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January 2000

## Test 1770: John Deere 5105 Diesel 8-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1770

## JOHN DEERE 5105 DIESEL

### 8 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 564 rpm)					
40.58 (30.26)	2300	2.39 (9.04)	0.416 (0.253)	16.99 (3.35)	
Standard Power Take-off Speed - (540 rpm)					
40.69 (30.35)	2200	2.36 (8.92)	0.409 (0.249)	17.28 (3.40)	
VARYING POWER AND FUEL CONSUMPTION					
40.58 (30.26)	2300	2.39 (9.04)	0.416 (0.253)	16.99 (3.35)	Air temperature
35.34 (26.35)	2364	2.16 (8.20)	0.433 (0.263)	16.32 (3.22)	79°F (26°C)
26.91 (20.07)	2402	1.78 (6.75)	0.468 (0.285)	15.10 (2.97)	Relative humidity
18.19 (13.56)	2433	1.49 (5.62)	0.577 (0.351)	12.24 (2.41)	34%
9.17 (6.84)	2455	1.19 (4.50)	0.916 (0.557)	7.71 (1.52)	Barometer
0.58 (0.43)	2482	0.85 (3.21)	10.349 (6.295)	0.68 (0.13)	28.99"Hg (98.17 kPa)
Maximum Torque 114 lb.-ft. (154 Nm) at 1402 rpm					
Maximum Torque Rise - 22.7%					
Torque rise at 1801 rpm - 17%					

#### TRACTOR SOUND LEVEL WITHOUT CAB

	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
At no load in 3rd(A3) gear	87.5	87.3
Transport speed - no load - 8th(B4) gear		91.7
Bystander in 8th(B4) gear	--	81.5

#### 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 16.9-28; 6; 12 (85)  
Two 9.5-24; 6; 12 (85)  
17.5 in (445 mm)  
2775 lb (1259 kg)  
1890 lb (857 kg)  
4665 lb (2116 kg)

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

**Dates of Test:** May 2 - 17, 2000

**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) 0.8487 Fuel weight 7.067 lbs/gal (0.847 kg/l) Oil SAE 15W40 API service classification CG-4 Transmission and hydraulic lubricant John Deere Hy-Gard Fluid Front axle lubricant SAE 80W90 API GL-5 Total time engine was operated 11.5 hours

**ENGINE:** Make John Deere Diesel Type three cylinder vertical Serial No. \*PE3029D072454\* Crankshaft lengthwise Rated engine speed 2300 Bore and stroke 4.19" x 4.33" (106.4 mm x 110.0 mm) Compression ratio 17.4 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: 15.8 - 17.8 lb/h (7.2 - 8.1 kg/h) High idle: 2475 - 2525 rpm

**CHASSIS:** Type front wheel assist Serial No. \*LV5105B110157\* Tread width rear 55.8" (1417 mm) to 71.7" (1820 mm) front 52.8" (1340 mm) to 75.0" (1904 mm) Wheelbase 76.8" (1950 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio Nominal travel speeds mph (km/h) first 1.94 (3.13) second 2.78 (4.48) third 3.93 (6.33) fourth 5.51 (8.87) fifth 6.44 (10.36) sixth 9.72 (15.64) seventh 13.74 (22.11) eighth 19.26 (31.00) reverse 2.32 (3.74), 3.32 (5.34), 4.70 (7.56), 6.58 (10.59) 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 2199 engine rpm Unladen tractor mass 4500 lb (2041 kg)

## THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range: 3173 lbs (14.1 kN)

- i) Opening pressure of relief valve: NA  
Sustained pressure of the open relief valve: 2820 psi (194 bar)
- ii) Pump delivery rate at minimum pressure and rated engine speed: 11.6 GPM (43.9 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 9.5 GPM (36.0 l/min)  
Delivery pressure: 2500 psi (172 bar)  
Power: 13.9 HP (10.4 kW)

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. (bar) 2760 (190)  
Location: hydraulic service port  
Hydraulic oil temperature: °F (°C) 158 (70)  
Location: hydraulic sump  
Category: II  
Quick attach: none

#### SAE Static Test System pressure 2485 psi (171 Bar)

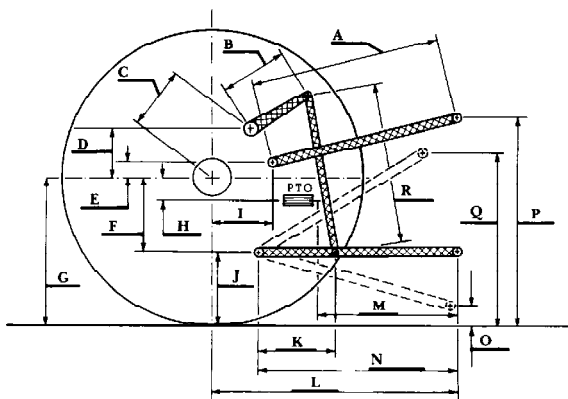
Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	3812	4190	4356	4275	4124
" " " " " (kN)	(17.0)	(18.6)	(19.4)	(19.0)	(18.3)

#### ASAE Static Test System pressure 2755 psi (190 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	4227	4680	4884	4776	4568
" " " " " (kN)	(18.8)	(20.8)	(21.7)	(21.2)	(20.7)

	SAE/ASAE Test		OECD Test	
	inch	mm	inch	mm
A	24.3	617	25.2	641
B	11.4	290	11.4	290
C	13.2	334	13.2	334
D	12.1	308	12.1	308
E	12.0	305	12.0	305
F	4.9	124	4.9	124
G	26.4	670	26.4	670
H	1.8	46	1.8	46
I	12.0	305	12.0	305
J	21.5	546	21.5	546
K	15.8	402	15.8	402
L	36.2	918	36.2	918
M	21.9	555	21.9	555
N	29.9	760	29.9	760
O	8.0	203	8.0	203
P	40.5	1029	45.5	1156
Q	36.1	916	36.1	916
R	22.5	572	22.5	572

#### HITCH DIMENSIONS AS TESTED - NO LOAD



**REPAIRS AND ADJUSTMENTS:** The hydraulic relief valve was replaced.

**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).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1770, July 7, 2000.

Leonard L. Bashford  
Director

G. J. Hoffinan  
M. F. Kocher  
R. D. Grisso Jr.  
Board of Tractor Test Engineers



John Deere 5105 Diesel

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