University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

1-1-2007

Test 1892: John Deere 5403 Diesel 9-Speed

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

Follow this and additional works at: http://digitalcommons.unl.edu/tractormuseumlit

Part of the Applied Mechanics Commons

Museum, Tractor, "Test 1892: John Deere 5403 Diesel 9-Speed" (2007). *Nebraska Tractor Tests.* Paper 2069.
http://digitalcommons.unl.edu/tractormuseumlit/2069

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA TRACTOR TEST 1892
JOHN DEERE 5403 DIESEL
9 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—545 rpm)					
65.04 *(48.50)*	2400	3.97 *(15.01)*	0.427 *(0.260)*	16.40 *(3.23)*	
Maximum Power (1 hour)					
66.27 *(49.42)*	2300	3.91 *(14.81)*	0.414 *(0.252)*	16.94 *(3.34)*	
VARYING POWER AND FUEL CONSUMPTION					
65.04 *(48.50)*	2400	3.97 *(15.01)*	0.427 *(0.260)*	16.40 *(3.23)*	Air temperature
57.62 *(42.96)*	2501	3.72 *(14.09)*	0.453 *(0.276)*	15.48 *(3.05)*	77°F *(25°C)*
43.89 *(32.73)*	2542	3.04 *(11.50)*	0.485 *(0.295)*	14.45 *(2.85)*	Relative humidity
29.67 *(22.12)*	2563	2.37 *(8.96)*	0.559 *(0.340)*	12.53 *(2.47)*	52%
14.75 *(11.00)*	2586	1.53 *(5.78)*	0.725 *(0.441)*	9.67 *(1.90)*	Barometer
0.39 *(0.29)*	2599	0.88 *(3.35)*	15.769 *(9.592)*	0.44 *(0.09)*	28.79"Hg *(97.49 kPa)*

Maximum torque 172 lb.-ft. *(233 Nm)* at 1699 rpm
Maximum torque rise - 21.1%
Torque rise at 1902 rpm - 16%
Power increase at 2300 rpm - 2%

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
At no load in 5th(B2) gear	91.5
Transport speed - no load- 9th(C3) gear	90.7
Bystander in 9th (C3) gear	81.9

TIRES AND WEIGHT	Tested without ballast
Rear Tires–No., size, ply & psi *(kPa)*	Two 16.9-28; 8; 14 *(95)*
Front Tires–No., size, ply & psi *(kPa)*	Two 7.50-16; 6; 28 *(195)*
Height of Drawbar	16.5 in *(420 mm)*
Static Weight with operator– Rear	3325 lb *(1508 kg)*
– Front	1800 lb *(817 kg)*
– Total	5125 lb *(2325 kg)*

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832
Dates of tests: March 26 - April 4, 2007

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)*** 0.8421 **Fuel weight** 7.011 lbs/gal *(0.840 kg/l)* **Oil SAE** 15W40 **API service classification** CG-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard Fluid **Total time engine was operated** 8.5 hours

ENGINE: Make John Deere Diesel **Type** three cylinder vertical with turbocharger **Serial No.** *PY3029T109335* **Crankshaft** lengthwise **Rated engine speed** 2400 **Bore and stroke** 4.19" x 4.33" *(106.5 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 **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 26.0 - 28.7 lb/h *(11.8 - 13.0 kg/h)* **High idle:** 2575 - 2650 rpm **Turbo boost:** nominal 12.3 - 15.2 psi *(85 - 105 kPa)* as measured 13.7 psi *(95 kPa)*

CHASSIS: Type standard **Serial No.** *PY5403U000008* **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 1.39 *(2.23)* second 2.01 *(3.23)* third 3.02 *(4.86)* fourth 3.89 *(6.26)* fifth 5.62 *(9.05)* sixth 8.46 *(13.61)* seventh 9.00 *(14.49)* eighth 13.02 *(20.96)* ninth 19.58 *(31.51)* reverse 2.33 *(3.75)*, 6.55 *(10.54)*, 15.14 *(24.36)* **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** 4950 lb *(2245 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) Sustained pressure of the open relief valve:	2728 psi	*(188 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	12.2 GPM	*(46.2 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	11.5 GPM	*(43.5 l/min)*
Delivery pressure:	2360 psi	*(163 bar)*
Power:	15.8 HP	*(11.8 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 128°F *(53°C)*.

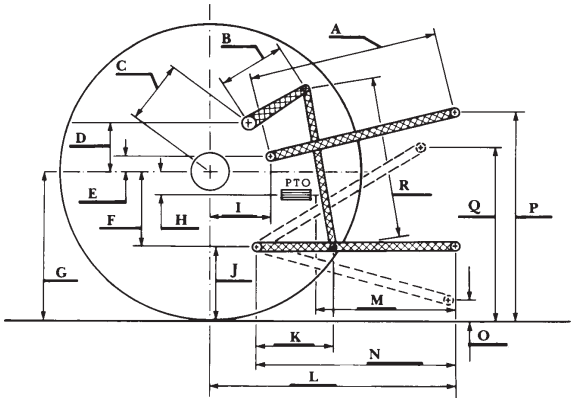
We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1892,** July 2, 2007.

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 5403 Diesel