

NEBRASKA OECD TRACTOR TEST 2117-SUMMARY 977

JOHN DEERE 5115M DIESEL

16 SPEED

Chassis Serial numbers 70000 and higher

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.h/l)	Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—566 rpm)						
100.41 (74.88)	2201	6.01 (22.75)	0.421 (0.256)	16.71 (3.29)	0.27 (1.04)	Fuel used during active exhaust regeneration-0.56 gal (2.12 l) (see note 1, p.2)
Standard Power Take-off Speed (540 rpm)						
102.25 (76.25)	2100	5.92 (22.39)	0.407 (0.247)	17.29 (3.41)	0.28 (1.07)	
Maximum Power (1 hour)						
106.07 (79.10)	1902	5.83 (22.08)	0.387 (0.235)	18.18 (3.58)	0.30 (1.12)	

VARYING POWER AND FUEL CONSUMPTION

100.41 (74.88)	2201	6.01 (22.75)	0.421 (0.256)	16.71 (3.29)	0.27 (1.04)	Air temperature
87.18 (65.01)	2246	5.46 (20.67)	0.441 (0.268)	15.97 (3.15)	0.25 (0.94)	73°F (23°C)
66.25 (49.41)	2277	4.48 (16.98)	0.476 (0.290)	14.77 (2.91)	0.22 (0.84)	Relative humidity
44.52 (33.20)	2300	3.57 (13.52)	0.564 (0.343)	12.46 (2.45)	0.19 (0.70)	33%
22.27 (16.61)	2300	2.59 (9.82)	0.819 (0.498)	8.59 (1.69)	0.16 (0.62)	Barometer
0.78 (0.58)	2300	1.93 (7.31)	17.347 (10.552)	0.41 (0.08)	0.17 (0.66)	28.47" Hg (96.41 kPa)

Maximum torque - 321 lb.-ft. (435 Nm) at 1447 rpm
 Maximum torque rise - 33.9%
 Torque rise at 1758 engine rpm - 29%
 Power increase at 1902 engine rpm - 5.6%

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	Air dry bulb	Barom. inch Hg (kPa)
Power at Rated Engine Speed—8th(B4) Gear										
92.58 (69.03)	6743 (29.99)	5.15 (8.29)	2200	4.1	0.459 (0.279)	15.32 (3.02)	0.021 (0.013)	198 (92)	58 (14)	28.97 (98.10)
75% of Pull at Rated Engine Speed—8th(B4) Gear										
72.71 (54.22)	5090 (22.64)	5.36 (8.63)	2259	2.8	0.491 (0.299)	14.32 (2.82)	0.019 (0.011)	196 (91)	61 (16)	28.97 (98.10)
50% of Pull at Rated Engine Speed—8th(B4) Gear										
49.98 (37.27)	3411 (15.17)	5.50 (8.84)	2292	1.7	0.563 (0.343)	12.49 (2.46)	0.017 (0.010)	195 (90)	63 (17)	28.98 (98.14)
75% of Pull at Reduced Engine Speed—9th(C1) Gear										
72.83 (54.31)	5101 (22.69)	5.35 (8.61)	1705	2.8	0.414 (0.252)	17.00 (3.35)	0.029 (0.018)	193 (89)	63 (17)	28.97 (98.10)
50% of Pull at Reduced Engine Speed—9th(C1) Gear										
49.87 (37.18)	3411 (15.17)	5.48 (8.82)	1727	1.7	0.449 (0.273)	15.66 (3.08)	0.025 (0.015)	191 (88)	64 (18)	28.97 (98.10)

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

Dates of tests: April 9 - 15, 2015

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)** 0.8447 **Fuel weight** 7.033 lbs/gal (0.843 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** SAE 80W90 **API GL-5 Total time engine was operated** 17.0 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.** *PE4045U003913* **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: 40.3 - 43.7 lb/h (18.3 - 19.8 kg/h) **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 18.8 - 21.8 psi (130 - 150 kPa) as measured 20.1 psi (139 kPa)

CHASSIS: Type front wheel assist **Serial No.** *1LV5115MCFJ741213* **Tread width** rear 59.4" (1508 mm) to 71.4" (1813 mm) front 52.8" (1342 mm) to 77.0" (1957 mm) **Wheelbase** 92.5" (2350 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 1.21 (1.95) second 1.55 (2.49) third 1.87 (3.01) fourth 2.23 (3.60) fifth 2.92 (4.70) sixth 3.73 (6.00) seventh 4.52 (7.28) eighth 5.41 (8.70) ninth 7.16 (11.52) tenth 9.14 (14.71) eleventh 11.07 (17.81) twelfth 11.08 (17.83) thirteenth 13.24 (21.31) fourteenth 14.13 (22.74) fifteenth 17.12 (27.55) sixteenth 20.47 (32.94)

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)
6th(B2) Gear										
83.22 (62.05)	9535 (42.41)	3.28 (5.27)	2224	12.6	0.508 (0.309)	13.84 (2.73)	0.022 (0.013)	199 (93)	64 (18)	28.98 (98.14)
7th(B3) Gear										
92.55 (69.01)	8209 (36.52)	4.23 (6.81)	2200	5.9	0.459 (0.279)	15.34 (3.02)	0.019 (0.012)	196 (91)	52 (11)	28.96 (98.07)
8th(B4) Gear										
92.58 (69.03)	6743 (29.99)	5.15 (8.29)	2200	4.1	0.459 (0.279)	15.32 (3.02)	0.021 (0.013)	198 (92)	58 (14)	28.97 (98.10)
9th(C1) Gear										
94.72 (70.63)	5141 (22.87)	6.91 (11.12)	2200	2.8	0.447 (0.272)	15.72 (3.10)	0.020 (0.012)	196 (91)	54 (12)	28.96 (98.07)
10th(C2) Gear										
94.31 (70.32)	3976 (17.69)	8.89 (14.31)	2200	2.0	0.450 (0.274)	15.62 (3.08)	0.021 (0.013)	197 (92)	56 (13)	28.96 (98.07)

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)
6th(B2) Gear										
83.41 (62.20)	9513 (42.32)	3.29 (5.29)	2226	12.3	0.508 (0.309)	13.85 (2.73)	0.022 (0.013)	198 (92)	64 (18)	28.97 (98.10)
7th(B3) Gear										
92.78 (69.19)	8838 (39.31)	3.94 (6.34)	2073	7.0	0.450 (0.274)	15.63 (3.08)	0.022 (0.014)	197 (92)	59 (15)	28.97 (98.10)
8th(B4) Gear										
95.69 (71.36)	8218 (36.56)	4.37 (7.03)	1900	5.9	0.427 (0.260)	16.47 (3.24)	0.024 (0.015)	197 (91)	59 (15)	28.97 (98.10)
9th(C1) Gear										
98.81 (73.68)	6262 (27.85)	5.92 (9.53)	1900	3.6	0.413 (0.251)	17.03 (3.36)	0.024 (0.014)	196 (91)	55 (13)	28.96 (98.07)
10th(C2) Gear										
98.22 (73.24)	4822 (21.45)	7.64 (12.30)	1900	2.5	0.417 (0.254)	16.87 (3.32)	0.025 (0.015)	197 (92)	56 (14)	28.96 (98.07)
11th(C3) Gear										
97.48 (72.69)	3926 (17.46)	9.31 (14.98)	1900	1.9	0.419 (0.255)	16.80 (3.31)	0.025 (0.015)	196 (91)	56 (14)	28.96 (98.07)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th(B3) gear	74.3	74.3
Transport in 16th (D4) gear		78.0
Bystander in 16th (D4) gear		81.2

Horizontal distances of drawbar hitch point behind rear wheel axis - 28.5"(725 mm), 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 18.4R30; **; 12 (85)
 Two 12.4R24; ***; 14 (95)
 16.0 in (405 mm)
 5755 lb (2610 kg)
 3540 lb (1606 kg)
 9295 lb (4216 kg)

reverse 1.34 (2.15), 1.70 (2.74), 2.06 (3.32), 2.47 (3.97), 3.22 (5.18), 4.11 (6.62), 4.98 (8.02), 5.95 (9.58), 7.89 (12.70), 10.07 (16.21), 12.19 (19.62), 12.21 (19.65), 14.60 (23.49), 15.57 (25.06), 18.87 (30.37), 22.56 (36.30) **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** 9120 lb (4137 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The manufacturer declares that the average time between active regenerations is 100 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full load, under steady state conditions. A 3% power loss was observed during the active exhaust regeneration.

NOTE 2: The performance data on this report applies to tractors with chassis serial numbers that end with 700000 and higher.

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. **2117**, Nebraska Summary 977, May 13, 2015 .

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 Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)
100.20 (74.72)	1644	5.31 (20.11)	0.373 (0.227)	18.86 (3.72)	0.33 (1.24)
75.21 (56.09)	1648	4.08 (15.44)	0.381 (0.232)	18.44 (3.63)	0.29 (1.08)
50.30 (37.51)	1648	2.95 (11.15)	0.412 (0.250)	17.08 (3.36)	0.21 (0.79)
25.10 (18.72)	1647	1.86 (7.06)	0.522 (0.318)	13.47 (2.65)	0.19 (0.70)
0.69 (0.51)	1646	1.15 (4.36)	11.769 (7.159)	0.60 (0.12)	0.17 (0.66)

Normal mode 540 PTO rpm @ 2100 engine rpm

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)
100.52 (74.96)	2103	5.80 (21.96)	0.406 (0.247)	17.33 (3.41)	0.27 (1.03)
75.42 (56.24)	2106	4.60 (17.41)	0.429 (0.261)	16.39 (3.23)	0.23 (0.88)
50.27 (37.49)	2103	3.46 (13.12)	0.485 (0.295)	14.51 (2.86)	0.18 (0.69)
25.11 (18.72)	2103	2.43 (9.20)	0.681 (0.414)	10.33 (2.04)	0.15 (0.58)
0.62 (0.46)	2101	1.63 (6.16)	18.425 (11.207)	0.38 (0.08)	0.18 (0.67)

HYDRAULIC PERFORMANCE

CATEGORY: II

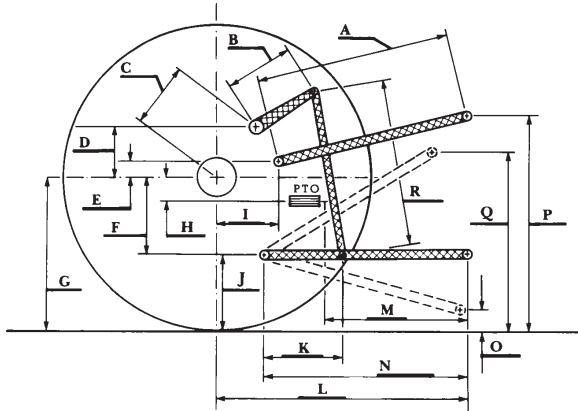
Quick Attach: None

OECD Static test

		lift cylinders
Maximum force exerted through whole range:	6390 lbs	(28.4 kN) (2 x 63 mm)
i) Sustained pressure of the open relief valve:	2953 psi	(204 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	19.7 GPM	(74.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	18.0 GPM	(68.1 l/min)
Delivery pressure:	2404 psi	(166 bar)
Power:	25.2 HP	(18.8 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	25.2	640
B	12.6	320
C	17.7	449
D	15.0	380
E	14.8	375
F	8.8	223
G	29.3	745
H	0.2	4
I	15.4	390
J	20.5	522
K	17.5	444
L	41.7	1060
M	23.0	585
N	33.1	840
O	9.1	230
P	44.6	1132
Q	36.2	919
R	27.8	705



RECOMMENDED CITATION FORMAT:

NTTL.(2018). Nebraska Tractor test 2117 for John Deere 5115M Diesel.

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



JOHN DEERE 5115M DIESEL

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