2015

Test 2130: John Deere 8345R

Nebraska Tractor Test Lab
University of Nebraska-Lincoln, tractortestlab@unl.edu

NEBRASKA OECD TRACTOR TEST 2130–SUMMARY 1000
JOHN DEERE 8345R DIESEL
e23 TRANSMISSION

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)*	Gal/hr *(l/h)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1052 rpm)						
304.17 *(226.82)*	2099	16.38 *(62.02)*	0.377 *(0.229)*	18.56 *(3.66)*	0.35 *(1.31)*	Fuel used during active exhaust regeneration-0.86 gal *(3.24 l)* (see note 1, p.2)
Standard Power Take-off Speed(1000 rpm)						
328.12 *(244.68)*	1995	17.45 *(66.04)*	0.372 *(0.227)*	18.81 *(3.71)*	0.35 *(1.33)*	
Maximum Power (1 hour)						
343.45 *(256.11)*	1750	17.87 *(67.65)*	0.364 *(0.222)*	19.22 *(3.79)*	0.38 *(1.43)*	
VARYING POWER AND FUEL CONSUMPTION						
304.17 *(226.82)*	2099	16.38 *(62.02)*	0.377 *(0.229)*	18.56 *(3.66)*	0.35 *(1.31)*	Air temperature
265.39 *(197.90)*	2156	14.53 *(54.99)*	0.383 *(0.233)*	18.27 *(3.60)*	0.26 *(0.99)*	73°F *(23°C)*
200.06 *(149.18)*	2166	11.45 *(43.36)*	0.401 *(0.244)*	17.47 *(3.44)*	0.21 *(0.78)*	Relative humidity
134.27 *(100.13)*	2179	8.76 *(33.16)*	0.457 *(0.278)*	15.33 *(3.02)*	0.14 *(0.54)*	44%
67.41 *(50.27)*	2188	6.23 *(23.59)*	0.647 *(0.394)*	10.82 *(2.13)*	0.12 *(0.44)*	Barometer
0.26 *(0.19)*	2200	3.64 *(13.77)*	97.540 *(59.331)*	0.07 *(0.01)*	0.10 *(0.37)*	28.95" Hg *(98.02 kPa)*

Maximum Torque - 1101 lb.-ft. *(1492 Nm)* at 1600 rpm
Maximum Torque Rise - 44.6%
Torque rise at 1680 engine rpm - 41%
Power increase at 1750 rpm - 12.9%

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—10th Gear-Manual mode										
276.77 *(206.39)*	19702 *(87.64)*	5.27 *(8.48)*	2100	4.6	0.413 *(0.251)*	16.94 *(3.34)*	0.011 *(0.007)*	212 *(100)*	67 *(20)*	28.75 *(97.36)*
75% of Pull at Maximum Power—10th Gear-Manual mode										
216.45 *(161.41)*	14754 *(65.63)*	5.50 *(8.85)*	2160	3.0	0.421 *(0.256)*	16.65 *(3.28)*	0.010 *(0.006)*	193 *(89)*	61 *(16)*	28.86 *(97.73)*
50% of Pull at Maximum Power—10th Gear-Manual mode										
147.11 *(109.70)*	9851 *(43.82)*	5.60 *(9.01)*	2173	1.8	0.460 *(0.280)*	15.21 *(3.00)*	0.012 *(0.007)*	188 *(87)*	64 *(18)*	28.91 *(97.90)*
75% of Pull at Reduced Engine Speed—5.7 mph *(9.2 km/h)* Auto mode										
216.40 *(161.37)*	14963 *(66.56)*	5.42 *(8.72)*	1366	3.2	0.392 *(0.239)*	17.86 *(3.52)*	0.014 *(0.009)*	213 *(101)*	60 *(16)*	28.87 *(97.77)*
50% of Pull at Reduced Engine Speed—5.8 mph *(9.4 km/h)* Auto mode										
147.50 *(109.99)*	9854 *(43.83)*	5.61 *(9.03)*	1396	1.8	0.395 *(0.240)*	17.72 *(3.49)*	0.012 *(0.007)*	196 *(91)*	65 *(18)*	28.90 *(97.87)*

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

Dates of tests: October 5 -23, 2015

Manufacturer: John Deere Tractor Works, 3500 East Donald St., P.O. Box 270, Waterloo Ia, 50704-0270

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8412 **Fuel weight** 7.004 lbs/gal *(0.839 kg/l)* **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal *(1. 087 kg/l)* **Oil SAE** 10W-30 **API service classification** CJ-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard fluid **Front axle lubricant** John Deere Hy-Gard fluid **Total time engine was operated:** 27.5 hours

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with two turbochargers and air to air aftercooler and D.E.F (diesel exhaust fluid) exhaust treatment **Serial No.***RG6090U019633* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.661" x 5.354" *(118.4 mm x 136.0 mm)* **Compression ratio** 16.0 to 1 **Displacement** 548 cu in *(8984 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 and water separator **Fuel cooler** radiator for pump return fuel **Exhaust** DOC (diesel oxidation catalyst), SCR (selective catalyst reduction) and regenerative DPF (diesel particulate filter) integrated within a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 109.6 - 118.8 lb/h *(49.7 - 53.9 kg/h)* **High idle:** 2190 - 2210 rpm **Turbo boost:** nominal 20.3 -23.2 psi *(140 - 160 kPa)* as measured 21.5 psi *(148 kPa)*

CHASSIS: Type front wheel assist with duals **Serial No.***1RW8345RCFS104292* **Tread width** rear 60.0" *(1524 mm)* to 132.6" *(3368 mm)* front 64.0" *(1625 mm)* to 88.0" *(2235 mm)* **Wheelbase** 121.3" *(3080 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph *(km/h)*** first 1.49 *(2.40)* second 1.73 *(2.78)* third 2.00 *(3.22)* fourth 2.32 *(3.74)* fifth 2.69 *(4.33)* sixth 3.12 *(5.03)* seventh 3.59 *(5.77)* eighth 4.16 *(6.70)* ninth 4.82 *(7.75)* tenth 5.58 *(8.98)* eleventh 6.47 *(10.42)* twelfth 7.49 *(12.06)* thirteenth 8.70 *(14.00)* fourteenth 9.99 *(16.08)* fifteenth 11.60 *(18.67)* sixteenth 13.22 *(21.27)*

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
MANUAL MODE - 2100 ENGINE RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					7th Gear					
225.57	26971	3.14	2154	13.8	0.459	15.25	0.011	192	49	29.05
(168.20)	*(119.97)*	*(5.05)*			*(0.279)*	*(3.00)*	*(0.007)*	*(89)*	*(9)*	*(98.37)*
					8th Gear					
258.42	25941	3.74	2125	10.5	0.439	15.97	0.011	198	49	29.06
(192.70)	*(115.39)*	*(6.01)*			*(0.267)*	*(3.15)*	*(0.007)*	*(92)*	*(10)*	*(98.41)*
					9th Gear					
272.71	22936	4.46	2100	6.3	0.420	16.69	0.011	213	68	28.76
(203.36)	*(102.02)*	*(7.18)*			*(0.255)*	*(3.29)*	*(0.007)*	*(100)*	*(20)*	*(97.39)*
					10th Gear					
276.77	19702	5.27	2100	4.6	0.413	16.94	0.011	212	67	28.75
(206.39)	*(87.64)*	*(8.48)*			*(0.251)*	*(3.34)*	*(0.007)*	*(100)*	*(20)*	*(97.36)*
					11th Gear					
280.48	17092	6.15	2101	4.0	0.408	17.15	0.011	213	53	29.08
(209.15)	*(76.03)*	*(9.90)*			*(0.248)*	*(3.38)*	*(0.007)*	*(100)*	*(12)*	*(98.48)*
					12th Gear					
282.04	14759	7.17	2100	3.3	0.406	17.25	0.010	211	57	29.08
(210.31)	*(65.65)*	*(11.53)*			*(0.247)*	*(3.40)*	*(0.006)*	*(99)*	*(14)*	*(98.48)*
					13th Gear					
279.97	12538	8.38	2099	2.7	0.411	17.06	0.011	215	58	29.07
(208.77)	*(55.77)*	*(13.48)*			*(0.250)*	*(3.36)*	*(0.007)*	*(102)*	*(15)*	*(98.44)*

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
At no load in 9th gear	68.9	68.9
Transport speed - no load - 20th gear		70.5
Bystander in 20th gear		86.0

TIRES AND WEIGHT — **Tested Without Ballast**

Rear Tires - No., size, ply & psi*(kPa)*	Four 480/80R50;***;12*(85)*
Front Tires - No., size, ply & psi*(kPa)*	Two 420/85R34;***;26*(180)*
Height of Drawbar	21.0 in *(535 mm)*
Static Weight with operator - Rear	16320 lb *(7403 kg)*
- Front	11500 lb *(5216 kg)*
- Total	27820 lb*(12619 kg)*

seventeenth 15.35 *(24.70)* eighteenth 17.78 *(28.61)* nineteenth 20.64 *(33.22)* twentieth 23.89 *(38.44)* twenty-first 26.10 *(42.00)* twenty-second 26.10 *(42.00)* twenty-third 26.10 *(42.00)* electronically limited reverse 1.79 *(2.88)*, 2.41 *(3.88)*, 3.24 *(5.21)*, 4.32 *(6.95)*, 4.99 *(8.03)*, 6.71 *(10.80)*, 9.02 *(14.51)*, 12.02 *(19.35)*, 15.91 *(25.60)*, 18.64 *(30.00)*, 18.64 *(30.00)*, 18.64 *(30.00)* electronically limited **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 1995 engine rpm **Unladen tractor mass** 27645 lb *(12539 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The manufacturer declares that the average time between active regenerations is 50 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full load, under steady state conditions.

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 remote hydraulic flow claim of 85 GPM *(321l/min)* with the dual pumps combined. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2130**, Nebraska Summary 1000, December 10, 2015.

Roger M. Hoy
Director

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

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - AUTO MODE

(Loads based on 2100 engine rpm manual mode performance runs)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
4.2 mph *(6.8 km/h)*										
255.76 *(190.72)*	26043 *(115.84)*	3.68 *(5.92)*	1573	11.0	0.422 *(0.257)*	16.59 *(3.27)*	0.016 *(0.009)*	213 *(100)*	50 *(10)*	29.07 *(98.44)*
4.8 mph *(7.8 km/h)*										
271.43 *(202.40)*	22946 *(102.07)*	4.44 *(7.14)*	1556	6.5	0.406 *(0.247)*	17.27 *(3.40)*	0.015 *(0.009)*	215 *(101)*	69 *(20)*	28.76 *(97.39)*
5.6 mph *(9.0 km/hr)*										
276.31 *(206.04)*	19853 *(88.31)*	5.22 *(8.40)*	1550	4.7	0.397 *(0.242)*	17.63 *(3.47)*	0.015 *(0.009)*	215 *(102)*	67 *(20)*	28.76 *(97.39)*
6.6 mph *(10.6 km/h)*										
281.61 *(209.99)*	17038 *(75.79)*	6.20 *(9.98)*	1574	4.0	0.391 *(0.238)*	17.92 *(3.53)*	0.014 *(0.008)*	215 *(102)*	54 *(12)*	29.08 *(98.48)*
7.6 mph *(12.2 km/h)*										
281.76 *(210.10)*	14723 *(65.49)*	7.18 *(11.56)*	1576	3.2	0.388 *(0.236)*	18.06 *(3.56)*	0.014 *(0.009)*	214 *(101)*	57 *(14)*	29.08 *(98.48)*
8.8 mph *(14.2 km/h)*										
278.79 *(207.89)*	12380 *(55.07)*	8.45 *(13.59)*	1588	2.7	0.390 *(0.237)*	17.98 *(3.54)*	0.013 *(0.008)*	213 *(101)*	59 *(15)*	29.07 *(98.44)*

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
MANUAL MODE - 1750 ENGINE RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					7th Gear					
225.74	26960	3.14	2154	13.7	0.458	15.31	0.011	191	49	29.05
(168.33)	*(119.92)*	*(5.05)*			*(0.278)*	*(3.02)*	*(0.007)*	*(88)*	*(9)*	*(98.37)*
					8th Gear					
259.12	26002	3.74	2127	10.5	0.440	15.93	0.012	192	49	29.07
(193.23)	*(115.66)*	*(6.02)*			*(0.267)*	*(3.14)*	*(0.008)*	*(89)*	*(9)*	*(98.44)*
					9th Gear					
281.69	24694	4.28	2053	8.2	0.421	16.62	0.010	205	50	29.08
(210.06)	*(109.84)*	*(6.89)*			*(0.256)*	*(3.27)*	*(0.006)*	*(96)*	*(10)*	*(98.48)*
					10th Gear					
301.31	23753	4.76	1949	7.1	0.411	17.05	0.010	206	51	29.08
(224.69)	*(105.66)*	*(7.66)*			*(0.250)*	*(3.36)*	*(0.006)*	*(96)*	*(11)*	*(98.48)*
					11th Gear					
306.87	23103	4.98	1750	6.7	0.408	17.16	0.013	216	53	29.08
(228.83)	*(102.77)*	*(8.01)*			*(0.248)*	*(3.38)*	*(0.008)*	*(102)*	*(12)*	*(98.48)*
					12th Gear					
312.43	19977	5.87	1749	5.0	0.399	17.55	0.012	216	56	29.08
(232.98)	*(88.86)*	*(9.44)*			*(0.243)*	*(3.46)*	*(0.007)*	*(102)*	*(14)*	*(98.48)*
					13th Gear					
315.20	17158	6.89	1751	4.0	0.397	17.66	0.012	217	56	29.08
(235.04)	*(76.32)*	*(11.09)*			*(0.241)*	*(3.48)*	*(0.007)*	*(103)*	*(13)*	*(98.48)*
					14th Gear					
314.38	14793	7.97	1751	3.4	0.398	17.60	0.012	217	57	29.08
(234.43)	*(65.80)*	*(12.83)*			*(0.242)*	*(3.47)*	*(0.007)*	*(103)*	*(14)*	*(98.48)*
					15th Gear					
316.52	12758	9.31	1750	2.7	0.395	17.73	0.010	216	57	29.08
(236.03)	*(56.75)*	*(14.97)*			*(0.240)*	*(3.49)*	*(0.006)*	*(102)*	*(14)*	*(98.48)*

HYDRAULIC PERFORMANCE

CATEGORY: IVN
Quick Attach: Yes
OECD Static test

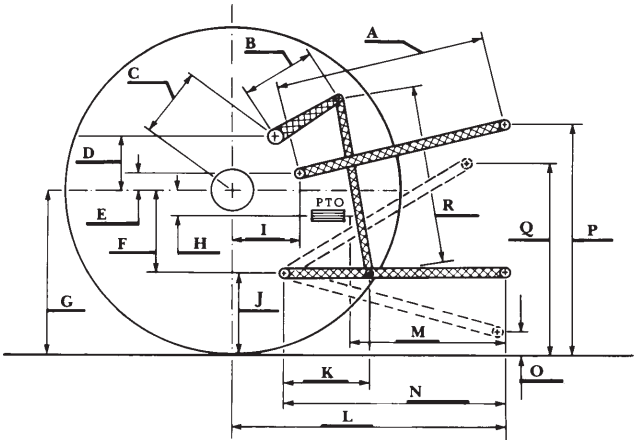
		Lift cylinders
Maxmum force exerted through whole range:	20254 lbs *(90.1 kN)*	2x115 mm
	15229 lbs *(67.7 kN)*	2x100 mm

	85 cc pump	85 cc and 35cc pumps combined
i) Sustained pressure at compensator cutoff:	3012 psi *(208 bar)*	2941 psi *(203 bar)*
	three outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	60.8 GPM *(230.2 l/min)*	84.2 GPM *(318.7 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	61.0 GPM *(230.7 l/min)*	80.0 GPM *(302.9 l/min)*
Delivery pressure:	2566 psi *(177 bar)*	2114 psi *(146 bar)*
Power:	91.2 HP *(68.0 kW)*	98.7 HP *(73.6 kW)*
	single outlet set	
	1/2" couplers	3/4" couplers
ii) Pump delivery rate at minimum pressure and rated engine speed:	37.4 GPM *(141.4 l/min)*	42.9 GPM *(162.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	36.3 GPM *(137.3 l/min)*	41.5 GPM *(157.2 l/min)*
Delivery pressure:	2345 psi *(162 bar)*	2301 psi *(159 bar)*
Power:	49.6 HP *(37.0 kW)*	55.8 HP *(41.6 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	28.5	*725*
B	20.5	*520*
C	20.9	*532*
D	18.9	*480*
E	12.0	*304*
F	14.4	*365*
G	38.2	*970*
H	9.1	*230*
I	23.6	*599*
J	23.8	*605*
K	28.7	*730*
L	52.8	*1340*
*L'	58.7	*1490*
M	25.9	*657*
N	40.1	*1019*
O	9.1	*230*
P	50.1	*1272*
Q	41.5	*1055*
R	45.7	*1160*

*L' to Quick Attach ends



JOHN DEERE 8345R DIESEL
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln