

# NEBRASKA OECD TRACTOR TEST 1971-SUMMARY 732

## JOHN DEERE 8320RT DIESEL

### 16 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1048 rpm)</b>					
261.34 (194.88)	2100	14.32 (54.19)	0.385 (0.234)	18.26 (3.60)	
<b>Standard Power Take-off Speed(1000 rpm)</b>					
286.68 (213.78)	2004	15.47 (58.54)	0.379 (0.230)	18.54 (3.65)	
<b>Maximum Power (1 hour)</b>					
297.43 (221.79)	1749	15.89 (60.16)	0.375 (0.228)	18.72 (3.69)	

#### VARYING POWER AND FUEL CONSUMPTION

261.34 (194.88)	2100	14.32 (54.19)	0.385 (0.234)	18.26 (3.60)	Air temperature
228.12 (170.11)	2153	13.01 (49.25)	0.400 (0.244)	17.53 (3.45)	79°F (26°C)
172.03 (128.28)	2162	10.69 (40.48)	0.436 (0.265)	16.09 (3.17)	Relative humidity
115.65 (86.24)	2175	8.02 (30.35)	0.487 (0.296)	14.42 (2.84)	35%
58.33 (43.50)	2186	5.49 (20.79)	0.661 (0.402)	10.62 (2.09)	Barometer
1.64 (1.22)	2194	4.03 (15.25)	17.228 (10.479)	0.41 (0.08)	28.88" Hg (97.80 kPa)

Maximum torque - 978 lb.-ft. (1325 Nm) at 1501 rpm

Maximum torque rise - 49.7%

Torque rise at 1698 engine rpm - 40%

Power increase at 1749 rpm - 13.8%

#### 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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—8th Gear</b>									
225.14 (167.89)	18639 (82.91)	4.53 (7.29)	2098	2.5	0.446 (0.271)	15.76 (3.10)	195 (91)	62 (17)	29.00 (98.21)
<b>75% of Pull at Maximum Power—8th Gear</b>									
176.75 (131.80)	14100 (62.72)	4.70 (7.56)	2156	1.3	0.483 (0.294)	14.53 (2.86)	193 (90)	74 (23)	29.00 (98.21)
<b>50% of Pull at Maximum Power—8th Gear</b>									
118.17 (88.12)	9324 (41.47)	4.75 (7.64)	2167	0.8	0.566 (0.344)	12.40 (2.44)	183 (84)	74 (23)	29.00 (98.21)
<b>75% of Pull at Reduced Engine Speed—11th Gear</b>									
177.11 (132.07)	14070 (62.59)	4.72 (7.60)	1400	1.5	0.422 (0.257)	16.62 (3.27)	197 (92)	74 (23)	29.00 (98.21)
<b>50% of Pull at Reduced Engine Speed—11th Gear</b>									
118.32 (88.23)	9343 (41.56)	4.75 (7.64)	1400	0.9	0.464 (0.283)	15.12 (2.98)	194 (90)	74 (23)	29.00 (98.21)

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

**Dates of tests:** April 13 - 21, 2010

**Manufacturer:** John Deere Tractor Works, 3500 East Donald St., P.O. Box 270, Waterloo Ia, 50704-0270

**FUEL, OIL and TIME:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8433 Fuel weight 7.022 lbs/gal (0.842 kg/l) Oil SAE 15W-40 API service classification CI-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 turbocharger and air to air aftercooler Serial No.\*RG6090L069954\* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 4.661" x 5.354" (118.4 mm x 136.0 mm) Compression ratio 16.3 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 prestrainer Fuel cooler radiator for pump return fuel Muffler vertical Cooling medium temperature control 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 98.5 - 106.5 lb/h (44.7 - 48.3 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal 26.1 - 30.5 psi (180 - 210 kPa) as measured 27.4 psi (189 kPa)

**CHASSIS:** Type tracklayer-rubber tracked Serial No.\*1RW8320RC9P901296\* Track width 76.0" (1930 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 1.13 (1.82) second 1.52 (2.44) third 2.01 (3.24) fourth 2.70 (4.34) fifth 3.03 (4.87) sixth 3.49 (5.62) seventh 4.06 (6.53) eighth 4.67 (7.52) ninth 5.40 (8.69) tenth 6.23 (10.02) eleventh 7.23 (11.64) twelfth 8.34 (13.42) thirteenth 9.82 (15.81) fourteenth 13.16 (21.18) fifteenth 17.52 (28.20) sixteenth 23.46 (37.76) reverse 1.06 (1.70), 2.83 (4.56), 3.57 (5.75), 6.56 (10.56) @1500 engine rpm 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 2004 engine rpm Unladen tractor mass 33880 lb (15368 kg)

## DRAWBAR PERFORMANCE

### Unballasted - 2100 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 cool- ing med	Temp. °C Air dry bulb	Barom. inch Hg (kPa)
4th Gear									
205.98 (153.60)	32075 (142.68)	2.41 (3.88)	2099	11.2	0.488 (0.297)	14.38 (2.83)	186 (85)	53 (12)	29.18 (98.82)
5th Gear									
215.90 (160.99)	28986 (128.94)	2.80 (4.50)	2102	7.8	0.464 (0.282)	15.14 (2.98)	187 (86)	54 (12)	29.18 (98.82)
6th Gear									
221.89 (165.46)	25260 (112.36)	3.30 (5.30)	2099	5.2	0.451 (0.274)	15.58 (3.07)	186 (86)	57 (14)	29.18 (98.82)
7th Gear									
222.31 (165.78)	21347 (94.96)	3.91 (6.28)	2105	3.6	0.451 (0.274)	15.58 (3.07)	196 (91)	64 (18)	29.00 (98.21)
8th Gear									
225.14 (167.89)	18639 (82.91)	4.53 (7.29)	2098	2.5	0.446 (0.271)	15.76 (3.10)	195 (91)	62 (17)	29.00 (98.21)
9th Gear									
222.78 (166.12)	15846 (70.49)	5.28 (8.49)	2100	1.9	0.451 (0.274)	15.58 (3.07)	194 (90)	60 (16)	29.18 (98.82)
10th Gear									
222.98 (166.27)	13710 (60.99)	6.10 (9.82)	2099	1.4	0.448 (0.272)	15.68 (3.09)	197 (92)	65 (18)	29.00 (98.21)
11th Gear									
217.40 (162.11)	11472 (51.03)	7.11 (11.43)	2099	1.0	0.459 (0.279)	15.29 (3.01)	196 (91)	66 (19)	29.00 (98.21)
12th Gear									
217.99 (162.55)	9966 (44.33)	8.20 (13.20)	2098	0.8	0.459 (0.280)	15.28 (3.01)	202 (94)	67 (19)	29.00 (98.21)

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

**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 104°F(40°C). 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. **1971**, Nebraska Summary 732, July 27, 2010.

Roger M. Hoy  
Director

M.F. Kocher  
D.R. Keshwani  
J.A. Smith  
Board of Tractor Test Engineers

#### TRACTOR SOUND LEVEL WITH CAB

**dB(A)**

At no load in 8th gear	70.7
Transport speed - no load - 16th gear	78.1
Bystander in 16th gear	85.9

#### TIRES AND WEIGHT

#### Tested Without Ballast

Track width	25.0 in (635 mm)
Height of Drawbar	18.0 in (455 mm)
Static Weight with operator	34055 lb(15447 kg)

**DRAWBAR PERFORMANCE**  
**Unballasted - 1750 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear									
205.30 (153.09)	33194 (147.65)	2.32 (3.73)	2077	13.8	0.496 (0.302)	14.16 (2.79)	185 (85)	52 (11)	29.18 (98.82)
5th Gear									
224.27 (167.24)	31753 (141.24)	2.65 (4.26)	2050	10.7	0.463 (0.281)	15.18 (2.99)	191 (88)	55 (13)	29.18 (98.82)
6th Gear									
240.57 (179.39)	29896 (132.98)	3.02 (4.86)	1993	9.0	0.451 (0.274)	15.57 (3.07)	199 (93)	59 (15)	29.18 (98.82)
7th Gear									
248.97 (185.66)	28931 (128.69)	3.23 (5.19)	1819	7.8	0.442 (0.269)	15.90 (3.13)	200 (93)	59 (15)	29.18 (98.82)
8th Gear									
252.76 (188.48)	25904 (115.23)	3.66 (5.89)	1751	5.9	0.439 (0.267)	16.01 (3.15)	200 (93)	69 (21)	29.00 (98.21)
9th Gear									
256.67 (191.40)	22302 (99.20)	4.32 (6.94)	1753	3.8	0.432 (0.263)	16.27 (3.21)	199 (93)	70 (21)	29.00 (98.21)
10th Gear									
259.72 (193.67)	19381 (86.21)	5.03 (8.09)	1748	2.3	0.426 (0.259)	16.49 (3.25)	201 (94)	71 (22)	29.00 (98.21)
11th Gear									
256.70 (191.42)	16372 (72.83)	5.88 (9.46)	1753	1.9	0.428 (0.260)	16.41 (3.23)	203 (95)	74 (23)	29.00 (98.21)
12th Gear									
257.19 (191.79)	14194 (63.14)	6.80 (10.94)	1748	1.4	0.429 (0.261)	16.38 (3.23)	199 (93)	74 (23)	29.00 (98.21)
13th Gear									
256.06 (190.94)	11942 (53.12)	8.04 (12.94)	1749	1.0	0.430 (0.261)	16.35 (3.22)	198 (92)	74 (23)	29.00 (98.21)

## HYDRAULIC PERFORMANCE

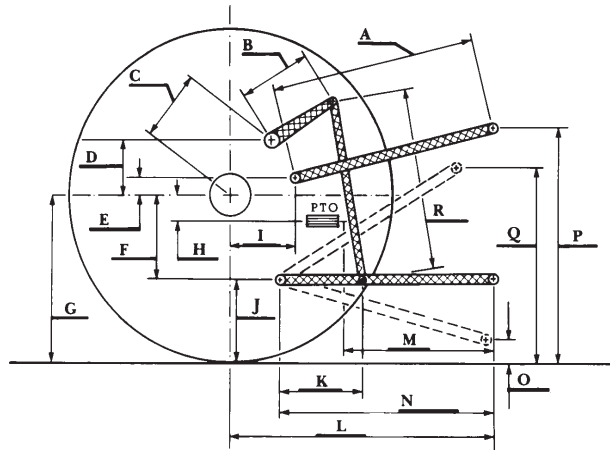
CATEGORY: IVN

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range:	21167 lbs (94.2 kN)	
	63 cc pump	85 cc pump
i) Sustained pressure at compensator cutoff:	2973 psi (205 bar)    2902 psi (200 bar)	
	<b>three outlet sets combined</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	48.4 GPM (183.3 l/min)	65.0 GPM (246.1 l/min)
iii) Pump delivery rate at maximum hydraulic power:	47.4 GPM (179.5 l/min)	64.7 GPM (245.0 l/min)
Delivery pressure:	2740 psi (189 bar)	2429 psi (168 bar)
Power:	75.8 HP (56.5 kW)	91.7 HP (68.4 kW)
	<b>single outlet set</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	41.2 GPM (155.9 l/min)	42.2 GPM (159.6 l/min)
iii) Pump delivery rate at maximum hydraulic power:	39.4 GPM (149.1 l/min)	41.2 GPM (156.1 l/min)
Delivery pressure:	2286 psi (158 bar)	2032 psi (140 bar)
Power:	52.5 HP (39.2 kW)	48.9 HP (36.4 kW)

### HITCH DIMENSIONS AS TESTED - NO LOAD



	inch	mm
A	28.1	715
B	20.5	520
C	24.8	631
D	24.2	615
E	12.6	320
F	11.5	292
G	35.0	888
H	3.1	80
I	18.5	470
J	23.5	596
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	50.5	1283
Q	41.1	1043
R	44.7	1135

\*L' to Quick Attach ends



**JOHN DEERE 8320RT DIESEL**