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Test 1618: John Deere 4255 Powershift Diesel 15-Speed

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1618—SUMMARY 056
JOHN DEERE 4255 POWERSHIFT DIESEL
15 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—1002 rpm)					
123.36 *(91.99)*	2200	7.34 *(27.78)*	0.411 *(0.250)*	16.81 *(3.31)*	
Maximum Power (2 Hours)					
126.68 *(94.46)*	2000	7.24 *(27.39)*	0.395 *(0.240)*	17.51 *(3.45)*	Air temperature
VARYING POWER AND FUEL CONSUMPTION					
123.36 *(91.99)*	2200	7.34 *(27.78)*	0.411 *(0.250)*	16.81 *(3.31)*	75°F *(24°C)*
107.57 *(30.22)*	2260	6.81 *(25.79)*	0.438 *(0.266)*	15.79 *(3.11)*	Relative humidity
82.02 *(61.16)*	2292	5.73 *(21.69)*	0.483 *(0.294)*	14.32 *(2.82)*	37%
55.42 *(41.33)*	2323	4.69 *(17.74)*	0.585 *(0.356)*	11.82 *(2.33)*	Barometer
27.98 *(20.86)*	2345	3.56 *(13.47)*	0.879 *(0.535)*	7.86 *(1.55)*	28.70″ Hg *(97.20 kPa)*
0.26 *(0.19)*	2367	2.47 *(9.36)*	66.632 *(40.531)*	0.10 *(0.02)*	

Maximum Torque 384 lb.-ft *(521 Nm)* at 1350 rpm
Maximum Torque Rise 30.5%
Torque Rise at 1000 engine rpm 24%

DRAWBAR PERFORMANCE
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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—7th Gear									
104.28 *(77.76)*	8873 *(39.47)*	4.41 *(7.09)*	2198	3.72	0.482 *(0.293)*	14.35 *(2.83)*	188 *(87)*	72 *(22)*	28.99 *(98.17)*
75% of Pull at Maximum Power—7th Gear									
81.87 *(61.05)*	6654 *(29.60)*	4.61 *(7.43)*	2275	2.68	0.528 *(0.321)*	13.09 *(2.58)*	185 *(85)*	72 *(22)*	28.99 *(98.17)*
50% of Pull at Maximum Power—7th Gear									
56.05 *(41.79)*	4446 *(19.78)*	4.73 *(7.61)*	2309	1.69	0.621 *(0.378)*	11.13 *(2.19)*	181 *(83)*	72 *(22)*	28.99 *(98.17)*
75% of Pull at Reduced Engine Speed—9th Gear									
81.61 *(60.86)*	6654 *(29.60)*	4.60 *(7.40)*	1757	2.60	0.478 *(0.291)*	14.45 *(2.85)*	183 *(84)*	72 *(22)*	28.99 *(98.17)*
50% of Pull at Reduced Engine Speed—9th Gear									
55.96 *(41.73)*	4438 *(19.74)*	4.73 *(7.61)*	1789	1.69	0.539 *(0.328)*	12.83 *(2.53)*	180 *(82)*	72 *(22)*	28.99 *(98.17)*

Location of Test: Center for Agricultural Equipment, Lincoln Nebraska 68583-0832, U.S.A.

Dates of Test: April-May, 1989

Manufacturer: John Deere Waterloo Works, P.O. Box 3500, Waterloo, Iowa 50704

FUEL OIL and TIME: Fuel No. 2 Diesel **Cetane No.** 51.1 **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8301 **Fuel weight** 6.912 lbs/gal *(0.828 kg/l)* **Oil SAE** 15W40 **API service classification** CD/SD **To motor** 3.820 gal *(14.458 l)* **Drained from motor** 3.693 gal *(13.980 l)* **Transmission and hydraulic lubricant** John Deere HyGard fluid **Front axle lubricant** John Deere GL-5 Gear Lubricant 85W-140 **Total time engine was operated** 25.5 hours.

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger **Serial No.** *RG6076T101998* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** (as specified) 4.56″ × 4.75″ *(115.8 mm × 120.7 mm)* **Compression ratio** 16.0 to 1 **Displacement** 466 cu in *(7634 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **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 prefilter **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan.

ENGINE OPERATING PARAMETERS: Fuel rate 49.6-54.1 lb/hr *(22.5-24.5 kg/hr)* **High idle** 2350-2400 rpm **Turbo boost** nominal 12-15 psi *(83-103 kPa)* as measured 12.2 psi *(84 kPa)*.

CHASSIS: Type front wheel assist **Serial No.** *RW4255P001019* **Tread width** rear 62.0″ *(1574 mm)* to 110.2″ *(2800 mm)* front 60.6″ *(1538 mm)* to 88.0″ *(2235 mm)* **Wheel base** 105.3″ *(2675 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph *(km/h)*** first 1.41 *(2.27)* second 2.02 *(3.25)* third 2.38 *(3.83)* fourth 3.06 *(4.93)* fifth 3.53 *(5.68)* sixth 4.01 *(6.45)* seventh 4.61 *(7.43)* eighth 5.17 *(8.32)* ninth 5.96 *(9.58)* tenth 6.76 *(10.88)* eleventh 7.79 *(12.53)* twelfth 8.94 *(14.38)* thirteenth 11.06 *(17.80)* fourteenth 15.08 *(24.27)* fifteenth 18.65 *(30.02)* reverse 1.72 *(2.76)*, 2.46 *(3.96)*, 3.73 *(6.01)*, 5.62 *(9.05)* **Clutch** multiple wet disc hydraulically power actuated by foot pedal **Brakes** multiple wet disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2201 engine rpm and 1002 rpm at 2200 engine rpm **Unladen tractor mass** 14050 lb *(6373 kg)*.

DRAWBAR PERFORMANCE AT 2000 RPM
MAXIMUM POWER IN SELECTED GEARS

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)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				4th Gear					
93.89 *(70.01)*	13548 *(60.26)*	2.60 *(4.18)*	2196	14.28	0.540 *(0.329)*	12.80 *(2.52)*	185 *(85)*	65 *(18)*	29.06 *(98.41)*
				5th Gear					
104.00 *(77.55)*	12577 *(55.95)*	3.10 *(4.99)*	2100	7.17	0.485 *(0.295)*	14.25 *(2.81)*	185 *(85)*	64 *(18)*	29.07 *(98.44)*
				6th Gear					
106.24 *(79.22)*	11789 *(52.44)*	3.38 *(5.44)*	2004	6.58	0.471 *(0.286)*	14.69 *(2.89)*	187 *(86)*	67 *(19)*	29.04 *(98.34)*
				7th Gear					
109.43 *(81.60)*	10289 *(45.77)*	3.99 *(6.42)*	2001	4.20	0.457 *(0.278)*	15.12 *(2.98)*	186 *(85)*	63 *(17)*	29.09 *(98.51)*
				8th Gear					
106.45 *(79.38)*	8877 *(39.48)*	4.50 *(7.24)*	1997	3.40	0.469 *(0.285)*	14.73 *(2.90)*	185 *(85)*	63 *(17)*	29.08 *(98.48)*
				9th Gear					
106.41 *(79.35)*	7644 *(34.00)*	5.22 *(8.40)*	2003	2.92	0.470 *(0.286)*	14.72 *(2.90)*	188 *(86)*	67 *(19)*	29.03 *(98.31)*
				10th Gear					
106.59 *(79.48)*	6731 *(29.94)*	5.94 *(9.56)*	1999	2.51	0.469 *(0.285)*	14.73 *(2.90)*	186 *(86)*	69 *(21)*	29.02 *(98.27)*
				11th Gear					
106.01 *(79.05)*	5782 *(25.72)*	6.88 *(11.06)*	2000	2.10	0.472 *(0.287)*	14.65 *(2.89)*	187 *(86)*	69 *(21)*	29.01 *(98.24)*
				12th Gear					
108.93 *(81.23)*	5164 *(22.97)*	7.91 *(12.73)*	2000	1.77	0.456 *(0.277)*	15.16 *(2.99)*	188 *(86)*	70 *(21)*	29.00 *(98.21)*
				13th Gear					
105.86 *(78.94)*	4038 *(17.96)*	9.83 *(15.82)*	2000	1.36	0.471 *(0.287)*	14.67 *(2.89)*	188 *(86)*	71 *(22)*	28.99 *(98.17)*

DRAWBAR PERFORMANCE AT 2000 RPM
MAXIMUM POWER IN SELECTED GEARS—BALLASTED TRACTOR

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)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				3rd Gear					
85.79 *(63.97)*	15746 *(70.04)*	2.04 *(3.29)*	2249	14.53	0.573 *(0.349)*	12.05 *(2.37)*	186 *(86)*	72 *(22)*	28.67 *(97.09)*
				4th Gear					
101.77 *(75.89)*	14006 *(62.30)*	2.72 *(4.39)*	2122	7.16	0.493 *(0.300)*	14.01 *(2.76)*	188 *(87)*	79 *(26)*	28.68 *(97.12)*
				5th Gear					
104.45 *(77.89)*	13074 *(58.16)*	3.00 *(4.82)*	2000	6.03	0.477 *(0.290)*	14.49 *(2.85)*	189 *(87)*	81 *(27)*	28.68 *(97.12)*
				6th Gear					
105.74 *(78.85)*	11492 *(51.12)*	3.45 *(5.55)*	2001	4.72	0.470 *(0.286)*	14.70 *(2.89)*	190 *(88)*	83 *(28)*	28.69 *(97.16)*
				7th Gear					
107.82 *(80.40)*	10019 *(44.57)*	4.04 *(6.49)*	2002	3.30	0.460 *(0.280)*	15.01 *(2.96)*	187 *(86)*	71 *(22)*	28.66 *(97.05)*
				8th Gear					
105.40 *(78.60)*	8727 *(38.82)*	4.53 *(7.29)*	2002	2.97	0.474 *(0.288)*	14.58 *(2.87)*	190 *(88)*	81 *(27)*	28.64 *(96.99)*
				9th Gear					
105.08 *(78.36)*	7509 *(33.40)*	5.25 *(8.45)*	2003	2.48	0.475 *(0.289)*	14.56 *(2.87)*	191 *(88)*	81 *(27)*	28.64 *(96.99)*
				10th Gear					
104.98 *(78.29)*	6592 *(29.32)*	5.97 *(9.61)*	2001	2.32	0.478 *(0.291)*	14.47 *(2.85)*	189 *(87)*	76 *(24)*	28.64 *(96.99)*
				11th Gear					
104.73 *(78.10)*	5690 *(25.31)*	6.90 *(11.11)*	2002	1.99	0.477 *(0.290)*	14.50 *(2.86)*	191 *(88)*	82 *(28)*	28.64 *(96.99)*
				12th Gear					
107.41 *(80.09)*	5074 *(22.57)*	7.94 *(12.78)*	2002	1.74	0.464 *(0.282)*	14.88 *(2.93)*	190 *(88)*	81 *(27)*	28.64 *(96.99)*
				13th Gear					
104.00 *(77.55)*	3955 *(17.59)*	9.86 *(15.87)*	2002	1.33	0.481 *(0.292)*	14.38 *(2.83)*	191 *(88)*	83 *(28)*	28.64 *(96.99)*

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 return was maintained at 121° F *(49° C)*. This tractor is equipped with a variable speed cooling fan. Since engine power is influenced by fan speed, all power tests were conducted at approximately the same ambient air temperatures. This tractor did not meet manufacturers 3 point lift capacity claim of 6550 lb *(2971 kg)* or 8470 lb *(3842 kg)* with lift assist cylinder. The performance figures on this summary were taken from a test conducted under the OECD restricted standard test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1618,** Summary 056, December 22, 1989.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
R. D. GRISSO
G. J. HOFFMAN
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE AT 2200 RPM
MAXIMUM POWER IN SELECTED GEARS—BALLASTED TRACTOR

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)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				3rd Gear					
86.79 *(64.72)*	15833 *(70.43)*	2.06 *(3.31)*	2247	14.15	0.568 *(0.345)*	12.17 *(2.40)*	185 *(85)*	71 *(22)*	28.66 *(97.05)*
				4th Gear					
101.24 *(75.49)*	13271 *(59.03)*	2.86 *(4.60)*	2200	6.03	0.497 *(0.302)*	13.91 *(2.74)*	187 *(86)*	76 *(24)*	28.67 *(97.09)*
				5th Gear					
102.61 *(76.52)*	11517 *(51.23)*	3.34 *(5.38)*	2199	4.72	0.493 *(0.300)*	14.01 *(2.76)*	192 *(89)*	83 *(28)*	28.68 *(97.12)*
				6th Gear					
103.14 *(76.92)*	10101 *(44.93)*	3.83 *(6.16)*	2201	3.94	0.486 *(0.296)*	14.22 *(2.80)*	191 *(88)*	85 *(29)*	28.69 *(97.16)*
				7th Gear					
104.36 *(77.82)*	8783 *(39.07)*	4.46 *(7.17)*	2198	2.98	0.485 *(0.295)*	14.26 *(2.81)*	186 *(86)*	70 *(21)*	28.66 *(97.05)*
				8th Gear					
100.51 *(74.95)*	7529 *(33.49)*	5.01 *(8.06)*	2201	2.48	0.500 *(0.304)*	13.83 *(2.72)*	190 *(88)*	81 *(27)*	28.64 *(96.99)*
				9th Gear					
100.12 *(74.66)*	6492 *(28.88)*	5.78 *(9.31)*	2200	2.24	0.503 *(0.306)*	13.73 *(2.71)*	190 *(88)*	81 *(27)*	28.64 *(96.99)*
				10th Gear					
100.08 *(74.63)*	5707 *(25.39)*	6.58 *(10.58)*	2197	2.08	0.503 *(0.306)*	13.74 *(2.71)*	189 *(87)*	78 *(26)*	28.64 *(96.99)*
				11th Gear					
100.33 *(74.82)*	4947 *(22.01)*	7.61 *(12.24)*	2199	1.66	0.500 *(0.304)*	13.82 *(2.72)*	190 *(88)*	82 *(28)*	28.64 *(96.99)*
				12th Gear					
101.83 *(75.94)*	4361 *(19.40)*	8.76 *(14.09)*	2202	1.49	0.495 *(0.301)*	13.97 *(2.75)*	190 *(88)*	83 *(28)*	28.64 *(96.99)*

TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
Gear closest to 4.7 mph *(7.5 km/h)*—7th Gear	75.0
Maximum sound level	75.5
Transport speed—no load—15th Gear	77.5
Bystander in 15th Gear	86.5

LUGGING ABILITY IN 10th GEAR

Crankshaft Speed rpm	2197	1983	1763	1542	1325	1101
Pull—lbs *(kN)*	5707 *(25.39)*	6645 *(29.56)*	7265 *(32.32)*	7519 *(33.45)*	7761 *(34.52)*	7523 *(33.46)*
Increase in Pull %	0	16	27	32	36	32
Power—Hp *(kW)*	100.08 *(74.63)*	104.89 *(78.21)*	101.57 *(75.74)*	91.86 *(68.50)*	81.36 *(60.67)*	65.63 *(48.94)*
Speed—Mph *(km/h)*	6.58 *(10.58)*	5.92 *(9.53)*	5.24 *(8.44)*	4.58 *(7.37)*	3.93 *(6.33)*	3.27 *(5.27)*
Slip %	2.08	2.32	2.48	2.65	2.81	2.65

THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi. *(bar)*	2520 *(174)*
Location	remote outlet
Hydraulic oil temperature °F*(°C)*	142 *(61)*
Location	transmission sump
Category	II
Quick attach	No

Hitch point distance to ground level in. *(mm)*	8.7 *(221)*	15.7 *(399)*	22.4 *(569)*	30.4 *(772)*	37.4 *(950)*
Lift force on frame lb. " " " " " " *(kN)*	7550 *(33.6)*	7482 *(33.3)*	7199 *(32.0)*	6526 *(29.0)*	6175 *(27.5)*
			with lift assist cylinder		
Hitch point distance to ground level in. *(mm)*	9.0 *(229)*	16.0 *(406)*	22.3 *(566)*	30.4 *(772)*	37.4 *(950)*
Lift force on frame lb. " " " " " " *(kN)*	9833 *(43.7)*	9872 *(43.9)*	9540 *(42.4)*	8633 *(38.4)*	8077 *(35.9)*

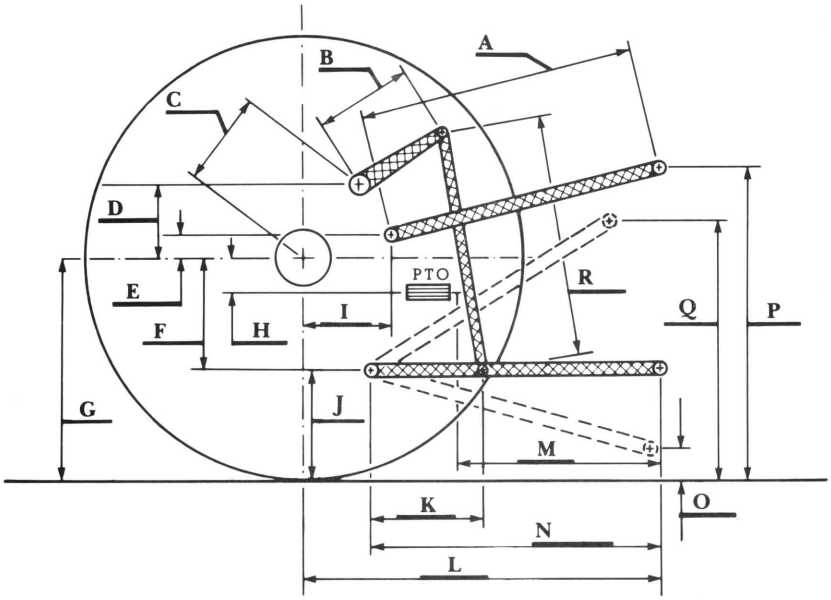
TIRES AND WEIGHT	With Ballast	Without Ballast
Rear Tires—No., size, ply & psi (kPa)	Four 18.4R38; *; 12 *(85)*	Two 18.4R38; *; 16 *(110)*
Ballast—Duals (total)	1410 lb *(640 kg)*	None
—Cast Iron (total)	None	None
Front Tires—No., size, ply & psi *(kPa)*	Two 14.9R26; ***; 30 *(205)*	Two 14.9R26; ***; 30 *(205)*
Ballast—Test Equip (total)	110 lb *(50 kg)*	None
—Cast Iron (total)	None	None
Height of Drawbar	17.5 in *(445 mm)*	17 in *(430 mm)*
Static Weight—Rear	10220 lb *(4636 kg)*	8695 lb *(3944 kg)*
—Front	5350 lb *(2427 kg)*	5355 lb *(2429 kg)*
—Total	15570 lb *(7063 kg)*	14050 lb *(6373 kg)*

THREE POINT HITCH PERFORMANCE
(OECD Static Test)

CATEGORY: II
Quick Attach: None

Maximum Force Exerted Through Whole Range:	5373 lbs *(23.9 kN)*
	*7107 lbs *(31.6 kN)*
i) Opening pressure of relief valve:	NA
Sustained pressure with pump stalled:	2520 psi *(174 Bar)*
ii) Pump delivery rate at minimum pressure:	27.1 GPM *(102.6 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	26.2 GPM *(99.2 l/min)*
Delivery pressure:	2050 psi *(141 Bar)*
Power:	31.3 Hp *(23.4 kW)*

*with lift assist cylinder



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	26.6	*676*
B	11.5	*292*
C	11.3	*287*
D	10.9	*278*
E	5.6	*143*
F	10.1	*256*
G	33.1	*842*
H	6.5	*165*
I	14.3	*362*
J	22.9	*583*
K	23.1	*587*
L	41.6	*1056*
M	22.0	*558*
N	37.1	*942*
O	8.3	*211*
P	43.0	*1093*
Q	35.5	*903*
R	32.8	*833*

John Deere 4255 Powershift Diesel

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