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2016

Test 2146: John Deere 6145R AutoQuad-Plus

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2146—SUMMARY 1009

JOHN DEERE 6145R AUTOQUAD-PLUS DIESEL

20 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1045 rpm)						
116.42 (86.81)	2100	7.31 (27.67)	0.440 (0.268)	15.92 (3.14)	0.18 (0.70)	Fuel used during active exhaust regeneration-0.90 gal (3.41 l) (see note 1, p.2)
Standard Power Take-off Speed (1000 rpm)						
127.15 (94.82)	2010	7.66 (29.00)	0.422 (0.257)	16.60 (3.27)	0.15 (0.55)	
Maximum Power (1 hour)						
134.25 (100.11)	1899	7.82 (29.62)	0.408 (0.248)	17.16 (3.38)	0.19 (0.71)	

VARYING POWER AND FUEL CONSUMPTION

116.42 (86.81)	2100	7.31 (27.67)	0.440 (0.268)	15.92 (3.14)	0.18 (0.70)	Air temperature
101.75 (75.87)	2153	6.76 (25.59)	0.466 (0.283)	15.05 (2.96)	0.13 (0.48)	73°F (23°C)
77.06 (57.47)	2177	5.74 (21.73)	0.522 (0.318)	13.42 (2.64)	0.09 (0.35)	Relative humidity
52.26 (38.97)	2203	4.86 (18.40)	0.652 (0.397)	10.75 (2.12)	0.04 (0.15)	16%
26.65 (19.87)	2236	3.69 (13.98)	0.971 (0.591)	7.21 (1.42)	0.05 (0.19)	Barometer
2.38 (1.78)	2249	2.73 (10.32)	8.014 (4.875)	0.87 (0.17)	0.06 (0.24)	28.68" Hg (97.11 kPa)

Maximum torque - 432 lb.-ft. (586 Nm) at 1451 rpm

Maximum torque rise - 48.4%

Torque rise at 1686 engine rpm - 41%

Power increase at 1899 engine rpm - 15.3%

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	Air dry bulb	Barom. inch Hg (kPa)	
Power at Rated Engine Speed—8th (C1) Gear										
107.46 (80.13)	7509 (33.40)	5.37 (8.63)	2103	2.0	0.478 (0.291)	14.65 (2.89)	0.012 (0.007)	189 (87)	56 (13)	28.73 (97.29)
75% of Pull at Rated Engine Speed—8th (C1) Gear										
84.40 (62.94)	5658 (25.17)	5.60 (9.00)	2177	1.3	0.535 (0.326)	13.10 (2.58)	0.012 (0.007)	190 (88)	65 (18)	28.67 (97.09)
50% of Pull at Rated Engine Speed—8th (C1) Gear										
57.20 (42.65)	3768 (16.76)	5.69 (9.16)	2202	0.7	0.664 (0.404)	10.55 (2.08)	0.008 (0.005)	188 (87)	65 (18)	28.65 (97.02)
75% of Pull at Reduced Engine Speed—11th (C3) Gear										
83.68 (62.40)	5641 (25.09)	5.56 (8.95)	1500	1.3	0.454 (0.276)	15.45 (3.04)	0.014 (0.008)	190 (88)	66 (19)	28.63 (96.95)
50% of Pull at Reduced Engine Speed—11th (C3) Gear										
57.29 (42.72)	3771 (16.77)	5.70 (9.17)	1529	0.7	0.503 (0.306)	13.93 (2.74)	0.014 (0.008)	188 (87)	66 (19)	28.64 (96.99)

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

Dates of tests: March 24 to April 6, 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:** 22.5 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.** *PE6068U019087* **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: 51.1 - 55.3 lb/h (23.2 - 25.1 kg/h) **High idle:** 2225 - 2275 rpm **Turbo boost:** nominal 10.9 - 13.8 psi (75 - 95 kPa) as measured 12.1 psi (83 kPa)

CHASSIS: Type front wheel assist **Serial No.** *1RW6145RKFA022742* **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.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(A3) Gear										
80.97 (60.38)	14746 (65.59)	2.06 (3.32)	2158	14.3	0.581 (0.353)	12.06 (2.38)	0.014 (0.008)	191 (88)	61 (16)	28.31 (95.87)
4th(A4) Gear										
98.57 (73.50)	14078 (62.62)	2.63 (4.23)	2100	8.5	0.520 (0.316)	13.48 (2.65)	0.016 (0.009)	192 (89)	61 (16)	28.32 (95.90)
5th(B1) Gear										
104.72 (78.09)	11996 (53.36)	3.28 (5.27)	2100	4.9	0.489 (0.298)	14.31 (2.82)	0.014 (0.009)	192 (89)	63 (17)	28.29 (95.80)
6th(B2) Gear										
105.68 (78.81)	9871 (43.91)	4.02 (6.46)	2100	3.1	0.486 (0.296)	14.41 (2.84)	0.013 (0.008)	191 (88)	51 (11)	28.75 (97.35)
7th(B3) Gear										
105.51 (78.68)	8166 (36.32)	4.85 (7.80)	2100	2.2	0.488 (0.297)	14.37 (2.83)	0.013 (0.008)	191 (88)	50 (10)	28.77 (97.43)
8th(C1) Gear										
107.46 (80.13)	7509 (33.40)	5.37 (8.63)	2103	2.0	0.478 (0.291)	14.65 (2.89)	0.012 (0.007)	189 (87)	56 (13)	28.73 (97.29)
9th(B4) Gear										
104.05 (77.59)	6541 (29.09)	5.97 (9.60)	2100	1.7	0.494 (0.301)	14.18 (2.79)	0.014 (0.008)	190 (88)	53 (12)	28.73 (97.29)
10th(C2) Gear										
105.55 (78.70)	6103 (27.15)	6.49 (10.44)	2100	1.5	0.491 (0.299)	14.27 (2.81)	0.013 (0.008)	190 (88)	58 (15)	28.73 (97.29)
11th(C3) Gear										
101.26 (75.51)	4870 (21.66)	7.80 (12.55)	2100	1.1	0.508 (0.309)	13.80 (2.72)	0.014 (0.009)	188 (87)	63 (17)	28.73 (97.29)
*12th(C4) Gear										
111.94 (83.47)	4384 (19.50)	9.58 (15.41)	2101	0.8	0.495 (0.301)	14.15 (2.79)	0.014 (0.008)	193 (89)	63 (17)	28.70 (97.19)

*Boosted mode

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th (B3) gear	68.2	68.1
Transport speed - no load - 18th (F2) gear		71.5
Bystander in 18th (F2) 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)
19.0 in (485 mm)
10015 lb(4543 kg)
5475 lb (2483 kg)
15490 lb (7026 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 15315 lb (6947 kg)

NOTE 1: The manufacturer declares that the
average time between active regenerations is 50
hours. A 2% power increase was observed during
the active exhaust regeneration.

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.
2146, Nebraska Summary 1009, 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 - 1900 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)
3rd(A3) Gear										
82.26 (61.34)	14723 (65.49)	2.10 (3.37)	2156	12.8	0.571 (0.348)	12.26 (2.41)	0.014 (0.008)	191 (88)	61 (16)	28.31 (95.87)
4th(A4) Gear										
98.63 (73.54)	14274 (63.49)	2.60 (4.18)	2094	9.5	0.522 (0.318)	13.41 (2.64)	0.015 (0.009)	192 (89)	61 (16)	28.32 (95.90)
5th(B1) Gear										
111.19 (82.91)	13507 (60.08)	3.09 (4.97)	2020	6.9	0.483 (0.294)	14.51 (2.86)	0.011 (0.007)	193 (89)	63 (17)	28.28 (95.77)
6th(B2) Gear										
118.87 (88.64)	12664 (56.33)	3.52 (5.66)	1900	6.0	0.462 (0.281)	15.18 (2.99)	0.014 (0.009)	192 (89)	52 (11)	28.76 (97.39)
7th(B3) Gear										
120.92 (90.17)	10452 (46.49)	4.34 (6.98)	1900	3.3	0.452 (0.275)	15.49 (3.05)	0.014 (0.008)	192 (89)	51 (10)	28.73 (97.29)
8th(C1) Gear										
120.49 (89.85)	9395 (41.79)	4.81 (7.74)	1900	2.8	0.455 (0.277)	15.39 (3.03)	0.014 (0.009)	192 (89)	58 (15)	28.73 (97.29)
9th(B4) Gear										
120.38 (89.77)	8417 (37.44)	5.36 (8.63)	1900	2.4	0.455 (0.277)	15.39 (3.03)	0.014 (0.009)	191 (88)	55 (13)	28.73 (97.29)
10th(C2) Gear										
119.81 (89.34)	7703 (34.26)	5.83 (9.38)	1900	2.1	0.458 (0.278)	15.31 (3.02)	0.014 (0.009)	193 (89)	62 (17)	28.72 (97.25)
11th(C3) Gear										
119.89 (89.40)	6403 (28.48)	7.02 (11.30)	1901	1.6	0.458 (0.279)	15.30 (3.01)	0.014 (0.009)	193 (89)	63 (17)	28.73 (97.29)
12th(C4) Gear										
117.08 (87.31)	5080 (22.60)	8.64 (13.90)	1900	1.0	0.469 (0.285)	14.96 (2.95)	0.015 (0.009)	194 (90)	64 (18)	28.70 (97.19)

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		D.E.F Consumption	Temp. °F(°C)	Barom.	
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	lb/hp.hr (kg/kW.h)	cool- ing med	Air dry bulb	inch Hg (kPa)
Power at Rated Engine Speed—7th (B3) Gear										
103.68 (77.31)	8152 (36.26)	4.77 (7.68)	2100	3.5	0.492 (0.300)	14.23 (2.80)	0.014 (0.008)	191 (88)	50 (10)	28.75 (97.36)
75% of Pull at Rated Engine Speed—7th (B3) Gear										
81.84 (61.03)	6123 (27.24)	5.01 (8.06)	2180	2.5	0.545 (0.331)	12.86 (2.53)	0.012 (0.007)	189 (87)	66 (19)	28.68 (97.12)
50% of Pull at Rated Engine Speed—7th (B3) Gear										
55.60 (41.46)	4080 (18.15)	5.11 (8.22)	2203	1.6	0.677 (0.412)	10.36 (2.04)	0.007 (0.004)	188 (87)	66 (19)	28.66 (97.05)
75% of Pull at Reduced Engine Speed—11th (C3) Gear										
81.86 (61.04)	6110 (27.18)	5.02 (8.08)	1372	2.4	0.453 (0.276)	15.46 (3.05)	0.019 (0.011)	189 (87)	65 (19)	28.63 (96.95)
50% of Pull at Reduced Engine Speed—11th (C3) Gear										
55.96 (41.73)	4044 (17.99)	5.19 (8.35)	1405	1.6	0.501 (0.304)	14.00 (2.76)	0.013 (0.008)	188 (87)	65 (19)	28.61 (96.88)

MAXIMUM POWER IN SELECTED GEARS

5th(B1) Gear										
93.91 (70.03)	11697 (52.03)	3.02 (4.85)	2116	13.2	0.545 (0.331)	12.86 (2.53)	0.014 (0.008)	191 (88)	64 (18)	28.28 (95.77)
6th(B2) Gear										
101.52 (75.70)	9897 (44.02)	3.85 (6.19)	2100	7.0	0.505 (0.307)	13.87 (2.73)	0.014 (0.008)	191 (88)	51 (11)	28.76 (97.39)
7th (B3) Gear										
103.68 (77.31)	8152 (36.26)	4.77 (7.68)	2100	3.5	0.492 (0.300)	14.23 (2.80)	0.014 (0.008)	191 (88)	50 (10)	28.75 (97.36)
8th(C1) Gear										
104.67 (78.05)	7420 (33.00)	5.29 (8.51)	2100	3.3	0.495 (0.301)	14.16 (2.79)	0.013 (0.008)	190 (88)	58 (14)	28.73 (97.29)
9th(B4) Gear										
101.66 (75.80)	6459 (28.73)	5.90 (9.50)	2100	2.7	0.502 (0.306)	13.95 (2.75)	0.014 (0.009)	191 (88)	54 (12)	28.75 (97.36)
10th(C2) Gear										
104.31 (77.78)	6096 (27.12)	6.42 (10.33)	2100	2.5	0.495 (0.301)	14.16 (2.79)	0.013 (0.008)	190 (88)	59 (15)	28.72 (97.26)
11th(C3) Gear										
101.73 (75.86)	4929 (21.92)	7.74 (12.46)	2105	2.0	0.506 (0.308)	13.85 (2.73)	0.013 (0.008)	190 (88)	62 (17)	28.71 (97.22)
*12th(C4) Gear										
110.43 (82.35)	4361 (19.40)	9.50 (15.29)	2102	1.6	0.498 (0.303)	14.07 (2.77)	0.014 (0.009)	193 (89)	64 (18)	28.69 (97.16)

*Boosted mode

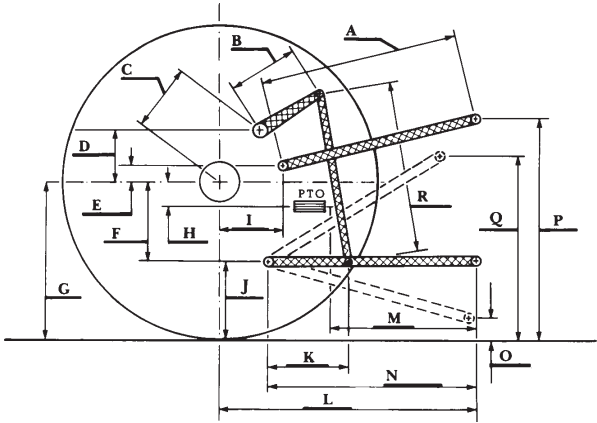
HYDRAULIC PERFORMANCE

CATEGORY: II
Quick Attach: No

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

- i) Maximum observed pressure: 2970 psi (205 bar)
three outlet sets combined
- ii) Pump delivery rate at minimum pressure and rated engine speed: 30.9 GPM (116.8 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 29.1 GPM (110.0 l/min)
Delivery pressure: 2789 psi (192 bar)
Power: 47.3 HP (35.3 kW)
single outlet set

- ii) Pump delivery rate at minimum pressure and rated engine speed: 30.6 GPM (115.8 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 30.3 GPM (114.5 l/min)
Delivery pressure: 2296 psi (158 bar)
Power: 40.5 HP (30.2 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 6145R DIESEL