

# NEBRASKA OECD TRACTOR TEST 2007–SUMMARY 790

## NEW HOLLAND T8.390 DIESEL

### 18 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>						
293.62 (218.96)	2000	15.39 (58.27)	0.369 (0.225)	19.08 (3.76)	1.32 (5.00)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
332.40 (247.87)	1803	16.70 (63.21)	0.354 (0.215)	19.91 (3.92)	1.40 (5.30)	
<b>Maximum Power (1 hour)</b>						
332.40 (247.87)	1803	16.70 (63.21)	0.354 (0.215)	19.91 (3.92)	1.40 (5.30)	

#### VARYING POWER AND FUEL CONSUMPTION

293.62 (218.96)	2000	15.39 (58.27)	0.369 (0.225)	19.08 (3.76)	1.32 (5.00)	Air temperature
261.06 (194.67)	2084	14.16 (53.60)	0.382 (0.232)	18.44 (3.63)	1.02 (3.86)	73°F (23°C)
197.21 (147.06)	2115	11.17 (42.29)	0.399 (0.243)	17.65 (3.48)	0.82 (3.10)	Relative humidity
134.13 (100.02)	2147	8.19 (31.01)	0.430 (0.262)	16.37 (3.23)	0.60 (2.27)	18%
68.02 (50.72)	2184	5.41 (20.49)	0.561 (0.341)	12.57 (2.48)	0.33 (1.25)	Barometer
5.15 (3.84)	2215	2.94 (11.11)	4.019 (2.445)	1.75 (0.35)	0.00 (0.00)	28.93" Hg (97.97 kPa)

Maximum torque - 1116 lb.-ft. (1514 Nm) at 1450 rpm  
 Maximum torque rise - 45.0%  
 Torque rise at 1599 engine rpm - 39%  
 Power increase at 1800 engine rpm - 13.2%

#### 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)	Fuel Consumption Hp.hr/gal (kW/h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—8th Gear</b>									
259.61 (193.59)	19517 (86.81)	4.99 (8.03)	2001	2.8	0.427 (0.260)	16.51 (3.25)	189 (87)	50 (10)	28.92 (97.93)
<b>75% of Pull at Maximum Power—8th Gear</b>									
205.84 (153.49)	14590 (64.90)	5.29 (8.51)	2097	1.7	0.449 (0.273)	15.69 (3.09)	185 (85)	54 (12)	28.87 (97.77)
<b>50% of Pull at Maximum Power—8th Gear</b>									
141.36 (105.41)	9774 (43.48)	5.43 (8.73)	2136	1.1	0.500 (0.304)	14.11 (2.78)	182 (83)	55 (13)	28.87 (97.77)
<b>75% of Pull at Reduced Engine Speed—11th Gear</b>									
206.80 (154.21)	14506 (64.52)	5.35 (8.61)	1396	1.7	0.405 (0.246)	17.41 (3.43)	185 (85)	55 (13)	28.87 (97.77)
<b>50% of Pull at Reduced Engine Speed—11th Gear</b>									
141.61 (105.60)	9765 (43.44)	5.44 (8.75)	1413	1.1	0.428 (0.260)	16.46 (3.24)	183 (84)	54 (12)	28.87 (97.77)

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

**Dates of tests:** October 18 - 27, 2011

**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)** 0.8463 **Fuel weight** 7.047 lbs/gal (0.845 kg/l) **Diesel Exhaust Fluid (DEF)** 30% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 15W40 API service classification** CI-4 **Transmission and hydraulic lubricant** New Holland Ambra Mastertran fluid **Frontaxle lubricant** SAE 85W-140 API GL-5 **Total time engine was operated:** 22.0 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.** \*11H0012880\* **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 **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 108.0 - 114.7 lb/h (49.0 - 52.0 kg/h) **High idle:** 2200-2250 rpm **Turbo boost:** nominal 23.2 - 27.6 psi (160 - 190 kPa) as measured 25.2 psi (174 kPa)

**CHASSIS: Type** front wheel assist with duals **SerialNo.** \*ZBRC05700\* **Tread width** rear 64.0" (1626 mm) to 129.0" (3277 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 136.0" (3454 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 1808 engine rpm or 1000 rpm at 1803 engine rpm **Unladen tractor mass** 26495 lb (12018 kg)

**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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
5th Gear									
219.28 (163.52)	26800 (119.21)	3.07 (4.93)	2075	11.6	0.486 (0.296)	14.49 (2.85)	188 (86)	52 (11)	28.91 (97.90)
6th Gear									
240.76 (179.53)	25688 (114.26)	3.52 (5.66)	2005	8.6	0.460 (0.280)	15.33 (3.02)	188 (87)	49 (10)	28.93 (97.97)
7th Gear									
256.85 (191.53)	22514 (100.15)	4.28 (6.89)	2000	4.4	0.428 (0.260)	16.48 (3.25)	188 (87)	50 (10)	28.92 (97.93)
8th Gear									
259.61 (193.59)	19517 (86.81)	4.99 (8.03)	2001	2.8	0.427 (0.260)	16.51 (3.25)	189 (87)	50 (10)	28.92 (97.93)
9th Gear									
255.98 (190.88)	16545 (73.59)	5.81 (9.34)	2001	1.9	0.430 (0.262)	16.39 (3.23)	190 (88)	50 (10)	28.90 (97.87)
10th Gear									
256.64 (191.38)	14401 (64.06)	6.69 (10.76)	2000	1.6	0.427 (0.260)	16.50 (3.25)	189 (87)	51 (10)	28.89 (97.83)
11th Gear									
254.76 (189.97)	12440 (55.33)	7.68 (12.36)	1999	1.3	0.432 (0.263)	16.32 (3.21)	189 (87)	51 (10)	28.89 (97.83)
12th Gear									
249.85 (186.31)	10614 (47.21)	8.83 (14.20)	2001	1.1	0.438 (0.267)	16.09 (3.17)	191 (88)	51 (11)	28.88 (97.80)

**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 primary fuel filter was maintained at 104°F (40°C). The manufacturer's 3 point hitch lift claim of 17750 lbs (8051 kg), with 105 mm lift cylinders, was not verified. The performance results on this summary were taken from OECD tests conducted under the Code 2 Test Code Procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2007**, Nebraska Summary 790, January 19, 2012.

Roger M. Hoy  
 Director

M.F. Kocher  
 D.R. Keshwani  
 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 7th gear	68.0	68.0
Bystander in 18th gear		86.5

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
<b>Rear Tires</b> -No., size, ply & psi (kPa)	Six 520/85R42;**,10(70)	Four 520/85R42;**,9(60)
<b>Ballast</b> - Triples (total)	2320 lb (1053 kg)	None
- Cast Iron (total)	4085 lb (1853 kg)	None
<b>Front Tires</b> -No., size, ply & psi (kPa)	Four 420/90R30;**,15(105)	Two 420/90R30;**,17(120)
<b>Ballast</b> - Duals (total)	1140 lb (517 kg)	None
- Cast Iron (total)	3080 lb (1397 kg)	None
<b>Height of Drawbar</b>	21.0 in (535 mm)	20.0 in (510 mm)
<b>Static Weight with operator</b> - Rear	22805 lb(10344 kg)	17210 lb (7806 kg)
- Front	14490 lb (6573 kg)	9460 lb (4291 kg)
- Total	37295 lb(16917 kg)	26670 lb(12097 kg)

**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)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear									
221.34 (165.05)	26952 (119.89)	3.08 (4.95)	2074	11.2	0.482 (0.293)	14.63 (2.88)	186 (86)	51 (11)	28.90 (97.87)
6th Gear									
241.01 (179.72)	25473 (113.31)	3.55 (5.71)	2016	8.2	0.458 (0.279)	15.38 (3.03)	188 (87)	49 (10)	28.93 (97.97)
7th Gear									
263.78 (196.70)	24276 (107.98)	4.07 (6.55)	1936	5.9	0.432 (0.263)	16.29 (3.21)	188 (87)	50 (10)	28.92 (97.93)
8th Gear									
278.62 (207.77)	22640 (100.71)	4.62 (7.43)	1879	4.3	0.422 (0.257)	16.69 (3.29)	190 (88)	51 (10)	28.91 (97.90)
9th Gear									
286.10 (213.34)	20824 (92.63)	5.16 (8.30)	1801	3.2	0.416 (0.253)	16.95 (3.34)	194 (90)	50 (10)	28.89 (97.83)
10th Gear									
289.19 (215.65)	18163 (80.79)	5.97 (9.61)	1800	2.2	0.411 (0.250)	17.13 (3.38)	194 (90)	51 (10)	28.89 (97.83)
11th Gear									
288.09 (214.82)	15683 (69.76)	6.89 (11.08)	1801	1.7	0.412 (0.250)	17.12 (3.37)	195 (91)	51 (10)	28.89 (97.83)
12th Gear									
286.63 (213.74)	13485 (59.98)	7.97 (12.83)	1811	1.4	0.417 (0.254)	16.91 (3.33)	196 (91)	51 (11)	28.88 (97.80)

**DRAWBAR PERFORMANCE AT 1800 ENGINE RPM**  
**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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F cool- ing med	Temp.°C Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
226.86 (169.17)	37986 (168.97)	2.24 (3.60)	2017	12.9	0.484 (0.294)	14.57 (2.87)	200 (93)	67 (19)	28.56 (96.72)
4th Gear									
253.25 (188.85)	36914 (164.20)	2.58 (4.14)	1924	8.6	0.451 (0.274)	15.63 (3.08)	208 (98)	69 (20)	28.56 (96.72)
5th Gear									
271.29 (202.30)	35060 (155.95)	2.90 (4.67)	1846	6.3	0.432 (0.263)	16.30 (3.21)	205 (96)	70 (21)	28.56 (96.72)
6th Gear									
280.88 (209.45)	31806 (141.48)	3.31 (5.33)	1801	4.2	0.422 (0.257)	16.69 (3.29)	210 (99)	70 (21)	28.56 (96.72)
7th Gear									
286.18 (213.40)	27359 (121.70)	3.92 (6.31)	1800	2.9	0.415 (0.252)	16.99 (3.35)	204 (96)	72 (22)	28.56 (96.72)
8th Gear									
287.18 (214.15)	23808 (105.90)	4.53 (7.28)	1799	2.3	0.412 (0.250)	17.12 (3.37)	209 (98)	72 (22)	28.57 (96.75)
9th Gear									
285.81 (213.12)	20432 (90.89)	5.25 (8.45)	1802	1.9	0.413 (0.251)	17.07 (3.36)	210 (99)	72 (22)	28.57 (96.75)
10th Gear									
282.27 (210.49)	17539 (78.02)	6.04 (9.71)	1802	1.6	0.420 (0.255)	16.78 (3.31)	209 (98)	73 (23)	28.57 (96.75)
11th Gear									
279.85 (208.68)	15150 (67.39)	6.93 (11.14)	1800	1.4	0.424 (0.258)	16.61 (3.27)	209 (98)	72 (22)	28.58 (96.78)
12th Gear									
276.26 (206.01)	12919 (57.46)	8.02 (12.91)	1810	1.2	0.428 (0.261)	16.45 (3.24)	214 (101)	72 (22)	28.58 (96.78)

## HYDRAULIC PERFORMANCE

CATEGORY: 4N

Quick Attach: Yes

OECD Static test

Maximum force exerted through whole range: 19559 lbs (87.0 kN) (2 x 115 mm cylinders)  
cylinders)

	<u>Standard pump</u>	<u>High flow pump</u>
	<u>three outlet sets combined</u>	
i) Sustained pressure at compensator cutoff:	2975 psi (205 bar)	2899 psi (200 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	45.8 GPM (173.4 l/min)	60.0 GPM (226.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	46.5 GPM (176.2 l/min)	59.7 GPM (226.0 l/min)
Delivery pressure:	2756 psi (190 bar)	2569 psi (177 bar)
Power:	74.8 HP (55.8 kW)	89.5 hp (66.7 kW)
	<u>single outlet set</u>	
i) Sustained pressure at compensator cutoff:	2963 psi (204 bar)	2890 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	35.8 GPM (135.6 l/min)	44.9 GPM (170.0 l/min)
iii) Pump delivery rate at maximum hydraulic power:	34.2 GPM (129.3 l/min)	38.7 GPM (146.6 l/min)
Delivery pressure:	2420 psi (167 bar)	2170 psi (150 bar)
Power:	48.2 HP (36.0 kW)	49.0 hp (36.6 kW)

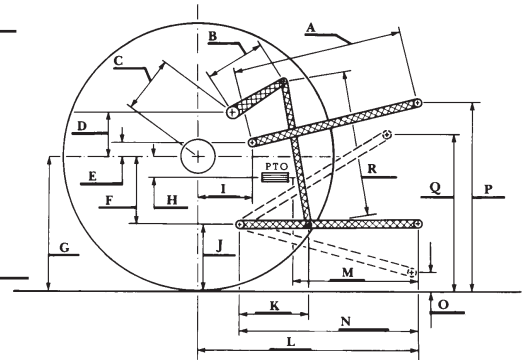
## HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	24.0	610
B	20.5	520
C	22.9	581
D	20.7	525
E	10.5	266
F	15.7	400
G	36.6	930
H	3.5	90
I	20.9	530
J	20.9	530
K	30.2	768
L	51.0	1295
*L'	58.1	1475
M	25.0	636
N	43.1	1095
O	9.0	230
P	48.4	1230
Q	37.4	951
R	39.6	1005

\*L' to Quick Attach ends

## MegaFlow system

	<u>Main pump</u>	<u>MegaFlow pump</u>
i) Sustained pressure at compensator cutoff:	3090 psi (213 bar)	2935 psi (202 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.6 GPM (164.9 l/min)	33.5 GPM (126.7 l/min)
Combined flow:	77.1 GPM (291.6 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	36.3 GPM (137.4 l/min)	34.5 GPM (130.7 l/min)
Delivery pressure:	2797 psi (193 bar)	2764 psi (191 bar)
Power:	59.2 HP (44.1 kW)	55.7 Hp (41.5 kW)



## NEW HOLLAND T8.390 DIESEL

Institute of Agriculture and Natural Resources  
University of Nebraska–Lincoln