

NEBRASKA OECD TRACTOR TEST 1968—SUMMARY 729

JOHN DEERE 8270R DIESEL

16 SPEED

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

Dates of tests: May 3 - 28, 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 Front axle lubricant John Deere Hy-Gard fluid Total time engine was operated: 29.5 hours

ENGINE: Make John Deere Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No.*RG6090L070152* 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 water separator Fuel cooler radiator for pump return fuel Muffler vertical Cooling medium temperature control 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 85.8 - 92.6 lb/h (38.9 - 42.0 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal 23.2 - 27.6 psi (160 - 190 kPa) as measured 24.2 psi (167 kPa)

CHASSIS: Type front wheel assist Serial No.*1RW8270RV9P003130* Tread width rear 60.0" (1524 mm) to 132.5" (3368 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) Wheelbase 118.9" (3020 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 1.12 (1.81) second 1.51 (2.43) third 2.01 (3.24) fourth 2.69 (4.33) fifth 3.02 (4.86) sixth 3.48 (5.60) seventh 4.05 (6.51) eighth 4.66 (7.50) ninth 5.39 (8.67) tenth 6.21 (9.99) eleventh 7.21 (11.61) twelfth 8.31 (13.38) thirteenth 9.80 (15.77) fourteenth 13.12 (21.12) fifteenth 17.47 (28.12) sixteenth 23.41 (37.67) reverse 1.06 (1.70), 2.83 (4.55), 3.57 (5.74), 6.55 (10.54)@1500 engine rpm 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 2004 engine rpm Unladen tractor mass 23670 lb (10736 kg)

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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1048 rpm)					
228.79 (170.61)	2100	12.37 (46.82)	0.380 (0.231)	18.50 (3.64)	
Standard Power Take-off Speed(1000 rpm)					
250.43 (186.75)	2004	13.22 (50.04)	0.371 (0.225)	18.95 (3.73)	
Maximum Power (1 hour)					
256.80 (191.50)	1749	13.39 (50.69)	0.366 (0.223)	19.18 (3.78)	

VARYING POWER AND FUEL CONSUMPTION

228.79 (170.61)	2100	12.37 (46.82)	0.380 (0.231)	18.50 (3.64)	Air temperature
199.66 (148.88)	2153	11.32 (42.86)	0.398 (0.242)	17.63 (3.47)	73°F (23°C)
150.45 (112.19)	2163	9.24 (34.99)	0.431 (0.262)	16.28 (3.21)	Relative humidity
100.68 (75.08)	2173	7.16 (27.12)	0.500 (0.304)	14.05 (2.77)	22%
50.77 (37.86)	2185	5.01 (18.97)	0.693 (0.422)	10.13 (2.00)	Barometer
1.93 (1.44)	2194	3.52 (13.32)	12.808 (7.791)	0.55 (0.11)	28.76" Hg (97.39 kPa)

Maximum torque - 833 lb.-ft. (1129 Nm) at 1501 rpm
 Maximum torque rise - 45.5%
 Torque rise at 1700 engine rpm - 39%
 Power increase at 1749 rpm - 12.2%

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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool-ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th Gear									
204.64 (152.60)	16552 (73.63)	4.64 (7.46)	2097	4.1	0.424 (0.258)	16.56 (3.26)	194 (90)	59 (15)	28.74 (97.33)
75% of Pull at Maximum Power—8th Gear									
159.48 (118.92)	12371 (55.03)	4.84 (7.78)	2155	2.8	0.465 (0.283)	15.09 (2.97)	192 (89)	67 (19)	28.77 (97.43)
50% of Pull at Maximum Power—8th Gear									
107.83 (80.41)	8257 (36.73)	4.90 (7.89)	2168	2.1	0.536 (0.326)	13.10 (2.58)	185 (85)	67 (19)	28.78 (97.46)
75% of Pull at Reduced Engine Speed—11th Gear									
159.46 (118.91)	12324 (54.82)	4.85 (7.81)	1401	2.8	0.402 (0.245)	17.45 (3.44)	201 (94)	67 (19)	28.77 (97.43)
50% of Pull at Reduced Engine Speed—11th Gear									
107.82 (80.40)	8213 (36.53)	4.93 (7.93)	1410	2.1	0.438 (0.266)	16.05 (3.16)	181 (83)	68 (20)	28.79 (97.49)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - 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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
5th Gear									
173.27 (129.20)	22754 (101.21)	2.86 (4.59)	2148	12.2	0.476 (0.289)	14.76 (2.91)	183 (84)	54 (12)	28.73 (97.29)
6th Gear									
192.66 (143.67)	22003 (97.88)	3.29 (5.29)	2100	9.7	0.452 (0.275)	15.54 (3.06)	184 (85)	56 (13)	28.74 (97.33)
7th Gear									
202.38 (150.91)	19132 (85.10)	3.97 (6.38)	2097	6.0	0.428 (0.260)	16.41 (3.23)	187 (86)	58 (14)	28.74 (97.33)
8th Gear									
204.64 (152.60)	16552 (73.63)	4.64 (7.46)	2097	4.1	0.424 (0.258)	16.56 (3.26)	194 (90)	59 (15)	28.74 (97.33)
9th Gear									
204.57 (152.54)	14204 (63.18)	5.40 (8.69)	2098	3.3	0.423 (0.257)	16.59 (3.27)	190 (88)	60 (16)	28.74 (97.33)
10th Gear									
203.86 (152.01)	12212 (54.32)	6.26 (10.07)	2099	2.9	0.425 (0.258)	16.53 (3.26)	195 (91)	61 (16)	28.74 (97.33)
11th Gear									
199.62 (148.85)	10247 (45.58)	7.31 (11.76)	2099	2.3	0.435 (0.265)	16.12 (3.18)	194 (90)	63 (17)	28.75 (97.36)
12th Gear									
198.39 (147.94)	8827 (39.27)	8.43 (13.57)	2097	2.0	0.440 (0.267)	15.97 (3.15)	201 (94)	65 (18)	28.75 (97.36)

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 115°F(46°C). The performance figures on this summary were taken from a test conducted under the OECD Code 2 test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1968**, Nebraska Summary 729, 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	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 8th gear	70.7	70.7
Transport speed-no load- 16th gear		74.2
Bystander in 16th gear		84.5

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi(kPa)	Four 480/80R46;***;17(115)	Four 480/80R46;***;10(70)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	6320 lb (2867 kg)	None
Front Tires - No., size, ply & psi(kPa)	Two 480/70R30;***;22(150)	Two 480/70R30;***;19(130)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	780 lb (354 kg)	None
Height of Drawbar	19.5 in (495 mm)	18.5 in (470 mm)
Static Weight with operator - Rear	20630 lb (9358 kg)	14655 lb (6647 kg)
- Front	10315 lb (4678 kg)	9190 lb (4169 kg)
- Total	30945 lb(14036 kg)	23845 lb(10816 kg)

DRAWBAR PERFORMANCE
UNBALLASTED-FRONT DRIVE ENGAGED - 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)
5th Gear									
172.99 (128.99)	22778 (101.32)	2.85 (4.58)	2148	12.4	0.478 (0.291)	14.69 (2.89)	183 (84)	54 (12)	28.73 (97.29)
6th Gear									
192.04 (143.20)	22134 (98.46)	3.26 (5.24)	2097	10.7	0.453 (0.275)	15.51 (3.06)	186 (86)	57 (14)	28.74 (97.33)
7th Gear									
213.56 (159.25)	21405 (95.21)	3.74 (6.02)	2024	8.2	0.430 (0.261)	16.34 (3.22)	195 (90)	59 (15)	28.74 (97.33)
8th Gear									
222.33 (165.79)	20769 (92.39)	4.02 (6.46)	1869	7.0	0.416 (0.253)	16.87 (3.32)	204 (95)	60 (16)	28.74 (97.33)
9th Gear									
227.54 (169.68)	19331 (85.99)	4.42 (7.11)	1753	5.6	0.414 (0.252)	16.97 (3.34)	202 (94)	61 (16)	28.74 (97.33)
10th Gear									
230.82 (172.12)	16743 (74.48)	5.17 (8.32)	1756	4.2	0.408 (0.248)	17.20 (3.39)	201 (94)	62 (17)	28.74 (97.33)
11th Gear									
229.17 (170.89)	14203 (63.18)	6.05 (9.74)	1755	3.2	0.414 (0.252)	16.96 (3.34)	200 (93)	64 (18)	28.75 (97.36)
12th Gear									
227.89 (169.93)	12142 (54.01)	7.04 (11.33)	1758	2.6	0.415 (0.253)	16.90 (3.33)	198 (92)	66 (19)	28.75 (97.36)
13th Gear									
226.42 (168.84)	10246 (45.58)	8.29 (13.33)	1752	2.2	0.418 (0.254)	16.81 (3.31)	199 (93)	67 (19)	28.76 (97.39)

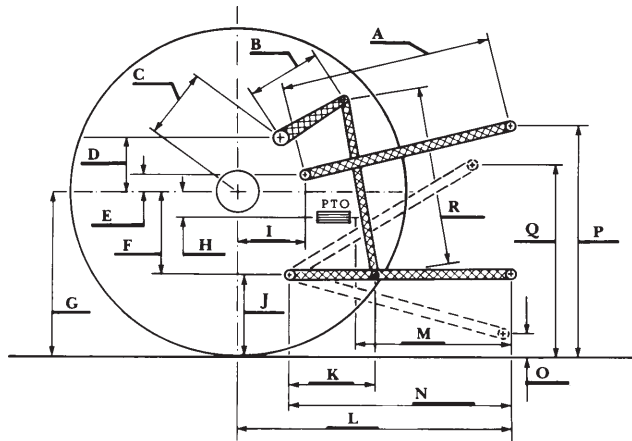
DRAWBAR PERFORMANCE
BALLASTED - FRONT DRIVE ENGAGED - 1750 RPM
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
148.19 (110.51)	29331 (130.47)	1.90 (3.05)	2155	12.7	3rd Gear 0.513 (0.312)	13.69 (2.70)	188 (86)	67 (19)	28.93 (97.97)
189.53 (141.33)	28029 (124.68)	2.54 (4.08)	2101	9.9	4th Gear 0.465 (0.283)	15.11 (2.98)	194 (90)	67 (19)	28.93 (97.97)
203.67 (151.87)	26641 (118.50)	2.87 (4.61)	2075	7.9	5th Gear 0.437 (0.266)	16.05 (3.16)	200 (94)	67 (19)	28.93 (97.97)
220.45 (164.39)	26255 (116.79)	3.15 (5.06)	1964	7.2	6th Gear 0.424 (0.258)	16.58 (3.27)	206 (97)	69 (21)	28.94 (98.00)
224.63 (167.50)	25747 (114.53)	3.28 (5.27)	1754	6.9	7th Gear 0.420 (0.256)	16.71 (3.29)	203 (95)	70 (21)	28.95 (98.04)
230.56 (171.92)	22410 (99.68)	3.86 (6.20)	1758	4.7	8th Gear 0.410 (0.250)	17.12 (3.37)	203 (95)	71 (22)	28.95 (98.04)
231.53 (172.65)	19341 (86.03)	4.49 (7.23)	1755	3.9	9th Gear 0.408 (0.248)	17.20 (3.39)	203 (95)	71 (22)	28.95 (98.04)
231.48 (172.61)	16671 (74.16)	5.21 (8.38)	1754	3.4	10th Gear 0.409 (0.249)	17.15 (3.38)	202 (94)	73 (23)	28.96 (98.07)
229.45 (171.10)	14145 (62.92)	6.09 (9.79)	1753	2.9	11th Gear 0.414 (0.252)	16.96 (3.34)	202 (94)	73 (23)	28.96 (98.07)
228.05 (170.05)	12151 (54.05)	7.04 (11.32)	1752	2.4	12th Gear 0.416 (0.253)	16.88 (3.33)	203 (95)	74 (23)	28.96 (98.07)
227.54 (169.67)	10238 (45.54)	8.34 (13.41)	1754	2.0	13th Gear 0.418 (0.255)	16.78 (3.31)	202 (94)	75 (24)	28.96 (98.07)

HYDRAULIC PERFORMANCE

CATEGORY:	III	III	IVN
Quick Attach: Yes			
OECD Static test			
Lift cylinders:	<u>1 x 90 mm & 1x100 mm</u>	<u>2x100 mm</u>	<u>2x112 mm</u>
Maximum force exerted through whole range:	14191 lbs (63.1 kN)	15683 lbs (69.8 kN)	18326 lbs (81.5 kN)
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	<u>63 cc pump</u>	<u>85 cc pump</u>	
i) Sustained pressure at compensator cutoff:	2940 psi (203 bar)	2923 psi (202 bar)	
	three outlet sets combined		
ii) Pump delivery rate at minimum pressure and rated engine speed:	46.4 GPM(175.7 l/min)	63.4 GPM(240.0 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	46.0 GPM(174.1 l/min)	62.9 GPM(238.0 l/min)	
Delivery pressure:	2690 psi (185 bar)	2521 psi (174 bar)	
Power:	72.2 HP (53.8 kW)	92.5 HP (69.0 kW)	
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	single outlet set		
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.8 GPM(154.6 l/min)	40.9 GPM(155.0 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	40.4 GPM(153.0 l/min)	39.1 GPM(148.0 l/min)	
Delivery pressure:	2119 psi (146 bar)	2244 psi (155 bar)	
Power:	50.0 HP (37.3 kW)	51.2 HP (38.2 kW)	

HITCH DIMENSIONS AS TESTED—NO LOAD



	Category III		Category IVN	
	inch	mm	inch	mm
A	29.3	744	27.1	689
B	20.5	520	20.5	520
C	20.9	532	20.9	532
D	18.9	480	18.9	480
E	12.0	304	12.0	304
F	14.4	365	14.4	365
G	35.6	905	37.0	940
H	7.9	200	7.9	200
I	21.9	555	21.9	555
J	21.2	540	22.6	575
K	28.7	730	28.9	733
L	49.3	1252	56.6	1438
*L'	53.4	1357	62.5	1588
M	22.4	569	29.7	755
N	42.6	1081	45.7	1162
O	9.0	230	9.0	230
P	43.2	1099	49.7	1262
Q	39.4	1001	40.7	1035
R	42.8	1087	43.5	1106

*L' to Quick Attach ends



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