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2012

Test 2037: John Deere 5100M

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 2037

JOHN DEERE 5100M DIESEL

16 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—565 rpm)					
84.03 (62.66)	2198	5.32 (20.14)	0.446 (0.271)	15.80 (3.11)	Fuel used during active exhaust regeneration - 0.74 gal (2.79 l) (see Note 1 p.2)
Standard Power Take-off Speed (540 rpm)					
88.68 (66.13)	2100	5.37 (20.13)	0.427 (0.260)	16.50 (3.25)	
Maximum Power (1 hour)					
89.32 (66.60)	1902	5.15 (19.48)	0.406 (0.247)	17.36 (3.42)	

VARYING POWER AND FUEL CONSUMPTION

84.03 (62.66)	2198	5.32 (20.14)	0.446 (0.271)	15.80 (3.11)	Air temperature
73.25 (54.62)	2260	4.90 (18.56)	0.472 (0.287)	14.94 (2.94)	73°F (23°C)
55.45 (41.35)	2278	4.11 (15.55)	0.522 (0.318)	13.50 (2.66)	Relative humidity
37.35 (27.85)	2300	3.26 (12.35)	0.616 (0.375)	11.45 (2.26)	43%
18.60 (13.87)	2300	2.44 (9.23)	0.924 (0.562)	7.63 (1.50)	Barometer
0.40 (0.30)	2300	1.84 (6.96)	32.400 (19.708)	0.22 (0.04)	29.14"Hg (98.68 kPa)

Maximum torque - 278 lb.-ft. (376 Nm) at 1602 rpm
Maximum torque rise - 38.4%
Torque rise at 1762 rpm - 31%
Power increase at 1902 rpm - 6.3%

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th(B3) gear	76.1	76.2
Transport in 16th (D4) gear		76.4
Bystander in 16th (D4) gear		78.9

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; **, 12 (85)
17.0 in (430 mm)
5390 lb (2445 kg)
3410 lb (1547 kg)
8800 lb (3992 kg)

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

Dates of tests: September 13 - 21, 2012

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

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 15W40
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 10.5 hours

ENGINE: Make John Deere Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler
Serial No. *PE4045R011515*
Crankshaft lengthwise
Rated engine speed 2200
Bore and stroke 4.19" x 5.00" (106.5 mm x 127.0 mm)
Compression ratio 16.8 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 particulate filter integrated within a vertical muffler
Cooling medium temperature control one thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: **Fuel rate:** 37.0 - 40.8 lb/h (16.8 - 18.5 kg/h)
High idle: 2275 - 2325 rpm
Turbo boost: nominal 14.5 - 17.4 psi (100 - 120 kPa) as measured 16.1 psi (111 kPa)

CHASSIS: **Type** front wheel assist
Serial No. *1LV5100MACJ440187*
Tread width rear 59.4" (1508 mm) to 71.4" (1813 mm) front 52.8" (1342 mm) to 77.0" (1957 mm)
Wheelbase 90.6" (2300 mm)
Hydraulic control system direct engine drive
Transmission selective gear fixed ratio
Nominal travel speeds mph (km/h) first 1.19 (1.91) second 1.52 (2.44) third 1.83 (2.95) fourth 2.19 (3.53) fifth 2.86 (4.61) sixth 3.65 (5.88) seventh 4.43 (7.13) eighth 5.29 (8.52) ninth 7.02 (11.29) tenth 8.95 (14.41) eleventh 10.84 (17.44) twelfth 10.85 (17.46) thirteenth 12.97 (20.88) fourteenth 13.84 (22.27) fifteenth 16.77 (26.99) sixteenth 20.05 (32.27) reverse 1.30 (2.10), 1.67 (2.69), 2.02 (3.25), 2.42 (3.89), 3.16 (5.08), 4.03 (6.48), 4.88 (7.85), 5.83 (9.39), 7.73 (12.44), 9.87 (15.88), 11.94 (19.22), 11.96 (19.25), 14.30 (23.01), 15.25 (24.54), 18.49 (29.75), 22.10 (35.56)

HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

Maximum force exerted through whole range:	4858 lbs	<i>(21.6 kN)</i> (2 x 56 mm)
	6390 lbs	<i>(28.4 kN)</i> (2 x 63 mm)
	2789 psi	<i>(192 bar)</i>
i) Sustained pressure of the open relief valve:		
ii) Pump delivery rate at minimum pressure and rated engine speed:	20.8 GPM	<i>(78.9 l/min)</i>
iii) Pump delivery rate at maximum		
hydraulic power:	20.4 GPM	<i>(77.0 l/min)</i>
Delivery pressure:	2534 psi	<i>(175 bar)</i>
Power:	30.1 HP	<i>(30.1 kW)</i>

lift cylinders

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** 8625 lb (3912 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.

HITCH DIMENSIONS AS TESTED—NO LOAD

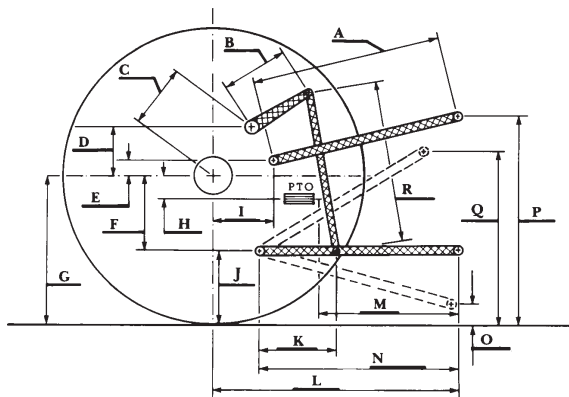
	inch	mm
A	25.2	640
B	12.6	320
C	17.7	449
D	15.0	380
E	14.8	375
F	8.8	223
G	29.3	745
H	0.2	4
I	15.4	390
J	20.5	522
K	17.5	444
L	41.7	1060
M	23.0	585
N	33.1	840
O	9.1	230
P	44.6	1132
Q	36.2	919
R	27.8	705

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 139°F (59°C).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2037**, February 13, 2013.

Roger M. Hoy
Director

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



Economy mode

540 PTO rpm @ 1645 engine rpm

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)
85.85 (64.02)	1645	4.71 (17.84)	0.387 (0.236)	18.21 (3.59)
64.60 (48.17)	1650	3.73 (14.13)	0.407 (0.248)	17.30 (3.41)
43.10 (32.14)	1651	2.71 (10.25)	0.443 (0.270)	15.92 (3.14)
21.60 (16.11)	1648	1.83 (6.92)	0.597 (0.363)	11.81 (2.33)
0.40 (0.30)	1653	1.24 (4.68)	21.800 (13.270)	0.32 (0.06)

Normal mode

540 PTO rpm @ 2100 engine rpm

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)
85.85 (64.02)	2098	5.08 (19.22)	0.417 (0.254)	16.91 (3.33)
64.50 (48.10)	2104	4.19 (15.86)	0.458 (0.279)	15.39 (3.03)
42.80 (31.92)	2093	3.19 (12.06)	0.525 (0.320)	13.43 (2.65)
21.40 (15.96)	2091	2.35 (8.89)	0.774 (0.471)	9.11 (1.80)
0.30 (0.22)	2093	1.51 (5.73)	35.583 (21.660)	0.20 (0.04)



JOHN DEERE 5100M DIESEL

Institute of Agriculture and Natural Resources
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