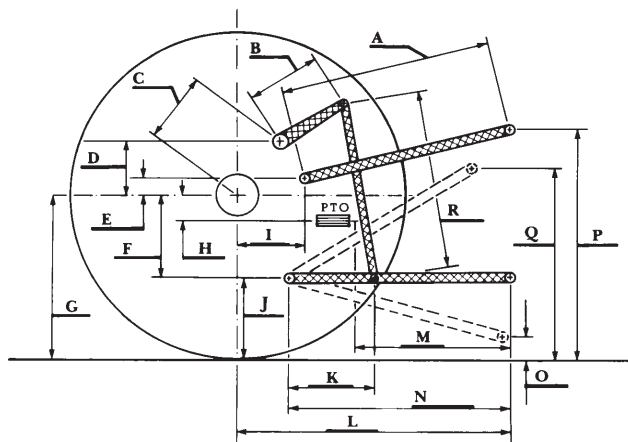
CATEGORY: IVN
Quick Attach: Yes
OECD Static test

| | <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) |
| three outlet sets combined | | |
| 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

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln