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2018

Test 2195: John Deere 5115R OC

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2195—SUMMARY 1143

JOHN DEERE 5115R DIESEL

16 SPEED

Open center hydraulic system

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—566 rpm)						
101.43 (75.64)	2201	5.99 (22.68)	0.415 (0.252)	16.93 (3.34)	0.27 (1.02)	Fuel used during active exhaust regeneration-0.42 gal (1.60 l) (see note 1, p.2)
Standard Power Take-off Speed (540 rpm)						
108.74 (81.08)	2100	6.17 (23.35)	0.398 (0.242)	17.63 (3.47)	0.29 (1.09)	
Maximum Power (1 hour)						
113.45 (84.60)	1851	6.05 (22.91)	0.375 (0.228)	18.74 (3.69)	0.27 (1.01)	

VARYING POWER AND FUEL CONSUMPTION

101.43 (75.64)	2201	5.99 (22.68)	0.415 (0.252)	16.93 (3.34)	0.27 (1.02)	Air temperature
88.86 (66.26)	2268	5.51 (20.86)	0.436 (0.265)	16.12 (3.18)	0.22 (0.83)	73°F (23°C)
67.05 (50.00)	2283	4.50 (17.05)	0.472 (0.287)	14.88 (2.93)	0.15 (0.59)	Relative humidity
44.93 (33.51)	2297	3.60 (13.62)	0.562 (0.342)	12.49 (2.46)	0.09 (0.34)	19%
22.65 (16.89)	2313	2.61 (9.88)	0.809 (0.492)	8.68 (1.71)	0.06 (0.22)	Barometer
0.66 (0.49)	2326	1.83 (6.92)	19.537 (11.884)	0.36 (0.07)	0.02 (0.08)	28.64" Hg (96.98 kPa)

Maximum torque - 347 lb.-ft. (471 Nm) at 1502 rpm
 Maximum torque rise - 43.5%
 Torque rise at 1760 engine rpm - 37%
 Power increase at 1851 engine rpm - 11.9%

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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing dry med bulb	Air dry bulb	Barom. inch Hg (kPa)
Power at Rated Engine Speed—8th(B4) Gear										
91.44 (68.18)	6154 (27.37)	5.57 (8.96)	2199	5.0	0.463 (0.281)	15.18 (2.99)	0.023 (0.014)	195 (91)	51 (10)	28.95 (98.04)
75% of Pull at Rated Engine Speed—8th(B4) Gear										
71.81 (53.55)	4613 (20.52)	5.84 (9.40)	2273	3.7	0.497 (0.302)	14.14 (2.79)	0.023 (0.014)	194 (90)	57 (14)	28.54 (96.65)
50% of Pull at Rated Engine Speed—8th(B4) Gear										
49.09 (36.61)	3090 (13.74)	5.96 (9.59)	2290	2.4	0.582 (0.354)	12.06 (2.38)	0.021 (0.013)	192 (89)	58 (14)	28.53 (96.61)
75% of Pull at Reduced Engine Speed—10th(C2) Gear										
71.84 (53.57)	4589 (20.41)	5.87 (9.45)	1795	3.8	0.423 (0.258)	16.59 (3.27)	0.025 (0.015)	191 (88)	61 (16)	28.52 (96.58)
50% of Pull at Reduced Engine Speed—10th(C2) Gear										
48.82 (36.41)	3072 (13.66)	5.96 (9.59)	1799	2.4	0.465 (0.283)	15.09 (2.97)	0.022 (0.013)	188 (86)	63 (17)	28.51 (96.55)

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

Dates of tests: April 3 - 24, 2018

Manufacturer: John Deere Commercial Products Inc., 700 Horizon South Parkway, Grovetown Ga. USA 30813

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8434 **Fuel weight** 7.023 lbs/gal (0.842 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 10W30 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** 18.0 hours.

ENGINE: Make John Deere **Diesel Type** four cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *PE4045U058055* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.19" x 5.00" (106.5 mm x 127.0 mm) **Compression ratio** 16.9 to 1 **Displacement** 276 cu in (4525 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 **Fuel cooler** radiator for return fuel **Exhaust** regenerative aftertreatment system consisting of DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) within an underhood muffler and vertical exhaust **Cooling medium temperature control** two thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 39.9 - 43.1 lb/h (18.1 - 19.5 kg/h) **High idle:** 2300 - 2350 rpm **Turbo boost:** nominal 16.7 - 19.6 psi (115 - 135 kPa) as measured 18.9 psi (130 kPa)

CHASSIS: Type front wheel assist **Serial No.** *1LV5115RHHH400221* **Tread width** rear 60.0" (1525 mm) to 71.6" (1819 mm) front 58.6" (1488 mm) to 81.5" (2070 mm) **Wheelbase** 88.6" (2250 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 1.35 (2.17) second 1.67 (2.68) third 2.07 (3.33) fourth 2.54 (4.08) fifth 3.13 (5.03) sixth 3.86 (6.21) seventh 4.78 (7.70) eighth 5.87 (9.45) ninth 6.05 (9.74) tenth 7.48 (12.03) eleventh 9.26 (14.90) twelfth 11.36 (18.28) thirteenth 13.55 (21.81) fourteenth 16.73 (26.93) fifteenth 20.73 (33.36) sixteenth 24.86 (40.00) electronically limited

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED-2200 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)
5th(B1) Gear										
71.32 (53.18)	9617 (42.78)	2.79 (4.48)	2268	13.8	0.542 (0.330)	12.96 (2.55)	0.024 (0.015)	197 (91)	51 (11)	28.58 (96.77)
6th(B2) Gear										
84.74 (63.19)	9220 (41.01)	3.45 (5.55)	2213	11.3	0.499 (0.304)	14.06 (2.77)	NA (NA)	196 (91)	52 (11)	28.56 (96.72)
7th(B3) Gear										
88.46 (65.96)	7462 (33.19)	4.45 (7.15)	2200	7.0	0.479 (0.292)	14.65 (2.89)	0.021 (0.013)	196 (91)	53 (12)	28.92 (97.93)
8th(B4) Gear										
91.44 (68.18)	6154 (27.37)	5.57 (8.96)	2199	5.0	0.463 (0.281)	15.18 (2.99)	0.023 (0.014)	195 (91)	51 (10)	28.95 (98.04)
9th(C1) Gear										
91.27 (68.06)	5947 (26.45)	5.76 (9.26)	2200	4.8	0.464 (0.282)	15.14 (2.98)	0.019 (0.012)	195 (90)	54 (12)	28.92 (97.92)
10th(C2) Gear										
91.53 (68.25)	4774 (21.23)	7.19 (11.57)	2200	3.7	0.462 (0.281)	15.21 (3.00)	0.027 (0.016)	196 (91)	56 (13)	28.90 (97.87)
11th(C3) Gear										
91.43 (68.18)	3815 (16.97)	8.99 (14.47)	2200	2.8	0.462 (0.281)	15.19 (2.99)	0.022 (0.014)	197 (91)	57 (14)	28.89 (97.83)

UNBALLASTED - FRONT DRIVE ENGAGED-1850 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)
5th(B1) Gear										
71.35 (53.21)	9620 (42.79)	2.79 (4.48)	2269	13.8	0.541 (0.329)	12.97 (2.56)	0.024 (0.014)	196 (91)	51 (11)	28.58 (96.77)
6th(B2) Gear										
85.00 (63.38)	9260 (41.19)	3.45 (5.54)	2214	11.4	0.499 (0.304)	14.06 (2.77)	NA (NA)	196 (91)	52 (11)	28.56 (96.72)
7th(B3) Gear										
93.93 (70.04)	8902 (39.60)	3.96 (6.37)	2030	10.3	0.463 (0.282)	15.16 (2.99)	0.025 (0.015)	197 (91)	53 (12)	28.56 (96.72)
8th(B4) Gear										
98.66 (73.57)	8180 (36.38)	4.53 (7.28)	1850	8.6	0.436 (0.265)	16.11 (3.17)	0.020 (0.012)	195 (90)	52 (11)	28.94 (97.99)
9th(C1) Gear										
98.75 (73.64)	7885 (35.07)	4.70 (7.56)	1850	8.0	0.433 (0.263)	16.22 (3.19)	0.020 (0.012)	196 (91)	55 (13)	28.91 (97.90)
10th(C2) Gear										
101.02 (75.33)	6382 (28.39)	5.94 (9.56)	1850	5.6	0.421 (0.256)	16.67 (3.28)	0.022 (0.013)	196 (91)	56 (13)	28.90 (97.87)
11th(C3) Gear										
101.89 (75.98)	5116 (22.75)	7.47 (12.02)	1851	4.0	0.421 (0.256)	16.70 (3.29)	0.021 (0.013)	196 (91)	58 (15)	28.88 (97.80)
12th(C4) Gear										
102.36 (76.33)	4156 (18.49)	9.24 (14.87)	1849	3.1	0.420 (0.255)	16.74 (3.30)	0.021 (0.013)	197 (91)	59 (15)	28.88 (97.80)

Horizontal distances of drawbar hitch point behind rear wheel axis - 32.5"(825 mm), 34.4" (875 mm)

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 460/85R30;**,12 (85)
 Two 320/85R24;***;14 (95)
 17.0 in (430 mm)
 6105 lb (2769 kg)
 3730 lb (1692 kg)
 9835 lb (4461 kg)

reverse 1.44 (2.32), 1.78 (2.87), 2.21 (3.55), 2.71 (4.36), 3.34 (5.37), 4.12 (6.63), 5.11 (8.22), 6.26 (10.08), 6.46 (10.39), 7.99 (12.84), 9.88 (15.90), 12.12 (19.51), 14.46 (23.27), 17.86 (28.74), 18.64 (30.00), 18.64 (30.00) electronically limited **Clutch** wet disc hydraulically actuated by foot pedal **Brakes** wet disc hydraulically actuated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2100 engine rpm, Economy PTO 540 rpm at 1645 engine rpm, 1000 rpm at 2103 engine rpm **Unladen tractor mass** 9660 lb (4381 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The manufacturer declares that the average time between active regenerations is 150 hours. A 9% power decrease was observed during the active exhaust regeneration.

NOTE 2: The performance data on this report applies to tractors with an open center hydraulic system.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor exceeded the 73 dB(A) sound power claim, with front drive engaged, by 54.9% (1.9 dB(A)) and with front drive disengaged by 12.2% (0.5 dB(A)). 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. **2195**, Nebraska Summary 1143, June 15, 2018.

Roger M. Hoy
 Director

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

Shiftable PTO Performance

Economy mode 540 PTO rpm @ 1645 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption	
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)
107.56 (80.21)	1645	5.63 (21.31)	0.368 (0.224)	19.10 (3.76)	0.28 (1.05)
80.53 (60.05)	1642	4.22 (15.98)	0.368 (0.224)	19.07 (3.76)	0.20 (0.76)
53.81 (40.12)	1644	3.06 (11.57)	0.399 (0.243)	17.60 (3.47)	0.14 (0.52)
26.90 (20.06)	1640	1.95 (7.39)	0.510 (0.310)	13.77 (2.71)	0.04 (0.15)
0.60 (0.45)	1642	1.09 (4.11)	12.664 (7.703)	0.55 (0.11)	0.03 (0.12)

Normal mode 540 PTO rpm @ 2100 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption	
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)
107.60 (80.24)	2107	6.10 (23.08)	0.398 (0.242)	17.65 (3.48)	0.28 (1.06)
80.47 (60.01)	2096	4.79 (18.13)	0.418 (0.254)	16.80 (3.31)	0.21 (0.78)
53.81 (40.13)	2099	3.61 (13.67)	0.471 (0.287)	14.90 (2.93)	0.12 (0.45)
26.85 (20.02)	2100	2.47 (9.35)	0.646 (0.393)	10.87 (2.14)	0.03 (0.13)
0.61 (0.46)	2101	1.57 (5.94)	17.934 (10.909)	0.39 (0.08)	0.01 (0.02)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th(B3) gear	74.9	73.5
Transport in 16th (D4) gear		77.7
Bystander in 16th (D4) gear		84.0

HYDRAULIC PERFORMANCE

CATEGORY: II

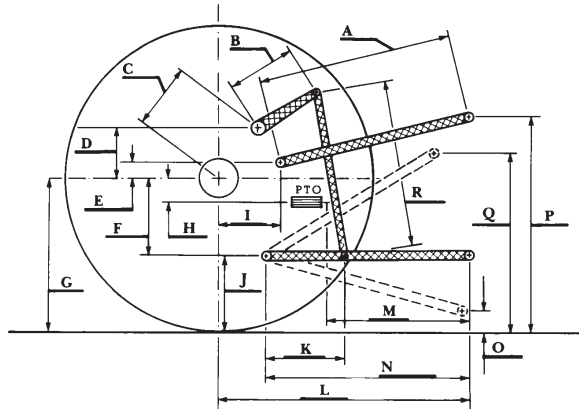
Quick Attach: None

OECD Static test

	lift cylinders	
Maximum force exerted through whole range:	7720 lbs (34.3 kN) (2 x 75 mm)	8678 lbs (38.6 kN) (2 x 80 mm)
	single outlet set	two outlet sets combined
i) Sustained pressure of the open relief valve:	2964 psi (204 bar)	2965 psi (204 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	19.4 GPM (73.4 l/min)	19.5 GPM (73.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	19.1 GPM (72.3 l/min)	19.5 GPM (73.8 l/min)
Delivery pressure:	2424 psi (167 bar)	2533 psi (175 bar)
Power:	27.0 HP (20.2 kW)	28.8 HP (21.5 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	26.4	670
B	14.1	358
C	17.7	449
D	15.0	380
E	14.4	365
F	8.8	223
G	31.3	795
H	0.2	4
I	14.4	365
J	22.5	572
K	17.5	444
L	41.7	1060
M	23.0	585
N	33.1	840
O	9.1	230
P	46.5	1182
Q	38.4	975
R	32.3	820



RECOMMENDED CITATION FORMAT:

NTTL.(2018). Nebraska OECD tractor test 2195 for John Deere 5115R OC Diesel.

Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>



JOHN DEERE 5115R DIESEL

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