2009

Test 1962: John Deere 5105M Diesel

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1962
JOHN DEERE 5105M DIESEL
32 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—566 rpm)					
81.55 *(60.81)*	2200	5.34 *(20.20)*	0.460 *(0.280)*	15.28 *(3.01)*	
Standard Power Take-off Speed(540 pm)					
91.23 *(68.03)*	2100	5.75 *(21.77)*	0.444 *(0.270)*	15.86 *(3.12)*	
Maximum Power (1 hour)					
91.23 *(68.03)*	2100	5.75 *(21.77)*	0.444 *(0.270)*	15.86 *(3.12)*	
VARYING POWER AND FUEL CONSUMPTION					
81.55 *(60.81)*	2200	5.34 *(20.20)*	0.460 *(0.280)*	15.28 *(3.01)*	Air temperature
70.82 *(52.81)*	2250	4.91 *(18.57)*	0.487 *(0.296)*	14.44 *(2.84)*	76°F *(24°C)*
53.70 *(40.05)*	2274	4.13 *(15.62)*	0.541 *(0.329)*	13.02 *(2.56)*	Relative humidity
36.16 *(26.97)*	2296	3.19 *(12.09)*	0.621 *(0.378)*	11.33 *(2.23)*	37%
18.13 *(13.52)*	2301	2.31 *(8.75)*	0.898 *(0.546)*	7.84 *(1.54)*	Barometer
0.65 *(0.48)*	2300	1.43 *(5.41)*	15.539 *(9.452)*	0.45 *(0.09)*	29.04"Hg *(98.35 kPa)*

Maximum torque - 290 lb.-ft. *(393 Nm)* at 1350 rpm
Maximum torque rise - 49.0%
Torque rise at 1799 rpm - 31%
Power increase at 2100 rpm - 11%

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Front Wheel Drive Disengaged dB(A)
At no load in 13th(B3L) gear	81.4	81.2
Transport in 32nd (D4H) gear		82.0
Bystander in 32nd (D4H) gear		82.8

TIRES AND WEIGHT	Tested without ballast
Rear tires–No., size, ply & psi *(kPa)*	Two 18.4R30;**;12 *(85)*
Front tires–No., size, ply & psi *(kPa)*	Two 12.4R24;***;12 *(85)*
Height of drawbar	16.5 in *(420 mm)*
Static weight with operator– Rear	5385 lb *(2443 kg)*
– Front	3140 lb *(1424 kg)*
– Total	8525 lb *(3867 kg)*

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

Dates of tests: September 23 - October 6, 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)*** 0.8450 **Fuel weight** 7.036 lbs/gal *(0.843 kg/l)* **Oil SAE** 15W40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** JohnDeere Hy-Gard fluid **Front axle lubricant** SAE 80W90 API GL-5 **Total time engine was operated** 12.5 hours

ENGINE: Make John Deere Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler **Serial No.** *PE4045L088730* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.19" x 5.00" *(106.5 mm x 127.0 mm)* **Compression ratio** 19.0 to 1 **Displacement** 276 cu in *(4525 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Fuel cooler** radiator for return fuel **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 37.5 - 41.2 lb/h *(17.0 - 18.7 kg/h)* **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 15.2 - 17.4 psi *(105 - 120 kPa)* as measured 16.1 psi *(111 kPa)*

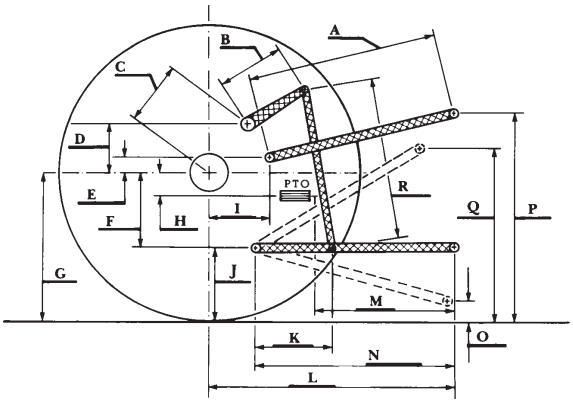
CHASSIS: Type front wheel assist **Serial No.** *LV5105M170202* **Tread width** rear 59.4" *(1508 mm)* to 71.4" *(1813 mm)* front 52.8" *(1342 mm)* to 77.0" *(1957 mm)* **Wheelbase** 85.7" *(2178 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial(2) range operator controlled powershifting **Nominal travel speeds mph *(km/h)*** first 1.19 *(1.91)* second 1.42 *(2.29)* third 1.52 *(2.44)* fourth 1.82 *(2.93)* fifth 1.83 *(2.95)* sixth 2.19 *(3.53)* seventh 2.21 *(3.55)* eighth 2.63 *(4.24)* ninth 2.86 *(4.61)* tenth 3.44 *(5.53)* eleventh 3.65 *(5.88)* twelfth 4.39 *(7.07)* thirteenth 4.43 *(7.13)* fourteenth 5.29 *(8.52)* fifteenth 5.32 *(8.56)* sixteenth 6.36 *(10.24)* seventeenth 7.02 *(11.29)* eighteenth 8.43 *(13.56)* nineteenth 8.95 *(14.41)* twentieth 10.76 *(17.31)* twenty-first 10.84 *(17.44)* twenty-second 10.85 *(17.46)* twenty-third 12.97 *(20.88)* twenty-fourth 13.02 *(20.96)* twenty-fifth 13.04 *(20.98)* twenty-sixth 13.84 *(22.27)* twenty-seventh 15.58 *(25.08)* twenty-eighth 16.63 *(26.76)* twenty-ninth 16.77 *(26.99)* thirtieth 20.05 *(32.27)* thirty-first 20.15 *(32.43)* thirty-second 24.09 *(38.77)*

HYDRAULIC PERFORMANCE

CATEGORY: II		
Quick Attach: None		
OECD Static test		
Maximum force exerted through whole range:	4793 lbs	*(21.3 kN)*
i) Sustained pressure of the open relief valve:	2903 psi	*(200 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	20.1 GPM	*(76.1 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	18.2 GPM	*(68.9 l/min)*
Delivery pressure:	2507 psi	*(173 bar)*
Power:	26.6 HP	*(19.9 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	25.6	*650*
B	12.6	*320*
C	17.7	*449*
D	15.0	*380*
E	14.8	*375*
F	8.8	*223*
G	29.3	*745*
H	0.2	*4*
I	15.4	*390*
J	20.5	*522*
K	17.5	*444*
L	41.7	*1060*
M	23.0	*585*
N	33.1	*840*
O	7.8	*197*
P	47.5	*1207*
Q	33.9	*861*
R	28.1	*715*



reverse 1.30 *(2.10)*, 1.67 *(2.69)*, 2.02 *(3.25)*, 2.42 *(3.89)*, 3.16 *(5.08)*, 4.03 *(6.48)*, 4.87 *(7.85)*, 5.83 *(9.39)*, 7.73 *(12.44)*, 9.87 *(15.88)*, 11.94 *(19.22)*, 11.96 *(19.25)*, 14.30 *(23.01)*, 15.25 *(24.54)*, 18.49 *(29.75)*, 22.10 *(35.56)* **Clutch** wet disc hydraulically actuated by foot pedal **Brakes** wet disc hydraulically actuated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2100 engine rpm or 1000 rpm at 2103 engine rpm, Economy PTO 540 rpm at 1645 engine rpm **Unladen tractor mass** 8350 lb *(3787 kg)*

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 135°F *(57°C)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1962,** December 14, 2009.

Roger M. Hoy
Director

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

Economy mode
540 PTO rpm @1645 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)*
84.14 *(62.74)*	1653	4.98 *(18.87)*	0.417 *(0.254)*	16.89 *(3.33)*
68.24 *(50.89)*	1640	4.27 *(16.17)*	0.440 *(0.268)*	15.99 *(3.15)*
45.72 *(34.09)*	1646	3.24 *(12.29)*	0.499 *(0.304)*	14.09 *(2.77)*
22.91 *(17.08)*	1652	1.75 *(6.61)*	0.536 *(0.326)*	13.12 *(2.58)*
0.58 *(0.43)*	1652	0.66 *(2.52)*	8.124 *(4.946)*	0.87 *(0.17)*

Normal mode
540 PTO rpm @2100 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)*
91.76 *(68.42)*	2100	5.71 *(21.63)*	0.438 *(0.266)*	16.07 *(3.16)*
68.65 *(51.19)*	2106	4.51 *(17.08)*	0.462 *(0.281)*	15.22 *(3.00)*
45.54 *(33.96)*	2093	3.35 *(12.69)*	0.518 *(0.315)*	13.60 *(2.68)*
22.88 *(17.06)*	2103	2.21 *(8.37)*	0.679 *(0.413)*	10.36 *(2.04)*
0.59 *(0.44)*	2107	1.15 *(4.35)*	13.637 *(8.301)*	0.52 *(0.10)*

JOHN DEERE 5105M DIESEL

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