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## Test 1854: John Deere 4520 Ehydro Diesel Hydrostatic

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1854

## JOHN DEERE 4520 EHYDRO DIESEL

### HYDROSTATIC

#### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—540 rpm)</b>					
46.58 (34.73)	2398	3.00 (11.37)	0.455 (0.277)	15.51 (3.06)	

<b>Standard Power Take-off Speed - (540 rpm)</b>					
46.58 (34.73)	2398	3.00 (11.37)	0.455 (0.277)	15.51 (3.06)	

#### VARYING POWER AND FUEL CONSUMPTION

46.58 (34.73)	2398	3.00 (11.37)	0.455 (0.277)	15.51 (3.06)	Air temperature
41.54 (30.97)	2520	2.82 (10.68)	0.479 (0.291)	14.73 (2.90)	75°F (24°C)
31.69 (23.63)	2550	2.31 (8.75)	0.514 (0.313)	13.72 (2.70)	Relative humidity
21.14 (15.76)	2569	1.79 (6.76)	0.596 (0.363)	11.84 (2.33)	74%
10.81 (8.06)	2593	1.35 (5.10)	0.879 (0.534)	8.03 (1.58)	Barometer
0.85 (0.63)	2627	0.95 (3.59)	7.925 (4.821)	0.89 (0.18)	28.76"Hg (97.39 kPa)

Maximum Torque 135 lb.-ft. (183 Nm) at 1500 rpm  
Maximum Torque Rise - 32.0%  
Torque rise at 1900 rpm - 19%

#### 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 kph)	86.1	85.8
Transport speed-no load-C range		86.2
Bystander in C range		77.5

#### 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)  
15.5 in (395 mm)  
2390 lb (1084 kg)  
1640 lb (744 kg)  
4030 lb (1828 kg)

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

**Dates of tests:** August 31-September 2, 2005

**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) 0.8473 Fuel weight 7.055 lbs/gal (0.846 kg/l) Oil SAE 15W40 API service classification CG-4 Transmission and hydraulic lubricant John Deere Hy-Gard Fluid Total time engine was operated 5.5 hours

**ENGINE:** Make John Deere Diesel Type four cylinder vertical with turbocharger Serial No. \*PE4024T025407\* 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: 20.2 - 22.3 lb/h (9.2 - 10.1 kg/h) High idle: 2550 - 2650 rpm Turbo boost: nominal 8.0 - 10.9 psi (55 - 75 kPa) as measured 9.8 psi (67 kPa)

**CHASSIS:** Type Front wheel assist Serial No. \*LV4520H250007\* Tread width rear 51.3" (1304 mm) to 74.8" (1900 mm) front 53.1" (1349 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 -0-3.7(6.0), B -0-6.6(10.7), C -0-15.5(25.0) reverse A-0-3.7(6.0), B-0-6.6(10.7), C-0-15.5(25.0) 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 Unladen tractor mass 3855 lb (1749 kg)

### THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: I

Quick Attach: None

Maximum Force Exerted Through Whole Range: 2523 lbs (11.2 kN) (at 24" behind link ends)  
2821 lbs (15.3 kN) (at lift link ends)

- i) Opening pressure of relief valve: NA  
Sustained pressure of the open relief valve: 2606 psi (180 bar)
- ii) Pump delivery rate at minimum pressure and rated engine speed: 10.8 GPM (40.9 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 9.3 GPM (35.2 l/min)  
Delivery pressure: 2082 psi (144 bar)  
Power: 11.3 HP (8.4 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

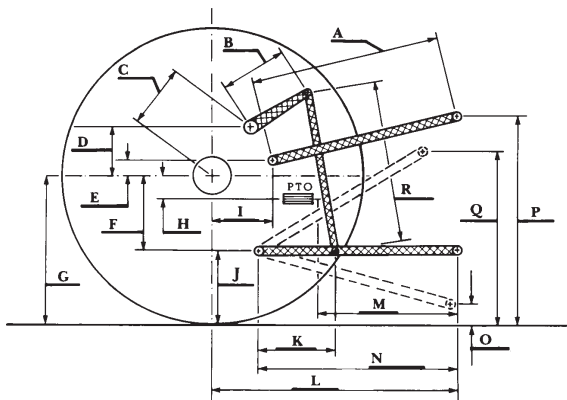
#### SAE Static Test—System pressure 2165 psi (149 Bar)

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

#### HITCH DIMENSIONS AS TESTED - NO LOAD



**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. This tractor did not meet the manufacturer's claims of 3130 lb (1423 kg) lift capacity at ball ends nor 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 163°F (73°C).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1854**, October 26, 2005.

Leonard L. Bashford  
Director

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



**John Deere 4520 Diesel**