# NEBRASKA TRACTOR TEST 2115
# JOHN DEERE 5085M DIESEL
# 16 SPEED

### Chassis Serial numbers 700000 and higher

## POWER TAKE-OFF PERFORMANCE

| Power HP *(kW)* | Crank shaft speed rpm | Diesel Consumption Gal/hr *(l/h)* | lb/hp.hr *(kg/kW.h)* | D.E.F. Consumption Hp.hr/gal *(kW.h/l)* | D.E.F. Consumption Gal/hr *(l/h)* | Mean Atmospheric Conditions |
|---|---|---|---|---|---|---|
| **MAXIMUM POWER AND FUEL CONSUMPTION** | | | | | | |
| **Rated Engine Speed—(PTO speed—565 rpm)** | | | | | | |
| 72.80 *(54.29)* | 2197 | 4.65 *(17.59)* | 0.449 *(0.273)* | 15.66 *(3.09)* | 0.16 *(0.59)* | Fuel used during active exhaust regeneration-0.68 gal *(2.58 l)* (see note 1, p.2) |
| **Maximum Power (1 hour)** | | | | | | |
| 72.80 *(54.29)* | 2197 | 4.65 *(17.59)* | 0.449 *(0.273)* | 15.66 *(3.09)* | 0.16 *(0.59)* | |
| **Standard Power Take-off Speed (539 rpm)** | | | | | | |
| 72.79 *(54.28)* | 2100 | 4.50 *(17.02)* | 0.434 *(0.264)* | 16.19 *(3.19)* | 0.16 *(0.59)* | |
| **VARYING POWER AND FUEL CONSUMPTION** | | | | | | |
| 72.80 *(54.29)* | 2197 | 4.65 *(17.59)* | 0.449 *(0.273)* | 15.66 *(3.09)* | 0.16 *(0.59)* | Air temperature |
| 63.12 *(47.07)* | 2243 | 4.31 *(16.33)* | 0.481 *(0.292)* | 14.63 *(2.88)* | 0.14 *(0.54)* | 75°F *(24°C)* |
| 47.83 *(35.67)* | 2262 | 3.65 *(13.83)* | 0.537 *(0.327)* | 13.09 *(2.58)* | 0.12 *(0.45)* | Relative humidity |
| 32.33 *(24.11)* | 2294 | 3.00 *(11.35)* | 0.652 *(0.397)* | 10.79 *(2.12)* | 0.11 *(0.40)* | 46% |
| 16.25 *(12.12)* | 2300 | 2.42 *(9.16)* | 1.047 *(0.637)* | 6.72 *(1.32)* | 0.10 *(0.40)* | Barometer |
| 0.95 *(0.71)* | 2300 | 1.91 *(7.24)* | 14.201 *(8.638)* | 0.50 *(0.10)* | 0.14 *(0.54)* | 28.79" Hg *(97.51 kPa)* |

Maximum torque - 225 lb.-ft. *(305 Nm)* at 1497 rpm
Maximum torque rise - 29.3%
Torque rise at 1750 engine rpm - 19%
Power increase - 0%

| TRACTOR SOUND LEVEL WITHOUT CAB | Front Wheel Drive Engaged dB(A) | Front Wheel Drive Disengaged dB(A) |
|---|---|---|
| At no load in 7th (B3) gear | 84.6 | 84.5 |
| Transport in 16th (D4) gear | | 88.2 |
| Bystander in 16th (D4) gear | | 80.5 |

| TIRES AND WEIGHT | Tested without ballast |
|---|---|
| **Rear tires–**No., size, ply & psi *(kPa)* | Two 16.9-30;6;12 *(85)* |
| **Front tires–**No., size, ply & psi *(kPa)* | Two 11.2-24;6;18 *(125)* |
| **Height of drawbar** | 16.5 in *(420 mm)* |
| **Static weight with operator**– Rear | 5015 lb *(2275 kg)* |
| – Front | 3270 lb *(1483 kg)* |
| – Total | 8285 lb *(3758 kg)* |

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

**Dates of tests:** April 16 - 20, 2015

**Manufacturer:** John Deere Commercial Products Inc., 700 Horizon South Parkway, Grovetown Ga. USA 30813

**CONSUMABLE Fluids, OIL and TIME: Fuel** No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8447 **Fuel weight** 7.033 lbs/gal *(0.843 kg/l)* **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal *(1.087 kg/l)* **Oil SAE** 10W30 **API service classification** CJ-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** SAE 80W90 API GL-5 **Total time engine was operated** 9.5 hours

**ENGINE: Make** John Deere Diesel **Type** four cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *PE4045U006492* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.19" x 5.00" *(106.5 mm x 127.0 mm)* **Compression ratio** 16.9 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 **Exhaust** regenerative aftertreatment system consisting of DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) integrated within a vertical muffler **Cooling medium temperature control** two thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 31.1 - 33.5 lb/h *(14.1 - 15.2 kg/h)* **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 16.0 - 18.9 psi *(110 - 130 kPa)* as measured 17.6 psi *(121 kPa)*

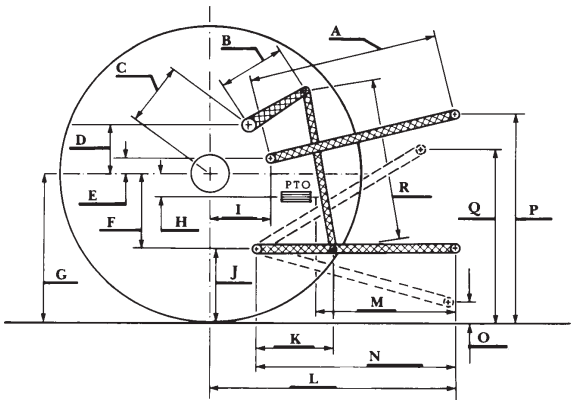
**CHASSIS: Type** front wheel assist **Serial No.** *1LV5085MTFJ733786* **Tread width** rear 59.4" *(1508 mm)* to 71.4" *(1813 mm)* front 52.8" *(1342 mm)* to 77.0" *(1957 mm)* **Wheelbase** 90.6" *(2300 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph *(km/h)*** first 1.16 *(1.87)* second 1.48 *(2.38)* third 1.80 *(2.89)* fourth 2.14 *(3.45)* fifth 2.80 *(4.50)* sixth 3.57 *(5.75)* seventh 4.33 *(6.97)* eighth 5.18 *(8.33)* ninth 6.85 *(11.03)* tenth 8.76 *(14.09)* eleventh 10.59 *(17.05)* twelfth 10.61 *(17.07)* thirteenth 12.68 *(20.41)* fourteenth 13.53 *(21.77)* fifteenth 16.39 *(26.38)* sixteenth 19.60 *(31.54)*

## HYDRAULIC PERFORMANCE

| | | |
|---|---|---|
| CATEGORY: II | | |
| Quick Attach: None | | |
| OECD Static test | | lift cylinders |
| Maximum force exerted through whole range: | 4858 lbs | *(21.6 kN)* (2 x 56 mm) |
| | 6390 lbs | *(28.4 kN)* (2 x 63 mm) |
| i) Sustained pressure of the open relief valve: | 2963 psi | *(204 bar)* |
| ii) Pump delivery rate at minimum pressure and rated engine speed: | 19.7 GPM | *(74.4 l/min)* |
| iii) Pump delivery rate at maximum hydraulic power: | 17.8 GPM | *(67.5 l/min)* |
| Delivery pressure: | 2444 psi | *(169 bar)* |
| Power: | 25.4 HP | *(19.0 kW)* |

**HITCH DIMENSIONS AS TESTED—NO LOAD**

| | inch | *mm* |
|---|---|---|
| A | 25.2 | *640* |
| 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 | 9.1 | *230* |
| P | 44.6 | *1132* |
| Q | 36.2 | *919* |
| R | 27.8 | *705* |




reverse 1.28 *(2.06)*, 1.63 *(2.62)*, 1.98 *(3.18)*, 2.36 *(3.80)*, 3.08 *(4.96)*, 3.93 *(6.33)*, 4.77 *(7.68)*, 5.70 *(9.18)*, 7.56 *(12.16)*, 9.64 *(15.52)*, 11.68 *(18.79)*, 11.69 *(18.81)*, 13.98 *(22.49)*, 14.91 *(23.99)*, 18.07 *(29.08)*, 21.60 *(34.76)* **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, Economy PTO 540 rpm at 1645 engine rpm **Unladen tractor mass** 8110 lb *(3679 kg)*

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**NOTE 1:** The manufacturer declares that the average time between active regenerations is 100 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full load, under steady state conditions. A 3% power increase was observed during the active exhaust regeneration.

**NOTE 2:** The performance data on this report applies to tractors with chassis serial numbers that end with 700000 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 claims of 4% power bulge and 30% torque rise.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2115,** May 13, 2015.

Roger M. Hoy
Director

M.F. Kocher
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

## Economy mode
## 540 PTO rpm @1645 engine rpm

| Power HP *(kW)* | Crank shaft speed rpm | Diesel Consumption Gal/hr *(l/h)* | lb/hp.hr *(kg/kW.h)* | Hp.hr/gal *(kW.h/l)* | D.E.F. Consumption Gal/hr *(l/h)* |
|---|---|---|---|---|---|
| 67.67 *(50.46)* | 1644 | 3.73 *(14.11)* | 0.387 *(0.236)* | 18.16 *(3.58)* | 0.19 *(0.72)* |
| 50.68 *(37.79)* | 1640 | 2.94 *(11.12)* | 0.408 *(0.248)* | 17.25 *(3.40)* | 0.14 *(0.52)* |
| 33.93 *(25.30)* | 1649 | 2.18 *(8.26)* | 0.452 *(0.275)* | 15.55 *(3.06)* | 0.10 *(0.38)* |
| 16.85 *(12.56)* | 1647 | 1.56 *(5.92)* | 0.652 *(0.397)* | 10.78 *(2.12)* | 0.09 *(0.34)* |
| 0.82 *(0.61)* | 1645 | 1.13 *(4.27)* | 9.666 *(5.880)* | 0.73 *(0.14)* | 0.11 *(0.41)* |

## Normal mode
## 540 PTO rpm @2100 engine rpm

| Power HP *(kW)* | Crank shaft speed rpm | Diesel Consumption Gal/hr *(l/h)* | lb/hp.hr *(kg/kW.h)* | Hp.hr/gal *(kW.h/l)* | D.E.F. Consumption Gal/hr *(l/h)* |
|---|---|---|---|---|---|
| 67.52 *(50.35)* | 2097 | 4.20 *(15.88)* | 0.437 *(0.266)* | 16.09 *(3.17)* | 0.14 *(0.52)* |
| 51.01 *(38.04)* | 2110 | 3.57 *(13.51)* | 0.492 *(0.299)* | 14.29 *(2.81)* | 0.11 *(0.43)* |
| 33.87 *(25.25)* | 2104 | 2.78 *(10.50)* | 0.576 *(0.351)* | 12.20 *(2.40)* | 0.10 *(0.38)* |
| 16.86 *(12.57)* | 2097 | 2.05 *(7.75)* | 0.854 *(0.520)* | 8.23 *(1.62)* | 0.10 *(0.38)* |
| 0.83 *(0.62)* | 2106 | 1.61 *(6.09)* | 13.618 *(8.283)* | 0.52 *(0.10)* | 0.13 *(0.49)* |

**JOHN DEERE 5085M DIESEL**

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