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2016

## Test 2149: New Holland T8.410 SmartTrax

Nebraska Tractor Test Laboratory

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# NEBRASKA OECD TRACTOR TEST 2149—SUMMARY 1012

## NEW HOLLAND T8.410 SMARTTRAX DIESEL

### 17 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption		Mean Atmospheric Conditions
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1109 rpm)</b>						
302.71 (225.73)	2000	15.60 (59.05)	0.361 (0.220)	19.41 (3.82)	1.90 (7.17)	
<b>Standard Power Take-off Speed (998 rpm)</b>						
340.17 (253.66)	1800	17.07 (64.62)	0.352 (0.214)	19.93 (3.93)	2.03 (7.70)	
<b>Maximum Power (1 hour)</b>						
340.17 (253.66)	1800	17.07 (64.62)	0.352 (0.214)	19.93 (3.93)	2.03 (7.70)	

#### VARYING POWER AND FUEL CONSUMPTION

302.71 (225.73)	2000	15.60 (59.05)	0.361 (0.220)	19.41 (3.82)	1.90 (7.17)	Air temperature
271.97 (202.81)	2115	14.53 (55.01)	0.374 (0.228)	18.72 (3.69)	1.60 (6.07)	73°F (23°C)
207.34 (154.62)	2148	11.72 (44.35)	0.396 (0.241)	17.70 (3.49)	1.07 (4.03)	Relative humidity
140.18 (104.53)	2178	8.80 (33.31)	0.440 (0.268)	15.93 (3.14)	0.68 (2.57)	37%
71.35 (53.21)	2213	5.91 (22.39)	0.581 (0.353)	12.07 (2.38)	0.41 (1.56)	Barometer
0.86 (0.64)	2227	2.96 (11.22)	24.279 (14.768)	0.29 (0.06)	0.33 (1.26)	28.96" Hg (98.05 kPa)

Maximum torque - 1154 lb.-ft. (1565 Nm) at 1400 rpm  
 Maximum torque rise - 45.2%  
 Torque rise at 1600 engine rpm - 38%  
 Power increase at 1800 engine rpm - 12.4%

#### 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)	D.E.F. Consumption Hp.hr/gal (kW.h/l)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing dry med	Air bulb	Barom. inch Hg (kPa)
<b>Power at Rated Engine Speed—7th Gear</b>										
251.58 (187.60)	18957 (84.32)	4.98 (8.01)	2000	3.5	0.435 (0.265)	16.11 (3.17)	0.065 (0.039)	209 (98)	55 (13)	28.63 (96.95)
<b>75% of Pull at Rated Engine Speed—7th Gear</b>										
204.52 (152.51)	14258 (63.42)	5.38 (8.66)	2131	2.0	0.465 (0.283)	15.08 (2.97)	0.057 (0.035)	206 (96)	60 (15)	28.68 (97.12)
<b>50% of Pull at Rated Engine Speed—7th Gear</b>										
140.34 (104.65)	9513 (42.31)	5.53 (8.90)	2171	1.1	0.527 (0.321)	13.30 (2.62)	0.049 (0.030)	192 (89)	60 (16)	28.69 (97.16)
<b>75% of Pull at Reduced Engine Speed—10th Gear</b>										
204.18 (152.25)	14310 (63.65)	5.35 (8.61)	1397	2.0	0.425 (0.259)	16.47 (3.25)	0.060 (0.037)	202 (94)	60 (15)	28.68 (97.12)
<b>50% of Pull at Reduced Engine Speed—10th Gear</b>										
140.37 (104.67)	9477 (42.15)	5.55 (8.93)	1437	1.1	0.454 (0.276)	15.45 (3.04)	0.062 (0.038)	187 (86)	60 (16)	28.69 (97.16)

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

**Dates of tests:** April 19 to May 2, 2016

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

**CONSUMABLE Fluids, OIL and TIME: Fuel** No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8417 **Fuel weight** 7.008 lbs/gal (0.840 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil** SAE 10W40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** New Holland Ambra Mastertran fluid **Front axle lubricant** SAE 85W-140 **API GL-5** **Total time engine was operated:** 16.0 hours

**ENGINE: Make** F.P.T. Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** \*15H00119172\* **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.606" x 5.315" (117.0 mm x 135.0 mm) **Compression ratio** 15.9 to 1 **Displacement** 531 cu in (8704 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 **Fuel cooler** radiator for pump return fuel **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) integrated within a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 107.1 - 114.0 lb/h (48.6 - 51.7 kg/h) **High idle:** 2215 - 2265 rpm **Turbo boost:** nominal 23.2 - 26.1 psi (160 - 180 kPa) as measured 24.2 psi (167 kPa)

**CHASSIS: Type** Half track drive, front wheel assist with rear rubber tracks **Serial No.** \*ZGRE01076\* **Tread width** rear 120.0" (3050 mm) front 68.0" (1725 mm) to 88.0" (2235 mm) **Wheelbase** 140.0" (3550 mm) **Length of track on ground** 29.4" (748 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 2.23 (3.59) second 2.56 (4.12) third 2.95 (4.75) fourth 3.39 (5.45) fifth 3.88 (6.25) sixth 4.46 (7.17) seventh 5.20 (8.37) eighth 5.97 (9.60) ninth 6.88 (11.07) tenth 7.89 (12.69) eleventh 9.05 (14.56) twelfth 10.38 (16.70) thirteenth 12.93 (20.81) fourteenth 14.83 (23.87) fifteenth 17.11 (27.53) sixteenth 19.01 (30.60) seventeenth 19.01 (30.60) electronically limited reverse 3.21 (5.17), 3.68 (5.93), 7.48 (12.04), 8.58 (13.81)

**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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med bulb	Air dry bulb	Barom. inch Hg (kPa)	
					<b>3rd Gear</b>					
227.94 (169.97)	33754 (150.14)	2.54 (4.08)	2010	13.9	0.486 (0.296)	14.41 (2.84)	0.072 (0.044)	202 (94)	47 (8)	28.85 (97.70)
					<b>4th Gear</b>					
239.04 (178.25)	29275 (130.22)	3.06 (4.92)	2000	8.8	0.461 (0.280)	15.22 (3.00)	0.070 (0.043)	208 (98)	51 (11)	28.90 (97.87)
					<b>5th Gear</b>					
244.49 (182.31)	25419 (113.07)	3.61 (5.81)	1999	6.3	0.450 (0.274)	15.59 (3.07)	0.068 (0.042)	206 (97)	54 (12)	28.92 (97.93)
					<b>6th Gear</b>					
246.30 (183.67)	21893 (97.38)	4.22 (6.79)	1999	4.5	0.446 (0.271)	15.73 (3.10)	0.067 (0.041)	209 (98)	55 (13)	28.63 (96.95)
					<b>7th Gear</b>					
251.58 (187.60)	18957 (84.32)	4.98 (8.01)	2000	3.5	0.435 (0.265)	16.11 (3.17)	0.065 (0.039)	209 (98)	55 (13)	28.63 (96.95)
					<b>8th Gear</b>					
249.20 (185.82)	16245 (72.26)	5.75 (9.25)	2000	2.7	0.441 (0.268)	15.88 (3.13)	0.065 (0.039)	209 (98)	55 (13)	28.63 (96.95)
					<b>9th Gear</b>					
247.25 (184.37)	13888 (61.78)	6.68 (10.74)	2000	2.0	0.443 (0.269)	15.82 (3.12)	0.066 (0.040)	209 (98)	57 (14)	28.64 (96.99)
					<b>10th Gear</b>					
244.25 (182.14)	11905 (52.96)	7.70 (12.38)	2000	1.5	0.450 (0.274)	15.58 (3.07)	0.066 (0.040)	209 (98)	57 (14)	28.64 (96.99)
					<b>11th Gear</b>					
239.46 (178.56)	10142 (45.11)	8.86 (14.25)	1999	1.2	0.460 (0.280)	15.25 (3.00)	0.067 (0.041)	210 (99)	58 (14)	28.66 (97.05)

**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** 1000 rpm at 1803 engine rpm **Unladen tractor mass** 36170 lb (16406 kg)

**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. The manufacturer's remote flow claim of 75 GPM (282 l/min), with MegaFlow option, was not verified. The performance results 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. **2149**, Nebraska Summary 1012, June 10, 2016.

Roger M. Hoy  
 Director

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

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 6th gear	67.4	67.6
Bystander in 15th gear		89.3

**TIRES AND WEIGHT**

<b>Rear Tracks</b> - No. & size	2 x 18 in (455 mm)
<b>Front Tires</b> - No., size, ply & psi (kPa)	Two 420/85R38;***;17(115)
<b>Height of Drawbar</b>	22.5 in (570 mm)
<b>Static Weight with operator</b> - Rear	26685 lb (12104 kg)
- Front	9660 lb (4381 kg)
- Total	36345 lb (16485 kg)

**Tested Without Ballast**

**DRAWBAR PERFORMANCE AT 1800 ENGINE RPM**  
**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)	Consumption 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)
3rd Gear										
229.15 (170.87)	33792 (150.31)	2.55 (4.10)	2012	13.6	0.485 (0.295)	14.45 (2.85)	0.072 (0.044)	199 (93)	47 (8)	28.85 (97.70)
4th Gear										
243.89 (181.87)	32017 (142.42)	2.86 (4.60)	1933	11.9	0.471 (0.287)	14.86 (3.93)	0.070 (0.043)	209 (98)	52 (11)	28.89 (97.83)
5th Gear										
259.83 (193.75)	30056 (133.70)	3.25 (5.22)	1873	10.1	0.458 (0.279)	15.29 (3.01)	0.066 (0.040)	210 (99)	55 (13)	28.90 (97.87)
6th Gear										
269.40 (200.89)	27652 (123.00)	3.65 (5.87)	1800	8.1	0.445 (0.271)	15.74 (3.10)	0.065 (0.040)	209 (98)	57 (14)	28.92 (97.93)
7th Gear										
281.20 (209.69)	24041 (106.94)	4.39 (7.06)	1800	5.4	0.428 (0.260)	16.37 (3.22)	0.062 (0.038)	210 (99)	55 (13)	28.63 (96.95)
8th Gear										
282.85 (210.92)	20790 (92.48)	5.10 (8.21)	1800	4.1	0.425 (0.258)	16.50 (3.25)	0.061 (0.037)	210 (99)	55 (13)	28.63 (96.95)
9th Gear										
282.45 (210.62)	17804 (79.20)	5.95 (9.58)	1800	2.9	0.425 (0.259)	16.48 (3.25)	0.061 (0.037)	210 (99)	57 (14)	28.64 (96.99)
10th Gear										
280.96 (209.51)	15333 (68.20)	6.87 (11.06)	1800	2.3	0.427 (0.260)	16.42 (3.23)	0.062 (0.038)	210 (99)	57 (14)	28.64 (96.99)
11th Gear										
277.95 (207.27)	13156 (58.52)	7.92 (12.75)	1799	1.7	0.432 (0.263)	16.22 (3.20)	0.062 (0.037)	209 (98)	58 (14)	28.66 (97.05)
12th Gear										
273.34 (203.83)	11235 (49.97)	9.12 (14.68)	1799	1.4	0.439 (0.267)	15.98 (3.15)	0.062 (0.038)	210 (99)	58 (14)	28.66 (97.05)

## HYDRAULIC PERFORMANCE

CATEGORY: 4N

Quick Attach: Yes

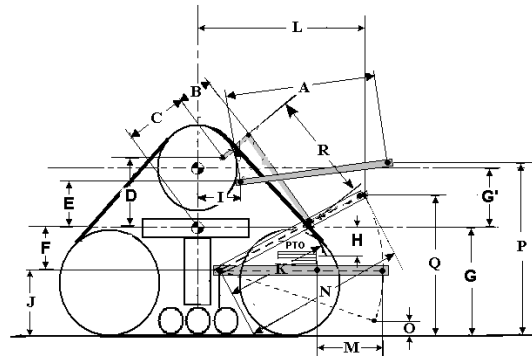
OECD Static test

Maximum force exerted through whole range:	20012 lbs (89.0 kN)
	<b>Standard pump</b>
	<u>three outlet sets combined</u>
i) Sustained pressure at compensator cutoff:	2814 psi (194 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.2 GPM (167.2 l/min)
iii) Pump delivery rate at maximum hydraulic power:	45.1 GPM (170.6 l/min)
Delivery pressure:	2608 psi (180 bar)
Power:	68.6 HP (51.1 kW)
	<u>single outlet set</u>
i) Sustained pressure at compensator cutoff:	2803 psi (193 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	42.6 GPM (161.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	33.8 GPM (127.8 l/min)
Delivery pressure:	2250 psi (155 bar)
Power:	44.3 HP (33.0 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	29.7	755
B	20.5	520
C	22.9	581
D	23.4	595
E	13.2	336
F	11.6	295
G	33.8	860
*G'	14.6	370
H	0.8	20
I	20.9	530
J	22.2	565
K	30.2	768
L	53.1	1350
*L'	60.4	1534
M	27.2	691
N	38.2	970
O	10.4	265
P	49.8	1265
Q	42.3	1075
R	40.7	1035

\*G' to undercarriage pivot point  
\*L' to Quick coupler ends



**NEW HOLLAND T8.410 SMARTTRAX DIESEL**