

NEBRASKA OECD TRACTOR TEST 2011A - SUMMARY 794A

NEW HOLLAND T9.670 DIESEL

16 SPEED

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

Dates of tests: November 8-30, 2011

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

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)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1051 rpm)						
477.95 (356.41)	2100	26.34 (99.71)	0.388 (0.236)	18.14 (3.57)	1.89 (7.15)	
Standard Power Take-off Speed (1000 rpm)						
512.41 (382.10)	1999	27.23 (103.09)	0.375 (0.228)	18.82 (3.71)	2.08 (7.87)	
Maximum Power (1 hour)						
530.73 (395.76)	1900	27.58 (104.40)	0.366 (0.223)	19.24 (3.79)	2.11 (7.99)	

VARYING POWER AND FUEL CONSUMPTION

477.95 (356.41)	2100	26.34 (99.71)	0.388 (0.236)	18.14 (3.57)	1.89 (7.15)	Air temperature
414.71 (309.25)	2146	23.58 (89.27)	0.401 (0.244)	17.59 (3.46)	1.67 (6.32)	75°F (23°C)
312.19 (232.80)	2154	18.86 (71.38)	0.426 (0.259)	16.56 (3.26)	1.25 (4.73)	Relative humidity
209.09 (155.92)	2165	14.23 (53.88)	0.480 (0.292)	14.69 (2.89)	0.88 (3.33)	29%
104.82 (78.17)	2175	9.93 (37.57)	0.667 (0.406)	10.56 (2.08)	0.48 (1.82)	Barometer
--	2188	5.20 (19.69)	--	--	0.14 (0.53)	28.89" Hg (97.83 kPa)

Maximum torque - 1674 lb.-ft. (2270 Nm) at 1401 rpm

Maximum torque rise - 40.1%

Torque rise at 1700 engine rpm - 31%

Power increase at 1900 engine rpm - 11.0%

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)	Temp. °F (°C) cool-ing med	Barom. inch Hg (kPa)
Maximum Power—5th Gear							
490.42 (365.71)	33712 (149.96)	5.46 (8.78)	2100	3.1	0.422 (0.257)	16.69 (3.29)	204 (96)
75% of Pull at Maximum Power—5th Gear							
379.95 (283.32)	25356 (112.79)	5.62 (9.04)	2145	2.2	0.447 (0.272)	15.77 (3.11)	201 (94)
50% of Pull at Maximum Power—5th Gear							
256.93 (191.59)	16917 (75.25)	5.70 (9.17)	2157	1.4	0.496 (0.302)	14.22 (2.80)	189 (87)
75% of Pull at Reduced Engine Speed—9th Gear							
379.62 (283.08)	25363 (112.82)	5.61 (9.03)	1471	2.2	0.393 (0.239)	17.91 (3.53)	203 (95)
50% of Pull at Reduced Engine Speed—9th Gear							
257.15 (191.76)	16916 (75.25)	5.70 (9.17)	1484	1.4	0.419 (0.255)	16.83 (3.32)	197 (92)

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 lubricant** New Holland Mastertran transmission fluid **Hydraulic and axle lubricant** New Holland Multi G134 hydraulic fluid **Total time engine was operated:** 31.5 hours

ENGINE: Make F.P.T. Diesel **Type** six cylinder vertical with two turbochargers, air to air intercooler, water to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *A-002-001217* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.315" x 5.906" (135.0 mm x 150.0 mm) **Compression ratio** 16.5 to 1 **Displacement** 786 cu in (12880 ml) **Starting system** 24 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, separate radiators for hydraulic and transmission oil **Fuel filter** two paper elements **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 535 engine hp: 176.6 - 188.9 lb/h (80.1 - 85.7 kg/h) 600 engine hp: 197.9 - 211.9 lb/h (89.8 - 96.1 kg/h) **High idle:** 2150 - 2200 rpm **Turbo boost:** nominal 33.4 - 37.7 psi (230 - 260 kPa) as measured 35.3 psi (243 kPa)

CHASSIS: Type four wheel drive with duals **Serial No.** *ZBF126081* **Tread width** rear 83.4" (2118 mm) to 160.2" (4070 mm) front 83.4" (2118 mm) to 160.2" (4070 mm) **Wheelbase** 154.0" (3911 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 2.71 (4.36) second 3.27 (5.26) third 3.95 (6.36) fourth 4.75 (7.64) fifth 5.46 (8.79) sixth 6.00 (9.65) seventh 6.57 (10.57) eighth 7.22 (11.62) ninth 7.94 (12.78) tenth 8.72 (14.03) eleventh 9.56 (15.38) twelfth 10.52 (16.93) thirteenth 12.06 (19.41) fourteenth 14.53 (23.38) fifteenth 17.54 (28.23) sixteenth 21.14 (34.02) reverse 4.18 (6.73), 8.32 (13.39) **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Power take-off** 1000 rpm at 1999 engine rpm **Unladen tractor mass** 50760 lb (23024 kg)

**DRAWBAR PERFORMANCE AT 2100 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)	Temp. ^o F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
					2nd Gear				
404.48 (301.62)	48323 (214.95)	3.14 (5.05)	2140	8.6	0.460 (0.280)	15.33 (3.02)	205 (96)	43 (6)	28.57 (96.75)
					3rd Gear				
475.46 (354.55)	47196 (209.94)	3.78 (6.08)	2103	7.3	0.435 (0.265)	16.20 (3.19)	205 (96)	48 (9)	28.60 (96.85)
					4th Gear				
488.37 (364.18)	38943 (173.22)	4.71 (7.57)	2100	4.0	0.425 (0.258)	16.58 (3.27)	205 (96)	56 (13)	28.60 (96.85)
					5th Gear				
490.42 (365.71)	33712 (149.96)	5.46 (8.78)	2100	3.1	0.422 (0.257)	16.69 (3.29)	204 (96)	52 (11)	28.57 (96.75)
					6th Gear				
493.72 (368.17)	30731 (136.70)	6.03 (9.70)	2101	2.6	0.420 (0.255)	16.78 (3.31)	204 (95)	51 (10)	28.52 (96.58)
					7th Gear				
488.63 (364.37)	27738 (123.38)	6.61 (10.63)	2100	2.5	0.420 (0.255)	16.78 (3.31)	204 (96)	50 (10)	28.62 (96.92)
					8th Gear				
491.60 (366.59)	25240 (112.27)	7.31 (11.76)	2100	2.2	0.422 (0.257)	16.69 (3.29)	202 (94)	54 (12)	28.60 (96.85)
					9th Gear				
485.52 (362.05)	22659 (100.79)	8.04 (12.93)	2099	1.9	0.429 (0.261)	16.42 (3.24)	203 (95)	55 (13)	28.60 (96.85)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

Note 1: The performance results on this report were obtained from tests carried out on the Case IH Steiger 600 Diesel.

Note 2: The advertised engine power levels for this tractor are not in standard SAE (U.S.) horsepower units. The advertised rated engine power of 608 DIN hp is equivalent to 599.68 SAE hp. The advertised maximum engine power of 669 CV hp is equivalent to 659.85 SAE hp.

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 110°F (43°C). The pull in 2nd gear was limited to avoid excessive power hop. The performance figures 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. **2011A**, Nebraska Summary 794A, March 5, 2012.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB

dB(A)

At no load in 4th gear	74.8
Bystander in 16th gear	85.8

TIRES AND WEIGHT

Rear Tires - No., size, ply & psi(kPa)
Front Tires - No., size, ply & psi(kPa)
Height of Drawbar
Static Weight with operator - Rear
 - Front
 - Total

Tested Without Ballast

Four 800/70R38;***;9(60)
 Four 800/70R38;***;16(110)
 22.0 in (560 mm)
 22390 lb(10156 kg)
 28545 lb(12948 kg)
 50935 lb(23104 kg)

DRAWBAR PERFORMANCE AT 1900 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
2nd Gear									
403.93 (301.21)	48295 (214.82)	3.14 (5.05)	2140	8.6	0.459 (0.279)	15.34 (3.02)	206 (96)	43 (6)	28.59 (96.82)
3rd Gear									
475.52 (354.60)	47253 (210.19)	3.78 (6.08)	2102	7.4	0.433 (0.263)	16.28 (3.21)	203 (95)	48 (9)	28.61 (96.88)
4th Gear									
518.45 (386.61)	45025 (200.28)	4.32 (6.94)	1966	6.0	0.420 (0.256)	16.76 (3.30)	203 (95)	56 (13)	28.60 (96.85)
5th Gear									
535.17 (399.07)	41245 (183.46)	4.87 (7.83)	1900	4.5	0.409 (0.249)	17.23 (3.39)	204 (96)	53 (12)	28.57 (96.75)
6th Gear									
539.43 (402.25)	37498 (166.80)	5.40 (8.68)	1900	3.5	0.402 (0.245)	17.52 (3.45)	203 (95)	51 (11)	28.52 (96.58)
7th Gear									
538.21 (401.34)	34013 (151.30)	5.93 (9.54)	1900	3.2	0.403 (0.245)	17.49 (3.45)	203 (95)	51 (11)	28.62 (96.92)
8th Gear									
540.92 (403.36)	31004 (137.91)	6.55 (10.53)	1900	2.8	0.405 (0.246)	17.40 (3.43)	201 (94)	55 (13)	28.60 (96.85)
9th Gear									
537.84 (401.06)	27906 (124.13)	7.23 (11.64)	1900	2.4	0.408 (0.248)	17.26 (3.40)	201 (94)	55 (13)	28.60 (96.85)
10th Gear									
536.21 (399.85)	25070 (111.52)	8.02 (12.91)	1916	2.1	0.411 (0.250)	17.15 (3.38)	204 (95)	56 (13)	28.60 (96.85)

HYDRAULIC PERFORMANCE

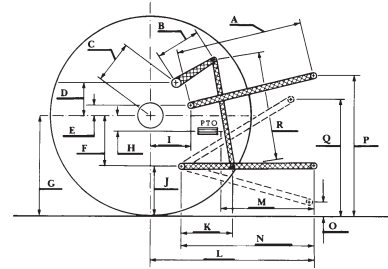
HITCH DIMENSIONS AS TESTED - NO LOAD

CATEGORY: IVN		
Quick Attach: yes		
OECD Static test		
Maximum force exerted through whole range:	19620 lbs (87.3 kN)	
Three outlet sets combined		
	<u>Standard pump</u>	<u>High flow pump</u>
i) Sustained pressure of the open relief valve:	2877 psi (198 bar)	3050 psi (210 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.8 GPM (165.8 l/min)	61.4 GPM (232.4 l/min)
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM (163.7 l/min)	58.7 GPM (222.0 l/min)
Delivery pressure:	2526 psi (174 bar)	2680 psi (185 bar)
Power:	63.7 HP (47.5 kW)	91.7 Hp (68.4 kW)
Single outlet set		
ii) Pump delivery rate at minimum pressure and rated engine speed:	42.8 GPM (162.2 l/min)	43.8 GPM (165.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM (161.6 l/min)	41.4 GPM (156.8 l/min)
Delivery pressure:	2024 psi (139 bar)	2315 psi (160 bar)
Power:	50.4 HP (37.6 kW)	56.0 Hp (41.7 kW)

	inch	mm
A	32.6	827
B	29.9	760
C	23.2	590
D	22.0	558
E	13.5	342
F	13.4	340
G	38.2	970
H	6.4	162
I	22.8	578
J	24.8	630
K	29.0	736
L	56.3	1431
*L'	63.6	1615
M	34.3	871
N	46.5	1181
O	7.9	200
P	48.6	1234
Q	42.2	1072
R	39.8	1010

MegaFlow system

Two outlet sets combined		
	<u>Standard pump</u>	<u>MegaFlow pump</u>
i) Sustained pressure at compensator cutoff:	2877 psi (198 bar)	2855 psi (197 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.8 GPM (165.8 l/min)	57.3 GPM (217.0 l/min)
Combined flow:	101.1 GPM (382.8 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM (163.7 l/min)	56.4 GPM (213.6 l/min)
Delivery pressure:	2526 psi (174 bar)	2479 psi (171 bar)
Power:	63.7 HP (47.5 kW)	81.6 Hp (60.9 kW)



Two outlet sets combined		
	<u>High flow pump</u>	<u>MegaFlow pump</u>
i) Sustained pressure at compensator cutoff:	2993 psi (206 bar)	2855 psi (197 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	61.0 GPM (230.9 l/min)	57.3 GPM (217.0 l/min)
Combined flow:	118.3 GPM (447.9 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	56.7 GPM (214.7 l/min)	56.4 GPM (213.6 l/min)
Delivery pressure:	2517 psi (174 bar)	2479 psi (171 bar)
Power:	83.3 HP (62.1 kW)	81.6 Hp (60.9 kW)



NEW HOLLAND T9.670 Diesel