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Test 2226: John Deere 8RT 410

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NEBRASKA OECD TRACTOR TEST 2226—SUMMARY 1173

JOHN DEERE 8RT 410 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—1053 rpm)						
323.51 (241.24)	2101	17.21 (65.15)	0.371 (0.226)	18.80 (3.70)	0.49 (1.87)	Fuel used during active exhaust regeneration-0.79 gal (2.99 l) (see note 1, p.2)
Standard Power Take-off Speed(1000 rpm)						
353.07 (263.28)	1995	18.41 (69.67)	0.364 (0.221)	19.18 (3.78)	0.57 (2.14)	
Maximum Power (1 hour)						
370.47 (276.26)	1750	18.76 (71.01)	0.354 (0.215)	19.75 (3.89)	0.60 (2.26)	

VARYING POWER AND FUEL CONSUMPTION

323.51 (241.24)	2101	17.21 (65.15)	0.371 (0.226)	18.80 (3.70)	0.49 (1.87)	Air temperature
282.32 (210.53)	2155	15.41 (58.32)	0.381 (0.232)	18.33 (3.61)	0.46 (1.75)	72°F (22°C)
212.83 (158.71)	2166	12.23 (46.30)	0.401 (0.244)	17.40 (3.43)	0.35 (1.31)	Relative humidity
142.52 (106.28)	2177	9.17 (34.72)	0.449 (0.273)	15.54 (3.06)	0.31 (1.16)	32%
71.58 (53.38)	2185	6.45 (24.42)	0.629 (0.383)	11.10 (2.19)	0.21 (0.79)	Barometer
1.95 (1.46)	2198	4.30 (16.28)	15.365 (9.346)	0.45 (0.09)	0.09 (0.35)	28.86" Hg (97.73 kPa)

Maximum Torque - 1194 lb.-ft. (1619 Nm) at 1550 rpm

Maximum Torque Rise - 47.7%

Torque rise at 1680 engine rpm - 42%

Power increase at 1750 engine rpm - 14.5%

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.h/l)	Temp. °F(°C)	Barom. inch Hg (kPa)
Power at Rated Engine Speed—11th Gear-Manual mode								
310.64 (231.64)	19780 (87.98)	5.89 (9.48)	2101	2.3	0.424 (0.258)	16.48 (3.25)	0.017 (0.011)	213 (101)
75% of Pull at Rated Engine Speed—11th Gear-Manual mode								
240.62 (179.43)	14776 (65.73)	6.11 (9.83)	2160	1.5	0.445 (0.270)	15.70 (3.09)	0.018 (0.011)	213 (100)
50% of Pull at Rated Engine Speed—11th Gear-Manual mode								
162.18 (120.94)	9847 (43.80)	6.18 (9.95)	2172	0.9	0.488 (0.297)	14.30 (2.82)	0.020 (0.012)	210 (99)
75% of Pull at Reduced Engine Speed—6.2 mph (10.0 km/h)-Auto mode								
240.80 (179.56)	14800 (65.83)	6.10 (9.82)	1399	1.5	0.403 (0.245)	17.33 (3.41)	0.019 (0.011)	211 (99)
50% of Pull at Reduced Engine Speed—6.2 mph (10.0 km/h)-Auto mode								
162.07 (120.86)	9901 (44.04)	6.14 (9.88)	1205	0.9	0.428 (0.260)	16.31 (3.21)	0.018 (0.011)	209 (98)

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

Dates of tests: October 16 - 22, 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 **Total time engine was operated:** 21.5 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.** *RG6090U087139* **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: Stationary PTO operations (370 engine hp) 117.1 - 126.6 lb/h (53.1 - 57.4 kg/h) Drawbar operations (410 engine hp) 129.9 - 140.7 lb/h (58.9 - 63.8 kg/h) **High idle:** 2190 - 2210 rpm **Turbo boost:** nominal 29.0 - 32.6 psi (200 - 225 kPa) as measured 31.5 psi (217 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *1RW8410DVL924112* **Track width** 72.0" (1829 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										
238.45 (177.81)	35085 (156.06)	2.55 (4.10)	2156	14.6	0.489 (0.298)	14.27 (2.81)	0.018 (0.011)	212 (100)	46 (8)	28.91 (97.88)
7th Gear										
269.20 (200.74)	33905 (150.82)	2.98 (4.79)	2143	12.6	0.478 (0.291)	14.60 (2.88)	0.016 (0.010)	213 (100)	47 (8)	28.89 (97.83)
8th Gear										
293.58 (218.92)	31013 (137.95)	3.55 (5.71)	2104	8.6	0.453 (0.275)	15.43 (3.04)	0.016 (0.010)	213 (101)	48 (9)	28.89 (97.83)
9th Gear										
303.82 (226.56)	26763 (119.05)	4.26 (6.86)	2100	5.0	0.433 (0.264)	16.11 (3.17)	0.016 (0.010)	213 (100)	47 (8)	29.04 (98.34)
10th Gear										
308.54 (230.08)	23079 (102.66)	5.01 (8.06)	2100	3.4	0.425 (0.259)	16.41 (3.23)	0.016 (0.010)	213 (101)	48 (9)	29.04 (98.34)
11th Gear										
310.64 (231.64)	19780 (87.98)	5.89 (9.48)	2101	2.3	0.424 (0.258)	16.48 (3.25)	0.017 (0.011)	213 (101)	52 (11)	29.04 (98.32)
12th Gear										
311.02 (231.92)	17032 (75.56)	6.85 (11.02)	2100	1.8	0.427 (0.260)	16.34 (3.22)	0.018 (0.011)	214 (101)	54 (12)	29.03 (98.31)
13th Gear										
309.80 (231.02)	14554 (64.74)	7.99 (12.85)	2100	1.4	0.428 (0.261)	16.30 (3.21)	0.018 (0.011)	214 (101)	54 (12)	29.03 (98.31)
14th Gear										
305.83 (228.06)	12483 (55.52)	9.19 (14.79)	2100	1.2	0.433 (0.263)	16.13 (3.18)	0.018 (0.011)	215 (101)	53 (12)	29.02 (98.27)

(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), 18.64 (30.00), 18.64 (30.00) 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** 35550 lb (16125 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.

NOTE 2. In stationary PTO operation, this model operates in a derated power mode.

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. **2226**, Nebraska Summary 1173, April 6, 2021.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 9th gear	68.4
Transport speed - no load - 21st gear	72.8
Bystander in 21st gear	86.6

Horizontal distance of drawbar hitch point behind rear wheel axis - 43.0"(1092 mm)

TRACKS AND WEIGHT

Track width
Height of Drawbar
Static Weight with operator

Tested Without Ballast

16.0 in (405 mm)
19.0 in (485 mm)
35725 lb (16205 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)										
292.64 (218.22)	31209 (138.82)	3.52 (5.66)	1802	8.7	0.437 (0.266)	15.97 (3.15)	0.015 (0.009)	213 (101)	48 (9)	28.88 (97.80)
4.5 mph (7.2 km/h)										
303.65 (226.43)	26877 (119.55)	4.24 (6.82)	1803	5.1	0.421 (0.256)	16.58 (3.27)	0.015 (0.009)	213 (100)	48 (9)	29.04 (98.34)
5.2 mph (8.4 km/h)										
308.74 (230.22)	22991 (102.27)	5.04 (8.10)	1814	3.3	0.416 (0.253)	16.78 (3.31)	0.015 (0.009)	212 (100)	50 (10)	29.04 (98.32)
6.1 mph (9.8 km/h)										
310.29 (231.38)	19607 (87.21)	5.94 (9.55)	1828	2.3	0.413 (0.251)	16.90 (3.33)	0.017 (0.010)	213 (101)	52 (11)	29.03 (98.31)
7.0mph(11.2km/h)										
311.61 (232.37)	17141 (76.24)	6.82 (10.98)	1801	1.8	0.411 (0.250)	16.99 (3.35)	0.017 (0.011)	214 (101)	55 (13)	29.03 (98.31)
8.1 mph (13.0 km/h)										
309.70 (230.94)	14630 (65.08)	7.94 (12.78)	1819	1.4	0.415 (0.252)	16.84 (3.32)	0.017 (0.010)	214 (101)	53 (12)	29.03 (98.31)
8.7mph(14.0km/h)										
305.40 (227.73)	12470 (55.47)	9.19 (14.78)	1808	1.2	0.417 (0.254)	16.73 (3.29)	0.018 (0.011)	214 (101)	53 (12)	29.02 (98.27)

**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 (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing dry bulb	Air dry bulb	Barom. inch Hg (kPa)
6th Gear										
238.80 (178.07)	35070 (156.00)	2.55 (4.10)	2155	14.5	0.492 (0.300)	14.18 (2.79)	0.017 (0.010)	211 (99)	45 (7)	28.92 (97.93)
7th Gear										
269.29 (199.73)	33937 (149.64)	2.98 (4.81)	2144	12.7	0.478 (0.278)	14.62 (3.01)	0.017 (0.012)	213 (100)	48 (11)	28.90 (97.48)
8th Gear										
294.18 (219.37)	31161 (138.61)	3.54 (5.70)	2101	8.7	0.453 (0.276)	15.41 (3.04)	0.016 (0.010)	213 (101)	48 (9)	28.89 (97.82)
9th Gear										
318.21 (237.29)	30271 (134.65)	3.95 (6.35)	2000	7.7	0.442 (0.269)	15.78 (3.11)	0.013 (0.008)	215 (101)	49 (9)	28.88 (97.80)
10th Gear										
333.74 (248.87)	28579 (127.12)	4.38 (7.05)	1891	6.4	0.432 (0.263)	16.15 (3.18)	0.011 (0.006)	216 (102)	49 (9)	28.88 (97.80)
11th Gear										
340.59 (253.97)	25077 (111.55)	5.10 (8.20)	1851	4.1	0.423 (0.257)	16.52 (3.25)	0.011 (0.007)	216 (102)	48 (9)	28.88 (97.78)
12th Gear										
344.54 (256.92)	21641 (96.26)	5.97 (9.61)	1850	2.8	0.416 (0.253)	16.78 (3.31)	0.011 (0.007)	215 (102)	49 (9)	28.88 (97.80)
13th Gear										
345.74 (257.82)	18573 (82.62)	6.98 (11.23)	1850	2.1	0.415 (0.253)	16.81 (3.31)	0.011 (0.007)	215 (101)	49 (9)	28.87 (97.77)
14th Gear										
344.02 (256.54)	16013 (71.23)	8.06 (12.96)	1851	1.7	0.420 (0.255)	16.64 (3.28)	0.011 (0.007)	216 (102)	49 (9)	28.87 (97.77)

Lugging ability in 14th gear

Crankshaft speed rpm	2100	2000	1900	1852	1700	1502	1306	1102
Pull-lbs (kN)	12476 (55.49)	14212 (63.22)	15430 (68.63)	15881 (70.64)	17022 (75.72)	17614 (78.35)	16348 (72.72)	14658 (65.20)
Increase in pull%	0	14	24	27	36	41	31	17
Power-Hp (kW)	305.61 (277.89)	330.86 (246.72)	340.70 (254.06)	341.54 (254.68)	335.49 (250.17)	306.34 (228.43)	247.89 (184.85)	188.10 (140.27)
Speed-mpH (km/h)	9.19 (14.79)	8.73 (14.05)	8.28 (13.33)	8.07 (12.98)	7.39 (11.89)	6.52 (10.49)	5.69 (9.15)	4.81 (7.74)
Slip %	1.2	1.4	1.6	1.7	1.8	1.9	1.8	1.5

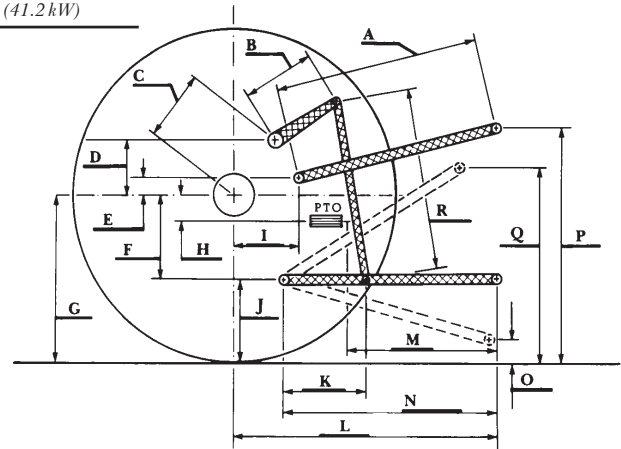
HYDRAULIC PERFORMANCE

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:	2883 psi (199 bar) three outlet sets combined
ii) Pump delivery rate at minimum pressure and rated engine speed:	62.4 GPM (236.2 l/min)
iii) Pump delivery rate at maximum hydraulic power:	62.4 GPM (236.1 l/min)
Delivery pressure:	2458 psi (170 bar)
Power:	89.4 HP (66.7 kW)
	single outlet set
	1/2" couplers 3/4" couplers
ii) Pump delivery rate at minimum pressure and rated engine speed:	36.4 GPM (137.6 l/min) 43.0 GPM (162.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	33.9 GPM (128.2 l/min) 41.6 GPM (157.6 l/min)
Delivery pressure:	2390 psi (165 bar) 2273 psi (157 bar)
Power:	47.2 HP (35.2 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



RECOMMENDED CITATION FORMAT:

NTTL.(2021). Nebraska OECD tractor test 2226 for John Deere 8RT 410 e23 Diesel. Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>



JOHN DEERE 8RT 410 DIESEL
Institute of Agriculture and Natural Resources
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