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Test 2225: John Deere 8RT 370

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 2225-SUMMARY 1172

JOHN DEERE 8RT 370 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)						
324.98 (242.33)	2101	17.24 (65.24)	0.370 (0.225)	18.85 (3.71)	0.62 (2.36)	Fuel used during active exhaust regeneration-0.91 gal (3.43 l) (see note 1, p.2)
Standard Power Take-off Speed(1000 rpm)						
352.91 (262.16)	1995	18.43 (69.78)	0.365 (0.222)	19.14 (3.77)	0.63 (2.40)	
Maximum Power (1 hour)						
370.53 (276.30)	1750	18.77 (71.07)	0.354 (0.215)	19.74 (3.89)	0.69 (2.60)	
VARYING POWER AND FUEL CONSUMPTION						
324.98 (242.33)	2101	17.24 (65.24)	0.370 (0.225)	18.85 (3.71)	0.62 (2.36)	Air temperature
283.32 (211.27)	2154	15.49 (58.63)	0.382 (0.232)	18.29 (3.60)	0.52 (1.98)	74°F (23°C)
213.35 (159.09)	2165	12.26 (46.42)	0.401 (0.244)	17.40 (3.43)	0.41 (1.53)	Relative humidity
143.04 (106.67)	2177	9.22 (34.89)	0.450 (0.274)	15.52 (3.06)	0.35 (1.31)	39%
71.80 (53.54)	2186	6.54 (24.76)	0.636 (0.387)	10.98 (2.16)	0.23 (0.87)	Barometer
1.70 (1.27)	2199	4.34 (16.44)	17.870 (10.870)	0.39 (0.08)	0.12 (0.47)	29.07" Hg (98.43 kPa)

Maximum Torque - 1191 lb.-ft. (1615 Nm) at 1550 rpm
 Maximum Torque Rise - 46.6%
 Torque rise at 1680 engine rpm - 42%
 Power increase at 1750 engine rpm - 14.0%

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.h/l)	Temp. °F(°C)	Barom. inch Hg (kPa)
Power at Rated Engine Speed—10th Gear-Manual mode								
283.66 (211.53)	20947 (93.18)	5.08 (8.18)	2100	2.4	0.426 (0.259)	16.39 (3.23)	0.019 (0.011)	214 (101)
75% of Pull at Rated Engine Speed—10th Gear-Manual mode								
220.33 (164.30)	15707 (69.87)	5.26 (8.47)	2159	1.5	0.450 (0.274)	15.52 (3.06)	0.018 (0.011)	212 (100)
50% of Pull at Rated Engine Speed—10th Gear-Manual mode								
148.79 (110.95)	10484 (46.64)	5.32 (8.56)	2171	0.9	0.498 (0.303)	14.03 (2.76)	0.021 (0.013)	211 (99)
75% of Pull at Reduced Engine Speed—5.3 mph (8.6 km/h)-Auto mode								
220.36 (164.32)	15719 (69.92)	5.26 (8.47)	1383	1.6	0.404 (0.246)	17.30 (3.41)	0.019 (0.011)	212 (100)
50% of Pull at Reduced Engine Speed—5.3 mph (7.4 km/h)-Auto mode								
148.31 (110.59)	10516 (46.78)	5.29 (8.51)	1383	1.0	0.429 (0.261)	16.28 (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: September 18 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 **Total time engine was operated:** 19.0 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.** *RG6090U088309* **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: 117.1 - 126.6 lb/h (53.1 - 57.4 kg/h) **High idle:** 2190 - 2210 rpm **Turbo boost:** nominal 27.5 - 29.7 psi (190 - 205 kPa) as measured 28.0 psi (193 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *1RW8370DJL924159* **Track width** 72.0" (1829 mm) to 120.0" (3048 mm) **Length of track on ground** 98.7" (2508 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)	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					
247.16 (184.31)	36060 (160.40)	2.57 (4.14)	2134	13.1	0.474 (0.288)	14.74 (2.90)	0.018 (0.011)	212 (100)	46 (8)	28.81 (97.56)
					7th Gear					
266.51 (198.73)	32810 (145.94)	3.05 (4.91)	2101	8.9	0.451 (0.275)	15.47 (3.05)	0.019 (0.012)	212 (100)	50 (10)	28.79 (97.49)
					8th Gear					
276.63 (206.28)	28368 (126.18)	3.66 (5.89)	2100	5.4	0.437 (0.266)	15.96 (3.14)	0.019 (0.011)	214 (101)	53 (12)	28.83 (97.63)
					9th Gear					
281.47 (209.89)	24392 (108.50)	4.33 (6.97)	2100	3.6	0.431 (0.262)	16.21 (3.19)	0.019 (0.011)	214 (101)	52 (11)	28.83 (97.63)
					10th Gear					
283.66 (211.53)	20947 (93.18)	5.08 (8.18)	2100	2.4	0.426 (0.259)	16.39 (3.23)	0.019 (0.011)	214 (101)	53 (12)	28.83 (97.63)
					11th Gear					
281.71 (210.07)	17839 (79.35)	5.92 (9.53)	2100	1.8	0.425 (0.259)	16.43 (3.24)	0.018 (0.011)	213 (100)	59 (15)	28.85 (97.70)
					12th Gear					
281.36 (209.81)	15344 (68.25)	6.88 (11.06)	2100	1.4	0.430 (0.261)	16.25 (3.20)	0.018 (0.011)	214 (101)	61 (16)	28.85 (97.70)
					13th Gear					
276.43 (206.13)	12947 (57.59)	8.01 (12.89)	2099	1.1	0.436 (0.265)	16.03 (3.16)	0.019 (0.011)	214 (101)	62 (17)	28.84 (97.66)

(26.73) nineteenth 19.28 (31.02) twentieth 22.31 (35.91) twenty-first 25.89 (41.67) twenty-second 26.10 (42.00) twenty-third 26.10 (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** 35365 lb (16041 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. **2225**, Nebraska Summary 1172, 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	66.3
Transport speed - no load - 21st gear	70.1
Bystander in 21st gear	85.3

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)
19.5 in (495 mm)
35540 lb (16121 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)										
275.27 (205.27)	28563 (127.05)	3.61 (5.81)	1553	6.0	0.416 (0.253)	16.77 (3.30)	0.022 (0.013)	213 (100)	57 (14)	28.85 (97.70)
4.5 mph (7.2 km/h)										
280.34 (209.05)	24375 (108.42)	4.32 (6.94)	1555	3.5	0.408 (0.248)	17.12 (3.37)	0.021 (0.013)	213 (100)	57 (14)	28.84 (97.66)
5.2 mph (8.4 km/h)										
283.61 (211.48)	20911 (93.02)	5.09 (8.19)	1814	2.4	0.415 (0.252)	16.84 (3.32)	0.020 (0.012)	213 (100)	55 (13)	28.84 (97.66)
6.1 mph (9.8 km/h)										
281.31 (209.77)	17685 (78.66)	5.97 (9.60)	1828	1.8	0.411 (0.250)	17.00 (3.35)	0.020 (0.012)	213 (101)	60 (16)	28.85 (97.70)
7.0mph(11.2km/h)										
281.76 (210.10)	15432 (68.64)	6.85 (11.02)	1801	1.5	0.412 (0.250)	16.96 (3.34)	0.020 (0.012)	213 (101)	62 (16)	28.84 (97.66)
8.1 mph (13.0 km/h)										
275.66 (205.56)	12975 (57.71)	7.97 (12.83)	1819	1.2	0.421 (0.256)	16.59 (3.27)	0.021 (0.013)	214 (101)	63 (17)	28.84 (97.66)

**DRAWBAR PERFORMANCE(Unballasted)
MANUAL MODE - 1750 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										
244.61 (182.40)	35955 (159.93)	2.56 (4.11)	2133	13.7	0.483 (0.294)	14.47 (2.85)	0.020 (0.012)	212 (100)	47 (8)	28.81 (97.56)
7th Gear										
267.85 (199.73)	33642 (149.64)	2.99 (4.81)	2081	9.8	0.456 (0.278)	15.30 (3.01)	0.020 (0.012)	213 (100)	51 (11)	28.79 (97.48)
8th Gear										
291.66 (217.49)	32882 (146.26)	3.33 (5.36)	1980	9.0	0.443 (0.269)	15.76 (3.10)	0.018 (0.011)	213 (100)	53 (12)	28.78 (97.46)
9th Gear										
305.61 (227.89)	31208 (138.82)	3.68 (5.91)	1862	7.7	0.432 (0.263)	16.17 (3.18)	0.017 (0.010)	213 (101)	54 (12)	28.78 (97.46)
10th Gear										
309.32 (230.66)	28460 (126.60)	4.08 (6.57)	1750	5.9	0.423 (0.257)	16.49 (3.25)	0.019 (0.012)	214 (101)	54 (12)	28.84 (97.66)
11th Gear										
316.11 (235.72)	24534 (109.13)	4.83 (7.77)	1750	3.9	0.415 (0.253)	16.82 (3.31)	0.018 (0.011)	214 (101)	59 (15)	28.85 (97.70)
12th Gear										
322.46 (240.46)	21336 (94.91)	5.67 (9.12)	1751	2.6	0.406 (0.247)	17.19 (3.39)	0.018 (0.011)	215 (101)	61 (16)	28.84 (97.66)
13th Gear										
320.81 (239.22)	18142 (80.70)	6.63 (10.67)	1751	1.8	0.407 (0.247)	17.16 (3.38)	0.019 (0.011)	215 (101)	62 (17)	28.84 (97.66)
14th Gear										
318.76 (237.70)	15645 (69.59)	7.64 (12.30)	1750	1.5	0.411 (0.250)	16.98 (3.35)	0.019 (0.012)	214 (101)	63 (17)	28.84 (97.66)
15th Gear										
313.67 (233.90)	13215 (58.78)	8.90 (14.32)	1751	1.2	0.417 (0.253)	16.76 (3.30)	0.020 (0.012)	215 (102)	63 (17)	28.84 (97.66)

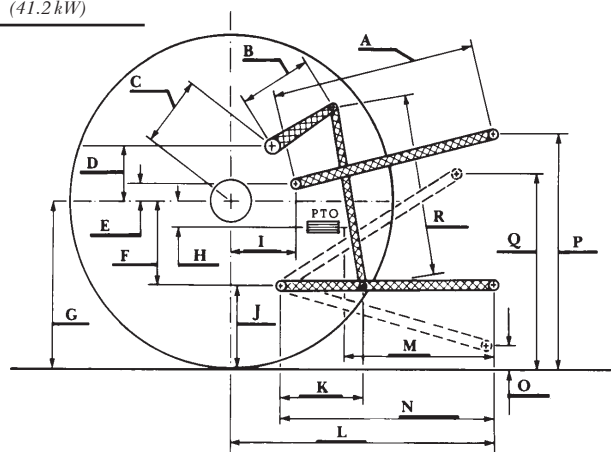
HYDRAULIC PERFORMANCE

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:	2938 psi (203 bar) three outlet sets combined
ii) Pump delivery rate at minimum pressure and rated engine speed:	62.5 GPM (236.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	60.8 GPM (230.1 l/min)
Delivery pressure:	2574 psi (177 bar)
Power:	91.3 HP (68.1 kW)
	single outlet set
	1/2" couplers 3/4" couplers
ii) Pump delivery rate at minimum pressure and rated engine speed:	36.8 GPM (139.2 l/min) 43.0 GPM (162.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	33.4 GPM (126.4 l/min) 41.6 GPM (157.6 l/min)
Delivery pressure:	2400 psi (165 bar) 2273 psi (157 bar)
Power:	46.7 HP (34.9 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 2225 for John Deere 8RT 370 e23 Diesel. Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>



JOHN DEERE 8RT 370 DIESEL
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