

Tractor Test and Power Museum, The Lester F. Larsen

UNL Larsen Tractor Museum Archives

University of Nebraska - Lincoln

Year 2006

Test 1870: John Deere 5103 Diesel
9-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1870

JOHN DEERE 5103 DIESEL

9 SPEED

Chassis S/N PY5103U001808 to PY5103U013641

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
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MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—(PTO speed—545 rpm)					
43.70 (32.59)	2399	2.94 (11.13)	0.470 (0.286)	14.87 (2.93)	
Maximum Power (1 hour)					
46.45 (34.64)	2150	2.85 (10.78)	0.428 (0.261)	16.32 (3.21)	

VARYING POWER AND FUEL CONSUMPTION

43.70 (32.59)	2399	2.94 (11.13)	0.470 (0.286)	14.87 (2.93)	Air temperature
38.70 (28.86)	2503	2.76 (10.45)	0.499 (0.303)	14.02 (2.76)	75°F (24°C)
29.23 (21.80)	2528	2.35 (8.88)	0.561 (0.341)	12.46 (2.45)	Relative humidity
19.95 (14.87)	2563	1.69 (6.39)	0.592 (0.360)	11.82 (2.33)	18%
10.01 (7.47)	2581	1.23 (4.66)	0.859 (0.522)	8.14 (1.60)	Barometer
0.62 (0.46)	2600	0.89 (3.36)	10.035 (6.104)	0.70 (0.14)	28.29"Hg (95.80kPa)

Maximum Torque 133 lb.-ft. (180 Nm) at 1351 rpm
 Maximum Torque Rise - 38.9%
 Torque rise at 1901 rpm - 26%

TRACTOR SOUND LEVEL WITHOUT CAB

	dB(A)
At no load in 5th(B2) gear	90.5
Transport speed - no load - 9th(C3) gear	92.0
Bystander in 9th(C3) gear	81.0

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 13.6-28; 8; 12 (85)
 Two 7.50-16; 6; 28 (195)
 14.5 in (370 mm)
 3110 lb (1411 kg)
 1780 lb (807 kg)
 4890 lb (2218 kg)

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

Dates of tests: March 9 - 30, 2006

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) 0.8395 Fuel weight 6.990 lbs/gal (0.838 kg/l) Oil SAE 15W40 API service classification CG-4 Transmission and hydraulic lubricant John Deere Hy-Gard Fluid Total time engine was operated 8.0 hours

ENGINE: Make John Deere Diesel **Type** three cylinder vertical with turbocharger **Serial No.** *PY3029T106597* **Crankshaft** lengthwise **Rated engine speed** 2400 **Bore and stroke** 4.19" x 4.33" (106.4 mm x 110.0 mm) **Compression ratio** 17.8 to 1 **Displacement** 179 cu in (2934 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element and one polyester felt element **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 20.0 - 21.0 lb/h (9.1 - 9.5 kg/h) **High idle:** 2575 - 2650 rpm **Turbo boost:** nominal 8.7 - 11.6 psi (60 - 80 kPa) as measured 10.0 psi (69 kPa)

CHASSIS: Type standard **Serial No.** *PY5103U009123* **Tread width** rear 55.7" (1415 mm) to 71.5" (1815 mm) front 56.3" (1430 mm) to 80.7" (2050 mm) **Wheelbase** 80.3" (2040 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 1.26 (2.03) second 1.83 (2.94) third 2.75 (4.42) fourth 3.55 (5.71) fifth 5.11 (8.23) sixth 7.69 (12.37) seventh 8.20 (13.20) eighth 11.83 (19.03) ninth 17.77 (28.60) reverse 2.13 (3.42), 5.95 (9.58), 13.77 (22.17) **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc mechanically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2376 engine rpm **Unladen tractor mass** 4715 lb (2139 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range:	3591 lbs	(16.0 kN)
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	2785 psi	(192 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	12.4 GPM	(46.9 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	12.2 GPM	(46.2 l/min)
Delivery pressure:	2471 psi	(170 bar)
Power:	17.6 HP	(13.1 kW)

THREE POINT HITCH PERFORMANCE

Observed maximum pressure psi. (bar)	2796 (193)
Location:	remote outlet
Hydraulic oil temperature: °F (°C)	185 (85)
Location:	hydraulic sump
Category:	II
Quick attach:	none

SAE Static Test—System pressure 2480 psi (171 Bar)

Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	6633	5486	5067	4734	3978
" " " " " (kN)	(29.5)	(24.4)	(22.5)	(21.1)	(17.7)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

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).

Note: The performance figures on this report apply to chassis serial numbers PY5103U001808 through PY5103U013641.

Report reissued: The manufacturer's advertised power claim changed from 42 PTO hp to 38 PTO hp effective after chassis S/N PY5103U013641.

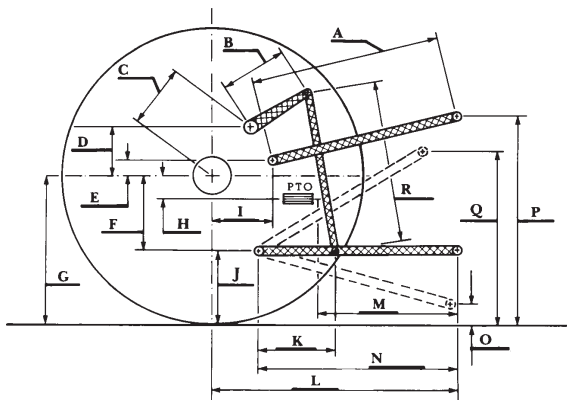
We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1870, August 31, 2007.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

	SAE Test		OECD Test	
	inch	mm	inch	mm
A	23.3	590	23.5	597
B	11.0	280	11.0	280
C	13.7	347	13.7	347
D	11.8	300	11.8	300
E	13.2	335	13.2	335
F	6.9	175	6.9	175
G	26.4	670	26.4	670
H	0.4	10	0.4	10
I	15.7	397	15.7	397
J	19.5	495	19.5	495
K	16.1	410	16.1	410
L	38.6	980	38.6	980
M	21.7	550	21.7	550
N	32.6	830	32.6	830
O	8.0	203	8.0	203
P	38.6	980	43.5	1105
Q	32.5	825	32.5	825
R	21.2	540	21.2	540

HITCH DIMENSIONS AS TESTED - NO LOAD



John Deere 5103 Diesel