

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

---

1-1-1992

## Test 1660: John Deere 5200 Diesel 9-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

---

Nebraska Tractor Test Lab, "Test 1660: John Deere 5200 Diesel 9-Speed" (1992). *Nebraska Tractor Tests*. 1969.

<https://digitalcommons.unl.edu/tractormuseumlit/1969>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# NEBRASKA OECD TRACTOR TEST 1660—SUMMARY 115

## JOHN DEERE 5200 DIESEL

### 9 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—545 rpm)				
41.12 (30.66)	2399	2.53 (9.56)	0.429 (0.261)	16.28 (3.21)
Maximum Power (2 Hours)				
41.90 (31.24)	2246	2.51 (9.49)	0.418 (0.254)	16.71 (3.29)

#### VARYING POWER AND FUEL CONSUMPTION

41.12 (30.66)	2399	2.53 (9.56)	0.429 (0.261)	16.28 (3.21)	Air temperature  74°F (23°C)
35.86 (26.74)	2466	2.23 (8.45)	0.435 (0.265)	16.06 (3.16)	
27.30 (20.36)	2503	1.89 (7.15)	0.484 (0.294)	14.45 (2.85)	Relative humidity  37%
18.24 (13.60)	2509	1.59 (6.01)	0.609 (0.370)	11.48 (2.26)	
9.18 (6.84)	2524	1.25 (4.71)	0.948 (0.577)	7.37 (1.45)	Barometer  29.04" Hg (98.33 kPa)
0.44 (0.33)	2538	0.86 (3.25)	13.656 (8.306)	0.51 (0.10)	

Maximum Torque 115 lb.-ft (156 Nm) at 1320 rpm

Maximum Torque Rise 27.8%

#### 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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—5th (II2) Gear									
35.74 (26.65)	3345 (14.88)	4.01 (6.45)	2396	6.61	0.501 (0.305)	13.93 (2.74)	178 (81)	64 (18)	29.18 (98.81)
75% of Pull at Maximum Power—5th (II2) Gear									
28.38 (21.17)	2510 (11.17)	4.24 (6.82)	2482	4.48	0.533 (0.324)	13.10 (2.58)	178 (81)	71 (22)	29.12 (98.61)
50% of Pull at Maximum Power—5th (II2) Gear									
19.37 (14.44)	1671 (7.43)	4.35 (7.00)	2505	2.90	0.629 (0.383)	11.10 (2.19)	176 (80)	71 (22)	29.12 (98.61)
75% of Pull at Reduced Engine Speed—6th (II3) Gear									
28.40 (21.18)	2517 (11.19)	4.23 (6.81)	1816	4.48	0.470 (0.286)	14.88 (2.93)	179 (82)	71 (22)	29.12 (98.61)
50% of Pull at Reduced Engine Speed—6th (II3) Gear									
19.40 (14.47)	1668 (7.42)	4.36 (7.02)	1842	3.02	0.524 (0.319)	13.34 (2.63)	177 (80)	71 (22)	29.12 (98.61)

#### 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)
3th (I3) Gear									
30.66 (22.86)	5162 (22.96)	2.23 (3.58)	2469	14.50	0.559 (0.340)	12.51 (2.46)	176 (80)	56 (13)	29.15 (98.71)
4th (II1) Gear									
33.86 (25.25)	4842 (21.54)	2.62 (4.22)	2417	12.41	0.527 (0.321)	13.25 (2.61)	177 (81)	60 (16)	29.18 (98.81)
5th (II2) Gear									
35.85 (26.73)	3519 (15.65)	3.82 (6.15)	2296	7.02	0.495 (0.301)	14.13 (2.78)	178 (81)	64 (18)	29.18 (98.81)
6th (II3) Gear									
35.70 (26.62)	2559 (11.38)	5.23 (8.42)	2245	4.54	0.488 (0.297)	14.33 (2.82)	178 (81)	65 (18)	29.18 (98.81)
7th (III1) Gear									
35.73 (26.64)	1809 (8.05)	7.41 (11.92)	2247	3.15	0.487 (0.296)	14.35 (2.83)	179 (81)	68 (20)	29.15 (98.71)

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

**Dates of Test:** September 17 to October 7, 1992

**Manufacturer:** John Deere Commercial Products,  
Inc., P.O. Box 15458, Augusta, Ga 30919-1458

**FUEL OIL and TIME:** Fuel No. 2 Diesel Cetane No. 53.9 Specific gravity converted to 60°/60°F (15°/15°C) 0.8392 Fuel weight 6.987 lbs/gal (0.837 kg/l) Oil SAE 15W40 API service classification SG/CE To motor 1.948 gal (7.373 l) Drained from motor 1.767 gal (6.688 l) Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant John Deere GL-5 Gear Lubricant SAE 80W-90 Total time engine was operated 28.5 hours.

**ENGINE:** Make John Deere Diesel Type three cylinder vertical Serial No. \*CD 3029D 104433\* Crankshaft lengthwise Rated rpm 2400 Bore and stroke (as specified) 4.19" × 4.331" (106.4 mm × 110.0 mm) Compression ratio 17.8 to 1 Displacement 179 cu in (2934 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow cartridge Fuel filter one paper element and sediment bowl Muffler underhood Exhaust vertical Cooling medium temperature control one thermostat

**ENGINE OPERATING PARAMETERS:** Fuel rate 16.8-18.3 lb/hr (7.6-8.3 kg/hr) High idle 2550-2600 rpm

**CHASSIS:** Type front wheel assist Serial No. \*LV5200C-110022\* Tread width rear 55.8" (1417 mm) to 71.7" (1820 mm) front 51.9" (1317 mm) to 78.0" (1982 mm) Wheel base 80.7" (2050 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio Nominal travel speeds mph (km/h) first 1.30 (2.09) second 1.88 (3.02) third 2.56 (4.12) fourth 3.01 (4.84) fifth 4.34 (6.98) sixth 5.92 (9.52) seventh 8.25 (13.28) eighth 11.92 (19.18) ninth 16.25 (26.15) reverse 2.19 (3.52), 5.05 (8.13), 13.87 (22.32) Clutch single dry disc operated by foot pedal Brakes wet single disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Power take-off 540 rpm at 2376 engine rpm Unladen tractor mass 4930 lb (2236 kg).

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

**DRAWBAR PERFORMANCE  
(BALLASTED—FRONT DRIVE DISENGAGED)  
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)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—5th (II2) Gear</b>									
35.18 (26.23)	3390 (15.08)	3.89 (6.26)	2400	8.35	0.506 (0.308)	13.81 (2.72)	178 (81)	64 (18)	29.00 (98.21)
<b>75% of Pull at Maximum Power—5th (II2) Gear</b>									
28.14 (20.98)	2544 (11.31)	4.15 (6.68)	2485	5.67	0.536 (0.326)	13.05 (2.57)	178 (81)	76 (24)	28.98 (98.14)
<b>50% of Pull at Maximum Power—5th (II2) Gear</b>									
19.32 (14.41)	1693 (7.53)	4.28 (6.89)	2510	3.65	0.628 (0.382)	11.13 (2.19)	176 (80)	76 (24)	28.98 (98.14)
<b>75% of Pull at Reduced Engine Speed—6th (II3) Gear</b>									
28.10 (20.96)	2549 (11.34)	4.13 (6.65)	1817	5.67	0.477 (0.290)	14.65 (2.89)	180 (82)	76 (24)	28.98 (98.14)
<b>50% of Pull at Reduced Engine Speed—6th (II3) Gear</b>									
19.34 (14.42)	1688 (7.51)	4.30 (6.92)	1847	3.65	0.529 (0.322)	13.20 (2.60)	177 (81)	76 (24)	28.98 (98.14)

**MAXIMUM POWER IN SELECTED GEARS**

<b>4th (II1) Gear</b>									
29.73 (22.17)	4338 (19.29)	2.57 (4.14)	2462	14.88	0.559 (0.340)	12.51 (2.46)	176 (80)	60 (16)	29.00 (98.21)
<b>5th (II2) Gear</b>									
35.18 (26.23)	3390 (15.08)	3.89 (6.26)	2400	8.35	0.506 (0.308)	13.81 (2.72)	178 (81)	64 (18)	29.00 (98.21)
<b>6th (II3) Gear</b>									
35.15 (26.21)	2400 (10.68)	5.49 (8.84)	2402	5.31	0.503 (0.306)	13.88 (2.74)	178 (81)	68 (20)	29.00 (98.21)
<b>7th (III1) Gear</b>									
35.04 (26.13)	1691 (7.52)	7.77 (12.51)	2394	3.58	0.501 (0.303)	13.94 (2.75)	178 (81)	68 (20)	29.00 (98.21)

**DRAWBAR PERFORMANCE  
(BALLASTED—FRONT DRIVE ENGAGED)  
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)
<b>2nd (I2) Gear</b>									
25.42 (18.96)	5851 (26.03)	1.63 (2.62)	2490	14.80	0.589 (0.358)	11.86 (2.34)	173 (78)	53 (12)	29.00 (98.21)
<b>3rd (I3) Gear</b>									
32.76 (24.43)	5709 (25.39)	2.15 (3.46)	2417	15.00	0.544 (0.331)	12.84 (2.53)	177 (81)	60 (16)	29.00 (98.21)
<b>4th (II1) Gear</b>									
35.15 (26.21)	4973 (22.12)	2.65 (4.27)	2397	10.08	0.507 (0.308)	13.78 (2.72)	177 (81)	60 (16)	29.00 (98.21)
<b>5th (II2) Gear</b>									
36.03 (26.87)	3363 (14.96)	4.02 (6.47)	2395	5.48	0.494 (0.300)	14.14 (2.79)	178 (81)	64 (18)	29.00 (98.21)
<b>6th (II3) Gear</b>									
35.42 (26.41)	2366 (10.52)	5.61 (9.03)	2404	3.27	0.503 (0.306)	13.89 (2.74)	178 (81)	64 (18)	29.00 (98.21)
<b>7th (III1) Gear</b>									
35.11 (26.18)	1673 (7.44)	7.87 (12.67)	2390	2.12	0.505 (0.307)	13.82 (2.72)	179 (82)	68 (20)	29.00 (98.21)

**TRACTOR SOUND LEVEL WITHOUT CAB**

	<b>dB(A)</b>
At 75% of load in 5th (II2) gear—front drive engaged	93.0
Bystander in 9th (III3 gear)	83.5

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. During steady state operation on the PTO dynamometer, the character of the fuel system causes momentary engine speed fluctuations of +/– 10 rpm. For the maximum power tests, the fuel temperature at the injection pump was maintained at 144° F (62° C). The performance figures on this summary were taken from a test conducted under the OECD Code II restricted standard test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1660**, Summary 115, October 23, 1992.

LOUIS I. LEVITICUS

Engineer-in-Charge

L. L. BASHFORD

R. D. GRISSO

K. VON BARGEN

Board of Tractor Test Engineers

**TIRES AND WEIGHT**

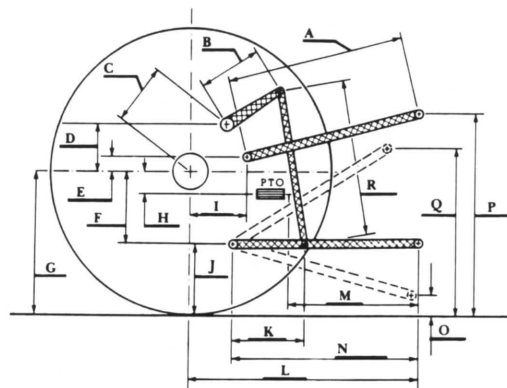
	With Ballast	Without Ballast
<b>Rear Tires</b> —No., size, ply & psi (kPa)	Two 16.9-28; 6; 14 (95)	Two 16.9-28; 6; 12 (85)
<b>Ballast</b> —Liquid (total)	992 lb (450 kg)	None
—Cast Iron (total)	None	None
<b>Front Tires</b> —No., size, ply & psi (kPa)	Two 9.5-24; 6; 12 (85)	Two 9.5-24; 6; 12 (85)
<b>Ballast</b> —Liquid (total)	None	None
—Test Equip. (total)	43 lb (19 kg)	None
<b>Height of Drawbar</b>	16.5 in (420 mm)	16.5 in (420 mm)
<b>Static Weight with Operator</b> —Rear	4022 lb (1824 kg)	3030 lb (1374 kg)
—Front	2108 lb (956 kg)	2065 lb (937 kg)
—Total	6130 lb (2780 kg)	5095 lb (2311 kg)

**THREE POINT HITCH PERFORMANCE (SAE Static Test)**

Observed Maximum Pressure psi. (bar)	2830 (195)				
Location	remote outlet				
Hydraulic oil temperature °F(°C)	170 (77)				
Location	hydraulic sump				
Category	II				
Quick attach	none				
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. (kN)	4686 (20.8)	4713 (21.0)	4625 (20.6)	4178 (18.6)	3619 (16.1)

**THREE POINT HITCH PERFORMANCE (OECD Static Test)**

CATEGORY: II		
Quick Attach: none		
Maximum Force Exerted Through Whole Range:		2905 lbs (12.9 kN)
i) Opening pressure of relief valve:		NA
Sustained pressure with relief valve open:		2830 psi (195 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:		11.8 GPM (44.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:		10.3 GPM (39.0 l/min)
Delivery pressure:		2450 psi (169 bar)
Power:		14.7 HP (11.0 kW)

**HITCH DIMENSIONS AS TESTED—NO LOAD**

	inch	mm
A	24.1	613
B	11.0	280
C	14.0	356
D	12.2	311
E	11.2	284
F	6.5	166
G	26.4	670
H	0.2	4
I	15.1	384
J	19.8	504
K	16.7	424
L	39.2	996
M	22.4	570
N	32.9	836
O	7.0	178
P	43.9	1114
Q	33.0	838
R	20.7	527

**John Deere 5200 Diesel**