

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

2012

Test 2035: John Deere 6210R

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Nebraska Tractor Test Lab, "Test 2035: John Deere 6210R" (2012). *Nebraska Tractor Tests*. 2434.
<https://digitalcommons.unl.edu/tractormuseumlit/2434>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA OECD TRACTOR TEST 2035—SUMMARY 829

JOHN DEERE 6210R AUTOQUAD-PLUS DIESEL

20 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1072 rpm)					
179.12 (133.57)	2101	10.67 (40.39)	0.420 (0.255)	16.79 (3.31)	Fuel used during active exhaust regeneration - 0.87 gal (3.30 l) (see note 1 p.2)
Standard Power Take-off Speed (1000 rpm)					
199.73 (148.94)	1960	11.55 (43.71)	0.408 (0.248)	17.30 (3.41)	
Maximum Power (1 hour)					
205.18 (153.01)	1701	11.41 (43.20)	0.392 (0.238)	17.98 (3.54)	

VARYING POWER AND FUEL CONSUMPTION

179.12 (133.57)	2101	10.67 (40.39)	0.420 (0.255)	16.79 (3.31)	Air temperature
157.15 (117.19)	2165	9.93 (37.61)	0.446 (0.271)	15.82 (3.12)	73°F (23°C)
119.40 (89.04)	2194	8.33 (31.55)	0.492 (0.299)	14.33 (2.82)	Relative humidity
80.40 (59.95)	2226	6.29 (23.82)	0.552 (0.336)	12.78 (2.52)	48%
40.60 (30.28)	2246	4.63 (17.53)	0.804 (0.489)	8.77 (1.73)	Barometer
1.90 (1.42)	2250	3.33 (12.62)	12.374 (7.527)	0.57 (0.11)	28.79" Hg (97.49 kPa)

Maximum torque - 666 lb.-ft. (903 Nm) at 1601 rpm

Maximum torque rise - 48.7%

Torque rise at 1680 engine rpm - 43%

Power increase at 1701 engine rpm - 14.5%

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—7th (B3) Gear									
170.30 (126.99)	12366 (55.01)	5.17 (8.31)	2100	2.8	0.445 (0.270)	15.86 (3.12)	192 (89)	73 (23)	28.64 (96.99)
75% of Pull at Maximum Power—7th (B3) Gear									
133.52 (99.57)	9280 (41.28)	5.40 (8.68)	2176	1.9	0.496 (0.302)	14.21 (2.80)	195 (91)	89 (32)	28.62 (96.92)
50% of Pull at Maximum Power—7th (B3) Gear									
91.16 (67.98)	6180 (27.49)	5.54 (8.91)	2214	1.1	0.569 (0.346)	12.39 (2.44)	189 (87)	90 (32)	28.63 (96.95)
75% of Pull at Reduced Engine Speed—10th (C2) Gear									
133.17 (99.30)	9285 (41.30)	5.38 (8.66)	1634	1.9	0.449 (0.273)	15.71 (3.09)	197 (92)	90 (32)	28.61 (96.88)
50% of Pull at Reduced Engine Speed—10th (C2) Gear									
91.46 (68.20)	6211 (27.63)	5.52 (8.88)	1661	1.1	0.485 (0.295)	14.53 (2.86)	188 (86)	90 (32)	28.61 (96.88)

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

Dates of tests: September 7 - 19, 2012

Manufacturer: John Deere Tractor Works, 3500 East Donald Street, 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) 0.8467 Fuel weight 7.050 lbs/gal (0.845 kg/l) Oil SAE 15W-40 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: 25.0 hours

ENGINE: Make John Deere Diesel Type six cylinder vertical with two turbochargers and air to air intercooler Serial No. *PE6068R866857* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 4.19 x 5.00" (106.5 mm x 127.0 mm) Compression ratio 17.0 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 regenerative particulate filter integrated within a vertical muffler Cooling medium temperature control 2 thermostats and 2 variable speed fans

ENGINE OPERATING PARAMETERS: Fuel rate: 72.3 - 78.5 lb/h (32.8 - 35.6 kg/h) High idle: 2225 - 2275 rpm Turbo boost: nominal 25.4 - 28.3 psi (175 - 195 kPa) as measured 26.8 psi (185 kPa)

CHASSIS: Type front wheel assist with duals Serial No. *1RW6210RECA001432* Tread width rear 60.0" (1524 mm) to 124.6" (3164 mm) front 58.8" (1494 mm) to 86.9" (2206 mm) Wheelbase 110.2" (2800 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 1.74 (2.80) second 2.09 (3.37) third 2.50 (4.03) fourth 3.07 (4.94) fifth 3.68 (5.93) sixth 4.44 (7.14) seventh 5.31 (8.55) eighth 5.86 (9.43) ninth 6.51 (10.47) tenth 7.06 (11.36) eleventh 8.45 (13.60) twelfth 10.35 (16.66) thirteenth 10.85 (17.46) fourteenth 13.07 (21.03) fifteenth 15.65 (25.18) sixteenth 19.17 (30.85) seventeenth 19.80 (31.86) eighteenth 23.84 (38.37) nineteenth 26.10 (42.00) twentieth 26.10 (42.00) electronically limited

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)	Consumption Hp.hr/gal (kW.h/l)	Temp.°F cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
4th(A4)Gear									
136.92 (102.10)	18718 (83.26)	2.74 (4.41)	2158	13.0	0.537 (0.327)	13.13 (2.59)	188 (87)	70 (21)	28.73 (97.29)
5th(B1)Gear									
161.03 (120.08)	17777 (79.08)	3.40 (5.46)	2101	7.7	0.468 (0.285)	15.05 (2.96)	192 (89)	74 (23)	28.75 (97.36)
6th(B2)Gear									
166.05 (123.82)	14580 (64.86)	4.27 (6.87)	2101	3.7	0.460 (0.280)	15.34 (3.02)	190 (88)	71 (21)	28.65 (97.02)
7th(B3) Gear									
170.30 (126.99)	12366 (55.01)	5.17 (8.31)	2100	2.8	0.445 (0.270)	15.86 (3.12)	192 (89)	73 (23)	28.64 (96.99)
8th(C1)Gear									
169.53 (126.42)	11119 (49.46)	5.72 (9.21)	2101	2.4	0.448 (0.272)	15.75 (3.10)	192 (89)	76 (24)	28.64 (96.99)
9th (B4) Gear									
167.38 (124.81)	9859 (43.85)	6.37 (10.24)	2101	2.1	0.456 (0.277)	15.47 (3.05)	190 (88)	68 (20)	28.65 (97.02)
10th(C2) Gear									
166.27 (123.98)	9018 (40.11)	6.92 (11.13)	2100	1.9	0.457 (0.278)	15.43 (3.04)	193 (89)	78 (26)	28.64 (96.99)
11th (C3)Gear									
169.02 (126.04)	7599 (33.80)	8.35 (13.43)	2101	1.5	0.444 (0.270)	15.88 (3.13)	195 (91)	80 (27)	28.65 (97.02)

reverse 1.81 (2.92), 2.18 (3.51), 2.61 (4.21), 3.20 (5.15), 3.84 (6.18), 4.63 (7.45), 5.54 (8.91), 6.11 (9.84), 6.79 (10.93), 7.36 (11.85), 8.82 (14.19), 10.81 (17.39), 11.32 (18.22), 13.63 (21.94), 17.57 (26.28), 20.00 (32.19), 20.66 (33.25), 24.87 (40.03), 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 1950 engine rpm or 1000 rpm at 1960 engine rpm **Unladen tractor mass** 18180 lb (8246 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The manufacturer declares that the average time between active regenerations is 25 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full 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. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 122°F (50°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. **2035**, Nebraska Summary 829, January 17,2013.

Roger M. Hoy
Director

M.R. Riley
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 6th (B2) gear	75.2	75.1
Transport speed- no load - 19th (E3) gear		75.3
Bystander in 19th (E3) gear		78.3

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi(kPa)	Four 480/80R46;***;12(85)	Four 480/80R46;***;12(85)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	3180 lb(1443 kg)	None
Front Tires - No., size, ply & psi(kPa)	Two 420/90R30;***;17(115)	Two 420/90R30;***;12(85)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	2030 lb (920 kg)	None
Height of Drawbar	21.0 in (510 mm)	21.5 in (545 mm)
Static Weight with operator - Rear	14885 lb (6752 kg)	12365 lb (5609 kg)
- Front	8680 lb (3937 kg)	5990 lb (2717 kg)
- Total	23565 lb(10689 kg)	18355 lb (8326 kg)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED - 1700 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)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th(A4) Gear									
137.18 (102.30)	18733 (83.33)	2.75 (4.42)	2159	13.0	0.536 (0.326)	13.15 (2.59)	188 (87)	70 (21)	28.73 (97.29)
5th(B1) Gear									
161.35 (120.32)	17919 (79.71)	3.38 (5.43)	2095	8.0	0.475 (0.289)	14.83 (2.92)	193 (89)	74 (23)	28.74 (97.33)
6th(B2) Gear									
178.59 (133.17)	17242 (76.69)	3.89 (6.25)	1969	6.5	0.460 (0.280)	15.34 (3.02)	196 (91)	75 (24)	28.75 (97.36)
7th(B3) Gear									
188.62 (140.65)	16424 (73.06)	4.31 (6.93)	1802	5.5	0.437 (0.266)	16.14 (3.18)	199 (93)	76 (24)	28.76 (97.39)
8th(C1) Gear									
191.80 (143.02)	15888 (70.67)	4.53 (7.29)	1701	4.5	0.425 (0.259)	16.57 (3.26)	199 (93)	77 (25)	28.64 (96.99)
9th(B4) Gear									
193.91 (144.60)	14313 (63.67)	5.08 (8.18)	1700	3.5	0.420 (0.255)	16.80 (3.31)	196 (91)	68 (20)	28.65 (97.02)
10th(C2) Gear									
193.18 (144.05)	13080 (58.18)	5.54 (8.92)	1700	3.1	0.422 (0.257)	16.69 (3.29)	200 (93)	80 (26)	28.64 (96.99)
11th(C3) Gear									
194.60 (145.11)	10913 (48.54)	6.69 (10.76)	1700	2.4	0.414 (0.252)	17.05 (3.36)	201 (94)	82 (28)	28.64 (96.99)
12th(C4) Gear									
192.30 (143.40)	8774 (39.03)	8.22 (13.23)	1702	1.8	0.420 (0.255)	16.80 (3.31)	202 (94)	82 (28)	28.64 (96.99)

DRAWBAR PERFORMANCE AT 1700 ENGINE RPM
BALLASTED - FRONT DRIVE ENGAGED
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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(A3) Gear									
137.69 (102.67)	23417 (104.16)	2.21 (3.55)	2161	14.3	0.529 (0.322)	13.32 (2.62)	191 (88)	60 (16)	29.14 (98.68)
4th(A4) Gear									
164.04 (122.32)	22469 (99.94)	2.74 (4.41)	2050	8.3	0.481 (0.293)	14.66 (2.89)	190 (88)	61 (16)	29.15 (98.71)
5th(B1) Gear									
182.24 (135.89)	21181 (94.22)	3.23 (5.19)	1968	6.2	0.451 (0.275)	15.62 (3.08)	191 (88)	61 (16)	29.15 (98.71)
6th(B2) Gear									
188.57 (140.62)	19618 (87.27)	3.61 (5.80)	1798	4.8	0.431 (0.262)	16.35 (3.22)	194 (90)	62 (17)	29.14 (98.68)
7th(B3) Gear									
193.88 (144.57)	17615 (78.36)	4.13 (6.64)	1700	3.7	0.418 (0.254)	16.85 (3.32)	196 (91)	63 (17)	29.14 (98.68)
8th(C1) Gear									
194.56 (145.08)	15885 (70.66)	4.59 (7.39)	1700	3.1	0.417 (0.254)	16.92 (3.33)	195 (91)	64 (18)	29.12 (98.61)
9th(B4) Gear									
194.24 (144.84)	14237 (63.33)	5.12 (8.23)	1701	2.6	0.417 (0.254)	16.90 (3.33)	195 (91)	63 (17)	29.13 (98.65)
10th(C2) Gear									
193.15 (144.03)	13016 (57.90)	5.57 (8.96)	1700	2.3	0.418 (0.254)	16.85 (3.32)	196 (91)	64 (18)	29.12 (98.61)
11th(C3) Gear									
194.65 (145.15)	10903 (48.50)	6.70 (10.77)	1700	1.9	0.417 (0.254)	16.89 (3.33)	195 (90)	65 (18)	29.12 (98.61)
12th(C4) Gear									
191.67 (142.92)	8729 (38.83)	8.23 (13.24)	1701	1.5	0.421 (0.256)	16.75 (3.30)	195 (91)	65 (18)	29.11 (98.58)

HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: No

Lift cylinders:

2 x 90 mm

Maximum force exerted through whole range:

12660 lbs (56.3 kN)

60 cc pump

i) Sustained pressure at compensator cutoff:

2892 psi (206 bar)

three outlet sets combined

ii) Pump delivery rate at minimum pressure and rated engine speed:

42.8 GPM (162.1 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

42.4 GPM (160.6 l/min)

Delivery pressure:

2592 psi (179 bar)

Power:

64.2 HP (47.9 kW)

single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:

32.8 GPM (124.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

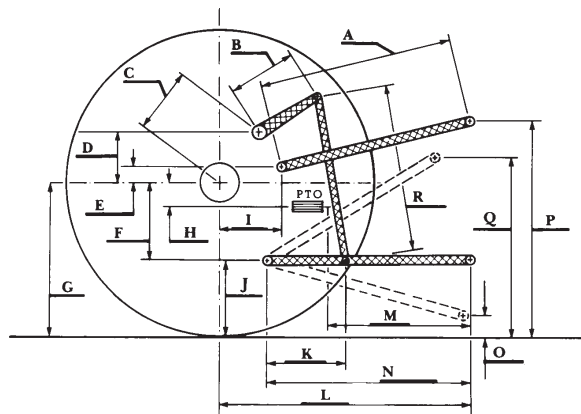
30.3 GPM (114.8 l/min)

Delivery pressure:

2290 psi (158 bar)

Power:

40.5 HP (30.2 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	29.3	745
B	16.1	410
C	24.6	624
D	23.8	605
E	7.5	190
F	10.8	275
G	38.4	975
H	4.1	105
I	21.8	554
J	27.6	700
K	26.2	666
L	51.3	1303
M	26.9	683
N	43.6	1108
O	9.0	230
P	54.5	1385
Q	40.1	1018
R	43.9	1115



JOHN DEERE 6210R DIESEL