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2018

Test 2194: John Deere 5100R PFC

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 2194

JOHN DEERE 5100R DIESEL

16 SPEED

Pressure flow hydraulic system

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft 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)						
92.95 (69.32)	2201	5.50 (20.82)	0.416 (0.253)	16.90 (3.33)	0.23 (0.86)	Fuel used during active exhaust regeneration-0.47 gal (1.79 l) (see note 1, p.2)
Standard Power Take-off Speed(540rpm)						
97.92 (73.02)	2100	5.55 (21.00)	0.398 (0.242)	17.65 (3.48)	0.25 (0.93)	
Maximum Power (1 hour)						
103.73 (77.35)	1902	5.60 (21.19)	0.379 (0.231)	18.53 (3.65)	0.28 (1.06)	

VARYING POWER AND FUEL CONSUMPTION

92.95 (69.32)	2201	5.50 (20.82)	0.416 (0.253)	16.90 (3.33)	0.23 (0.86)	Air temperature
81.38 (60.69)	2267	5.06 (19.17)	0.437 (0.266)	16.07 (3.17)	0.19 (0.71)	73°F(23°C)
61.42 (45.80)	2282	4.20 (15.92)	0.481 (0.292)	14.61 (2.88)	0.13 (0.49)	Relative humidity
41.14 (30.67)	2295	3.36 (12.73)	0.574 (0.349)	12.24 (2.41)	0.07 (0.26)	20%
20.76 (15.48)	2311	2.53 (9.59)	0.857 (0.521)	8.20 (1.61)	0.07 (0.27)	Barometer
0.73 (0.54)	2325	1.82 (6.90)	17.619 (10.717)	0.40 (0.08)	0.06 (0.24)	29.17" Hg(98.79 kPa)

Maximum torque - 310 lb.-ft. (420 Nm) at 1501 rpm
 Maximum torque rise - 39.8%
 Torque rise at 1761 engine rpm - 34%
 Power increase at 1902 engine rpm - 11.6%

TRACTOR SOUND LEVEL WITH CAB

	Engaged dB(A)	Disengaged dB(A)
At no load in 7th (B3) gear	73.8	73.8
Transport in 16th (D4) gear		76.7
Bystander in 16th (D4) gear		83.0

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 16.9R30; **, 12 (85)
 Two 11.2R24; **, 18 (125)
 16.0 in (405 mm)
 6045 lb (2742 kg)
 3690 lb (1674 kg)
 9735 lb (4416 kg)

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

Dates of tests: April 16 - 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** 9.0 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.** *PE4045U056990* **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) with an underhood muffler and vertical exhaust **Cooling medium temperature control** two thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 36.2 - 39.2 lb/h (16.4 - 17.8 kg/h) **High idle:** 2300 - 2350 rpm **Turbo boost:** nominal 18.1 - 21.0 psi (125 - 145 kPa) as measured 19.6 psi (135 kPa)

CHASSIS: Type front wheel assist **Serial No.** *1LV5100RCHH400188* **Tread width** rear 58.0" (1473 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 1.29 (2.07) second 1.59 (2.56) third 1.97 (3.17) fourth 2.41 (3.88) fifth 2.98 (4.79) sixth 3.67 (5.91) seventh 4.55 (7.33) eighth 5.59 (8.99) ninth 5.76 (9.27) tenth 7.11 (11.45) eleventh 8.81 (14.18) twelfth 10.81 (17.40) thirteenth 12.89 (20.75) fourteenth 15.93 (25.63) fifteenth 19.73 (31.75) sixteenth 24.21 (38.96)

HYDRAULIC PERFORMANCE

CATEGORY: II

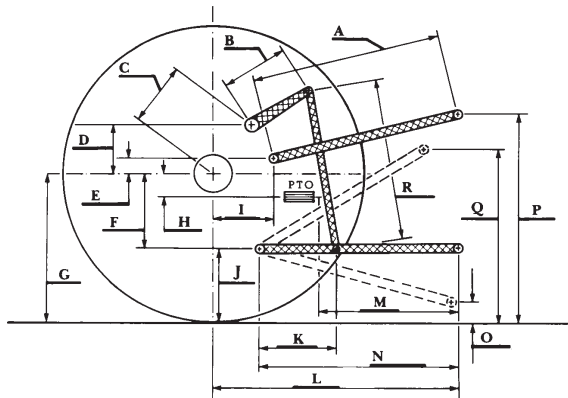
Quick Attach: None

OECD Static test

	<u>lift cylinders</u>
Maximum force exerted through whole range:	7720 lbs (34.3 kN) (2 x 75 mm) 8678 lbs (38.6 kN) (2 x 80 mm)
	<u>single outlet set</u> <u>two outlet sets combined</u>
i) Sustained pressure of the open relief valve:	2874 psi (198 bar) 2887 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	28.4 GPM (107.6 l/min) 31.1 GPM (117.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	27.1 GPM (102.7 l/min) 30.2 GPM (114.2 l/min)
Delivery pressure:	2374 psi (164 bar) 2606 psi (180 bar)
Power:	37.6 HP (28.0 kW) 45.9 HP (34.2 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 tractor test 2194 for John Deere 5100R PFC Diesel. Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>

reverse 1.37 (2.21), 1.70 (2.73), 2.10 (3.38), 2.58 (4.15), 3.18 (5.11), 3.92 (6.31), 4.86 (7.82), 5.96 (9.59), 6.15 (9.89), 7.59 (12.22), 9.40 (15.13), 11.54 (18.57), 13.76 (22.15), 17.00 (27.35), 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 **Unladen tractor mass** 9560 lb (4336 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The manufacturer declares that the average time between active regenerations is 150 hours. A 6% power decrease was observed during the active exhaust regeneration.

NOTE 2: The performance data on this report applies to tractors with a Pressure-and-Flow Compensated(PFC) hydraulic system.

REMARKS: This tractor exceeded the 73 dB(A) sound power claim, with front drive engaged, by 20.2% (0.8 dB(A)) and with front drive disengaged by 20.2% (0.8 dB(A)). All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2194**, 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)
95.64 (71.32)	1644	4.98 (18.84)	0.365 (0.222)	19.22 (3.79)	0.27 (1.03)
71.66 (53.44)	1643	3.84 (14.53)	0.376 (0.229)	18.67 (3.68)	0.19 (0.74)
47.77 (35.62)	1644	2.80 (10.59)	0.411 (0.250)	17.07 (3.36)	0.11 (0.41)
23.95 (17.86)	1653	1.90 (7.19)	0.557 (0.339)	12.61 (2.48)	0.02 (0.09)
0.57 (0.42)	1641	1.06 (4.01)	13.046 (7.935)	0.54 (0.11)	0.03 (0.13)

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)
95.64 (71.32)	2097	5.40 (20.43)	0.396 (0.241)	17.72 (3.49)	0.23 (0.88)
71.74 (53.50)	2102	4.29 (16.25)	0.420 (0.256)	16.71 (3.29)	0.17 (0.64)
47.78 (35.63)	2100	3.39 (12.81)	0.498 (0.303)	14.11 (2.78)	0.08 (0.30)
23.80 (17.75)	2101	2.30 (8.71)	0.679 (0.413)	10.34 (2.04)	0.04 (0.15)
0.66 (0.49)	2098	1.55 (5.86)	16.453 (10.008)	0.43 (0.08)	0.06 (0.22)



JOHN DEERE 5100R DIESEL

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