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Test 1945: John Deere 4520 S/N 65001 and higher

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1945

JOHN DEERE 4520 EHYDRO DIESEL

HYDROSTATIC

(Chassis S/N 650001 and higher)

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—541 rpm)					
54.55 (40.68)	2401	3.79 (14.36)	0.490 (0.298)	14.38 (2.83)	

Maximum Power - (1 hour)					
55.94 (41.71)	2200	3.78 (14.32)	0.477 (0.290)	14.79 (2.91)	

VARYING POWER AND FUEL CONSUMPTION

54.55 (40.68)	2401	3.79 (14.36)	0.490 (0.298)	14.38 (2.83)	Air temperature
48.01 (35.80)	2486	3.44 (13.02)	0.505 (0.307)	13.96 (2.75)	76°F (24°C)
36.72 (27.38)	2531	2.71 (10.26)	0.520 (0.317)	13.55 (2.67)	Relative humidity
24.88 (18.55)	2576	2.01 (7.60)	0.569 (0.346)	12.39 (2.44)	12%
12.60 (9.40)	2600	1.33 (5.02)	0.743 (0.452)	9.50 (1.87)	Barometer
1.59 (1.18)	2600	0.83 (3.15)	3.695 (2.248)	1.91 (0.38)	28.83"Hg (97.63 kPa)

Maximum Torque 157 lb.-ft. (213 Nm) at 1802 rpm
Maximum Torque Rise - 31.5%
Torque rise at 1899 rpm - 26%
Power increase at 2200 rpm - 2%

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in B range-speed setting 4.7 mph (7.5 km/h) (engine 2600 rpm)	86.7	86.3
At no load in B range-speed setting 4.7 mph (7.5 km/h) (engine 1760 rpm)	83.3	82.5
Transport speed-no load-C range		87.1
Bystander in C range		79.9

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 17.5L-24; 8; 20 (135)
Two 10-16.5; 6; 15 (105)
16.5 in (420 mm)
2360 lb (1070 kg)
1675 lb (760 kg)
4035 lb (1830 kg)

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

Dates of tests: April 20-22, 2009

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) 0.8470 Fuel weight 7.052 lbs/gal (0.845 kg/l) Oil SAE 15W40 API service classification CG-4 Transmission and hydraulic lubricant John Deere Hy-Gard Fluid Total time engine was operated 9.5 hours

ENGINE: Make John Deere Diesel Type four cylinder vertical with turbocharger and air to air intercooler Serial No. *PE4024R002845* Crankshaft lengthwise Rated engine speed 2400 Bore and stroke 3.386" x 4.134" (86.0 mm x 105.0 mm) Compression ratio 20.5 to 1 Displacement 149 cu in (2440 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, radiator for transmission and hydraulic oil Fuel filter one paper element Muffler underhood Exhaust horizontal Cooling medium temperature control one thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 26.0 - 28.0 lb/h (11.8 - 12.7 kg/h) High idle: 2550 - 2650 rpm Turbo boost: nominal 15.2 - 16.7 psi (105 - 115 kPa) as measured 15.6 psi (108 kPa)

CHASSIS: Type Front wheel assist Serial No. *LV4520H060464* Tread width rear 66.5" (1689 mm) to 90.0" (2285 mm) front 54.6" (1386 mm) to 56.7" (1440 mm) Wheelbase 71.5" (1816 mm) Hydraulic control system direct engine drive Transmission Hydrostatic. Infinitely variable within the ranges shown. The transmission has 3 mechanical ranges Nominal travel speeds mph (km/h) A -0-4.1(6.6), B -0-7.3(11.7), C -0-17.0(27.3) reverse A-0-4.1(6.6), B-0-7.3(11.7), C-0-17.0(27.3) Clutch none - travel speed is electronically controlled 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 2395 engine rpm or 540 rpm at 1735 engine rpm Unladen tractor mass 3860 lb (1751 kg)

HYDRAULIC PERFORMANCE

CATEGORY: I

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 2523 lbs (11.2 kN)

i) Sustained pressure of the open relief valve: 2446 psi (169 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 11.3 GPM (42.8 l/min)

iii) Pump delivery rate at maximum hydraulic power: 10.8 GPM (40.9 l/min)

Delivery pressure: 2250 psi (155 bar)

Power: 14.2 HP (10.6 kW)

THREE POINT HITCH PERFORMANCE

Observed maximum pressure psi.(bar) 2516 (173)

Location: hydraulic service port

Hydraulic oil temperature: °F (°C) 158 (70)

Location: hydraulic sump

Category: II

Quick attach: none

SAE Static Test—System pressure 2165 psi (149 Bar)

Hitch point distance to ground level in.(mm) 8.1 (205) 13.7 (349) 20.0 (509) 26.9 (684) 32.1 (816)

Lift force on frame lb 2961 3050 3021 2833 2581

" " " " " (kN) (13.2) (13.6) (13.4) (11.6) (11.5)

OECD/SAE Test

	inch	mm
A	21.9	555
B	11.4	290
C	13.7	347
D	12.7	323
E	11.7	297
F	5.2	131
G	23.1	586
H	0.2	6
I	12.6	320
J	17.9	455
K	15.8	402
L	32.9	836
M	20.1	511
N	27.5	699
O	8.1	207
P	36.0	915
Q	30.5	775
R	19.0	483

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The performance figures on this report apply to tractors with chassis S/N 650001 and higher.

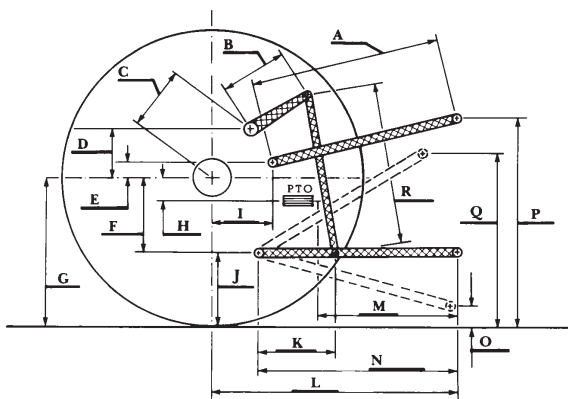
REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's claim of implement pump flow of 12.0 GPM (45.3 l/min). For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 168°F (75°C).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1945**, July 30, 2009.

Roger M. Hoy
Director

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

HITCH DIMENSIONS AS TESTED - NO LOAD



Economy mode
540 PTO rpm @ 1735 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)
52.81 (39.38)	1734	3.25 (12.30)	0.434 (0.264)	16.26 (3.20)
41.05 (30.61)	1739	2.55 (9.65)	0.437 (0.266)	16.12 (3.17)
27.26 (20.33)	1734	1.62 (6.15)	0.420 (0.255)	16.80 (3.31)
13.60 (10.14)	1736	0.84 (3.18)	0.435 (0.265)	16.20 (3.19)
1.36 (1.01)	1729	0.29 (1.10)	1.511 (0.920)	4.67 (0.92)

Normal mode
540 PTO rpm @ 2397 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)
52.29 (38.99)	2389	3.59 (13.60)	0.484 (0.295)	14.56 (2.87)
41.02 (30.59)	2407	2.88 (10.93)	0.496 (0.302)	14.22 (2.80)
27.18 (20.27)	2389	1.94 (7.34)	0.503 (0.306)	14.03 (2.76)
13.60 (10.14)	2400	1.24 (4.70)	0.644 (0.391)	10.96 (2.16)
1.45 (1.08)	2393	0.67 (2.53)	3.256 (1.980)	2.17 (0.43)



John Deere 4520 Diesel