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2015

Test 2107: John Deere 9370R

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 2107-SUMMARY 970

JOHN DEERE 9370R DIESEL

18 SPEED

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						
SEE NOTE 1 - PAGE 2						
Rated Engine Speed—(PTO speed—1108 rpm)						
307.66 (229.42)	2099	17.33 (65.62)	0.396 (0.241)	17.75 (3.50)	0.36 (1.36)	Fuel used during active exhaust regeneration-1.29 gal (4.88 l) (see note 2, p.2)
Standard Power Take-off Speed(1000 rpm)						
352.25 (262.68)	1895	19.02 (72.02)	0.380 (0.231)	18.52 (3.65)	0.45 (1.70)	
Maximum Power (1 hour)						
354.60 (264.43)	1800	19.08 (72.24)	0.378 (0.230)	18.58 (3.66)	0.46 (1.73)	

VARYING POWER AND FUEL CONSUMPTION

307.66 (229.42)	2099	17.33 (65.62)	0.396 (0.241)	17.75 (3.50)	0.36 (1.36)	Air temperature
268.10 (199.92)	2150	15.35 (58.12)	0.403 (0.245)	17.46 (3.44)	0.36 (1.36)	73°F (23°C)
200.89 (149.80)	2150	12.34 (46.71)	0.432 (0.263)	16.28 (3.21)	0.28 (1.06)	Relative humidity
133.92 (99.87)	2150	9.39 (35.53)	0.493 (0.300)	14.27 (2.81)	0.25 (0.96)	24%
67.06 (50.01)	2150	6.78 (25.67)	0.711 (0.433)	9.89 (1.95)	0.21 (0.80)	Barometer
0.59 (0.44)	2151	4.29 (16.22)	51.415 (31.275)	0.14 (0.03)	0.20 (0.75)	28.87" Hg (97.77 kPa)

Maximum Torque - 1129 lb.-ft. (1531 Nm) at 1599 rpm
 Maximum Torque Rise - 46.6%
 Torque rise at 1681 engine rpm - 42%
 Power increase at 1800 rpm - 15.3%

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) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
Maximum Power—7th Gear- Manual mode										
292.24 (217.92)	22917 (101.94)	4.78 (7.69)	2100	3.1	0.417 (0.254)	16.86 (3.32)	0.010 (0.006)	188 (87)	52 (11)	28.76 (97.39)
75% of Pull at Maximum Power—7th Gear - Manual mode										
227.49 (169.64)	17167 (76.36)	4.97 (8.00)	2168	2.5	0.431 (0.262)	16.32 (3.21)	0.013 (0.008)	193 (89)	75 (24)	28.70 (97.18)
50% of Pull at Maximum Power—7th Gear- Manual mode										
155.08 (115.64)	11449 (50.93)	5.08 (8.18)	2192	1.4	0.478 (0.291)	14.71 (2.90)	0.015 (0.009)	186 (86)	77 (25)	28.68 (97.12)
75% of Pull at Reduced Engine Speed—5.1 mph (8.2 km/h)-Auto mode										
227.43 (169.59)	17050 (75.84)	5.00 (8.05)	1595	2.5	0.396 (0.241)	17.78 (3.50)	0.015 (0.009)	205 (96)	76 (25)	28.69 (97.16)
50% of Pull at Reduced Engine Speed—5.1 mph (8.2 km/h)-Auto mode										
154.91 (115.52)	11498 (51.14)	5.05 (8.13)	1297	1.4	0.415 (0.252)	16.95 (3.34)	0.017 (0.010)	194 (90)	77 (25)	28.67 (97.09)

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

Dates of tests: March 25 to April 2, 2015

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)** 0.8447 **Fuel weight** 7.033 lbs/gal (0.843 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** CJ-4 **Transmission, hydraulic and final drive lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 33.0 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.** *RG6090U012177* **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 transmission/ hydraulic oil also feeding front and rear axles **Fuel filter** two paper cartridges **Fuel cooler** radiator for returned 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** 3 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 118.6 - 128.1 lb/h (53.8 - 58.1 kg/h) **High idle:** 2150 - 2250 rpm (2125 - 2175 rpm with PTO engaged) **Turboboost:** nominal 27.6 - 33.4 psi (190 - 230 kPa) as measured 30.4 psi (210 kPa)

CHASSIS: Type four wheel drive with duals **Serial No.** *1RW9370RKEP016015* **Tread width** rear 60.2" (1530 mm) to 131.8" (3348 mm), front 60.2" (1530 mm) to 131.8" (3348 mm) **Wheelbase** 137.8" (3500 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 2.37 (3.81) second 2.91 (4.69) third 3.23 (5.19) fourth 3.60 (5.79) fifth 3.96 (6.38) sixth 4.42 (7.12) seventh 4.90 (7.89) eighth 5.47 (8.81) ninth 6.03 (9.71) tenth 6.74 (10.84) eleventh 7.46 (12.01) twelfth 8.25 (13.27) thirteenth 9.18 (14.77) fourteenth 10.15 (16.33) fifteenth 12.54 (20.18) sixteenth 15.43 (24.83) seventeenth 19.08 (30.70) eighteenth 23.48 (37.78)

DRAWBAR PERFORMANCE
(Unballasted at 2100 rpm - manual mode)

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)	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)
1st Gear										
218.06 (162.60)	38965 (173.32)	2.10 (3.38)	2160	14.5	0.487 (0.296)	14.44 (2.84)	0.014 (0.008)	190 (88)	62 (17)	28.52 (96.58)
2nd Gear										
263.78 (196.70)	38178 (169.82)	2.60 (4.18)	2103	11.9	0.461 (0.280)	15.27 (3.01)	0.012 (0.007)	195 (90)	66 (19)	28.50 (96.51)
3rd Gear										
279.25 (208.23)	35239 (156.75)	2.97 (4.78)	2100	8.5	0.434 (0.264)	16.19 (3.19)	0.012 (0.007)	200 (93)	70 (21)	28.49 (96.48)
4th Gear										
283.53 (211.43)	31299 (139.22)	3.40 (5.47)	2100	6.5	0.429 (0.261)	16.41 (3.23)	0.012 (0.007)	199 (93)	74 (24)	28.73 (97.29)
5th Gear										
289.02 (215.52)	28596 (127.20)	3.79 (6.10)	2099	5.1	0.420 (0.255)	16.76 (3.30)	0.012 (0.007)	199 (93)	73 (23)	28.75 (97.36)
6th Gear										
288.76 (215.32)	25233 (112.24)	4.29 (6.90)	2100	3.9	0.420 (0.255)	16.76 (3.30)	0.012 (0.007)	198 (92)	70 (21)	28.75 (97.36)
7th Gear										
292.24 (217.92)	22917 (101.94)	4.78 (7.69)	2100	3.1	0.417 (0.254)	16.86 (3.32)	0.010 (0.006)	188 (87)	52 (11)	28.76 (97.39)
8th Gear										
291.10 (217.07)	20444 (90.94)	5.34 (8.59)	2099	2.7	0.417 (0.254)	16.86 (3.32)	0.010 (0.006)	189 (87)	46 (8)	28.75 (97.36)
9th Gear										
292.72 (218.28)	18509 (82.33)	5.93 (9.54)	2100	2.4	0.416 (0.253)	16.91 (3.33)	0.010 (0.006)	191 (88)	56 (13)	28.77 (97.43)
10th Gear										
290.64 (216.73)	16488 (73.34)	6.61 (10.64)	2100	2.3	0.418 (0.254)	16.82 (3.31)	0.010 (0.006)	191 (88)	60 (15)	28.77 (97.43)
11th Gear										
290.38 (216.53)	14869 (66.14)	7.32 (11.78)	2099	1.9	0.417 (0.254)	16.86 (3.32)	0.011 (0.007)	195 (91)	63 (17)	28.76 (97.39)
12th Gear										
290.96 (216.97)	13368 (59.46)	8.16 (13.13)	2100	1.6	0.419 (0.255)	16.79 (3.31)	0.012 (0.007)	198 (92)	67 (20)	28.76 (97.39)

reverse 2.37 (3.81), 3.23 (5.19), 3.60 (5.79), 4.90 (7.89), 5.47 (8.81), 7.46 (12.00) **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated by foot pedal **Steering** hydrostatic and articulated **Power take-off** 1000 rpm at 1895 engine rpm **Unladen tractor mass** 39410 lb (17876 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1. With stationary PTO operation, using FieldCruise™, an isochronous governor is utilized.

All PTO tests were conducted with FieldCruise™ engaged.

NOTE 2. The manufacturer declares that the average time between active regenerations is 50 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full PTO load, under steady state conditions.

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. **2107**, Nebraska Summary 970, July 5, 2015.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 7th gear	68.6
Transport speed - no load - 18th gear	71.7
Bystander in 18th gear	85.7

TIRES, BALLAST 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 480/80R46;***;14(95)
Four 480/80R46;***;18(125)
20.5 in (520 mm)
17650 lb (8005 kg)
21935 lb (9950 kg)
39585 lb (17955 kg)

DRAWBAR PERFORMANCE
UNBALLASTED - AUTO MODE
(Loads based on 2100 engine rpm manual mode performance runs)
DRAWBAR POWER AT SELECTED TRAVEL SPEEDS

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)
2.4 mph (3.8 km/h)										
215.61 (160.78)	38571 (171.57)	2.10 (3.37)	1538	11.9	0.428 (0.260)	16.43 (3.24)	0.015 (0.009)	198 (92)	64 (18)	28.51 (96.55)
2.9 mph (4.6 km/h)										
257.89 (192.30)	37848 (168.35)	2.56 (4.11)	1665	11.3	0.426 (0.259)	16.50 (3.25)	0.016 (0.010)	207 (97)	68 (20)	28.49 (96.48)
3.2 mph (5.2 km/h)										
279.29 (208.26)	35176 (156.47)	2.98 (4.80)	1711	8.6	0.414 (0.252)	17.01 (3.35)	0.015 (0.009)	212 (100)	71 (22)	28.50 (96.51)
3.6 mph (5.8 km/h)										
283.37 (211.31)	31328 (139.35)	3.39 (5.46)	1543	6.6	0.404 (0.245)	17.43 (3.43)	0.015 (0.009)	211 (99)	75 (24)	28.72 (97.26)
4.0 mph (6.4 km/h)										
288.37 (215.03)	28485 (126.71)	3.80 (6.11)	1702	5.2	0.399 (0.242)	17.64 (3.48)	0.015 (0.009)	211 (99)	72 (22)	28.74 (97.33)
4.5 mph (7.2 km/h)										
288.81 (215.37)	25038 (111.37)	4.33 (6.97)	1724	4.0	0.394 (0.240)	17.85 (3.52)	0.015 (0.009)	210 (99)	71 (22)	28.75 (97.36)
5.0 mph (8.0 km/h)										
292.02 (217.76)	22584 (100.46)	4.85 (7.81)	1556	3.1	0.393 (0.239)	17.88 (3.52)	0.013 (0.008)	198 (92)	53 (12)	28.76 (97.39)
5.5 mph (8.8 km/h)										
290.60 (216.70)	20353 (90.53)	5.35 (8.61)	1711	2.7	0.398 (0.242)	17.68 (3.48)	0.012 (0.007)	194 (90)	52 (11)	28.76 (97.39)
6.0 mph (9.6 km/h)										
292.09 (217.81)	18707 (83.21)	5.86 (9.43)	1867	2.5	0.400 (0.243)	17.59 (3.46)	0.012 (0.007)	196 (91)	59 (15)	28.76 (97.39)
6.7 mph (10.8 km/h)										
290.09 (216.32)	16441 (73.13)	6.62 (10.65)	1901	2.3	0.402 (0.244)	17.50 (3.45)	0.012 (0.007)	196 (91)	62 (16)	28.76 (97.39)
7.3 mph (11.8 km/h)										
289.59 (215.94)	14999 (66.72)	7.24 (11.65)	1867	1.9	0.397 (0.241)	17.74 (3.49)	0.013 (0.008)	199 (93)	65 (18)	28.76 (97.39)
8.2 mph (13.2 km/h)										
290.68 (216.76)	13416 (59.68)	8.13 (13.08)	1888	1.6	0.405 (0.246)	17.36 (3.42)	0.014 (0.009)	204 (96)	68 (20)	28.76 (97.39)

DRAWBAR PERFORMANCE
(Unballasted at 1800 RPM, Manual mode)
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)	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)
1st Gear										
219.94 (164.01)	38985 (173.41)	2.12 (3.40)	2160	13.9	0.485 (0.295)	14.50 (2.86)	0.014 (0.008)	190 (88)	61 (16)	28.52 (96.58)
2nd Gear										
265.09 (197.67)	38064 (169.32)	2.62 (4.21)	2102	11.2	0.458 (0.279)	15.36 (3.03)	0.012 (0.007)	194 (90)	65 (18)	28.51 (96.55)
3rd Gear										
279.62 (208.51)	36588 (162.75)	2.87 (4.61)	2076	10.7	0.443 (0.269)	15.89 (3.13)	0.012 (0.007)	206 (97)	73 (23)	28.49 (96.48)
4th Gear										
298.27 (222.42)	35312 (157.08)	3.17 (5.10)	2016	9.2	0.432 (0.263)	16.28 (3.21)	0.012 (0.007)	208 (98)	74 (23)	28.49 (96.48)
5th Gear										
309.98 (231.15)	34265 (152.42)	3.40 (5.46)	1951	8.6	0.426 (0.259)	16.52 (3.25)	0.013 (0.008)	214 (101)	75 (24)	28.49 (96.48)
6th Gear										
316.90 (236.31)	32867 (146.20)	3.62 (5.82)	1842	7.7	0.420 (0.256)	16.74 (3.30)	0.014 (0.008)	214 (101)	76 (24)	28.48 (96.44)
7th Gear										
323.20 (241.01)	30694 (136.53)	3.95 (6.36)	1800	6.8	0.413 (0.251)	17.03 (3.36)	0.013 (0.008)	213 (101)	77 (25)	28.48 (96.44)
8th Gear										
327.80 (244.44)	27667 (123.07)	4.44 (7.15)	1800	5.6	0.406 (0.247)	17.31 (3.41)	0.013 (0.008)	214 (101)	77 (25)	28.47 (96.41)
9th Gear										
327.02 (243.86)	24672 (109.75)	4.97 (8.00)	1800	4.6	0.409 (0.249)	17.20 (3.39)	0.013 (0.008)	214 (101)	78 (26)	28.46 (96.38)
10th Gear										
328.14 (244.69)	22131 (98.44)	5.56 (8.95)	1800	4.0	0.405 (0.246)	17.37 (3.42)	0.014 (0.008)	214 (101)	79 (26)	28.45 (96.34)
11th Gear										
329.33 (245.58)	19981 (88.88)	6.18 (9.95)	1800	3.6	0.404 (0.246)	17.40 (3.43)	0.013 (0.008)	214 (101)	79 (26)	28.44 (96.31)
12th Gear										
330.41 (246.39)	17950 (79.84)	6.90 (11.10)	1800	3.0	0.403 (0.245)	17.46 (3.44)	0.013 (0.008)	214 (101)	79 (26)	28.44 (96.31)
13th Gear										
325.74 (242.90)	15909 (70.77)	7.68 (12.36)	1801	2.6	0.407 (0.247)	17.29 (3.41)	0.013 (0.008)	215 (101)	79 (26)	28.43 (96.28)
14th Gear										
329.98 (246.07)	14450 (64.28)	8.56 (13.78)	1801	2.2	0.403 (0.245)	17.45 (3.44)	0.013 (0.008)	215 (102)	80 (27)	28.43 (96.28)

HYDRAULIC PERFORMANCE

CATEGORY: 4N/4

Quick Attach: Yes

OECD Static test

	<u>Category 4N</u>	<u>lift cylinders</u>
Maximum force exerted through whole range:	16084 lbs(71.5 kN)	(1 x 90 mm and 1x100 mm)
	21408 lbs(95.2 kN)	(2 x 110 mm)
	<u>Category 4</u>	
	15769 lbs(70.1 kN)	(1 x 90 mm and 1x100 mm)
	21384 lbs(95.1 kN)	(2 x 110 mm)

	<u>Base pump</u>	<u>Tandem pump</u>
	<u>three outlet sets combined</u>	
i) Sustained pressure at compensator cutoff:	3094 psi (213 bar)	2881 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	60.1 GPM(227.5 l/min)	57.2 GPM (216.4 l/min)
Combined flow:	117.3 GPM (443.9 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	60.9 GPM(230.7 l/min)	57.7 GPM(218.5 l/min)
Delivery pressure:	2820 psi (194 bar)	2371 psi (163 bar)
Power:	100.2 HP (74.8 kW)	79.9 HP (59.5 kW)

	<u>single outlet set</u>	
	<u>3/4" couplers</u>	<u>1/2" couplers</u>
i) Sustained pressure at compensator cutoff:	2909 psi (201 bar)	2884 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.7 GPM(165.5 l/min)	36.5 GPM(138.1 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.8 GPM(162.2 l/min)	34.6 GPM(131.1 l/min)
Delivery pressure:	2217 psi (153 bar)	2265 psi (156 bar)
Power:	55.4 HP (41.3 kW)	45.8 HP (34.1 kW)

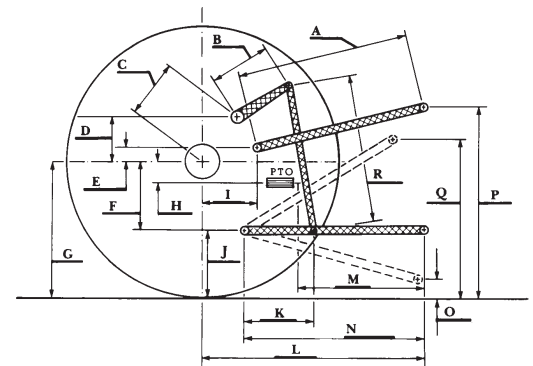
Category 4N

Category 4

	inch	mm	inch	mm
A	31.7	805	30.3	770
B	19.7	500	19.7	500
C	25.0	635	25.0	635
D	24.4	620	24.4	620
E	12.8	325	12.8	325
F	13.8	350	13.8	350
G	36.6	930	36.6	930
H	2.4	60	2.4	60
I	18.7	474	18.7	474
J	22.8	580	22.8	580
K	30.9	785	30.9	785
L	52.8	1342	52.8	1342
*L'	58.7	1491	59.6	1515
M	22.8	579	22.8	579
N	45.6	1159	45.6	1159
O	9.1	230	9.1	230
P	50.8	1290	50.8	1291
Q	41.1	1045	40.9	1040
R	47.0	1195	47.2	1200

*L' to Quick Attach ends

HITCH DIMENSIONS AS TESTED—NO LOAD



JOHN DEERE 9370R DIESEL