

January 2003

## Test 1829: New Holland TG 210 Diesel

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



Part of the [Applied Mechanics Commons](#)

---

"Test 1829: New Holland TG 210 Diesel" (2003). *Nebraska Tractor Tests*. 264.  
<http://digitalcommons.unl.edu/tractormuseumlit/264>

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 1829—SUMMARY 417

## NEW HOLLAND TG 210 DIESEL

### 18 SPEED

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

**Dates of Test:** October 7-27, 2003

**Manufacturer:** CNH America LLC, 700 State St. Racine, Wi. 53404 USA

**FUEL, 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) **Oil SAE 15W40 API service classification SF/CD/CE** **Transmission and hydraulic lubricant** New Holland Multi-Tran fluid **Front axle lubricant** SAE 85W-140 API GL-5 **Total time engine was operated:** 26.0 hours

**ENGINE: Make** Consolidated Diesel Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** \*46277159\* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.488" x 5.315" (114.0 mm x 135.0 mm) **Compression ratio** 17.0 to 1 **Displacement** 505 cu in (8268 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** two paper elements and prefilter **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** **Fuel rate:** 78.8-86.6 lb/h (35.7 - 39.3 kg/h) **High idle:** 2375-2465 rpm **Turbo boost:** nominal 19.6 - 23.9 psi (135 - 165 kPa) as measured 21.8 psi (150 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** \*JAW126668\* **Tread width** rear 64.0" (1626 mm) to 129.0" (3277 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 129.3" (3284 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 1.96 (3.15) second 2.24 (3.61) third 2.58 (4.16) fourth 2.96 (4.77) fifth 3.41 (5.48) sixth 3.90 (6.28) seventh 4.55 (7.33) eighth 5.23 (8.41) ninth 6.02 (9.69) tenth 6.91 (11.12) eleventh 7.92 (12.75) twelfth 9.09 (14.63) thirteenth 11.33 (18.23) fourteenth 12.99 (20.91) fifteenth 14.98 (24.11) sixteenth 17.19 (27.66) seventeenth 19.72 (31.73) eighteenth 22.61 (36.39) reverse 2.81 (4.53), 3.23 (5.20), 6.56 (10.55), 7.52 (12.10) **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2000 engine rpm or 1000 rpm at 1984 engine rpm **Unladen tractor mass** 20455 lb (9278 kg)

#### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1110 rpm)</b>					
173.09 (129.07)	2200	11.66 (44.15)	0.474 (0.288)	14.84 (2.92)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
193.34 (144.18)	1982	11.70 (44.28)	0.426 (0.259)	16.53 (3.26)	
<b>Maximum Power (2 hours)</b>					
195.30 (145.63)	1950	11.64 (44.07)	0.419 (0.255)	16.77 (3.30)	

#### VARYING POWER AND FUEL CONSUMPTION

173.09 (129.07)	2200	11.66 (44.15)	0.474 (0.288)	14.84 (2.92)	Air temperature
151.52 (112.98)	2269	10.45 (39.56)	0.485 (0.295)	14.50 (2.86)	80°F (27°C)
116.00 (86.50)	2311	8.57 (32.46)	0.520 (0.316)	13.53 (2.67)	Relative humidity
78.49 (58.53)	2355	6.87 (26.00)	0.615 (0.374)	11.43 (2.25)	57%
40.15 (29.94)	2388	5.08 (19.22)	0.889 (0.541)	7.91 (1.56)	Barometer
0.00 (0.00)	2440	3.46 (13.08)	---	---	28.80" Hg (97.53 kPa)

Maximum Torque - 679 lb.-ft. (921 Nm) at 1250 rpm  
 Maximum Torque Rise - 64.3%  
 Torque rise at 1798 engine rpm - 38%

#### 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)	Temp. °F (°C) cool-ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th Gear</b>									
146.80 (109.47)	12708 (56.53)	4.33 (6.97)	2186	3.39	0.563 (0.342)	12.50 (2.46)	197 (92)	53 (12)	28.78 (97.46)
<b>75% of Pull at Maximum Power—7th Gear</b>									
115.63 (86.23)	9510 (42.30)	4.56 (7.34)	2274	2.25	0.618 (0.376)	11.37 (2.24)	197 (92)	61 (16)	28.73 (97.29)
<b>50% of Pull at Maximum Power—7th Gear</b>									
79.78 (59.49)	6345 (28.22)	4.72 (7.60)	2331	1.39	0.721 (0.439)	9.75 (1.92)	196 (91)	62 (17)	28.72 (97.26)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
115.85 (86.39)	9500 (42.26)	4.57 (7.35)	1727	2.25	0.488 (0.297)	14.41 (2.84)	187 (86)	61 (16)	28.72 (97.26)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
79.39 (59.20)	6337 (28.19)	4.70 (7.56)	1759	1.38	0.547 (0.333)	12.86 (2.53)	184 (85)	61 (16)	28.71 (97.22)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - 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)
4th Gear									
140.05 (104.43)	20092 (89.37)	2.61 (4.21)	2196	10.79	0.605 (0.368)	11.64 (2.29)	197 (92)	48 (9)	28.77 (97.43)
5th Gear									
149.10 (111.19)	19191 (85.37)	2.91 (4.69)	2095	10.03	0.565 (0.344)	12.45 (2.45)	197 (92)	51 (11)	28.78 (97.46)
6th Gear									
157.87 (117.72)	18378 (81.75)	3.22 (5.18)	1973	7.02	0.529 (0.322)	13.29 (2.62)	194 (90)	52 (11)	28.78 (97.46)
7th Gear									
163.24 (121.73)	16219 (72.15)	3.77 (6.07)	1940	5.16	0.509 (0.310)	13.81 (2.72)	197 (92)	55 (13)	28.78 (97.46)
8th Gear									
164.29 (122.51)	14009 (62.31)	4.40 (7.08)	1951	4.02	0.506 (0.308)	13.89 (2.74)	198 (92)	57 (14)	28.78 (97.46)
9th Gear									
164.08 (122.35)	12087 (53.77)	5.09 (8.19)	1942	3.24	0.503 (0.306)	13.97 (2.75)	197 (92)	58 (14)	28.75 (97.36)
10th Gear									
163.02 (121.57)	10405 (46.28)	5.88 (9.46)	1942	2.62	0.513 (0.312)	13.72 (2.70)	197 (92)	58 (14)	28.75 (97.36)
11th Gear									
160.61 (119.77)	8929 (39.72)	6.75 (10.86)	1934	2.16	0.522 (0.317)	13.49 (2.66)	198 (92)	59 (15)	28.74 (97.33)
12th Gear									
159.34 (118.82)	7680 (34.16)	7.78 (12.52)	1938	1.79	0.527 (0.320)	13.36 (2.63)	198 (92)	60 (16)	28.74 (97.33)
13th Gear									
155.11 (115.66)	5979 (26.60)	9.73 (15.66)	1934	1.25	0.537 (0.327)	13.10 (2.58)	196 (91)	61 (16)	28.73 (97.29)

**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 110°F (43°C). The pull in 3<sup>rd</sup> gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code Procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1829**, Nebraska Summary 417, December 15, 2003.

Leonard L. Bashford  
 Director

M.F. Kocher  
 V.I. Adamchuk  
 W.P. Campbell  
 Board of Tractor Test Engineers

**TRACTOR SOUND LEVEL WITH CAB**

**dB(A)**

At 75% load in 9th gear	75.3
Bystander in 18th gear	85.0

**TIRES, BALLAST AND WEIGHT**

	<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b> -No., size, ply & psi (kPa)	Four 520/85R42;**,9(60)	Two 520/85R42;**,17(115)
<b>Ballast</b> - Duals (total)	1950 lb (885 kg)	None
- Cast Iron (total)	None	None
<b>Front Tires</b> -No., size, ply & psi (kPa)	Two 420/90R30;**,16(110)	Two 420/90R30;**,13(90)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	855 lb (388 kg)	None
<b>Height of Drawbar</b>	17.5 in (445 mm)	17.0 in (430 mm)
<b>Static Weight with operator</b> - Rear	15210 lb (6899 kg)	13320 lb (6042 kg)
- Front	8225 lb (3731 kg)	7310 lb (3316 kg)
- Total	23435 lb (10630 kg)	20630 lb (9358 kg)

**DRAWBAR PERFORMANCE**  
**BALLASTED - 1950 ENGINE 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
144.12 (107.47)	23585 (104.91)	2.29 (3.69)	2167	8.75	0.586 (0.356)	12.00 (2.36)	197 (92)	51 (11)	28.62 (96.92)
4th Gear									
155.09 (115.65)	22792 (101.38)	2.55 (4.11)	2071	7.28	0.548 (0.334)	12.83 (2.53)	196 (91)	52 (11)	28.64 (96.99)
5th Gear									
160.38 (119.60)	22490 (100.04)	2.67 (4.30)	1878	6.61	0.509 (0.310)	13.81 (2.72)	197 (92)	53 (12)	28.66 (97.05)
6th Gear									
162.31 (121.03)	18542 (82.48)	3.28 (5.28)	1952	3.85	0.514 (0.313)	13.69 (2.70)	198 (92)	54 (12)	28.68 (97.12)
7th Gear									
165.68 (123.54)	16091 (71.58)	3.86 (6.21)	1949	3.09	0.503 (0.306)	13.99 (2.76)	197 (92)	55 (13)	28.70 (97.19)
8th Gear									
164.19 (122.43)	13901 (61.83)	4.43 (7.13)	1943	2.60	0.505 (0.307)	13.93 (2.74)	198 (92)	57 (14)	28.71 (97.22)
9th Gear									
162.50 (121.18)	11844 (52.68)	5.15 (8.28)	1949	2.16	0.507 (0.308)	13.87 (2.73)	197 (92)	58 (14)	28.71 (97.22)
10th Gear									
160.73 (119.86)	10184 (45.30)	5.92 (9.52)	1950	1.92	0.510 (0.310)	13.78 (2.72)	198 (92)	59 (15)	28.72 (97.26)
11th Gear									
156.31 (116.56)	8613 (38.31)	6.81 (10.95)	1941	1.56	0.539 (0.328)	13.05 (2.57)	198 (92)	60 (16)	28.72 (97.26)
12th Gear									
152.42 (113.66)	7302 (32.48)	7.83 (12.60)	1948	1.32	0.548 (0.334)	12.82 (2.53)	198 (92)	61 (16)	28.73 (97.29)
13th Gear									
150.05 (111.89)	5751 (25.58)	9.78 (15.75)	1948	1.06	0.558 (0.340)	12.59 (2.48)	197 (91)	61 (16)	28.73 (97.29)

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

CATEGORY: III

Quick Attach: Yes

Maximum force exerted through whole range: 12802 lb (56.9 kN) High Lift Option  
16375 lb (72.8 kN)

i) Opening pressure of relief valve: NA NA

Sustained pressure at compensator cutoff: 3090 psi (213 bar) Mega flow pump  
2770 psi (191 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 38.6 GPM (146.1 l/min) 31.2 GPM (118.1 l/min)  
Combined flow: 69.8 GPM (264.2 l/min)

iii) Pump delivery rate at maximum hydraulic power: 38.2 GPM (144.6 l/min) 31.4 GPM (118.9 l/min)  
Delivery pressure: 2800 psi (193 bar) 2560 psi (177 bar)  
Power: 62.4 HP (46.6 kW) 46.9 Hp (35.0 kW)

### THREE POINT HITCH PERFORMANCE(Standard lift cylinders)

Observed Maximum Pressure psi. (bar) 3260 (225)  
Location: lift cylinder  
Hydraulic oil temperature: °F (°C) 150 (65)  
Location: hydraulic sump  
Category: III  
Quick attach: none

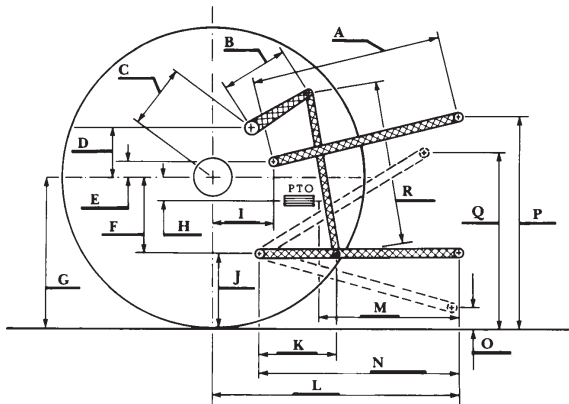
#### SAE Static Test—System pressure 2935 psi (202 Bar)

Hitch point distance to ground level in. (mm)	8.7 (222)	16.1 (409)	23.9 (607)	31.9 (810)	39.9 (1013)
Lift force on frame lb	23888	19088	17829	16837	15402
" " " " " " (kN)	(106.3)	(84.9)	(79.3)	(74.9)	(68.5)

#### HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	mm	inch	mm
A	28.2	718	28.5	724
B	20.5	520	20.5	520
C	22.9	581	22.9	581
D	20.7	525	20.7	525
E	10.5	266	10.5	266
F	15.7	400	15.7	400
G	36.4	925	36.4	925
H	3.5	90	3.5	90
I	20.9	530	20.9	530
J	20.7	525	20.7	525
K	30.2	768	30.2	768
L	46.1	1170	46.1	1170
*L'	50.7	1287	--	--
M	20.1	511	20.1	511
N	38.2	970	38.2	1089
O	9.0	230	8.0	203
P	47.6	1210	40.7	1035
Q	40.7	1035	40.0	1016
R	39.2	995	39.9	1013

\*L' to Quick Attach ends



NEW HOLLAND TG210 DIESEL

Agricultural Research Division  
Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln  
Darrell Nelson, Dean and Director