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2016

Test 2147: John Deere 6155R AutoQuad-Plus

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 2147—SUMMARY 1010

JOHN DEERE 6155R AUTOQUAD-PLUS DIESEL

20 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.l/l)	Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1045 rpm)						
130.10 (97.02)	2100	8.32 (31.49)	0.448 (0.273)	15.64 (3.08)	0.16 (0.62)	Fuel used during active exhaust regeneration-0.75 gal (2.82 l) (see note 1, p.2)
Standard Power Take-off Speed (1000 rpm)						
140.22 (104.56)	2010	8.67 (32.81)	0.433 (0.263)	16.18 (3.19)	0.15 (0.57)	
Maximum Power (1 hour)						
151.66 (113.09)	1700	8.64 (32.69)	0.399 (0.243)	17.56 (3.46)	0.21 (0.80)	

VARYING POWER AND FUEL CONSUMPTION

130.10 (97.02)	2100	8.32 (31.49)	0.448 (0.273)	15.64 (3.08)	0.16 (0.62)	Air temperature
113.38 (84.54)	2153	7.67 (29.04)	0.474 (0.288)	14.78 (2.91)	0.13 (0.50)	73°F (23°C)
85.70 (63.90)	2167	6.54 (24.76)	0.535 (0.325)	13.10 (2.58)	0.09 (0.34)	Relative humidity
58.10 (43.33)	2198	5.59 (21.16)	0.674 (0.410)	10.39 (2.05)	0.02 (0.09)	27%
29.56 (22.05)	2233	4.24 (16.04)	1.005 (0.611)	6.98 (1.37)	0.04 (0.14)	Barometer
0.65 (0.49)	2250	3.03 (11.48)	32.474 (19.753)	0.22 (0.04)	0.07 (0.26)	28.39" Hg (96.15 kPa)

Maximum torque - 495 lb.-ft. (672 Nm) at 1499 rpm

Maximum torque rise - 52.2%

Torque rise at 1680 engine rpm - 46%

Power increase at 1700 engine rpm - 16.6%

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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med bulb	Air dry bulb	Barom. inch Hg (kPa)	
Power at Rated Engine Speed—7th (B3) Gear										
123.38 (92.00)	9627 (42.82)	4.81 (7.74)	2100	2.8	0.474 (0.288)	14.79 (2.91)	0.013 (0.008)	188 (86)	55 (13)	28.77 (97.43)
75% of Pull at Rated Engine Speed—7th (B3) Gear										
96.16 (71.70)	7201 (32.03)	5.01 (8.06)	2168	1.9	0.521 (0.317)	13.46 (2.65)	0.012 (0.007)	187 (86)	60 (16)	28.68 (97.12)
50% of Pull at Rated Engine Speed—7th (B3) Gear										
65.65 (48.95)	4806 (21.38)	5.12 (8.24)	2201	1.1	0.640 (0.389)	10.95 (2.16)	0.006 (0.004)	186 (86)	62 (16)	28.66 (97.05)
75% of Pull at Reduced Engine Speed—11th (C3) Gear										
96.04 (71.62)	7238 (32.20)	4.98 (8.01)	1354	1.9	0.437 (0.266)	16.03 (3.16)	0.016 (0.010)	188 (86)	65 (18)	28.65 (97.02)
50% of Pull at Reduced Engine Speed—11th (C3) Gear										
65.63 (48.94)	4783 (21.28)	5.15 (8.28)	1389	1.1	0.475 (0.289)	14.75 (2.91)	0.013 (0.008)	186 (86)	63 (17)	28.65 (97.02)

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

Dates of tests: March 31 to April 14, 2016

Manufacturer: John Deere Tractor Works, 3500 East Donald Street, 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)** 0.8417 **Fuel weight** 7.008 lbs/gal (0.840 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 and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 23.0 hours

ENGINE: Make John Deere **Diesel Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *PE6068U018821* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.19" x 5.00" (106.5 mm x 127.0 mm) **Compression ratio** 16.5 to 1 **Displacement** 414 cu in (6788 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 **Exhaust** DOC (diesel oxidation catalyst), SCR (selective catalyst reduction) and regenerative DPF (diesel particulate filter) integrated within a vertical muffler **Cooling medium temperature control** 2 thermostats and 2 variable speed fans

ENGINE OPERATING PARAMETERS: Fuel rate: 54.5 - 58.9 lb/h (24.7 - 26.7 kg/h) **High idle:** 2225 - 2275 rpm **Turbo boost:** nominal 12.3 - 15.2 psi (85 - 105 kPa) as measured 13.7 psi (95 kPa)

CHASSIS: Type front wheel assist **Serial No.** *1RW6155RPFA022776* **Tread width** rear 62.9" (1597 mm) to 119.3" (3031 mm) front 67.5" (1714 mm) to 83.5" (2122 mm) **Wheelbase** 108.9" (2765 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.60 (2.57) second 1.93 (3.10) third 2.31 (3.71) fourth 2.83 (4.55) fifth 3.39 (5.46) sixth 4.08 (6.57) seventh 4.89 (7.87) eighth 5.39 (8.68) ninth 5.99 (9.64) tenth 6.49 (10.45) eleventh 7.78 (12.52) twelfth 9.53 (15.34) thirteenth 9.99 (16.07) fourteenth 12.02 (19.35)

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED-2100 ENGINE 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)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. ^o F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th (A4) Gear										
103.01 (76.81)	15386 (68.44)	2.51 (4.04)	2130	13.5	0.546 (0.332)	12.84 (2.53)	0.015 (0.009)	189 (87)	46 (8)	28.58 (96.78)
5th(B1) Gear										
120.86 (90.12)	14134 (62.87)	3.21 (5.16)	2100	6.3	0.486 (0.295)	14.43 (2.95)	0.014 (0.009)	189 (87)	49 (9)	28.58 (96.78)
6th(B2) Gear										
122.34 (91.23)	11557 (51.41)	3.97 (6.39)	2100	3.9	0.478 (0.291)	14.67 (2.89)	0.013 (0.008)	188 (86)	57 (14)	28.75 (97.36)
7th(B3) Gear										
123.38 (92.00)	9627 (42.82)	4.81 (7.74)	2100	2.8	0.474 (0.288)	14.79 (2.91)	0.013 (0.008)	188 (86)	55 (13)	28.77 (97.43)
8th(C1) Gear										
122.58 (91.41)	8633 (38.40)	5.32 (8.56)	2100	2.4	0.479 (0.291)	14.63 (2.88)	0.015 (0.009)	188 (87)	47 (8)	28.85 (97.70)
9th(B4) Gear										
121.27 (90.43)	7667 (34.10)	5.93 (9.54)	2100	2.1	0.483 (0.294)	14.50 (2.86)	0.014 (0.008)	188 (87)	58 (14)	28.75 (97.36)
10th(C2) Gear										
121.54 (90.63)	7070 (31.45)	6.45 (10.38)	2101	1.9	0.483 (0.294)	14.52 (2.86)	0.015 (0.009)	187 (86)	48 (9)	28.82 (97.60)
11th(C3) Gear										
120.45 (89.82)	5828 (25.92)	7.75 (12.47)	2100	1.4	0.485 (0.295)	14.45 (2.85)	0.014 (0.009)	187 (86)	49 (9)	28.83 (97.63)
*12th(C4) Gear										
125.11 (93.29)	4925 (21.91)	9.53 (15.34)	2101	1.1	0.492 (0.300)	14.23 (2.80)	0.015 (0.009)	188 (87)	50 (10)	28.78 (97.46)

* Boosted mode

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th (B3) gear	69.6	69.5
Transport speed - no load - 18th (F2) gear		72.4
Bystander in 18th (E2) gear		82.2

TIRES 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

Two 480/80R42;***;14(95)
 Two 420/85R28;***;12(85)
 19.5 in (495 mm)
 10010 lb (4540 kg)
 5495 lb (2493 kg)
 15505 lb (7033 kg)

fifteenth 14.40 (23.18) sixteenth 17.65 (28.40)
 seventeenth 18.23 (29.33) eighteenth 22.57 (35.32)
 nineteenth 26.10 (42.00) twentieth 26.10 (42.00)
 electronically limited reverse 1.67 (2.69), 2.01
 (3.23), 2.40 (3.87), 2.95 (4.74), 3.54 (5.69), 4.26
 (6.85), 5.10 (8.21), 5.63 (9.06), 6.25 (10.06), 6.78
 (10.91), 8.12 (13.07), 9.95 (16.01), 10.42 (16.77),
 12.55 (20.20), 15.03 (24.19), 18.41 (29.63), 19.02
 (30.61), 22.90 (36.85), 26.10 (42.00), 26.10 (42.00)
 electronically limited **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** 540 rpm at 1987 engine
 rpm or 1000 rpm at 2010 engine rpm **Unladen**
tractor mass 15330 lb (6954 kg)

NOTE 1: The manufacturer declares that the
 average time between active regenerations is 50
 hours.

NOTE 2: This tractor model is equipped with
 the Intelligent Power Management (IPM) system
 which automatically increases the engine power
 when the travel speed exceeds 9.3 mph (15 km/h).

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.
 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.
2147, Nebraska Summary 1010, May 17, 2016.

Roger M. Hoy
 Director

M.F. Kocher
 S.K. Pitla
 P.J. Jasa
 Board of Tractor Test Engineers

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - 1700 ENGINE 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)	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)
4th (A4) Gear										
103.37 (77.08)	15409 (68.54)	2.52 (4.06)	2129	13.3	0.544 (0.331)	12.87 (2.54)	0.014 (0.009)	190 (88)	46 (8)	28.59 (96.82)
5th (B1) Gear										
122.92 (91.46)	15003 (66.74)	3.08 (4.95)	2055	8.4	0.487 (0.296)	14.40 (2.84)	0.013 (0.008)	189 (87)	47 (8)	28.60 (96.85)
6th (B2) Gear										
133.63 (99.64)	14029 (62.40)	3.58 (5.75)	1936	6.1	0.464 (0.282)	15.10 (2.97)	0.012 (0.007)	190 (88)	47 (8)	28.59 (96.82)
7th (B3) Gear										
138.66 (103.40)	13158 (58.53)	3.96 (6.36)	1769	5.1	0.440 (0.268)	15.92 (3.14)	0.014 (0.009)	189 (87)	47 (8)	28.61 (96.88)
8th (C1) Gear										
138.62 (103.37)	12295 (54.69)	4.23 (6.81)	1700	4.3	0.436 (0.265)	16.09 (3.17)	0.015 (0.009)	189 (87)	48 (9)	28.87 (97.77)
9th (B4) Gear										
138.81 (103.51)	11012 (48.98)	4.73 (7.61)	1700	3.6	0.435 (0.265)	16.12 (3.17)	0.014 (0.009)	192 (89)	60 (16)	28.70 (97.19)
10th (C2) Gear										
139.95 (104.36)	10178 (45.27)	5.16 (8.30)	1700	3.0	0.433 (0.263)	16.19 (3.19)	0.014 (0.009)	190 (88)	48 (9)	28.81 (97.56)
11th (C3) Gear										
139.32 (103.89)	8397 (37.35)	6.22 (10.01)	1700	2.3	0.434 (0.264)	16.16 (3.18)	0.014 (0.009)	190 (88)	50 (10)	28.79 (97.49)
12th (C4) Gear										
137.90 (102.83)	6744 (30.00)	7.67 (12.34)	1700	1.7	0.438 (0.267)	15.99 (3.15)	0.015 (0.009)	191 (88)	51 (10)	28.80 (97.53)
13th (D1) Gear										
137.22 (102.32)	6397 (28.45)	8.05 (12.95)	1700	1.6	0.439 (0.267)	15.97 (3.15)	0.015 (0.009)	191 (88)	52 (11)	28.77 (97.43)
*14th (D2) Gear										
142.02 (105.90)	5477 (24.36)	9.73 (15.65)	1702	1.2	0.440 (0.268)	15.92 (3.14)	0.015 (0.009)	191 (88)	53 (12)	28.78 (97.43)

* boosted mode

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE DISENGAGED
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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Power at Rated Engine Speed—8th (C1) Gear										
120.25 (89.67)	8602 (38.26)	5.24 (8.43)	2100	3.9	0.487 (0.296)	14.39 (2.84)	0.015 (0.009)	188 (87)	47 (8)	28.83 (97.63)
75% of Pull at Rated Engine Speed—8th (C1) Gear										
94.49 (70.46)	6476 (28.81)	5.48 (8.81)	2167	2.7	0.531 (0.323)	13.21 (2.60)	0.012 (0.008)	187 (86)	67 (20)	28.62 (96.92)
50% of Pull at Rated Engine Speed—8th (C1) Gear										
64.52 (48.11)	4312 (19.18)	5.61 (9.03)	2200	1.9	0.650 (0.396)	10.78 (2.12)	0.008 (0.005)	186 (86)	69 (20)	28.61 (96.88)
75% of Pull at Reduced Engine Speed—11th (C3) Gear										
94.66 (70.58)	6479 (28.82)	5.48 (8.82)	1504	2.7	0.451 (0.274)	15.53 (3.06)	0.015 (0.009)	188 (87)	72 (22)	28.60 (96.85)
50% of Pull at Reduced Engine Speed—11th (C3) Gear										
64.84 (48.35)	4319 (19.21)	5.63 (9.06)	1531	1.6	0.495 (0.301)	14.15 (2.79)	0.015 (0.009)	186 (86)	71 (21)	28.60 (96.85)

MAXIMUM POWER IN SELECTED GEARS

5th(B1) Gear										
99.03 (73.85)	12052 (53.61)	3.09 (4.96)	2155	12.7	0.547 (0.333)	12.81 (2.52)	0.014 (0.008)	189 (87)	47 (8)	28.61 (96.88)
6th (B2) Gear										
116.70 (87.02)	11568 (51.45)	3.79 (6.09)	2100	8.6	0.503 (0.306)	13.93 (2.74)	0.015 (0.009)	188 (87)	47 (8)	28.62 (96.92)
7th (B3) Gear										
119.63 (89.20)	9526 (42.37)	4.71 (7.58)	2100	4.7	0.490 (0.298)	14.30 (2.82)	0.014 (0.009)	188 (87)	56 (13)	28.75 (97.36)
8th (C1) Gear										
120.25 (89.67)	8602 (38.26)	5.24 (8.43)	2100	3.9	0.487 (0.296)	14.39 (2.84)	0.015 (0.009)	188 (87)	47 (8)	28.83 (97.63)
9th(B4) Gear										
118.13 (88.09)	7570 (33.67)	5.85 (9.41)	2100	3.4	0.492 (0.300)	14.23 (2.80)	0.014 (0.009)	189 (87)	59 (15)	28.72 (97.26)
10th (C2) Gear										
120.08 (89.54)	7074 (31.47)	6.37 (10.24)	2100	3.0	0.488 (0.297)	14.36 (2.83)	0.014 (0.009)	188 (87)	47 (9)	28.82 (97.60)
11th(C3) Gear										
119.41 (89.04)	5837 (25.96)	7.67 (12.34)	2100	2.4	0.488 (0.297)	14.36 (2.83)	0.015 (0.009)	188 (86)	49 (9)	28.82 (97.60)
*12th(C4) Gear										
123.43 (92.04)	4904 (21.81)	9.44 (15.19)	2100	2.0	0.498 (0.303)	14.06 (2.77)	0.015 (0.009)	189 (87)	50 (10)	28.79 (97.49)

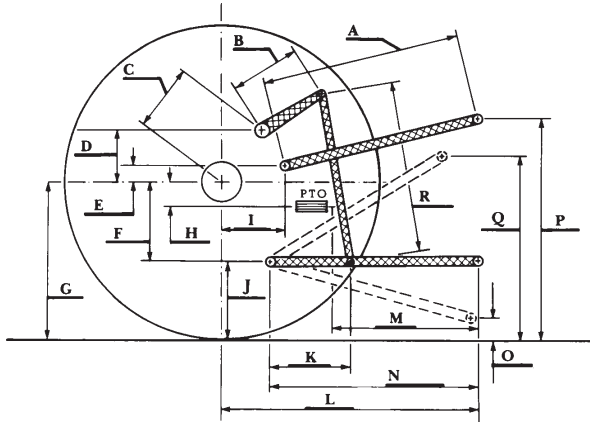
* Boosted mode

HYDRAULIC PERFORMANCE

CATEGORY: II
Quick Attach: No

Maximum force exerted through whole range: 9244 lbs (41.1 kN) 2 x 90 mm Lift cylinders

- i) Maximum observed pressure: 2953 psi (204 bar)
three outlet sets combined
- ii) Pump delivery rate at minimum pressure and rated engine speed: 30.7 GPM (116.2 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 28.8 GPM (109.1 l/min)
Delivery pressure: 2747 psi (189 bar)
Power: 46.2 HP (34.4 kW)
single outlet set
- ii) Pump delivery rate at minimum pressure and rated engine speed: 30.4 GPM (115.2 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 30.4 GPM (115.3 l/min)
Delivery pressure: 2227 psi (154 bar)
Power: 39.6 HP (29.5 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	29.4	748
B	16.1	410
C	23.8	604
D	22.6	575
E	7.9	200
F	9.8	250
G	36.6	930
H	3.1	80
I	19.1	485
J	26.8	680
K	24.8	629
L	47.8	1213
M	24.7	628
N	41.4	1053
O	9.0	230
P	53.7	1365
Q	39.0	990
R	39.6	1005



JOHN DEERE 6155R DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln